The high luminosity which can be inferred from the spectrum of HD 30353 is confirmed to some extent by the radial velocity which has been determined from a single spectrogram. The velocity measured using eleven presumably unblended lines is -35 ± 3 km/sec, which, if assumed to be entirely a consequence of galactic rotation, gives a minimum absolute visual magnitude, uncorrected for interstellar absorption, of about -5.5 .

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Buscombe, W. and A. McKellar. Intensities of molecular bands in the spectra of R-type stars.

The intensities (equivalent widths in Angstrom units) of all the bands of appreciable strength in the violet system of CN and the Swan system of C_2 , and also of the $\lambda 4315$ CH band, have been measured in the spectra of the three early R-type stars, HD 156074 (R0), HD 182040 (R2) and HD 76396 (R4). Such quantitative measurements on the absorption bands in the spectra of the cool carbon stars have not heretofore been made.

If the populations of the molecular states concerned in the production of the absorption bands be assumed to follow the Maxwell-Boltzmann distribution law, the intensities of the bands can be used to derive so-called "vibrational" temperatures for the stellar atmospheres. Due to any possible "curve-of-growth" effects the values obtained would be expected to be maximum temperatures. For CN, relative transition probabilities determined in the laboratory and also those calculated by theory were available for use, while for C_2 only the theoretical values were available. The empirical probabilities gave somewhat more self-consistent temperatures than the theoretical probabilities. While a considerable range was found in the figures from the different band sequences, the mean temperature of 5400°K is thought to have some significance. It is consistent with the colours of the three stars, which are among the hottest of all those of spectral type R.

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Chang, Y. C. Spectrographic observations of the eclipsing binaries of the W Ursae Majoris type, AH Virginis and TZ Bootis.

Over 30 spectrograms for each of these eclipsing binaries have been obtained at the McDonald

Observatory with a dispersion of 76 Å/mm at $H\gamma$. The spectral lines of AH Vir break up into components at quadrature. The difference in intensity of the components is greatest at phase 0.75 P and is least at phase 0.25 P . Assuming a circular orbit, it has been found from the velocity curve that $\gamma = +10$ km/sec; $K_b = 105$ km/sec; $K_f = 250$ km/sec. In many respects, the spectroscopic behavior of this binary bears close resemblance to YY Eri, another eclipsing variable of the W Ursae Majoris type. The mass-functions are $m_b \sin^3 i = 1.33$ and $m_f \sin^3 i = 0.56$. It appears to be fairly general that the mass ratio as given by K_b and K_f differs from unity by a greater amount than can be reconciled with the mass-luminosity relation.

The spectral lines of TZ Boo do not become double at quadrature. There does not seem to be any correlation between the radial velocity and phase as calculated from the period of light variation. The mean velocity is -58 km/sec.

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Dodson, Helen W. and E. Ruth Hedeman. A geometrical aid in the determination of the disk positions of solar limb phenomena.

An understanding of the significance of prominence activity may perhaps be acquired more readily if limb phenomena can be correlated more closely with associated features on the solar disk. The disk position corresponding to a limb feature is usually quite uncertain since prominences of great heights can be observed very far from the solar limb. The methods suggested in this paper have proved successful in determining the heliographic coordinates of certain prominence features recorded in the motion pictures taken at the McMath-Hulbert Observatory.

Apparent height and heliographic latitude of stable solar prominences change with time because of solar rotation. If the poles of the axis of rotation are assumed to be on the limb, a prominence of height, h/R , of true heliographic latitude, B , and meridian distance, θ , will appear of height, H/R , where

$$\frac{H}{R} = \left(1 + \frac{h}{r}\right) \sqrt{1 - \cos^2 \theta \cos^2 B} - 1,$$

R being the solar radius. The difference between true and apparent height Δ/R is given by

$$\frac{\Delta}{R} = \left(1 + \frac{h}{r}\right) (1 - \sqrt{1 - \cos^2 \theta \cos^2 B}).$$