

ALPHA SPECTROSCOPY

From The Simple

This single-channel Alpha Spectrometer features the versatile 7400A Vacuum Chamber and the low noise 7404-01 Preamp/Amplifier. With the S-20 MCA and its built-in detector bias supply, this system provides uncompromising performance at extremely low cost. A wide choice of SSB detectors and all the accessories necessary to complete or enhance your Alpha Spectroscopy System are readily available from Canberra.



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of the universe—but they also show (and this I do indeed deplore) an almost naive confidence in the various hypotheses, some of which are quite half-baked. These, I suppose, have been proffered for the rational explanation of the observed patterns of radiation. The book would have been so much more valuable if statements such as "This is due to..." had been replaced by "Some astronomers have suggested that this can be explained by..." But then they do point out instances where explanations of certain phenomena (such as M 82, on page 186, or Cygnus A, on page 216), which were generally accepted some years ago, turned out to be false.

The lay public will hardly be impressed with the reliability of a fast-moving science when they find positive statements from one or two decades ago flatly contradicted in the contemporary literature. An assessment of the probability that a certain statement will be substantially revised in the foreseeable future requires a perspective that is more profound than that of most science writers. And yet this caution is necessary when one addresses, as the authors do, anyone but the inner circle of the cognoscenti.

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University of Florida

book note

Maxwell on Saturn's Rings
Edited by Stephen G. Brush, C. W. F. Everitt and Elizabeth Garber
199 pp. M.I.T. Press, 1983.
\$25.00

Saturn's rings are an interesting subject not only for the physicist or planetary astronomer, but also for the historian of science. Galileo discovered the rings in 1610, but never understood their nature. In his simple telescope the rings appeared to him as protrusions from the planet, and only in 1656 did Christiaan Huygens, using a much better telescope, identify the phenomenon as rings.

Today, notwithstanding close scrutiny by space probes, the dynamics of the ring system remains a mystery. It was enough of a mystery for James Clerk Maxwell, who until 1856 never had expressed any interest in astronomy, to incite his mathematical study of the stability of the ring system, resulting in an essay that won the Adams Prize for the year 1856.

In this essay, entitled "On the Stability of the Motion of Saturn's Rings," Maxwell rules out the possibility that the rings can be solid or liquid, and concludes that "the rings must consist of disconnected particles; they may be either solid or liquid, but they must be

independent." The volume also contains letters Maxwell exchanged with scientists and astronomers while he was working on the essay. Included are his correspondence with Harvard astronomer George Bond and several working papers. The essay and working papers give an especially interesting glimpse of how Maxwell tackled an extremely difficult problem by masterfully applying Newtonian mechanics often with an uncanny awareness of the limitations of the mathematical tools available at his time. —AH

new books

Theory and Mathematical Physics

Advances in Applied Mechanics. Vol. 24. J. W. Hutchinson, T. Y. Wu, eds. 376 pp. Academic, New York, 1984. \$89.00. *Compendium*

Methods in Radiative Transfer. W. Kallofen, ed. 450 pp. Cambridge U.P., New York, 1984. \$49.50. *Compendium*

Molecular Quantum Electrodynamics: An Introduction to Radiation-Molecular Interactions. D. P. Craig, T. Thirumachandran. 324 pp. Academic, New York, 1984. \$58.00. *Advanced text*

Asymptotic Behavior of Mass and Space-time Geometry: Lecture Notes in Physics. Proc. Conf. at Oregon State Univ., Corvallis, Oregon, October, 1983. F. J. Flaherty, ed. 213 pp. Springer-Verlag, New York, 1984. \$10.50

Boundary Integral Equation Analyses of Singular, Potential, and Biharmonic Problems: Lecture Notes in Engineering. D. B. Ingham, M. A. Kelmanson. 173 pp. Springer-Verlag, New York, 1984. \$12.50. *Monograph*

The Experimental Foundation of Solid Mechanics: Mechanics of Solids I. J. F. Bell. 813 pp. Springer-Verlag, New York, 1984. \$36.00

Fluctuations and Sensitivity in Nonequilibrium Systems: Springer Proceedings in Physics 1. Proc. Int. Conf. Univ. of Texas, Austin, Texas, March, 1984. W. Horsthemke, D. K. Kondepudi, eds. 273 pp. Springer-Verlag, New York, 1984. \$28.00

