road bridge. Even much less strength, in many cases, would be entirely safe.

But it is well to lean always towards safety, and rather make a structure unnecessarily strong than too weak.—Enough, however, has perhaps been said on this head.

I would make no difference in the general plan of trusses for rail road or common bridges. Sometimes a less proportionate height will be admissible, if thought to possess any advantages in the way of appearance, or for any other consideration. I would seldom, however, make the height less than one-eighth the length of span.

A height from 12 to 14 ft. on a common road, will admit of ties across the top, and in such cases they should always be employed, with suitable horizontal bracing, and in all cases sufficient security should be provided to preserve the erect position of the trusses; for if their erectness be lost, their strength is very much impaired, and they are not only dangerous, but very unpleasant to the eye.

The flooring may be formed with longitudinal joists, upon the cross bearers, and cross planking upon the joists, or by making the bottom stringer a little larger, particularly deeper, diminishing the horizontal thickness of the cross bearers, and increasing their number, so as to leave spaces of only 2½ or 3 ft. between them, and laying the plank lengthwise or diagonally. Horizontal braces may be spiked on the lower side of the cross beams or joists, in the manner of what is sometimes called stay-lathing.

An advantage of planking lengthwise is, the more steady motion of carriages, producing less shaking of the structure; also, the less wearing of plank by toe corks. The disadvantage if any, is the liability of the wheels to wear at the joints of the plank. It would seem that this might be obviated by inclining the plank more or less out of the direct line of the wheel track. The longitudinal planking is the cheaper method, as one set of timbers, (the joists,) is dispensed with, without any considerable increase in the expense of the cross timbers. On the whole,