

NEW BOOKS.

A Practical Elementary Chemistry. By B. W. MCFARLAND, High School, New Haven, Conn. 462 pp., 148 cuts. Scribners.

This book is different. Most first year textbooks are written and afterward a laboratory manual is arranged which follows more or less closely the text, the manual either separate or bound in with the text. This book puts the manual first, filling 100 pages and giving 47 experiments, though many of these are too long for one laboratory period. This is followed by Part II, Fundamental Ideas, pages 104 to 165; Part III, Advanced Theory, pages 168-238; and Part IV, Descriptive, pages 251 to 454.. The Index fills 8 pages.

Such an arrangement should free the teacher from slavery to a text and is pedagogically right in basing the study on laboratory work, not on a textbook. It is an extension of the plan followed by two well-known and formerly widely used books, Remsen, and Shepard. In these the directions for laboratory work are printed in different type in the body of the text. Whether the entire separation of the two parts as given here is practically advantageous remains to be seen. The author is quite complacent over the results obtained while using it. They may be due to the teacher rather than to the plan.

Each chapter of the first three parts is followed by exercises, questions and problems designed to provoke thought, though in some cases the student is told what he should have discovered. *E. g.*, page 59: "Note that the odor has been removed." "Note that the color has been removed." "Note that the bitter taste has been removed." The references are all to paragraphs but none of these are given at top of page and much time must be spent looking through the work to find the required paragraph.

Aside from the features enumerated the book has no distinctive differences. The subject of equations receives much attention and Chapter XIX is made up entirely of review exercises. Carbon and its compounds get ten pages of descriptive text and the metals 76, of which 17 are given to the alkalies. Five pages go to Osmosis and related topics, 10 to Electrochemistry and 3 to Thermochemistry. Gram molecular volume is given but the Kinetic molecular hypothesis is not mentioned.

The terminology leaves much to be desired. Sugar dissolves in water and copper dissolves in nitric acid, as though the two were the same; there is "suction" and precipitates are "sucked dry," as though his students would not understand unbalanced atmospheric pressure; there are hydrogens and oxygens and bariums and aluminums and 2 KBr's (two kay bee ar's or two potassium bromides?); logically there should be sodiums, or would they be sodas? and coppers might be shortened to "Cops." Such usage might, perhaps, be permissible elsewhere. It has no place in a text for beginners. " $N_2O + H_2O = 2HNO$ " and the statement "NO

is the hyponitrite radical and has a valence of one because it can form a compound with one hydrogen" are surprising to say the least and the word "symbol" is given four distinct meanings. "Chemistry teaches us the value of 40 or more elements or compounds" and "Valence is taught only to relieve the student of the necessity of remembering the combining proportions of the elements in thousands of compounds," need reconciling.

The type, illustrations and presswork are good. A few misprints such as the last formula on p. 135, "pyrophoric" on p. 148 and carbon dioxide, p. 332, escaped the proofreader.

In spite of all these the book will well repay a reading and will appeal to those desiring a change in plan.

C. M. WIRICK.

The Analysis of Non-Ferrous Alloys. By FRED IBBOTSON, B.Sc., B.MET., A.R.Sc.I. AND LESLIE AITCHISON, M.MET. With diagrams. London, New York: 1915. Longmans, Green & Co. pp. vii + 230.

The aim of this volume is to assemble the methods which, in the opinion of the authors, combine accuracy and speed in the highest degree, and apply to conditions which are actually to be met with in analytical practice. The various metals treated in the volume are first considered from the viewpoint of pure solutions, and subsequently as constituents of alloys.

The subject matter is divided into fifteen chapters, the first of which treats of apparatus used for electrolytic analysis, the second with the underlying principles of electrolytic analyses, the third with precipitations by means of hydrogen sulphide, the last with the analysis of commercial alloys, and the others with the determination of the various elements found in non-ferrous alloys. There is an appendix containing directions for the preparation of certain reagents, and the preparation of platinum electrodes. Five-place logarithms are also included. The index is subdivided into author and subject indexes.

The book is noteworthy as an assemblage of data which are widely distributed in journal literature, and as a contribution to a field which is not efficiently covered, but is of growing importance. The book is not without some rather serious imperfections in composition and directness of statements but, in spite of these imperfections, the authors have made a distinct contribution to analytical chemistry.

H. P. TALBOT.