Global Riemannian Geometry. T. J. Willmore, N. J. Hitchin, eds. 213 pp. Wiley, New York, 1984. \$64.95. *Compendium*

Local Density Approximations in Quantum Chemistry and Solid State Physics. J. P. Dahl, J. Avery, eds. 851 pp. Plenum, New York, 1984. \$125.00. *Compendium*

Mathematical Methods with Applications to Problems in the Physical Sciences. T. C. Bradbury. 702 pp. Wiley, New York, 1984. \$37.95. *Text*

Atomic, Molecular and Chemical Physics

Surface Enhanced Raman Vibrational Studies at Solid/Gas Interfaces. Springer Tracts in Modern Physics. I. Pockrand. 164

pp. Springer-Verlag, New York, 1984. \$28.50

Electron-Molecule Interactions and Their Applications, Vol. 2. L. G. Christophorous, ed. 678 pp. Academic, New York, 1984. \$85.00. *Compendium*

Surface Enhanced Raman Vibrational Studies at Solid/Gas Interfaces. *Springer Tracts in Modern Physics.* I. Pockrand. 164 pp. Springer-Verlag, New York, 1984. \$28.50. *Monograph*

Ultrafast Phenomena IV. *Springer Series in Solid State Sciences 54.* Proc. of the Fourth Int. Conf. Monterey, California, June, 1984. D. H. Auston, K. B. Eisenthal, eds. 509 pp. Springer-Verlag, New York, 1984. \$29.00

Advances in Chemical Physics, Vol. 56. I. Prigogine, S. A. Rice, eds. 586 pp. Wiley, New York, 1984. \$90.00. *Compendium*

Aerosols: Science, Technology, and Industrial Applications of Airborne Particles. Proc. of the First Int. Aerosol Conf., September, 1984, Minneapolis, Minnesota. B. Y. H. Liu, D. Y. H. Pui, H. J. Fissan, eds. 1069 pp. Elsevier, New York, 1984. \$95.00

Chemical Oscillations, Waves, and Turbulence. Y. Kuramoto. 156 pp. Springer-Verlag, New York, 1984. \$28.50. *Monograph*

Chemistry and Physics of Solid Surfaces V. *Springer Series in Chemical Physics.* R. Vanselow, R. Howe, eds. 554 pp. Springer-Verlag, New York, 1984. \$45.50

Complex Chemistry. Structure and Bondings. J. Emsley, R. D. Ernst, B. J. Hathaway, K. D. Warren. 199 pp. Springer-Verlag, New York, 1984. \$43.00. *Compendium*

Dynamics of First-Order Phase Transitions in Equilibrium and Nonequilibrium Systems. *Lecture Notes in Physics.* S. W. Koch. 148 pp. Springer-Verlag, New York, 1984. \$6.50. *Monograph*

Phase Transitions and Critical Phenomena, Vol. 9. C. Domb, J. L. Lebowitz, eds. 318 pp. Academic, New York, 1984. \$60.00. *Compendium*

Solid State Chemistry and its Applications. A. R. West. 734 pp. Wiley, New York, 1984. \$67.95. *Advanced text*

Thermodynamics and Statistical Physics

Thermodynamics. W. Z. Black, J. G. Hartley. 755 pp. Harper & Row, New York, 1984. \$31.50. *Undergraduate text*

Astronomy, Cosmology and Space Physics

Cool Stars, Stellar Systems, and the Sun. *Lecture Notes in Physics 193.* Proc. Third Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, Cambridge, Mass., October, 1983. S. L. Baliunas, L. Hartmann, eds. 364 pp. Springer-Verlag, New York, 1984. \$19.00

The Solar Granulation, Second Edition. R. J. Bray, R. E. Loughhead, C. J. Durrant. 256 pp. Cambridge U.P., New York, 1984. \$54.40. *Monograph*

Basic Concepts in Relativistic Astrophysics. L. Z. Fang, R. Ruffini. 218 pp. World Scientific (US dist. Heyden, Philadelphia), 1984. \$33.00

Total Eclipses of the Sun. Jack B. Zirker. 224 pp. Van Nostrand, New York, 1984. \$22.50. *Lay readers*

The Catastrophic Universe: An Essay in the Philosophy of Cosmology. A. G. Pacholczyk. 126 pp. Pachart, Tucson, 1984. \$9.95

