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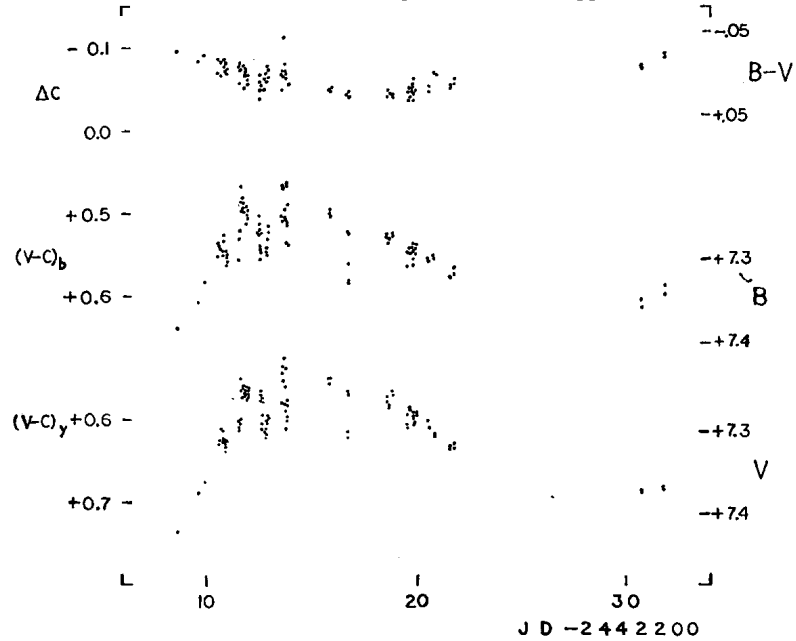
HD 163868, A NEW BRIGHT SOUTHERN VARIABLE

In his study of the light curve of V453 Sco, Gaposchkin (1938) used HD 163868 as one of several comparison stars. The present author observed V453 Sco at Cerro Tololo in 1974 using HD 163868 as a check star. Comparison with HD 163274, which Woodward and Koch (1975) show to be constant in light, clearly shows HD 163868 to be variable.

The yellow and blue observations, on the natural instrumental system, are presented in Tables Ia and Ib, each observation being an 8-sec. integration with a 1P21 photometer on the Yale 1-m or the Lowell 61-cm reflectors. Only a few violet observations were obtained and these are not listed. The differential yellow and blue light and colour curves are shown in the figure. It is apparent that the new



Differential light and colour curves for HD 163868

variable is reddest when it is brightest. If the variation is periodic, a lower limit of 20 days is indicated, but there is also a possibility of light variation on the time scale of several hours.

On two nights HD 163868 was standardized using 7 stars from the Cousins, Lake, Stoy (1966) list. The V amplitude is at least $0^m.18$. B-V ranges from +0.02 to -0.04, and the average U-B is -0.73. A standard reddening law suggests HD 163868 to be a B1 V, B2 III or B4 Ia object. The spectral type of the star is B5 Ve, so that there is a small discrepancy between the spectrographic and photometric parameters. This could be due to the line emission.

Until more observations are obtained, conjecture about the mechanism of variation is premature.

I am grateful to CTIO for telescope time and for excellent help from several night assistants.

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References:

Cousins, A.W.J., Lake, R., and Stoy, R.H. (1966) Royal Obs. Bull 121, E3-55.
Gaposchkin, S. (1938) Harvard Bull, 909, 20.
Woodward, E.J., and Koch, R.H. (1975) (in press).

