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VARIABLE STARS IN THE NORTHERN LUMINOUS STARS CATALOGUES

The six catalogues of Luminous Stars in the Northern Milky Way resulting from the collaboration of the Hamburg and Warner and Swasey Observatories some twenty years ago contain a large number of objects assigned to the OB natural group as well as a few somewhat later type supergiants. As a companion piece to the writer's earlier note (IBVS No. 1958) listing the known variable stars among the objects contained in Stephenson and Sanduleak's comparable catalogue of Luminous Stars in the Southern Milky Way (1971), this note lists those northern luminous stars that are either named variables or contained in the 1951 or 1965 catalogues of stars suspected of variability. A few variables in the most recent naming lists (IBVS Nos. 1581, 1921, and 2042) may have been missed; coordinates were not readily available for some.

As before, additional spectroscopic data exist for a large proportion of the variables listed, but not for all. Also, a number of other LS objects are known to be variable, through the work of Haug (1970) for example, but are not listed in the table. Finally, it should be mentioned that charts exist for all of the LS stars.

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References:

- Haug, U., 1970, *Astron. Astrophys. Suppl.* 1, 35.  
LS I: Hardorp, J., Rohlfs, K., Slettebak, A., and Stock, J., 1959.  
LS II: Stock, J., Nassau, J. J., and Stephenson, C. B., 1960.  
LS III: Hardorp, J., Theile, I., and Voigt, H. H., 1964.  
LS IV: Nassau, J. J. and Stephenson, C. B., 1963.  
LS V: Hardorp, J., Theile, I., and Voigt, H. H., 1965.  
LS VI: Nassau, J. J., Stephenson, C. B., and MacConnell, D. J., 1965.  
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Table I  
Variable stars in the LS catalogue

Star No.	Spectrum	Name or Sus- pected Var. No.	Star No.	Spectrum	Name or Sus- pected Var. No.
<u>LS I</u>			<u>LS I</u>		
+53 4	OB	V353 Per	+61 164	OB h!	V594 Cas
+54 2	OB	V436 Per	+61 215	OB(ce,le)	AZ Cas
+55 7	G I	FM Cas	+61 270	OB <sub>ce</sub>	KM Cas
+55 8	OB	V592 Cas	+61 303	OB	V615 Cas
+55 31	OB	V354 Per	+61 304	OBce,r	V482 Cas
+55 36	F8 I	V440 Per	+62 50	OB	V375 Cas
+56 30	OB <sub>ce</sub> ,(h)	V351 Per	+62 67	OB <sub>ce</sub> ,h	102302
+56 35	OB	V352 Per	+62 128	OB	κ Cas
+56 42	OB <sub>ce</sub>	V438 Per	+62 165	OB	146
+56 47	OBce,h	V361 Per	+62 229	OB	TX Cas
+56 73	OB <sup>+</sup> ce	102392	+63 4	OB	DY Cep
+56 74	OB	ZZ Per	+63 30	OB	V362 Cas
+57 1	(OB)	V373 Cas	+63 39	OBce	102301
+57 3	OB	100007	+63 114	A7 Iab	BM Cas
+57 11	OBce,h	5910	+63 181	OBce,(h)	5960
+57 16	OB <sup>+</sup>	102344	+65 26	OB	BK Cam
+57 50	OB <sub>ce</sub> (h)	V355 Per			
+57 65	B5 Ia	V425 Per	<u>LS II</u>		
+57 98	OB <sub>r</sub>	EO Per	+10 5	(F9 Ia)	FM Aql
+58 77	OB	100182	+15 2	F3 I	AP Her
+58 87	OB <sup>+</sup>	V362 Per	+15 15	OB	V688 Aql
+58 130	G0 Ia	RX Cam	+15 17	F6 Iab	KL Aql
+59 15	OBce	QQ Cas	+16 14	F8 Iab	S Sge
+59 43	G I	DL Cas	+17 3	F4 I	FF Aql
+59 136	OB	102383	+18 4	B6 Iar	HT Sge
+59 163	OB	100249	+18 16	OB <sup>+</sup> (ce)	102965
+59 171	OB	V368 Cas	+18 17	OB	SY Sge
+59 174	OB	CC Cas	+20 8	F8 Iab	U Vul
+59 179	OB	102407	+20 19	OB <sup>+</sup> le,r	FG Sge
+59 187	B8 Iar	100276	+22 3	OB	ES Vul
+60 3	A2 Iab	8855	+23 50	OB	EV Vul
+60 42	OB	UU Cas	+24 22	A0 Iab	101901
+60 64	OB	QX Cas	+26 12	F8 Ia	X Vul
+60 125	OBce,h	5872	+27 2	F6 Ib	V473 Lyr
+60 155	A1 Ib	100108	+27 3	A4 Ib(1e)r	EP Lyr
+60 230	OB <sub>ce</sub>	DN Cas	+27 18	F8 Ia	SV Vul
+60 262	A7 Ib	100216	+27 29	OB	EQ Vul
+61 51	OB	8880	+28 3	A1 II	V840 Cyg
+61 70	A2 Ia <sup>+</sup>	V566 Cas	+29 5	Pec	BF Cyg
+61 113	OB	102294?	+29 15	B7 II	V1507 Cyg

