The book appears to have been hastily prepared and published. It is photooffset from a typed manuscript, with numerous typographical errors remaining. Some unfortunate errors occur in equations. The expression for the dispersion in graded-index fibers appears twice; each is different and neither is correct. All figures are line drawings (no photographs or half tones), and the explanations in the text are often inadequate. Wording is, at times, needlessly confused; for example, "... the pulse spreading per kilometer can be approximately extrapolated by relating the pulse spread to the square root of the fiber length", rather than a simple statement that pulse spreading increases approximately as the square root of length.

The Elions present most statements in a definitive way, and it is difficult to distinguish between statements of fact, statements that are generally accepted, and statements unique to the authors. For example, they state that accelerated life-testing by increasing temperature cannot be used for lasers. Many research laboratories use this method, however, and data exist to substantiate it.

The book is perhaps of most interest in providing the Elions' assessment of where fiber-communications technology is heading, including future projections on technology performance, cost and markets. The elder Elion is Managing Director of Electro-Optics at Arthur D. Little, Inc and has been extensively involved in international fiber-optic communication studies. Indeed, in the final chapter the authors tell us that "... the international Fiber Optics Communications Program of Arthur D. Little, Inc. may play a major role in the development of fiber communication systems and world-wide optical telecommunications." The younger Elion is associated with Sumitomo Electric Industries, a leading Japanese supplier of fiber-optic cables and electro-optic communication systems. The Elions have an obvious enthusiasm for the potential of fiber-optic communications. It is easy to find fault with an early book in this rapidly evolving field, but the authors do present much useful and timely information.

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Laboratory
Bell Laboratories
Holmdel, N.J.

Bell Laborato Holmdel,

book notes

Optoelectronics: Theory and Practice.

A. Chappell, et al., eds. 442 pp.

McGraw-Hill, New York, 1978. \$21.50

Optoelectronics devices make use of the mutual interaction of radiation and the electronic structure of materials. This guide, prepared by Texas Instruments engineers and scientists, divides into three parts. The first part covers the fundamental principles of optoelectronics, photometric and radiation units, laws of radiation, radiation, luminescence and photoemission phenomena. The second part focuses on the description, calculation and application of optoelectronic semiconductor components. In the final part, the authors describe circuits proven in the laboratory and in practice.

The State of Academic Science, Volume 2 (Background Papers). B.L.R. Smith, J. J. Karlesky, eds. 192 pp. Change Magazine, New Rochelle, N.Y., 1978. \$5.95

The first volume of The State of Academic Science (described in PHYSICS TODAY, August 1977, page 61) presented the major findings of an NSF-sponsored survey of American academic science. In this second volume, the editors, Bruce L. R. Smith (Columbia) and Joseph J. Karlesky (Franklin and Marshall), point out that "The treatment of such issues as graduate education, government regulations, and trends in research activity is more detailed and comprehensive in the papers than in the original volume. We believe that the background papers will also make a substantial contribution to the debate of public policy issues." The contributors to this volume are Walter S. Baer (Rand Corp.), David W. Breneman (Brookings Institution), Sanford A. Lakoff (University of California, San Diego), Dael Wolfle (University of Washington) and Carl York (Lawrence Berkeley Laboratory).

A Handbook of Radio Sources, Part 1 (Strong Extragalactic Sources, Right Ascension Range 0 through 11 Hours). A. G. Pacholczyk. 234 pp. 1978. \$38.00 (Available from Pachart Publishing House, P. O. Box 6721, Tucson, Arizona 85733)

The author, Andreze J. G. Pacholczyk (Steward Observatory, University of Arizona), explains that "The present Handbook contains only the data on extragalactic sources that I found most frequently needed in the discussion of gross physical properties of sources: structure, spectra, polarization, polarization structure, and optical identification." A second planned volume will include data on strong sources for the remaining half of the sky. A third volume will be devoted to better-observed weak sources.

Muon Physics, Volume 1 (Electromagnetic Interactions). V. W. Hughes, C. S. Wu, eds. 396 pp. Academic, New York, 1977. \$36.50

This volume, the first of a trilogy, contains a historical introduction by Chienshiung Wu (Columbia) and Vernon W. Hughes (Yale) and chapters on electromagnetic properties and interactions of muons (Hughes and Toichiro Kinoshita).

muonic atoms (Jörg Hüfner, Florian Scheck and Wu, with an appendix by R. C. Barrett) and cosmic-ray muons (R. K. Adair and H. Kasha). Volumes 2 and 3 will be devoted, respectively, to weak interactions and to muon chemistry and muons in solids.

