
 NEW BOOKS

On a New Chemical Theory and Researches on Salicylic Acid. Papers by ARCHIBALD SCOTT COUPER (1858). Alembic Club Reprints, No. 21. Gurney and Jackson, 33 Paternoster Row, London E. C. 4, England; 1933. 45 pp. 12.5×19 cm. Price, 2/6.

Archibald Scott Couper shares with August Kekulé the credit for the conception of linking carbon atoms together to build up the skeleton, so to speak, of the molecules of organic compounds. He is accorded undivided credit for being the first to use connecting lines to represent these links between atoms.

Couper's first publication, "On a New Chemical Theory," setting forth these ideas, was presented before the Academy of Sciences in Paris on June 14, 1858. Kekulé's corresponding paper on the same subject appeared in *Liebigs Annalen* on the 19th of the preceding month. Couper had, however, handed his manuscript to Wurtz for presentation to the Academy before the 19th of May; but Wurtz had delayed in transmitting it. Regarding this loss of priority the author writes: "It is not improbable that this shock may have contributed in some measure to the subsequent mental discomposure that clouded his (Couper's) life while still a young man and led to his withdrawal from active chemical research . . ."

It seems to me that this episode, which resulted in the loss to Chemistry of one of the most brilliant young investigators in her history, while a warning to all of us against the sin of procrastination, is even more an illustration of the harm that may result from the pernicious cult of priority.

These classical contributions to chemical theory are welcome additions to the Alembic Club Reprints. I wish, however, that a portrait of Couper, such for instance as the fine one reproduced in Anschütz's biography of Kekulé, could have been included in this reprint.

ARTHUR B. LAMB

Correction Tables for Use with Platinum Resistance Thermometers. By G. S. CALLENDAR AND F. E. HOARE. Longmans, Green and Co., 55 Fifth Ave., New York, 1933. 12 pp.

No thermometric instrument in use is quite equal, in reproducibility, precision and convenience, to the resistance thermometer of pure platinum developed and perfected by the late Professor H. L. Callendar. In 1927 at Paris on the occasion of the seventh conference on weights and measures an international scale of temperature was adopted for the range -190 to 3400°C . As a basis for this scale of temperature from zero to 660° the international temperature scale was defined on the assumption that the resistance of pure platinum (R_{100}/R_0 not less than 1.390 and $R_{444.6}/R_0$ not less than 2.465) is given by the formula $(R_t - R_0)/R_0 = At + Bt^2$. Besides the normal fusion (0°) and boiling (100°) temperatures of water the normal boiling point for sulfur was assumed to be 444.60°C . The resistance formula quoted leads to the well-known

difference formula of Professor Callendar $t - t_p = \delta(t - 100)t$ where t_p is used to denote $(R_t - R_0)/(R_{100} - R_0)100$ and δ takes the value $-B/(A + B100)$.

The authors have based their table of differences, exact to 0.001° , to 500 and to 0.01° above 500° , from 0° to 1000 in single t_p degrees. on the round value 1.5×10^{-4} for delta. Since satisfactory resistance thermometers differ slightly from 1.5×10^{-4} in delta value the authors in Table II present a second table by the use of which the international temperature may be easily ascertained for delta's differing from 1.5×10^{-4} . In an appendix convenient details are given for correcting the reference or calibration temperatures to the normal values. The tables are printed on excellent and durable paper in clear readable type. They are recommended to everyone concerned with the precise determination of temperatures on the international scale above zero degrees.

F. G. KEYES

The Conductivity of Solutions. By CECIL W. DAVIES, D.Sc., Senior Lecturer in Physical Chemistry, Battersea Polytechnic. Second edition, revised and enlarged. John Wiley & Sons, Inc., 440 Fourth Avenue, New York, 1933. x + 281 pp. 14.5×22.5 cm. Price, \$4.00.

