Theoretically it is more economical, as far as the area of the section is concerned, to turn the flanges in, for the moment of inertia is greater; but, on the other hand, the difficulty encountered in riveting in a confined space more than equalizes the advantage just mentioned.

Another advantage which can be claimed for channels turned in, viz., avoiding cutting them off before reaching the upper chord pin, is partially counterbalanced by the increased size of pin, due to the larger leverage thus given to the stresses in the diagonals. Notwithstanding the difficulty in riveting, it is often found necessary, in swing bridges, to turn in the flanges of the post channels in order to form a good connection with the channel bottom chords: otherwise, the channels of the bottom chords may be turned in, and the post channels be allowed to bestride them.

The objection to cutting away the flanges of channels at the feet of posts has been shown by some experiments made by the Chicago and Alton Railroad Company, as given in a paper read before the Western Society of Engineers by Mr. E. J. Ward, who shows that this cutting-away reduces the strength of the strut about ten per cent.

Main diagonals, as will be demonstrated in Chapter X., should have the proportion of width to depth of about one to four; and the chord bars, the proportion of from one to four to one to seven, according to the number of them in the panel.

It is preferable, for appearances, to make the counters of square or round instead of flat bars, because of the unsightly change that there would be in the diameter of the flat bars at the upset ends. It is immaterial, except for the effect upon the pins, whether the hip verticals be flat, square, or round; but the preference is usually given to square iron.

Built floor beams in ordinary bridges should be formed of solid plates and angles, and not made trussed; because, even if the latter method permit of a saving of material, it is more conducive to vibration. Where the panels are long and the roadway is very wide, it would be permissible to use trussed beams, provided that they be made very rigid in their details, and not too slight in their sections.