The horizontal strain in the centre of the span, being equal to the force which would sustain the half truss in equilibrium, is independent of the particular number or inclination of the braces. The same may be said of the pressure upon the abutments, which is always proportional to the distance of the centre of gravity from the point of support at the other end of the truss.

The parts of a frame can only act by distributing the forces which are applied to it,—they cannot create force; hence whatever be the inclination of the braces, the pressure upon the abutment and the strain upon the centre of the chord must remain the same, with the same weight. It might be inferred, therefore, that the degree of inclination was of little consequence, or that different angles would be equally advantageous. That such is not the case can be rendered evident by the following considerations.

1. The braces must not be so long as to yield by lateral flexure.

2. The chords being unsupported in the intervals between the ties, these intervals must be limited by the condition that no injurious flexure shall be produced by the passage of a load.

On the other hand, as the ties approach each other, the angle of the brace increases; and when the intervals become small, the number of ties and braces is greatly increased, and with them the weight of the structure.

The true limit of the intervals can be readily determined when the size of the chords and the maximum load are known; for it should evidently be such that when the load is at the middle, the flexure should not exceed a given amount.

The portion of the chord between any two ties is in the condition of a beam supported at the ends and loaded in the middle.

Should the angle of the brace as determined by this condition be too great, the remedy consists in introducing intermediate timbers as represented by the dotted lines in the marginal figure, and it is evident that by the addition of these we are enabled to vary the inclination at pleasure. A system of framing that will admit of the introduction of such timbers