

COMMISSION 27 OF THE I. A. U.  
INFORMATION BULLETIN ON VARIABLE STARS

Number 2927

Konkoly Observatory  
Budapest  
22 August 1986  
HU ISSN 0374 - 0676

LILLER'S NOVA-LIKE OBJECT  
IN CENTAURUS

In 1986 Feb, Bill Liller reported his discovery of a nova-like object which reached maximum near 1986 Jan 13 at about magnitude 7 (Liller, 1986). No other information on this star has come to our attention. Accordingly, we have searched our nova and fireball patrol photographs for images of the variable during its outburst.

A photograph by Dawes from Sydney on 1986 Jan 11.54 U.T. records the variable at magnitude 7.0. The estimate is complicated by the proximity to the mv 6.0 star (SAO 240765) 2.6 arcminutes to the north, and by the Ektachrome 400 emulsion with a Kodak Wratten 32 (Magenta) filter, used as an experiment to combat sky pollution. The 55mm focal length lens just separates the variable from the nearby star.

The fish-eye lens fireball and nova patrol camera operated by McNaught from Siding Spring Observatory does not have the resolution to separate the variable, the focal length being only 15mm. However, near maximum, the variable became sufficiently bright that the combined brightness was clearly brighter than mv 6.0. Eyeball estimates of the brightness of SAO 240765 from the photos show a scatter of around 0.2 mag around a mean of m 6.0 in early and late January. However on Jan 11, 12 and 13 the images of SAO 240765 were significantly raised indicating that the variable was near maximum.

	U.T. Period covered by photos	Combined magnitude change	No. of photos.	Derived mean mag. of the variable.
86 Jan 11	1612 - 1752	-0.2	6	7.7::
12	1325 - 1829	-0.5	12	6.6
13	1228 - 1804	-0.4	11	6.9:

The magnitudes will be affected by the slight separation of the two stars and the comatic images. However on several frames the image appears

somewhat brighter than on the preceding and following frames and these may represent real variations. The brightest frames are detailed below.

	U.T. of mid.exp.	Durn. min.	Combined magnitude change	Derived mag. of the variable
86 Jan 11	1742	20	-0.6	6.3
12	1435	20	-1.0	5.5
12	1545	20	-0.8	5.9
12	1605	20	-0.8	5.9
12	1705	20	-1.3	5.1
13	1716+/-20	20	-0.8	5.9

It is not known what significance should be placed on these individual observations, but it does appear that maximum was reached on Jan 12 at mag 6.6 and possibly somewhat brighter.

The magnitudes are approximately pv, based on unfiltered HP5 emulsion. No patrol photos were taken in the period Jan 8 - 10 or Jan 14 - 17.

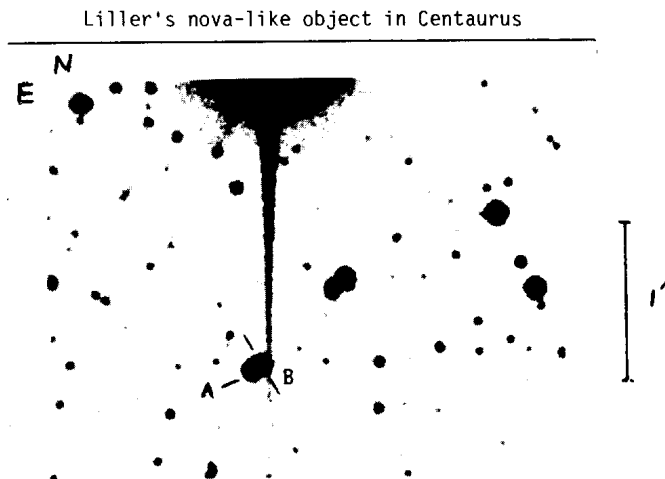


Figure 1 From a J survey plate of the U.K. Schmidt Telescope.  
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By enlarging the Dawes' photo and overlaying it on a schmidt survey plate, it was clear that a pair of mag 14 stars are the best candidates for the variable in quiescence. The pair (labelled A and B) are shown in Fig. 1, this being the same identification as that suggested by Liller (ref. 1) of a faint star on the Papadopoulos "True Visual Magnitude Photographic Star Atlas".

Examination of several atlases showed no evidence of variability although the Papadopoulos atlas has the star some 0.5 magnitudes brighter than appears visually in a telescope. The data from the atlases searched is as follows

Union	1929	May 27	fainter than	13 B
Union	29	Jul 5	" "	12 B
Canterbury	66	Apr 21	at minimum	14 B
Stellarum	70	Apr 5	"	14 B
Papadopoulos	73	May 5	at minimum?	13.5: V
ESO B	74	Feb 25	at minimum	14 B
SERC J	76	Apr 22	"	14 J
SERC SR/I	80	Mar 7	"	
ESO R (5617)		?	"	

The SERC red/IR plate pair do not show any stars in the vicinity of the variable that are significantly coloured, nor does comparison of ESO B and R plates. On the colour photo by Dawes the star appears white (after allowance for the filter). It is certainly not red at maximum or minimum.

Visual monitoring of the candidate pair has been carried out regularly by McNaught. In 1986 March, observations on 15 nights showed no evidence of variability. Weekly observations subsequently until 1986 Aug 1 gave no change. Usually the pair are not resolved, but star A is the righter. In good seeing, there is no evidence of a relative change of brightness in the pair.

Astrometry of the two candidate stars was carried out by McNaught on a SERC J film copy based on 11 Perth 70 stars within 1.5 degrees of the variable using the Bolton measuring machine at UKSTU, Siding Spring.

	R.A. (1950.0)			Dec. (1950.0)		
	h	m	s	o	'	"
Star A	13	17	42.57	-55	34	32.1
B	13	17	42.31	-55	34	30.0

The RMS error is 0.4 arcsec in both coordinates. Plate epoch is 1976.31.

The use of the UKSTU and AAT facilities at Siding Spring is gratefully acknowledged by McNaught. Particular thanks go to Tom Cragg who generously allows me access to his 32cm reflector.

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Reference :

Liller, W., 1986, IAUC 4180