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HBV 477
 A NEW ECLIPSING VARIABLE IN THE CYGNUS - CLOUD

HBV 477 = BD + 29°3814 (9.5)
 Sp.: BOV $M_v = -4.40$ (Neckel, Th. Heidelberg Ver. Bd. 19.
 1967)

RA 19^h52^m39^s.28 D +29°43'31".2 (1900.0)

HBV 477 was suspected to be an eclipsing variable by WACHMANN (unpublished) during his survey of the Cygnus-Cloud. All attempts to find the period of its light-changes failed. Therefore HBV 477 was put onto the program for photoelectric observations by the author and a total of 635 observations in B and V each was obtained from May 1969 until now.

Once again it took a year and a half until the period could be found, because only ascending branches of the minima were observed and these showed a large scattering.

The finally derived elements are together with their mean errors:

$$\text{Min. hel.} = 244\ 0371.4095 + 1^d 956\ 692\ 02 . E$$

$$\qquad \qquad \qquad \pm 14 \qquad \qquad \qquad \pm 72$$

Table I gives the times of minima, the epochs and the O-C. The observations starting JD = 244 0366 are photoelectric observations while the prior ones are photographic.

Table I

	O	E	O-C		O	E	O-C
243	2775.465:	-3882.0	-0.066	244	0371.401	0.0	-0.009
	3506.322	-3508.5	- .034		0372.359	+ 0.5	-0.029
	4133.479	-3188.0	+ .004		0373.358	+ 1.0	- .008
	4134.474	-3187.5	+ .020		0467.263	+ 49.0	- .022
	4626.548	-2936.0	- .014		0469.234	+ 50.0	- .010
	4627.595	-2935.5	+ .055		0811.680	+225.0	+ .015
	4628.522	-2935.0	+ .004		0812.658	+225.5	+ .014
	4629.563:	-2934.5	+ .066		0824.405	+231.5	+ .021
	5309.456	-2587.0	+ .009		0825.379	+232.0	+ .017
	5360.310	-2561.0	- .011		0827.331	+233.0	+ .012
244	0366.493	- 2.5	- .025		0828.308	+233.5	+ .011
	0369.435	- 1.0	- .018		0875.273	+257.5	+0.015
	0370.415	- 0.5	- .018				

The total of 422 photographic observations obtained by WACHMANN was reduced to one revolution by the above elements. Table II gives the normals formed out of these 422 observations, n giving the number of single observations for each normal.

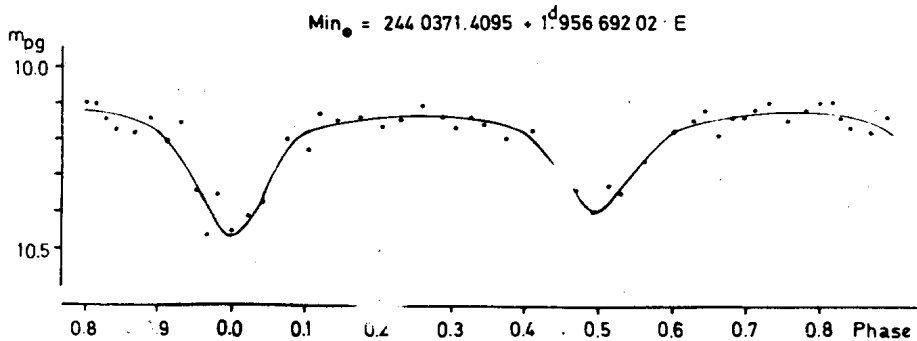
Table II

Phase	m_{pg}	n	Phase	m_{pg}	n	Phase	m_{pg}	n
0.0221	10.41	12	0.4149	10.18	10	0.7587	10.15	7
.0449	10.37	10	.4445	10.29	11	.7828	10.12	9
.0786	10.20	8	.4733	10.34	8	.8009	10.10	11
.1067	10.23	8	.4945	10.40	11	.8155	10.10	8
.1204	10.13	12	.5165	10.33	11	.8292	10.14	9
.1465	10.15	11	.5331	10.35	9	.8436	10.17	10
.1755	10.14	14	.5655	10.26	10	.8693	10.18	11
.2080	10.17	11	.6035	10.18	9	.8910	10.14	9
.2310	10.15	8	.6311	10.15	9	.9123	10.20	9
.2619	10.11	10	.6467	10.12	10	.9337	10.15	7
.2895	10.14	9	.6641	10.19	8	.9547	10.34	8
.3074	10.17	10	.6821	10.14	10	.9673	10.46	7
.3276	10.14	10	.6989	10.14	9	.9819	10.35	6
.3453	10.16	12	.7131	10.12	11	0.9999	10.45	11
0.3776	10.20	11	0.7330	10.10	8			

The mean light-curve is given in the figure.

HBV 477 shows the following light-changes:

Max I: 10^m13 Min I: 10^m47 Type: EB
 II: 10^m12 Min II: 10^m40



The normals show a relative large scattering around the mean light-curve. This is caused by:

1. the small amplitude of the overexposed star
- and 2. the vicinity to the edge of the plates.

HBV 477 will be further observed at Hamburg Observatory with the 60 cm photoelectric telescope in U, B and V. Orbital elements will be calculated later on.

The photoelectric observations were partly carried out at Stephanion, Greece, where a 38 cm photoelectric telescope was placed by a NATO-grant.

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