

---



---

## NEW BOOKS

---



---

**Laboratory Manual of Agricultural Chemistry.** By C. C. HEDGES, Head of the Department of Chemistry and Chemical Engineering, and H. R. BRAYTON, Professor of Inorganic Chemistry, Agricultural and Mechanical College of Texas. Revised edition. D. Appleton-Century Company, 35 West 32nd Street, New York, N. Y., 1938. 74 pp. 13.5 × 20.5 cm. Price, \$1.00.

This manual is a compilation of experimental procedures for, and is designed to act simply as a laboratory guide in, a course dealing with the elementary quantitative analysis of certain agricultural materials. No explanatory notes accompany the procedures, such being considered by the authors as belonging more properly with the lectures which must accompany such a course. Questions at the end of each experiment are designed to lead the student toward independence of thought and impress upon him the necessity of purposeful outside reading.

Sixty-six procedures are described in seven chapters which deal, respectively, with (1) Preparatory Quantitative Analysis, (2) Analysis of Feedstuffs, (3) Chemical Analysis of Soil, (4) Analysis of Fertilizers, (5) Analysis of Insecticides and Fungicides, (6) Analysis of Milk, and (7) A Brief Sanitary Examination of Water. An appendix gives useful references and tables, together with methods for preparation of reagents.

DAVID R. BRIGGS

**Leçons de Philosophie Chimique par J.-B. Dumas.** (Dumas' Lectures on Chemical Philosophy.) With an Introduction by GEORGES URBAIN. (Classiques de la Découverte Scientifique.) Gauthier-Villars, Editeur, 55 Quai des Grands-Augustins, Paris 6, France, 1937. xxviii + 270 pp. 13.5 × 19 cm. Price, 21 francs.

Eleven brilliant lectures, delivered at the *Collège de France* in the spring of 1836 by a great chemist who was also a master of literary craftsmanship, are here reprinted with an Introduction by another great chemist who is also a sculptor, a musician and a master craftsman in words. "Since Dumas, no French chemist has risked himself by writing or by professing a 'Chemical Philosophy.' What better praise could be given to the book, unique in its class, which this unmatched Master has left us."

Near the beginning of the first lecture Dumas says:

"Chemical Philosophy, if I may dare to define it, aims to remount to the general principles of the Science, to show not merely whereof they consist today but further to show the phases through which they have passed, to give the most general explanation of chemical phenomena, and to establish the relationship which exists between the observed facts and the causes of these facts.

"Chemical Philosophy makes abstraction of the special properties of bodies; it sets aside the particularities which they may present and examines only the essence of the diverse reactions. Taken from the point of view of present chemistry, it amounts to a general study of the material

particles which the chemists call *atoms* and of the forces to which these particles are submitted. Thus it includes an investigation of all of the properties of atoms, an examination of chemical action and of its effect, of its causes and of its various modifications; it seeks to un-mix the relationships of resemblance and difference which natural substances show, and it tries to discover the secret causes of them.

"I shall be able then, limiting its rôle in this manner, to tell you how the Science can envisage itself by starting from the principles which are admitted today; but you will find it more useful to examine how it has given itself these same principles, how it has determined its manner of experimenting, how it has fixed the march of its logic. You will like to follow its progress from its origin down to the present time, and even to foresee, in so far as it is permitted to do it, the future discoveries which it promises us."

Urbain estimates that "a good quarter" of the book relates to the history of chemistry, and the judgment is good as concerns the material which was history in the time of Dumas. But the substance of the rest of the book, being a discussion of the chemistry of a century ago by the chemist himself who established the principle of substitution in organic chemistry and laid the foundations of structure theory, is history now. Dumas gave careful study to the history of chemistry. "He points out priorities which are today still neglected or misunderstood: that Laplace and Lavoisier, before Volta, realized the first electrochemical experiment; that Fourcroy, before Grotthus, gave the first theory of the decomposition of water by the pile; that Davy, before Gerhardt, considered all acids as compounds of hydrogen; and that Ampère, before Faraday, imagined that atoms carried the charges, some of them positive, others negative, in the manner of ions."

