1984phae.proj.1318w

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~~Stars~~ Oct. 13. 1884.

Stars fol. δ Aquilae. N. obs.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| δ Aq. (with shade) | 21h | L | 22.8 | δ | 20m | 20.5 | |
| | | | 40.6 | 17.8 | | 42.4 | 22.1 |
| f | 9 | | 26.4 | f | 21 | 11.7 | |
| | | | 41.1 | 12.7 | | 27.6 | 15.9 |
| e | | | 7.4 | e | | 36.3 | |
| | 10 | | 16.9 | 19.5 | | 59.7 | 23.4 |
| b | | | 1.1 | b | 22 | 10.3 | |
| | 11 | | 25.2 | 34.1 | | 48.3 | 38.0 |
| a | | | 44.3 | a | | 7.6 | |
| | 12 | | 23.7 | 35.4 | 23 | 37.0 | 39.4 |
| d | 13 | | 17.9 | d | | 44.1 | |
| | | | 37.8 | 19.9 | 24 | 11.7 | 26.4 |
| c | 14 | | 11.0 | c | | 21.8 | |
| | | | 32.8 | 21.8 | | 49.7 | 27.9 |
| a | | | 47.3 | 22.6 | | | |
| | 15 | | 7.9 | | | | |
| d | 15 | | 22.0 | | | | |
| | | | 42.8 | 20.8 | | | |
| a | | | 52.8 | 37.0 | | | |
| | 16 | | 29.8 | | | | |
| b | | | 54.0 | 36.0 | | | |
| | 17 | | 34.0 | | | | |
| e | | | 10.7 | 22.4 | | | |
| | 18 | | 13.1 | | | | |
| f | | | 21.0 | 15.0 | | | |
| | | | 36.0 | | | | |
| f | 19 | | 24.7 | 23.3 | | | |
| | | | 12.0 | | | | |

| S | f | e | b | a | d | c |
|---|---|---|---|---|---|---|
| 17.8 | 12.7 | 19.5 | 34.1 | 35.4 | 19.9 | 21.8 |
| 23.3 | 15.0 | 22.4 | 36.0 | 37.0 | 20.8 | 22.6 |
| 22.1 | 15.9 | 23.4 | 38.0 | 39.4 | 26.4 | 27.9 |
| 63.2 | 43.6 | 65.3 | 108.1 | 111.8 | 67.1 | 72.3 |

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Oct. 13. 1884.

Comet Wolf. Gr. obs.

| | | | |
|---|---|---|---|
| 85.5 | 21 | 36.3 | +11.0 |
| 45 | 21 | 25 | |
| Zero 41.5 | | | |

~~Dm 11.4646~~ 21 37 24.8 +11 0 1 0.3

Dm 11.4653 21 38 52.8 +11 13.4

| ☉ North | ☿ * north | | | |
|---|---|---|---|---|
| ~~No~~ | ~~☿ * North~~ | | | |
| 21h 58 31.7 | 22 1 45 9 | | | 22.2 |
| 58 53.9 | 1 2 16 0 | | | 23.1 |
| 58 42.80 | 1 2 57.75 | -3 | 18.15 | +7.9 |
| 22 3 40.7 | 6 54.8 | | | 23.1 |
| 4 2.8 | 7 25.0 | | | 20.2 |
| 3 52.25 | 7 9.90 | -3 | 17.65 | +7.1 |
| 7 55.0 | 11 9.4 | | | 23.2 |
| 8 18.2 | 11 39.0 | | | 29.6 |
| 8 6.60 | 11 24.20 | -3 | 17.60 | +6.4 |
| 12 31.20 | 15 45.7 | | | 23.4 |
| 12 54.70 | 16 14.7 | | | 29.0 |
| 12 43.00 | 16 0.20 | -3 | 17.20 | +5.6 |
| 16 49.7 | 20 4.4 | | | 24.3 |
| 17 14.0 | 20 33.8 | | | 29.4 |
| 17 1.85 | 20 19.1 | -3 | 17.25 | +5.1 |

L
8 21
82
Time

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Oct. 13, 1884

Fir. 132 (Prob.)

Bond 236. ~~Bond 394~~

| | | | | | |
|---|---|---|---|---|---|
| 22 | 23 | 46.0 | 22 | 21 | 1.0 |
| | 24 | 44.9 | | 22 | 1.0 |

Wedge photometer. S. obs.

Stars in region of η Serpentis

| | | | | | |
|---|---|---|---|---|---|
| | η (with shade) | 39.4 | 16.0 | 15.0 | 70.4 |
| | b | 16.5 | 14.2 | 10.0 | 40.7 |
| 9 40 | a | 30.0 | 24.8 | 20.0 | 74.8 |

Stars growing fainter from decrease of altitude during observations. Star c still visible out of wedge at end of observations, but not visible in wedge at the beginning.

Times by stopwatch.

α Aquarii

| | | | | | |
|---|---|---|---|---|---|
| | α (with shade) | 20.8 | 22.2 | 23.9 | 22.3 | 66.9 |
| | c | 15.0 | 14.5 | 13.2 | 14.2 | 42.7 |
| | b | 15.2 | 15.2 | 15.9 | 15.4 | 46.3 |
| | d | 12.7 | 14.5 | 13.5 | 13.6 | 40.7 |
| 10 43 | a | 39.0 | 34.0 | 36.2 | 36.4 | 109.2 |

Star following c 5ˢ; equal to c by estimate.

10 46 14.8

15.5

14.1

Identification of region by chart unusually difficult and requiring much time, on account of apparent errors in assigned magnitudes. Star e not visible in wedge.

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Oct. 13, 1884.

Stopwatch runs $1^m$ in $1^m$ by B 236.

α Pegasi

| | | | | | |
|---|---|---|---|---|---|
| α (with shade) | 31.5 | 24.3 | 27.5 | 27.8 | 83.3 |
| a | 30.7 | 31.0 | 31.7 | 31.1 | 93.4 |
| b | 26.7 | 26.5 | 25.0 | 26.1 | 78.2 |
| 11 16 c | 13.3 | 13.1 | 14.2 | 13.5 | 40.6 |

d not visible in wedge.

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# Oct. 14, 1884

Disappearance of Jupiter I. S. obs. and rec.
Photometer H. Compared with satellite II.

B & C 1182

| | | |
|---|---|---|
| 14 | 26 | 25.7 |
| | 27 | 25.7 |
| 16 | 12 | 17 |
| | 8 | 12 |
| 16 | 20 | 29 |

B 394

| | | |
|---|---|---|
| 16 | 6 | 0.0 |
| | 7 | 0.0 |
| 14 | 40 | 55 |

| | | | |
|---|---|---|---|
| 14 | 34 | 34 | 15.3 |
| | 35 | 7 | 108.2 |
| | | 25 | 14.6 |
| | 36 | 5 | 108.4 |
| | | 30 | 18.0 |
| | | 55 | 108.2 |
| | 37 | 12 | 14.0 |
| | | 36 | 110.3 |
| | | 56 | 11.3 |
| | 38 | 22 | 109.0 |
| | | 40 | 13.9 |
| | 39 | 8 | 104.2 |
| | | 35 | 20.0 |
| | | 55 | 101.3 |
| | 40 | 11 | 21.5 |
| | | 31 | 94.2 |

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1884phae.proj.1318w



Oct. 14, 1884

| | | | |
|---|---|---|---|
| 14 | 40 | 56 | 30,2 |
| | 41 | 20 | Suspected |

Limit of visibility

| | | | |
|---|---|---|---|
| 14 | 42 | 33 | 36.6 |
| | 43 | 17 | 91.0 |
| | | 52 | 34.0 |
| | 44 | 23 | 91.0 |

| | | | | | |
|---|---|---|---|---|---|
| B & C 1182 | | | B 394 | | |
| 14 | 53 | 25.5 | 16 | 33 | 0.0 |
| | 54 | 25.5 | | 34 | 0.0 |

Region of 91

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1884phae.proj.1318w



# Oct, 15, 1884.

## Region of η Serpentis.

Stopwatch runs 1m 0s while B. 236 runs
7 0

| | | | | | | |
|---|---|---|---|---|---|---|
| | η (with shade) | 16s.0 | 19.6 | 21.8 | 19.1 | 57.4 |
| | b | 20.2 | 19.1 | 19.7 | 19.7 | 59.0 |
| | c | 14.0 | 13.0 | 14.6 | 13.9 | 41.6 |
| 7 10 | a | 30.0 | 30.5 | 32.0 | 30.8 | 92.5 |

d not visible in wedge.

## δ Aquilae

| | | | | | | |
|---|---|---|---|---|---|---|
| | δ (with shade) | 17.9 | 21.0 | 19.0 | 19.3 | 58.0 |
| | f | 13.0 | 13.2 | 13.9 | 13.4 | 40.1 |
| | e | 18.2 | 20.8 | 16.1 | 18.4 | 55.1 |
| | b | 28.8 | 34.1 | 33.0 | 32.0 | 95.9 |
| | a | 37.5 | 38.0 | 35.8 | 37.1 | 111.3 |
| | d | 23.0 | 19.9 | 20.2 | 21.0 | 63.1 |
| 9 10 | c | 23.5 | 24.9 | 22.2 | 23.5 | 70.6 |

g not visible in wedge.

## α Aquarii

| | | | | | | |
|---|---|---|---|---|---|---|
| | α (with shade | 23.4 | 17.2 | 19.7 | 20.1 | 60.3 |
| | c | 14.5 | 16.5 | 15.0 | 15.3 | 46.0 |
| | b | 15.9 | 18.3 | 18.0 | 17.4 | 52.2 |
| | d | 13.5 | 13.4 | 14.8 | 13.9 | 41.7 |
| 9 50 | a | 35.1 | 34.9 | 34.4 | 34.8 | 104.4 |

e not visible in wedge; star 5s foll. c
about equal to c, as before.

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1884phae.proj.1318w

8

Oct. 15, 1884

β Aquarii

| | | | | | |
|---|---|---|---|---|---|
| β (with shade) | 22.5 | 21.9 | 19.7 | 21.4 | 64.1 |
| a | 32.8 | 34.0 | 33.9 | 33.6 | 100.7 |
| c | 16.1 | 17.1 | 18.0 | 17.1 | 51.2 |
| b | 21.8 | 21.9 | [16.1] small wedge but observation not known to be bad | 19.9? | 59.8 |
| e | 11.3 | 12.2 | 12.8 | 12.1 | 36.3 |
| d | 14.2 | 16.3 | 12.5 | 14.3 | 43.0 |

10 20

f not visible in wedge.

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1884phae.proj.1318M



Oct. 17, 1884.

B. 236, $22^h\ 23^m\ 0^s.0$ to $22^h\ 24^m\ 0^s.0$
Stop watch, $0^m.0$ " $1^m\ 1^s.1$

Wedge Photometer. Shade glass mounted in pasteboard cap.
Region of θ Aquilae. S. obs

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 25 | θ (with shade) | 19.2 | 19.9 | 19.9 | 19.7 | 59.0 |
| | e | 14.0 | 16.4 | 14.5 | 15.0 | 44.9 |
| | f | 12.1 | 12.9 | 13.3 | 12.8 | 38.3 |
| | a | 37.9 | 39.0 | 40.9 | 39.3 | 117.8 |
| | b | 28.0 | 31.9 | 29.5 | 29.8 | 89.4 |
| | c | 22.1 | 22.8 | 24.2 | 23.0 | 69.1 |
| | d | 20.0 | 18.6 | 23.7 | 20.8 | 62.3 |
| 8 41 | g not visible in wedge. | | | | | |

B. 236, $22^h\ 51^m\ 00^s$ to $22^h\ 52^m\ 00^s$
Stop watch, $0^m.0$ " $1^m\ 0^s.7$

β Aquarii. S. obs

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 53 | β (with shade) | 17.4 | 19.8 | 17.4 | 18.2 | 54.6 |
| | a | 34.8 | 32.7 | 37.1 | 34.9 | 104.6 |
| | c | 18.6 | 19.7 | 22.5 | 20.3 | 60.8 |
| | b | 23.6 | 22.4 | 22.0 | 22.7 | 68.0 |
| | e | 14.0 | 13.6 | 14.8 | 14.1 | 42.4 |
| 9 06 | d | 19.9 | 18.7 | 14.1 | 17.6 / 16.9 | 52.7 |

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1884phae.proj.1318w



Oct. 17, 1884.

~ Aquarii - S. obs -

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | 15 | α (with Shade) | 17.7 | 21.3 | 17.5 | 18.8 | 56.5 |
| | | | 17.6 | 15.7 | 13.1 | 15.5 | 46.4 |
| | | ~~b~~ | 19.5 | 18.2 | 18.7 | 18.8 | 56.4 |
| | | a | 16.6 | 16.4 | 14.8 | 15.9 | 47.8 |
| 9 | 31 | a | 35.8 | 34.6 | 31.5 | 34.0 | 101.9 |

B 236, $23^h 45^m 0^s.0$ to $23^h 46^m 0^s.0$
Stop Watch, $0^m.0$ " $1^m 0^s.8$

9 52 Some haze during observations
Clouds later -

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1884phae.proj.1318w



Oct. 12. 1884.

Wolfs Comet. Fr. obs.

21 4F +9. Zero 14.0
21 5 3 45.
— 8 Setting 59.0

| ♂ mitt | | | × mitt | | | | |
|---|---|---|---|---|---|---|---|
| | | | h | m | s | | |
| 22 | 13 | 27.8 | 22 | 9 | 59.4 | | 27.6 |
| | 13 | 55.4 | | 10 | 25.6 | | 26.2 |
| | 13 | 41.7 | | 10 | 12.50 | +3 29-20 | +53.8 |
| 22 | 18 | 13 5 | | 14 | 43.9 | | 27 5 |
| | 18 | 41.0 | | 15 | 10.6 | | 26.7 |
| | 18 | 27.25 | | 14 | 59.25 | 3 30.00 | 54 2 |
| | 22 | | | 19 | 6.0 | | |
| | | | | 19 | 32.4 | | 26.4 = Last |
| | | | | 19 | 19.20 | | |
| 22 | 27 | 20.2 | | 23 | 50.7 | | 28.8 |
| | 27 | 49.0 | | 24 | 17.0 | | 26 3 |
| | 27 | 34 60 | | 24 | 3.85 | 3 29.25 | 55.1 |
| 22 | 37 | 16.0 | 22 | 33 | 44.2 | | 27 4 |
| | 37 | 43 4 | | 34 | 13 5 | | 29.3 |
| | 37 | 29.70 | | 33 | 58.85 | 3 29.15 | 56.7 |
| 22 | 41 | 43.3 | | 38 | 11.0 | | 28.1 |
| | 42 | 11.4 | | 38 | 40.5 | | 29.5 |
| | 41 | 57.25 | | 38 | 25.75 | 3 28 40 | 57.6 |

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1884phae.proj.1318M



Oct. 18. 1884.

Bond 236.

| | | | |
|---|---|---|---|
| 22 | 48 | 21.3 | |
| | 49 | 21.4 | |

~~Bond 394.~~
~~Grad. 1324.~~

| | | |
|---|---|---|
| 8h | 41 | 0.0 |
| | 42 | 0.0 |

Comp. star 2 m. +8° 47′ 36. =
W. I. 21h 9m 9.

~~δ Aquilae~~

Stopwatch runs 1m 0s.4 while B236 runs 1m 0s
Wedge photometer S.obs.

Region of δ Aquilae

| | | | | | | |
|---|---|---|---|---|---|---|
| q 20 | δ (with shade) | 17.0 | 16.0 | 15.3 | 16.8 | 50.3 |
| | f | 13.2 | 13.8 | 14.1 | 13.7 | 41.1 |
| | e | 19.2 | 16.0 | 17.7 | 17.6 | 52.9 |
| | b | 30.3 | 30.1 | 31.0 | 30.5 | 91.4 |
| | a | 37.7 | 36.9 | 34.5 | 36.4 | 109.1 |
| | d | 22.7 | 19.9 | 20.9 | 21.2 | 63.5 |
| q 40 | c | 21.7 | 21.9 | 22.0 | 21.9 | 65.6 |

c is probably less visible in the wedge than it would otherwise be on account of the star following it (at 5m 33s, 5′).

Region of θ Aquilae

| | | | | | | |
|---|---|---|---|---|---|---|
| q 53 | θ (with shade) | 13.0 | 16.3 | 15.3 | 14.9 | 44.6 |
| | e | 11.2 | 13.0 | 12.0 | 12.1 | 36.2 |
| | a | 35.1 | 36.4 | 34.9 | 35.4 | 106.3 |
| | b | [19.5] 24.0 | 22.1 | 23.6 | 23.2 | 69.7 |
| | c | 18.7 | 21.3 | 20.1 | 20.0 | 60.1 |
| -90 12 | d | 20.4 | 16.4 | 16.0 | 17.6 | 52.8 |

First observation of b [19.5] suspected to be one of c: rejected.

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Oct, 18, 1884

Region of α Pegasi.

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 26 | α (with shade) | 19.0 | 23.7 | 21.9 | 21.5 | 64.6 |
| | a | 35.0 | 34.9 | 31.9 | 33.9 | 101.8 |
| | b | 27.1 | 25.7 | 25.0 | 25.9 | 77.8 |
| 10 42 | c | 14.2 | 15.0 | 14.9 | 15.7 | 47.1 |

d not visible in wedge; perhaps might be if b were not near.

Stopwatch runs $90^s.3$ while B 236 runs $90^s.0$

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Dec 19 1884

| | | | | | |
|---|---|---|---|---|---|
| 13 | 44 | 56.6 | = 15 | 25 | 0.0 |
| 13 | 46 | 56.6 | 15 | 27 | 0.0 |
| 13 | 47 | 56.6 | 15 | 28 | 00 |

Disappearance of Satellite II. Probs. Succes

Photometer H. Compared with Sat. I.

| | | |
|---|---|---|
| 16 | 2 | 37 |
| | 8 | 12 |
| 16 | 10 | 49 |
| | 19 | 57 |
| 14 | 30 | 36 |

| | | | |
|---|---|---|---|
| 14 | 18 | 56 | 13,3 |
| | 19 | 9 | 109,3 |
| | | 22 | 15,8 |
| | | 34 | 103,2 |
| | | 47 | 17,4 |
| | 20 | 0 | 102,0 |
| | | 16 | 21,8 |
| | | 32 | 104,8 |
| | | 43 | 17,4 |
| | | 55 | 103,9 |
| | 21 | 9 | 18,6 |
| | | 22 | 98,3 |
| | | 35 | 20,4 |
| | | 46 | 99,4 |
| | | 57 | 18,6 |
| | 22 | 6 | 103,4 |
| | | 18 | 17,4 |
| | | 30 | 101,6 |

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Oct. 19 1884

| | | | |
|---|---|---|---|
| 14 | 22 | 43 | 16.3 |
| | 23 | 1 | 105.2 – |
| | | 17 | 21.2 |
| | | 32 | 101.3 |
| | 24 | 8 | 20.3 |
| | | 19 | 101.3 – |

Satellite II decidedly fainter than I, even when Jupiter is out of the field.

| | | | |
|---|---|---|---|
| 14 | 27 | 0 | 15.4 |
| | | 15 – | 98.6 |
| | | 26 | 13.4 |
| | | 36 | 103.8 – |
| | | 45 | 17.5 |
| | | 53 | 103.2 |
| | 28 | 3 | 22.4 |
| | | 14 | 98.3 – |
| | | 24 | 16.5 – |
| | | 33 | 100.4 |
| | | 41 | 18.9 |
| | | 50 | 102.6 – |
| | | 59 | 22.4 |
| | 29 | 10 | 98.5 – |
| | | 17 | 22.2 |
| | | 25 – | 95.6 |
| | | 32 | 21.6 |
| | | 39 | 96.4 |
| | | 47 | 25.4 |
| | | 56 | 98.3 |

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Oct, 19 1884.

| | | | |
|---|---|---|---|
| 14 | 30 | 5 | 25.4 |
| | | 19 | 95.3 |
| | | 30 | 28.9 |
| | | 38 | 91.7 |
| | | 46 | 36.2 |
| | | 53 | 85.8 |
| | 31 | 0 | 31.6 |
| | | 9 | 82.8 |
| | | 16 | 37.6 |
| | | 24 | 81.7 |
| | | 32 | 39.5 |
| | | 40 | 79.8 |
| | | 47 | 42.6 |
| | | 55 | 76.4 |
| | 32 | 7 | suspected |

Limit of visibility

| | | | |
|---|---|---|---|
| 14 | 32 | 53 | 47.8 |
| | 33 | 2 | 77.4 |
| | | 9 | 46.3 |
| | | 17 | 77.7 |

B A, C 1182

| | | | |
|---|---|---|---|
| 14 | 39 | 56.7 | |
| | 40 | 56.2 | |

B 394

| | | |
|---|---|---|
| 16 | 20 | 0.0 |
| | 21 | 0.0 |

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Oct. 20, 1884.

6 33 Stopwatch runs 31.0 while 13.236 runs 30.0

Revision of Vol. VI. S.Ls.

2606 is followed 2', 1.5 south by a star 8 brighter (D.M. +0° 4755?)

2645 is 7.2 south of 2644, and in same δ with 2646. No other star near which could be identified with 2645: 2647 apparently identical with 2646. See note below, on 2645.

9.8 − 7.2 = 2.6 2.9 + 0.0 = 2.9 2.6/2.9 2.8

7 10 2668 3 b

a 2 2668

a and b are the comparison stars used last year (R 108, 40).

Mags 2668 about 10.5

| | Stopwatch | | | Wedge: | | a > 2668 | b < 2668 |
|---|---|---|---|---|---|---|---|
| a | 12.8 | 15.2 | 17.1 | 15.1 | 15.0 | 0.3 | 2.5 |
| | | | | | | 1.8 | 2.0 |
| b | 10.0 | 11.0 | 11.7 | 2.7 | 10.9 | 1.6 | 3.8 |
| | | | | | | 1.2 | 2.8 |
| 2668 | 12.5 | 13.0 | 15.5 | 11.0 | 13.7 | 0.2 magn. | 0.5 magn. |

2645 is No. 217, Vol. VI pp. 168, 169. It has apparently two observations in δ; but No. 218 has only one. Perhaps the observation in δ in Zone 144 assigned to No. 217 belongs to No. 218. In that case, No. 217 was observed only in Zone 143 with an error of 1'. But then there would also be an error in No. 218 in Zone 144. No observation in Zone 144 of any of the stars Nos. 218 – 223, and No. 222 has nearly the same δ with that assigned to No. 217. This may accordingly be supposed to be the star actually observed in Zone 144.

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1884phae.proj.1318w



Oct 20. 1884

9 33 Standards in region following δ Cet

| | m | s | | |
|---|---|---|---|---|
| a | 4 | 3 | 0.7 | 9.2 |
| b | 4 | 48 | 11. | 10.5 |
| c | 3 | 28 | 2.9 | 11.0 |
| d | 3 | 20 | 0.2 | 11.8 |
| e | 3 | 37 | 0.7 | n Sum. |
| f | 2 | 49 | 8.0 | n Sum |
| g | 3 | 33 | 8.5 | n Sum. |

Stars following ζ Ceti

9 5[m]

| | | | | |
|---|---|---|---|---|
| a | 3[h] | 48 | 8 | 9.8 |
| b | 5 | 37 | 1.5 | 10.0 |
| c | 5 | 34 | 3.8 | 10.7 |
| d | 4 | 9 | 5.6 | 11.0 |
| e | 2 | 19 | 4 | 11.8 |
| f | 2 | 27 | 4 | 12.7 |
| g | 2 | 39 | 2 | 13.4 |

Stars following ζ Ceti

10 6

| | | | | |
|---|---|---|---|---|
| a | 2 | 49 | 0 | 8.5 |
| b | 3 | 37 | 3.6 | 9.4 |
| c | 3 | 27 | 6.6 | 10.2 |
| d | 2 | 45 | 8 | 11.1 |
| e | 3 | 23 | 2 | 12.0 |
| alien line | | | | |
| a' | 2 | 19 | 7 | 9.4 |

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1884phae.proj.1318w



Oct 20, 1884

8 stars following α Lyncis.

| | | | | |
|---|---|---|---|---|
| a | 3 | 59 | 6 | 8.8 |
| b | 4 | 30 | 6 | 9.4 |
| c | 3 | 5 | 9.2 | 10.3 |
| d | 3 | 23 | 7 | 11.0 |
| e | 2 | 41 | 1 | 11.7 |
| f | 2 | 44 | 78 | 12.4 |

Air hazy. P. obscured & wandering.

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Oct. 21, 1884

8 32 Stopwatch runs 60.0 while B.236 runs 60.0

Hazy.

Region of γ Pegasi

| | | | | | |
|---|---|---|---|---|---|
| γ (with shade) | 16.6 | 20.1 | 15.0 | 17.2 | 51.7 |
| 8 50 a | 20.7 | 20.1 | 20.9 | 20.6 | 61.7 |
| c | 11.0 | 11.1 | 12.2 | 11.4 | 34.3 |
| d | 10.0 | 10.1 | 12.4 | 10.8 | 32.5 |
| 9 7 b | 18.1 | 16.9 | 18.8 | 17.9 | 53.8 |

c not visible in wedge

Region of θ Ceti

| | | | | | |
|---|---|---|---|---|---|
| 9 28 θ (with shade) | 13.3 | 18.2 | 19.1 | 16.9 | 50.6 |
| a | 18.8 | 19.0 | 19.0 | 18.9 | 56.8 |
| 9 41 b | 15.2 | 15.5 | 19.7 | 16.8 | 50.4 |

c not visible in wedge

H.P. 203, with shade ; without shade

| | |
|---|---|
| 10.0 | 46.5 |
| 10.0 | 46.5 |
| 10.9 | 48.1 |
| 9.8 | 45.5 |
| 10 16 9.9 | 46.3 |
| 10.1 | 46.6 |

Diff. 36.5

10 16 Stopwatch runs 60.2 while B.236 runs 60.0

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Oct. 23, 1884,

5 55 Stopwatch runs 60.s1 while 13.236 runs 60.s0

| | Region A Pegasi | | | | Fobs. |
|---|---|---|---|---|---|
| γ (with shade) | 23.1 | 26.0 | 25.9 | 25.0 | 75.0 |
| a | 24.2 | 22.7 | 21.0 | 22.6 | 67.9 |
| c | 14.7 | 11.4 | 15.1 | 13.7 | 41.2 |
| d | 14.8 | 12.8 | 15.1 | 14.2 | 42.7 |
| b | 21.1 | 18.1 | 20.0 | 19.7 | 59.2 |
| [e] | [11.6 not the star] | | | | |
| 6 49 e | 10.6 | 11.1 | 12.5 | 11.4 | 34.2 |

f not visible in wedge.

c 1 d by estimate without wedge.

Experiments with Photometer I on stars following standards. Fobs.

α Aquarii.

2 2 0 −0.9

2 1 ν6

— 4

Star c Prism on right hand side

2.30

1 55 2,ν9

2.ν7

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Oct. 23, 1884.

c Prism on left hand side.

| | | |
|---|---|---|
| | 3.12 | W. obs. |
| 8 17 | 3.01 | |
| | 2.95 | |

| | | |
|---|---|---|
| | e | W. obs. |
| | 1.62 | |
| 8 23 | 1.59 | |
| | 1.68 | |

| | | |
|---|---|---|
| | g | W. obs. |
| | 1.68 | |
| 8 26 | 0.87 | |
| | 0.95 | |

| | | |
|---|---|---|
| | h | W. obs. |
| | 0.74 | |
| 8 31 | 0.73 | |
| | 0.66 | |

| | | |
|---|---|---|
| | f | W. obs. |
| | 1.04 | |
| 8 36 | 1.07 | Reject; dome probably interfered. |
| | 1.14 | |

| | | |
|---|---|---|
| | ~~k~~ f | W. obs. |
| | 1.12 | |
| 8 40 | 1.25 | |
| | 1.03 | |

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Oct. 23, 1884.

b W. obs.

2.43 too small on second look; ~~but not~~ rejected.

8 42 2.81

2.89

2.68

d W. obs.

2.13

8 45 2.07

2.30

8 52 i not certainly seen. W. obs.

8 57 a too bright for observation. W. obs.

i seen.

1.52 W. obs.

9 4 1.47

1.11

Standards following a Pegasi.

Prob. I. S. obs.

