Simultaneous measurements of S_ν at 2,695 and 8,085 MHz allow the determination of $T_e\Omega_s$ and $E\ T_e^{-1.45}$ as functions of time whenever the argument in the exponential in equation 1 is large enough. By multiplying $E\ T_e^{-1.45}$ by $T_e\Omega_s$ raised to the 1.45 power, a parameter independent of T_e, $E\ \Omega_s^{1.45}$ can be obtained. The results of such an analysis, whenever it was possible, are presented in Table 1. Only the first two hours on May 3 are not compatible with a thermal source model. We conclude from this that, just as Sco X-1 occasionally shows signs of a rare thermal component[4], Cyg X-3 contains both thermal and non-thermal components, with the non-thermal behaviour being rare.

A few simple conclusions can be drawn from the thermal source parameters derived in Table 1. First, as has previously been noted for β Persei (R. M. H., manuscript submitted), $T_e\Omega_s$ is roughly constant, except for variations as expected from the noise in the flux density data, on any particular day; for example, $T_e\Omega_s = 1.9\times10^{-6}$ K sr on May 1, 1.0×10^{-6} on May 2, and 2.6×10^{-6} on May 3. The most interesting differences occur in $E\ \Omega_s^{1.45}$ which was roughly constant at 7.0×10^{-8} on May 1 and 1.1×10^{-7} on May 3; however, there was a clear variation from 5×10^{-8} up to 1.6×10^{-7} during the flare on May 2, 1972. If the thermal interpretation of the radio data for Cyg X-3 is valid, simultaneous measurements at radio and X-ray energies should provide an unusual opportunity to look for correlations and to further determine the parameters of the source.

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LR Cen is not Cen X-3

The eclipsing variable LR Cen has been suggested[1,2] as a candidate for the optical counterpart of Cen X-3[3] on the basis of the near coincidence of the position and period of LR Cen with those of Cen X-3. My observations[4] and those of Kristian *et al.*[1] show that in March, the time of eclipse of the secondary of LR Cen nearly coincided with that of Cen X-3. Also LR Cen and Cen X-3 both have orbits of low eccentricity; thus, LR Cen and Cen X-3 have similar positions, periods, phases and eccentricities.

The difference in periods, however, though small, is significant. The observed eclipses of the X-ray source would have occurred at several different phases in the cycle of LR Cen if its period was unchanged since the original determination of 2.095595 ±0.000009 days by Uitterdijk[5] in 1932. I have redetermined the period of LR Cen from my observations of its primary eclipse on March 16, 1972 (Fig. 1*a*) and from those obtained on April 26, 1972 (Fig. 1*b*). The precise times of the minima were determined from the coefficients of second order polynomials which were fitted to the observations using the method of least squares. The value for the period of LR Cen of 2.0954 ±0.0007

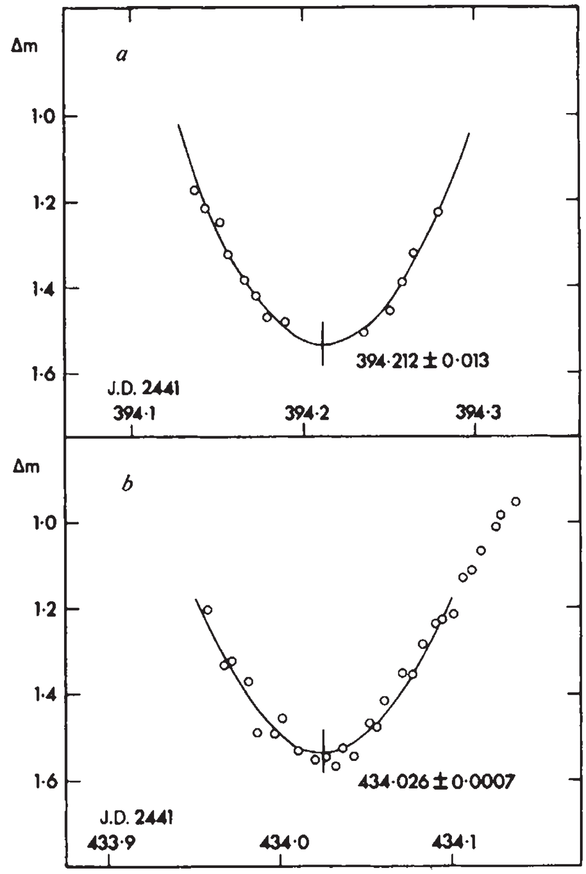

Fig. 1 Primary minima of LR Cen in V, given in magnitudes with respect to Uitterdijk's comparison star C. The lines represent the second order polynomials used to determine the time of the minima.

days was obtained for the 19 cycles elapsed between the primary minimum on March 16, 1972 (J.D. 244 1394.212±0.013) and the primary minimum on April 26, 1972 (J.D. 244 1434.026 ±0.007). These observations show that the period of LR Cen is unchanged, and that it is significantly different from 2.08712 ±0.00004 days, the period of Cen X-3.

Thus, the near coincidence of the times of eclipse found in March is wholly coincidental, and I now conclude that LR Cen is not the optical counterpart of Cen X-3.

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Ring Current Effect on Magnetospheric Electron Density Profiles derived from Plasmapause Whistlers

The longitudinal drift of van Allen radiation belt charged particles, with opposite charges drifting in opposite directions in the geomagnetic field, constitutes a westward directed ring