

substance, b. p. 19.8° at 740 mm.,  $n_D^{20}$  1.3656,  $d_4^{14}$  0.6681. This substance dissolved in 66% sulfuric acid at 0° within ten minutes and did not decolorize a dilute alkaline permanganate solution within twenty-four hours. These properties correspond with those reported for 1,1-dimethylcyclopropane (Gustavson and Popper, *J. prakt. Chem.*, (2) **58**, 458 (1898)); the yield corresponds to 25%

Because of similarity in physical constants, the possibility of this compound being isopropylethylene was recognized. A known sample of isopropylethylene, prepared from isoamyl chloride and alcoholic potassium hydroxide, had the prop-

erties b. p. 18.8° at 731 mm.,  $n_D^{20}$  1.3640,  $d_4^{15}$  0.6332. It was insoluble in 66% sulfuric acid and decolorized a dilute alkaline permanganate solution instantly under the same conditions as used for the 1,1-dimethylcyclopropane above.

The significance of these results for the current theory of intramolecular rearrangement, especially in relation to the formation and behavior of free radicals, will be discussed in a separate paper.

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## NEW BOOKS

**Vitamin B<sub>1</sub> (Thiamine) and its Use in Medicine.** By ROBERT R. WILLIAMS, Sc.D., Bell Telephone Laboratories, and TOM D. SPIES, M.D., Associate Professor of Medicine, University of Cincinnati. The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1938. xvi + 411 pp. 19 figs. 16 × 24.5 cm. Price, \$5.00.

A very excellent Macmillan Medical Monograph presenting a history of the discovery of vitamin B<sub>1</sub> (Thiamine), its function in the regulation of cell respiration, and other physiological data, which are of immediate interest to clinicians and practicing physicians. It is an inspiring story of medical and biochemical progress beginning with the Chinese description of the disease beriberi—in the early centuries, and revealing the successive contributions of workers during years of scientific research finally leading up to the determination of structure and complete synthesis of the neutral vitamin substance by American investigators.

The authors have summarized the present knowledge of this important chemical substance in convenient form for future reference. In Part I are recorded data that are of the greatest interest and value to all practitioners of medicine. Particular attention is paid by the authors to the clinical considerations of practical interest and importance; to the relation of beriberi to similar diseases, the pathology and physiology of vitamin B<sub>1</sub>, its pharmacology, the methods of prevention and treatment of vitamin B<sub>1</sub> deficiencies and the relation of diet to beriberi disturbances.

In Part II the authors have presented a very complete survey of the chemical and biological literature dealing with vitamin B<sub>1</sub>. This embraces a review of its discovery, the methods of isolation and identification from natural sources, the determination of constitution and its final synthesis. The authors review also in this part the nature of the functional groups of the vitamin B<sub>1</sub> molecule; the

adopted methods of biochemical analysis, and discuss the present conclusions of physiologists regarding thiamine requirements in nutrition, and its general distribution in the living organism. Thiamine is one of several organic substances which play a vital role in living cells. The authors have brought together a large amount of scientific data of immediate interest to chemists, physicians, clinicians, physiologists and biologists. They deserve much credit for their method of presentation and its completeness. A most commendable feature of the book are the excellent bibliographies introduced at the end of each chapter.

TREAT B. JOHNSON

**Feuerfeste Baustoffe silikatischer und silikalthaltiger Massen.** (Refractory Materials of Construction Made up of or Containing Silicates.) By Dr.-Ing. Dr. Phil. CLAUS KOEPPPEL. Verlag von S. Hirzel, Königstrasse 2, Leipzig C 1, Germany, 1938. xvi + 296 pp. 51 figs. 15 × 23 cm. Price, RM. 15.50; bound, RM. 17.

This is Band 18 of "Chemie und Technik der Gegenwart" ("Modern Chemistry and Technology"). The author's purpose, freely translated, is "to help both the student and the practical man to orient himself in the wide-extending field of the silicate sciences with particular reference to their application to current practice in the manufacture and handling of refractory materials of construction." The book will be much easier reading for the experimental chemist than for either the student or the practicing ceramist, for the language is that of the scientist rather than the technician or the engineer. Nevertheless, the plan of treatment indicated above is carried out quite thoroughly.

The principal emphasis is on the properties and reactions of pure silica. This body of knowledge not only is

directly applicable to refractory products—for example, those refractories that are made of silica and of siliceous clays—but also serves as a guide to the behavior of the melts, glasses, and crystalline compounds which silica forms with other oxides. Nearly all commercial refractories are either made directly of silica and silicates, or contain silicates as accessory constituents, either adventitious or purposely added. Practically every type of refractory product is therefore touched upon, even such essentially non-siliceous refractories as calcined dolomite and magnesite.

