



# The Variable Star

## OBSERVER

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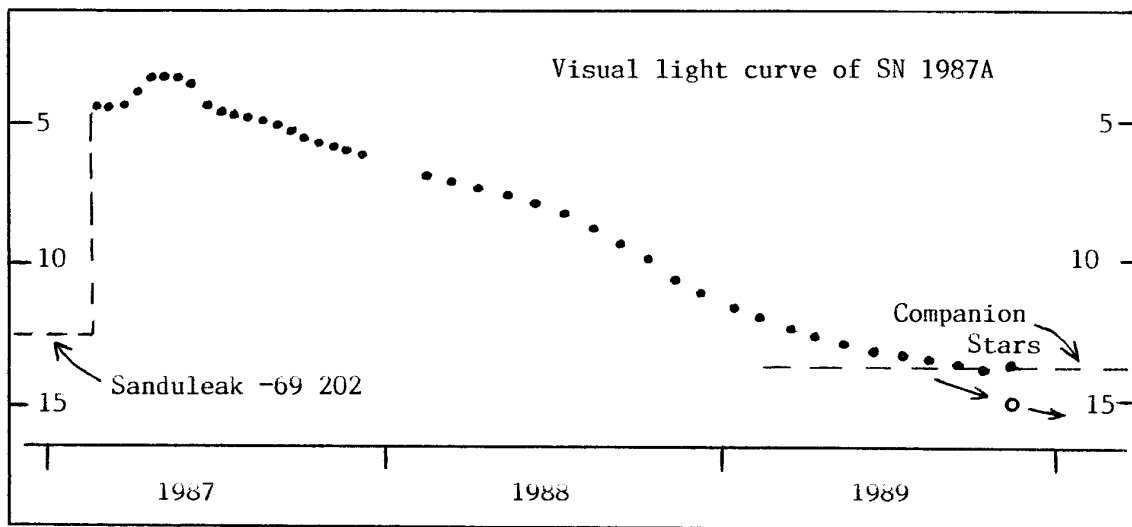
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### Seen SN 1987A lately?

By Richard Fleet

Probably not. Professional observations continue but for most of us the show is long over. It's more than four years now since one of the great astronomical events of this century, the fuss has died down, the textbooks have been revised, but what actually happened to the supernova?

Peaking at around 3rd magnitude in May 1987 it then began the long fade to oblivion - providing visual observers with a unique opportunity to follow a supernova down some ten magnitudes. Some two years after the blast the remnant matched the brightness of the precursor star. Soon after this visual estimates were hampered by the glare (!) of the surviving 14th magnitude companion stars which gradually overwhelmed the fading remnant. By late 1989, SN 1987A was lost to amateurs. Look at the field now and it's virtually the same as the 'before' photographs - there is no sign of the dramatic events of the last few years.



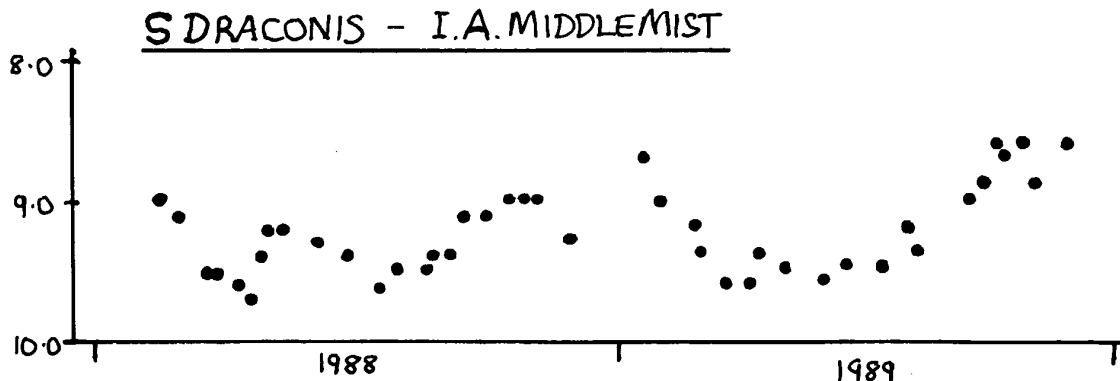
The light curve shows fortnightly means of my own estimates for 1987 and thereafter monthly means from the circulars of the VSS RASNZ. The open circle shows its actual brightness at the end of 1989.

