

with sufficient accuracy to give ground for further inferences, is all that the theory requires. For that reason we pass on without giving other and later results even where Fechner has not been confirmed by other experimenters.

So far we have gained two points, *i.e.*, the zero on the sensation scale and the unit value, a positive known quantity from the table above, on the excitation scale. We now cast about for means to graduate both scales in an ascending way by relatively equal values.

It is a common fact of experience that excitations and sensations do not sustain the ordinary relation of cause and effect to each other. Two candles do not illuminate a page twice as much as one; two violins, pitched in the same key do not double the sound of one; and as intensities increase, it is a matter of ordinary observation, that very little variations are brought about by well marked changes in the stimulus. This result of general observation recurs to us as we advance in the consideration of the values on our scales, for we would expect from this rough judgment of daily life, that larger increments would have to be made the higher we ascend on the excitation side to produce regular equal increments on the sensation side.

This is confirmed by a further research undertaken on all the senses in turn, an experimental determination of the amount of increased excitation necessary to produce the *smallest perceptible difference* in sensations of the same kind. Let us suppose a given excitation for pressure, then increase it slightly until it is judged greater than before, determine the ratio of the increment to the former excitation, repeat the experiment with a much larger excitation, making the same fractional determination and compare the results. It is found that the fractional increase in excitation necessary to produce a perceptible difference is constant for each sense. But this means that the absolute increase is not constant, but becomes greater as the intensity of the initial excitation becomes greater. For example, if the initial excitations in two experiments be 6 and 9 grammes, a relative fractional