

XXII. Again, in cases where the truss is sufficiently high to admit of being secured and braced laterally at the top, the cancelled truss is better suited to such an arrangement than the arched truss, which, though high enough in the middle, will not admit of the lateral security being extended towards the ends without parts extending above the arch expressly for that purpose.

XXIII. On the whole, it would seem that the relative cost of trusses upon the plans shewn in Fig. 7 and 8, would be nearly proportioned to the amount of material in each respectively. Hence I conclude, that though for bridges of moderate length, particularly common road bridges, and others where the road-way passes near the lower part of the truss, the arched truss may be preferable, still, as a general rule, the cancelled truss, as shewn in Fig. 7, may be constructed to sustain a given weight, through all the changes to which the load of a bridge is usually liable, with from five to ten per cent less expense than the arched truss, and should be preferred for long spans, especially for rail-roads, and where the track passes over the top.

With regard to truss A., as compared with truss 7, the former manifestly has some 8 per cent the advantage in all cases where the diagonals act by thrust, but otherwise the advantage will be counteracted, mostly, by the greater length of some of the parts acting by thrust in truss A.

XXIV. But though I say, judging from the above examinations and comparisons, such results and advantages, in the use of the cancelled truss, may be obtained, I am nevertheless constrained to say, that, though the general plans and principles of this truss have been extensively used in bridge building, still, for reasons which I will not, in this place, undertake to explain, the principles have never, (to my knowledge or belief,) been applied with that skill and economy in the proportions of the different parts of the structure, which are necessary to secure the advantages above pointed out as practicable.