The book is illustrated with two full-page plates, respectively, a portrait of Dumas and a picture of the Dumas medal. It is supplied with a useful Table of Contents. It is a fine book for the student who wishes to improve his knowledge either of literary or of scientific French.

TENNEY L. DAVIS

**A Hundred Years of Chemistry.** By ALEXANDER FINDLAY, Professor of Chemistry in the University of Aberdeen. The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1937. 352 pp. 14 × 22.5 cm. Price, \$4.25.

This book is an historical presentation of trends and developments in the science of chemistry during the past hundred years. Students and teachers of chemistry who are interested in following the rapid development of chemical science, both theoretical and practical, since the eighteen-thirties, will find this work informative and complete. In the comprehensive treatment of each subject Professor Findlay mentions many chemists and shows their influence on the growth and evolution of the science.

The years of birth and death generally follow the name of each chemist as his work is introduced. These discussions are rounded out by numerous references to the original literature, many footnotes, and an appendix containing biographical notes of chemists, now dead, whose contributions made these advancements possible.

In order to appreciate the heritage of the chemists of the nineteenth century, Professor Findlay, in Chapter I, discusses "The Historical Background" from the time of Lavoisier's interpretation of the phenomena of combustion to that of Wöhler, Liebig and Berzelius on the constitution of organic compounds. The other contents are as follows: II, The Development of Organic Chemistry, 1835-1865; III, The Determination of Atomic Weights and the Classification of the Elements; IV, Stereochemistry; V and VI, The Rise and Development of Physical Chemistry in the Nineteenth Century, I and II; VII, Organic Chemistry in the Second Half of the Nineteenth Century. The Synthesis of Organic Compounds, and the Theories of Chemical Structure; VIII, The Rise and Development of Chemical Industry Based on Coal Tar; IX, The Constitution and Synthesis of Naturally Occurring Compounds; X, The Discovery of New Elements. The Rare Gases; XI, Radioactivity and Atomic Constitution; XII, Physical Chemistry and Chemical Theory in the Twentieth Century; XIII, The Development of Industrial Chemistry; Appendix—Biographical Notes; Index.

Dr. Findlay's scholarly contribution is a welcome addition to other publications which deal with chemistry from an historical aspect, and would be a valuable acquisition to any library devoted to chemistry.

CLAUDE K. DEISCHER

**Practical Methods in Biochemistry.** By FREDERICK C. KOCH, Professor of Biochemistry, University of Chicago. Second edition (revised). The Williams and Wilkins Company, Baltimore, Maryland, 1937. ix + 302 pp. Illustrated. 16.5 × 23.5 cm. Price, \$2.25.

This book describes a large number of useful qualitative tests and biochemical preparations, as well as many quantitative methods. For the most part this is done clearly so that the instructions can be followed readily by first year medical students and others of similar training. The number of tests and methods in the book is far greater than could be covered in an ordinary course in biochemistry; the book should therefore be of some value as a source of reference, especially as many references to the original literature are given.

Some criticisms may be offered. On p. 109 hemochromogen is identified with reduced hematin, although this conception has now been disproved. The colorimetric determination of amino acids (p. 143) has been greatly improved by Danielson [*J. Biol. Chem.*, **101**, 505 (1933)], who has also shown in unpublished work that the removal of ammonia by permutit (p. 193) gives unsatisfactory results, since it also removes some of the amino acids. The colorimetric method for blood calcium (p. 163) may be made uncertain by variations in the magnesium content of the blood.

JOHN T. EDSALL

**Die heterogenen Gleichgewichte.** (Heterogeneous Equilibria.) By RUDOLF VOGEL, Professor in the University of Göttingen. Akademische Verlagsgesellschaft m. b. H., Sternwartenstrasse 8, Leipzig C 1, Germany, 1937. xxiii + 737 pp. 491 figs. 17.5 × 25 cm. Price, RM. 66; bound, RM. 68.

