and orange lines because of the difference in dispersion of the crystal and the liquid.

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GEO. L. KEENAN
RAYMOND M. HANN

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NEW BOOKS

Walthère Spring, Oeuvres complètes de. (Complete Works of Walthère Spring.) Published by the Chemical Society of Belgium. Hayez, Brussels, 1914 and 1923. Vol. I, iv + 900 pp. Frontispiece. Vol. II, iv + 960 pp. Frontispiece. 16.5 × 25 cm. Price 40 francs.

These volumes, published under the auspices of the Chemical Society of Belgium, were edited by a Committee composed of G. Chavanne, L. Crismer and J. Wauters. The first volume appeared three years after the death of Spring; the second, delayed by the World War, has but recently been issued.

The numerous publications of Spring have been assembled under ten heads, as follows: The Effect of High Pressure on Solids, and the Diffusion of Solids; Physico-chemical Dynamics; Color and Transparency of Fluids; Inorganic Chemistry; Colloids; Geology and Meteorology; Miscellaneous Reviews, etc. The separate articles number 131. These titles and this large number are eloquent in showing the versatility of Spring and the scope of his work, the excellence and originality of which are well recognized.

There is also a biography of Spring by Crismer, giving a careful summary of his scientific achievements and an appreciative depiction of his personality. The Editors acknowledge the generous assistance of E. Solvay in the publication of the first volume, and of the University Foundation in the publication of the second.

This collection of the many scattered and inaccessible papers of Spring will surely be valuable and is a fitting memorial to a great investigator.

ARTHUR B. LAMB

Cinq Questions d'Actualité. (Five Questions of the Day.) Reports and Discussions of the First Council of Chemistry, held at Brussels on April 21–27 1922, under the auspices of the Solvay International Institute of Chemistry. Gauthier-Villars and Company, 55, Quai des Grands-Augustins, Paris, 1925. xvi + 336 pp. Illustrated. 25.5 × 16.5 cm. Price, unbound, 30 francs.

This volume contains eight addresses on important current problems of chemistry, as follows:

Isotopes, a General Introduction to the Discussion on Atomic Structure, by Frederick Soddy.

The Determination of Atomic Weights by the Method of Positive Rays, by F. W. Aston.

Regarding the Separation of Isotopes, by Jean Perrin and Georges Urbain.

Analysis by Means of X-Rays and Molecular Structure, by W. H. Bragg.

Molecular Configuration and Optical Activity, by William Pope.

The Relation between Rotatory Power and Wave Length, by Thomas Martin Lowry.

The Electronic Theory of Valence, by Ch. Mauguin.

Chemical Mobility, by André Job.

In addition to these excellent and authoritative reviews, this report also contains in full the discussions as carried on by the many notable investigators in attendance.

It is unfortunate that the publication of these addresses should have been so long delayed, and we are glad to note that measures have been taken to avoid this in the case of the Second Solvay Council of Chemistry.

ARTHUR B. LAMB

The Foundations of Colloid Chemistry. A selection of early papers bearing on the subject. Edited, on behalf of the Colloids Committee of the British Association, by EMIL HATSCHEK, Lecturer on Colloids at the Sir John Cass Technical Institute, London. Ernest Benn, Limited, 8 Bouverie Street, E. C. 4, London, 1925. 173 pp. and 1 folder. 15 × 22.5 cm. Price 18s. net.

Colloid chemistry is still far behind many other branches of physical chemistry in its progression toward a strictly mathematical science. The known laws governing the existence, stability and nature of the colloidal state are still for the most part qualitative, rather than quantitative. This domain of knowledge has not yet been formulated, systematized and crystallized into an exact science. It is still amorphous, colloidal.

As a result the devotees of this science naturally and rightly see great possibilities for its growth and development. They are filled with the enthusiasm and optimism of the pioneer and the first settler. They often lead one to think of colloid chemistry as a new and very modern science.

