BRIDGE BUILDING.

PRELIMINARIES.

I. A bridge is a structure for sustaining the weight of carriages, animals, &c., during their transit over a stream, gulf or valley.

Bridges are constructed of various plans and dimensions, according to the circumstances and objects requiring their erection; and it is the purpose of this work, after a few remarks upon the general nature and principles of bridges, to attempt some analyses and comparisons of the respective qualities and merits of various general plans, with a view of deducing practical results, as to a judicious and economical choice and application of materials in the construction of these useful and important structures.

II. The force of gravity, on which the weight of bodies depends, acts in vertical lines, and consequently, a heavy body can only be prevented from falling to the earth, by a force equal and opposite to that with which gravity impels the body downward. This resisting force must not only act vertically upward, but the line of its action must pass through the centre of gravity of the body it sustains. All the forces in the world, acting parallel with, or perpendicular to, the vertical passing through its centre of gravity, could not prevent a