

1829photo, pro3, 5022

KC
11365
541

KG 11365.5411

GRAY, J. H.
JULY 1 1899
HARVARD

KG-11365.542



Sun. Jan. 22 1899

at 6:00 watch 29 sec fast

T. N. Spectral. Phot. N. crani: obs.

Index to left.

6 17 37

151.7 } ← comp. hardis.
206.0

150.4 54.3
 58.5
208.9 112.8 1.35

B

6 31 58

150.0

209.7

151.4

206.1

59.7
54.7

114.4

1.32
1.34

Index to right and below,

6 40 08

241.8

298.0

242.0

296.6

56.2
54.6

110.8

1.40

a

6 45 00

6 33 41

-26 correction

6 33 15

11 33.29 m.s.

22.4813

243.0

297.4

244.5

298.3

54.4

56.8

111.2

1.39

1.40

mean = 1.37

At 7:00 watch 24 sec fast.

T. troubled greatly by faintness of stars: var. near minimum and moon bright, altitude low.

Wed. Jan. 25, 1899.

At 6:00 watch 13 sec fast.

Transpeculae: Phot. V. Cam: obs.

Index to right and below.

56.4
122.3 < comp. star dis.
58.2 65.9
125.0 66.8
132.7 0.92

a

58.6
122.0 63.4
56.0 66.0
129.4 0.99
122.0 0.96

Index to left and above.

145.8
212.2 66.4
146.4 64.6
211.0 131.0 0.96

β

146.6
211.7 65.1
145.7 66.7
131.8 0.94
212.2 0.95
212.6 = 212.4 mean = 0.96

At 7:00 watch 7 sec fast.

Troubled greatly by faintness of stars in bright moonlight and low altitude.

Wed. Feb. 1. 1899.

~~Fri. 27.~~

~~Thurs. Jan. 26. 1899.~~

at ~~5:40~~ ^{6:00} watch ~~41~~ ³ sec fast.

T Nucleolar:
Index

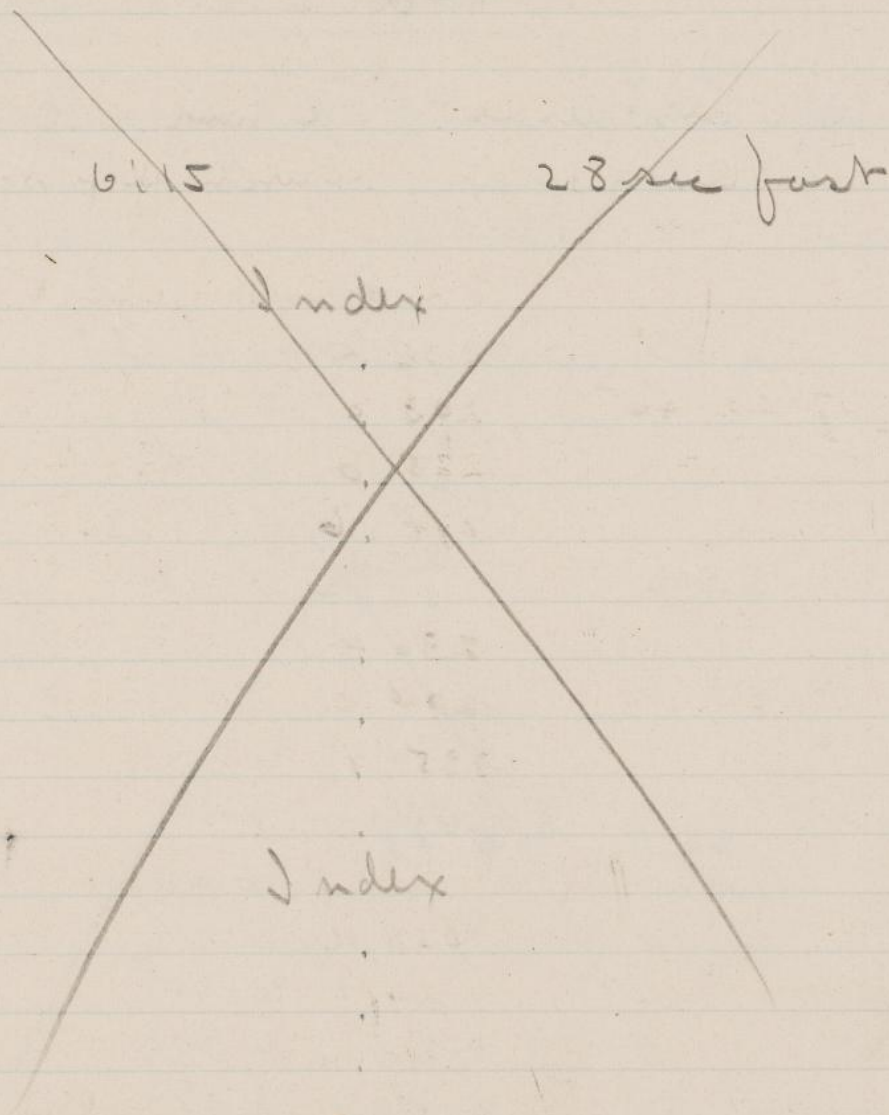
Phot. N.

Cran. obs.

Abundant

Cloudy

Index



Wed. Feb. 8. 1899.

5 Nulpeculae: Phot. V. Crum. obs.
at 16:45 watch 44 sec fast

Index to left + below

236.8
293.0 < comp. standis.

235.0
294.6 $\frac{56.2}{59.6}$ 129
 $\frac{115.8}{115.8}$

B

236.4

294.0

235.1

294.6

$\frac{57.6}{59.5}$
 $\frac{117.1}{117.1}$

$\frac{1.26}{1.28}$

Index to right and above.

327.0

24.7

325.6

26.8

$\frac{57.7}{61.2}$
 $\frac{118.9}{118.9}$

1.22

a

325.7

24.7

328.0

25.0

$\frac{59.0}{57.0}$
 $\frac{116.0}{116.0}$

$\frac{1.28}{1.25}$

mean = 1.26

17 42 21

17 32 02

- 24

17 31 38

22^h 31.6^m 5^s

8.9386

daylight

interferes
correction

at 17:45 watch 18 sec fast. Watch ap-
parently running down: or else affected by
severe cold = 4° or 5° F.

Comparison as well as var. exceedingly

Feb. 8, 1899.

fair although not at low altitude:
Some frost on eyepiece and probably
more inside.

Last four settings uncertain in
rapidly approaching daylight.

Phot examined later but no
frost inside as suspected above: fair-
ness probably due to altitude after all.

Thurs. Feb. 9. 1899.

I Vulpeculae Phot. V. Cam: obs.

at 16:35 watch 55 sec fast.

Index to left and below.

58.3 $\angle$ comp. star dis.

16 53 42

117.3

56.8

115.1

59.0

58.3

117.3

1.25

B

17
16 0 33

58.7
115.2

58.6

115.5

56.5

56.9

113.4

1.34
1.30

Index to right and above.

328.6 ~~204.0~~

17
16 11 05

26.0

320.4

26.7

57.4

56.3

113.7

1.33

a

17
16 15 56
17 05 19
-30 correction

25.3
330.2
330.7
26.2

55.1

55.5

110.6

1.40

1.36

mean = 1.33

17 04 49
22^h 04^m 8^s 5.m.5.

9.9200

Feb. 9. 1899.

Same again.

Cram: obs.

Index to right and above.

17 23 56
~~19 53~~

148.7

225.4

148.4

209.2

~~229.5~~~~22.8~~~~151.2~~

< comparison dis.

56.7

60.8

117.5

1.25

A

17 30 48

148.9

207.2

148.7

206.7

58.3

58.0

116.3

1.27

1.26

Index to left and below.

17 35 10

58.9

116.2

56.8

114.8

57.3

57.9

115.2

1.30

B

17 38 45

17 32 10

-7

correction

17 32 3

22^h 32^m 0^s m.T.

9.9389

daylight

rather

strong

59.5

115.2

56.6

115.2

116.4

55.7

59.2

114.9

1.31

1.30

lake
= 115.8
mean

mean = 1.28

At 17:43 watch 2 sec slow: this great change in watch error is real due to some cold = -4°F.

Feb. 9, 1899.

Stars somewhat faint in first group but not so as to be very troublesome: much better in first half of second: last half of second group taken in great haste so as to finish before daylight: daylight strong in last two or three settings.

Cold wave -- 4 5.

Fri. Feb 10, 1899.

5 Nulpeaulas: Phot. N.: Cray: obs.
 Bond #394 Arnold + Dent #958
 $16^h \quad 35^m \quad 00^s = 16^h \quad 37^m \quad 06^s$

Index to right + above.

319.9 < comp stars dis.

34.8
 319.1
 35.9
 $\begin{array}{r} 74.9 \\ 76.8 \\ \hline 151.7 \end{array}$ 0.54

a

321.8
 33.9
 321.2
 33.4
 $\begin{array}{r} 72.1 \\ 72.2 \\ \hline 144.3 \end{array}$ 0.69
 0.62

Index to left and below.

49.4
 120.9
 48.1
 121.9
 $\begin{array}{r} 71.5 \\ 73.8 \\ \hline 145.3 \end{array}$ 0.67

B

51.5
 120.3
 48.9
 120.9
 $\begin{array}{r} 71.8 \\ 72.0 \\ \hline 143.8 \end{array}$ 0.70
 0.68
mean = 0.65

17 23 45
 17 12 14
 -02 06 correction.
 17 10 08

22^h 10^m 10^s s.m.T.

10.9237

Feb. 10, 1899.

Same again.

Cran: obs.

Index to left and below

51.2 < comp star dis.

123.7

51.2

123.8

72.5

72.5

145.0

0.67

B

50.3

124.5

49.8

123.1

74.2

73.3

147.5

0.62

0.64

Index to right and above.

140.9

212.1

140.6

214.1

71.2

73.5

144.7

0.68

a

143.2

216.6

141.5

216.0

73.4

74.5

147.9

0.62

0.65

mean = 0.64

17 40 30

17 33 53

17 -02 06

correction

17 31 47

22^h 31^m 8^s m. 5.

10^d 9388

Band #394

17^h 43^m 00^s

=

17^h 45^m 06^s

Arnold + Dent 958 #

Stars much brighter than on two previous mornings, both comp stars + var. which is

Feb. 10, 1899.

near maximum.

Last group very hastily taken
to finish before being stopped by day-
light: hence probably not so good
as previous one.

Stars bright and so not troubled by
daylight at end: cold severe = -6°F .
making fine settings impossible

Tues. Feb. 14, 1899.

SNulpeculae:

Phot. N.

Cram. obs:

Band 394
16^h 27^m 00^s

Arnold + Dent #958
16^h 29^m 12^s

Index tonight and above

149.1 < comp. star dis.

16 53 43

211.1

147.6

210.2

62.0

62.6

124.6

1.09

A

17 02 57

147.1

210.7

147.4

~~211.2~~
211.2

63.6

64.4

128.0

1.02

1.06

Index to left and below

17 16 00

235.9

~~297.8~~

237.3

~~298.7~~

61.9

61.4

123.3

1.12

B

236.5

298.3

235.4

301.9

61.8

66.5

128.3

1.01

1.06

mean 1.06

17 ~~25~~ 25

17 09 31
-02 12 correction

17 07 19

22^h 07.3^m 5^s

14^d 9217

Band #394

17^h 35^m 00^s

Arnold + Dent #958

17^h 37^m 12^s

Wed. Feb. 15. 1899.

5 Nulpeculae:

Phot. V. Cram: obs.