TABLE Ia. Yellow observations of HD 163868

JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C
208.5856	+.735	211.7248	+.571	212.6074	+.606	213.8005	+.577	219.7564	+.591
209.6077	.688	.7288	.562	.6311	.577	.8326	.582	.7565	.598
209.9052	.674	.7347	.559	.6774	.594	.8366	.601	.7579	.604
210.5474	.623	.7545	.562	.7157	.593	213.8690	.595	.7580	.597
.5612	.624	.7741	.568	.7462	.611	215.8358	.548	.8023	.594
.6064	.629	.7984	.567	.7589	.612	.8360	.543	.8024	.590
.6647	.625	.8173	.562	.7810	.617	215.8378	.555	.8232	.595
.7425	.610	.8233	.568	.7976	.622	216.6811	.569	.8233	.605
.7897	.611	.8300	.569	.8302	.606	.6813	.566	.8750	.593
.8238	.621	.8512	.572	.8346	.610	.7098	.622	219.8751	.590
.8373	.628	.8540	.568	.8622	.600	216.7100	.616	220.5413	.609
.8460	.626	.8692	.565	.8664	.603	218.5551	.570	.5414	.602
.8946	.638	.8734	.574	.8943	.598	.5553	.577	.8630	.621
.9036	.633	.8799	.560	212.9275	.595	.5556	.571	220.8636	.621
.9151	.630	.8972	.570	213.5268	.553	.5559	.578	221.5670	.630
.9217	.627	.9056	.573	.5490	.578	.6707	.585	.5671	.632
210.9290	.627	.9120	.564	.5885	.535	.6708	.582	.7409	.628
211.5055	.613	.9174	.562	.6164	.543	.8561	.569	221.7410	.633
.5378	.608	211.9224	.561	.6408	.579	218.8563	.566	230.6860	.686
.5605	.602	212.5370	.572	.6710	.525	219.5203	.593	230.6862	.686
.5882	.605	.5409	.565	.7275	.610	.5205	.604	231.8419	.683
.6144	.598	.5546	.571	.7493	.588	.5206	.608	231.8420	.681
.6548	.550	.5679	.577	.7759	.537	.6523	.587		
211.7087	.564	212.6033	.575	213.7793	.558	219.6524	.584		

TABLE Ib. Blue observations of HD 163868

JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C	JD(hel.) 2442000+	V-C
208.5858	+.637	211.7250	+.497	212.6076	+.554	213.8007	+.512	219.7567	+.540
209.6080	.604	.7291	.480	.6313	.522	.8328	.512	.7581	.539
209.9054	.581	.7348	.480	.6775	.522	.8368	.535	.7582	.534
210.5475	.550	.7547	.486	.7160	.541	213.8692	.538	.7583	.545
.5615	.535	.7743	.491	.7464	.539	215.8366	.495	.7583	.539
.6066	.541	.7985	.492	.7592	.547	.8370	.502	.8025	.543
.6649	.539	.8175	.494	.7812	.545	215.8372	.502	.8026	.543
.7427	.542	.8234	.495	.7977	.549	216.6817	.520	.8234	.560
.7899	.524	.8303	.493	.8304	.545	.6819	.523	.8235	.554
.8240	.533	.8514	.497	.8348	.542	.7103	.560	.8752	.548
.8375	.549	.8542	.513	.8624	.529	.7107	.579	219.8760	.537
.8462	.546	.8694	.498	.8667	.532	216.7109	.582	220.5416	.553
.8948	.563	.8736	.501	.8945	.522	218.5564	.524	.5418	.555
.9039	.552	.8795	.501	212.9278	.515	.5567	.527	.8638	.548
.9154	.557	.8974	.497	213.5269	.502	.6712	.536	220.8640	.552
.9218	.551	.9058	.504	.5491	.509	.6714	.536	221.5674	.576
210.9291	.552	.9122	.495	.5887	.467	.6716	.528	.5676	.576
211.5058	.555	.9176	.489	.6166	.469	.8565	.526	.7412	.564
.5380	.530	211.9225	.496	.6410	.504	218.8567	.523	221.7414	.572
.5606	.528	212.5372	.519	.6712	.467	219.5213	.547	230.6864	.602
.5884	.520	.5412	.524	.7277	.494	.5214	.563	230.6866	.612
.6155	.521	.5548	.502	.7495	.506	.6527	.547	231.8422	.594
.6550	.466	.5682	.519	.7760	.462	.6534	.542	231.8423	.584
211.7089	.484	212.6035	.512	213.7795	.487	219.7566	.543		