

to do business at the present time are demoralizing industry. Legitimate users of alcohol have long chafed under the clauses in the regulations which make it difficult for them to procure the necessary supplies of spirits to keep their plants in operation.

The changes as suggested in the administrative functions of the Internal Revenue Bureau should receive the indorsement of all legitimate users of alcohol. Congress should by every fair means be prevailed upon to consider the recommendations at the short session, to the end that legitimate industry may be enabled to expand freely.

While on the subject of alcohol regulations, mention must be made of the unjust taxing of alcohol intended for use in certain products. The levying of a tax on consumers of industrial alcohol is absolutely against the provisions of the Volstead Act. Though it is prescribed in the prohibition regulations, the tax is not in conformity with the law itself.

A manufacturer of shellac, under the existing regulations, can procure his alcohol free of tax; a manufacturer of hair tonics, on the other hand, who assuredly is a legitimate consumer of alcohol, is required to pay a tax on the alcohol he buys. The unjust discrimination should not be permitted to continue. Why a tax at all on alcohol intended for legitimate industrial use?

MARYLAND PREREQUISITE LAW.

The Maryland "prerequisite" law requires that each candidate for registration as a pharmacist shall be twenty-one years of age, have had four years of high school training and four years of drug-store experience, and be a graduate of a college of pharmacy "recognized" by the board. Candidates for registration as assistants must be eighteen years old, have had two years of high school training, two years of drug-store experience, and have attended one term at a college of pharmacy.

BOOK NOTICES AND REVIEWS.

Reagent Chemicals, Standards and Tests for.
By B. L. Murray. Published by D. Van Nostrand Co., New York. 379 pp., with index. Price, \$3.00.

A great improvement over Krauch. A well-selected list of the principal inorganic and organic reagents. Under each reagent chemical is given its chemical formula and molecular weight, followed by a clear, concise description of its physical and chemical characteristics, methods of preservation, uses in chemistry and the arts, etc. Many valuable suggestions and useful bits of information are given in conjunction with frequent references to literature. This portion of the text makes the book a source of much useful information for the analytic or research chemist. Next in order follows a tabular arrangement of "Maximum Limits of Impurities," in which the author has endeavored to set approximate limits of unavoidable impurities, to which we will refer again. This is followed by "Methods of Testing" given concisely and obviously intended for the experienced chemist. Introducing the text is a short caption entitled, "Explanatory Notes," which cover specific gravity, solubilities, boiling and melting points, etc. We regret to note that the author has retained the old unit of 15° C. for specific gravities. This seems unfortunate in view of the U. S. P. standard of 25° C.,

and the Bureau of Standards of 20° C. The wisdom of the 25° C. standard of the U. S. P. has been amply demonstrated to the satisfaction of all. Two pages are devoted to "Reagents, Tests and Test Solutions." We note the absence of any reference to the U. S. P. reagents, which comply with those of the Bureau of Standards and Department of Agriculture. I note this because we desire, above all, uniformity. Reference to the U. S. P. text for the preparation of reagents would leave nothing to be inferred, since it is very clear and explicit.

The author's methods of preparation of his reagents are too concise, leaving much to the idiosyncrasies of the chemist. While this may not influence some reagents, yet it is of great importance with the majority.

"Marsh Test for Arsenic." This test has undergone many modifications, each of which requires strict adherence to minute details if reliable results are to be expected. The text description of the apparatus as well as the manner for carrying out the test is too general and loose. No precautions are given. This is unfortunate, owing to the frequent references to the test in quantitative arsenic determinations. It would have added to the value of the book to have included the U. S. P. modified Gutzeit, which is simpler, more rapid in execution and equally accurate.

Also the preparatory precaution of *previous* reduction of the "ic" to "ous" arsenic is provided for. It is not wise to depend in all cases upon the nascent hydrogen of the old Marsh apparatus to reduce all of the arsenic. The test for arsenic under bismuth subnitrate needs revision. Suggest boiling with sodium hydroxide for removal of the arsenic from the bismuth and then testing this. Under metaphosphoric acid, the statement "no dark color should develop" after testing according to Bettendorff is taken to indicate not over 0.0015 percent of arsenic. In this instance some degree of color intensity should be given for comparative purposes. That is, through the employment of other chemicals in definite dilutions.

