BBSAG

BULLETIN

105

1994 January 15

138. LIST OF MINIMA OF ECLIPSING BINARIES

The following table lists 4 photoelectric (underlined), 22 CCD-measured and 221 visual heliocentric minima of eclipsing binaries obtained primarily from July 1993 to December 1993 by the following observers:

EBl	Ernst Blättler, Wald, Switzerland
GB	Guy Boistel, Sautron, France
RB	Roland Boninsegna, Dourbes, Belgium
RD	Roger Diethelm, R. Szafraniec Observatory, Metzerlen, Switzerland
MKo	Michael Kohl, Laupen, Switzerland
KL	Kurt Locher, Grüt, Switzerland
MMa	Massimiliano Martignoni, Busto Arsizio, Italy
HP	Hermann Peter, Otelfingen, Switzerland
APs	Anton Paschke, Rüti, Switzerland
DR	Delphine Russeil, Abriès, France
JVb	Jacquline Vandenbroere, Bruxelles, Belgium

The O-C values generally refer to the linear elements of the GCVS 1985, with the remarked exceptions. For the reduction of the visual minima, the tracing paper method was employed, while most of the photoelectric observations were reduced with the Kwee-van Woerden algorithm.

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Nr	Design.	Star	Type	O	e.	O-C	n	Obs	Remarks
31036	2311+458	**TT And**	p	49213.381	0.008	-0.041	9	HP	
31037	0041+306	**UU And**	p	49236.395	0.004	0.000	7	HP	
31038			p	49340.444	0.003	+0.008	7	KL	
31039	0058+378	**WZ And**	p	49217.408	0.005	+0.010	7	HP	
31040			p	49249.408	0.006	+0.009	6	HP	
31041	0153+418	**XZ And**	p	49229.377	0.004	+0.028	12	HP	
31042	2334+483	**AD And**	p	49217.456	0.006	-0.011	6	HP	
31043			p	49218.422	0.005	-0.032	9	HP	
31044	2308+516	**BL And**	p	49211.415	0.005	+0.009	8	HP	
31045			p	49219.352	0.005	0.000	7	HP	
31046			p	49232.364	0.005	+0.010	9	HP	
31047			p	49331.316	0.005	-0.004	9	HP	
31048	0209+453	**CP And**	p	49278.523	0.007	+0.197	19	JVb	
31049	2217-203	**AT Aqr**	p	49250.317	0.004	+0.008	7	KL	
31050	2233-009	**CX Aqr**	p	49321.296	0.009	-0.004	7	KL	
31051			p	49331.314	0.005	+0.007	8	HP	
31052	2243+007	**DD Aqr**	p	49250.406	0.005	+0.009	8	HP	
31053	2019-075	**XZ Aql**	p	49232.377	0.006	+0.082	7	KL	
31054	1900+157	**KP Aql**	p	49229.360	0.005	-0.030	16	HP	
31055	1945+092	**OP Aql**	p	49220.463	0.004	-0.097	20	APs	CCD
31056	2007+102	**V346 Aql**	p	49220.379	0.003	-0.001	8	HP	
31057	1948+163	**V602 Aql**	p	49206.436	0.008	+0.175	9	HP	
31058			p	49212.448	0.005	+0.162	13	HP	
31059	1929+106	**V616 Aql**	p	49250.350	0.006	-0.001	7	KL	elem. MVS 11, 120
31060	1953+072	**V719 Aql**	p	49229.429	0.008	-2.000	31	APs	CCD
31061	1956+116	**V1168 Aql**	p	49220.500	0.006	-0.014	9	HP	
31062	1922+159	**V1353 Aql**	p	49226.382	0.004	+0.022	9	HP	
31063	0629+324	**WW Aur**	p	49032.420		-0.017	15	MMa	
31064	1402+302	**TU Boo**	s	49321.704	0.004	-0.062	6	KL	
31065	1458+353	**TY Boo**	p	49211.360	0.004	+0.059	7	HP	
31066	1419+473	**UW Boo**	p	49172.450	0.006	+0.005	30	APs	CCD
31067	1533+436	**YY Boo**	p	49212.38	0.01	-0.07	22	APs	CCD
31068	1454+465	**AC Boo**	p	49167.46	0.01	-0.06	21	APs	CCD; minimum asymmetric
31069	1524+371	**CV Boo**	p	49185.425	0.005	-0.014	11	APs	CCD
31070	0734+761	**Y Cam**	p	49249.355	0.006	+0.130	6	KL	
31071	0447+548	**AQ Cam**	p	49340.337	0.009	+0.025	6	KL	
31072	0620-226	**RU CMa**	p	49340.478	0.005	+0.036	12	KL	
31073	0615-215	**EG CMa**	p	49340.569	0.006	-0.037	10	KL	
31074	0720+070	**RX CMi**	s	49308.585	0.007	+1.054	30	APs	CCD

