

Relation of Visual Acuity and Contrast Sensitivity Under Nighttime Driving Conditions

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• **THERE** appear to be no data available to indicate any definite relationship of visual acuity and the ability to detect low-contrast differences at night.

Over the years, the company has conducted a number of dynamic seeing-distance tests using observer-drivers. The observers' eyes were checked with the standard AMA test chart and also with the Luckiesh-Moss low-contrast chart. About two years ago, the eyes of some 30 observers who were attending a lighting test demonstration at Phoenix, Arizona, were checked with these two charts.

Though a sufficient number of observers has not been checked to make absolutely certain there is no correlation between visual acuity and the ability to detect low-contrast differences at night, in all the checks so far there has been no correlation; that is, observers who had 20/20 or better visual acuity oftentimes made a poor showing with the low-contrast chart. Conversely, sometimes those with acuity as low as 20/40 made a good showing with the low-contrast chart. Some had good performance both ways, some had poor performance both ways.

Obviously, the best combination from the standpoint of nighttime driving safety is excellent visual acuity plus excellent ability to detect low-contrast differences at night. However, it is the author's opinion that of the two, the latter is the more important.

With the limited number of observers used in conducting seeing-distance tests in moving cars, those with the best performance with the Luckiesh-Moss low-contrast chart also gave the best seeing-distance performance on the tests. Conversely, those with the poorest rating with the Luckiesh-Moss low-contrast chart gave the poorest results in the seeing-distance tests. In the case of these particular tests observers with 20/20 acuity rating or with spectacles giving correction to 20/20 were used. More data are needed.