

*A Preliminary Study of Experiments on Time Relations in Binocular Vision.* TIMOTHY J. STEVENSON and E. C. SANFORD. *Amer. J. of Psychol.*, 1908, XIX., 130-137.

The study, of which this paper is a preliminary report, belongs in the same general group with studies previously made by Münsterberg, by Dvorák, and by Exner on the gaining of stereoscopic effect by presenting the two halves of the stereogram separately, each to its particular eye.

The present problem is concerned with the time interval which may come between the presentation of the two pictures without destroying the stereoscopic relief; and, in addition, the preliminary results given in this paper show the effect of the insertion of too great an interval between the presentations.

The apparatus is an adaptation of the Wheatstone stereoscope. The diagrams were exhibited through notches in two revolving cardboard discs, which could be set in such a way as to expose the two pictures successively, each for a brief period, with any desired time interval between the exposures. Three kinds of discs were used, black, white, and medium gray, because of the effect of the brightness of the background upon the duration of after-images.

It was determined that if to the actual duration of the exposure of the first picture be added the duration of the after-image, practically no interval whatever can be inserted between the periods of excitation of the two retinas without destruction of the stereoscopic relief.

Upon two points in regard to the effect of the time interval the results were uniform. First, when the interval is too long to allow stereoscopic relief, the parts of the diagram seem to be in motion, changing rapidly from the position they occupy in one picture to that which they hold in the other. Double images are not seen. And, second, as the interval is shortened so that conditions are favorable for the proper relief, the relief does not flash out suddenly in its full amount, but grows gradually with each decrease in the interval, reaching its maximum with simultaneous exposure.

The writers suggest that the latter results furnish an argument in support of Wundt's theory of complex local signs in binocular vision. If the phenomenon can be looked upon as a reflex one, the tendency to movement ought to be roughly proportional to the time during which a very brief stimulus was operative binocularly, and these experiments show this to be the case.

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