

what he means by the "conquest" of energy. Harrison is a distinguished optical physicist, former Dean of Science at MIT and former chairman of the governing board of the American Institute of Physics.

As was to be expected, Harrison has written a very readable and illuminating volume. The wealth of facts and figures is somewhat overwhelming, but the brilliant expository style makes it easy for the intelligent reader to absorb the overall picture.

He begins with a brief account of the development of energy technology as man's endeavor to transfer the burden of work to ingenious mechanical devices. The discussion continues with the many ways energy transformations are used in industry, transportation and the economy of the home. A complete chapter is devoted to the role of energy in assuring an adequate water supply. Practical sources of energy are discussed at length, including fossil fuels, falling water and nuclear fuels.

The physicist will be glad to see a clear exposition of the essential physical meaning of energy in terms of conservation or invariance in the midst of change. The loss of energy availability associated with every transformation, as exemplified by the second law of thermodynamics, is also adequately presented. Other chapters contain material on devices for the storage and transfer of energy, solar energy and atomic and nuclear energy. Both fission and fusion processes are well described, and there is a thorough presentation of plasma physics.

Harrison's book should make a decided appeal to many readers.

R. BRUCE LINDSAY
Hazard Professor of Physics
Brown University

Basic Concepts of Measurement

By Brian Ellis

219 pp. Cambridge Univ. Press, New York, 1968. \$2.45

This is a paperback edition of Brian Ellis's book of 1966. In it he discusses the basic principles of measurement from a mainly logical point of view. He has some searching criticism to make on scales, quantities, units, dimensions, number and probability, but it is not easy reading for the ordinary scientist. On dimensions, the author does not appear to be

very well informed. He says, for instance, that "... dimensions are thought to be some sort of intrinsic characteristic of quantities." This mystical outlook was dismissed as long ago as 1941, (see G. B. Brown, "A New Treatment of the Theory of Dimensions," Proc. Phys. Soc. 53, 418, 1941) where some clear definitions were substituted, but this is not mentioned in the bibliography.

With the help of M. J. Scott-Taggart, the author provides, as an appendix, a welcome translation of the important critique of the temperature concept by Mach in his *Die Principien der Wärmelehre*.

Ellis's book is a useful stimulant to discussion of a difficult subject.

G. BURNISTON BROWN
London, England

Photoemissive Materials: Preparation, Properties, and Uses

By A. H. Sommer

256 pp. Wiley, New York, 1968. \$12.95

A. H. Sommer is well known as one of the most knowledgeable persons on photoemissive materials. A book by him on this subject was long overdue and I, for one, am extremely pleased to see it appear.

After a relatively brief treatment of the fundamentals of photoelectric emission, additional space is devoted to the emission of photoelectrons from metals and to the technology of the preparation of suitable metal surfaces. The three chapters on metals are followed by seven chapters on semiconductor emitters. Their properties, chemical, electrical, optical and crystallographic, are discussed quite extensively, together with the technology of their preparation. The many diagrams, illustrating their spectral response and quantum yield, should help anyone in adapting an existing commercial product to his own requirements.

The next two chapters deal with ultraviolet-sensitive and with miscellaneous semiconductor photoemitters. My inclination would have been to reverse the order of these two chapters and to join chapter 13 (semiconductors) to the other semiconductor materials. However, chapter 12 on ultraviolet photoemitters can be very useful to the practitioners of vacuum-ultraviolet spectroscopy.

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RELATIVITY

Proceedings of the Relativity Conference in the Midwest

Edited by Moshe Carmeli, Stuart I. Fickler, both of the Aerospace Research Laboratories, Office of Aerospace Research, Wright-Patterson AFB, Ohio and Louis Witten, Physics Department, Univ. of Cincinnati, Ohio

Presents an extensive review of those topics receiving the greatest attention in current research in the field of relativity. Included are the dynamics of the gravitational field, cosmological models, experimental tests of general relativity, relativistic kinetic theory, and philosophical foundations of general relativity. In addition, there is a special section devoted to "superspace". Providing an excellent supplemental reading for any course in relativity, this volume is also suitable as a reference for research workers.

378 PAGES MARCH 1970 \$20.00

HIGH-ENERGY PHYSICS AND NUCLEAR STRUCTURE

Proceedings of the Third International Conference on High Energy Physics and Nuclear Structure, Columbia Univ., September 1969

Edited by Samuel Devons, Department of Physics, Columbia University, New York

Representing a broad spectrum of modern physics, contributions to this volume emphasize research on coherent production of unstable particles and nuclear interactions at very high energies. Topics considered range from study of nuclear electromagnetic properties using high-energy probes to pionic x-ray spectra, fundamental symmetry properties of nuclear interactions, and new accelerator developments in the intermediate energy range.

