The above spherically symmetric treatment of the nebula is an over-simplification. At all wavelengths the nebula has a non-circular appearance, with the pulsar which powers the electron source being offset to the SE of the centroid of the nebula. Optical polarization maps[12] indicate a marked asymmetry in the structure of the magnetic field, and our own data indicate that the $(J-K)$ and $(V-K)$ colour excess is most marked in the NW sector of the nebula. Even allowing for geometrical projection effects, we think that this sector of the nebula must be the region farthest from the relativistic-electron source. It is therefore the region in which electron-lifetime effects are likely to be most marked.

We conclude that both the mean colour change observed around the edges of the nebula, and the NW-sector asymmetry, can be explained on the basis of established synchrotron theory. Higher-quality mapping observations at 0·58, 1·2 and 2·2 microns could lead to a more detailed model of the synchrotron-emitting region; a spectroscopic check for line-emission contamination of the *J* and *K* signals would be a necessary preliminary.

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NOTES FROM OBSERVATORIES

Sky Brightness and Colour Changes during the 1982 July Lunar Eclipse

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The lunar eclipse of 1982 July 6 aroused considerable interest because of the unusual length of totality (106 minutes), and the large amount of volcanic dust in the atmosphere. The sky brightness and colour changes during the eclipse were measured with the 31-inch reflector of Lowell Observatory at Anderson Mesa, Arizona. From previous experience in 1982 June and July it was known that during the Full Moon the sky colour indices at Anderson Mesa were around $0^{m}{\cdot}4$ and $0^{m}{\cdot}7$ in $(U-B)$ and $(B-V)$ respectively, compared to indices of $-0^{m}{\cdot}5$ and $0^{m}{\cdot}8$ during the New Moon. It was expected that the sky colour would change from that of the time of a Full Moon to that of a New Moon as totality approached. This hypothesis was largely confirmed (see Fig. 1). It should be noted that the $(B-V)$ colour index was not constant during totality, but rather reached a maximum at the onset of totality and declined slowly thereafter. This was in sharp contrast to the $(U-B)$ index which was symmetrical in time about the midpoint of the eclipse. The $(B-V)$ and $(U-B)$ colours of the Moon are $0^m{\cdot}91$ and $0^m{\cdot}45$ respectively[1]. The $(U-B)$ colour index of the sky was around $0^m{\cdot}4$ prior to and following the eclipse. Curiously the $(B-V)$ index approached $0^m{\cdot}91$ most closely at the onset of totality ($(B-V) = 0^m{\cdot}96$). All measurements were taken 20 degrees North of the Moon with the telescope tracking at lunar speed. In order to avoid stars in the photometer's diaphragm the position of the telescope was moved from time to time, but never more than 15 arc minutes from 20 degrees due North of the Moon.

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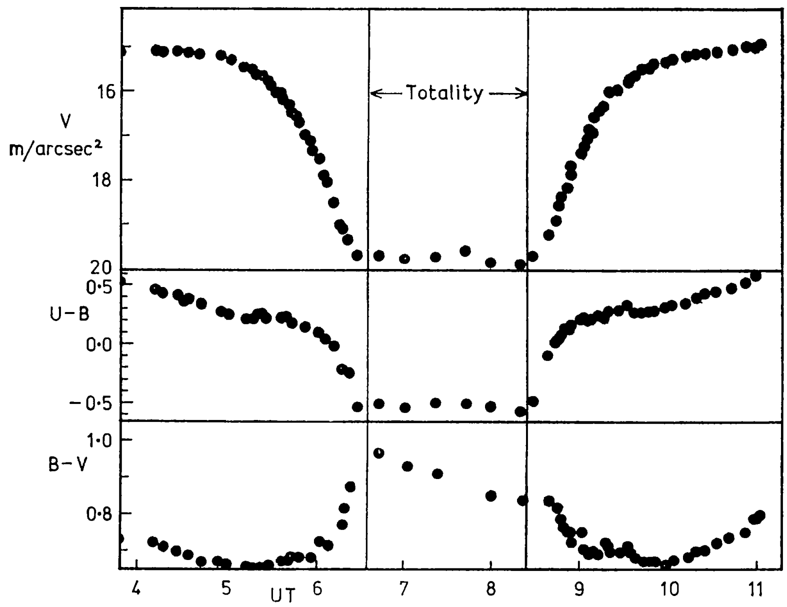

FIG. 1

Sky brightness and colour changes during the lunar eclipse of 1982 July 6.

TABLE I

Circumstances[2] of the Eclipse of 1982 July 6

	U.T. h m
Moon enters penumbra	04 22·2
Moon enters umbra	05 32·8
Total eclipse begins	06 37·7
Middle of the eclipse	07 30·9
Total eclipse ends	08 24·1
Moons leaves umbra	09 29·0
Moon leaves penumbra	10 39·6