

parabolic collectors would be of interest to physicists. The above remarks are more intended as suggestions for a future edition than as criticisms of the present treatment.

The style of the authors is clear, and the topics they cover are treated in sufficient detail to teach a graduate engineer how to construct analytical models and predict the performance of solar-energy thermal processes. The book illustrates this material with well chosen applications, particularly for the heating of buildings. This is an excellent volume, and it should be in the library of every engineer interested in solar-energy utilization.

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Homogeneous Relativistic Cosmologies

M. P. Ryan Jr., L. C. Shepley
321 pp. Princeton U. P., Princeton, N.J.,
1975. \$15.00 hardcover, \$7.50 paperback

There are, broadly speaking, two types of theoretical cosmologists: those who do astrophysics on background Robertson-Walker geometries, which are spatially homogeneous (that is, all points in space are viewed as equivalent) and isotropic (all spatial directions equivalent), and those who work on more complex geometries, including the simplest (spatially homogeneous but anisotropic) non-Robertson-Walker geometries. The latter group, which has extensively studied such topics as the existence and nature of singularities and the observational constraints on permissible models, has operated over the last decade mainly in Great Britain, the US and the Soviet Union. In *Homogeneous Relativistic Cosmologies*, the authors review the work of the American school.

Michael Ryan Jr and Lawrence Shepley are active members of this school, and the book includes fairly full accounts of their own contributions to the study of generalizations of the closed and flat Robertson-Walker cases. Such a connected account is useful to workers in this field and will be of interest to researchers in physics and astronomy who seek some idea of recent developments.

The style is wordy, but readable and sometimes witty. Ryan and Shepley provide an extensive bibliography, but I dislike its chronological arrangement. Their flow charts of topics appear more useful to them than to readers.

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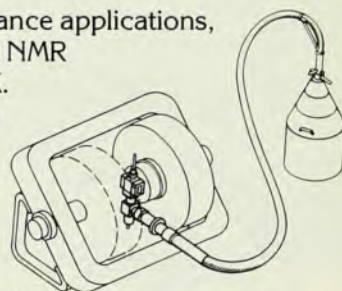
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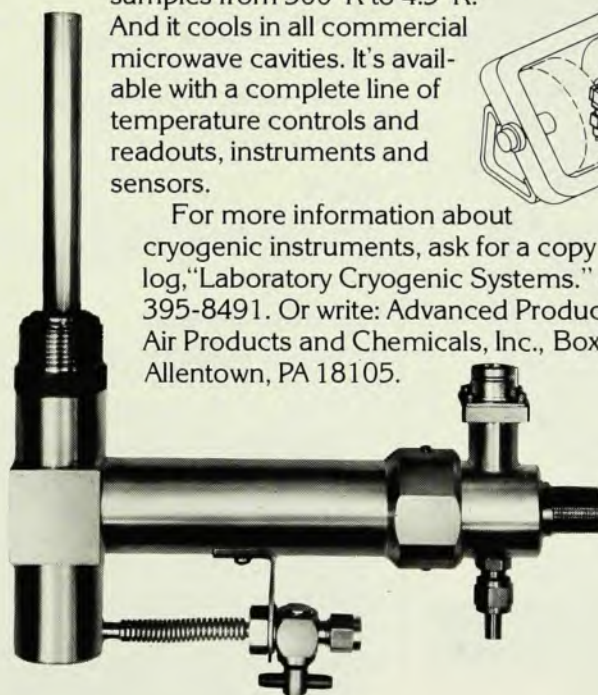


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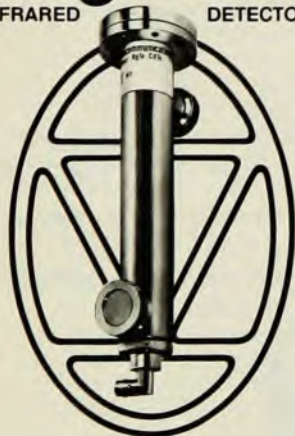
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The authors appear a little uncertain about their readership. For example, they define a topology, yet they use "homeomorphism" without explanation; there are several such inconsistencies. Some easy proofs are given and some hard ones omitted, without even outline indications, and there are a few minor errors. The book provides little account of the Russian and British work—to which I have contributed and about which I must therefore be prejudiced—even when I feel it to be essential to a balanced view. The section on mixing, for example, fails to mention the Russian contribution in this area. Thus I could not recommend this volume as a complete account of the subject.

In conclusion, then, this is a useful but disappointing book from two able workers.

