INSTEAD of commencing this treatise with a history of Bridge Construction, and an explanation of the various plans that have from time to time been adopted, it is believed that a preferable mode will be to establish first the true principles of construction, and then to apply these principles to an examination of plans that have been executed. By this means it can be ascertained how far they coincide with, or depart from, the principles which we endeavor to establish, and how far the correctness of these principles is confirmed by practical experience.

The most important part of any bridge, and that which admits of the greatest variation in form and principle, is the support of the roadway. To this therefore our chief attention will be directed.

The most simple support for a roadway evidently consists of a series of longitudinal timbers laid between two abutments or piers. And as the examination of this case will lead, by easy gradations, to others which are more complicated, and as it also involves many of the principles which apply to structures of a more important character, we will begin by an examination of the forces which act upon a single beam laid upon two supports and loaded with a weight, either uniformly distributed, or concentrated at any given point.

(63)