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CD -30°5135

The emission-line star CD -30°5135 ( $\alpha$ : 7<sup>h</sup>47<sup>m</sup>1,  $\delta$ : -31°1', 1950) has recently been considered by Humphreys (PASP 87,933,1975) to be a double-line spectroscopic binary (F2ep Iab + B8:). The mean velocity of the metal lines was in mid-January 1974 about +70 km/s, whereas the hydrogen lines H8 to H10 had a mean velocity of -60 km/s. H $\beta$  to H $\delta$  were contaminated by emission. The higher Balmer lines were attributed by Humphreys to a late B-type component, whose presence was inferred from an enhanced ultraviolet continuum and the absence or weakening of several F-type metal lines in that wavelength region, as well as from the profiles of the higher Balmer lines (Humphreys, op.cit., and private communication).

Velocity determinations from two Iia-0 coudé spectrograms (20 Å/mm) obtained with the ESO 1.5 m telescope in December 1973 do not support this interpretation. On 2 December 1973, the mean velocity of 21 metal lines was +127 $\pm$ 2 km/s, which is comparable to the velocity, +141 km/s, measured by Merrill (PASP, 54,155,1942). This spectrogram is not sufficiently exposed in the ultraviolet to permit accurate velocity determinations for the higher Balmer lines. However, from the positions of H8 and H9 entirely longwards of the Fe comparison lines at 3888.5 Å and 3834.2 Å, respectively, it can be clearly stated that these lines do not show the large negative velocity necessary in the presumed B8 binary component. In order to obtain the velocity of the higher Balmer lines with respect to the metal lines another spectrogram has been used. This spectrogram, taken on 8 Dec. 1973, has slightly doubled comparison lines. Many stellar lines are, however, narrower than the comparison lines, which shows that the shift in plate position took place before or after the exposure of the stellar spectrum. Thus, internal velocity determinations are presumed reliable. The metal lines have an internal mean error of the order of  $\pm$ 3 km/s, with an absolute value of the mean velocity in

the range +125 - +175 km/s. Relative to the metal lines the hydrogen lines H $\delta$  to H10 have a mean velocity of about -85 km/s. Taking the metal line velocity in early December 1973 as +130 km/s, we get the following results (with Humphreys's for comparison):

	Early Dec. 1973	Mid-Jan. 1974
Metal lines	+130 km/s	+70 km/s
Higher Balmer lines	+45 km/s	-60 km/s
[H and K CaII	+35 km/s	+15 km/s]

As the velocities of the two main line systems are both changed in the same direction, these data clearly speak against CD -30<sup>o</sup>5135 as a binary. A further indication is the fact that the F-type lines missing from Humphreys's spectra are present in mine, although the ultraviolet continuum appears to be somewhat enhanced also in these. The seeming lack of HeI or SiIII lines attributable to the B8 component supports the same conclusion.

What might then be the cause of these velocity variations? It is known that A-F supergiants in general show velocity variations, sometimes with appreciable differences in the behaviour of metal and hydrogen lines (e.g., Abt, Ap.J. 126, 138, 1957). The amplitude of the variations in CD -30<sup>o</sup>5135 is, however, much larger than any found by Abt. A further fact is the observation by Humphreys (op.cit.) that the star became bluer by 0.1 magnitude from 2 Jan. to 3 Jan. 1974, while retaining its visual brightness. In addition, the P Cyg structure observed by Humphreys at H $\gamma$  and H $\delta$  is absent from my spectra (H $\gamma$  may be partly filled-in by emission to the longward side, as its velocity is about 20 km/s less than that of the other hydrogen lines). H $\delta$  appears rather strongly in emission on the December 1973 spectrograms, with a superposed absorption component shifted towards shorter wavelengths. Its velocity has not been measured, as this part of the spectrum is affected by astigmatism of the camera. The accessible observations are too scanty to make possible an interpretation of the observed phenomena. CD -30<sup>o</sup>5135 obviously merits continued study. Further photometric data from January 1974 onwards would be of great value for a decision whether the spectral changes have been accompanied by brightness and/or colour variations.

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