Band #394

Arnold + Dent #958

16^h 13^m 00^s

= 16^h 15^m 16^s

Index to left and below.

53.4

< comp. star dis.

16 58 48

126.1

53.3

72.7

0.64

74.1

127.4

146.8

B

52.0

17 05 05

128.5

54.6

76.5

71.8

0.61

148.3

0.62

126.4

Index to right and above.

145.0

17 15 45

214.0

146.5

218.0

~~6~~ 9.0

71.5

0.76

150.5

4

a

145.4

17 22 32

218.1

146.4

217.5

72.7

71.1

143.8

0.70

0.73

17 08 18

22^h 08.3^m L.M.T.

15.9224

mean = 0.68

Feb. 15, 1899.

Same again

Cram: obs

Index to right and above.

17 27 03

3 23.9 < comp. star dis.

36.4

72.5

324.4

71.0

0.70

35.4

143.5

A

17 31 25

323.4

71.4

0.73

34.8

70.8

0.72

324.0

142.2

34.8

clouds → Index to left and below.

235.0

17 39 10

307.9

72.9

0.71

237.8

70.5

307.5

143.4

B

23 314

124.6 started

74.2

0.62

17 42 11

30 7.6

in

73.5

0.66

17 35 12

23 4.4

wrong

147.7

0.66

17 -02 16

30 7.9

7.9 assumed in reduction

mean = 0.69

17 32 56

Impossible to finish: clouds & daylight

22^h 32^m 9^s a.m.15^d 9395

Band 394

Arnold + Dent 958.

18^h 23^m 00^s

=

18^h 25^m 16^s

Near near maximum and stars sufficiently
bright but images hazy & blurry at best.

Feb. 15, 1899.

making observation somewhat troublesome: no clouds seen but thin haze noticed at times making halo around Jupiter and much more around Venus when rising. Sky apparently clear except for these cases in first group.

Second group taken more rapidly to finish before daylight. but daylight noticed about at middle of second set, when the sky was seen to be covered almost everywhere with thin haze, before not noticed. Stars lost in haze while reversing. Impossible to get last reading of alt. because of daylight and haze.

Fri. Feb. 17, 1899.

5 Vulpeculae
Band #394
15^h 6^m 00^s

Phot. N. Crum. obs.
Arnold + Dent #958
15^h 8^m 22^s

Index to right and above

334.8
33.8 < comp star dis.
335.0
35.7

59.0	
60.7	
119.7	1.20

a

334.4
34.8
333.7
33.4

60.4	
59.7	
120.1	1.19
	1.20

Index to left and below

242.6
303.5 = 303.5
244.4
305.4

60.9	
61.0	
121.9	1.15

Day B

243.5
306.0
245.6
305.2
306.0

62.5	
60.0	
122.5	1.14
	1.14
	mean = 1.17

= 305.6
mean

17 39 32

17 32 06

-02 22

17 29 44

22^h 29.7^m 5. m. 5.

17^d 9373

Band #394

17^h 48^m 00^s =

Arnold + Dent #958
17^h 50^m 22^s

Feb. 17, 1899.

Very heavy dew and air excessively moist: instrument completely fogged up immediately after being put out on balcony: all parts taken inside and dew vaporized off over gas light several times but impossible to keep instrument free from dew, so put photographs inside of dome where group was obtained. Field unusually clear and dark and stars seen better than usual. Daylight strong at last but not troublesome in observation.

Mon. 20,
~~Sun~~ Feb 29 1899.

5 Nulpeculae.

Phot. N:

Cram. obs.

Band #394

Arnold + Dent #958

$\begin{array}{r} 12^h \\ 15^h \end{array}$

$\begin{array}{r} 13^m \\ 24^m \\ 45^m \end{array}$

00

=

$\begin{array}{r} 12^h \\ 15^h \end{array}$

$\begin{array}{r} 15^m \\ 26^m \\ 47^m \end{array}$

$\begin{array}{r} 20^s \\ 24^s \\ 35 \end{array}$

Index to right and above

329.3

< comp. star dis.

39 5

331.0

70.2

0.81

68.0

39 0

138.2

a

330.7

36 2

65.5

0.92

331.3

67.4

0.86

132.9

38.7

Index to left and below

238.2

309.0

70.8

240.2

66.2

0.83

305.4

137.0

B

241.8

306.0

64.2

0.89

238.3

70.3

0.86

308.6

134.5

mean = 0.86

17 07 07

16 49 00

-0.2 35 correction

16 46 25

21^h 46^m 4 Gr. m. J.

20^d 9072

Feb 20, 1899.

Band #394 Arnold + Dens. #958
 17^h 43^m 00^s = 17 45 35^s

Index to left and below.

58.0
 17 14 57 131.5 < comp. char dis.
 62.6 73.5
 125.4 62.8
 136.3 0.85

B

60.6
 17 23 45 127.4 66.8
 61.2 66.3 0.91
 133.1 0.88
 127.5

Index to right + above

328.0
 17 29 50 41.9 73.9
 332.1 64.5 0.81
 138.4

Day-
a

322.0
 17 23 55 lighter 27.2 65.2 0.83
 17 25 37 72.0 0.82
 -02 35 correction 137.2
 17 23 02 mean = 0.85
 22^h 23^m 00^s m.m.s. 39.8 take
 20.49326 40.9 mean

Troubled some by poor focus in first group: changed it for the better in the second.

Daylight in last part of 2nd group but not at all troublesome

Wed. Feb. 22, 1899,

5 Nulpenlar:

Phot. N.:

Cram. obs:

Band #394

Arnold + Dent #958

12^h 45^m 00.0

= 12^h 47^m

42.6

Index to right and above.

331.6

< comp. star dis.

30.9

333.3

59.3

1.28

56.7

30.0

116.0

A

331.1

31.4

60.3

1.32

53.8

335.1

114.1

1.30

28.9

Index to left and below

243.3

300.0

56.7

1.29

243.0

59.0

302.0

115.7

B

240.0

302.7

62.7

1.18

242.5

57.7

300.2

120.4

1.24

mean = 1.27

16 35 01

16 44 50

16 55 54

17 03 54

16 49 55

-02 43 correction

16 47 12

21^h 47.2 Gr. m. S.

22^d 9077

Feb. 22. 1899.

Same again.

Cram: obs.

Index to left and below.

65.8 < comp. stand. dis.

17 09 02

121.0

63.2

55.2

59.0

1.32

122.2

114.2

B

65.0

17 14 55

122.7

57.7

1.29

64.3

57.7

1.30

122.0

115.4

Index to right and above

153.8

17 23 12

212.0

58.2

1.18

152.4

62.4

214.8

120.6

A

153.2

17 30 01

Day -

212.0

58.8

1.37

17 19 18

156.9

53.1

1.28

-02 43

210.0

mean = 1.29

17 16 35

22^h 16^m 6

Band #394

Arnold + Dent #958

22^d 928217^h 58^m 00^s 0

=

16^h 00^m 43.3

Images a little brighter and seeing a little better in second group than in first. Very little moonlight in second group. Daylight not troublesome.

Fri. Feb. 24, 1899.

Transpuculae: Phot. N: Gram. obs.

Band #394 Arnold + Dent #958
 $12^h 20^m 00.0 = 12^h 22^m 52.0$

Index to right and above

327.6
 40.3 < comp. tardis.

328.6 72.7
 37.0 68.4 0.75
 141.1

A

327.8
 38.0 70.2
 327.6 71.1 0.75
 38.7 141.3 0.75

Index to left and below.

56.8
 131.1 74.3
 60.9 66.3 0.76
 127.2 140.6

B

59.6
 125.5 65.9
 56.1 72.8 0.80
 128.9 138.7 0.78

mean = 0.76

16 42 20

16 29 49
 -0.2 53 correction

16 26 56
 21^h 26.9 Gr. m. F.

24^d 8937

Feb. 24, 1899.

Same again

Cram: obs.

Index to left and below.

16 52 22

236.7 < comp. star dis.

310.4

239.4

306.6

~~7~~ 3.7

67.2

140.9

0.76

B

17 00 52

239.7

306.5

237.3

309.4

66.8

72.1

138.9

0.80

0.78

Index to right and above.

149.9

219.0

152.8

215.0

69.1

62.2

131.3

0.95

a

17 16 50

150.2

219.2

149.3

216.4

69.0

67.1

136.1

0.85

0.90

mean = 0.84

17 05 12

17 02 19

22^h 02.3^m 3^s m. T.24^d 9183

During all observations sky very clear
and air very transparent.

Feb. 24, 1899

Same again.

cam obs.

Index to right and above.

150.9 < camp. star dis

217.5

149.48

209.0

666.6

59.4

186.0

0.86

1.06

circle magnitude
read 10th mag
of. per
groupA

150.3

209.3

148.7

208.9

6
59.0

60.2

149.2

3

0.79

1.21

1.14

0.82

Index to left and below (slightly)

236.6

310.2

237.2

309.0

73.7

71.8

145.5

0.66

B

237.0

310.9

236.7

309.4

73.9

72.7

146.6

0.64

0.65

mean = 0.74

17 37 58

17 28 24

-02 53

17 25 31

22^h 25.5^m

24.9344

Daylight

correction

S.M.T.

14^h 43^m 00.0

=

17^h 45^m 52.8

Band #394

Arnold + Dent #958

17^h 45^m 52.8

I in first group seeing only fair: changed focus slightly for second group: seeing also better: third group taken hastily to finish before daylight: daylight not troublesome

Sat. Feb. 25, 1899.

Set Amold + Dent #958 ahead 23h 58^m 0

Band #394

12^h 30^m 00^s 0

Amold + Dent #958

12^h 30^m 56^s 1

T Vulpeculae.

Phot. V:

Gram: obs.

Index to right and above

328.5

32.5

< comp star dis.

328.4

32.4

64.0

64.0

128.0

1.02

A

328.0

34.6

327.0

32.2

66.6

65.2

131.8

0.94

0.98

Index to left and below.

240.0

301.3

239.1

306.2

61.3

67.1

128.4

1.01

B

238.6

304.0

239.6

302.4

65.4

62.8

128.2

1.02

1.02

mean = 1.00

16 19 47

16 11 53

-0 57

correction

16 10 56

21^h 10^m 9^s S.M.T.

25^d 8^h 25^m

Feb. 25, 1899.

Same again.

Cran obs.

