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How To See Your Own Fovea*

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The classical way of seeing the vessels of your own retina (Purkinje tree) is to shine a light on your closed eye, as paraxially as you can get, say between the bulb and the orbit. When you move the light to and fro or up and down those branches of the tree stand out which have components that are at right angles to the movement of the light. (Thus one shows endoscopically the importance of retinal "jitter" in establishing the clearness of boundaries.) The branches stand out as one moves the light and also seem to move in the direction of the movement of the light as is only natural from the optics of the situation. Still, with your eyes closed this movement takes place as if against a stationary background. On studying this background we came to an astonishing conclusion.

The light we used was piped through a fiber optics system so as to remove as much heat as possible and still permit a fair brightness. (It is necessary to use a bright cold light since it takes several minutes to see what is described here.) On shining this light between the upper lid and the supraorbital boundary

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of the closed eye, actually pressing the end of the bundle against the skin and pointing it upward, we saw the Purkinje tree stand out in full clarity on rubbing the light along the orbit. But in the far distance it seemed that there was a reddish glow directly ahead in the region where, by the ending of the branches, we could say the optical projection of the fovea lay. Keeping the light moving continually but concentrating on this distant glow, we gradually noted that this orangish-reddish region was shifting back and forth in its periphery together with the tree and shifted less markedly as one went from the outer regions of the glow to its center, which seemed relatively stationary. But what gave the impression of shifting where there was no tree? We saw a pebbly, grainy structure and this graininess seemed very finely resolved indeed. It was the relative shift of the outer with respect to the inner parts of this region that was most startling as we shifted the exciting light. It was as if we were staring into a valley.

Suppose we consider the possibilities here. In the foveal region where no vessels exist, what could contribute a grainy appearance of the sort described, seeming to move in the manner described, except the foveal pit walls, the very vitreal surface of which ought produce a grainy shadow that shifts in our perception as the light shifts. But a shadow of what? What is grainy, pebbly, streaky on the pit walls in dimensions fine enough to go the limit of resolution of the cones, if not the cellular elements superjacent to the cones and here seen as with a microscope with high magnification because of their proximity to the cones?

The phenomenon is not in the least useful, but it is very beautiful and people see it easily.

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