Observer Profile: Ian Middlemist

Ian Middlemist was born in Northumberland in 1944 and grew up in a farming family. He says he cannot remember ever not being interested in astronomy. At school he read every book on the subject that he could lay his hands on, often reading the same book many times over. One such book was 'The Story of Variable Stars' by Campbell and Jacchia. He started to find his way round the sky with a 2-inch brass refractor but mostly he just looked at star clusters and nebulae. In 1962, after taking A-levels, he moved to take up a job in central Manchester and gave up observing for several years because of the lack of a suitable site.

He married in 1972 and settled down in Marple, a small town 12 miles SE of Manchester. Here he found reasonably dark skies and this rekindled his interest in observational astronomy and in variable stars in particular. He joined the Binocular Sky Society, a small but active group of variable star observers which existed between 1968 and 1974 when it was absorbed into the BAA VSS. In 1973 he started up a variable star section in the Manchester Astronomical Society which flourished for a few years and, in 1976, with Colin Henshaw he formed the North Western Association of Variable Star Observers to encourage the observation of variable stars in the NW of England. They aimed to do this by holding meetings in the Manchester and Merseyside areas and by publishing a quarterly magazine called 'Light-Curve' carrying news, views and preliminary observational results. This too flourished for several years before it too was absorbed into the VSS in 1981. Since then Ian has concentrated most of his efforts on making observations rather than running organisations.

Over the years, his main observational interest has been in red semiregular variables of between the 8th and 10th magnitudes. He started to follow these when he graduated from binoculars to a 60mm refractor in the mid '70s. Now he uses a 6-inch Dobsonian to observe them. He has published some of his results in 'Light-Curve' and, more recently, in the VSS Circulars. Among his favorite stars are ST Camelopardalis (6-8 mag, SRb, 300d?) from the VSS binocular list, SV Cygni (8-10 mag, Lb) from the AAVSO list, and S Draconis (8.5-10 mag, SRb, 136d?) from his own 'private' list. The accompanying light-curve for S Dra is based on his observations from the years 1988 and 1989. He suspects that the GCVS period of 136d is wrong and that the true period is close to one year.



As well as semiregular variables, Ian also observes some Mira stars for the AAVSO and some eclipsing binaries for the VSS. He has contributed observations to the BAA Solar and Aurora sections but complains of never being able to catch comets and novae.

He blames this on Murphy's Law but might not the notorious Manchester weather have something to do with this? When not standing outside in the freezing cold night, or sitting indoors filling out observation report forms, Ian likes to read science fiction. His other hobby is bird-watching, which provides targets for his binoculars during the hours of daylight. He works as a chartered patent agent, dividing his time between offices in Stockport and Sheffield; and, before you ask, yes he really has patented a mouse-trap!

On a Nova in Boötis in the Year 1877

By Fr.Schwab

[The following article first appeared in *Astronomische Nachrichten* **156**, 349-352, 1901. This translation from the German was arranged by Ian Howarth in 1980. Comments by the present editor are placed in square brackets.]

During a series of observations of 34 Boötis [= W Boo] started in January 1877, d Boötis came to be suspected of being slightly variable. As a suitable comparison star, I inserted an equally bright neighbour, [which I] called d', into sheet 7 of [my] copy of Littrow's sky atlas. As I had no access to Heis's [more complete] atlas at that time, it did not occur to me that the absence of d' was not [just] a mistake in Littrow's less than complete atlas.

If we assume the following magnitudes (keeping close to the Potsdam Durchmusterung values) for the comparison stars: Sigma Boo = 4.85, Fl 70 Vir = 5.10, d Boo = 5.15, then we can deduce the following magnitudes for d' (times are local time at Marburg-on-Lahn):

|     | <u>1877</u> | <u>h</u> | <u>Weight</u> | <u>Mag</u> |     | <u>1877</u> | <u>h</u> | <u>Weight</u> | <u>Mag</u> |
|-----|-------------|----------|---------------|------------|-----|-------------|----------|---------------|------------|
| May | 30          | 11.1     | 1             | 5.24       | Jun | 13          | 11.4     | $\frac{3}{4}$ | 5.10       |
| Jun | 1           | 10.9     | $\frac{3}{4}$ | 5.40       |     | 15          | 11.2     | 1             | 4.99       |
|     | 2           | 11.5     | 1             | 5.31       |     | 16          | 11.2     | 1             | 4.98       |
|     | 9           | 12.0     | 1?            | 5.11       |     | 17          | 11.1     | 1             | 5.10       |
|     | 10          | 11.3     | 1             | 5.02       | Jul | 5           | 11.0     | $\frac{1}{2}$ | 5.31       |
|     | 11          | 11.3     | $\frac{3}{4}$ | 5.33       |     | 7           | 11.1     | $\frac{3}{4}$ | 5.05       |
|     | 12          | 11.5     | 1?            | 5.12       |     | 14          | 11.2     | 1?            | 5.01       |