This presentation of the phase rule is Volume II in the "Handbuch der Metallphysik" being issued under the editorship of Masing, and is intended primarily for the use of metallurgists. It is the author's purpose, however, to give the book a much broader basis than the usual limited phase-rule study offered as an introduction to metallurgy. To this end the general principles of the subject are carefully laid down and logically developed, and while metallurgy is never lost sight of for long, it is nevertheless not permitted to dominate the logical progress of the book.

Among the textbooks on the phase rule, still astonishingly few for the sixty years since the rules were laid down by Gibbs, this must take a position of some importance. In size at any rate, and in ground covered, it is away beyond anything since the (alas! uncompleted) "Heterogene Gleichgewichte" of Roozeboom, and is, I think, the only text in these thirty years that might be called comprehensive. The seven hundred pages include extensive and what almost may be called exhaustive treatment of one-, two- and three-component systems, and a sufficient treatment of four-component systems. The tables of references to metallic systems which have been studied are especially full and cannot fail to be useful to the metallurgist. Non-metallic systems are introduced as examples with frequency, but there is of course no effort to make such references exhaustive, and the examples are chiefly the classical cases with few references to the newer ones. The printing is good and the 491 figures in the main well-drawn and clear. As a reference book, the reviewer feels sure that there is nothing on the phase rule as complete as this volume by Vogel, except the volumes of Roozeboom, and they (or most of them) are out of print.

In a book as fundamentally sound as this, a few minor criticisms will not lessen the real value. The few references to the work of Gibbs, in text and in footnote, read merely, "W. Gibbs, Thermodynamische Studien," which seems an understatement of both Gibbs' name and his publications. The German periodicals furnish nearly all the references in the text; work in English, French or American journals is noted very infrequently. Finally, 68 marks is a large price for a book, whether paid in depreciated American money or in some better kind.

ARTHUR E. HILL

**Reaktionsfähigkeit fester Stoffe.** (Reactivities of Solid Substances.) By J. ARVID HEDVALL. Verlag Johann Ambrosius Barth, Leipzig, Germany, 1938. 234 pp. 50 figs. Price, RM. 18; bound, RM. 19.20

Up to ten years ago it was possible to discuss seriously in the literature whether or not the observations relating to reactions between solid substances—they were already abundant and numerous—were to be interpreted as such or as cases of partial melting or changes by way of gas phases. Today, the interpretation as solid phase reactions is accepted beyond a doubt. It is known that these

reactions are of frequent occurrence, that they are controlling in technically important processes (such as ceramics, metallurgy, etc.) and that they exhibit many qualitative characteristics for which analogs in other types of reaction are lacking. The past year has now brought forth the first two monographs in this field: "Diffusion and Chemical Reaction in Solid Substances," by W. Jost and the present work of J. A. Hedvall.

The book of Jost adopts the principle of diffusion as a controlling and adequate one for this reaction type and considers, mainly, such sufficiently simple and well investigated phenomena as will serve as practical applications of diffusion principles.

Hedvall proceeds in an opposite and certainly more up-to-date way. After a penetrating and orderly summary of the large field of phenomena and a thorough treatment, of its diverse aspects and the departures from the predictions of classical theory, new, very versatile and, for the present, not always orthodox concepts and relations are deduced for correlating the facts.

The first part of the book deals with the structure of solid substances and contains, in addition to a review of the literature and the fundamental facts, a section on geometrical and particularly chemical crystallography and the lattice energy relationships. The second part considers the reactivity of matter in the solid state by referring to metallographic experience and preliminary experiments, to a general systematic study of reactions in solid substances, and to the effects produced by factors other than those of thermal energy (magnetic, electrical, optical and acoustic). The third part, finally, introduces a series of important results of investigations in the fields of additive oxide reactions, special reactions involving exchange of atomic positions, the reactions of silicate chemistry and the changes that occur in the presence of variously activated substances. Consideration is given to the significance of the solid state in sintering and recrystallization processes and to reactions of solid substances with gases and liquids. In the light of the discussion in the second part, the third part also describes some reactions that are of particular technical importance and which occur with or between intermediate solid phases.

