

one of whom stays on earth, while the other cruises in a spaceship with speed approaching that of light. The conclusion of special relativity theory is that when the space traveler returns to earth he will find his brother much older in years than he is. Though there has been controversy over this deduction, it is now generally admitted to be a valid consequence of the theory. According to Schlegel's view, however, the moving clock will not actually run slow and the space traveler will gain no advantage so far as aging is concerned over his earth-bound brother. This may make some people happy! At any rate the author's point deserves careful consideration.

In the opinion of the reviewer, the weakness of the book lies in the introductory treatment of the nature of time. In his attempt to disregard so-called psychological time in order to concentrate on what he calls "physical" time, the author appears to commit the fallacy of supposing that the two can really be separated in any logical discussion. The introduction of the concept "cyclical" in the attempt to provide a "physical" definition of time leads to circular reasoning. The author is not content with, nor does he mention, the pragmatic notion of time in physics as a simple parameter serving as a useful independent variable to relate the behavior of different physical systems and whose range of variation is the real-number continuum. The interesting views of Poincaré on this matter are ignored. There are many loosely phrased and misleading statements in the discussion of the relation between time and the statistical behavior of thermodynamic systems, notably with respect to the H-theorem and entropy.

The writer's style is rather repetitious and diffuse. In spite of these shortcomings, however, the book has numerous suggestive ideas and may be read with profit.

BOOKS RECEIVED

Introduction to Atomic and Nuclear Physics (4th ed.). By Henry Semat. 628 pp. Holt, Rinehart & Winston, New York, 1962. \$7.50.

Introduction to Nuclear Physics and Chemistry. By Bernard G. Harvey. 370 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1962. \$12.00.

Nuclear Electronics. Conf. Proc. (Belgrade, May 1961). Vol. 1, 597 pp., \$11.00; vol. 2, 459 pp., \$8.00. IAEA, Vienna, 1962. Distr. in US by Internat'l Publications, Inc., New York. Both paperbound.

Magnetogasdynamics and Plasma Dynamics. By Shih-I Pai. 197 pp. (Springer-Verlag, Vienna) Prentice-Hall, Inc., Englewood Cliffs, N. J., 1962. \$14.00.

Collected Papers. Vol. 1, Italy, 1921-1938. By Enrico Fermi. 1043 pp. (Accademia Nazionale Dei Lincei, Rome) University of Chicago Press, Chicago, 1962. \$15.00.

Atomic-Absorption Spectrophotometry. By W. T. Elwell and J. A. F. Gidley. 102 pp. The Macmillan Co., New York, 1962. \$5.00.

Rock-Forming Minerals. By W. A. Deer, R. A. Howie, J. Zussman. 333 pp. John Wiley & Sons, Inc., New York, 1962. \$15.50.

Theory of Molecular Excitons. By A. S. Davydov. Transl. from Russian by Michael Kasha and Max Oppenheimer, Jr. 174 pp. McGraw-Hill Book Co., Inc., New York, 1962. \$7.95.

Proceedings of the Rutherford Jubilee International Conference, Manchester 1961. J. B. Birks, ed. 856 pp. Academic Press Inc., New York, 1961. \$32.00.

Careers in Astronautics and Rocketry. Training and Opportunities in the Space and Missile Fields. By Carsbie C. Adams and Wernher von Braun in collaboration with Frederick I. Ordway, III. 252 pp. McGraw-Hill Book Co., Inc., New York, 1962. \$6.95.

Stereochemistry of Carbon Compounds. By Ernest L. Eliel. 486 pp. McGraw-Hill Book Co., Inc., New York, 1962. \$15.00.

An Introduction to the Theory of Newtonian Attraction (reprint of 1940 ed.). By A. S. Ramsey. 184 pp. Cambridge U. Press, New York, 1961. Paperbound \$1.75.

Advances in Astronomy and Astrophysics, Volume 1. Zdeněk Kopal, ed. 366 pp. Academic Press Inc., New York, 1962. \$10.00.

Fundamental Problems in Statistical Mechanics. Proc. NUFFIC Internat'l Summer Course (Netherlands, Aug. 1961). Compiled by E. G. D. Cohen. 249 pp. (North-Holland, Amsterdam) Interscience, division of John Wiley & Sons, Inc., New York, 1962. \$7.50.

Science and the Humanities. By Moody E. Prior. 124 pp. Northwestern U. Press, Evanston, Ill., 1962. \$3.50.

Problèmes d'Electronique. A l'Usage des Ingénieurs et Chercheurs, des Etudiants des Facultés et des grandes Ecoles. By Robert Guillien. 418 pp. Eyrolles, Paris, 1962. 77.70 NF.

Theoretical Physics. By Gerhard A. Blass. 451 pp. Appleton-Century-Crofts, Inc., New York, 1962. \$8.50.

Solid State Physics, Volume 13. Advances in Research and Applications. Frederick Seitz and David Turnbull, eds. 482 pp. Academic Press Inc., New York, 1962. \$14.50.

Analytical Mechanics. By Grant R. Fowles. 278 pp. Holt, Rinehart and Winston, Inc., New York, 1962. \$6.00.

Bibliography of the Ionosphere. An Annotated Survey Through 1960. By Laurence A. Manning. 613 pp. Stanford U. Press, Stanford, 1962. \$15.00.

Thermophysics. By Allen L. King. 369 pp. W. H. Freeman & Co., San Francisco, 1962. \$9.50.

Unpublished Scientific Papers of Isaac Newton. Edited and Transl. by A. Rupert Hall and Marie Boas Hall. 416 pp. Cambridge U. Press, New York, 1962. \$11.00.

Mathematics Manual. Methods and Principles of the Various Branches of Mathematics for Reference, Problem Solving, and Review. By Frederick S. Merritt. 378 pp. McGraw-Hill Book Co., Inc., New York, 1962. \$9.50.

