

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS
 NUMBER 826

Konkoly Observatory
 Budapest
 1973 September 18

Veröffentlichungen der Remeis-Sternwarte Bamberg
 Astronomisches Institut der Universität Erlangen-Nürnberg
 Band X, Nr.107

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 Contribution No.40

NEW SOUTHERN VARIABLE STARS

On sky patrol plates taken at the Southern Station of the University of Florida, Gainesville and the Remeis-Sternwarte, Bamberg, at the Mount John Observatory, New Zealand, the stars in the following list were found to be variable.

The brightness of these stars were estimated by comparison with standard stars in the Harvard-Groningen Atlas, Selected Areas (1965, A. Brun and H. Vehrenberg).

Finding charts, 1° in declination, with south up, are also given.

| BV-Nr. | RA 1900.0 | Dec. | Maximum Brightness | Ampl. | Remarks |
|---|--------------|------|-----------------------|-------------------|---------|
| | | | pg | pg | |
| BV 1572 Pup = CoD -44°3424 (10 ^m) = CAP -44°1555 (9 ^m .8) | | | | 0 ^m .5 | |
| BV 1573 Pup = CoD -44°3450 (10 ^m) = CAP -44°1584 (9 ^m .8) | | | | 0.4 | |
| BV 1574 Pup = 7 ^h 55 ^m 13 ^s -38° 43' 3" = CAP -44°11 ^m .0 | | | | 1.0 | 1 |
| BV 1575 Pup = CoD -40°3763 (9 ^m .3) = CAP -40°2030 (9 ^m .2) | | | | 0.4 | |
| = HD 66436 (F8) | | | | | |
| BV 1576 Vel = CoD -42°4345 (10 ^m) = CAP -42°2626 (10 ^m .0) | | | | 0.3 | |
| BV 1577 Vel = CoD -40°4603 (9 ^m .1) = CAP -40°2859 (9 ^m .1) | | | | 0.3 | |
| BV 1578 Vel = CoD -42°4977 (9 ^m .1) = CAP -42°3348 (9 ^m .8) | | | | 0.5 | |
| BV 1579 Vel = CoD -42°5032 (9 ^m .8) = CAP -42°3425 (8 ^m .8) | | | | 0.6 | 2 |
| = HD 79101 (A2) | | | | | |
| BV 1580 Pyx = CoD -32°6252 (9 ^m .3) = CAP -32°2570 (9 ^m .4) | | | | 0.8 | |
| BV 1581 Cen = CoD -47°6586 (10 ^m) | | | | 4.0 ^x | 3 |
| BV 1582 Cen = CoD -50°5778 (9 ^m .9) = CAP -50°4038 (9 ^m .8) | | | | 0.6 | 4 |

^xAmplitude until plate limit (14^m)

Remarks:

1) BV 1574 is a Cepheid variable, whose ephemeris can be given as $\text{Max.} = \text{JD } 243 \ 8442.354 + 15^{\text{d}}.565 \cdot E$

The following maxima were found:

| Maximum | E | O-C | Maximum | E | O-C |
|-----------------|----|--------|-----------------|-----|--------|
| JD 243 8442.354 | 0 | +0.000 | JD 243 9205.247 | 49 | +0.208 |
| 8739.551 | 19 | +1.462 | 9562.256 | 72 | -0.778 |
| 8816.335 | 24 | +0.421 | 9935.885 | 96 | -0.709 |
| 9143.419 | 45 | +0.640 | 244 0589.469 | 138 | -0.855 |
| 9174.343 | 47 | +0.434 | 1710.500 | 210 | -0.504 |

Minimum occurs about phase 0.7.

2) BV 1579 is an Algol-type eclipsing binary. Only three minima were found:

| |
|-----------------|
| JD 243 8443.399 |
| 244 1394.906 |
| 244 1689.080 |

3) BV 1581 is a Mira variable. The following maxima were found from a plot of magnitude estimates from all available patrol plates. In parenthesis after each maximum is given the number of points used to determine that maximum.

| | |
|------------------|-----------------|
| JD 243 8473 (13) | JD 244 0723 (6) |
| 8793 (15) | 1035 (9) |
| | 1721 (4) |

From these is obtained the ephemeris

$$\text{Max.} = \text{JD } 243 \ 8793 + 325^{\text{d}} \cdot E$$

The variable is above the plate limit (14^{m}) for approximately 120 days around the time of maximum.

