even detrimental, since in such cases dry rot inevitably sets in at an early day.

KINDS OF BRIDGES.

The various kinds of bridges ordinarily met with may be classed under one of four heads, namely, the plain beam or girder, the beam truss, the suspension truss, and the arch truss or bowstring. The first class needs no explanation. The second form includes all trusses where both top and bottom chords are absolutely essential, while the third embraces those trusses wherein only the upper chord is essential. The bowstring is properly not a truss at all, but simply an arch wherein the horizontal tie takes the place of fixed abutments. The office of all girders, whether plain or trussed, is to transmit weight to the points of support, which action develops two classes of strains, namely, horizontal and vertical (sometimes called shearing). The former are resisted by the top and bottom longitudinal chords or flanges, while the latter are taken up by the intermediate bracing, called collectively the web, which applies to all the material lying between the chords or flanges, whether open as in a truss, or solid as in a plate-girder. The longitudinal strains in the chords are either compressive or tensile, and whichever may be the case, the quality of the strain is the same throughout the chord considered. The web is exposed to both kinds of strain, the parts of which, if a truss, are alternately in tension and compression in the march of a given weight to