
NEW BOOKS

A Text-Book of Quantitative Chemical Analysis. By ALEX. CHARLES CUMMING, O.B.E., D.Sc., F.I.C., and SYDNEY ALEXANDER KAY, D.Sc., formerly Lecturer in Chemistry in the University of Edinburgh. Seventh edition revised by FRANCIS CLINT GUTHRIE, M.A., F.I.C., and JOHN TRENGOVE NANCE, M.A., Lecturer in Chemistry in the University of Liverpool. D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York, N. Y., 1939. xv + 496 pp. 85 figs. 15 × 23 cm. Price, \$5.00.

The scope of this book is indicated by the titles of the eight parts into which it is divided, namely: I, General Principles; II, Volumetric Analysis; III, Gravimetric Analysis; IV, Colorimetric Methods; V, Systematic Quantitative Analysis; VI, The Analysis of Simple Ores and Alloys; VII, Gas Analysis; and VIII, Water Analysis. More than the usual number of specific determinations are to be found in each part.

Fundamental principles and theoretical interpretations are only briefly treated. There are simple but adequate directions of procedure. Reasons for a particular step are seldom given. Students might reasonably ask why, on page 216, 2% ammonium nitrate is recommended as a solution for washing precipitated $\text{Fe}(\text{OH})_3$, while on page 267, hot water, and on page 397, 2% ammonium acetate are recommended for the same purpose.

The definition of $p\text{H}$ on page 60 makes use of hydrogen-ion concentration in terms of *grams* per liter rather than in terms of gram-ions per liter.

Useful tables and reference works are included in the Appendix.

CHESTER M. ALTER

Schopenhauer und die Chemie. By A. MITTASCH. Carl Winter's Universitätsbuchhandlung, Lutherstrasse 59, Heidelberg, Germany, 1939. v + 92 pages. 17 × 24.5 cm. Price, RM. 2.50.

Dr. Mittasch, known particularly for his work on catalysis, on its theory and on its practical application in chemical engineering, on its history, and on its background and implications, is to be reckoned among the more philosophical of contemporary writers on the history of chemistry. The present little book supports the conviction, already finding expression in an ever-increasing number of studies and publications, that the history of thought and the history of science is one and the same. Speculation and positive knowledge in the long run are parallel, as the fibers which make up a thread are parallel, more than parallel for they are bound together, intertwined, overlapped.

The book consists of four principal parts, which deal respectively with Schopenhauer's knowledge of the chemistry of his time, with his view of the significance and importance of chemistry, with his philosophy of chemistry, and with the significance for the future of Schopenhauer's

philosophy of chemistry. So far as the reviewer can see, Schopenhauer made no greater use of the chemistry of his time than did other contemporaneous alert and intelligent thinkers. Certainly no more than Emerson. No more than Shakespeare in his time. Probably less wisely than Francis Bacon made use of the scientific knowledge of his day. The charge may even be made that Schopenhauer, as several of the philosophants of the present are doing, used the concepts and jargon of science to arrive at conclusions which could have been reached more clearly by less devious methods. His final judgment concerning the order of things is not greatly different from the judgment which Omar Khayyam reached, more than seven centuries earlier, on the basis of scientific evidence only slightly more meager, and refused to accept as final. The book is a reprint from the 26th Yearbook of the Schopenhauer-Gesellschaft, 1939, and will be of interest especially to students of Schopenhauer—for whom, if they happen to be humanists of the old style, Mittasch has done a real, eye-opening service.

TENNEY L. DAVIS

Thermodynamics and Chemistry. By F. H. MACDOUGALL, M.A., Ph.D., Professor of Physical Chemistry, University of Minnesota. Third Edition. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y., 1939. ix + 491 pp. 52 figs. 15.5 × 23.5 cm. Price, \$5.00.

The reviewer liked this book in the previous editions [review of second edition, *THIS JOURNAL*, 49, 1610 (1927)]. More material is now included, notably on the calculation of thermodynamic functions with the aid of quantum statistical mechanics. The author writes extremely well and clearly. The printing is excellent.

