

greatest extent, but this I consider would be undesirable. Admit, however, occasionally, the same grade as employed on iron lines in Europe, and I would instance the Turin and Genoa line, over which there is a heavy merchandise traffic equal to any line out of England, and where the steepest grade is $3\frac{1}{2}$ centimetres per metre (or about 175 feet per mile) for a length of $3\frac{1}{2}$ miles; a grade comparatively easy on a rail made of wood with the *grain endways*.

The question of cost, therefore, will, by the system I propose, be enormously reduced.

The next point of consideration is, whether a railway is the most desirable means of communication; and, in fact, suitable when "applied to channels of great trade." Mr. Jarvis' opinion is, that it is not, and that the conclusion arrived at by many people, that railways will in a great measure supersede canals, is "reached without consideration." With this opinion I am at direct variance, and will endeavour to show that experience generally is opposed to this view.

As regards England in this matter, it may be urged that the comparison there is not a fair one, as fuel is cheaper than anywhere else, and the canals were not in the best condition to contend with transport by railway.

I will therefore pass to France, where fuel is not cheap, and where the canals and rivers constituting their water communications have been all laid out and executed by a body of engineers, as scientific and experienced in these works as any in Europe.

What have been the results on some of the most important lines in France? Take the "Chemin de Fer du Nord," from Paris to Lille and Valenciennes; the line from Paris to Strasbourg, from Strasbourg to Mulhouse, from Paris to Lyons, and from Paris to Orleans. I take them as representing "the channels of great trade." The "Chemin de Fer du Nord" has to contend with a line partly composed of canals and partly of navigable rivers, and the struggle has been long and fierce, but has resulted as shewn by