Index to left and below.

$$\begin{array}{r}
 16 \quad 28 \quad 43 \\
 57.2 \\
 123.7 \\
 58.4 \\
 123.7 \\
 \hline
 66.5 \\
 65.3 \\
 \hline
 131.8
 \end{array}
 \begin{array}{l}
 < \text{comp. star dis.} \\
 \\
 \\
 \\
 \\
 \end{array}
 \begin{array}{l}
 \\
 \\
 0.94 \\
 \\
 \end{array}$$

B

$$\begin{array}{r}
 16 \quad 33 \quad 07 \\
 57.9 \\
 120.6 \\
 56.4 \\
 125.1 \\
 \hline
 62.7 \\
 68.7 \\
 \hline
 131.4
 \end{array}
 \begin{array}{l}
 \\
 \\
 \\
 \\
 \end{array}
 \begin{array}{l}
 0.95 \\
 0.94 \\
 \\
 \\
 \end{array}$$

Index to right and above.

$$\begin{array}{r}
 16 \quad 42 \quad 12 \\
 149.8 \\
 215.6 \\
 151.3 \\
 214.0 \\
 \hline
 65.8 \\
 62.7 \\
 \hline
 128.5
 \end{array}
 \begin{array}{l}
 * \\
 \\
 \\
 \\
 \end{array}
 \begin{array}{l}
 1.01 \\
 \\
 \\
 \\
 \end{array}$$

A

$$\begin{array}{r}
 16 \quad 50 \quad 27 \\
 16 \quad 38 \quad 37 \\
 - \quad 0 \quad 57 \text{ correction} \\
 \hline
 16 \quad 37 \quad 40 \\
 21^h \quad 37^m \quad 37^s \text{ cor. m. s.} \\
 25.9012
 \end{array}
 \begin{array}{r}
 150.4 \\
 214.0 \\
 149.8 \\
 214.0 \\
 \hline
 63.6 \\
 64.2 \\
 \hline
 127.8
 \end{array}
 \begin{array}{l}
 1.03 \\
 1.02 \\
 \\
 \hline
 \text{mean} = 0.98
 \end{array}$$

Feb. 25, 1899.

same again

Cram: obs

Index to right and above

16 59 04

327.5 < comp star dis

34.8

330.0

32.0

67.3

62.0

129.3

0.99

A

17 05 00

330.0

34.4

327.1

35.2

64.4

68.1

132.5

0.93

0.96

Index to left and below

17 14 58

238.8

304.0

241.0

300.2

65.2

59.2

124.4

1.10

B

17 19 57

240.7

301.7

240.6

301.0

61.0

60.4

121.4

1.16

1.13

mean = 1.04

17 09 45

-0 57

correction

17 08 48

22^h 08^m 8^s Br. m. B.

25.9228

Band #394

17^h 25^m 00.0= 17^h 25^m 57.1

Arnold + Dent #958

Sky clear in first half of first group, possibly later: sky generally little hazy elsewhere from that time & later: not bothered by haze or clouds at all.

Mon. Feb. 27, 1899.

Band #394.

11^h 36^m 00.^s0 = 11^h 37^m 03.^s7 Arnold + Dent #958

T. Vulpesiae: Phot. V. Crani. obs.

Index to right and above

331.5
30.8 < comp. star dis.

330.2
30.3
59.3
60.1
119.4 1.21

a

331.3

30.0
330.1
30.0
58.7
59.9
118.6 1.22
1.22

Index to left and below.

240.7
300.4
242.8
299.1
59.7
56.3
116.0 1.28

B

242.4

300.0
241.4
297.7
57.6
56.3
113.9 1.33
1.30

mean = 1.26

16 06 15

16 17 03

16 29 32

16 36 36

16 22 22

- 01 05 correction

16 21 17

21^h 21^m 3^s Sr. M. 5.

27.8752

Feb. 27, 1899.

same again.

trans: obs.

Index to left and below.

60.5 < comp. star dis.
 120.6
 60.8
 120.0

60.1	
59.2	
119.3	1.21

B

60.4
 121.1
 60.2
 118.5

60.7	
58.3	
119.0	1.21

Index to right and above

150.1
 210.0
 150.9
 210.8

59.9	
59.9	
119.8	1.20

A

151.0
 211.4
 153.2
 208.6

60.4	
55.4	
115.8	1.29
mean = 1.22	1.24

17 10 49
 16 58 51
 - 01 05 correction

16 57 46
 21^h 57^m 8^s M. T.

27^d 9 151

Stars faint in first group but not so as to be
 troublesome: stars brighter in second group but
 seeing not good in any one of groups, but not bad.
 Last group hastily taken to finish before daylight.
 and settings not so close: less than obtained

Feb. 27, 1899.

with difficulty in strong twilight

Same again.

Cran: obs.

Index to right (and above)

334.0
27.8 < comp star dis.

331.5	53.8	
	<u>58.9</u>	1.36
30.4	112.7	

A

332.1		
29.7	57.6	
	<u>57.8</u>	1.29
331.1	115.4	1.32
28.9		

Index to left

62.0		
120.2	58.2	
	<u>59.0</u>	1.25
59.2	117.2	
118.2		

B

59.4		
122.0	62.6	
	<u>60.1</u>	1.13
59.9	122.7	1.19
120.0		
	mean =	1.26

17 28 10

17 22 10

17 21 05

22^h 21.127^d 9313

Strong

Band #394

17^h 33^m 00.0 =17^h 34^m 04.9

Arnold + Dent #958

Sun Mar. 5, 1899.

T Nulpeculae.

Phot N:

Cran: abs.

Band #394

Arnold + Dent #958

15^h 32^m 00.0

= 15^h 32^m

28.7

Index to right and above

143.2

215.0

144.6

213.4

< comp. star dis.

71.8
68.8
140.6

0.76

a

143.7

212.7

143.2

214.0

69.0
70.8
139.8

0.78
0.77

Index to left and below

Circle

wrongly

read

280.0

for

230.0

281.4

305.2

283.7

303.9

73.8
70.2
144.0

0.69

B

284.9

302.2

284.3

302.6

67.3
68.3
135.6

0.86

0.78

mean = 0.78

16 39 47

16 26 49

- 29 correction

16 26 20

21^h 26^m 33^s

5^d 89 33

For Arnold + Dent #958 ahead 23^h 59^m at

15^h 30^m

Mar. 5, 1899.

Same again:

Cram: obs.

Index to left.

16 53 22

55.4		
122.2	< comp. star dis.	
53.0	66.8	
	71.9	0.80
124.9	138.7	

B

17 02 30

51.4		
124.8	73.4	0.71
53.2	69.8	0.76
123.0	143.2	

Index to right.

17 09 55

323.7		
31.3	67.6	
324.4	70.5	0.81
34.9	138.1	

a

17 16 15 Day- { 321.0

17 05 30 light { 35.6

-29 correction { 324.0

32.8

74.6	0.71
68.8	0.76
143.4	
mean = 0.76	

17 05 01

22^h 05.0^m Band #394

5.29201

23^m 00.0 = 17^h 23^m 28.8

Arnold & Dent #958

Stars bright and observations considered good.
Daylight not troublesome although strong at last.

Thurs. March. 16, 1899.

T. Vulpecular: Phot. V. Crum: obs.

Band #394 Arnold + Dent #958
 $16^h \ 06^m \ 00.0 = 16^h \ 07^m \ 05.4$

Set chronometer ahead $23^h \ 59^m$
 Band #394 Arnold + Dent #958
 $16^h \ 10^m \ 00.0 = 16^h \ 10^m \ 05.5$

Index to right + above.

329.4

26.6

< comp. star dis.

330.0

24.0

57.2

54.0

111.2

1.39

a

330.4

27.7

330.0

27.0

57.3

57.0

114.3

1.32

1.36

Index to left

239.1

298.4

239.5

297.2

59.3

57.7

117.0

1.26

B

Daily hr

16 52 07

16 41 47

- 06 minutes

16 41 41

21 hr 41.7 hr. m. T.

16.9040

240.0

295.6

240.9

295.6

55.6

54.7

110.3

1.41

1.34

mean = 1.35

Mar. 16, 1899.

Band #394

Arnold + Dent #958

17^h 01^m 00.0 = 17^h 01^m 05.6

Night unusually clear and stars bright
conditions favorable. Daylight strong in
last four settings, possibly affecting them
although observation was not difficult

Sun. March 19, 1899.

Wulpecular: Phot. N.: Crum. obs.

Band #394 Arnold & Dent #958.
 $15^h \quad 53^m \quad 00.0 = 15^h \quad 53^m \quad 15.5$

Index to left

16 14 43
 55.5
 123.0 < comp. char dis.
 55.4
 119.0 $\frac{67.5}{63.6} = 0.96$
 131.1

B.

16 24 27
 56.0
 121.7
 53.4 $\frac{65.7}{68.5} = 0.89$
 121.9 $\frac{134.2}{0.92}$

Index to right

16 34 55
 144.7
 213.4 $\frac{68.7}{64.4} = 0.91$
 146.9 $\frac{133.1}{0.92}$
 211.3

A.

16 42 16
 147.6
 210.0 $\frac{62.4}{68.8} = 0.95$
 145.0 $\frac{131.2}{0.93}$
 213.8 $\frac{mean = 0.92}{0.92}$

21^h 28^m 89.5 Band #394 Arnold & Dent #958
 19.8950 $16^h \quad 48^m \quad 00.0 = 16^h \quad 48^m \quad 15.7$

Mon. Mar. 20, 1899.

5 Nulpecular Phot. W. Crum. obs.

Index to left

58.0

< comp. band dis.

120.0

60.8

62.0

59.5

1.16

120.3

121.5

B

58.0

61.2

119.2

57.0

1.23

59.7

118.2

1.20

116.7

Index to right

151.0

205.0

54.0

1.27

147.9

62.5

210.4

116.5

a

145.9

64.0

1.14

209.9

58.3

1.20

149.1

122.3

207.4

mean = 1.20

16 31 45

16 13 59
- 15 correction

16 13 44

21^h 13^m 59^s Band #394

20^d 8 8 45 15^h 37^m 00^s 0

17 12 00^s 0

Amald + Dent #958.

15^h 37^m 14.6

17 12 14.8

Fri. Mar. 24, 1899.

T Nilpeculae. Phot. N: Crani: obs.

Band #394
 $11^h \quad 39^m \quad 00.0 = 11^h \quad 39^m \quad 30.6$ Arnold + Dent #958
 Index to right and above.

14 19 18

326.4

29.6

327.4

29.2

< comp. star dis.

63.2

61.8

125.0

1.08

a

14 33 05

326.6

28.8

327.4

27.1

62.2

59.7

121.9

1.15

1.12

I

Index to left and below.

60.0

119.0

57.9

120.0

59.0

62.1

121.1

1.17

B

14 55 52

59.5

120.6

58.0

121.4

61.1

63.4

124.5

1.10

1.14

mean = 1.13

14 37 57

-31 correction

14 37 26

19^h 37.4 s.m.f.

24.8177

Observation slow + difficult in the above group because of low altitude, bright moon, and consequent faintness of stars: much easier in last four groups.

Mar. 24, 1899.

Index to left and below.

237.9 < comp. trans. dis.

298.1

236.9

299.0

60.2

62.1

122.3

1.14

B

238.1

301.0

237.5

296.9

62.9

59.4

122.3

1.14

1.14

II

Index to right + above

149.6

208.4

147.6

209.7

58.8

62.1

120.9

1.17

a

147.8

212.0

149.5

208.0

64.2

58.5

122.7

1.13

1.15

mean = 1.14

Index to right and above

149.0

210.4

149.7

209.4

61.4

59.7

121.1

1.17

8 15 06 40

15 12 13

15 21 30

15 24 00

15 16 51

-31 correction

15 16 20

20^h 16^m 3^s a.m. 5.24^d 8 4 46

15 25 10

Mar 24, 1899.

a

15 42 10

147.0

210.0

147.5

210.9

63.0

63.4

126.4

1.05

1.11

III Index to left

15 47 43

239.0

297.9

238.5

301.2

58.9

62.7

121.6

1.16

β

15 54 20

236.0

298.9

240.6

298.4

62.9

57.8

120.7

1.18

1.17mean = 1.1415 44 ⁵¹₋₃₁ correction

15 44 20

20^h 44^m 3^s r.m.s.24^d 8641

Index to left.

15 59 53

60.8

119.5

58.2

119.7

58.7

61.5

120.2

1.19

56.5

120.9

61.4

118.7

64.4

57.3

121.7

1.16

1.18

β

Mar 24, 1899.

IV

Index to right.

