their men. The working of the traveller need not be explained, but can be seen from Figs. 19, 20 and 21.

The whole work was carried out with very few accidents. One of the Canadian Bridge Company's workmen fell from the traveller, near bent No. 45 and, of course, was instantly killed, and two more men lost their lives by asphyxiation in a test hole that was sunk into the workings of an old coal mine on the east bank of the river.

The actual construction of the substructure started during September, 1907, and the bridge was opened for traffic on the 1st of November, 1909. Something like about 300 working days were required for the erection of the steel.

The bridge was designed by C. N. Monsarrat, Esq., M.Can.Soc.C.E., with Mr. C. C. Schneider, M.Can.Soc. C.E., consulting engineer. The work was handled from the office of the assistant chief engineer, Mr. J. E. Schwitzer, at Winnipeg, with Mr. F. St.C. Farran as engineer in charge of construction. The writer was assistant to Mr. Farran, and had immediate charge of the field work, in which he was ably assisted by Mr. A. T. MacDonald, now resident engineer of Bear River bridge, Dominion Atlantic Railway, and Mr. J. R. Middleton, resident engineer of Pitt River bridge, near Vancouver.

The contractors for the substructure were Messrs. John Gunn and Sons, of whom the writer cannot speak too highly in reference to the manner in which they carried out the work. This remark would apply to both the Canadian Bridge Company, who carried out the erection of the steel work, and the Raymond Concrete Pile Company, who drove the concrete piles.

Everything in connection with the work went along smoothly, and Fig. 20 shows the last girder being placed. The girder, of course, exactly reached the mark that had been set by the field party on the bridge seat of the west abutment, which was finished during the spring of 1908.



General View of Viaduct. The Riveting Traveller is seen over the Span between Bents 60 and 62.

PRODUCTION OF IRON IN CANADA IN 1913.

The iron ore shipments from Canadian mines during 1913 amounted to 307,634 short tons, valued at \$629,843. These shipments included 92,386 tons of hematite and roasted siderite, 209,886 tons of magnetite and concentrates and 5,362 tons of titaniferous ore. The total ore shipments in 1912 were 215,883 short tons, valued at \$523,315, and included 128,912 tons classed as magnetite and 86,971 as hematite.

Exports of iron ore from Canada during 1913 were recorded by the Customs Department as 126,124 tons, valued at \$426,681. These were from Ontario, New Brunswick, Nova Scotia and Quebec. Imports, according to Customs records, in 1913 were 1,942,325 tons, valued at \$3,877,824.

Shipments from the Wabana mines, Newfoundland, in 1913 by the two Canadian mines operating there were 1,605,920 short tons, of which 1,048,432 tons were shipped to Sydney and 557,488 tons to the United States and Europe.

The total production of pig iron in Canadian blast furnaces in 1913 was 1,128,967 tons of 2,000 pounds, valued at approximately \$16,540,012 as compared with 1,014,587 tons, valued at \$14,550,990, in 1912. Of the total production of 1913, 23,696 tons were made with charcoal as fuel and 1,105,271 tons with coke.

The classification of the production according to the purposes for which it was intended was as follows: Bessemer 265,685 tons, basic 614,845 tons, foundry and miscellaneous 248,437 tons. The amount of Canadian ore used during 1913 was 139,436 tons, imported ore 2,110, 828 tons, mill cinder, etc., 33,583 tons.

The amount of coke used during the year was 1,417, 148 tons, comprising 710,260 tons from Canadian coal and 706,888 tons of imported coke or coke made from imported coal. There were also used 2,206,191 bushels of charcoal. Limestone flux used amounted to 630,119 tons.

In connection with blast furnace operations there were employed 1,589 men and \$1,149,345 were paid in wages.

The production of pig iron by provinces in 1912 and 1913 was as follows:—

	1912.	Value		1913.	Value
Tons.	Value.	per Ton.	Tons.	Value	per 101.
Nova Scotia	6 374,910 8 176,089	15 00 13 87	480,068 648,899	7,201.020 9,338,992	14 39

There was also a production in 1913 in electric furnaces of 8,075 tons of ferro alloys, valued at \$493,018, compared with 7,834 tons, valued at \$465,225, in 1912.

The exports of pig iron during the year are reported as 6,326 tons, valued at \$351,646, an average of \$55.58 per ton. Probably the greater part of this is ferro-phosphorous, produced at Buckingham, and ferro-silicon and ferro-manganese, produced at Welland.

There were imported during the year 253,843 tons of pig iron, valued at \$3,234,877, charcoal pig iron 9²⁶ tons, valued at \$12,528 and ferro-manganese, ferrosilicon, etc., 30,355 tons valued at \$940,443.