The first edition of this book has been reviewed in the July, 1931, number of THIS JOURNAL. The essential character of the book as described in the earlier review has not been changed in this new edition. Seventy-seven pages have been added in the revision. About one-half of the new material is scattered through the book and mainly deals with articles in the original literature which have appeared since the first edition was published. Two new chapters have been added dealing with the use of conductivity measurements in chemical analysis and in chemical research and for the control of industrial processes. The book has been improved in the revision.

GRINNELL JONES

Hydrides of Boron and Silicon. By ALFRED STOCK, Professor of Inorganic Chemistry, Technische Hochschule, Karlsruhe. The George Fisher Baker Non-Resident Lectureship in Chemistry at Cornell University. The Cornell University Press, 124 Roberts Place, Ithaca, New York; 1933. x + 250 pp. Illustrated. 15.5×23.5 cm. Price, \$2.00.

This volume contains the lectures delivered by Professor Alfred Stock of the Karlsruhe Technische Hochschule during his tenure of The George Fisher Baker Non-Resident Lectureship in Chemistry at Cornell University in 1932. In these lectures Professor Stock summarizes the extensive researches which he and his colleagues have carried out during the past thirty years on the hydrides of boron, to which we owe most of our present knowledge of these substances. Until now accounts of these researches have appeared only as journal articles.

It is of value to have these researches presented in a collected and accessible form not only because of the important results which they yielded, but also because of the new experimental technique which Professor Stock developed in the course of these researches and which is proving very useful in this and in related fields.

The book is illustrated by many diagrams and figures showing the novel and ingenious forms of apparatus which Professor Stock and his colleagues have devised. There are also an excellent bibliography and index.

ARTHUR B. LAMB

Grenzflächen-katalyse. (Catalysis at Surface Boundaries.) By DR. PHIL. MARTIN KRÖGER, Professor at the University of Leipzig. Verlag von S. Hirzel, Königstrasse 2, Leipzig, Germany, 1933. viii + 387 pp. 101 figs. 14.5 × 22.5 cm. Price, RM. 10.50; bound, RM. 12.50.

This book presents the results of researches conducted by Professor Kröger and his associates with the object of learning more about surface catalysis by a study of the properties of the solid catalyst as modified by the presence of gaseous reactants. The electrical resistance of metal powders, the dielectric properties of oxides, the ferromagnetic properties of iron, iron oxide, cobalt and nickel powders as a function of their preparation and use as catalysts, and the velocity of sound in gas systems containing powders are among the properties measured. The volume containing this work is more in the nature of a collection of theses rather than a general discussion of the subject indicated in the title. The value of the papers would have been enhanced by the condensation necessary to publication in modern chemical literature. The first sixteen pages of the book only are employed to give a general summary of the subject and the other methods of attack on surface problems. It must be evident to anyone familiar with this field that such a survey must be quite inadequate.

HUGH S. TAYLOR

Combustion et Détonation des Substances Explosives. (Combustion and Detonation of Explosive Substances.) By MARCEL PATRY, D.Sc. Hermann et Cie, Éditeurs, 6 Rue de la Sorbonne, Paris, France, 1933. 182 pp. 86 figs. 16 × 24.5 cm. Price, fr. 45.

An unusual feature of this book is that it comprises mainly an account of the author's original investigations, most of which have already been reported in the literature, rather than a review of the work of others. It contains, however, 124 references to the literature, listed in a bibliographic index. Unfortunately, these references are numbered consecutively for each of the eight chapters; their use would be facilitated by consecutive numbering throughout the book. The investigations described deal largely with detonator explosives—mercury fulminate and lead azide—and cover the following general subjects: preparation and properties of explosives used; action of heat on mercury fulminate; formation of the explosive wave in detonator explosives and in secondary explosives; photographic study of shock waves and luminous phenomena; and the transmission of detonation at a distance. These

experimental studies should greatly interest those concerned with either the theory or application of explosives.

It is unfortunate that a book of such interest should be issued with such poor binding (paper cover); the reviewer's copy is already in a sad condition.

