

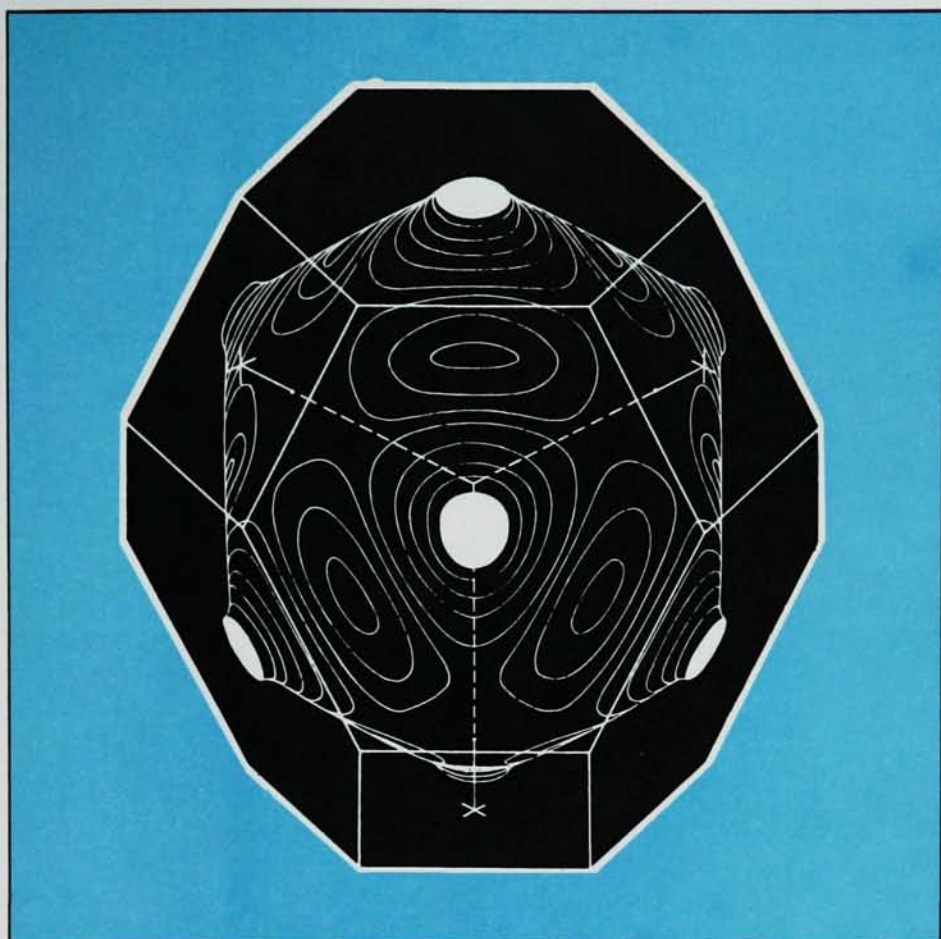
to the available periodical literature other than manufacturers' catalogs. Names are often cited, but the author does not give any reference to the work of the men whose names he mentions.

Section 1.2 of this book is titled "Criteria of Strain Measurement Methods." It is only two pages long but provides an excellent summary of the desired properties and design goals for any type of measurement transducer or system.

The theory of strain gauging is not given in any depth, but the book is full of practical hints and lists of procedures. There is much more descriptive material than mathematical development, and therefore the book is an excellent source for those who are interested in experimental methods.

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Richard Zipin is responsible for application of optical subsystems to precise dimensional-measurement devices at the Automation and Measurement Division of The Bendix Corporation, Dayton, Ohio.



FERMI SURFACE for copper is formed by electrons in the half-filled 4s band. (From *The Fermi Surface*, edited by W. A. Harrison and M. B. Webb (Wiley, 1960).)

Electron-transport theory

PHYSICS OF ELECTRONIC CONDUCTION IN SOLIDS. By Frank J. Blatt. 446 pp. McGraw-Hill, New York, 1968. \$14.50

by C. S. KOONCE

The author states in the preface, "This book was written with the expectation that it could be read profitably by seniors or beginning graduate students in physics, graduate students in material science, electrical engineering and physical metallurgy, and research scientists working in these fields." Indeed this book should prove rewarding to scientists in all of these fields because the author has succeeded in developing an introductory text that treats comprehensively a subject common to all of these disciplines: electronic conduction in solids.

Although the emphasis of the book is on electronic transport, the applications of electronic conduction cover many topics generally treated in introductory solid-state physics textbooks; thus the book is ideally suited for supplementary reading by students in introductory solid-state physics courses. The subject of the book is the research field of the author, a professor of physics at Michigan State University.

The book is a finished product: The chapters are organized into a cohesive and logical development of electronic conduction, and a preface explains this presentation. There is a rather complete index, numerous figures and tables and helpful problems. The first four chapters provide a brief background in solid-state physics, enabling the reader to understand the theory of electronic transport. The book assumes no previous training in solid-state physics and little knowledge of quantum mechanics. The theory of electronic conduction is developed in the next three chapters. The remaining five chapters deal with applica-

tions in both metals and semiconductors. All parts of the book are marked by an outstanding ease of expression.

A student reading this book will have the advantage of seeing the theory of electronic transport presented and its limitations discussed before applying the theory to specific cases in materials. In addition he will see the theory applied to both metals and semiconductors so that he may note both the similarities and differences.

