

in which all the quantities have been determined in the tables already given. Now considering this a differential equation, we may integrate by our calculus and reach the form :

$$S = K. \log E, \text{ or}$$

the sensation varies as the logarithm of the excitation,—the celebrated logarithmic law of Fechner.

Considered under its more general form, as indicated in the principle of Weber, this law has an unequal application to different sensations. For sight, touch and hearing, it is fully established ; for taste and smell, it is still in doubt, by reason of the mechanical difficulties which these senses offer to experimental research. It applies under restrictions to our estimation of linear distance, to our perception of the passage of small periods of time, and to our discrimination of local positions in the skin. In all cases, however, its application is restricted within upper and lower limits of intensity of sensation. When too intense, the organism fails under the stimulus, reaching the limit of its vibratory responsiveness, and when too faint, either the organism does not excite a conscious reaction, or the attention fails to discriminate the sensation.

With so much in the way of exposition of Weber's law before us, it may not be out of place to indicate the principle criticisms which have been urged against it, both in its general result and in the method of research which it involves. To say that it has been criticised is to express very mildly the state of discussion which the last twenty years have seen, especially for a period after the publication of Fechner's great work.

Both of the two assumptions made by Fechner, that the perceptible differences of sensation of the same sense are equal for all intensities of stimulus, and that the increments of sensation and excitation are proportional, are called in question. The results of late physiological work tend strongly in favor of the first assumption and it is probably safely established. The second, with the application of the calculus of differentials, is so plainly subject to criticism that even its strongest advocates only attempt to justify it by the