Owing to his experimental and theoretical researches, J. A. Hedvall has had a large share in the rise of this new branch of chemistry. His presentation in the book of the subject of reactivities in solid substances is clear and is free from simplifications and schematizations that do violence to facts. It is intelligible to the general reader and has, at the same time, strict scientific penetration and objectivity. It completely states the essentials of our present knowledge in this field and provides a background from which to view new problems and new developments.

G. F. HÜTTIG

**German for Chemists.** By JOHN H. YOE, Ph.D., Professor of Chemistry, and ALFRED BURGER, Dr. phil. (Vienna), Research Associate in Chemistry, University of Virginia. Prentice-Hall, Inc., 70 Fifth Avenue, New York, N. Y., 1938. xiv + 537 pp. 15.5 × 24 cm. Price, \$4.50.

Some chemists have so little familiarity with the German language that they are unable to consult an important part

of original chemical literature. There have been published in recent years a number of texts, so devised that, when studied systematically, they give the foundation necessary for reading the average articles in German periodicals. The subject matter in these texts is chosen primarily for the variety of typical expressions and width of vocabulary, rather than for the scientific value.

The present text under review is divided into nine parts. Part one, seventy-six pages, comprises forty-four exercises selected from elementary inorganic, organic, analytical, physical, colloidal, industrial and physiological chemistry, in which the individual German sentences on the even pages are paralleled by the English equivalents on the odd pages. Then follow seven parts, some four hundred pages, wholly in German, in which the same chapters of chemistry considered in Part one are more fully treated. Part nine, thirty-five pages, comprises articles selected from recent German books and periodicals, and affords greater difficulties than the preceding parts.

The authors wisely omitted the insertion of a vocabulary, but recommended in its place the use of the well-known Patterson's dictionary.

W. L. JENNINGS

**Physikalische Methoden in chemischen Laboratorium.** Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany, 1937. 267 pp. Illustrated. 15.5 × 23 cm. Price, RM. 2.70.

This volume is not a complete monograph, but rather a collection of reprints of thirteen papers published in *Angew. Chem.* [48, 785 (1935); 49, 117, 315, 344, 437, 443 (1936); 50, 18, 193, 255, 279, 375, 546, 691 (1937)]. The latter deal with a more or less arbitrary selection of physico-chemical methods in the laboratory, and the field covered is far from complete. Six papers are of a typical review nature (application of röntgenographic methods, ultra sound and chemical action, chromatographic analysis, Raman effect, determination of dielectric loss, application of polarographic methods). The other papers contain more or less original work (inorganic chromatography, new method of quantitative emission spectral analysis, quantitative spectral analysis, polarographic determination of copper, nickel and cobalt in steel, photoelectric spectrophotometry, colorimetry with colloidal solutions).

To those who have no access to the original journal, the present collection offers an opportunity to purchase the various papers at a reasonable price.

I. M. KOLTHOFF

**Gmelin's Handbuch der anorganischen Chemie.** (Gmelin's Handbook of Inorganic Chemistry.) Edited by R. J. MEYER. Eighth edition. System-Number 24, Rubidium. Issued by the Deutsche Chemische Gesellschaft. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany, 1938. 250 pp. 17 × 25 cm. Price, RM. 31.50.

This volume on rubidium, like the other volumes of this Handbook, discusses first the free element and then its compounds with other elements of smaller "System Number," which in this instance comprise all of the non-metals, hydrogen, bismuth and all of the alkali metals ex-

cept cesium. The presentation follows that of earlier volumes and is eminently satisfactory. The literature has been covered to August, 1937.

It is of interest, as showing the current trend in inorganic chemistry, that the discussion of the physical properties of the free element and the structure of its atom occupies a quarter of the whole volume.

The publishers announce that the volume on cesium is in preparation; with its appearance the volumes on the alkali metals will be complete.

