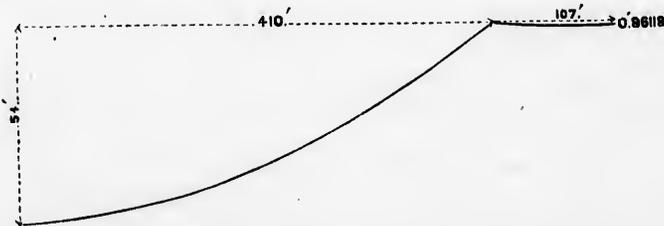


the full extent of the lengthening or shortening of the land curve of the cables, I am entirely on the side of safety.

Mr. Wasell's criticism of the bridge is based altogether upon his apparent proof, that when the cables are exposed to a low temperature, it is impossible that the lower ones shall bear any considerable portion of the load on the upper roadway; (or, on the contrary, that when exposed to a high temperature the upper cables will not bear their proper load;) and not only this, but that owing to the rigid connections which he claims to exist between the cables, there will under a high temperature be a portion of the weight of the upper cables borne by the lower, and under a low temperature a portion of the weight of the lower cables borne by the higher.

Proceeding to actual facts, we find that the cables of the Niagara Bridge were all regulated at a mean temperature of 55° Fah.,* and at that temperature the deflections, spans, and lengths of curves, were as shown in the following diagram:—



* The floors were also united at that temperature; and as the lower floor had been used for over a year previous for a carriage-way, the upper floor was loaded with 600 tons of stone, to produce the same amount of stretch in the upper cables that had already taken place in the lower.