

competition of manufacturers, enabling supplies of this material to be obtainable at less than half the price which iron rails commanded not many years ago. Within a recent period contracts have been made for steel rails of heavy double-headed section delivered free on board at less than £3 10s. per ton, whilst in 1870 the market prices of iron rails of similar type ranged as high as £7 10s. per ton, steel rails then ruling at £10 per ton.

The original rails of the Liverpool and Manchester Railway were, as far as my recollection serves, delivered at the price of about £11 to £12 per ton (1829).

On the main lines of this country steel rails weighing from 86 lbs. to 90 lbs. per yard are now coming generally into use, lighter rails being no longer adapted to sustain the heavy weights which in our modern and powerful locomotives are concentrated on a single pair of wheels, a weight in some cases amounting to 17½ tons.

In other cases, where it is permissible to couple two or more pairs of wheels and distribute the weight of the engine over a larger number of them, lighter rails can be, and are, used with advantage. In this way rails varying from 42 lbs. to 65 lbs. per yard are employed very extensively on the lines of the American continent and elsewhere.

The question of gauge elicited scarcely any discussion in the case of the Liverpool and Manchester Railway.

The gauge of 4 feet 8½ inches was adopted without question as a convenient one, being identical with, or closely approximating to, the gauge of the Stockton and Darlington line.

It was in 1838 that the question assumed importance, and the battle of the gauges raged fiercely in consequence of the adoption, by Mr. Brunel, of 7 feet as the gauge of the Great Western and its tributary lines.

Whatever may have been the mechanical advantages due to such increase of gauge, these, as time passed on, were shown, as regards English railways, to be far outweighed by commercial considerations incidental to the obstructions arising from breaks of gauge and to consequent diversion of traffic into the lines of other companies.

These considerations eventually determined the Great Western Railway Company to adopt the mixed (broad and narrow) gauge over nearly all portions of their system, which theretofore had been laid on the broad gauge.

The history of the events which led up to conviction that steam power was destined to become the chief agent for land transport in