RG
11366
400

1880phae.proj.1404R

Fundamental Stars.
Circle Readings
A. 1880
From Feb. 29/1880 to Apr. 29/1880

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1980phae.proj.1404R

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A25

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Feb 29 1880

Gemini
6h 30m 43s
+16° 30'

Obs.
R E
R
No. 5
rem.

Rej 5 wires

Can Maj
6 39 49
−16 33

R R
0 2 216 213
330 334
424 423
347 348

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1880phae.proj.1404R

2

Feb. 29 1880 C = 46.711

η Aquilae

19 40 30
+10° 19'

	R	R	R
10 0	37.0	37.2	37.6
	46.0	46.2	46.1
	51.8	51.7	52.0
	47.2	47.3	47.5
	1820	1824	1832
	45.50	45.60	45.80

α Aquilae

19 44 53
+8° 33'

	R	R
55 1	57.4	57.7
	6.7	7.1
	12.0	12.2
	6.0	6.1
	2621	2631
	55.25	5.78

A-1

β Eridani

5 1 54
−5 15'

	R	R
40 4	3.7	3.6
	13.8	13.7
	19.4	19.7
	13.9	13.9
	508	509
	12.70	12.73

β Orionis

5 8 44
−8 21'

	R	R
45 3	36.5	37.1
	46.2	46.9
	54.8	55.0
	47.0	46.6
	1845	1856
	46.13	46.40

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2000phae.proj:1404R

Feb. 29-Mar 1 C=46.711

C=46.711

Sun

22 51 54

−7° 14'

	R	
25	46.6	46.8
	56.1	56.6
	3.9	3.4
	56.0	56.0
	2226	2226
	55.65	55.65

Pr. limb in R.A.

Upper limb in S

ζ Can. Maj

6 39 49

−16 03

	R	R
0 0	54.2	54.2
	7.8	7.7
	120	12.8
	646.2	
	2604	2609
	5.10	5.23

Σ Can Maj

6 58 52

−28 40

	R	R
15 1	28.8	28.2
	41.7	41.2
	43.2	43.2
	388	390
	1525	1516
	38.13	37.90

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1880phae.proj.1404R

4

Mar 1 1880

α Virginis

13 18 49

−10 32

	R	R
0 0	20.8	21.0
	29.2	29.4
	37.1	36.9
	29.7	29.0
	116.8	116.3
	29.20	29.08

α Bootis

14 10 8

+19 49

	R	R
40 0	5-9.7	0.0
	8.2	8.2
	10.7	10.2
	6.0	6.2
	24.6	24.6
	6.15	6.15

J Scorpii

15 53 11

−22 16

	R	R
40 3	58.2	57.8
	9.8	10.0
	12.7	12.8
	5.3	5.2
	26.0	25.8
	6.50	6.45

B, Scorpii

16 5 24

−19 24

	R	R
55 1	2.7	2.8
	15.2	15.8
	16.9	16.8
	9.7	9.3
	44.5	44.7
	11.13	11.18

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1880phae.proj.1404R

2 Librae
14 44 11
−15 32

	R	R
0 0	41,3	41,8
	52,8	53,0
	55,4	55,6
	49,7	50,0
	209,7	04
	52.43	50.08

ν Serpentis
15 38 18
+6 48

	R	R
40 0	38,5	38,7
	48,1	48,0
	49,8	49,7
	44,4	44,8
	180,8	181,2
	45.20	45.30

ν Ophiuchi
16 50
−3 23

	R	R
50 2	48,1	48,2
	59,0	59,1
	0,3	0,5
	53,8	53,8
	221,2	221,6
	55.30	55.40

A−1

ε Scorpii
16 21 59
−26 10

	R	R
35 1	40,7	40,2
	53,0	52,6
	54,2	54,0
	47,8	47,7
	195,7	194,5
	48.93	48.63

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1880phae.proj.1404R

Mar 1 1880

7 Oph.		2 Oph.	
16 30 30		17 32 7	
−10 19		−15 34	
R	R	R	R
45 2 33,7	33,1	0 2 30,0	29,4
42,5	43,0	41,3	41,8
47,4	47,7	43,2	43,0
39,0	39,2	36,0	36,0
16 26	16 30	15 05	15 05
40.65	40.75	37.63	37.63

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1880phae.proj.1404R

Mar-1-2

Sun

22 55 38

-6 52

35 0 56.8

7.0

9.4

27

25 59

3.98

Both limbs on RA

Lower limb for S

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1880phae.proj.1404R

8 Mar 2 1880

ζ Tauri

4 25 59
+16 16

R R

10 4 6.8 6.9
15.0 15.1
17.9 17.9
12.2 11.9
5 19 5 18
12.98 12.95

B Eridani

5 1 54
−5 15

R R

40 2 53.2 53.8
27 28
5.6 5.6
5 9 7 5 9 6
24 24
23 12 23 1.8
57.80 57.95
60.30 60.45

Mar 2 1880

S Orionis

5 25 50
−0 24

R

20 1 51.1
2.0
4.2
5 6.2
23 55
58.88

ε Leporis

5 27 44
+7 55

20 2 56.0
8.2
9.7
8.3
17 2
4.30

A 4 2 C

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1880phae.proj.1404R

B Orionis

5 - 8 44

- 8 2

R R

45 8 45.0 44.9
52.1 52.6
55.8 59.8
51.3 51.4
2102 2102
52.55 52.55

J Orionis

5 18 35

+6 14 R R

10 4 11.2 11.3
22.9 23.0
23.0 23.1
17.5 18.0
74.6 75.4
18.65 18.85

ε Orionis

5 - 30 4

- 1 17

45 1 21.8 22.5
32.8 32.8
35.2 35.1
29.4 29.1
1192 1195
29.80 29.88

A 3 2 C

κ Columbae

5 - 35 - 16

- 34 8

30 3 44.0 43.8
56.4 56.8
56.1 56.6
50.8 50.5
73 80
51.83 52.0

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1880phae.proj.1404R

Mar 2 1880

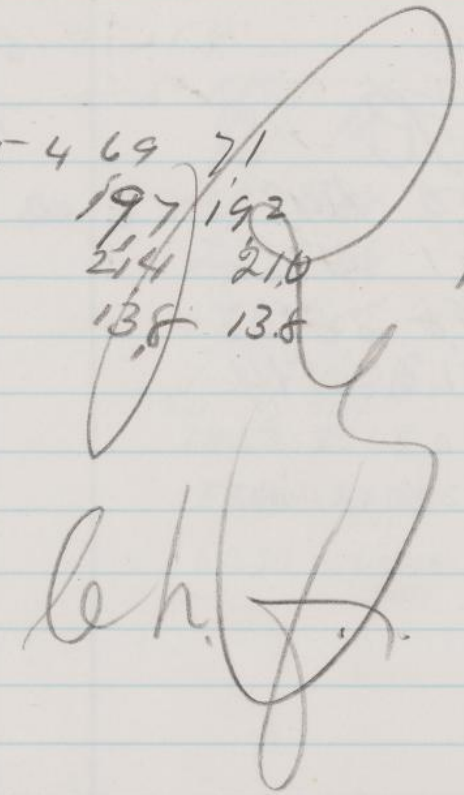
Cam Maj

6 3944 R-1633

RR

0 0 59.2 59.8
11.6 11.6
13.7 14.2
7.4 6.7
27.19 28.23
7.98 8.08

3 5 4 69 71
19.7 19.2
21.4 21.0
13.8 13.8



2 Ophi.
17 29 19
+2 39

R R R

5-0 0 6.8 7.1 7.2
14.2 14.1 14.1
14.3 15.2 14.1
9.3 19.7 9.7
4.46 4.64 4.51
11.15 11.60 11.28

λ Herculis C-46. 684
18 59 56
-5 3

R R

30 3 29.6 29.8
37.2 37.3
38.1 38.2
32.2 32.0
13.71 13.73
34.28 34.33

Rij 1.51

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1880phae.proj.1404R

Mar 2
3 Oph.
16 30 30 — 1019
R R

45 2 27,2 27,7
36,0 36,1
40,4 41,4
23,0 32,4
13,69 13,76
34.23 34.40

Mar 2
2 Oph.
17 32 7
— 15 34

0 3 27,1 27,7
36,1 36,2
39,4 39,3
32,2 32,8.
13,68 13,80
34.20 34.50

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1880phae.proj.1404R

Mar 2-3 C = 46.675

Within Limits for S

Sun

22 59 21

−6 28 R

40 0 47.8

56.1

58.0

51.8

2137

53.43

Mars

nOpp.

17 03 27

−8 34 R

0 2 30 3 30.5

40.1 41.2

45.1 43.6

38.4 39.1

1549 1547

38.73 38.68

Jupiter

1 44 30

+10 19 R

5 4 29.6 29.9

38.8 38.8

42.1 42.1

39.1 38.8

1496 1496

37.40 37.40

Jupiter

1 44 23

+8 23 R.

55 0 39.8 39.1

47.0 47.4

51.6 51.5

46.7 46.6

1843 1846

4608 4615

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1880phae.proj.1404R

α Herculis

17 5 18

+14 32

R R

55 3 41.0 41.4
49.9 49.7
52.9 52.6
46.7 46.7
1905 1904
47.63 47.60

A.S. & fall.

Lyr.

17 29 A

#2 39 R R

50 0 8.2 8.7
16.0 16.8
19.7 19.2
14.7 15.0
586 597
14.65 14.93

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1880phae.proj.1404R

March 4, 1880

Mar 3-4 1880

Sun $\odot = 346.675$

Lower limit for δ

45 4 55.3
2.7
11.3
5.3
25 4 6
3.65

Both limits in R.A.

Lost A_1 (1) 2 and (3) Rej (3)

51 Ophiuchi.

$A_1 - A_9$

α 6^h 43^m 45^s

$+87°$ 14

R R

15	0	53.6	6.3
		58.8	11.0
		2.7	14.9
		2.0	14.4
		23 7 1	466
		59.28	11.65

$A_1 - A_9$

Lost 7 1

δ Can. Maj

7 3 28

-26 12

R R

40	0	27.6	28.1
		40.5	40.4
		48.6	48.4
		42.0	42.2
		158 7	159 1
		39.68	39.78

Lost A_{+1}

β Can Min.

7 20 35

$+8$ 32

R R

55	2	2.5	3.2
		14.4	15.1
		22.7	22.7
		14.2	14.3
		538	553
		13.45	13.83

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1880phae.proj.1404R

Mar 4 1880
α Can Min
6 58 52
– 28 40

	R	R
15 1	28.1	28.1
	40.6	40.7
	47.2	47.5
	43.0	42.3
	158.9	158.6
	39.73	39.65

Lost first 3 wires

	R	R
*	19.4	26.4
	24.0	30.7
	27.7	34.5
	28.0	4.8
	99.1	156.4
	24.78	39.10

*After long rattle

α Gem.
7 26 52
+32 9

		R	R
20	0	1.0	1.2
		8.8	8.9
		16.2	16.9
		13.0	13.0
		39.0	40.0
		9.75	10.0

α Can Maj
7 32 58
+5 32

		R	R
55	1	44.0	43.9
		56.4	56.3
		1.9	2.1
		56.2	56.4
		218.5	218.7
		54.63	54.68

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1880phae.proj.1404R

March 4. 1880

β Gem

7 37 55

+28 17

R R

10	0	6.5	7.0
		14.4	14.0
		20.1	20.1
		17.0	17.1
		5.80	5.82
		14.50	14.58

ν Argus

8 2 23

−23 57

V R

20	4	54.0	53.7
		7.4	8.0
		15.6	15.6
		7.7	7.7
		24.7	25.0
		6.18	6.25

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1880phae.proj.1404R

Mar. 6 1880

ζ Herculis

16h 54m

+31° 9'

