

There are several statements with which other rheologists will disagree. Apart from these minor points, this book should be of valuable service to the industrial rheologist, who is called upon to measure significant flow properties of industrial materials. The time and often the experience is lacking to design specialized equipment for the measurement of specific rheological properties. This book should help the industrial rheologist with some prior background in the field to select and if necessary modify commercially available equipment for the measurement of significant rheological properties.

Fluid Dynamics. An Introductory Account of Certain Theoretical Aspects Involving Low Velocities and Small Amplitudes. By G. H. A. Cole. 238 pp. (Methuen, London) John Wiley & Sons, Inc., New York, 1962. \$4.95.

Reviewed by R. B. Lindsay, Brown University.

The accelerating development of aerodynamics in recent times, together with increased interest in such things as plasma dynamics and related physical problems, has served to put considerable emphasis on the need for up-to-date, concise, introductory treatments of fluid dynamics. The impor-

tance of such is all the greater since the older classical treatises, in addition to being heavily mathematical, usually fail to come to grips with the actual physical conditions prevailing in the interesting practical cases of fluid flow. The present work, one in the valuable series of Methuen's Monographs on Physical Subjects, endeavors to provide, in brief, but readable, compass, an adequate introduction to modern fluid dynamics.

The first four chapters contain a more or less conventional treatment of the motion of an ideal fluid, mainly restricted to irrotational flow, and including a very brief summary of sound waves in gases. Viscous and thermal effects are then introduced, followed by a study of the laminar boundary layer and turbulence. There is a substantial chapter on the various dimensionless parameters associated with fluid flow, like the Reynolds, Strouhal, Mach numbers, etc. The book concludes with a short chapter on hydromagnetics. This confined to treatment of continuum magnetohydrodynamics and does not include plasmas.

Though the mathematical analysis is adequate and in general clear, the principal emphasis is on the physical

ideas involved, particularly in the case of turbulent flow and boundary layer problems. The general results are presented with clarity, though greater use of charts and graphs would have been helpful. In his desire to achieve brevity, the author occasionally leaves out material badly needed by the novice in the subject. This is true, for example, for the important concept of group velocity in wave motion. Here the reader not previously initiated will learn nothing of the meaning of group velocity and must make do with a series of formulas. The acoustician will not be contented with the chapter on sound waves. In particular, he will be depressed by the implication that sound waves are nothing but small oscillations in a gas. The sufficiently incautious reader may indeed receive the impression that because the compressibility of a liquid is much smaller than that of a gas (the author states that a liquid is essentially incompressible), there can be no sound waves in a liquid. This would make the submarine detection problem difficult indeed!

There is a brief but useful bibliography, somewhat marred by the careless misspelling of many proper names.

BOOKS RECEIVED

GENERAL

Reports on Progress in Physics, Volume 26. A. C. Strickland, ed. 472 pp. The Institute Of Physics and The Physical Society, London, 1963.

ATOMIC & MOLECULAR PHYSICS

The Theory of Atomic Spectra (1935 ed.). By E. U. Condon, and G. H. Shortley. 441 pp. Cambridge Univ. Press, New York, 1963. Paper \$3.95.

CHEMISTRY & CHEMICAL PHYSICS

Effect of Ionizing Radiation on High Polymers. By T. S. Nikitina, E. V. Zhuravskaya, and A. S. Kuzminsky. Transl. from Russian by Scripta Technica, Inc. 90 pp. Gordon and Breach, New York, 1963. \$4.95.

Annual Review of Physical Chemistry, Volume 14. H. Eyring, C. J. Christensen, and H. S. Johnston, eds. 433 pp. Annual Reviews, Inc., Palo Alto, California, 1963. \$8.50.

Configurational Statistics of Polymeric Chains. By M. V. Volkenstein. Transl.

from Russian by Serge N. Timasheff and M. J. Timasheff. 562 pp. Interscience, New York, 1963. \$20.00.

ELECTROMAGNETIC WAVES & ELECTRONS

Advances in Electronics and Electron Physics, Volume 18. L. Marton and Claire Marton, eds. 342 pp. Academic, New York, 1963. \$12.50.

Meteorological and Astronomical Influences on Radio Wave Propagation. (Nato Advanced Study Institute, Corfu, 1961). B. Landmark, ed. 318 pp. (Pergamon, Oxford) Macmillan, New York, 1963. \$15.00.

EXPERIMENTAL TECHNIQUES

A Stress Analysis of a Strapless Evening Gown and Other Essays for a Scientific Age. Robert A. Baker, ed. 192 pp. Prentice-Hall, Englewood Cliffs, N. J., 1963. \$3.95.

Principles of Reliability. By Erich Pieruschka. 365 pp. Prentice-Hall, Englewood Cliffs, New Jersey, 1963. \$15.00.

Cryogenic Engineering. By J. H. Bell, Jr.

411 pp. Prentice-Hall, Englewood Cliffs, N. J., 1963. \$16.00.

High-Pressure Measurement. Symp. Proc. (New York, Nov. 1962). A. A. Giardini and Edward C. Lloyd, eds. 409 pp. Butterworths, Washington, D. C., 1963. \$10.75.

