

Thus, by using radioactivity as an analytical tool, it is possible to measure the phosphorus taken up from both fertilizer and soil and the utilization of the fertilizer phosphorus, something which could not possibly be done by ordinary chemical means.

We are grateful to the National Research Council of Canada for generous support of this work.

UNIVERSITY OF SASKATCHEWAN  
SASKATOON, CANADA

J. W. T. SPINKS  
S. A. BARBER

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## NEW BOOKS

**Scientific Societies in the United States.** By RALPH S. BATES, Ph.D. Massachusetts Institute of Technology Press: John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y., 1945. vii + 246 pp. 15 × 22.5 cm. Price, \$3.50.

In pondering the subject of "Books," one may well raise in mind three questions: (1) why write a book, (2) what to write it about, (3) whence the material of which to construct it; (1) and (2) being settled, where does one seek material for (3). The sources may be many-fold and the yield from each variable; Dr. Bates certainly has sifted a multitude of sources (more than 500 are listed), and therewith compiled in five chapters what seems to be a very complete, authoritative and well-documented history of United States societies, large and small, ancient, honorable, ephemeral and recent.

Chapter I on "Scientific Societies in Eighteenth Century America" begins with a background mention of pattern and precedent from European societies. The "Boston Philosophical Society" (about 1685) of transient existence, seems to have been the first, followed by Benjamin Franklin's "Junto" (1727), parent of the "American Philosophical Society" (1743-1744), which withstood some lean and dormant times to become the oldest scientific society still in existence in our country. The "American Academy of Arts and Sciences" (1780) in Boston came next, and many others followed, transitory and permanent. Many medical societies were among them, usually and logically of local interest, and many state societies and academies, often chartered by state legislatures. Agricultural, mechanic arts and engineering societies began to be formed even before 1800.

Chapter II is entitled "National Growth, 1800-1865," and it was during this period that the country and its scientific society roster expanded from the Atlantic over the Appalachian ranges to the Ohio, Mississippi and Missouri valleys, over and around the Rocky Mountains to the Pacific Coast. Lyceums, medical societies and state academies of science were the usual new organizations, for the age of permanent specialized pure science bodies was not yet at hand. The author has organized the material in this chapter largely on a state-to-state basis, and the result is impressive. Significant names appearing in this chapter are: Silliman's *American Journal of Science* (1818), the American Medical Association (1847), James Smithson, Joseph Henry and the Smithsonian Institution (1846), American Association for the Advancement of Science (1848), the National Academy of Sciences (1863).

Chapter III, "The Triumph of Specialization, 1866-1918," reveals "three main developments. First, the keynote of the period was the tendency toward specialization; second, . . . a slow but sure drift in the direction of national centralization within the specialties; and, third, . . . an increasing tendency to form strictly technological societies . . ." This period saw science come of age, and in so doing

refute the famed saying of Sir William Crookes. The growth of scientific societies kept pace, with many of the new ones enjoying existence to the present day, and many of the older ones broadening their activities.

Chapter IV considers "American Scientific Societies and World Science, 1919-1944," and presents a summary of scientific work in this period accompanied by mention of the many new organizations founded, some of them serving to correlate the efforts and interests of related groups.

Chapter V is titled "The Increase and Diffusion of Knowledge," and deals with the American system of federated societies, as applied by local and national cooperating groups.

A bibliography of 28 pages and extensive index complete the 246-page volume. For a work of its type errors of fact or date seem to be very scarce, as well as typographical ones, the reviewer having noted merely "lyecums" on p. 36, "James Cutbrush" on p. 53, while Webster's Unabridged gives James Clerk-Maxwell rather than J. C. Maxwell (pp. 32, 87).

ALLEN D. BLISS

**Aqueous Solution and the Phase Diagram.** By FREDERICK FIELD PURDON and VICTOR WALLACE SLATER, B.Sc., F.R.I.C., M.I., Chem. E. Longmans, Green and Co., Inc., 55 Fifth Ave., New York, N. Y. 1946. iv + 167 pp. 19 × 25.5 cm. Price, \$7.00.

