

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