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1967), which is a very good physico-mathematical text on classical hydrodynamics. R. S. Brodkey's *The Phenomena of Fluid Motions* (Addison-Wesley, 1967) can supply some of the qualitative or graphic sense, and the recent text on turbulent flow by H. Tennekes and J. L. Lumley *A First Course in Turbulence*, (MIT, 1972) might be used to round out that topic.

STANLEY CORRISIN

*Johns Hopkins University
Baltimore, Md.*

Complex Permittivity: Theory and Measurement

B. K. P. Scaife, ed.

170 pp. English Universities Press,
London, UK, 1971. £3.45

The three long chapters in this book are devoted to a discussion of the theory of dispersion in polar dielectrics by B. K. P. Scaife, a survey of the effects of pressure on dielectric properties by W. G. S. Scaife, and a review of the methods for measuring complex permittivity by R. G. Bennett and J. H. Calderwood.

The theoretical chapter is a development and extension of what might be called the Fröhlich approach, to which the author has made numerous contributions. This is a useful, purely classical discussion of fluctuation theory and of diffusion and inertial models, but in his approach the author presents correlation-function theory macroscopically with no account of R. Kubo's treatment or developments of it and makes no mention of calculations of these functions for various models by Roy Gordon and others. R. W. Zwanzig's results on effects of dipole-dipole coupling are used to point up difficulties with attempts to generalize Onsager's equation for the static permittivity to the time-dependent case, but neither the model nor its development are adequately described.

The chapter on pressure effects is a survey of experimental techniques and results for nonpolar gases, nonpolar and polar liquids, ionic crystals, polymers, ferroelectric crystals and ice, principally for static permittivity and relaxation at audio and radio frequencies. The account is quite comprehensive and a useful guide to the literature, except that it was presumably written before a considerable body of recent work on dielectric virial coefficients and far infrared absorption in gases was published.

The chapter on experimental techniques discusses bridge methods for audio and radio frequencies, resonance methods for the uhf region, and microwave transmission line and waveguide

New Books from North-Holland

Polarons in Ionic Crystals and Polar Semiconductors

Proceedings of the 1971 Antwerp Advanced Study Institute on Fröhlich Polarons and Electron-Phonon Interactions in Polar Semiconductors.

Edited by JOZEF T. DEVREESE, University of Antwerp, Belgium.

1972, 807 pages. Dfl. 140.00 (ca. \$43.75)

Contains the proceedings of a meeting held to review the progress made in polaron physics since 1962. The major theoretical and experimental developments dealt with in this book, include: magneto-optical properties (with applications relating to II-VI and III-V semiconductors); internal excited states (resonances) of polarons and their role in the optical and magneto-optical properties of free and bound polarons (applications to alkali-halides, thallous-halides and silver-halides); transport properties (including high field effects) with an extension of the KUBO formation; polarons in degenerate semiconductors; fiezo-polarons; acousto-polarons; small-polarons (transition metal oxides); excitons; effects of nonparabolicity of bands; alternative formulations of the theory. With contributions from leading physicists in the field, the book is intended for graduate physicists with a background in solid state physics. Many tables are given which relate physical constants to polaron properties.

Few Particle Problems in Nuclear Interaction

Proceedings of the International Conference on Few Particle Problems in Nuclear Interaction, Los Angeles, August, 1972.

Edited by I. SLAUS, S. A. MOSZKOWSKI, R. P. HADDOCK and W. T. H. VAN OERS

1973, approx. 1100 pages
Dfl. 160.00 (ca. \$50.00)

Presents and authoritative and up-to-date review of recent developments in low and medium energy few particle problems. Special emphasis is given to the nuclear three body problem, nuclear forces (in particular the three body force), symmetries, and the interaction of mesons, leptons and photons with few nucleon systems. Applications of these results to astrophysics and nuclear structure studies are summarized.

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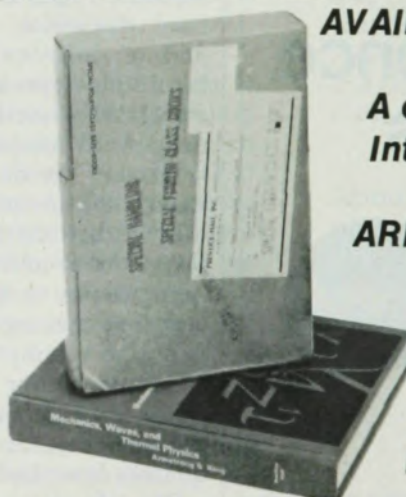
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ANNOUNCING . . .

THE ELECTROMAGNETIC INTERACTION. By ROBIN L. ARMSTRONG & JAMES D. KING, both of the University of Toronto. When used in conjunction with the authors' first book, this new book completes a first-year course in physics. After first discussing basic electricity, magnetism and Maxwell's equations in a vacuum, the book goes on to consider the interaction of electromagnetic waves with matter in detail. August 1973/approx. 528 pp./013-249110-9/\$11.95

MECHANICS, WAVES, AND THERMAL PHYSICS. An introductory calculus-based text that proceeds from single-particle motion to the motion of macroscopic systems in terms of constituent particles. It emphasizes statistical and quantum concepts. 1970/563 pp./013-571810-4/\$11.30.

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measurements. It might be characterized as a fairly brief updating of such old standbys as the books by B. Hague and L. Hartshorn. An experimentalist in search of a method to suit his needs will find useful information, but there are deficiencies in the coverage. As examples, the discussion of transformer bridges hardly does justice to their capabilities at present, the use of "active" circuit elements is suggested only by a special case, and there is no mention of recent developments in time-domain reflectometry and other transient methods. The authors can be more easily forgiven their omission of millimeter-wave and far-infrared techniques as lying beyond their chosen frequency or time range.

There is good material in this book, which should be useful to both present and prospective workers interested in dielectric theory and measurements. The principal shortcomings are ones of omission, which is not too surprising when the amount of material covered in 170 pages is considered.

R. H. COLE
Brown University
Providence, R. I.

new books

Conference Proceedings

Cyclotrons-1972 (AIP Conf. Proc. No. 9, Sixth Cyclotron Conference, Vancouver, Canada, 18-19 July, 1972). J. J. Burgerjon, A. Strathdee, eds. 836 pp. AIP, New York, 1972. \$14.96.

Elementary Particles

Photon-Hadron Interactions. Richard P. Feynman. 282 pp. W. A. Benjamin, Reading, Mass., 1972. cloth \$16.00; paper \$7.95.

The Physics of Elementary Particles. L. J. Tassie, Halsted, New York, 1973.

Atoms and Molecules

Physics of Atoms and Molecules. U. Fano, L. Fano. 592 pp. University of Chicago, Chicago, Ill., 1973. \$14.50.

Chemical Physics

Interatomic Potentials. Ian M. Torrens. 247 pp. Academic, New York, 1972. \$14.00.

Fluids and Plasmas

Progress in Heat and Mass Transfer, Vol. 5: Heat and Mass Transfer in Rheologically Complex Fluids. W. R. Schowalter, ed. 349 pp. Pergamon, New York, 1973. \$33.00.

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