latter, and thirty (30) pounds for all greater spans. It is true that actual wind pressures do occasionally exceed these amounts; but in view of the fact that the chance of any one bridge ever being subjected to such pressure throughout its whole length is extremely small, and that it could receive once in a while a far greater pressure without suffering material injury if the bridge be properly designed, it seems legitimate to adopt the pressures assumed.

Moreover, when a highway-bridge is blown down, the actual loss is seldom much greater than the cost of a new bridge. Travellers can cross the stream at the nearest bridge above or below, until the structure be replaced. And the fall of the bridge need involve no loss of life: for, in the first place, no human being would be likely to be upon it in such a storm; and, in the second, if there were, he could not escape being dashed to pieces or blown off, even if the bridge were sufficiently rigid to withstand the pressure.

With railroad-bridges, of course, it is a very different matter. The delay caused by the loss of such a bridge may be much more expensive than the replacing of the structure. Besides, railroad-bridges are subjected to the greatest wind pressure when covered by a train; so that the fall usually involves the loss of human life.

If the lateral systems of highway-bridges were to be made as strong as those of railroad-bridges, unstiffened eye-bars could be very seldom employed for the bottom chords; because the compression there due to the wind pressure would be far in excess of the tension due to dead load (vide Appendix I.).

Even with the pressures assumed, it is necessary to rely upon the stiffness of the joists to prevent buckling the bottom chords of at least two-thirds of the iron and combination highway-bridges in the United States.

It is not necessary to add any area to the section of the bottom chords to resist the tension due to wind pressure, unless this tension exceeds that due to the live load multiplied by the ratio of the intensity of working tensile stress in lateral systems to that of working tensile stress in chords. Should it so exceed, the chords should be proportioned to resist the wind