work principle, for example, would complement some of the formal treatments and approximations. The practical implications of the theory are not well covered. The suggestions made with respect to the failure of the Tacoma Narrows bridge seem oblique to the generally accepted explanation of that disaster.

Some 170 references, mainly Russian and German literature, are cited. The index is adequate, the printing of good quality, and the figures excellent. I noted a few misspelled words. The translators have performed an excellent service. Engineers, teachers, and others who are interested in vibrations and structures should acquaint themselves with the contents of this volume. To the research worker in the field this monograph is indispensable.

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Analytical Chemistry

Automatic Methods in Volumetric Analysis. D. C. M. Squirrell. Van Nostrand, Princeton, N.J., 1964. x + 201 pp. Illus. $6.75.

This book is a compilation of assorted volumetric (that is, titrimetric) determinations and techniques that have been adapted to automatic methods. The automatic methods discussed include titrations to preset potentiometric end points and the automatic recording of titration curves involving potentiometric, amperometric, spectrophotometric, thermometric, and conductometric detection.

Details of many individual methods are provided, including, in places, rather trivial equations for calculating results, but neither the theoretical basis of the determinations nor equations for the titration reactions are given. Instrumentation for automatic titrations is not discussed, with the exception of some apparatus that originated in the author's laboratory. The coverage of the literature is certainly not exhaustive, and the author fails to point out that many of the methods found in the classic monographs on potentiometric and amperometric titrations can easily be adapted to automatic recording methods. Another serious shortcoming is the lack of a list of references to texts in which the principles and limitations of these methods are discussed—for example, Lingane's *Electroanalytical Chemistry*—and to annual reviews of these methods.

Probably the most serious omission in the book is the lack of reference to coulometric titrations. A large number of coulometric methods, in which the titrant is generated electrically either externally or *in situ*, have been developed and described. Because these methods eliminate the difficult mechanical problems associated with buret addition of reagents and are uniquely suited for small-scale determinations, they will probably be the choice of many workers in the future. The one brief reference to coulometric titrations is in connection with the determination of sulfur dioxide in a continuous analyzer. This discussion, like many others in the book, completely neglects all of the previous work on this coulometric reaction as well as the many other continuous analyzers that date back to the original work of Shaffer, Briglio, and Brockman (1945).

In general this book may be of use to analysts and technicians who are seeking a specific automatic titration method. It has little in it to recommend it to students of analytical chemistry. Most modern analytical chemists would probably prefer a more exhaustive and rigorous treatment of the subject and would want to understand these methods more thoroughly before adopting them for routine use.

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New Books

Mathematics, Physical Sciences, and Engineering

Advances in Photochemistry. vol. 3. W. Albert Noyes, Jr., George S. Hammond, and J. N. Pitts, Jr., Eds. Interscience (Wiley), New York, 1964. 296 pp. Illus. $12.50. Four papers: "Unimolecular decomposition and some isotope effects of simple alkanes and alkyl radicals" by B. S. Rabinovitch and D. W. Setser; "Gaseous photooxidation reactions" by D. E. Hoare and G. S. Pearson; "Vacuum ultraviolet photochemistry" by J. R. McNesby and H. Okabe; and "Electronic energy transfer between organic molecules in solution" by F. Wilkinson.

Advances in Space Research. Proceedings, First Inter-American Symposium on Space Research (Buenos Aires), November 1960. Edited by T. M. Tabanera and the Technical Staff of the Argentine National Commission on Space Research. Pergamon, London; Macmillan, New York, 1964. 446 pp. Illus. $17.50. Twenty-three papers.

Chemical Reactions of Polymers. E. M. Fettes, Ed. Interscience (Wiley), New York, 1964. 1326 pp. Illus. $40. Sixteen papers.

Chemical Reactor Theory. An introduction. Kenneth Denbigh. Cambridge Univ. Press, New York, 1965. 196 pp. Illus. $6.50.

Combustion Theory. The fundamental theory of chemically reacting flow systems. Forman A. Williams. Addison-Wesley, Reading, Mass., 1965. 463 pp. Illus. $15.

Condensation and Evaporation of Solids. Proceedings of an international symposium (Dayton, Ohio), September 1962. Emile Rutner, P. Goldfinger, and J. P. Hirth, Eds. Gordon and Breach, New York, 1964. 721 pp. Illus. $38. Forty-five papers prepared for the symposium which was sponsored by the Directorate of Materials and Processes, U.S. Air Force.

Elementary Coordination Chemistry. Mark M. Jones. Prentice-Hall, Englewood Cliffs, N.J., 1965. 489 pp. Illus. $18.60.

Friction and Wear of Materials. Ernest Rabinowicz. Wiley, New York, 1965. 254 pp. Illus. $12.

Fundamentals of Physical Chemistry. H. D. Crockford and Samuel B. Knight. Wiley, New York, ed. 2, 1964. 429 pp. Illus. $7.50.

Fundamentals of Vacuum Science and Technology. Gerhard Lewin. McGraw-Hill, New York, 1965. 262 pp. Illus. $11.50.

The Mechanical and Physical Properties of the British Standard En Steels (B.S. 970–1955. vol. 1, *En 1 to En 20*. Compiled by J. Woolman and R. A. Mottram. Pergamon, London; Macmillan, New York, 1964. 462 pp. Illus. $20.

Nonlinear Optics. N. Bloembergen. Benjamin, New York, 1965. 236 pp. Illus. Paper, $4.95; cloth, $9. A lecture note and reprint volume.

Principles of Inverter Circuits. B. D. Bedford and R. G. Hoft. Wiley, New York, 1964. 429 pp. Illus. $12.75.

Probability: A Programed Workbook. Frederick Mosteller, Robert E. K. Rourke, and George B. Thomas, Jr. Addison-Wesley, Reading, Mass., 1965. 88 pp. Illus. Paper, $4.95.

Quasi-Stellar Sources and Gravitational Collapse. Proceedings of a symposium (Dallas, Tex.), December 1963. Ivor Robinson, Alfred Schild, and E. L. Shucking, Eds. Univ. of Chicago Press, Chicago, 1965. 493 pp. Illus. $10.

Radioisotopic Power Generation. William R. Corliss and Douglas G. Harvey. Prentice-Hall, Englewood Cliffs, N.J., 1964. 318 pp. Illus. $14.75.

Silurian and Devonian Corals of the Falls of the Ohio (*Mem. Geol. Soc. Am.* No. 93). Erwin C. Stumm. Geological Soc. of America, New York, 1964. 194 pp. Plates. $8.50.

Stratigraphy and Life History. Marshall Kay and Edwin H. Colbert. Wiley, New York, 1965. 748 pp. Illus. $9.75.