

LETTER TO THE EDITORS

RATE OF DARK ADAPTATION IN THE CAT

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LAMOTTE and BROWN (1970) report a very successful behavioural study of dark adaptation in cats. Such studies are essential if one is to understand the physiological mechanisms of behaviour, but there is one detail which they state disagrees with the neurophysiological results of BARLOW, FITZHUGH and KUFFLER (1957): they claim that the time course of dark adaptation in cats is “not at all unlike” that in humans, whereas we found it to be much slower. I was very willing to believe that our ether decerebrated cats were slower than healthy unoperated animals, and that this was the explanation, but careful inspection of LaMotte and Brown’s results suggest that the disagreement is not as great as they claim.

First, they may have misunderstood the intensity of preadaptation we specified as “greater than 4 f.c.” Though this was not a good choice of unit, we clearly explained in the “Methods” of our paper that it referred to retinal illumination in a Maxwellian view situation. They misquote us as specifying “greater than 4.0 ft-L”; perhaps they thought our preadaptations were considerably weaker than was in fact the case, because they thought we were referring to luminances in the external field, which is how they specify their own preadaptations.

Second, we regularly found thresholds declining out to 70 min, and in one case out to beyond 120 min, following very intense preadaptation. Their curves only go to 50 min in the dark and, in some cases, the threshold still appears to be decreasing at that time. However their results certainly do not show the very late rod-cone break that we sometimes found.

Finally a direct comparison of their Fig. 2, for the human, and Fig. 3, for the cat, shows that they found the threshold dropping by a factor of 10 in 3–5 min immediately after the rod-cone break in humans, whereas the same change took about 10–15 min in their cats. Their results confirm that rate of decline of log (threshold) in the early part of the scotopic phase is indeed slower in cats than in man, and do not conflict with our less complete neurophysiological results on this point.

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