866 PAGES MARCH 1970 \$37.50

THE CHEMISTRY AND PHYSICS OF HIGH ENERGY REACTIONS

By Ernest J. Hadley, Associate Dean and Professor of Chemical Engineering, Univ. of Houston, Texas and Everett R. Johnson, Associate Dean of Engineering, Univ. of Maryland College Park, Maryland

The first book to offer a comprehensive textbook treatment of the entire field of radiation chemistry, this volume analyzes the complex high energy reactions induced by radiation in terms of physical-chemical principles. Treated in detail are such topics as the theory of ion molecule reactions, mass spectrometry, pulsed radiolysis, energy transfer in liquids, and kinetics of polymer formation. Included are numerous examples and end-of-chapter problems.

475 PAGES JANUARY 1970 \$22.50

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PHYSICS FOR POETS

Robert H. March, University of Wisconsin. 250 pages. *Now available* | Keeping to the broad sweep of the subject matter and curtailing many of the intermediary topics, this book links two crucial periods in physical thought, the classical mechanics of Newton and the Einstein-Bohr-Schrödinger revolution of the twentieth century. The book is for use in a one-semester course for non-specialists.

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Frederick Bueche, University of Dayton. 928 pages, \$12.95. *Published 1969* | This text is intended for the calculus-level university physics course. The realistic selection of topics and treatment insures that both modern and classical physics can be covered in a three- or four-semester course.

BASIC PHYSICS

Marsh W. White, **Kenneth V. Manning**, and **Robert L. Weber**, all of The Pennsylvania State University. 592 pages, \$9.95. *Published 1968* | The text begins with light and geometrical optics. Newtonian mechanics is then discussed and developed with reference to its applications in rockets and satellites. Temperature measurement and heat transfer introduce thermodynamics. Wave properties receive special coverage, and direct-current and a-c circuits are dealt with in several chapters.

A CONTEMPORARY VIEW OF ELEMENTARY PHYSICS

Sidney Borowitz and **Lawrence A. Bornstein**, both of New York University. 896 pages, \$13.50. *Published 1968* | Utilizing a fresh, modern approach, the author provides both liberal arts students and science majors with a solid knowledge of the fundamental ideas and theories of physics.

PHYSICS: Principles and Insights

Ira M. Freeman, Rutgers, The State University. 729 pages, \$11.95. *Published 1968* | This introductory text is designed for students who are not specializing in physics or engineering but who seek an understanding of the subject as future workers in other fields and as well-informed individuals.

PHYSICS OF SOLIDS, Second Edition

Charles A. Wert, University of Illinois, Urbana, Illinois; and **Robb M. Thomson**, State University of New York, Stony Brook, Long Island, New York. McGraw-Hill Series in Materials Science and Engineering. 544 pages. *Now available* | This revision, like the first edition, treats principally the electronic and magnetic properties of solids. The emphasis is on the physical picture, and mathematical models and theorems are relatively simple.

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Walter A. Harrison, Stanford University. International Series in Pure and Applied Physics. 512 pages. *Now available* | This text is designed for a comprehensive first course in solid state physics at the graduate level.

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The last chapter is "Cathodes for Practical Applications," a title covering radiation detectors and imaging tubes. The whole book is user oriented and fulfills the requirements as completely as is possible within the limited space of a monograph. I recommend it very warmly.

LADISLAUS MARTON
Office of International Relations
National Bureau of Standards

Introduction to Modern Physics

By C. H. Blanchard, C. R. Burnett, R. G. Stoner, R. L. Weber
(2nd edition) 497 pp. Prentice-Hall
Englewood Cliffs, N. J., 1969. \$9.95

I have examined this revised text from a different viewpoint than may usually have been done. Being a physicist in a medical-school environment and teaching in a medical-physics program, I continually look for suitable books. A less than advanced text that covers the basics of modern physics is required for students having undergraduate majors in biology and chemistry, so they can study more advanced topics usually found in medical-physics curricula.

From this point of view, the book has much to offer, because it only requires a knowledge of elementary calculus and quite clearly introduces other mathematical tools as required. Basic concepts such as electric and magnetic fields and collision theory are clearly presented. In addition, a good selection of problems is given on each topic.

In the areas of radiation interactions and the fundamentals required to understand radiation instrumentation, the book covers the gas laws, kinetic theory, ionization, x-ray physics, interactions of radiation with matter, semiconductors, radioactivity, particle accelerators, nuclear interactions and an introduction to the principles of quantum mechanics.

The material can adequately serve as a base for a more advanced treatment of these areas. In this respect, it bridges a gap between the less advanced course in elementary physics and the more sophisticated courses usually available to the advanced physics student. Its primary usefulness, therefore, is in courses designed for either interdisciplinary or engi-

neering curricula, such as in nuclear engineering.

The book is well written, presenting each topic clearly and concisely, and the subject matter is representative and timely.

