NOTES.

NOTE A.

There are few wooden bridges of which the deflection is less than one inch under the weight of an ordinary locomotive engine and tender. I have caused various experiments to be made on this subject, and have been favoured by intelligent engineers with their observations—which prove that a deflection of one inch under heavy engines is almost universal in bridges of only 130 or 140 feet span.

A depression of 1 1/2 inches is frequent, and from two to three inches occasionally occurs.

A wooden bridge of 100 feet span is ordinarily more strained by a weight which produces a depression of one inch, than a suspension bridge of the same span would be under a depression of a foot; or one of a thousand feet span by a depression of many feet.

A depression of one inch in a bridge of 100 feet span is just as important as one of 10 inches in a bridge of 1000 feet span.

NOTE B.

It can only be in extreme cases, where very heavy trains are conveyed, that the change of grade due to the flexure of the bridge could be an object of any moment; and never until the inclination surmounted by the engine, exceeds the maximum grade ascended by the same engine on other parts of the road.

In the centre of an arch of great span, the flooring offers, comparatively, little resistance; but near the ends, where secured to the abutments, its stiffening effect is greatly increased.

In a weak bridge, or even in a strong one, overloaded, the first dif-