length of joists. Hence, if we could find the point where the cost of connections (consisting of extra material in the lappings of parts, connecting pins, screws and nuts, and enlarged sections at the ends of members, together with the extra labor in forming the connections), becomes equal to the whole cost of material in joists or stringers; that would seem to indicate the proper width of panel, or value of \( h \), as far as depends upon these elements.

But aside from the fact that our data upon this question are so few and so imperfect, that it would be mere charlatanism to attempt to reduce the matter to a mathematical formula, the occasions would be so rare which would admit of the application of such formula, without incurring disadvantages in other respects, such as improper inclination of diagonals, unsuitable ratio of length to depth of truss, &c., that no attempt will be here made to give anything more definite upon this point, than to refer to the best precedents and practice of the times; which seem to confine the range of width of panel mostly within the limits of 8 and 15 feet.

Within these limits, and seldom reaching either extreme, plans may be adapted to any of the ordinary lengths of span, by adopting the single or double canceled trusses, Figs. 12 and 13, or 18 and 19, or the arch truss Fig. 11, (which unquestionably contain the essential principles and combinations of the best trusses in use), according to length of span, the purposes of the bridges respectively, or the taste and judgment of engineers and builders.