beam is supported by either abutment, all that is necessary to be done is to multiply the shorter or longer segment into which its centre of gravity divides the beam (according to the above law) by the weight, and then divide by the product by the sum of the segments, which is, of course, the same as the span. For example, sup-

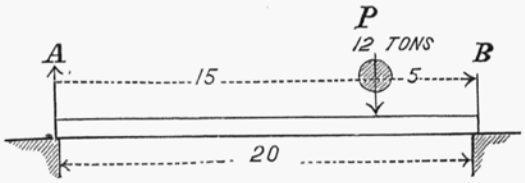

FIG. 26.

pose we have a beam A B (Fig. 26) 20 ft. long, and there is a weight of 12 tons, $\frac{1}{4}$ the distance from B, or 5 ft. Then each abutment supports or "reacts" a certain amount of this weight proportional to its distance from either end, the sum of these reactions being equal to the weight. A supports or reacts according to the rule: $\frac{12 \text{ tons} \times 5 \text{ ft.}}{15 \text{ ft.} + 5 \text{ ft.}} = 3$ tons; and B supports $\frac{12 \text{ tons} \times 15 \text{ ft.}}{15 \text{ ft.} + 5 \text{ ft.}} = 9$ tons. Adding these two upward reactions, there results a total of 12 tons, the same as the whole load at P acting downward. Any number of weights are to be treated in the same way, the sums of their separate reactions being the total reactions or weight supported at each abutment Any weight or force multiplied by the leverage at which it acts is called the *moment* of that weight or force. The leverage or lever-arm of any force is the perpendicular distance let fall from the point around which its moment