10 51 c

1.46

1.34

1.50

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Oct 23. 1884

b

3.15
10 53 3.41
2.99

d

0.72
10 56 0.62
0.74

e

10 59 0.53
0.58
0.55

fold of two stars = plane of f. 3 S. of st.
brightest stars S.P. both.
F. fold of two stars doubled.
0.60
11 1 0.40
0.42

a too bright.
g not seen.

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Oct. 24, 1884

Photometric Region of δ Aquilae

Prelim.

| | | |
|---|---|---|
| | g | 2.61 |
| 6 35 | | 2.64 |
| | | 2.34 |
| | h | |
| | | 1.34 |
| 6 38 | | 1.38 |
| | | 1.60 |
| | i | |
| | | 1.00 |
| 6 39 | | 0.96 |
| | | 1.03 |
| | f | |
| | | 2.24 |
| 6 40 | | 2.12 |
| | | 2.34 |
| | e | |
| | | 3.58 |
| 6 41 | | 3.79 |
| | | 3.58 |

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1884phae.proj.1318w



Oct. 24, 1884

i

6 42 1.87
1.79
1.68

b too bright

a too bright

d

6 43 4.03
4.07
4.26

c

6 47 3.86
4.01
3.99

k suspected only.

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Oct 24 1884

14 20 Jupiter clear at 14 00 but behind bank of clouds at 14 20

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1884phae.proj.1318w



Oct. 25, 1884

Photometer S. Region of α Aquarii S. obs.

h

0.67

9 25 0.55

0.53

e

1.06

9 27 1.18

1.01

g

0.68

9 30 0.85

0.69

c

1.56

9 33 1.47

1.61

Star follic; 0.1 magn. brighter than chart by estimate,

1.83

9 39 1.75

1.81

f clouds

0.92

9 55 0.90

0.98

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Oct. 25, 1884

| | b |
|---|---|
| | 2.70 |
| 9 57 | 2.58 |
| | 2.42 |

| | d |
|---|---|
| | 1.49 |
| 10 0 | 1.57 |
| | 1.27 |

a too bright; i not seen.

clouds coming

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1884phae.proj.1318w



Nov 2, 1884.

Field of wedge — Zone 49°50' to 50°0' S. dec.

Dn 49° 2604 69.0
7 04 2609 26.6
2614 51.0
2623 38.5

Series dec. P

49 2604 double. 62.4 cap 5th 120° 9.5 -6.6
2609 33.0 +6.4
14 55.0 +4.0
7 25 23 34.0 -4.5

Series I. P. dec

7 30 Begin 2678
Dn 2700 2.5 p of 2700
8 01 4-Dn 2765 P. sec.

Stopwatch runs 60.3 while B.236 runs 60.0
Probn

8 2 Dn. 2785

8 25 Interval 2891 and 2892 39.5
8 36 2928
2974 pr. 2976 12°. Another star pr. 2974 12s equally bright, 1' south

8 48 Clouds interrupt, and probably affected observations of 2974 and 2976.

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1884phae.proj.1318



Nov. 3, 1884

6 0 Stopwatch runs 55.2 while B 236 runs 55.0
Series 2. S. obs. & rec.

6 15 Begun at 2492
Star foll. 2501 4s, 3' north tr. to dis. 25.7

6 45 Prec. 2513 about 40s, 1' south, — " — 23.0

6 58 2603 (24 2604) may affect observation of 2602

7 15 Stopped at 2675

7 17 Stopwatch runs 60.0 while B 236 runs 60.0

Series 3

8 32 Begun at 2997

8 45 Thin clouds noticed which may have affected observations of 3046 and 3051, these being the last stars observed. The series is short and should probably be rejected.

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1884phae.proj.1318w



Nov 6. 1884

Series 3. ~~Obs.~~

5 35 Dm 49° 2448

5 55

abandoned S. obs

6 00 Began at Dm 49° 2448

Dm 49 2497 affected by 2498 and 2499

Dm 49 2501 has a bright tail 5's 3' n.

2532 " " " 6's 1½'

" also streaming to Dm 6's 6' S of it.

6 31 1. obs. Rec. 2540 and later

6 56 Stopped at 2614

| Comet | Graff. | W. R. |
|---|---|---|
| 22h | 22m | +1.2 |
| 23 | 0 | |
| | +38 | |

Pos. Zero 170.0

45.

215.0

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1884phae.proj.1318w



Nov. 6. 1884.

23 ~~46~~ ~~12.4~~

47 14.0 *
27.7 E
V0.4 E

42 2.4 *

49 9.2
23.4
46.V
V7.2

V1 36.V
V1.2

V2 10.7
21.2

V4 3V.7
V0.0

VV 12.7
23.0

~~VV 24.0~~

V8 10.V
29.V
V1.1

1884phae.proj.1318w



Nov. 6, 1884.

0h 0m 9.5
24.0
42.2
54.0

2 12.3
27.0
45.5
3 3.5

~~4 12.5~~

5 10.0
24.5
51.4
6 1.0

Order in all the sets star, comet.
comet, star.
Both in northern half of square.

Comp. star D M. +0° 4876 (8.6)

Bond 236.
0 13 27.6
15 27.7

Bond 394.
8 52 0.0
54 0.0

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1884phae.proj:1318w



Nov 9. 1884.

Solis 4. O. obs.

Stopwatch at $0^h 56^m 0^s$ 1 min = 60.7 by watch.

244.0 Setting 304.0

9 46 Begin ~~299~~ 2974 result affected by 2976

10 7 3057

10 35 3118 diff orig 4-3120

3138

10 40 End d- 3156

Stopped by clouds which are now to the SW in various parts of the sky but not very near region of sun. Clouds also interfered during observation

B. + C. 1142.

| | | | | | |
|---|---|---|---|---|---|
| ~~14~~ | | | ~~16~~ | 6 | 0.0 |
| 14 | 25 | 52.0 | 16 | 7 | 0.0 |
| | 26 | 52.2 | | 8 | 0.0 |

Bond 394.

14 47 Apx. time eclipse.

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Nov. 6. 1884.

Dis Jups. I. S. obs. Proc.
Phot. R. Comp. with Cat. III.

| | | | |
|---|---|---|---|
| 14 | 36 | 41 | 112.5 |
| | | 55 | 190.4 |
| | 37 | 4 | 114.4 |
| | | 17 | 191.4 |
| | | 24 | 121.1 |
| | | ~~44~~ | |
| | 38 | 6 | 146.9 |
| | | 22 | 113.2 |
| | | 34 | 149.0 |
| | | 49 | 117.9 |
| | 39 | 4 | 191.5 |
| | | 15 | 119.2 |
| | | 26 | 144.0 |
| | | 42 | 114.9 |
| | | 55 | 149.2 |
| | 40 | 9 | 117.0 |
| | | 22 | 144.4 |
| | | 33 | 114.5 |
| | | 44 | 143.0 |
| | | 54 | 117.2 |
| | 41 | 4 | 149.0 |
| | | 17 | 119.0 |
| | | 37 | 126.3 |
| | | 42 | 123.5 |
| | | 50 | 149.7 |

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1884phae.proj.1318w



Nov. 6. 1884.

| | | |
|---|---|---|
| | V-7 | 122.2 |
| 42 | 4 | 129.0 |
| | 12 | 116.0 |
| | 21 | 124.2 |
| | 30 | 122.9 |
| | 34 | 124.0 |
| | 46 | 124.7 |
| | V-3 | 127.2 |
| 43 | 0 | 116.4 |
| | 4 | 129.4 |
| | 1V | 122.0 |
| | 23 | 124.3 |
| | 32 | 113.6 |
| | 41 | 127.6 |
| | V-2 | 113.4 |
| 44 | 4 | 190.2 |
| | 13 | 114.0 |
| | 22 | 123.0 |
| | 31 | 121.V |
| | 41 | 124.3 |
| | V-0 | 120.2 |
| | V-7 | 122.3 |
| 4V | 3 | 124.2 |
| | 4 | 124.0 |
| | 1V | 12V.V |
| | 2V | 179.V |
| | 29 | 119.4 |
| | 36 | 127.V |

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1884phae.proj.1318w



Nov. 6. 1884.

| | | |
|---|---|---|
| 45 | 43 | 122.0 |
| | 49 | 174.4 |
| | 56 | 125.0 |
| 46 | 1 | 175.2 |
| | 8 | 128.2 |
| | 14 | 140.0 |
| | 21 | 127.3 |
| | 28 | 175.8 |
| | 34 | 125.8 |
| | 41 | 176.0 |
| | 48 | 128.2 |
| | 55 | 170.0 |
| 47 | 1 | 131.3 |
| | 6 | 170.2 |
| | 12 | 135.0 |
| | 18 | 171.1 |
| | 24 | 136.3 |
| | 30 | 166.2 |
| | 37 | 139.0 |
| | 43 | 160.0 |
| | 50 | Suspected. |

Limit of Vis.

| | | |
|---|---|---|
| 48 | 18 | 143.2 |
| | 28 | 162.6 |
| | 44 | 141.8 |
| | 53 | 161.8 |

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Nov. 6. 1884.

B. + C. 11h 2.

~~14~~

| | | |
|---|---|---|
| 14 | ⌐3 | ⌐1.7 |
| | ⌐4 | ⌐1.7 |

Bond 394.

~~16 34 0.0~~

| | | |
|---|---|---|
| 16 | 3⌐ | 0.0 |
| | 36 | 0.0 |

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Nov. 7, 1884

Region of Aquilae

Photometer J. Pickering

| | e |
|---|---|
| 5 44 | 2.62 |
| | 2.07 |
| | 2.06 |

| | i |
|---|---|
| 5 46 | 1.01 |
| | 0.92 |
| | 0.96 |

| | k |
|---|---|
| 5 54 | 1.61 |
| | 1.73 |
| | 1.59 |

| | h |
|---|---|
| 5 56 | 1.25 |
| | 1.40 |
| | 1.30 |

| | i |
|---|---|
| 5 57 | 0.92 |
| | 0.91 |
| | 0.92 |

| | k |
|---|---|
| 5 59 | 0.74 |
| | 0.86 |
| | 0.69 |

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1884phae.proj.1318w



Nov. 7, 1884

a too bright

| | | |
|---|---|---|
| | | g |
| 6 | 3 | 1.54 |
| | | 1.56 |
| | | 1.64 |
| | | b |
| 6 | 4 | 5.68 |
| | | 5.65 |
| | | 5.08 |
| | | c |
| 6 | 5 | 3.46 |
| | | 3.34 |
| | | 3.02 |
| | | d |
| 6 | 7 | 2.79 |
| | | 2.31 |
| | | 2.64 |

Regim of β Aquarii
a too bright Pidor

| | | |
|---|---|---|
| | | c |
| 6 | 16 | 2.40 |
| | | 2.39 |
| | | 2.56 |

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Nov. 7, 1884.

f

6 17 1.44
1.27
1.16

i

6 20 0.71
0.68
0.76

g' too faint

g

6 24 1.06
0.85
0.94

h

6 27 1.28
1.24
1.26

b

6 29 2.46
2.93
2.76

6 30 e

1.59
1.78
1.55

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Nov. 7, 1884.

| | | d |
|---|---|---|
| 6 | 31 | 1.62 |
| | | 1.90 |
| | | 2.15 |

α Aquarii. P. obs.

22 0 −0.9
22 45
+45

| | | h |
|---|---|---|
| 7 | 42 | 0.69 |
| | | 0.22 |
| | | 0.69 |

| | | e |
|---|---|---|
| 7 | 45 | 1.59 |
| | | 1.67 |
| | | 1.31 |

| | | g |
|---|---|---|
| 7 | 47 | 0.92 |
| | | 0.97 |
| | | 0.77 |

Clear ab 2m N 3° and dec. 6.0 is equally bright with c

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Nov. 7. 1884.

~~1.96~~

c

1.96

7 v0 2.0 ~

2.17

f

7 v2 1.06

1.27

1.13

b

7 v4 2.20

1.9v

2.2v

d

7 v2 1.43

1.v6

1.66

Stopped by clouds which probably affected some of the obs. Last star "a" not measured.

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1884phae.proj.1318w



Nov. 8, 1884

Photometer I

Regimont α Aquarii. P. obs.

| | h |
|---|---|
| 5 58 | 0.78 |
| | 0.79 |
| | 0.82 |
| | e |
| 6 0 | 1.11 |
| | 1.33 |
| | 1.29 |
| | g |
| 6 1 | 0.95 |
| | 0.78 |
| | 0.80 |
| | c |
| 6 3 | 1.46 |
| | 1.42 |
| | 1.64 |
| | f |
| 6 5 | 0.96 |
| | 1.04 |
| | 1.12 |

One star only seen in place of f.

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Nov. 8, 1884

| | b |
|---|---|
| 6 7 | 1.82 |
| | 1.68 |
| | 1.57 |

| | d |
|---|---|
| 6 9 | 1.29 |
| | 1.65 |
| | 1.63 |

a too bright

Region of δ Aquilae. Stobbs

| | e |
|---|---|
| | 1,42 |
| | 1,35 |
| 6 35 | 1.41 |

| | i |
|---|---|
| | 1,04 |
| | 1.04 |
| 6 38 | 0.92 |

| | f |
|---|---|
| | 1.07 |
| | 1.05 |
| 6 51 | 1.01 |

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Nov. 8, 1884

j

0.70
0.65
6 53 0.72

Small star close to j thought to be seen proc. instead of south as on chart

h

1.14
1.16
6 57 1.19

k

0.70
0.77
7 2 0.54

a too bright.

g

7 5 1.21
1.10
1.28

b too bright

c

2.89
2.89
7 10 2.36

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Nov. 8, 1884

d

2.79
2.25
7 13 2.89

β Aquarii. Fr. obs.

21 2r −6.1
22 r4
+1 29

a too bright.

c

2.33
7 44 2.48
2.36

f

2.21
7 48 2.1r
2.16

i

0.68
7 r4 0.63
0.r2

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1884phae.proj.1318w



Nov. 5. 1884.
just certainly seen

g

2.6 K

8 9 1.9 v

1.9 d

h

0.97

8 15 1.02

1.11

b

3.4 d

8 20 3.12

3. v 0

e

1.49

8 24 1.49

1.42

d

2.13

8 32 2.37

2.34

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Nov. 8. 1884. P. obs.

α Pegasi.

22 v9 +14.6

0 1v

+1 1v

f

9 13 0.50
0.50
0.52

e

9 17 0.68
0.79
0.69

g not seen; a too bright.

b

9 20 2.41
2.53
2.13

d

9 21 0.82
0.80
0.85

c

9 22 1.29
1.30
1.13

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1884phae.proj.1318w



Nov 8. 1884

γ Pegasi. S obs.

| | |
|---|---|
| | a |
| 9 38 | 2.29 |
| | 1.80 |
| | 2.23 |
| | |
| | ~~a~~ c |
| | 1.10 |
| 9 40 | 1.00 |
| | .94 |
| | |
| | g |
| | 0.85 |
| 9 42 | 0.88 |
| | 1.06 |
| | |
| | d |
| | 1.52 |
| 9 46 | 1.16 |
| | 1.16 |
| | |
| | b |
| | 1.77 |
| 9 48 | 1.71 |
| | 1.64 |
| | |
| | i not taken |
| | h |
| | 0.71 |
| 9 51 | 0.57 |
| | 0.65 |

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1884phae.proj.1318w



Nov 8, 1884.

| | f |
|---|---|
| 9 53 | 0.77 |
| | 0.88 |
| | 0.95 |

| | e |
|---|---|
| | 1.15 |
| 10 0 | 1.15 |
| | 1.07 |

θ' Cetj P. Obs.
Star 5$^s$ foll. d in same declination substituted for f.

| | d |
|---|---|
| 10 24 | 1.84 |
| | 1.71 |
| | 1.60 |

Star substituted for f as above.

| | |
|---|---|
| 10 26 | 1.25 |
| | 1.34 |
| | 1.26 |

| | c |
|---|---|
| 10 27 | 1.96 |
| | 2.08 |
| | 2.20 |

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1884phae.proj.1318w



Nov. 8, 1884

e

10 29 1.80
1.65
1.54

g too faint

a

10 33 3.77
3.44
2.97

b

10 36 2.86
2.78
2.76

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Phot 9 1884

Standard pole β Cassiopeiae Plate I Rdgs.

a Cas Light

| | C |
|---|---|
| | 199 |
| 5 34 | 196 |
| | 189 |
| | : |
| | 0.81 |
| 5 41 | 0.86 |
| | 1.01 |

| | t |
|---|---|
| | 102 |
| 5 45 | 1.17 |
| | 1.06 |

| | |
|---|---|
| 5 50 | 0.92 |
| | 1.04 |
| | 0.96 |

| | h |
|---|---|
| 5 57 | 0.88 |
| | 1.07 |
| | 0.94 |

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Nov. 9, 1884

| | b |
|---|---|
| 5 58 | 2.41 |
| | 2.31 |
| | 2.37 |

| | e |
|---|---|
| | 1.75 |
| 6 0 | 1.60 |
| | 1.65 |

| | d |
|---|---|
| | 1.47 |
| 6 1 | 1.59 |
| | 1.40 |

f two faint

Region of α Pegasi S. obs.

| | f This is the south following of two faint stars about 3s apart, with a somewhat brighter star south preceding, as on p. 24 |
|---|---|
| | 0.53 |
| | 0.52 |
| 6 41 | 0.60 |

g not seen

| | e |
|---|---|
| | 0.72 |
| 6 45 | 0.73 |
| | 0.79 |

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Nov. 9, 1884

a too bright

| | | d |
|---|---|---|
| 6 | 54 | 0.79 |
| | | 0.78 |
| | | 0.67 |

| | | b |
|---|---|---|
| | | 2.26 |
| 6 | 56 | 2.16 |
| | | 2.72 |

| | | c |
|---|---|---|
| | | 1.36 |
| | | 1.27 |
| | | 0.9 |

Observed Zen 58° Hodg Obs

| | | | |
|---|---|---|---|
| 7 | 22 | Sirius 5. R | |
| 7 | 38 | Began with DM 49° 3186 | |
| | | 3272 to 3273 3° 1's | 12 in 22m |
| 8 | 00 | 3284 | 14 in 24 |
| 8 | 24 | 3365 | 14 in 23 |
| | | 3392 S. nec. | 6 in 12 |
| 8 | 51 | 3487 | 50 in 65 |
| 9 | 3 | Ended 3510 rej of two | 17 min |

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1884phae.proj.1318w



Nov 9 1884

Sirius 6 Lyn.

9 05 Began with Dm 49° 3573

18 3564 chair changed from

20 3571 Chp.

3612

3660 Stars in this vicinity

appear to disagree from catalogue

10 20 3642

10 26 3664

10 49 Ended with 3760

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Nov. 10. 1884

Series 7 Stars.

5 37 Begin circle Obs + 49°9
Transits to identify 119 etc.
0.0
6 5 21.0
80.0
116.0
150.0

6 8 119
6 28 427
6 40 Stopped at 26 5

Photometer I. Set on γ Pegasi
Too light up.

6' Ceti. Phot. I. Fr. obs.

1 18 −8.8
23 10
−2 8

f ; this is the same star observed on f. 52

0.96
8 4 1.02
0.96

~~B~~ d
1.47
8 12 1.60
~~1.58~~
1.54

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1884phae.proj.1318w



Nov. 10, 1884.

c

2.31

8 14 2.13 faint on second look.

2.44

e

1.46

8 17 1.32

1.33

g

0.81

8 23 0.69

0.76

a too bright

f

4.02

8 31 3.96

4.15

~~ζ Piscium.~~ Pegasi. W. obs.

0 Y 7 +14.0

a

2.76 rejct

3.22

8 46 3.04

2.98

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1884phae.proj:1318w



Nov. 10, 1884

c

1,59

8 48 1,51

1,65

g

1.07

8 52 1,13

1,17

d

1,37

8 53 1,33

1,35

h

2,13

8 55 2,23

2,29

i too faint

h

0,77

9 0 0,91

0,79

a

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1884phae.proj:1318M



Nov. 10, 1884

f

9 3 1.13
1.15
1.10

e

1.15

9 13 1.26
1.29

9 29 Stopwatch runs 61.0 while B.236 runs 60.0

Wedge photometer S. obs.

γ Pegasi

γ (with shade) 16.5 12.5 19.8 48.8

a 15.6 15.2 15.2 46.2

c 9.4 (not visible afterwards in wedge)

b 12.0 13.3 11.4 36.7

For more complete observation see p. 68

Series 8 S. obs.

10 24 Begun 3766 ~~(three of two)~~ fell. of two stars observed.

10 47 Ended 3862 hazy; fainter stars beginning to be wholly invisible with wedge.

This series rejected: see p. 80.

10 51 Stopwatch runs 60.1 while B.236 runs 60.0

Object glass found to be somewhat dewy; this had been suspected during the observations from the faintness of the stars, although the images were pretty good.

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1884phae.proj.1318w



Nov. 11, 1884.

Photospectroscope
H.P. 2566. γ Ursæ Min.

P. obs.
Zero 164.5 Setting 74.5

~~A~~ B

5 5-2 21 31 39.0
53.0 21 46.0 144.8 84.8

32 23.2 ε 147.6
39.1 α 91.7
33 40.6 δ 30.2
34 9.5 β 34 108 +1.3
12.0 γ

~~B~~ A

5 5.6 21 35 5.4
19.0 12.2 158.0
36 31.8 α 68.4
47.5 δ 52.7
37 38.0 γ 40.2 -2.3
42.5 β

~~A~~ B H.P. 2500. β Ursæ Min.

6 7 21 46 57.5
47 6.3 58.9 18 12.7
48 17.0 α 109.6
49 6.0 δ 60.6
50 1.5 γ 6.6 -4.1
11.7 β

~~B~~ A

6 12 21 50 50.2
51 5.3 57.8 18 12.0
52 37.3 δ 82.5
53 49.6 α 10.2
50.4 γ 59.8 -9.4
54 9.2

21 38 39.5
53.5 ~~46.5~~ 42.5 297.3 ~~252.5~~

39 39.5 α ~~95~~
45.0 ε
99.5 141.2
94.0 201.6
293 59.5 40 49.7 δ
19.0 -1.0 +.3 41 18.0 γ
20.0 β ~~49.0~~

~~B~~ A

21 42 97.4
31.8
246 150.4 308.4
76.0 144.4 43 39.0 α
54.8 107.5 44 0.2 δ
53.0
57.0 γ
β

~~A~~ B

21 54 57.0
64.4 18 12.6.0 37 3.7 ~~25.5~~
55 11.8
56 22.0 α 108.4 21 8.0
57 11.2 δ 59.2 119.8
58 5.7 γ 10.4 -4.8 -8.9
15.2 β

~~B~~ ~~B~~ A

21 59 3.3
11.0 12 12.5 30 4.5 ~~18 4.5~~
18.7
22 1 3.8 α 59.7 ~~22.2~~ 41 69.3
5.0 δ 14.0 58.5 ~~18.7~~
4.8 γ
22.2 β 13.5 -8.7 -18.1

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Nov. 11, 1884.

H.P. 2766 η Draconis

A B

6 48 22 27 53.2
28 1.8 57.5 15 16.2
34.5 α 69.2
29 44 δ 29.3
32.7 γ
34.0 β 33.7 −.3

B A

6 50 22 30 10.3
19.4 14.8 9.2
31 11.0 δ 35.0
14.0 α 32.0
43.5 γ
48.5 β 46.0 −2.5

A B H.P. 2937 β Draconis

7 2 22 41 21.0
27.0 24.0 7.3
52.0 α 44.0
42 17.8 δ 18.5
36.6 γ
38.0 β 36.3 −1.7

B A

7 4 22 43 15.0
21.2 18.1 7.3
44 0.0 α 32.4
4.0 δ 28.4
30.7 γ
34.0 β 32.4 −1.6

A B

22 32 59.1 63.6 15 16.4 31 32.6
33 8.2
47.0 α 53.0 122.2
34 7.7 δ 32.3 61.6
38.0 γ
42.0 β 40.0 −2.0 −2.3

B A

22 35 18.3
27.1 22.7 8.7 17.9
36 20.0 α 39.4 71.4 74.4
21.3 δ 38.1 73.1 74.1
54.9 γ
57.4 β 59.4 −4.5 −7.0

A B

22 45 16.4
23.0 19.7 7.3 145.6
44.2 α 48.8 92.8
46 12.1 δ 20.9 39.4
32.0 γ
34.0 β 33.0 −1.0 −2.7

B A

22 47 6.6
12.8 9.7 7.1 146.4
53.5 α 28.8 60.7
57.2 δ 27.6 56.0
48 20.0 γ
23.7 β 21.8 −1.9 −3.5

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1884phae.proj.1318w



Nov. 11, 1884

H.P. 3009 γ Draconis P. obs.

~~A~~ B

7 9 22 49 15.4
21.3 18.4 76.6
53.0 δ 42.0
50 11.5 δ 23.5
32.6 γ 35.0 -2.3
37.3 β

~~B~~ A

7 12 22 51 ~~2~~ δ
3 ν 32.5 ~~40.3~~ 71.0
18 ν δ 25.0
20 ν δ 23.0
42.0 γ 43.5 -1.5
47.0 β

A B ~~49~~

7 14 ν3 19.ν
26.ν 23.0 74.0 150.6
ν6.0 δ 41.0 83.0
ν4 19.0 δ 18.0 41.5
35.0 γ 37.0 -2.0 -4.3
39.0 β

~~B~~ A

7 16 ν5 12.ν 15.8 71.2 142.2
19.0
ν7.0 δ 30.0 53.0
ν6 ν.0 δ 22.0 47.0
23.0 γ 27.0 -4.0 -5.5
31.0 β

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1884phae.proj.1318w



Nov. 11. 1884.

Standard θ Aquilae. H. P. 35 1 K.

20 ν −1.2

23 0

+2 νν

P. obs.

A B

7 21 23 1 6.ν

8.8 40.2 11.0

25.ν 23.ν ζ

24.0 2ν.6 ε

4.ν 44.ν δ

49.0 +1.0 44.0 β

ν0.0 γ

A B

2 3 3 34.0

36.0 43.8 84.0 34.0

28.8 ~~54.3~~ ν2.8 ν1.0 ε

26.8 ~~50.8~~ ν2.3 ν3.0 ζ

9.8 14.3 4 10.0 δ

19.8 +1.3 +2.3 14.ν β

21.0 γ

B A

7 23 2 22.ν

24.2 40.0 26.0

19.7 44.ν ζ

11.2 ν3.0 δ

23.ν γ

4.2 −.8 ν.0 β

B A

~~4~~ν 12.0

14.0 43.ν 83.ν 16.0

21.0 40.7 36.ν ζ

13.0 24.2 44.0 δ

ν7.ν −1.ν −2.3 ν6.0 γ

ν9.0 β

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1884phae.proj:1318w



Nov. 11. 1884.

β Aquarii = H III 375 P. obs.

21 25 −6.1

20 6

+1 +1

A B

7 29 23 4 31.0

33.0 45.8 35.0

31.8 47.0 E

28.8 50.0 L

8.8 9 10.0 S

18.8 +1.3 17.5 B

20.0 V

A B

23 11 3.5

50.2 45.0 90.8 7.0

26.2 55.0 24.0 L

9.2 18.0 41.0 S

49.0 V

50.2 −1.3 0.0 52.5 B

B A

7 30 23 9 49.0

51.0 42.8 53.0

16.8 10 17.0 L

14.8 19.0 S

33.8 −1.7 32.0 V

35.5 B

B A

23 12 25.0

27.0 45.0 87.8 29.0

17.5 34.3 24.5 L

16.0 30.8 26.0 S

12.0 −2.0 −3.7 13 9.0 V

14.0 B

Series 8. S. obs.

8 50 Stopwatch runs 60.0 while B. 236 runs 60.0

8 55 ~~Trial~~ Series 18 begun with 3170

9 17 3284

9 43 3365

10 8 3495

Star 11m 8s fell. 3546 δ 53', tr. to dis. 22.9

11 3 Ended at 3632

11 6 Stopwatch runs 61.0 while B. 236 runs 60.0

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Nov. 12, 1884

Region of α Pegasi. P. obs.

~~Star pr. f about 2°, 2' south; call this f.~~

| | | | |
|---|---|---|---|
| | 40.2 | 52.7 | pr. of this pair called f |
| 5 50 | 44.2 | 56.5 | foll. — " — " f |
| | 57.3 | 67.6 | e |

e through Mt. to be observed rather too early in second set of transits.

See pp. 24 and 55.

Photometer I.

