

BBSAC Bulletin 5

1972 October 10

38th List of Minima of Eclipsing Binaries

The following table lists 295 visual minima, namely

- 1) all 290 obtained during August and September 1972 by the BBSAG members
 - RD Roger Diethelm, Winterthur
 - RG Robert Germann, Wald
 - MG Matthias Giger, Bern
 - KL Kurt Locher, Grüt-Wetzikon
 - HP Hermann Peter, Otelfingen
 - FS Felix Schäpper, Bülach
- 2) 5 from the "WAS EB Program" (see no. 3 of the heading comment to the 37th list) by DB Dave van Buren, Geneva N.Y. USA

The O-C refer to the linear elements of the GCVS 1969, disregarding improved elements in the 1971 1st supplement to the GCVS. Reductions were made using the tracing paper method by R.Diethelm, R.Germann, K.Locher, and H.Peter.

cur- rent no.	star	minimum or- der	JD hel 244...	O-C	n	ob- ser- ver	cur- rent no.	star	minimum or- der	JD hel 244...	O-C	n	ob- ser- ver
3787	RT And	I	1515.478	-0.004	11	DB	3819		I	1587.457	-0.064	9	KL
3788		I	1542.524	-0.002	12	HP	3820		I	1591.382	-0.073	6	KL
3789		I	1561.386	-0.009	8	KL	3821		I	1591.388	-0.067	12	HP
3790		I	1566.418	-0.008	10	HP	3822	CX Aqr	I	1535.376	+0.003	10	KL
3791		I	1583.393	-0.014	13	RG	3823		I	1542.500	+0.012	11	HP
3792		I	1583.403	-0.004	10	HP	3824		I	1561.396	+0.004	10	KL
3793	UU And	I	1589.403	+0.111	20	HP	3825		I	1561.403	+0.011	8	HP
3794	XZ And	I	1563.436	-0.011	11	HP	3826		I	1571.411	+0.011	12	HP
3795		I	1582.440	-0.009	10	RD	3827		I	1585.307	+0.008	10	KL
3796	AB And	II	1534.521	+0.014	6	KL	3828		I	1591.423	+0.008	9	HP
3797		I	1536.359	+0.027	7	RG	3829	CZ Aqr	I	1535.537	+0.022	14	KL
3798		II	1536.513	+0.021	10	HP	3830	DX Aqr	I	1558.404	+0.034	11	KL
3799		II	1536.519	+0.021	10	RD	3831	EE Aqr	I	1550.541	-0.009	12	KL
3800		II	1550.454	+0.017	12	HP	3832	EK Aqr	II	1550.518	*	10	KL
3801		II	1554.440	+0.020	9	RD	3833		I	1565.530	*	11	KL
3802		II	1555.437	+0.022	8	RG	3834	OO Aql	I	1536.381	-0.022	5	KL
3803		II	1563.392	+0.011	11	KL	3835		I	1536.392	-0.010	13	HP
3804		II	1563.400	+0.019	10	HP	3836		I	1540.433	-0.023	10	HP
3805		II	1572.348	+0.006	10	HP	3837		I	1550.574	-0.019	8	KL
3806		II	1580.329	+0.021	7	KL	3838		II	1554.383	-0.010	6	KL
3807		II	1580.330	+0.023	7	RG	3839		II	1555.382	-0.025	13	RD
3808		II	1581.322	+0.019	8	RD	3840		II	1555.387	-0.020	11	HP
3809		II	1581.324	+0.021	7	RG	3841		II	1555.388	-0.019	9	RG
3810		II	1582.318	+0.020	8	RG	3842		II	1565.520	-0.023	6	KL
3811		II	1582.665	+0.034	5	KL	3843		I	1570.323	-0.035	11	HP
3812		II	1584.302	+0.012	8	RG	3844		I	1574.392	-0.020	9	HP
3813		II	1585.307	+0.021	7	KL	3845		II	1534.288	-0.006	7	RG
3814		II	1586.302	+0.021	11	KL	3846		II	1586.295	-0.026	8	RG
3815		II	1589.285	+0.017	8	KL	3847		II	1587.313	-0.022	6	KL
3816		II	1591.608	+0.016	6	RG	3848	V 343 Aql	I	1534.550	-0.017	11	KL
3817	BX And	I	1560.397	-0.002	12	KL	3849		I	1535.406	-0.003	13	HP
3818	RY Aqr	I	1585.491	-0.064	10	KL	3850		I	1536.414	+0.005	10	KL