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new books

Nuclei, Nuclear Physics

Nuclear Structure, Vol. 2: Nuclear Deformations. A. Bohr, B. R. Mottelson. 748 pp. W. A. Benjamin, Reading, Mass., 1975. \$37.50

Nuclear Reactor Analysis. J. J. Duderstadt, L. J. Hamilton. 650 pp. Wiley, New York, 1976. \$23.95

Advances in Nuclear Physics, Vol. 8. M. Baranger, E. Vogt, eds. 383 pp. Plenum, New York, 1975. \$27.50

Optics

Optical Communications. R. M. Gagliardi, S. Karp. 432 pp. Wiley, New York, 1976. \$24.95

Fluids and Plasmas

Advances in Plasma Physics, Vol. 6. P. K. Kaw, W. L. Kruer, C. S. Liu, K. Nishikawa (A. Simon, W. B. Thompson, series eds.). 600 pp. Wiley, New York, 1976. \$35.00

Physics of the Hot Plasma in the Magnetosphere (Nobel Symposium No. 30, Kiruna, Sweden, April 1975). B. Hultqvist, L. Stenflo, eds. 369 pp. Plenum, New York, 1975. \$25.00

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Problems in Electronics (Int. Series of Monographs in Natural Philosophy, Vol. 61). J. Auvray, M. Fourier. 430 pp. Pergamon, New York, 1973. \$18.00 clothbound, \$10.00 paperbound

Materials and Solid State

The Elementary Language of Solid State Physics. M. H. B. Stiddard. 188 pp. Academic, London, 1975. \$14.00

Introduction to Superconductivity (Int. Series in Solid State Physics, Vol. 6). A. C. Rose-Innes, E. H. Rhoderick. 228 pp. Pergamon, New York, 1976. \$13.20

Vacuum Ultraviolet Radiation Physics (Proc. of the 4th Int. Conf. on Vacuum Ultraviolet Radiation Physics, Hamburg, July 1974). E.-E. Koch, R. Haensel, C. Kunz, eds. 832 pp. Pergamon, Vieweg, Braunschweig, Germany, 1974.

Astronomy, Space Physics

Black Holes in Space. P. Moore, I. Nicolson. 126 pp. W. W. Norton, New York, 1976. \$7.95

Pulsating Stars. B. V. Kukarkin, ed. 320 pp. Halsted, New York, 1975. \$37.50

The Solar System (Articles from Scientific American, Sept. 1975). 145 pp. W. H. Freeman, San Francisco, 1975.

Astronomical Calendar 1976. G. Ottewill. 55 pp. Published by author at Physics Dept., Furman University, Greenville, S. Carolina, 1975. \$4.95

Planetary Science

Light Scattering in Planetary Atmospheres. V. V. Sobolev. 256 pp. Pergamon, New York, 1975. \$25.00

Earth in Crisis: An Introduction to the Earth Sciences. T. L. Burrus, H. J. Spiegel. 439 pp. C. V. Mosby, St. Louis, Mo., 1976. \$13.50

A Short Course in Cloud Physics (Int. Series in Natural Philosophy, Vol. 84). R. R. Rogers. 227 pp. Pergamon, New York, 1976. \$14.50

Clouds, Rain and Rainmaking, 2nd edition. B. J. Mason. 189 pp. Cambridge U.P., New York, 1976. \$12.95

Biophysics

Photoprocesses, Photoreceptors and Evolution. J. J. Wolken. 317 pp. Academic, New York, 1975. \$19.50

Theory and Mathematical Physics

The Wave Equation on a Curved Space-Time. F. G. Friedlander. 282 pp. Cambridge U.P., New York, 1976. \$39.50

Measurements and Time Reversal in Objective Quantum Theory (Int. Series in Natural Philosophy, Vol. 75). F. J. Belinfante. 142 pp. Pergamon, New York, 1975. \$10.00

Mathematical Cosmology and Extragalactic Astronomy. I. E. Segal. 204 pp. Academic, New York, 1976. \$22.50

Fluctuations, Instabilities, and Phase Transitions (Proc. of NATO Advanced Study Institute, Geilo, Norway, April 1975). T. Riste, ed. 389 pp. Plenum, New York, 1975. \$29.50

Instrumentation and Techniques

The Measurement of Appearance. R. S. Hunter. 384 pp. Wiley, New York, 1975. \$19.50

Business Mathematics and Calculating Machines. B. D. Phillips, D. A. Storey. 210 pp. Macmillan, New York, 1976. \$8.95

Physics for Technology. J. E. Betts. 723