bend, should be able to resist more compression than the rest of the strut. Such a detail occurs often on the ends of the struts which keep the pedestals apart. It is generally difficult to make a satisfactory design for this member, as it interferes with the joists; but, with the lower lateral system previously described, all the difficulty vanishes.

Concerning the proportioning of eye-bar heads, there is a variety of both opinion and practice. Many specifications call for a section at the eye equal to one and a half times that of the bar for welded bars, or one and a third times the same for hammered eyes, not taking into account the effect which the different ratios of diameter of pin to width of bar have upon the strength of the eye. Specifications for the better class of both railroad and highway bridges have of late made this distinction; but there seems to be some uncertainty as to what is the exact effect of each ratio upon the strength. On p. 20 is given a table for sizes of chord heads, prepared from actual experiments by C. Shaler Smith, C.E., who is considered the best American authority upon all matters connected with the designing of bridge superstructures. The subject of chord-head proportioning is further treated in Chapter XVIII.

Bent eyes do not make a very good detail, but are such a convenience that they are often used by good designers. If the diameters of the rods do not exceed one inch and three-fourths, there is no objection to using such eyes. The principal point to be raised against them is because of the eccentric pull which they give upon the pin nut. This objection may be removed by using either extra large nuts, or the detail shown in the upper lateral rod connection of Plates II. and IV., in which the bent eyes pull against a piece of channel riveted to the strut. A still greater improvement is shown on Plate VI., in which a piece of bent plate is substituted for the channel: this permits of more rivets in the connection, and avoids the possibility of having to insert a filling-plate between the channel and the strut.

In connection with this detail, on Plate VI. is another and a rather peculiar one. The plate, which was originally in the form of the letter T, is bent so that the stem may be riveted to