

gate length of the iron-girder bridges is 4,487 feet; the wooden bridges, 35,447 feet—giving a total length of $7\frac{1}{2}$ miles. These bridges have cost about 12 per cent. of the gross amount of maintenance, or about 2s. 6d. per foot, being equal to $2\frac{1}{2}$ per cent. of the cost of construction. Floods in the Rakaia and Ashburton Rivers have from time to time rendered necessary considerable repairs and additions to protective works, involving heavy expenditure. These have, however, to a great extent checked further encroachments.

The Rangitata River is a source of great trouble. A special report prepared by the Resident Engineer is attached herewith (*see* Appendix I), to which I would beg to call your earnest attention.

The traffic on the North line, Christchurch to Amberley, has been suspended three times during the past year through the overflow of the Waimakariri River: these stoppages caused great public inconvenience through the suspension of all traffic, besides incurring an expenditure of £2,100 in making good the damage done to the line on these occasions. Works are now in progress which I have no doubt will prevent a recurrence of the kind in future, the line being raised above flood-level, and a 400-foot opening provided for carrying off floodwater.

Several new and extensive works have been executed during the year: these include the rearranging of the Christchurch Station Yards, and extensions to the Ashburton Station Yard, including the removal and re-erection of several large buildings, cranes, &c. Two new platforms made of concrete, respectively 740 and 350 feet in length, with verandahs, have also been constructed.

The gauge of the North line was altered from 5 feet 3 inches to the New Zealand standard gauge of 3 feet 6 inches on the 20th of December, the alteration being effected without necessitating the suspension of either passenger or goods traffic beyond one day. The length altered, including sidings, is 44 miles. The gauge of the Lyttelton Station Yard was altered during the night of the 8th of May. The Christchurch and Lyttelton new passenger stations were opened for public traffic on the 21st of December, since which date all passenger traffic has been carried on the narrow-gauge road.

The broad-gauge rolling stock was purchased by Mr. Mais, Engineer-in-Chief for the South Australian Government, the price obtained being less than what was anticipated, but it was absolutely necessary that it should be disposed of. The bulk of it left Lyttelton on the 22nd of June, in the ship "Hyderabad."

Locomotive.—Considerable improvements have taken place in the Christchurch workshops, but they are still far from being in a position to cope successfully with the constantly increasing demands made upon them for work. The Locomotive Engineer reports, "The inconveniences of the present situation of the shops in the station yard are beyond conception, and the cost of work is vastly increased by the want of proper tools and elbow-room." Twenty-one locomotives have received extensive repairs. Two tank engines from Invercargill, two tender engines from America, and one tank engine from England were received, erected, and put to work. One hundred and sixty sets of switches were made, as also 570 lamps of various patterns, 120 new goods wagons built, 25 erected, and 8 rebuilt, 43 sheep trucks converted into covered goods wagons, 9 new carriages erected, 323 wagons thoroughly repaired and painted, and 7 locomotive engines fitted for burning native coal, which I have no doubt will be brought into general use for locomotive purposes. (*See* special report, Appendix K.) With regard to the American engines, the Locomotive Engineer reports, "They have now proved themselves to be both good and economical, and, as for attention to detail in design and general excellence in workmanship, they stand out first in our catalogue of locomotives. American engines I thoroughly believe to be more suited for our lines than anything we can get built in England." The train mileage for the year was 799,972, and the engine mileage 1,120,845. The total expenditure of the department was £44,421 17s. 4d., equal to 13'33d. per train mile, and 9'51d. per engine mile. On the Christchurch section 8,651 tons of coal were used, being 197 tons per engine; the consumption per engine mile 17'28 lb., and cost 2'76d. per mile. Correct data wherewith to institute a comparison with the previous year's expenditure are not obtainable, but the Railway Engineer's report for 1875 gives the cost per train mile at 18'15d., and cost per engine mile at 12'63d. This shows a reduction on the expenses per train mile of 4'80d., and per engine mile 3'06d., being equivalent to a sum of £16,032 for the year's train mileage, or £14,290 for the year's engine mileage.

DUNEDIN SECTION.

Traffic.—The total earnings amounted to £103,606 8s. 5d., which with £539 12s. 1d., received for rents, &c., amounts to £104,146 0s. 6d., showing an increase over the previous year of £15,004 17s. 1d. The total number of passengers carried was 351,723, realizing £51,191 3s. 7d., being an increase in number over the year of 1876-77 of 57,973, and in amount of £6,779 0s. 3d. In addition to this, 64,128 passengers were carried over the Ocean Beach line, which is worked by the Government (a portion of the main trunk line being used by the Company), which brings the total number of passengers carried to 415,851, a very extraordinary traffic certainly, when compared with the population of the district. Great inconvenience was experienced on this section owing to the deficiency of wagon stock, which I have no doubt has in a measure tended to check the development of mineral and other traffic. A heavy loss was sustained through the severe floods which occurred during the month of June, the traffic being almost entirely suspended for a week.

There were carried during the year 144,251 tons of goods, 41,548 bales of wool, 5,175,491 feet of timber, besides 252 truckloads of heavy timber, the increase over the previous year's work being 8,940 bales of wool, 4,165,031 feet and 214 truckloads of timber. The total receipts for this traffic were £52,415 4s. 10d., and for the preceding year £48,220 17s. 2d., showing an increase of £4,194 7s. 8d. The General Manager reports that "the working of the railway has been crippled through the want of sufficient pier accommodation; the wharves are too short to afford ample berthing for shipping, and too narrow for the proper conduct of the extensive traffic upon them, while worse and more immediate in its damaging effects than either is the insufficient depth of water at their sides." The result of this is that many masters of vessels prefer to remain in the stream and discharge their cargoes into lighters for conveyance to Dunedin.

The effect of raising the rates on the Port Chalmers line at the commencement of the year was a serious check to the shipping traffic; the use of lighters, which had been declining, was at once