Region of γ Pegasi. P. obs.

| | a |
|---|---|
| 5 55 | 1.90 |
| | 1.92 |
| | 1.70 |

| | c |
|---|---|
| | 1.17 |
| | 1.34 |
| 5 57 | 1.21 |

| | g |
|---|---|
| | 0.99 |
| 5 58 | 0.87 |
| | 1.01 |

| | d |
|---|---|
| | 1.30 |
| 6 0 | 1.29 |
| | 1.50 |

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Nov. 12, 1884.

| | | b |
|---|---|---|
| | | 1.89 |
| 6 | 1 | 2.12 |
| | | 1.96 |

i not seen

| | | h |
|---|---|---|
| | | 0.86 |
| 6 | 3 | 0.95 |
| | | 0.98 |

| | | f |
|---|---|---|
| | | 1.14 |
| 6 | 5 | 1.28 |
| | | 1.31 |

| | | e |
|---|---|---|
| | | 1.38 |
| 6 | 7 | 1.48 |
| | | 1.34 |

6 28 Stopwatch runs $60^s.8$ while B.236 runs $60^s.0$

Wedge. Region of γ Pegasi 8. obs.

| | | | | | |
|---|---|---|---|---|---|
| 6 | 30 | γ (with shade) | 23.5 | 19.3 | 25.9 | 68.7 |
| | | a | 23.3 | 22.5 | 23.1 | 68.9 |
| | | c | 12.1 | 12.1 | 10.5 | 34.7 |
| | | d | 9.3 | 8.0 | 10.6 | 27.9 |
| 6 | 50 | b | 16.8 | 18.0 | 19.6 | 54.4 |

e not visible in wedge.

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Nov. 12, 1884

Region of α Pegasi. S obs.

7 0 α (with shade) 19.0 24.3 18.9 6 2.2

Star foll. α 1m54s δ 8.3 21.2 25.8 25.0 f 2.0

7 10 Star foll. α 4m56s, δ 5.0 37.0 38.1 35.0 1 1 0.1

Region of θ Cdi. S obs.

Too much haze. c not visible in

8 45 wedge; g not seen well enough for measurement with Photometer 9.

Photospectroscope. W obs.

H.P. 3899. α Aquarii.

A

9 10 0 52 46.2

51.0 48.6 47.9

53 6.0 ε 30.5

19.1 δ 17.4

34.4 α 2.1

36.0 γ

37.0 β 36.5 −.5

A

0 55 29.2

33.1 31.2 49.9 97.8

56 3.7 δ 17.4 34.8

12.3 α 8.8 10.9

20.2 γ

22.0 β 21.1 −.9 −1.4

B

9 12 0 54 6.7

10.6 8.6 50.2

24.0 ε 34.8

34.5 α 24.3

50.2 δ 8.6

57.4 γ

0.2 β 58.8 −1.4

B

0 56 50.8

54.9 52.8 49.2 99.4

57 18.2 α 23.8 48.1

31.5 δ 10.5 19.1

41.7 γ

42.2 β 42.0 −.2 −1.6

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Nov. 12 1884.

A N.P. 3648 ε Cygni A

9 21 1 4 5.2
10.1 7.6 60.0
49.3 δ 18.3
53.6 α 14.0
5 6.3 γ
9.0 β 7.6 −1.4

B

9 22 1 5 38.5
43.2 40.8 60.7
53.0 ε 48.5
6 15.0 α 26.5
~~8~~ 32.0 δ 9.5
41.0 γ
42.0 β 41.5 −.5

1 7 11.0
15.8 134 59.4 119.4
30.0 ε 42.8 428
55.0 δ 17.8 36.1
8 0.0 α 12.8 26.8
12.2 γ
13.5 β 12.8 −.7 −2.1

B

1 8 50.4
56.0 53.2 ~~7.8~~
9 10.4 ε
30.2 α
~~37~~ 40.0 δ
55.6 γ ~~7.8~~
β did not disappear

A H.P. 3564 γ Cygni

9 29 1 12 43.4
49.5 46.4 65.6
13 37.5 δ 14.5
44.0 α 8.0
51.5 γ
52.5 β 52.0 −.5

A

1 16 56.5 58.6 66.5 132.1
17 0.7
46.6 δ 18.5 33.0
52.0 α 13.1 26.1
18 4.2 γ
6.0 β 5.1 −.9 −1.4

B

9 31 1 14 27.0
32.3
48.0 ε
15 4.0 α
27.7 δ
~~37.4~~
neither β nor γ disappear

B

1 18 52.0
57.2
19 12.4 ε
32.7 α
51.3 δ
1.3 γ
β did not disappear

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1884phae.proj.1318w



Nov. 12, 1884.

A H.P. 3419 δ Cygni

9 40 1 23 7.8
13.2 10.5 69.7
31.0 ε 49.2
59.8 δ 20.4
24 4.7 α 15.5
19.0 γ
21.5 β 20.2 −1.3

B

9 41 1 25 3.8
9.2 6.5 71.1
28.0 ε 49.6
39.2 α 38.3
26 8.7 δ 8.9
17.2 γ
18.0 β 17.6 −.4

A

1 26 50.9
56.4 53.6 70.2 139.9
27 42.5 δ 21.3 41.7
47.2 α 16.6 32.1
28 3.5 γ
4.2 β 3.8 −.4 −1.7

B

1 29 12.3
18.4 15.4 79.6 141.7
29.2 ε 56.8 106.4
44.4 α 41.6 79.9
30 14.1 δ 11.9 20.8
26.0 β 0.0 −.4
26.0 γ

A H.P. 3631 α Cygni

9 49 1 33 21.9
27.3
42.0 ε
34 26.8 α
30.0 δ
36.5 γ
β did not disappear

B

9 51 1 35 15.0
20.6
45.0 ε
36 1.6 α
27.0 δ
30.2 γ
β did not disappear

A

1 37 38 ~~49.0~~ 50.8
~~24~~ 56.2
39 ~~37.0~~ 6.5 ε
~~22.4~~ 58.0 α
40 0.0 δ
5.2 γ
β did not disappear

B

1 40 48.0
53.6
41 15.1 ε
37.8 α
59.0 δ
42 3.2 γ
β did not disappear

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Nov. 12, 1884

A H.P. 3757 α Cephei A

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 2 | 1 | 45 | 29.0 | | | | 1 | 50 | 52.3 | |
| | | | | 37.4 | 33.2 | 10.61 | | | 51 | 0.6 | |
| | | | 46 | 52.0 δ | | 27.3 | | | 52 | 19.6 δ | |
| | | | | 59.6 α | | 19.7 | | | | 21.0 α | |
| | | | 47 | 18.6 γ | | | | | | 46.5 γ | |
| | | | | 20.0 β | 19.3 | -.7 | | | | | |

B did not disappear

B

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 4 | 1 | 48 | 13.0 | | | | 1 | 53 | 34.0 | |
| | | | | 21.4 | 17.2 | 10.68 | | | | 42.4 | 38.2 10.90 21.58 |
| | | | | 43.5 ε | | 80.5 | | | 54 | 20.8 ε | 66.4 146.9 |
| | | | 49 | 5.2 α | | 58.8 | | | | 31.7 α | 55.5 114.3 |
| | | | | 45.3 δ | | 18.7 | | | 55 | 13.3 δ | 13.9 32.6 |
| | | | 50 | 3.0 γ | | | | | | 27.0 | |
| | | | | 5.0 β | 4.0 | -1.0 | | | | 27.5 β | 27.2 -.3 -1.3 |

A N.P. 4080 α Pegasi A

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 20 | 2 | 3 | 37.5 | | | | 2 | 6 | 20.3 | |
| | | | | 41.6 | 39.6 | 52.0 | | | | 25.0 | |
| | | | 4 | 16.8 α | | 14.8 | | | | 37.5 ε | |
| | | | | 19.8 δ | | 11.8 | | | 7 | 2.9 δ | |
| | | | | 31.3 γ | | | | | | 6.8 α | |
| | | | | 32.0 β | 31.6 | -.4 | | | | 16.0 γ | |

β did not disappear

B

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 21 | 2 | 5 | 3.3 | | | | 2 | 7 | 43.0 | |
| | | | | 7.7 | 5.5 | 57.0 | | | | 47.4 | 45.2 51.4 102.4 |
| | | | | 23.2 ε | | 33.3 | | | 8 | 8.0 ε | 28.6 61.9 |
| | | | | 32.0 α | | 24.5 | | | | 11.6 α | 25.0 49.5 |
| | | | | 51.0 δ | | 5.5 | | | | 31.0 δ | 5.6 11.1 |
| | | | | 56.0 γ | | | | | | 36.2 γ | |
| | | | | 57.0 β | 56.5 | -.5 | | | | 37.0 β | 36.6 -.4 -.9 |

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# Nov. 13 1884

AB N.P. 2807 ζ Herculis P. obs. AB

5 47 21 35 1.0 / 5.7 3.4 52.4
23.0 α 32.8
36.5 δ 19.3
53.7 γ 55.8 -2.2
5 6.0 β

21 39 47.0 / 51.5 49.2 55.6 108.0
40 13.0 α 31.8 64.6
28.0 δ 16.8 36.1
43.0 γ 44.8 -1.7 -3.9
46.5 β

BA

5 50 21 38 13.7 / 19.0 16.4 49.8
44.2 δ 22.0
52.4 α 13.8
39 4.5 γ 6.2 -1.8
8.0 β

BA

21 41 24.0 / 28.3 26.2 49.9 99.7
53.8 δ 22.3 44.3
42 2.3 α 13.8 27.6
14.2 γ 16.1 -1.9 -3.7
18.0 β

AB N.P. 3147 α Lyrae two bright

6 9 21 54 39.7 / 44.2 42.0 48.2
57.0 ε 33.2
55 1.5 α 28.7
20.0 δ 10.2
29.0 γ 30.2 -.7
31.5 β

AB N.P. 3259 ζ Aquilae

21 59 21.6 / 26.0 23.8 45.0 93.2
42.8 α 26.0 54.7
22 0 1.2 δ 7.6 17.8
7.5 β 8.8 +1.3 +.6
10.0 γ

BA

6 10 21 56 22.9 / 26.2 24.6 48.9
0.0 α 13.5
2.0 δ 11.5
12.0 γ 13.5 -1.5
15.0 β

BA

22 1 58.7 / 2 2.2 60.4 47.2 96.1
30.2 δ 17.4 28.9 ~~20.9~~
33.1 α 14.5 28.0
46.2 γ 47.6 -1.4 -2.9
49.0 β

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A N.P. 3418 γ Aquilae

6 19 22 6 18,0
22,5 20.2 47.3
44,6 δ 22.9
7 0,8 α 6.7
6,0 γ
9,0 β 7.5 -1.5

B

6 21 22 7 52,0
55,6 53.8 47.2
8 21,7 β 19.3
24,0 δ 17.0
40,0 γ
42,0 β 41.0 -1.0

A N.P. 3429 α Aquilae

6 30 22 17 48,5
52,5 50.5
18 28,8 δ
35,0 α

B & γ do not disappear

B

6 32 22 19 25,3
29,2 27.2
46.0 ε
20 0,0 α
17,3 δ

A

22 9 28.3
32,3 30.3 47.8 95.1
54,4 δ 23.7 46.6
10 7,6 α 10.5 17.2
16,2 γ
20,0 β 18.1 -7.9 -3.4

B

22 12 ~~12,1~~ 5,2
~~38~~ 59,1 7.2 47.0 94.2
31,0 α 23.2 42.5
34,4 δ 19.8 36.8
53,3 γ 54.7 -8 -18
55,0 β

A

22 20 53,0
57,0 55.0
21 35,6 δ
41,0 α

B & γ do not disappear

B

22 22 32,1
36,3 34.2
56,7 ε
23 6,0 α
22,4 δ

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Nov. 13, 1884

A H.P. 3574 θ Aquilae

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 38 | 22 | 25 | 1,2 | | | 22 | 27 | 56,3 |
| | | | | 5,2 | 3.2 | 45.2 | | 28 | 0,2 |
| | | | | 34,7 α | | 13.7 | | | 30,6 α |
| | | | | 36,0 δ | | 12.4 | | | 32,0 δ |
| | | | | 47,0 | | | | | 43,5 |
| | | | | 49,8 γ/β | 48.4 | -1.4 | | | 45,0 γ/β |

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B

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|---|---|---|---|---|---|---|---|---|---|
| 6 | 39 | 22 | 26 | 25,0 | | | 22 | 29 | 10,3 |
| | | | | 29,1 | 27.0 | 44.8 | | | 14,2 |
| | | | | 45,5 α | | 26.3 | | | 29,2 α |
| | | | 27 | 2,8 δ | | 9.0 | | | 49,5 δ |
| | | | | 11,3 β | | 11.8 +.5 | | | 56,0 γ |
| | | | | 12,2 γ | | | | | 57,0 β |

B

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A H.P. 3899 α Aquarii

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 45 | 22 | 32 | 34,2 | | | 22 | 35 | 15,1 |
| | | | | 38,3 | 36.2 | 44.1 | | | 19,1 |
| | | | | 57,6 δ | | 22.7 | | | 48,6 δ |
| | | | 33 | 11,9 α | | 8.4 | | | 50,0 α |
| | | | | 18,6 γ | | 20.3 -1.7 | | | 1,0 γ |
| | | | | 22,0 β | | | | | 4,0 β |

A

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B

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|---|---|---|---|---|---|---|---|---|---|
| 6 | 47 | 22 | 34 | 4,4 | | | 22 | 37 | 19,2 |
| | | | | 7,8 | 6.1 | 45.7 | | | 23,3 |
| | | | | 28,7 α | | 23.1 | | | 44,0 α |
| | | | | 37,5 δ | | 14.3 | | | 56,5 δ |
| | | | | 50,5 γ | | 51.8 -1.2 | | | 5,0 |
| | | | | 53,0 β | | | | 38 | 6,8 γ/β |

B

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Nov. 13. 1884.

Sketch of Sol. & Evidence

| | | | | |
|---|---|---|---|---|
| a | 5 | 38 | 7 | 8.5 |
| b | 2 | 40 | 8 | 9.8 |
| c | 5 | 48 | 1 | 10.4 |
| d | 5 | 21 | 6 | 11.3 |
| e | 3 | 12 | 0 | 11.6 |
| f | 3 | 44 | 4 | 12.6 |
| g | 3 | 45 | 2 | 13.7 |
| h | 3 | 53 | 1 | ns |
| i | 3 | 39 | 6 | ns. |

Dis. Sup. II. Phot. H. Comp. with sat. next Sol. (prec.) P. obs. = I.

B. + C. 1882. Bond 89 K.

| | | | | | | |
|---|---|---|---|---|---|---|
| minutes evidently wrong from comparisons on Nov. 6. and Nov. 15. as well as at end of this eclipse. | 11 | 10 | 29.5 | 12 | 52 | 0.0 |
| | | 11 | 29.5 | | 58 | 0.0 |
| | | 22 | | | | |
| | 11 | | 24.5 | Ap. time dis. | | |
| | 11 | 18 | 35.0 | | 137.6 | |
| | | | 52.0 | | 229.4 | |
| | | 19 | 11.0 | | 143.3 | |
| | | | 26.5 | | 234.6 | |
| | | | 37.5 | | 146.9 | |
| | | | 49.0 | | 230.2 | |
| | | | 55.0 | | 147.3 | |
| | | 20 | 10.5 | | 230.2 | |
| | | | 21.5 | | 150.4 | |

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Nov. 13. 1884

| | | | | |
|---|---|---|---|---|
| 11 | 20 | 34,0 | 229.4 | |
| | | 46,0 | 1KK.9 | |
| | | V2,0 | 230,6 | |
| | 21 | 9,V | 1V0,7 | |
| | | 20,0 | 227.2 | |
| | | 32,0 | 1K7.3 | |
| | | K3,0 | 230,K | |
| | | VV,0 | 1V1.2 | |
| | 22 | 8,V | 22V.2 | 5 |
| | | 19,0 | 1K8.8 | |
| | | 36,0 | 22V.2 | |
| | | 47.0 | 1V2.8 | |
| | 23 | 1,0 | 229.2 | 6 |
| | | 12,0 | 1K7.8 | |
| | | 26,0 | 227.3 | |
| | | 38,0 | 1K7.2 | |
| | | V0,0 | 227.3 | |
| | 24 | 33,0 | 1V1.2 | 7 |
| | | KV.0 | 233,6 | |
| | 2V | K7,V | 1V1.6 | |
| | 26 | 0,V | 22V.8 | 8 |
| | | 12.0 | 1K8.7 | |
| | | 26,0 | 227.7 | |
| | | V7,V | 1V0.7 | |
| | 27 | 11.V | 230,2 | 9 |
| | | 21,V | 1K9.2 | |
| | | 32.0 | 227.6 | |

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Nov. 13. 1884.

| | | | |
|---|---|---|---|
| 11 | 24 | 47.0 | 149.9 |
| | | 54.0 | 230.0 10 |
| | 29 | 10.0 | 151.6 |
| | | 23.0 | 224.6 |
| | 30 | 39.0 | 144.9 |
| | | 44.0 | 230.0 |
| | | 59.5 | 149.4 |
| | 31 | 10.0 | 226.6 |
| | | 20.5 | 149.4 |
| | | 33.0 | 226.0 |
| | | 47.0 | 152.6 |
| | | 55.0 | 229.1 |
| | 32 | 2.0 | 156.4 |
| | | 10.0 | 223.1 |
| | | 20.0 | 156.2 |
| | | 29.0 | 224.9 |
| | | 37.5 | 152.4 |
| | | 44.5 | 222.3 |
| | | 52.5 | 157.4 |
| | 33 | 1.5 | 217.7 |
| | | 6.5 | 161.4 |
| | | 16.0 | 221.6 |
| | | 23.5 | 164.4 |
| | | 31.0 | 220.5 |
| | | 34.0 | 163.0 |
| | | 46.0 | 214.6 |
| | | 54.0 | 166.0 |
| | 34 | 4.0 | 213.9 |

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Nov. 13. 1884.

| | | | | |
|---|---|---|---|---|
| 11 | 34 | 12,0 | 172,6 | |
| | | 24,5 | 202,0 | |
| | | 40,0 | 179,7 | |
| | | 54,0 | 197,2 | |

Limit of Vis.

| | | | | |
|---|---|---|---|---|
| 11 | 35 | 22,5 | 175,2 | |
| | | 31,0 | 207,1 | 31,9 |
| | | 45,5 | 171,3 | 35,1 |
| | | 57,0 | 206,4 | 2/67,0 |
| | | | | 33,5 |

| | B. + C. 1162. | | Bond 394. | | |
|---|---|---|---|---|---|
| 11 | 43 | 29,1 | 13 | 25 | 0,0 |
| | 44 | 29,1 | | 26 | 0,0 |

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Nov. 14. 1884.

Hedges Series No. 9 S obs.

Dm +49° 2604 distt ~~60° 10"~~ 9.0 110° 4" 10.5 mags

5 47 Began with Dm +49 2635

2639 affected by 2641

2663 " " 2666

6 30 2777

6 26 Ended at 2994

Stopwatch runs $60^s.2$ while B 236 runs $60^s.0$

Stopwatch runs $60^s.0$ while B 236 runs $60^s.0$

series 10 S obs

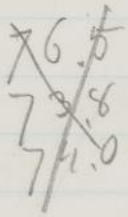
8 56 Began with 3642

9 53 3802

10 23 Ended 3905

This series includes the whole of Series 8 (p. 61) which may be rejected on account of the dew on the object-glass.

Stopwatch runs $66^s.0$ while B 236 runs $60^s.0$



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Nov. 15, 1884

5 48 Stopwatch runs 60,5 to title B. 236 runs 60,0
Series 11 S. obs.

6 20 Began 2999

7 7 Ended 3148

H. P. 379 v

21 2 v −6.1

0 d

+2 43

~~H. obs.~~

S. obs.

Iris A.

0 21 14.0

17.v 16.8 44.4

43.v δ 17.7

46.v α 14.7

22 0.v γ 1.8

2.0 β 1.2

A

~~0 2 C~~ 3 C.v

0h 26m 1.5 C2.v

3.0 43.8 88.2 v.0 2. δ

19.8 37.5 27.0 δ 14.0 α

9.3 24.0 37.v α 24.v γ

46.8 −2.2 −3.0 C4.v γ 2.v

C9.0 β

B

~~22 41.0~~

~~C.v~~

23 17.0

20.v 18.8 46.7

C4.v α ~~and ε~~ 17.0

C4.v δ 17.0

7.v γ

7.v β 5.5 −2.0

B

~~α 27 C9.0~~

~~v 3.0~~

0 27 C9.0

v1.0 42.0 88.7 v3.0

16.5 24 33.5 16.v α

12.5 29.v 20.v δ

0.0 −2.0 33.0 β

33.0 γ

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Nov. 15. 1884.

H. A. 3h36.

21 3h +9.3

0 30

+2 r2

A

0 31 4r.r

47.2 49.8 49.0

27.5 1 9.r δ

7.0 30.0 α

35.0 γ

37.0 -2.0 39.0 β

~~B~~ A

0 3K K1.r

43.5- 47.0 96.8 Kr.r

20.0 47.5- 3r 10.r δ

11.5- 18.5- 19.0 α

30.5- -1.5- -3.5- 29.0 γ

32.0 β

~~A~~ B

0 33 2r.0

26.8 47.2 26.r

15.5- r4.r δ

12.5- 3K 1.r α

13.0 γ

14.0 -1.0 1r.0 β

B

0 36 11.r

13.5- 49.5- 96.7 1r.r

19.5- 32.0 K3.r α

19.5- 35.0 Kr.r δ

3.0 0.0 -1.0 37 3.0 β

3.0 γ

H. P. ~~3h40.~~ 3h14.

21 40 -16.7

0 3h

+2 r4

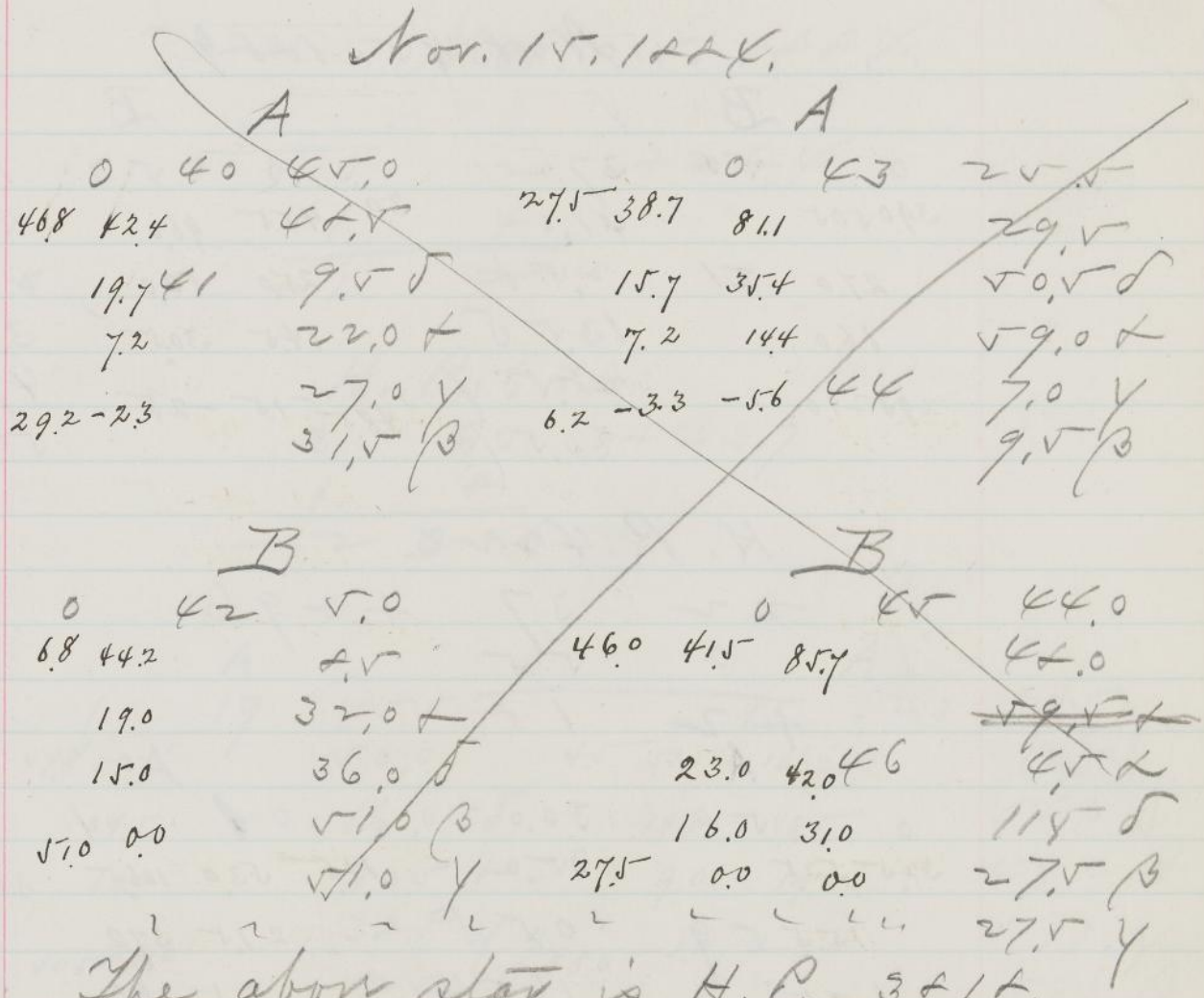
See next page for obs.

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1884phae.proj.1318

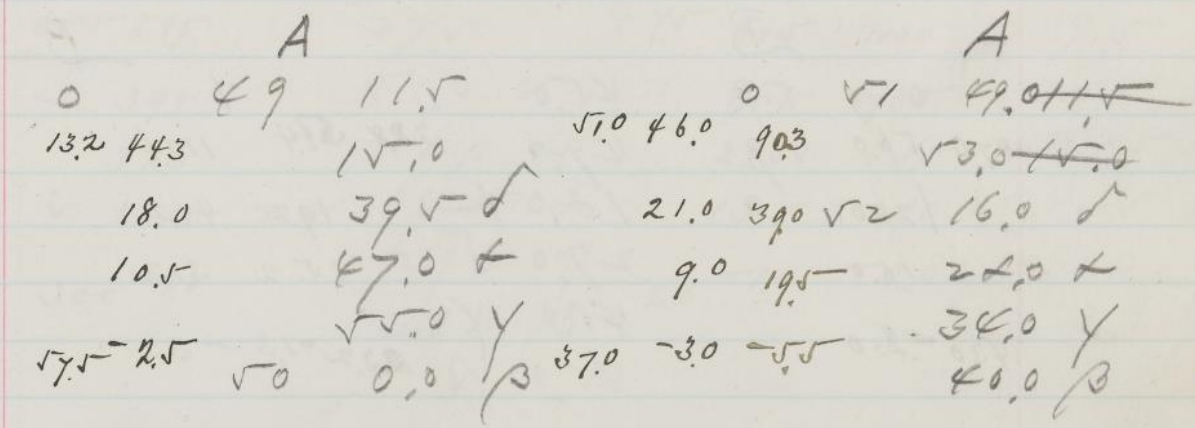


Nov. 15, 1884.




The above star is H. P. 3 & 1 &.

H. P. 3 & 4 &.




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Nov. 15. 1884.

B

| | | |
|---|---|---|
| 0 | V0 | 37.0 |
| 39.0 V0.5 | | 41.0 |
| 27.0 | V1 | 2.V d |
| 16.0 | | 13.V δ |
| 29.5 − 1.0 | | 24.V γ |
| | | 30.V β |

B

| | | |
|---|---|---|
| 0 | V3 | 1.0 |
| 3.0 45.5 | | 96.0 |
| 25.0 | V2.0 | 23.V d |
| 14.5 | 30.5 | 34.0 δ |
| 48.5 − 1.5 − 2.5 | | 47.0 γ |
| | | V0.0 β |

H. P. 40 = 0.

22 37 + 29.6

0 VV

---

+2 1A

A

| | | |
|---|---|---|
| 0 | VA | 30.0 |
| 32.5 − 53.5 | | 3V.0 |
| 15.5 | V9 | 0.V δ |
| 9.5 | | 16.V d |
| 26.0 − 2.0 | | 24.0 γ |
| | | 28.0 β |

A

| | | |
|---|---|---|
| 1 | 1 | 9.V |
| 11.5 − 53.0 | 106.5 − | 13.V |
| 21.5 − | 37.0 | 43.0 δ |
| 8.5 − | 18.0 | V6.0 d |
| 4.5 − − 2.0 − 4.0 | | 2.V γ |
| | | 6.V β |

B

| | | |
|---|---|---|
| 0 | V9 | 45.0 |
| 47.0 V6.0 | V9 | 49.0 |
| 25.0 | 0 | 14.0 d |
| 16.0 | | 27.0 δ |
| 43.0 − 2.0 | | 41.0 γ |
| | | 45.0 β |

B

| | | |
|---|---|---|
| 1 | 2 | 26.V |
| 28.8 V4.4 | 110.4 | 31.0 |
| 19.2 | 44.2 | 3 4.0 d |
| 15.2 | 31.2 | 4.0 δ |
| | | 22.0 γ |
| 23.2 − 1.3 − 3.3 | | 24.V β |

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Nov. 15. 1884.