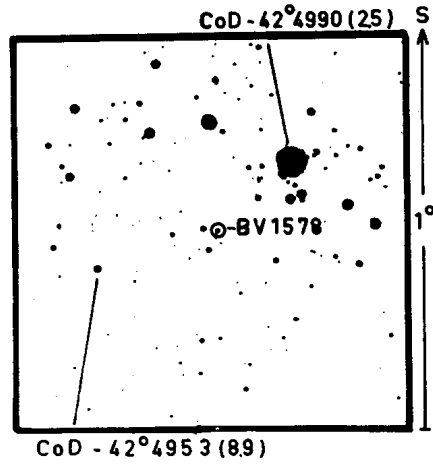
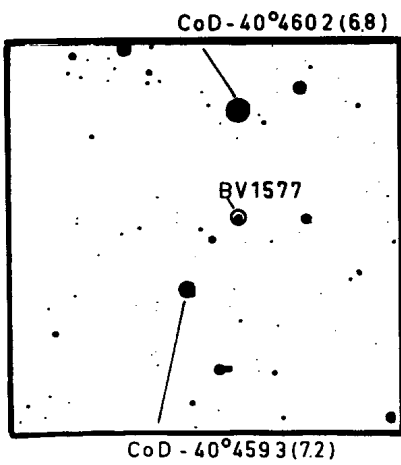
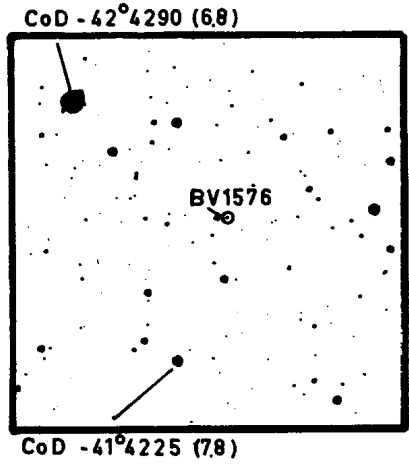
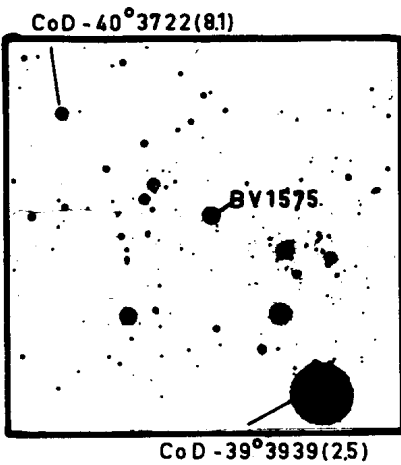
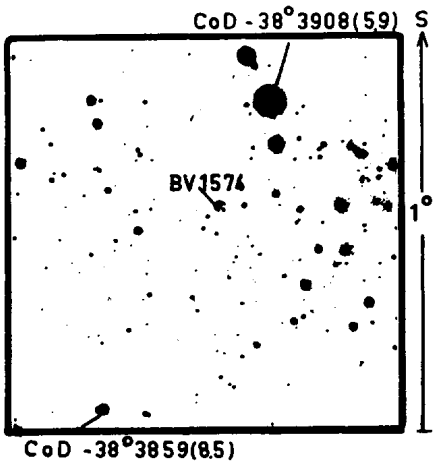
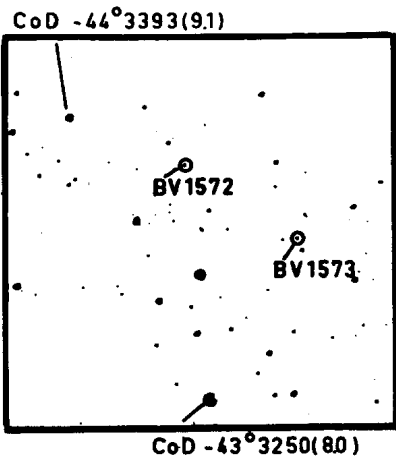
Print 36 of the Canterbury Sky Atlas (1972, N.A. Doughty, C.D. Shane, and F.B. Wood), made from a plate exposed 120 days after maximum, may just barely show the variable. Since the limiting photographic magnitude of the atlas is stated to be magnitude 16, BV 1581 has an amplitude of at least six magnitudes.