	R	R
2v 1	52.3	52.5
	58.1	58.7
	1.8	1.8
	0.2	0.0
	2324	2330
	58.10	58.25

ζ Ophiuchi

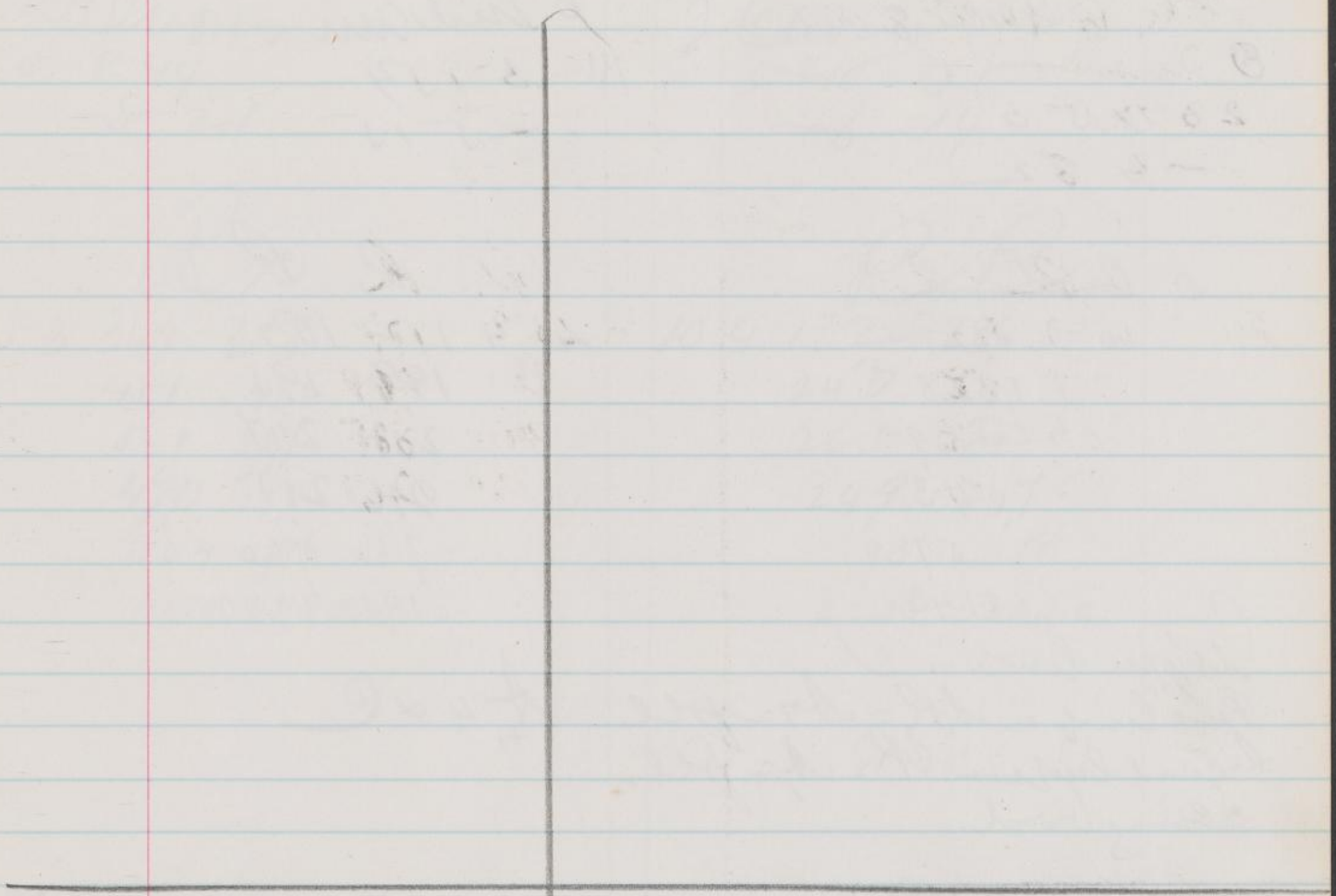
17 3 27

−15 34

	R	R
0 2	16.4	17.7
	28.3	28.9
	34.0	33.5
	26.0	26.4
	105.2	106.5
	26.30	26.63

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1880phae.proj.1404R

March 8, 1880

E

23 17 5 3
−4 32

⊙ ~~Upper limb~~

40 4 42.7
52.8
55.9
54.3
57
51.43

Upper limb in ✓
First limb in A.R. = Azzolle
Second limb in A.R. = Azzolle,
Seing bad.

β Andromedi
5 1 53
−5 15

R R
40 4 11.2 10.3
19.9 19.5
23.8 24.7
21.6 21.5
7 65 7 60
19.13 19.00

A
+1 4 α C

1880phae.proj.1404R

B Orionis

5 8 44
−8 21

L R

45-8 36.2 35.7
45.1 45.2
52.1 51.9
47.0 47.0
180.4 179.6
45.10 44.90

ζ Orionis

5 10 07
+6 14

R R

10 4 132 136
24.7 24.3
26.5 26.2
24.9 24.7
93 88
22.33 22.20

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1880phae.proj.1404R

22 Mars 1880

Orion

R

50 1 49.0
5.98
3.9
8.2
23.29
58.23

ε Leporis

R

50 0 25.9
38.11
4.13
38.0
14 3 3
35.83

Ab. ∝ e

κ Orionis

5 42 1
−9 4 6

R M

10 0 52.4 52.9
2.0 2.1
8.0 8.2
3.0 3.1
5.4 6.3
1.35 1.58

R

5 0 40.5 40.7
5.20 5.18
5.35 5.38
10.3 10.7
19 6 3 19 7 0
49.08 49.25

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1880phae.proj.1404R

Delphini

R

40 1 290
396
434
402
1527

38.18

A, a e

α Can Maj

6 39 49
−16 33

R R N

0 0 51.3 51.8 51.8
3.5 3.9 3.8
5.2 5.4 5.6
1.7 2.1 2.6
24 18 24 32 24 33
60 45 60.80 60.85
60.62 60.85

δ Can Maj

3 28

−26 12

N N R R N

30 59.8 40 32.0 40.0 30.9 30.8
10.0 41.6 42.0 42.7 42.4
11.7 41.6 41.0 44.2 44.2
7.4 39.9 41.0 41.0 41.0
28.9 1581 1582 1588 1584
7.23 39.52 39.55 39.70 39.60
39.56 39.62

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1880phae.proj.1404R

β Can Min

W	R	R	W	W	W
55 2 6.1	55.3 20.7	20.2	20.5	~~21.0~~	20.0
13.7	29.6	29.8	30.5	30.4	30.0
14.6	30.6	30.7	31.4	30.6	30.9
11.1	27.0	27.2	~~29.0~~	26.0	27.8
4 5 5	1079	1079	~~1094~~	1090	1087
11.38	26.95	26.95	~~27.85~~ 27.35	26.75	27.18

26.95

α Can Min

7 32 58

+5 32

W	W	R	R	W	W	W	W
55 2 52.2 3 6.6	55 3 6.4	6.4	5.2	5.7	5.5	6.1	6.1
3.6	16.8	17.9	18.2	17.5	17.5	17.2	16.9	17.1
0.0	16.5	15.6	15.4	15.9	15.6	15.4	15.6	15.3
58.1	~~16.2~~	13.9	14.0	13.1	13.8	13.6	13.9	13.4
~~23.89~~ 54 3		538	540	517	516	517	525	519
~~58.48~~ ~~+6.07~~ 13.55		13.45	13.50	12.92	13.15	12.95	13.12	12.98

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1880phae.proj.1404R

L Argus
8 2 23
-23 57

~~C H I~~

Ch. f.

α Virginis
13 18 49
-10 42

0 0 14.8
22.8
26.5
20.2
8 43
21.08

α Bootis
14 10 8
+19 49

		R	R
40	0	52.3	50.7
		56.6	59.1
		57.4	57.7
		56.0	56.6
		2.3	24.1
		55.83	56.03

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1880phae.proj.1404R

Mag – 10

March 10, 1880

⊙

23 27 – 15

– 3 46

25 4 40.8
51.3
49.8
48.2
19.01
47.53

Some lines in ~

α Leonis

10 1 56

+12 53

W	R	R	W
55 1 47.1	55.2	13.7	14.2
53.9	22.4	22.8	22.1
54.6	21.9	22.2	22.8
52.4	20.8	20.5	19.5
20.80	7.89	79.2	78.6
52.00	19.72	19.80	19.65
	19.76	19.65	

Seeing very fine indeed both limbs R.A.

β Leonis

11 42 53 +15 15

W	W	R	R	W
15 0 5.3 1 53.0	53.1	52.9	52.6	
13.5	1.0	1.2	1.2	0.7
11.1	0.9	0.5	0.4	0.7
10.2	57.7	57.9	58.2	58.0
40.1	232.6	232.9	232.7	232.0
10.02	58.15	58.22	58.18	58.00
	58.18		58.09	

ε Leonis

12 3 57 – 21 57

W	W	R	R	W
53.2 1′ 2.1	2.0	1.9	1.8	
3.1	11.1	12.8	12.3	12.1
4.1	13.3	13.2	12.9	13.3
58.4	8.9	9.2	9.2	8.5
248.8	35.4	37.2	36.3	35.7
2.20	8.85	9.30	9.08	8.92
	9.08	9.19		

last 1st wire

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1880phae.proj.1404R

3 Leonis

10 ~~09~~ 57
+24 1

W	R	R	W
~~25 3~~ ~~25-9 3~~ ~~8.9~~ 25.9	25 4 41.8	41.8	42.1
~~30.5~~ - 31.9	49.2	49.6	49.2
30.5	46.2	46.8	47.3
31.6	47.8	47.2	46.9
119.9	24.3	25.4	26.5
29.98	46.08	46.35	46.38
	46.21		46.38

δ Leonis

11 7 40
+21 11

W	R	R	W
15 3 21.9	4 55.3	55.8	56.1
26.7	4.2	4.1	4.4
27.3	0.9	1.2	1.3
28.3	2.1	2.0	1.9
26.2	2.5	3.1	3.7
26.55	0.62	0.78	0.92
	0.70		0.92

δ Corvi

12 23 37 −15 50

W	W	R	R
15 3 59.9	20 0 15.1	15.0	14.8
10.6	25.2	25.1	25.0
9.3	24.3	24.7	24.8
4.8	26.0	21.1	21.2
24.6	~~26~~ 24	59	5.8
1.15	~~21.15~~ 21.10	21.47	21.45
		21.46	

β Corvi

12 28 2
−22 44

W	W	R	R
	36.31		
20 1 42.8	2 [43.7]	35.2	35.3
15.4	45.6	46.1	46.0
52.9	46.0	46.2	46.2
49.0	42.1	41.8	42.3
16.01	17.00	93	98
	42.50		
40.02	~~46.0~~	42.32	42.45
	42.50	42.38	35.7
			42.8

last first 2 lines

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1880phae.proj.1404R

Mar 10 1880

ζ Virginis

12 35 32 −0 47

	W	W	R	R	W
15 1	11.4	2 22.1	21.7	21.5	22.5
	18.8	30.4	30.8	30.2	30.0
	19.0	30.9	31.0	31.2	30.4
	15.0	36.8	27.2	27.0	27.1
	4.2	1202	1107	1099	1100
	16.05	20.05	27.68	27.48	27.50
		27.50			
		1102	27.58		
		27.55			

δ Virginis

12 49 30

+ 4 3

	W	W	R	W
25 1	54.3	3 3.3	2.3	2.7
	3.9	11.6	11.6	12.0
	5.99	8.7	8.6	9.0
	58.5	7.4	7.4	6.9
	23.66	3.20	2.99	3.06
	59.15	8.00	7.48	7.65
		7.82	7.48	

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1880phae.proj.1404R

ε Vir

12 56 9

+11 37

W R

SZ 2 56.3 50412.7

47 22.2

28 21.4

59.9 18.2

2432 745

60.80 18.62

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1880phae.proj.1404R

Mar 11 1880

α Aquilae

19 44 43

+8 23

	R	R
55 1	485	485
	566	567
	558	560
	527	529
	138	141
	5 3.45	5 3.53

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1880phae.proj.1404R

♂ Mai 11-12 1880

23 32 35
– 2 58

10 0 28.1
36.4
36.0
33.1
1339
33.48

Keplerian in δ

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1880phae.proj.1404R

Mars Data

β Orionis

5 8 44

— 8 21

	W	W	R	R	W
35 3	20.7	20.7			
	30.4	30.3			
	32.3	32.7			
	26.3	26.3			
	109.7	110.0			
	27.42	27.50			

ζ Orionis

5 15 38

~~Title~~ 14

	W	W	R	R	W
0 4	18.7	5 23	1.3	1.2	2.0
	30.3	13.6	13.8	13.9	13.1
	28.7	11.1	10.3	11.2	12.1
	24.2	7.4	7.8	7.7	6.6
	101.9	34.4	33.2	34.0	33.8
	25.48	8.60	8.30	8.50	8.45
			8.52	8.40	

Lost the stars

ζ Orionis

5 34 39

— 2 0

	W	W	R	R	W
15 3	24.5	4 44.2	43.3	43.2	43.5
	34.2	54.6	54.1	54.7	54.0
	35.8	55.0	54.8	54.3	54.7
	30.6	49.6	50.1	49.9	49.5
	125.1	203 4	202.3	202.1	201.8
	31.28	50.85	50.58	50.52	50.45
		50.65	50.55		

κ Orionis

— 5 42 1

— 9 43

	W	W	R
55 0	19.8	1 52.5	52.1
	27.2	0.5	1.7
	29.9	4.5	4.7
	24.8	58.6	59.2
	101.7	237 5	237
	25.42	59.38	59.43

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1880phae.proj.1404R

α Leporis

5 27 24

−17 55

W	W	R	
8 22,8	4 13,4	10 3	15.3
33,2	21,9 ?		27.2 ?
33,6	26,8		27.6
28,8	22,2		23.0
118.4	86.3		93.1
29.60	21.58		23.28

ζ Orionis

5 30 4

−1 17

W	W.	W	W
35 4	50.0	1 27,6	26.2 26.3
57,8	35,8		36.0 36.0
04	36,4		36.6 36.9
47	32		32.6 32.7
2,89	1310		1314 131.9
2.22	32.75		32.85 32.98

Long. 15° 32

Ayac.

