

ing these mechanical properties, and the methods of timber testing.

The work is presented in three parts, the first, the mechanical properties of wood, taking up fundamental considerations, tensile compressive, shearing and transverse strengths, toughness, torsion, hardness, and cleavability. The second part deals with factors affecting the mechanical properties of wood, such as rate of growth, weight, density, color, knots, insect and fungus injuries, temperature, preservatives, etc., etc. Part III. is devoted to timber testing, and takes up, forms of material used, moisture determination, machinery appliances, beam testing (large and small), and tests for impact, hardness, cleavage, tension, spike-pulling, etc. One appendix gives a sample working plan of the U.S. forest service. Another gives strength values for structural timbers. A bibliography in three parts well portrays the extent of literature on the subject.

Cement Specifications. By Jerome Cochrane, B.S., C.E., M.C.E. Published by D. VanNostrand Company, New York. First edition, 1912. 101 pp., illustrated, 6 x 9 ins., cloth. Price \$1.00 net.

According to the full title of this work, it is a treatise on cement specifications, including the general use, purchase, storage, inspection and test requirements of Portland, natural, puzzolan (slag), and silica (sand) cement, and methods of testing and analysis of Portland cement. In the compilation of the work the author expresses himself as having endeavored at all times to present a set of specifications that would not only be consistent throughout, but which, at the same time, conform to modern practice. He recognizes the futility of endeavoring to draw up specifications which will meet all conditions of engineers and all constructional and manufacturing conditions of actual work, and he observes that it was useless to expect that all provisions incorporated in the specifications would be applicable to every class of construction work. This is mentioned by the way, for the reader will find that the presentation of the subject, growing in importance as the uses of cement are magnified, is clear, complete, and one well worthy of reference.

Besides the introduction, the divisions of the book are as follows: General Conditions Governing Use of Cement; Furnishing Cement to the Contractor; Purchase of Cement from Manufacturers; Delivery and Storage; Inspection and Tests; Test Requirements; Methods of Testing; Significance of Tests; Methods of Chemical Analysis; Bibliography of Specifications; same of Foreign Specifications.

Materials of Machines. By Albert W. Smith, director of Sibley College, Cornell University. Published by John Wiley and Sons, New York City; Canadian selling agents, Renouf Publishing Co., Montreal. Second edition, 1914. 215 pp., 36 illustrations, 5 x 7½ ins., cloth. Price \$1.25.

The first edition of Prof. Smith's work was published about twelve years ago. The subject matter has been entirely re-written and brought up to date for the present edition. Its title may be better defined by stating that it is an elementary treatise on metallic materials used in the construction and operation of machines. This is presented in two parts, the first dealing with the manufacture of materials, to which four chapters are devoted, viz., Preliminary Considerations of Fuels; Electric Furnaces; Refractory Materials; Outline of the Metallurgy of Iron and Steel; and, the same of copper, lead, tin, zinc and

aluminum. The second part deals with the physical properties of materials, as follows: Testing Materials; The Equilibrium of Iron and Carbon; Cast Iron; Steel; Heat Treatment of Steel; Non-ferrous Alloys; Selection of Materials for Machines. The first part is written as an essential preliminary to the study of the second, while the second part presents some very desirable information for those who design, construct and operate machines. The information which this book contains is not easily collected, and its presentation in a single, small volume will be welcomed with considerable interest by engineers interested any way in the construction and operation of machines.

PUBLICATIONS RECEIVED.

Ontario Railway and Municipal Board.—Eighth annual report (to December 31st, 1913). 588 pp.; 6 x 9 ins.

Weights and Measures, Gas and Electricity.—Part 2, reports and statistics of inland revenues, Canada, 1914. 54 pp.; 6 x 9 ins.

Municipal Department of Hygiene and Statistics of Montreal.—Report for 1913, by Dr. S. Boucher, M.O.H. 104 pp.

United States Bureau of Mines.—Fourth Annual Report of the Director, for year ending June 30th, 1914. 101 pp.; 6 x 9 ins.

Agriculture and Immigration.—Report of Department, Province of Manitoba, for 1913. 125 pp.; illustrated; 6 x 9 ins.

Determination of the Co-efficient of Expansion of Mercury at Low Temperatures.—By C. B. James. A reprint from the transactions of the Royal Society of Canada. 8 pp.; illustrated.

Tide Tables.—Two bulletins, prepared by W. Bell Dawson, superintendent, Tidal and Current Survey, Department of Naval Service, Canada. One relating to Eastern coasts and the other to Western coasts.

Analyses of Mine and Car Samples of Coal.—Bulletin 85, United States Bureau of Mines, relating to samples collected in 1911, 12 and 13, giving tabulated analyses and descriptions of samples by states and counties. Illustrated.

The Crow's Nest Volcanics.—By J. D. MacKenzie. Published by the Geological Survey, Department of Mines, Canada, as museum bulletin No. 4. It relates to general geology, petrography, discussion, summary and conclusions. 37 pp.; illustrated.

Commission of Conservation, Canada.—Fifth Annual Report, 1914, giving proceedings of the fifth annual meeting, held at Ottawa, January, 1914. 288 pp.; illustrated; 6 x 9 ins.; cloth. James White, assistant to chairman, Commission of Conservation, Ottawa.

Department of Naval Service.—Annual Report for year ending March 31st, 1914. 100 pp.; illustrated; 6 x 9 ins. It contains reports on naval branch fisheries protection service, survey of tides and currents, hydrographic survey branch and radio telegraph branch.

The Expansive Force of Ice.—(See *The Canadian Engineer*, December 10th, 1914, page 741.) A 20-page reprint from the transactions of the Royal Society of Canada. Prepared by Prof. H. T. Barnes, and Messrs. J. W. Hayward and Norman M. McLeod. Illustrated.

Notes on the Sampling and Analysis of Coal.—By A. C. Fieldner for the United States Bureau of Mines. Published as technical paper 76. 61 pp.; illustrated. Collection of samples; methods of analysis; interpretation and accuracy of analytical results; classification, etc.