The Visual Perception of Velocity.

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I. Introduction.

In the last half century of psychological investigation few specific problems of perception have elicited so many researches and have been the basis for so much theoretical controversy as the visual perception of movement. The reason for this is not far to seek. From the earliest
laboratory studies to the most recent it has become increasingly clear that the inconstant correlation between the physical events in the stimulus and the phenomenal events in the perception of movement could not be explained by the ordinary psychophysical concepts.

In 1912\textsuperscript{1}, after a careful investigation of all the previously postulated explanations for the perception of real and pseudo-movement, Wertheimer set up his radical theory, which in its wider applications is known to all psychologists as the Gestalt theory. Wertheimer's view of movement perception has been widely accepted, but by no means in its entirety or without criticism. Numerous investigations continue to center around Wertheimer's hypothesis and there is still much controversy in the field. The latest investigation, that of DeSilva\textsuperscript{2}, shows there is still much confusion regarding the interpretation of the perception of movement and points out clearly that much remains to be known about this type of perception before it becomes a closed chapter in experimental psychology and any theory may be accepted as final.

This investigation aims to fill one of the most outstanding gaps in our knowledge of movement perception. In all the work that has been done, no investigation has concerned itself primarily with the functional characteristics of the perception of velocity. Various investigators, as will be shown in the historical survey, have observed lack of correlation between the velocity of the stimulating movement and the phenomenal velocity, and it is generally known that judgments regarding velocity are rarely accurate. But such scattered material as exists by no means adequately covers the field. This investigation attempts (1) to assemble the observations of previous workers that concern the perception of velocity; (2) to determine by experiment what objective factors condition phenomenal velocity (i.e. the perceived rate of movement) and in what varying degrees they operate; and (3) to discover how these factors affect the theory of the perception of movement. These three given aims will be followed out in order in the following three sections.

II. Historical.

The literature on the perception of movement has been adequately reviewed\textsuperscript{3}, consequently the present survey is limited to the studies concerning the perception of velocity.

\textsuperscript{1} Max Wertheimer, Experimentelle Studien über das Sehen von Bewegung. Z. Psychol. 61, 161—265 (1912).
\textsuperscript{3} The reader is referred to De Silva, op. cit., 293—295, for the latest material on the perception of movement and references to the older investigations. The material up to 1923 is also admirably summarized by J. Fröbes, Lehrbuch der experimentellen Psychologie 1, 395—413 (1923).