Nr	Design	Star	Type	O	e.	O-C	n	Obs	Remarks
31075	0130+707	**AH Cas**	p	49251.357	0.008	-0.206	7	KL	
31076	2350+572	**EP Cas**	p	49211.457	0.005	-0.014	7	HP	
31077			p	49229.347	0.006	-0.020	11	HP	
31078	2304+538	**IR Cas**	p	49212.449	0.004	+0.019	8	HP	
31079			p	49239.651	0.008	-0.006	7	KL	
31080	2326+602	**IS Cas**	p	49213.403	0.005	+0.036	10	HP	
31081	0048+585	**KL Cas**	p	49279.534	0.012	-0.004	12	JVb	
31082	0045+605	**OR Cas**	p	49219.392	0.007	-0.003	8	HP	
31083			p	49229.352	0.003	-0.009	11	HP	
31084			p	49340.216	0.003	-0.014	6	KL	
31085	0049+501	**V364 Cas**	s	49232.382	0.007	-0.009	10	HP	
31086	0308+597	**V368 Cas**	p	48250.372	0.003	-0.038	36	EBI	pe, B
31087	2354+558	**V374 Cas**	p	49218.393	0.005	+0.029	11	HP	
31088			p	49220.475	0.005	+0.022	6	HP	
31089	2354+627	**V375 Cas**	p	49218.433	0.006	-0.013	9	HP	
31090			p	49221.384	0.006	-0.009	6	HP	
31091	0042+473	**V384 Cas**	p	48950.440	0.006	-0.100	9	JVb	
31092			p	49000.325	0.008	-0.087	17	JVb	
31093	0111+487	**V389 Cas**	p	49331.297	0.005	+0.045	9	HP	
31094	0037+499	**V523 Cas**	s	49219.435	0.005	+0.016	7	HP	
31095			p	49316.306	0.008	+0.022	6	KL	
31096	2021-131	**TY Cap**	p	49220.406	0.006	+0.025	10	HP	
31097	0057+816	**U Cep**	p	49313.358	0.006	+0.063	10	KL	
31098	2145+570	**SU Cep**	p	49217.461	0.005	+0.014	6	HP	
31099			p	49218.362	0.005	+0.014	7	HP	
31100			p	49236.386	0.005	+0.009	8	HP	
31101	2038+754	**VW Cep**	p	49032.571		-0.079	10	MMa	
31102			p	49129.412		-0.091	19	MMa	
31103	2217+696	**WW Cep**	p	49217.394	0.005	-0.040	7	HP	
31104			p	49220.435	0.006	-0.067	8	HP	
31105	2244+674	**WY Cep**	p	49212.406	0.005	+0.032	7	HP	
31106			p	49232.370	0.005	+0.011	9	HP	
31107	2058+694	**FS Cep**	p	48950.349	0.007	+0.042	9	JVb	
31108	2127+649	**GI Cep**	p	49212.396	0.004	-0.005	9	HP	
31109			p	49213.428	0.005	-0.010	8	HP	
31110	2109+575	**IO Cep**	p	49229.319	0.004	+0.004	8	HP	
31111	0220+809	**V358 Cep**	p	49326.245	0.004	+0.006	6	KL	elem. BBSAG Bull. 96, 10
31112	0146-211	**TW Cet**	s	49336.339	0.008	-0.018	4	KL	
31113	0156-231	**AA Cet**	p	49313.375	0.008	-0.008	7	KL	
31114	1604+274	**TW CrB**	p	49212.410	0.004	+0.020	7	HP	

