of authors totals 36. Considering this, the uniformity of quality and method of presentation has remained remarkably uniform and good.

Each article surveys for its particular specialty the experimental work which has been done and indicates its importance in the total understanding of solid state physics. The text is fast moving and the information density is very high as the necessary ideas and experimental methods of each subject are presented in order in clear language, with a minimum demand upon the readers' mathematical skills. References to the current literature are generously provided and could form the basis for additional reading.

The book could be used profitably by students of solid state physics quite early in their graduate training. Mature scientists with specialties in the other physical sciences or other branches of physics who wish to review the modern developments in this area should find this volume easy and profitable reading.

General experimental methods are covered. The details of experimental technique (which often make the difference between success and failure in an experiment) are not included. Readers seeking this information should look elsewhere.

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The Proton in Chemistry. The George Fisher Baker Non-Resident Lectureship in Chemistry at Cornell University. By R. P. BELL, Fellow of Balliol College and University Reader in Physical Chemistry, Oxford University. Cornell University Press, 124 Roberts Place, Ithaca, N. Y. 1959. vii + 223 pp. 16 × 24 cm. Price, 4.75.

This book is based on the lectures given by the author at Cornell University as George Fisher Baker Non-Resident Lecturer during 1958. The material covered complements that in "Acid–Base Catalysis" (Oxford, 1941). The author states that "Many of the theses which were argued in some detail in the earlier book now have become generally accepted, and the kinetic evidence obtained from catalyzed reactions has been supplemented by direct studies of acid–base reactions using a variety of modern techniques." An idea of the scope of the book may be obtained from the topics discussed: 1. Qualitative Nature of Acids and Bases, 2. Definition and Measurement of Acid–Base Strengths in Aqueous Solution, 3. Effect of the Solvent on Acid–Base Equilibria, 4. Thermodynamic Functions Relating to Acid–Base Equilibria, 5. Concentrated Solutions of Acids and Bases, 6. Acid–Base Strength and Molecular Structure, 7. Rates of Acid–Base Reactions, 8. Acid Base Catalysis, 9. Rates, Equilibria, and Structures in Acid–Base Reactions, 10. Isotope Effects in Acid–Base Reactions. The writing is lucid, concise, and well documented. The author has wisely omitted the terms "acid" and "base" from the title of this book because these terms are often used in a wider sense without reference to the proton.

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Advances in Chemical Physics. Volume II. Edited by I. PRIGOGINE, University of Brussels, Brussels, Belgium. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. ix + 412 pp. 16 × 23.5 cm. Price, $11.50.

This is the second volume of a series whose expressed aim is to present personalized reviews of various topics, allowing the authors full scope to express their own views on the subjects discussed. It is natural that various writers will use this freedom in different ways; some will address themselves primarily to specialists in their own subjects, others will try to give more or less self-contained accounts which can serve as introductions to workers whose own interests are in other more or less closely related fields. Some of these essays can, indeed, serve the latter purpose, whereas others, either through predisposition on the part of the author or, perhaps, through a feeling of compulsion toward brevity (even though the introduction states that there was no limitation of space), would seem to be of greater service to the specialist than to the general reader. All of the topics are of timely interest, and they are extremely varied as to content and method.

The volume begins with an article on "Clathrate Solutions," by J. H. Van der Waals and J. C. Platteeuw. This is a particularly interesting class of solutions of gases in crystals for which the usual methods and approximations of statistical mechanics work unusually well. A discussion is given of the theory and the article concludes with a detailed account of numerous experimental data. There follows an account of "Inter- and Intramolecular Forces and Molecular Polarizability," by Kenneth S. Pitzer. This is quite compressed, and the equations are not explained in sufficient detail for the article to serve as an introduction to the subject. It may, however, bring one already acquainted with the field up-to-date, and there are some useful tables. The next paper, by J. S. Rowlinson and M. J. Richardson, is on "The Solubility of Solids in Compressed Gases." It contains a readable introduction to the subject, and a collection of data on a considerable number of systems. (A reference to the point K was omitted in Fig. 1, and the text refers to the curve FO in Fig. 8, as EO, which could cause some momentary confusion.) The fourth article, "Thermodynamics of Metallic Solutions," by R. A. Oriani, brings out some of the difficulties of this theory, and shows that some of the assumptions of the order–disorder theory are invalid. It points to the desirability of further research in this subject. An article, "Recent Advances in Polymer Chemistry," by M. Szwarc, the most "chemical" paper in the collection, gives an account of various aspects of initiation, propagation and termination of polymerization reactions. "Nuclear Quadrupole Resonance in Irradiated Crystals," by Jules Duchesne, describes one of the newer methods of obtaining information on crystal imperfections. By far the most ambitious article in the collection is entitled, "Correlation Problem in Many-Election Quantum Mechanics," by Per-Olov Löwdin. This deals with the interaction between electrons in atoms and molecules—the many-body problem, with special reference to chemical binding. In spite of the fact that this is the longest article in the volume, it appears to be compressed. Too many of the equations are merely quoted, and too much is taken for granted about the notation for it to be very readable for anyone not already more or less acquainted with the subject. Together with the following article by Hiroyuki Yoshizumi, which is a bibliography of the subject, it serves as a guide to the literature, so that the less experienced reader may find out what he has to learn and where he can find it; for the more experienced reader it will serve as an outline of the present state of the subject. The final article is by E. Bright Wilson, Jr., "The Problem of Barriers to Internal Rotation in Molecules." It discusses both the experimental methods for determining barrier heights, and the various theories concerning them.

Altogether the book offers a useful collection of review articles, which can instruct in many cases, and in any event can offer a guide to the field covered. This series of volumes should be in every chemical library, and in many cases will be valuable in personal libraries. Compared to the "Annual Reviews of Physical Chemistry," we may say that the volumes under review offer, in general, more coherent accounts of more specialized topics. It is probably to be expected that, over the years, "Annual Reviews" will give a more complete coverage of the literature.

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Struktur und Eigenschaften der Materie in Einzeldarstellungen. Band XXII. Elektron- und Ionenprozesse in Ionenkristallen mit Berücksichtigung Photochemischer Prozesse. By Professor DR. OSTAP STASIW, Institut für Kristallphysik Berlin-Adlershof. Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf, Germany. 1959. viii + 307 pp. 16 × 23.5 cm. Price, DM. 66.—.

Although it has a somewhat more comprehensive title, this book covers a less extended field than the now classic work of Mott and Gurney, "Electronic Processes in Ionic