0 2 +24.4
1 4
+1 2

H. P. 612.

3 40 +23.7
1 8
−2 32

A

1 19 47.8 S 27
24.S 20
10.0
40.S −2.0

47.S
S0.0
16.0 S
30.S t
34.S Y
42.S B

A

1 23 4.S S3.S 106 2
14.0 38.S
9.0 19.0
S8.0 −1.0 −3.0

2.S
6.S
44.0 S
49.0 t
S7.0 Y
S9.0 B

B

1 21 35.S S4.S
39.0
32.0
13.S 22
30.0 −1.0

33.S
37.S
S1.0 t
S4.0 t
16.S S
29.0 Y
31.0 B

B

1 2S 7.S S4.S 109.0
40.S 79.S
22.S S4.S
13.S 27.0
2.0 −1.0 −2.0

S.S
9.S
21.S t
39.S t
42.S S
1.0 Y
3.0 B

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1884phae.proj.1318w



Nov. 15. 1884.

H. P. 797.

4 29.0 +16.3

1 24

— 3 1

H. P. 262.

4 69 +33.0

1 00

— 3 19

A

1 32 7.V

10.0 V4.0 12.V

2V.V- 36.V d

0.V- 33 3.V c

4.0 -0.V 3.V

4.V B

A

1 3V 21.V

23.2 V4.0 108.0 26.0

25.7 2

V1.8 V1.V d

0.7

1.8 36 16.0 X

0.2

17.2 -.V +4.2 17.0 c

-1.2 -1.7 14.V B

B

1 33 V6.0

V8.V V3.0 3c 1.0

13.V 34.0 d

13.V 34.0 c

V1.V -.V V1.0 Y

V2.0 D

1 36 69.0

V1.V VV.0 108.0 V6.0

19.V- 33.0 27.0 V

17.0 30.V- 29.V c

46.V -.V —1.0 66.0 Y

67.0 B

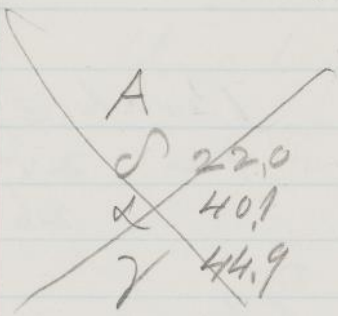
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1884phae.proj.1318M



Nov. 15, 1884

$\lambda$ Lacti




A

| | | | | |
|---|---|---|---|---|
| 57 | 29.8 | | | |
| | 33.8 | 31.8 | 47.2 | |
| 58 | 58.8 δ | | 22.2 | |
| | 17.2 αγ | 19.0 | 1.8 | |
| | 20.7 β | | ±1.7 | |

A

| | | | | |
|---|---|---|---|---|
| 0 | 0.2 | | | |
| | 3.9 | 2.0 | 48.2 | 95.4 |
| | 28.4 | | 23.8 | 46.0 |
| | 47.8 γ | | | |
| | 48.5 α | | 1.7 | 3.5 |
| | 52.5 β | 50.2 | −2.3 | −4.0 |

B

| | | | | |
|---|---|---|---|---|
| 1 | 58 48.7 | | | |
| | 52.5 | 50.6 | 48.6 | |
| 59 | 21.8 α | | 17.4 | |
| | 21.8 δ | | 17.4 | |
| | 38.2 γ | 39.2 | −1.1 | |
| | 40.3 β | | | |

B

| | | | | |
|---|---|---|---|---|
| 1 | 28.5 | | | |
| | 32.4 | 30.4 | 49.2 | 97.8 |
| 2 | 1.3 α | | 18.3 | 35.7 |
| | 1.3 δ | | 18.3 | 35.7 |
| | 18.2 γ | 19.6 | −1.4 | −2.5 |
| | 21.0 β | | | |

Region of $\theta$ Lacti  S. obs.

| | | | | |
|---|---|---|---|---|
| $\theta$ with shade | 13.0 | 16.1 | 12.0 | 41.1 |
| d | 9.2 | 9.6 | 9.8 | 28.6 |
| c | 10.6 | 11.0 | 13.9 | 35.5 |
| 10 42 a | 25.3 | 23.0 | 25.5 | 73.8 |
| b | 17.8 | 18.2 | 22.0 | 58.0 |

e not visible in wedge

11 5 Stopwatch runs $60^s.0$ while B236 runs $60^s.0$

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Nov. 15. 1884.

| | B. + C. 1142. | | Bond 394. | | |
|---|---|---|---|---|---|
| 10 | 43 | 24.7 | 12 | 2V | 0.0 |
| | 44 | 24.7 | | 26 | 0.0 |

11 7.V Ap. time eclipse.

Dis d up. I. Phot. R. P. obs.
Comp. with cat. III.

| | | | | |
|---|---|---|---|---|
| 10 | V4 | V2.0 | 3.1 | |
| | VV | 3.V | 92.4 | |
| | | 2V.0 | 3V4.4 | 1 |
| | | 39.0 | 92.4 | |
| | | V1.0 | 4.2 | — |
| | V6 | 2.0 | 92.2 | |
| | | 31.0 | 2.3 | 2 |
| | | 4V.0 | 91.2 | |
| | V7 | 37.0 | 2.2 | — |
| | | V3.V | 91.3 | |
| | V4 | 7.0 | 0.2 | 3 |
| | | 16.0 | 91.4 | — |
| | | 44.0 | 1.V | |
| | | V3.V | 93.3 | 4 |
| | V9 | 9.0 | 2.2 | |
| | | 22.0 | 96.4 | — |
| 11 | 0 | 17.0 | 4.2 | |
| | | 3V.0 | 92.2 | |
| | | V2.V | 7.3 | V |
| | 1 | 4.V | 93.4 | — |

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1884phae.proj.1318



Nov. 15, 1884.

| | | | |
|---|---|---|---|
| 11 | 1 | 47.0 | 1.3 |
| | | 59.0 | 98.4 |
| | 2 | 11.0 | 3.9 6 |
| | | 24.0 | 95.2 - |
| | 3 | 21.0 | 0.7 |
| | | 30.5 | 93.6 |
| | | 44.5 | 3.4 7 |
| | | 56.0 | 91.2 - |
| | 4 | 14.0 | 3 59.6 |
| | | 24.5 | 93.2 9 |
| | | 32.5 | 2.9 |
| | | 41.0 | 90.2 |
| | | 50.5 | 3 56.2 — |
| | 5 | 0.5 | 98.1 |
| | | 11.0 | 2.6 9 |
| | | 21.0 | 98.1 — |
| | | 30.0 | 4.3 |
| | | 32.0 | 92.6 10 |
| | | 42.5 | 5.2 |
| | | 56.0 | 97.2 — |
| | 6 | 6.0 | 3.3 |
| | | 16.5 | 22.4 |
| | | 26.5 | 5.2 |
| | | 36.0 | 22.9 |
| | | 45.0 | 2.2 |
| | | 53.5 | 2 5.7 |
| | 7 | 5.0 | 12.6 |
| | | 15.0 | 24.3 |
| | | 25.5 | 13.4 |

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1884phae.proj.1318w



Nov. 15, 1884.

| | | | |
|---|---|---|---|
| 11 | 7 | 35.0 | 79.6 |
| | | 43.5 | 17.4 |
| | | 5-6.0 | 40.3 |
| | 8 | 5.5 | 21.6 |
| | | 14.0 | 75.8 |
| | | 22.0 | 26.0 |
| | | 30.0 | 62.8 |
| | | 43.0 | 32.6 |
| | | 53.0 | 60.2 |

Limit of Vis.

| | | | |
|---|---|---|---|
| 11 | 9 | 32.0 | 33.8 |
| | | 42.5 | 66.7 |
| | | 5-6.0 | 35.1 |
| | 10 | 8.5 | 64.8 |

B. & C. 1162.

| | | |
|---|---|---|
| 11 | 17 | 24.3 |
| | 18 | 24.3 |

Bond 394.

| | | |
|---|---|---|
| 12 | 59 | 0.0 |
| 13 | 0 | 0.0 |

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Obs 16 1884

Series 12. 8 obs.
Begins with 95°

| | | |
|---|---|---|
| 7 | 10 | |
| 7 | 20 | 1000 |
| 7 | 45 | 1099 |
| 8 | 8 | 1190 |

Ended with 1211 stopped by gradually increasing haze.

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1884phae.proj.1318w



Nov. 17, 1884

| | | Series 13 | F. obs. |
|---|---|---|---|
| 6 | 0 | Begun | 575 |
| 6 | 26 | | 665 |
| 6 | 51 | | 740 |
| 7 | 24 | | 863 |
| 7 | 57 | Ended | 937 |
| 8 | 4 | Stopwatch runs $60^s.5$ while F. 1327 runs $60^s.0$ | |

| | | Series 14 | F. obs |
|---|---|---|---|
| 9 | 22? | Begun | 1201 |
| 9 | 49 | | 1300 |
| 10 | 24 | | 1386 |
| 10 | 50 | Ended | 1447 |
| 11 | 5 | Stopwatch runs $60^s.0$ while F. 1327 runs $60^s.0$ | |

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1884phae.proj.1318



Nov. 20. 1884.

θ Cet. Phot. S. Gr. obs.

1h 16m −9.0

~~49~~

~~−2 27~~

1 16

0 11

−1 √

f

8 18 2.23 reject.

f

8 28 2.94

Clouds came on.

Stars near HP 207. Pos 30 = 1.4m −8'

| | | | |
|---|---|---|---|
| HP 207. Bessel. | 1h | 53.5 | −26 53 |
| Lane. 587 Stone | 1 | 55.0 | −26 48 |
| Lal 3702 Ll. Hy. | 1 | 53.8 | −27 1 |
| Lane 570 | 1 | 54.5 | −26 12 |
| Cal. 4221 | 1 | 55.0 | −26 49 |
| 1236 | 1 | 53.2 | −26 46 |
| a | 1 | 54.7 | −26 44 |
| b | 1 | 51.9 | −26 48 |

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1884phae.proj.1318w



Phr. 20. 1884.

Cel. 1231 1236

| | | | | |
|---|---|---|---|---|
| a | 2 | 12 15.4 | 5.8 | 9.0 |
| 1231 | | 36.7 | 0.8 | 8.0 |
| 1236 | | 57.6 | 3.8 | 8.8 |
| Lel | | 15 37.0 | -1.5 | 6.5 |
| 1231 | | 16 45.4 | 11.2 | 7.6 |
| L | 2 | 18 52.2 | 5.3 | 8.2 |
| ~~Sam 794~~ | | | | |
| a | 2 | 21 39.6 | 9.8 | 8.0 |
| Sam 794 | | 22 0.8 | 5.2 | 7.6 |
| 1236 | | 22 15.2 | 7.4 | 8.3 |

B. + C. 1182.

| | | | |
|---|---|---|---|
| 13 | 45 | 13.9 | |
| | 46 | 14.1 | |

Bond 394.

| | | |
|---|---|---|
| 15 | 27 | 0.0 |
| 24 | | 0.0 |

23 — V1 — 23

14 9 Ap. time ecl.

Dis. Jup. II. Phot. H. Comp. with Sat. I.

S. obs.

~~Limit of Vis.~~

| | | | |
|---|---|---|---|
| 13 | 52 | 29.4 | 149.4 |
| | | V1.0 | 224.4 |
| | V9 | 8.0 | 149.2 |
| | | 22.5 | 231.1 |

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1884phae.proj.1318



Nov. 20. 1884.

| | | | | |
|---|---|---|---|---|
| 13 | 59 | 30,0 | 149.9 | |
| | | 46.5 | 227.2 | 2 |
| 14 | 0 | 1,0 | 150.5 | |
| | | 26.0 | 231.5 | |
| | | 41.5 | 152.7 | |
| | | 54,0 | 232.4 | |
| | 1 | 4,5 | 151.7 | 3 |
| | | 22,5 | 235.2 | |
| | | 34,0 | 151.7 | |
| | | 45.0 | 234.3 | |
| | | 59,0 | 147.4 | 4 |
| | 2 | 10,0 | 231.3 | |
| | | 26,0 | 149.6 | |
| | | 36,5 | 231.9 | 5 |
| | | 46,5 | 149.5 | |
| | | 53.5 | 227.4 | |
| | 3 | 3,5 | 150.1 | |
| | | 12,5 | 228.4 | 6 |
| | | 24,5 | 151,0 | |
| | | 34,0 | 234.0 | |
| | | 44,5 | 153.4 | |
| | | 59.5 | 234.9 | 7 |
| | 4 | 4,5 3.8 | 153.4 | |
| | | 14,5 | 230.4 | |
| | | 24,0 | 149.9 | |
| | | 37.5 | 231.6 | 8 |
| | | 44,0 44 | 152.2 | |
| | 5 | 2,5 | 231.4 | |

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1884phae.proj.1318w



Nov. 20. 1884.

| | | | |
|---|---|---|---|
| 14 | V | 14.V | 1V0.0 |
| | | 24.V | 202.6 |
| | | 33.V | 1V7.6 |
| | | 46.0 | 232.0 |
| | | VV.0 | 1V2.0 |
| | 6 | 3.0 | 226.4 |
| | | 11.V | 1V3.2 |
| | | 19.V | 223.4 |
| | | 26.V | 1V6.0 |
| | | 33.V | 229.7 |
| | | ~~39.V~~ | ~~144.V~~ |
| | | V2.0 | 1V7.0 |
| | 7 | 0.0 | 224.7 |
| | | 10.V | 1V0.0 |
| | | 20.0 | 227.7 |
| | | 30.0 | 1VV.9 |
| | | 40.V | 224.4 |
| | | V0.V | 1V6.1 |
| | | V4.V | 229.0 |
| | 8 | 9.0 | 1V6.4 |
| | | 20.V | 22V.V |
| | | 30.0 | 162.0 |
| | | 37.V | 222.1 |
| | | 44.V | 164.4 |
| | | V1.V | 219.7 |
| | | V7.V | 167.9 |
| | 9 | 4.V | 210.7 |

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1884phae.proj.1318w



Nov. 20. 1884.

| | | | |
|---|---|---|---|
| 14 | 9 | 12 V | 166 — |
| | | 19, V | 210. V |
| | | 26, V | 171. 0 |
| | | 33.0 | 204.7 |
| | | 40, V | 175.1 |
| | | 47.0 | 204.4 |
| | | 56.0 | 174. V |
| | 10 | 2,0 | 203.V |
| | | ~~12.0~~ | |
| | | ~~12.0~~ | 172.0 |

Not seen again.

Limit of Vis.

| | | | |
|---|---|---|---|
| 14 | 10 | V-1. | 173.4 |
| | 11 | V.V | 201.V |
| | | 17.V | 181.7 |
| | | 27.0 | 202.4 |

| | | B. & C. 1152. | Bond 394. | |
|---|---|---|---|---|
| 14 | 15 | 13.8 | 15 | V7. 0.0 |
| | 16 | 13.8 | | V8 0.0 |

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1884phae.proj.1318w



Nov. 21, 1884.

5 53 Wedge photographs. Stopwatch runs 60.0 w[hi]ch by B. 23 6 runs 60.0

Region of α Pegasi. Sobs.

| | | | | | |
|---|---|---|---|---|---|
| 5 59 | α (with shade) | 22.5 | 23.2 | 23.3 | 69.0 |
| | Star foll. α 1m 54s, δ 8'.3 | 21.1 | 24.6 | 22.9 | 68.6 |
| 6 11 | Star foll. α 4m 56s, δ 5'.0 | 36.5 | 37.1 | 36.1 | 109.7 |

δ' Ceti. Sr. obs.

1h 18m −4.8

23 35

−1 43

f not seen well enough to measure.

C

2.39
7 45 2.39
2.64

g too faint to measure. Sky hazy.

1.64
7 53 1.46
1.70

1.87
7 54 1.91
1.90

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1884phae.proj.1318w



Nov. 21. 1884.

"a" too bright to measure.

| | b |
|---|---|
| | 3.14 |
| 7 52 | 3.36 |
| | 3.23 |

~~H.P.~~ 1 obs. The star is $\theta^2$ Ceti north of H.P.220.

Wedge Photometer with shade

| | |
|---|---|
| | 10.0 |
| | 8.3 |
| | 10.0 |
| | 10.0 |
| | 8.0 |
| | 9.2 |

Observations very doubtful; in most trials the star could not be found after it entered the wedge, but in these cases it was thought to be seen.

Without shade

| | |
|---|---|
| | 48.5 |
| | 43.9 |
| | 46.4 |
| 8 58 | 46.6 |
| | 47.1 |
| | 46.5 |

With shade

| | |
|---|---|
| | 9.9 |
| | 10.4 |
| | 8.0 |
| | 8.0 |
| 9 13 | 8.3 |
| | 8.9 |

Same remark as above

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Nov. 21, 1884

Region of θ Cœti S. obs.

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | 23 | θ with shade | 17.4 | 16.1 | 18.0 | 51.5 |
| | | c | 12.6 | 10.0 | 9.3 | 31.9 |
| | | a | 34.0 | 20.0 | 17.5 | 71.5 |
| 9 | 39 | b | 16.7 | 19.8 | 14.1 | 50.6 |

d not visible in wedge.

Sky hazy but the haze does not seem variable; no obvious reason for variation in observations above.

Region of α Piscium

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | 47 | α with shade | 15.7 | 17.0 | 20.2 | 52.9 |
| | | a | 22.0 | 20.3 | 20.6 | 62.9 |
| | | d | 9.3 | 9.0 | 11.6 | 29.9 |
| | | c | 12.0 | 13.1 | 12.8 | 37.9 |
| 10 | 3 | b | 16.8 | 17.4 | 20.7 | 54.9 |

e not visible in wedge.

Region of α Cœti.

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | 13 | α with shade | 18.1 | 17.9 | 21.6 | 57.6 |
| | | a | 23.5 | 28.7 | 27.0 | 79.2 |
| | | d | 10.9 | 13.5 | 12.1 | 36.5 |
| | | e | 11.8 | 11.1 | 8.8 | 31.7 |
| | | c | 19.8 | 18.2 | 19.8 | 57.8 |
| | | b | 28.2 | 27.0 | 25.0 | 80.2 |
| 10 | 30 | By estimate b 2 a ; d 2 e. | | | | |

Stopwatch runs $60^s.6$ while B 236 runs $60^s.0$

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1884phae.proj.1318w



Nov. 22, 1884.

5 41 Stopwatch runs $60^s.3$ while B. 236 runs $60^s.0$

Wedge phot. Region of $\alpha$ Pegasi. 5 obs.

| | | | | | |
|---|---|---|---|---|---|
| 5 50 | $\alpha$ with shade | 26,3 | 24,7 | 24,7 | 75.7 |
| | Star foll. $\alpha$ , $\delta$ | 20,0 | 20,0 | 19,7 | 59.7 |
| 5 55. | Star foll. $\alpha$ , $\delta$ | 33,2 | 28,8 | 33,0 | 95.0 |

Region of $\alpha$ Piscium

Haze thick; clouds coming on.

14 40 Fog and cloud through which Jupiter was seen only at intervals and imperfectly to adjust the Micrometer

1884phae.proj.1318w



Nov. 24, 1884.

Wedge not in adjustment

Reads 264.9 Zero at 179.6

Sl at, 269.6

Region of α Piscium S. obs.

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | 48 | α with shade | 19.0 | 18.8 | 18.2 | 56.0 |
| | | a | 14.2 | 16.0 | 17.9 | 48.1 |
| | | d | 8.3 | 9.0 | 9.0 | 26.3 |
| | | c | 8.1 | 10.3 | 9.2 | 27.6 |
| 6 | 4 | b | 15.8 | 17.8 | 16.9 | 50.5 |

e not visible in wedge.

Region of α Cati

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | 15 | α with shade | 19.1 | 22.3 | 20.3 | 61.7 |
| | | a | 21.3 | 21.8 | 22.4 | 65.5 |
| | | d | 10.5 | 9.9 | 9.2 | 29.6 |
| | | e | 9.0 | 7.9 | 8.0 | 24.9 |
| | | c | 16.1 | 17.9 | 16.4 | 50.4 |
| 6 | 28 | b | 25.2 | 23.5 | 26.0 | 74.7 |

8 28 Stopwatch runs $60^s.8$ while 7.1327 runs $60^s.0$

Series 15. Zone 54° 50′ to 55° 0′. S. obs.

9 10 Begun 2455

9 32 2532

9 59 2617

10 35 Ended 2749

11 2 Stopwatch runs $60^s.0$ while 7.1327 runs $60^s.0$

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Nov. 26, 1884,

8 40 Stopwatch runs 60.0 while B 236 runs 60.0
Series 16. Zone 54° 50′ to 55° 0′. Pl. obs.

8 43 Begun with 2535
9 10 2617
9 36 2761
10 4 2880
10 40 2983
11 12 3076
11 22 Ended with 3115

Skynet runs $4^m\ 0.0^s$ < $4^m\ 0.0$

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Nov. 29, 1884,

Stopwatch runs $60^s.8$ while B. 236 runs $60^s.0$

Series 17. Zone 54° 50′ to 55° 0′ 5 obs.

8 27 Begun with 2295

8 49 2418

9 12 Ended 2520

Series 18. Zone 54° 50′ to 55.0 5 obs.

9 20 Begun 2750

9 40 2785 Thin clouds; series abandoned.

Stopwatch runs $60^s.2$ while B. 236 runs $60^s.0$

| | B. + C. 1162. | | Bond 394. | |
|---|---|---|---|---|
| # | | | # | |
| 16 | 17 | √√.1 | 16 | 18 0.0 |
| | 18 | √√.0 | | 19 0.0 |

Dis. of sep. I. Phot. R. P. obs.

Corrs. with distant sat. following. = IV.

| | | | |
|---|---|---|---|
| 16 | 26 | 7.0 | 270.6 |
| | | 26.0 | 29.2 |
| | | 46.0 | 269.4 |
| | 27 | 3.0 | 283.3 |
| | | 23.0 | 271.2 |
| | | 39.0 | 36.3 IV |
| | | √2.0 | 266.7 |

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Nov. 29. 1884.

| | | | |
|---|---|---|---|
| 16 | 2A | 17.0 | 2A.A |
| | | 37.0 | 271.6 |
| | | 56.0 | 29.3 |
| | 29 | 9.0 | 267.2 |
| | | 27.5 | 2A.7 |
| | | 41.0 | 269.4 |
| | | 55.5 | 27.7 |
| | 30 | 13.5 | 26A.1 |
| | | 25.0 | 2A.A |
| | | 39.0 | 26A.2 |
| | | 52.0 | 27.0 |
| | 31 | A.5 | 269.3 |
| | | 20.0 | 26.7 |
| | | 37.5 | 267.3 |
| | | 4A.5 | 26.A |
| | 32 | 9.0 | 26A.7 |
| | | 16.5 | 22.A |
| | | 26.0 | 267.9 |
| | | 34.5 | 2A.A |
| | | 45.0 | 267.6 |
| | | 56.0 | 29.2 |
| | 33 | A.0 | 272.2 |
| | | 19.0 | 25.0 |
| | | 32.0 | 26A.A |
| | | 42.0 | 2A.A |
| | | 54.0 | 270.5 |
| | 34 | 5.6 | 20.A |

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Nov. 29. 1884.

| | | | |
|---|---|---|---|
| 16 | 34 | 12.V | 220.6 |
| | | 30.0 | 14.2 |
| | | 37.V | 227.3 |
| | | K7.0 | 4.3 |
| | | V9.0 | 229.9 |
| | 3V | 11.V | 10.2 |
| | | 22.V | 296.7 |
| | | 3V.V | 3.3 |
| | | K3.V | 300.0 |
| | | V3.0 | 3V4.2 |
| | 36 | 1.0 | 311.3 |
| | | 4.0 | 347.6 |

Limit of Vis.

| | | | |
|---|---|---|---|
| 16 | 36 | 37.0 | 30V.7 |
| | | K9.0 | 347.3 |
| | 37 | 1K.V | 312.K |
| | | 2K.V | 346 |

B. + C. 1142.

| | | |
|---|---|---|
| 16 | 41 | V4.2 |
| | 42 | V4.7 |

Bond 394.

| | | |
|---|---|---|
| 16 | 42 | 0.0 |
| | 43 | 0.0 |

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1884phae.proj.1318w



Dec 1. 1884.

HP. 220

Wds Photospheric

A

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | 35 | 37.8 | | | 38 | 7.8 | |
| | | 41.6 | 39.7 | 43.7 | | 11.2 | 9.5 45.4 89.1 |
| | | 58.2 | δ | 25.2 | | 33.7 α | 21.2 42.6 |
| | | 2.0 | α | 21.4 | | 38.2 δ | 16.7 41.9 |
| | | 22.1 | γ | 23.4 -1.2 | | 53.8 γ | 54.9 -1.1 -2.3 |
| | | 24.6 | | | | 56.0 β | |

B ~~37~~

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 36 | 49.0 | | | 39 | 18.4 | |
| | | 53.3 | | 51.2 46.0 | | 22.7 | 20.6 47.5 93.5 |
| | 37 | 9.2 | α | 28.0 | | 37.4 α | 30.7 58.7 |
| | | 28.4 | δ | 8.8 | | 57.6 δ | 10.5 19.3 |
| | | 36.4 | β | 37.2 +0.8 | 40 | 6.7 γ | 8.1 -1.4 -0.6 |
| | | 38.0 | γ | | | 9.5 β | |

HP 932

A

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | 48 | 3.6 | | | 0 | 53 | 26.9 |
| | | 8.9 | 6.2 | 72.7 | | | 32.5 29.7 72.7 144.4 |
| | | 26.8 | ε | 52.1 | | | 52.9 ε 49.5 101.6 |
| | 49 | 3.4 | α | 1.5.5 | | | 24.3 α 18.1 33.6 |
| | | 12.7 | δ | 6.2 | | | 33.0 δ 9.4 15.6 |
| | | 18.6 | γ | 18.9 -0.3 | | | 42.3 β 42.4 +0.1 -0.2 |
| | | 19.2 | β | | | | 42.6 γ |

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Dec 1. 1884

B

~~53.9~~
~~0 50 36.5~~
~~40.4~~

0 51 40.6
46.3 43.4 72.6
20.3 α 35.7
24.7 ε 31.3
57.8 δ 4.2
56.0 β 56.0 0.0
56.0 γ

B

0 55 10.8
16.4 13.8 72.6 145.2
47.6 α 38.6 74.3
58.4 ε 27.8 59.1
24.4 δ 1.8 6.0
26.2 β 26.2 0.0 0.0
26.2 γ

HP 897

A

1h 0 16.2
21.3 18.8 63.9
49.3 α 33.4
1 6.8 δ 15.9
20.4 γ 22.7 -2.3
25.0 β

1 4 5.4
10.9 8.2 63.4 127.3
38.9 α 32.7 66.1
48.8 δ 22.8 38.7
10.9 γ 11.6 -0.6 -2.9
12.2 β

B

1 57.0
2 2.4 59.7 65.7
26.4 α 39.0
49.2 δ 16.2
3 3.3 γ 5.4 -2.0
7.4 β

1 5 39.7
45.3 42.5 66.4 132.1
6 6.2 α 42.7 81.7
34.2 δ 14.7 30.9
47.3 γ 48.9 -1.6 -3.6
50.5 β

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1884phae.proj.1318w



Dec 1, 1884.

