Photochemical and Nervous Components of Visual Adaptation

J.		ten Doesschate
M.A.		Bouman

Utrecht

Measurements of the chance of observation of brief light-flashes as a function of the diameter of the testfield for the dark and light adapted eye, combined with theoretical considerations based on van der Velden's 2 quantum hypothesis lead to the conclusion that the process of visual adaptation is not only governed by a change in concentration of the visual purple (photochemical component) but also by a change in the switching of the neurons (nervous component).

Theoretically it is possible to separate both components in cases of pathological disturbance of dark adaptation.

A more extensive paper on the same subject has been published in Ophthalmologica 126, 222–230, 1953.

Discussion.

Jonkers: It would be interesting to know if your conclusions would prove applicable to varying conditions of illumination of the testfield, i.e. in varying degrees of dark adaptation. Does not the so-called "retinal grey" cause disturbances in more advanced dark adaptation?

ten Doesschate answers: I refer Mr. Jonkers to the papers of Bouman on the chance of observation of intensity differences. The presence of the adapting field causes complications which we tried to avoid by the present experimental conditions. The "retinal grey" did not disturb the well-trained subject.