British Astronomical Association

Variable Star Section Circular

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TELEPHONE ALERT NUMBERS

NOVA AND SUPERNOVA DISCOVERIES: First phone Nova/Supernova Secretary. If only answering machine response leave a message and then try the following: Denis Buczynski 01524-68530, Glyn Marsh 01772-690502, or Martin Mobberley 01245-475297 (wkdays) 01284-828431 (wkends)

VARIABLE STAR ALERTS: Phone Gary Poyner (see above for number)

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The following charges are made for the Circulars. These cover one year (4 issues). Make cheques out to the BAA. Send to the Circulars Editor.

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VSS Chart Catalogue:

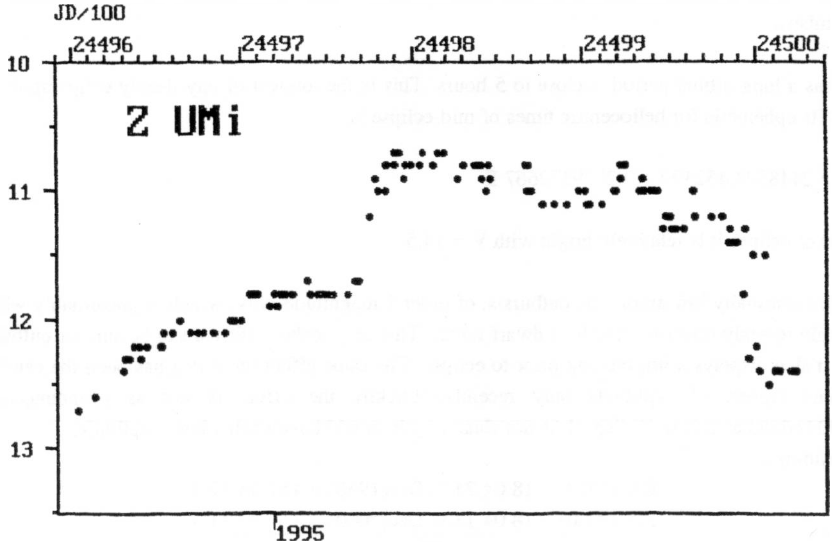
A new chart catalogue is now available from the Director or Secretary priced 60p + SAE (A5). The catalogue includes the telescopic, binocular, eclipsing and 'New Variable' star programmes, and incorporates the recent additions to the telescopic programme, recurrent objects and alert stars.

Z UMi:

Z UMi has been monitored constantly by the Director since the announcement that it was being re-classified as an RCB star in September 1994 (VSSC 82). Recent estimates during the past six weeks indicate an apparent fade is in progress. The light curve shown here also includes observations reported in late October by Bill Worraker & Margareta Westlund. A chart for this new addition to the telescopic programme appeared in VSSC 85 (Courtesy AAVSO). A revised Photoelectric (V) sequence has just been released by the AAVSO (Alert Notice 216), which involves slight amendment to the original sequence. Revised values for comparison stars are...

	Old	New		Old	New
a	10.9	11.2	d	12.9	13.0
b	11.1	11.4	e	14.3	14.3
c	12.5	12.5	f	14.4	14.3

Observers are asked to add this star to their observing programme (using the new sequence) in order that it's behaviour can be monitored as closely as possible. Observations should be reported to the Secretary in the usual way.



R CrB:

By now most observers will be aware that R CrB is undergoing a major fade. Recent estimates show that the star is presently at magnitude 13.0 (Nov 9.71, L. Kiss, Szeged, Hungary). A request has been received by 'The Astronomer' HQ from professionals at La Palma, concerning observations of R CrB during this present fade. Unfortunately astronomers at La Palma can only obtain useful observations when R CrB is below magnitude 14.0. Would observers who monitor this star with moderate sized telescopes please report your observations to Guy Hurst if R CrB drops below magnitude 14.0. This is of course in addition to including R CrB in your reports to Melvyn Taylor. The field is now visible in both evening and morning sky.

HS1804+6753:

HS1804+6753 is a new eclipsing short period dwarf nova discovered by the Einstein satellite. Dwarf Novae which display eclipses of the white dwarf are rare, with only the following known to be visible from the northern hemisphere.... IP Peg. HT Cas. DV UMa & V2051 Oph

M. Iida (VSOLJ) has found the following identification (from VSNET 222)

HS1804+6753 = GSC (134) 180414.10 +675412.1 (J2000.0)
= MS1804.3+6753

The following information was posted on VSNET by Tom Marsh, Southampton University in September....

1) It has a long orbital period – close to 5 hours. This is the longest of any deeply eclipsing dwarf nova. Its ephemeris for heliocentric times of mid-eclipse is:

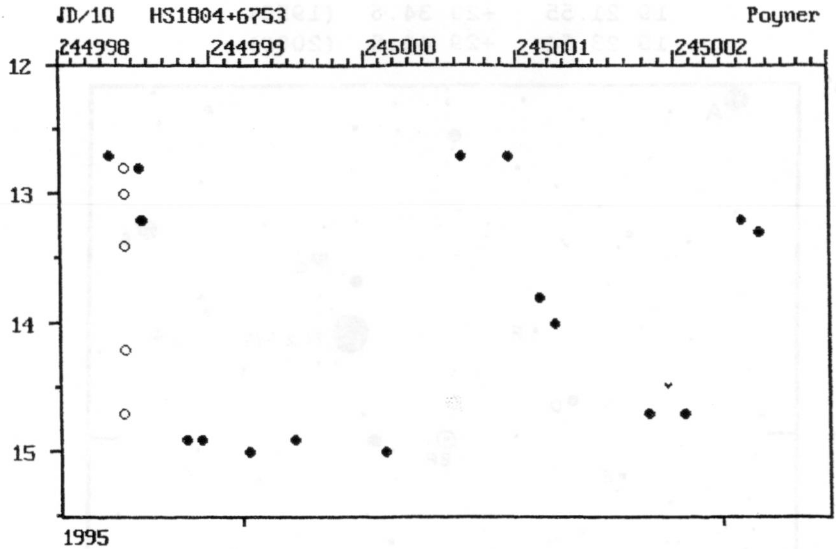
HJD = 2448398.452499 + 0.2099372667 E

2) Out of eclipse it is relatively bright with V = 14.5

3) It has unusually low amplitude outbursts, of order 1 magnitude only. which is presumably why it was only recently discovered to be a dwarf nova. This may make it difficult to be sure of outbursts since it also displays a brightening prior to eclipse. The same effect in IP Peg has been the cause of spurious reports of outbursts only recently. Luckily the effect is not as pronounced in HS1804+6753 as it is in IP Peg. It is not clear why it should have such a low amplitude.
Its position is:

RA (1950) = 18 04 24.7, Dec(1950) = +67 53 52.4
RA (2000) = 18 04 13.9, Dec(2000) = +67 54 11.3

Observations made by the Director since this announcement have revealed three outbursts (the third as I write these words). The outburst amplitude appears to be 2 magnitudes, not one as mentioned above. Minimum brightness is approximately 14.8, rising to 12.7 in outburst. One eclipse egress has been observed - September 23rd - when the star was seen to rise from 14.7 to 12.8 in 36 minutes. The interval between the outbursts observed so far are 23d & 18d respectively, the latter being a fainter maximum by ~0.5mag. The light curve shown here is taken from observations made by the Director. The open circles show the eclipse egress.



The frequency of outbursts and apparent brightness at maximum makes this a very interesting star to observe visually. HS1804 has the added attraction of being circumpolar from the UK. Observers with moderate sized telescopes and/or CCD's should find the eclipses particularly interesting. Finder charts (courtesy VSOLJ) are available from the Director.

BF Cygni:

A new chart and sequence has been produced for the ZAND star BF Cyg, with V band photometry obtained by Brian Skiff, Lowell observatory following a request from the Director. Observers of this star will know that a fainter sequence is long overdue, as BF Cyg remains faint at approximately 12.5mag. The sequence to BAA chart 088.01 reached 11.45 mag, which meant that observers were recording their estimates with absurdly large steps in the order of one magnitude. Hopefully this new sequence will prove adequate for the full range of BF Cyg.