In this situation the publication of a volume such as the present is timely and salutary. It contains nine articles of fundamental importance to colloid chemistry, *published between 1840 and 1889 by authors now dead.* It demonstrates emphatically that colloid chemistry has a past as well as a future.

The first article is by Dr. Ascherson of Berlin and is entitled "On the Physiological Utility of the Fats, etc., " and records the discovery of an interesting and important adsorption phenomenon, and expresses strikingly modern views regarding its mechanism. Next come three articles by Selmi of Modena on colloidal solutions of silver chloride, of prussian blue, and of sulfur. These for the most part had heretofore been published only in the inaccessible "Annals of Natural Science, of Bologna." There follow, in order, Faraday's paper on colloidal solutions of gold, Graham's "On the Properties of Silicic Acid and Other Analogous Colloidal Sub-

stances" and one by Muthmann showing that what had been considered suboxide of silver was really colloidal metallic silver. Next, there is a paper by Van Bemmelen wherein the concept of an adsorption compound is first developed, and finally one by our own Carey Lea "On the Allotropic Modifications of Silver."

There are careful subject and author indexes. There are also a few notes by the editor, Emil Hatschek, which make one wish there were more.

These articles are all interesting and stimulating; in particular those of Ascherson, Faraday, Graham and Van Bemmelen because of the alertness, clarity and vigor of intellect which they disclose and that of Carey Lea for the originality, elegance and conclusiveness of the work which it describes. The volume should be a useful and illuminating one for students and devotees of colloid chemistry.

ARTHUR B. LAMB

A Comprehensive Treatise on Inorganic and Theoretical Chemistry. Vol. V. Boron, Aluminum, Gallium, Indium, Thallium, Scandium, Cerium and Rare Earth Metals, Carbon (Part 1). By J. W. MELLOR, D.Sc. Longmans, Green and Company, 55 Fifth Avenue, New York, 1924. x + 1004 pp. Illustrated. 25 × 16 cm. Price $20.00 net.

This volume like the earlier ones of the series impresses us with the astounding fluency and chemical literacy of the author. It seems incredible that one man can present so clearly and intelligently such a multitude and variety of subjects. Considering its comprehensive nature and the immense number of separate details it chronicles, this volume is as little like a dictionary, or, in other words, is about as interesting as is humanly possible. One ought, however, to point out that while surprisingly comprehensive, it is not a complete collection of all our knowledge on the subjects treated, nor indeed is any such claim made for it.

This is an almost indispensable volume for any one interested in or concerned with inorganic chemistry.

ARTHUR B. LAMB

Allen's Commercial Organic Analysis. Vol. II. Fifth edition, revised and in part rewritten. Edited by S. S. SADTLER, E. C. LATHROP AND C. A. MITCHELL. P. Blakiston's Son and Company, 1012 Walnut Street, Philadelphia, Pennsylvania, 1924. ix + 807 pp. 24 figs. 24 × 16 cm. Price $7.50.

The second volume of the new, fifth edition replaces Volume II of the fourth edition which was published in 1910 and covers the same subjects, namely, animal and vegetable fats, fixed oils and waxes, margarines, higher fatty acids, soap, glycerol, wool-fat, wool-grease, suint, degras and sterol alcohols. Linseed oil is discussed but not paints and varnishes.

Four of the authors or revisers of the separate chapters are English and five are American.

The old edition discussed the interpretation of analyses of oils and fats

without reference to hydrogenated or hardened oils and is, therefore, quite misleading at the present time. The old edition does not describe the determination of the iodine value of fatty oils by the Hanus method which has been adopted by the Association of Official Agricultural Chemists and the American Society for Testing Materials. Both of these defects have been remedied in the new edition. These changes may serve as illustrative examples demonstrating that the old edition is obsolete, and that the revision has been substantial.

