

book is brought out, the author might very well extend its usefulness for such students by including problems which are as provocative as his text. This lack, however, in no way detracts from the extremely successful presentation of the contents.

Rarefied Gas Dynamics. Symp. Proc. (Paris, June 1962). J. A. Laurmann, ed. Supplement 2 of *Advances in Applied Mechanics*, edited by H. L. Dryden, Th. von Kármán, et al. Vol. 1, 541 pp.; vol. 2, 529 pp. Academic Press New York, 1963. \$16.00 per volume. Reviewed by R. Bruce Lindsay, Brown University.

The statistical theory of gases is a very old discipline, much cultivated by both physicists and chemists, who have used it in trying to learn about transport and other properties of such fluids. In fairly recent times it has taken on renewed life in view of the practical problems provided by the

high-speed flow of low-density gases encountered in high-flying aircraft and in the ballistic-missile and artificial-satellite field. The flow of ionized gases has also posed a new challenge to the statistical theory. It is, therefore, not surprising that considerable research activity has developed, leading to international symposia for the discussion of the results. The two volumes under review contain 55 papers from the Third International Symposium on Rarefied Gas Dynamics held in Paris in June 1962.

Rarefied gas dynamics deals with the flow of gases in which the mean free path of the molecules is not negligible compared with some length associated with the structure of the flow, e.g., channel width in tube flow or the boundary-layer thickness in external flow. Its normal field of study is the transition region between the effectively continuous flow handled by the Navier-Stokes equation (very small

mean free path) and the other extreme of collisionless molecular motion. Much of the mathematical complexity of the subject is connected with the difficult physical conditions encountered in this region.

The articles in these volumes are grouped in six sections dealing respectively with: (1) fundamental kinetic theory (Boltzmann equation); (2) molecular beams and surface interactions; (3) ionized gas flows; (4) transition flow-theory; (5) transition flow-experiment; and (6) experimental methods in rarefied gas flows. Each article is accompanied by a brief bibliography and in many cases by a summary of the discussion it elicited at the symposium. Most of the articles are in English, though there are a few in French. The figures and typography are excellent. The whole constitutes a compendium of useful up-to-date information in a most important field of fluid dynamics.

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ACOUSTICS

Acoustique sous-marine. By L. Guieysse and P. Sabathé. 251 pp. Dunod, Paris, 1964. 64 F.

ASTRONOMY & ASTROPHYSICS

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Elements of Astromechanics. By P. van de Kamp. 140 pp. W. H. Freeman, San Francisco, 1964. Cloth \$4.00, Paper \$2.00.

ATOMIC & MOLECULAR PHYSICS

The Atom. By Charles Hatcher. 107 pp. (Macmillan, London) St Martin's Press, New York, 1964. \$3.95.

BIOPHYSICS & MEDICAL PHYSICS

Introduction to Biophysical Chemistry. By R. Bruce Martin. 365 pp. McGraw-Hill, New York, 1964. \$11.50.

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Classics in the Theory of Chemical Combination. O. Theodor Benfey, ed. 191 pp. Dover, New York, 1963. Paper \$1.85.

Uranium. By J. H. Gittus. 623 pp. Butterworths, Washington, D.C., 1963. \$24.75.

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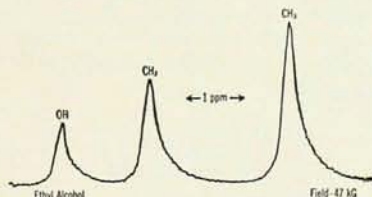
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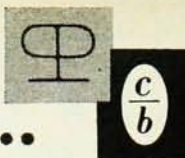
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ADVANCES IN CRYOGENIC ENGINEERING, Volume 9

Edited by K.D. Timmerhaus. Proceedings of the Ninth (1963) Annual Cryogenic Engineering Conference sponsored by the University of Colorado's College of Engineering and the National Bureau of Standards' Boulder Laboratories. The 69 papers contained in this volume (the latest in a series recognized as the most authoritative compilation of development reports in low-temperature engineering) examine such widespread areas as: insulation, heat transfer, mechanical properties, seals, fluid phenomena, engineering aspects of superconductivity, thermodynamics, phase equilibria, safety instrumentation, cryopumping, and various developments in processes and equipment. Every paper accepted for publication in **ADVANCES IN CRYOGENIC ENGINEERING** is being published for the first time. 598 pages \$17.50 ⌘

ADVANCES IN ELECTRONIC CIRCUIT PACKAGING, Volume 4

Edited by Michael A. Marrese. Proceedings of the Fourth (1963) Annual International Electronic Circuit Packaging Symposium sponsored by the University of Colorado and Electrical Design News (EDN). The 28 papers comprising this fourth volume in the series continue to reflect the guiding principle of these annual symposia—to stimulate the exchange of ideas which will aid the design engineer in his work and eliminate duplication of effort in electronic and electro-mechanical areas. The work presented is of a well-tested, advanced nature and was contributed by engineers and designers from the country's leading electronics laboratories. Volume 4 contains papers on such developmental topics as: **MULTI-LAYER PRINTED CIRCUITS—THIN-FILM LOGIC UNITS—THE B-MODULE—ELECTRONIC MODULE CONNECTORS.** Approx. 475 pages \$17.50 ⌘

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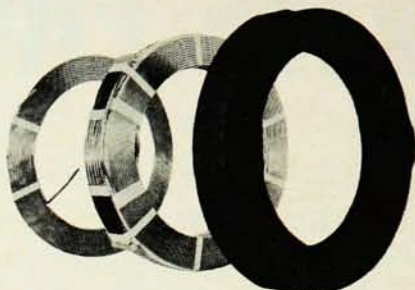


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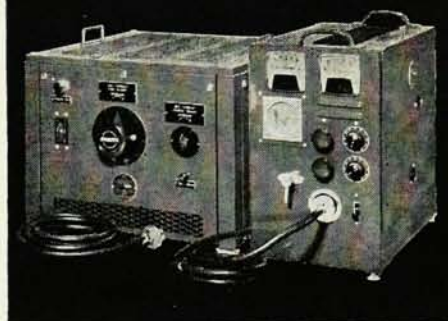
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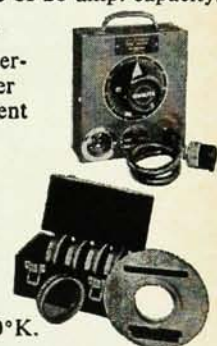


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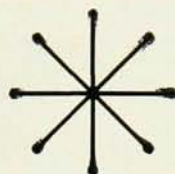
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