tension in the bottom,—the only saving that can by any possibility be made to take place being confined to the sides, must be a saving in that portion of the weight which is only about 34 per cent. of the whole. How, therefore, can 70 per cent. of saving be realized, as has been stated, out of the total weight, when the question resolves itself into a difference of opinion on a portion which is only 34 per cent. of such weight?

I am tempted to reiterate here much that was said by several experienced Engineers on the subject, during the discussions already alluded to, at the Institution of Civil Engineers; but the argument adduced on that occasion could only be rendered thoroughly intelligible by the assistance of diagrams of some complexity, and I think sufficient has been said to demonstrate that no saving *of importance* can be made in the construction of the roadway of the Victoria Bridge, as it is now designed by the substitution of any other description of girder. Yet, lest this should be considered mere assertion, permit me to adduce one or two examples, where the close-sided tubular system, and the open-sided system, may be fairly brought into comparison with each other in actual practice.

The most remarkable parallel case which occurs to me is the comparison of the Victoria tubes under consideration, with a triangular or 'Warren' bridge, which has been erected by Mr. Joseph Cubitt over a branch of the river Trent, near Newark, on the Great Northern Railway.

The spans are very similar and so are the depths. In calling your attention to the comparison, you must bear in mind that all possible skill and science were brought to bear upon every portion of the details of the Newark Dyke Bridge, in order to reduce the total weight and cost to a minimum.

The comparison stands thus:

VICTORIA BRIDGE AS BEING ERECTED.

Span, 242 feet; weight, including bearings, 275 tons, for a length of 257 feet.

NEWARK DYKE BRIDGE AS ERECTED.

Span, 240 feet 6 inches; weight, including bearings, 292 tons, for a length of 254 feet,

which shews a balance of 17 tons in favor of the Victoria tubes.

The Newark Dyke Bridge is only 13 feet wide, while the Victoria tube is 16 feet, having a wider guage railway passing through it.

This is a very important case, as the spans and depths are all but identical, and it will therefore enable you to form a judgment upon that point which has caused so much controversy at the discussion alluded to. It is true that in the Newark Dyke Bridge a large proportion of the weight is of cast iron, a material I have frequently adopted in the parts of tubular bridges subjected to compression only, but from its brittle character I should never recommend it for exportation, nor for the parts of a structure that are liable to a lateral blow.

It has been suggested that there is much convenience in the arrangement of the trellis, or 'Warren' bridge, as it may be taken to pieces, and more conveniently and economically transported overland than 'boiler plates;' this may be correct under some circumstances, but it cannot hold good for a work like the Victoria Bridge over the St. Lawrence.

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Another example may be mentioned of a tubular beam, somewhat similar in dimensions to the last described, and one which is actually erected on a continuation of the same line of railway, as that on which the Newark-Dyke Bridge is situa-