ε Orionis

5 4 8 37

+ 7 m 23

	W	W	R	R	W
55 0	22,3	1 34,3	33.3	33.2	33,3
22	25,6	42,1	42.5	42.1	41,7
	26,3	42,1	41.0	41.1	41,2
	22,0	37,3	37.7	37.7	37.4
	16 2	1538	1545	1541	1536
	24.05	38.95	38.63	38.52	38.40
		38.67	38.57		

δ Ursæ Min.

W	W	W	W
55 2 24.1	3 11.7	9 2	59.2
27.4	44.5	12.6	2,9
24.7	11.9	8.5	58,8
23.6	10.1	6.7	56,9
198	82	37.0	2378
24.95	12,05	9.25	59.46

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1880phae.proj.1404R

Mar 15 1880

u Gem

6 15 39

+22 34

	n	W	R	W
40 4	1.0	0 27.7	27.8	28.1
	10.9	35.8	35.8	34.9
	5.1	32.4	32.2	31.9
	5.9	32.9	32.3	32.0
	22.9	88	81	126.9
	5.73	32.20	32.02	31.72
		31.96	32.02	

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1880phae.proj.1404R

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1880phae.proj.1404R

March 16—17

☉ C = 44.419

☆ 23 50 53
— 6 59
PW W

0 1 35.8	3 10.6		
43.4	19.3		
44.7	20 0		
—	16 3		
	65.7		
	16.42		

Mar 17, 1880

β Eridani

5 1 54
— 5 15

W	W	R	R
30 2 26.7	3 44.3	43.8	44.0
33.6	53.4	53.4	53.4
36.0	54.5	53.3	54.3
31.1	49.9	50.2	50.9
126.4	202.1	200.7	202.6
31.60	50.52	50.18	50.65
			50.42

Leung Wood.
1st line in R A = 4, A 4
2nd line in R.A. A 8 9 A -1
Both lines in ∧

1 β Gem
7 37 55
) +28 19

W	W	R	R	W
55 4 42.4	113.2	12.8	12.3	12.4
49.0	18.4	18.8	19.7	18.3
46.1	16.2	16.2	16.2	16.3
44.9	15.9	16.3	16.5	16.1
182.4	237	64.1	247	231
45.60	15.92	16.02	16.18	15.78
	16.85	16.10		

ν Argus
8 2 23
— 23 57

W	W	R	R	W
10 4 23.1	0 46.2	46.2	46.2	46.1
34.6	57.2	57.8	58.0	56.7
35.0	57.6	57.7	57.9	57.3
29.3	52.1	52.7	53.8	52.2
120	213 213 3	214.4	255.9	212.3
30.50	52.88	53.60	53.98	53.08
		52.98	53.79	

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1880phae.proj.1404R

Mar. 17, 1880

α Orionis

5 48 37

W W R W W

55 0 4.8 25 39.1 55 1 40.0 40.3

12.9 48.5 48.3 48.3

12.5 48.0 48.1 48.2

9.0 44.5 44.3 44.1

39.2 180.1 180.7 180.9

9.80 45.02 45.18 45.22

45.20

α Can Min

7 32 58

+ 5 32

W W W R

45 1 11.4 2 45.4 45.8

22.0 57.1 57.7

20.6 54.6 55.0

18.4 51.4 52.0

72.4 208 5 210 5

18.10 52.12 52.62

α Hydrae

9 21 38

− 8 8

W W R R W

25 1 11.1 2 49.9 49.6 48.8 49.8

17.2 58.8 59.0 59.0 58.9

19.5 0.4 0.6 0.8 0.2

13.2 54.2 53.7 54.1 53.6

61 40 222 3 222 9 222 7 222 5

15 35 55 82 55 72 55 68 55.62

55.71 55.70

ε Leonis

9 38 59

+ 24 20

W W R R W

55 4 3.4 0 34.9 34.7 34.4 34.3

10.6 41.2 41.9 42.0 41.4

7.9 39.1 39.4 39.3 39.4

6.3 38.6 38.9 39.8 38.9

28.2 1538 1549 1555 1540

7.05 38.45 38.92 38.87 38.50

38.48 38.79

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1880phae.proj.1404R

March 17, 1880

ζ Leonis

10 9 57
+24 1

W	R
15 2 46.7	15.4
53.3	7.1
50.6	15.8
48.9	12.0
199.5	50.3
49.88	12.58

γ' Leonis

10 13 18
+20 27

W	W	R	R	W.
50 1 40.1	3 ~~10.9~~	10.8	10.8	10.9
49.6	18.8	19.0	19.1	18.9
46.2	16.7	16.7	16.5	16.3
44.8	15.1	15.2	15.1	14.2
207	215	217	215	203
45.18	15.36	15.42	15.38	15.08
	15.23	15.40		

pr. star

γ Virginis

12 35 32
−0 47

W	R	R	W
5 3 40.0	~~4.2~~	3.7	3.3
12.1	14.0	18.0	12.2
12.2	12.9	12.2	12.2
7.3	~~11.3~~ 7.3	7.2	6.9
35.6	55.6	36.1	34.6
Obs.? 8.9	9.88	9.02	8.65

Mean S & R.

Last A+1 and A−1 45

AA

δ Virginis

12 49 30
+ 4 3

W	W	R	R	W
15 0 18.1	1 40.5	40.3	40.3	40.4
28.1	50.5	51.0	51.5	50.5
24.1	46.7	46.6	46.7	~~44.7~~
22.0	~~43.2~~	44.6	44.2	44.3
92.3	181.9	825	827	181.6
23.08	45.48	45.62	45.68	45.40
	45.49	45.65		

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1880phae.proj.1404R

March 17, 1880

δ Leonis

11 7 40

+21 11

W	W	R	R	W
5 2 45.2	4 20.4	20.2	19.8	19.9
53.1	27.9	28.2	28.5	28.1
49.0	24.4	24.2	24.1	24.2
48.8	23.1	23.9	24.1	23.1
196.1	95.8	96.5	96.5	95.3
49.02	23.95	24.12	24.12	23.82
	23.88	24.12		

β Leonis

11 42 53

+15 15

W	W	R	R	W
0 4 0.0	4 41.5	40.6	41.0	41.5
8.2	49.0	49.8	50.0	49.2
6.3	48.6	48.5	48.6	48.9
1.2	44.0	44.7	44.7	44.1
15.7	183.3	226	184.3	183.7
3.92	45.83	45.90	46.08	45.93
		45.88	45.99	

ε Virginis

12 56 9

+11 37

W	R
40 2 13.4	3 40.6
22.4	49.9
20.1	47.2
26.2	43.8
82.1	181.5
20.52	45.38

α Virginis

13 16 49.

−10 32

W	R
4 5 4 58.6	5 0 4.3
6.8	14.6
8.6	15.2
1.8	14.0
255.8	48.1
39.5	12.03

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1880phae.proj.1404R

May 17 1880

α Aquilae

19 44 53

+8 33

R	R
45 06.3	6.4
15.4	15.8
10.9	11.4
8.8	8.0
424	424
10.60	10.60

β Cygni

21 7 47

+27 44

R	R
30 4 37.5	37.2
44.4	44.7
39.9	39.8
39.9	38.8
1620	1615
40.50	40.38

α Aquilae

19 44 53

+8 33

R	R
~~30 2 11.34~~ 40	5.9	5.9.9
	9.4	9.4
	7.9	8.0
	4.1	4.2
	~~5.9~~	
	2613	2615
	5.33	5.38

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1880phae.proj.1404R

March 17–18, 1880

⊙ 23 54 31
— 0 36

35 2 55.8 55 2 55.2
4.6 2.2
3.7 12.4
59.1 11.0
208
3.2 5.20
0.80

No. of Links in δ

Coef. $A_{+1} + A_2$ for 2nd Links.

β Eridani

5 1 54
— 5 15

	W	w	R	R
30 2	17.3	4 2.4	2.5	2.1
	25.1	11.2	11.0	11.6
	24.5	12.9	13.2	12.8
	23.6	8.3	8.7	6.7
	93.5	34.8	35.4	33.2
	23.38	8.70	8.85	8.30
				8.58

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1880phae.proj.1404R

March 11 1880

51 Ophei

6 43

+47°

R

35 1 37,2

46,4

43,0

44,5

171.1

42.78

Lost 1st 2 wires (6 shots)

ζ Can Min

6 52

−28 40

R R

0 4 48,4 48,8

1,2 1,2

0,2 0,2

56,4 56,7

2262 2266

56.55 56.65

ζ Gem

7 26 52

+32 9

R R

5 4 40,3 40,0

46,8 47,1

48,2 48,4

45,9 45,0

202 205

45.30 45.13

ζ Can Min

7 32 56

+5 32

R R

45 1 27,2 27,4

38,2 38,2

37,3 37,3

34,8 34,7

137,5 137,6

34.38 34.40

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1880phae.proj.1404R

S Cam Mag

D 328
−2612

	R	R
30 0	7,0	7,1
	187	192
	800	200
	154	15,2
	611	61.5
	15.28	15.38

B Cam Main

D 2035
+832

	R	R
45	1232	230
	324	32,2
	320	320
	286	284
	1162	1156
	2905	28.90

Olsen

7378
+2819

	R	R
55 4	503	508
	583	58,1
	561	564
	560	557
	560	
	207	211
	55.18	55.28

C Argus

8223
−2357

10 4	25,7	267
	392	389
	400	400
	347	343
	1396	1394
	34.90	34.85

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1880phae.proj.1404R

Mar 21. 1880

β Librae.

15 40 30 — 8 56

B P

10 4 7 0 6.4
1 6.1 1 5.7
1 9.4 1 9.7
1 2.2 1 2.2
5 4.7 5 4.0
1 3.68 1 3.50

α Coronæ Borealis.

15 29 34
+ 27
R R

10 1 47.7 47.2
54.2 55.0
52.1 52.2
51.0 51.1
205.0 205.5
51.25 51.38

β Scorpii

15 55 24
— 19 28

W W R R W
45 0 35.3 2 0.6 0.8 0.5 0.7
47.0 12.4 13.0 12.4 12.6
46.9 12.7 12.7 13.0 12.7
39.4 5.6 5.2 5.6 8.4
168.6 31.3 31.7 31.5 31.4
4215 7.82 7.92 7.88 7.85
7.83 7.90

δ Ophiuchi

16 8 0
— 3 23

W W R R W.
40 11.9 2 26.2 25.0 25.0 25.6
10.5 34.6 35.0 35.2 35.0
11.3 34.9 35.3 35.6 35.2
45 28.6 29.5 29.7 29.0
28.2 124.3 124.8 125.5 124.8
7.05 31.08 31.20 31.38 31.20
31.14 31.29

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1880phae.proj.1404R

March 21, 1880

α Serpentis

15 38 18

+ 6 48

	K	R
30 0	19.4	19.7
	30.6	30.6
	30.0	30.1
	23.6	24.0
	103.6	104.4
	25.90	26.10

δ Scorpii

15 53 11

−22 16

	W	W 6	R	R
30 3	30.6	4 5 7.4	56.2	56.0
	40.6	7.7	8.2	8.2
	42.4	8.9	8.5	9.0
	34.3	0.9	0.3	0.5
	147.9	25 8.9	253.2	253.7
	36.98	3.48	3.30	3.42
		3.48	3.36	

α Scorpii

16 21 5.9

−26 10

	W	W	W	R
25 1	9.9	2	33.5	32.5
	21.1		45.3	45.2
	20.9		44.2	44.9
	13.8		37.9	38.0
	65.7		160.9	160.6
	16.42		40.22	40.15

β Herculis

16 25 1

+ 21 45

	W	R	W
30 4	55.0	54.0	55.2
	3.1	3.3	3.1
	0.1	0.0	59.8
	57.8	57.7	57.3
	2360	2350	2254
	59.0	58.75	58.85

A 7 C

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1880phae.proj.1404R

Mar 2, 1880

ζ Ophiuchi

16 30 30

− 10 19

	W	W	R	R	W
35 1	54.5	3 27.7	26.8	26.3	27.6
	26	36.0	46.4	36.3	36.3
	5.2	38.7	39.1	39.0	38.6
	57.2	31.3	31.0	30.8	30.9
	239.5	133.7	133.3	132.4	133.6
	59.88	33.42	33.33	33.10	33.40
		33.41	33.21		

η Herculis

16 38 45

+ 39 9

	W	W	R	R	W
54	55.3	1 39.0	38.6	38.9	39.0
	0.2	43.9	44.2	44.1	44.0
	59.5	42.0	42.3	42.9	42.0
	56.5	40.9	40.7	41.0	40.9
	231.5	165.8	165.8	165.9	165.9
	57.88	41.45	41.45	41.48	41.48
		41.47	41.47		