cur- rent no.	star	minimum or- der	JD hel 244...	O - C	n	ob- ser- ver	cur- rent no.	star	minimum or- der	JD hel 244...	O - C	n	ob- ser- ver
3851		I	1560.386	-0.002	14	HP	3911	ZZ Cyg	I	1540.444	-0.036	10	HP
3852	V 346 Aql	I	1534.484	0.000	11	KL	3912		I	1569.367	-0.030	9	HP
3853		I	1535.585	-0.005	11	KL	3913		I	1574.396	-0.030	14	HP
3854		I	1554.390	-0.009	5	KL	3914		I	1591.368	-0.030	12	HP
3855		I	1554.393	-0.006	12	HP	3915	DR Cyg	I	1583.440	+0.010	13	HP
3856		I	1585.362	-0.014	7	KL	3916	KR Cyg	I	1556.355	+0.004	10	HP
3857		I	1585.367	-0.010	10	HP	3917		I	1583.390	-0.005	10	HP
3858	Y Cam	I	1540.517	+0.060	17	HP	3918		I	1589.308	-0.003	10	HP
3859	SV Cam	I	1542.502	-0.012	10	HP	3919	V 456 Cyg	I	1528.381	+0.008	5	RD
3860	WW Cam	I	1582.400	+0.073	10	RD	3920		II	1540.423	+0.019	13	HP
3861	AL Cam	I	1582.418	0.000	11	RD	3921		II	1556.464	+0.019	12	HP
3862	TY Cap	I	1539.447	-0.068	9	HP	3922		I	1561.352	+0.006	6	KL
3863		I	1569.334	-0.078	13	HP	3923		I	1585.429	+0.020	13	HP
3864		I	1589.278	-0.059	10	KL	3924	V 687 Cyg	I	1565.400	+0.008	14	HP
3865	RZ Cas	I	1536.518	-0.004	16	FS	3925		I	1582.470	+0.006	16	HP
3866		I	1536.520	-0.002	13	MG	3926	W Del	I	1569.543	+0.149	6	KL
3867		I	1536.520	-0.002	10	RD	3927	TY Del	I	1563.439	-0.005	9	HP
3868		I	1536.522	0.000	13	DB	3928	RR Dra	I	1561.469	+0.085	14	HP
3869		I	1536.524	+0.002	13	HP	3929	RZ Dra	I	1534.465	-0.005	7	KL
3870		I	1542.505	+0.007	14	HP	3930		I	1555.392	-0.012	11	RD
3871		I	1554.451	0.000	10	RD	3931		I	1555.398	-0.005	9	RG
3872		I	1560.433	+0.006	11	HP	3932		I	1581.298	+0.002	13	HP
3873		I	1560.437	+0.010	12	KL	3933	TW Dra	I	1562.411	-0.023	15	HP
3874		I	1572.385	+0.006	12	HP	3934	UZ Dra	II	1565.402	+0.012	10	HP
3875		I	1584.334	+0.002	11	RG	3935		I	1583.339	+0.012	10	HP
3876		I	1590.306	-0.003	14	KL	3936	AI Dra	I	1583.307	-0.005	12	KL
3877		I	1590.309	+0.001	12	HP	3937		I	1583.316	+0.004	9	RG
3878	TV Cas	I	1535.554	+0.006	10	KL	3938		I	1583.325	+0.013	12	HP
3879	TW Cas	I	1581.331	0.000	15	HP	3939		I	1589.331	+0.024	11	HP