H.P. 1100

A

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 49.8 | | | 1 | 18.8 | | |
| | 9 | 55.7 | √2.8 | 69.2 | | 24.3 | 21.0 | 71.0 | 140.2 |
| | | 32.8 α | | 29.2 | 13 | 2.6 α | | 29.2 | √8.4 |
| | | 55.6 δ | | 6.4 | | 25.8 δ | | 6.2 | 12.6 |
| | 10 | 0.8 γ | 2.0 | −1.2 | | 31.6 β | 32.0 | +0.4 | −0.8 |
| | | 3.2 β | | | | 32.4 γ | | | |

B

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 | 35.2 | | | 14 | 9.3 | | | |
| | 41.0 | 38.1 | 70.2 | | 15.2 | 12.2 | 69.7 | 139.9 |
| 11 | 3.3 α | | 45.0 | | 35.8 α | | 46.1 | 91.1 |
| | 7.5 ε | | 40.8 | | 49.6 | | 32.3 | 73.1 |
| | 45.6 δ | | 2.7 | | 19.2 | | 2.7 | √.4 |
| | 47.6 γ | 48.3 | −0.7 | | 21.5 | 21.9 | −0.4 | −1.1 |
| | 49.0 β | | | | 22.3 | | | |

A H.P. 978

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 17 | 54.9 | | | 20 | 42.8 | | | |
| | 59.8 | √7.4 | √7.6 | | 47.4 | 4√.1 | √6.9 | 114.√ |
| 18 | 27.8 α | | 27.2 | 21 | 15.4 α | | 26.6 | √3.8 |
| | 46.4 δ | | 8.6 | | 33.7 δ | | 8.3 | 16.9 |
| | 55.0 γ | √√.0 | 0.0 | | 41.8 γ | 42.0 | −0.2 | −0.2 |
| | 55.0 β | | | | 42.2 β | | | |

B

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 19 | 18.2 | | | 22 | 9.2 | | | |
| | 22.8 | 20.5 | √7.3 | | 14.1 | 11.6 | √6.1 | 113.4 |
| | 43.8 α | | 34.0 | | 32.7 α | | 35.0 | 69.0 |
| | 49.7 ε | | 28.1 | | 40.8 ε | | 26.9 | √√.0 |
| | 14.0 δ | | 3.8 | | 44.4 δ | | 3.3 | 7.1 |
| | 17.8 γ | 17.8 | 0.0 | | 7.6 γ | 7.7 | −0.1 | −0.1 |
| | 17.8 β | | | | 7.8 β | | | |

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1884phae.proj.1318w



Dec 1, 1884.

H.P. 1160.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25 | 57.8 | | | 1 | 29 | 11.2 | | |
| | 2.6 | 1.9 | 59.8 | 50.2 | | | 15.4 | 133 51.1 | 51.3 |
| | | 22.5 α | | 27.2 | | | 42.3 α | 22.1 | 49.3 |
| | | 38.8 β | | 11.2 | | | 53.8 β | 10.6 | 21.8 |
| | | 49.6 | | | | | 4.4 γ | 4.4 0.0 | -0.4 |
| | | 50.4 | 50.0 | -0.4 ? | | | 44 β | | |
| | 27 | 49.4 | | | 1 | 30 | 27.7 | | |
| | | 53.6 | 51.5 | 51.0 | | | 32.3 | 30.0 49.9 | 100.9 |
| | | 7.8 α | | 34.7 | | | 46.7 α | 33.2 | 67.9 |
| | | 38.7 β | | 3.8 | | | 16.2 β | 3.7 | 7.5 |
| | | 42.0 β | | | | | 19.5 β | | |
| | | 43.0 γ | 42.5 | +0.5 | | | 20.3 γ | 19.9 +0.4 | +0.9 |

H.P. 1194

Place of bands

Zero point at top of strips crossed by A & B.

Position of wire A 2 on first strip

Wire A

Middle of First band 9 on first strip

Second " 2 on Second "

Third " 6 on Second "

Fourth " 8 on second "

Fifth " 2 on third "

Sixth " 5 on third "

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Dec. 1, 1884.

Wire B

8 40 Suspected band 8 on first strip
0 on second "
4½ " second "
Suspected 8 " second "
0 " third "
4½ " third "
Suspected 8 " third "

A

1 41 5.0
9.4 7.2 49.6
35.5 δ 21.3
37.0 α 19.8
54.0 γ
59.5 β √6.8 -2.7

A

1 43 40.1
44.5 42.3 52.1 101.7
44 10.6 δ 23.8 45.1
15.2 α 19.2 39.0
31.7 γ
37.0 β 34.4 -2.6 -5.3

B

1 42 24.5
28.7 26.6 50.6
47.0 δ α 30.2
43 5.0 δ 12.2
17.2 γ
17.2 β 17.2 0.0

B

1 45 3.9
8.2 6.0 52.8 103.4
25.0 α 33.8 64.0
48.0 δ 10.8 23.0
57.2 γ
46 0.5 β 58.8 -1.7 -1.7

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1884phae.proj.1318w



Dec. 1, 1884

H.P. 1216 ζ Geminorum

A

8 48 1 50 29,5
33,8 31.6 46.4
49,0 α 29.0
54,4 δ 18.6
18,0 β
18,0 γ 18.0 0.0

B

1 52 31,0
35,3 33.2 46.3
43,5 α 36.0
53 9,0 δ 10.5
19,0 β
20,0 γ 19.5 +0.5

A H.P. 1249 γ Geminorum

8 56 1 58 25,0
29,2 27.1 52.7
35,0 α 24.8
59 1,2 δ 8.6
19,8 β
19,8 γ 19.8 0.0

B

1 59 45,6
49,9 47.8 53.3
2 0 6,0 α 35.1
11,0 ε 30.1
38,0 δ 3.1
41,0 β
41,2 γ 41.1 +0.1

A

1 53 44,0
48,7 46.4 47.2 93.6
54 5,7 α 27.9 56.9
23,0 δ 10.6 29.2
33,1 β
34,2 γ 33.6 +0.5 +0.5

B

1 55 0,2
4,6 2.4 49.4 95.7
14,8 α 37.0 73.0
43,5 δ 8.3 18.8
51,8 β
51,8 γ 51.8 0.0 +0.5

2 1 5,2
9,7 7.4 52.1 104.8
36,0 α 23.5 48.3
51,3 δ 8.2 16.8
59,0 γ
0,0 β 59.5 -0.5 -0.5

B

2 ~~2~~ 3 ~~2~~3,0 43,5
27,3 47,6 45.6 52.5 105.7
4 44,5 α 8,0 α 30.0 65.1
53,0 δ 13,0 ε 25.0 55.1
~~3~~ 36,0 δ 2.0 5.1
38,0 γ
38,0 β 38.0 0.0 +0.1

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1884phae.proj.1318w



Dec. 1, 1884

9 24 Stopwatch runs 60.0 while B 236 runs 60.0
Series 18. Zone 49° 50' to 50° 0' 5,057.

9 35 Begin 1452
10 15 1588
10 33 Ended 1647

B & C. 1182 B 394

| | | | | | |
|---|---|---|---|---|---|
| 1 | 10 | 13.7 | 10 | 41 | 30.0 |
| | 10 | 43.7 | | 42 | 0.0 |

Jupiter too low to observe eclipse.

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# Dec. 2 1884.

A H.P. 4080 α Pegasi A Pickering

5 36 22 40 46,2 22 43 37,0

50.6 48.4 47.1 41.4 39.2 50.4 97.5

41 5,0 ε 30.5 54,4 ε 35.2 65.7

16,0 α 19.5 44 7,9 α 21.7 41.2

27,5 δ 8.0 21,0 δ 8.6 16.6

35,0 β 29,0 β

36,0 γ 35.5 +0.5 30,3 γ 29.6 +0.6 +1.1

B B

22 42 14,3 22 45 30,2

18,7 16.5 51.0 34,5 32.4 49.6 100.6

33.9 α 33.6 50.62 31.4 65.0

40,0 ε 27.5 57,5 ε 24.5 52.0

43 4,0 δ 3.5 46 20,2 δ 1.8 5.3

7,5 β 22,0 β

7,5 γ 7.5 0.0 22,0 γ 22.0 0.0 0.0

A H.P. 295 β Arietis A

5 45 22 50 52,6 22 53 38,2

55.0 52.8 50.9 42,5 40.4 51.2 102.1

51 21,7 α 22.0 54 9,2 α 22.4 44.4

29,5 δ 14.2 20,0 δ 11.6 25.8

43,0 γ 30,0 γ

44.4 β 43.7 -0.7 33,2 β 31.6 -1.6 -2.3

B B

22 52 12,0 22 55 20,5

16.2 14.1 51.8 22.8 51.6 103.4

31,7 α 34.2 25,2

53,7 δ 10.2 38,0 α 36.4 70.6

5 3 3,5 γ 56 8,2 δ 6.2 16.4

8,3 β 5.9 -2.4 13,7 γ

15,0 β 14.4 -0.6 -3.0

B looks much brighter than γ

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1884phae.proj.1318w



# Dec. 2, 1884

A N.P. 333 α Arietis A

5 52 22 57 44.5
48.9 46.7 √2.1
58 20.2 α 18.6
23.0 δ 15.8
36.5 γ
41.0 β 38.8 −2.2

23 0 50.3
54.7 √2.5 52.9 105.0
1 26.6 α 18.8 37.4
32.0 δ 13.4 29.2
43.0 γ
47.7 β 45.4 −2.3 −4.5

B

22 59 32.0
36.4 34.2 53.8
52.6 α 35.4
23 0 16.4 δ 11.6
27.0 γ
29.0 β 28.0 −1.0

B

23 2 14.3
18.8 16.6 53.2 107.0
35.6 α 34.2 69.6
3 3.0 δ 6.8 18.4
8.2 γ
11.5 β 9.8 −1.7 −2.7

A N.P. 336 β Trianguli A

23 5 23.0
6 0 27.7 25.4 √7.1
53.0 α 29.√
6 9.6 δ 12.9
21.3 γ
23.7 β 22.5 −1.2

23 8 50.4
55.4 √2.9 59.2 116.3
9 20.8 α 31.3 60.8
40.7 δ 11.4 24.3
57.2 γ
58.0 β √2.1 −1.1 −2.3

B

23 7 5.3
10.2 7.8 √8.4
20.2 α 46.0
57.8 δ 8.4
8 5.5 γ
7.0 β 6.2 −0.8

B

23 10 53.2
58.5 √5.8 59.3 117.7
11 10.0 α 45.1 91.1
47.0 δ 8.1 16.√
54.4 γ
55.8 β √5.1 −0.7 −1.5

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1884phae.proj.1318w



Dec. 2, 1884

A. N. P. 324-5. γ Andromedae. A (Companion too close to measure separately)

6 10

23 14 48.0
53.0 50.5 65.8

15 30.4 α 25.9
33.0 δ 23.3

53.4 γ
59.2 β 56.3 -2.9

B

23 16 37.0
42.2 39.6 66.7

17 0.2 α 46.1
36.3 δ 10.0

44.6 γ
48.0 β 46.3 -1.7

23 18 16.3
21.5 18.9 66.5 132.3

19 0.5 α 24.9 50.8
8.0 δ 17.4 40.7

23.8 γ
27.0 β 25.4 -1.6 -4.5

B

23 19 58.2
20 3.6 60.9 67.0 133.7

24.7 α 43.2 89.3
51.5 δ 16.4 26.4

21 6.6 γ
9.2 β 7.9 -1.3 -3.0

A N. P. 483 γ Persei A

6 20

23 25 46.0
52.3 49.2 86.6

26 ~~28.2~~ 32.0 δ 33.8
36.0 α 29.8

27 3.0 γ
8.5 β 5.8 -2.7

23 29 36.5
42.7 39.6 73.6 160.2

30 26.2 δ 27.0 60.8
28.8 α 24.4 54.2

50.5 γ
55.8 β 53.2 -2.6 -5.3

B

23 27 42.6
49.3 46.0 78.1

28 4.8 α 59.3
50.0 δ 14.1

29 3.2 γ
5.0 β 4.1 -0.9

23 31 25.0
31.3 28.2 77.8 155.9

47.0 α 59.0 118.3
32 31.4 δ 14.6 28.7

44.5 γ
47.5 β 46.0 -1.5 -2.4

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1884phae.proj.1318w



Dec. 2, 1884

A

23 35 −2,8 N.P. 23 γ Pegasi A

6,8 4.8 48.6

33.0 α 20.4

45.0 δ 8.4

52,8 β √3.4 +0.6

6 30 54.0 γ

B

23 36 30.2

34,5 32.4 48.2

47,2 α 33.4

53,0 ε 27.6

37 16,0 δ 4.6

20,0 β 20.6 +0.6

21,2 γ

23 37 45,8

49.6 47.7 48.7 97.3

38 15.7 α 20.7 41.1

25.2 δ 11.2 19.6

35,0 β 36.4 +1.4 +2.0

37.7 γ

B

23 39 8,4

8,0 5.7 50.3 98.5

18.5 α 37.5 70.9

25,2 ε 30.8 58.4

57,3 δ 4.7 9.3

57,0 β 56.0 +1.0 +1.6

57,0 γ

9 13 Stopwatch runs 60.0 while B 236 runs 60.0

Lenis 19 Zone 54°50' to 55° 0' Sidereal

~~9~~ 19? Begun 2750

9 57 2880

10 23 2983

11 0 Ended 3091

Clouds above 3085 and 3091 during observations but apparently too far to affect result. More cloudy afterwards.

Stopwatch runs 60.0 while B 236 runs 60.0

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1884phae.proj.1318w



Dec 3, 1884.

Photographic Spectroscope. S. Ds

A H.P. 220 A

5 48 22 57 53.5 23 1 9.7
59.8 √7.6 47.2 13.6 11.6 45.2 92.4
17.7 α 27.1 30.8 α 26.0 √53.1
23.8 δ 21.0 38.6 δ 18.2 39.2
44.4 γ 44.8 -0.4 56.8 β √6.8 0.0 -0.4
45.2 β 56.8 γ

B B

22 59 33.2 2 42.8
37.5 35.4 42.6 46.7 44.8 45.2 87.8
44.6 α 33.4 54.4 α 33.6 67.0
23 0 8.9 δ 9.1 3 17.5 δ 10.5 19.6
16.4 β 18.0 +1.6 26.3 β 28.0 +1.7 +3.3
19.7 γ 29.7 γ

A HP 103 A

23 6 23.4 23 9 33.3
28.2 28.8 53.6 37.8 35.6 54.8 108.4
57.9 α 21.5 10 1.6 α 28.8 √0.3
7 44.8 δ 15.0 13.2 δ 17.2 32.2
18.7 γ 19.4 -0.6 30.4 β 30.4 0.0 -0.6
20.0 β 30.4 γ

B B

23 8 7 59.6 11 4.3
8 4.2 61.9 52.9 8.4 64 √6.0 108.9
17.6 α 37.2 23.7 α 36.7 73.9
48.3 δ 6.5 48.4 δ 12.0 18.5
54.8 β 54.8 0.0 12 0.4 β 0.4 0.0 0.0
54.8 γ 0.4 γ

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1884phae.proj.1318w

Dec 3 1884.

HP. 541

6 08

A

23 17 8.4
14.3 11.4
46.2 α
18 19.3 δ
β & γ
do not disappear

A

23 21 0.7
6.9 3.8
44.4 α
22 8.4 δ

B.

23 19 8.6
15.0 11.8
34.3 α
20 27.6 δ

23 22 39.3
45.4 42.4
23 7.0 α
21.8 δ & ε
58.6 δ

A HP 591

6 18

23 28 17.4
23.3 20.4 47.4
33.8 δ 34.0
38.0 α 29.8
~~54.3~~
2.6 γ
13.6 ~~9.8~~ β 7.8 -5.8

23 32 ~~73.6~~ 0.2
~~30.0~~ 6.8 35 45.4 92.8
14.7 δ 34.2 68.2
20.1 α 28.8 58.6
46.2 γ 48.9 -2.7 -8.5
51.6 β

B

23 30 10.3
16.4 13.4 47.7
21.3 α 39.8
27.0 δ 34.1
59.7 γ 61.1 -1.4
31 2.5 β

33 16.3
24.2 21.2 -2.2 99.9
29.7 α 44.0 83.8
35.4 δ 38.0 72.1
13.4 γ 13.4 0.0 ~~-1.4~~
13.4 β

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1884phae.proj.1318w



Dec 3, 1884

A H.P. ~~658~~ 649

6 26

23 36 54.3
59.6 57.0 65.8
37 26.3 α 36.5
42.7 δ 20.1
38 2.8 β 2.8 0.0
2.8 γ

B

23 38 32.7
37.9 35.3
47.4 α
0.9 ε
32.8 δ
36.0 β
γ does not dis.

A H.P. 496. β Persei

6 34

23 45 39.4
44.2 41.8
59.9 ε
16.2 α
45.4 δ
~~49.7~~
β γ do not dis

B

23 47 57.9
48 3.6
21.2 α
38.0 ε
-6.3 δ
6.3
γ does not dis

A

23 40 10.3
15.8 13.0 63.7 129.5
43.5 α 33.2 69.7
41 5.4 δ 11.3 31.4
16.7 γ 16.7 0.0 0.0
16.7 β

B

41 44.7
52.0 47.4
59.2 α
42 8.8 ε
49.4 δ
49.4 β
γ does not dis

B

23 51 13.8
19.2
37.9 α
46.2 ε
52 23.3 δ
23.3
γ does not dis

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Dec 3. 1884

A  HP 489.  A

23 55 16.3  23 58 12.3
23.5 20.9 √5.3  17.8 15.0 √√.1 110.4
52.4 α 24.8  42.2 α 27.9 52.7
53.5 δ 22.7  48.4 δ 21.7 44.4
56 13.3 γ 16.2 -3.0  59 6.9 γ 10.1-3.2 -6.2
19.2 β  13.3 β

B  B

23 56 49.2  23 59 38.4
55.0 52.1 59.7  43.5 41.0 57.6 117.3
57 8.0 α 43.8  59.6 α 39.0 82.8
34.3 δ 17.√  23.4 δ 15.2 32.7
51.6 β √1.8 0.0  37.8 β 38.6 -0.9 -0.9
51.8 γ  39.5

Pole by B 11, 14, 24.
line A 9, 11, 21

α = 10  δ = 40

7 0  HP 797

A.

0 11 16.2  0 13 50.1
20.8  54.2
28.4 ε  14 1.0 ε
49.4 α  ++ 22.7 α
12 4.2 δ  34.5 δ.
β δ γ do not do.

B

B

0 12 37.4  0 15 0.9
41.8  5.0
52.5 ε  14.7 ε
3.6 α  27.2 α
29.3 δ  53.9 δ

β δ γ do not do.

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1884phae.proj.1318w



Dec 3. 1884.

Sirius 20. N. Obs.

7 50 Begin with Dbr +49° 1152
8 02 1190
8 46 1303
Star f 1317 6^s same d, 0.5 brighter; transit to dis. 33.0
9 12 1382
9 36 1464
9 50 End with 1479; clouds collect
Stopwatch runs 60.0 while B 236 runs 60.0

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1884phae.proj.1318w



# Dec. 4, 1884

Position 194°6

Zero. 104°9

Dif ~~194°9~~ 14°9

Series 21 Zone 54° 50' to 55° 0'. P. obs.

5 40 Stopwatch 2 mins 60°1 while B.236 mins 60°0

5 44 Begin with 1931

5 52 1998

6 15 2098

6 33 2160

Observations Series 22.

6 54 2165

7 05 2176

7 34 End with 2293

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1884phae.proj.1318w



# Dec. 5, 1884.

5 58 Stopwatch runs $60^s.0$ while B 236 runs $60^s.0$
Series 23 Zone 54°50' to 55°0' 1 obs.

6 7 Began 2009

6 40 2098

2157 follows 2149 $2^m 13^s$

2160 follows 2149 $2^m 21^s$

Star observed for 2160 in Series 21; trans. to dis. 33.1

7 15 2176

7 45 2295

7 56 Ended 23414

Stopwatch runs $60^s.2$ while B. 236 runs $60^s.0$

Swifts' suspected comet.

4 20 +V 0° Sr. obs.

2 31

−1 49

2 36

−1 44

−1 40

Comet not found — Sky bright.

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1884phae.proj.1318w



Dec. 5, 1884.

Stopwatch runs $60^{s}.3$ while B.236 runs $60^{s}.0$

Ⓓ Series 24. Zone 49° 50' to 50° 0' S. obs.

| | | | |
|---|---|---|---|
| 10 | 10 | Begun | 3915 |
| 10 | 32 | | 4001 |
| 10 | 55 | | 4115 |
| 11 | 14 | | 4230 |
| 11 | 35 | Ended | 4334 |

Stopwatch runs $61^{s}.1$ while B.236 runs $60^{s}.0$

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1884phae.proj.1318w



Dec. 6. 1884.

~~Bost~~

B. & C. 1182.

| | | | |
|---|---|---|---|
| 18 | 18 | 14.8 | |
| | 19 | 14.8 | |

Bond 394.

| | | |
|---|---|---|
| 18 | 18 | 0.0 |
| | 19 | 0.0 |

Dis. Jupiter I. S. obs. W. rec.

Object glass so heavily dewed that satellite was not visible with common eye piece. Cloudy at time of previous eclipse.

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1884phae.proj-1318w



Dec. 7. 1884.

8 45 Photospectroscope. Sol. Prom.

A H 482

2 11 57.4
12 08 √9.1
30.0 α
34.6 δ
37.4 ?
Both β & γ both
weak though.

A

2 17 11.3
15.2 13.2 48.1
44.4 α 16.9
47.5 δ 13.8
1.3 γ 1.3 0.0
1.3 β

B

2 14 21.2
25.4 23.3 √0.√
42.5 α 31.3
57.3 δ 14.√
13.8 β 13.8 0.0
13.8 γ

B

2 18 36.0
40.2 38.1 49.9 100.4
55.4 α 32.6 63.9
20 3 δ 7.7 22.2
28.0 β 28.0 0.0 0.0
28.0 γ

Star 15' north.

9 0 ~~47.4~~ 3.0
7.3
12.4 α
19.3
22.4
Clouds

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1884phae.proj.1318w



Dec 7, 1884.

Stars 15' n of α Cet.

A

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | 53.8 | | | 28 | 5.4 | | |
| | 57.4 | √5.6 | 40.8 | | 9.4 | 7.4 | 33.1 | 73.9 |
| 25 | 11.4 | α | 25.0 | | 20.3 | α | 20.3 | 45.3 |
| | 28.3 | δ | 8.1 | | 33.8 | δ | 6.7 | 14.8 |
| | 36.4 | β | 36.4 0.0 | | 40.5 | β | 40.5 0.0 | 0.0 |
| | 36.4 | γ | | | 40.5 | γ | | |

B

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 27 | 0.8 | | | | 7.4 | | |
| | 4.5 | | 2.6 | 41.2 | 11.7 | 9.6 | 35.2 | 76.4 |
| | 6.7 | α | 37.1 | | 14.2 | α | 30.6 | 67.7 |
| | 17.3 | ε | 26.5 | | 20.3 | ε | 24.5 | √1.0 |
| | 36.4 | δ | 7.4 | | 39.8 | δ | √.0 | 12.4 |
| | 43.8 | β | 43.8 0.0 | | 42.7 | β | 44.8 +2.1 | +2.1 |
| | 43.8 | γ | | | 46.7 | γ | | |

A H.P. 653

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 34 | 4.0 | | | 2 | 36 | 39.4 | | | |
| | | 7.8 | √.9 | 48.9 | | | 42.8 | 41.1 | 49.3 | 98.2 |
| | | 38.4 | α | 16.4 | | | 8.8 | α | 21.6 | 38.0 |
| | | 41.6 | δ | 13.2 | | | 14.7 | δ | 15.7 | 28.9 |
| | | 54.4 | β γ | √4.8 -0.5 | | | 29.4 | γ | 30.4-0.9 | -1.4 |
| | | 55.3 | β | | | | 31.3 | β | | |

B

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 35 | 17.0 | | | 2 | 38 | 22.8 | | | |
| | | 20.9 | | 19.0 √0.8 | | | 27.0 | 24.9 | 49.7 | 100.5 |
| | | 32.4 | ε | 37.4 | | | 33.6 | ε | 41.0 | 78.4 |
| | | 39.6 | α | 30.2 | | | 43.4 | α | 31.2 | 61.4 |
| | 36 | 1.3 | δ | 8.5 | | | 54 | δ | 9.2 | 17.7 |
| | | 9.3 | γ | 9.8 -0.6 | | | 14.0 | γ | 14.6-0.7 | -1.3 |
| | | 15.4 | β | | | | 15.3 | β | | |

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Dec 7, 1884

936 938 $\beta$ Orionis

A

9 18 2 41 37.8
41.7
42 17.6 $\Sigma$
17.8 $\alpha$
$\beta\gamma\delta$ ~~thumb~~

2 44 26.7
30.8
45 5.3 $\alpha$
7.7 $\Sigma$
$\beta\gamma\delta$ 20.8 ~~thumb~~

B

42 59.6
43 3.4
24.3 $\alpha$
45.0 $\Sigma$

~~53~~
45 53.4
57.2
45 18.7 $\alpha$
33.6 $\Sigma$
$\beta\gamma\delta$ 47.8 thumb

A 1005 ~~$\beta$~~ Orionis

2 49 39.0
43.4 41.2 $\sqrt{1.2}$
1.4 $\Sigma$ 31.0
10.7 $\alpha$ 21.7
30.7 $\delta\beta$ 1.7
V 34.2 ~~thumb~~ 32.4 +1.7

2 53 11.3
15.4 13.4 48.9 100.1
39.6 $\alpha$ 22.7 44.4
39.6 $\Sigma$ 22.7 $\sqrt{3.7}$
1.4 $\beta\delta$ 0.9 2.6
3.2 $\gamma$ 2.3 +0.9 +2.6
5.4 nebs.

B

2 51 10.7
14.6 12.6 $\sqrt{0.6}$
29.9 $\alpha$ 33.3
43.4 $\Sigma$ 19.8
22 $\beta$
$\gamma\delta$ 4.2 ~~thumb~~ 3.2

2 54 40.3
42.2
44.1
59.6 $\alpha$
13.6 $\Sigma$
30.2
33.5 b
34.0 nebs.

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Dec 7. 1884.
1045 ½ Cincinn.

9 33 2 58 22.3
26.0
49.6 Σ
55.0 α
59 13.4 δ
17.0 nebs
B
59 48.8
52.7
3 0 9.7 α
22.3 Σ
42.2 δ β γ
42.7 nebs.

3 1 55.0
59.0
2 11.4 Σ
27.2 α
42.3 δ
47.8 β γ
48.4 nebs.
3 22.7
27.3
36.9 α
48.4 Σ
1.4 δ
4.8 β
6.0 γ
clouds.

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Dec. 8, 1884

9 1 Stopwatch runs 61.0 while B.236 runs 60.0
Series 25. Zone 54°50' to 55°0'. S. obs.

9 9 Begun 2347
9 35 Ended 2452

Series 26. Zone 49°50' to 50°0'. S. obs.

