Practical Application of the Stenopeic Opening

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The stenopeic opening as a diagnostic aid has been known for a long time. It can be used when looking for the cause of reduced visual acuity. Many investigators have shown the usefulness of this aid in practice.

The principle of the investigation is as follows: The opening is placed before the patient's eye in such a way that he sees as sharp as possible. It is established whether under these conditions the visual acuity is better than without the stenopeic opening. If this is the case, it is evident that the stenopeic opening intercepts a number of rays which, on account of turbidities or refraction anomalies do not contribute to a correct retinal image.

In order to make the above-mentioned indication for turbidities or refraction anomalies as clear as possible, the circumstances should be such that the visual acuity can increase considerably. This implies that the optotypes must be bright (e.g. an illumination intensity of 500 lux or more). Also the stenopeic opening should not be too narrow, because in that case the diffraction blur will exert an important influence. In most cases, good results may be expected from an opening of 1 mm. diameter.

The investigation with the stenopeic opening can still be extended. For instance, it can be made so small that the blur of the image on the retina is entirely due to diffraction. It is then established whether the visual acuity thus attained equals that of a normal eye under equal conditions. If this is the case, a normal visual acuity will probably be achieved by elimination or correction of the anomalies in the eye.

This can be illustrated by the following (Fig. 1). In a case of lenticular turbidities, with an illumination intensity of 5000 lux, a visual acuity was attained of about 1/10, and of 1/2 with the aid

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Fig. 1.

1.0 1.2

1.5

2.0 (mm)

normal eye; eye with lenticular turbidities;

after extirpation of the lens (corr.j.

the same eye,

of a stenopeic opening of 1 mm. This may, therefore, be considered as an indication that the visual acuity is actually reduced by the lenticular turbidities. When a narrower opening was used, visual acuity was the same as that of a normal eye. The expectation was therefore justified that on lenticular extraction a normal visual acuity could be achieved. The results after extirpation of the lens were in accordance with this expectation: Only when stenopeic openings of a large

diameter were used, was the visual acuity still slightly reduced. This may be attributed to a slight degree of secondary cataract and some irregular astigmatism.

Discussion.

Hagedoorn: Denier van der Gon's studies are of clinical significance: (a) for evaluation of the function of the macula

as was formerly done with a stenopeic opening

but now with alternating

accurately adjusted illumination and size of the opening; (b) in cases of malingering. I have observed a patient who had lost an eye and appeared to have a diminished visual acuity in the other eye. No abnormalities were observed

and formerly examination would have led to the diagnosis of normal vision. Van der Gorís curves with increasing illumination and increasing size of the stenopeic opening revealed that the patient did not malingering and that in the above-mentioned examination he must have seen with the eye now removed.