VARIABLE STAR
BULLETIN

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PHOTOGRAPHIC AND VISUAL OBSERVATIONS OF ECLIPSES OF EX HYDRAE

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In quiescence about two months before the outburst at the beginning of May 1987, an eclipse was observed by S.and K.Fujino with 31 cm Wright Schmidt camera with Tri-X film and the yellow green filter. During the outburst, two eclipses were caught visually by Iida and Kato. The results are shown in Figure 1, and the times of minima are as follows.

Observer	JD hel.	E	O-C
Fujino	2446855.149	134174	-0.^{d}001
Iida	6922.089	135155	+0. 002
Kato	6923.041	135169	-0. 002

O-C is calculated using the following elements given by Jablonski and Busko (1985).

T_{min} = JED.hel 2437699.94179 + 0.068233846*E

Observed o-c values are practically zero and there is no remarkable change of the orbital period.

The shape of light curve during outburst are different from that in quiescence. In outburst, duration of the eclipses are longer and the shapes are quite asymmetric, in contrast to the short and almost symmetric eclipse in quiscence. However, depth of eclipses is almost same (0.8-1.0 mag.).

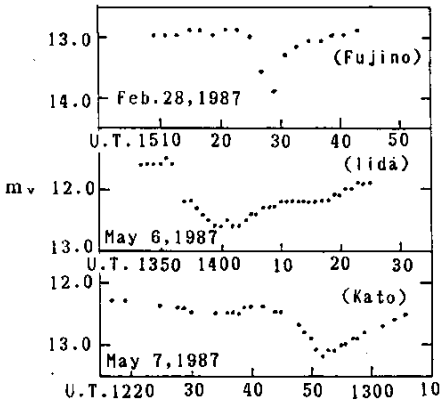

Figure 1. Eclipses of EX Hya

Reference:
Jablonski,F. and Busko,I.C.,1985, Month. Not. R.A.S.,214,219.

DETERMINATION OF SUPERHUMP-PERIOD OF T LEONIS

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The star exhibited a bright long outburst in late January, 1987 which lasted at least 9 days and was the first superoutburst since one recorded in June, 1982.

During the superoutburst, photographic observations were carried out by Fujino with 31 cm Wright Schmidt canera with Tri-X film with yellow-green filter, and visual observations by Kato with 10 cm reflector. The results are shown in Figure 1.

All the data were reduced to the differences to the daily means of respective observers. Period analysis yields possible superhump periods:

$$1/p=1/0.0603 + n \quad \text{where } n=0,1,2,\cdots\cdots.$$

Three photoelectric timings of superhumps have been reported (Slovak, Nelson and Shafter,1987). Based on four epochs of superhump maxima, we obtained an unambiguous period of $0.^{d}064$. Using the epochs of the successive night, we are able to express all the observed maxima with the formula:

$$\text{Max. UT} = \text{Jan.}25.376 + 0.06411*E$$

All the epochs of maxima and O-C's calculated from this formula are listed in Table 1.

From the O-C curve in Figure 2, we conclude that the superhump period decreased during the superoutburst. This phenomenon is observed in other SU UMa systems. The orbital period of $0.^{d}0588$ has been reported by Shafter and Szkody (1984), having discrepancy with the above superhump period. This can be explained as a contraction of the accretion disk (Osaki,1985).

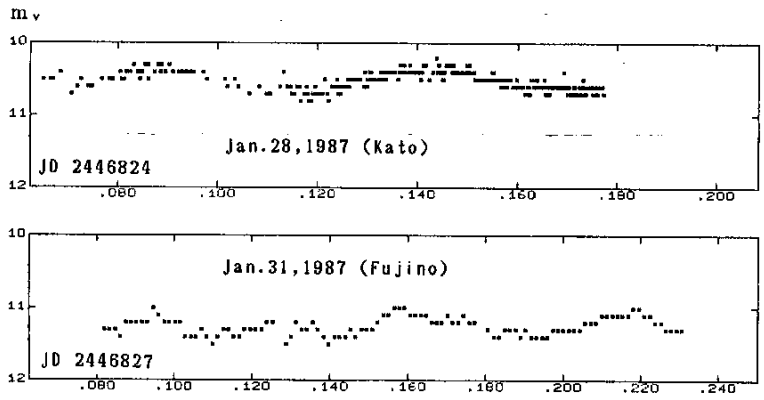

Fig. 1. Light curves of T Leo

Table 1.

