

After the observer's eye had become accustomed to the weak illumination, the disc looked gray on rotation and could be compared with black and white discs. It was found, exactly as Hillebrand had stated it, that in this illumination red and yellow were relatively darker and green and blue relatively brighter than in daylight.

The experiments which Gimber conducted in a dark room with a colour-blind seem further to show the impossibility of Hering's special "White-Valenz" theory. It has several times been emphasized that the disappearance of colours in weak illumination corresponds to the vision of total colour-blinds for whom remains only the excitation of the black-white substance. Hence for them the normal intensities of the colours must be those which we see in weak illumination, and therefore to a red-green colour-blind green should look brighter and red darker than to an eye of normal colour sense. He found, however, that while the original trial for green gave a 0.6 darker value than for normal persons, yet in the dark room green looked 13.5 too bright, and in the control trials the λ lines always appeared a little though not much, too bright. The colour-blind with whom Gimber conducted his experiments was a decided dichromat with a shortened spectrum almost to the D line. The indifference line was at or near E; the violet side of the spectrum was not shortened. One need only say that under such conditions no wonder that red looked darker than to an eye of normal colour sense.

In the experiments which we conducted on the intensity of colour pigments in different illumination, the apparatus used was that of Dr. Mäe made by Zimmerman and altered to suit the particular needs of the case. The discs used were of Milton-Bridges colored paper on a black and white background. The ring of colour was a constant, the gray a variable quantity. The intensity of the light was relatively controlled by conducting the trials in a room admitting daylight through a square window of forty by forty-eight inches, then through a small square opening one-twelfth the size of the window, which was further successively covered by 5, 10, 20, 30, 40, 50, and 60 white tissue papers.