"Maximum Limits of Impurities." The plan of stating on the labels of reagents the quantities of impurities present has been in use for some years. No one has attempted to establish standard limits in such a systematic manner up to the appearance of this work, aside from sporadic attempts of the U. S. P. This plan is an excellent one; a responsible task requiring much experience and careful accurate work for which Mr. Murray is eminently fitted. In performing this task, the author realizes fully its difficulties in his preface statement, *viz.*, "The percentage figures in which the limits are stated were in part determined by quantitative tests, and to this extent are accurate; in part by qualitative tests in which the reactions in unknowns are compared with knowns. Such comparative tests... should not be regarded as exact." The analyst is not so much concerned over limits as he is over the accuracy of the analyses as stated on the label of the reagent he is using in important investigations.

So long as the quantities of the more important impurities are accurately given on a label, he can make the necessary corrections, otherwise the reagent is worthless except in so far as he is informed what impurities he may expect.

For general analytic work the qualitative limit tests are the best and most satisfactory, but cannot be relied upon in accurate quantitative determinations.

We note that the limit of ammonia salt in molybdic anhydride is set at 0.0035%, and determined by boiling 1 Gm. of the anhydride with alkali and noting that moist red litmus is not turned blue. This is a loose and inaccurate quantitative method owing to the

great variability in the quality of red litmus paper.

Market red-litmus may respond to N/1000 alkali V. S. or only to N/10 alkali V. S. The author should have established standards of sensitiveness for both blue and red litmus. In this connection I would suggest that Azolitmin should be tested rather with 0.5 Cc. of N/100 HCl or NaOH V. S. than 0.05 Cc. of N/10 V. S.

The author's method for determining definite percentage limits of Ca-Mg-SO₄ and other like ions through the absence of any noticeable reaction following the addition of a reagent to a percentage solution of the reagent is open to criticism. If any degree of accuracy is desired a proper large quantity of the reagent should be taken and the customary methods of analysis followed.

Some frequently occurring expressions are noted, *viz.*: "The reagent contains not less than," suggest following the U. S. P. plan stating, "The reagent *should* contain..." In the rubric under molybdic acid the statement, "It contains at least 83 percent and usually about 85 percent of MoO₃" might lead the unsuspecting to assume that *all* molybdic acids are up to this standard. The insertion of "should" would clarify the statement. In testing for absence of Cl by means of silver nitrate, the statement, "The liquid should not appear changed" seems too vague. Again, in adding this reagent to the solution being tested it is directed, for example, to "add *some* silver nitrate solution,"—it would be better to replace "some" by "a few drops." The terms "faint and slight opalescence" as well as "opalescence," occur frequently and are used to indicate widely varying quantities of Cl ions under the same term and conditions.

Why not adopt standard dilutions for comparison so that such terms as faint or slight or simple opalescence may be interpreted alike by all?

It is refreshing to note the use of the word *determining* in place of the old term estimating.

Under nitric acid, arsenic determination, the expression "evaporate the mixture on a sand-bath to fumes of sulphur dioxide" should read "until fumes of sulphur dioxide appear." Under sodium thiosulphate we miss tests for sulphites, sulphate and free sulphur.

Space does not permit reference to other slight slips appearing in the text which are unavoidable in editing a work of this character.

The press-work is unusually well done; the clear, bold type with the systematic arrangement of the text affords the reader a quick comprehensive grasp of the text.

Mr. Murray is to be congratulated on offering us a valuable reference book, the editing of which has required much care and experience.

V. COBLENTZ.

Practical Standardization by Chemical Assay of Organic Drugs and Galenicals. A manual for the student of pharmacy and a convenient hand-book of Pharmaceutical Assaying and Standardization for the practical pharmacist, the manufacturer, the control chemist or the drug inspector, by A. B. Lyons, F.C.S. Published by Nelson Baker & Co., Detroit, Mich. Price, \$3.00.