ARTHUR B. LAMB

#### Diffusion und chemische Reaktionen im festen Stoffen.

(Diffusion and Chemical Reactions in Solid Substances.)

By Dr. WILHELM JOST, Professor at the Technische Hochschule, Hannover. Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany, 1937. viii + 231 pp. 60 figs. 15 × 22.5 cm. Price, RM. 20. (bound) RM. 21.

This is the second monograph of the series *Die chemische Reaktionen* published by Steinkopff under the editorship of Drs. K. F. Bonhoeffer and H. Mark; the first volume, *Grundlagen der Photochemie* (Fundamentals of Photochemistry) by Drs. K. F. Bonhoeffer and P. Harteck appeared in 1933; the present volume is to be followed by volumes on gas reactions by H. J. Schumacher, kinetics of the formation of phases and crystal growth by M. Volmer, and polymerization reactions by H. Mark.

The author has written this book for the purpose of assembling and evaluating the voluminous literature which has appeared, and for the purpose of giving the experimenter the methods necessary to analyze his results quantitatively, well realizing that much of the information available is qualitative rather than quantitative and that much remains to be learned about the solid state before the science of reactions in the solid state can approach in rigor the science of reactions in gases or solutions.

Chapter I (38 pp.) presents a full treatment of the laws of diffusion and of their application to specific boundary conditions, including a treatment of the rate of transfer at phase boundaries; Chapter II (52 pp.) affords a discussion of the theory of the *Fehlordnungerscheinungen*, "the phenomena originating in imperfect lattice order" in crystals, based chiefly on the work of Wagner and Schottky. The discussion here, as elsewhere in this book, is limited chiefly to diffusion and reaction in oxides, salts, etc.—heteropolar compounds—and much stress is laid on information furnished by the electrical (electrolytic) conductivity of heteropolar compounds, in which field the author has made important contributions; in Chapter III (48 pp.) the data on self-diffusion and "foreign atom" diffusion in metals and in heteropolar compounds are reviewed, as in Chapter IV (38 pp.), the data on the rate of formation of surface reaction layers, formed by the reaction of metals with gases, for example, the oxidation of iron in dry air, are discussed, again chiefly on the theoretical basis of the Wagner-Schottky theory; Chapter V classifies the types of reaction in the solid state, describes the methods of investigation employed, discusses reaction in mixed powders—in which the effects of grain size, impurities, etc., are mentioned—of metals, oxides, salts, etc.

Reactions in the solid state consisting in the decomposition of a solid phase by reason of change in temperature—such as, for example, the formation of pearlite from austenite in the Fe-C system, and precipitation from solid solution, both of immense importance to the physical metallurgist—are not treated here, but will be discussed by Volmer in the volume noted above.

This is a very valuable and timely book. It discusses a field of research that is broad and upon which little has appeared in book form, and should thus be of value to a rather widely varied group. For workers interested in solids, whether from the point of view of the theory of the solid state of aggregation or of the theory of reactions in solids, this volume constitutes an important source book and also a court of critical opinion, for which those workers will be grateful. This reviewer has seen no other book in which this subject has been treated so comprehensively or so competently.

It is surprising that so few workers in this country have turned their attention to this field. The experimentation is not difficult and results of great interest and value can be obtained rather readily with relatively simple equipment. The results are very important practically to the ceramicist and to the metallurgist, and as the field expands doubtless will be of importance to others. The process of the carburization of iron—the reaction between Fe and Co or hydrocarbons, may seem simple to the casual observer, but actually there is still a great deal to know about the kinetics of the process; what factors determine the presence or absence of a more rapid rate of diffusion at grain boundaries is not known; despite much work there is still a great deal to be learned about the oxidation of alloys; powder metallurgy is in its infancy scientifically but is already extremely important in the engineering field; reaction rates in heterogeneous systems are ill-understood. What better field could an energetic scientist want than this?