The book seems to be comparatively free from errors. There is considerable revision of the thermodynamic presentation in the direction of the methods of Gibbs and of Lewis and Randall and there are naturally some errors not present in the earlier editions. Some of these follow. Page 44, first line, "if p is constant" invites erroneous interpretation and has no correct one. Page 108, a criterion for stable equilibrium is expressed by a *differential equality* which does not exclude neutral or unstable equilibrium. This is mitigated by the text immediately following. Page 145, the sentence before Eq. (41) and also the one following it imply the popular and unsatisfactory definition of function: y is a function of x if y varies with x . Page 148, the validity of Eq. (60) is not as stated and the conclusion just below Eq. (62) does not really follow. This conclusion implies that we cannot salt-out a dye-stuff. Page 211, the expression "in view of equation X-50, it is clear . . ." is optimistic, since in that equation the potentials and mole numbers for the independent components but in the vanishing term of XII-7 they are for the greater number of "substances." It would seem clearer to begin at once with Eq. (8) as an obvious consequence of the consideration of the free energy as a function (at

constant T and p) of the masses of the "substances" even when they are not independently variable. Page 253, in order to arrive at Eq. (8) one must postulate further that the ratio of the fugacity to the pressure approaches the limit unity as the pressure approaches zero. The substitution of one "zero" for another under the logarithm sign is not legitimate in the circumstances. This too-simple explanation has been given by others, and can here be remedied by a small change in Eq. (6).

The more modern thermodynamic treatment seems to make here a somewhat greater demand on the previous mathematical experience of the instructor than did that of the earlier editions. He should add to the material of the new and useful chapter on Mathematical Apparatus (1) a definition of function, (2) the statement that the mathematicians have proved that Eq. (III-1) applies also when the variables are not independent and (3) a brief discussion of the theory of dimensions, such as that given in the earlier editions, but extended to recognize the mole as a unit of quantity of substance. The addition (2) is the more important as several commentators on chemical thermodynamics have stated or implied the contrary fact about the equation.

L. J. GILLESPIE

Der disperse Bau der festen Systeme. Allgemeine Theorie der Verunreinigung fester Systeme. (The Disperse Structure of Solid Systems. General Theory of Contamination of Solid Systems.) By Professor D. BALAREW, Sofia. Verlag von Theodor Steinkopff, Dresden-Blasewitz, Germany, 1939. 240 pp. 45 figs. Price, RM. 10; bound, RM. 11.50.

This publication covers Volume 50 of the *Kolloid Beihefte* and is published as a separate monograph. During the last few years, Balarew has published his views on the disperse structure of solids in several issues of the *Kolloid Beihefte*. According to Balarew, all solids have a colloidal-disperse structure, regardless of whether they consist of colloidal particles or of more perfect macrocrystals. The latter always are growth agglomerates and have a porous structure. Balarew rejects the view of the physicists (Kossel, Stransky, Volmer) on the growth of crystals and claims that all crystals grow "jumpwise" by addition—not of individual ions—but of elementary building stones. He tries to substantiate his views by referring to many experimental data. His monograph is not easily read, as Balarew repeats himself on almost every page. All authors to whom reference is made (with the exception of Wo. Ostwald) are badly criticized. Such criticism might have a stimulating effect toward further research, were it not for the fact that many references are incomplete and incorrect. To mention one example: the existence of postprecipitation is still denied although it has been established conclusively in a great number of cases.

It is of interest to get acquainted with Balarew's views even if one does not agree with him in many respects. It would have been preferable, however, if the author had published his ideas in a much more concise and exact form. Considering how little is offered, the price of the monograph is very high.

I. M. KOLTHOFF

Anleitung zur organischen qualitativen Analyse. (Introduction to Organic Qualitative Analysis.) By DR. HERMANN STAUDINGER, Professor of Chemistry and Director of the Chemical Laboratory, University of Freiburg i. Br. Third edition, revised with the assistance of Dr. Werner Kern, Frankfurt a. M. Verlag von Julius Springer, Linkstrasse 22-24, Berlin W 9, Germany, 1939. xvi + 157 pp. 14 × 21 cm. Price, RM. 6.90.

Ten years have elapsed since the appearance of the second edition of this little volume. The new edition contains twelve more pages of text than its predecessor and appears to differ from it only in minor clarifications of text, and the inclusion of references to the more outstanding relevant papers of the decade.

As before, the material is divided into a general introductory section (42 pages) and the "special part" (99) which constitutes the real meat of the book. The scheme of identification is based primarily on volatility and solubility. It makes no serious attempt to deal with the characterization of specific compounds but is rather extensively concerned with the behavior of the various classes and groups of organic compounds. For this reason the book is intensely suggestive and continues to be a valuable tool to both teacher and student.

