with hydrogen chloride we can obtain either enantiomeric halide (to be sure partially racemized[2]) depending on the temperature of the reaction. Thus with hydrogen chloride in pentane solution at 25°, 3,7-dimethyloctanol-3, b. p. 89.0° (15 mm.), $n^{25}D$ 1.4320, d^{25}_4 0.8250, $\alpha^{23}D$ −0.45°, yielded the corresponding tertiary chloride, b. p. 71.0° (9 mm.), $n^{25}D$ 1.4346, d^{25}_4 0.8647, $\alpha^{23}D$ −0.28°. The same reaction run at −78° gave the enantiomeric chloride (contaminated with unchanged carbinol), b. p. 69–70° (8 mm.), $n^{25}D$ 1.4340, d^{25}_4 0.8516, $\alpha^{23}D$ +0.17°.

These results undoubtedly are due to a predominance of one type of substitution reaction over the other, and are in harmony with the results of Levene and Rothen with phenylated carbinols, except that these investigators observed similar results only when no solvent was used. It appears then that tertiary carbinols react in much the same way as secondary carbinols, *i. e.*, that halogenation may occur by at least two different paths,[3] predominance of each being determined by the temperature. If the lower temperature favors retention of the original configuration, as suggested by Levene and Rothen, thus probably involving an intramolecular nucleophilic change (S_Ni),[4] then levo 3,7-dimethyloctanol-3 is configurationally related to dextro 3-chloro-3,7-dimethyloctane. This relationship would mean that this tertiary carbinol is an exception to the general rule advanced by Cowdrey, Hughes, Ingold, Masterman and Scott for secondary carbinols.[5] A detailed report of our work, together with more recent developments, will be presented in the near future.

(2) It is not possible at present to say whether this racemization is due mainly to the concurrent formation of both enantiomers by different paths, to racemization of a sterically unstable intermediate, or to racemization due to a common ion effect.

(3) Cowdrey, Hughes, Ingold, Masterman and Scott, *J. Chem. Soc.*, 1252 (1937).

(4) Ref. 3, p. 1269.

(5) Ref. 3, p. 1268.

DEPARTMENT OF CHEMISTRY
McGILL UNIVERSITY PHILIP G. STEVENS
MONTREAL, CANADA NEAL L. McNIVEN

RECEIVED APRIL 14, 1939

NEW BOOKS

Principles of Flotation. By IAN W. WARK, Ph.D., D.Sc., Officer in Charge of the Flotation Research Laboratory in the Department of Chemistry, University of Melbourne. Australasian Institute of Mining and Metallurgy, Inc. Tait Book Company Pty., Ltd., 349 Collins Street, Melbourne, Australia; G. E. Stechert and Company, 31 East 10th Street, New York, N. Y., 1938. 346 pp. 101 figs. 15.5 × 24 cm. Price, 21s./-.

This very readable, well-written monograph critically examines and correlates the more recent investigations in the field of mineral flotation with the author's numerous contributions to this important division of applied surface chemistry. In the integration of his own work with that of other investigators he has, in some instances, used their data in drawing interesting and thought-provoking conclusions.

In the presentation of the work of some investigators on homologous series of flotation reagents, Wark has neglected to recalculate and replot their data to the mole per ton basis; he has kept the pound per ton basis given in the original reports. The pound per ton basis may be important in cost studies of homologous series of flotation reagents, but such a basis does not readily permit a sound interpretation of such physico-chemical data.

In his discussion of the theory of froth formation, Wark tells us that most inorganic salts raise the surface tension of water. However, the work of Jones and Ray and the more recent theoretical considerations of Langmuir show that, in extremely dilute solutions, all of these salts may be expected to reduce the surface tension of water.

In applying the Gibbs adsorption theorem to frothing agents, Wark remains content with the statement that since the slopes of the surface tension–concentration curves of all such reagents are negative, U is positive, and that the distorted surface of a bubble will have a lower reagent concentration and hence a higher surface tension. The evident possibility of classifying the effectiveness of such reagents according to the degree of negativity of the slopes of their surface tension–concentration curves has not been considered. Wark does show, however, that the surface tension changes due to the presence of frothing agents have a negligible effect on contact angles.