Stellar Nucleosynthesis. C. Chiosi, A. Renzini, eds. 397 pp. Reidel, Dordrecht, Holland 1984. \$55.00. *Compendium*

Astronomy with Schmidt-type Telescopes. Proc. 78th IAU Colloquium, Asiago, Italy, August-September 1983. M. Capaccioli, ed. 619 pp. Reidel, Dordrecht, Holland, 1984. \$84.00

VLBI and Compact Radio Sources. Symposium No. 110 of the International Astronomical Union. Bologna, Italy, June-July 1983. R. Fanti, K. Kellerman, G. Setti, eds. 512 pp. Reidel, Boston, 1984. \$54.00 cloth; \$24.50 paper

The Astronomical Scrapbook: Skywatchers, Pioneers, and Seekers in Astronomy. J. Ashbrook. 468 pp. Sky Publishing, Cambridge, Massachusetts and Cambridge U.P., New York, 1984. *Lay readers*

Astronomy and Astrophysics Abstracts, Vol. 34: Literature 1983, Part 2. S. Böhme, W. Fricke, H. Hefele, I. Heinrich, W. Hoffman, D. Krahn, V. R. Matas, L. D. Schmadel, G. Zechs, eds. 921 pp. Springer-Verlag, New York, 1984.

Interstellar Chemistry. W. W. Duley, D. A. Williams. 251 pp. Academic, New York, 1984. \$45.00. *Monograph*

Miscellaneous

Relativity and Engineering. *Springer Series in Electrophysics.* J. Van Bladel. 402 pp. Springer, New York, 1984. \$29.00. *Monograph*

Infrared and Millimeter Waves: Vol. 10. Millimeter Components and Techniques, Part 2. K. J. Button. 402 pp. Academic, New York, 1984. \$65.00. *Compendium*

McGraw-Hill Dictionary of Chemistry. S. P. Parker, ed. 665 pp. McGraw-Hill, New York, 1984. \$32.50

The New Story of Science. R. M. Augros, G. N. Stanciu. 234 pp. Gateway, Lake Bluff, Ill., 1984. \$6.95

The Physics and Technology of Xerographic Processes. E. M. Williams. 288 pp. Wiley, New York, 1984. \$39.95. *Monograph*

Testing, Evaluation and Shallow Land Burial of Low and Medium Radioactive Waste Forms. Proc. seminar R&D Program of the Commission of the European Communities on Radioactive Waste Management and Disposal, Geel, Belgium, September 1983. W. Krischer, R. Simon, eds. 227 pp. Harwood Academic, New York, 1984. \$38.00

Understanding ADA. K. C. Shumate. 387 pp. Harper & Row, New York, 1984. \$18.95

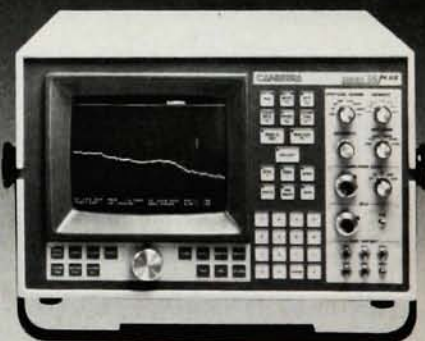
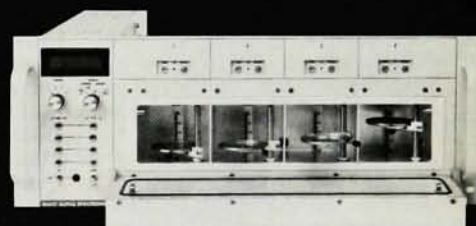
Self-Organization and Management of Social Systems: Insights, Promises, Doubts, and Questions. H. Ulrich, G. J. B. Probst, eds. 155 pp. Springer-Verlag, New York, 1984. \$23.00. *Compendium* □

ALPHA SPECTROSCOPY

To The Sublime

The 7404 Quad Alpha Spectrometer, unlike any other, was designed from the ground up as a multi-channel system. This is why the 7404 alone has such important features as digital readout of detector bias, leakage current, vacuum level, and pulser energy along with provisions for sample bias and vacuum/bias interlock to protect your SSB detectors.

The S-35 PLUS MCA with our 8222 Gated Mixer-Router completes a four-channel system which is truly elegant as well as economical.



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