κ Ophiuchi

17 29 19

+ 12 39

	W	W	R	R	W
35 4	31.2	0 59.4	59.4	59.5	59.7
	40.5	7.9	8.3	8.0	8.0
	39.1	6.7	6.6	6.8	6.4
	33.6	0.7	1.6	1.5	1.2
	14 47	25 47	25 5.9	5.8	5.3
	36.18	3.68	3.98	3.95	3.82
		3.75	3.96		

β Aquilae

19 45 22

+ 6 6

	R	R
10 1	56.6	56.6
	7.4	7.7
	4.2	4.2
	0.0	59.8
	82	85
	2.05	2.12

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1880phae.proj.1404R

March 21 1880

η Ophiuchi

17 3 27

−15 34

W	W	R	R	W
50 1 52.0	3 7.9	7.1	6.7	7.1
3.1	19.0	18.4	18.3	19.0
2.1	17.8	18.0	18.1	18.6
54.7	11.0	11.0	11.2	10.9
238.9	55.7	54.5	54.3	55.6
~~58.22~~ 57.98	13.92	13.62	13.58	13.90
	13.91	13.60		

α Herculis

17 9 18

+14 32

W	W	R	R	W
45 1 47.3	3 18.8	18.1	18.2	18.6
55.1	26.9	27.0	27.6	27.0
54.8	26.4	26.6	26.6	26.7
48.6	20.3	20.2	20.7	19.0
2058	924	91.9	93.1	91.3
51.45	23.10	22.98	23.28	22.82
	22.96	23.15		

α₂ Capricorni

20 11 20

−12 55

R	R
10 3 40.7	40.7
57.2	57.8
52.7	52.9
44.2	43.8
1888	1892
47.20	47.30

Ref A. Lost A 23456

γ Cygni

Lyr B

+39 52

R	
25 1 52.6	50.9
56.4	56.4
54.8	54.9
52.3	54.8
141	140
53.52	53.50

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1880phae.proj.1404R

48

Mar 21 1880

ζ Cygni

Nov 9 19

+30 31

R	R
45 35 3.2	53.7
54.4	54.7
58.6	59.0
56.5	56.3
27.7	28.7
56.93	57.18

ζ Cygni

29 747

+29 44

R	R
30 4 50.7	50.6
58.9	58.8
55.5	55.8
52.8	52.8
17.7	18.0
54.43	54.50

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1880phae.proj.1404R

β Aquilae

2, 2, 11

– 42 6 R

20 4 58.2 57.5

8.6 11.9

4 8.8

2 1.0

256.4 256.5

4.10 4.12

Font 1 & 2

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1880phae.proj.1404R

Mar. 22 1880

⊙

	W	W
0 3	21.2	35 1 23.7
	30.1	32.6
	31.3	32.9
	27.6	30.0
	110.2	119.2
	27.55	29.80

~~Lost 2d wire~~

Lost 1st wire in 2nd line

Brt limbs in S + N.A.

Seeing very fine.

α Can Min

7 32 58

+ 5 32

	W	W	R	R
45 1 8	9 2	39.5	39.3	39.3
	20.0	57.5	57.3	57.9
	20.9	59.4	57.6	57.7
	15.6	47.0	47.0	47.1
	65.4	189.4	189.2	190.0
	16.35	47.35	47.30	47.50
			47.40	

β Gem

7 37 55

+ 28 19

	W	W	R	R	W
55 4	50.2	1 7.3	6.8	7.5	8.0
	59.5	14.4	14.9	15.2	14.4
	59.4	15.4	14.9	15.1	14.9
	56.1	11.6	12.1	12.7	13.0
	225.2	48.7	48.7	50.5	50.3
	56.30	12.18	12.18	12.62	12.58
			12.38	12.40	

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10000phae.proj:1404R

March 22, 1880

δ Can. Maj

7 3 28

−26 12

W	W	R	R	W
[25-3?] 53.0	0 89	9.1	9.4	9.4
4.8	20.3	21.4	20.8	20.3
7.6	23.7	23.7	23.7	23.1
1.4	17.4	18.7	19.0	17.9
246.8	70.3	72.9	72.9	70.7
1.70	17.58	18.22	18.22	17.68
	17.63	18.22		

β Can Min

7 20 .35

+8 32

W	W	R	R	W
451 38.9	2 48.1	47.9	48.9	49.0
49.0	58.8	59.7	59.7	59.0
50.6	0.1	0.3	0.6	0.5
45.0	54.2	54.9	55.0	54.4
183.5	221.2	222.8	224.2	222.9
45.88	55.30	55.70	56.05	55.72
	55.51	55.88		

ν Argus

10 8 2 23

−23 57

W	W	R	R	W
10 4 27.9	0 46.1	45.9	46.1	46.7
40.4	58.0	58.7	58.8	59.7
42.5	0.3	59.9	0.7	0.4
35.8	53.7	54.1	54.3	54.0
146.6	218.1	218.6	219.9	217.9
36.65	54.52	54.65	54.98	54.48
	54.53	54.82		

ρ Serpentis

14 15 29

−2 51

R	R
10 3 53.4	53.4
4.7	4.6
53.3	53.0
59.5	59.4
243.3	242.4
0.83	0.60

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1880phae.proj.1404R

Mar 22 1880

Sagittarius

#5756 - 4627

	R	R
40 0	17	13
	140	141
	150	148
	85	82
	395	384
	968	960

Aquilæ

1940 20

+19 19

	R	R
55 4	62	60
	158	154
	152	153
	120	116
	492	483
	230	1208

α Aquilæ.

19h 54

— 1 11

	R	R
20 3	318	313
	418	421
	424	432
	360	370
	1520	1536
	3800	3840

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1880phae.proj.1404R

α Aquilæ
1944.0
+8°03

R	R
45-0 178	174
25.2	27.4
26.4	26.4
21.6	21.4
93.0	92.6
23.25	23.15

β Aquilæ
1944.22
+6.6

R	R
16 1 48.1	48.9
55.3	55.4
57.7	57.8
53.5	54.0
218.6	220.1
54.65	55.03

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1880phae.proj.1404R

54 Mar 23 1880 C = 44.352

α 12 43
+1 28

W W

35 4 55.0 54.2
55.6 55.1
53.9 52.6
51.0 52.0
205.5 203.9
51.38 50.98

× Aquilæ
18 59 54
−5.2
K

24 1273
1363
1357
1338
1371
34.28

J Aquilæ
1880.20
+10.9
K K

55 4 135 137
238 241
257 259
906 210
836 847
20.90 20.18

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1800phae.proj.1404R

ε Aquil
19 44 53
+8 23

	R	R
45-0	13,1	13,1
	23,0	22,3
	23,3	23,4
	19,1	19,0
	78,5	78,1
	19.63	19.53

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1880phae.proj.1404R

Mar 24 1880 c = 44,374

(1)

W	W
15° 1 11.2	45° 3 23.4
21.0	33.6
21.1	36.0
22.9	30.0
76.2	1230
19.05	30.75

Both lines in Σ R4.

Seeing pretty good

Mar 24
2 Syndics
1940-30 +1019

R	R
0 0 27.1	26.8
33.9	34.1
31.8	32.2
27.0	26.7
1198	1198
29.95	29.95

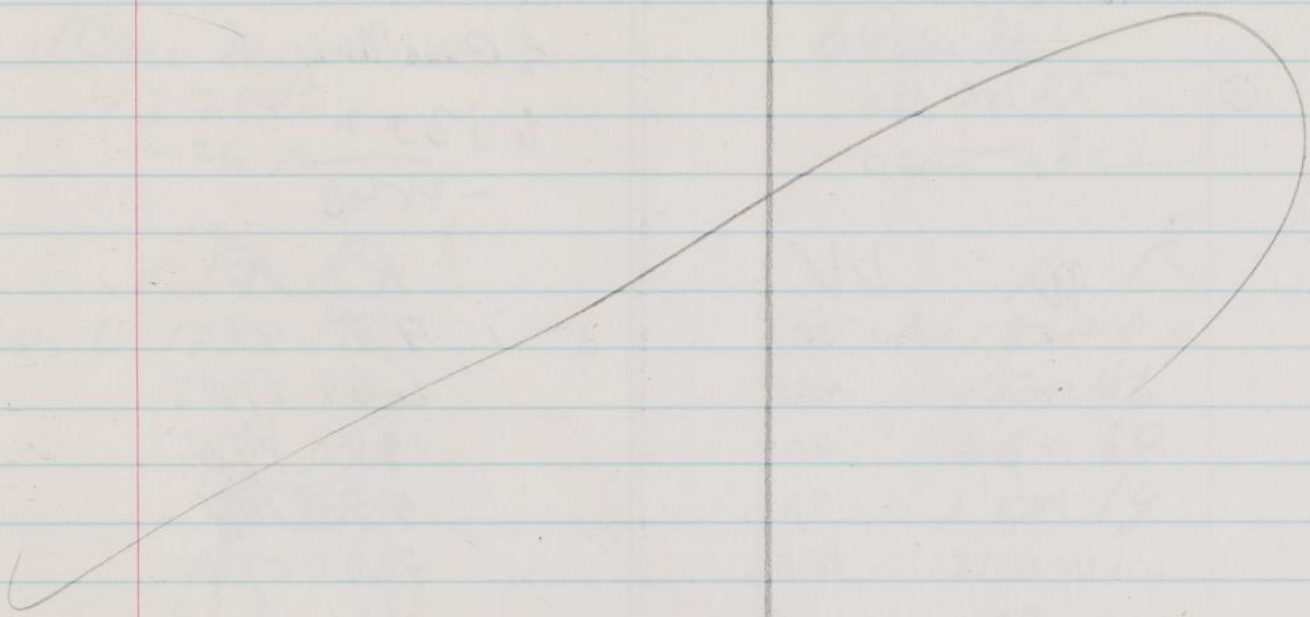
---

2 Syndics
1 8 44 53
+8 38

R	R
45° 0 13.2	13.1
21.1	21.0
17.8	17.8
12.0	12.1
64.1	640
16.03	16.00

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1880phae.proj.1404R

Mar. 25 1880

⊙ 0 19 59.26
+ 2 10

W	W
50 2 46.0	25 0 36.9
54.1	40.5
48.7	41.6
46.0	37.4
194.8	161.4
48.70	40.35

Mar 25 1880 C = 64.345

ζ Cam Mag
6 53 52
−2 40

R	R
6 − 1 9.5	9.4
20.4	21.1
17.5	17.0
9.9	10.4
57.3	57.9
14.32	14.48

ζ Lyn.
7 26 52
+3 29

R	R
5 4 42.9	43.0
~~48.1~~	48.4
44.8	45.3
40.7	41.3
17.5	18.0
44.38	44.50

ζ Cam Min
7 32 58
+5 32

R	R
45 1 24.2	24.4
34.2	34.3
29.4	29.7
25.0	25.7
11 2.8	11 4.1
28.20	28.53

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1880phae.proj.1404R

March 25, 1880

σ Can Maj

7328

−26 12

		R	R
30	0	173	170
		278	282
		257	256
		197	200
		90.5	90.8
		22.62	22.70

β Can Min

D 2535

+5 32

		R	R
45	3	1,8	2.0
		103	106
		66	69
		1,4	1,9
		21.1	21.4
		5.28	5.35

β Gem

7 0755

+28 9

		R	R
55	4	424	430
		452	458
		438	437
		421	423
		17.5	18.8
		44.38	44.70

ν Argus

8 2 23

−23 57

		W	W		R	R	W
10	4	22.7	0	47,9	47.3	47.1	47.7
		32.5		57,5	57.7	58.2	57.0
		30.6		54,9	55.1	55.0	54.8
		22,8		48,0	49.9	49.0	48.6
		108.6		208.3	210.0	209 3	208 1
		27.15		52.08	52.50	52.32	52.03
				52.06	52.41		

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1880phae.proj.1404R

March 25, 1880

α Hydrae

9 21 38

−8 8

	W	W	W
25 1	19.9	2.41.4	41.8
	26.4	49.7	49.4
	25.6	48.6	48.6
	18.4	48.2	41.2
	9 0 3	18 0 9	18 10
	22.58	45.23	45.25

C = 44 34 35

ε Leonis

9 38 59

+24 20

	W	W	R	R	W
55 4	13.0	0 38.2	37.6	38.0	38.2
	17.6	43.2	44.0	44.0	43.4
	13.5	38.4	38.6	38.0	38.5
	10.4	36.1	36.0	35.9	36.9
	54.5	155.9	156.2	155.9	157.0
	13.62	38.98	39.15	38.98	39.25
		39.12	39.01		

δ Leonis

11 7 40

+21 11

	W	W	R	R	W
5 2	7.3	4 25.1	26.8	26.9	27.0
5 3	1.2	33.5	34.2	34.1	33.9
	59.0	27.8	28.1	28.2	27.8
	1.6	25.1	25.4	25.6	25.3
	9.1	11 8.5	11 4.5	11 4.8	11 4.0
	2.28	28.38	28.62	28.70	28.50
		28.44	28.66		