9 55 Began 3766
Stw mp 3867 transit to dis. 31.1
10 21 3908
Interrupted by clouds at 3939
11 10 Stopwatch runs 60.6 while B 236 runs 60.0
Dis. Sups. ~~II~~ I. Phot. R. S. obs.
Comps. with Sat. III

| B. & C. 1102. | | | Bond 394. | | |
|---|---|---|---|---|---|
| 12 | 47 | 9.3 | 12 | 47 | 0.0 |
| | 48 | 9.3 | | 48 | 0.0 |

| | | | | |
|---|---|---|---|---|
| 12 | 49 | 41.0 | 131.0 | Reject. circle read incorrectly. |
| | | ∨0.∨ | 197.8 | |
| | | ∨9.∨ | 112.0 | |
| | ∨0 | 9.∨ | 213.8 | |
| | | 19.0 | 115.8 | |
| | | 28.0 | 213.2 | |
| | | 37.∨ | 12∨.∨ | |
| | | ∨∨.0 | 213.0 | |
| | ∨1 | 4.0 | 127.2 | |
| | | 12.0 | 203.8 | |

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1884phae.proj.1318w



Dec. 4. 1884.

| | | |
|---|---|---|
| 12 V1 | 21.0 | 122.2 |
| | 29.V | 201.4 |
| | 3V.0 | 120.2 |
| | 41.0 | 203.0 |
| | 44.0 | 124.2 |
| | VV.V | 201.2 |
| V2 | 3.V | 121.0 |
| | 9.0 | 197.2 |
| | 16.0 | 177.V |
| | 2V.0 | 202.0 |
| | 32.V | 119.4 |
| | 39.0 | 200.9 |
| | 4V.0 | 123.2 |
| | V2.0 | 212.4 |
| V3 | 0.0 | 130.V |
| | 7.0 | 201.0 |
| | 14.0 | 121.9 |
| | 20.0 | 204.V |
| | 27.0 | 11V.V |
| | 34.V | 200.0 |
| | 41.0 | 114.0 |
| | V7.0 | 204.0 |
| V4 | V.0 | 128.4 |
| | 12.V | 199.3 |
| | 2V.0 | 111.V |
| | 27.0 | 200.2 |
| | 33.V | 114.V |
| | 40.V | 197.2 |

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1884phae.proj.1318w



Dec. 6. 1884.

| | | |
|---|---|---|
| 12 -4 | 44.- | 120.- |
| | -7.0 | 201.3 |
| -5 | 4.- | 121.3 |
| | 11.- | 202.- |
| | 14.- | 125.2 |
| | 26.0 | 194.0 |
| | 33.0 | 124.2 |
| | 40.- | 144.1 |
| | 44.0 | 129.3 |
| | -4.0 | 195.4 |
| -6 | 0.0 | 132.4 |
| | 6.0 | 192.4 |
| | 11.0 | 124.3 |
| | 17.0 | 191.4 |
| | 22.- | 134.7 |
| | 24.- | 191.9 |
| | 34.0 | 137.- |
| | 40.- | 145.0 |
| | 46.0 | 137.4 |
| | -2.0 | 142.0 |
| | -7.0 | 144.0 |
| -7 | 2.0 | 142.2 |
| | 7.8 | 144.- |
| | 12.0 | 179.0 |
| | 17.0 | 144.4 |
| | 22.- | seen |
| | 25.0 | recreated |

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Dec. 8, 1884.

| | | Limit of Vis. | |
|---|---|---|---|
| 12 | 57 | 40.5 | 147.2 |
| | | 47.5 | 174.0 |
| | | 56.0 | 147.4 |
| | 58 | 4.5 | 177.2 |

| B. + C. 1182. | | | Bond 394. | | |
|---|---|---|---|---|---|
| 13 | 3 | 9.1 | 13 | 3 | 0.0 |
| | 4 | 9.1 | | 4 | 0.0 |

Clouds passing at times, probably interfering with observations.

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1884phae.proj.1318w



Dec 11, 1884

Series 27 55° 8 obs.

8 00 Began incl. Dec +54° 743 }
This series discontinued. }

8 20 Stopwatch runs 61.0 while 7.1327 runs 60.0

Series 27 Zone 49°50' to 50°0' 8 obs.

9 0 Began 3939, which may have been affected by clouds in }
9 23 4002 Series 26 }

The star taken for 4051 in both series is in fact 4046, and that taken for 4046 is not a DM. star. It follows 4043 about 25s.

There is a group of faint stars near the place of 4051, which may be the DM. object; transit to dis. of brightest star of group 21s.0. A somewhat brighter star lies south of the group, with another following it.

10 14 4120

10 30 4202 clouds

10 39 4202 again; clouds gone

10 50 4230 ended; clouds approaching

11 7 Stopwatch runs 60.7 while 7.1327 runs 60.0

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1884phae.proj.1318w



Dec. 15, 1884.

8 23 Stopwatch runs 60$^s$.9 while T. 132 runs 60$^s$.0

Region of 6$^h$ S +50°

Clouds prevent observations.

| | | | B 394 | | | | B L C 1182 |
|---|---|---|---|---|---|---|---|
| 11$^h$ | 6$^m$ | 00 | | 11$^h$ | 5$^m$ | 26$^s$ | |
| | 7 | 0.0 | | | 6 | 26.7 | |

Selected Standard fields Equinox

| | | | |
|---|---|---|---|
| a | 2$^h$ | 0 | 7.5 |
| b | 2 | 42 | 7.5 |
| c | 2 | 54 | 4.2 |
| d | 3 | 7 | 1.8 |
| e | 3 | 14 | 7.8 |
| f | 2 | 26 | 2.3 |
| g | 2 | 14 | 4.0 |
| h | 3 | 31 | 6.3 |
| i | 3 | 48 | 2.2 |
| j | 3 | 40 | 3.8 mb cm. |

+ 1
11 50

12 47 24
8 41
12 56

D$_b$ at 12 55

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1994phae.proj.1318w



Dec 15 1884

Stars follg. α Leonis

| | | | |
|---|---|---|---|
| a | 3 | 11 | 0.6 |
| b | 4 | 14 | -0.8 |
| c | 2 | 16 | 1.2 |
| d | 2 | 26 | 8.1 |
| e | 2 | 46 | 5.2 |
| f | 3 | 10 | 5.5 |
| g | 2 | 18 | 5.5 |
| h | 2 | 12 | 7.5 mb en |

Dec Just after II. Red II

| | | | | |
|---|---|---|---|---|
| | | Obs Eqn. | | Clock on d running wild. |
| 12 | 39 | 09.0 | 148.2 | |
| | | 19.0 | 232.4 | |
| | | 43.5 | 151.2 | Comp. with Sat. I. |
| | | 56.5 | 230.6 | -1 |
| | 40 | 14.0 | 154.6 | |
| | | 26.0 | 229.4 | |
| | | 39.0 | 154.6 | |
| | | 52.5 | 230.4 | |
| | 41 | 14.5 | 153.4 | -2 |
| | | 28.0 | 226.7 | |
| | | 40.0 | 153.4 | |
| | | 55.5 | 224.9 | -3 |
| | 42 | 16.0 | 153.3 | |
| | | 32.5 | 227.2 | |
| | | 44.0 | 152.6 | |
| | | 59.0 | 226.5 | -4 |

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Dec. 15. 1884

| | | | |
|---|---|---|---|
| 12 | 47 | 07.5 | 150.6 |
| | | 17.0 | 226.7 |
| | | 42.5 | 155.5 |
| | | 52.0 | 226.4 — 5 |
| | 48 | 16.5 | 154.4 |
| | | 32.0 | 226.8 |
| | 49 | 03. | 152.6 |
| | | 16. | 226.6 — 6 |
| | | 25. | 151.0 |
| | | 43.5 | 228.9 |
| | 50 | 06. | 150.8 |
| | | 14. | 227.4 — 7 |
| | | 23.5 | 147.3 |
| | | 34.5 | 229.8 |
| | | 43. | 151.6 |
| | | 51.5 | 229.7 — 8 |
| | 51 | 03.5 | 151.2 |
| | | 11.5 | 227.7 |
| | | 20.5 | 150.2 |
| | | 27.5 | 228.5 — 9 |
| | | 36. | 150.6 |
| | | 44.5 | 231.1 |
| | | 55.5 | 152.1 |
| | 52 | 03. | 225.1 — 10 |
| | | 11.5 | 152.4 |
| | | 18.5 | 226.6 |
| | | 27. | 153.7 |
| | | 35. | 230.0 — 11 |
| | | 44. | 154.4 |
| | | 54.5 | 225.9 |
| | 53 | 01. | 152.2 |

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1004phae.proj:1318w



050*1

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} editions in K

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Dec. IV. 1884.

| | | |
|---|---|---|
| 5ʰ7 | 10. | 224.4 — <12 |
| | 18. | 151.3 |
| | 27,5ᵐ | 225.4 |
| | 37.5ᵐ | 154.6 |
| | 45ᵐ. | 223,8 |
| | 53. | 156.0 |
| 5ʰ4 | 00. | 223.6 |
| | 06. | 158.4 |
| | 13,5ᵐ | 220.6 |
| | 20,5ᵐ | 158.8 |
| | 29.0 | 218.5ᵐ |
| | 35,5ᵐ | 163.9 |
| | 45ᵐ. | 215.4 |
| | 55,5ᵐ | 165.1 |
| | 57,5ᵐ | 214.6 |
| 5ʰ5ᵐ | 04. | 167.6 |
| | 10,5ᵐ | 215.8 |
| | 18,5ᵐ | 168.8 |
| | 26. | 208.3 |
| | 32,5ᵐ | 175.4 |
| | 41. | 209.7 |
| | 48. | 173.4 |
| | 58. | 207.4 |
| 5ʰ6 | 09,5ᵐ | 179.4 |

limit of visibility

| | | | |
|---|---|---|---|
| | | | β Ors |
| 5ʰ6 | 43. | 204.0 | E, ne. |
| | 55. | 174.9 | |
| 5ʰ8 | 00. | 175.8 | |
| | 09. | 202.5ᵐ | |
| | 18.5ᵐ | 174.4 | |
| | 31. | 203.6 | |

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1884phae.proj.1318w



Dec 15. 1884.

B394 BAC

| | | | | | |
|---|---|---|---|---|---|
| 13 | 6 | 00 | 13 | 5 | 26.2 |
| 13 | 7 | 00 | | 6 | 26.3 |

Averaged each setting at 13 00
Dis. Sys. I. Phot. R. S. obs.
Compd with Sat. III.

| | | | | | |
|---|---|---|---|---|---|
| 14 | 41 | 26.0 | 14 | 42 | 0.0 |
| | 42 | 26.0 | | 43 | 0.0 |

| | | | |
|---|---|---|---|
| 14 | 44 | 16.√ | 11√.0 |
| | | 27√ | 213.0 |
| | | 46.√ | 114.2 |
| | | √3.√ | 204.2 – 1 |
| | 45√ | 1.0 | 116.3 |
| | | 10.0 | 204.8 |
| | | 17.0 | 119.0 |
| | | 25.0 | 209.0 – 2 |
| | | 33.0 | 114.3 |
| | | 40.0 | 210.2 |
| | | 47.√ | 119.3 |
| | 46 | 1.0 | 207.2 |
| | | 10.0 | 116.0 – 3 |
| | | 17.0 | 210.0 |
| | | 25.0 21.6 | 119.4 |

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1004phae.proj.1318



Dec. 15. 1944.

| | | | |
|---|---|---|---|
| 14 | 46 | 34.5 | 204.5 |
| | | 40.5 | 114.3 |
| | | 44.5 | 204.1 |
| | | 47.5 | 119.1 |
| | 47 | 50.0 | 205.5 |
| | | 14.0 | 119.3 |
| | | 21.0 | 200.0 |
| | | 24.5 | 123.0 |
| | | 35.0 | 194.2 |
| | | 40.5 | 126.0 |
| | | 46.0 | 199.5 |
| | | 53.0 | 126.4 |
| | | 59.0 | 195.5 |
| | 48 | 50.0 | 129.0 |
| | | 11.0 | 194.0 |
| | | 17.5 | 129.0 |
| | | 24.0 | 197.5 |
| | | 32.0 | 129.0 |
| | | 34.0 | 192.5 |
| | | 37.0 | 133.4 |
| | | 40.0 | 129.4 |
| | | 46.0 | 134.5 |
| | 49 | 2.0 | 126.0 |
| | | 7.5 | 142.4 |
| | | 13.5 | 141.2 |
| | | 20.0 | 144.3 |
| | | 27.0 | 141.3 |
| | | 33.0 | 146.5 |
| | | 34.5 | 175.5 |

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Dec. 15. 1884.

14 49 ~~15 0~~ ~~17 0~~
15 3 15 Susp.
15 6 15 "

Limit of Vis.

14 15 1 2.0 15 2.4
15.0 17 4.5
24.0 15 4.1
33.0 17 2.4

B. + C. 1142. Bond 394.

14 15 4 26.0 14 15 9 0.0
15 9 26.0 15 0 0.0

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# Dec. 16, 1884

## Region of α Piscium

| | | | | | Sol. |
|---|---|---|---|---|---|
| g 32 | α with shade | 16.5 | 17.8 | 17.8 | 52.1 |
| | e | 9.8 | 16.0 | 8,2 | 28.0 |
| | a | 23,0 | 21.9 | 21,8 | 66.7 |
| | d | 12,8 | 15.0 | 12,9 | 40.7 |
| | c | 13,8 | 16.4 | 16,8 | 47.0 |
| g 52 | b | 20.8 | 22,1 | 17,9 | 60.8 |

f not visible in wedge

## Region of α Ceti

| | | | | | |
|---|---|---|---|---|---|
| 10 1 | α with shade | 17.5 | 20,0 | 18,8 | 56.3 |
| | a | 25,0 | 25,6 | 26,3 | 76.9 |
| | d | 14,9 | 15,5 | 16,9 | 47.3 |
| | e | 11,4 | 12,8 | 11,5 | 35.7 |
| | c | 21,8 | 21.0 | 23,1 | 65.9 |
| 10 23 | b | 25,4 | 26,5 | 25.9 | 77.8 |

Star north of α Ceti

| With shade | Without shade |
|---|---|
| 11.6 | 51.0 (not wholly disappearing). |
| 12.5 | |

## Region of γ Eridani

| | | | | | |
|---|---|---|---|---|---|
| 10 44 | γ with shade | 16,2 | 13,8 | 15,1 | 45.1 |
| | b | 24,1 | 24,9 | 25,2 | 74.2 |
| | e | 9,8 | 11,8 | 12,2 | 33.8 |
| | f | 8.0 | 9,0 | 9,2 | 26.2 |
| | d | 14.0 | 14,2 | 14.0 | 42.2 |
| | a | 30,2 | 30.9 | 32,3 | 93.4 |
| 41 3 | c | 14,1 | 14,0 | 15,2 | 43.3 |

g not visible in wedge

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Dec. 19. 1884.

Encke's Comet. W. obs.

+3,10 +19.0
30 30
9 3,0 0 7 0,0

22 46 52 +3 40 49
-1 33 -9 30
22 45 19 +3 31 19

22 47
1 25
+2 34

22 42
1 33
2 51

22 8
1 45
3 37

23 46
1 47
21 59
22 1

23 43
1 53
+3 10

2 0
22

Encke's Comet not found. It would be quite impossible to see it with the seeing so bad as it is. Much hazy light in field. Thermometer low, — considerable wind.

W.

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1884phae.proj.1318w



Dec. 19. 1884.

Region of γ Eridani. S. obs.

| | | | | | |
|---|---|---|---|---|---|
| 9 30 | K with shade | 19.7 | 16.0 | 19.2 | 54.4 |
| | b | 25.0 | 25.8 | 27.8 | 78.6 |
| | e | 16.2 | 16.8 | 15.0 | 48.0 |
| | d | 16.1 | 14.5 | 16.3 | 46.9 |
| | a | 31.5 | 36.0 | 33.2 | 100.7 |
| 9 48 | c | 19.7 | 19.0 | 17.5 | 56.2 |

f not visible in wedge; seeing rather bad.
By estimate, e 1' d'

9 50 Stopwatch runs 61$^s$.0 while B.236 runs 60$^s$.0

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Dec. 22, 1884.

B.D.C. 1182.

16 14 36.2
15 36.2

B 394.

16 16 0.0
17 0.0

16 14 21
+
16 42 21
16
26 21
14 26
16 41

Cloudy till 15h 30m then beginning to clear.

Dio. Sup. I. Phot. R. S. obs.
Comparison with sat. III. Clamps frozen so that clock cannot be used. Seeing variable, often very bad; satellites sometimes nearly disappear.

| | | | | |
|---|---|---|---|---|
| 16 | 30 | 40.0 | | 115.2 |
| | | 47.0 | | 206.5 |
| | | 56.0 | 51.8 | 114.1 |
| | 31 | 4.0 | | 206.5 |
| | | 13.0 | | 119.2 |
| | | 23.5 | | 210.0 |
| | | 33.0 | | 112.1 |
| | | 44.0 | | 215.1 |
| | | 55.0 | | 113.9 |
| | 32 | 6.0 | | 212.3 |
| | | 17.5 | | 114.2 |

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Dec. 22. 1884.

| | | | |
|---|---|---|---|
| 16 | 32 | 24.0 | 214.7 |
| | | 37.5 | 104.1 |
| | | 42.5 | 209.5 |
| | 33 | 1.0 | 106.3 |
| | | 14.0 | 212.9 |
| | | 20.5 | 115.5 |
| | | 34.5 | 204.2 |
| | | 45.5 | 116.4 |
| | | 55.0 | 209.3 |
| | 34 | 3.0 | 111.0 |
| | | 10.5 | 219.0 |
| | | 21.5 | 112.2 |
| | | 47.5 | 219.7 |
| | | 57.0 | 109.0 |
| | 35 | 5.0 | 212.0 |
| | | 14.5 | 106.0 |
| | | 24.0 | 213.1 |
| | | 32.5 | 104.0 |
| | | 42.0 | 213.0 |
| | | 55.0 | 110.2 |
| | 36 | 4.0 | 209.4 |
| | | 15.0 | 110.5 |
| | | 23.5 | 225.0 |
| | | 35.0 | 111.7 |
| | | 43.0 | 210.5 |
| | | 52.5 | 114.5 |
| | 37 | 1.0 | 210.0 |

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1884phae.proj.1318w



Dec. 22. 1884.

| | | |
|---|---|---|
| 16 37 | 12.0 | 110.2 |
| | 21.0 | 212.3 |
| | 29.0 | 114.1 |
| | 39.0 | 207.0 |
| | 47.0 | 120.0 |
| | 52.5 | 207.9 |
| 37 | 59.5 | 114.1 |
| 38 | 6.5 | 204.4 |
| 38 10 | 13.5 | 114.4 |
| | 21.0 | 204.3 |
| | 29.5 | 107.0 |
| | 34.0 | 212.2 |
| | 45.5 | 114.1 |
| | 52.0 | 209.3 |
| 39 | 0.5 | 110.5 |
| | 8.5 | 204.5 |
| | 16.5 | 120.1 |
| | 22.5 | 194.2 |
| | 31.5 | 117.0 |
| | 38.5 | 204.7 |
| | 45.0 | 121.2 |
| | 51.0 | 194.3 |
| | 57.5 | 124.4 |
| 40 | 3.5 | 194.5 |
| | 10.0 | 129.1 |
| | 15.5 | 193.2 |
| | 22.0 | 124.9 |
| | 29.0 | 199.0 |

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1884phaer.proj-1318M



Dec. 22. 1884.

| | | | |
|---|---|---|---|
| 16 | 40 | 35.0 | 127.0 |
| | | 43.0 | 196.2 |
| | | 50.5 | 130.5 |
| | | 52.0 | 147.2 |
| | 41 | 5.0 | 136.9 |
| | | 11.0 | 190.0 |
| | | 17.5 | 142.0 |
| | | 24.0 | 190.1 |
| | | 31.0 | 140.3 |
| | | 34.0 | 120.1 |
| | | 45.5 | susp. |

Limit of Visibility.

| | | | | |
|---|---|---|---|---|
| 16 | 41 | 52.5 | 142.5 | |
| | 42 | 15.5 | 174.2 | 36.3 |
| | | 25.0 | 18.9 | 144.4 | 34.4 |
| | | 36.5 | 179.2 | 35.4 |
| | | | 646.5 | |
| | | | 161.6 | |

B. + C. 1182.

| | | |
|---|---|---|
| 16 | 47 | 35.2 |
| | 48 | 35.2 |

Bond 394.

| | | |
|---|---|---|
| 16 | 49 | 0.0 |
| | 50 | 0.0 |

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1884phae.proj.1318w



Dec 29. 1884.

Dis. Sys. II. Phot. R. P. obs.

Sets. I and II close together.

Comps. with set. preceding.

| | | | |
|---|---|---|---|
| 1d | 0 | √9.0 | 124.0 |
| | | 9.0 | 240.7 |
| | | 21.0 | 126.4 |
| | | 33.√ | 233.6 |

Sats. so close together that they could not be obs. separately.

At 1d 1h √ — dew formed on object glass preventing further observations.

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1884phae.proj-1318M



Dec. 30. 1884.

Observations with wedge at +50° W. obs.

68.V Pos. Zero.

360.

---

428.V

90.

---

338.V

~~Zone~~ observations abandoned. for Ever. Photometry.

Series 28. Zone 49°50' to 50°0' S. obs.

| | | |
|---|---|---|
| 8 | 28 | Began 4244 |
| 8 | 57½ | 2 |
| 9 | 28 | 138 |
| 10 | 0 | Ended 240; clouds approaching |
| 10 | 10 | Stopwatch runs 60s.5 as hide F.1327 runs 60s.0 |

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1884phae.proj:1318w



Jan. 8, 1885

Region of γ Geminorum P. Obs.
Hazelkinders observations.

8 45 — a b, c, d, and f, as before
e seen, but Imagn. fainter than f.

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1884phae.proj.1318



Jan. 9, 1885.

B 86.1182

| | | |
|---|---|---|
| 8 | 47 | 30.4 |
| | 48 | 30.3 |

B 394

| | | |
|---|---|---|
| 8 | 50 | 0.0 |
| | 51 | 0.0 |

| | | | | | |
|---|---|---|---|---|---|
| 9 | 17 | 1.6 | 9 | 54 | 18.0 |
| | 8 | 12 | | 8 | 12 |
| 9 | 27 | 14 | 10 | 2 | 30 |
| | 2 | 30 | | 2 | 30 |
| 9 | 29 | 44 | 10 | 0 | 0 |

Dis. Sup. I. Phot. R. & N. obs. Trace, Comp. with sub. III.

| | | |
|---|---|---|
| 9 12 | 7.0 | 134.2 |
| | 14.0 | 214.3 |
| | 30.5 | 145.0 |
| | 46.5 | 213.1 |
| | 56.5 | 132.5 1 |
| 13 | 10.0 | 214.5 |
| | 19.5 | 139.6 |
| | 29.0 | 217.0 |
| | 45.0 | 149.5 2 |
| | 56.5 | 210.5 |
| 14 | 5.0 | 141.4 |
| | 13.0 | 204.1 |
| | 25.5 | 145.1 3 |
| | 35.0 | 212.1 |
| | 45.0 | 142.7 |
| | 55.5 | 210.4 4 |

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1884phae.proj.1318w



Jan. 9. 1884.

| | | | |
|---|---|---|---|
| 9 | 16 | 8.0 | 141.2 |
| | | 19.0 | 215.4 |
| | | 29.0 | 150.9 |
| | | 42.0 | 213.2 |
| | | 54.0 | 136.2 |
| | 16 | 4.5 | 204.0 |
| | | 14.0 | 145.0 |
| | | 21.0 | 210.6 |
| | | 24.0 | 139.9 |
| | | 35.0 | 213.4 |
| | | 44.0 | 143.1 |
| | | 54.5 | 211.9 |
| | 17 | 4.5 | 147.2 |
| | | 13.5 | 213.1 |
| | | 23.0 | 144.1 |
| | | 33.0 | 209.1 |
| | | 47.5 | 150.3 |
| | | 57.0 | 204.6 |
| | 18 | 6.0 | 141.5 |
| | | 18.0 | 211.4 |
| | | 30.5 | 142.9 |
| | | 40.0 | 213.1 |
| | 19 | 1.0 | 150.0 |
| | | 11.0 | 211.0 |
| | | 22.5 | 146.5 |
| | | 31.5 | 207.0 |
| | | 50.0 | 148.7 |
| | | 57.5 | 207.4 |
| | 20 | 9.0 | 143.9 |

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1884phae.proj.1318w



Jan. 9. 1884.

| | | | |
|---|---|---|---|
| 9 | 20 | 19.0 | 204.0 |
| | | 27.0 | 143.1 |
| | | 36.V | 207.4 |
| | | 47.0 | 139.7 |
| | | V3,0 | 207.0 |
| | 21 | 0.V | 141.0 |
| | | 9.V | 204.V |
| | | 16.V | 14V.2 |
| | | 23,0 | 204.0 |
| | | 33,0 | 1V7.0 |
| | | 39,0 | 206.4 |
| | | 47,0 | 14V.7 |
| | | V6,0 | 202.4 |
| | 22 | 2,0 | 1V4.0 |
| | | 4,0 | 202.0 |
| | | 14,V | 1V9.0 |
| | | 20,0 | 197.4 |
| | | 27,0 | 1V9.7 |
| | | 36.V | 197.4 |
| | | 44,0 | 163.4 |
| | | V4,0 | seen |
| | | V9,0 | suspected |

Limit of Vis.

| | | | |
|---|---|---|---|
| | 23 | 27,0 | 167.0 |
| | | 3V,0 | 194.2 |
| | | 44,0 | 162.0 |
| | | V2,0 | 197.3 |

Haze variable, often thick.
Much haze at time of disappearance.

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1884phae.proj.1318w



Jan. 9. 1884.

| B. + C. 1182. | | | Bond 394. | | |
|---|---|---|---|---|---|
| 9 | 24 | 30.1 | 9 | 31 | 0.0 |
| | 29 | 30.1 | | 32 | 0.0 |

At 9h 47m Jupiter visible in Photometer but not satellites.
At 9h 54m Jupiter vis. but not sats.
At 10h 0m Jupiter slightly vis. but sats not seen.

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1884phae.proj.1318



Jan. 10, 1885

Region of χ Pegasi

Photometer G. 1.8 bs.

| | a |
|---|---|
| 9 7 | 4.03 |
| | 4.60 |
| | 3.88 |

| | c |
|---|---|
| | 1.83 |
| | 1.40 |
| 9 15 | 1.36 |

| | g |
|---|---|
| | 1.06 |
| | 0.94 |
| 9 24 | 0.94 |

| | d |
|---|---|
| | 1.23 |
| | 1.31 |
| 9 27 | 1.23 |

| | b |
|---|---|
| | 2.02 |
| | 2.23 |
| 9 29 | 2.61 |

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1884phae.proj.1318w



Jan. 10, 1885

i not seen

h

0.86

0.79

9 34 0.74

f

1.09

0.91

1.17

9 34 0.

e

1.15

1.19

9 43 1.04

Region of Piscium

e

10 23 1.66

1.64

1.49

f

1.28

1.22

10 28 1.26

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1884phae.proj.1318w



Jan. 10, 1885

| | |
|---|---|
| | g |
| | 1.00 |
| | 1.00 |
| 10 32 | 1.24 |
| | a |
| | 4.29 |
| | 3.63 |
| 10 36 | 3.75 |
| | d |
| | 1.85 |
| | 2.07 |
| 10 39 | 1.95 |
| | c |
| | 2.66 |
| | 2.68 |
| 10 43 | 2.49 |
| | b |
| | 4.55 |
| | 4.95 |
| 10 45 | 4.63 |

By estimate a 1 b ; but the stars are very nearly equal.

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1884phae.proj.1318w



Jan. 12, 1885.

Region of $\alpha$ Piscium.

Photometer F. W. obs.

| | | e |
|---|---|---|
| 9 | 2 | 1.64 |
| | | 1.94 |
| | | 1.87 |

| | | f |
|---|---|---|
| 9 | 27 | 1.47 |
| | | 1.46 |
| | | 1.55 |

| | | g |
|---|---|---|
| 9 | 31 | 1.47 |
| | | 1.51 |
| | | 1.50 |

| | | a |
|---|---|---|
| 9 | 45 | 4.06 |
| | | 4.12 |
| | | 4.17 |

| | | d Nr. |
|---|---|---|
| 9 | 48 | 3.94 Wrong star |
| | | 4.16 |
| | | 4.18 |

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1884phae.proj.1318w



Jan. 12. 1884. ~~5~~

d again.

9 ν-3±

4.ν-6

4.ν-4 Wrong star.

4.6 ν-

d

2.47

10 ν- 2.ν-4

2.6 ν

c

3.03

10 1ν 3.26

3.14

b

5.00

10 14 ν.34

ν.10

4 Piscium getting rather low. and sky rather hazy. Throughout measures.

Star d is decidedly fainter than a to the eye.

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1884phae.proj.1318w



Jan. 14, 1885.

8 30 N.P. 307 too low to observe. Must be looked for early in the evening.

N.P. 1141. S. obs.

9 25 Behrmann's catalogue and atlas disagree. The atlas is right; catalogue wrong. The star is probably U.A. Lepus, 91.

N.P. 1228 and 1240.

Atlas and catalogue of Heis disagree. In the atlas the two stars are sp and nf, which is correct. These stars are Gould VI 1196 and 1301, but see below; diff. magn. by estimate about 1.5, not so much as 2.0 (Gould has 6 and 8). Gould VI 1255, 1293, and 1294, observed also with stopwatch for identification.

Preceding Gould VI 1301 18s, 11' north is a
11 0 star, magn. 6.5 (1 magn. brighter than VI 1301). This is not in Gould; if not an asteroid, it is likely to be the object seen by Heis, and should be considered N.P. 1240.

