

long-span girders, and by reason of inherited bias, regard all such as aesthetically defective because they do not conform to the necessarily large relative depths of ancient girders of stone. Short-span girder bridges, such as the Wabash Railroad crossing of the entrance to Forest Park, St. Louis, Mo. (Fig. 2.), may be made singularly pleasing by proper treatment of the whole structure, for example, by employing unusual and graceful lines for the abutments and using lamp clusters, thus drawing attention away from the straight, rigid lines of the girders themselves.

The least pleasing of all plate girder bridges is that made up of a succession of spans of considerable length and of the same construction. The lack of contrast gives rise to pronounced monotony. A very good example of a girder bridge in which this difficulty has been overcome successfully is the Gormanstown Viaduct (Fig. 11). The use of the lattice girder for the central span breaks the monotony inseparable from a continuous line of plate girders, while the curved bracket plates at the pier ends of the approach girders, the handrailing, and the dentiled effect produced by the projecting ends of the long ties all conduce to the same end. These features, combined with the symmetry of an ideal arrangement of spans, produce an exceptionally pleasing structure.

In longer spans the most pleasing types are those simple structures which were first found to be adapted for bridging spaces beyond the capacity of the beam of wood or stone, viz., the suspension bridge and its inverse, the arch. From the days when the Peruvians, Thibetans, and Chinese first strung ropes of twisted wood-fibre or thongs across their mountain gorges and carried the traveller over on a platform safely to the opposite side, the race has been appreciative of the efficiency and singularly graceful lines of suspension cables. Following the lines dictated by natural law, the material is employed in the most advantageous way possible. Similarly, the inverted suspension bridge, or arch, in which the primary structural element, the arch rib, provides resistance by compression only, is ideal in efficiency, simplicity, and beauty of line for the material employed. Familiarity with the arch and its essential principle governs our judgments on all bridges to a remarkable degree. Thus, since stone is the material in which the great development of architecture has taken place, and since it is employed for bridges only in the arch, we have associated the highest aesthetic value with the arch. It is impossible to say how much liking for the material has coloured our judgment of the structural form, but undoubtedly it has done so to some extent. Proof of this need not be sought farther than in the fact that the steel arch is generally regarded as more beautiful than the suspension bridge, certainly not from superior grace of line, but simply because of the age-long association with stone.