a is $2{\cdot}5 \times 10^{34}$ gauss cm.^{3} (five times the magnetic moment of the sun), we have

$$V = 10^{11} \text{ electron volts.}$$

If the orientation of the magnetic moments in relation to the rotation is the same as in our solar system, the accelerated particles have a positive charge.

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[1] NATURE, **138**, 761 (1936).
[2] *Z. Phys.*, in the press.

Luminous Efficiency of Rays entering the Eye Pupil at Different Points

WE have shown[1] that the impression of brightness produced by a light ray which forms an image on a fixed area of the retina depends in high degree on the position of entry of the ray in the eye pupil. For the ratio η of the apparent brightness for peripheral entry to the apparent brightness for central entry, values as low as 0·2 were found for white light and foveal vision. The following new features of the phenomenon have been revealed by later work :

(1) Measurements with white light. When the ray is imaged at the fovea the variation of apparent brightness with point of entry is large whatever the brightness level to which the eye is adapted. When the ray is imaged at a point a few degrees to the side of the fovea (parafoveal vision) there is very little variation of apparent brightness with point of entry

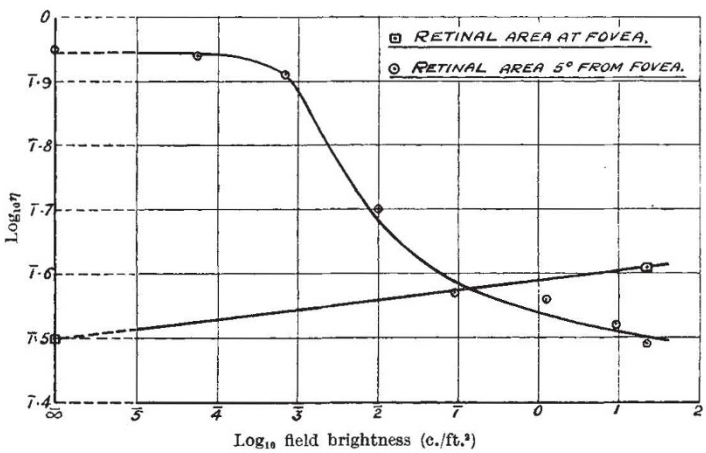

Fig. 1.

for brightness levels below 0·001 c./sq. ft. As the brightness level is increased beyond this value, the effect sets in and is fully developed at a brightness level between 0·1 and 1 c./sq. ft. Fig. 1 shows the variation of $\log_{10}\eta$ with the logarithm of the brightness level, for foveal and parafoveal vision. In these experiments adaptation was secured by viewing a uniform brightness of the desired value. η was deduced from determinations of the smallest intensity of a ray, entering peripherally or centrally and imaged at the fovea or in the parafovea, which the subject could just perceive (liminal brightness increment).

(2) Measurements with monochromatic light. Foveal vision. The change of apparent brightness with point of entry shows a relatively small variation with wave-length, being greatest in the blue, least in the yellow. It was observed, however, that the monochromatic light changes colour as its point

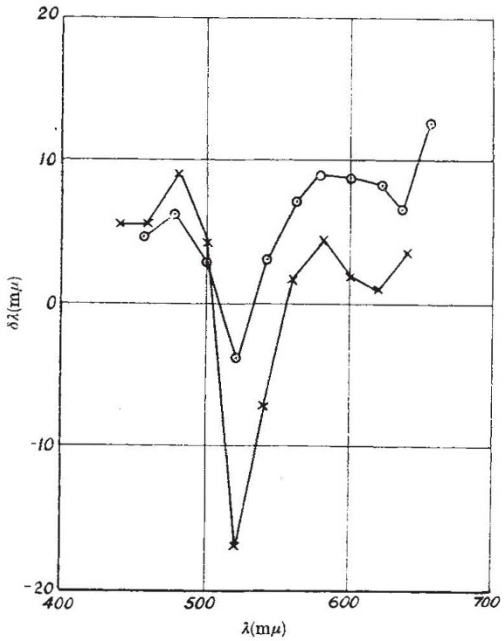

Fig. 2.

of entry is varied. The difference ($\delta\lambda$) in apparent hue for central and peripheral entry as a function of wave-length λ for two subjects is depicted in Fig. 2. In addition, in the green and blue-green, the peripheral ray appears more saturated.

Full details of these investigations are being published, but we may perhaps add here the following comments :

(*a*) The retinal origin of the effect is definitely confirmed.

(*b*) For the parafovea, the effect sets in at the brightness level commonly associated with the change-over from scotopic to photopic vision.

(*c*) The three types of receptors of the trichromatic theory must exhibit the effect in different degrees. This appears to be necessary to explain the observed colour change of physically homogeneous light.

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Dec. 24.

[1] Stiles and Crawford, *Proc. Roy. Soc.*, B, **112**, 428 (1933).

Forbidden Transition in the Spectrum of Interstellar Ionized Titanium

AN exploration of the ultra-violet spectra of a number of stars has recently been undertaken in collaboration with Dr. Walter S. Adams, using the aluminized mirror of the 100-inch telescope, a new grating of high efficiency ruled by R. W. Wood on an aluminized Pyrex disc, and an off-axis Schmidt