16 10 57

148.9

209.8

148.4

209.8

60.9

61.4

122.3

1.14

a

16 16 30

147.4

209.9

150.9

208.4

62.5

57.5

120.0

1.19

1.16

mean = 1.1716 08 01
-31 correction

16 07 30

21^h 07.5^m br. m. S.24^d 8 8 03

Index to right.

16 22 14

151.7

208.5

149.0

209.9

56.8

60.9

117.7

1.24

a

16 27 22

147.5

209.0

148.4

206.5

61.5

58.1

119.6

1.20

1.22

V

Index to left

16 33 12

240.2

299.0

235.4

300.6

58.8

65.2

124.0

1.11

Mar. 24, 1899.

B

234.0

300.8

237.7

297.9

$$\begin{array}{r}
 66.8 \\
 60.2 \\
 \hline
 127.0
 \end{array}
 \quad
 \begin{array}{r}
 1.04 \\
 1.08 \\
 \hline
 \text{mean} = 1.15
 \end{array}$$

16 40 11

16 30 45

-31 corrections

16 30 14

21^h 30^m 2^s Br. m. S.24^d 8959

Band #394

16^h 47^m 00^s.0 =16^h Arnold + Durr #958
47^m 31.1

Wed. Mar. 29, 1899.

T. Nulpenlae.

Phot. N.

Cran: obs.

Band #394
14^h 4^m 00^s

Arnold + Dent #958
14^h 4^m 32^s.2

Index bright.

148.9
209.1 < comp. star dis.
148.9
206.4

60.2	
57.5	1.24
<u>117.7</u>	

a

15 25 20

148.6
207.2
149.0
207.6

58.6	
58.6	1.25
<u>117.2</u>	1.24

Index to left

15 30 25

clouds

237.7
297.2
237.7
297.7

59.5	
60.0	1.20
<u>119.5</u>	

clouds

B

15 40 00

238.6
297.2
238.0

58.6	1.23
59.7	1.22
<u>118.3</u>	

15 28 50
-32 correction

clouds

15 28 18

clouds

20^h 28^m 33^s m. 5.

29^d 8530

297.7 ← assumed from
previous set
in reduction
last reading lost in clouds.

mean = 1.23

Troubled by clouds during last two sets.

Mar. 29, 1899.

last reading of all lost in clouds:

$$\begin{array}{rcl} \text{Band \#394} & & \text{Arnold + Dent \#958} \\ 16^h \ 59^m \ 00.^s & = & 16^h \ 59^m \ 32.^s \end{array}$$

Saturday, Apr. 1, 1899.

T Nulpeculae

Phot N:

Cram: obs

Band #394
15^h 46^m 00.0

Arnold + Dent #58
15^h 46^m 47.3

Index to left.

235.8
300.9 < comp. star dis.

233.5
300.3
 $\frac{65.1}{66.8}$
131.9 0.94

β

234.4

300.4

235.0

305.7

Index to right.

322.4

33.4

326.0

28.0

$\frac{66.0}{70.7}$
136.7 0.84
0.89

$\frac{71.0}{62.0}$
133.0 0.92

α

326.8

29.1

321.7

32.0

$\frac{62.3}{70.3}$
132.6 0.92
0.92

mean = 0.90

15 55 47

16 0 56

16 07 42
~~16 07.7 47~~

11 42

16 11.7 47

16 04 02

-47 correction

16 03 15

21^h 03.29 m. T.

1. d 8772

Apr. 1, 1899.

Index to right.

16 24
16 ~~16.4~~

141.0	72.4	0.87
213.4	<u>62.9</u>	
147.2	135.3	
210.1		

a16 20 12
16 ~~20.20~~

147.0	61.0	0.99
208.0	<u>68.6</u>	
144.0	129.6	0.93
212.6		

Index to left

16 26 58

50.9	72.7	0.85
123.6	<u>63.7</u>	
56.3	136.4	
120.0		

B

16 30 28

16 23 30
-47

16 22 43

21^h 22^m 7^s S. m. S.1^d 8908

correction

Daylight 58.7

119.0

string 54.1

123.0

60.3	1.00
<u>68.9</u>	0.92
129.2	
mean = 0.92	

Bond #394

16^h 48^m

00.0 =

Arnold + Dent #958
16^h 48^m 47.5

Times in minutes + tenths on this date were recorded by Mr. Colson and have been changed to seconds in reduction.

Mon. Apr. 3, 1899.

Transparencies:

Phot. N: Cram: obs.

Bond #394. Arnold + Dent #958.
 $12^h \quad 35^m \quad 00.0 = 12^h \quad 35^m \quad 55.7$

Index tonight + above.

326.3
 27.5 < comp. standards.

328.9 61.2
 28.4 59.5
 120.7 1.18

a

326.1
 27.3 61.2
 54.3 1.29
 330.2 115.5 1.24
 24.5

Index to left + below

58.7
 115.2 56.5
 61.5
 56.5 118.0
 118.0

B

57.9
 116.6 58.7 1.26
 58.1 1.25
 58.8 116.8
 116.9 mean = 1.24

13 04 47

13 11 55

13 21 07

13 27 20

13 16 17
 -36 correction

13 15 21

18^h 15.4^m 52.7^s M.T.

3.27607

Apr 3, 1899.

Index to left + below.

13 34 30

238.5		
294.0	55.5	
237.6	<u>59.4</u>	1.31
297.0	114.9	

B

13 41 55

237.5		
299.0	61.5	
239.5	<u>57.3</u>	1.22
296.8	118.8	1.26

Index to right + above

13 52 26

150.4		
205.9	55.5	
147.7	<u>60.7</u>	1.28
208.4	116.2	

a

14 01 26

13 47 34 correction

13 46 38

18^h 46^m 6^s in T.3^d 7 8 2 3

147.5		
206.7	59.2	1.31
148.3	<u>55.7</u>	1.30
204.0	114.9	
	mean = 1.28	

Index to right and above.

15 26 13
17 22

Reject
heavy dew on
eyepiece makes
images faint

29.0
23.8
.
.

330.7		
29.4	58.7	
330.8	<u>56.3</u>	1.30
27.1	115.0	

Apr. 3, 1899.

15 30 51

A

329.5

58.1

1.23

27.6

60.31.26

329.0

118.4

29.3

Index to left.

62.4

15 36 35

119.8

57.4

1.32

56.9

61.7

114.3

118.6

B

63.6

1.39

15 40 24

117.2

53.6

1.3615 33 31
- 56 correction

61.8

57.6mean = 1.31

15 32 35

119.4

111.220^h 32^m 6^s a.m. T.3^d 8560120.2

Index to left.

238.5

299.0

60.5

1.28

55.5

242.5

116.0

298.0

240.3

15 52 52

298.5

58.2

1.2559.21.26

241.0

117.4

300.2

B

Apr. 3. 1899.

Index to right.

15 58 54

331.2

58.2

1.31

29.4

56.6

330.9

114.8

a

27.5

330.0

27.4

57.4

1.26

59.6

1.28

329.9

117.0

mean = 1.27

29.5

15 05 07

15 55 51

-56 correction

15 54 55

20^h 54^m 9^s m.53^d 87 14

Band #394

16^h 10^m 00.0 =

Arnold + Dent #958

16^h 10^m 56.2

Sky unusually clear even to horizon: var. and comp. var seen clearly at 12:30 in phot. but observations not begun until half an hour later waiting simply for greater altitude. Stars somewhat faint but observations taken slowly and without difficulty. Last two groups taken later with moon up, moon so near last quarter that it made but little difference, stars being brighter at this greater altitude than before.

Tues. Apr. 4, 1899.

5 Nulpeculae

Phot N:

Cran: obs.

Bond #394

13^h 06^m 00.0

=

Arnold + Dent #958

13^h 06^m 59.5

Index to left and below.

239.9

< camp. was dis.

301.6

234.2

61.7

70.3

132.0

0.94

304.5

B

236.3

68.7

305.0

65.0

0.90

238.7

133.7

0.92

303.7

Index to right and above.

328.0

31.0

63.0

328.0

65.9

1.00

128.9

33.9

a

326.5

68.7

35.2

60.4

1.00

330.6

129.1

1.00

31.0

mean = 0.96

13 56 56

13 42 54

-1 00 correction

13 41 54

18^h 41.9^m 54.5

4^d 7791

Apr. 4, 1899.

Index to right.

16 09 02

147.2

214.9

148.0

217.1

67.7

69.1

136.8

0.84

a

16 14 30

145.2

217.2

150.0

212.7

72.0

62.7

134.7

0.88

0.86

Index to left.

16 22 36

237.1

303.5

236.1

303.6

66.4

67.5

133.9

0.90

B

16 27 53

236.6

306.7

239.0

303.2

70.1

64.8

134.9

0.88

0.89

mean = 0.88

16 18 30

-1 0

correction

16 17 30

21^h 17.5^m 59^s m.s.4^d 8872

Band #394

16^h 34^m

00.0 =

Arnold + Dent #958

16^h 34^m 59.7

Wed. Apr. 5, 1899.

J. Nulpeculae: Phot. V. Cam. obs.
 Set chronometer ahead $23^h 59^m$
 Byrd #394 Arnold + Dent #958
 $15^h 19^m 00.0 = 15^h 19^m 03.8$

Index to right.

$148.1 - 214.6 < \text{comp. star dis.}$
 $15 \quad 34 \quad 10$
 $214.6 \quad 66.5$
 $146.0 \quad 70.8$
 $216.8 \quad 137.3$
 0.83

A Stopped to shift phot. from dome to balcony

143.6
 $15 \quad 48 \quad 27$
 $217.0 \quad 73.4$
 $148.5 \quad 65.0$
 $213.5 \quad 138.4$
 0.81
 0.82

Index to left

235.7
 $15 \quad 55 \quad 23$
 $303.4 \quad 67.7$
 $233.4 \quad 72.0$
 $305.4 \quad 139.7$
 0.78

B

235.5
 $15 \quad 59 \quad 24$
 $307.5 \quad 72.0$
 $238.2 \quad 64.9$
 $303.1 \quad 136.9$
 0.84
 0.81
 $\text{mean} = 0.82$

$15 \quad 49 \quad 16$
 -04 correction
 $15 \quad 49 \quad 12$
 $20^h 49^m 2 \text{ Gr. m. S.}$
 $5^d 86 44$

Apr. 5, 1899

Index to left

16 03 33

57.1	67.9	
125.0	73.5	0.75
52.6	<u>141.4</u>	
126.1		

B

16 07 49

54.6	74.0	0.73
128.6	68.1	
57.0	<u>142.1</u>	0.74
125.1		

Index to right.

16 15 37

327.0	68.9	
33.9	71.0	0.78
324.4	<u>139.9</u>	
35.4		

a

16 19 53

Day-

324.0	73.5	0.77
37.5	66.6	
326.0	<u>140.1</u>	0.78

16 11 43

-04

light.

16 11 39

21^h 11.6^m Gr. m. 5.

take	3 1.6	
mean	3 3.5	= 32.6

mean = 0.765^d 8830

Bond #394

Arnold + Dent #958

16

30

00.0

=

16^h30^m

54.0

Daylight somewhat strong at last but not troublesome.

Sat. Apr 8, 1899.

T Nulpeculae.

Phot N.

Cram: obs.

Band #394

Arnold + Dent #958

15^h 40^m 00^s.0

= 15^h 40^m 16^s.0

Index to right.

15 51 26

146.9

2
307.4

< comp. star dis.

149.0

209.9

60.5

60.9

121.4

1.16

a

15 55 52

147.5

209.0

147.6

208.1

238.0

61.5

60.5

122.0

1.15

1.16

Index to left.

