

THE THERMAL INTERCONVERSION OF MIXED BENZOINS

Sir:

The appearance of a paper by E. Margaret Luis [*J. Chem. Soc.*, 2547 (1932)] on the "Interconversion of Mixed Benzoins," and of an article by Buck and Ide [THIS JOURNAL, 54, 4359 (1932)] in which they describe attempts to effect the same interconversion, induce us to report that, in the course of certain of our experiments on the reaction of arylamines with α -hydroxy and α -bromo ketones, we have been able to effect the partial transformation of anisbenzoin, $p\text{-CH}_3\text{OC}_6\text{H}_4\text{CHOHCOC}_6\text{H}_5$, into benzanisoin, $p\text{-CH}_3\text{OC}_6\text{H}_4\text{COCHOHC}_6\text{H}_5$, by simply heating the former above its melting point. The same transformation is effected quantitatively by distillation of anisbenzoin in vacuum (1 mm.).

We have found that anisbenzoin, which we have prepared both by the method of Asahina and Terasaka [*J. Pharm. Soc. Japan*, 494, 219 (1923)] as well as by the method of McKenzie, Luis, Tiffeneau and Weill, *Bull. soc. chim.*, 45, 414 (1929)], melts at 89° when pure. This melting point was given by Asahina and Terasaka, while McKenzie and his collaborators give $100\text{--}101^\circ$ as the melting point. The crystals melting at 89° have been examined by us under the microscope and seem to be perfectly pure. We have found that through slow heating, and then subsequent cooling, of the anisbenzoin (m. p. 89°) its melting point can be altered. After a number of such treatments, its melting point rises to a value approximating the melting point given by McKenzie and his collaborators. We are therefore of the opinion that the 101° compound of McKenzie and his co-workers is already a mixture of the benzanisoin (m. p. 106°) and the anisbenzoin (m. p. 89°).

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NEW BOOKS

Chemical Analysis by X-Rays and its Application. By GEORG VON HEVESY. The George Fisher Baker Non-Resident Lectures in Chemistry at Cornell University, 1931. The McGraw-Hill Book Company, Inc., 330 West 42d Street, New York, 1932. 333 pp. Price, \$3.00.

This volume contains the lectures delivered by Professor Georg von Hevesy at Cornell University in the winter of 1931-32 during his tenure of the George Fisher Baker Non-Resident Lectureship at that institution.

The introductory lecture is entitled "The Age of the Earth." This is followed by three series of lectures, the subjects of each series being as follows: the first series, of ten lectures, "Analysis by Means of X-Rays";

the second series, of four lectures, "The Discovery and Properties of Hafnium"; the third series, of six lectures, "The Chemical Composition of the Earth and the Cosmic Abundance of the Elements."

Professor von Hevesy has himself investigated all of these subjects with conspicuous success and he presents them here in a clear, lively and authoritative fashion. This volume, therefore, like its predecessors in this Series, affords not only a useful and interesting survey of timely subjects, but also a valuable summary of the important contributions which its author has made to them.

ARTHUR B. LAMB

Analytical Chemistry. Based on the German Text of F. P. Treadwell. Translated and Revised by WILLIAM T. HALL, S.B., Associate Professor of Analytical Chemistry, Massachusetts Institute of Technology. Vol. I. **Qualitative Analysis.** Eighth English Edition. John Wiley and Sons, Inc., 440 Fourth Ave., New York, 1932. xi + 640 pp. Illustrated. 15 × 23.5 cm. Price, \$4.50.

That a new edition of the classic Treadwell-Hall Volume I should appear two years after the last is a tribute to its value. The increase in size is mainly accounted for by the addition of the syllabus of a course given at Massachusetts Institute of Technology. There have been some changes. A new "acidic group of the earth acids" containing tantalum and columbium (niobium) from the ammonium sulfide group, and tungsten from the hydrogen sulfide group has been formed. Thallium, indium, gallium and vanadium have been transferred from the hydrogen sulfide to the ammonium sulfide group. The book seems quite free from typographical errors, although one has been noted: isomorphous on p. 114 has been misspelled. The reviewer, perhaps unreasonably, feels that the section on "electrolytical dissociation" should be modernized, as should that on "solubility product."

LOUIS WALDBAUER

L'Azéotropisme. La Tension de Vapeur des Mélanges de Liquides. Bibliographie. (Azeotropism. The Vapor Pressure of Liquid Mixtures. A Bibliography.) By Prof. Dr. MAURICE LECAT. Maurice Lamertin, Éditeur, Rue Coudenberg, 58-62, Brussels, Belgium, 1932. viii + 135 pp. 16 × 24.5 cm. Price, 15 belgas.

This Bibliography covers not only the literature relative to azeotropic mixtures but also that dealing with the vapor pressure of liquid mixtures in general. It is to be followed, in the near future, according to a statement of the author in the Preface, by a large quarto volume containing tables of azeotropic binary mixtures, whose references to the literature will be based on the present volume.

This Bibliography contains three lists: in the first or main list the articles are arranged alphabetically according to the authors' names; in the second list, the authors' names are arranged chronologically, with cross

references to the main list; in the third list, the names of the sources, chiefly scientific journals, are arranged alphabetically, also with cross references to the main list.