3880	AB Cas	I	1570.386	+0.003	10	HP	3940	S Equ	I	1569.341	-0.008	6	KL
3881		I	1581.326	+0.008	13	HP	3941		I	1569.346	-0.002	12	HP
3882		I	1581.327	+0.009	10	RD	3942	RU Eri	I	1571.609	+0.002	11	KL
3883		I	1585.429	+0.010	14	HP	3943		I	1585.530	+0.014	8	KL
3884	U Cep	I	1562.397	+0.025	14	KL	3944	TZ Eri	I	1585.530	-0.032	10	KL
3885		I	1582.343	+0.027	17	HP	3945	WX Eri	I	1553.633	+0.012	13	KL
3886		I	1582.343	+0.027	11	KL	3946		I	1581.624	+0.011	11	KL
3887		I	1587.324	+0.022	10	KL	3947	YY Eri	I	1536.603	-0.012	13	KL
3888	VW Cep	II	1580.369	-0.062	6	KL	3948		II	1560.593	-0.006	7	KL
3889		I	1581.334	-0.072	8	KL	3949		I	1554.611	-0.007	14	KL
3890	ZZ Cep	I	1582.408	-0.018	9	RD	3950		I	1565.546	-0.003	11	KL
3891	EG Cep	I	1581.378	+0.003	10	RD	3951		II	1569.559	-0.009	11	KL
3892	EK Cep	I	1535.417	-0.002	12	DB	3952		I	1571.662	+0.005	8	KL
3893	GK Cep	I	1574.369	-0.001	13	HP	3953		I	1572.624	+0.002	6	KL
3894		II	1581.358	-0.033	8	HP	3954		II	1580.492	-0.007	5	KL
3895		I	1589.314	-0.034	14	HP	3955		I	1581.625	+0.002	11	KL
3896	TW Cet	II	1536.578	-0.010	12	KL	3956		I	1589.651	-0.010	14	KL
3897		I	1565.580	-0.020	11	KL	3957		I	1591.586	-0.004	8	RG
3898		I	1585.526	-0.016	13	KL	3958	SZ Her	I	1553.427	+0.020	11	HP
3899	XY Cet	I	1587.445	-0.003	5	KL	3959		I	1562.429	+0.023	10	HP
3900	BV 1481 Cet	I	1534.621	*	4	KL	3960		I	1562.430	+0.024	7	KL
3901		II	1571.647	*	12	KL	3961		I	1571.428	+0.023	12	HP
3902		II	1580.458	*	7	KL	3962		I	1585.333	+0.021	11	HP
3903		I	1581.566	*	7	KL	3963		I	1585.336	+0.024	6	KL
3904		II	1582.634	*	4	KL	3964	TT Her	I	1536.382	-0.034	9	KL
3905		II	1585.566	*	12	KL	3965		I	1536.391	-0.025	9	HP
3906		I	1587.448	*	5	KL	3966	TU Her	I	1572.363	-0.048	13	HP
3907	U Cr8	I	1562.382	-0.026	13	KL	3967	TX Her	II	1560.409	-0.027	15	KL
3908		I	1569.313	+0.001	10	HP	3968		II	1560.433	-0.003	15	HP
3909	SW Cyg	I	1561.420	+0.159	20	HP	3969		II	1591.320	-0.013	6	KL
3910	117 Cya	I	1539.78	+0.07	12	HP	3970		II	1591.334	+0.001	12	HP