6
15 00 33

296.5

236.0

298.0

58.5

62.0

120.5

1.18

B

6
15 04 36

15 58 07

-16 correction

15 57 51

20^h 57^m 51^s cr. m. T.

8.2 87 35

238.3

298.5

240.4

296.6

60.2

56.2

116.4

1.27

1.22

mean = 1.19

Apr. 8, 1899.

Index to left.

16 07 13

237.9

296.7

235.6

298.8

58.8
63.2
122.0

1.15

β

16 10 54

236.7

296.4

239.5

295.1

59.7
55.6
115.3

1.30
1.22

Index to right

16 15 ²²
~~53~~

330.2

327.1

328.5

27.4

62.9
58.9
121.8

1.15

Day-
light

a

325.9

28.7

328.6

62.8
59.7
122.5

1.14
1.14

mean = 1.18

strong

16 19 43

16 13 18

-16 correction

16 13 02

21^h 13.0^m Gr. m. T.

8.2 8840

Band #394

16^h 30^m 00.0 = 16^h 30^m 16.2 annul + Dent #958

Last of second group taken in strong daylight and with great difficulty on account of faintness of stars.

Sun. Apr. 9. 1899.

5 Vulpeculae

Phot. N:

Cram: abs.

Boyd #394

Arnold + Dent #958

14^h 06^m

00.0

= 14^h 06^m 20.0

20.0

Index to left and below.

53.3

< comp. star dis.

126.4

50.1

124.2

73.1

74.1

147.2

0.63

B

49.2

125.6

53.1

125.0

76.4

71.9

148.3

0.61

0.62

I

Index to right and above.

143.1

214.5

143.0

217.1

71.4

74.1

145.5

0.66

a

143.9

215.4

143.1

215.4

71.5

72.3

143.8

0.70

0.68

mean = 0.65

Index to right

323.0

33.0

321.9

35.5

70.0

73.6

143.6

0.70

14 25 51

14 33 47

14 41 45

14 49 43

14 37 46

-20 correction

14 37 26

19^h 37.4 Br. m. 5.

9.8177

15 19 45

Apr. 9, 1899.

15 24 20

a

322.0

37.6

322.5

34.9

Index to left.

231.5

305.6

232.3

307.0

$$\begin{array}{r} 75.6 \\ 72.4 \\ \hline 148.0 \end{array}$$

$$\begin{array}{r} 0.61 \\ \hline 0.66 \end{array}$$

II

15 32 05

74.1

0.60

$$\begin{array}{r} 74.7 \\ \hline 148.8 \end{array}$$
B

15 37 32

15 28 26
-20 correction15 28 06
20^h 28^m 1^s in T.9.^d 8529

230.6

306.4

233.0

303.5

$$\begin{array}{r} 75.8 \\ 70.5 \\ \hline 146.3 \end{array}$$

$$\begin{array}{r} 0.65 \\ \hline 0.62 \end{array}$$
mean = 0.64

Index to left.

52.7

15 41 23

123.6

50.6

127.7

$$\begin{array}{r} 70.9 \\ 77.1 \\ \hline 148.0 \end{array}$$

0.61

B

15 45 10

53.0

126.3

53.2

126.0

$$\begin{array}{r} 73.3 \\ 72.8 \\ \hline 146.1 \end{array}$$

$$\begin{array}{r} 0.65 \\ \hline 0.63 \end{array}$$

Apr. 9, 1899.

III

Index bright.

15 50 50

143.5

213.5

141.0

216.0

$$\begin{array}{r} 70.0 \\ 75.0 \\ \hline 145.0 \end{array}$$

0.67

a

142.8

217.9

144.5

213.7

$$\begin{array}{r} 75.1 \\ 69.2 \\ \hline 144.3 \end{array}$$

$$\begin{array}{r} 0.69 \\ 0.68 \\ \hline \end{array}$$
mean = 0.66

15 56 17

15 48 25

-20 correction

15 48 05

20^h 48.1^m m.T.

9.8668

Index bright.

322.8

34.0

322.1

36.7

$$\begin{array}{r} 71.7 \\ 74.6 \\ \hline 146.3 \end{array}$$

0.65

16 01 45

a

320.5

38.0

324.9

33.6

$$\begin{array}{r} 77.5 \\ 68.7 \\ \hline 146.2 \end{array}$$

$$\begin{array}{r} 0.65 \\ 0.65 \\ \hline \end{array}$$

16 05 08

IV

Index to left.

233.5

302.4

231.1

307.6

$$\begin{array}{r} 68.9 \\ 76.5 \\ \hline 145.4 \end{array}$$

0.67

16 10 58

Apr. 9, 1899.

16	15	43	<u>B</u> { Day- -20 correction light	232.5			
16	08	23		305.5	73.0	0.72	
				234.6	69.8		
16	08	03		304.4	142.8	0.70	
21 ^h	08 ^m	00 ^s	cor. m. T.				
9 ^d	8806					<u>mean = 0.68</u>	

Band #394 Arnold + Dent #58
 16^h 26^m 00^s = 16^h 26^m 20^s.4

Daylight strong and a little troublesome at
 last of fourth group.

Mon. Apr. 10, 1899.

5 Nucleolae.

Phot. N.

Cram. obs.

Boyd #394

13^h 21^m 00.0 =

Arnold + Dent #958

13^h 21^m 24.0

Index to right

325.6
31.0 < comp. char dis.
324.4
31.5

65.4
67.1
132.5

0.93

a

325.9

31.7

326.1

29.0

65.8
62.9
128.7

1.00
0.96

Index to left

56.5

120.0

53.6

120.9

63.5
67.3
130.8

0.96

B

53.6

121.9

56.4

118.2

68.3
61.8
130.1

0.98
0.97

mean = 0.96

15 39 48

15 30 13

-24 correction

15 29 49

20^h 29.8^m 2.7^s m. J.

10^d 8541

Apr. 10, 1899.

Index to left

15 57 46

235.7

299.5

234.0

300.1

$$\begin{array}{r} 63.8 \\ 66.1 \\ \hline 129.9 \end{array}$$

0.98

B

16 02 20

233.6

299.6

235.5

298.6

$$\begin{array}{r} 66.0 \\ 63.1 \\ \hline 129.1 \end{array}$$

1.00

0.99

Index to right

16 10 07

145.3

209.5

146.8

212.6

$$\begin{array}{r} 64.2 \\ 65.8 \\ \hline 130.0 \end{array}$$

0.98

Day-

a

light

16 14 03

146.9

213.6

66.7

0.99

16 06 04

-24 minutes

146.6

209.6

$$\begin{array}{r} 63.0 \\ 129.7 \end{array}$$

0.98

mean = 0.98

16 05 40

21^h 05^m 7^s m.m. 5.

10.2 8790

Band #394

16^h25^m

00.0

=

Arnold + Dent #958

16^h25^m

24.5

Daylight made images faint in last of last group.

Tues. Apr. 11, 1899.

Wulpeculae.

Phot. V.

Cram. obs.

(From East Equatorial Book)

#

Band #394

Arnold + Dent 958

12^h 18^m 00.^s0

= 12^h 18^m 28.^s0

Index to left and below

12 55 03
48 25

237.0 +30.0

298.6 222.5

6 236.5

297.3

B

234.6

299.5

237.0

297.0

Index to right and above.

326.8

28.5

327.2

31.8

a

324.8

29.6

327.0

27.0

13 11 50

13 02 58

-28 correction

13 02 30

18^h 02.^m5 gr. m. T.

11.7518

wrong pair stars
used

61.6

60.8
122.4

1.14

64.9

60.0
124.9

1.09

1.12

61.7

64.6
126.3

1.06

64.8

60.0
124.8

1.09

1.08

mean = 1.10

Apr. 11, 1899.

Index to right and above.

13 16 58

148.6

209.0

147.6

208.1

60.4

60.5

120.9

1.17

A

13 23 40

147.0

210.2

148.0

207.5

63.2

59.5

122.7

1.13

1.15

Index to left and below.

13 29 51

56.8

118.2

57.8

118.0

61.4

60.2

121.6

1.16

B

Hazy

13 33 28

54.8

119.6

58.1

115.9

64.8

57.8

122.6

1.14

1.15

mean = 1.15

13 25 59

-28 correction

13 25 31

18^h 25.5^m ex. m. T.

11.7678

Bayer # 394

13^h 40^m

00.0 =

13^h40^m

28.2

Arnold + Dent #958

In last half of first group stars seemed faint, and in second group have become apparent, especially in last four to six settings.

Wed. Apr. 12 1899.

T. Vulpianae:

Phot. V.

Cram: obs.

15^h Band #394
32^m 00.0

Ampld + Dent #958
15^h 32^m 32.0

Index to left

57.0

< comp. star dis.

117.9

58.0

60.9
59.0
119.9

1.19

117.0

B

57.2

117.8

60.6
59.0
119.6

1.20

57.6

119.6

1.20

116.6

clouds

Index to right (and below)

150.8

204.1

53.3
52.4

1.52

154.1

105.7

clouds

a

206.5

clouds

151.4

205.8

158.9

206.5

54.4

47.6

102.0

1.61

1.56

mean = 1.38

Daylight

strong

clouds

assumed from previous
set

16 13 24

16 01 37

-32 correction

16^h 01^m 05^s ser. m. T.

21 01.1

12.8758

Last reading lost in clouds + daylight

Tues. Apr. 18, 1899.

Transpenculae:

Phot. V.

Cran. obs.

Band #394

Bliss & Brighton #1182

14^h 58^m

00.0 =

15^h

01^m

35.0

Index to left.

48.5

< comp. star dis.

124.6

49.9

127.5

76.1

77.6

153.7

0.50

B

49.7

124.3

50.1

125.9

Index to right

141.2

217.3

141.5

213.5

76.1

72.0

148.1

0.61

a

142.0

214.2

140.8

218.3

72.2

77.5

149.7

0.58

0.60

mean = 0.57

15 8 47
13 47

15 17 47

15 20 47

15 27 47

15 20 47

- 3 34 correction

15 17 13

20^h 17^m 2

der. m.s.

18.28452

Apr. 18, 1899.

Index to right.

319.8

35.6

322.0

28.4

75.8

66.4

142.2

0.73

a.

321.0

28.5

322.5

33.0

67.2

70.5

137.7

0.82

0.78

Index to left.

229.0

306.7

232.7

303.8

77.7

71.1

148.8

0.60

β.

232.6

302.0

231.7

306.1

69.4

74.4

143.8

0.70

0.65

mean = 0.72

15 51 00

15 43 02

- 3 34

correction

15 39 28

20^h 39^m.518^d 8608

Dr. W. S. Bond # 394

15^h55^m00^s.0

Bliss + Creighton # 1182

15^h58^m33^s.5

Night foggy and images somewhat blurry.
at best

Wed. Apr. 19. 1899.

Telescope:

Phot N.

Cram: obs.

Band #394

Arnold + Dent #958

$15^h \quad 04^m \quad 00.0 = 15^h \quad 04^m \quad 58.0$

Index to left -

15 (11 46)	236.1		
12 41	299.8		
(13 47)	235.2	63.7	
(14 26)	300.2	<u>65.0</u>	1.00
		128.7	

B

15 (15 09)	233.9		
15 53	299.4	65.5	0.95
(16 48)	235.2	<u>66.0</u>	0.98
(18 01)	301.2	131.5	

Index to right.

