

chemistry. The most recent methods are adequately sketched and cited. Almost half of the book is devoted to the detection and measurement of nuclear radiation. The conventional detectors and the information retrieval systems connected with them as well as the more modern techniques—organic scintillation detectors and solid state devices—are well treated. Low-level counting methods are mentioned as well as the problems posed by absolute assay measurements. Finally, source mounting techniques are considered.

This well-written text will be most useful to any student confronted by the problem of applying the techniques of this field to chemical problems. It gives a competent survey of all the essential facts he must know.

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Cloud Microphysics

The Physics of Rainclouds. N. H. Fletcher. Cambridge University Press, New York, 1962. 386 pp. Illus. \$11.50.

Fletcher's book went to press a decade and a half after the current explosive growth of cloud physics was triggered, in August 1946, by Schaefer's accidental discovery of the way in which supercooled clouds undergo freezing near -40°C . That the bulk of what we now know about the anatomy and physiology of natural clouds has been learned during the last decade and a half is indicated by the fact that in Fletcher's comprehensive bibliography of about 550 references some 85 percent of the papers listed were published after 1946. Much of the effort behind that recent expansion in the work on cloud physics was stimulated by the hope that man might learn to control, or at least to modify, natural precipitation processes. In this book Fletcher documents the strides taken in pursuing that intriguing goal.

Greater progress has been made in understanding the microphysics of clouds than in elucidating the gross dynamics and kinematics of cloud motions. Hence Fletcher addresses himself chiefly to summarizing the present state of cloud microphysics. P. Squires contributes an introductory chapter in

which he sketches the broad outlines of cloud dynamics, but initial attacks on that mathematically forbidding subject are only currently being undertaken in studies on numerical models in which high-speed computers are used. Thus, perhaps another decade must pass before a really adequate treatment of cloud dynamics can be given in a book of this type.

The Physics of Rainclouds is a competent review of what is now known about cloud microphysics and precipitation processes. Because marked progress in understanding the mechanisms of nucleation of both condensation and ice-formation has been one of the most significant advances of recent years, and because Fletcher has been a leading contributor in this area, it is not surprising that topics in nucleation comprise roughly two-fifths of the book, and a very valuable two-fifths indeed. Two chapters sum up the state of the art of cloud modification, with strong supporting discussions of the production and properties of silver iodide nuclei and of ice-crystal growth. The author wisely eschews any attempt to summarize the field of cloud electrification and justifiably leaves the field of radar meteorology to other recently published works; but one might ask if, in a book on rainclouds, he should not have dealt more extensively with details of the growth of precipitation particles. Perhaps that minor objection could be better phrased by suggesting that another title, such as "Microphysics of Clouds," might be more appropriate for this very useful work.

The book was intended not only as "a useful reference volume for workers in the various branches of cloud physics" but also as an "up-to-date introduction to cloud physics for physicists and meteorologists new to the subject." It seems to me that Fletcher achieved both those aims.

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New Books

Mathematics, Physical Sciences, and Engineering

Practical Mathematics for Chemists. F. H. C. Kelly. Butterworth, Washington, D.C., 1963. 156 pp. Illus. \$3.95.

Programmed Supplements for General Chemistry. vol. 2. Gordon M. Barrow, Malcolm E. Kenney, Jean D. Lassila,

Robert L. Litle, and Warren E. Thompson. Benjamin, New York, 1963. 159 pp. Illus. Paper, \$3.95.

Progress in Astronautics and Aeronautics. vol. 11, *Power Systems for Space Flight*. A selection of technical papers, based mainly on a conference (Santa Monica, Calif.), September 1962. Morris A. Zipkin and Russell N. Edwards, Eds. Academic Press, New York, 1963. 959 pp. Illus. \$13.50.

Rheology of Emulsions. Proceedings of a symposium held by the British Society of Rheology (Harrogate), October 1962. P. Sherman, Ed. Pergamon, London; Macmillan, New York, 1963. 154 pp. Illus. \$7.50.

Semiconductor Particle Detectors. J. M. Taylor. Butterworth, Washington, D.C., 1963. 194 pp. Illus. \$8.25.

The Spores and Pollen of the Potomac Group of Maryland. Gilbert J. Brenner. Department of Geology, Mines, and Water Resources, Baltimore, Md., 1963. 237 pp. Illus. Paper, \$2.50; cloth, \$3.50.

Statistical Astronomy. Robert J. Trumpler and Harold F. Weaver. Dover, New York (© 1953), 1963. 666 pp. Illus. Paper, \$3.

Tables for Testing Significance in a 2×2 Contingency Table. Compiled by D. J. Finney, R. Latscha, B. M. Bennett, and P. Hsu. Cambridge Univ. Press, New York, 1963. 109 pp. Illus. Paper, \$3.25.

Tables of Series, Products, and Integrals. I. M. Ryshik and I. S. Gradstein. Plenum Press, New York, ed. 2, 1963. 464 pp. Illus. \$15.

Technique of Inorganic Chemistry. vols. 1 (276 pp., \$9.50) and 3 (353 pp., \$11.50). Hans B. Jonassen and Arnold Weissberger, Eds. Interscience (Wiley), New York, 1963. Illus.

Theoretical Evaluation of Chemical Propellants. Roger Lawrence Wilkins. Prentice-Hall, Englewood Cliffs, N.J., 1963. 479 pp. Illus. \$15.

Thin-Layer Chromatography. Kurt Randerath. Translated by D. D. Libman. Verlag Chemie, Weinheim, Germany; Academic Press, New York, 1963. 264 pp. Illus. \$8.

Treatise on Analytical Chemistry. pt. 1, *Theory and Practice*. vol. 4, section D-1, *Magnetic Field Methods of Analysis*; section D-2, *Electrical Methods of Analysis*. I. M. Kolthoff and Philip J. Elving, Eds. Interscience (Wiley), New York, 1963. 981 pp. Illus. \$25.

The Two-Nucleon Interaction. Michael J. Moravcsik. Oxford Univ. Press, New York, 1963. 164 pp. Illus. Paper, \$2.90.

Ultrahigh Vacuum. And its applications. Richard W. Roberts and Thomas A. Vanderslice. Prentice-Hall, Englewood Cliffs, N.J., 1963. 219 pp. Illus. \$12.

Vacuum Technology. Andrew Guthrie. Wiley, New York, 1963. 544 pp. Illus. \$12.50.

Variational Principles in the Theory of Collisions. Yu. N. Demkov. Translated from the Russian edition (Moscow 1959) by N. Kemmer. Pergamon, London; Macmillan, New York, 1963. 167 pp. Illus. \$6.50.

X-Ray Studies of Materials. A. Guinier and D. L. Dexter. Interscience (Wiley), New York, 1963. 166 pp. Illus. \$6.75.