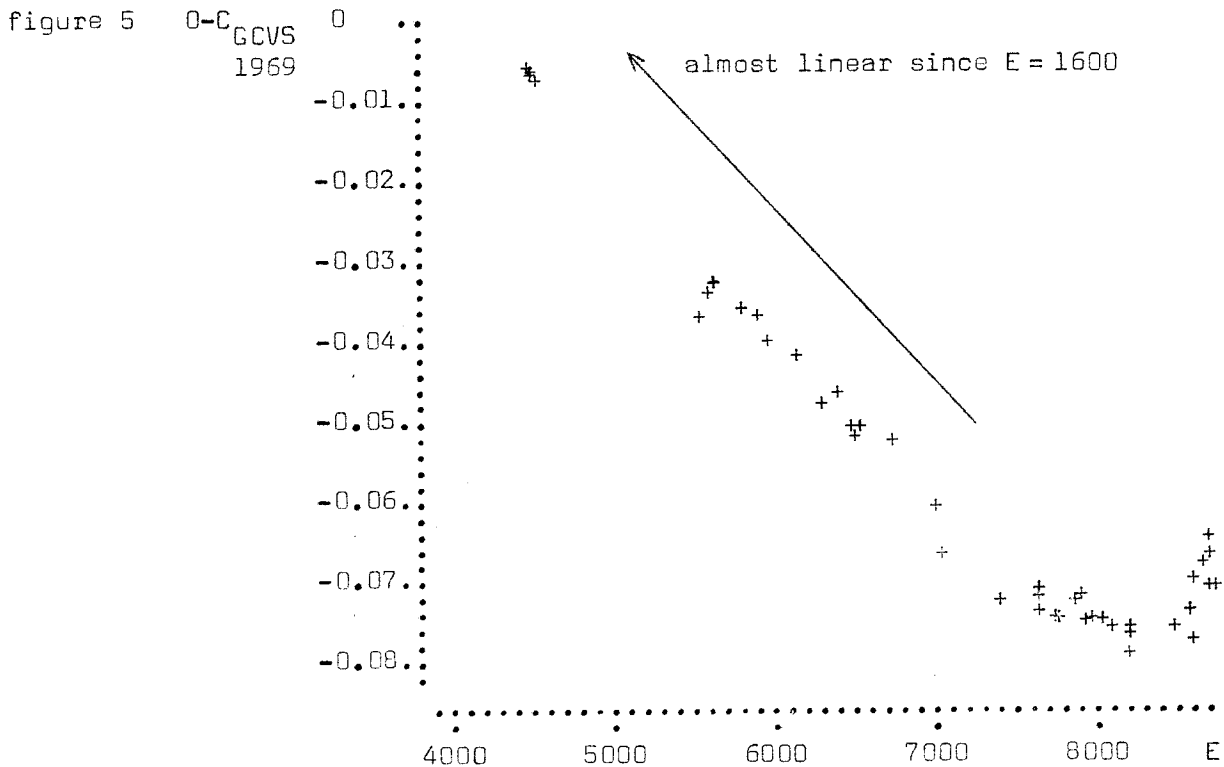
current no.	star	minimum or-der	JD hel 244...	O - C	n	ob-ser-ver	current no.	star	minimum or-der	JD hel 244...	O - C	n	ob-ser-ver
3971	UX Her	I	1560.425	-0.041	11	HP	4027	V1010 Oph	I	1558.343	-0.044	7	KL
3972		I	1574.369	-0.037	14	HP	4028		I	1560.336	-0.036	7	KL
3973	BC Her	I	1571.384	-0.142	14	HP	4029		I	1562.317	-0.039	8	KL
3974	CT Her	I	1540.418	+0.028	10	HP	4030	ER Ori	I	1550.631	-0.012	6	KL
3975	GL Her	I	1570.393	+0.064	11	HP	4031	UX Peg	I	1565.390	-0.022	10	HP
3976	MM Her	I	1555.342	-0.066	10	RD	4032	BB Peg	I	1561.371	+0.023	13	KL
3977	V 338 Her	I	1531.406	+0.061	8	KL	4033		I	1562.439	+0.006	8	KL
3978		I	1561.442	+0.065	10	HP	4034		II	1563.346	+0.010	12	KL
3979		I	1565.369	+0.074	11	HP	4035	DI Peg	I	1550.562	-0.013	10	KL
3980		I	1582.339	+0.071	13	HP	4036		I	1563.381	-0.007	11	HP
3981	V 450 Her	I	1555.342	-0.016	7	RD	4037		I	1565.512	-0.012	11	KL
3982	u Her	I	1536.402	+0.043	12	DB	4038		I	1580.460	-0.013	7	KL
3983	SW Lac	II	1531.474	-0.006	5	KL	4039	RT Per	I	1580.416	-0.048	9	HP
3984		I	1534.498	-0.029	6	KL	4040	XZ Per	I	1570.422	0.000	10	HP
3985		I	1536.422	-0.029	8	HP	4041		I	1585.404	+0.011	12	HP
3986		II	1541.389	-0.034	8	KL	4042	β Per	I	1535.523	-0.042	15	KL
3987		I	1550.524	-0.039	6	KL	4043		I	1581.415	-0.031	12	HP
3988		I	1554.372	-0.040	6	KL	4044	SX Psc	I	1565.573	-0.023	6	KL
3989		I	1554.382	-0.029	11	HP	4045	UV Psc	I	1534.609	+0.019	7	KL
3990		I	1555.343	-0.031	7	RD	4046		I	1565.610	+0.022	10	KL
3991		I	1555.350	-0.024	8	RG	4047		I	1571.630	+0.015	10	KL
3992		II	1558.387	-0.034	7	RG	4048	RW PsA	II	1535.500	-0.029	5	KL
3993		I	1563.360	-0.032	11	KL	4049	U Sge	I	1555.377	-0.002	15	RD
3994		I	1563.365	-0.027	10	HP	4050		I	1555.383	+0.004	14	HP
3995		I	1571.388	-0.022	12	HP	4051		I	1555.402	+0.023	5	KL
3996		I	1580.349	-0.041	6	KL	4052		I	1582.427	+0.003	11	RD
