

be so nearly twice that which the same weight would exert if hung vertically from them, that for the sake of briefness it is assumed as such.

Therefore every pound which the cables are loaded with will strain them in their place equal to two pounds at the point of suspension, whether that weight be the cables themselves or the roadways and attachments, or any load which may be on the bridge.

If then the cables in consequence of their position are strained twice as much as if hung vertically, they will sustain only half as much, without breaking when in their place as if hung vertically.

We have seen as above that the ultimate cohesive strength of the 80,000 strands is equal to 60,000 tons net, and that the cables will sustain in their position half of this amount or 30,000 tons net. Therefore if the weight of the cables themselves and all that is attached to them, the roadways, &c., &c., is deducted from this amount, the remaining quantity will be the weight which if placed on the deck of the bridge would strain the structure so as to cause fracture.

The strength of the cables being thus determined, we shall presently see what load is likely to come upon them and how they will be affected by it.

THE CABLES OF THE LAND SPANS.

Each land span being precisely one half the length of the centre span, in order to balance the forces on the tops of the towers and being fastened in the retaining wall, on the same level as the lowest part of the curve of the principal span, the resultant of the forces, which come upon them is equal to that on the main cables and consequently they have to be of a corresponding strength. Appendice B.