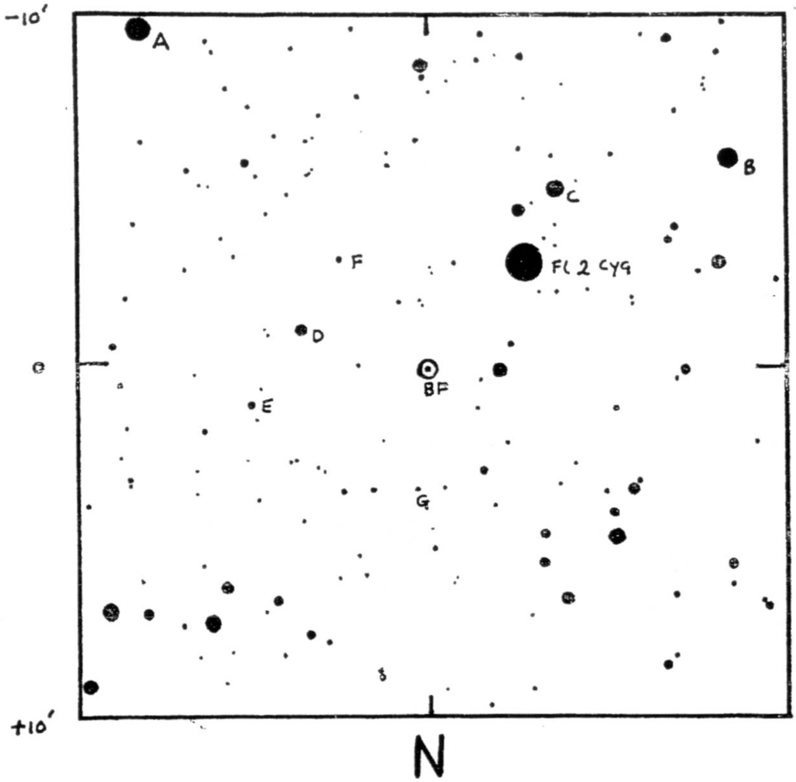
.920+29

20' Field
Inverted

BF Cygni

Type: ZAND   Range 9.3 - 13.4

19 21.55   +29 34.6   (1950)
19 23.54   +29 40.5   (2000)



Sequence: V magnitudes Brian Skiff, October 1995
Chart: From GSC.   Drawn G. Poyner Oct 95

A = 9.76	C = 10.97	E = 12.02
B = 10.51	D = 11.29	F = 12.90
		G = 13.43

088.02

AW Gem:

AW Gem (which has recently been added to the VSS telescopic programme) was observed in outburst on October 10.466 UT by AAVSO observer Bill Dillon. The outburst was soon confirmed to be a superoutburst characteristic of UGSU stars. CCD photometry undertaken by Taichi Kato and the Ouda team at Kyoto university, Japan with a 60cm reflector on October 11-12, detected superhumps with an amplitude of 0.3 mag. A superhump period of 0.0797 day was obtained. Visual observations by the Director show that the outburst lasted for about 12 days.

SU Tau:

This RCB star is currently undergoing it's second major fade in 1995. A partial recovery to magnitude 11.8 was observed in August, but by September SU Tau had once again faded to below mag 13.0. Recent observations made by the Director in October show SU Tau very faint at magnitude 15.7.

Recent Papers on Variable Stars

Tristram Brelstaff

The Nonvariability of the Progenitor of Supernova 1993J in M81 (Cohen et al., Astron. J., 110, 308-311, 1995) - Archival CCD images covering 150d show it to be constant to within 0.2V.

Cataclysmic and Close Binaries in Star Clusters III: Recovery of the Quiescent Nova 1860 AD (T Scorpii) in the Core of the Globular Cluster M80 (Shara & Drissen, Astrophys. J., 448, 203-206, 1995) - T Sco is one of only 2 novae ever seen in globular clusters. The Hubble Space Telescope has been used to identify it at minimum. It is noticably less luminous than other novae of the same age which is consistent with the hibernation of CVs between nova eruptions. Only one other faint blue star was found in M80 (out of 8000 checked). The tidal capture theory of CV formation suggests there should have been several dozen. This could mean they are either quickly ejected from the cluster, or else spend most of the time 'hidden' in a state of low mass-transfer.

Flickering in V841 Ophiuchi (Warner et al., Astrophys. Space Sci., 226, 27-30, 1995) - Observations of this old nova on 7 nights in 1985 show random flickering on time scales of minutes to hours.

QU Vulpeculae: An Eclipsing Neon Nova in the Period Gap (Shafter et al., Astrophys. J. Lett., 448, L33-L36, 1995) - Photometry shows eclipses 0.5V deep at 2.68hr intervals. Spectra are still dominated by radiation from the shell ejected 10 years ago.

A Deep Optical Imaging Study of the Nebular Remnants of Classical Novae (Slavin et al., Mon. Not. Royal Astron. Soc., 276, 353-371, 1995) - Study shells round DQ Her, FH Ser, GK Per, V1500 Cyg, T Aur, V533 Her, NQ Vul, V476 Cyg, DK Lac, LV Vul, RW UMi, and V450 Cyg. Slow novae tend to produce ellipsoidal shells with rings; fast ones produce spherical ones which are more patchy.

An Improved Orbital Period for the Recurrent Nova U Scorpii (Schaeffer & Ringwald, Astrophys. J. Lett, L45-L48, 1995) - Give times of 9 minima of this eclipsing recurrent nova and derive a period of 1.2305631 days. By redetermning the period after the next eruption it should be possible to estimate the mass lost during the eruption.

A Study of the Long-term Behaviour of the SU Ursae Majoris Dwarf Novae VW Hydri and Z Chamaeleontis (Mohanty & Schlegel, Astrophys. J., 449, 330-340, 1995) - Use 30 years of amateur observations to study the relationship between outburst durations, quiescence intervals and cycle times. Z Cha is too faint for a complete analysis but VW Hyi shows behaviour as complex as that found in SS Cyg by Cannizzo and Mattei. None of the differences found between VW Hyi and SS Cyg were attributable solely to the SU UMa nature of the former.

Discovery of a Peculiar SU Ursae Majoris-type Dwarf Nova ER Ursae Majoris (Kato & Kunjaya, Publ. Astron. Soc. Japan, 47, 163-168, 1995) - Confirm superhump period of 0.06549-0.06573d. Superoutbursts last 20d and occur at intervals of only 43d. Normal outbursts occur at intervals of 4d.

A Model for a Peculiar SU Ursae Majoris-type Dwarf Nova ER Ursae Majoris (Osaki, Publ. Astron. Soc. Japan, 47, L11-L14, 1995) - Present light-curve simulations based on the thermal-tidal instability model for SU UMa stars. The observed light-curve is best produced by a very high mass transfer rate, close to the borderline between SU UMa stars and the nova-like variables.

The Orbital Period of CY UMa (Martinez-Pais & Casares, Mon. Not. Royal Astron Soc., 275, 699-702, 1995) - Spectra in quiescence reveal an orbital period of 0.06795d in disagreement with the periods found photometrically.

Systematics of Superoutbursts in Dwarf Novae (Warner, Astrophys. Space Sci., 226, 187-211, 1995) - Surveys properties of known and suspected SU UMa stars. Changes in periods of superhumps during superoutbursts are well explained by precessing disk model. SU UMa stars with very long outburst intervals (WZ Sge, HV Vir) probably have white dwarf secondaries. Those with very short outburst intervals (V1159 Ori) have high mass transfer rates and are similar to Z Cam stars (which have longer orbital periods). The accretion disk model can be used to explain the correlation between the intervals between normal and super outbursts. It also explains why the initial decline from superoutburst is steeper in those stars with longer superoutburst intervals.

The AM Canum Venaticorum Stars (Warner, Astrophys. Space Sci., 225, 249-270, 1995) - AM CVn stars are cataclysmic variables that consist of two degenerate (white dwarf or neutron star) components in a very close binary system. Their orbital periods are between 15 mins and 1 hour and their light variations are thought to be due the superhump mechanism seen in SU UMa stars (however AM CVn stars are helium-rich wheras SU UMa stars are hydrogen-rich). Of the 6 known members of this class, AM CVn and EC 1530-1403 are analogous to the nova-like variables, with high mass transfer rates and stable accretion discs. CR Boo, V803 Cen and CP Eri are analogous to the VY Scl stars, with unstable mass transfer. GP Com appears to be analogous to an SU UMa star at quiescence and may show superoutbursts at intervals of decades.

Double Circumstellar Disc Structure in X Persei (Tarasov & Roche, Mon. Not. Royal Astron. Soc., 276, L19-L20, 1995) - High-resolution spectra reveal that the disk in this Be/X-Ray binary is double.

The ROSAT Spectrum of the Symbiotic Nova AG Pegasi: Evidence for Colliding Winds (Muset et al., Astron. Astrophys., 297, L87-L90, 1995) - ROSAT used to detect X-rays emitted by hot plasma at about 1 million K. This is probably due to the collision between the stellar winds of the red giant and white dwarf components. This is the first definite observation cf colliding winds in a symbiotic system.

AG Pegasi: Will Accretion Begin Soon? (Zamanov & Tomov, Observatory, 115, 185-187, 1995) - The luminosity of the white dwarf component has been decreasing over the past few years. About the year 2001 the stellar wind from the red giant will start to accrete directly onto the white dwarf. This will be the first time that any cataclysmic binary has been observed to undergo this transition from colliding winds to accretion.

On Two Recently Announced New Symbiotic Novae (Bragagha et al., Astron. Astrophys., 297, 759-763, 1995) - Spectrophotometry of LQ Ser (= Nova Sgr 1897) and Wakuda's Peculiar Variable in Sgr shows the former to be a Mira star and the latter to be a possible symbiotic nova.

Determination of Two Groups of High Luminosity Red Variable Stars (Vardanyan, Astrophysics, 37, 138-142, 1994) - Photometric, colorimetric and polarimetric data are used to distinguish two classes of luminous red variables: binary stars with photometric periods over 480d, and single stars with periods less than 480d. The binary stars show correlations between the V-magnitude and the B-V and U-B colours and also strong variations in polarisation. On these grounds, PZ Cas may be a binary.

Semiregular Variables of SRa and SRb Variability Classification in the GCVS (Lebzelter et al., Astron. Astrophys., 298, 159-164, 1995) - Study of the light-curves of oxygen-rich (as opposed to carbon-rich) semiregular variables. For 40% of these stars listed in the GCVS the data is considered insufficient. Find a tendency for the longer-period stars to show multiple or varying periods.

Rapid Variations in Long-period Variables (Maffei & Tosti, Astron. J., 109, 2652-2654, 1995) - Study 182 Mira and semiregular variables in the field of M16 and M17 on I and B plates covering 1961-1991. Find short-term variations (over 0.5m in 1-30d) in 18 of them. Some appear to show 'flickering' on a time-scale of days.

