

diately following, that of the compounds of hydrogen, the halogens, and oxygen, thus "introduced in order that the learner may have some facts to use in the consideration of acids and bases."

The second volume (pp. 366) is devoted to the metallic elements, their properties, and reactions (pp. 299); the classification of the elements in accordance with the periodic law (pp. 18); a system of qualitative analysis, (pp. 47), concluding with a table of seventy-two elements with their atomic "masses," prepared by F. W. Clarke and a blank table of solubilities of salts to be filled by the student as he determines these properties in his experiments.

"Mass" is used in preference to weight and the system of spelling recommended by the committee of the American Association for the Advancement of Science followed throughout.

Having developed the significance of valence and atomic mass in the first volume, the author devotes considerable space in this volume, in connection with each metal, to the facts which determine its classification with regard to these properties; and in view of the difficulties which students frequently meet in acquiring familiarity with them, this provision will, in many cases, prove most valuable.

The volumes are, each of them, provided with excellently arranged indexes, are of such form and size as to be convenient for use either in the study, the lecture room, or the laboratory, and are offered in attractive style both as to binding and typography.

WM. MCMURTRIE.

QUALITATIVE CHEMICAL ANALYSIS OF INORGANIC SUBSTANCES AS PRACTICED IN GEORGETOWN COLLEGE, D. C. pp. 61. New York: American Book Company. 1894. Price \$1.50.

This small book is divided into four parts: I. Basic Analysis. II. Acid Analysis. III. Preliminary Examination. IV. Solution of Solid Substances.

The bases are grouped and numbered according to Fresenius. The method of describing the properties and characteristic reactions of the elements of each group is somewhat different from that commonly used. A brief note of the properties of the element itself is first given, then the names and formulas of the

most common soluble compounds, and then the insoluble compounds under which head the characteristic reactions are given by first naming the insoluble compound or precipitate and then stating how it is formed, giving its properties, etc. Although the author states that "only these facts have been selected which are indispensable in a course such as the one for which the book is intended," it would seem that too large a number of characteristic reactions are either omitted or reserved to the analytical tables and explanations of the tables, and that in consequence the student hardly did a sufficient number of these important experiments before going on with a group separation.

This form of arrangement, however, may possess some advantages over the usual method of procedure. Certain it is that the explanations connected with each table of analysis is one of the best features of the book and bears evidence of careful and conscientious work on the part of the author. In treating of the acids the usual preliminary experiments upon the characteristic reactions of the individual acids of each group are entirely dispensed with, and instead one passes immediately to their separation and detection. To be sure the special tests applied to the separate portions of the original solution are characteristic. And the explanation of them is apt, still here again it would seem that some experience should be had in noting their deportment toward certain reagents before going to their separation. The preliminary examination and the solution of substances is substantially the same as ordinarily given in most text-books.

W. J. KARSLAKE.

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**ADDENDUM.**—Professor Mabery makes the following addition to his article in the February number, page 105, after the words "Morley determined with the utmost precision the proportions of oxygen without finding any appreciable variations," insert the following:

In certain conditions of the atmosphere, when a vertical descent of the upper portions occurs, Professor Morley observed a deficiency in oxygen equivalent to 0.16 per cent.