Table I (cont.)  
Variable stars in the LS catalogue

Star No.	Spectrum	Name or Sus- pected Var. No.	Star No.	Spectrum	Name or Sus- pected Var.No.
<u>LS II</u>			<u>LS III</u>		
+29 <sup>·</sup> 27	OBce	V1356 Cyg	+40 <sup>·</sup> 2	OB <sup>-</sup>	V380 Cyg
+30 37	F8 Iab	DT Cyg	+41 11	OB <sup>-</sup>	V1187 Cyg
+31 3	OB <sup>-</sup>	V1671 Cyg	+41 18	OBh <sup>+</sup> !!	V1685 Cyg
+31 17	OB	V483 Cyg	+41 31	OB <sup>+</sup> rr	V729 Cyg
+32 1	F8 I	V924 Cyg			
+33 <sup>·</sup> 6	OB(ce)	101894	+42 <sup>·</sup> 24	OB <sup>-</sup>	103041
+34 20	F7 I-II	101977	+43 7	WR	V1687 Cyg
+34 28	OB	Y Cyg	+43 24	OB <sup>+</sup> le, (h)	SS Cyg
+35 8	OB <sup>+</sup> r	V1357 Cyg	+45 23	OB <sup>-</sup>	V1661 Cyg
+35 33	OB <sup>+</sup> le(r)	V1676 Cyg	+47 1	OB <sup>-</sup>	102967
+35 <sup>·</sup> 37	OB	V448 Cyg	+47 <sup>·</sup> 2	OB	V819 Cyg
+35 46	A2 Ia, h	V425 Cyg	+47 3	OB	RX Cyg
+35 79	F7 I	X Cyg	+47 33	OB	V530 Cyg
+36 23	WNh	101949	+47 48	OBh	V1427 Cyg
+36 27	WCh	V1042 Cyg	+48 41	OB <sup>-</sup>	DL Cyg
+36 <sup>·</sup> 38	WCh	V1679 Cyg	+49 <sup>·</sup> 48	OB	KX And
+36 49	OB	KV Cyg	+51 36	OB <sup>+</sup> ce, h	V357 Lac
+36 55	OB	V382 Cyg	+52 2	OB <sup>+</sup> le, h	V1696 Cyg
+37 43	WNh	101974	+52 9	OB	8694
+37 50	OB <sup>+</sup> le, h, r	P Cyg	+53 21	OB1	V680 Cyg
+38 <sup>·</sup> 11	WNh	102983	+54 <sup>·</sup> 41	OB1	103081
+38 28	OB <sup>-</sup>	V699 Cyg	+54 42	OB <sup>-</sup>	V345 Lac
+38 42	WNh	V444 Cyg	+55 5	OB	8619
+38 44	OB <sup>+</sup> ce	V478 Cyg	+55 24	B8 II	EE Cep
+38 75	OB <sup>+</sup> ce, h, r	V1322 Cyg	+55 32	OB	8755
+39 <sup>·</sup> 43	OB <sup>+</sup> r	V498 Cyg	+55 <sup>·</sup> 34	OBle	GP Cep
+39 52	OB <sup>+</sup> le, r	V455 Cyg	+56 15	OB	AI Cep
+39 55	A5 Iab	V367 Cyg	+56 21	OB	102136
+39 60	GO I	VY Cyg	+56 41	OB <sup>-</sup>	103085
+40 18	OB <sup>-</sup>	V470 Cyg	+56 42	(OB <sup>-</sup> )	NX Cep
+40 <sup>·</sup> 23	(F5 Iab)	101987	+56 <sup>·</sup> 79	OB <sup>-</sup>	OT Lac
			+56 80	OB <sup>+</sup> (le)	CQ Cep
			+56 97	OB <sup>-</sup>	102211
			+57 26	(OB <sup>-</sup> )le, h	CX Cep
			+57 76	OBce	DH Cep
			+58 <sup>·</sup> 1	(OB1)	102069
			+58 6	OB <sup>-</sup>	8645
			+59 14	OB <sup>-</sup> (h)	DL Cep
			+59 40	OB	CR Cas

