The Dee Bridge.

A considerable degree of excitement has been caused within a few months in England, by the failure of a bridge over the river Dee, near Chester, (England,) during the passage of a rail road train, by which accident several lives were lost.

As the facts of the case may afford an instructive lesson upon the subject treated of in the preceding pages, I am inclined to state the most important of them, with a few accompanying remarks, before taking leave of the subject.

The bridge in question, was upon the plan called the "Cast Iron Girder Bridge."

In this plan, each track, or pair of ways, is supported by two cast iron Girders, or beams, with their ends resting on abutments and piers, which, in the case of the Dee Bridge, are 98 feet apart. The form of the Girders, is essentially that of the common railway bars, known as the I or T rail; the vertical "web" being two and one-eighth inches thick, by about three and one-half feet deep; the lower flange, twenty-four and one-half inches wide by two and a half thick, and the top flange, about seven and a half inches wide, by a little less than two inches thick; the whole cross section containing 160 square inches, and the whole depth being 45 inches.

In addition to this, are wrought iron suspension bars, containing 60 square inches of cross section, running obliquely downward from a connection at the ends, about 3 ft. above the upper flange, (there being a rising portion at the ends to which such connection is made,) to the lower flange, at the joints of the cast iron part, 36 ft., or one third the length of the girders, from the ends; the casting being in three pieces, connected by bolting through flanges, and by strengthening pieces at the points. Between the two joints, the suspension bars run horizontally, just above the lower flange of the girder.

One effect of these suspension bars is, to throw a great amount of thrust, or crushing force upon the top flange, in so much that the engineers who examined and testified upon the subject, upon the inquest held in relation to the lives lost by the accident, generally concurred in the opinion that they rather weakened than strengthened the girder. Adopting that conclusion upon this point, which appears to be corroborated by experiment, let us examine whether the failure of the bridge, in connection with the other facts of the case, should inspire distrust, or confidence in the use of iron bridges for rail roads.

By calculation according to formulae deduced from experiment, a pair of girders is estimated to be able to sustain at the extreme or breaking point, 148 tons in the centre, or 296 tons distributed uniformly over their length. In this estimate, the testifying engineers concur with little or no variation. Now, the weight of a pair of girders, is about 70 tons, or, with other parts of the structure, about 90 tons. Mr. H. Robertson, (en-