Wark has compared and discarded former erroneous ideas and theories of many investigators; he invites criticism of his interpretations. He has presented his considered opinion of the fundamentals of mineral flotation based on his own researches and those of others. The book is a valuable contribution to the science of mineral flotation.

C. C. DE WITT

The Structure and Composition of Foods. Volume IV. Sugar, Sirup, Honey, Tea, Coffee, Cocoa, Spices, Extracts, Yeast, Baking Powder. By ANDREW L. WINTON, Ph.D., and KATE BARBER WINTON, Ph.D. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y., 1939. xxxiii + 580 pp. 134 figs. 16 × 24 cm. Price, $9.00.

The fourth volume in this series by the Winton's is divided into four parts, I Saccharine products, II Alkaloidal products, III Spices and extracts, IV Leaven. Each part is divided into numerous sections or chapters dealing with specific materials. Thus, in Part I, in addition to an introduction relating to sugars in general, there is a discussion of the composition and properties of the products of sugar cane, sorghum, corn stalk, palm stalk, sugar beet, maple, and malt, as well as honey, invert sugar, and glucose.

In Part II Alkaloidal Products, are included cocoa, maté, tea, chocolate and cocoa, coffee, betel nut, guarana, coffee-cassia, chicory, and dandelion. The last two named are not definitely established as alkaloid-containing, but are doubtless included here because of their use in mixture with coffee. Of course, most of the sources of medicinal alkaloids are omitted, since only foods (using that term in a broad sense) are covered in these volumes.

Numerous materials used as sources of flavoring principles are included in Part III. In this and the two preceding parts appear citations to many papers published more than thirty years ago which are of somewhat doubtful acceptability as sources of precise knowledge in the light of present-day organic- and bio-chemical ideas.

Part IV covers yeast and baking powder, the first named section including a discussion of alcoholic fermentation, the enzymes, and the vitamins of yeast, as well as its chemical composition and technical applications. Practically no reference is made to the various species and strains or races of yeast, and their role in the preparation or fermentation of various food products.

As in the instance of the three preceding volumes in this series, this book is replete with data and diagrams gleaned from the literature of the past half century. It constitutes a convenient source of such data, and of citations to a vast literature.

C. H. BAILEY

The Application of Chemistry to Agriculture. By C. C. HEDGES, Head of Department of Chemistry and Chemical Engineering, and H. R. BRAYTON, Professor of Inorganic Chemistry, Agricultural and Mechanical College of Texas. D. Appleton-Century Company, 35 West 42nd Street, New York, N. Y., 1938. xi + 238 pp. Illustrated. 14 × 21 cm. Price, $2.00.

This book is one of the Century Science Series edited by James Kendall, and is intended as a textbook for students of agriculture who have had a preceding course of one year in inorganic chemistry. The general subjects presented are plants, soil, fertilizers and animal foods, with a final chapter on fungicides and insecticides. In the section on plants the authors discuss the germination of seeds, the growth of plants, their composition, inorganic and organic essential elements and their function.

Then follows a very much abridged presentation of organic chemistry leading up to carbohydrates, fats and proteins and the principles of animal nutrition. The section on soils begins with the atmosphere in its relation to soils, the origin and function of soils, weathering of rocks, the formation of soil, mineral plant food, organic matter, nitrification, alkali soils and soil acidity. Under the subject of fertilizers they discuss general character of fertilizers, organic nitrogen, inorganic nitrogen, phosphorus, superphosphates, bone, etc., potassium fertilizers, lime and indirect fertilizers, commercial fertilizers. The book concludes with a chapter on fungicides and insecticides, including disinfectants, deodorants, etc.

The book covers the ground thoroughly and students who use it will realize the importance of the relation of chemistry to agriculture. It is doubtful, however, whether they will be able to retain anything but general ideas. The discussions, in many instances, are insufficient in explanation, while presenting a large but confused mass of facts, so that, in the end, there is no clear picture of what actually does take place. There are few actual errors, but a good many instances in which the authors' use of terms is open to question. In the hands of a good instructor the book will be a helpful, satisfactory text.

JOSEPH S. CHAMBERLAIN

Practical Organic Chemistry. By FREDERICK GEORGE MANN, Sc.D., D.Sc., F.I.C., Trinity College, Cambridge, and BERNARD CHARLES SAUNDERS, M.A., Ph.D., B.Sc., Magdalene College, Cambridge. Foreword by Sir WILLIAM J. POPE. Longmans, Green and Co., 114 Fifth Avenue, New York, N. Y., 1939. xiii + 418 pp. 66 figs. 14.5 × 22.5 cm. Price, $2.75.

