COMMISSION 27 OF THE I.A.U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 3517

Konkoly Observatory
Budapest
12 September 1990
HU ISSN 0374 - 0676

ON THE AMPLITUDE OF THE RECURRENT NOVA V 3890 SAGITTARII

The recent discovery of a new outburst (Jones 1990) of this object, which was originally called "Nova Sgr 1962" (for the description of the first maximum see Dinerstein 1973), caused me to check the available plates of the Sonneberg Sky Patrol at the location of the star. On 7 of 679 suitable exposures taken at Sonneberg and in Namibia mainly by P. Ahnert, C. Hoffmeister, and H. Huth in the years 1926 to 1983 the variable is visible during the 1962 eruption and shows the following pg. magnitudes:

243 7818.52	$10^m.5$
.54	10.6
7820.52	10.9:
7821.49	10.8
7824.45	11.1:
.47	11.0
.49	11.2

The first two plates of this list were taken at the date of the Nantucket discovery plate (1962 June 2). With certainty the maximal brightness determined by us is much fainter than the value of $8^m.4$ from the Nantucket exposure: The nova is only slightly brighter (by 0.4 mag at the most) than the nearby CoD $-24^\circ 14410$ (star A of Dinerstein l.c.). The magnitude of A has been determined concurrently as $10^m.9$ by linking it to the Henry Draper Catalogue pg. brightness data of 5 neighbouring stars and independently to Selected Area 134 (the systematic correction of Seares et al. (1924) and the difference in atmospheric extinction taken into account). Also the other magnitudes, on the subsequent part of the descending branch, are systematically 1.5 to 2 mag fainter than the corresponding trend of the light-curve of Dinerstein. - At the remaining plates the star is invisible, fainter than $11^m.4$. We did not reach our goal to find some further eruption, and there is at present no possibility of correcting statistically the observed cycle length of 28 years.

The 1990 eruption of V 3890 Sgr should have reached visually $8^{m}.0$ at the most (Liller 1990; Jones 1990). The light-curve of this outburst very closely resembles that of 1962, if we assume photovisual magnitudes for the upper part of Dinerstein's curve. This assumption would be in accordance with our own magnitude determination on non-sensitized photographic plates if we pay regard to the positive colour index normally present in this phase of an eruption. An analogous example is V 745 Sco - pg. light-curve of 1937 see Duerbeck (1984), pv. maximum of 1989 see Liller (1989) et al.

From all these facts we conclude that the outburst amplitude might have been not much larger than 7 mag pg., and not > 9 mag as assumed possible by Duerbeck (1987) e.g. This newly determined outburst range is well fitting the amplitude-cycle length relationship: For the three recurrent novae RS Oph, T Pyx, and V 1017 Sgr with an amplitude of about 7 mag an average cycle length of 26 years was observed, and the values for the second group V 394 CrA, T CrB, U Sco, and V 745 Sco are approximately 10 mag and 50 years (see e.g. Hoffmeister et al. 1990).

W. WENZEL
Sternwarte Sonneberg
Zentralinstitut für Astrophysik der
Akademie der Wissenschaften
der DDR

References:

Dinerstein, H., 1973, Inf. Bull. Variable Stars 845
Duerbeck, H.W., 1984, Inf. Bull. Variable Stars 2490
Duerbeck, H.W., 1987, Space Sci. Rev. 45, no. 1-2,p.123
Hoffmeister, C., Richter, G., Wenzel, W., 1990, Veränderliche Sterne 3. Aufl., Verlag Barth, Leipzig,p.88
Jones, A.F., 1990, IAU Circ. 5002
Liller, W., 1989, IAU Circ. 4820; see also subsequent nrs. of the Circ.
Liller, W., 1990, IAU Circ. 5010
Seares, F.H., et al., 1924, Contr. Mt. Wilson Obs. 13,p.145