These considerations lead me therefore to the conclusion that the present design for the foundation is as economical as is compatible with complete security."

A legitimate conclusion, which we apprehend will not be gainsayed.

Mr. Ross gives a graphic description of the difficulty of putting in these foundations:

"Any diminution in these piers (referring to a proposal to reduce the dimensions of the centre piers) which I might according to my own views of the case be induced to adopt, I should treat as some compensation, as far as it went, for the increased depth of the foundations generally, which are found greatly to exceed our anticipations: although every pains had been taken to ascertain what these would be, we find in the progress of the works that the bed of the river in most parts is formed of large boulders heaped together in large masses, the interstices being filled up with gravel, sand and mud, in many instances forming a hard concreted mass, and in others the reverse; beds of quick sand and mud being as frequent as any other. Three thousand tons of such material we had to clear out of the foundation of No. 5 pier, as you will see indicated on the diagram already referred to, below the level at which our previous examination would lead us to expect the foundation we sought. One of the boulders taken out, by admeasurement would weigh about eleven tons; masses of three and four tons are strewed as thickly as pebbles on the sea shore. The shallows in the river are evidently formed by these deposits, and I have no doubt in every instance where these shallows appear we shall have to encounter similar difficulties. In pier No 3 we found a depth of four feet at one end, and nine feet at the other, to clear out ere we reached the rock. These unlooked for contingents have materially retarded our season's operations, otherwise we should by this time have Nos. 3, 5 and 6 nearly completed, as it turns out we require another season to accomplish this. And here I think it well to observe that up to No. 6 inclusive, the expensive outlays have already been incurred; the dams have been completed, and in all except No. 4 the water has been pumped out and the machinery erected for setting the stone, but No. 5 is the only one where we have been able to complete any masonry, owing to the unlooked for causes I have already described. These contingents render it impossible to complete one pier in less than two seasons, though, as in the case of No. 1 pier, where no such unlooked for difficulty arose, the whole was begun and completely finished in one season, thus saving the removal and re-erection of all the machinery and appliances necessary, besides the reparation of such damages as the winter operations may produce."

Of the spans, and the considerations which led to their adoption, Mr. Stephenson says:

"These considerations lead me therefore to the conclusion, that the present design for the foundation is as economical as is compatible with complete security.

We are now brought to the question, as to whether the upper masonry is of a more expensive description than necessary, or whether it can be reduced in quality. This question is exceedingly important, since the cost of the masonry constitutes upwards of 50 per cent. of the total estimated cost of the bridge and approaches. The amount of the item of expenditure for the masonry is clearly