Municipal Bridges.

(Continued from last issue)

COMMON DEFECTS OF BRIDGES.

The more common defects of steel bridges are:—

(1) Weak joints and connections. A bridge is no stronger than its weakest part.

(2) Insufficient, small, and badly formed rivets. Shop rivets are usually satisfactory, but field rivets are very often loose, badly formed, burned, bent, and the connected plates twisted.

(3) An inferior form of truss. The amount and weight of steel used in a truss is of little account if the design is weak.

(4) The use of inferior metal. For large and important bridges, inspection should commence at the rolling mills, or at the bridge works. When steel is assembled and painted it is difficult to detect metal that is too hard, which has been rolled when cold, or has other defects. Bridge companies are apt to put into bridges metal from other work.

(5) The entire bridge, or an occasional member, too light. This can only be overcome by careful scrutiny of the plans by an engineer. It is a fault very common to work done by local men who have little more facility for bridge erection than a blacksmith. The engineer by fixing the loads to be carried can determine the necessary size and shape of each piece of steel in the bridge.

(6) Defective field erection. When a bridge is being erected in the field a company may send their own foreman, or may let the work as a contract to some one who is more or less capable. Field work must be examined to see that members are straight and properly assembled. Under a careless foreman certain members may be bent, twisted, placed end for end, etc.

(7) Insufficient attention paid to painting. Inferior paint, carelessly applied to rusted steel, is a common defect.

(8) Necessary bracing or members may be omitted. A steel bridge should be so constructed as to be an independent unit, without relying on abutments or piers for stiffness.