

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

of Paris, on July 6, 1887, and which Le Chatelier republished in a second edition in 1904 together with several papers of later date, owing to the fact that the earlier publications were not generally available. This thesis, as Le Chatelier states in the preface to the second edition, has been the foundation for much subsequent work and it is classical in its importance, many of his conclusions having been confirmed by more recent investigations.

Mr. Mack's translation is a clear one and should be in the hands of everybody who is interested in the subject. It is to be regretted that he did not include the papers forming the fourth part of the second edition of 1904, all of which are of interest.

CLIFFORD RICHARDSON.

THE MODERN ASPHALT PAVEMENT. By CLIFFORD RICHARDSON. New York: John Wiley & Sons. Cloth. 8vo. Price, \$3.00.

Mr. Clifford Richardson's book, "The Modern Asphalt Pavement," is by far the fullest treatise that has been published on the subject and is the first book that discusses the details of this industry. Without doubt, it will do much toward accomplishing what the author states in his introduction is the object of the work: "To demonstrate the nature of asphalt pavements and the causes of defects in them, to bring about improvement in the methods of their construction, and to show how this can be done."

The book, with the exception of one short chapter on asphaltic concrete, deals exclusively with the modern sheet asphalt pavement, the materials and the methods of construction, some views as to the cause of their failure and the methods of examining the materials used. The materials and methods of construction described, as is natural to expect owing to the author's present connection with the Trinidad Asphalt interests, are those principally applicable to this asphalt. While they are applicable in a degree to other brands of asphalts it is to be regretted that Mr. Richardson does not discuss a little in detail the modifications that are desirable with different asphalts.

The book is divided into parts, each treating of the different branches of the industry, while chapters give the details.

Parts 1, 2 and 3 discuss and describe in a general way the various parts of an asphalt pavement and describe the various materials used in the construction of these parts. Chapters III and IV