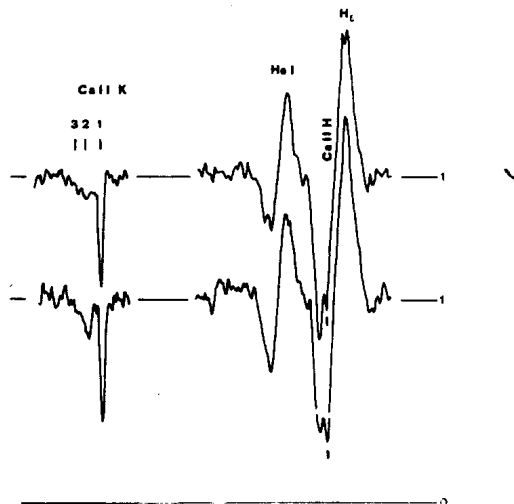


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ON THE SPECTRAL VARIATIONS OF P CYGNI IN 1973

Irregular spectral variations of P Cyg in the last 30 years have been reported by Luud (Soviet Astr. 11, 211, 1967), Astafyev, Hollandsky and Kopylov (Izv. Krym. 40, 46, 1969), and de Groot (BAN 20, 225, 1969). These variations are in general of rather small amplitude, but recently Stephenson (IAU Circ. 2562, 1973) claimed a remarkable weakening of the violet-displaced P Cyg-absorption lines, as well as of the circumstellar H and K lines of CaII: his observations are based on a  $130 \text{ \AA mm}^{-1}$  spectrogram obtained on July 17, 1973. A blue spectrum of P Cyg (W5752) was taken on March 23, 1973 at the Coudé focus of the 193 cm telescope of the Observatoire de Haute-Provence with a reciprocal dispersion of  $9.7 \text{ \AA mm}^{-1}$ . After Stephenson's communication a second plate of the star (W5837) was secured with the same equipment on September 11 of the same year. The Figure reproduces the intensity spectrum of P Cyg, normalized to the continuum, near  $\lambda\lambda 3933$  and  $3970$ . Small intensity variations of the hydrogen lines and of the  $H_{\beta} + \text{HeI } 3888$  blend have



been observed. We have measured on the tracings the differences  $V_E - V_A$  of the radial velocities of the emission and absorption components for the lines given in Table 1.

Line	$V_E - V_A$ (km s <sup>-1</sup> )		Line	$V_E - V_A$ (km s <sup>-1</sup> )	
	W5752	W5837		W5752	W5837
H <sub>11</sub>	175	120	HeI 3819	90	135
H <sub>10</sub>	200	115	3964	110	120
H <sub>9</sub>	185	125	4026	120	130
H <sub>8</sub> +HeI	185	150	4388	85:	115:
H <sub>ε</sub>	195	185	4471	125	120
H <sub>δ</sub>	180	180	N II 3995	80	95
H <sub>γ</sub>	185	170	FeIII 4395	100	90
CaII K			4419	100	90
a <sub>1</sub> -a <sub>2</sub>	105	95			
a <sub>1</sub> -a <sub>3</sub>	180:	180			

Only for H<sub>11</sub> to H<sub>8</sub> we have observed a remarkable variation of the radial velocities.

The CaII K-line displays two absorption components: a sharp interstellar line and a broad and shallow violet-displaced feature (Figure). The latter one is originated in the outermost parts of the expanding envelope of P Cyg and is probably formed by two or more distinct components of variable intensities. The presence of multiple components of this line has been noticed by Underhill (The Early Type Stars, p,220, 1966), and a similar feature is also shown by the NaI yellow doublet (Beals, Publ.Victoria 9,1,1950). In conclusion, the large spectral change of P Cyg reported by Stephenson is not confirmed by our spectra, unless it lasted for less than 2 months. The observed spectral variations are of rather small amplitude and take origin in the external parts of the star's atmosphere.

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