CAST-IRON BRIDGES.

It is foreign to the original design of this treatise to introduce the subject of cast-iron structures; but as the same general principles must guide the engineer in these, as in other bridges, a paragraph upon the subject may not be considered out of place.

The abundance of wood, and its great relative economy, have secured its adoption in this country, in preference to iron; but in Great Britain, many splendid structures have been erected of the latter material, which possess great beauty, strength, and durability.

If the principle of proportioning every part to the strain which it has to bear, is important in its application to timber-bridges, much more must it be when applied to bridges of cast-iron; for the expense is nearly in proportion to the quantity of material, and the weight, and consequently the weakness, is increased by every pound unnecessarily added. As we have said already, the strength of a bridge is the strength of its weakest point; and of course the accumulation of material where it is not needed, so far from being of advantage, is a positive injury.

It is therefore of the first importance, in designing a plan for a cast-iron bridge, to place the material which is to resist the horizontal strains at the greatest possible distance from the