the Shediac River, with a st... more favourable maximum gradient than the last, might be found, but only by materially increasing the distance, and with an unfavourable approach to the Harbour.

 $\S$  12. It remains only to compare the merits of the immediate Valley of the Petitcodiac, and of the Table Land northward, for the object of the Railway.

The latter route would present alternate rises and falls which at some points could be reduced to bare practicability, only by heavy cuttings and embankments; whilst the only advantage proposed would be to avoid contact with the tortuous channel, tides, floating ice, and soft banks of the Petitcodiac.

It does not appear however that it is really necessary to come in contact with these in any manner involving material difficulty; whilst the working character of the Line, when constructed, would be of unsurpassed excellence.

From Steves' to Pitfield's the mean inclination would scarcely be 7 feet per mile, and from thence the remaining distance to the Bend, about 14 miles, would be level.

The increase in the whole distance from Saint John to Shediac by this route will be about three miles, but with the advantage of touching the Harbour at the Bend, which is not approached within two miles by the direct route.

By adopting the immediate Valley of the Petitcodiac we have therefore a Line of Railway of 108 miles in extent; connecting three of the most important Harbours in the Province by a ruling gradient between level and 7 feet per mile, and two maximum gradients each of only 30 feet per mile. It is most probable that the latter, favourable as they are, may be still further reduced.

§ 13. It will be proper, for instance, that a thorough examination of the vicinity of Lawler's Lake and Portage Cove, near Saint John, should be made in order to determine the practicability of preserving an uninterrupted level at that point within a warrantable limit of expense. It is scarcely doubtful that by a slight variation of the Line and some increase of expense, the rise of 30 feet per mile from Shediac, might also be reduced to the same limit as that at Stone's Brook, say 22 feet per mile, which would then become the heaviest gradient of the Line.

This rise is very little gitter than what is termed the angle of repose; or that inclination upon which the friction of a Train of Carriages at rest is just sufficient to prevent their being set in motion by the force of gravity.

§ 14. A system of gradients so favourable, will place this Road in the first class of working Lines.

It is true that advanced knowledge and experience have proved the practicability of ascending steeper inclinations than

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