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PHOTOMETRIC HISTORY OF 24.1939 Aur = CSV 458

Independently Gyulbudagyan and Magakyan (Astron.Zhurn.Pis'ma 3, p.113) and Cohen (Monthly Not. RAS 184,p.695) detected the faint arc of nebulosity situated immediately south of the variable star 24.1939 during systematic surveys of the POSS photographs for unknown cometary nebula. The star's variability had been discovered by Morgenroth (Astr.Nachr. 268,p.273) long ago on Sonneberg plates. By comparing the two adjacent POSS prints 846 and 1309 which overlap at the position of the object, Cohen confirmed the variability.

I checked the star's region on roughly 150 blue sensitive plates of the Sonneberg collection, taken with the 14 cm camera (f:5). The object is mostly invisible, that means fainter than $15^m.3$ to $15^m.8$. At four occasions however it can be observed well above the plate limit; these maxima are :

1931 Nov.	15	$13^m.5$ (confirmed by 2 plates of Nov.5 and 13)
1934 Nov.	3	13.1
1945 March	15	14.4
1967 Dec.	2	14.7

Of course the nebulous arc is invisible throughout.

If there were not the spectroscopic findings of Cohen (especially his determination of the luminosity class) one would indeed think the object to be a long period variable (as Morgenroth did), because those four maxima and the one which is indicated by the POSS print O 846 of 1953 Oct. 7/8 can easily be represented by a period of 346^d.

Another point of confusion is obvious: If the star is of spectral type M2 and suffers an interstellar extinction of at least A_V= 2.2 mag, then from the red magnitude of $15^m.4$ (POSS E 846) (all these data according to Cohen l.c.) would follow a blue magnitude of about $18^m.5$ (supposed R = 3) whereas at POSS O 846 the star

appears not fainter than 16^m. Similar conclusions are valid for the pair POSS 1309 with $16^m.3$ as starting red magnitude.The strong Hα emission, if present at that time, even strengthens this contradiction.

The most important statement of the present paper probably concerns the existence of several maxima in the course of the time interval checked, instead of one single fading possibly assumed previously. Some further particulars of our photographic observations will appear in Mitt. Veränd. Sterne Sonneberg 8,No.5.

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