β Leonis

11 42 53

+15 15

	W	W	R	R	W
0 4	15.0	0 39.4	39.1	39.4	39.6
	21.6	45.8	46.3	46.1	45.6
	18.6	42.2	42.7	42.3	42.3
	12.1	35.5	36.5	36.3	36.6
	67.3	162.9	164.6	164.1	164.1
	16.82	40.72	41.15	41.02	41.02
		40.86	41.08		

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1880phae.proj.1404R

α Leonis
10 1 56
+12 33

W	W	R	R	W
45 0 21.2	1 50,8	50.6	50.8	50,4
27,9	57,5	58.4	58.0	57,8
24,1	54,0	54.7	55.0	54,5
18,3	49,4	48.2	48.9	49,2
91.5	211,7	211,9	212,7	211,9
22.88	52,92	52,98	53,18	52,98
	52,55	53.08		

ζ Leonis
10 9 57
+24 1

W	W	R	R
15 3 46.6	4 21,0	20.2	20.1
53,2	27,1	27.0	27.3
47,6	21,6	21.7	21.9
45,1	19,0	18.7	18.3
192.5	88.7	87.6	87.6
48.12	22.18	21.90	21.90
	22.18	21.90	

ε Corvi
12 3 57
-21 57

W	W	R	R	W
40 4 14.1	0 32,0	31.5	32.0	32,0
23,6	41,5	41.7	41.8	41,1
21,4	38,4	38.9	38.5	37,4
11,6	31,0	31.0	31.8	30,7 (31.7)
71.1	142,9	143.1	144.1	142,2
17.78	35,72	35.78	36.02	35,55
	35.63	35.90		35.60

δ Corvi
12 23 37
1 -15 50

W	W	R	R
5 32 5.8	4 45,2	44.2	44.7
37.9	55,1	55.8	55.8
35.0	51,3	51.8	52.0
27,6	43,9	43.7	43.1
129.3	195.5	195.5	195.6
32.32	48.88	48.88	48.90

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1880phae.proj.1404R

62 Mar 25 1882 C = 44,345

β Leonis

12 28 2

−22 44

M	M	R	R	M
0	15.8	28.0	23.2	23.2	23.0
	25.3	32.8	32.8	33.1	32.6
	22.9	30.1	30.5	30.6	30.1
	14.0	22.6	22.4	22.2	22.0
	7.8.0	108.5	108.9	109.1	107.7
	19.5	27.12	27.22	27.28	26.92
		27.02	27.30		

γ Virginis

12 35 32

− 0 47

M	M	R	R	M
5.0	41.4	8.4	8.2	8.0	8.3
	48.7	16.3	16.6	16.8	16.6
	46.0	13.6	13.8	13.9	13.9
	40.6	7.1	7.1	6.7	7.3
	176.7	45.6	45.7	45.4	46.5
	44.18	11.40	11.42	11.35	11.62
		11.51	11.38		

α Virginis

13 18

−10 32

M	M	R
45.4	53.6	22.7	22.2
	14	29.3	29.8
	16	29.4	29.8
	52.0	21.9	21.4
	228.6	103.3	103.2
	57.15	25.83	25.80

α Aquilæ

19 44 3

+8 33

R R

45	0	9.4	10.0
		17.0	17.0
		12.7	13.2
		8.0	8.2
		47.6	48.4
		11.90	12.10

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1000phae.proj.1404R

March 25, 1880

δ Virginis

12 49 30

+ 4 3

	M	M	R	R	M
15 0	16.6	48,2	48.3	48.4	48,8
	25.6	58,5	59.1	58.7	58,0
	19.9	51,7	52.3	52.1	51,6
	16,4	48,0	48.0	48.6	47,4
	78.5	2054	207.7	2078	2058
	19.62	51.35	51.92	51.95	51.45
			51.40	51.93	

ε Virginis

12 58 9

+ 11 37

	M	M	R
40 2	24 0	3 45,4	45.1
	32.1	53,2	53.0
	28.4	496	49.1
	22,2	42,6	42.2
	10 67	1908	189 4
	26.68	47.70	47.35

ν3 Aquilæ

19 9 22

+ 66

	R	R
10 3	11.0	11,2
	20,6	20,8
	15,3	15,3
	10,7	10,7
	5.76	580
	14.40	14.50

Lon. A 41 1 2

θ Aquilæ

20 5 4

− 1 11

	R	R
25 3	40,2	40,2
	49,2	49,8
	460	461
	39,8	39,8
	17,52	1759
	43.80	43.98

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1880phae.proj.1404R

64

Mar 26 1880

☿ C = 44,346

6 23 37
+2 33

	W		Nv
35	4 11.8	0	2 22.1
	21.3		30.4
	15.0		25.6
	11.2		21.1
	593		992
	14.83		24.80

Both limbs δ, R A.
Seeing very fine

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Mar. 28 1880

@ = 44,346

2 Cam Mi

73258 +5 37

R R

45 132.6 333

43.5 43.7

39.1 39.7

34.3 34.3

150.7 151.0

37.68 37.75

Pleiem

73705

+38 9

R R

55 4 44.1 47.8

54.6 54.9

50.0 50.1

46.5 46.7

20.14 20.15

50.35 50.38

Ch. J.

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Mar. 29 1882

δ Ursae Min C = 44.346

18 18
+8636

R R R R R R R R

40 3 49.7 07.4 56.0 14.4 43.0 15-0 6.2 5.9
51.9 8.5 58.7 4.0 6.3 15.3 15.7
45.6 8.3 52.1 58.7 59.8 14.2 14.1
47.2 58.8 54.3 59.0 1.1 8.0 8.2
1944 2385 2241 2431 2515 437 439
48.60 59.63 55.28 0.78 2.88 10.93 10.98

Lost A+1

δ Aquilae
19 40 30
+10 19

R R
55 3 58.5 58.6
8.0 8.3
5.2 5.2
1.4 0.9
253.4 253.2
3.36 3.30

α Aquilae
19 44 53
+8 33

R R
45 0 12.7 12.7
20.5 21.2
17.0 17.4
12.4 12.0
62.6 63.1
15.65 15.78

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Mar 29 1880

C = 44,35 –

σ Sagittarii

α 4746 – 26 27

	R	R
40 2	5766	5770
	817	824
	63	68
	12	1,2
	2528	2534
	3.20	3.35

γ Aquilae

10 19 + 6

– 5 3

	R	R
90 1	348	348
	435	437
	414	414
	3372	868
	1569	1567
	39.23	39.18

β Aquilae

19 49 22

	R	R
10 1	401	407
	495	499
	460	456
	416	421
	1772	1778
	44.30	44.45

δ Aquilae

20 5 4

– 1 11

25 – 4	542	542
	417	412
	24	27
	578	573
	2391	2384
	59.78	59.60

Lost – A 71

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1880phae.proj.1404R

Mar 29 10 W ☉ = 44,352

ℒ Cop.

20 11 20

−12 5 5

	R	R
10 2	25,4	28,2
	38,7	38,8
	34,0	35,2
	30,9	31,0
	137,0	137,2
	34,25	34,30

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72

Mar 30 1880 $\odot$ = 34,3 -2

$\odot$

0 38 10

+4 6

	W	W
55 0	48.2	25 3 49.1
	57.3	57.9
	57.7	52.8
	50.4	50.5
	207 6	2103
	51.90	52.58

Both limbs in S & R. A.

Seeing very good.

β Eridani

5 1 54

−5 15

	W	W	R	R	W
30 2	52,6	3 46.9	48.0	48.0	48.6
	06	57.4	57.3	56.7	56.9
	07	56.9	57.2	57.4	56.9
	55,8	57,1	51.7	51.4	51.9
	229.7	214 4	214.2	213.5	214.3
	57.42	53.60	53.55	53.38	53.58
		53.59	53.47		

δ Orionis

5 25 50

−0 24

	W	R
40 1	19.5	2 42.8
	29.4	53.1
	29.4	53.1
	23.8	46.3
	102.1	195.3
	25.52	48.82

ε Orionis

5 30 4

−1 17

	W	W	R	R	
35 0	2.8	1 10,0	9.8	9.8	
	12,7	~~20,0~~ 19,5	19.9	19.9	
	11,7	20,0	20.2	20.1	
	8,6	13,1	13.6	13.6	
	32.8	63,6	63.5	63.4	
	8.20	15.65	15.88	15.85	
			15.87		

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1880phae.proj.1404R

β Orionis

5 8 44
− 8 21

	W	W	R	R	W
3 5 3	14.2	40.6	40.5	40.0	40.3
	23.0	49.7	50.3	50.0	50.0
	24.9	51.9	52.0	51.8	51.6
	17.4	44.4	43.8	43.8	44.0
	19.5	186.6	186.6	185.6	185.9
	19.88	46.65	46.65	46.40	46.48
			46.56	46.53	

γ Orionis

5 18 38
+ 6 14

	W	W	R	R	W
0 3	49.5	4 10.9	10.9	11.0	10.8
	1.2	22.1	22.6	22.5	22.0
	58.6	19.8	20.3	20.3	20.0
	53.0	15.0	15.3	15.2	15.3
	22.3	67.8	69.1	69.0	68.1
	55.58	16.95	1.728	17.25	17.02
			16.99	17.26	

κ Orionis

5 42 1
− 9 43

	W	W	R	R	W
0 0	33.9	1 55.3	55.2	55.6	55.9
	42.9	4.8	5.4	5.1	4.8
	45.5	7.6	7.8	7.8	7.8
	38.0	59.1	59.3	59.3	59.4
	16.03	24.68	24.71	7.8	7.9
	40.08	1.70	1.92	1.95	1.98
			1.84	1.93	

α Orionis

5 48 37
+ 7 23

	W	W	R	R	W
5 5 0	11.7	1 35.1	34.0	34.1	34.6
	21.0	43.4	44.1	44.0	43.5
	19.1	41.8	42.2	42.2	42.3
	13.0	36.1	36.2	35.9	36.1
	6.48	15.64	15.65	15.62	15.69
	16.20	39.10	39.12	39.05	39.22
			39.16	39.08	

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1880phae.proj.1404R

Mar 30, 188

ω Gem

6 15 39

+22 34

W	W	R	R	W
7.8	0 28.6	28.0	27.3	28.2
15.3	35.6	36.1	36.6	36.0
11.2	32.0	32.9	32.2	32.1
18.6	29.4	30.2	30.2	30.3
52.4	125.6	7.2	126.3	126.6
13.10	31.40	31.80	31.58	31.65
	31.53	31.69		

C = 44.352

γ Gem

6 30 43

+16 30

W	W	R	R	W
45 3 34.8	4 54.9	53.9	53.7	54.5
43.4	2.5	3.1	3.4	3.0
46.4	2.8	2.8	3.2	3.0
37.6	56.3	57.6	57.4	56.2
159.2	236.5	237.4	237.7	236.7
39.80	59.12	59.35	59.42	59.18
	59.15	59.38		

α Hydrae

9 21 38

−8 8

W	W	R	R	W
25 1 26.4	2 46.4	45.7	45.4	46.2
34.3	54.4	55.1	55.0	54.2
35.3	56.0	56.9	56.5	55.8
27.5	48.4	48.4	48.0	48.3
123.5	205.8	206.1	204.9	204.5
30.88	51.45	51.52	51.22	51.12
	51.28	51.37		

ε Leonis

9 38 59

+24 20

W	W	R	R	W
55 4 13.9	0 35.6	36.3	36.4	36.4
21.0	43.0	43.3	43.6	43.2
18.2	40.5	41.0	40.6	40.0
16.0	38.0	38.2	38.2	39.0
69.1	157.1	158.8	158.8	158.6
17.28	39.28	39.70	39.70	39.65
	39.47	39.70		

Ch. f

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1000phae.proj.1404R

2 Can Maj

6 39 49

— 16 33

W	W	JR	JR	W
50 0 40.1	2 48	4.1	4.3	4.7
51.4	16.1	16.7	16.1	16.3
50.8	15.0	15.9	15.7	15.5
45.4	9.0	9.4	9.0	9.0
18.7	44.9	46.1	45.1	45.5
46.92	11.22	11.52	11.28	11.38
	11.30	11.40		

ε Can Maj

6 53 52 1V

— 28 40

W	W
5 1 30.0	30.1
41.7	41.9
39.1	39.2
33.5	33.0
14.43	14.42
36.08	36.05

No

2 Com Ber

15 29 34

+24 7

R	R
10 3 14.9	14.8
21.8	22.0
18.4	18.9
16.5	16.1
7.16	7.18
17.96	17.95

2 Serpentis

15 38 10

+6 48

R	R
30 0 21.3	21.6
31.3	31.2
29.3	29.8
24.0	24.0
10.59	10.66
26.48	26.65

Sont - A+1

Trouble with the illuminator

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1880phae.proj.1404R

March 30 1880

ν Scorpii

~~B Scorpii~~

15 53 11

−22 16

R R

15 4 56.7 57.0

57.2 57.0

57.2 57.9

57.4 57.4

2525 2533

3.13 3.33

C = 44, 352

B Scorpii

15 58 24

−19 ~~28~~ R

45 0 45.3 45.4

56.7 56.9

56.0 56.3

48.4 48.0

2064 2066

51.60 51.65

B Herculis

16 25 1

+21 45

R R

35 0 8.2 8.3

16.0 16.0

10.6 10.5

10.2 10.1

450 449

11.25 11.23

A −1

ζ Ophi.

