

getting to be a livelier appreciation of the value of the synthetical chemistry as a part of every chemist's training, there is even now a comparatively small number of laboratories where a regular course in the preparation of pure inorganic compounds from crude and impure materials, is required of the students. Wherever such a course is offered, or contemplated this little book of Dr. Lengfeld's will be welcomed. It contains careful and *workable* directions for the preparation of about fifty compounds, beginning with easily prepared substances, like sodium chloride, potassium chlorate, and acid sodium carbonate, and proceeding with compounds the preparation of which requires greater experience and skill, and finally ending with hydrogen dioxide, hydroxylamine sulphate, and phosphonium iodide.

To quote from the preface: "An attempt has been made to introduce all processes generally used, and at the same time to avoid repetition. The student should study each preparation in detail, work out other methods of making the same substance, understand and criticise every step he takes and read some original articles. Therefore references to the literature have been given." The student who conscientiously follows this advice, and works through such a list of preparations, will find his knowledge of chemistry increased quite as much as it would be by any equal amount of labor that he could undertake.

G. M. RICHARDSON.

THE ELEMENTS OF QUALITATIVE ANALYSIS. By WM. A. NOYES, PH.D., Professor of Chemistry in the Rose Polytechnic Institute. Fourth Edition. Henry Holt & Co. 1897. 97 pp. Price, 88 cents.

Each one of the earlier editions of this work has proved itself an extremely useful and complete outline of the general subject covered by Fresenius in his larger work on Qualitative Analysis. The present edition does not differ radically from those preceding it, but it embodies many useful additions and minor changes, which will increase its value. Its mode of treatment throughout is characterized by the same explicitness in the directions to students. Copious tables of reactions are a feature of the book. A brief introductory chapter upon the dissociation theory of solutions calls attention to the many applications of the theory

and emphasizes the importance which it seems likely to take in the near future in the teaching of analytical chemistry.

F. C. PHILLIPS.

THE COMPENDIOUS MANUAL OF QUALITATIVE CHEMICAL ANALYSIS OF C. W. ELIOT AND F. H. STORER, AS REVISED BY W. R. NICHOLS. By W. B. LINDSAY, Professor of General and Analytical Chemistry in Dickinson College, and F. H. STORER, Professor of Agricultural Chemistry in Harvard University. Nineteenth Edition, Newly Revised. New York: D. Van Nostrand Company. 1899. vii+202 pp. Price, \$1.25 net.

The publication of nineteen editions in thirty years of a scientific book is ample evidence both of the value of the work and of the general appreciation of its value. This is particularly true of a work of this kind when every teacher of qualitative chemistry seems to find it necessary to publish a book covering this course for the special benefit of the pupils in the institution to which he is attached.

The plan of the work is excellent and follows the course which should be pursued by any one beginning the study of qualitative analysis. Beginning with examples of the separation of two elements, the student is led gradually on to the separation of the groups and the different members of each group. The treatment of an unknown substance follows, and so through the entire range of the subject. The descriptions are uncommonly clear and the language is simple and vigorous. The changes from the first revised edition are very slight and are in line of improvement, but some of the old cuts of apparatus are antiquated and below the standard of the rest of the book.

ANDREW A. BLAIR.

BOOKS RECEIVED.

The Compendious Manual of Qualitative Chemical Analysis of C. W. Eliot and F. H. Storer, as revised by W. R. Nichols. Nineteenth edition, newly revised by W. B. Lindsay and F. H. Storer. New York: D. Van Nostrand Co. 1899. vii+202 pp. Price \$1.25 net.

Wheat. Bulletin No. 83. Kentucky Agricultural Experiment Station of the State College of Kentucky, Lexington, Ky. August, 1899. 20 pp.

The Elements of Blowpipe Analysis. By Frederick Hutton Getman, New York: The Macmillan Co. 1899. x + 77 pp. Price, 60 cents.

The Chemical Composition of American Food Materials. By W. O. At-