Table I (cont.)  
Variable stars in the LS catalogue

Star No.	Spectrum	Name or Sus- pected Var. No.	Star No.	Spectrum	Name or Sus- pected Var. No.
<u>LS III</u>			<u>LS V</u>		
+59 I 15	OB	QQ Cas	+20 5	OB	100698
+60 6	cA	102128	+20 6	OB	UW Ori
+60 9	cF	IR Cep	+20 11	OB <sup>+</sup>	100713
+60 I 3	A4 <sup>+</sup> Iab	8855	+20 36	OB	V963 Ori
+61 2	OB <sup>+</sup>	V337 Cep	+21 11	cA	ζ Tau
+61 17	OB <sup>-</sup>	IL Cep	+22 20	F2 II	SS Gem
+62 5	OB1	EM Cep	+22 33	OB	LR Gem
+62 29	OB <sup>-</sup>	KZ Cep	+23 49	OB <sup>-</sup>	LT Gem
+62 32	OB <sup>-</sup>	NY Cep	+23 56	OB <sup>+</sup>	LU Gem
+63 20	OB <sup>-</sup>	CW Cep	+26 5	OB <sup>+</sup> ce	V725 Tau
+64 9	OB <sup>-</sup>	AH Cep	+26 12	OB <sup>-</sup> h	V593 Tau
+66 5	OB <sup>-</sup>	XZ Cep	+27 2	OBh	V722 Tau
			+27 5	OB1	ET Tau
			+33 10	A3 Ib	100474
			+34 1	OB <sup>-</sup>	6063
<u>LS IV</u>					
-14 54	OB <sup>+</sup> r	V430 Sct	+34 3	OB(ce)	AE Aur
-13 44	OB(r)	W Sct	+34 25	OB	IU Aur
-12 54	OB <sup>+</sup> h,r	RY Sct	+35 1	OB	ξ Per
-12 58	OB	EQ Sct	+35 19	OB	LY Aur
-11 14	WC	CV Ser	+36 9	OB	EO Aur
-11 25	OB <sup>-</sup> r	7872	+36 11	OB <sup>-</sup>	MZ Aur
-10 26	OB <sup>-</sup>	V599 Aql	+39 1	OB <sup>-</sup>	100363
- 9 12	OB(r)	RZ Sct	+39 16	OB1	TT Aur
- 7 35	F5 I-II	U Aql	+39 21	OB <sup>-</sup>	6155
- 6 4	OB1e,h	XX Oph	+40 34	OB <sup>-</sup> (ce)	100452
- 6 5	F8 Ib	Y Oph	+41 23	A0 II	100433
- 4 13	B9 Ib	RR Sct	+41 25	OB <sup>-</sup>	BF Aur
- 2 3	(A5)Ib-II	V453 Oph	+41 27	OB <sup>-</sup>	100441
- 2 24	OB	V337 Aql	+42 24	OB <sup>-</sup>	SX Aur
- 1 7	OB	V1331 Aql	+43 23	A9 Ia	ε Aur
+ 0 1	OB	V2052 Oph	+43 31	OB1	IY Aur
+ 1 1	OB	V986 Oph	+44 15	(OB <sup>-</sup> )	KR Per
+ 3 19	OB	V1294 Aql	+47 7	OB <sup>-</sup>	δ Per
+ 4 2	OB	V2048 Oph	+47 10	OB <sup>-</sup>	MX Per
+ 7 1	B8 Ib-II	V784 Oph	+48 5	(OB)	ψ Per
+ 7 6	F5 I	RZ Oph	+50 6	OB <sup>-</sup>	102438
+ 9 5	OB <sup>+</sup>	V1182 Aql	+52 1	1e,h!	V471 Per

Table I (cont.)  
Variable stars in the LS catalogue

Star No.	Spectrum	Name or Sus- pected Var. No.	Star No.	Spectrum	Name or Sus- pected Var. No.
<u>LS V</u>			<u>LS VI</u>		
+52 <sup>-</sup> 11	OB	6053	+ 1 <sup>-</sup> 17	OB	V454 Mon
+52 12	OB	6055	+ 2 16	OB <sup>-</sup>	V498 Mon
+56 6	OBh	V356 Per	+ 2 18	B6 I-II	V505 Mon
+56 7	OB	V357 Per	+ 4 1	OB <sup>-</sup>	$\omega$ Ori
+56 9	OB	V358 Per	+ 4 11	OB <sup>-</sup>	V578 Mon
+56 <sup>-</sup> 11	OB <sup>-</sup>	5972	+ 5 <sup>-</sup> 4	OB <sup>-</sup> h	AX Mon
+57 14	(OB)h	V424 Per	+ 6 1	F II:	SV Mon
+57 19	OB <sup>-</sup>	V360 Per	+ 6 5	OB	V640 Mon
+57 21	OB <sup>-</sup>	100179	+ 8 8	W(N)	100737
+34 29	OB	102471	+ 8 12	OB <sup>-</sup> h	R Mon
<u>LS VI</u>			<u>LS VI</u>		
- 4 <sup>-</sup> 4	OB	V397 Mon	+ 9 <sup>-</sup> 14	OB <sup>+</sup>	S Mon
- 4 20	OB	V637 Mon	+ 9 20	F8 <sub>-</sub> II	UY Mon
- 3 5	OB	HI Mon	+10 4	OB <sup>-</sup>	V1028 Ori
- 2 3	OB	V1030 Ori	+10 13	OB <sup>-</sup>	IS Mon
- 1 1	OB <sup>-</sup>	100504	+12 10	A5 Ib-II	100765
- 1 <sup>-</sup> 3	OB	V901 Ori	+13 <sup>-</sup> 9	OB <sup>-</sup>	100720
- 1 17	F6 II	V526 Mon			
- 0 12	OB	V647 Mon			
+ 0 30	OB <sup>+</sup>	V450 Mon			
+ 1 8	OB <sup>+</sup>	6469			