This textbook of practical organic chemistry is based on the author's experience in the laboratory course at Cambridge University. It is noteworthy for its breadth of scope. The book contains five sections: methods and manipulation (36 pages); preparations (164 pages); reactions and identification of organic compounds (79 pages); quantitative analysis (77 pages); simple enzyme reactions (20 pages). An appendix contains a description of the preparation of reagents, directions for first aid, tables of physical constants and logarithms.

The sections on manipulation and preparations are excellent. Directions for the many preparations are carefully and concisely worded, so that they can be followed exactly by inexperienced students. The scale of the preparations has been made smaller than is customary in laboratory manuals, for the purpose of conserving the student's time and the department's money. Each experiment begins with a short account of the theoretical considerations involved, including a comparison of relative merits where several methods are given, as for the process of esterification.

The section on identification of organic compounds concerns characterization of the commoner members of the important classes of compounds only. Methods described in the section on quantitative analysis have very unequal degrees of usefulness. For example, the Dumas procedure for nitrogen which is described is a macro method in which the tube must be refilled for each de-

termination; yet the methods for molecular weight determination which are given are both numerous and practical. Inclusion of a section on enzyme reactions is a commendable effort to broaden the student's viewpoint of organic chemistry.

The book should be useful in long laboratory courses in elementary organic chemistry, and as a convenient reference for more advanced students. No accessories which some instructors find useful in teaching, such as questions to be answered by the students, or directions for keeping a laboratory note book, etc., are included in the book.

ARTHUR C. COPE

The Chemistry of Carbon Compounds. By VICTOR VON RICHTER. Edited by the late Professor RICHARD ANSCHÜTZ. Volume II. **The Alicyclic Compounds and Natural Products.** Translated from the 12th German edition (Butenandt-Lipp-Niederländer-Reindel-Rochussen) and revised by T. W. J. TAYLOR, M.A., (Oxford), and A. F. MILLIDGE, Ph.D., B.Sc. (Lond.). Nordemann Publishing Company, Inc., 215 Fourth Avenue, New York, N. Y., 1939. xiii + 656 pp. 14.5 × 22.5 cm. Price, $15.00.

This book is more than a mere translation of the first part of Volume II of the 12th German edition of Richter–Anschütz; the authors of the different sections have added to, and in some parts rewritten, their contributions before the translation was made. Consequently the sections dealing with fields in which rapid developments are being made, are much more nearly up to date than would have been the case had the translator been content in making a translation without revision.

References are given to original papers and not to the *Zentralblatt* as in the original, the names of authors are given, and a number of additional references to special monographs have been added, with the result that the translation is far more useful to the average reader in this country than the original German text. The translator has done his work excellently; the translation is free, and reads smoothly, but it contains accurately the ideas of the original.

For those who are not familiar with the content of the original Richter–Anschütz, a brief description may be in order. Part A is devoted to Alicylic Compounds (by R. Rochussen and K. Niederländer) and is subdivided as follows: Ia, Monocyclic Compounds Excluding Cyclohexane and its Derivatives; Ib, Cyclohexane and its Derivatives (by F. Rochussen); II, Polynuclear Alicylic Compounds (by A. Butenandt and K. Niederländer); and III, Terpenes and Resins (by M. Lipp). Part B is devoted to Natural Products (I–VIII by F. Reindel and K. Niederländer, and VIII by A. Butenandt) and includes the following subdivisions: I, Glycosides; II, Tannins, Lichen Acids, etc.; III, The Active Principles of the Peppers; IV, Natural Coloring Matters; V, Nitrogen-Free Poisons; VI, Sterols, Bile Acids, and Scymnol; VII, Vitamins; and VIII, Hormones.

This translation measures up to the high standard set in the original German edition, and is probably the best reference book of moderate size in its field.

NATHAN L. DRAKE

Kurzes Lehrbuch der physikalischen Chemie. (Brief Textbook of Physical Chemistry.) By Dr. HERMANN ULICH, Professor, and Dr. KURT CRUSE, Assistant, in the Technical Institute of Aachen. Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany, 1938. xvi + 315 pp. 79 figs. 16 × 24 cm. Price, RM. 12.