Jan. UT	Source	Method	E	O - C
25.369	IAUC	pe	0	-0.007
27.365	IAUC	pe	31	+0.001
27.425	IAUC	pe	32	-0.003
27.560	Fujino	pg	34	+0.004
27.623	Fujino	pg	35	+0.003
28.583	Fujino	pg	50	+0.001
28.588	Kato	vis	50	+0.006
28.646	Kato	vis	51	0
31.595	Fujino	pg	97	0
31.658	Fujino	pg	98	-0.001

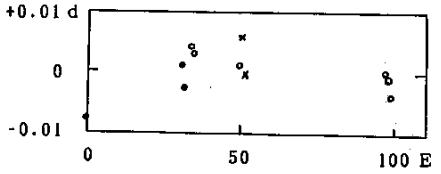

Fig. 2. O-C curve of T Leo.

References:
Schafter,A.W. and Szkody,P.,1984,Ap.J.276,305.
Slooak,M.H., Nelson,M.J. and Shafter,A.W.,1987,IAUC,No4314.
Osaki,Y.,1985,Astr.Astrphys.,144,369.

VISUAL OBSERVATIONS OF NSV13991

K.Gomi (Suwa,Nagano)

NSV13991 (SAO 90155) which was originally listed as 183.1935 Peg was observed in 1938 - 48, and repeated in 1963 - 1982. This star is shown as LB type of the range 8.7 - 9.1p in NSV catalogue.

The observations in 1963 - 77 are shown in Figure 1. From the overall observations, it is known that the star is possibly SR type with period of about 350 days. The range seems to be 6.8 - 8.2mv.

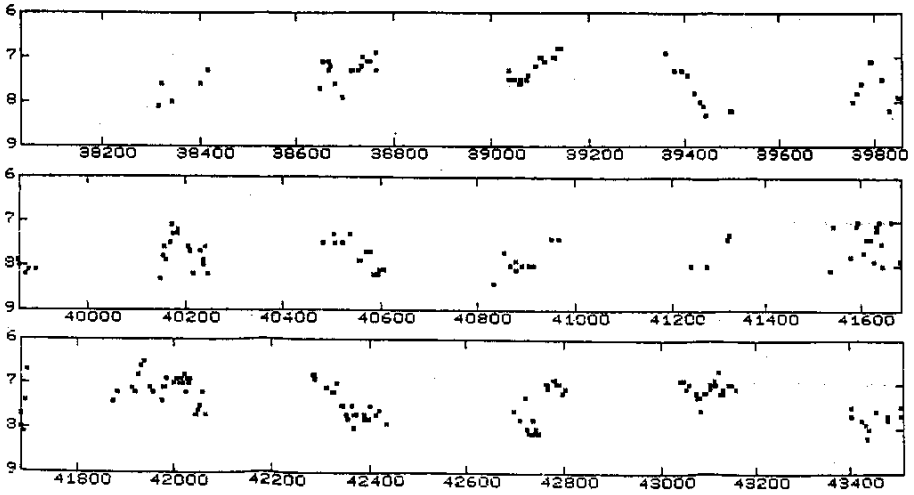

FIG.1. Light curve of NSV13991 in 1963 - 77.
Ordinates: m_v , Abscissae: JD(2400000+)

A NEW MIRA TYPE VARIABLE IN MONOCEROS

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A new variable of Mira type was detected by Wakuda in 1982 on photographs taken with 400 mm lens and Tri-X films through the yellow-green filter to get visual magnitude. Observations of Saito was made by 21 cm reflector with the same photographic materials.

Figure 1 shows the light variation in 1982 through 1987. It is noticeable that very bright maxima was observed in 1987. The range is thus 9.8 - <13.5mv so far. The period of the star seems to be 367 days with the provisional elements,

$$\text{Max} = \text{JD } 2445405 + 365.5^{d} * E$$

The star was independently discovered by R. MacNaught of Siding Springs Observatory in 1987. He measured the position of the star as follows.

(RA) $7^{h}23^{m}12.^{s}3$ (DEC) -3° 00'22" (1950)

In finding chart, Figure 2, visual magnitudes of comparison stars measured by Dr.Huruhata are given without decimal points.

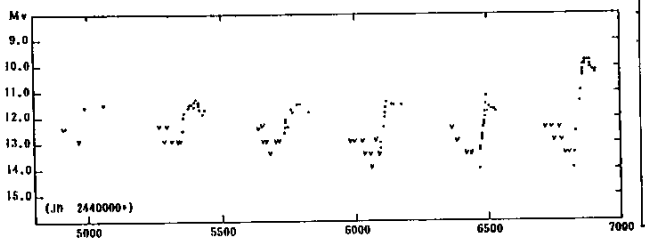

Figure. 1. Light variation of 072002 Mon.

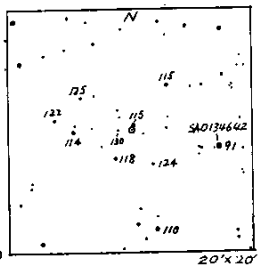

Figure. 2. Finding chart.

Reference:
MacNaught,R.,1987, The astronomer,23,No.276.

VARIABLE STAR OBSERVERS LEAGUE
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