The Correspondence of Isaac Newton, Volume 7 (1718–1727). A R. Hall, L. Tilling, eds. 522 pp. Cambridge U. P. (for the Royal Society), New York, 1978. \$72.50

This seventh and final volume of this series (begun in 1960) contains correspondence from the closing years of Newton's life, letters that the editors have been unable to date with any certainty, and additions and corrections to earlier volumes. The principal topics in the 1718-1727 letters are the calculus dispute (Johann Bernoulli succeeded Leibniz as the chief continental protagonist after the death of the latter) and the preparation of new editions of the Traité d'Optique and the Principia. The editors, A. Rupert Hall and Laura Tilling, note that only a few of the letters in this volume "may justly be described as scientific;" they observe, however, that "After the creative power of his genius had deserted him, Newton retained to the very end of his extremely long life his characteristic clarity of thought," and that this trait is reflected in the letters that he wrote in his final years.

Corrections

T. D. Settimi's Optical Design and Ray-Tracing by Pocket Calculator, listed in the August issue, can be obtained from Innovative Optical Matériel, P. O. Box 3648, Riverside, Calif 92519.

In the September issue, the name of the author of Enzyme Kinetics, Claude Marmasse, was inadvertently omitted. Also, Quantum Electrodynamics by Suraj Gupta should have been placed under the "Particles, Nuclei and High Energy Physics" category. Both books are published by Gordon and Breach, New York.

new books

Particles, Nuclei and High-Energy Physics

The Mesonic Interface between Nuclear Structure and Particle Physics (Proc. of the Int. School of Nuclear Physics, Erice, September 1976) (Progress in Particle and Nuclear Physics, Vol. 1) D. Wilkinson, ed. 284 pp. Pergamon, Elmsford, N. Y., 1978. \$50.00

Droplet Model of Atomic Nuclei. W. D. Myers. 150 pp. IFI/Plenum, New York, 1977. \$75.00

The Key to the Universe: A Report on the New Physics. N. Calder. 199 pp. Penguin,

The Compleat Physicist

Coherence and Quantum Optics IV

edited by Leonard Mandel and Emil Wolf

The University of Rochester

This volume emphasizes the evolution of active areas of interest: areas such as resonance fluorescence, radiative energy transfer, and optical bistability. 1,028 pp., 1978, \$65.00

Progress in Atomic Spectroscopy

edited by W. Hanle

Justus Liebig University, Germany

and H. Kleinpoppen

University of Stirling, Scotland

These volumes summarize important methods and applications, and examine such topics as the relationship between astronomy and atomic spectroscopy, precision measurements of atomic structure, laser applications, and innovative spectroscopic methods such as X-ray, stored ion, and laser-high resolution.

Volumes in Physics of Atoms and Molecules Part A: approx. 710 pp., illus., 1978, \$49.50 Part B: approx. 790 pp., illus., 1978, \$49.50

Two-volume set: \$95.00

High-Pressure Science and Technology

edited by K. D. Timmerhaus and M. S. Barber

University of Colorado, Boulder

Reflecting the breadth of current research on high-pressure theory, design, and application, these volumes examine such areas as energy resources, high-pressure kinetics, phase transition on both electronic and lattice levels, and equations of state, as well as numerous other areas of research.

Volume 1: Physical Properties and Material Synthesis

approx. 1,090 pp., 1979, \$75.00

Volume 2: Applications and Mechanical Properties

approx. 1,010 pp., 1979, \$75.00 Two-volume set: \$140.00

Structure Determination by X-Ray Crystallography

by M. F. C. Ladd

University of Surrey, England

and R. A. Palmer

University of London

"The introductory chapters on crystal geometry are extremely thorough; the detailed analysis of space groups and their symbols, in particular, should prevent much of the confusion which a newcomer to the field experiences on first meeting them. . . . throughout the book, the derivations are clearly expressed and attractively presented, and the worked examples . . . provide considerable illumination of the principles involved." -P. G. Jones, Nature 410 pp., illus., 1977, \$29.50 hardcover, \$14.75 softcover

Highly Conducting One-Dimensional Solids

edited by Jozef T. Devreese University of Antwerp, Belgium

Roger Evrard

University of Liege, Belgium

and V. W. Van Doren

Rjksuniversitair Centrum, Belgium

Contents: Introduction to Highly Conducting One-Dimensional Solids. X-Ray and Neutron Scattering from One-Dimensional Conductors. Charge-Density Wave Phenomena in One-Dimensional Metals: TTF-TCNQ and Related Organic Conductors. The Organic Metals (TSeF)_x(TTF)_{1-x}-TCNQ—A Systematic Study. Perturbation Approach to Lattice Instabilities in Quasi-One-Dimensional Conductors. Theory of the One-Dimensional Electron Gas. The Prospects of Excitonic Superconductivity. Recent Developments and Comments, Index.