ROBERT F. MEHL

#### Allgemeine und technische Elektrochemie nichtmetallischer Stoffe.

(General and Technical Electrochemistry of Non-Metallic Materials.) By Dr. ROBERT MÜLLER, Professor an der Montanistischen Hochschule. Verlag von Julius Springer, Schottengasse 4, Wien I, Austria, 1937. x + 440 pp. 125 figs. 16 × 24 cm. Price, RM. 30.

The present work, complete in itself, together with the author's "Allgemeine und technische Elektrometallurgie" which appeared in 1932, is intended to cover the entire domain of electrolysis. The book, intermediate between a handbook and a textbook, contains an extraordinary amount of material. The author has emphasized briefly but yet critically only the most important facts. The fundamentals of electrolytic phenomena are included in only those instances in which it is necessary to amplify the previous discussions. The author has attempted to cover all the available references, to review critically a large part of the domain of electrochemistry, and to make the technician and student aware of all existing possibilities. He has dealt first with the winning of non-metallic elements, giving special attention to hydrogen and oxygen cells and to the halogen industry. Chlorine,

as the most important member of this group from a technical standpoint, naturally takes up most of the space in the chapter dealing with chlorine and alkali. A special chapter is devoted to the cathodic reduction of non-metallic substances, to inorganic reductions not involving the formation of the metal and to organic reductions. A chapter on anodic oxidations includes the oxidation of inorganic ions, the formation of the per salts and organic oxidations. The concluding chapter treats electrophoresis, electroendosmosis and electro dialysis. This well printed, well bound, well indexed and well illustrated book is a valuable contribution to the literature of electrochemistry.

MERLE RANDALL

**Cours de Chimie Industrielle. Tome V. Industries Organiques.** (Industrial Chemistry. Vol. V. Organic Industries.) By G. DUPONT, Professor in the Faculty of Sciences of the University of Paris. Gauthier-Villars, Éditeur, 55 Quai des Grands Augustins, Paris, France, 1938. iv + 279 pp. 16 × 25 cm. Price, fr. 70.

The book under review is part of a series entitled "A Course in Industrial Chemistry." The earlier volumes are: I, General Considerations and Combustibles; II, The Industries Based on Minerals; III, Metallurgy; IV, Organic Industries, first part. The present volume is labelled number V, Organic Industries, second part.

Volume V contains six chapters numbered 5 to 10 which are meant to follow the four chapters in Volume IV. Chapter 5 deals with dyestuffs and tannins and is by far the largest (99 pages); Chapter 6 describes pharmaceutical products (32 pages); Chapter 7 deals with essential oils and perfumes (40 pages); Chapter 8 with resins, turpentine and caoutchouc or rubber (32 pages); Chapter 9 with paints and varnishes (15 pages); and Chapter 10, with photographic products (18 pages).

The reviewer has not had the advantage of reading the earlier volumes, and has endeavored to take this lack into account in preparing his comments. In general let it be said that the treatment is scholarly and reasonably full. There would seem to be, however, some disparity in the space allotted to several topics; in some cases the placement of a topic may lead to misinterpretation. For example, the synthetic resins are placed under "varnishes," which is unfortunate, for casual leafing and even reading would suggest that synthetic resins are exclusively varnish-forming resins; it is only by close reading that one finds that the molding resins are properly designated. Turpentine is very fully described in 15 pages, with 9 illustrations out of a total of 19 in the book, and with a valuable table of 16 varieties of this solvent. The very full description of turpentine is due to the great interest which the forest of "maritime pines," west and south of Bordeaux, possesses and is probably quite in order in a French book. On the other hand, the important substance, rubber, receives a total of only 5.5 pages. Under dyestuffs there is no mention of the recent developments such as Rapidogens, Stable Diazo Salts, Neolan or Pilatus dyes, and others. Again under the "nature of the fibers" in connection with dyeing, wool, silk, and cotton are presented, but not artificial silk, nor is there a reference to

some other portion of the series where that might be included.

Against this must be set the excellence of the section on hormones, the one on vitamins, the one on antipyretic or analgesic agents; in fact, the whole chapter on pharmaceutical products is of a high order. Certain specific needs are supremely well met, not only as to turpentine and the pharmaceutical agents, already mentioned, but, as further example, in a table of 54 essential oils, with the plant of origin, means of extraction, yield, and chief constituents for each.