This star is probably the companion 300°.7 to N.P. 1228 if that was observed by mistake for N.P. 1240; there is also a ~~star~~ faint star (about 8.0 magn.) preceding N.P. 1228 about 40s, north 22', which may be the suspected companion at 0°.4; the ~~star~~ nf star seen by Heis has no such companions.

Unless N.P. 1228 and 1240 were observed in immediate succession, it is more likely that the object observed for 1240 was 1228 than that it was the star seen by Heis

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1884phae.proj.1318w



# Jan. 17 1885

9 55 H.P. 1273.

H.P. 1276 = Gould 1898

Gould 1903, 1907, 1959 identified; also Gould 1889, which is nearest place of H.P. 1273, about 8 magn; also Gould 1938

The only stars of the region which could be seen with the naked eye seem to be Gould 1898, 1959, 1938. The last may be Behrmann's star.

H.P. 1321.

Behrmann's star may be Gould 2732, H.P. 1324; the star observed by Stone for Lacaille 2538 is too faint for the naked eye, and there is nothing in Lacaille's place visible in the finder.

H.P. 1320 = Gould 2670

H.P. 1331 = Gould 2891.

Gould 2670, 2732, and 2891, correspond well with the triangle on Behrmann's

10 40 map.

H.P. 1778

Stone 5402 = Gould 4047.

Gould 3933 3903 and 3846, also identified.

Nothing visible in finder in region of Lacaille 4087.

The place given in the Photometric Catalogue for H.P. 1778 is from the U.A. and agrees with

11 30 Gould 4047.

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1884phae.proj.1318w



Jan. 18, 1885.

Region 4 α Piscium.
Photometer I. P. Obs.

Transits

2 6 48.3 α Piscium
7 46.3 reddish star 9 mag. 1' n of α Pisc.
9 7

6 0 e
1.82
1.79
1.79

6 3 f
1.55
1.60
1.55

6 6 g
1.79
1.91
2.32

Transit
19 30.4
38.2
49.3

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1004phae.proj:1318w



Jan. 18, 1885

a

6 13 3.86
3.64
3.44

d

6 16 2.38
2.16
2.17

c

6 21 3.00
2.34
2.37

b

6 22 3.56
3.09
3.64

Star 12.6 magn. f b $2^s$ 1' north
~~13.5~~ " f b $2^s$ 4.5 north
14.0 " f b $4^s$, 7' north.

---

Region of ~~Lac~~ 2 Cetii
5 obs. with common eyepiece
For f take star at $5^m\ 2^s$, δ 9.6
5 4, δ 4.8
6 43 g h 4 1, δ 7.0

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1884phae.proj.1318w



Jan 18 1885

7 5 Standards for a Cet Obs.

a
3.59
3.27
2.65

d
1.71
1.45
1.63

e
1.64
1.64
1.42

7 15

c
2.63
2.37
2.55

h
4.16
4.64
4.05

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1884phae.proj.1318w



Jan 18. 1885.

2
.81
.86
.92

f
1.39
1.14
1.14

g
1.03
1.02
1.09

7 30

B 8 6 1182
10 3 12,0
4 12,0

B 394
10 6 0.0
7 0.0

10 21 22
8 12
10 29 34
2 48
10 26 46

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1884phae.proj.1318w



~~D~~. Jan. 18, 1885
Photometry R. Compared with I.
& Disappearance of Jupiter III, P. Obs.

| | | | | |
|---|---|---|---|---|
| 10 | 12 | 41 | 40.6 | S. rec. |
| | | 54 | 143.0 | |
| | 13 | 3 | 42.5 | |
| | | 12 | 147.7 | — 1 |
| | | 23 | 43.3 | |
| | | 35 | 150.1 | |
| | | 43 | 41.6 | |
| | | 53 | 147.3 | — 2 |
| | 14 | 3 | 37.4 | |
| | | 13 | 150.3 | |
| | | 23 | 42.6 | |
| | | 33 | 149.4 | — 3 |
| | | 43 | 41.8 | |
| | | 53 | 145.0 | |
| | 15 | 2 | 47.1 | |
| | | 13 | 146.6 | — 4 |
| | | 27 | 44.9 | |
| | | 39 | 151.2 | |
| | | 49 | 43.8 | |
| | 16 | 1 | 146.6 | |
| | | 33 | 45.6 | — 5 |
| | | 50 | 143.8 | |
| | | 59 | 45.9 | |
| | 17 | 12 | 149.6 | — 6 |
| | | 23 | 44.2 | |
| | | 34 | 148.4 | |
| | | 46 | 45.7 | |
| | 18 | 0 | 147.4 | — 7 |

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Jan. 18,

| | | | |
|---|---|---|---|
| 10 | 18 | 14 | 43,2 |
| | | 49 | 149,2 |
| | | 57 | 43,8 |
| | 19 | 6 | 146,3 — 8 |
| | | 15 | 45,0 |
| | | 25 | 148,5 |
| | | 37 | 42,8 |
| | | 45 | 148,2 — 9 |
| | | 53 | 45,1 |
| | 20 | 3 | 146,1 |
| | | 17 | 44,3 |
| | | 35 | 147,4 — Comet. 10 |
| | | 48 | 44,8 |
| | 21 | 1 | 149,0 |
| | | 10 | 45,0 |
| | | 18 | 149,3 — 11 |
| | | 25 | 45,1 |
| | | 33 | 146,4 |
| | | 42 | 47,4 |
| | | 52 | 150,0 — 12 |
| | 22 | 1 | 45,8 |
| | | 9 | 148,6 |
| | | 21 | 46,8 |
| | | 31 | 145,3 — 13 |
| | | 42 | 46,5 |
| | | 55 | 146,6 |
| | 23 | 4 | 44,4 |
| | | 14 | 146,3 — Hel 14 |

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1884phae.proj.1318M



Jan. 18, 1885

| | | | |
|---|---|---|---|
| 10 | 23 | 25 | 51,7 |
| | | 32 | 145,3 |
| | | 40 | 50,8 |
| | | 46 | 145,3 — 15 |
| | 24 | 3 | 45.0 |
| | | 12 | 141,5 |
| | | 20 | 48,6 |
| | | 28 | 143,4 — 16 |
| | | 36 | 53,1 |
| | | 50 | 140,2 |
| | | 59 | 49.7 |
| | 25 | 6 | 139,1 |
| | | 12 | 52,6 — 17 |
| | | 19 | 141,4 |
| | | 26 | 56,8 |
| | | 32 | 137,5 |
| | | 50 | 54,6 — 18 |
| | | 59 | 138,2 |
| | 26 | 4 | 55,0 |
| | | 13 | 133,0 — 19 |
| | | 23 | 60,4 |
| | | 32 | 137,4 |
| | | 43 | 60,4 |
| | | 51 | 134,8 — 20 |
| | | 58 | 60,2 |
| | 27 | 7 | 131,2 |
| | | 16 | 66,6 |
| | | 23 | 131,4 — 21 |
| | | 31 | 66,0 |
| | | 43 | 126,2 |

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Jan. 18, 1885

| | | | |
|---|---|---|---|
| 10 | 27 | 51 | 61.6 |
| | ~~28~~ 27 | 0 | 124.7 |
| | | 6 | 70.7 |
| | | 12 | 126.4 |
| | | 19 | 68.2 |
| | | 27 | 124.2 |
| | | 36 | 71.4 |
| | | 44 | 119.5 |
| | | 51 | 68.0 |
| | | 58 | 119.6 |
| | 29 | 4 | 74.7 |
| | | 11 | 114.9 |
| | | 18 | 80.3 |
| | | 25 | 114.2 |
| | | 31 | 82.3 |
| | | 37 | 112.8 |
| | | 45 | 80.7 |
| | | 52 | 109.8 |
| | 30 | 0 | 83.0 |
| | | 6 | 109.9 |
| | | 12 | 89.4 |
| | | 22 | 105.6 |
| | | 32 | seen |
| | | 36 | 91.2 |

Limit of visibility

| | | | |
|---|---|---|---|
| 10 | 31 | 32 | 86.4 |
| | | 46 | 105.8 |
| | | 59 | 88.4 |
| | 32 | 1 1 | 110.6 |

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Jan. 18, 1885

| B & C 1182 | | | B 394 | | |
|---|---|---|---|---|---|
| 10 | 46 | 11.2 | 40 | 49 | 0.0 |
| | 47 | 11.2 | | 50 | 0.0 |

11 15 Region of H.P. 1684 I. 8bs
Gould 801, 938, and 1051 recognized.
Sky hazy. No brighter star seen in
the region than Gould 801.
The nearest star in U.A. is in
Pyxis, $9^h\ 4^m\ 47^s$, $-22°\ 40'.1$

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1884phae.proj.1318w



Jan. 19 1885.
Region of ζ Cyg. S. obs.
Photometer 9.

a

3,88
3,87
6 18 3.29

d

2,05
1,77
6 24 2,06

e

1,04
1,31
6 27 1,32

c

2,41
2,71
6 30 2,11

b

3,22
2,85
6 35 3,70

h

0,65
0,58
6 42 0,64

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1884phae.proj.1318w



Jan. 19, 1885

f

0.80
0.84
6 47 0.82

g

0.93
1.04
6 49 0.94

f has a star 9 4 magn. foll. 5s same S.

Standard foll. v Eridani Polar

7 30 h

4.11
4.60
4.88

i

2.12
2.19
2.25

j

1.48
1.64
1.71

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1884phae.proj.1318w



Jan 19 1884

7 40

g
1.68
1.50
1.54

h
1.32
1.34
1.36

i ruled only

d
2.19
1.94
2.33

c
2.75
2.70
3.06

7 50

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1884phae.proj.1318w



Jan. 21, 1885

Reciprocal Y Eridani
Photometer 9.1 5 obs.

| | h |
|---|---|
| | 4.15 |
| | 4.14 |
| 9 7 | 4.61 |

| | e |
|---|---|
| | 1.66 |
| | 1.75 |
| 9 14 | 1.55 |

i not seen

| | f |
|---|---|
| | 1.16 |
| | 1.17 |
| 9 17 | 1.08 |

| | g |
|---|---|
| | 0.95 |
| | 1.02 |
| 9.22 | 0.93 |

| | h |
|---|---|
| | 0.69 |
| | 0.61 |
| 9 27 | 0.65 |

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1884phae.proj.1318w



Jan. 21, 1885.

d

2.00
1.95
9 29 1.71

a too bright

c

2.31
2.31
9 33 2.18

Region of α Tauri. S.of.

e

0.70
0.62
10 28 0.54

f

0.32
0.39
10 32 0.39

Star at $2^m$ ~~57~~ $5^s$, 6.7

0.31
0.29
0.31

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Jan. 21, 1885

| | c |
|---|---|
| | 0,58 |
| | 0,58 |
| 10 43 | 0,57 |

| | d |
|---|---|
| | 0,66 |
| | 0,61 |
| 10 47 | 0,76 |

| | a |
|---|---|
| | 2,38 |
| | 2,66 |
| 10 49 | 2,95 |

| | b |
|---|---|
| | 2,33 |
| | 1,48 |
| 10 51 | 1,73 |

By estimate d 1 c

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Jan 26. 1885.

Photo-Spectroscopic Observ. of Eridani.

A

| | | | | | |
|---|---|---|---|---|---|
| 2 | 48 | 51.6 | | | |
| | | 55.5 | √3.6 | 45.0 | |
| | 49 | 15.4 α | | 23.2 | |
| | | 17.6 δ | | 21.0 | |
| | | 37.8 γ | | | |
| | | 39.5 β | 38.6 | -0.9 | |

B

| | | | | | |
|---|---|---|---|---|---|
| 2 | 50 | 26.3 | | | |
| | | 29.9 | 28.1 | 47.1 | |
| | | 40.4 α | | 34.8 | |
| | 51 | 3.7 δ | | 11.5 | |
| | | 15.2 β γ | 15.2 | 0.0 | |

A

| | | | | | |
|---|---|---|---|---|---|
| 2 | 51 | 47.2 | | | |
| | | 51.1 | 49.2 | 46.4 | 91.4 |
| | | 14.7 α | | 20.9 | 44.1 |
| | | 16.5 δ | | 19.1 | 40.1 |
| | | 34.3 β | | | |
| | | 36.8 γ | 35.6 | +1.3 | +0.4 |

B

| | | | | | |
|---|---|---|---|---|---|
| | 52 | 56.3 | | | |
| | 53 | 0.0 | √8.2 | 45.6 | 92.7 |
| | | 10.4 α | | 33.4 | 68.2 |
| | | 30.8 δ | | 13.0 | 14.5 |
| | | 42.8 β | | | |
| | | 44.9 γ | 43.8 | +1.0 | +1.0 |

6 17 β Leporis H P. 994

A

| | | | | | |
|---|---|---|---|---|---|
| 2 | 58 | 19.7 | | | |
| | | 23.6 | 21.8 | 43.8 | |
| | | 45.4 α | | 20.2 | |
| | | 48.0 δ | | 17.6 | |
| | | 3.7 γ | | | |
| | | 7.5 β | 5.6 | -1.9 | |

B

| | | | | | |
|---|---|---|---|---|---|
| 2 | 59 | 28.4 | | | |
| | | 32.5 | 30.4 | 46.6 | |
| | | 40.6 α | | 36.4 | |
| | 3 | 0 12.7 δ | | 4.3 | |
| | | 15.5 β γ | 17.0 | -1.6 | |
| | | 18.6 | | | |

A

| | | | | | |
|---|---|---|---|---|---|
| 3 | 0 | 44.4 | | | |
| | | 48.3 | 46.4 | 47.0 | 90.8 |
| | 1 | 6.0 α | | 27.4 | 47.6 |
| | | 9.2 δ | | 24.2 | 41.8 |
| | | 31.4 γ | | | |
| | | 35.3 β | 33.4 | -1.9 | -3.8 |

B

| | | | | | |
|---|---|---|---|---|---|
| | | 52.4 | | | |
| | | 56.4 | √4.4 | 46.9 | 93.5 |
| | | 4.4 α | | 36.9 | 73.3 |
| | | 35.2 δ | | 6.1 | 10.4 |
| | | 40.0 β | | | |
| | | 42.6 γ | 41.3 | +1.3 | -0.3 |

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Jan 26, 1885

α Leonis HP 1014

6 26 3 4 A 57.8
1.6 59.7 ✓0.3
75.6 α 24.4
34.3 δ 15.7
50.0 β γ ✓0.0 0.0

3 6 19.4
28.3 21.4 ✓1.9 102.2
41.2 α 32.1 ✓6.5
57.3 δ 16.0 31.7
7 13.3 β γ 13.3 0.0 0.0

5 8.2
12.0 10.1 48.7
19.4 α 39.4
53.3 δ ✓.5
56.5 β
6 1.0 γ ✓8.8 +2.3

7 37.4
41.3 39.4 ✓0.4 99.1
49.3 α 40.5 79.9
26.4 δ 3.4 8.9
29.0 β
30.5 γ 29.8 +0.8 +3.1

6 32 β A Eridani HP 910.

3 11 1.3
4.9 3.1 ~~44.7~~ ✓0.0
24.2 α ~~23.6~~ 28.9
42.4 δ 10.7
53.1 β γ ~~47.8~~ ✓3.1 0.0

B
3 12 16.3
20.7 18.5 49.7
29.9 α 38.3
3.8 δ 4.4
6.6 β
9.5 γ 8.2 +1.4

3 13 39.3
42.8 41.0 48.9 98.9
14 0.8 α 29.1 ✓8.0
15.0 δ 14.9 25.6
28.6 γ
31.0 β 29.9 -1.1 -1.1

B
15 56.3
2.2 60.2 46.9 96.6
9.9 α 37.2 75.5
43.6 δ 3.5 7.9
45.5 β
46.7 γ 47.1 +1.6 +3.0

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1884phae.proj.1318M



Jan 26, 1885.

Σ 7 Orionis HP 1029

A

6 39 3 ~~17~~ 18 11.9
16.2 14.0 52.8
39.2 α 27.6
19 0.6 δ 6.2
6.8 β γ 6.8 0.0

3 20 54.4
21 2.3 60.4 √1.1 103.9
~~2~~ 25.8 α 2√.7 √3.3
46.0 δ √.√ 11.7
51.5 β, γ √1.5 00 0.0

B

3 19 24.3
28.3 26.3
38.8 α
38.6 ε
14.4 δ
17.6 β
γ not dis.

3 22 16.8
21.0 18.9
30.7 α
33.5 ε
23 9.6 δ
14.2 β
γ not dis

6 46

Zone ~~6~~ 44° 50' to 50° 0' S. obs.

Series 29. Wedge Photometer

9 16 Began with 251.

9 46 357

~~4443~~ disappears only just before emerging.

10 15 450

10 50 Ended with 563.

10 55 Stopwatch runs 60.0 while F. 1327 runs 60.0

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1884phae.proj.1318w



Jan. 29, 1885.

Photo-spectroscope P. 86.

γ Pegasi H.P. 23.

A

6 0 2 50 6 3
10.7 8.5 48.5
32.0 α 25.0
52.3 δ 4.7
57.0 γ
57.0 β √7.0 0.0

B

51 42.3
46.8 44.6 47.4
52 0.7 α 31.3
8.5 ε 23.5
29.3 δ 2.7
31.0 β 32.0 +1.0
33.0 γ

A

6 8 2 58 50.0
54.7 √2.4 √4.4 54.6
21.2 α 22.3 45.8
42.0 δ √.0
45.0 β ~~43.5~~ 47.0 +2.0
49.0 γ

B

59 17.0
21.8 19.4 √4.1
36.0 α 37.5
53.3 ε 20.2

3 0 11.0 β +2.5
16.0 δ 2.5
16.0 γ 13.5

72.3

2 53 1.4
6.0 3.7 48.8 97.3
27.3 α 25.2 50.2
47.5 δ 5.0 9.7
52.0 β √2.5 +0.5 +0.5
53.0 γ

2 54 17.2
21.6 19.4 47.1 94.5
33.5 α 33.0 64.3
45.6 ε 20.9 44.4
55 3.0 δ 3.5 6.2
5.0 β 6.5 +1.5 +2.5
8.0 γ

A

3 0 40.0
44.6 42 35 6.5 111.1
1 12.0 α 26.8 72.6
32.0 δ 6.8 11.8
38.0 β 38.8 +0.8 +2.8
39.5 γ

3 2 1.4
6.2 3.8 59.4 112.5
22.0 α 40.2 77.7
36.2 ε 26.0 46.2
58.3 δ 3.9 6.4
1.2 β 2.2 +1.0 +3.5
3.2 γ

γ scarcely discernible

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Jan. 29, 1885

HP 185

A

5 15 3 5 17.2
22.1 19.6 ✓8.✓
54.5 2 23.6
1.5 δ 16.6
16.6 γ
19.6 β 18.1 − 1.✓

B

5 6 46.0
57.0 48.✓ ✓7.4
7 13.0 2 32.9
38.9 δ 7.0
44.8 β 4✓.9 + 1.1
47.0 γ

HP 9

A

6 25 3 15 9.2
17.1 13.2 93.0
57.1 2 49.1
16 26.0 δ 20.2
46.2 β
46.2 γ 46.2 0.0

B

3 17 20.3
28.9 24.6 9✓.✓
50.2 ε 68.9
53.0 2 66.1
18 45.0 δ 14.1
58.2 β ✓9.1 + 0.9
19 0.0 γ

A

3 8 11.7
16.7 14.2 ✓8.6 117.1
48.5 2 24.3 47.9
56.0 δ 16.8 33.4
9 11.5 γ
14.0 β 12.8 − 1.2 − 2.7

B

3 9 53.0
58.1 ✓5.6 60.6 118.0
10 18.8 2 37.4 70.3
47.0 δ 9.2 16.2
55.7 β ✓6.2 + 0.5 + 1.6
56.7 γ

A

3 19 39.2
47.2 43.2 92.6 185.6
20 31.5 2 44.3 93.4
56.6 δ 19.2 39.4
21 15.2 γ
16.5 β 15.8 − 0.7 − 0.7

B

3 21 49.5
57.6 ✓3.6 94.4 188.9
22 19.5 2 68.5 134.6
28.5 ε ✓9.✓ 128.4
23 19.0 δ 9.0 23.1
27.5 β
24.5 γ 28.0 + 0.5 + 1.4

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Jan. 29 1885

Blackburn HP 1482

6 37

A

3 29 55.5
59.5 √7.√ 36.√
28 5.0 α 27.0 23.6 √0.6
24.0 δ 10.0 10.3 20.3
32.8 β 34.0 +1.2 60.5 +1.0 +2.2
35.3 γ

B

3 29 11.9
16.0 14.0 36.2
47.3 β
47.3 δ 2.9
53.0 γ √0.2 +2.9 2.2 -2.0 +0.9

α not seen

A

3 30 23.0
25.0 35.√ 72.0 27.0
36.9 α
50.2 δ
57.5 β
1.5 γ

31

B

3 31 26.0
28.0 34.2 70.4 30.1
35.0 δ
47.2 40.1
32 0.5 γ β
4.0

α not seen

A HP482

6 44

3 34 55.0
56.8 √6.9 47.9
35 22.2 α 22.1
30.2 δ 14.6
43.7 γ
46.0 β 44.8 -1.2

B

3 36 12.0
16.0 14.0 48.0
32.0 α 30.0
54.2 δ 17.8

37 1.0 β
3.0 γ 2.0 +1.0

A

3 37 37.3
41.4 39.4 46.2 94.1
38 7.8 α 17.8 39.9
14.2 δ 11.4 26.0
23.3 γ
28.0 β 25.6 -2.4 -3.6

13

3 36 53.0
56.7 √4.8 49.2 97.2
39 14.2 α 29.7 √9.7
36.5 δ 7.5 15.3
44.0 β 44.0 0.0 +1.0
44.0 γ

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Jan. 29, 1885

Spectrum of o Ceti

Image on A

6 52 Bands at 20
24 } Int. 7
26 } Int. 2
28
33 } Int. 8
36
41 Int. 5

Spectrum extends to 56

Image on B

~~Bands at~~

Spectrum begins 18

Bands at 23 } Int. 7
26
28 } Int. 2
30
35 } Int. 7
39
43 Int. 4

Spectrum extends to 62

Wire A at 13
B at 17

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Jan. 31, 1885.

Series 30 Wedge photometer. S. obs.

Stopwatch runs 60.0 while B.236 runs 60,0

Zone 54° 50' to 55° 0'

6 20 Began with 3100

6 50 Interval 48 to 48 11.0; 48 faint, variable?

481 a; a is a star 7s/p. 48, 3's south.

53 248

7 3 Ended with 86; field becoming much brighter with moonlight.

Series 31 Rob.

7 10 Began with +54° 88

7 44 174

8 15 265

Ended 274

Cirrus clouds & streaks with brighter ones mixed thyr. indicate HP 219 δ Cass

Photographic. ~~H. P. 142 γ Cass.~~

A

~~5 33 40.4~~

~~35.4~~

45.3

5 34 11.4

18.7 15.0 88.5

35 7.2 α 26.3

~~16.8~~

29.7 δ 13.8

41.5 β 43.5 +2.0

45.5 γ

5 37 57.6

38 5.5 61.6 90.0 178.5

56.8 α 34.8 61.1

39 19.2 δ 12.4 26.2

29.7 β 31.6 +1.9 +3.9

33.6 γ

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Jan 31. 1885

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | B | | | | | | | | | B | | | | | | | | |
| 8 | 40 | 5 | 36 | 5.4 | | | | | | 5 | 39 | 52.6 | | | | | | | |
| | | | | 13.4 | | 9.4 | 89.9 | | | | 40 | 59.8 | | 56.2 | 94.2 | 184.1 | | | |
| | | | | 42.6 | Σ | √6.7 | | | | | | 20.8 | Σ | | 69.6 | 126.3 | | | |
| | | | | 44.0 | α | √5.3 | | | | | | 29.6 | α | | 60.8 | 116.1 | | | |
| | | | 37 | 31.8 | δ | 7.5 | | | | | | 27.4 | δ | | 3.0 | 10.5 | | | |
| | | | | 38.3 | β | | | | | | | 28.3 | β | | | | | | |
| | | | | 40.3 | γ | 39.3 | +1.0 | | | | | 32.5 | γ | | 30.4 | +2.1 | +3.1 | | |

~~δ Cas. HP. 219~~

A ) Cas. HP. 142

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 5 | 45 | 45.3 | | | | | 49 | 44.5 | | | | | | | | |
| 8 | 50 | | | | 53.4 | | 49.4 | 96.4 | | | 52.4 | | 48.4 | 96.4 | 192.8 | | | | |
| | | | 46 | 43.7 | α | | 42.1 | | | 50 | 46.3 | α | | 38.4 | 80.5 | | | | |
| | | | 47 | 17.8 | δ | | 8.0 | | | 51 | 7.4 | δ | | 17.3 | 25.3 | | | | |
| | | | | 24.3 | β | | | | | | 24.7 | β | | 24.7 | 0.0 | +1.5 | | | |
| | | | | 27.2 | γ | | 25.8 | +1.5 | | | 24.7 | γ | | | | | | | |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | B | | | | | | | | | | | | | | | | | |
| | | | 47 | 48.3 | | | | | | 51 | ~~44.5~~ | 43.5 | | | | | | | |
| | | | | 56.0 | | √2.2 | 97.0 | | | | ~~52.4~~ | 50.9 | | 47.2 | 97.0 | 194.0 | | | |
| | | | 48 | 29.7 | Σ | √9.5 | | | | 52 | | 20.8 | Σ | | 63.4 | 122.9 | | | |
| | | | | 34.4 | α | √4.8 | | | | | | 25.0 | α | | 59.2 | 114.0 | | | |
| | | | 49 | 26.2 | δ | | 3.0 | | | 53 | | 20.2 | δ | | 3.9 | 6.9 | | | |
| | | | | 28.3 | β | | | | | | | 22.2 | β | | | | | | |
| | | | | 30.0 | γ | | 29.2 | +0.9 | | | | 26.3 | γ | | 24.2 | +2.0 | +2.9 | | |

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Jan 31, 1885.

ε Ophiuchi H.P. 649

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 00 | 5 | 56 | 50.6 | | 5 | 59 | 53.7 | | |
| | | | | 55.7 | √3.2 62.4 | | | 58.8 | √62 60.5 | 122.9 |
| | | | 57 | 28.4 α | 29.2 | 6 | 0 | 29.8 α | 26.9 | 56.1 |
| | | | | 50.0 δ | √.6 | | | 50.8 δ | √.9 | 11.5 |
| | | | | 55.2 β | √5.6 +0.3 | | | 56.7 β | 0.0 | +0.3 |
| | | | | 58.1 γ | | | | 56.7 | | |
| | | B | | | | B | | | | |
| | | 5 | 58 | 13.0 | | 6 | 1 | 44.3 | | |
| | | | | 18.3 | 15.6 62.8 | | | 49.4 | 46.8 60.2 | 123.0 |
| | | | | 35.4 α | 43.0 | | 2 | 2.8 α | 44.2 | 87.2 |
| | | | | 40.3 ε | 38.1 | | | 49.3 ε | 27.7 | 65.8 |
| | | | 59 | 17.2 δ | 1.2 | | | 46.2 δ | 0.8 | 2.0 |
| | | | | 17.2 β | 18.4 +1.2 | | | 47.0 β | 47.0 +0.8 | +2.0 |
| | | | | 19.6 γ | | | | 47.8 γ | | |

A. Herc. ε Orionis

| | | | | | |
|---|---|---|---|---|---|
| 6 | 8 | 27.8 | | 58.0 | |
| | | 31.4 | 29.6 | 1.7 | |
| | | 47.4 ε | | 16.7 ε | |
| | 9 | 0.0 α | | 30.8 α | |
| | | 16.7 δ | | 49.0 δ | |
| | | β d γ dub | | β d γ dub | |
| | | dis. | | | |
| | | B | | | |
| 6 | 9 | 49.9 | | 6.7 | |
| | | 45.8 | | 10.9 | |
| | 10 | 2.2 α | | 24.3 α | |
| | | 11.3 ε | | 40.8 ε | |
| | | 33.7 δ | | 59.7 δ | |
| | | 33.7 β | | 59.7 β | |
| | | γ dub dis | | γ dub dis | |

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1884phae.proj.13189



Jan 31. 1885.