No organic chemist will wish to deprive himself of the services of this stimulating volume. Those who have worn out their old editions will welcome this new one; those who have not yet made its acquaintance cannot afford to delay this privilege any longer.

ERNEST H. HUNTRESS

Justus von Liebig. Die Lebensgeschichte eines Chemikers. (The Life Study of a Chemist.) By RICHARD BLUNCK. Wilhelm Limpert Verlag, Berlin SW 68, Germany, 1938. 320 pp. 14 × 21.5 cm.

This interesting biography of Liebig is addressed to the general reader rather than to the specialist or the chemist. It deals most fully with the years of Liebig's youth and early triumphs, since this period throws most light on his genius and personality.

The biographer is frankly sympathetic and appreciative rather than analytical and critical. He can, however, hardly be blamed for his tolerance; Liebig's brilliance, high ideals, passionate devotion to his subject and commanding personality adequately counterbalance his frequent unreasonableness and indeed perversity. His ardent advocacy of a united Germany at the time when his country was weak and divided also must endear him to the German of today.

One incident in Liebig's career deserves greater emphasis than the biographer gives it. Liebig was once arrested and incarcerated for his participation in a minor political uprising against the government among the students at the University of Bonn. He was pardoned by Duke Ludwig the First, and shortly thereafter, on the recommendation of Liebig's teacher, Professor Kastner, Duke Ludwig granted him funds from his private purse sufficient for a two years' study of chemistry at Paris, the then scientific capital of Europe. It is not every ruler who is wise and fortunate enough to pick a Liebig for his benefactions!

ARTHUR B. LAMB

Iodine and the Incidence of Goiter. By J. F. McCLENDON, Professor of Physiological Chemistry, University of Minnesota. The University of Minnesota Press, Minneapolis, Minn., 1939. vi + 126 pp. Illustrated. 22 × 28.5 cm. \$5.00.

In his preface to this book the author points out that the book has been written at the suggestion of and for the benefit of research workers, especially those interested in goiter prophylaxis.

The book does not deal with the anatomy of the thyroid gland, the classification of goiter, or anything directly concerned with medical treatment.

It represents, however, a very complete review of the literature on the incidence of endemic goiter and its correlation to the distribution of iodine. This is the general viewpoint of the book, but it also contains extensive tables of the iodine content of soil, water and atmosphere, and of the various plants and animals, including all foodstuffs. A great material has conscientiously been collected by the author from chemical and medical journals all over the world. The material is condensed in brief chapters in a very successful way, and all figures handy-arranged in tables.

For those studying the problems of the etiology of endemic goiter the book will be very useful. But it is also valuable for all interested in nutrition, as almost all papers concerning the iodine content of foods will be found quoted in the book.

The author hopes that the reader will be convinced of the fact that "iodine is not only a drug, but also an essential food constituent and that lack of it may lead to a deficiency disease just as may the lack of a vitamin. In other words, iodine should have a place not only in an individual but also in preventive medicine, which aims to prevent disease in large populations."

GULBRAND LUNDE

Theoretical and Applied Electrochemistry. By MAURICE DE KAY THOMPSON, Professor of Electrochemistry, Massachusetts Institute of Technology. Third edition. The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1939. xxi + 535 pp. 234 figs. 15 × 22 cm. Price, \$5.00.

"Theoretical and Applied Electrochemistry" consists of three parts; the first is "Theoretical Electrochemistry," with six chapters; the second, "Applied Electrochemistry of Aqueous Solution," with ten chapters; the third "Electric Furnaces and their Products," with five chapters.

The first three chapters deal with Faraday's law, electrolytic dissociation theory and electrical conductance. The fourth chapter entitled "Electrokinetic Phenomena" presents briefly electrophoresis, electroosmosis, the theory for the double layer on a colloidal wall, the ζ -potential of the colloidal particle. The fifth chapter is on electromotive force, and is the longest in the book, 55 pages; it includes seven pages of tables of reference electrodes, standard single potential electrodes, and oxidation-reduction potentials. Chapter six is on electrolysis and polarization, and within it hydrogen overvoltage receives nine pages.

