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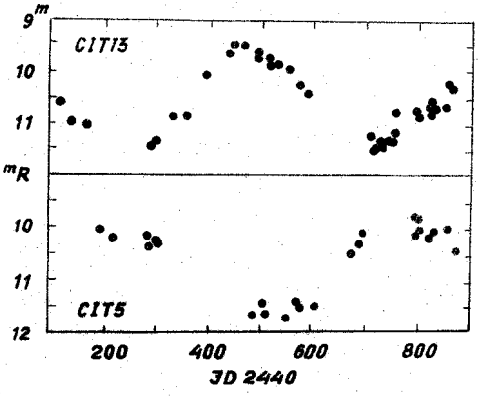
ON THE VARIABILITY OF THE CARBON STARS CIT 5 AND CIT 13

Among the 14 extremely cool stars found at the California Institute of Technology (1) at least three are carbon stars and possibly variables (2,3). P.Pesch (3) has shown that two of them, CIT 5 and CIT 13, had been identified as N-type stars at the Dearborn observatory and listed as Nos 259 and 228 respectively (4,5), Do 228 having been noted as variable (4). The last one has No 5438 in the Catalogue of Suspected Variable Stars (6).

In order to find out the type of variability of the two stars they have been observed since autumn 1968 photographically with a Schmidt camera mainly in m_R (magnitudes similar to R of W.Becker) as well as in V (and in B, when possible). By now, some conclusions can be made.

CIT 5 = Do 259 = IRC +50096 (7) had two flat maxima, $m_R = 10^m.1$, and one minimum, $m_R = 11^m.7$. The range of changes in V was from $11^m.8$ to $14^m.1$. In B the star was fainter than the plate limit (18^m–19^m) even at maximum light, thus $B-V > 6^m$. The cycle of light variations was about 550^d. The star probably belongs to the variables of Mira Ceti type. If so, it is a carbon star of this type of variability possessing the longest period known.

CIT 13 = Do 228 = CSVS 5438 (6) = IRC + 40485 had two minima, $m_R \sim 11^m.5$, $V \sim 13^m.5$, and one maximum, $m_R = 9^m.5$ at J.D. 2440457. Its colour indices at J.D. 2440586 were $B-V \sim 5^m$, $V-m_R = 1^m.7$. The cycle of variations of CIT 13 is about 470^d. Such a period of variability contradicts neither the few observations of K-magnitudes published in (1,2,7) nor the early two observations given in (4). The star evi-



dently is of Mira Ceti type. The light of CIT 13 is now increasing, somewhat slower, however, than in the previous cycle, and will reach its maximum in December 1970.

The results of observations for both stars in magnitudes m_R are given in the Figure.

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