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not really resolved. Finally, I was taken aback by the inclusion of a rather extensive section dealing with the crystallographic space group.

I suspect that a teacher would either have to omit some of this more exotic material or supply some of the missing information and concepts in class. On balance, though, I recommend this textbook.

A. Biermann City College of the City University of New York

# new books

CONFERENCE PROCEEDINGS

Applications of Holography (Conf. proc. US-Japan Seminar on Information Processing by Holography, Washington, D. C., 13-18 Oct. 1969). E. S. Barrekette, W. E Kock, T. Ose, J. Tsujiuchi, G. W. Stroke, eds. 396 pp. Plenum, New York, 1971. \$16.50

Computational Physics (Conf. proc. Second Annual Conference on Computational Physics, Imperial College, London, UK, 7-9 Sept. 1970). 152 pp. Institute of Physics and the Physical Society, London, UK, 1970).

Diffusion Process (Conf. proc. Thomas Graham Memorial Symposium, Strathclyde, UK), Vol. 1. J. N. Sherwood, A. V. Chadwick, W. M. Muir, F. L. Swinton, eds. 395 pp. Gordon and Breach, New York, 1971. \$29.50

Earth Station Technology (Conf. proc. 14-16 Oct. 1970, IEE). 446 pp. Institute of Electrical Engineers, London, UK, 1970. £9.75

Environmental Aspects of Nuclear Power Stations (Conf. proc. 10–14 Aug. 1970, New York, IAEA, USAEC). 960 pp. UNIPUB, New York, 1971. \$25.00

5th International Aerospace Instrumentation Symposium (25–28 March 1968, Cranfield, UK). 232 pp. 1968. £5. Proceedings of the 6th International Aerospace Instrumentation Symposium (23–26 March 1970, Cranfield, UK). 1970. £7. Peter Peregrinus, Stevenage, UK.

Gallium Arsenide and Related Compounds (Conf. proc. Third International Symposium, Rheinisch-Westfahlische Technische Hochschule, sponsored by the British Institute of Physics and the Avionics Laboratory of the US Air Force, Aachen, Germany, Oct. 1976). 297 pp. The Institute of Physics, London, UK, 1971.

High-Energy Physics and Nuclear Structure (Conf. proc. Third International Conference on High-Energy Physics and Nuclear Structure, Columbia Univ., New York, N. Y., 8-12 Sept. 1969). S. Devons, ed. 859 pp. Plenum, New York, 1970. \$37.50

Ion Implantation (Conf. proc. 7-9 Sept. 1970, Reading, UK, IPPS, IEE). 241 pp. Peter Peregrinus Ltd., Stevenage, UK, 1970.

Nuclear Data for Reactors, Vols. 1, 2 (Conf.

proc. 15-19 June 1970, Helsinki, IAEA). 1699 pp. UNIPUB, New York, 1971. \$45.00

### **ELEMENTARY PARTICLES**

Subnuclear Phenomena, Parts A and B. A. Zichichi, ed. 709 pp. Academic, New York, 1971. \$24.00 each

### NUCLEI

Fisiunea Nucleara Izomera. By N. Vilcov. 170 pp. Academiei Republicii Socialiste Romania, Bucharest, Romania, 1971.

### ATOMS AND MOLECULES

Rydberg Series in Atoms and Molecules. By A. B. F. Duncan. 119 pp. Academic, New York, 1971. \$7.50

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Fundamental Liquids. By L. B. Borst. 107 pp. Twin Bridge Press, New York, 1970.

Gillam and Stern's Introduction to Electronic Absorption Spectroscopy in Organic Chemistry. 3rd ed. By E. S. Stern, C. J. Timmons. 277 pp. St. Martin's Press, New York, 1971. \$20.00

Introduction to Quantum Chemistry. By C. R. Gatz. 550 pp. Charles E. Merrill, Columbus, Ohio, 1971. \$15.95

Photochemistry. By R. P. Wayne. 263 pp. American Elsevier, New York, 1971. \$12.00

Progress in Nuclear Magnetic Resonance Spectroscopy, Vols. 6 and 7. J. W. Emsley, J. Feeney, L. H. Sutcliffe, eds. 186 pp. and 529 pp. Pergamon, New York, 1971. \$13.50 and \$24.00

Recent Topics in Mass Spectrometry. By R. I. Reed. 355 pp. Gordon and Breach, New York, 1971. \$29.50

### ACOUSTICS

High-Intensity Ultrasonic Fields. L. D. Rozenberg, ed. 429 pp. Plenum, New York, 1971. \$30,00

Ultrasonic Transducer Materials. O. E. Mattiat, ed. 185 pp. Plenum, New York, 1971. \$12.50

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Lasers. 2nd ed. By B. A. Lengyel. 386 pp. Wiley, New York, 1971. \$14.95

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Advances in Materials Research, Vol. 5. H. Herman, ed. 499 pp. Wiley, New York, 1971. \$32,50

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Introduction to the Theory of Solid State Physics. By J. D. Patterson. 388 pp. Addison-Wesley, Reading, Mass., 1971. \$14.50

Physical Metallurgy, 2nd revised ed. R. W.

Cahn, ed. 1333 pp. American Elsevier, New York, 1971. \$51.50

Structure and Properties of Magnetic Materials. By D. J. Craik. 244 pp. Pion Ltd., London, UK, 1971. £3.30 (£2.50, student edition).