The Foreword defines standardization, and states that this implies the possibility of a reasonably exact determination of the active constituent or constituents of drugs. Trustworthy assay processes, therefore, are the one solid foundation on which to build. That the results of such assay shall be minutely exact is not essential, but the results must not be of doubtful interpretation. It sometimes happens that no assay has been found which is in itself infallible, but that we have two processes mutually confirmative, by which practical certainty of our results may be reached.

"In preparing this brochure reasonable completeness has been the aim kept in view, but in this age of rapid progress in science and in the practical application of scientific discoveries, completeness is an idea that may be approximated, perhaps, but never fully attained."

The author is nearing his four-score years and the undertaking of preparing this publication was an arduous task. He has accomplished the work with the care that has marked his contributions to the U. S. Pharmacopoeia and to pharmaceutical literature during many years. He gives due credit to the collaborators and the experience gained in the laboratory.

Part I is devoted to "General Principles and Procedures," including preliminary operations in the assay of crude drugs, methods of exhaustion, extraction of alkaloids by means of immiscible solvents, volumetric determination of alkaloids by alkalimetry. Then follow alternative procedures, routine procedures for assay of crude drugs, and for assay of galenical preparations. General

principles for the assay of volatile oils are also given and methods for the determination of saponification values, and iodine absorption value of fixed oils and fats.

Part II is concerned with detail of assay methods and standardization of individual drugs. There are ten chapters and the subjects considered are: Liquids employed as solvents, alkaloidal drugs, potent non-alkaloidal drugs, cathartic drugs, non-potent vegetable drugs, essential oils, epinephrine and glandular extracts, organic principles and synthetics, carbohydrates, and digestive enzymes. There are also various tables, lists of apparatus, reagents, etc.

The paragraphs of subjects are numbered for convenient reference, and the book has nearly 400 pages. The author deserves credit for presenting a valuable work for the student and practical pharmacist. The only adverse criticism we have to offer is relative to typography, and greater care should have been given to the final proof reading. The book deserves to be in the laboratory of every pharmacy, and, in the laboratory, will serve students and workers as an authoritative guide.

PUBLICATIONS RECEIVED.

Annual Reports of the Chemical Laboratory of the American Medical Association, Volume 12, January to December, 1919. Part I, Reprint of Contributions, Part II, Reports abstracted from the JOURNAL, Part III, Reports not previously published. Laboratory Staff: W. A. Puckner, Ph.D., director, Secretary of Council on Pharmacy and Chemistry, A.M.A.; P. N. Leech, Ph.D.; A. H. Clark, Ph.G., B.S.; L. E. Warren, Ph.C., B.S.

"This volume contains accounts of those portions of the A. M. A. Laboratory's activities which are of interest to workers concerned with the examination and standardization of medicines." Special attention is called in the Preface to the reports contained therein on the American-made synthetic drugs: barbital and barbital sodium, veronal and veronal sodium, luminal and luminal sodium, and phenetidyl-acetphenetidin hydrochloride, also to the examination of acriflavine and proflavine which received considerable attention during the war in the treatment of wounds. These reports have value for the pharmacist on account of the information relative to drugs, and methods of analysis which are employed.

The Supplement to the United States Naval Medical Bulletin—Published for the information of the Hospital Corps of the Navy. Issued by the Bureau of Medicine and Surgery Navy Department, Division of Publications, Captain J. S. Taylor, Medical Corps, United States Navy, in Charge. Edited by Lieutenant Commander H. H. Lane, Medical Corps, United States Navy, July, 1920. Copies may be had by sending 25 cents in money (not stamps) to the Superintendent of Documents, Government Printing Office, Washington, D. C.

As usual, the *Supplement* contains instructive and interesting matter. The address by Lieutenant P. F. Dickens, delivered at the Washington meeting of the American Pharmaceutical Association on "The Pharmacist in the Navy," presents the subject interestingly, and the "Syllabus of the Hospital Corps Training School, Naval Training Station, San Francisco, indicates the line of work and study which the students pursue. This number contains 172 pages and quite a number of excellent half-tone illustrations.