A volume in Physics of Solids and Liquids. approx. 405 pp., illus., 1979, \$42.50

Electromagnetic Interactions of Hadrons

edited by A. Donnachie and G. Shaw University of Manchester, England

These two volumes examine the definitive evidence photoproduction experiments have provided for quark model ideas, as well as the similarities between high-energy electromagnetic interactions and hadron-induced reactions.

Volumes in Nuclear Physics Monographs Volume 1: 458 pp., illus., 1978, \$49.50

Volume 2: approx. 570 pp., illus., 1978, \$57.50

Understanding the Fundamental Constituents of Matter

edited by Antonino Zichichi

European Physical Society, Geneva, Switzerland

Reviewing theoretical and experimental advances in understanding fundamental constituents of matter, this volume examines studies describing finite size particles, the discovery of new particles in e⁺e⁻ and neutrino interactions, and recent progress toward mastering strong interactions. The Subnuclear Series, Volume 14. 926 pp., 1978, \$75.00

New Frontiers in High-Energy Physics

edited by Arnold Perlmutter and Linda F. Scott

University of Miami, Florida

This volume surveys the most important recent advances in highenergy physics, stressing results in the study of strong interactions, and examining several areas that will prove especially significant in the coming years. Studies in the Natural Sciences, Volume 14. 680 pp., 1978, \$59.50



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New York, 1978 (clothbound edition, 1977). \$6.95 paperbound

New Results in High Energy Physics—1978 (Proc. of the 3rd Int. Conf., Vanderbilt Univ., Nashville, Tenn., March 1978) (AIP Conf. Proc., No. 45—Particles and Fields Subseries, No. 14). R. S. Panvini, S. E. Csorna, eds. 387 pp. American Institute of Physics, New York, 1978. \$20.25

Atomic, Molecular and Chemical Physics

Advances in Laser Chemistry (Proc. of the Conf., Caltech, Pasadena, Calif., March 1978) (Series in Chemical Physics, Vol. 3) A. H. Zewail, ed. 463 pp. Springer-Verlag, New York, 1978. \$34.50

Quantum Chemistry. J. P. Lowe. 599 pp. Academic, New York, 1978. \$49.50

Optics and Acoustics

Color Vision: An Historical Introduction (Series in Behavior). G. S. Wasserman. 224 pp. Wiley-Interscience, New York, 1978. \$18.95

Man-Made Noise. E. N. Skomal. 342 pp. Van Nostrand Reinhold, New York, 1978. \$19.95

Quantum Electronics and Lasers

Novel Sources of Coherent Radiation (Based on lectures of the Summer School, Telluride, Colorado, August 1977 and the Office of Naval Research-sponsored Workshop, Summer 1977) (Physics of Quantum Electronics, Vol. 5). S. F. Jacobs, M. Sargent III, M. O. Scully, eds. 401 pp. Addison-Wesley, Reading, Mass., 1978. \$27.50

Adaptive Optics and Short Wavelength Sources (Based on lectures of the Summer School, Telluride, Colorado, August 1977 and the Office of Naval Research-sponsored Workshop, Summer 1977) (Physics of Quantum Electronics, Vol. 6). S. F. Jacobs, M. Sargent III, M. O. Scully, eds. 312 pp. Addison-Wesley, Reading, Mass. 1978. \$24.50

Fluids and Plasmas

Handbook on Plasma Instabilities, Vol. 2. F. F. Cap. 552 pp. Academic, New York, 1978. \$28.50

Gaseous Electronics, Vol. 1 (Electronic Discharges). M. N. Hirsh, H. J. Oskam, eds. 506 pp. Academic, New York, 1978. \$39.50

Crystallography, Low-Temperature and Solid-State Physics

The Science of Soap Films and Soap Bubbles. C. Isenberg. 188 pp. Tieto, Clevedon, Avon, UK, 1978. \$20.00

The Physics of Liquid and Solid Helium, Part II (Series of Monographs and Texts in Physics and Astronomy, Vol. 29). K. H. Bennemann, J. B. Ketterson, eds. 750 pp. Wiley-Interscience, New York, 1978. \$65.00

Current Topics in Materials Science, Vol. 1. E. Kaldis, ed. 761 pp. North-Holland, New York, 1978. \$115.50

Introduction to Solid-State Theory (Series in Solid-State Sciences, Vol. 2). O. Madelung, 486 pp. Springer-Verlag, New York, 1978. \$29.50 Space Groups For Solid State Scientists. G. Burns, A. M. Glazer. 278 pp. Academic, New York, 1978. \$14.50

