

out the year. The latter condition might possibly be inferred from the magnitude of the river and the regularity of the rainfall in the watershed.

GREYMOUTH TO NELSON CREEK RAILWAY.

*Railway.*—The only construction-works of any importance undertaken on this line during the year are the erection of an engine-shed and workshops at Greymouth Station, and a small goods-shed on Greymouth Wharf.

*Greymouth Harbour Works.*—Until last year, when a separate vote was taken for it, this work has always been considered a portion of the railway. I shall therefore, for convenience of reference, consider it in the same connection.

The work done during the past year consists of the extension seaward of the south training-wall for a distance of 830 feet, and the placing of about 16,500 tons of quarry-refuse and shingle in reclamation-works inside the wall. The exact quantity and prices of the various works are as follow : 69,813 tons of rock quarried and placed in sea-wall, at an average cost of 2s. 10d. per ton ; 16,675 tons of quarry-refuse deposited in reclamation, average cost 2s. 10d. ; shingle dredged from river-bed, and deposited in reclamation, 11d. per ton. The cost of the rock this year is lower, and that of the quarry-refuse higher, than last year, but the average price of all the quarried material is exactly the same, and this is 4d. per ton less than the average for 1879–80. The cost of dredging for the last three years has been respectively 11d., 11½d., and 11d. Considering the increased length of lead, and the necessity for using heavier blocks of stone, these figures show that the work is being carried out in a systematic and economical manner.

The amount of dredging done during the year is comparatively small. The state of the shingle-banks made it unnecessary to keep berths clear at the wharf for the shipping, and the reclamation is not an urgent matter, consequently dredging operations have been temporarily suspended. With the moderate votes taken, it was considered advisable to confine the expenditure to the training-wall, the most important part of the whole harbour-works.

The small dredge has been lent to the Hokitika Harbour Board for a few months to deepen the channel into the Mahinapouri Lake. The large one is laid up, but in working order, at Greymouth.

The training-wall is now out to a length of 27 chains, or about 4 chains beyond the general line of the beach, and, although subjected to heavy seas and floods, it is standing admirably. The increasing force of the waves in the greater exposure experienced as the work advances is met by widening the wall and using heavier blocks of stone. Of course the cost is also increased in the same proportion ; the section now in progress, which is in reality the commencement of the breakwater, being nearly three times as expensive as the training-wall proper. The cost will still further increase as the wall gets into deeper water, but it will be some time yet before a material change in the character of the work is necessary, for the wall is still only costing about an eighth of the average price of breakwaters already constructed in other parts of the colony. It will be necessary, however, to gradually increase the weight of the stone blocks, and for this purpose heavier and stronger cranes and other plant are required.

There can now be no doubt that the construction of the sea-wall has already had a beneficial effect on the Greymouth Harbour. There is no material alteration in the depth of water, but the channel has been kept in a more direct course across the bar, an essential condition to the safe navigation of the port.

The following table shows the depth of water on the Grey bar at each high water of spring- and neap-tides every month, from June, 1879, to March, 1882. It is compiled from information kindly supplied by the harbour authorities :—

Month.	1879-80.		1880-81.		1881-82.	
	Spring-tides : Height on Bar, in feet.	Neap-tides : Height on Bar, in feet.	Spring-tides : Height on Bar, in feet.	Neap-tides : Height on Bar, in feet.	Spring-tides : Height on Bar, in feet.	Neap-tides : Height on Bar, in feet.
April ... ..	...	...	13, 13	11, 10	10½, 12, 12	9, 9½
May ... ..	...	...	12½, 14	10, 11, 12	13, 8	8½, 6½
June ... ..	14½, 14	12, 12½	12, 14	12, 12	11, 10½	7½, 9½
July ... ..	13½, 12½	11½, 10½	12, 14	11, 12	11, 10	10, 6½
August ... ..	12, 13½	11, 11½	12, 13	11, 12	12½, 14	8½, 11½
September... ..	13, 12	11, 11½	13, 14	11, 11½	13, 12	11, 11
October ... ..	12½, 13½, 13	10, 11½	14, 14	12, 12	12, 11½	9, 10
November ... ..	13½, 12	10½, 10½	15, 13½	13, 11½	11, 11½	9, 8, 9
December ... ..	12½, 11½	11½, 11½	14, 13	12½, 11	10½, 12	10, 11½
January ... ..	12½, 12½	10½, 9½	15, 14, 14	12, 13	12½, 13½	12½, 11½
February ... ..	12½, 12½	11½, 10	13, 15	10½, 11½	12, 13	10½, 13
March ... ..	14½, 13½	11½, 10	15, 14	11, 10	11½, 13	10, 11

PICTON TO HURUNUI RAILWAY.

*Section, Picton to Blenheim.*—The only construction-works done on or for this section during the year is the erection of ten high-side wagons sent from Christchurch to meet the increasing demands of the traffic, and some small additions to the protective works at the Opawa Bridge.

*Section, Blenheim to Awatere.*—The extension of the main line southwards from Blenheim has been initiated during the year by the letting of a contract for the formation of the Vernon Section, 4 miles 38 chains in length. The contract was entered into on the 6th December, 1881, but comparatively little work has yet been done. The works, which are moderately light, consist chiefly of low embankments over ground subject to floods, with a few timber-openings at watercourses. The alignments and levels of the section are first class throughout.