The Lilly Scientific Bulletin, Series 1, No. 10. This number contains "A contribution to the Pharmacology of Cotton Root Bark," by Charles R. Eckler, M.S.; "The Specificity of Disinfectants and Its Bearing on their Standardization," by A. L. Walters, B.S., M.D., and "The Preparation of 1,2-Dichloro-Ether," by E. A. Wildman and Harold Gray.

Hygienic Laboratory—Bulletin No. 120. February, 1920. I. The Experimental Production of Pellagra in Human Subjects by Means of Diet, by Joseph Goldberger and G. A. Wheeler. II. The Chemical Composition of the Rankin Farm Pellagra Producing Experimental Diet, by M. X. Sullivan and K. K. Jones. III. Biological Study of a Diet Resembling the Rankin Farm Diet, by M. X. Sullivan. IV. Feeding Experiments with the Rankin Farm Pellagra Producing Experimental Diet, by M. X. Sullivan.

How to Pass the Board: "A text book for preparing students to pass the examinations of any State Board of Pharmacy," By D. Chas. O'Connor, author of "Commercial Pharmacy," etc. 435 pages, 8½ × 5½. Bound in cloth. Price, \$3.50. The Spatula Publishing Company, Boston.

NEW PUBLICATIONS.

The Microscope. Re-Written and largely Re-Illustrated. Simon Henry Gage, of Cor-

nell University. Price, \$3.00. Comstock Publishing Co., Ithaca, N. Y.

Applied Economic Botany. McIlville Thurston Cook, Ph.D., Rutgers College, New Brunswick, N. J. The author has endeavored to make this work so flexible that it may be used in schools regardless of the amount of time devoted to the subject, of the available laboratory space and equipment. 261 pp. J. B. Lippincott Company, Philadelphia.

Pasteur—The History of a Mind. Emile Duclaux. Translated by Erwin F. Smith and Florence Hedges, Pathologists of the U. S. Department of Agriculture. This book is not only a critique of Pasteur. It is a contribution to biological history at a very important period in the development of science. 363 pp. The W. B. Saunders Co., Philadelphia.

Pharmacology. Douglas Cow, M.D. 7¼ × 4¾ in. Pp. 132. 7s. 6d. J. & A. Churchill, 7 Great Marlborough Street, London, W. [This is the first volume of the "Students' Synopsis Series" of books which Messrs. Churchill have in hand. Dr. Cow states that the book is not intended to displace any of the recognized textbooks, but to be used along with them. It is adapted for the final reading as a refresher of the student's memory before the examination. The book is arranged in paragraphs alphabetically, and deals not only with single drugs, but with classes of remedies and the action of drugs upon parts of the body.]

Experimental Organic Chemistry. Augustus P. West. Illustrated. 469 pp. Price, \$3.00. World Book Co., Yonkers on Hudson, N. Y.

Acids, Alkalies and Salts. G. H. J. Adlam. 8vo. 121 pp. Price, 2s. 6d. Sir Isaac Pitman & Sons, New York.

Chemical Dictionary: Inorganic Chemical Synonyms and Other Useful Chemical Data. E. R. Darling. 12mo. 100 pp. Price, \$1.00. D. Van Nostrand Co., New York.

Kinetic Theory of Gases and Liquids. R. D. Kleeman. 12mo. 272 pp. Price, \$3.00. John Wiley & Sons, Inc., New York.

A Short Handbook of Oil Analysis. A. H. Gill. 9th Ed. Revised. 215 pp. Price, \$2.50. J. B. Lippincott Co., Philadelphia.

Food Inspection and Analysis. A. E. Leach and A. L. Winton. 4th Ed. Revised and enlarged. 1,090 pp. Price, \$8.50. John Wiley & Sons, Inc., New York.

Everyday Chemistry. Alfred Vivian. 12mo. 560 pp. Price, \$1.64. American Book Co., New York.