Solid State Physics: Advances in Research and Applications, Vol. 33. H. Eurenreich, F. Seitz, D. Turnbull, eds. 416 pp. Academic, New York, 1978. \$36.00

Festköperprobleme/Advances in Solid State Physics, Vol. 18 (Selection of invited papers, Spring meeting of solid-state divisions, German Physical Society, Freudenstadt, March 1978). J. Treusch, ed. 289 pp. Vieweg, Braunschweig, W. Germany, 1978. DM 74.00

Hydrogen in Metals I: Basic Properties (Topics in Applied Physics, Vol. 28). G. Alefeld, J. Völkl, eds. 426 pp. Springer-Verlag, New York, 1978. \$49.00

Astronomy, Cosmology and Space Physics

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Annual Review of Astronomy and Astrophysics, Vol. 16. G. Burbidge, ed. 652 pp. Annual Reviews, Palo Alto, Calif., 1978. (Price not stated)

The HR Diagram: The 100th Anniversary of Henry Norris Russell (Proc. of IAU Symp. No. 80, National Academy of Sciences, Washington, D. C., November, 1977). A. G. D. Philip, D. S. Hayes, eds. 474 pp. Reidel, Boston, 1978. \$55.00 clothbound, \$34.50 paperbound

Stars and Nebulas. W. J. Kaufman III. 204 pp. Freeman, San Francisco, 1978. \$13.00 clothbound, \$7.00 paperbound

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Theory of Planetary Atmospheres: An Introduction to Their Physics and Chemistry (Int. Geophysics Series, Vol. 22). J. W. Chamberlain. 330 pp. Academic, New York, 1978. \$29.50

Nonlinear Phenomena in the Ionosphere (Physics and Chemistry in Space, Vol. 10). A. V. Gurevich. 370 pp. Springer-Verlag, 1978. \$45.00

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An Introduction to the Physics of Diagnostic Radiology, 2nd edition. E. E. Christensen, T. S. Curry III, J. E. Dowdey. 428 pp. Lea and Febiger, Philadelphia, 1978 (first edition, 1972). \$18.00

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Topics in Theoretical and Experimental Gravitation Physics (Proc. of the Int. School of Cosmology and Gravitation, Erice, Italy, March 1975) (NATO Advanced Study Institutes Series, Series B (Physics), Vol. 27). V. De Sabbata, J. Weber, eds. 343 pp. Plenum, New York, 1977. \$37.50

Topics in Nonlinear Dynamics: A Tribute to Sir Edward Bullard (Proc. of a workshop, La Jolla Institute, Calif. December 1977) (AIP Conf. Proc., No. 46). S. Jorna, ed. 404 pp. American Institute of Physics, New York, 1978. \$20.50

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Group Theoretical Methods in Physics (Proc. of the 6th Int. Colloquium, Tübingen, Germany, July 1977) (Lecture Notes in Physics, Vol. 79). P. Kramer, A. Rieckers, eds. 546 pp. Springer-Verlag, New York, 1978. \$23.50

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The Fourier Transform and its Applications, 2nd edition. R. N. Bracewell. 444 pp. McGraw-Hill, New York, 1978 (first edition, 1965). \$23.00

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Haifa (US distributor: American Institute of Physics, New York), 1978. \$49.50

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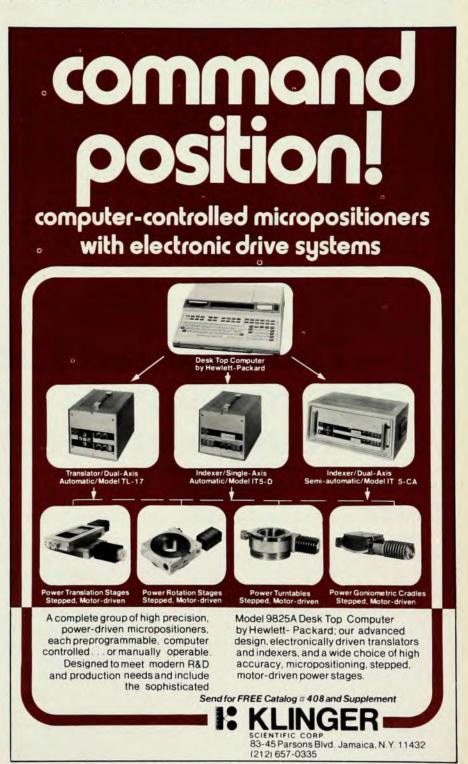
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