lead to the filling up of the bay, by preventing the scour which, at the present time, takes place through the passages, there being no large river entering the bay, or other means of maintaining a counteraction to the great accumulation of drift, which tends to obliterate the irregularities in the coast line.

These considerations appeared to be so conclusive against our recommending any expenditure for works as this place, that we did not think it necessary to require any exact surveys or soundings to be made.

Grey River.

The selection of a port is therefore limited to the Grey River, and the choice between either bank as the best terminus of the railway line is necessarily determined by the relative natural facilities which they afford for the construction of wharfage, which will form part of a scheme for the conservation of the channel and outlet of the river, with a maximum depth of water on the bar. The works which require to be undertaken involve, therefore, not only considerations affecting the proposed railway, but, also, harbour works; and with this in view, it becomes necessary to enquire, in the first place, into the changes that the river channel has undergone since the first surveys were made, and especially to show the effect which the protective works, already constructed, have exercised.

These changes have been combined in plan No. 1 attached hereto from an inspection of which it is at once evident that, during the last six years, the form of the channel of the river, between the Lime Stone Gorge and its mouth, a distance of one and a quarter mile, has undergone but little change, and that the south bank has been at all times the one which is best adapted for affording the greatest extent of permanent wharf frontage. The reason for this is obvious, when we consider that at the Lime Stone Gorge the river is rock-bound from side to side, so that its channel is there absolutely fixed. From this point to the sea, there is only sufficient distance for it to make one sweep or curve to reach its mouth, and, from the nature of the banks, this curve will always have its convexity towards the south or left hand side of the river. The projection of Point Elizabeth beyond the general trend of the coast line, has caused the accumulation of the coarse shingle, brought down the river, that would otherwise have travelled to the northward, thus causing the river to discharge into deeper water than it otherwise would have done. But this accumulation has now reached its maximum, the additions to it being at once carried beyond the point, so that the distance between the Gorge and the mouth of the river, may be looked upon also as fixed. If, therefore, the tendency which the curve of the river between the Gorge and its mouth has to become lengthened by overflowing and undermining the low land on the south side, be controlled by suitable works, the channel of the river may be rendered permanent, and its whole volume directed to deepen the bar.

The remarkable influence which Point Elizabeth exercises in giving stability to the character and position of the mouth of the Grey River, may be gathered from the attached plan, No. 2, shewing the formation of this part of the coast, and we are of opinion that it is rarely that any bar harbour presents such favourable conditions for the successful construction of permanent harbour works. The works required would not be expensive in proportion to the advantages to be gained, and a good deal has been already done in the right direction.

Thus the south bank from the Gorge to the sea, forms the frontage of the town of Greymouth, a distance of seventy or eighty chains, forty-four chains of which have been faced by wharfage and protective works, at a cost of £12,580. A great part of these works, will, no doubt, have to be replaced by more solid structures, and they will require to be extended much further down the river.

The land to the south of the river is low-lying, and occupied by tidal lagoons and swampy patches, which are inundated by the river during floods. So that, unless restrained for nearly the whole distance to the point of the South Spit, the river will always tend to overflow in that direction, and the scouring power of the freshets on the bar will be thereby greatly diminished.

On the north side of the river the only deep water close to the shore at the present time is from ten to twelve chains at the Gorge, the remainder of the reach having on that side a flat shingle bank, which tends to advance and force the main channel toward to the south shore. There has, at one time, been a deep channel along the north side, now represented by a narrow lagoon, but there is no probability of the river resuming this course as its channel is now established at a lower level and follows a well shaped curve, which, for the reasons we have already stated, is the only direction that can be permanently maintained by engineering works.

Having in view an extensive development of the coal trade, it is, therefore, clear to us that the chief wharves will have to be on the south or Greymouth side of the river.

Railway Lines.

For the purpose of ascertaining accurately the difference in the expense of constructing a railway from the coal mine gorge to the port on the north and south sides of the river, preliminary surveys were made, and estimates framed on a schedule of prices previously agreed to by the engineers representing the rival interests. Plans and estimates are attached, and although they represent the cost as considerably above what would be required in either case, the schedule prices being higher than necessary, they are relatively correct, and afford a safe basis for comparison.

Plan and section No. 3 shew the best line on the north bank of the river from Brunner Town to Cobden, a distance of six miles, and the estimate shows that its cost would be £19,662.

Plans Nos. 4 and 5, shew the best line on the south side from the Canterbury (or Westland) mine mine to Greymouth, with a length of six miles seventy-three chains, and with an estimated cost of £21,376.

These lines are equally favorable for working and maintenance, the heavier gradients on the north line being counterbalanced by the increased length of the south line in this particular case where all the heavy loads will be down hill.

The coal mines which are most immediately available, are on the north side of the river, but when facilities for carriage are afforded by the railway, there is no doubt that the seams on the south side will be also opened up and worked.