Lenticular Sclerosis and Age

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In Fortuyn's thesis, the visual acuity, i.e. the smallest distinguishable detail, is justifiably related to the contrast. The greater the contrast, the smaller the detail that can be distinguished. Similarly: the larger the object, the slighter the distinguishable contrast. A third factor is the degree of illumination.

In practice, the visual acuity is determined at optimal illumination and at optimal contrast. This is done because, under these conditions, changes in illumination and contrast are relatively unimportant. Still, it is not certain that this holds true under all circumstances. Dekking, with whom Fortuyn took his degree, investigated the matter further and constructed an ingenious instrument, in which, by means of polarization of light, the illumination and the contrast can be adjusted to any desired level. At that time, I was devising an instrument myself, which I show you here.

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20

290 Colenbrander, Lenticular Sclerosis and Age

It is an apparatus that is held in the hand and through which the examinee looks. On the object side there are two openings, one above the other, and on the side nearest the eye is another opening, directly opposite the lower opening on the object side. The light through the upper opening is reflected downwards by a slanting mirror, passes a positive lens and is led in the direction of the eye opening by a second slanting mirror, which is partially permeable. The position and strength of the lens are such that the object, which is visible unrefracted through the lower opening, is projected by the lens exactly on to the eye opening. The partially permeable mirror can be shifted in and out and is divided into 2 parts, allowing the passage of $\frac{1}{2}$ and V_n of the light, respectively, the rest being reflected. Consequently, when the background of the optotypes is evenly illuminated and the letters occupy little space in respect of the background, the latter, seen through the apparatus, is always maintained constant, whereas the contrast can be reduced from full to half or 1:1 by adjusting the mirror.

With this instrument, the visual acuity after correction was examined in 100 normal persons of various ages. Vision was generally more decreased after diminution of the contrast after the 50th year than before that age. There is no doubt that, in this respect, early lenticular sclerosis plays an important role.

This result

which was not altogether unexpected

must in my opinion have consequences with regard to the examination of car drivers

especially occupational drivers

because the inconvenience caused by oncoming cars and by driving in a fog differs widely from one person to another. One person sees much further than another

and young persons generally see furthest of all. These differences are probably related to diffuse scattering in the media especially in the lens. It may therefore be advisable for every ophthalmologist to have a cheap apparatus at his disposal with which the reduction of vision due to decreased contrast can be measured. Establishment of the visual acuity under optimal conditions might prove to be of little practical value in the examination of drivers and an instrument similar to that described might become a necessary evil along the thorny path of examinations.