

an expected star on the meridian, is anticipated by the attention and given a reaction earlier than its true position would confirm.

The distinction between perception and reproduction, that is between the conscious form of a direct intuition and that of a memory picture, is very artificial, inasmuch as reproduced images enter in all our perceptions and influence their time. We have dealt heretofore with simple perception as if this influence did not exist, but a moment's reflection shows that it should be taken into account in all time measurements. In the experiments of which I have spoken, in which attention plays a part, that is, in which the subject knew before he experienced the excitation, its nature and quality, the reaction time was diminished, for the reason that it was possible to call up a memory picture of previous experiences and hold it before the attention, in such a way that the voluntary impulse could be set in play almost immediately upon the discharge of the sensor centres. For example, if the subject expects the stroke of a bell, he recalls the sensation of a previously heard stroke and the organs are in readiness to respond. So what we have called perception time really results from a diminution due to reproduction. The true time for perception must be obtained by experimenting with excitations entirely unexpected and the differences between the reaction time in this case and that of an expected excitation of the same nature, due to the influence of reproduction simply, is sometimes half the true perception time.

The problem then arises to determine the reproduction or simple association time, that is, the time which elapses between the full perception of a first image and that of a second which the first suggests. To do this we must first determine the time of a complete association reaction, that is, the time which elapses from (say) the hearing of a word, as *storm*, and the utterance of a closely associated word, as *wind*. The association must be spontaneous with the subject and the original word a monosyllable and very familiar. The uniformity of result is surprising considering the variety and indefiniteness