Up to this time, 34 Boötis was observed with the naked eye but, because moonlight was causing too many gaps in observations, a small Galilean telescope was used from now on. This meant that d' was too far from 34 for easy comparison and so it was no longer used as a comparison star. However, it is most probable that d' was still visible to the naked eye in the later, more scattered observations, as its disappearance should have been noticed. The observations of 34 Boötis stopped on 1877 Oct 10.

I first noticed that d' had disappeared on 1878 Jan 9. Later the area was searched with the 1-inch telescope and the star would have been noticed had it been brighter than magnitude 7 or 8. The area was again searched in 1879 Feb, Mar, 1882 Jun, and 1883 Jun with the 4-inch Marburg telescope and referring to the Bonner Durchmusterung, but without success. However, these searches were not carried out very intensively. More recently I have acquired two plates of the area, courtesy of Prof Küstner, which were taken by Prof Mönnichmeyer at the Bonn Observatory on Jul 8 and Aug 8 of this year [1901]. These should be very useful in further investigations.

As far back as early 1876 or late 1875 I had been 'improving' sheet 14 of Reidig's small edition of Bode's *Uranometria* by inserting into it the fainter stars in Boötis, Libra and Serpens. Around the site of the nova, all of the stars are present but the nova is missing. It could not have been brighter than magnitude 6 or 7 at that time.

Within the uncertainty in the position of star d' lies the star BD+21°2606 (mag 9.4 according to the BD). In 1879 Feb and Mar I estimated this star to be mag 9.8 and BD+21°2608 to be 9.9 using the Marburg telescope. However, on the Bonn Observatory plates BD+21°2606 appears noticeably fainter than BD+21°2608. [This is probably just a result of BD+21°2606 being redder. Its spectrum is M1.]

I would also like to mention two fainter stars denoted as f2 and f3 in my notebook. The both seem to be variable. They are both at the same declination as BD+21°2608 but f2 (mag 10 to 11) follows it by 40s and f3 (mag 13.5) follows it by 43s. On 1882 Jun 6, using the Marburg telescope, I estimated f3 to be mag 9.9 while in 1883 Apr and May it appeared to be mag 12 and now [1901] it is invisible with that instrument.

I would be pleased to send a carbon copy of my map, based on the Bonn photographs, and a list of magnitudes to interested persons on request.

Ilmenau, August 1901

Fr. Schwab

[There then follow some comments by the AN editor on observations of BD+21°2606 recorded by the BD observers.]

Schwab's d' Boötis is now called AB Boötis, BD+21°2606 has become NSV 6556, and f3 is now NSV 6563. The following details are from the 1985 GCVS and the NSV:

AB Boo: 14h 04m 43s +20° 59' (1950), 4.5mv - ?, Nova?  
NSV 6556: 14h 04m 43s +20° 59:0 (1950), 12.5mp, Amp 0.3m, Spec M1  
NSV 6563: 14h 05m 59s +20° 49:3 (1950), 10.6mv - [14mv

Later in 1901, Schwab discovered the eclipsing binary U Sge.

### 'Glimpses'

On a card post-marked Cyprus, but with a picture of Big Ben on the reverse, John Isles writes: 'Congratulations on your excellent first issue of the VSO - please keep these coming! On page 2, line 16 read "+0.02" for "+0.002". I think the SSP-5 model with PMT (which I have) is to be preferred, for accuracy and fainter limiting mag. The note on Kappa Oph was very interesting but the JAS does very well without using it as a comparison star for Alpha Her.'

Dr Richard Miles, known for his photoelectric photometry of asteroids and variable stars, has been unable to observe for the past two years because he has had to move to France with his job. However, this job comes to an end early next year and he plans to set up his observatory again. Not only that, but he also hopes to add a third telescope to his existing two-telescope setup to allow him to make more precise observations at fainter magnitudes (he can already achieve +0.02 mag at mag 12!).

Dave McAdam, the VSS Computing Secretary, mentions two recent requests for VSS observations from professionals: the past five years observations of R Sct from Dr M Shenton at Keele University and all the observations of RS Oph to 1989 from A Evans, also at Keele.