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AN ORBITAL PERIOD FOR VW HYDRI

The dwarf nova VW Hyi has been observed since 1968 at the Auckland Observatory using the 50 cm telescope and associated photoelectric equipment. Although this system does not exhibit eclipses, in earlier papers in "Southern Stars" we drew attention to repetitive features in the light curve which indicated a period of around 100 minutes. More extensive observations now indicate a period of 106.95 minutes.

We have extended our series of observations to provide a base line of over 25,000 cycles. Using all these which show unambiguous repetitive features, as listed in Table I, we have derived the elements given below for a bright regular feature of the light curve. Our curves have not been treated to remove the

Table I Observed Times of Peak on 'Minimum Light' Light-Curves

HJD 2440000+	Cycle No.	O - C	HJD 2440000+	Cycle No.	O - C
128.0222	0		1620.8785	20100	+0.0072
128.0953	1	-0.0012	1620.9549	20101	+0.0093
394.1375	3583	+0.0021	1633.9444	20276	+0.0014
394.2153	3584	+0.0055	1634.0177	20277	+0.0004
456.0826	4417	+0.0050	1778.9264	22228	+0.0062
456.1581	4418	+0.0062	2005.8924	25284	-0.0003
470.1125	4606	-0.0024	2005.9661	25285	-0.0009
484.0049	4793	+0.0013	2006.0404	25286	-0.0008
484.1549	4795	+0.0028	2006.9316	25298	-0.0009

well known rapid irregular flickering which is present in VW Hyi, as in other cataclysmic variables.

Elements: H.J.D. 2,440,128.0222 + 0<sup>d</sup>.0742711 E  
 ± 0.0000002

These elements provide a reliable ephemeris for the system at minimum light, subject to the expected uncertainties of a feature of this type. Figures 1 and 2 show typical light curves. The points shown are from 30 second integrations in white light

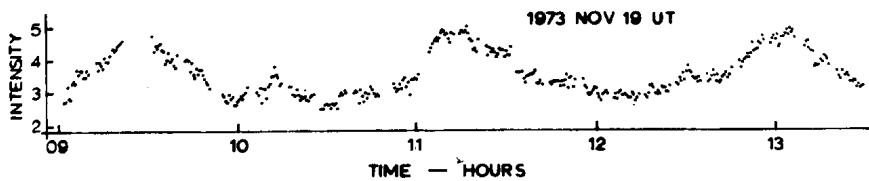


FIGURE 1

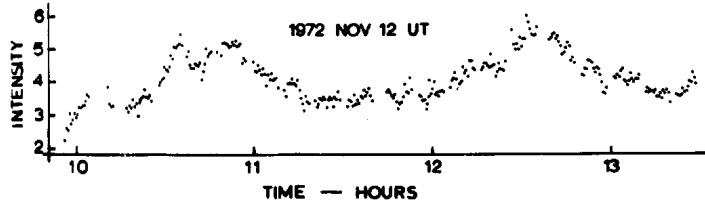


FIGURE 2

using a blue-sensitive EMI 9502 photomultiplier tube.

Once the star brightens more than two magnitudes (as during outbursts) this feature quickly disappears. It may be replaced by other similar appearing peaks but these are usually displaced in phase and cannot be fitted with any degree of certainty to the foregoing elements. Table II lists some features observed during the recent supermaximum outburst. These show a change

Table II Observed Times of Peak on 'Minimum Light' Light-Curves

HJD	Cycle No.	O-C	Phase	HJD	Cycle No.	O-C	Phase
2442000+				2442000+			
010.9632	25352	+0.0201	0.27	020.0198	25474	+0.0156	0.21
011.0368	25353	+0.0194	0.26	020.9383	25486	+0.0428	0.58
011.1097	25354	+0.0180	0.24	020.9638	25487	+0.0059	0.08
012.8924	25378	+0.0182	0.25	021.0157	25487	+0.0460	0.62
012.9660	25379	+0.0176	0.24	021.9322	25500	+0.0031	0.04
019.8885	25472	+0.0328	0.44	021.9611	25500	+0.0258	0.35
019.9448	25473	+0.0149	0.20	022.0047	25501	-0.0048	0.94
019.9684	25473	+0.0385	0.52	022.0385	25501	+0.0290	0.39

in phase, and in some cases an occurrence of more than one peak per cycle. Generally the quiescent peaks are 0.5 to 0.9 magnitudes amplitude. Those noted in Table II are pretty much the same but tended to reduce in amplitude in the later stages.

At times the system exhibits flare-like behaviour which can completely submerge the more normal light peak. This is especially pronounced at times between phase 0.60 and 0.90. A small 'flare' of this type is shown in Figure 2. Confusion over these, and attempts to fit the peaks occurring during outbursts, can lead to a variety of incorrect orbital periods for this star, and led to our earlier, too short, period.

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