den impulses, and to being fretted at the joints, by the sudden and frequent imposition and removal of heavy loads, it might be advisable to increase the dimensions of the truss timbers, somewhat beyond those given, though the latter are, *theoretically*, quite sufficient for the purpose.

The aim in arranging this and succeeding Plans for Wooden Bridges, was, to show the *least* quantity of material in the several parts, capable of forming safe and reliable structures. Of course, it will generally be safe to exceed, but seldom to reduce the dimensions specified.

Now, to show what strength may be obtained by very small timbers, properly proportioned and put together, I may here state, that a model of the 20′ truss represented in F. 33, on a scale of 1 to 12, sustained at the *centre*, a weight of 350lbs, with no apparent injury, except a slight yielding under the bearing-plate, ($\frac{1}{4}'' \times \frac{1}{2}''$,) under the bolt heads, at the apex of the two braces.

The corresponding load for a truss of full, working size, of the same materials and proportions, of course, would be $350 \times 144 = 50400$ lbs.

It follows, that two trusses upon this plan, 20′ long, composed of 5×6 inch timbers, (as in F. 33) would sustain, with the same relative stresses upon the parts, a *distributed* load of over 100 net tons; or, 5 tons to each lineal foot; which is quite four times as much as a single track rail-road bridge of such length is ever subjected to, in ordinary use.