Nr	Design	Star	Type	O	e.	O-C	n	Obs	Remarks
31115	2002+414	**WW Cyg**	p	49206.478	0.006	+0.009	11	HP	
31116			p	49216.438	0.005	+0.015	9	HP	
31117			p	49226.385	0.005	+0.010	11	HP	
31118			p	49236.341	0.005	+0.012	7	HP	
31119	2051+386	**WZ Cyg**	p	49211.433	0.004	+0.041	7	HP	
31120			p	49249.415	0.004	+0.033	7	HP	
31121			p	49321.306	0.005	+0.035	6	KL	
31122	2022+467	**ZZ Cyg**	p	49211.448	0.004	-0.012	7	HP	
31123			p	49218.358	0.004	-0.016	7	HP	
31124			p	49250.420	0.004	-0.012	7	HP	
31125			p	49313.272	0.004	-0.022	8	KL	
31126	211+305	**AE Cyg**	p	49236.396	0.003	+0.007	10	HP	
31127	1939+466	**BR Cyg**	p	49232.358	0.004	0.000	10	HP	
31128			s	49250.341	0.003	-0.007	10	RD	pe, B
31129			p	49316.306	0.004	-0.004	6	KL	
31130	2056+349	**CG Cyg**	p	49220.470	0.003	+0.039	7	HP	
31131			p	49251.388	0.004	+0.031	10	HP	
31132	2113+372	**V387 Cyg**	p	49217.397	0.004	+0.009	7	HP	
31133			p	49226.363	0.004	+0.006	7	HP	
31134	2026+381	**V445 Cyg**	p	49249.355	0.006	+0.16	16	HP	
31135	2027+389	**V456 Cyg**	p	49211.387	0.005	+0.031	9	HP	
31136			p	49219.386	0.003	+0.010	13	HP	
31137			p	49236.341	0.004	+0.032	7	HP	
31138			s	49322.316	0.008	+0.007	6	KL	
31139	2043+494	**V512 Cyg**	p	49200.452	0.012	-0.137	12	JVb	
31140	1924+298	**V687 Cyg**	p	49251.351	0.005	0.000	9	HP	
31141	2025+586	**V728 Cyg**	p	49322.241	0.004	-0.016	7	KL	
31142	2014+478	**V787 Cyg**	p	49236.434	0.005	+0.004	11	HP	
31143	1956+332	**V1018 Cyg**	p	49200.494	0.010	-0.087	12	JVb	
31144	2003+308	**V1034 Cyg**	p	49250.405	0.005	-0.005	7	HP	
31145			p	49251.380	0.004	-0.007	12	HP	
31146	2006+405	**V1036 Cyg**	p	49211.402	0.007	+0.023	9	HP	
31147			p	49217.370	0.005	+0.037	9	HP	
31148			p	49249.382	0.005	+0.052	8	HP	
31149	2035+181	**W Del**	p	49206.412	0.005	+0.003	8	HP	
31150	2033+082	**TT Del**	p	42917.497	0.005	-0.035	30	APs	CCD
31151			p	49220.380	0.005	-0.023	9	HP	
31152	2101+130	**TY Del**	p	49216.465	0.003	-0.030	7	MKo	
31153	2027+138	**YY Del**	p	49219.393	0.004	+0.004	9	HP	
31154			p	49250.314	0.005	-0.005	7	HP	
31155	2043+109	**AV Del**	p	49211.475	0.008	-0.005	46	APs	CCD
31156	2052+082	**ET Del**	p	49232.450	0.004	-0.015	27	APs	CCD
31157	2014+155	**EW Del**	p	49236.486	0.010	+0.045	25	APs	CCD
31158	2014+157	**EX Del**	s	49236.358	0.005	-0.163	17	APs	CCD
31159			p	49236.517	0.004	-0.169	15	APs	CCD