GEOPHYSICS & EARTH SCIENCES

Jet-Stream Meteorology. By Elmar R. Reiter. Transl. from German. 515 pp. The University of Chicago Press, Chicago, 1963. \$17.50.

An Introduction to Atmospheric Physics. By Robert G. Fleagle and Joost A. Businger. Vol. 5 of Internat'l Geophysics Series, edited by J. Van Mieghem. 346 pp. Academic, New York, 1963. \$12.00.

General Oceanography. An Introduction. By Günter Dietrich. Transl. from German by Feodor Ostapoff. 588 pp. Interscience, New York, 1963. \$20.00.

HANDBOOKS, TABLES, ETC.

Soviet Men of Science. Academicians and Corresponding Members of the Academy of Sciences of the USSR. By John Turke-

vich. 441 pp. D. Van Nostrand, Princeton, N. J., 1963. \$12.00.

HISTORY & PHILOSOPHY OF SCIENCE

The Century of Science. By Watson Davis. 313 pp. Duell, Sloan and Pearce, New York, 1963. \$5.95.

Yankee Scientist—William David Coolidge. By John Anderson Miller. 216 pp. Mohawk Development Service, Schenectady, N. Y., 1963. \$3.95.

2000 Years of Space Travel. By Russell Freedman. 256 pp. Holiday House, New York, 1963. \$3.95.

The Natural Philosopher, Volume 1. A Series of Volumes Containing Papers Devoted to the History of Physics and to the Influence of Physics on Human Thought and Affairs through the Ages. 155 pp. Blaisdell, New York, 1963. Paper \$1.95, Cloth \$2.95.

MATHEMATICS

Applied Calculus. By L. J. Adams. 278 pp. Wiley, New York, 1963. \$5.95.

Probabilities on Algebraic Structures. By Ulf Grenander. 218 pp. (Almqvist & Wiksell, Stockholm) Wiley, New York, 1963. \$12.00.

Linear Approximation. Mathematical Surveys, No. 9. By Arthur Sard. 544 pp. American Mathematical Society, Providence, R. I., 1963. \$16.80.

Foundations of Differential Geometry, Volume 1. By Shoshichi Kobayashi and Katsumi Nomizu. 329 pp. Interscience, New York, 1963. \$15.00.

Matrices and Tensors. By G. G. Hall. Vol. 4 of Topic 1 of The International Encyclopedia Of Physical Chemistry And Chemical Physics, edited by E. A. Guggenheim, J. E. Mayer and F. C. Tompkins. 106 pp. (Pergamon, Oxford) Macmillan, New York, 1963. \$6.50.

NUCLEAR PHYSICS

The World of Elementary Particles. By Kenneth W. Ford. 246 pp. Blaisdell, New York, 1963. Paper \$2.95, Cloth \$4.50.

Nuclear Physics, An Introduction. By W. E. Burcham. 739 pp. McGraw-Hill, New York, 1963. \$12.00.

Once-Forbidden Beta-Transitions. By L. N. Zyryanova. Transl. from Russian by Prasenjit Basu. Transl. edited by Reginald W. Clarke. 107 pp. Macmillan, New York, 1963. \$5.00.

Man-Made Transuranium Elements. By Glenn T. Seaborg. 120 pp. Prentice-Hall, Englewood Cliffs, N. J., 1963. Paper \$1.50, Cloth \$3.95.

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Nuclear Energy. By L. A. Redman. 102 pp. Oxford University Press, New York, 1963. \$2.40.

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March 1963). 509 pp. IAEA, Vienna. Distr. in US by Nat'l Agency for International Publications, New York, 1963. \$10.00.

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Color: A Guide to Basic Facts and Concepts. By R. W. Burnham, Randall M. Hanes, and C. James Bartleson. 249 pp. Wiley, New York, 1963. \$9.25.

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An Introduction to Fluid Mechanics and Heat Transfer (2nd ed.) With Applications in Chemical & Mechanical Process Engineering. By J. M. Kay. 327 pp. Cambridge Univ. Press, New York, 1963. Paper \$2.45.

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Interfacial Phenomena. (2nd ed.) By J. T. Davies and E. K. Rideal. 480 pp. Academic, New York, 1963. \$15.00.

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Orbital Dynamics of Space Vehicles. By

Ralph Deutsch. 410 pp. Prentice-Hall, Englewood Cliffs, N. J., 1963. \$16.00.

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Experiments in College Physics (3rd ed.). By Bernard Cioffari. 278 pp. D. C. Heath and Company, Boston, Mass., 1963. Paper \$4.50.

THEORETICAL PHYSICS

Recherches sur la Théorie des Quanta (1924 ed.). By Louis de Broglie. 127 pp. Masson et Cie, Editeurs, Paris, 1963. Paper 15F.

The Mathematical Foundations of Quantum Mechanics. A Lecture-Note Volume. By George W. Mackey. 137 pp. W. A. Benjamin, New York, 1963. \$7.00.

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Thermodynamics. A Macroscopic-Microscopic Treatment. By Joachim E. Lay. 814 pp. Merrill, Columbus, Ohio, 1963. \$11.25.

X RAYS

X-Ray Studies of Materials. By A. Guinier and D. L. Dexter. 156 pp. Interscience, New York, 1963. \$6.75.

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