This book discusses the practical construction and use of the more important types of phase diagrams for aqueous salt solutions, with minimum attention to theory and derivation. By starting with the simplest problems of binary systems, and with what seems at first to be a surfeit of detail and explanation, the authors gradually proceed to a surprisingly clear and instructive presentation of quaternary and quinary diagrams. The principles are old and the methods well known, or at least long published. But the field is nevertheless one of deceptive simplicity, and both the student and the investigator in the heterogeneous equilibrium of salt solutions should find the book interesting and helpful.

The scope is much more limited than the title implies. It deals entirely with isothermal phase diagrams of condensed, single-liquid systems of simple salts and water. Some of the items not included are soap systems, salting out diagrams, effective hydrolysis, boiling point relations, polythermal projections, and even metastability. What is missing in coverage, however, is compensated by the clarity and thoroughness of the treatment of what may be called the problems of "salt chemistry," namely, the use of isothermal diagrams and of their superposition, for the purification, separation and interconversion of salts. The treatment, moreover, involves several unusual features which deserve to be mentioned. The use of specific examples throughout rather than of schematic "A-B-C"

diagrams, serves to introduce some acquaintance with the literature; the authors have even tabulated and included the actual literature data for every isotherm discussed. The mathematical problems are worked out in adequate, sometimes even unnecessary, detail, and they should consequently truly serve as examples. Half of the book is given over to four- and five-component systems involving reciprocal salt pairs. The difficulties of graphical representation and calculation encountered in these systems justify this emphasis, and the subject is carefully presented, with excellent use of various projections and elevations of the isotherms.

The style is clear, elementary and effective, and the many diagrams and tables are well drawn and arranged. What few errors have occurred are of no importance.

JOHN E. RICCI

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### BOOKS RECEIVED

October 10, 1946–November 10, 1946

- ROGER ADAMS, Editor-in-Chief. "Organic Reactions." Volume III. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 460 pp. \$5.00.
- A. M. CAMERON. "Chemistry in Relation to Fire Risk and Fire Extinction." Second Edition. Pitman Publishing Corporation, 2 West 45th Street, New York 19, N. Y. 196 pp. \$3.50.
- WILLIAM F. EHRET. "Smith's College Chemistry." Sixth Edition. D. Appleton-Century Co., 35 West 32nd St., New York, N. Y. 677 pp. \$4.75.
- BERNARD GAUTHIER. "Thèses présentées à la Faculté des Sciences de l'Université de Paris pour obtenir le Grade de Docteur ès Sciences physiques. Contribution à l'Hydrogenation sélective par le nickel Raney de quelques phénols à chaîne non saturée." Masson et Cie, Éditeurs, 120 Boulevard Saint-Germain, Paris, France. 83 pp. (Corrected notice).
- W. H. KEESOM. "Helium." (American Edition) Elsevier Publishing Company, 215 Fourth Ave., New York, N. Y. 494 pp. \$8.50. (See review by W. F. Giauque, THIS JOURNAL, 68, 1140 (1946)).
- W. F. LUDER AND SAVERIO ZUFFANTI. "Electronic Theory of Acids and Bases." John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 165 pp. \$3.00.
- R. W. MONCRIEFF. "The Chemical Senses." John Wiley and Sons, Inc., 440 4th Ave., New York, N. Y. 424 pp. \$4.50.
- "Abstract Bulletins N. S. Nos. 8 and 9. Abstracts of Current Information on Insect and Rodent Control." Insect Control Committee Coördination Center, National Research Council, Washington 25, D. C. 47 pp. and 93 pp.
- "Proceedings of the Mexican-American Conference on Industrial Research." Armour Research Foundation of Illinois Institute of Technology, 35 West 33rd Street, Chicago 16, Ill. 176 pp. \$2.50.