Part II begins with a chapter (VII) on electrochemical

analysis; next, chapter VIII, a very important one, on electroplating and galvanoplasty, takes up electroplating equipment, cleaning, pickling, nickel plating, cobalt, cobalt-nickel, zinc, chromium plating and many others. Chapter IX deals with the electrolytic extraction and refining of metals. In electrolytic extraction . . . "the ore is leached with a solvent that dissolves the metal, and the metal is deposited from the purified solution by electrolyzing with an unattackable anode." The solvents for copper ores are dilute sulfuric acid and ferric sulfate, or hot cupric chloride solution.

The definition quoted serves to distinguish electrolytic extraction from electrolytic refining, for in the latter the anodes consist of the impure metal, and the . . . "impure anodes are electrolyzed . . . and deposited on the cathode." The electrolytic extraction of copper, zinc, cadmium, nickel, manganese, silver, and other metals from ores is presented. The electrolytic refining of essentially the same metals is given with the conspicuous exception of Ni. On looking back over the extraction processes, one finds a method for nickel (p. 237, upper half), but to conform with the author's own definition, it should have been classed as a refining process, not as an extraction one. Electrolytic copper refining is fully treated, with many interesting details (pp. 240 to 257).

Chapter X describes electrolytic oxidation and reduction; the products by oxidation include chromic acid, permanganate, ferricyanide, and persulfate. Oddly enough, almost nothing is said regarding the production of hydrogen peroxide by electrolytic methods.

Electrolysis of alkali halides, which forms chapter XI, includes hypochlorite cells, chlorate cells, cells for "the production of chlorine and hydrate" under which latter heading the diaphragm cells are first and well treated, with numerous illustrations (pp. 298-312), and second, the mercury cells (pp. 313-316).

Chapter XII gives the electrolytic production of hydrogen, oxygen and heavy water, and the electrolytic purification of water.

Chapter XIII deals with primary cells, and chapter XIV with the lead storage cell (17 pages), the Edison storage cell (8 pages) and three others. Chapter XV has applications of electrokinetic phenomena (5 pages) and chapter XVI corrosion (2 pages).

Part III, as said before, deals with electric furnaces and their products. Chapter XX in this part deals with "The Fixation of Atmospheric Nitrogen," by the action of electricity on air only, and by nitrifying calcium carbide.

There are problems in nearly all the chapters, and a set of solutions and answers, which will be valuable to readers away from the classroom.

The description of subject matter just given contains at the same time various comments and these will be supplemented by the following remarks:

The preface states that the theoretical part was added to the original applied electrochemistry portion of the first edition at the request of many users of the book; without doubt, such users find it useful to have theoretical considerations at hand. Such a benefit depends in greater part upon a close correlation between the two, really three, parts and it is the reviewer's impression that such correlation might be improved. To give a definite example, let

a casual reader decide that upon coming to the alkali halide cells in Part II, he needs to know the theoretical decomposition voltage for sodium chloride in water solution at a definite temperature. The text for the cells presents no discussion; the index under decomposition voltage refers him to p. 179 where he finds an experimental decomposition voltage defined, but not directions for computation. To find a method for computing the desired voltage will require much searching of the text.

Several passages did not seem quite clear; thus, p. 180, lines 4-12, p. 184, lines 20-25, p. 78, lines 9-12; and the index, it may be remarked, has a startlingly large number of proper names.

The reviewer is anxious to call attention to other features in the book which will be welcomed; several have been indicated previously in the description of the subject matter. The treatment is all-inclusive, or essentially so. Next, the theoretical treatment has been brought into harmony with the latest developments (among others, for example, p. 89). Many items in the "applied" divisions will be novel to a large number of readers. Especially attractive to the reviewer are the sections in Part II dealing with the purification of water by electrolysis (p. 325), the hypochlorite cells (p. 294) and chlorate cells (p. 296), and the formation of sorbitol and mannitol by electrolytic reduction (p. 286).

EMIL RAYMOND RIEGEL

Standard Methods of Chemical Analysis. By WILFRED W. SCOTT, Sc.D., Late Professor of Chemistry, University of Southern California. Fifth Edition, edited by N. HOWELL FURMAN, Ph.D., Professor of Chemistry, Princeton University, in collaboration with eminent specialists. Vol. I, the Elements; Vol. II, Special Subjects. D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York, N. Y., 1939. xxxi + xxi + 2551 + 97 (index) pp. Illustrated. 16 × 24 cm. Price, \$17.00.