Nr	Design	Star	Type	O	e.	O-C	n	Obs	Remarks
31160	2051+044	**FZ Del**	p	49207.394	0.004	-0.029	7	HP	
31161			p	49236.388	0.003	-0.013	8	HP	
31162	1841+626	**RR Dra**	p	49217.421	0.005	+0.060	14	HP	
31163			p	49251.389	0.005	+0.053	8	KL	
31164			p	49251.389	0.004	+0.053	11	HP	
31165	1822+588	**RZ Dra**	p	49216.423	0.004	+0.025	7	HP	
31166			p	49232.398	0.004	+0.024	9	HP	
31167	1533+640	**TW Dra**	p	49236.376	0.004	+0.040	8	HP	
31168	1820+475	**TZ Dra**	p	49218.386	0.005	-0.001	8	HP	
31169	1655+527	**AI Dra**	p	49229.3645	0.0001	+0.0088	32	EBI	pe, B
31170			p	49247.347		+0.009	9	G B	
31171	1214+651	**AR Dra**	p	49236.653	0.009	+0.001	8	KL	
31172	0419-061	**TZ Eri**	p	49239.635	0.004	+0.087	6	KL	
31173	0642+344	**GX Gem**	p	49004.398	0.011	+0.070	13	JVb	
31174	1737+329	**SZ Her**	p	49217.356	0.005	-0.016	7	HP	
31175			p	49226.358	0.003	-0.014	10	HP	
31176	1711+307	**TU Her**	p	49198.443	0.003	-0.042	35	APs	CCD
31177	1751+169	**UX Her**	p	49202.458	0.003	+0.018	28	APs	CCD
31178	1823+182	**AW Her**	p	49129.511	0.008	+0.056	10	JVb	
31179	1848+124	**BC Her**	p	49249.377	0.006	-0.239	10	HP	
31180	1618+185	**CT Her**	p	49175.390	0.004	-0.002	40	APs	CCD; normal minimum
31181	1819+144	**MT Her**	p	49217.450	0.005	+0.015	10	HP	
31182	1749+500	**MX Her**	p	49236.338	0.006	-0.303	8	HP	
31183	1654+377	**V359 Her**	p	49216.364	0.008	+0.086	7	HP	
31184	1604+503	**NSV7457 Her**	p	49074.600	0.004	+0.013	14	JVb	belem. IBVS No. 3946
31185			p	49075.430	0.002	+0.005	9	JVb	
31186			s	49076.459	0.001	-0.014	15	JVb	
31187			s	49112.391	0.003	-0.005	19	JVb	
31188			p	49124.459	0.001	+0.007	13	JVb	
31189			s	49205.367	0.006	-0.005	9	JVb	
31190			s	49237.375	0.005	-0.005	11	JVb	
31191	2247+447	**VY Lac**	p	49211.422	0.005	-0.119	9	HP	
31192	2216+542	**AW Lac**	p	49249.338	0.0004	+0.119	7	HP	
31193	2226+535	**DG Lac**	p	49211.398	0.005	-0.113	9	HP	
31194			p	49295.242	0.009	-0.117	6	KL	
31195	2210+484	**EQ Lac**	p	49250.462	0.005	+0.098	8	KL	
31196	1914+323	**RV Lyr**	p	49251.396	0.007	-0.052	6	HP	
31197	1814+410	**TZ Lyr**	p	49232.378	0.005	+0.006	9	HP	
31198	1919+378	**UZ Lyr**	p	49212.449	0.005	-0.010	8	HP	
31199			s	49230.393	0.008	-0.032	30	APs	CCD
31200	1831+377	**EW Lyr**	p	49206.469	0.005	+0.252	11	HP	
31201			p	49249.350	0.004	+0.261	8	HP	

