In addition, citrinin was found to be a fairly strong acid (K_a 5.5×10^{-4} at 21° in 95% ethanol). Using a Beckman *p*H meter, Model M, we noted that below a *p*H of 4.6 the solution of citrinin was colored a characteristic bright lemon-yellow with green fluorescence. At *p*H 4.6, the color began to fade and at *p*H 5.6–5.8 it changed sharply to an orange-pink. Above *p*H 9.9 the color again changed sharply from an orange-pink to a cherry-red.

Investigations on citrinin and on synthetic compounds believed to be related structurally to citrinin are being continued.

We wish to acknowledge our appreciation to Professor C. C. Carpenter, Plant Science Department, Syracuse University, for assistance rendered in the microbiological procedures.

DEPARTMENT OF CHEMISTRY
SYRACUSE UNIVERSITY H. W. HIRSCHY
SYRACUSE, N. Y. P. M. RUOFF

RECEIVED MAY 18, 1942

NEW BOOKS

The Technology of Natural Resins. By C. L. MANTELL, Ph.D., Consulting Chemical Engineer, Director, Netherlands Indies Laboratories, and C. W. KOPF, B.Ch.E., J. L. Curtis and E. M. Rogers, B.A., Associates, Netherlands Indies Laboratories, New York. John Wiley and Sons, Inc., 440 Fourth Ave., New York, N. Y., 1942. vii + 506 pp. 81 figs. 15.5 × 23.5 cm. Price, $7.00.

The title of this volume is a little misleading as two of our most important natural resins, common rosin and shellac, are not included. The authors state: "Although an extensive literature exists on the synthetic resins, a corresponding development of the much older field of the natural materials is lacking. Volumes specifically devoted to shellac and rosin are in existence, but there is a decided gap in our technical literature concerning the important damar, copal, East India, and related resins from the viewpoint of their properties, their applications, industrial uses, development, and technology. This volume is an attempt to fill the gap."

The volume contains much information not published elsewhere or found only in scattered special articles.

One is reminded that the source territory of many of the natural resins discussed by the authors is now held by Japan. Our supply of Manila copal, damar, elemi and the East Indies batu, black and pale, are cut off for the duration. Much of our supply of shellac is similarly cut off.

The authors discuss the value of these natural resins in lacquer formulation and claim that in lacquer and oil varnishes they have not been satisfactorily replaced by synthetic resins. The present war situation of course requires their replacement by synthetic or other materials.

In the discussion of the removal of coloring matter from resins in solution by filtering through fuller's earth, it is implied that the loss by adsorption of resin by the earth precludes the commercial use of such a method. However, rosin in naphtha solution has successfully been decolorized in this way on a large scale for many years.

Technical monographs on special subjects, bringing the subject matter up to date, are always welcome, particularly when well done as in this volume. The authors are naturally interested in promoting the use of the particular natural resins in which they are commercially interested. The book, however, is not less valuable on that account.

B. T. BROOKS

Qualitative Analysis. By H. V. ANDERSON, B.Ch.E., M.S., Professor of Chemistry, and T. H. HAZLEHURST, A.B., Ph.D., Associate Professor of Chemistry, Lehigh University. Third, revised edition. Prentice-Hall, Inc., 70 Fifth Avenue, New York, N. Y., 1941. xi + 266 pp. 14 figs. 15.5 × 23.5 cm. Price, $3.70.

In revising the second edition of this popular text [reviewed in THIS JOURNAL, **60,** 2010 (1938)], the authors state that "certain changes in the presentation . . . have seemed advisable: . . . a more thorough treatment of acid–base reactions . . . and also a more detailed discussion of oxidation–reduction reactions and their analogy to acid–base reactions. . . . While endorsing the modern swing to semimicro technique, . . . in making this edition available to schools using semimicro methods, no change in the scheme of analysis has been advanced. . . . Therefore, along with the directions for procedures on the usual scale, there appear . . . quantities and occasionally special notes appropriate to semimicro methods. . . . Ionic equations have been used regularly. . . ." A slight increase in page length has more than taken up the small expansion, to give ten fewer pages.

The subject is presented under the chapter headings: Fundamental Theory, Solutions, Le Chatelier's Principle, Theory of Precipitation—The Solubility Product Principle, The Physical Process of Precipitation, Acids and Bases, Oxidation and Reduction, Cations of Groups I, II, III, IV and V, Reactions of Anions, Analysis of Solutions, Solids and Alloys, Appendix. The text treatment and literary presentation are clear and direct; well-planned format and good typography combine to produce an attractive book, its appearance being marred slightly by use of full capitals for certain terms (AWU, SPC, SOLID, LIQUID, etc.) and the cutting in of ionic charge symbols directly over subscripts instead of following them (which must have caused the typesetters hours of unnecessary labor).

