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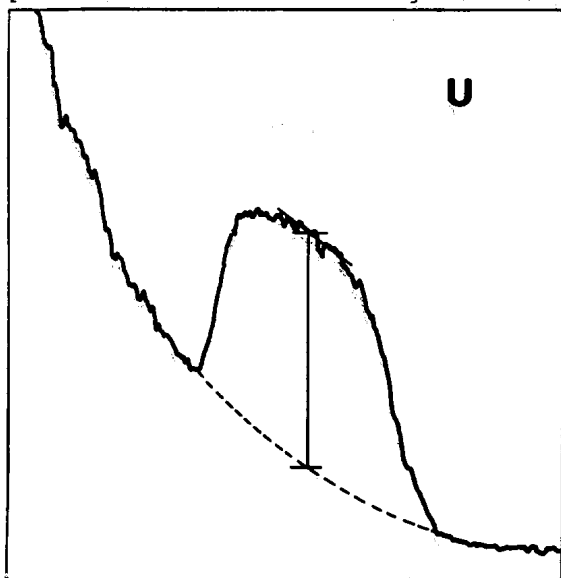
FIELD-SCANNING PHOTOELECTRIC OBSERVATIONS OF THE
ECLIPSING VARIABLE YY Gem

Photoelectric observations of the 10th magnitude eclipsing variable YY Gem (Castor C) taking into account scattered background light from the nearby star Castor A (α Gem) have been carried out in UBV using the 36-inch reflectors of the DoGaira Station of Tokyo Astronomical Observatory and the Okayama Astrophysical Observatory on five nights during the winter of 1973-74. BD+31^o1627 was used as the primary comparison star, with occasional light constancy checks provided by observing BD+31^o1611.

Difficulties in measurement are due to the strong scattered light of α Gem which is 73" distant from the variable studied. Scattered light may amount to roughly 8%, 25% and 50% of the system light in V, B and U respectively. However, by careful scanning of the background sky in the vicinity of the variable it has been possible to determine valid light levels at various observation

times.

The accompanying diagram shows a typical scan in U light from which a representative light level of the variable may be found. The scan is carried out by moving the telescope in declination starting from some point distant from the Castor system, moving until the star under investigation (YY Gem) is in the centre of the diaphragm, and proceeding onward in the direction of α Gem so that the char-



acter of the sky background increase can be examined. The telescope may be continuously moved in the same direction past the vicinity of the bright stars until the sky background again subsides to a normal value. In this way the symmetrical distribution of the scattered light may be checked and provide a verification of the sky background level during the scan of the variable.

The scanning direction of declination was chosen so that the scattered background light would show a monotonic increase as indicated in the diagram. In the right-ascension mode this pattern of variation is not so clear, due to the northerly position angle of the bright star (α Gem) with respect to the variable studied (YY Gem).

This approach has not been carried out before. In Kron's study of the system (Ap.J., 115, 301, 1952) the problem of the scattered light was not clarified. We therefore expect to obtain definite improvements over earlier observations of the system as our results so far suggest.

It has been established that primary and secondary eclipses of almost equal depths ($= 0^m.50$ in V) occur, with eclipses lasting for about 2 hours. The eclipse may be slightly deeper in B and U light. From the present observations, the mean out-of-eclipse magnitude in V light is $v=9^m.27$, while $B-V = 1^m.46$ and $U-B = 1^m.4$. It is hoped to continue observations of the system in the coming winter.

On the nights of Jan. 9-10, 11-12, 12-13 of 1974 continuous photoelectric monitoring was also carried out with the synchronous UBV photometer attached to the same telescope at Okayama to find any flare-like phenomenon as reported by Moffett and Bopp (Ap.J., 168: Letter 117, 1971). However, no flare-like phenomenon could be detected during these three nights.

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