16 30 30

−10 19

R R

35 2 28.2 28.1

37.0 37.4

39.6 39.3

31.2 30.8

1360 1356

34.00 33.90

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1880phae.proj.1404R

ν Oph
16 8 0
−3 2 3

RR
40 1 11,5 11,4
21,3 21,2
20,5 20,6
14,0 14,3
67,3 67,5
16.83 16.88

ν Scorpii
16 21 59
−26 1 0

R B
25 1 11,0 10,6
22,2 22,5
21,3 21,6
14,2 14,0
68,7 68,7
17.18 17.18

h Herculis
16 9 8 45
+39 9

R R
10 0 10,2 10.0
10,8 10,5
11,3 11,3
11,2 11,2
48,5 48,0
12.13 12.00

hOph,
17 3 27
−15 34

R R
50 1 51,1 51.0
2,3 2,8
0,8 1,0
53,9 54.0
2281 2288
57.03 57.20

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1880phae.proj.1404R

March 30 1880

ζ Herc.

17 9 18

+14 32

	R	R
45 1	55.3	55.6
	4.6	4.3
	3.0	3.0
	57.2	56.9
	2401	2398
	0.03	59.95

C = 44.352

20m.

17 29 19

+12 39

	R	R
35	44	89
	58.0	58.2
	57.6	57.7
	56.0	56.4
	2147	2149
	53.68	53.73

σ Sagitar.

18 47 46

−26 27

	W		W	R	R	W
40	3	0.0	4	21.1	20.2	20.0	20.9
		10.6		32.5	32.0	31.8	32.2
		8.7		30.4	30.6	31.1	30.8
		1.4		23.2	23.0	22.9	23.0
		20.7		1072	1058	1058	1069
		5.18		26.80	26.45	26.45	26.72
				26.76	26.45		

γ Aquilae

18 59 56

−5 3

	W	W	R	R	W
20	1	38.9	2	59.2	58.2	58.2	58.5
		46.7		6.9	7.3	6.8	6.5
		45.1		5.5	5.6	5.9	5.5
		39.0		59.8	59.2	59.4	59.3
		169.7		2514	2503	2503	498
		42.43		2.85	2.58	2.58	2.45
				2.65	2.58		

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1880phae.proj.1404R

δ Sct Mi

18

	Q	R	R	R	R	R	R		R	R	
40	32.8	25.3	43.6	43.6	58.9	55.2	10.1	103	47.2	47.0	
	27.7	27.7	45.5	45.1	1.6	1.4	12.2		57.9	58.1	
	22.9	22.9	40.3	40.3	56.5	56.1	7.9		56.8	56.6	
	21.8	22.2	40.7	40.6	56.3	56.6	12.6		48.9	48.7	
	98.2	98.1	170.5	174.6	233.3	233.3	42.8		210.8	210.4	
	24.55	24.53	42.63	43.65	58.33	58.35	10.70		52.70	52.60	

R Serpentis

18 15 29

+ 15 56

β Cygni

19 25 50

+ 27 42

	W	W	R	R	W	
35	1	19.8	24.1	48.0	48.3	49.2
		25.6	54.1	~~47.8~~ 54.8	55.0	54.2
		21.2	50.6	51.0	51.2	51.0
		17.9	47.7	47.0	47.8	47.9
		84.5	201.5	200.8	202.3	202.3
		21.12	50.38	50.20	50.58	50.48
				50.43	50.39	

γ Aquilae

19 40 30

+ 10 19

	W	W	R	R	W	
55	4	8.30	28.9	29.0	29.1	29.0
		16.5	36.3	37.4	37.2	36.0
		14.7	35.0	35.2	35.2	35.0
		9.2	29.9	30.2	31.0	30.5
		48.7	130.1	131.8	133.5	130.5
		12.18	32.52	32.95	33.12	32.62
				32.57	32.03	

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1880phae.proj.1404R

c = 44 352

Mar 30 1880

α Aquilae

19 44 53

+ 8 33

	W	W	R	R	W
45 0	41.0	1 325	32.2	32.2	32.9
	50.0	41.0	41.3	41.6	41.0
	49.3	38.3	38.2	39.0	38.8
	41.7	32.7	32.9	32.7	32.0
	180.0	144.5	144.6	145.5	144.9
	45.00	36.12	36.15	36.38	36.18
		36.15	36.27		

Lost first 20.2 m.

β Aquilae

19 49 22

+ 6 6

	W	W	R	R	W
10	56.0	3 9.0	8.8	8.0	8.9
	5.1	18.1	19.0	18.9	18.2
	2.0	14.7	14.9	15.0	14.8
	57.2	9.5	9.7	9.7	9.2
	24 03	5 23	5 24	5 16	5 11
	00.08	13.08	13.10	12.90	12.78
		12.98	13.00		

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1880phae.proj.1404R

δ Aquilae

20 5 4

−1 11

W	W	R	R	W
25 3 32.630	0.1	59.5	59.0	59.5
41.1	8.1	8.2	8.7	7.5
39.6	7.3	7.3	7.4	7.1
32.3	0.8	0.8	0.7	0.9
14 5 6	16.3	25 5 8	25 5 8	25 4 6
36.40	4.08	3.95	3.95	3.65
	3.87	3.95		

α² Cap

20 11 22

−12 45

W	W	R	R	W
10 3 15.4	4.0	4.3	4.2	5.2
23 9	14.7	15.3	15.3	14.8
25 1	15.9	16.1	16.4	16.4
14.5	5.0	5.2	5.5	5.0
9 9.2	40 6	40 9	41 4	41 4
24.8	10.15	10.22	10.35	10.35

α 5 & C.

10.25 10.28

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Mar 31. 1880

α Hydrae
9 21 38
−8 8

	W	W	R	R	W
25 1	17.8	2 42.6	42.7	41.9	42.4
	26.2	51.4	51.8	52.1	51.4
	28.7	53.1	53.7	53.4	53.1
	19.6	45.0	44.2	44.3	45.1
	92.3	192.1	192.4	191.7	192.0
	23.08	48.03	48.10	47.93	48.0
		48.01	48.01		

C = 44.352

ε Leonis
9 38 59
+24 20

	W	W	R	R	W
55 4	17.0	0 31.7	31.8	31.9	31.9
	24.2	38.6	39.1	38.9	38.4
	21.8	37.2 37.3		36.8	36.6
	18.8	33.2	33.9	34.0	33.3
	81.8	139.7	142.1	141.6	140.2
	20.45	35.18	35.52	35.40	35.05
		35.12	35.46		

γ¹ Leonis
10 13 18
+20 27

	W	W	R	R	W
50 2	21.6	3 15.3	15.6	15.0	15.5
	30.0	23.9	24.0	23.8	24.2
	28.5	21.9	22.3	22.3	22.0
	25.0	18.0	18.0	18.0	17.8
	105.1	79.1	79.9	79.1	79.8
	26.28	19.78	19.98	19.78	19.95
		19.87	19.88		

δ Corvi
12 23 37
−15 50

	W	W	R
5 3	20.9	4 51.2	49.3
	31.6	1.6	2.1
	30.6	0.8	1.0
	23.3	53.9	54.0
	10 64	227.5	226.4
	26.60	56.88	56.60

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1880phae.proj.1404R

α Leonis
10 1 56
+12 33

W	W	R	R	W
45 0 45.8	49.1	48.7	49.0	49.5
54.4	58.0	58.8	58.2	58.2
54.6	58.1	58.0	57.8	58.0
47.0	50.8	50.7	50.9	51.0
281.8	2160	2162	2159	2167
50.45	54.00	54.05	53.98	54.18
	54.09	54.02		

ζ Leonis
10 9 57
+24 1

W	W	R	R
15 2 54.0	4 16.3	15.9	
1.1	23.9	24.0	
58.9	21.2	21.8	
55.8	18.6	18.6	
2298	80.0	80.3	
57.45	20.00	20.08	

β Corvi
12 28 2
−22 44

W	W	R	R
0 1 17.8	2 34.6	34.0	34.1
28.1	45.0	45.8	46.0
29.6	46.1	46.3	46.0
21.9	38.6	37.4	38.0
97.2	164.3	163.5	164.1
24.30	41.08	40.88	41.02
	41.08	40.96	

δ Virginis
12 49 30
+4 3

W	W	R	R	W
15 0 30.8	1 41.3	42.0	41.9	42.2
40.4	53.0	53.0	53.2	53.3
37.1	49.8	50.4	50.3	50.3
31.4	44.9	45.0	45.6	45.6
1397	1890	1904	1910	1914
34.92	47.25 47.60 ~~31.50~~ 47.07		47.75 ✓	47.85 ✓
	47.25			

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Mar 31, 1880

ε Virginis

12 56 9

+ 11 37

	N	W	R	R
40	2	21.4	3 41.3	41.1
		31,1	50,1	50.8
		30,2	49,5	49.3
		24,0	43,1	43.0
		10 67	184,0	184 2
		26.68	46.0	46.05

C = 44,352

α Virginis

13 18 49

−10 32

	N	W	R
45	4	57.1	1 15,0 14.7
		6,0	23,2 23.8
		9,0	27,3 27.5
		599	180, 17.8
		2520	8355 83.8
		300	2088 20,95

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April 1880

α Aurigae

5 4 56

+45° 53'

	W	W
5 4	31.1	3 16.6
	41.6	24.3
	39.9	21.8
	34.6	18.7
	1472	814
	36.80	20.35

Seeing moderately good

Both limbs in 5 + R.A.

C = 44.352

β Orionis

5 8 44

−8 21

	W	W	R	R	W
11 11	10.5	4 38.3	38.5	37.7	38.0
	184	46.8	46.5	47.0	47.0
	242	46.0	53.2	52.9	53.3
	175	46.0	45.4	45.1	45.0
	766	183 3	183 5	182 7	183.3
	1765	45.83	45.88	45.68	46.82
		4582	45.76		

ν Orionis

5 29 31

−6 0

	W	W	R	R	W
15 2	23.9	3 35.3	34.1	33.7	34.1
	34.3	43.5	44.4	44.3	44.5
	35.5	48.0	48.6	48.2	48.0
	31.6	41.1	40.8	40.9	40.6
	1283	79	7.9	7.1	7.8
	32.08	41.98	41.98	41.78	41.95
		41.96	41.85		

κ Orionis

5 42 1

−9 43

	W	W	R	R	W
0 0	34.0	6 52.9	52.3	52.0	53.1
	42.6	2.0	2.3	2.8	2.4
	49.5	9.0	9.2	9.1	9.0
	41.1	59.5	59.5	59.7	59.5
	1672	2434	2433	36	40
	4180	0.85	0.83	0.90	1.0
		0.92	0.86		

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γ Orionis

5 18 38
+6 14

W	W	R	R	W
45.9	12.2	13.0	13.1	14.0
50.4	23.7	24.2	24.8	23.4
59.6	25.5	26.0	26.0	25.4
57.3	20.0	20.2	20.3	20.1
2182	814	834	842	829
54.55	20.35	20.85	21.05	20.72
	20.57	20.98		

δ Orionis

5 25 50
−0 24

W	W
32.8	27.9
42.4	8.0
46.5	6.0
40.5	9.1
161.7	1.0
40.42	00.25

ζ Orionis

5 48 37
+7 23

W	W	R	R	W
0.2	40.8	41.9	41.3	41.3
11.8	51.9	52.3	52.6	52.1
15.0	54.4	54.6	54.7	54.6
16.6	47.0	46.3	46.4	46.4
438	194.1	195.1	195.0	194.4
10.95	48.52	48.78	48.75	48.60
	48.56	48.76		

ω Gem

6 15 39
+22 34

W	W	R	R	W
56.5	30.1	30.3	30.1	30.6
6.1	88.6	39.4	39.2	38.8
5.9	39.5	39.6	40.4	39.6
3.0	37.1	37.0	37.0	37.0
251.5	25.3	26.3	46.7	26.0
2.88	36.33	36.58	36.68	36.50
	36.42	36.63		

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1880phae.proj.1404R

C = 44.352

Apr 1, 1880

γ Gem

6 30 43

+16 30

α Can Maj

6 39 49

−16 33

W	W	R	R	W
45 3 20.7	4 435	43.6	42.9	438
31.1	528	53.0	53.1	526
35.2	573	57.2	57.6	577
28.3	495	49.1	49.2	490
11 53	20 28	20 29	20 28	20 33
28.82	50.70	50.72	50.70	50.82
	50.76	50.71		

W	W	R	R	W
50 0 38.3	1 56.7	56.6	56.3	57.0
50.3	8.3	9.0	9.0	8.8
58.0	11.0	12.0	11.8	11.8
46.1	5.0	4.4	4.7	4.6
18 77	6 21 0	6 24 20	6 24 8	6 26 2
46.92	5.25	5.50	5.45	5.55
	58.40	58.47		

