

LABORATORY NOTES ON PRACTICAL METALLURGY. By WALTER MACFARLANE. New York: Longmans, Green & Co. x + 40 pp.

This book is designed to be a graduated series of exercises leading up to the various metallurgical processes. It begins with the melting and pouring of metals and alloys, gives experiments in cupellation, scorification and liquation; the reduction and fusibility of silicates; the assay of silver and gold ores; and the analysis of fuels.

There seems to be much duplication of experiments all illustrating the same principle, especially in the first part of the book, many of which might have been performed in an elementary course in chemistry. The directions are all detailed, but this is probably necessary in an elementary book. The interpretation of results is left entirely to the student and with proper guidance from the instructor should lead to valuable results, especially so since the experiments are logically arranged.

The melting-points of the metals given on page 123 do not give the most recent values, and in the case of manganese is distinctly wrong, giving 1900° instead of the Heraeus value of 1245° .

HENRY FAY.

A LABORATORY CHEMISTRY. By RICHARD B. MOORE, Instructor in Chemistry, University of Missouri. Philadelphia and London: J. B. Lippincott Company. 1904. 194 pp.

The author of this book is of the opinion that the chief weakness in the training of students of elementary chemistry in the secondary schools is a lack of drill in the scientific method, and an almost entire neglect of the theoretical principles which underlie the science. He has emphasized, accordingly, in this book the more important theories of inorganic chemistry and the physical principles underlying these theories. Almost one-half of the book is devoted to a consideration of that part of physics which the teacher of chemistry is called upon to use. The following subjects are treated at some length: Units of Measure, Specific Gravity, Measure of Length, Expansion of Solids, Liquids, and Gases, Charles' Law, Boyle's Law, Barometer, Change of State, Boiling-point, Freezing-point, Effect of Dissolved Substance on Boiling-point, Specific Heat, Latent Heat, and Electrolytic Dissociation. The chapters give a clear exposition of the principles and contain laboratory directions for experiments which serve to illustrate the principles discussed.

The atomic theory, valency, and the quantitative relations between the weights of substances which enter into a chemical reaction are discussed in a very satisfactory manner, and are illustrated by a number of appropriate experiments. The last chapters contain directions for a few of the experiments usually found in the laboratory guides in chemistry.

The book will be helpful to the large number of teachers who, unfortunately, are compelled to teach chemistry to students who have had no training in physics. JAMES F. NORRIS.

METALLURGY OF CAST IRON. A complete exposition of the processes involved in its treatment, chemically and physically, from the blast-furnace through the foundry to the testing machine. A practical compilation of original research. By THOMAS D. WEST. Fully illustrated. Ninth edition. Cleveland, O.: The Cleveland Printing and Publishing Co. Price, \$3.00.

That there has been a real need for a comprehensive treatise on this subject and that it has been met by the book under consideration are evidenced by the issue of nine editions in as many years.

It aims to present in as plain a way as possible the principles of the smelting of iron ores and the treatment of cast iron in the foundry, together with a discussion of the constitution of the various grades of iron, the appearance of its fracture as related to the chemical composition and the physical effects of impurities normally or occasionally present. A considerable part of the book is devoted to the mechanical testing of sample bars, and the effects of heat and mechanical treatment are discussed at length. Many of the original investigations of the author and his associates in this field are here recorded.

The book can be commended to all those interested in the production or use of cast iron as being both modern and free from unnecessary technicalities. FRANK JULIAN.

EXPERIMENTAL RESEARCHES ON THE CONSTITUTION OF HYDRAULIC MORTARS. By HENRI LECHATELIER. Translated by JOSEPH LATHROP MACK. New York: McGraw Publishing Co. Cloth. 12mo. 140 pp. Price, \$2.00.

Mr. Mack has put all persons who do not read French under obligation by his translation of the thesis of Le Chatelier "On the Constitution of Hydraulic Cements," which was presented by him for the Degree of Doctor of Science before the Faculty of Sciences