of ·005 combined with apsidal motion would produce easily observable fluctuations in the phase of the primary; however, no sensible trace of them is found. Next turning our attention to the deviations of the secondaries, given in column 7, we see that epochs 11 and 19 have positive residuals of respectively about 2 and $2^1/_2$ times the mean error. However, no improvement is obtained if we try to represent the residuals of the secondary by a sine curve with a period that is not unreasonably short. The weighted average of the residuals is + ·0012 ± ·0007 period. If we use for each series of observations the interval between primary and secondary we find the residuals from a half period as given in the last column. Again these do not show a periodic oscillation. In view of the constant phase of the primary, which on account of its greater depth would reveal the oscillations much more easily, the present writer ascribes the residuals of the secondary only to observational errors.

If there is no apsidal motion the eccentricity might still be large if $\omega = 90°$ or $270°$. Then the secondary lies midway between the primaries and is $1 \pm 2e$ times wider than the latter. However, the rectified intensities as given in *Lick Bull.* No. 378 show that in 1921 the secondary is only about 1·01 ± ·02 (m.e.) times wider than the primary.

In 1934 (*Harv. Circ.* No. 425) the secondary is about 1·03 ± ·03 (m.e.) times narrower than the primary; in 1937 the relative width of the two minima is uncertain. Therefore the eccentricity is insensibly small and probably not larger than ·01. The discrepancy with the spectroscopic value ·047 ± ·016 is not serious as the latter is only about three times its mean error.

On the apsidal motion of V380 Cygni and MR Cygni, by *W. J. Luyten.*

A spectroscopic orbit for Boss 5070 = V 380 Cygni was determined by HARPER in 1920 and revised by him in 1935 (*D.A.O.* **6**, 244, 1935). A photoelectric lightcurve and constants for the system were given by KRON (*Ap. J.* **82**, 225, 1935). The lightcurve shows indications of ellipticity; hence approximate synchronism is likely to exist between orbital revolution and axial rotation even though the eccentricity has the unusually large value of $e = 0{\cdot}22$. Since the primary is large in size, $r/a = 0{\cdot}347$, apsidal motion is likely to be rapid enough to be observable. RUSSELL's formula $P/U = k(r/a)^5 . (1 + 7m_2/m_1)$ with $m_2/m_1 = 0{\cdot}75$ would indicate $P/U = k/40$ and, even if k were only as large as 0·01 the period of apsidal motion might be of the order of 4000 orbital periods or 130 years. If no synchronism exists and the axial rotation of the primary is faster the apsidal rotation might still be of the same order. With $e = 0{\cdot}22$ and $\omega = 116°$ (HARPER) a change of $+ 1°$ in ω corresponds to a change of $- 0^P{\cdot}0021 = - 0^d{\cdot}026$ in $t_2 - t_1$.

KRON's photoelectric observations cover a period of seven years, and an attempt was accordingly made to derive $t_2 - t_1$ separately for the earlier and later observations, with the following results:

97 observations from 1923–1925 give $t_2 - t_1 = 5^d{\cdot}41 = 0^P{\cdot}435$.

105 observations from 1926–1930 give $t_2 - t_1 = 5^d{\cdot}31 = 0^P{\cdot}427$.

With $\Delta E = 92$ periods between these two sets, and $\Delta(t_2 - t_1) = - 0^P{\cdot}008$ corresponding to a difference in ω of $+ 4°$ we obtain for the change in ω: $\Delta\omega = + 0{\cdot}043$ degree per period = + 1·3 degree per year. The uncertainty of the data is considerable, and amounts to about 50% of the value of $\Delta(t_2 - t_1)$ probably. We may only tentatively conclude, therefore, that a *forward* apsidal rotation with a period U, of the order of $U = 8000\,P$ or $U = 280$ years, is suggested by the observations. New determinations of the times of primary and secondary minimum or a new spectroscopic orbit will be required to settle the matter definitely.

The eclipsing variable MR Cygni was discovered by WACHMANN, photometric observations and lightcurves have been published by WACHMANN (*A. N.* **255**, 371, 1935) and RÜGEMER (*A. N.* **245**, 37, 1931), while spectroscopic elements were determined by PEARCE (*R.A.S.C.* **29**, 411, 1935). The large value of the eccentricity ($e = 0{\cdot}122$) together with the short period $P = 1{\cdot}677$ suggests that apsidal motion might be observable in a short time and for this purpose the available material has been rediscussed. In the table are given the values of $(t_2 - t_1)/P$ as derived from the photometric and spectroscopic observations. In the calculation of ω the spectroscopic value of e has been used. Though the data are naturally extremely uncertain they are consistent with the hypothesis that the line of apsides moves *forward*. The rate of this motion appears to be of the order of 6 degrees per year corresponding to a period $U = 14000\,P$.

E	Observer	$(t_2 - t_1)/P$	ω
− 134	WACHMANN ptm	0·515	81°
+ 138	RÜGEMER ptm	0·488	101
+ 275	WACHMANN ptm	0·490	100
+ 420	PEARCE spectr.	0·485	103
+ 684	WACHMANN ptm	0·47:	108

$E = 0$ at J.D. 2426267.