HP 979. γ Aurig.

| | A | | A |
|---|---|---|---|
| 6 | 16 10.8 | 6 18 | 49.6 |
| | 14.6 | | 53.5 |
| | 35.0 ε | 19 | 6.2 ε |
| | 43.5 α | | 17.8 α |
| | 2.4 δ | | 42.4 δ |
| | 2.4 β | | 42.4 β |
| | γ obs not obs | | γ obs not obs |
| | B | 20 | 1.7 |
| 6 | 17 28.8 | | 5.7 |
| | 32.7 | | |
| | 47.4 α | | 22.5 α |
| | 1.3 ε | | 29.8 ε |
| | β γ δ obs not obs | | β γ δ obs not ~~33.2~~ 33.2 |
| | | | δ β obs abt 5.2 and watchly multiplied |

HP 1045 ξ Aurig

| | A | | A |
|---|---|---|---|
| 6 | 23 41.0 | 6 | 26 26.3 |
| | 45.3 | | 30.4 |
| | 54.6 ε | | 43.3 ε |
| | 24 11.7 α | | 56.9 α |
| | 30.6 δ | | 15.2 δ |
| | 33.5 β | | 18.6 β |
| | γ not obs | | γ not obs |
| | B | | B |
| 6 | 25 0.6 | 6 | 27 46.7 |
| | 4.8 | | ~~50.~~ 6 |
| | 21.4 α | | 24 5.2 α |
| | 23.6 ε | | 9.3 ε |
| | 52.8 δ | | 39.4 δ |
| | 52.8 β | | 39.4 β |
| | 54.5 γ obs | | γ obs not obs |
| | and [illegible] | | |

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1884phae.proj.1318w



Jan 31, 1885.

HP 1091 α Cancri.

9 33 6 29 59.0 6 32 58.3
30 2.4 33 0.4
10.6 ε ε and δ
36.4 α 37.5 α
42.2 δ 39.5 δ
51.4 γ 48.7 γ
β and dis. β and δ dis.
B B
31 44.8 6 34 19.6
48.5 24.0
58.9 ε 32.9 ε
32 14.4 α 49.4 α
33.7 δ 9.3 δ
β γ δ and ε dis. β γ δ and ε dis.

HP 1032 ζ Tauri

6 42 6 39 14.6 6 41 42.6
18.5 16.6 50.9 46.3 44.4 48.8 99.7
45.2 α 22.3 42 10.5 α 22.9 45.2
40 38 δ 3.7 29.3 δ 3.9 7.6
6.5 β 7.5 +1.0 32.0 β 33.2 +1.2 +2.2
8.5 γ 34.3 γ
B
6 40 26.3 42 56.8
28.2 48.2
30.0 43 0.9 58.8 48.6 96.8
47.8 ε 28.6 16.5 α 30.9 58.1
49.2 α 27.2 18.3 ε 29.1 57.7
41 13.6 δ 2.8 44.5 δ 2.9 5.7
15.2 β 46.4 β 47.4 +1.0 +2.2
17.5 γ 16.4 +1.2 48.3 γ

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Jan 31, 1885

Hr. 1263.

9 48 6 ~~48~~ 27.4 6 51 51.3
48 31.3 29.4 46.2 55.6 53.4 50.8 97.0
58.8 α 16.8 52 24.7 α 19.5 36.3
55.8 δ 16.8 24.7 δ 19.5 36.3
49 15.3 β 43.4 β
16.0 γ 15.6 +0.3 45.0 γ 44.2 +0.8 +1.1

B

~~49~~ 15.3 6 53 35.6
50 19.5 17.4 51.8 39.9 37.8 50.9 102.7
36.4 α 32.8 53.6 α 34.1 67.9
54.1 δ 15.1 48.7 δ 10.0 25.1
51 9.2 β 28.7 β
9.2 γ 9.2 0.0 28.7 γ 28.7 0.0 0.0
Hr. 1027

10 0 6 59 18.3 7 2 53.7
22.2 20.2 44.8 57.5 55.6 47.8 92.6
42.4 α 22.6 20.3 α 23.1 45.7
7 0 06.8 ~~4.4~~ 40.0 δ 3.4 7.8
4.7 β 43.4 β
5.3 γ 5.0 +0.3 43.4 γ 43.4 0.0 +0.3

B B

7 0 34.4 7 3 13.2
36.4 46.2
38.3 17.4 51.3 47.5 93.7
47.7 ε 34.9 27.4 α 35.4 70.3
52.0 δ 30.6 29.5 ε 33.3 63.9
1 20.8 δ 1.8 1.3 δ 1.5 3.3
20.8
24.3 β 22.6 +1.8 1.3 β
4.2 γ 2.8 +1.5 +3.3

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1884phae.proj.1318w



Ja 31.1885.

H.B. 1068 K Canis Minoris

10 8 7 5 48.3
52.1 √0.2 49.3
6 14.3 α 25.2
35.7 δ 3.8
39.5 β 39.5 0.0
39.5 γ

7 8 22.2
26.1 24.2 48.8 98.1
48.6 α 24.4 49.6
9 7.2 δ √.8 9.6
12.3 β 13.0 +0.7 +0.7
13.7 γ

B

1 7 7 10.9
14.9 12.9 49.3
27.3 ε 34.9
30.8 α 31.4
8 0.0 δ 2.2
1.8 β 2.2 +0.4
2.7 γ

7 9 36.2
40.3 38.2 47.6 96.9
48.4 ε 37.4 72.3
50.5 α 3√.3 66.7
10 25.8 ~~β~~ δ 00.0 2.2
25.8 β
25.8 25.8 0.0 +0.4
25.8 γ

H.B. 1403 β Canis Minoris

10 16 7 13 50.4
54.3 √2.4 45.8
14 16.6 α 21.6
28.6 δ 9.6
37.4 β 38.2 +0.8
39.0 γ

7 16 17.4
21.2 19.3 46.4 92.2
43.4 α 22.3 43.9
55.8 δ 9.9 19.5
17 5.7 β √.7 0.0 +0.8
5.7 γ

B

15 2.3
6.5 4.4 47.9
15.4 α 36.5
17.8 ε 34.5
50 0 δ 2.3
52.0 β 52.6 √2.3 +0.3
52.6 γ

7 17 30.8
34.7 32.8 48.7 96.6
44.8 α 37.7 74.2
46.3 ε 3√.2 69.7
49.7 δ 1.8 4.1
21.0 β 21.5 +0.5 +0.8
22.0 γ

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1884phae.proj-1318w



Jan 31, 1885

1 H 6 1442 Canis Min.

10 22 7 19 35.0
38.9 37.0 ~~41.6~~
52.7 ε ~~28.9~~
14.7 α ~~21.6~~
27.4 δ
β. γ. d n dir

7 21 57.7
22 1.9
10.5 ε
38.3 α
49.5 δ
β. γ. d n dir

B.

7 20 48.6
52.4
21 46.7 α
21.8 ε
β γ δ d n dir

B

7 23 11.4
15.3
38.6 α
43.5 ε
β γ δ d n dir.

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1884phae.proj.1318w



Feb. 1, 1885

B 8 C 1182 — B 394

| | | | | | |
|---|---|---|---|---|---|
| 9 | 6 | 37.0 | 9 | 10 | 0.0 |
| | 7 | 37.0 | | 11 | 0.0 |

9 25 17 — Disappearance of Jupiter I. Compared with III.
8 12
9 33 29 — P. obs. S. rec.
3 23
9 30 6 — Photometer R

~~9 25 20~~

| | | | |
|---|---|---|---|
| 9 | 26 | 41 | 306.5 |
| | | 53 | 32.6 |
| | 27 | 12 | 310.4 |
| | | 20 | 35.7 |
| | | 31 | 311.5 |
| | | 38 | 33.6 |
| | | 45 | 316.7 |
| | | 50 | 28.2 |
| | | 58 | 316.5 |
| 28 | | 5 | 30.6 |
| | | 12 | 316.3 |
| | | 19 | 26.4 |
| | | 26 | 315.1 |
| | | 33 | 26.9 |
| | | 43 | 320.8 |
| | | 52 | 24.4 |
| | | 59 | 322.3 |
| 29 | | 9 | 27.6 |
| | | 15 | 326.2 |

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1884phae.proj.1318



Feb. 1, 1885

| | | | |
|---|---|---|---|
| 9 | 29 | 27 | 19.1 |
| | | 35 | 325.7 |
| | | 43 | 19.7 |
| | | 53 | 323.8 |
| | 30 | 0 | 16.5 |
| | | 7 | 332.0 |
| | | 15 | 16.1 |
| | | 23 | 338.6 |
| | | 31 | 6.4 |
| | | 39 | suspected |

Limit of visibility

| | | | |
|---|---|---|---|
| 9 | 31 | 3 | 342.1 |
| | | 19 | 1.3 |
| | | 27 | 341.2 |
| | | 38 | 2.8 |

B & C 1182

| | | |
|---|---|---|
| 9 | 35 | 36.7 |
| | 36 | 36.7 |

B 394

| | | |
|---|---|---|
| 9 | 39 | 0.0 |
| | 48 | 0.0 |

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1884phae.proj.1318w



Feb. 20, 1885.

Region of γ Geminorum. Probs.

6 15 Magn. a in Dec. 7.3
- b " 8.9 only 1 star here; 2 on chart
- c " 9.4
- d " 9.5
- e est. 11.5 Rej. this e
- f " 10.6, 10.8
- e (3m 48s, 8.7') 10.2
- g (3 1, 3.6') 11.3 ident. with R former e
11.9
- h (2 35, 6.4) 12.7
- i (2 47, 5.1) 13.2
- j (2 42, 4.2) 13.6
- jk (2 34, 3.2) not seen

b Photometer I. I. obs.

2,16
2,57
6 55 2,09

c
1,47
1,31
7 0 1,45

h
0,43
0,45
7 3 0,40

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1884phae.proj.1318w



Feb. 2, 1885

| | |
|---|---|
| | 0.60 |
| | 0.52 |
| 7 6 | 0.56 |
| | d |
| | 1.17 |
| | 1.21 |
| 7 9 | 1.17 |
| | e |
| | 0.59 |
| | 0.81 |
| 7 12 | 0.59 |
| | g |
| | 0.94 |
| | 0.81 |
| 7 18 | 0.86 |
| | e |
| | 1.17 |
| | 1.13 |
| 7 21 | 1.09 |
| | f |
| | 0.89 |
| | 0.86 |
| 7 25 | 0.92 |

a two bright & suspected only.

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1884phae.proj.1318w



Feb. 2. 1884 V.

6 23 = 9 16

4 49.0 −16° 30′
6 26.
+1 37

9 40 Looked for Hagen's comparison star C to H.P. 867; but increasing haze and clouds made region too faint.

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1884phae.proj.1318w



Feb. 3, 1885.

Hagen's comparison star C to
D.M. +6°867. P. obs.
To be examined with field glass

Mod. I, ε Cassis
Stands S dx.
a too bright

6 20

g
1.06
.94
.92

f
1.07
1.40
1.11

6 24

d
3.06
3.25
3.30

b, c too bright

e
2.14
2.44
2.50

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Feb. 3. 1885

| | h |
|---|---|
| 6 33 | 0.99 |
| | .95 |
| | .87 |
| | i |
| | 0.65 |
| | .59 |
| | .54 |
| | i |
| | 0.70 |
| | .78 |
| | .88 |
| 6 38 | |

Region of α Can. Min. Probs.

| | d |
|---|---|
| | 1.18 |
| | 0.81 |
| 6 42 | 0.79 |
| | g |
| | 0.243 |
| | 0.43 |
| 8 45 | 0.57 |
| | h |
| | 0.36 |
| | 0.32 |
| 8 48 | 0.32 |

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1884phae.proj.1318w



Feb 3, 1885

| | c |
|---|---|
| | 0.73 |
| | 0.79 |
| 8 57 | 0.75 |

| | e |
|---|---|
| | 0.52 |
| | 0.53 |
| 8 54 | 0.52 |

| | f |
|---|---|
| | 0.52 |
| | 0.55 |
| 8 56 | 0.53 |

| | a |
|---|---|
| | 2.13 |
| | 2.05 |
| 9 1 | 2.00 |

| | b |
|---|---|
| | 0.98 |
| | 1.02 |
| 9 3 | 1.23 |

Region of Fauri. Sobs.

10 15 Clouds Came on.

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1884phae.proj.1318w



Feb. 6. 1885.

B. + C. 1162. Bond 394.

16 32 19.4 16 36 0.0
33 19.3 37 0.0

Dis. Sup. I. Phot. N. S. to N. rec.
Comp. with Sup. II.

16 36 0.0
V4
22

+6 0

16 32 19
16 V4 19

16 42 V9.0 101.3
43 1V.0 199.4
37.0 96.3
V0.0 197.7
44 7.V 94.0
20.0 197.4
32.0 106.1
46.0 199.V
V4.0 99.4
45 13.0 201.4
31.V 99.4
46.0 20V.4
43.0 94.4
V4.0 199.6
46 6.0 94.0

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1884phae.proj.1318w



Feb. 6. 1884.

| | | | |
|---|---|---|---|
| 16 | 47 | 16.0 | 194.3 -4 |
| | | 29.5 | 97.3 |
| | | 44.0 | 192.2 |
| | | 56.5 | 100.3 |
| | 44 | 6.0 | 200.1 -5 |
| | | 19.5 | 103.2 |
| | | 31.0 | 193.3 |
| | | 43.0 | 101.5 |
| | | 51.5 | 200.4 -6 |
| | 49 | 0.5 | 104.5 |
| | | 16.5 | 199.4 |
| | | 29.0 | 97.3 |
| | | 40.5 | 199.7 -7 |
| | 50 | 7.0 | 105.3 |
| | | 19.5 | 197.7 |
| | | 33.0 | 104.4 |
| | | 46.0 | 192.5 -8 |
| | 51 | 4.0 | 99.3 |
| | | 12.5 | 194.7 |
| | | 21.0 | 101.7 |
| | | 32.0 | 200.0 -9 |
| | | 39.0 | 103.0 |
| | | 45.5 | 204.0 |
| | | 53.0 | 94.7 |
| | 52 | 4.0 | 194.6 |
| | | 12.0 | 102.0 |
| | | 19.5 | 197.0 |
| | | 28.0 | 94.0 |

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1884phae.proj.1318w



Feb. 6. 1884.

| | | | |
|---|---|---|---|
| 16 | v2 | 36.0 | 196.6 |
| | | 44.0 | 103.0 |
| | | v1.v | 200.6 |
| | v3 | 1.0 | 102.0 |
| | | 9.0 | 194.4 |
| | | 17.v | 104.4 |
| | | 26.0 | 201.v |
| | | 34.0 | 101.7 |
| | | v0.0 | 149.4 |
| | v4 | 3.v | 104.4 |
| | | 12.v | 192.0 |
| | | 23.0 | 111.2 |
| | | 34.v | Susp. |

Limit of Vis.

| | | | |
|---|---|---|---|
| 16 | vv | 13.v | 107.4 |
| | | 26.0 | 124.0 |
| | | 34.0 | 111.7 |
| | | v4.0 | 192.0 |

Seeing bad. Satellites often invisible.

B. + C. 1142.

| | | | |
|---|---|---|---|
| 16 | 59 | 19.1 | |
| 17 | 0 | 19.1 | |

Bond 394.

| | | |
|---|---|---|
| 17 | 3 | 0.0 |
| | 4 | 0.0 |

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1884phae.proj.1318w



Feb. 6. 1884 v.

H. P. 2938.

17 24 +18.4

14 39

-2 49

14 46

17 30

-2 44 .043

1.08

36 v

= 3 v

17 27.7

17 26.7

D M. +19° 33 v (may 9 v) near the place of H. P. 2938 identified,

D M. +19° 33 v 6 identified,

" +19° 3346 "

This region is a degree north of H.P. 2938.

Previously identified

D M. +19° 3354, 3358, 3361, 3353. All these approximately correct in position and magnitude, as well as those entered in the original record above.

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1884phae.proj.1318w



Feb. 6. 1884 V.

~~+19° 3346~~

Transits.

| | | Dec | | Mag. | |
|---|---|---|---|---|---|
| 1V | V | 24.7 | − 3.V | 9.V | Dm. 3346 |
| | | 31.2 | 1.3 4.8 | 10.2 | |
| | | 4V.0 | 2.4 5.9 | 12.0 | |
| | | 46.4 | V.0 8.5 | 12.3 | |
| | | V1.2 | 9.6 13.1 | 9.4 | |
| | | V4.4 | 2.0 5.5 | 10.2 | |
| | | 1.1 | 2.6 6.1 | 12.3 | |
| | | V.2 | 6.3 9.8 | ~~10.3~~ | |
| | | 6.V | 0.V 4.0 | 9.V | Dm. 33V1. |
| | | 7.2 | 9.V 13.0 | 4.6 | " 33V6 |
| | | 30.6 | | | |

Same again.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1V | 8 | 20.2 | | | ~~6.8~~ | | 17 26 11.4 | 43.1 |
| | | 22.6 | 2.4 | 2.7 | 2.5 | 2.5 | 13.9 | 47.9 |
| | | 37.2 | 17.0 | 16.3 | 16.7 | 16.7 | 28.1 | 39.0 |
| | | 39.0 | 18.8 | 18.0 | 18.5 | 18.4 | 29.8 | 51.6 |
| | | 48.7 | [28.5] | 20.7 | 22.9 | 23.4 | 34.8 | 56.2 |
| | | 46.V | 26.3 | 27.0 | 26.3 | 26.5 | 37.9 | 48.6 |
| | | V1.V | 31.3 | 31.0 | 31.5 | 31.1 | 42.5 | 49.2 |
| | | V3.0 | 32.8 | 32.5 | 33.0 | 32.8 | 44.2 | 52.9 |
| | | V9.0 | 38.8 | 38.8 | 38.7 | 38.8 | 50.2 | 47.1 |
| | 9 | 22.1 | 61.9 | 61.7 | 61.8 | 61.8 | 27 13.2 | 56.1 |

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Feb. 6, 1884.

15 9 −0.0
−2.7 4.7
10 6.3 6
4.6
10.7
17.6
21.0
22.5
24.4
−1.7

15 12 3.5
6.0
20.2
22.0
26.4
29.4
34.5
36.5
42.2
13 −.3

Two small stars 12 mag. preceding +19° 3351. 1 sec. and 0 sec. and ~~eff~~ respectively ~~4.0~~ 4.0 and 3.7 north.

The whole region to be examined is a degree farther south. Look again.

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Feb. 7. 1885

Examined Dh. +54°48. 8.5. Dm

6 10 It is certainly as faint at 10.0 and a . . b
is much equal to two other stars a, b + Dm +54°49
near Dh +54° 49

Dh. +54° 48 is the known variable, T Cassiopeiae.

Series 32. Wedge Photometer. I. obs.
Zone 54° 50' to 55° 0'

6 34 Began with 2
7 10 " 77
7 25 Ended " 129.

6h 3v- Did. Lens. = 9h 2m Ed. S.
0 3k
6 1

0 23
6 4v
6 22

Series 33. Wedge Photometer. Ir. obs.
Zone v4° v0' to vv° 0'.

9 v2 Began with 130
10 34 " " 184
11 25 Ended " v74

Stop watch runs 60.v while chronometer runs 60.0

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1884phae.proj.1318w



Oct. 8, 1885

Seen 34 Pleiades

Rogers with Ob 5h 27s

7 48

8 50 511

9 3 Stopped 591

8 33 Stopwatch runs 60s.0 while B 236 runs 60s.0

Photospect. S. Obs. Pleiades

H. P. 94. α Cephei

9 15

A

6 48 20.6

27.3 24.0 74.4

49 14.7 α 23.7

14.7 δ 23.7

38.4 β 38.4 0.0

38.4 γ

A

6 52 21.2

27.9 24.6 79.2 153.6

53 2.6 α 41.2 64.9

2.6 δ 41.2 64.9

~~3 5 6~~

43 8 β 43.8 0.0 0.0

43 8 γ

B

6 50 41.0

47.6

51 16.7 α

44.4 δ

46.8 β

48.2 γ

? unresolved.

B

6 54 10.9 56 47.3

18.0 53.6

48.4 α 57 23.3 α

15.9 δ 53.4 δ

36 5 58 12.3 β

36.5 12.3 γ

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1884phae.proj.1318w



Mk. 81885

HP. 657 ℓ Leonis

9 30

A

7 5 44.2
47.6 45.9 47.7
6 7.2 α 26.4
22.4 δ 11.2
33.6 β 33.6 0.0
33.6 γ

7 8 17.7
21.8 19.8 48.2 95.9
42.7 α 25.3 51.7
46.7 δ 21.3 32.5
8.0 β 8.0 0.0 0.0
8.0 γ

B

7 7 0.6
4.8 2.7 ~~44.5~~ 44.5
12.6 α ~~36.6~~ 35.6
22.6 ε ~~25.6~~ 24.6
45.2 β ~~23.0~~ ~~23.0~~ +21.0
47.5 δ 0.7
49.0 γ ~~48.2~~ 47.2

7 9 25.3
29.4 27.4 45.0 89.5
38.6 α 33.8 69.4
46.4 ε 26.0 50.6
11.2 δ 1.2 1.9
13.2 β 12.4 +1.2 +3.2
13.6 γ

HP 653 γ Eridani has had new elements as follows

A

7 15 53.3
9.2 7.2 46.4
32.6 α 22.0
34.7 δ 18.9
52.6 γ 53.6 −0.9
54.5 β

7 17 44.6
48.8 46.7 45.1 91.5
11.2 α 20.6 42.6
13.5 δ 18.3 37.2
30.6 γ 31.8 −1.2 −2.1
33.0 β

B

7 16 23.6
27.0 25.3 46.5
39.2 α 32.6
57.6 δ 14.2
16.8 β 11.8 +1.2
13.0 γ

7 18 52.2
56.1 54.2 49.4 95.9
10.7 α 32.9 65.5
25.4 δ 18.2 32.4
43.6 β 43.6 0.0 +1.2
43.6 γ

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1884phae.proj.1318w



Oct. 8, 1885.

H.P. 880 R Leonis Minoris

~~H.P. 1195~~ A This is marked H.P. 1399 Corrected by S.

10 0

7 33 52.0
56.8 √3.4 58.0

34 19.2 α 32.2
41.0 δ 10.4
50.4 β 51.4 +1.0
52.5 γ

B

7 35 13.6
17.7 15.6 √6.1
29.7 α 42.0
36.3 ε 35.4
6.8 δ 4.9
9.7 β 11.7 +2.0
13.7 γ

~~H.P. 1201~~ 1195

7 36 37.5
42.0 39.8 56.8 114.8

37 6.7 α 29.9 62.1
28.9 δ 11.7 22.1
36.0 β 36.6 +0.6 +1.6
37.2 γ

7 38 3.6
8.2 6.0 √5.8 11.9
21.6 α 40.2 82.2
25.5 ε 36.3 71.7
58.0 δ 3.8 8.7
1.0 γ 1.8 -0.9 +1.1
27 β

The large eight minutes and the dec. -30°

7 48 10.2
15.1 12.6 √3.4
38.0 α 28.0
53.6 δ 10.4
49 6.0 β 6.0 0.0
60 γ

B

7 50 32.3
36.0 34.2 √3.5 10.6.9
57.1 α 30.6 √8.6
51 12.48 15.3 25.7
27.7 β 27.7 0.0 0.0
27.7 γ

B

7 49 20.2
24.8 22.5 49.9
30.4 α 42.0
7.2 δ √.2
12.3 β 12.4 +1.1
13.5 γ

7 51 52.4
57.0 √4.7 √2.5 10.2.4
52 5.4 α 41.8 83.8
42.4 δ 4.8 10.0
46.3 β 47.2 +0.9 +2.0
48.0 γ

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Oct. 8. 1885.

10 25 H.P. 1201

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 54 | 33.6 | | | 7 | 57 | 2.8 | | |
| | | 38.4 | 36.0 | 54.6 | | | 6.4 | 4.6 | 53.2 | 108.8 |
| | | 53.4 ε | 37.2 | | | | 17.3 ε | 40.5 | 77.7 |
| | | 6.0 α | 24.6 | | | | 33.3 α | 24.5 | 49.1 |
| | | 22.9 δ | 7.7 | | | | 48.7 δ | 9.1 | 16.8 |
| | | 29.8 β | | | | | 57.2 γ | | |
| | | 31.5 γ | 30.6 | +0.8 | | | 58.4 β | 57.8 | -0.6 | +0.2 |

B

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 55 | 50.6 | | | | 58 | 14.4 | | |
| | | 55.0 | 52.8 | 54.2 | | | 18.9 | 16.6 | 52.1 | 106.3 |
| | | 8.3 α | 38.7 | | | | 30.2 α | 38.5 | 77.2 |
| | | 17.0 ε | 30.0 | | | | 41.2 ε | 27.5 | 57.5 |
| | | 42.6 δ | 5.4 | | | 59 | 7.4 δ | 1.3 | 6.7 |
| | | 46.3 β | | | | | 8.4 β | | |
| | | 47.8 γ | 47.0 | +0.7 | | | 9.0 γ | 8.7 | +0.3 | +1.0 |

- α Cam Mrg HP 1275

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | 0 | 22.6 | | | 8 | 2 | 47.3 | | |
| | | 27.4 | | | | | 51.4 | | |
| | 1 | 1.3 ε | | | | 3 | 23.3 ε | | |
| | 1 | 12.0 α | | | | | 33.3 α | | |

B

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | 1 | 34.4 | | | 8 | 3 | 45.8 | | |
| | | 38.6 | | | | | 50.2 | | |
| | | 6.6 α | | | | | 19.2 α | | |
| | | 17.7 ε | | | | | 30.4 ε | | |

β, δ α ε dis.

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1884phae.proj.1318w



Oct. 8. 1885.

H.B. 1445 α Cancri

10 40 8 11 37.7
41.8
12 7.6 ε
15.7 α
31.2

B.J. α and ε

8 12 54.6
58.9
24.6 α
29.5 ε
48.7 δ

8 14 10.2
14.3
36.9 ε
50.4 α
3.08

15 19.6
24.0
46.7 α
56.0 ε
16 13.8

B.f.C. 1182
10 53 13.0
54 13.0

B 394
10 57 0.0
58 0.0

11 18 52
8 12
11 27 4
3 47
11 23 17

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Feb. 8, 1885

Disappearance of Satellite I. Pt. Obs.

11 14 19 34.0. reject

Photometer R; compared with sat. II.

| | | | |
|---|---|---|---|
| 11 | 16 | 1 | 40.3 |
| | | 13 | 127.6 |
| | | 30 | 45.0 |
| | | 45 | 123.4 – |
| | | 57 | 37.6 |
| 17 | | 8 | 126.5 |
| | | 26 | 38.8 |
| | | 34 | 123.7 – |
| | | 43 | 44.3 |
| | | 55 | 130.5 |
| 18 | | 10 | 31.9 |
| | | 24 | 126.8 – |
| | | 39 | 37.5 |
| | | 51 | 123.6 |
| | | 59 | 38.9 |
| 19 | | 9 | 124.0 – |
| | | 22 | 35.6 |
| | | 31 | 129.0 |
| | | 40 | 40.6 |
| | | 49 | 124.8 – |
| | | 56 | 37.6 |
| 20 | | 5 | 125.7 |
| | | 15 | 36.2 |
| | | 23 | 125.4 – |
| | | 33 | 39.1 |
| | | 40 | 121.6 |
| | | 50 | 41.7 |
| 21 | | 3 | 124.6 – |

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| | | | |
|---|---|---|---|
| 11 | 21 | 18 | 40.0 |
| | | 24 | 121.8 |
| | | 32 | 41.4 |
| | | 43 | 120.7 |
| | | 51 | 47.4 |
| | 22 | 0 | 117.4 |
| | | 10 | 53.6 |
| | | 16 | 118.3 |
| | | 22 | 50.2 |
| | | 29 | 116.4 |
| | | 40 | 59.8 |
| | | 46 | 115.6 |
| | | 56 | 52.5 |
| | 23 | 3 | 108.8 |
| | | 10 | 57.0 |
| | | 22 | 97.2 |
| | | 31 | Suspected |

Limit of visibility

| | | | |
|---|---|---|---|
| 11 | 23 | 58 | 58.8 |
| | 24 | 41 | 98.4 |
| | | 16 | 67.9 |
| | | 40 | 104.0 |

B & C 1182

| | | | |
|---|---|---|---|
| 11 | 32 | 12.6 | |
| | 33 | 12.6 | |

B 394

| | | | |
|---|---|---|---|
| 11 | 36 | 0.0 | |
| | 37 | 0.0 | |

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