15 (19 04)	324.9		
20 13	32.5	67.6	
(21 28)	325.4	<u>64.5</u>	0.94
(22 10)	29.9	132.1	

a

15 (22 46)	325.8		
23 29	28.5	62.7	1.00
(24 21)	325.6	<u>66.5</u>	0.97
(24 58)	32.1	129.2	

15 18 04
- 58 correction

15 17 06
20h 17.1 hr. m. 5.

19d 8452

mean = 0.98

Apr. 19. 1899.

Index to right

15 (32 20)

145.4

23 10

212.0

66.6

1.01

(34 56)

147.5

$\frac{61.8}{128.4}$

(35 50)

209.3

a

15 (36 43)

147.4

37 46

210.6

63.2

0.97

(39 01)

144.9

$\frac{67.0}{130.2}$

0.99

(39 53)

211.9

Index to left (and above slightly)

15 (41 57)

120.2

42 49

234.0

113.8

0.92

(44 19)

121.9

113.5

227.3

132.7

(44 38)

235.4

B

15 (47 10)

120.0

~~48 27~~

Day -

237.4

49 27

light

118.7

(50 29)

117.4

115.3

232.7

127.3

1.04

0.98

(52 14)

234.0

mean = 0.98

15 40 48

-58 correction

15 39 50

20^h 39.8^m 15^s

19.2 8610

B and # 394

56^m

00.0^s

=

Argold + Dent # 958

15^h

56^m

58.2^s

Fri. Apr. 21, 1899.

5 Vulpeculae: Phot. V. Crum: obs.

Bound #394

14^h 21^m 00^s.0 = 14^h 21^m 08^s.0 Arnold + Dent #958

Index to the left-

14 (54 31)

55 16

(56 14)

(57 30)

57

14 (58 30)

59 41

15 (00 54)

(02 18)

15 (04 04)

05 17

(06 25)

(08 10)

15 (09 08)

10 49

(11 53)

(12 50)

15 02 46

-0.8 correction

15 02 38

20^h 02^m 02^s.6 ser. m. 5.

21^d 8351

238.1

297.6

239.0

297.2

< comp. star dis

59.5

58.2

117.7

1.24

B.

237.0

299.4

238.5

297.7

62.4

59.2

121.6

1.16

1.20

Index to right-

329.7

26.9

327.8

25.9

57.2

58.1

115.3

1.30

a

327.7

27.0

328.7

25.6

59.3

56.9

116.2

1.28

1.29

mean = 1.24

Apr. 21, 1899.

Same again
Index to right

8	15	(24 10)	150.5		
		25 40	206.3		
		(26 52)	150.8	55.8	1.33
		(28 47)	208.9	58.1	
				<u>113.9</u>	

a

15	(30 06)	147.9			
	31 08	206.5	58.6	1.31	
	(32 21)	150.2	56.0	1.32	
	(33 ~~48~~)	206.2	<u>114.6</u>		

Index to left (and above slightly)

15	(36 58)	59.5			
	37 50	116.3	56.8	1.25	
	(38 49)	57.7	60.4		
	(40 12)	118.1	<u>117.2</u>		

β

15	(41 50)	59.0			
	43 36	117.5	58.5	1.31	
	(44 52)	61.8	56.0	1.28	
	(46 03)	117.8	<u>114.5</u>		
				<u>mean = 1.30</u>	

15 34 34

-08 correction

15 34 26

20^h 34.4^m 57.5^s21^d 8 57 2

Band #394

49^m 00.0

=

15

49^m

08.4

Arnold + Dent #958

Sky very clear and var. seemed very bright
for minimum

Sat Apr. 22. 1899.

Trouspiculae

Photo V

Cannals

Bond #394

Arnold + Dent #958

14^h 5^m 00.0 = 14^h 5^m 14.6

Index to left

58.1

< comparison dis.

122.4

49.7

124.0

69.3

74.3

143.6

0.70

B

58.8

125.0

53.9

125.6

74.2

69.7

143.9

0.70

0.70

I

Index to right.

141.9

214.3

140.4

213.0

72.4

72.6

145.0

0.67

A

140.5

216.6

139.9

212.3

76.1

73.4

149.5

0.58

0.62

mean = 0.66

14 30 05

14 22 51

-15 correction

14 22 36

19^h 22.6 ^{sr. m. 5.}

22. 8073

Last set hastened because of approaching clouds

Irregularly cloudy until 14^h 50^m

Apr. 22 1899.

Index to right

$$\begin{array}{r} 14 \\ 15 \end{array} 59 \ 00$$

322 .0

33 .8

322 .9

33 .6

71.8

70.7

142.5

0.72

a

15 09 28

clouds →

320 .1

36 .6

322 .0

30 .7

76.5

68.7

145.2

0.67

0.70

II

Index to left (and above slightly)

15 15 07

232 .6

303 .8

231 .0

305 .0

71.2

74.0

145.2

0.67

B

15 20 53

15 " ⁰⁷₁₃ correction15^h 10^m 52^s Dr. M. T.20^h 10.922^d 8409

230 .9

305 .3

230 .4

301 .4

74.4

71.0

145.4

0.67

0.67

means = 0.68

Index to left and above (slightly)

15 (34 10)

35 43

(36 37)

(37 27)

229 .6

304 .8

231 .1

302 .4

75.2

71.3

146.5

0.64

B

Apr. 22, 1899.

15 (31 21)

32 2

(32 47)

(33 23)

233 .6

302 .7

230 .7

304 .1

$$\begin{array}{r} 69.1 \\ 73.4 \\ \hline 142.5 \end{array}$$

$$\begin{array}{r} 0.72 \\ \hline 0.68 \end{array}$$

III

Index to right

15 (38 42)

39 44

(40 43)

(41 36)

322 .4

33 .0

320 .4

35 .7

$$\begin{array}{r} 70.6 \\ 75.3 \\ \hline 145.9 \end{array}$$

0.66

a

43 13

(44 43)

321 .5

33 .9

321 .5

34 .8

$$\begin{array}{r} 72.4 \\ 72.8 \\ \hline 145.2 \end{array}$$

0.67

0.66

mean = 0.67

15 37 $\frac{41}{15}$ correction15 37 $\frac{26}{15}$ correction20 37.4 $\frac{26}{15}$ correction22 37.4 $\frac{26}{15}$ correction

15 (42 34)

(44 02)

(46 28)

(47 06)

15 (45 15)

45 44

140 .5

214 .5

142 .6

210 .5

$$\begin{array}{r} 74.0 \\ 67.9 \\ \hline 141.9 \end{array}$$

0.74

a

15 (47 37)

48 25

(49 05)

(49 33)

142 .7

216 .4

140 .5

210 .4

$$\begin{array}{r} 73.7 \\ 69.9 \\ \hline 143.6 \end{array}$$

0.70

0.72

Apr. 22, 1899.

IV

Index to left

15 (50 26)

231.3

55-

303.1

 $\frac{71.8}{73.4}$

0.67

(57 39)

Day -

230.0

 $\frac{73.4}{145.2}$

(58)

303.4

(3)

15 (52 23)

230.8

53.0

306.1

75.3

 $\frac{0.65}{0.66}$

(33)

231.4

70.7

0.66

(54 04)

302.1

146.0

mean = 0.6915 49 31
-15 correction

15 49 16

Band #394

20^h 49.3^m 22.7^s5^h57^m

00.0 =

15^h

Arnold + Don #958

57^m 15.3

22.8676

Group I unaffected by clouds but last readings postponed
 Group II: clouds interrupted readings in 2nd set: but
 no readings obtained during clouds: only a few lighter
 passing clouds.

Groups III and IV taken rapidly to finish
 before daylight got too strong

Also Group III: first set by accident put on
 p74 and second then on previous page.

Tue. Apr. 28, 1899.

5 Vulpeculae
Byrd #394
14^h 57^m

Phot N.

trans. obs.

Arnold + Dens #958

00.0 = 14^h 57^m 36.0

Index to right and below

15 (17 39)
1 18 39
(19 33)
(21 13)

332.1
41.4
330.3
41.0
69.3
67.7
137.0
0.83

a

15 (21 59)
1 22 57
(23 54)
(24 50)

332.0
38.9
332.9
38.8
66.9
65.9
132.8
0.92
0.88

Index to left and above (slightly)

15 (27 43)
1 28 25
(29 25)
(29 56)

66.3
129.5
65.6
128.2
63.2
62.6
125.8
1.07

B

15 (30 43)
1 32 07
(33 04)
(33 27)

63.0
126.7
64.4
128.5
63.7
64.1
127.8
1.03
1.05
mean = 0.96

15 25 32
-36 correction

15 24 56
20^h 24^m 9^s cor. m. S.
28.8506

Apr. 28, 1899.

Index to left and above

15 (34 04)
 34 41
 (35 19)
 (35 43)

245.0

310.4

245.4

308.9

65.4

63.5

128.9

1.00

B

15 (36 00)
 36 35
 (37 16)
 (37 40)
~~84~~

245.9

308.5

243.5

308.5

62.6

65.0

127.6

1.03

1.02

Index to right and below

15 (39 31)
 40 01
 (41 15)
 (41 58)

~~352.4~~

220.8

153.9

219.0

68.3

65.1

133.4

0.91

15 (42 29)
 43 21
 (44 11)
 (45 07)

Daylight

155.2

220.6

155.6

221.9

65.4

66.3

131.7

0.94

0.92

mean = 0.97

15 38 39
~~-36 correction~~

15 38 03

20^h 38^m 03^s

28^d 8597

Band #394

00.0

=

16^h

Amld + Dmr #958
 12^m 36^s 3

Sat. Apr. 29, 1898.

Trupeculae

Phot. V:

Cram: obs.

Bond #394

Arnold + Dent #958

15^h 6^m 00.0 =

15^h 06^m 38.2

Index to left

15 18 7

247.0

comp star dis.

307.2

60.2

1.27

249.0

56.4

116.6

305.4

B

15 23 40

246.8

307.8

61.0

1.21

247.2

58.4

1.24

305.6

119.4

Index to right

15 30 30

339.4

36.4

57.0

1.24

335.8

61.0

118.0

36.8

a

15 35 24

335.6

38.5

62.9

1.14

15 26 55
-38 correction

337.4

59.5

1.19

15 26 17

36.9

122.4

mean = 1.22

20^h 26^m 3^s ex. m. T. Bond #394

Arnold + Dent #958

29^d 8 51 6 15^h 46^m 00.0 =

15^h 46^m 38.3

Wed. May 3, 1899.

T Vulpularae: Phot V. Exam: obs.

2 14 01 40
 66.6
 127.9
 66.4
 127.6

Index to left
 comp. char dis.

$$\begin{array}{r} 61.3 \\ 61.2 \\ \hline 122.5 \end{array}$$

1.14

β

14 08 47
 64.1
 127.2
 66.6
 126.1

Index to right

$$\begin{array}{r} 63.2 \\ 59.5 \\ \hline 122.7 \end{array}$$

$$\begin{array}{r} 1.13 \\ \hline 1.14 \end{array}$$

14 13 51
 157.0
 217.6
 156.4
 217.9

$$\begin{array}{r} 60.6 \\ 61.5 \\ \hline 122.1 \end{array}$$

1.14

α

14 21 13
 14 11 23
 -53 correction
 14 10 30
 19^h 10.5^m 52.5^s
 3^d 9990

$$\begin{array}{r} 157.6 \\ 215.4 \\ 155.9 \\ 219.5 \end{array}$$

$$\begin{array}{r} 57.8 \\ 63.6 \\ \hline 121.4 \\ \text{mean} = 1.14 \end{array}$$

$$\begin{array}{r} 1.16 \\ 1.15 \\ \hline 1.14 \end{array}$$

Band #394
 13^h 47^m 00.0^s =

Arnold + Dent #958
 13^h 47^m 52.5^s

May 3. 1899.