New Diameter Measurements for 10 Mira Variables: Implications for Effective Temperatures, Atmospheric Structure and Pulsation Modes (Haniff et al., Mon. Not. Royal Astron. Soc., 276, 640-650, 1995) - Multi-wavelength observations shows photospheres are greater than 350 solar radii. Suggests Mira stars with periods between 280d and 430d are not pulsating in the fundamental mode.

Observations of suspected variables – 3: NSV 436 Cas = Wr 162

Chris Lloyd and Dave McAdam

NSV 436 (HD 7177, SAO 22099, BD+56 223) was reported to be variable as a result of a photographic survey by Weber (1966) and appears in the NSV (Kholopov et al. 1982) as an Lb variable with a range $m_{pg} = 8.4 - 9.1$. The NSV gives the spectral type as M0, consistent with the claim of variability but the SAO catalogue gives K5, which raises some doubt, and $m_v = 7.5$.

The VSS has accumulated 1418 observations of NSV 436 (see Table 1 for the list of observers) made between 1974 and 1988. The raw observations are shown in Fig. 1a and show considerable scatter, over 1.5 mag, but no clear variation. The mean magnitude, $m_v = 7.61$, is consistent with the SAO value, and $\sigma = 0.21$ mag. Four observers have individual σ's > 0.3 mag, and these account for nearly 10% of the observations, however, these points have only a marginal effect on the overall scatter. As in previous papers the personal bias of each observer has been calculated and removed on the assumption that the magnitude of the star is constant. The de-biased data (Fig. 1b) show a small improvement in the scatter, to $\sigma = 0.16$ mag, and much of the structure in the raw data has been removed.

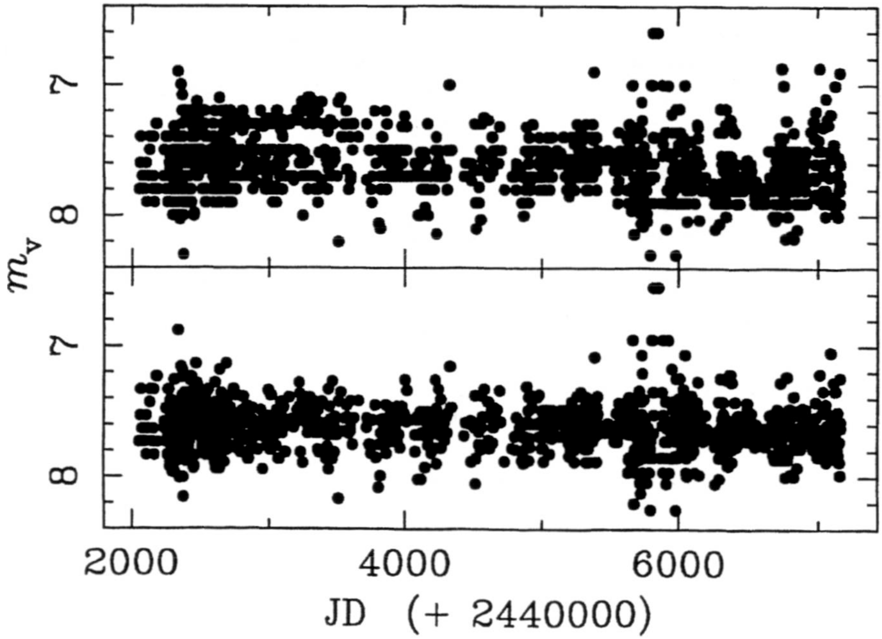


Figure 1: (a, top) The raw light curve of NSV 436 from the VSS data; (b, bottom) the data after correction for personal bias.

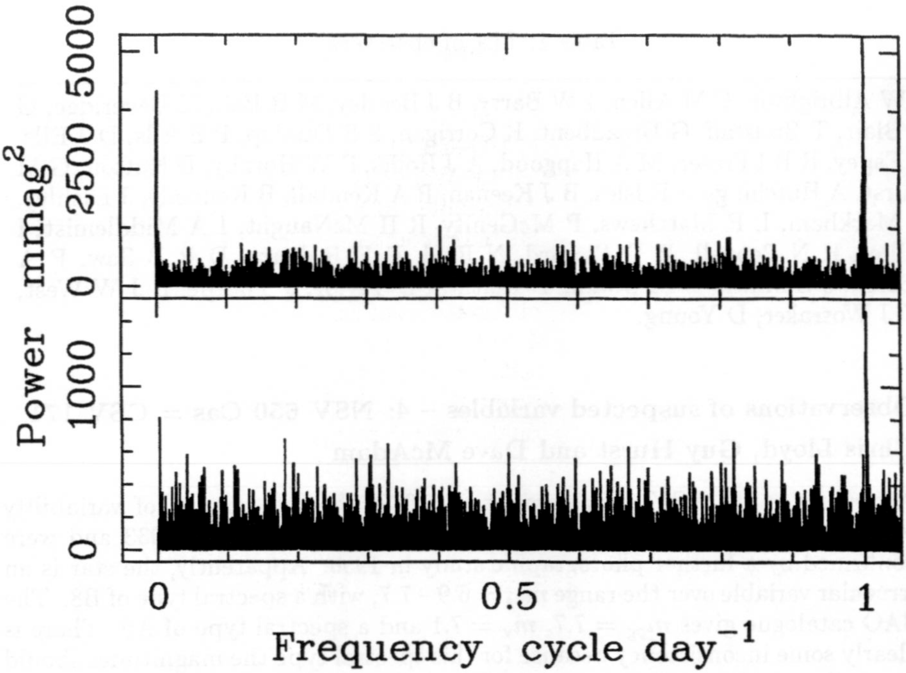


Figure 2: (a, top) The DFT power spectrum of the raw data which reflects the overall change in the shape of the observations in Fig. 1a, and (b, bottom) the power spectrum of the de-biased data. The dominant feature occurs at a period of 1 sidereal day.

The power spectrum of the raw observations (Fig. 2a) is dominated by four features near 1 cycle day^{-1} which are the 1-day aliases of the two features near zero frequency ($\sim$ 6700 and 2300 days). These two have amplitudes of $\sim$ 0.1 mag and are due to the apparent long term variation in the data. In the power spectrum of the de-biased data (Fig. 2b) all these features vanish and are replaced by single feature at a period of 1 sidereal day, with an amplitude of 0.06 mag. Its aliases at 1 sidereal day^{-1} and one year are visible in the noise. This feature is similar to those seen previously and probably reflects a small observational bias in the data. There is no indication of any significant periodic variation in the visual observations. If the star is an irregular variable then a period analysis might not reveal the variability. However, there is very little indication in the 10 and 50 day means (using the appropriate de-biasing) of any coherent activity, with a limit of < 0.2 mag over 14 years.

References

Kholopov P.N. et al. (Eds), 1982, *New Catalogue of Suspected Variables*, Moscow

Weber R., 1966, IBVS 155

Table 1: List of observers

S W Albrighton, C M Allen, J W Barry, B J Beesley, M R Bell, M Beveridge, G C Blair, T Brelstaff, G Broadbent, R Corrigan, S R Dunlop, P E Ells, D J Ells, B Espey, R B I Fraser, M A Hapgood, A J Hollis, P W Hornby, D Hufton, G M Hurst, A Hutchings, J E Isles, B J Keenan, R A Kendall, B Kennedy, J Lashley, T Markham, L R Matthews, P McGenity, R H McNaught, I A Middlemist, I Miller, R N Pennell, R D Pickard, N Reid, D H Roberts, D R B Saw, P A Scaven, J S Smith, D M Swain, T Tanti, M D Taylor, J Thorpe, E J W West, W J Worraker, D Young.

Observations of suspected variables – 4: NSV 650 Cas = CSV 171

Chris Lloyd, Guy Hurst and Dave McAdam

According to the NSV (Kholopov et al. 1982) the first reports of variability of NSV 650 (HD 11395, SAO 12030, BD+67 168) go back to 1933 and were confirmed by a further photographic study in 1950. Apparently, the star is an irregular variable over the range $m_{pg} = 6.9 - 7.7$, with a spectral type of B8. The SAO catalogue gives $m_{pg} = 7.7$, $m_v = 7.1$ and a spectral type of A0. There is clearly some inconsistency because for this spectral type the magnitudes should be similar. NSV 650 appears on the Binocular Sky Society chart for V391 Cas (DAP 720125) with the comments "7.3 – 7.7, nova-like?" Visual observations during 1976-77 reported by Bullivant (1977) suggested (with little confidence) semi-regular variations around a mean of $m_v = 7.1$, with a period of 220 days. In more recent visual observations the star has remained constant at $m_v \sim 7.2$ but the occasional brief brightening of small amplitude has been suspected.

NSV 650 has also been used as a comparison star in a photoelectric study of the Ap star HD 12288. Observations on 25 nights over $\sim$ 400 days during late 1970 – 1971 yielded a mean magnitude, V = 7.284 with an internal error, $\sigma \sim$ 0.003 mag (Wolff & Morrison 1973). The star is not variable.

The VSS has accumulated 2090 observations of NSV 650 (see Table 1 for the list of observers) made between 1971 and 1995. A quarter of these and almost all since 1988 were obtained by one observer. The raw observations are shown in Fig. 1a and show considerable change in the scatter with time, but no clear variation. The mean magnitude, $m_v = 7.21$, is in good agreement with the photoelectric value, and the standard deviation, $\sigma = 0.16$ mag. There is no indication of any significant flaring.

