

Simple time reaction as a function of luminance for various wavelengths*

ALFRED LIT, ROBERT H. YOUNG†, and MARGARET SHAFFER††
Southern Illinois University, Carbondale, Illinois 62901

Reaction time to white and colored targets was measured on two Ss for stimuli presented over a wide range of scotopic and photopic retinal illuminance levels. The colored targets were each photometrically matched for brightness against a white standard target at one photopic level (1.00 log td). The data show that for both the white and colored stimuli, reaction time is long at low target illuminations and progressively decreases to approach a final asymptotic value as the illumination level is increased. Discontinuities in the experimental curves relating reaction time and retinal illuminance occur at about -1.00 log td for all colors except red, in accordance with predictions based on the duplicity theory of vision. The photopic (cone) segments of the experimental curves overlap, while the scotopic (rod) segments are laterally displaced to progressively lower retinal-illuminance values as target wavelength is decreased, in accordance with expectations based on the differences in the luminosity functions of the scotopic and photopic systems.