In writing this book, Dr. Ulich and the co-author Dr. Cruse have set themselves a difficult task. It is no doubt possible, within the compass of about 300 pages, to present the important fundamental principles of physical chemistry not only for students of physical chemistry but also for students of metallurgy and of biology and medicine, as well as for physicists and engineers. But if an author attempts to do such a thing he must necessarily be reconciled to the omission of practically all illustrative material; and he does not have the space to pursue, to any great extent, the applications of the principles into the various ramifications of any of the several special fields. Perhaps many experienced teachers would prefer to have available several different kinds of textbooks of physical chemistry. All of such texts would be expected to outline the general principles, but the books which are addressed to students of biology might stress the aspects of the subject of particular significance for biologists, and the books written for metallurgists might dwell much more lingeringly upon those features of the general principles which metallurgists find it especially worth while to master. At least, granting that it is desirable to do these things in a textbook for the student, it is surely extremely difficult to do them satisfactorily for several types of students at the same time in one single book very severely limited in space.

Of course, it is never easy to assess the utility of an extremely brief textbook designed for a given class, or for given classes, of students without taking into account the resourcefulness of the teacher. Some teachers can supplement a general outline of principles with the examples required to make the presentation effective for students of widely different interests, just as some teachers can bridge the common gaps of textbooks and supply the missing derivations of relationships and supply the easy-stage background so often taken for granted—generally without warrant.

At any rate, in the present case the product of the authors' efforts is a very general outline of the principles of physical chemistry. The choice of material, for a general survey, is excellent. The method of treatment is excellent. Some considerable preparation in physics and mathematics on the part of the student is assumed. The treatment may be described as an elegant and summary discussion of the important basic elements of the science without any extensive derivation or proof of functional relationships, and without very much illustrative detail.

The generality, the very helpful generality, of the present authors' approach may be indicated by the fact that all of the material is classified under four chapters: Chap. I, Properties of Material States; Chap. II, Chemical Energetics and Science of Equilibrium; Chap. III, Chemical Kinetics; Chap. IV, Chemical Forces and the Structure of Matter. Within these four chapters there are, altogether, twenty-four sections, as follows: Chap. I, Ideal Gases, Solid Bodies, Non-ideal Gases and Liquids,

Solutions, Surface Boundaries. Chap. II, Chemical Equilibrium, Energetics of Chemical Reaction, Homogeneous Equilibrium, Heterogeneous Equilibrium, Heterogeneous Gas Equilibrium, The Phase Rule, Solution Equilibrium, Electrolyte Equilibrium, Electromotive Force, Electrolysis, Photochemistry. Chap. III, Mechanism of Reaction in Homogeneous Systems, Mechanism of Reaction in Heterogeneous Systems, Conductivity and Wandering of Ions, Arrest Phenomena in Electrode Processes and Concentration Polarization. Chap. IV, The Atom Nucleus, The Atom Sheath, Polar Bonds, Non-polar Bonds, Intermolecular Forces. Short lists of good problems are furnished at the ends of some of the sections.

Also given are a list of formula symbols and, in the Appendix, tables of specific heats, entropy and heats of formation, and certain natural constants and factors useful in calculations. There are both subject and author indexes. The appearance of the book, between the covers, is unusually fine.

EDWARD MACK, JR.

Kolloidchemische Grundlagen der Textilveredlung. (Colloid Chemistry of Textile Finishing.) By DR. EMMERICH VALKÓ. Verlag von Julius Springer, Linkstrasse 22–24, Berlin W 9, Germany, 1937. xi + 701 pp. 346 figs. 12 × 24.5 cm. Price, RM. 57; bound, RM. 60.

The scope of this remarkably fine book is wider than its title suggests. It gives a comprehensive critical survey of the physical chemistry of textile materials, dyes, soaps and other auxiliary substances, together with a survey of the phenomena upon which the processing of animal, vegetable and synthetic fibers is based. The book is an authoritative account of facts and theories of general interest to physical chemists. It is also a mine of information to those concerned with industrial applications, and to those seeking research problems of unusual fascination and importance. The whole is written in a particularly clear and agreeable style which is at once exact and objective, but always keeps in view the broader relations of the subject. It is a pleasure to find colloidal phenomena discussed without obscurity.

