resumed, and, notwithstanding that the rates are now lower than those charged by the Provincial Government, the traffic is only gradually reverting to the railway.

I would here briefly refer to the station accommodation at Port Chalmers. It is very unsatisfactory. The shed, which is utilized as a passenger station, is in a most dilapidated state, aud is also most inconveniently situated. The necessity for increased and improved accommodation at the Dunedin Station is most pressing, and unless the work is at once put in hand, and pushed forward vigorously, the public will be subjected to much inconvenience, and the department will be quite unable to meet the demands that are expected to be made upon it when through communication is established with Christchurch and Invercargill.

Maintenance.—The cost for maintenance has been £21,825 11s., or equal to £224 13s. per mile. Of this sum, £3,826, or £36 per mile, has been expended in new rails and fastenings. The line on this section suffered severely from floods in the early part of June: that portion intersecting the Taieri Plain sustained considerable damage, the several points of interruption corresponding with the breaches made by the flood in the month of February, 1877. These recurring damages might be considerably mitigated by the construction of openings in the embankments at the points broken through by the water. The embaukments impound the water until it rises level with the rails, when it rushes in a torrent across to the other side, washing away the ballast and cutting gaps, and often carrying away several chain-lengths of rails and sleepers. It is intended to construct several 15-feet openings, with a view to equalize the water-level, and thereby reduce the depth of water by increasing the area submerged. It will take some time to get this portion of the line into good running order. The sleepers are decaying fast; a large proportion are Oregon, and will require to be replaced this year. The native sleepers, of matai and totara, are still quite sound. The Resident Engineer reports that "Ibbotson's patent clip-joint has signally failed, and the present rough condition of the road is in a great measure due to its failure. In spite of constant attention, the bolts work loose or break, and, though screwed up as tight as the strength of the material will admit of, the passage of every wheel creates a vertical action which in a short time destroys the joint: this increases the cost of maintenance, and causes great discomfort to passengers from the continued jolting imparted to the carriages." I can fully indorse the foregoing, after very careful observation. The Port Chalmers line is being relaid with steel rails. The Lawrence line is in good working order, but it is very expensive to work, and requires the greatest attention. It abounds in reverse curves of extremely small radii, laid without straight line between them, the result being severe shocks to the rolling-stock and heavy wear and tear. Engines working over this line have had their wheels turned up after running 2,000 miles only—about one month's work. All renewals on this line should be made with steel rails; the 40-lb. iron rails are too light either for safety or economy.

Locomotive.—The train miles run on this section have been 337,636, engine miles 423,771, and the total expenses of the department amounted to £18,122 0s. 8d., equal to 12·88d. per train mile, and 10·26d. per engine mile. The engines, eighteen in number, ran an average distance of 23,543 miles each during the year. Each engine consumed 223 tons of coal, or 26 lb. per mile. Six of these engines are Fairlie's patent, their consumption of fuel being high as compared with the ordinary engine.

Experiments were carried out with a view to test the adaptability of the native coal for locomotive use, but, although not so successful as could be desired, I am hopeful that this coal only will, ere long, be used on the New Zealand railways. The level lines in Canterbury are far better suited to a light fuel than the heavy grades prevailing in Otago (*see* Appendix J).

The rolling stock has been carefully attended to, and is in good working order.

Considerable alterations and additions are required to the workshops at Hillside.

Port Chalmers Forge.—The forge has been fairly employed during the year, the largest work executed being a double-throw crank-shaft, weighing 50 cwt. Several smaller shafts, stern-frames, &c., have been turned out for various parts of the colony; and, for departmental use, wagon-axles, buffers, and various other forgings have been made. For all these, old scrap-iron has been used. Machinery is now in course of erection for the working of scrap-iron into carriage and wagon wheels, so that the only parts that will have to be imported will be the steel tires.

Invercargill Section.

Traffic.—The total receipts have been £47,584 8s. 1d., which with £267 18s. 7d. received for rents, &c., amounts to £47,852 6s. 8d., as against £40,806 6s. for the preceding year, showing an increase of £7,046 0s. 8d. The working expenses amounted to £34,149 11s. 5d., as against £30,155 17s. 11d. for the year 1876-77. The number of passengers carried was 92,907, as against 82,806 for the previous year. The tonnage of goods was 64,716, as against 51,839 for the year 1876-77, showing an increase of 12,877 tons.

Maintenance.—The expenditure under this head was £13,022 4s. 6d., being equal to £90·12 per mile of railway per annum, and 12·90d. per train mile. This low rate as compared with other New Zealand lines is in a great measure to be accounted for by the excellent road extending from the Bluff to Winton. The rails (72 lb. per yard) on this portion of the line, although in use several years, are apparently as sound as when first laid.

The difference between the cost of maintaining one mile of the Invercargill lines and an equal part of the Dunedin lines for one year is £116. This sum would yield 5 per cent. interest on £2,320. Had one-third only of this sum been expended in addition on each mile of road, the result would have been an enormous saving in maintenance, good road, much higher speed, with greater safety. The old bridges have been repaired and strengthened, and are now in safe condition. The Taipo Creek Bridge of five spans has been removed entirely, and a substantial brick culvert substituted.

Considerable alterations are required at the Invercargill workshops. A new engine-shed and extensive alterations are also required at the Invercargill Station Yard.

Floods, causing considerable damage to the line, have occurred, which interrupted the traffic for