

fortunate that these keys are not always applicable, since many products lack certain elements present in the original material.

Arranged at frequent intervals through the book in connection with the treatment of each special subject are very exhaustive bibliographies, with cross references to a complete general bibliography near the end. The volume closes with a useful glossary of botanical terms.

A word of commendation should be spoken on the attractive form and appearance of the book. Of necessity it is large but not cumbersome, is excellently bound and printed, and furnishes one of the best examples of modern book-making in the class of text-books.

ALBERT E. LEACH.

NOTES ON ELECTROCHEMISTRY. By F. G. WIERHMANN, PH.D. New York: McGraw Publishing Co. 1906.

Within a compass of less than 150 octavo pages the author gives an abundance of data relating to electrochemistry, helpful to students and practical men alike. The book is not a text-book in the ordinary sense of the word, but a compilation of facts to which one may often feel inclined to turn to refresh one's mind upon electrochemical topics.

E. F. S.

A SYSTEMATIC COURSE OF QUALITATIVE CHEMICAL ANALYSIS OF INORGANIC AND ORGANIC SUBSTANCES WITH EXPLANATORY NOTES. BY HENRY W. SCHIMPF, PH.G., M.D., Professor of Analytical Chemistry in the Brooklyn College of Pharmacy. New York: John Wiley & Sons. 1906. vii + 156 pp. Price, \$1.25.

This book is an epitome of the principal reactions in analytical chemistry, prepared for students in pharmacy. As the time which can be devoted to chemistry in a course of pharmacy is short, the book is correspondingly brief. It contains, however, the gist of analytical chemistry, both inorganic and organic. Part I, devotes 16 pages to "Definitions and General Considerations." Part II gives 63 pages to inorganic qualitative analysis, but includes the organic acids. The observation that "students should prepare their own reagents and not be kept in the dark as to their strength" is good for small classes; the caution regarding impurities in reagents is wise. The last 65 pages of the book are on organic qualitative analysis, and this portion is fairly comprehensive. Sugars, alkaloids, poisons, urine, as well as a large share of the more common synthetic medicines, are included.

Typographical errors are rare, and the make-up of the book is good.

JAS. LEWIS HOWE.

**METALLURGICAL CALCULATIONS** By JOSEPH W. RICHARDS, A.C., PH.D.  
PART I. INTRODUCTION, CHEMICAL AND THERMAL PRINCIPLES,  
PROBLEMS IN COMBUSTION. New York McGraw Publishing Com-  
pany 1906 Price, \$2.00.

This book contains a reprint of a series of papers published in "Electrochemical and Metallurgical Industry" from March, 1905 to March, 1906, to which have been added many problems for practice. Other papers yet to appear in the same journal are expected to make up a second and a third part of the completed work.

Chapter I fully explains the use of chemical equations for such computations of weights, and of volumes in case of gases, as may be required in metallurgical operations. The second chapter treats of the applications of thermochemistry, and the third chapter explains and well illustrates the applications of thermochemical data. Chapter IV treats of the thermochemistry of high temperatures, and chapter V, of specific heats, heats absorbed in fusion, and other related matters. The titles of the three following chapters are, "Artificial Furnace Gases," "Chimney Draft and Forced Draft," and "Conduction and Radiation of Heat." There is an appendix containing twenty-three problems in addition to the twenty-four given in the text. Chapters II, IV and V contain copious tables of data. The metallurgical master will need this harmonious collection of the physical data of his art, and the metallurgist who is not yet a master will find the clear teachings of this book an indispensable guide to the understanding of the scientific principles on which his art is founded, and by the knowledge of which only can it be intelligently advanced.

EDWARD W. MORLEY.

**A HANDBOOK FOR CANE-SUGAR MANUFACTURERS AND THEIR CHEMISTS.**  
By GUILFORD L. SPENCER, D.Sc., formerly Chief of Sugar Laboratory  
U. S. Department of Agriculture, Chief Magnolia Plantation, Chaparra  
Sugar Co., Cuban-American Sugar Co., Nicaragua Sugar Estates, Ltd.,  
etc. 16mo. viii + 331 pp. 52 illustrations, morocco. New York :  
John Wiley & Sons. London : Chapman & Hall, Ltd. 1906. Price,  
\$3 00.

This book is the fourth edition of the same work by this author,