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risks and difficulties, as well as the advantages, as viewed by these several groups are well summarized in this Fund report, and much of the raw data and "laboratory" conditions are recorded as well.

The future of the "Fordies" and their successors at present seems bright. Already eleven of the twelve participating colleges have incorporated the early admission idea into their regular admissions policy and several dozen other accredited institutions have similar programs. Whatever the eventual outcome of these programs, the early admissions idea certainly deserves the attention of educators and parents.

They Went to College Early presents this idea with all its most important ramifications along with much that will contribute to any reader's intelligent evaluation of this promising innovation in our educational structure.

Quantum Mechanics. By H. A. Kramers. 496 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1957. $12.50. (Part 1, *The Foundations of Quantum Theory*. 228 pp. $6.50, issued separately.) *Reviewed by J. Polkinghorne, University of Edinburgh.*

A book on mathematical physics may be said to be written in a spacious style when the passages of continuous prose outnumber the equations. By this simple test the reader of this book is led to expect a full and leisurely development of its subject. He is not disappointed. Kramers used his 496 pages to full advantage in giving an account of quantum theory that is detailed without ever becoming tedious. His approach is semi-historical, which enables him to show clearly how the concepts of the theory arose from experiment. In the first half of the book he lays the groundwork of non-relativistic quantum mechanics, including a long chapter on transformation theory which in its down-to-earth approach makes a good complement to reading Dirac's *Principles of Quantum Mechanics*. In the second half of the book he deals with the relativistic equation of the electron, the exclusion principle, and the semi-classical theory of radiation.

Although this book was written in 1937 very little of it seems dated. The chapter that has suffered the worst in this respect is that which deals with the relativistic equation of the electron. The Dirac equation is not written in its "covariant" form and so there is no discussion of the γ matrices as such. The existence of negative energy states is treated as a great mystery. There is a passing and inadequate reference to hole theory but no reference, of course, to the modern antiparticle treatment of this problem, although the Jordan-Wigner matrices are introduced in the chapter on the exclusion principle.

The translation into English (or perhaps one should say Scots—see page 16!) has been made very smoothly by ter Haar.

This is a book that all who study quantum theory will want to read and all who teach it will want to possess. There is a separate edition of the first five

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By M. E. Rose, *Oak Ridge National Laboratory.* Considers thoroughly the properties of rotations, and shows clearly how angular momentum theory can be applied to improve experimental techniques in measuring angular distribution in nuclear reactions, or, alternatively, angular correlations of successively emitted radiations. *A publication in Wiley's Structure of Matter Series, Maria Goeppert Mayer, Advisory Editor. 1957. 248 pages. $10.00.*

AN INTRODUCTION TO SEMICONDUCTORS

By W. Crawford Dunlap, Jr., *Bendix Aviation Corporation.* Offers a survey of *all* the important aspects of semiconductors. It covers fundamental concepts, properties of materials, methods of measurement, and applications—all from a unified point of view. *1957. 417 pages. 268 illus. $11.75.*

LIGHT SCATTERING BY SMALL PARTICLES

By H. C. van de Hulst, *University of Leiden, The Netherlands.* A coherent, unified treatment of the status of research in the field, containing much data never before published, many specially drawn figures, and completely new tables. Main emphasis is upon obtaining and utilizing the final curve. *A publication in Wiley's Structure of Matter Series, Maria Goeppert Mayer, Advisory Editor. 1957. 470 pages. $12.00.*

THE SCIENCE OF ENGINEERING MATERIALS

Proceedings of the Carnegie Conference on the Impact of Solid State Science on Engineering Materials. Edited by J. E. Goldman, *Ford Motor Company.* Explains why materials behave as they do by applying basic principles of solid state physics to the explanation of properties of materials. It offers an appreciation of basic atomistic phenomena, and interprets, qualitatively, the properties of metals, alloys, semi-conductors, cements, polymers and glasses. *1957. 528 pages. $12.00.*

PROGRESS IN SEMICONDUCTORS, Vol. II

Edited by Alan F. Gibson, *Radar Research Establishment, Malvern, U. K.;* R. E. Burgess, *University of British Columbia, Vancouver, B. C.;* P. Aigrain, *Université de Paris.* The second volume of a yearly international review of the semiconductor field, covering subject matter from the chemistry of materials to the applications of semiconductors. Vol. II: *1957. 280 pages. $10.50.* Vol. I: *1956. 220 pages. $8.00.*

LIGHT, COLOUR AND VISION

By Yves Le Grand, *Muséum National d'Histoire Naturelle;* translated by Dr. J. W. T. Walsh, Dr. R. W. G. Hunt and Dr. F. R. W. Hunt. Offers as much information and numerical data as possible with regard to the response of the eye to radiation. *1957. 520 pages. Prob. $11.00.*

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Edited by Richard F. Shea, *Knolls Atomic Power Laboratory, General Electric Company; eight co-authors:* Woo Foung Chow, Sorab K. Ghandhi, Edward Keonjian, Vernon P. Mathis, Donald A. Paynter, John A. A. Raper, Arthur P. Stern, Jerome J. Suran; *all of the Electronics Laboratory, General Electric Company. 1957. 468 pages. $12.00.*

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By R. Duncan Luce *and* Howard Raiffa; *both of Harvard University. 1957. Approx. 520 pages. Prob. $8.75.*

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chapters (nonrelativistic quantum mechanics) entitled *Foundations of Quantum Mechanics,* but those who buy this will miss one of the best chapters in the book, that dealing with the exclusion principle.

American Institute of Physics Handbook. Edited by Dwight E. Gray with 8 section editors. 1524 pp. McGraw-Hill Book Co., Inc., New York, 1957. $15.00. *Reviewed by Henry Wise, Stanford Research Institute.*

What scientific information does one seek in a reference work such as a handbook? Should it take the place of a research library? Should it serve as a source book of technical information? It is gratifying to find that the American Institute of Physics in the sponsorship of the *AIP Handbook* has provided the scientist with an all-inclusive reference work which contains more than a summary of physical data. In its listing of graphs and tables, this volume resembles the make-up of other scientific handbooks, but in addition, many chapters of the *AIP Handbook* contain concise summaries of the fundamental equations in the various branches of physics. Thus one finds in this book a number of useful formulas and derivations in many fields of physics. Because of its encyclopedic coverage, this information is limited in scope. However, numerous literature references placed at the end of each chapter enable the reader to supplement this information.

The *Handbook* is divided into 8 sections, each of which is the work of one or more specialists. In this manner authorative information and references are made available to the reader. The wide scope of the *AIP Handbook* makes it impossible to list all the individual subjects assembled under one cover. However, it may be worthwhile to sample some of the information. The section in mechanics includes various physical properties of solids, liquids, and gases, including crystallographic data, meteorological data, information on liquid jets and shock waves. The section on acoustics contains an analysis of sound propagation in fluids, architectural acoustics, and a very instructive chapter on mobility and classical impedance analogies. The section on heat lists data for high-pressure effects and critical phenomena. The section on electricity and magnetism includes static-field formulas and dynamic-field equations, numerous tables on properties of dielectrics, semiconductors, and nonmetallic conductors; and the electric and magnetic properties of the earth and stars. The chapter on optics exhibits recent data for the optical constants of metals and a brief description of radio astronomy. As is to be expected, the section on atomic and molecular physics reflects the rapid expansion and growth of this specialized field of physics. Of particular interest is the large body of information on ionization of gases. The final section on nuclear physics is of particular value to the scientist engaged in applied physics and engineering. The detailed information available in this section extends from the energy levels of light nuclei to fission product yields and thermal cross sections. And for those interested in locating a particle accelera-