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**PLATE ARCHIVE SEARCH FOR
THE PROGENITOR OF NOVA Cyg 2006**

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Name of the object:	
Nova Cyg 2006 = V2362 Cyg	
Equatorial coordinates:	Equinox:
R.A. = 21 ^h 11 ^m 32 ^s .35 DEC. = +44°48′03″.7	2000
Observatory and telescope:	
67/92 cm and 40/50 cm Asiago Schmidt telescopes	
Detector:	Photographic plates
Filter(s):	<i>UBVR_CI_C</i>
Date(s) of the observation(s):	
From November 2, 1962 to August 27, 1997	

Table 1: Asiago archival plates imaging the field of the progenitor of Nova Cyg 2006. The progenitor is invisible on all plates, and its magnitude (fourth column) is given in terms of the faintest star visible close to the position of the progenitor (for identification of R3, R4, R5 reference stars see text)

Date	UT	Band	Plate no.	Telescope	Date	UT	Band	Plate no.	Telescope
02 11 1962	20 52	<i>B</i> > R3	3274	40/50	18 10 1973	18 44	<i>U</i> > R4	6708	67/92
10 07 1967	00 50	<i>R_C</i> > R5	741	67/92	18 10 1973	19 09	<i>V</i> > R5	6709	67/92
13 07 1967	23 27	<i>R_C</i> > R5	754	67/92	18 09 1982	21 18	<i>V</i> > R5	11682	67/92
17 07 1967	00 51	<i>B</i> > R4	768	67/92	15 10 1982	21 17	<i>V</i> > R3	14982	40/50
25 03 1971	03 05	<i>B</i> > R4	4262	67/92	16 10 1982	21 17	<i>V</i> > R3	14994	40/50
25 03 1971	03 21	<i>V</i> > R5	4263	67/92	04 06 1984	23 54	<i>B</i> > R5	12519	67/92
25 03 1971	03 42	<i>R_C</i> > R5	4264	67/92	13 08 1985	00 00	<i>B</i> > R5	16379	40/50
30 03 1971	03 38	<i>V</i> > R4	4281	67/92	09 09 1985	22 08	<i>B</i> > R5	16461	40/50
18 09 1971	21 43	<i>V</i> > R3	9022	40/50	22 11 1995	20 22	<i>B</i> > R5	16003	67/92
18 10 1971	22 50	<i>B</i> > R3	9122	40/50	27 08 1997	23 54	<i>B</i> > R5	16467	67/92
17 12 1971	19 10	<i>V</i> > R3	9312	40/50	23 07 1985	23 50	<i>B</i> > R5	16362	40/50
28 09 1973	22 33	<i>U</i> > R3	6654	67/92	25 06 1984	02 05	<i>B</i> > R5	12510	67/92
28 09 1973	23 12	<i>I_C</i> > R4	6665	67/92					

Remarks:

Nova Cyg 2006 was discovered at unfiltered magnitude 10.5 by H. Nishimura (Nakano, 2006) on panchromatic photographic images obtained on 2.807 April UT. Its precise position was determined by Yamaoka (2006) as R.A. = $21^{\text{h}}11^{\text{m}}32^{\text{s}}.346 (\pm 0^{\text{s}}.010)$, Decl. = $+44^{\circ}48'03''.66 (\pm 0''.14)$ (equinox 2000.0). At this position the IPHAS $r'i'H\alpha$ survey of the galactic plane recorded previous to the outburst — on August 3, 2004 — an $H\alpha$ emitting source at magnitudes $r' = 20.30(\pm 0.05)$ and $i' = 19.76(\pm 0.07)$, which has been identified as the progenitor of the Nova by Steeghs et al. (2006). CCD photometry secured by the ANS (Asiago Novae and Symbiotic stars) Collaboration measured a peak brightness for the nova $R_C = 7.5$ and $I_C = 7.2$ that sets the outburst amplitude to $\Delta R_C \sim \Delta I_C \sim 12.7$ mag.

Nova Cyg 2006 has so far displayed a weird lightcurve. After an initial normal exponential slope, the decline has been slowing until a minimum brightness was reached around July 21 when the nova was shining at $B = 12.30$, $B - V = +0.16$, $V - I_C = +1.28$, $R_C - I_C = +0.02$ (Munari et al., 2006a). After that the nova has been *increasing* its brightness, reaching $B = 11.18$, $B - V = +0.36$, $V - I_C = +1.10$, $R_C - I_C = +0.42$ by November 12.8 UT (Munari et al., 2006b). Similarity to the lightcurve of Nova Aql 1999a (= V1493 Aql) has been noted by Goranskij et al. (2006).

To the aim of better constraining the nature of this peculiar nova, we have searched the plate archive of the Asiago 67/92 and 40/50 cm Schmidt telescopes looking for patrol plates covering the position of the Nova. We found 25 plates variously exposed in the $UBVR_CI_C$ bands between 2 November, 1962 and 8 August, 1997. A listing of the plates and date of exposure is given in Table 1. In none of the plates the progenitor is bright enough to be detected. With a typical limiting magnitude fainter than $B = 18.5$, these negative detections and those on the first and second Palomar surveys suggest that the progenitor has been living long and quietly in quiescence for several decades before the 2006 eruption.

The stars reported in Table 1 to identify the plate limiting magnitude are: R3 = USNO-B1.0 1347-0415159 ($B = 18.0$, $V = 16.4$, $R_C = 16.2$, $I_C = 15.9$), R4 = USNO-B1.0 1347-0415150 ($B = 18.1$, $V = 16.1$, $R_C = 15.5$, $I_C = 15.0$) and R5 = USNO-B1.0 1347-0415197 ($B = 18.6$, $R_C = 16.9$, $I_C = 16.3$). The magnitudes are taken from the USNO-B1.0 (Monet et al., 2003) and NOMAD (Zacharias et al., 2004) catalogues.

References:

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