C. G. STORM

Grundzüge der Chemie und Biochemie der Zuckerarten. (Fundamentals of the Chemistry and Biochemistry of the Sugars.) By KONRAD BERNHAUER, Lecturer at the German University in Prague. Verlag von Julius Springer, Linkstrasse 23-24, Berlin W 9, Germany, 1933. xi + 365 pp. 4 figs. 17 × 25.5 cm. Price, RM. 32; bound, RM. 33.80.

Of the recent works upon the chemistry of the sugars and carbohydrates the present volume by Bernhauer deserves to rank as one of the best. In the arrangement of his subject matter the author does not follow the usual classification according to monosaccharides, disaccharides, etc., but he subdivides his material according to the chemical and biochemical characteristics of the sugars as a general group. Part I of 100 pages upon "The Chemistry of the Sugars and Polysaccharides" is treated under the three headings of (1) General Characteristics, (2) Constitution and Configuration and (3) Fundamentals of Polysaccharide Chemistry. Part II of 73 pages entitled, "Purely Chemical Conversions of the Sugars" (Der rein chemische Zuckerabbau) comprises the three headings of (1) Non-oxidative Conversions and Decompositions, (2) Oxidative Conversions and (3) Significance of Sugar Conversion Processes in Preparation Work and Technology. Part III of 95 pages discusses "Biochemical Conversions of the Sugars" under the three headings of (1) Non-oxidative, and (2) Oxidative Biochemical Conversions and (3) Significance of Biochemical Conversions in Preparation Work and Technology. Part IV of 56 pages considers the "Relationship of the Sugars and their Conversion Products to Other Classes of Organic Compounds" under the three general classes of (1) Aliphatic, (2) Iso-cyclic and (3) Heterocyclic Compounds. The Index of 39 pages contains a register of authors and subject matter and a very convenient reference table of the derivation and conversion of 100 of the more common organic substances encountered in the chemistry and biochemistry of the sugars. The work for the convenience of its arrangement and copious footnote references will be most useful to all students of sugar chemistry. Only a few oversights and inaccuracies have been noted. On page 64 under Nomenclature no reference is made to the pioneer work of Rosanoff [THIS JOURNAL, 28, 114 (1906)] who was the first to propose the present rational reform of Fischer's original nomenclature of the sugars. Considerable carelessness is noted in the spelling of names. Duclaux, for example, is spelled Ducleau on page 120 and Ducleaux in other parts of the book. Mellanby is spelled Mellamby (p. 199) and Frankland is germanized into Franckland (p. 209). The formula proposed in 1933 by Micheel and Kraft for ascorbic acid (Vitamin C) and quoted by Bernhauer (p. 312) is already obsolete, which is only another indication of the impossibility of keeping any work dealing with modern chemical research even momentarily up to date.

C. A. BROWNE

Le Camphre et ses Dérivés. (Camphor and its Derivatives.) By R. CORNUBERT, Professor in the Faculty of Sciences at Nancy. Masson et Cie., Éditeurs, 120 Boulevard Saint-Germain, Paris VI^e, France, 1933. vii + 424 pp. 17 × 25.5 cm. Price, fr. 80.

Literally hundreds of chemists have spent months or years on the experimental study of camphor and its derivatives. The literature of the subject is very voluminous and complex. Professor Haller, one of the effective workers in this field, began work on this monograph twenty years ago and Professor Cornubert, who had worked with him, continued and completed the study after his death. No less than 3000 papers have been considered in preparing the book and 2500 of these have been read in the original text.

The book begins with a review of about 30 different formulas which have been proposed to represent the structure of camphor, leading finally to the true formula of Bredt in 1894 and the synthesis of camphoric acid by Komppa in 1909. This is a fine illustration of the amount of work sometimes required to discover the structure of a single compound and how, in the end, the result may be so certain that no further question of the accepted structure is likely to arise.

