scarcely noticeable, and making no appreciable difference in the length of the bar: nevertheless, it is better to make the bars as nearly as possible parallel to the planes of the trusses. The main diagonals should be placed next to the post, then the beam hangers, and inside of all, the counters with a filler between them long enough to permit of the screwing-up of the turn buckles, or sleeve nuts.

The arrangement of the chord bars will be treated in Chapter X.

The sections of the top chords and batter braces are to consist of two channels, with a plate on top, and latticing or lacing below. The same depth of channel, and the same width and thickness of plate, are to be employed from one end of the chord to the other; the difference in area being obtained by thickening the webs of the channels. On this account, there is often an excess of section in the end panels of the top chord, and, in long bridges, even in the next panels.

It is customary and better, but not necessary, to make the depth of the channels in the batter braces the same as that of the channels in the chord. The top plate for the batter brace should be of the same size as that for the chord.

The width of the top plate is dependent upon the depth of the channels; as the transverse distance between the centre lines of the rivets which attach the channels to the plate should be never less, and not (unless there be good reason) much greater, than the depth of the channels. The least dimensions for such plates for different channels are given on p. 15. The chord channels are sometimes spread apart in pony trusses, so as to increase the lateral stiffness; and in any bridge it may be necessary to spread them a little to admit of a certain manner of packing below: but, the more narrow the chord plate, the more economy of material will there usually be.

To proportion the top chord or batter brace for a given stress, assume the depth of the channels, and divide the length of the panel or batter brace by it, both dimensions being expressed in the same unit. Referring to Table X. or XI., according to the class of bridge to be designed, look down the column marked "Ratio of L to D," until the ratio just found is reached: the