

the various metals are stated, and the student is expected to confirm them; this is followed by descriptions of the recognized procedure for the separation of each group and of the metals which compose it. Part III treats the acid radicals on the same general plan. Acetates of silver, barium, calcium, etc., are used as reagents in preference to salts of inorganic acids. In Part IV a systematic procedure for dry reactions, and for the solution of materials for analysis is given in unusual detail, and the complete course of examination for the metals is again discussed. The Appendix gives the important reactions of many of the rare metals, an elaborate list of reagents, with a brief statement regarding the strength and preparation of each, tables of atomic weights and solubilities, and outline tables for the analytical procedures. These outline tables, as well as certain tables expressing in skeleton form the analysis of each group, which occur in the body of the work, are perforated so that they could easily be removed from the book. The author gives no hint of the reason for this in his prefatory statements.

The little volume contains a great deal of useful information in concise and clear form, and the book is worthy of the attention of teachers of qualitative analysis. Some who have large classes to deal with will doubtless wonder how the students as a whole can be persuaded to withstand the temptation to consult the numerous tables and full text of the latter part of the book, when constructing the schemes of analysis asked for in Part II, even though these teachers may recognize the fundamental excellence of the plan. Whether the plan is as novel as the author appears to assume it to be, may be questioned.

The subject matter is presented without any attempt to interpret the reactions from the standpoint of the ionic theory.

H. P. TALBOT.

ELEMENTARY PRACTICAL CHEMISTRY. PART II. ANALYTICAL CHEMISTRY, QUALITATIVE AND QUANTITATIVE. BY FRANK CLOWES, D. SC. LOND. Emeritus Professor of Chemistry in the University College, Nottingham, etc., etc., and J. BERNARD COLEMAN, A. R. C. SC., Head of the Chemical Department of the South-Western Polytechnic, Chelsea, etc., etc., Fifth edition, London: 1907. J. & A. Churchill. Philadelphia: P. Blakiston's Son & Co. pp. XV + 237. Price, \$1.00 net.

This little volume is an abridgment of the well-known works on qualitative and quantitative analysis by the same authors, and is adapted for introductory and comparatively elementary courses in colleges and technical schools. These works are so generally recognized as useful manuals, and, as in the case of the present work, so many editions have been called for, that extended description is unnecessary. This edition, the authors state, has been carefully revised, and some additions have been made to the volumetric portion, as well as a few gravimetric separations, and there is also appended a short section on Inorganic Prepa-

rations, illustrative of some of the typical processes of inorganic chemistry for the production of various classes of compounds.

The general use of the symbol Am for ammonium throughout this and other works by the same authors seems to lack full justification, and it is still more difficult to justify such inconsistencies in symbols as AmHO, and AmOH, and AlAm(SO₄)₂ · 12H₂O, and MgNH₄PO₄ · 6H₂O, which mar the pages of this generally excellent work.

H. P. TALBOT.

THE CHEMISTRY AND TECHNOLOGY OF MIXED PAINTS. BY MAXIMILIAN TOCH. pp. xvi + 160. New York: D. Van Nostrand Co. 1907. \$3.00 net.

There is always a satisfaction in reading a book written by a practical manufacturer, whether one agrees with him or not; he at all events has something definite to say, and says it. Mr. Toch writes simply and directly about paints, their manufacture, materials and use. First there is an excellent chapter on the plan and operation of the factory; this is followed by full accounts of the pigments in practical use, which give much interesting information about the newer pigments, concerning which the English books have very little to say. These are not mere physical descriptions of the dry pigments, but include specific information as to their use and value in paint, and are illustrated by sixty microphotographic plates. Especially new are the data about sublimed lead, zinc lead white, blue lead, artificial vermillions, and the various fillers, these last being in the author's opinion entitled to much more consideration than most previous writers have accorded them. The paint vehicles are then taken up, and some special paint problems are finally discussed. In an appendix is the most recent matter about tung oil.

The author writes from the standpoint of the newer class of paint manufacturers, and sets out clearly the views held by many of the important makers, and many of the paint chemists as well. There is a chapter on analytical methods; but information of a chemical nature is scattered freely throughout the treatise.

The book is handsomely printed and is free from typographical errors of any importance.

A. H. SABIN.

PRINCIPLES AND PRACTICE OF AGRICULTURAL ANALYSIS. A MANUAL FOR THE STUDY OF SOILS, FERTILIZERS, AND AGRICULTURAL PRODUCTS. SECOND EDITION, REVISED AND ENLARGED. VOLUME I, SOILS. BY HARVEY W. WILEY, A. M., PH. D. 92 Illustrations. 18 Plates. xii + 636 pp. The Chemical Publishing Co., Easton, Pa. 1906. Price, \$4.00.

Twelve years have elapsed since the publication of the first edition of this work, and in this time much progress has necessarily been made in methods and processes. The book has been brought strictly up to date. In spite of the fact that some of the material appearing in the first edition more fittingly treated under "fertilizers" has been left out, apparently to be transferred to Volume II, its place is more than filled with new matter.