In the main list are given not only the name of the author but also the title of the article, its date of receipt and publication, and in many instances the place and date of the author's birth. Unfortunately, when there are two or more authors of one article, one or more of the authors' names has frequently been omitted from the list. This may result in some inconvenience to the reader and some oversights.

This volume, particularly in conjunction with the promised tables, should be of value to any one concerned with azeotropic mixtures, and doubly so since Professor Lecat's earlier tabulation of azeotropic mixtures is now out of print. The Preface to this volume, in addition to its normal content, is enlivened with a stirring invective against war.

ARTHUR B. LAMB

The Biochemistry of Muscle. By DOROTHY MOYLE NEEDHAM, M.A., Ph.D., Biochemical Laboratory, Cambridge. E. P. Dutton and Company, Inc., 286-302 Fourth Avenue, New York, 1932. viii + 166 pp. 11 × 17.5 cm. Price, \$1.25.

This is one of a series of "Monographs on Biological Subjects" and is a most excellent critical survey of the subject.

The views of the mechanism of muscle contraction have undergone a complete revolution within the past three or four years. Those who have not followed all of the recent literature, and whose field of interest lies in physiology or biochemistry, cannot afford not to read this little volume, for it presents the older theories, the new discoveries and the present status of the problem in a condensed but lucid manner. Literature citations appear to be very complete, as is attested by a bibliography of 300 citations. Fortunately the author has herself done excellent research work in this field and is thoroughly competent to evaluate critically the data.

The book, of a size which easily slips in one's coat pocket, is divided into eight chapters, *i. e.*, "Lactic Acid Metabolism," "The Energy Production during Contraction," "The Part Played by Phosphate in the Mechanism of Carbohydrate Breakdown," "Adenylic Acid, Pyrophosphoric Acid and Phosphagen," "Contraction without Lactic Acid," "Respiration," "Inorganic Factors and Rigor Mortis" and "The Muscle as a Machine."

The readers should not be limited to those interested only in muscle physiology or biochemistry, for related data concerning the physiology and biochemistry of yeast, tumor and brain tissues, kidney, liver, fermentation, respiration, etc., are correlated with those directly relating to either "white" or "red" muscle. A glossary of technical terms is appended.

The book is highly recommended. The author and publisher are both

to be congratulated on its excellence. It will unquestionably stimulate further research, for numerous problems still unsolved are pointed out, and will be a boon to the teacher who can accept this summary as a clear-cut statement of the present status of the problem.

ROSS AIKEN GORTNER

BOOKS RECEIVED

October 15, 1932–November 15, 1932

- KENNETH C. BAILEY, Editor. "The Elder Pliny's Chapters on Chemical Subjects." Part II. Edward Arnold and Co., London. Longmans, Green and Co., 55 Fifth Ave., New York. 299 pp. \$5.00
- GEORGE BARGER. "Organic Chemistry for Medical Students." Gurney and Jackson, 33 Paternoster Row, London E. C., England. 252 pp. 12s. 6d., net.
- KLAUS CLUSIUS. "Kettenreaktionen." Fortschritte der Chemie, Physik und physikalischen Chemie. Band 21, Heft 5, Serie B. Verlag von Gebrüder Borntraeger, W 35, Schöneberger Ufer 12a, Berlin, Germany. 73 pp. Subscribers, RM. 9.60; separately, RM. 12.80.
- WILHELM EITEL, Editor. "Veröffentlichungen aus dem Kaiser Wilhelm-Institut für Silikatforschung in Berlin-Dahlem." Vol. V. Verlag von Friedr. Vieweg & Sohn Akt.-Ges., Braunschweig, Germany. 212 pp. RM. 28.
- HAVEN EMERSON, Editor. "Alcohol and Man. The Effects of Alcohol on Man in Health and Disease." The Macmillan Company, 60 Fifth Ave., New York. 451 pp. \$3.50.
- A. GRÜTZNER. "Eisen- und Stahllegierungen. Patentsammlung geordnet nach Legierungssystemen." Zugleich Anhang zur Metallurgie des Eisens in Gmelins Handbuch der anorganischen Chemie. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 10, Germany. 308 pp. Mk. 32, to subscribers.
- PAUL GÜNTHER. "Wilhelm Ostwald, 1853–1932." Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 10, Germany. 24 pp. Mk 1.
- OTTO JORDAN. "Chemische Technologie der Lösungsmittel." Verlag von Julius Springer, Linkstrasse 23–24, Berlin W 9, Germany. 322 pp. RM. 26.50.
- W. MCCARTNEY. Gattermann's "Laboratory Methods of Organic Chemistry." Translated from the Twenty-Second German Edition as Revised by Heinrich Wieland. The Macmillan Company, 60 Fifth Ave., New York. 416 pp. \$3.50.
- L. F. MAREK AND DOROTHY A. HAHN. "The Catalytic Oxidation of Organic Compounds in the Vapor Phase." American Chemical Society Monograph. The Chemical Catalog Co., Inc., 419 Fourth Ave., New York. 486 pp. \$9.00.
- ERICH MÜLLER. "Die elektrometrische (potentiometrische) Massanalyse." Fifth edition. Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 276 pp. RM. 14.50; bound, RM. 16.
- GEORGE SUTTON PARKS AND HUGH MARTIN HUFFMAN. "The Free Energies of Some Organic Compounds." American Chemical Society Monograph. The Chemical Catalog Co., Inc., 419 Fourth Ave., New York. 251 pp. \$4.50.