The chapters dealing with linseed oil, soap and glycerol appear to have been most improved. New sections dealing with chaulmoogra oil, kapok oil and perilla oil have been added. The discussion of tung oil and of margarines has been substantially enlarged, thus reflecting important changes in the industry since the publication of the last edition. The volume has been increased from 520 pages to 807 pages.

The chapters on fatty oils could have been made more useful by including more of the recognized specifications of the commercial grades. For example, the book does not give the specifications of "prime summer yellow," cottonseed oil, adopted by the New York Produce Exchange; nor is there a description of, or a reference to, the Lovibond colorimeter which must be used to determine whether a sample meets the specifications of the New York Produce Exchange. On the other hand, the New York Produce Exchange's definitions of the more important grades of lard are given. It is said of cottonseed oil that "its principal applications are in soap-making and the manufacture of margarine." But in the United States more than three-fourths of the total is used in making lard substitutes.

With reference to corn oil it is said that "it is used to some extent as an edible oil and for burning, but its proper use is for soap-making," whereas at the present time about three-quarters of all corn oil produced is used as food.

Paper, printing and binding are good. This new edition of "Allen" should be accessible in every laboratory where fats or materials derived from fats are analyzed.

GRINNELL JONES

The Principles of Applied Electrochemistry. By A. J. ALLMAND, D.Sc., Professor of Chemistry, King's College, London. Second edition, revised and enlarged by the Author and H. J. T. ELLINGHAM, Lecturer in Physical Chemistry, Imperial College of Science and Technology. Longmans, Green and Company, 55 Fifth Avenue, New York; Edward Arnold and Company, London; 1924. xi + 727 pp. 171 figs. 23.5 × 15 cm. Price $10.50.

The second edition of Applied Electrochemistry, revised by Allmand and Ellingham, conforms in general to the first edition. It has been enlarged and brought to date by the addition of more than 200 pages.

Part I, general and theoretical, occupies less than one-third of the book. It is obviously impossible to treat such a comprehensive subject adequately within the confines of 200 pages. However, the treatment is extended enough to furnish a theoretical background for the second part of the book. Equilibrium and osmotic pressure are not given separate chapters as in the first edition, and much more space is devoted to irreversible electrode processes. This change is a decided improvement.

Most of the changes and additions are made in Part II, the special and technical section, which comprises more than 500 pages. The recent literature has been adequately surveyed and almost all of the recent developments in industrial electrochemistry are considered. The limitations of space have restricted the treatment of some subjects, and a few have been entirely omitted, but in general the emphasis is well placed.

The first edition of Applied Electrochemistry gained favor, both as a text and a reference book, and the new edition merits an even more cordial reception.

VICTOR YNGVE

La Teinture et l'Impression, expliquées par la Chimie. (Dyeing and Printing, explained by Chemistry.) By ALBERT LETELLIER. Librairie Scientifique J. Hermann, Rue de la Sorbonne, 6, Paris, 1924. 606 pp. Illustrated. 23 × 14.5 cm. Price 35 francs.

This book is printed on fair paper. The pages are uncut and it is bound in a paper cover. There are over 600 pages of closely printed matter, about 50 half-tones and electrotype illustrations, and eight three-color impressions. The book has no index, which is very unfortunate.

The introduction, which occupies more than one-third of the book, covers the theory of the reactions of many of the problems used in dyeing and is in itself a classic, but it is not written for the layman. One must have more than an elementary knowledge of chemistry to understand the introduction of this book. The balance of the book is taken up with all types of dyeing and many of the old materials that have been in use for centuries. A very complete treatise is given on many of the modern coal-tar dyes and the chapter on Lake Making and the Dyeing of Leather is very interesting indeed.

Many formulas are given and the author carries a conviction in these formulas that he knows what he is writing about. It is to be hoped that some one will translate this book. It would make a valuable addition to the library of every student, and to every factory manager interested in this subject, and it is a great pity that the author did not think enough of his work to write a complete index.

MAXIMILLIAN TOCH