As in previous papers the personal bias of each observer has been calculated and removed on the assumption that the magnitude of the star is constant. Most of the dispersion is due to the relatively large number of observers, 7, whose observations have $\sigma > 0.2$ mag. No effort was made to further clean the data.

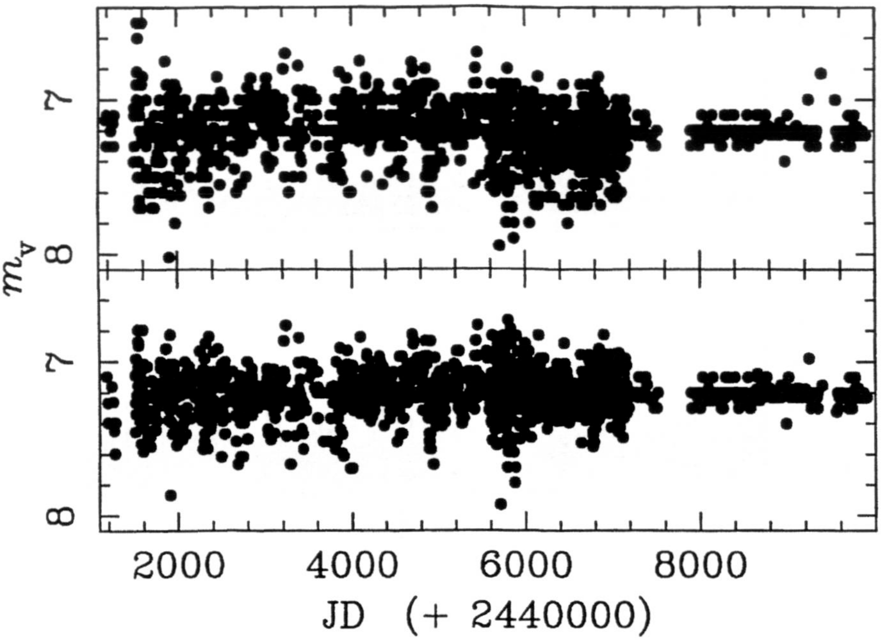


Figure 1: (a, top) The raw light curve of NSV 650 from the VSS data; (b, bottom) the data after correction for personal bias.

The power spectrum of the raw observations (Fig. 2a) is dominated by the feature near zero frequency ($\sim$ 5000 days), with an amplitude of $\sim$ 0.1 mag, which is due to an apparent slow variation in the data. The other feature at 1 cycle day^{-1} is an alias of the first and is due to the predominantly 1-day spacing of the observations. In the power spectrum of the de-biased data (Fig. 2b) the long period disappears and what is left is essentially noise. The dominant feature occurs at a period of 1 sidereal day with an amplitude of 0.03 mag, and probably reflects a small observational bias in the data. Its alias at 1 year is also visible. There is no indication of any significant periodic variation in the visual observations.

References

Bullivant J.S, 1977, Light Curve 2, 25 (no. 4)

Kholopov P.N. et al. (Eds), 1982, *New Catalogue of Suspected Variables,* Moscow

Wolff S.C. & Morrison N.D, 1973, PASP 85, 141

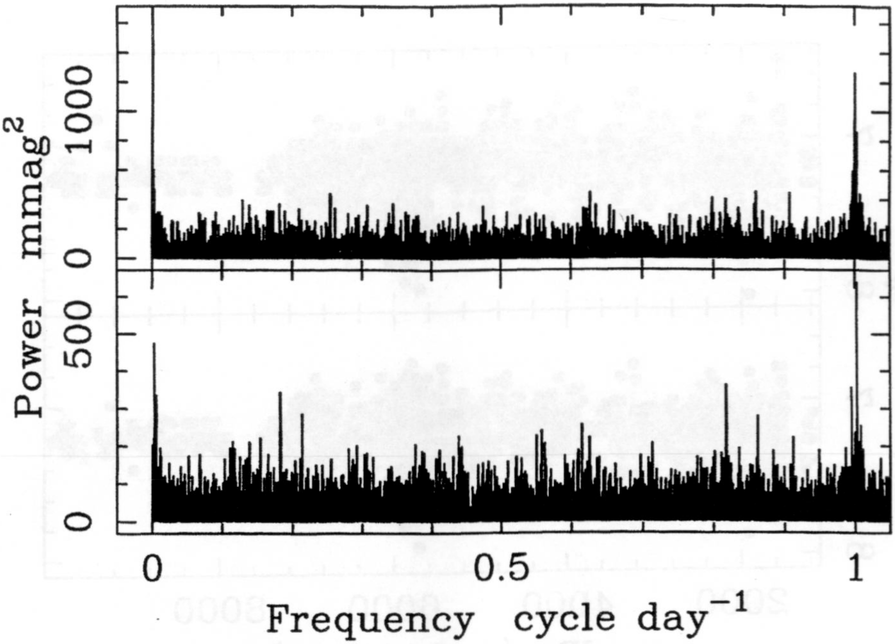


Figure 2: (a, top) The DFT power spectrum of the raw data which reflects the overall change in the shape of the observations in Fig. 1a, and (b, bottom) the power spectrum of the de-biased data. The dominant feature occurs at a period of 1 sidereal day.

Table 1: List of observers

J E Agar, S W Albrighton, C M Allen, M Beveridge, T Brelstaff, J S Bullivant, P R Clayton, M J Currie, C J Fisher, R B I Fraser, A Gardner, T Gough, K Grundy, M A Hather, C Henshaw, P W Hornby, M B Houchen, I D Howarth, D Hufton, G M Hurst, A Hutchings, J E Isles, B Jobson, R A Kendall, T Markham, L R Matthews, R H McNaught, I A Middlemist, I P Nartowicz, C Pezzarossa, D A Pickup, A K Porter, M Poxon, G Poyner, A R Pratt, P Quadt, G Ramsey, N Reid, M D Taylor, E J W West.

Comment on NSV 1280 Tau = CSV 6048

Chris Lloyd and Dave McAdam

The observant will have noticed that in the paper on this star in the previous issue of the *Circulars* the mean magnitude given is not consistent with the light curve. The correct mean magnitude from the visual observations is $m_v = 6.63$, with $\sigma = 0.16$ mag, which is ~ 0.2 mag brighter than the photoelectric value. All the other details given are correct.

Summaries of Information Bulletins on Variable Stars Nos 4210-4241
Gary Poyner

4210 Young pulsating stars in the Bohm-Vitense decrement. (Eggen, 1995)

4211 Photoelectric BV(RI) observations and new classification of BX Cru. (Berdnikov & Turner, 1995) *Photoelectric observations disprove GCVS classification of classical Cepheid, and indicate type SR.*

4212 Photoelectric BV(RI) observations of the peculiar Cepheid V473 Lyr. (Berdnikov & Turner, 1995)

4213 Photoelectric observations and new classification of V651 Her. (Berdnikov, Voziakova & Turner, 1995) *Observations confirm error in GCVS Cepheid classification, and show V651 Her to be an eclipsing variable.*

4214 Photoelectric observations and new elements of the eclipsing binary TY Pup. (Berdnikov & Turner, 1995)

4215 A peculiar new variable star near the wide binary L266-18A/B. (Oswalt & Smith, 1995)

4216 uvbyβ Photometry of stars of "Astrophysical Interest" (Handler, 1995)

4217 Slow Apsidal motion in V541 Cygni. (Wolf, 1995)

4218 The rediscovery of a dwarf nova, V725 Aquilae. (Nogami et al, 1995) *Possibility that this long forgotten DN could be either an infrequent outbursting UGSS or UGSU star caught in superoutburst. This object has been added to the recurrent objects programme.*

4219 AF Sco - A Mira star, not a Nova. (Duerbeck, 1995)

4220 Variability of HD 205117 in the open cluster M39 (NGC 7092) (Zakirov et al, 1995)

4221 Optical observations of the active star RE J2131+233. (Robb & Cardinal, 1995)

4222 Photoelectric Maxima/Minima of selected variables. (Agerer & Hubscher, 1995. *Compilation of BAV results giving photoelectric observations of 63 variables in 1994 & 1995, yielding 137 minima and maxima.*

4223 New variable in Ophiuchus. (Prosser, 1995)

4224 1995 photometry of RT Andromedae. (Heckert, 1995)

4225 1994 photometry of BH Virginis. (Heckert & Summers, 1995)

4226 Precision B,V,R,I light curves and new determination for V440 Cassiopeiae. (Samec et al, 1995) *Confirmation of W UMa classification.*

4227 DH Aquilae - A new SU UMa type dwarf nova. (Nogami & Kato, 1995) *First detection of superhumps during the September 1994 outburst.*

4228 Peculiar outburst behaviour of GO Com. (Kato et al, 1995) *Unusual outburst activity during July 1995 of GO Com, which is part of the recurrent objects programme.*

4229 Multicolour Photoelectric photometry of SN 1993J (Guinan & Marshall, 1995)

4230 New spectral classifications for 49 red variable stars. (Sanduleak et al, 1995)

4231 The deep 1995 optical minimum of CH Cygni and a new episode of dust condensation. (Munari et al, 1995)

4232 CI Aql: A new short-period eclipsing binary. (Mennickent & Honeycutt, 1995) *Observation reveals this suspected nova/dwarf novae to be an eclipsing star.*

4233 Photometric detection of the orbital period in ER UMa. (Kato et al, 1995) *An orbital period of 0.0635 +/- 0.0002d has finally been measured in this proto-type sub group of UGSU stars.*