The book does not pretend to give an exhaustive bibliography of the subjects treated, but includes most of the important published data, and makes a laudable effort to draw generalized conclusions from the data. At the same time, it is somewhat uncritical in places; for example (p. 26), it swallows without question the claim that quartz can be rendered amorphous, or can at least have its density altered, by mechanical grinding. In the reviewer's opinion, this is still unproven. In the one instance in which examination with the polarizing microscope accompanied such experiments, an instance apparently not known to the author, no effect of grinding could be perceived.

The work is that of a conscientious and penetrating student rather than an experimenter familiar with his materials by direct contact. It is readable, and ought to be quite useful to workers in silicates. Particularly commendable is its thorough index of 42 pages.

ROBERT B. SOSMAN

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## BOOKS RECEIVED

April 15, 1939 to May 15, 1939

- C. M. BEADNELL. "Dictionary of Scientific Terms as Used in the Various Sciences." Chemical Publishing Company of New York, Inc., 148 Lafayette St., New York, N. Y. 235 pp. \$3.00.
- KONRAD BERNHAUER. "Gärungschemisches Praktikum." Second edition. Verlag von Julius Springer, Linkstrasse 22-24, Berlin W 9, Germany. 317 pp. RM. 15; bound, RM. 16.50.
- J. B. BONINO, KURT H. MEYER AND L. RUZICKA. "Chimie Organique." Hermann et Cie., 6 Rue de la Sorbonne, Paris, France. 55 pp. Fr. 11.
- HAROLD SIMMONS BOOTH, Editor-in-Chief. "Inorganic Syntheses." Vol. I. McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y. 197 pp. \$3.00.
- JAMES BRYANT CONANT AND MAX TISHLER. "The Chemistry of Organic Compounds." Revised edition. The Macmillan Co., 60 Fifth Ave., New York, N. Y. 658 pp. \$4.00.
- G. R. HARRISON, Editor. "Proceedings of the Sixth Summer Conference on Spectroscopy and Its Application." John Wiley and Sons, Inc., 440 Fourth Ave., New York, N. Y. 172 pp. \$3.00.
- V. HENRI, W. ALBERT NOYES, JR., AND F. LONDON. "Chimie Générale." Hermann et Cie., 6 Rue de la Sorbonne, Paris, France. 30 pp. Fr. 10.
- A. JOUNIAUX. "Les Origines Françaises de la Chimie Analytique." Hermann et Cie., 6 Rue de la Sorbonne, Paris, France. 59 pp. Fr. 11.
- ERNEST KAHANE AND JEANNE LÉVY. "Biochimie de la Choline et de ses Dérivés. II. Acétylcholine." Hermann et Cie., 6 Rue de la Sorbonne, Paris, France. 59 pp. Fr. 11.
- PAUL KARRER. "Lehrbuch der organischen Chemie." Sixth edition. Georg Thieme Verlag, Rossplatz 12, Leipzig C 1, Germany. 989 pp. RM. 34; bound, RM. 36.
- GEORGE S. RICE AND IRVING HARTMANN. "Coal Mining in Europe." U. S. Bureau of Mines. Superintendent of Documents, Government Printing Office, Washington, D. C. 360 pp. \$0.50.
- HENRY SPINDLER. "Les Nombres Structuraux en Chimie." Hermann et Cie., 6 Rue de la Sorbonne, Paris, France. 32 pp. Fr. 10.
- VAN ARKEL, U. R. EVANS, L. BRAGG AND N. PARRAVANO. "Chimie Minérale." Hermann et Cie., 6 Rue de la Sorbonne, Paris, France. 71 pp. Fr. 20.
- E. WERTHEIM. "Textbook of Organic Chemistry." P. Blakiston's Son and Co., Inc., 1012 Walnut St., Philadelphia, Pa. 830 pp. \$4.00.
- "Gmelius Handbuch der anorganischen Chemie. System-Nummer 27, Magnesium." Teil B, Lieferung 4. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany. 127 pp. RM. 18.75.
- "Gmelius Handbuch der anorganischen Chemie. System-Nummer 35, Aluminium." Teil A, Lieferung 6. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany. 224 pp. RM. 27.75.
- "Gmelius Handbuch der anorganischen Chemie. System-Nummer 68, Platin." Teil B, Lieferung 1. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany. 72 pp. RM. 8.25.