

the chapter is devoted to a discussion of the strength of ties under various treatments.

"Stresses in the Rail" is the heading for Chapter IV. The first portion of this chapter is more given over to discussing wear on tires, which is well put together and interesting, but is not very well worked into the subject of the chapter. A statement is made farther on relative to the heating of a rail due to slipping of drivers. It is stated that the running surface is hardened by this overheating and cooling, due to the surrounding metal conducting the heat away quickly. Quite true, the surface of a rail is heated by slipping of drivers. As the author points out, the shower of sparks when slipping takes place attests to this, but even though a small portion of the rail were heated, there is no doubt that the surrounding metal cannot conduct the heat away quickly enough to produce hardening. Certainly the effect cannot be as the author states: "Similar to quenching steel from high temperature in water, etc." In cold or moist weather some effect might be noticed, but this would be doubtful. In the discussion of bending and shearing stresses and the efficiency of rail joints a great deal of very accurate information is quoted. For use as splice-bars, the author favors oil-treated steel, presumably about fifty points of carbon. The statement is made that "oil-treated steel is as much in advance of high-carbon steel as is the latter over soft steel." Presumably this refers to the higher carbon steels being oil-treated. The point is not clear. The context, however, quotes a fifty-point carbon steel used by Cambria Steel Company. The information quoted on Rail Splices is well worth careful consideration.

In Chapter V. the strength of the rail is taken up. A great deal of information on repeated stresses is given and applied to the case of a rail under service. It might have been as well to have gone more carefully into the discussion of the internal structure of steel than is done at the beginning of the chapter. The subject is one requiring careful consideration or it had better be left alone. The discussion of what constitutes a crystal and what is referred to by a crystalline grain in steel is one which is very confusing unless the reader is familiar with the study of alloys, and the iron carbon series in particular. The chapter also deals with the effect of temperature on the strength of a finished rail and on the methods of testing.

The Influence of the Detail of Manufacture is discussed in Chapter VI. The first portion of the chapter is taken up with a description of the methods of manufacture of steel and the influence of certain elements on steel. There are certain inaccuracies in the descriptions that are inevitable in a synopsis. For instance, in the description of the Bessemer process it is stated that, "The combustion of this carbon (in the molten pig iron) increases the heat of the metal, and the flame . . . is at first red, but rapidly becomes brighter, etc." No mention is made of the burning of the silicon, which, in our present Acid Process, is the most important element in maintaining the temperature of the process. The first "flame" while the silicon is burning as a matter of fact is not a true flame. This is doubtless what the author had in mind, but the description is loose. In discussing the treatment of the ingot the author has gone to considerable pains in collecting the most up-to-date information. The section on mechanical work is also very well put together.

The last chapter is made up of various rail specifications, and on account of the wide range given is valuable.

As stated before, there are a number of plates. The drawings show up well on the dead white paper, the dimensions being very clear.

The book is a credit to the author, and is evidently the result of an enormous amount of labor in gathering information.

PUBLICATIONS RECEIVED.

Canadian Railway Club.—Official proceedings of the club, Montreal. James Powell, secretary.

Cloth Pinions.—Illustrated bulletins. Issued by the Canadian General Electric Company, Limited, Toronto, Ont.

Air Compressors.—Illustrated bulletin. Issued by the Canadian General Electric Company, Limited, Toronto, Ont.

Map of Cowganda Mining Division.—Issued by the Geological Survey of Canada, and covering twenty-eight townships in that district.

Forest Products of Canada.—Statistics as compiled by R. G. Lewis, B.Sc.F., on pulpwood. Issued by the Department of the Interior, Canada.

Electricity in Excavation and Construction Work.—Illustrated bulletin, 28 pages. Issued by the Canadian General Electric Company, Limited, Toronto, Ont.

Ontario Agricultural College.—Thirty-eighth annual report. Issued by the Ontario Department of Agriculture, Toronto.

Inspectors of Factories.—Twenty-fifth annual report of inspectors. Issued by the Provincial Government, Toronto, Ont.

Report of City Engineer, Hamilton.—Annual report for year ending December 31st, 1912, of Mr. A. F. Macallum, city engineer.

Queen Victoria Niagara Falls Park.—Twenty-seventh annual report of the Commissioners. Issued by the Provincial Government, Toronto, Ont.

Prisons and Reformatories.—Forty-fifth annual report of the Inspector of Prisons and Public Charities. Issued by the Provincial Government, Toronto, Ont.

Rain Statistics, Compiled by the Department of Trade and Commerce for the Year ended March 31st, 1912.—Part V. of the annual report of the Department.

The Analysis of Black Powder and Dynamite.—Technical bulletin by Walter O. Snelling and C. G. Storm. Issued by the United States Bureau of Mines, Department of Interior.

The Currents in the Entrance to the St. Lawrence, from investigations of the tidal and current survey in the seasons of 1895, 1911, and 1912. Published by the Department of the Naval Service at Ottawa.

Revenues and Expenses of Steam Roads in the United States for the Month of April, 1913.—Bulletin No. 53, prepared by the Division of Statistics, and issued by the Interstate Commerce Commission.

The Determination of Internal Temperature Range in Concrete Arches.—By C. S. Nichols, B.C.E., and C. B. McCullough, B.S. Bulletin No. 30 of Iowa State College, Engineering Experiment Station.

Trade and Navigation Statements.—Unrevised monthly statements of imports entered for consumption and exports of the Dominion of Canada for the month of April, 1913. Issued by the Minister of Customs, Ottawa.

The Inspector of Prisons and Public Charities' Report.—Forty-fifth annual report on hospital for feeble-minded and epileptics for the year ending October 31st, 1912. Issued by the Provincial Government, Toronto, Ont.

The Theory of Loads on Pipes in Ditches, including Tests of Cement and Clay Drain Tile and Sewer Pipe.—By A. Marston and A. O. Anderson. Bulletin No. 31, Engineering Experiment Station of Iowa State College.

Topographical Surveys Branch Report.—Contains the annual report of the topographical survey branch for the year 1911-1912. 260 pages. Illustrated, and includes 17 sketch and topographical maps. Issued by the Department of the Interior, Ottawa.

Report of the Railway, Telegraph and Telephone Department of the Province of Saskatchewan for the year ending February 29th, 1912.—A pamphlet containing over