4234 Precision U,B,V,R,I light curves of LP Cephei. (Samec et al, 1995)

4235 Complete photoelectric U,B,V light curves of the short period near contact system: HL Aurigae. (Gray & Samec, 1995)

4236 Observations of superhumps in CY UMa. (Kato, 1995) *Superhump confirmation during the 1991,92 & 1993 outbursts.*

4237 BV Photometry of the Delta Scuti star Iota Bootis. (Kiss, 1995)

4238 Positions of variables in Southern Clusters. (Morel, 1995) *GSC identifications of 37 new variables in southern clusters.*

4239 Observations of KV Andromedae during the 1994 superoutburst. (Kato, 1995). *Revised superhump period and determination of the supercycle length of ~270d.*

4240 Photoelectric photometry of UV Lyncis in 1994. (Xiaobin et al, 1995).

4241 NSV 4219 UMa: An RR Lyr Variable. (Vandenbroere, 1995)

Suspect Comparison Stars - Patrick Maloney

The recent announcement that SAO 44590, comparison star 69 for V CVn, is variable has raised some matters that need addressing. Several observers have apparently reported doubts in the past about this star, and my own observations over ten years suggest that it may be almost as variable as V CVn itself. I have also suspected a couple of other comparison stars in the past and keep a wary eye on them. It occurred to me that many other observers may suspect one or more comparisons of some variability. I am currently checking all our charts against the latest GCVS and NSV. Any stars which are found in either will be flagged, as will all M-type stars. It must be stressed at this point that there is no reason to believe that our charts are anything but reliable, and stars such as SAO 44590 which remain undiscovered are bound to be exceptionally rare.

It is proposed that all comparison stars that are suspected of variability be registered and monitored closely. If you are doubtful about a comparison star, please report it, with estimates, to me at the address below, or 'phone during sociable hours. If you call during working hours just leave a message and I'll get back to you. It will be reported in the circular that the comparison star you suspect is to be treated with caution and that estimates are required. The estimates will then be collated and analysed. In this way the comparison can quickly be cleared or logged as a suspected variable.

27, Yellow Brook Close, Aspull, Wigan, LANCS. WN2 1ZH. 01942 833714.

Eclipsing Binary Predictions

The following predictions are calculated for an observer at 53 degrees north, 1.5 degrees west but should be usable for observers throughout the British Isles. The times of mid-eclipse appear in parentheses with the start and end times of visibility on either side. The times are hours GMAT, that is UT-12h. 'D' and 'L' are used to indicate where daylight and low altitude, respectively, prevent part of the eclipse from being visible. Charts for all of the stars included in these predictions (17 in all - see VSSC 85 for a list) are available from the Eclipsing Binary Secretary at 10p each (please enclose a large SAE).

1996 Jan 1 Mon
TW Dra D05(00)05
S Equ D05(01)07
X Tri 11(14)15L
Z Per 13(18)17L
Z Dra 13(16)18
U Sge L18(16)19D

1996 Jan 2 Tue
SS Cet 08(13)13L
SW Cyg 08(14)12L
X Tri 10(13)15L
SW Cyg L14(14)19D

1996 Jan 3 Wed
RZ Cas D05(03)06
U Cep D05(05)09
Y Psc D05(08)10L
Z Vul D05(10)08L
TX UMa L05(07)12
RW Tau 09(14)17L
X Tri 10(12)14L
RW Gem 13(18)18L
TW Dra 15(20)19D

1996 Jan 4 Thu
RZ Cas 06(08)10
S Equ 06(12)07L
Z Dra 07(09)11
X Tri 09(11)14
ST Per 11(15)17L
Z Per 14(19)17L

1996 Jan 5 Fri
U Sge D05(01)07L
SS Cet 07(12)13L
X Tri 08(11)13
RZ Cas 10(13)15
U Cep 12(17)19D
Z Dra 15(18)19D
Z Vul L17(21)19D

1996 Jan 6 Sat
RW Tau D05(08)13
TX UMa D05(09)13
X Tri 08(10)13
RW Gem 10(15)18L
TW Dra 10(15)19D
RZ Cas 15(17)19D

1996 Jan 7 Sun
Y Psc D05(02)07
SW Cyg D05(04)10
ST Per D05(06)11
X Tri 07(09)12
Z Per 16(20)17L

1996 Jan 8 Mon
U Cep D05(04)09
Z Vul D05(08)07L
U Sge D05(10)07L
X Tri 06(09)11
SS Cet 07(11)13L
Z Dra 08(11)13

1996 Jan 9 Tue
RW Tau D05(03)07
RZ Cas D05(03)05
TW Dra 05(10)15
TX UMa 05(10)15
X Tri 06(08)11
RW Gem 06(12)17
Z Dra 17(19)19D

1996 Jan 10 Wed
X Tri D05(07)10
RZ Cas D05(07)10
U Cep 11(16)19D
Z Vul L17(18)19D

1996 Jan 11 Thu
Z Dra D05(04)06
X Tri D05(07)09
S Equ D05(09)07L
SS Cet 06(11)12L
RZ Cas 10(12)15
SW Cyg L14(18)19D
U Sge L17(20)19D

1996 Jan 12 Fri
TW Dra D05(06)11
X Tri D05(06)08
RW Gem D05(08)13
TX UMa 07(12)16
ST Per 09(14)16L
Z Dra 10(12)15
RZ Cas 14(17)19D

1996 Jan 13 Sat
U Cep D05(04)09
X Tri D05(05)08
Z Vul D05(05)07L
Z Dra 19(21)19D

1996 Jan 14 Sun
X Tri D05(05)07
SS Cet 05(10)12L
RW Tau 11(16)16L

1996 Jan 15 Mon
TW Dra D05(01)06
X Tri D05(04)06
U Sge D05(05)06L
RW Gem D05(05)10
ST Per D05(05)09
Z Dra D05(06)08
TX UMa 08(13)18
U Cep 11(16)19D
Z Vul L16(16)19D

1996 Jan 16 Tue
X Tri D05(03)06
RZ Cas D05(07)09
SW Cyg D05(08)11L
Z Dra 12(14)17
SW Cyg L13(08)14

1996 Jan 17 Wed
SS Cet D05(09)12L
RW Tau D05(10)15
RZ Cas 09(12)14
TW Dra 15(20)19D

1996 Jan 18 Thu
RW Gem D05(02)07
Z Vul D05(03)07L
U Cep D05(04)08
S Equ D05(06)06L
Y Psc D05(09)09L
TX UMa 10(15)19D
RZ Cas 14(16)19
U Sge L17(14)19D

1996 Jan 19 Fri
Z Dra D05(07)10
RZ Cas 19(21)19D

1996 Jan 20 Sat
Z Per D05(02)07
RW Tau D05(04)09
SS Cet D05(09)12L
ST Per 08(12)16L
U Cep 11(16)19D
TW Dra 11(16)19D
Z Dra 14(16)18
SW Cyg 15(21)19D
Z Vul L16(14)19D

1996 Jan 21 Sun
TX UMa 11(16)19D
U Sge 17(23)19D

1996 Jan 22 Mon
Y Psc D05(04)08
RZ Cas D05(06)09

1996 Jan 23 Tue
Z Vul D05(01)06L
Z Per D05(03)08
U Cep D05(03)08
ST Per D05(04)08
SS Cet D05(08)12L
TW Dra 06(11)16
Z Dra 07(09)11
RZ Cas 09(11)13
RW Gem 14(19)17L

1996 Jan 24 Wed
TX UMa 13(18)19D
RZ Cas 13(16)18
Z Dra 15(18)19D

1996 Jan 25 Thu
S Equ D06(02)06L
U Sge D06(08)06L
SW Cyg D06(11)11L
U Cep 10(15)19D
RW Tau 13(17)15L
SW Cyg L13(11)17
ST Per 15(19)16L
Z Vul L16(12)17
RZ Cas 18(20)19D

1996 Jan 26 Fri
Z Per D06(04)09
TW Dra D06(07)12
SS Cet D06(08)11L
RW Gem 11(16)17L

1996 Jan 27 Sat
Z Dra 08(11)13
TX UMa 14(19)19D
Z Vul 18(23)19D

1996 Jan 28 Sun
U Cep D06(03)08
RZ Cas D06(06)08
ST Per 07(11)15
RW Tau 07(12)15L
U Sge L16(17)19D
Z Dra 17(19)19D

1996 Jan 29 Mon
TW Dra D06(02)07
Z Per D06(06)11
SS Cet D06(07)11L

RW Gem 08(13)16L
RZ Cas 08(10)13

1996 Jan 30 Tue

SW Cyg D06(01)07
Z Dra D06(04)06
Z Vul D06(10)06L
U Cep 10(15)19D
RZ Cas 13(15)18
TX UMa 16(21)19D

1996 Jan 31 Wed

ST Per D06(02)07
RW Tau D06(06)11
Z Dra 10(13)15
TW Dra 16(21)19D
RZ Cas 17(20)19D

1996 Feb 1 Thu

SS Cet D06(06)11L
Z Per D06(07)12
RW Gem D06(10)15
Z Vul 15(21)19D

1996 Feb 2 Fri

U Cep D06(03)07
Y Psc 06(11)08L
X Tri 12(15)13L
ST Per 14(18)15L
TX UMa 18(22)19D

1996 Feb 3 Sat

RZ Cas D06(05)08
Z Dra D06(06)08
SW Cyg 08(15)10L
TW Dra 12(17)19D
X Tri 12(14)12L
SW Cyg L12(15)19D