In brief, the point of view of the author would seem to be rather that of the pure science man who looks with interest into the materials which have an industrial use or application. The reader interested primarily in the scale or magnitude of industrial operations will wish that more production figures, more processing details, and more prices had been included. On the other hand, the reader who is inclined primarily toward the study of the chemical nature of these industrial organic materials will find that the book fills his purpose.

EMIL RAYMOND RIEGEL

**Chemistry of the Brain.** By IRVINE H. PAGE, A.B. (Chem.), M.D., Hospital of the Rockefeller Institute for Medical Research, New York. Charles C. Thomas, 220 East Monroe Street, Springfield, Illinois, 1937. xii + 444 pp. 2 figs. 17 × 24 cm. Price, \$7.50.

This work covers much more ground than is indicated by the title. As the composition of the brain is quantitatively but not qualitatively different from that of other organs, a discussion of the chemistry and metabolism of the brain constituents necessitates a treatise of general intermediary metabolism. The book can be considered an advanced treatise on this subject, particular emphasis being laid on those substances which are present in brain and nervous tissue in larger quantities, especially the fats and lipids.

The author, who has made important contributions to various fields of lipid metabolism, has given the book a more personal note than is generally found in compilations from the literature. It is interesting and easy to read. The chapters concerning the lipids are among the best which have been written in recent years, although some investigators may not agree with certain of Dr. Page's conclusions.

Dr. Page has undertaken a laborious enterprise in that he has collected from the almost endless literature in the entire range of biochemistry everything having a relationship to brain metabolism. The chemistry of the brain has hitherto generally been reviewed only from the standpoint of chemical composition, and this is the first attempt to bring together the basic material which may apply to later studies concerning chemical function. It is the first monograph in this field since the classical work by Thudichum, which appeared in 1901. By devoting an historical chapter to him, Dr. Page in a sense dedicated his book to Thudichum's memory.

A wide variety of investigators should be interested in this book. In the introduction Dr. Page expresses the fear that "clinicians will find this book too chemical and chemists that it is too clinical." In fact both groups, as

far as they are interested in the nervous system, will find this monograph essential.

The value of the book is greatly increased through Dr. J. H. Quastel's contribution of a chapter on oxidation in the brain. The idea of inviting so outstanding a specialist to review this complicated mechanism was indeed a happy thought.

The book is well printed, but unfortunately a number of errors have crept in, especially in the chemical formulas. However, it is too much to expect a monograph of this size to be free of mistakes.

The physician as well as the chemist will be grateful to Dr. Page for undertaking, in addition to his experimental work, the laborious preparation of this unusual monograph.

R. SCHOENHEIMER

**Kurzes Lehrbuch der Enzymologie.** (Brief Textbook of Enzymology.) By THEODOR BERSIN, University of Marburg 1 L. Akademische Verlagsgesellschaft m. b. H., Sternwartenstrasse 8, Leipzig C 1, Germany, 1938. viii + 170 pp. 25 figs. Price, RM. 11; bound, RM. 12.80.

The book is a brief presentation of modern enzyme chemistry designed for the use of students. In the introduction the author states: "The elucidation of the chemical nature of enzymes unfortunately has been delayed greatly as a result of statements that enzymes purified by the adsorption technique were of non-protein nature." Indeed Bersin very ably explains the chemical nature of enzymes using the crystalline enzymes and those with active groupings as examples. Langenbeck's theory of mainvalence catalysis, Weidenhagen's specificity theory of carbohydrases, and Northrop's theory of proteolytic enzymes are discussed. The first part of the book is devoted to general considerations and kinetics and the following chapters to the action of the most important enzymes. There are brief accounts on biological problems such as the formation of enzymes, division of enzymes in cell protoplasm, enzymic histochemistry, and immune enzymes. Enzymes in industry are also mentioned. About one-fourth of the book deals with the role of enzymes in respiration and metabolism.