The last edition of this well-known book was published in 1925. According to the preface of the present edition "an extensive revision . . . was in progress during the years 1930-2 and approximately half of the first volume was in galley proof when the work was interrupted by the death of Professor W. W. Scott. A further revision and extension of the book was undertaken in 1936 by the present editor in coöperation with the majority of the former collaborators, or their associates, and a number of new contributors."

As in the previous edition Volume I is devoted to the elements, qualitative tests, and various useful tables, and Volume II is given over to special subjects. Only a page by page comparison of the new edition with the previous one could make clear the extent of the changes and improvements effected by the revision. About one-third of the chapters have been entirely rewritten, and advantage has been taken of a complete resetting of type to revise thoroughly most of the other chapters. Besides these changes eight new chapters have been introduced: Rhenium; Ferrous Alloys based on the methods of the American Society for Testing Materials; Electrometric pH Measurement; Colorimetric pH Measurement; Conductometric Titrations; Chemical Microscopy; Quantitative Micro-

analysis; Analysis of Rubber Compounding Ingredients; Quantitative Spectrographic Analysis.

The reviewer's only regret is that the editors did not take the opportunity of a new edition to bring the whole book up to a more nearly uniform level of modernization. For instance, there is an excellent 87-page chapter on Quantitative Microchemical Analysis replete with references through 1937, but there is also a 21-page chapter on Methods for the Determination of Solubility which is reprinted from the 1919 edition of Seidell's "Solubilities." This, of course, is an extreme example and the criticism holds for only one or two of the less important topics.

The value of this book is greatly enhanced by the new edition. The collection of concise and clear procedures for so many diverse analyses will make it practically indispensable in the analytical laboratory; the wide range of topics and the wealth of information will make it a useful acquisition for every chemical library.

ARTHUR F. SCOTT

Essentials of Physiological Chemistry. By ARTHUR K. ANDERSON. Second edition. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y., 1939. 323 pp. Price, \$2.75.

In the second edition, this book has been brought up to date, and contains revised sections on lipids, oxidation and reduction enzymes, respiration, carbohydrate metabolism, vitamins and hormones, etc. There is also added a new chapter on the "Composition of Tissues" which is very helpful in correlating the chemistry of the animal body with its physiology.

Since the book is designed for students of human nutrition it contains many points of interest for the general reader, aside from its value to the student in biochemistry. The writer finds that the material is well organized and generally accurate. He would question, however, the statement that "Colostrum is rich in antibodies and is, therefore, an important factor in rendering infants immune to contagious diseases" (p. 129). How are these proteins taken into the body? He also regrets a diagrammatic formula for oxyhemoglobin which he does not feel represents the present state of knowledge of the substance (p. 222).

WILLIAM F. ROSS

Protein Metabolism in the Plant. By ALBERT CHARLES CHIBNALL, Professor of Biochemistry, Imperial College of Science and Technology, University of London. Yale University Press, New Haven, Conn., 1939. xv + 306 pp. Illustrated. 16 × 24 cm. Price, \$4.00.

The appearance of a specialized monograph in plant biochemistry is a rare event. The field of animal biochemistry has attracted so many workers that monographs on various aspects of the field are taken as a matter of course. Even textbooks rarely deal adequately with plant chemistry, and are usually restricted almost entirely to the biochemistry of mammals and of man. Yet, as is well known, most of the important syntheses on which human life depends, such as the production of proteins, carbohydrates, alkaloids and vitamins are carried out by plants. It is to

be hoped that the next decade or so will witness a deeper appreciation of the importance of this fact and a considerable increase in the amount of work carried out on problems of plant physiology and biochemistry.

In this volume of Silliman Lectures, delivered last year at Yale University, Professor Chibnall has covered all aspects of nitrogen metabolism in plants, with the exception of those parts of the field dealing with alkaloids, purines and other non-protein constituents. The limitation on the amount of work done has a certain advantage here, in that it has been possible to include a variety of investigations ranging from the pure chemistry of proteins to the physiology of buds, without sacrificing any of the detail which is essential to critical evaluation of the material.