1996 Feb 4 Sun

SS Cet D06(06)10
RW Gem D06(06)12
Z Per D06(08)13
RZ Cas 07(10)12
U Cep 10(14)18D
X Tri 11(14)12L
Z Dra 12(14)17
U Sge L16(11)17

1996 Feb 5 Mon

ST Per D06(10)14
X Tri 10(13)12L
RZ Cas 12(15)17

1996 Feb 6 Tue

Y Psc D06(05)08L
TW Dra 07(12)17
X Tri 10(12)12L
Z Vul L15(19)18D
RZ Cas 17(19)18D

1996 Feb 7 Wed

U Cep D06(02)07
RW Gem D06(03)08
V640 Ori D06(03)06
SS Cet D06(05)10
Z Dra D06(07)10
Z Per D06(10)15
X Tri 09(12)12L
U Sge L15(21)18D
S Equ L18(20)18D

1996 Feb 8 Thu

SW Cyg D06(04)10L
X Tri 08(11)12L
RW Tau 09(14)14L
Z Dra 14(16)18D

1996 Feb 9 Fri

TX UMa D06(01)06
V640 Ori D06(04)06
RZ Cas D06(05)07
TW Dra D06(07)12
X Tri 08(10)12L
U Cep 09(14)18D

1996 Feb 10 Sat

SS Cet D06(04)09
Z Per 06(11)15L
RZ Cas 07(09)12
X Tri 07(10)12
ST Per 13(17)15L

1996 Feb 11 Sun

V640 Ori D06(04)07
RW Tau D06(08)13
X Tri 06(09)11
Z Dra 07(09)12
RZ Cas 12(14)16
Z Vul L15(16)18D

1996 Feb 12 Mon

U Cep D06(02)07
TW Dra D06(03)08
TX UMa D06(03)07
X Tri D06(08)11
SW Cyg 12(18)18D
Z Dra 15(18)18D
RZ Cas 16(19)18D

1996 Feb 13 Tue

SS Cet D06(04)09
V640 Ori D06(05)07
X Tri D06(07)10
ST Per D06(08)12
Z Per 08(13)15L

1996 Feb 14 Wed

RW Tau D06(02)07
X Tri D06(07)09
U Cep 09(14)18D
U Sge L15(15)18D
TW Dra 17(22)18D
S Equ L18(17)18D

1996 Feb 15 Thu

RZ Cas D06(04)06
TX UMa D06(04)09
V640 Ori D06(05)08
X Tri D06(06)09
Z Dra 09(11)13
RW Gem 12(18)15L

1996 Feb 16 Fri

SS Cet D06(03)08
X Tri D06(05)08
RZ Cas 06(09)11
Z Per 09(14)14L
Z Vul L14(14)18D
Z Dra 17(19)18D

1996 Feb 17 Sat

U Cep D06(02)06
X Tri D06(05)07
V640 Ori D06(06)08
SW Cyg D06(08)09L
RZ Cas 11(13)16
SW Cyg L11(08)14
TW Dra 12(17)18D

1996 Feb 18 Sun

Z Dra D06(04)06
X Tri D06(04)07
TX UMa D06(06)11
RW Gem 09(14)15L
ST Per 11(15)14L
RZ Cas 16(18)18D

1996 Feb 19 Mon

SS Cet D06(03)07
V640 Ori D06(06)09
U Cep 09(14)18D
Z Dra 10(13)15
Z Per 10(15)14L
RW Tau 11(15)13L

1996 Feb 20 Tue

TW Dra 08(13)18

1996 Feb 21 Wed

Y Psc D06(07)07L
V640 Ori D06(07)09
ST Per D06(07)11
TX UMa D06(07)12
RW Gem D06(11)15L
Z Vul L14(12)17
U Sge L14(09)15
SW Cyg 16(22)18D
S Equ L17(14)18D

1996 Feb 22 Thu

SS Cet D06(02)07
Z Dra D06(06)08
RZ Cas D06(08)11
RW Tau D06(10)13L
Z Per 12(17)14L

1996 Feb 23 Fri

V640 Ori D06(07)10
TW Dra D06(08)13
RZ Cas 10(13)15
Z Dra 12(14)17
Z Vul 18(23)18D

1996 Feb 24 Sat

RW Gem D06(08)13
TX UMa D06(09)14
U Cep 08(13)18D
U Sge L14(18)18D
RZ Cas 15(18)18D

1996 Feb 25 Sun

RW Tau D06(04)09
V640 Ori D06(08)10
Z Per 13(18)14L

1996 Feb 26 Mon

TW Dra D06(04)09
Z Dra D06(08)10
SW Cyg D06(11)09L
ST Per 10(14)13L
SW Cyg L11(11)17
Z Vul L14(10)15

1996 Feb 27 Tue

RW Gem D06(05)10
V640 Ori D06(08)11
TX UMa D06(10)15
Z Dra 14(16)18D

1996 Feb 28 Wed

RZ Cas D07(08)10
Z Vul 16(21)18D

1996 Feb 29 Thu

ST Per D07(06)10
V640 Ori D07(09)11L
U Cep 08(13)18
RZ Cas 10(12)15

1996 Mar 1 Fri

RW Gem D07(01)07
Z Dra 07(09)12
TX UMa 07(12)17
RW Tau 12(17)13L
RZ Cas 15(17)18D

1996 Mar 2 Sat

SW Cyg D07(01)07
V640 Ori 07(09)11L
TW Dra 13(18)18D
U Sge L14(13)18D
Z Dra 15(18)18D
S Equ L17(22)18D

1996 Mar 4 Mon

RW Tau 07(12)13L
V640 Ori 07(10)11L
TX UMa 09(13)18D
Z Vul 13(19)18D

1996 Mar 5 Tue

RZ Cas D07(07)09
U Cep 08(13)17
TW Dra 09(14)17D
Z Dra 09(11)13
ST Per 09(13)13L
U Sge 16(22)17D

1996 Mar 6 Wed

V640 Ori 08(10)11L
RZ Cas 09(12)14
SW Cyg L10(15)17D
RW Gem 14(19)14L
Z Dra 17(20)17D

1996 Mar 7 Thu

RW Tau D07(06)11
TX UMa 10(15)17D
RZ Cas 14(16)17D

1996 Mar 8 Fri

ST Per D07(04)08
TW Dra D07(09)14
V640 Ori 08(11)11L

1996 Mar 9 Sat

Z Dra 10(13)15
RW Gem 11(16)14L

Z Vul	L13(16)17D	Z Vul	L13(14)17D	U Sge	L13(10)16	1996 Mar 25 Mon	
S Equ	L16(19)17D	1996 Mar 15 Fri		RZ Cas	13(15)17D	TW Dra	D07(05)10
1996 Mar 10 Sun		RW Gem	D07(09)13L	TX UMa	16(21)17D	U Cep	D07(11)16
U Cep	07(12)17	U Cep	07(12)17	1996 Mar 20 Wed		RZ Cas	12(15)17D
V640 Ori	09(11)11L	X Tri	07(10)10L	X Tri	D07(06)09	1996 Mar 26 Tue	
TX UMa	12(16)17D	RW Tau	09(13)12L	SW Cyg	D07(08)07L	RW Tau	11(15)11L
1996 Mar 11 Mon		SW Cyg	12(18)17D	Z Dra	D07(09)12	Z Vul	16(21)17D
TW Dra	D07(04)09	1996 Mar 16 Sat		U Cep	D07(12)16	1996 Mar 27 Wed	
SW Cyg	D07(05)08L	ST Per	D07(03)07	SW Cyg	L09(08)14	Z Per	D07(07)12L
RZ Cas	D07(06)09	Z Dra	D07(08)10	1996 Mar 21 Thu		1996 Mar 28 Thu	
SW Cyg	L10(05)11	X Tri	D07(09)10L	RW Gem	D07(03)08	Z Dra	10(13)15
X Tri	10(12)10L	TW Dra	14(19)17D	Z Per	D07(05)10	1996 Mar 29 Fri	
1996 Mar 12 Tue		TX UMa	15(19)17D	X Tri	D07(05)08	ST Per	D07(09)11L
Z Dra	D07(06)08	S Equ	L16(16)17D	ST Per	D07(10)12L	RW Tau	D07(10)11L
RW Gem	07(13)13L	1996 Mar 17 Sun		Z Dra	16(18)17D	SW Cyg	L08(12)17D
RZ Cas	09(11)14	RZ Cas	D07(06)08	1996 Mar 22 Fri		Z Vul	L12(08)13
X Tri	09(12)10L	X Tri	D07(08)10L	X Tri	D07(05)07	RW Gem	12(17)12L
V640 Ori	09(12)10L	Z Dra	14(16)17D	TW Dra	D07(10)15	U Sge	L12(14)17D
U Sge	L13(16)17D	1996 Mar 18 Mon		U Sge	14(19)17D	1996 Mar 30 Sat	
1996 Mar 13 Wed		Z Per	D07(03)08	1996 Mar 23 Sat		Z Per	D07(09)12L
ST Per	07(11)12L	RW Gem	D07(06)11	RZ Cas	D07(05)08	RZ Cas	D07(09)12
X Tri	08(11)10L	X Tri	D07(08)10L	S Equ	L15(12)17D	U Cep	D07(11)16
Z Dra	12(14)17	RW Tau	D07(08)12L	1996 Mar 24 Sun		TW Dra	15(20)16D
TX UMa	13(18)17D	RZ Cas	08(11)13	Z Per	D07(06)11	1996 Mar 31 Sun	
RZ Cas	13(16)17D	1996 Mar 19 Tue		RZ Cas	08(10)12	Z Dra	D07(06)08
1996 Mar 14 Thu		X Tri	D07(07)09	Z Dra	09(11)14	RZ Cas	12(14)16D
X Tri	08(10)10L	TW Dra	09(14)17D	Z Vul	L12(10)15	Z Vul	13(19)16D
V640 Ori	10(12)10L	Z Vul	L12(12)17D	SW Cyg	16(22)17D		

Continuous 13-year Light Curve of 12 BM Camelopardalis from Coordinated Amateur and Professional Photoelectric Photometry

Douglas S. Hall & Gregory W. Henry

[Communicated by Storm Dunlop. This paper was originally presented as a poster paper at the VSS Centenary Meeting in 1991.]