Nr	Design	Star	Type	O	e.	O-C	n	Obs	Remarks
31202	1803+005	**V423 Oph**	p	49216.414	0.005	+0.026	9	HP	
31203	1816+142	**V501 Oph**	p	49213.402	0.004	+0.001	7	HP	
31204	1738+078	**V506 Oph**	p	49212.397	0.004	+0.025	6	HP	
31205	1756+135	**V508 Oph**	p	49211.448	0.004	+0.019	9	HP	
31206			p	49229.364	0.003	+0.007	10	HP	
31207	1754+049	**V566 Oph**	s	49167.511	0.006	+0.015	17	JVb	
31208			s	49172.433	0.004	+0.022	20	JVb	
31209			s	49174.478	0.003	+0.019	17	JVb	
31210			p	49175.508	0.004	+0.025	28	JVB	
31211	1801+021	**V572 Oph**	p	49176.42	0.01	+0.43	31	APs	CCD
31212	1752+141	**V913 Oph**	p	49249.356	0.006	+0.075	8	HP	
31213	2226+177	**UX Peg**	p	49220.515	0.005	-0.014	8	HP	
31214			p	49251.411	0.004	-0.009	6	KL	
31215	2134+132	**AQ Peg**	p	49229.471	0.003	+0.277	11	KL	see note in this Bulletin
31216	2220+160	**BB Peg**	p	49219.422	0.005	+0.022	8	HP	
31217	2250+153	**BG Peg**	p	49220.411	0.006	-0.795	9	HP	
31218	2125+047	**BN Peg**	p	49219.436	0.004	+0.003	8	HP	
31219	2136+264	**BX Peg**	s	49250.351	0.007	-0.032	21	APs	CCD
31220			p	49250.491	0.005	-0.032	18	APs	CCD
31221	2145+270	**CU Peg**	p	49218.522	0.005	+0.038	35	APs	CCD
31222	2146+278	**CW Peg**	p	49220.435	0.004	+0.049	9	HP	
31223	2312+165	**EY Peg**	p	49251.394	0.007	+0.004	9	KL	elem. this Bulletin, p. 8
31224	0256+389	**ST Per**	p	49229.591	0.007	+0.075	6	KL	
31225	0405+464	**XZ Per**	p	49331.271	0.004	-0.020	7	HP	
31226	0403+333	**AG Per**	s	48239.582	0.004	+0.126	16	EBI	pe, B
31227	0150+545	**BY Per**	p	49250.627	0.005	+0.008	6	KL	
31228	0256+437	**IU Per**	p	49250.369	0.005	+0.005	6	HP	
31229	0319+411	**KN Per**		48877.439	0.003		10	JVb	
31230				48892.630	0.002		11	JVb	
31231				49004.370	0.002		10	JVb	
31232				49066.342	0.005		14	JVb	
31233	0156+529	**KW Per**	p	49216.499	0.002	+0.009	7	MKo	
31234			p	49217.431	0.004	+0.009	7	HP	
31235			p	49313.352	0.008	+0.010	6	KL	
31236	0306+426	**V432 Per**	p	49279.462	0.003	+0.008	9	JVb	elem. IBVS No. 3797
31237	2331+076	**Y Psc**	p	49216.463	0.004	-0.022	6	HP	
31238			p	49216.472	0.004	-0.013	7	MKo	
31239			p	49250.361	0.006	-0.017	10	HP	
31240	0054+120	**SX Psc**	p	49250.372	0.006	-0.017	8	HP	
31241			p	49322.233	0.006	-0.007	6	KL	
31242			p	49331.322	0.005	-0.003	7	HP	
31243	1916+195	**U Sge**	p	49229.387	0.004	-0.005	15	HP	