While the book is not a reference volume and is mainly written for beginners, it offers interesting reading for those acquainted with the field.

HENRY TAUBER

## BOOKS RECEIVED

March 15, 1938–April 15, 1938

B. BLEYER, Editor. "Alkoholische Genussmittel." Vol. VII, "Handbuch der Lebensmittelchemie." Verlag von Julius Springer, Linkstrasse 22–24, Berlin W 9, Germany. 828 pp. RM. 99; bound, RM. 103.50.

G. CHARRIER. "Guida all'Analisi Chimica Quantitativa." Third edition, Edizione Chiantore, Torino, Italy. 193 pp.

KATHARINE H. COWARD. "The Biological Standardization of the Vitamins." William Wood and Co., Mt. Royal and Guilford Aves., Baltimore, Md. 227 pp. \$4.50.

PAUL ERASMUS. "Über die Bildung und den chemischen Bau der Kohlen." Verlag von Ferdinand Enke, Hasenbergsteige 3, Stuttgart W, Germany. 121 pp. RM. 10.

RENÉE VON EULENBERG-WIENER. "Fearfully and Wonderfully Made. The Human Organism in the Light of Modern Science." The Macmillan Co., 60 Fifth Ave., New York, N. Y. 472 pp. \$3.50.

R. G. J. FRASER. "Molecular Beams." Chemical Publishing Company of New York, 148 Lafayette St., New York, N. Y. 70 pp. \$1.25.

GEORGE R. HARRISON, Editor. "Spectroscopy in Science and Industry. Proceedings of the Fifth Summer Conference on Spectroscopy and Its Applications." John Wiley and Sons, Inc., 440 Fourth Ave., New York, N. Y. 134 pp. \$3.00.

ALBIN KURTENACKER. "Analytischen Chemie der Sauerstoffsäuren des Schwefels." Ferdinand Enke Verlag. Hasenbergsteige 3, Stuttgart W, Germany. 216 pp. RM. 18; bound, RM. 19.60.

BRUNO LANGE. "Photoelements and Their Application." Translated by Ancel St. John. Reinhold Publishing Corp., 330 West 42d St., New York, N. Y. 297 pp. \$5.50.

A. I. OPARIN. "The Origin of Life." Translation with Annotations by Sergius Morgulis. The Macmillan Co., 60 Fifth Ave., New York, N. Y. 270 pp. \$2.75.

ADOLF SCHEIBE. "Piezoelektrizität des Quarzes." Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 233 pp. RM. 20; bound, RM. 21.

FOSTER DEE SNELL and CORNELIA T. SNELL. "Colorimetric Methods of Analysis, Including Some Turbidimetric and Nephelometric Methods. Vol. II. Organic and Biological." D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 815 pp.

H. P. STARCK. "Principles of Organic Chemistry." Chemical Publishing Company of New York, 148 Lafayette St., New York, N. Y. 664 pp. \$5.50.

CHARLES W. STILLWELL. "Crystal Chemistry." McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y. 431 pp. \$4.50.

ALBERT V. SZENT-GYÖRGI. "Studies on Biological Oxidation and Some of Its Catalysts." Verlag Johann Ambrosius Barth, Salomonstrasse 18B, Leipzig, Germany. 98 pp. RM. 5; bound, RM. 6.50.

J. E. VERSCHAFFELT. "Anvullingen der Thermostatica." De Sikkel, Antwerp, Belgium. 160 pp.

"Comptes Rendus des Travaux du Laboratoire Carlsberg. Série Chimique. Vol. 22. Volume Jubilaire en l'Honneur du Professeur S. P. L. Sørensen, pour son 70<sup>ième</sup> Anniversaire." Carlsberg Laboratorium, Copenhagen, Denmark. 570 pp.

"Hydrophobic Colloids. Utrecht Symposium on the Dynamics of Hydrophobic Suspensions and Emulsions." D. B. Centen's Uitgeversmij. N. V., Amsterdam, Holland. 181 pp. Dutch fl. 4.