The bright (6.1 < V < 6.3) variable star 12 BM Cam is a single-lined spectroscopic binary with an uncommonly long orbital period, about 80 days. After appearing on a privately circulated list of suspected variables[1], its variability was discovered in 1979 by Eaton et al.[2]. A call for coordinated photoelectric photometry by amateurs and professionals was placed in IAPPP Communication No. 3 by Hall[3]. Its new light curve appeared on the front cover of IAPPP Communication No. 8. In the Catalogue of Chromospherically Active Binaries[4] it is entry No 40.

The 13 annual light-curves shown (Fig. 1) were obtained at 22 different observatories in 5 different countries (Table 1). The 1983 photometry by Fernandes has been published separately[5].

The K0 giant star varies as a result of starspots on its surface, which rotates in approximate synchronism with the 80-day orbital period. Preliminary analysis of the light curves indicates that four huge spots have existed during the 13-year interval between the 1978-79 and 1990-91 observing seasons, sometimes two at the same time. Each produced dimming of the star's brightness as it rotated into and out of view (up to 0.2 magnitude in the V bandpass), and each lived about 5 years before disappearing.

The 13-year composite light curve show (Fig. 2) reveals signs of a long-term cycle in mean brightness.

References

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3 Hall, D.S., IAPPP Comm. 3, p.1, 1980
4 Strassmeier, K.G., Hall, D.S., Zeilik, M., Nelson, E., Eker, Z., and Fekel, F.C., Astr. Astrophys. Suppl. 72, p.291, 1988
5 Fernandes, M., BAV Rundbrief 32, p.119, 1983

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Gregory W. Henry, Centre of Excellence, Tennessee State University, Nashville, Tennessee 37203, USA

Table 1

Photoelectric Photometry Campaign Contributors

Observer's Name	Observatory Location	Observatory Name	Telescope Aperture
Barksdale	Florida	- - -	14 inches
Boyd + Genet	Arizona	Fairborn	10
Chambliss	Pennsylvania	Kutztown	18
Dodanas	Lithuania	Moletai	25
Eaton	Arizona	Kitt Peak	16
Fortier	Quebec	- - -	12.5
Fried	Arizona	Braeside	16
Hall	Arizona	Vanderbilt	16
Henry	Tennessee	Dyer	24
Henry	Arizona	Kitt Peak	16
Henry	Texas	McDonald	30 & 36
Landis	Georgia	- - -	8
Louth	Washington	- - -	11
McFaul	New York	Shenandoah	8 & 14
Miles	England	Mouldsworth	11
Nielsen	Delaware	- - -	4
Powell	Tennessee	E.T.S.U.	8
Renner	Wisconsin	Scuppernong	10
Robb	Arizona	Greentree	10
Slauson	Iowa	Summit	8
Stelzer	Illinois	- - -	14
Wood	California	Faun Lane	10 inches

Figure 1 The lightcurve of 12 BM Cam for the 1978-91 observing seasons. Note the changes in amplitude, irregularities, and overall variation in range. →

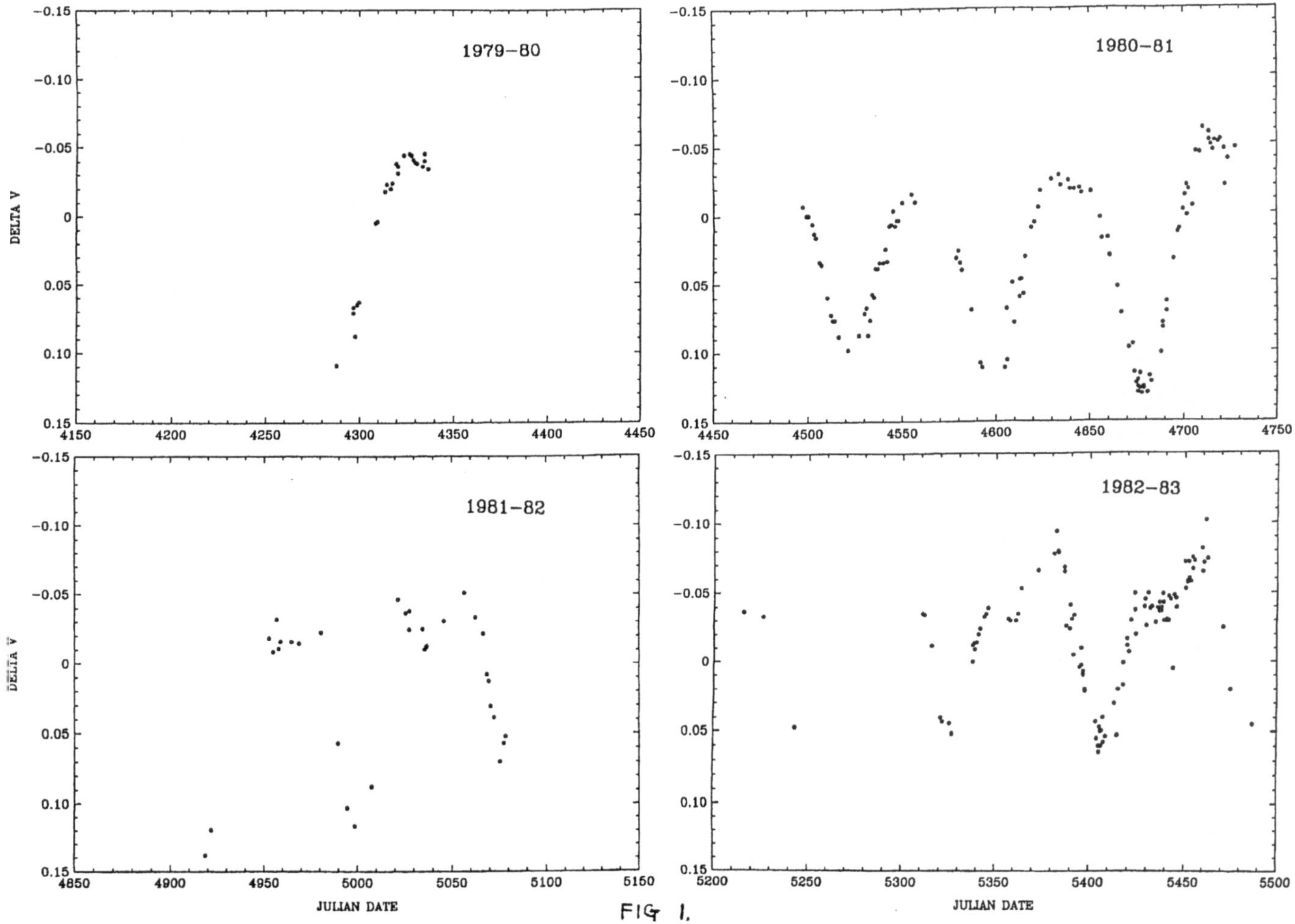
1979–80
1980–81
1981–82
1982–83
DELTA V
DELTA V
JULIAN DATE
JULIAN DATE

FIG 1.

