ROYAL ASTRONOMICAL SOCIETY OF NEW ZEALAND.

VARIABLE STAR SECTION.

CIRCULAR No. 175.

X PAVONIS

Frank M. Bateson, & A.F. Jones.

SUMMARY: Visual observations from 2,437,671 to 2,440,100 of X Pav give the elements:-

EPOCH (Max). J.D. 2,439,527 + 199^{d}.19. M-m 96^{d}.2. Mean visual range 8.66 to 9.42. Type SRa.

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INTRODUCTION: The variability of X Pav was discovered by E.C. Pickering (1). It was investigated by Gaposchkin (2) who found it to be semi-regular with a photographic range of 9.00 to 11.11 in a period of 397.22 days; spectrum Mc. His Epoch (Max) was 2,430,030. Gaposchkin listed 32 maxima and 34 minima in the interval 2,415,220 to 2,430,130 stating that " a period of about four hundred days was in force during the interval illustrated with secondary minima that suggest that this period should be halved." He also remarked that the regularity was spasmodic.

OBSERVATIONS; A.F. Jones first observed X Pav on 1962 Jan. 5 (2,437,671) and has observed it visually on the average twice monthly since then. Other observers have supplemented these observations from 1966 June 16 (2,439,293). Observations have been published in VSS, RASNZ, Circulars 120,127 and 133.

CHART & SEQUENCE: Chart 206 (3) shows X Pav with SPv magnitudes for the comparison stars as given by the Cape (4). Magnitudes for fainter stars appear in Circular 174 (5) but it is rarely necessary to use such stars.

DISCUSSION: During the period 2,437,671 to 2,440,100 X Pav exhibited the typical variations of a semi-regular giant variable of late spectral class. There were times when the amplitude was much more marked than at other times. When variations were small there appeared to be a slight regular variation with both maxima and minima flat. This made the determination of the exact times subject to uncertainty. However, there appeared to be a rough regularity with a period of about two hundred days, confirming Gaposchkin's suggestion that his period of 397.22 days should be halved.

Table 1 lists the observed maxima and minima. The variations appear to be best represented by the following elements:-

EPOCH (Maximum)	2,439,527
PERIOD:	Mean 199.19 days. (From 11 maxima 194^{d}.6; from 10 minima 204.2 days).
RANGE:	Mean:- Max. 8.66 (8.0 to 9.1)
	Min. 9.42 (9.2 to 9.7)
Min. to Max.	96.2 days.

1971 January 12

18 POOLES ROAD,
GREERTON.
TAURANGA.
NEW ZEALAND.

V.S.S. CIRCULAR No. 175 (cont).

REFERENCES:

1. PICKERING, E.C. H.C. 24, 1898
2. GAPOSCHKIN, S. H.A. 115, 2, 1945
3. BATESON, F.M., JONES, A.F. & STRANSON, I. "Charts for Southern Variables" Series 6. 1969. Published by F.M. Bateson.
4. CAPE. ANNALS, CAPE OBSERVATORY, XX, 1958.
5. BATESON, F.M., JONES, A.F. & MENZIES, B. Circ. 174,VSS,RASNZ, 1970.

TABLE 1.

OBSERVED MAXIMA & MINIMA OF X PAVONIS.

MAXIMA.				MINIMA.			
J.D.	MAG. v	INT. d	REMARKS	J.D.	MAG. v	INT. d	REMARKS.
2,437,872	9.1	...	Flat	2,437,813	9.4	...	
2,438,043	8.4	171		959	9.7	146	
314	8.7	271		2,438,220	9.5	261	
504	8.9	190		380	9.4	160	
804	8.7	300	Flat	632	9.4	252	Flat
932	8.8	128	Flat	864	9.4	232	
2,439,130	8.7	198	Flat	2,439,001	9.4	137	
285	8.4	155		233	9.4	232	
527	8.0	242		420	9.2	187	Flat
683	8.9	156	Flat	628	9.4	208	
800	9.0	117	Flat	855	9.4	227	
2,440,013	8.3	213					