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NOTE ON THREE OF G.HILL'S STARS

In Astrophysical Journal Supplement Series Nr.130 (1967) G.Hill published the results of an extensive search for new variable B stars. His findings meant a substantial widening of the region in the H-R diagram within which β CMA stars had been found up to then; also overrun were the barriers set by low rotational velocity and by the period-luminosity law. But Hill's method to derive periods is open to serious scepticism when it is applied to stars which have beats and phase shifts of the maxima and minima in their lightcurves, and this is known to be quite common among β CMA stars. Hill's results should therefore be checked by means of conventional long photometric runs on each of his stars.

The author spent several nights in observing three of them, two β CMA stars and one eclipsing variable, during observation campaigns at the ESO Observatory in Chile during 1968 and 1969-70. He arrived at the following conclusions:

1. HD 53755, B0-V, a β CMA star with amplitude $\Delta m_p = 0,032$ and $\Delta m_v = 0,031$ and $P = 0^d,43389$ according to Hill: neither the period nor the amplitude could be found back. If there is any periodicity at all discernable in the small lightfluctuations of the star, we would suggest $6^h 25^m$ for the period length and $0^m,02$ for the amplitude in v.

2. HD 53794, B0,5-IV, a β CMA star with amplitude $\Delta m = 0,027$ and $P = 0^d,12377$ according to Hill: only on one occasion, namely in the night of 20 December 1968 was a period of 3^h found back for a lightvariation of $0^m,01$. For the rest a period of $10^h 52^m,5$ is not unlikely associated with lightchanges of the order of $0^m,01 - 0^m,02$, and RV changes observed on spectrograms taken in the course of one and the same night. But the star is certainly a spectroscopic binary with very long period; this can be concluded from our RV measurements which reveal the RV to drop steadily from $\sim +50$ Km/sec on 19 Nov 1969 to ~ -20 Km/sec on 21 Jan. 1970.

3. HD 53756, B2-IV, an eclipsing binary with $\Delta m = 0,025$ and $P = 4^d,1237$ according to Hill: this star is indeed an eclipsing binary with slightly elongated components, but the period is $P = 2^d,8$. A secondary minimum almost as deep as the primary but revealing a slightly eccentric orbit caused Hill's mistake.

This star will be extensively reported on in a separate publication.