4) BV 1582 is an Algol-type eclipsing binary, whose ephemeris is $\text{Min.} = \text{JD } 243 \ 8471.404 + 1^{\text{d}}.776028 \cdot E$

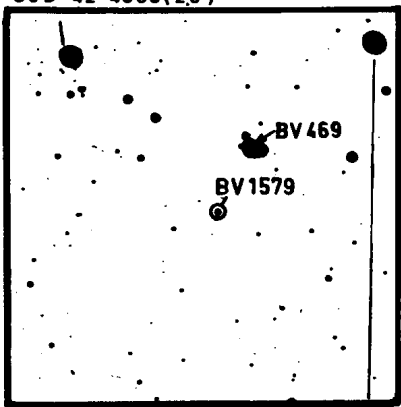
The following minima were found:

| Minimum | E | O-C | Minimum | E | O-C |
|-----------------|-------|--------|-----------------|--------|--------|
| JD 243 8407.549 | -36 | +0.082 | JD 243 8885.266 | 233 | +0.047 |
| 8471.404 | 0 | 0.000 | 8901.213 | 242 | +0.010 |
| 8504.304 | 18.5 | +0.079 | 9200.396 | 410.5 | -0.067 |
| 8520.252 | 27.5 | +0.008 | 9566.384 | 616.5 | +0.059 |
| 8529.248 | 32.5 | +0.084 | 9614.269 | 643.5 | -0.009 |
| 8820.446 | 196.5 | +0.052 | 244 0735.809 | 1275 | -0.031 |
| 8828.408 | 201 | +0.022 | 1059.907 | 1457.5 | -0.058 |
| 8844.382 | 210 | +0.012 | 1092.823 | 1476 | +0.002 |
| 8877.269 | 228.5 | +0.043 | | | |

The light curve shows a deep secondary eclipse.

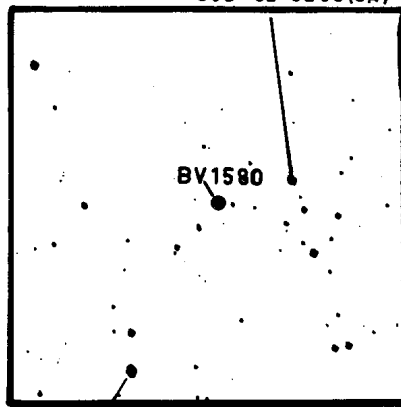


CoD-42°4990(25)



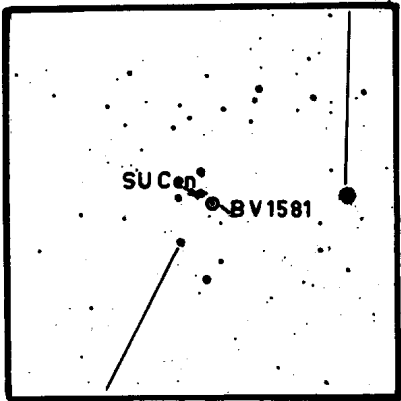
CoD 43°5041(67)

CoD-32°6268(94)



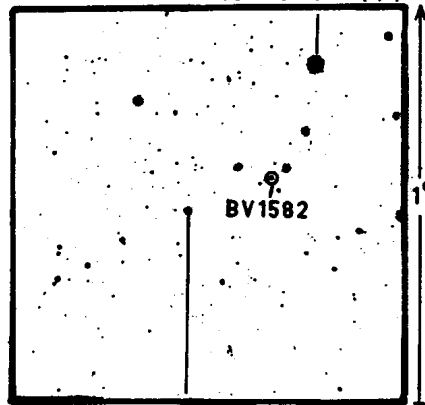
CoD - 32°6241(80)

CoD - 47°6622(82)



CoD -47°6579(91)

CoD - 51°5447(84) S



CoD - 50°5759(90)

Bamberg, September 1973

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