NORMAN A. BAILY
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NEW BOOKS

CONFERENCE PROCEEDINGS

Recent Developments in Ellipsometry. (Conf. Proc., Symposium of Recent Developments in Ellipsometry, Electrical Materials Laboratory, Univ. of Nebraska, Lincoln, Nebraska, 7-9 Aug. 1968.) N. M. Bashara, A. B. Buckman and A. C. Hall, eds. 452 pp. North-Holland, Amsterdam, 1969. \$24.00

Proceedings: International Conference on Properties of Nuclear States. (Conf. Proc., International Conference on Properties of Nuclear States, Montreal, Canada, 25-30 Aug 1969.) M. Harvey, R. Y. Cusson, J. S. Geiger and J. M. Pearson, eds. 811 pp. Les Presses de L'Université de Montréal, Montreal, Canada, 1969. Canada \$15.00

Vth International Congress on X-Ray Optics and Microanalysis; Tübingen 1968. (Conf. Proc., The Fifth International Congress on X-Ray Optics and Microanalysis, organized by the Institute of Applied Physics at Tübingen Univ., Western Germany, 9-14 Sept 1968.) G. Möllenstedt and K. H. Gaukler, eds. 612 pp. Springer-Verlag, New York, 1969. \$54.50

Clean Air Turbulence and Its Detection. (Conf. Proc., Symposium on Clear Air Turbulence and Its Detection, Seattle, Washington, 14-16 August 1968.) Yih-Ho Pao and Arnold Goldburg, eds. 552 pp. Plenum, New York, 1969. \$22.50

Boston Studies in the Philosophy of Science, Vols. IV and V (Conf. proc., Boston Colloquium on the Philosophy of Science 1966/1968). Robert S. Cohen and Marx W. Wartofsky, eds. 537 pp. Humanities Press, Inc., New York, 1969. \$20.00

Exploitation of Space for Experimental Research, Vol. 24 (Conf. proc., AAS 14th Annual Meeting, Dedham, Mass., 13-15 May 1968). Harry Zuckerberg, ed. 363 pp. American Astronautical Society, Tazana, Calif., 1969. \$14.25

Mass Loss From Stars (Conf. proc., 2nd Trieste Colloquium on Astrophysics, 12-17 Sept. 1968). Margerita Hack, ed. 345 pp. Springer-Verlag, New York, 1969. \$19.50

Hierarchical Structures (Conf. proc., Douglas Advanced Research Laboratories, Huntington Beach, California, 18-19 Nov., 1968). L. Law Whyte, A. G. Wilson and D. Wilson, eds. 322 pp. American Elsevier, New York, 1969. \$12.50

Nuclear Isospin (Conf. proc., 2nd Conference on Nuclear Isospin, Asilomar-Pacific Grove, California, 13-15 March 1969). John D. Anderson, Stewart D.

Oxford



Electrical Aspects of Combustion

By JAMES LAWTON, and FELIX WEINBERG, both of Imperial College, University of London. Recent years have seen a rapid growth of interest in ionization in flames, detonations, and other combustion phenomena. This has been stimulated by the practical implications of the subject, including direct generation of electricity from flame gases and the like. Dr. Lawton and Professor Weinberg have been actively engaged in these developments, and this book is entirely devoted to the formation, behavior in fields, diagnostics, and use of ions, electrons, and charged particles in combustion processes. 124 illustrations. \$11.20

Electron Paramagnetic Resonance of Transition Ions

By A. ABRAGAM, Collège de France; and B. BLEANEY, University of Oxford. This book gives the first comprehensive treatment of electron paramagnetic resonance of ions of the transition groups. A general survey presents such topics as the classical and quantum resonance equations, the spin Hamiltonian, Endor, spin-spin and spin-lattice interactions, together with an outline of the observed behavior of ions of each of the five transition groups. Finally, a theoretical survey discusses the fundamentals of the theory of paramagnetism. (International Series of Monographs on Physics.) 158 text figures. \$35.20

Non-Destructive Testing VIEWS, REVIEWS, PREVIEWS

By H. B. EGERTON. This volume of essays surveys non-destructive testing methods developed for the United Kingdom Atomic Energy Authority at Harwell. The essays are grouped in three sections covering data-processing and electronic techniques and the implications of advanced non-destructive testing techniques for the designer, techniques under development, and existing techniques. (Harwell Post-Graduate Series.) Paper \$8.00

The Metric System A CRITICAL STUDY OF ITS PRINCIPLES AND PRACTICE

By M. DANLOUX-DUMESNILS, l'Ecole Nationale Supérieure de l'Aéronautique; translated by ANNE GARRETT, and J. S. ROWLISON, both of Imperial College, University of London. This study traces the history, form, and development and extension of the metric system. It deals with how the metric system came into being, how it developed, what are S. I. units, and how they are related to older units and to the English system. The book is directed toward the proper use in practice which follows only after a full understanding of the principles that underlie the metric system. (The Athlone Press.) Paper \$2.40

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