Some Notes on Glare Phenomena

J.J.

Vos

Institute for Perception RVO-TNO, Soesterberg, The Netherlands

Summary

When a glaring light source enters the field of view, the environment is masked as if a veil is thrown on it. Possible explanations are: scattering of the light in the ocular media or a process of nervous interaction. Our own experiments suggest the former explanation. Some anomalies in the results supply interesting information about the contribution of intraretinal straylight.

Possible connections with and applications on pathology are mentioned.

A more complete paper will be published in the Proc. ICI, Brussels 1959.

Discussion

Professor Dekking: I am under the impression that Vos tries to explain the glare phenomenon entirely physically and attributes hardly any value to the physiological processes in the retina proper. This is definitely incorrect, and perhaps due to his too narrow conception of glare as a “veil” or fluorescent screen that seems to appear before the object observed. I believe that he

V o s , Some Notes on Glare Phenomena 485

ascribes the reduced threshold value for perception of the ring exclusively to this phenomenon. This is also evident from his method of comparison.

However, on the one hand, a local “glaring” source of light lowers the adaptation of the entire retina, and thus increases the threshold value (adaptive glare, in no way connected with scattering in the media); on the other hand, after a few seconds the light adaptation is increased and the marginal contrast develops, which reduces the glare and enhances perception of detail. The importance of local adaptation and marginal contrast, in other words, the physiological processes in the retina proper, was clearly demonstrated by my experiments with tridione, which eliminates the light adaptation of the cones. In these experiments an enormous degree of glare is developed, although nothing had changed in the ocular media. In connection with this and dozens of other well-known facts I think it quite impermissible to draw from experiments on glare conclusions implying that the retina is only a piece of passive ground glass.

Reply: Professor Dekking slightly misrepresents my conclusions which essentially came to this: all glare phenomena I have studied up to now can be explained without some additional nervous mechanism. Of course I do not deny the pure existence of neural mechanisms and the ground glass comparison does not come from me.

As to the actual objections: that local blinding should change the state of the retina in a nervous-adaptive way, I deny on the ground of the experimental results I have just showed; the work of tridione, I do not know, but it seems to be rather disturbing to describe it with the same word “glare”.

Professor Ten Doesschate: Could not the kink in the curves be explained as a nervous influence in the form of an inhibition especially involving the cones and reducing the glare effect by a constant factor?

Reply: I did explain it in terms of inhibition; but I went further and found a purely physical mechanism which possibly could account for this inhibitory effect!

Pameijer, J. K.: *Opht,halmologica* 139: 485 (1960)

Optical Corrections for Low Visual Acuity

By J. K. PAMEIJER

(Will be published in extenso elsewhere)