Nr	Design	Star	Type	O	e.	O-C	n	Obs	Remarks
31244	2010+191	**UZ Sge**	p	49220.465	0.006	+0.001	9	HP	
31245	1922+163	**CU Sge**	p	49219.426	0.005	+0.010	9	HP	
31246	1905+188	**DL Sge**	p	49221.368	0.005	+0.083	7	HP	
31247			p	49251.364	0.005	+0.073	14	HP	
31248	1950-147	**V505 Sgr**	p	49189.524	0.003	-0.004	20	DR	
31249	1846-102	**RS Sct**	p	49216.379	0.005	+0.018	7	HP	
31250	1556+173	**AO Ser**	p	49206.379	0.005	+0.021	6	HP	
31251			p	49213.417	0.004	+0.023	7	HP	
31252	1554+224	**AU Ser**	s	49201.409	0.005	-0.031	15	APs	CCD
31253			s	49206.436	0.004	-0.028	6	HP	
31254			s	49232.324	0.004	-0.036	7	HP	
31255	1534+156	**CC Ser**	s	49216.386	0.006	+0.061	5	HP	
31256	0344+249	**AH Tau**	p	49340.267	0.004	-0.093	6	KL	
31257	0128+301	**V Tri**	p	49326.228	0.007	-0.007	6	KL	
31258	0210+367	**RV Tri**	p	49313.249	0.004	-0.016	6	KL	
31259			p	49331.340	0.005	-0.013	7	HP	
31260	1042+458	**TX UMa**	p	49032.538		+0.106	27	MMa	
31261	1026+620	**ZZ UMa**	p	49236.600	0.003	-0.009	6	KL	
31262	0851+651	**AC UMa**	p	49321.701	0.006	-0.006	6	KL	
31263	1707+803	**RT UMi**	p	49232.383	0.005	+0.130	10	HP	
31264	2026+246	**AW Vul**	p	49206.434	0.006	+0.002	6	HP	
31265	2030+246	**AX Vul**	p	49326.230	0.007	-0.029	6	KL	
31266	2023+272	**BE Vul**	p	49206.378	0.006	+0.020	6	HP	
31267			p	49251.376	0.005	+0.008	10	HP	
31268	1954+237	**BO Vul**	p	49219.421	0.004	+0.026	13	HP	
31269			p	49221.368	0.004	+0.028	8	HP	
31270			p	49260.283	0.007	+0.026	5	KL	
31271	2023+208	**BP Vul**	p	49216.464	0.005	-0.003	7	MKo	
31272			p	49216.468	0.006	+0.001	6	HP	
31273			p	49218.411	0.006	+0.005	9	HP	
31274			p	49251.390	0.006	-0.002	10	HP	
31275			p	49321.242	0.006	-0.003	8	KL	
31276	1935+218	**BS Vul**	p	49207.406	0.005	-0.013	7	HP	
31277	2044+280	**BU Vul**	p	49213.432	0.005	+0.009	8	HP	
31278			p	49229.358	0.005	+0.003	12	HP	
31279	2023+263	**CD Vul**	p	49206.482	0.004	+0.010	8	HP	
31280	1946+262	**GU Vul**	p	48475.473	0.008	-0.082	11	JVb	
31281			p	48499.441	0.007	-0.115	10	RB	
31282			p	48212.501	0.009	-0.118	14	JVb	