Structure Corpului Solid: Metode Fizice de Studiu. By I. Pop, V. Niculescu. 344 pp. Academiei Republicii Socialiste Romania, Bucharest, Romania, 1971.

### CRYSTALS

Crystals and X-Rays. By H. S. Lipson. 197 pp. Springer-Verlag (Wykeham, UK), New York, 1970. \$4.00

Mobility of Atoms in Crystal Lattices. V. N. Svechnikov, ed. 92 pp. US Department of Commerce, National Bureau of Standards, Washington, D. C., 1970. \$3.00

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Solid State Materials: Preparation and Properties, Vol. 1: Aspects of Crystal Growth. R. A. Lefever, ed. 284 pp. Marcel Dekker, New York, 1971. \$18.50

Symmetry of Crystals, By E. S. Fedorov. D. Harker, K. Harker, trans. 315 pp. American Crystallographic Association, 1971. \$10.00 for ACA members; \$25.00 for non-members.

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Cryophysics and Cryoengineering: Topical Problems. 266 pp. International Institute of Refrigeration, Tokyo, Japan, 1970.

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Springer Tracts in Modern Physics, Vol. 56: The Method of the Correlation Function in Superconductivity Theory. By G. Lüdersand, K.-D. Usadel, G. Höhler, ed. 215 pp. Springer-Verlag, New York, 1971. \$21.50

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Electromagnetic Probing in Geophysics. J. R. Wait, ed. 391 pp. Golem Press, Boulder, Colo., 1971. \$15.00

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Nuclear Engineering for Satellites and Rockets. By H. Löb et al. 400 pp. Verlag Karl Thiemig, Munich, Germany, 1970.

Stellar Spectroscopy. By M. Hack, O. Struve. 317 pp. Observatoire Astronomico di Trieste, Italy, 1970.

Survey of the Universe. By D. H. Menzel, F. L. Whipple, G. de Vaucouleurs. 860 pp. Prentice-Hall, Englewood Cliffs, N. J., 1971. \$16.50

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Laser Applications in Medicine and Biology, Vol. 1. M. L. Wolbarsht. 288 pp. Plenum, New York, 1971. \$18.00

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A Course in Statistical Thermodynamics. By J. Kestin, J. R. Dorfman. 577 pp. Academic, New York, 1971. \$17.50

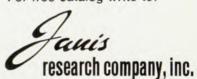




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Progress in Astronautics and Aeronautics, Vol. 24: Heat Transfer and Spacecraft Thermal Control. J. W. Lucas, ed. 658 pp. MIT Press, Cambridge, Mass., 1971. \$20.00

Solid State Electronics. By E. R. Jones Jr. 398 pp. Intext Educational Publishers, Scranton, Pa., 1971. \$10.95

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Introduction to Mechanical Properties of Materials. By M. M. Eisenstadt. 444 pp. MacMillan, New York, 1971. \$14.95

Introduction to Modern Physics. By J. D.

McGervey. 688 pp. Academic, New York, 1971. \$14.00

An Introduction to Physical Science. By J. T. Shipman, J. L. Adams, J. Baker, J. D. Wilson. 658 pp. D. C. Heath, Lexington, Mass., 1971. \$11.95

Modern Physics: A Student Study Guide. By R. Madey, R. M. Winter. 394 pp. Wiley, New York, 1971. \$4.00

Physical Science for Liberal Arts Students. 2nd ed. By H. N. Swenson, J. E. Woods. 361 pp. Wiley, New York, 1971. \$10.95

Physics for the Liberal Arts Student. By D. S. Saxon, W. B. Fretter. 381 pp. Holt, Reinhart, Winston, New York, 1971. \$10.95

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The Conceptual Foundations of Contemporary Relativity Theory. J. C. Graves. 361 pp. MIT Press, Cambridge, Mass., 1971. \$15.00

The Logical Structure of Mathematical Physics. By J. D. Sneed. 311 pp. Humanities, New York, 1971. \$21.00

Quantum Theory and Beyond: Essays and Discussions Arising from a Colloquium, T. Bastin, ed. 345 pp. Cambridge U. P., New York, 1971. \$16.00

Les Trois Etapes de la Cosmologie. By J. Merleua-Ponty, B. Morando. 316 pp. Robert Laffont, Paris, France, 1971.

The Universe of the Mind. By G. E. Owen. 349 pp. John Hopkins Press, Baltimore, Md., 1971. Cloth, \$15.00; paper, \$4.95

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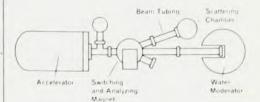
The International System of Units (SI). C. H. Page, P. Vigoureux, ed. 42 pp. National Bureau of Standards, Washington, D. C., 1971. \$0.40

The NBS Alloy Data Center: Permuted Materials Index. By G. C. Carter, D. J. Kahan, L. H. Bennett, J. R. Cuthill, R. C. Dobbyn. 683 pp. National Bureau of Standards, Washington, D. C., 1971. \$7.00

Thermophysical Properties of Matter, The TPRC Data Series, Vol. 1: Thermal Conductivity: Metallic Elements and Alloys. Y. S. Touloukian, R. W. Powell, C. Y. Ho, P. G. Klemens, eds. 1468 pp. Plenum, New York, 1970. \$95.00

Thermophysical Properties of Matter, The TPRC Data Series, Vol. 2: Thermal Conductivity: Nonmetallic Solids. Y. S. Touloukian, R. W. Powell, C. Y. Ho, P. G. Klemens, eds. 1172 pp. Plenum, New York, 1970. \$85.00

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