β Can Min

7 20 35

+8 32

ζ Gem

7 26 52

+32 9

W	W	R	R	W
45 1 43.9	2 55.0	54.3	55.0	55.1
53.2	6.5	7.2	7.3	6.9
57.2	7.9	8.5	8.5	8.0
50.6	0.6	0.0	0.3	0.0
20 71	25 00	00	25 11	00
51.78	2.50	2.50	2.78	2.50
	2.50	2.64		

W	W	R	R	W
5 42 7.5	1 2.8	2.8	2.9	3.1
35.7	9.9	10.9	11.4	10.9
39.0	14.1	14.8	14.7	13.7
34.1	9.6	9.3	9.7	9.4
13 63	36.4	37.8	38.7	37.1
34.08	9.10	9.45	9.68	9.28
	9.19	9.56		

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1880phae.proj.1404R

ε Can Maj
6 53 52
−28 40

W	W	R	R	W
50 8.1	1 10.3	10.7	10.3	11.1
18.1	22.6	23.7	23.4	23.0
20.4	25.1	25.4	26.0	25.5
14.0	18.6	18.2	17.9	18.5
6.06	76.6	78.0	77.6	78.1
15.15	19.15	19.50	19.40	19.52
	19.33	19.45		

δ Can Maj
7 3 28
− 26 12

N	W	R	R	W
30				
33 47.4	0 46	4.7	4.8	5.1
1.4	16.7	17.8	18.0	17.0
3.8	21.0	21.1	21.1	20.7
67.5	13.4	13.2	13.6	13.0
2291	557	568	575	558
57.28	13.92	14.20	14.38	13.95
	13.94	14.29		

α Can Min
7 32 58
+ 5 32

W	W	R	R	W
45 1 23.0	2 36.1	36.1	36.0	36.9
35.1	47.8	48.8	49.0	49.0
36.6	49.0	50.2	50.2	49.8
30.8	44.0	44.0	43.9	44.0
55	1769	1791	1791	1797
31.38	44.23	44.78	44.78	44.92
	44.58	44.78		

β Gem
7 37 55
+28 19

W	W	R	R	W
55 4 39.11	1 11.9	12.8	12.7	13.1
48.3	20.3	20.9	20.8	20.0
49.1	21.1	21.3	21.2	21.0
44.4	17.6	17.7	17.3	17.6
1809	709	727	720	717
45.22	17.72	18.18	18.00	17.93
	17.83	18.09		

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1880phae.proj.1404R

April 1880

7 45 54
+30 59

W W R R W

20 0 21.4 / 38.9 39.9 39.7 40.0
30.4 48.2 48.8 49.2 48.0
31.0 48.8 49.6 49.0 48.9
28.0 45.5 46.0 46.0 45.9
11 08 18 14 18 43 18 39 18 28
27.70 45.35 46.08 45.98 45.70
45.52 46.03

C = 44.352

α Hydrae
9 21 38
-8 8

R R

2 - 1 23.9 24.1
83.5 34.1
39.0 35.2
30.5 30.9
12 73 12 8.3
31.82 32.08

Z Leonis
10 9 57
+24 1

R

15 - 24 47.7
56.5
57.0
52.3
21 35
53.38

Z Leonis
10 13 18
+11 27

R R

50 1 50.2 45.5
59.8 59.5
00 02
56.4 56.1
22 64 22 59
56.60 56.48

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1880phae.proj.1404R

ε Leonis

9 38 59
+24 20

	R	R
0 0	31.7	31.3
	39.9	40.0
	40.2	40.2
	37.2	37.1
	149.0	148.6
	37.25	37.15

κ Leonis

10 13 56
+12 33

	R	R
45 1	40.6	40.8
	52.9	50.7
	58.4	53.4
	46.9	46.0
	191.8	191.2
	47.95	47.80

2.41

---

3 λ Aq.

γ Aquilae

18 59 56
− 5 3

	W	W	R	R	W
20 1	58.5	2 52.8	52.4	52.7	52.2
	6.4	1.1	2.0	1.7	1.1
	8.3	3.1	3.1	2.9	3.4
	2.4	57.4	56.7	57.0	57.5
	25 5.6	234.4	234.2	234.3	234.2
	3.90	58.60	58.55	58.58	58.55
		58.57	58.56		

β Cygni

19 25 50
+27 42

	W	W	R	R	W
35 1	27.8	2 39.6	39.9	39.8	40.4
	33.8	46.1	47.1	47.0	46.2
	33.8	46.0	46.3	46.2	45.6
	31.2	43.4	42.5	43.3	43.2
	126.6	175.1	175.8	176.3	175.4
	31.65	43.78	43.95	44.08	43.85
		43.81	44.01		

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1880phae.proj.1404R

C = 44.352

Apr 1, 1880

γ Aquilae

19 40 30

+ 10 19

W	W	R	R	W
55 3	59.2	0 30.0	30.6	30.3	30.8
	8.1	39.5	40.2	40.0	39.0
	9.9	40.5	40.8	40.6	41.0
	4.9	36.1	35.6	36.0	36.8
	24 21	14 61	147 2	1469	147 6
	'0.52	36.52	3680	36.72	36.90
		36.71	36.76		

α Aquilae

19 44 53

+ 8 33

W	W	R	R
0 4.6	1 37.2	37.9	37.7
14.9	47.0	47.7	47.7
15.6	47.3	47.5	47.4
10.4	41.6	41.2	41.3
45.7	1731	1743	1741
11.42	43.28	43.58	43.53
	~~47.3~~ 43.28	~~43.42~~	43.55

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1880phae.proj.1404R

β Aquilae

19 49 22
+6 6

	W		W	R	R	W
10	1 58.1	3	8.4	8.1	8.1	8.9
	8.6		19.1	19.8	19.6	19.6
	8.3		18.6	19.0	18.8	18.9
	3.0		13.9	13.8	13.7	13.7
	25 8.0		60.0	60.7	60.2	61.1
	64.50		15.00	15.18	15.05	15.28
			15.14	15.12		

Θ Aquilae

20 5 4
— 1 11

	W	W	R	R	W
25 4	33.0	0 10.9	10.9	10.9	10.9
	43.4	20.1	21.1	21.2	20.2
	45.9	23.0	23.1	23.1	22.8
	37.6	17.0	16.1	16.8	16.6
	159.9	71.0	71.2	72.0	70.5
	39.98	17.75	17.80	18.0	17.63
		17.69			
	A 4 & C		17.90		

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1880phae.proj.1404R

Apr. 2 1880

0 49 5

+ 5 16

	W		W
45	1 39.9	15	4 40.0
	46.7		49.3
	46.5		50.1
	41.6		45.0
	17 47		15 44
A_2 ac	43.68		46.10

Both limbs in S + R. A.

Local - 1st wire of 2nd limb

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1880phae.proj.1404R

Ann.

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1880phae.proj.1404R

April

~~March~~ 3-4 1880

c =

⊙ 0 56 23

+ 6 2

W		W
0 0 34.4	30	3 35.5
44.1		46.6
52.0		58.3
44.8		46.7
1753		1873
43.83		46.52

Seeing pretty good
Lost A_2 and A_3 for
second limb.

---

51 Ophiuchi Lb.

6 43 45

9 1 26

δ Sagittarii

18 47 46

−20 27

R	P	R	R		R	R		R	R
25 0	23.2	12.7	5.0	4	19.0	15.4	13.8	40 2	50.1	49.8	~~47.0~~
	26.0	15.5	7.2		23.0	19.1	17.3		5.7	3.1	~~23.0~~
	32.1	21.8	13.2		29.0	25.5	23.8		13.2	18.6	
	28.9	17.7	10.7		25.0	21.0	19.0		4.8	4.9	
	110.2	68.7	36.1		96.0	81.0	73.9		25.8	25.4	
	27.55	17.18	9.02		24.00	20.25	18.48		6.295	2.85	

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1880phae.proj.1404R

c = 39.8

δ Musca c =
18 11 2
-68 37

40 3	413	558	458	483	526
	458	595	482	526	572
	513	61	545	591	26
	493	36	540	580	10
	1877	2450	2025	2180	2334
	46.92	61.25	50.62	54.50	58.35

η Serpentis
18 15 29
-2 56

15 0	27	24	
	128	129	
	240	240	
	155	152	
	550	545	
	13.75	13.62	

δ Aquilae
18 59 56
-5 13

2 1	568	568
	69	70
	169	170
	91	97
	2697	2705
	7.43	7.62

β Cygni
19 25 50
+27 42

W	W	R	R	W
35 1 24.5	2 34.4	37.3	37.3	38.0
30.8	445	45.1	44.9	449
38.7	530	53.2	52.9	529
35.0	484	48.7	48.3	487
90	1833	1843	1834	1845
32.25	45.83	46.08	45.85	46.12
	45.97	45.97		

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1880phae.proj.1404R

c = 39.8

Apr 4 1880

γ Aquilae

19 40 30

+ 10 19

	W	W	R	R
55 3	54.4	0 21.5	22.1	21.9
	4.8	30.5	30.8	30.9
	4.6	40.7	41.0	40.7
	8.0	35.0	34.9	35.0
	25.8	12.77	12.88	12.85
	2.95	31.92	32.20	32.13
		31.92	32.16	

α Aquilae

19 44 53

+ 8 33

	W	W	R	R
45 0	15.1	1 28.3	28.6	28.8
	24.0	39.1	39.0	39.2
	33.8	48.0	48.2	47.6
	26.1	40.9	41.0	41.2
	9.9 0	156.1	156.8	156.8
	24.75	39.02	39.20	39.20
		39.02	39.20	

α² Capricorni

20 11 20

−12 55

	W	W	R	R	W
10 2	26.0	3 42.7	42.5	42.1	43.0
	35.8	54.0	54.3	53.9	54.8
	48.6	5.6	5.9	6.2	5.6
	36.7	54.8	55.3	55.8	55.2
	1461	2171	2180	2180	2178
	36.52	54.28	54.50	54.50	~~54.86~~ 54.45
		54.36	54.50		54.45

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1960phae.proj.1404R

β Aquilae

19 49 22
+6 6

	W	W	R	R	W
10 1	38.4	2 52.9	57.0	56.7	57.9
	50.4	9.6	8.8	9.1	8.9
	58.5	17.0	17.1	16.7	17.0
	52.0	9.5	10.4	10.7	10.0
	1993	2730	2733	2732	2738
	49.82	68.25	8.32	8.30	8.45
		8.35	8.31		

Θ Aquilae

20 5 4
−1 11

	W	W	R	R	W
25 3	32.6	4 55.1	55.3	55.0	58
	42.9	5.7	6.3	6.1	6.0
	52.9	16.9	16.4	16.8	17.0
	44.8	7.3	7.9	7.7	8.0
	1732	250	259	256	258
	43.30	6.25	6.48	6.40	6.45
		6.35	6.44		

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1880phae.proj.1404R

April 4–5

⊙ 1h 0m 2s
+6° 25′

W	W
35 3 40.4	10 1 18.9
51.1	29.8
1.2	38.3
53.0	32.8
205.7	119.8
51.43	29.95

Both limbs in δ
last (of limb in RA
for second limb A+1 2 34 5.
A 1 2 A−1 4, 5

ζ Leonis
10 9 57
+24 1

W	W	R
15 2 46.1	4 5.0	5.3
56.2	15.2	15.9
5.0	23.3	24.0
57.7	16.1	16.8
225 0	602	620
56.25	15.05	15.5

c = 39.8

April 5, 1880
ζ Hydrae
9 21 38
−8 8

W	W	R	R	W
25 1 3.1	2 38.0	37.3	37.3	37.9
13.1	48.1	48.4	48.9	48.5
27.8	1.7	2.0	2.1	1.5
15.8	49.5	50.0	50.7	50.3
598	197.3	197.7	199.0	198.2
14.95	49.33	49.42	49.75	49.55
	49.44	49.58		

γ Leonis
10 13 18
+20 27

W	W	R	R	W
55 2 7.2	3 5.9	6.2	6.5	6.6
18.6	17.5	17.7	17.8	17.4
27.4	26.0	26.7	26.2	25.7
29.6	18.6	18.3	19.0	18.5
828	680	689	695	682
20.70	17.00	17.22	17.37	17.05
	17.03	17.29		

Pr. #

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1000phae.proj:1404R

ε Leonis

9 38 59

+24 20

	W	W	R	R	W
55 3	59.5	0 19.3	19.9	19.5	19.9
	8.6	28.5	29.4	29.0	28.3
	18.1	38.0	38.1	38.2	38.6
	11.4	31.0	32.3	31.1	31.1
27	27.6	11.68	11.97	11.78	11.79
	9.4	29.20	29.92	29.45	29.48
		29.34	29.68		

α Leonis

10 1 56

+12 33

	W	W	R	R	W
45 0	11.9	1 38.9	40.0	40.1	40.1
	+2.2	51.0	50.8	51.4	51.0
	22.5	1.1	2.0	2.1	1.4
	22.7	51.2	51.8	51.6	51.7
	9.83	202.2	204.6	205.2	204.2
	24.58	50.55	51.15	51.30	51.05
		50.80	51.22		