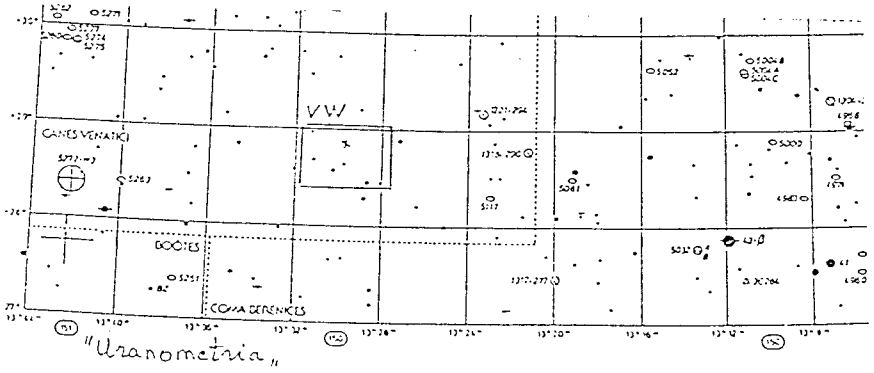
Erratum

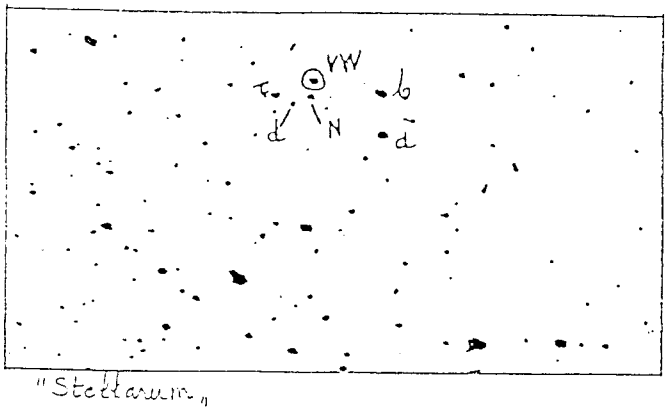
Bulletin No. 104:
Minimum No. 30939: read O = 49006.396 instead of 48006.396

CONCERNING THE IDENTIFICATION OF VW CVN

VW CVn ($13^h29^m43^s$, +28°52.9' (Aequ. 2000.0)) is catalogued in the 1985 edition of the GCVS with the following specifications: EW, 11.4 - 12.6 (12.4) m_{pg}, JD_{hel} = 2435923.246 + 0.850012 · E, according to Strohmeier and Knigge (1961). It is also noted that the period varies and that the variable is not marked on the discovery map, but that it has to be drawn 6 mm to the west and 3 mm to the north of the comparison star c.

We present here an identification chart of VW CVn and its comparison stars:





a = 10.96 (V)
b = 11.20 (V)
c = 12.16 (V)
N = 12.40 (V)
d = 14.38 (V)

This identification is confirmed by photoelectric measurements made at the Jungfraujoch observatory, where the stated V magnitueds of the comparison stars were obtained.

The three minima published in the BBSAG Bulletins pertain to star N. I have observed this star visually, and I think it may be considered as a suspected variable, although three photoelectric measurements taken between April 15 and 19, 1993, show no variation.

VW CVn is completly out of phase according to the 112 visual estimates I obtained in 1992 and 1993. Either the stated elements are not precise enough or its period has changed since its discovery. Further observations in order to secure a valid set of elements are recommended.

J. Vandenbroere

THE DURATION OF TOTALITY OF AQ PEG

AQ Peg is a very rarely observed eclipsing binary, whose duration of totality is given as $^{d}/_{p} = 0.030$ in the GCVS 1985. The visually determined minimum given on page 5 of this Bulletin yields a value for $^{d}/_{p}$ of 0.047 ± 0.002.

K. Locher

NEW ELEMENTS FOR EY PEG

In BBSAG Bulletin No. 85 (page 5), K. Locher gave the preliminary elements for EY Pegasi. In the meantime, a number of new determinations of the time of minimum have been published in the BBSAG Bulletins. From these observations, more accurate elements can be deduced:

JD(min, hel) = 2447041.510 (±0.028) + 1.923307 (±0.000006) · E .

R. Diethelm

A CCD LIGHT CURVE OF XX LEO

From a set of CCD observations of XX Leonis, a preliminary light curve has been deduced. It is depicted below (Elements: JD(min, hel) = 2431169.170 + 0.970938 · E).

A. Pascke