14 37 31	333.6		
	39.1	65.5	1.09
	335.2	<u>59.2</u>	
	34.4	124.7	

a

14 45 08	335.3		
	35.8	60.5	<u>1.10</u>
	334.3	<u>64.0</u>	1.10
	38.3	124.5	

II Index to left

14 53 44	243.7		
	307.4	63.7	1.11
	247.0	<u>59.9</u>	
	306.9	123.6	

B

14 58 58	246.8	57.2	<u>1.19</u>
14 48 50	304.0	<u>62.8</u>	1.15
-53 correction	245.3	120.0	
	308.1	mean	<u>= 1.12</u>

14 47 57
19^d 48.0^m Br. m. 5.
3. 8 2 50

Index to left

15 22 17	245.0		
	308.1	63.1	1.13
	245.3	<u>59.6</u>	
	304.9	122.7	

B

May 3. 1899.

15 17 49

245.2

306.4

246.6

304.7

III

Index to right

334.4

15 28 40

37.9

335.0

36.3

$$\begin{array}{r} 61.2 \\ 58.1 \\ \hline 119.3 \end{array}$$

$$\begin{array}{r} 1.21 \\ \hline 1.17 \end{array}$$

$$\begin{array}{r} 63.5 \\ 61.3 \\ \hline 124.8 \end{array}$$

1.09

a

334.3

37.9

335.7

37.6

$$\begin{array}{r} 63.6 \\ 61.9 \\ \hline 125.5 \end{array}$$

$$\begin{array}{r} 1.08 \\ \hline 1.08 \end{array}$$

mean = 1.12

15 33 19

15 25 31

-53 correction

15 24 38

20^h 24^m 6^s br. m. f.3.^d 8504~~Index~~

D aylight too strong to continue

In Group III first set by accident played first in sequence.

1 Band #394 Arnold + Dent #958
 15^h 47^m 00.0 = 15^h 47^m 52.7

Fri. May 5. 1899.

5 Vulpeculae Phot N. Ann obs.
 Bond #394 Arnold + Durr #958
 14^h 38^m 00.0 = 14^h 38^m 58.3
 Index to left

14 50 25
 59.6
 130.2 < comp. star dis.
 62.6
 130.4
 $\frac{70.6}{67.8}$ 0.81
 138.4

B

14 56 52
 62.4
 128.6
 62.6
 130.0
 $\frac{66.2}{67.4}$ 0.90
 133.6 0.86

I Index to right

15 01 12
 151.5
 217.6
 153.0
 220.0
 $\frac{66.1}{67.0}$ 0.91
 133.1

a

15 06 20
 14 58 42
 -58 correction
 14 57 44
 19^h 57^m 44^s M.T.
 5.2 8 3 17
 151.9
 218.5
 154.0
 218.6
 $\frac{66.6}{64.6}$ 0.95
 -131.2 0.93
mean = 0.90

May 5, 1899.

Index to right (and ^{below} ~~above~~ slightly)

15	12	27	333.4		
			38.4	65.0	
			333.1	67.4	0.93
			40.5	132.4	

a

15	17	58	331.0		
			40.8	69.8	0.86
			331.1	65.9	0.90
			37.0	135.7	

II Index to left (and above slightly)

15	24	12	242.4		
			307.7	65.3	0.91
			241.6	67.9	
			309.5	133.2	

B

15	30	29	242.5	68.5	0.90
15	21	17	311.0	65.4	0.90
		-58 correction	243.0	133.9	
15	20	19	308.4		
20 ^h	20 ^m	20.3 S.M.T.		<u>mean</u>	<u>= 0.90</u>
5 ^d	8474				

Band #394

15^h 40^m 00.0

=

15^h 40^m

Arnold + Dent #958

58.5

Sat. May 6, 1899.

5 Nulpeculae.

Phot. N.

Crim: obs

Band #394.

Arnold + Dent #958

14^h 04^m 00.0 = 14^h 04^m 01.0

Index to left

241.6

316.2

242.6

315.7

< comp star dis.

74.6

73.1

147.7

0.62

B

242.1

315.0

244.2

315.6

72.9

71.4

144.3

0.69

0.66

Index to right

333.4

46.0

333.46

45.3

72.6

71.7

144.3

0.69

a

334.8

46.0

332.9

44.6

71.2

71.7

142.9

0.72

0.70

mean = 0.68

-01 correction

14 26 08

19^h 26^m 1^s ser. m. 5.

6.8098

May 6, 1899

Index to right

14 (46 19)
 46 57
 (48 28)
 (49 26)

155.4

226.2

156.5

223.1

70.8
66.6
 137.4

0.83

a

14 (50 32)
 51 47
 (52 56)
 (53 55)

155.0

224.8

156.0

224.3

69.8
68.3
 138.1

0.81
0.82

Index to left-

14 (55 57)
 57 01
 (58 28)
 15 (60 32)

64.3

134.3

65.0

136.4

70.0
73.4
 143.4

0.71

B

15 (01 22)
 03 22
 64 33)
 (05 21)

64.6

136.6

65.3

135.6

72.0
70.3
 142.3

0.73

0.72

mean = 0.77

14 54 47

- 01 correction

14 54 46

19^h 54.^m8 Gr. m. J.

^d
 6. 8298

May 6, 1899.

Index to left

15 13 41

243.4

314.6

241.8

316.5

71.2

74.7

145.9

0.66

B

15 18 18

242.6

316.0

244.1

315.6

73.4

71.5

144.9

0.68

0.67

Index to right

15 23 10

155.3

224.0

156.5

223.8

68.7

67.3

136.0

0.86

a

15 27 58

15 20 47

-01 correction

15 20 46

20^h 20^m 8^s6^d 8 4 78

155.1

223.9

155.2

224.0

68.8

68.8

137.6

0.82

0.84

mean = 0.76

Bond #394

Arnold + Dent #958

15^h37^m00^s= 15^h37^m01^s

Tues. May 9, 1899.

5 Vulpeculae

Phot. V.

Cram: obs.

Band #394

Arnold + Dens #958

13^h 06^m 00.0

=

13^h 06^m 17.6

06^m

17.6

Index to left.

13 (47 31)

49 00

(50 47)

(53 07)

(54 27)

56 00

(57 06)

(59 27)

B

65.2

< comp. van der.

126.7

67.4

126.3

61.5

58.9

120.4

1.18

67.9

127.9

67.8

125.8

60.0

58.0

118.0

1.24

1.21

I

Index to right.

14 (02 00)

04 30

(06 29)

(07 47)

(09 12)

10 33

(12 23)

(14 10)

159.0

215.2

157.8

217.5

56.2

59.7

115.9

1.28

157.6

216.9

157.7

214.5

59.3

56.8

116.1

1.28

1.28

mean = 1.24

14 00 01

-18 correction

13 59 43

18^h 59.7 sec. M. S.

9.7915

May 9, 1899.

Index to right -

14 (15 14)
 16 07
 (17 22)
 (18 27)

338.1

33.2

336.0

36.3

$$\begin{array}{r} 55.1 \\ 60.3 \\ \hline 115.4 \end{array}$$

1.29

a

(19 20)

338.5

20 46

36.5

(22 51)

337.3

(24 07)

35.3

$$\begin{array}{r} 58.0 \\ 58.0 \\ \hline 116.0 \end{array}$$

$$\begin{array}{r} 1.28 \\ 1.28 \\ \hline \end{array}$$

II Index to left

(25 38)

248.2

26 52

304.8

(28 10)

246.0

(29 20)

306.6

$$\begin{array}{r} 56.6 \\ 60.6 \\ \hline 117.2 \end{array}$$

1.25

B

(30 24)

246.4

32 23

307.4

(33 40)

250.4

(35 10)

304.3

$$\begin{array}{r} 61.0 \\ 53.9 \\ \hline 114.9 \\ \text{mean} = 1.28 \end{array}$$

14 24 02

-13 correction

14 23 44

19h 23.7 ex. m. time

9.8 081

15 07 00

Index to left (and above)

67.0

125.5

67.6

126.0

$$\begin{array}{r} 58.5 \\ 58.4 \\ \hline 116.9 \end{array}$$

1.26

May 9, 1899.

15	11	10	β	66.5	61.2	$\frac{1.25}{1.26}$
				127.7	$\frac{56.3}{117.5}$	
				68.4		
			III	124.7		
				Index to right (and below)		
				157.4		
17	59			215.6	$\frac{58.2}{59.5}$	1.24
				157.9	$\frac{117.7}{117.7}$	
				217.4		

a

23	44			156.3	61.4	$\frac{1.19}{1.22}$
15	14	58		217.7	$\frac{58.5}{119.9}$	
		-18	correction	157.5	<u>mean</u>	<u>= 1.24</u>
15	14	40		216.0		
20 ^h	14 ^m	14.7	Sec. m. S.			
9 ^d	84	35				

Bond #394 Arnold + Dent #958
 15^h 42^m 00.0^r = 15^h 42^m 18.1^r

Wed. May 10, 1899.

J Vulpeculae:

Phot. N:

Cram obs.

Band #394

Arnold + Dent #958

15^h 02^m 00.^s0= 15^h 02^m 21.^s6

Index to left.

15 (14 37)
15 06

243.4

318.0

(15 52)

242.8

(16 28)

317.7

B

15 (17 00)

242.8

17 32

317.7

(18 09)

241.7

(19 21)

318.9

(20 39)

15 21 06

(21 53)

(22 23)

15 (22 57)

22 40

(24 37)

(25 55)

Daylight

15 19 21

-22 correction

15^h 18 5920^h 19.0^m 51.5^s

10.8465

Band #394

15^h 52^m 00.^s0= 15^h 52^m 22.^s0

Arnold + Dent #958

Group taken in great haste to finish before daylight.

Thurs. May 11, 1899.

5 Nulpeculae:

Band #394

13^h 15^m 00.0 =

Phot N:

Cram. obs.

Arnold + Dent #58

13^h 15^m 25.9

Index to left

243 .0

312 .4 < comp. var. dis.

244 .0

69.4
69.3

0.80

313 .3

138.7

B

245 .1

311 .8

66.7
68.5

0.87

244 .1

134.2

0.84

312 .6

Index to right

335.3

41.6

66.3
69.9

0.85

333.4

136.2

43.3

a

334.4

44.0

69.6
63.4

0.92

337.0

133.0

0.88

40.4

mean = 0.86

13 49 05

13 41 54

-26 correction

13 41 28

18^h 41.5^m ex. m. time.

11. 77 88

May 11, 1899.

Index to right

14	12	14	156.9	64.3	0.90
			221.2	69.7	
			153.5	134.0	
			223.2		

a

18	12	153.6	68.9	0.91
		222.5	64.4	0.90
		156.0	133.3	
		220.4		

Index to left

22	45	65.8		
		132.3	66.5	0.92
		65.6	66.1	
		131.7	132.6	

B

29	03	62.5	70.0	0.87
14	20	133.5	65.5	0.90
		65.1	135.5	
		130.6		
			mean = 0.90	

-26 correction

14 20 22
 19^h 20.4^m ex. in time

11. d 8059

Band #394

14^h 33^m 00.0 = 14^h 33^m 26.2

Arnold + Dent #958

Night very clear and stars bright.

Fri. May 12, 1899.

5 Vulpeculae.

Phot. V.