To give some conception of the extent and nature of the subject matter, it may be pointed out that the first half of the book (ten chapters) deals with the general properties of textile fibers, cellulose, silk and wool, describing their constitution and structure, their behavior toward water, and in solution, mercerization, chemical changes and felting. Consideration of mechanical processes is excluded, as is also manufacture of artificial fibers. Likewise technical processes are not described in detail, but their basic phenomena are carefully elucidated.

Chapters 11 to 13 occupy nearly a third of the book and provide an excellent account of the colloid chemistry of dyes, and their solutions, of the phenomena of dyeing and of the behavior of dyes upon the fabric. This part of the monograph fills a long felt need. Probably, however, as Ostwald protests, some of the distinctively colloid behavior has been omitted from consideration.

Chapters 14, 15 and 16 discuss the colloid chemistry of soaps, of wetting and emulsifying agents and detergents, followed by a briefer description of starch and gum arabic.

The bibliographies at the end of each chapter are a valuable feature because they are modern and substantially complete. Greatest weight is laid upon the latest interpretation to be found in the literature, although occasionally this may have led to a premature abandonment of a better-established position. The book is very well produced and very fully illustrated.

J. W. MCBAIN

Précis de Chimie Physique. (Treatise on Physical Chemistry.) By A. BERTHOUD, Professor of Chemistry at the University of Neuchâtel. Gauthier-Villars, Imprimeur-Éditeur, 55 Quai des Grands-Augustins, Paris, France, 1939. vi + 498 pp. 133 figs. 16.5 × 25.15 cm. Price, fr. 155.

This book is written as a text for a first course in physical chemistry. The author has desired to "remain in the happy ground between physics and chemistry without forgetting that physical chemistry particularly interests the chemists."

The book covers the subjects which would be included in almost any text of this description. In addition to the customary chapters on gases, liquids, solids, thermodynamics, thermochemistry, reaction kinetics, colloids, and radioactivity there are included good chapters on atomic structure and X-rays, the electronic theory of valence, absorption spectra, and photochemistry. Most of the chapters seem well done, and the text is relatively free from typographical errors. The thermodynamics is covered without the use of partial differentials but on the whole is quite rigorous and better than in most texts of an elementary character.

The author, in common with most others who write elementary physical chemistry books, shows certain weaknesses and lack of knowledge of recent developments in certain fields. For example, the drop weight method is treated in the classical way with no mention of any corrections to the formula: $w = k\gamma$, and the old value of 6.55×10^{-27} erg/sec. is used for Planck's constant. The concept of activity is introduced in an academic fashion but is not used in treating equilibrium in solution.

The book is, perhaps, slightly better than many textbooks on this subject but has no particular point to recommend it over the best American texts.

W. ALBERT NOYES, JR.

The Phase Rule and its Applications. Eighth Edition. By ALEXANDER FINDLAY, Professor of Chemistry, University of Aberdeen. Revised with the Assistance of A. N. Campbell, Associate Professor of Chemistry, University of Manitoba. Longmans, Green and Co., 114 Fifth Avenue, New York, N. Y., 1939. xv + 327 pp. 163 figs. 14.5 × 22 cm. Price, $3.00.

This is still the best and most useful book on the phase rule in English, and an eighth edition is to be welcomed. The new version differs very little from the earlier editions; the text itself, in no sense rewritten, is extended by no more than eight pages, including brief insertions on some more recent work, attempts to bring the examples and bibliographical references up to date, and the revision and addition of occasional sets of data. The old Appendix,

on the experimental determination of the transition point, has been omitted. It may be mentioned that the printing, which has obviously been made from the old plates by a new "Novographic Process," is distinctly inferior to that of previous editions.

The continued omission of references to schematic space models for the better elucidation of the relations between all the projections and sections of the complete phase diagrams of the typical one- and two-component systems considered, remains a fault long felt in this otherwise practical and excellent book. Its well known good qualities, however, far outweigh such faults, and we can still recommend it very highly as a standard text on the subject, the value of which will no doubt continue to be appreciated for a long time.