3997		I	1580.352	-0.039	6	RG	4053		I	1582.430	+0.006	18	HP
3998		I	1581.321	-0.032	6	RD	4054	V 505 Sgr	I	1556.448	-0.041	11	HP
3999		I	1581.329	-0.023	7	RG	4055		I	1562.367	-0.037	11	HP
4000		II	1583.406	-0.032	10	HP	4056		I	1562.371	-0.033	13	KL
4001		II	1585.332	-0.030	10	KL	4057		I	1581.302	-0.028	7	KL
4002		II	1586.294	-0.030	10	KL	4058	RT Scl	I	1580.462	-0.019	6	KL
4003		I	1589.347	-0.024	10	HP	4059	U Sat	I	1591.280	+0.008	6	KL
4004	TW Lac	I	1570.397	-0.036	14	HP	4060	RS Sct	I	1534.462	+0.026	10	KL
4005	VX Lac	I	1536.422	-0.043	10	HP	4061		I	1536.449	+0.020	9	KL
4006	CM Lac	I	1558.400	-0.003	9	RG	4062		I	1554.381	+0.017	8	KL
4007		I	1558.404	+0.001	11	KL	4063		I	1558.371	+0.022	8	RG
4008		I	1566.417	-0.010	11	HP	4064		I	1560.371	+0.030	11	KL
4009	DG Lac	I	1570.329	+0.141	14	HP	4065		I	1562.377	+0.042	7	KL
4010	TZ Lyr	I	1555.390	+0.014	14	RD	4066	AO Ser	I	1531.416	+0.002	7	KL
4011		I	1581.294	+0.006	8	RD	4067	X Tri	I	1550.627	-0.021	6	KL
4012	EW Lyr	I	1565.403	+0.038	15	HP	4068		I	1591.431	-0.022	10	HP
4013	FL Lyr	I	1569.371	-0.005	10	HP	4069	ZZ UMa	I	1536.383	-0.004	11	KL
4014		I	1582.433	-0.013	10	RD	4070		I	1582.370	-0.002	13	HP
4015		I	1582.443	-0.002	15	HP	4071	RU UMi	I	1536.501	-0.002	10	RD
4016	U Oph	I	1536.366	-0.017	17	DB	4072	Z Vul	I	1560.435	+0.003	10	KL
4017		I	1536.379	-0.004	10	HP	4073		I	1560.444	+0.012	10	HP
4018		II	1562.381	-0.001	12	HP	4074		I	1565.361	+0.020	13	HP
4019	V 508 Oph	II	1536.527	+0.005	10	RD	4075		I	1587.440	+0.004	8	KL
4020		II	1554.453	+0.001	10	RD	4076	BE Vul	I	1534.613	+0.019	9	KL
4021		II	1562.381	0.000	10	HP	4077	BO Vul	I	1560.450	-0.056	10	HP
4022		II	1581.346	0.000	11	RD	4078		I	1562.396	-0.066	12	HP
4023		II	1581.359	+0.014	8	HP	4079	BU Vul	I	1555.349	+0.007	8	RG
4024		II	1582.384	+0.005	5	RD	4080		I	1556.479	-0.001	10	HP
4025		II	1589.276	+0.001	7	KL	4081		I	1580.386	+0.009	9	HP
4026		II	1591.328	-0.016	5	KL							

