add to the weight to be sustained between said piers or abutments. Therefore, a less proportion of the strength of the material is exhausted in sustaining the structure itself.

But we have seen that the weight of a bridge increases in the duplicate ratio of the increase in length, while its power of sustaining weight, only increases in the *simple* ratio of increase in length; and the limit of the practicable length of span is, when the weight becomes equal to the whole power of the material to sustain.

It is manifest, then, that the trussed bridge will sooner reach that limit than the suspension bridge, the latter containing a less amount of material in proportion to its strength, or power of sustension.

If the trussed bridge require fifty per cent more material for a given length to sustain a given weight, than a suspension bridge, the latter will sustain its own weight till the square of its length is fifty per cent. greater than the square of the greatest length at which the former can sustain itself.

This advantage of the suspension principle, renders it worthy of some consideration for very long stretches, where the weight of the structure forms so large an item in the whole amount of weight to be supported.

Suspension bridges have been used with tolerable success for common travel, where the moving load is trifling, compared with the weight of the structure itself. The most important one now in use in this country, is that over the Schuylkill, near Philadelphia, being 343 feet long, and 27 feet wide. It is sustained by wire cables passing over towers at the corners of the bridge, the ends of the cables carried down obliquely and anchored into the ground outside of the towers, and the central portions hanging in a catenarean curve between the towers. The road-way or platform is suspended from these curved cables. This is the general plan of constructing suspen-