JOHN E. RICCI

BOOKS RECEIVED

March 15, 1939 to April 15, 1939

E. BAMES, A. BÖMER, R. GRAU, C. GRIEBEL, J. GROSSFELD, W. HALDEN AND H. HOLTHÖFER, Editors. "Handbuch der Lebensmittelchemie. Vol. IV. Fette und Öle: Lipoide, Wachse, Harze, Ätherische Öle." Verlag von Julius Springer, Linkstrasse 22-24, Berlin W 9, Germany. 966 pp. RM. 135; bound, RM. 138.60.

ADOLF BRAUER AND JOSEF REITSTÖTTER, Editors. "Fortschritte des chemischen Apparatewesens. Werkstoffe." Akademische Verlagsgesellschaft m. b. H., Sternwartenstrasse 8, Leipzig C 1, Germany. 256 pp. RM. 28.

R. M. BURNS AND A. E. SCHUH. "Protective Coatings for Metals." American Chemical Society Monograph. Reinhold Publishing Corp., 330 West 42d St., New York, N. Y. 407 pp. $6.50.

A. C. CANDLER, Editor. "Spectrographic Analysis in Great Britain." Published by Adam Hilger, Ltd., 98 St. Pancras Way, London NW 1, England. 80 pp. 7s./9d.

KARL K. DARROW. "Introduction to Contemporary Physics." Second edition. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 648 pp. $7.00.

R. C. EVANS. "An Introduction to Crystal Chemistry." The Macmillan Company, 60 Fifth Ave., New York, N. Y. 388 pp.

STANLEY H. FILLION, Compiler. "Research Publications of the Worcester Polytechnic Institute, 1937-1938." Vol. II. W. P. I. Research Committee, Worcester Polytechnic Institute, Worcester, Mass. 92 pp.

A. GORIS AND A. LIOT. "Pharmacie Galénique." Tomes I-II. Masson et Cie., Éditeurs, 120 Boulevard Saint-Germain, Paris VI, France. 897 + 1020 pp. Fr. 390; bound, fr. 450.

LEICESTER F. HAMILTON AND STEPHEN G. SIMPSON. "Calculations of Quantitative Chemical Analysis." Third edition. McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y. 293 pp. $2.50.

THOMAS ANDERSON HENRY. "The Plant Alkaloids." Third edition. P. Blakiston's Son and Co., Inc., 1012 Walnut St., Philadelphia, Pa. 689 pp. $12.00.

GERHARD HERZBERG. "Molekülspektren und Molekülstruktur. I. Zweiatomige Moleküle." Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 404 pp. RM. 21; bound, RM. 22.50.

ELIZABETH MCCOY AND L. S. MCCLUNG. "The Anaerobic Bacteria and their Activities in Nature and Disease." A Subject Bibliography, in Two Volumes (Lithoprinted). University of California Press, Berkeley, Calif. 295 + 602 pp.

JOHN H. NORTHROP. "Crystalline Enzymes. The Chemistry of Pepsin, Trypsin and Bacteriophage." Columbia University Press, 2960 Broadway, New York, N. Y. 176 pp. $3.00.

WILHELM PRODINGER. "Organische Fällungsmittel in der quantitativen Analyse." Second edition. Ferdinand Enke Verlag, Hasenbergsteige 3, Stuttgart-W, Germany. 204 pp. RM. 17; bound, RM. 18.80.

WILFRED W. SCOTT. "Standard Methods of Chemical Analysis." Fifth edition, edited by N. Howell Furman. Two volumes. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 2738 pp. $17.00.

HERMANN STAUDINGER AND WERNER KERN. "Anleitung zur organischen qualitativen Analyse." Third edition. Verlag von Julius Springer, Linkstrasse 22-24, Berlin W 9, Germany. 157 pp. RM. 6.90.

PAUL WESSEL AND V. RIEDERER VON PAAR. "Physik für Studierende an Technischen Hochschulen und Universitäten." Verlag von Ernst Reinhardt in München, Germany. 548 pp. M. 4.90.

PAUL WESSEL. "Das Aufbauprinzip der Technik." Verlag von Ernst Reinhardt in München, Germany. 39 pp.

C. HAROLD WRIGHT. "Soil Science. A Handbook of Physical and Chemical Methods." Second edition. Thomas Murby and Co., 1 Fleet Lane, Ludgate Circus, London E.C. 4, England. 276 pp. 12s./6d.