

LABORATORY EXPERIMENTS. For students in general chemistry in the University of Wisconsin. BY VICTOR LENHER. Second Edition. Madison, Wis. : Tracy, Gibbs & Co. 1903. pp. 31. Price, 50 cents.

The experiments prescribed begin with exercises upon glass bending and cutting, and upon chemical and physical change, after which the elements are taken up in the following order: hydrogen, chlorine, oxygen, nitrogen, carbon, the halogens, sulphur, the phosphorus group, silicon, boron, the alkalies, the alkaline earths, magnesium, zinc, cadmium, mercury, copper, silver, tin, lead, nickel, cobalt, iron, aluminum, chromium, and manganese. The treatment is essentially qualitative, although a few quantitative experiments have been introduced.

The manual contains no prefatory statements, but is presumably prepared to accompany the author's lecture and classroom instruction, and can, therefore, hardly be judged by itself. It contains little or nothing which can be regarded as unique, but the student who has conscientiously completed the experiments as prescribed, and given the explanations asked for, should have acquired a considerable knowledge of descriptive chemistry and a useful training in accurate observation.

The alternate (right-hand) pages of the book are blank; the typography leaves something to be desired. H. P. TALBOT.

A MANUAL OF QUALITATIVE CHEMICAL ANALYSIS. BY J. F. MCGREGORY. Boston: Ginn & Co. 1903. 133 pp. Price, \$1.10.

The book is divided into four parts. Part I gives the usual reactions of the common metals and acids. Part II describes blowpipe analysis very briefly. Part III takes up systematic methods for the metals and acids in solution. Part IV is devoted to the examination of "complex" solids. The author makes no use of the modern theory of solution, stating in the preface: "That however valuable the study of this subject may be to the chemist, its introduction as a basis of study in qualitative analysis is not to be recommended." On looking through the book, nothing new or original is to be found, unless  $(\text{NH}_4)_3\text{PO}_4(\text{MoO}_3)_6$  as the formula of ammonium phosphomolybdate and some other errors should be so considered.

As the reviewer believes that qualitative analysis should be taught from the standpoint of reactions of ions, this book does not appeal favorably to him, and the question, which naturally

suggests itself when a new book on qualitative analysis appears—why was this published?—remains without an answer.

E. H. M.

A LABORATORY GUIDE TO QUALITATIVE ANALYSIS WITH THE BLOWPIPE.  
BY F. W. MARTIN, PH.D. New York: John Wiley & Sons. 1903.  
12mo. iv + 41 pp. Price, 60 cents net.

The author of this little book states that, in his judgment, the restricted use of blowpipe methods as a means of qualitative analysis is due mainly to the lack of a manual on the subject which is designed specifically for the analysis of compounds in general. To meet this deficiency he has arranged a scheme of analysis which is the feature of the book and which consists of well-known tests applied in the following order: 1, Closed tube; 2, open tube; 3, on plaster tablet, (*a*) *per se*, (*b*) with hydriodic acid, (*c*) with hydrobromic acid, (*d*) with stannic chloride, (*e*) with cobalt nitrate; 4, flame reaction; 5, bead reactions; 6, sodium carbonate on charcoal; 7, zinc and hydrochloric acid, after fusion with sodium carbonate and potassium nitrate; 8, fusion with acid potassium sulphate or sodium carbonate for detection of acids. Excellent cross references add greatly to the value of the scheme.

While the reviewer can not agree with the opinion of the author, as stated above, it is undoubtedly true that many substances, especially those of a simple nature, can be advantageously analyzed by the scheme presented. It is doubtful, however, if the book will be recommended. Very little attention is paid to the greatest difficulty of its use, *i. e.*, interfering elements and their separation. Some of the tests given cannot be relied upon except for the purest material, and a few are insufficient for identification even when free from admixture. The blowpipe has its use, but too much has often been claimed for it, even in the hands of the expert. A few important blowpipe reactions have been omitted, such as the coatings obtainable on charcoal and the metallic buttons which are so easily produced by means of sodium from many compounds and ores, and even from the silicates of the malleable metals. The manual is without cuts of any kind and assumes the guiding hand of a teacher already familiar with the subject. For class use this has, perhaps, a distinct advantage, as cumbrous details are omitted.