Cram obs

Bond #394

Arnold + Dent #58

12^h 50^m 00.0 =

12^h 50^m 30.6

Index to left

66.0

< comp. star dis.

129.7

67.1

63.7

61.6

1.08

125.3

128.7

B

68.2

130.0

61.8

62.8

1.09

124.6

1.08

67.2

130.0

Index to right

159.5

217.7

58.2

60.7

1.22

158.9

118.9

219.6

a

158.2

218.3

60.1

59.2

1.21

159.1

119.3

1.22

218.3

mean

= 1.15

13 26 26

13 15 17

-31 correction

13 14 46

18^h 14^m 8 s. m. time

12^d 7603

May 12, 1899.

Index to right

13 40 18

329.1

38.6

59.5

62.4

1.15

338.3

121.9

40.7

a

13 47 06

38.0

57.3

1.21

340.7

62.1

119.4

1.18

39.7

337.6

Index to left

13 54 30

249.9

308.6

58.7

1.08

245.9

66.6

125.3

312.5

B

14 02 26

246.6

63.9

1.14

310.5

58.5

122.4

1.11

249.3

307.8

mean = 1.14

13 51 07

-31 correction

13 50 36

18^h 50^m.6 br. m. time

12.47851

Index to left

249.0

308.9

59.9

1.22

248.4

58.7

118.6

307.1

May 12, 1899.

15 01 19

B

249.0

309.0

247.1

309.6

Index bright.

~~247.5~~

39.0

338.2

39.0

$$\begin{array}{r} 60.0 \\ 62.5 \\ \hline 122.5 \end{array}$$

$$\begin{array}{r} 1.14 \\ \hline 1.18 \end{array}$$

7-40

$$\begin{array}{r} 61.5 \\ 60.8 \\ \hline 122.3 \end{array}$$

1.14

a

308.5

38.6

336.5

40.0

$$\begin{array}{r} 60.1 \\ 63.5 \\ \hline 123.6 \end{array}$$

$$\begin{array}{r} 1.11 \\ \hline 1.12 \end{array}$$
mean = 1.15

12 28

15 04 24

-31 correction

15 03 53

20^h 03.^m9 hr. m. time12.^d 8360

Bond #394

15^h 23^m 00.^s0= 15^h

Arnold + Durb #958

23^m 31.ⁿ1

Sky quite clear, more so than usual.

Tues. May 30, 1899.

Arnold + Dent 958

Band # 394

12^h 06^m 54.5 = 12^h 06^m 00.0

Wulpeculae Phot. V. Crown obs
Index to right.

12 22 41

251.0 < comp. star dis.

312.5

61.5

252.6

60.5

1.15

122.0

313.1

A.

12 29 37

254.0

312.1

58.1

1.27

58.2

252.6

116.3

1.21

310.8

Index to left

342.2

41.3

59.1

1.17

62.1

341.0

121.2

43.1

B.

12 42 07

340.9

43.7

62.8

1.12

12 32 52

342.1

60.4

1.14

-55

correction.

123.2

12 31 57

42.5

mean = 1.18

17^h 32^m 00.0

30.7306

May 30, 1899.

Index to left

161.8

223.2

162.1

221.8

61.4

59.7

121.1

1.17

B.

162.4

222.1

162.5

222.5

59.7

60.0

119.7

1.20

1.18

Index to right

252.8

311.5

254.1

311.8

58.7

57.7

116.4

1.27

a.

252.1

311.5

252.8

312.4

59.4

59.6

119.0

1.21

1.24

mean = 1.21

14 01 17

13 50 59

-55 correction

13 50 04

18^h 50^m 1^s Gr. m. T.30^d 7 8 48

Arnold + Dent 958

14^h 07^m 55^s 0= 14^h

Band #394

07^m 00^s 0

clouds from south prevent further observation.

Wed. May 31. 1899.

Arnold + Dent #958 Bond #394
 $13^h \quad 21^m \quad 59.5 = 13^h \quad 22^m \quad 00.0$

5 Vulpes: Phot. N. Crum. obs.

Index to right.

$252.7 < \text{comp. star dis.}$

310.6

254.6

31.550

$\begin{array}{r} 57.9 \\ 56.4 \\ \hline 114.3 \end{array}$

1.32

A.

254.9

311.4

253.8

311.0

$\begin{array}{r} 56.5 \\ 57.2 \\ \hline 113.7 \end{array}$

$\begin{array}{r} 1.33 \\ 1.32 \end{array}$

Index to left

344.4

40.0

343.6

43.0

$\begin{array}{r} 55.6 \\ 59.4 \\ \hline 115.0 \end{array}$

1.30

B.

341.8

43.3

344.0

40.0

$\begin{array}{r} 61.5 \\ 56.0 \\ \hline 117.5 \end{array}$

$\begin{array}{r} 1.25 \\ 1.28 \end{array}$

mean = 1.30

13 47 40

13 39 23

- 1 00 correction

13 38 23

18^h 38^m 4 Gr. M. 5.

31^d 7767

Arnold + Dent #958

14^h 05^m 59.9 = 14^h 06^m 00.0

Bond #394

06^m 00.0

Thurs. June 1, 1899.

5 Vulpeculae

Phot. V.

trans. obs.

Band #394

Arnold + Dent #958

$12^h \quad 00^m \quad 00.0 = 12^h \quad 00^m \quad 05.0$

Index to left

< comparison dis.

12 18 48

335.8

46.5

336.0

clouds

49.5

B.

334.6

70.7

73.5

144.2

0.69

12 24 58

Haze

47.6

1-haze thick 337.9

48.3

73.0

70.4

143.4

0.71

0.70

Index to right.

clear

65.5

12 37 21

Haze

137.2

1-haze thick

67.8

12 39

Stars gone

140.3

A.

65.4

137.5

64.8

Haze very thick 142.3

Stars almost

(141.6)

141.0

invisible

Band #394

Arnold + Dent #958

$12 \quad 58 \quad 00.0 = 12^h \quad 58^m \quad 05.2$

12 45 19

12 31 37

-0.5 correction

12 31 32

$17^h \quad 31^m \quad 5$

$1^d \quad 7302$

72.1
76.8
148.9

I rumbled all the time by varying haze.

0.60

0.64

mean = 0.67

Sat June 3, 1899.

S Vulpeculae

Phot. V:

Cram: obs.

Index to right

14 04 45

13.3 < comp. star dis.

74.0

13.0

74.8

60.7

61.8

122.5

1.14

a.

114 10 00

13.9

74.2

13.8

73.1

60.3

59.3

119.6

1.20

1.17

Index to left

114 12 04

102.2

163.8

101.8

165.6

61.6

63.8

125.4

1.08

B.

114 23 33

14 14 05

-37 correction

14 13 28

19^h 13.5^m 3^d 80103^d 8010

101.5

165.9

103.2

162.6

64.4

59.4

123.8

mean = 1.14

1.11

1.10

Bond #394

Bliss + Creighton #1192

13 48^m 00.0 = 13^h48^m 36.9

June 3, 1899.

Index to left

14 33 06

283 .3

343 .8

283 .4

346 .0

60.5

62.6

123.1

1.13

B.

14 37 59

283 .4

344 .3

283 .4

343 .4

60.9

60.0

120.9

1.17

1.15

Index to right.

192.5

253.9

192.9

256.0

61.4

63.1

124.5

1.10

a.

191.3

254.9

193.2

253.4

63.6

60.2

123.8

1.11

1.10

mean = 1.12

14 49 47

14 41 10

-37 correction

14 40 33

19^h 40^m 6^s Gr. M. T.

3.28198

Band #394
14^h 58^m 00.0 =Bloss + Crighton #1182
14^h 58^m 37.6

Mon. June 5, 1899.

5 Nulpeculae. Phot V. Crum. obs.

Band #394

Arnold + Dent #958

$13^h \quad 38^m \quad 00^s = 13^h \quad 38^m \quad 12.6^s$

Index to left

97.9

14 02 16

166.4

68.5

0.94

63.6

100.4

132.1

Haze thick

164.0

13.

Haze

99.1

14 11 08

166.3

67.2

0.91

66.2

100.6

133.4

0.92

Haze

166.8

Index to right

191.1

14 28 18

255.7

64.6

1.06

61.5

191.9

126.1

253.4

a

190.5

14 33 00

252.9

62.4

0.99

67.1

14 18 41

190.4

129.5

1.02

-13 correction

257.5

mean = 0.97

14 18 28

19^h 18.5^m 52.7^s

5.8046

Troubled throughout by varying haze.

June 5, 1899.

Index to right.

10.2

77.8

8.7

73.4

$$\begin{array}{r} 67.6 \\ 64.7 \\ \hline 132.3 \end{array}$$

0.93

a

9.9

73.0

9.6

77.7

$$\begin{array}{r} 63.1 \\ 68.1 \\ \hline 131.2 \end{array}$$

0.95

0.94

Index to left

279.6

346.2

279.0

346.2

$$\begin{array}{r} 66.6 \\ 67.2 \\ \hline 133.8 \end{array}$$

0.90

B.

Day-

278.0

345.5

279.3

346.0

344.2

$$\begin{array}{r} 67.5 \\ 65.8 \\ \hline 133.3 \end{array}$$

0.91

0.90

mean = 0.92

light

14 55 40

14 47 50

-13 correction

14 47 37

19^h 47^m 6^s m.s.5^d 8247

strong.

Bond #394.

15^h 10^m 00^s.0

=

Arnold + Dent #958

15^h 10^m 12^s.7

Sunday 11
Thursday June 6, 1899.

T Vulpeculae.

Phot N:

Crane obs

12 ³⁰₅₀ 00.0 =

12^h

³⁰₅₀^m

¹⁷₀ 37.9

Band #394

Arnold + Dent #958

Index to left.

277.9 = comp. star dis.

346.2

276.5

68.3

69.8

0.81

138.1

346.3

277.5

346.7

69.2

70.6

0.78

276.4

139.8

0.80

347.0

Index to right.

9.1

74.9

65.8

70.6

0.85

6.6

136.4

77.2

7.8

77.9

70.1

66.0

0.85

9.0

136.1

0.85

75.0

mean = 0.82

12 36 21

12 41 40

12 48 32

12 53 40

12 45 03

June 6¹¹, 1899.

Index to right + below

188.4

255.3

187.1

257.4

66.9

70.3

137.2

0.83

187.7

257.6

188.9

255.0

69.9

66.1

136.0

0.86

0.84

Index to left + above

278.1

346.0

276.5

347.7

67.9

71.2

139.1

0.79

276.6

347.5

277.7

344.8

70.9

67.1

138.0

0.81

0.80

mean = 0.82

Index to left and above

99.2

165.3

96.6

168.5

66.1

71.9

138.0

0.81

June 11, 1899

14 23 00

96.1
168.4
98.5
165.5

72.3
67.0
139.3

0.79
0.80

Index to right and below

14 28 50

189.5
254.2
185.4
259.0

64.7
63.6
138.3

0.81

14 34 21

187.7
259.0
189.6
253.9

71.3
64.3
135.6
mean = 0.82

Band #394 = Arnold + Dent #958
14^h 42^m 0.00^s = 14^h 42^m 38.1^s

Monday June 12, 1899.

5 Nulpecular

Phot N:

Exam: obs.

Bond #394

Arnold + Dent #958

12^h 32^m 00.0 = 12^h 32^m 42.3

Index for b

10.4

73.3

9.3

77.2

< comp. Stand. dis.

8.0

76.3

13.0

72.0

Index

101.9

161.4

97.9

165.6

98.4

166.1

100.7

161.8

1859phsa, prof., 512C