Following this introduction, 17 pages are given to an account of the occurrence, preparation, purification and properties of camphor; 74 pages describe the substitution products, including the borneols, and a great variety of derivatives in which the complex nucleus of camphor remains intact and the transformations of camphor to aromatic compounds; 95 pages describe the "degradation" products—camphoric acids, etc.; 33 pages are given to acids derived from camphor by other methods than by "degradation"; 25 pages are taken for a discussion of the stereochemistry of camphor and its derivatives; the bibliography fills 38 pages, including two pages for articles which have appeared in 1931 and 1932 while the book has been in press; on three pages is given a recapitulation of the genetic relations ("transpositions") of derivatives of camphor with references to the text where each is discussed; the book is concluded with an alphabetical index, 13 pages and table of contents, 4 pages.

The work of the author has been well done. He has presented a surprising wealth of material in a clear, accurate and well arranged manner. Persons wishing to orient themselves in this complex field will find the book indispensable. One of the difficulties of the subject is the fact that the same compound has often been called by several names. For example, β -campholytic acid has been called successively, camphothetic acid (Walker, 1893), isolauronic acid (Koenigs and Hoerlin, 1893), isocampholytic and *cis*-campholytic acid (Noyes, 1895), and β -campholytic (Tiemann, 1900). Professor Cornubert has not only chosen the most suitable of these names but he has indicated, briefly, the occasions which led to the other names and the reasons why the name chosen is the best.

A unique method has been used for the bibliography. All papers published in a given Journal are listed together, chronologically. In general, this has the advantage of bringing nearly all the papers published by a given author near together. It has the disadvantage that when an author's name is found in the bibliography it is impossible

to determine, directly, the subject treated in the reference quoted. This could be remedied, in part, by giving the page of the text after each author's name. Still better, by giving a statement of the topic discussed, as is done in the author index of *Chemical Abstracts*, but this would have added very much to the size and expense of the book. The price is surprisingly low in comparison with the price of similar books in other languages.

W. A. NOYES

Annual Review of Biochemistry. Vol. II. Edited by JAMES MURRAY LUCK, Stanford University. Stanford University Press, Stanford University, California, 1933. vii + 564 pp. 15.5 × 23 cm. Price, \$5.00.

This book follows the general plan and style of the initial volume of the series. There are twenty-five review essays by biochemists recognized as experienced investigators in the fields covered by them. One misses a few major topics, notably the enzymes, that have attracted renewed attention in recent years. On the other hand, the inclusion of several items that have been neglected in the immediate past is refreshing. After all, the choice of themes remains a problem of editorial judgment. The difficulties are indicated by the editors in these words:

"So fertile are the fields of biochemistry that the preparation of complete and comprehensive surveys of the rapidly growing literature would tax beyond measure the ingenuity and industry of the chronicler. New journals are being born over night and little if any abatement is yet evident in the flood of papers to the old. On vitamins alone no less than 1000 papers are reported to have been published in the past year. In the present volume almost 3000 papers in twenty-five different fields have actually received review. We are satisfied that this represents less than half of the papers of sufficient merit and weight to deserve treatment."

There is considerable food for thought in this statement.

LAFAYETTE B. MENDEL

BOOKS RECEIVED

December 15, 1933–January 15, 1934

SIDNEY W. COLE. "Practical Physiological Chemistry." Ninth edition. W. Heffer & Sons, Ltd., 3–4 Petty Cury, Cambridge, England. 419 pp. 12s./6d., net.

"Abridged Scientific Publications from the Kodak Research Laboratories." Volume XV, 1931–1932. Eastman Kodak Co., Rochester, N. Y. 311 pp.

"Physica." Vol. I, No. 1, December, 1933. Martinus Nijhoff, Publisher, The Hague, Holland. Ten issues, 960 pp., per annum. 25 guilders.

"Summary of the Principal New or Revised Formulae Recommended by the Pharmacy Sub-Committee for Inclusion in the British Pharmaceutical Codex, 1934." Report of Pharmacy Sub-Committee, Codex Revision Committee. The Pharmaceutical Press, 23 Bloomsbury Square, London W. C. 1, England. 49 pp. 2/6.