* not contained in the GCVS 1969, O - C according to:
(EK Agr:) 1971 supplement to the GCVS: -0.024 -0.030 respectively
(BV 1481 Cet:) Bloomer's elements IBVS 587: +0.037 +0.032 +0.044:
0.051 0.028 0.019 0.067 respectively

Probable Period Change of RW
Tauri in 1970

Observations of the eclipsing binary RW Tau in 1971 by observers of the BBSAG indicate a drastic period change in early 1970 as clearly shown by figure 5. Previously the star was showing no appreciable change in period for more than 50 years. We would like to urge observers of eclipsing binaries to give special attention to this star in the now starting season.

R. Diethelm



Further Note on V 983 Ophiuchi

(compare BBSAG Bulletin 3, page 4:) Meanwhile the survey has been extended to 55 nights, and the suggestions previously reported are considerably improved.

K. Locher

Approximate O-C Value of CN Andromedae

During the night JD 2441582 I was able to observe the ascending branch of the lightcurve of the eclipsing binary CN And. These observations show the O-C value to be negative by a considerable amount (at least -0.04). It is hoped that this information will lead to further observation of the entire eclipse of CN And.

R. Diethelm

New Light Elements for the
Eclipsing Binary U Sagittae

From 33 observed minima of U Sge since 1964 the following set of new elements has been derived, employing the common method of least square deviations:

$$JD \text{ min hel} = 2429111.353 \pm .033 + 3.380612 \cdot E \pm .000010$$

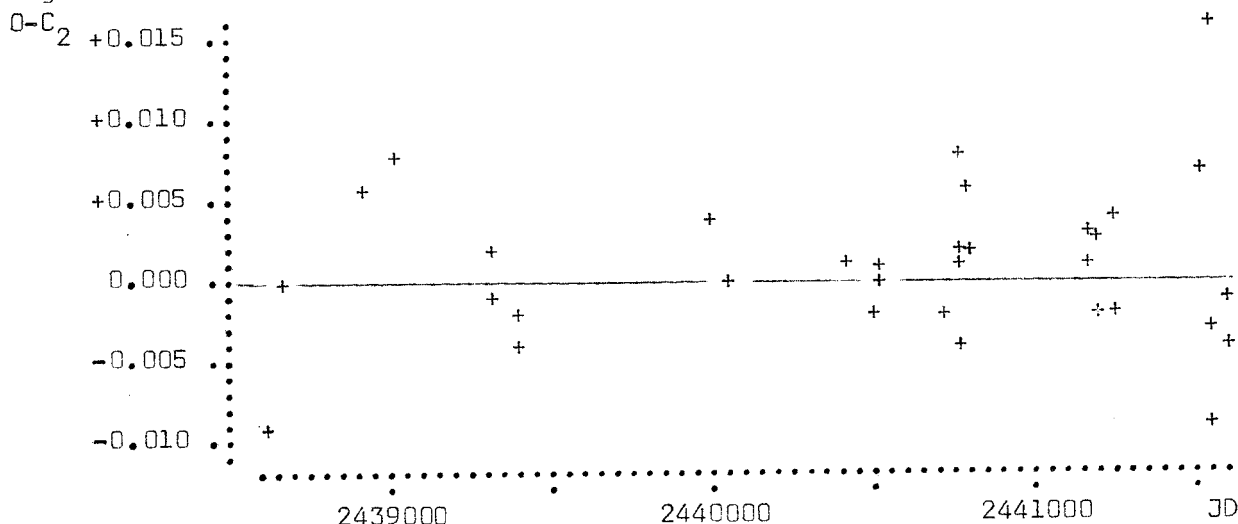
All minima have been weighted according to the number of single observations. Table 6 states these observations along with the O-C₂ values as derived from the new elements, while figure 6 shows these values plotted versus time.

R. Diethelm

table 6

O	O-C ₁	GCVS 69 n		O-C ₂	O	O-C ₁	GCVS 69 n		O-C ₂
2438624.386	+0.003	14	HP	-0.009	2440774.466	+0.010	15	RD	+0.002
668.343	+0.012	17	HP	0.000	774.472	+0.016	12	NR	+0.008
935.417	+0.017	14	HP	+0.006	801.511	+0.010	11	RD	+0.002
39023.315	+0.019	18	HP	+0.008	801.515	+0.014	13	KL	+0.006
317.420	+0.010	9	KL	-0.001	41173.378	+0.009	6	HB	+0.001
317.423	+0.013	13	HP	+0.002	173.380	+0.011	6	RD	+0.003
388.410	+0.007	20	HP	-0.004	200.419	+0.005	6	KL	-0.002
405.315	+0.009	20	HP	-0.002	217.328	+0.011	10	KL	+0.003
40010.450	+0.013	18	HP	+0.004	244.373	+0.011	11	KL	+0.004
064.536	+0.010	17	HP	0.000	261.271	+0.006	11	KL	-0.002
419.501	+0.010	21	HP	+0.001	511.445	+0.014	11	KL	+0.007
507.394	+0.007	20	KL	-0.002	555.377	-0.002	15	RD	-0.009
524.299	+0.008	14	KL	0.000	555.383	+0.004	14	HP	-0.003
524.300	+0.009	17	HP	+0.001	555.402	+0.023	5	KL	+0.016
730.514	+0.006	18	HP	-0.002	582.427	+0.003	11	RD	-0.004
774.460	+0.004	9	ED	-0.004	582.430	+0.006	18	HP	-0.001
774.465	+0.009	7	HP	+0.001					

figure 6



Improved Results on 3V 1481 Ceti

(compare BBSAG Bulletin 1, page 4:) From 62 further observations during 12 autumn nights 1972 it is now almost certain that Bloomer's elements are correct and that the brighter visual component (ADS 1581 A) is the eclipsing one, although not all of these further observations were made being unaware of the phase (in order to get the O-C of minima published on page 2 of this is-

sue.) Table 7 lists the new observations, and figure 7 shows them plotted against phase, together with the ones repeated from table 2/figure 2 of BBSAG Bulletin 1.

