Trusses without Verticals.

nately upon thrust and tension pieces, extending directly or obliquely from chord to chord.

With reference to Fig. 18, we have regarded the weight as transferred from tension diagonals to thrust verticals, and the contrary. But if we conceive the verticals to be removed, except the endmost, we have only to insert a thrust brace from the abutment to the second node (or the first from the angle), of the upper chord, and to so form and connect the other diagonals as to enable them to act by either tension of thrust, and we have a truss capable of sustaining weights applied at all, or any of the nodes of the upper and lower chords, in the same manner as the truss with verticals, represented in Fig. 18. In this condition, the truss will act upon the principles discussed with reference to Fig. 13. For this modification of the truss, see Fig. 19.

To estimate the strains upon the several parts of such a truss, due to weights \( w, w, \) etc., at the nodes of the lower chord; we may place the figures 1, 2, 3, etc., over the nodes of the upper chord, as was done in the case of Fig. 18. But, instead of adding alternate figures to form the second series, to be used as co-efficients of \( w'' \), for expressing the weights sustained by diagonals, we add every fourth figure; because it is only the weights at every fourth node, that act upon the same set of diagonals.

For instance; the weights at 1, 5, 9 and 13, act upon their peculiar set of 8 pieces (excluding the end braces, but including the tension vertical at 1), and none of the weights at the other nodes have any action upon those pieces; as is made obvious by an inspection of Fig. 19.

Again, the weight at 2, 6, 10 and 14, have their peculiar and independent set; and so of those at 3, 7, 11 and 15, and those at 4, 8 and 12. Therefore, in form-