Modern College Physics. By Harvey E. White. 755 pp. D. Van Nostrand Co., Inc., New York, 1962. \$9.75.

Detonation and Two-Phase Flow. S. S. Penner and F. A. Williams, eds. Volume 6 of Progress in Astronautics and Rocketry, edited by Martin Summerfield. 368 pp. Academic Press Inc., New York, 1962. \$5.25.

Absorption Spectroscopy. By Robert P. Bauman. 611 pp. John Wiley & Sons, Inc., New York, 1962. \$12.00.

Computers and Common Sense. The Myth of Thinking Machines. By Mortimer Taube. 136 pp. Columbia U. Press, New York, 1961. \$3.75.

Physics of the Nucleus. By M. A. Preston. 661 pp. Addison-Wesley Publishing Co., Inc., Reading, Mass., 1962. \$15.00.

The Myth of Metaphor. By Colin Murray Turbayne. 224 pp. Yale U. Press, New Haven, 1962. \$6.00.

Life, Its Nature, Origin and Development. By A. I. Oparin. Transl. from Russian by Ann Synge. Academic Press Inc., New York, 1961. \$4.50.

Tritium in the Physical and Biological Sciences. Symp. Proc. (Vienna, May 1961). Vol. 1, 369 pp., \$7.00. Vol. 2, 438 pp., \$8.00. Internat'l Atomic Energy Agency, Vienna, 1962. Distr. in US by Internat'l Publications, Inc., New York.

A Survey of Physical Theory (reprint of *A Survey of Physics*). By Max Planck. Transl. from German by R. Jones and D. H. Williams. 117 pp. Dover Publications, Inc., New York, 1960. Paperbound \$1.15.

Superfluids (reprint of 1950 ed.). Vol. 1, Macroscopic Theory of Superconductivity. By Fritz London. 173 pp. Dover Publications, Inc., N. Y., 1961. Paperbound \$1.45.

The Thermodynamics of Electrical Phenomena in Metals and a Condensed Collection of Thermodynamic Formulas (reprint of 1934 and 1925 eds.). By P. W. Bridgman. 244 pp. Dover Publications, Inc., New York, 1961. Paperbound \$1.65.

Magnetism and Very Low Temperatures (reprint of 1940 ed.). By H. B. G. Casimir. 93 pp. Dover Publications, Inc., New York, 1961. Paperbound \$1.25.

A Treatise on Dynamics of a Particle (reprint of 1898 ed.). By Edward John Routh. 417 pp. Dover Publications, Inc., N. Y., 1960. Paperbound \$2.25.

Selected Papers on Physical Processes in Ionized Plasmas. Donald H. Menzel, ed. 374 pp. Dover Publications, Inc., N. Y., 1962. Paperbound \$2.95.

Progress in Semiconductors, Volume 6. Alan F. Gibson, R. E. Burgess, F. A. Kröger, eds. 322 pp. John Wiley & Sons, Inc., New York, 1962. \$11.00.

Fundamentals of Celestial Mechanics. By J. M. A. Danby. 348 pp. The Macmillan Co., New York, 1962. \$8.00.

Switching Circuits for Engineers. By Mitchell P. Marcus. 296 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1962. \$12.00.

Whole-Body Counting. Symp. Proc. (Vienna, June 1961). 535 pp. IAEA, Vienna, 1962. Distr. in US by Internat'l Publications, Inc., New York. \$10.00.

Semiconductor Device Physics. By Allen Nussbaum. 340 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1962. \$11.00.

Theory of Ion Flow Dynamics. By Demetrios G. Samaras. 636 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1962. \$16.00.

Operational Calculus in Two Variables and Its Applications. By V. A. Ditkin and A. P. Prudnikov. Transl. from Russian by D. M. G. Wishart. Vol. 24 of Internat'l Series of Monographs on Pure and Applied Mathematics, general editors: I. N. Sneddon, S. Ulam, M. Stark. 167 pp. Pergamon Press, New York, 1962. \$8.50.

OXFORD BOOKS OF EXCEPTIONAL INTEREST

PHYSICAL PRINCIPLES AND APPLICATIONS OF JUNCTION TRANSISTORS

By J. H. SIMPSON and R. S. RICHARDS. This book provides a basic course on transistors for students and research workers who have a background in physics or engineering but are not necessarily specialists in electronics. 273 figures. (*Monographs on the Physics and Chemistry of Materials*) \$10.10

ASYMPTOTIC APPROXIMATIONS

By SIR HAROLD JEFFREYS. In this introductory volume, the main theorems on asymptotic series are proved; the theory of the method of steepest descents is given in some detail; and linear differential equations of the second order are treated by a method based on integral equations. 19 figures. \$4.80

DIFFUSE X-RAY REFLECTIONS FROM CRYSTALS

By W. A. WOOSTER. This is the first study that has given a unified treatment of all of the various aspects of diffuse x-ray reflections from crystals, concentrating on simple explanations of the underlying physical ideas and keeping the complex mathematics of this field to a minimum. Examples of actual problems have been chosen to illustrate the general principles, and worked out in sufficient detail to permit a student to carry out the analysis of the experimental data for himself. *Illustrated.* \$5.60

NEUTRON DIFFRACTION

Second Edition

By G. E. BACON. In this second edition the author has taken full account of the many developments in the field since the first edition appeared in 1955. Like the first edition, it is a clear but not oversimplified exposition of how neutron diffraction, together with better-known techniques using x-rays, makes a unique contribution to the study of magnetic and molecular structures and the lattice dynamics of crystals. 190 figures. \$8.80

At all bookstores

OXFORD UNIVERSITY PRESS

417 Fifth Avenue, New York 16