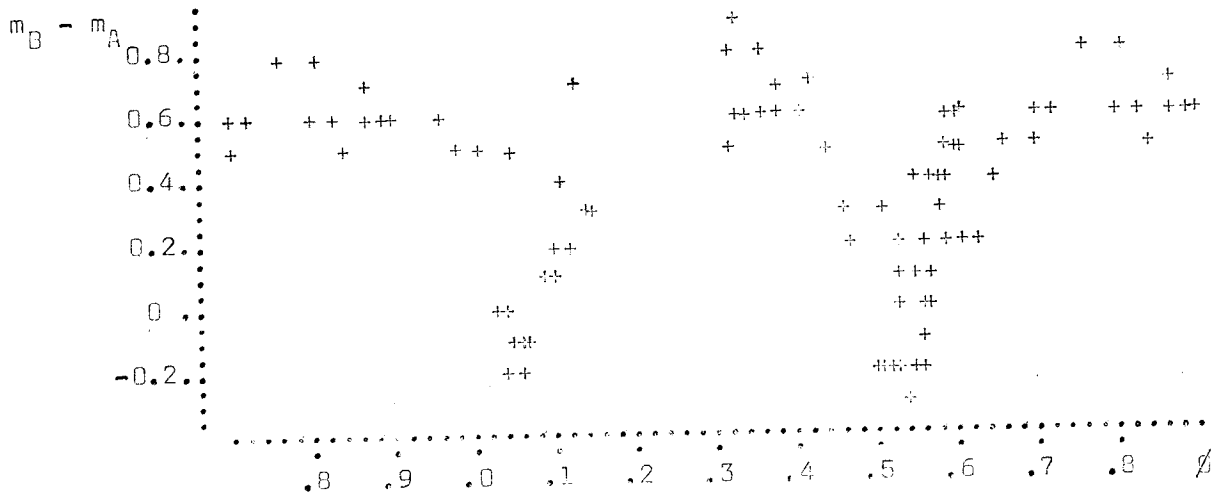
The type of variation now seems rather to be EW than EB according to 1) figure 7 and 2) the fact that the period is very typical for an early F type dwarf contact binary, the 3 components of the whole system being nearly equally bright and of integrated spectral type F2 (ADS and SAO catalogues).

K. Locher

table 7

night JD 244...	1534	1535	1550	1553	1565
phase observed	.01 .03 .04 .06	.33	.87 .90	.96 .98	.32 .36
$m_{ADS\ 1581\ B} - m_A$.5 .0 -.2 -.2	.6	.7 .6	.6 .5	.8 .6
	1569	1571			
	.80 .83 .84	.53 .54 .55 .56 .57 .58 .59 .59 .59			
	.6 .6 .5	.0 -.3 -.2 -.1 .1 .3 .4 .4 .5 .6			
		1580		1581	
	.60 .60 .61	.53 .55 .56 .57 .59 .60 .61	.04 .05 .06		
	.5 .6 .6	.1 .1 .2 .0 .2 .5 .5	.0 -.1 -.1		
		1582	1585		
	.07 .10 .11 .13	.51 .53 .55 .57	.38 .38 .41 .44 .46		
	-.1 .1 .4 .7	.3 .2 .4 .4	.7 .6 .6 .5 .3		
			1587		
			.47 .50 .51 .52 .53 .56 .56	.05 .07 .09 .10 .12	
			.2 -.2 -.2 -.2 -.2 -.2 .0	.5 .2 .1 .2 .2	

figure 7



Errata

BBSAG Bulletin 4, page 2

- minimum no. 3691 : The uncertainty sign (±) should be given
- minimum no. 3768 : 0 and 0-C should be decreased by 1 hour exactly, i.e. 0.042

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- V 346 Aql : The second minimum of September 24/25 should be listed 24 hours later
- AI Dra : The second minimum of August 29/30 should be listed 24 hours later