The book consists really of three parts. In the first five chapters are traced the gradual development of the concept of asparagine and glutamine as intermediates in the breakdown and resynthesis of proteins in seedlings, from the discovery of asparagine in 1806, through the extensive experiments of E. Schulze, lasting over 33 years, to the modern position. It might be suggested that the historical treatment in the opening 3 chapters is unnecessarily extensive. Professor Chibnall's attempt to reduce some of Schulze's experiments to "balance sheets" is certainly not very happy, perhaps because in the "balance sheets" no clear separation is made between the substances lost and those gained. His extensive recalculation of the original data (which must have involved a great deal of labor) has, however, greatly contributed to the clarity of the presentation. Two chapters then discuss the preparation and properties of leaf proteins, a field to which Professor Chibnall and his associates have made major contributions. In the last four chapters nitrogen transformations in isolated leaves are considered. This field, of course, remains in an unsatisfactory state because of the quite unexplained proteolysis which occurs when leaves are detached. Three appendices, one by J. W. H. Lugg, deal with analytical procedures.

The spirit of these lectures is that of the experimentalist thoroughly familiar with the pitfalls of the field, and a number of unpublished experiments from the author's laboratory are included throughout the book. This close contact with the laboratory gives life to all the discussion. In his critical synthesis of miscellaneous facts, garnered from a scattered literature, into a presentation of the subject as a closely interwoven whole, Professor Chibnall has done a great service not only to those in the field but to physiologists and biological chemists in general.

KENNETH V. THIMANN

Spectrochimica Acta. Ein Forschungsarchiv. (Spectrochemistry.) Band I, Heft 1. Verlag von Julius Springer, Linkstrasse 22-24, Berlin W 9, Germany, 1939. 92 pp. 56 figs. 17.5 × 26 cm. Price, RM. 8.60.

A rather inauspicious moment has been chosen for the entrance of this new journal into a field which badly needs a unifying influence. The present literature of spectrochemical analysis is so widely scattered in journals of chemistry, physics, biology, medicine, geology, and metallurgy that it is almost impossible to keep abreast of de-

velopments with ordinary library facilities. A journal devoted solely to spectrochemical analysis should be of great assistance in this respect, and it is to be hoped that it can survive the war.

In the first paper, Kaiser reports some experimental results on the effects of various factors on the relative intensities of lines emitted from a spark. From these results he is able to draw conclusions and set up certain rules which should be of great assistance in developing a technique for spark analysis.

Rollwagen has carried out a similar task for the d. c. arc, and emphasizes particularly the essential differences between the cathode layer and the positive column of the arc.

Scheibe and Martin describe a very interesting new technique for local microanalysis, in which a spark strikes to a moving sample, and the spectrum falls on a plate which moves synchronously with the sample. In this way they are able to trace differences of composition of individual grains within a metal, and detect concentrations of impurities at grain boundaries.

Gatterer and Junkes describe the quantitative determination of traces of europium in samarium, and McClelland and Whalley describe a technique which they have found useful in the analysis of various non-ferrous alloys.

The journal also includes a series of abstracts of recent books and papers dealing with spectrochemical analysis.

K. B. THOMSON

BOOKS RECEIVED

October 10, 1939–November 10, 1939

EARLE RADCLIFFE CALEY. "The Composition of Ancient Greek Bronze Coins." The American Philosophical Society, Independence Square, Philadelphia, Penna. 203 pp. \$2.50.

Fritz Feigl. "Qualitative Analysis by Spot Tests." Second English edition from the third German edition. Nordemann Publishing Co., 215 Fourth Avenue, New York, N. Y. 462 pp. \$7.00.

ROBERT J. HARTMAN. "Colloid Chemistry." Houghton Mifflin Co., Cambridge, Mass. 556 pp. \$4.75.

WILHELM JOST. "Explosions- und Verbrennungsvorgänge in Gasen." Verlag von Julius Springer, Linkstrasse 22-24, Berlin W9, Germany. 608 pp. RM. 46.50; bound, RM. 49.50.

T. M. LOWRY AND A. C. CAVELL. "Intermediate Chemistry." The Macmillan Co., 60 Fifth Avenue, New York, N. Y. 876 pp. \$3.25.

HAROLD C. WEBER. "Thermodynamics for Chemical Engineers." John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y. 258 pp. \$3.25.

"Abridged Scientific Publications from the Kodak Research Laboratories." Vol. XX. Eastman Kodak Co., Rochester, New York. 273 pp.

"The Merck Index." Fifth edition. Merck and Co., Inc., Rahway, New Jersey. 1060 pp. \$3.00.