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C. S. Koonce is a physicist in the Cryogenic Physics Section, Heat Division, at the National Bureau of Standards.

Value of groups

APPLIED GROUP THEORY. By Arthur P. Cracknell. 417 pp. Pergamon Press, Oxford, 1968. Cloth \$7.50, paper \$6.00

by GERALD ROTHBERG

Arthur P. Cracknell's book *Applied Group Theory* is published in a series

(*Selected Readings in Physics*) intended primarily to provide undergraduate students with reprints of important papers in the development of a subject, along with introductory material illustrating present-day applications. In meeting these objec-

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tives Cracknell has divided his book almost equally between reprints and text with about 200 pages of each.

The first four chapters provide an orientation in the terminology and basic mathematics of group theory, and there are brief discussions of some important groups, including the crystallographic and full-rotation groups. The remaining four chapters touch on a large number of applications: normal modes of vibration of molecules and solids, crystal field theory, isobaric spin in classifying nuclear energy levels, and so forth. There are problems at the end of each chapter, with solutions at the end of the book.

In his preface the author points out that there is no textbook available that is both oriented towards physics students and yet "understandable by undergraduates." Cracknell's book, although it handles some topics with enviable lucidity, is not the book to fill this gap—the discussion is too superficial. The author does manage to show how valuable group theory can be, but he never discusses any topic sufficiently deeply for the reader to become master of it. Well, almost never: The one exception is the discussion of the normal modes of the methane molecule, which is relatively detailed and tied in with reprints of papers by Eugene Wigner and E. Bright Wilson Jr. The book would have been more valuable if other topics had also been treated in this depth. However, the book is unsuitable for self-study except as a quick survey. Not enough material is presented in the text for one to understand the terminology of some of the reprints without reference to other books.

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The reviewer is an associate professor at Stevens Institute of Technology.

Metals and insulators

SOLID STATE PHYSICS: ADVANCES IN RESEARCH AND APPLICATIONS, VOL. 21. Frederick Seitz, David Turnbull, Henry Ehrenreich, eds. 513 pp. Academic Press, New York, 1968. \$24.50

by DANIEL C. MATTIS

This latest volume in the "Seitzchrift" consists of four excellent reviews of related topics in the metal-insulator

problem. The opener is a review by David Adler of the known facts about transition-series oxides; the second article is a theoretical analysis of the hypothetical excitonic insulator by B. I. Halperin and T. M. Rice. The third review is a report by Joachim Appel on a decade of halting progress in the vexing polaron problem, and the fourth article is a compendium by Bernard R. Cooper of the magnetic properties of rare-earth metals. Competently written and edited, this volume recommends itself to a large category of solid-state physicists for study and reference.

* * *

The reviewer is professor of solid-state physics at the Belfer Graduate School of Science, Yeshiva University, where he occasionally works in semiconductor physics.

NEW BOOKS

CONFERENCE PROCEEDINGS

Physics of Solids in Intense Magnetic Fields. E. D. Haidemanikis, ed. (Chania, Crete, 16–29 July 1967) 606 pp. Plenum, New York, 1968. \$45.00

Mass Motions in Solar Flares and Related Phenomena, Nobel Symposium 9. (Capri, 10–12 June 1968). Yngve Ohman, ed. 245 pp. Wiley (Interscience), New York, 1969. \$22.00

Mechanical and Thermal Properties of Ceramics. (NBS-303) J. B. Wachtman Jr. ed. (Gaithersburg, Md., 1, 2 April 1968) 268 pp. National Bureau of Standards, Washington, DC, 1969. \$4.75

The Fourth International Vacuum Congress, Parts 1 and 2. (Manchester, 17–20 April 1968). Arranged by the Joint British Committee for Vacuum Science and Technology. 447 pp. and 827 pp. Institute of Physics and Physical Society, London, 1968. \$15.00 (part 1)

ELEMENTARY PARTICLES

Interaction Cross Sections of Elementary Particles. By V. S. Barashenkov. 416 pp. Daniel Davey, Hartford, Conn., 1969. \$21.50

NUCLEI

Nuclear Structure. By Aage Bohr and Ben R. Mottelson. 471 pp. W. A. Benjamin, New York, 1969. \$25.00

ATOMS, MOLECULES, CHEMICAL PHYSICS

Organic Electronic Spectral Data, Vol. 5. J. P. Philips, R. E. Lyle and R. Jones, eds. 1019 pp. Wiley (Interscience), New York, 1969. \$34.95

Electrochemistry for Technologists. By G. R. Palin. 225 pp. Pergamon, New York, 1969. Cloth \$5.50, paper \$4.00

Les Elements des Terres Rares. By Jean



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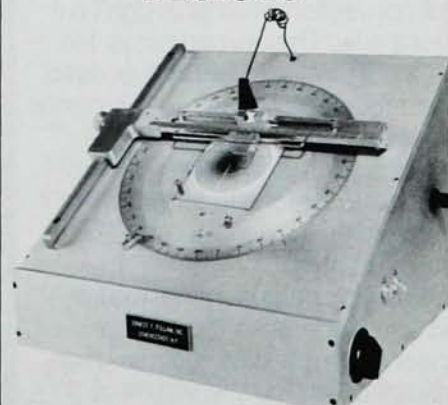


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