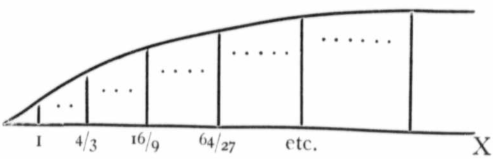
Let X represent a series of sensations 0, 1, 2 etc., increasing by a constant quantity from the zero point 0; let the upright lines represent at each point the excitation necessary for the sensation of that intensity. Now by drawing the dotted lines parallel to X, it is seen that the succession additions made to the vertical are not equal, but grow constantly greater, *i.e.*, for hearing, $y' = y + y/3$, $y'' = y' + y'/3$ etc. Having erected these vertical lines by the law of increase given in the table, the curve abcd etc., may be plotted through their extremities, being the "curve of excitation."

(2.)



The same relation may be shown in an inverse way, in (2) above, in which the scale of increasing excitation is given on the line X, the vertical lines representing the sensations increasing by a constant quantity. The curve connecting the extremities is now the "curve of sensation," and is the obverse of the preceding.

A further mathematical expression has been given to this law by Fechner. As we shall see below, it is open to some criticism; yet it is ably defended, and whatever may be its fate as a mathematical deduction, the law of Weber as given above will not be involved.

Assuming, says Fechner, that the smallest perceptible differences in sensation are equal for any value of the excitation (an assumption which has no proof), and that very small increments of sensation and excitation are proportional to each other, we may throw Weber's formula into the following equation (DS being increment of sensation, DE increment of excitation, and K merely a proportional constant):

$$DS = K. \frac{DE}{E}$$