ALLEN D. BLISS

Ionic Equilibrium as Applied to Qualitative Analysis. By T. R. HOGNESS, Professor of Chemistry, and WARREN C. JOHNSON, Associate Professor of Chemistry, University of Chicago. Henry Holt and Company, 257 Fourth Avenue, New York, N. Y., 1941. vii + 307 pp. Illustrated. 14.5 × 22 cm. Price, $2.00.

In this book the authors have merely omitted the analytical sections of their earlier text, "Qualitative Analysis and Chemical Equilibrium" and reprinted the remainder without substantial change. This shortens the original text by nearly one hundred pages, probably with corresponding price reduction, but otherwise we can see little gain. The unabbreviated text has been favorably known for the clarity and easy reading of its theoretical sections. These cover adequately the principles of ionization and of solution equilibria, together with the application of such principles to the separations of qualitative analysis. The authors also grant rather generous space to the topic of oxidation–reduction, which is developed both through the valence change and ion electron methods. Instead of expressing a standard potential for each oxidation–reduction pair, the authors derive equilibrium expressions for each half reaction involved and combine these to yield a numerical constant which replaces the usual oxidation potentials in the tables of oxidants. From these values the authors claim that the student can more readily calculate, for any concentration, whether or not the proposed reaction will occur.

An attractive feature of the text, at least to the instructor, is the generous number of well-chosen exercises or problems to illustrate the principles just elaborated. Sample problems are worked out in some detail, and answers to all problems are included in the appendix.

ERWIN B. KELSEY

Organic Syntheses. Collective Volume I. Second Revised Edition. Edited by HENRY GILMAN, Revised by A. H. BLATT. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y.; London, Chapman and Hall, Ltd., 1942. 580 pp. Price, $6.00.

The first collective volume of "Organic Syntheses" appeared ten years ago, and a new edition has now been issued. The opportunity has been taken to bring the material up to date and to incorporate new procedures for some dozen of the preparations. The literature relating to the preparations has also been reviewed and a large number of recent references are given.

The new edition in content, arrangement and appearance maintains the very high standard of the earlier volume. It is pointed out by the editor that a number of the compounds described are now available commercially, but their preparations have been retained, largely for educational reasons. If a chemical can be purchased for a price of five dollars or less per kilogram, its name is marked in the new edition with an asterisk. Some twenty-five compounds are so marked, which reflects on the recent development of the fine organic chemical industry. Incidentally, anhydrous hydrogen cyanide and levulinic acid should be added to the asterisked list.

"Organic Syntheses" is now a chemical institution and needs praise as little as "Beilstein." It remains the most important American contribution to the reference literature of organic chemistry.

R. P. LINSTEAD

BOOKS RECEIVED

April 10, 1942–May 10, 1942

SAUL B. ARENSON. "How to Solve Problems in Quantitative Analysis." Thomas Y. Crowell Company, 432 Fourth Avenue, New York, N. Y. 89 pp. $0.75.

R. P. BELL. "Acid–Base Catalysis." Oxford University Press, 114 Fifth Avenue, New York, N. Y. 211 pp. $3.50.

E. F. BURTON and W. H. KOHL. "The Electron Microscope." Reinhold Publishing Corporation, 300 West 42nd Street, New York, N. Y. 233 pp. $3.85.

F. H. CAMPBELL. "Chemical Dictionary." Chemical Publishing Company, Inc., 234 King Street, Brooklyn, New York. 85 pp. $2.50.

BRUCE CHALMERS and A. G. QUARRELL. "The Physical Examination of Metals." Vol. II. "Electrical Methods." Longmans, Green and Company, 55 Fifth Avenue, New York, N. Y. (London, Edward Arnold and Company.) 280 pp. $6.00.

SAMUEL GLASSTONE. "An Introduction to Electrochemistry." D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York, N. Y. 557 pp. $5.00.

B. SMITH HOPKINS. "General Chemistry for Colleges." Third edition. D. C. Heath and Company, 285 Columbus Avenue, Boston, Mass. 758 pp. $3.80.

I. M. KOLTHOFF and V. A. STENGER. "Volumetric Analysis." Vol. I. "Theoretical Fundamentals." Second revised edition. Interscience Publishers, Inc., 215 Fourth Avenue, New York, N. Y. 309 pp. $4.50.

WILLIAM MCPHERSON, WILLIAM EDWARDS HENDERSON, W. CONARD FERNELIUS and LAURENCE LARKIN QUILL. "Introduction to College Chemistry." Ginn and Company, Statler Office Building, Park Square, Boston, Mass. 608 pp. $3.50.

JACK DE MENT. "Fluorescent Chemicals." Chemical Publishing Company, Inc., 234 King Street, Brooklyn, N. Y. 240 pp. $4.25.

"A Symposium on Respiratory Enzymes." The University of Wisconsin Press, Madison, Wisconsin. 281 pp. $3.00.

J. F. THORPE and M. A. WHITELEY. "Thorpe's Dictionary of Applied Chemistry." Fourth Edition, Volume V, FEH.–Glass. Longmans, Green and Company, 55 Fifth Avenue, New York, N. Y. 610 pp. $25.00.