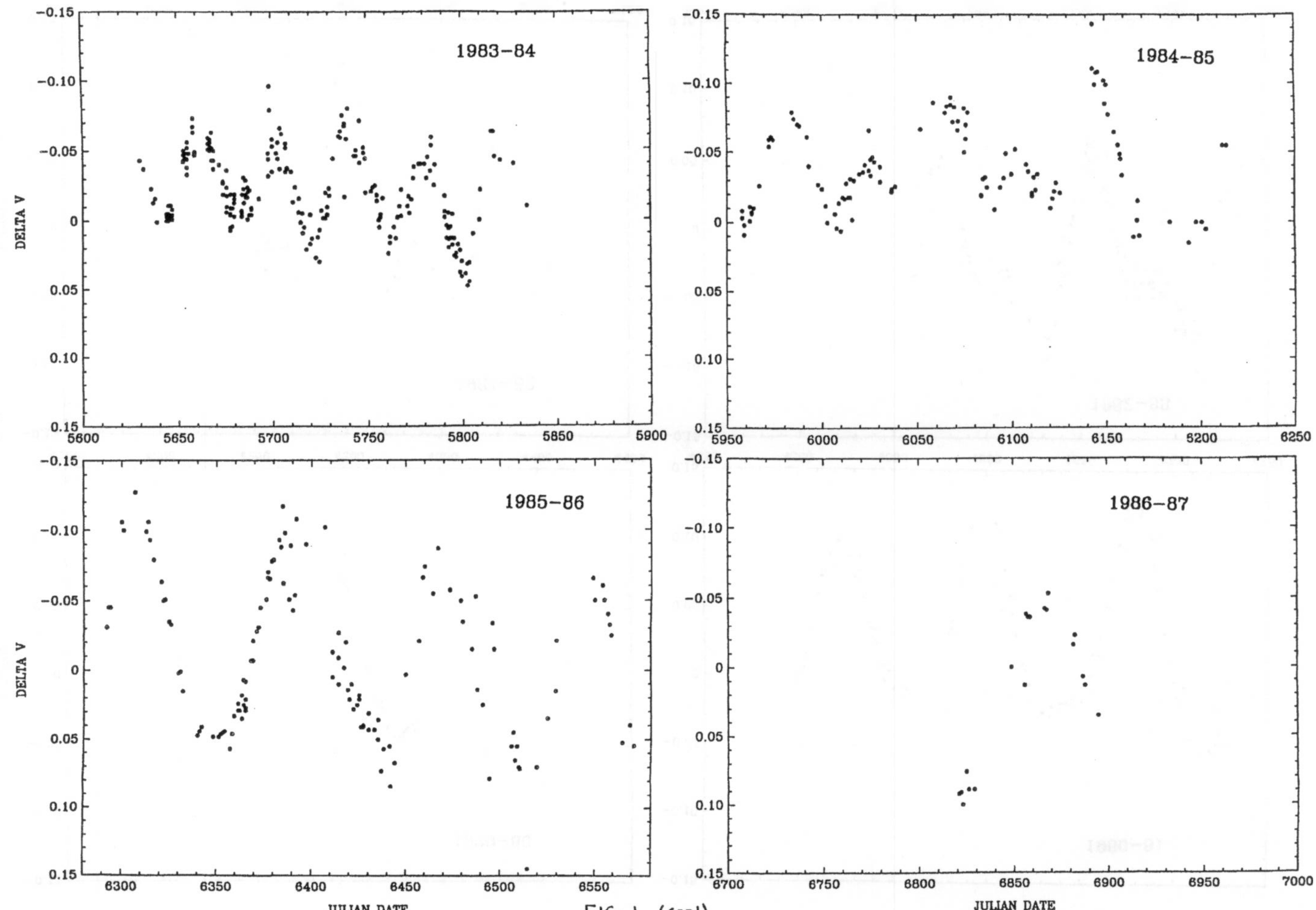
1983-84
1984-85
1985-86
1986-87
DELTA V
DELTA V
JULIAN DATE
JULIAN DATE
-0.15
-0.10
-0.05
0
0.05
0.10
0.15
5600
5650
5700
5750
5800
5850
5900
5950
6000
6050
6100
6150
6200
6250
6300
6350
6400
6450
6500
6550
6700
6750
6800
6850
6900
6950
7000

FIG 1. (cont)

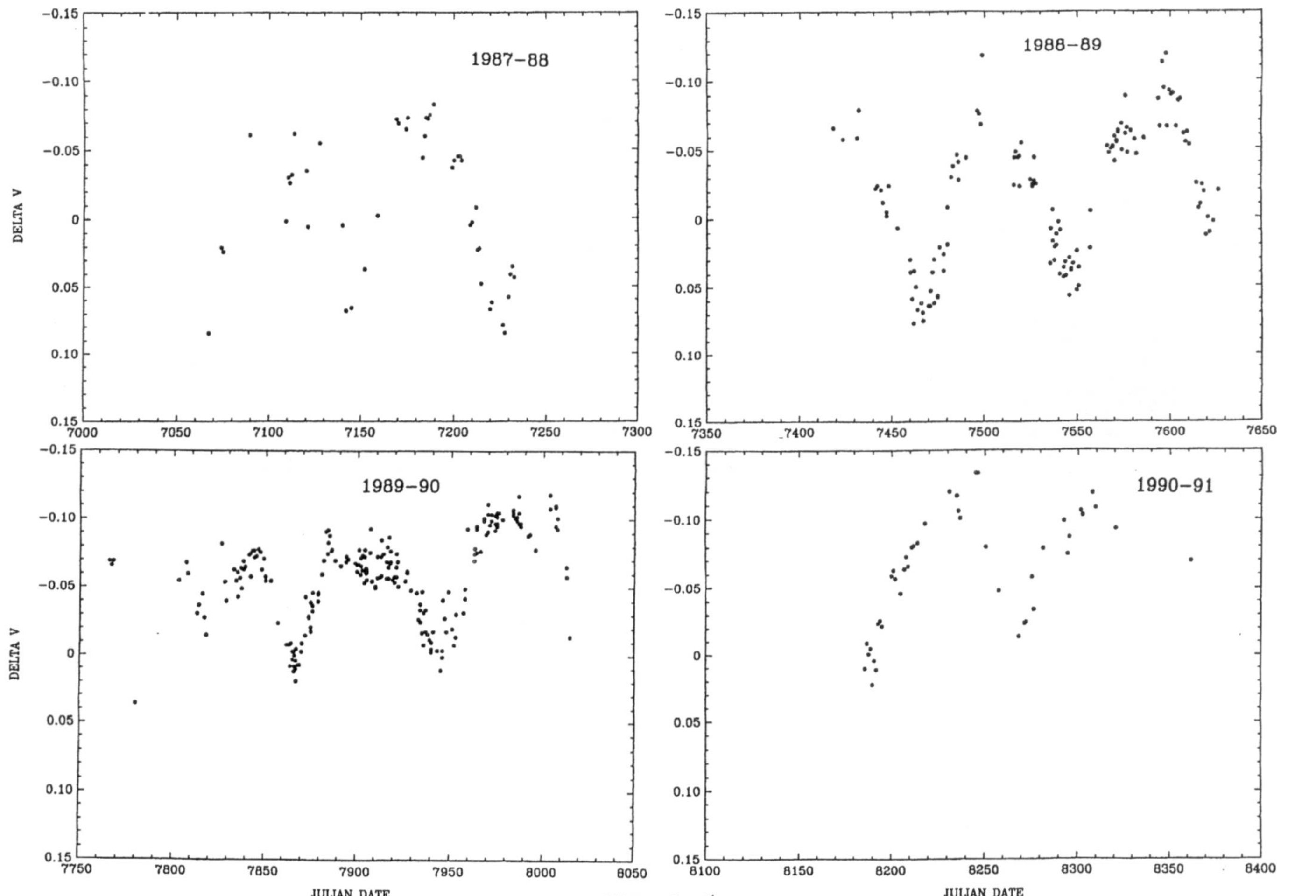
1987-88
1988-89
1989-90
1990-91
DELTA V
JULIAN DATE
-0.15
-0.10
-0.05
0
0.05
0.10
0.15
7000
7050
7100
7150
7200
7250
7300
7350
7400
7450
7500
7550
7600
7650
7750
7800
7850
7900
7950
8000
8050
8100
8150
8200
8250
8300
8350
8400

FIG 1 (cont)

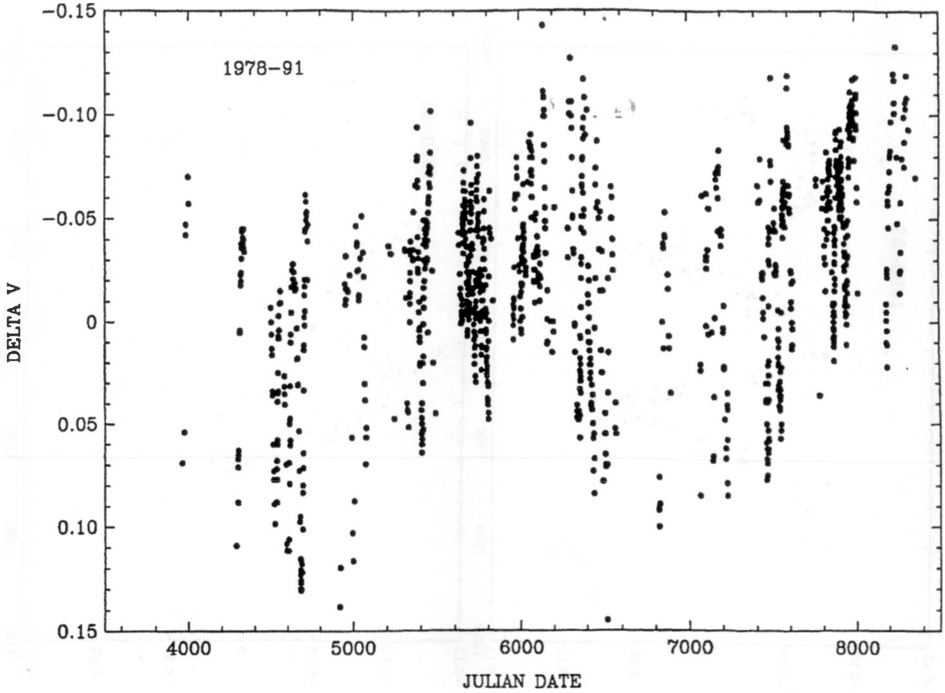

Figure 2 Composite light curve of 12 BM Cam, showing long-term variations in mean range.

PQ Cephei
Michael Dahm(?)

[The following note arrived on a Sonneberg Observatory postcard of the North America Nebula. The surname of the writer was not very clear, hence the question mark.]

I read the article and your note in the last issue of the VSS Circular about PQ Cep. You never heard of it. Please have a look in Mitteilungen ueber Veraenderliche Sterne, Band 12, Heft 9 (1993), p.164. This year I investigated PQ Cephei on photovisual plates of the Sonneberg Sky Patrol. This remarkable carbon star has a colour index B-V of 6.0. Note that the max brightness in the GCVS must be erroneous. A full paper about PQ Cephei will appear in the next issue of the BAV-Rundbrief, 4/1995. PQ Cephei is a Mira star with the elements max = JD 2448479 + 445.2xE. The light range is 8.55 to 12.0v and a chart is also given.
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