δ Leonis

11 7 40

+21 11

	W	W	R	R	W
55 2	53.6	4 10.0	10.3	10.4	10.6
	4.8	21.0	21.8	21.3	21.3
	11.1	27.3	27.5	27.6	28.0
	5.0	22.3	22.2	22.3	21.9
	2.845	806	81.8	81.6	818
	3.62	20.15	20.45	20.40	20.45
		20.30	20.47		

β Leonis

11 42 53

+15 15

	W	W	R	R	W
0 3	46.1	0 26.0	26.6	26.2	26.4
	57.9	36.4	37.1	36.9	36.6
	6.6	46.4	46.6	46.8	46.6
	57.3	37.1	37.0	37.5	36.8
	227.9	1461	1473	1474	1464
	36.98	36.53	36.83	36.85	36.60
		36.57	36.84		

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1880phae.proj.1404R

Apr 5 1880

ε Corvi

12 3 54

−21 57

	W	W	R	R	W
10 4	10.5	0 38.9	38.5	38.7	38.6
	233	52.0	52.1	51.9	52.0
	339	3.0	2.7	3.0	2.6
	283	51.0	51.3	51.3	51.6
	930	2049	2046	2049	2048
	23.25	20.48	20.48		

C = 44 39.8

δ Corvi

12 23 37

−15 50

	W	W	R
5 3	15.5	4 38.4	38.4
	299	53.0	52.8
	38.0	1.5	1.2
	27.4	51.0	50.8
	11 08	2039	2032
	27.70	50.98	50.80

Searle's Star (in AR)

0 42 15

+70 31

109 29

δ Virginis

12 49 30

+4 3

	W	W	R	R	W
15 0	13.2	1 44.1	44.3	44.6	44.9
	266	58.2	58.0	57.2	58.0
	2.7	3.5	3.7	3.8	3.8
	258	57.3	57.4	57.1	57.7
	983	2231	2234	2227	2244
	24.58	55.78	55.85	55.68	56.10
		55.94	55.76		

last 1st wire A−1

AR Only

A_{-1} A A_{+1}

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1880phae.proj.1404R

β Corvi

12 28 2

− 22 44

		W	W	R	R	W
0	0	59.7	20.0	~~20.0~~	19.9	20.0
		10.1	34.1	33.7	33.7	33.6
		19.2	43.5	43.9	43.3	43.6
		9.0	32.7	32.8	33.0	32.8
		38.0	1803	1304	~~1329~~ 1330	1300

~~+32.58~~ 3.

9.50 32.58 32.60 32.48 32.50

32.54 32.54

fell star

γ Virgini

12 35 32

− 0 47

		W	W	R	R	W
5	0	35.6	2 7.3	7.0	6.7	7.2
		51.1	19.6	19.7	19.7	19.3
		0.2	29.1	29.0	29.1	29.1
		50.8	19.3	19.2	18.8	19.4
		2007	753	749	743	750
		50.18	18.82	74.6 (18.72)	18.58	18.75

ε Virginis

12 56 9

+ 11 37

		W	W	R
40	2	35.4	3 40.0	39.9
		46.1	52.0	52.2
		5 46.6	0.0	0.0
		46.1	52.2	52.2
		1822	2042	2043
		45.55	51.05	51.08

α Virginis

13 18 49

		W	R	R	W
50	11	17.6	17.4	17.3	
		28.8	29.0	29.3	
		41.6	41.7	41.8	
		30.4	30.7	30.8	
		1184	1188	1192	
		29.60	29.80	29.80	

Rej 1.5 ∫

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1880phae.proj.1404R

C — 44 40.5

Ursae Majoris

19 25 50
+27 42

R	R
35 1 29.8	30.0
38.6	38.7
42.5	42.0
38.0	42.7
148.9	153 4
37.23	38.35

Aquilae

20 5 4
— 1 11

W	W	R	R	W
25 3 33.0	4 57.6	57.2	57.1	57.6
43.7	8.6	8.8	8.3	8.1
49.5	14.9	14.0	14.2	14.3
42.2	58	6.0	6.3	6.3
168 4	26.9	26.0	259	263
42.10	6.73	6.50	6.48	6.58
	6.65	6.49		

Capricorni

20 11 20
— 12 55

W	W	R	R	W
10 3 16.7	3 49.0	48.6	48.9	49.2
29.2	1.0	1.2	1.2	0.8
35.9	9.0	9.0	8.2	8.2
26.1	58.6	58.0	58.2	57.9
107.9	237 6	236 8	236 5	236 1
26.98	59.40	59.20	59.13	59.03
	59.21	59.16		

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1880phae.proj.1404R

α Aquilae
19 44 53
+8 33

		W	W	R	R	W
45	0	13.9	32.1	32.1	31.9	32.2
		23.5	42.5	42.4	42.8	42.0
		27.6	46.7	46.7	46.9	46.9
		21.1	40.4	40.0	40.5	40.4
		86.1	161.7	161.2	162.1	161.5
		21.52	40.43	40.30	40.53	40.38
			40.40	40.41		

β Aquilae
19 49 22
+6 6

		W	W	R	R	W
10	1	49.3	111.4	11.4	11.9	11.0
		1.0	23.6	23.6	23.6	23.9
		5.3	27.1	27.5	27.3	27.5
		59.8	21.4	21.0	20.8	21.0
		23 5.4	83.5	83.5	83.6	83.4
		58.85	20.88	20.88	20.90	20.85
			20.87	20.89		

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1880phae.proj.1404R

C = 44 40.5

April 7 1880

α Can Min

7 32 58

+ 5 32

	W	W	R
45	1 30.6	2 86.6	37.0
	41.7	48.3	48.6
	43.2	50.0	50.2
	38.4	44.2	45.3
	153 9	179 3	181 1
	38.48	44.83	45.28

Ch. f.

ε Leonis

9 38 59

+ 24 20

	W	W	R	R	W
55	4 12.3	0 82.4	33.0	32.2	32.5
	20 3	39.9	39.9	39.8	89.4
	21.7	41.3	41.2	40.7	41.2
	18.0	37.7	37.2	37.0	37.3
	7 23	151 3	151 3	149 7	150 4
	18.08	37.83	37.83	37.43	37.60
		37.71	37.63		

β Gem

7 37 55

+ 28 19

	W	W
55	4 43.5	1 8.5
	57.3	10.0
	53.0	11.8
	48.6	9.0
	196 4	39 3
	49.10	9.83

Ch. f.

α Leonis

10 1 56

+ 12 33

	W	W	R	R	W
45	0 24.2	1 45.9	45.4	45.0	45.4
	33.0	54.3	55.1	54.8	55.1
	35.7	57.6	57.9	57.7	57.9
	28.3	50.1	50.0	50.1	49.8
	121 2	7.9	8.4	7.6	8.2
	30.30	57.98	52.10	51.90	52.05
		52.01	52.00		

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1880phae.proj.1404R

L Argus

8 2 23
−23 57

W	W	R	R	W
10.4 30.6	o 47.0	47.0	46.8	
~~30.6~~ 43.6	58.6	59.0	59.0	
~~43.6~~ 48.2	3.0	3.0	3.2	
38.6	54.9	54.8	54.7	
161.0	223.5	223.8	223.7	
40.25	55.88	55.95	55.92	
	55.88	55.93		

α Hydrae

9 21 28
− 8 8

W	W	R	R	W
10 2 ~~27.8~~	28.2	42.0	41.0	42.0	41.9
~~21.9~~	16.2	50.8	50.9	50.4	50.6
~~12.7~~	*21.3	55.0	55.8	55.4	55.0
~~25.9~~	12.1	47.0	47.0	46.8	46.6
~~12.7~~	57.4	1948	1947	1946	1941
	14.35	48.70	48.68	48.65	48.53
		48.61	48.67		

A4 etc

γ' Leonis

10 13 18
+20 27

W	W	R	R	W
50.1 57.2	3 47.6	9.1	8.0	8.7
35	17.0	17.1	17.2	16.4
4.3	17.8	18.3	18.3	18.0
58.8	11.6	12.4	12.3	11.6
08	540	569	55.8	54.7
00.20	13.50	14.22	13.95	13.67
	13.59	14.08		

δ Leonis

11 7 40
+21 11

W	W	R	R	W
52 54.9	4 20.9	20.7	20.2	20.1
3.4	29.1	29.5	29.2	29.0
2.3	28.4	29.2	29.8	29.0
58.0	23.4	24.6	25.0	24.0
2386	218	240	242	221
59.65	25.45	26.00	26.05	25.53
	25.49	26.02		

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1880phae.proj.1404R

C = 44 40.5

April 7, 1880

β Leonis

11 42 53

+ 15 15

ε Corvi

12 3 54

− 21 57

	W	W	R	R	W		W	W
0 4	40.5	0 33.0	33.1	33.4	32.8	10 4	46.3	0 32.3
	9.5	40.6	41.1	40.9	40.1		58.6	43.0
	10.9	42.9	43.5	43.7	43.0		2.1	46.4
	4.5	34.6	34.3	~~34.0~~ 34.7	~~33.8~~ 34.3		50.0	35.8
	25.4	15.13	15.20	15.20	15.02		21.70	15.75
	6.35	37.83	38.00	38.00	37.55		54.25	39.38
		37.69	38.00					

Last A_{+1}

~~Last~~ Some one of first wires bad

γ Virginis

12 35 32

− 0 47

Searle's Star (in AR)

0 42 15

+ 10 9 29

	W	W	R	R	W
5 0	34.2	2 ~~34~~ 4.4	3.9	4.2	4.1
	42.9	13.5	14.0	14.2	14.1
	46.1	17.0	16.9	17.1	17.0
	36.6	8.1	7.7	7.3	8.1
	15.98	4.30	4.25	4.28	4.33
	39.95	10.75	10.63	10.70	10.82
		10.78	10.66		

per star

50 4 15.3

A_{-1} A A_{+1}

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1880phae.proj.1404R

δ Corvi

12 23 37
−15 50

	W	W	R	
5 3	23.9	4 51	57.0	
	35.4	8	3.7	
	37.1	48	5.2	
	26.7	54.7	55.7	
	123.1	2348	2356	
	30.78	58.70	58.90	

β Corvi

12 28 2
−22 44

	W	W	R	R	W
0	15.0	2 19.0	18.1	18.3	18.6
	16.7	30.0	30.4	30.2	30.1
	18.6	33.1	33.4	33.4	33.0
	9.0	22.2	23.3	22.8	22.5
	59.3	104.3	105.2	104.7	104.2
	14.83	26.08	26.30	26.18	26.05
		26.07	26.24		

δ Virginis

12 49 30
+4 3

	W	W	R	R	W
15 0	13.1	1 44.3	44.3	44.3	44.5
	23.8	55.8	56.0	55.9	56.0
	22.9	54.4	54.6	54.7	54.0
	17.0	47.6	47.4	48.7	48.6
	76.8	2621	2023	2036	2031
	19.20	50.53	50.58	50.90	50.78
		50.65	50.74		

ε Virginis

12 56.9
+11 37

	W	W	R
40 2	12.3	3 44.0	43.7
	22.0	53.1	53.8
	22.6	54.2	54.2
	18.0	45.1	44.4
	74.9	196.4	196.1
	18.73	49.10	49.03

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1880phae.proj.1404R

April 1880 C = 44,405

α ~~Polaris~~ Regasi

22 58 46
+14 32

	R	R
45-1	132	129
	213	217
	229	228
	142	142
	716	716
	17.90	17.90

Lon 1-15-3 Ha

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1000phae.proj.1404R

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1880phae.proj.1404R

C = 44.40.5

April 8 1880

⊙ 1h 11m 1s

+ 7 32

45	0	33.6	0	3	11.4
		43.0			21.5
		44.0			23.2
		37.0			16.0
		157.6			72.1
		39.40			18.03

Good - 1m 20s or 3 mins of 1m time

C = ~~44 40.5~~

C = 44.35.0

β Eridani

5 1 37 − 5 15

W	W	R	R	W
30 3 19.6	3 57.9	57.9	58.0	57.9
26.5	6.4	6.9	6.8	6.4
31.8	11.0	11.7	11.7	11.1
25.1	3.8	4.0	4.2	3.3
103.0	2591	2605	2607	2587
25.75	4.78	5.12	5.19	4.68
	4.73	5.14		

A3 etc

γ Gem

6 30 43

+ 16 30

W	W	R	R	W
45 3 18.2	4 51.2	51.0	51.0	51.3
27.5	0.8	0.8	1.1	1.3
32.6	4.6	5.0	5.0	5.0
23.6	55.2	56.1	57.0	56.2
10 19	23 22	2329	2348	2338
25.48	58.05	58.22	58.53	58.45
	58.25	58.39		

ε Can Maj

6 53 52

− 28 40

W	W	R	R	W
0 4 47.5	1 18.0	17.8	17.0	17.9
1.3	30.1	30.7	30.2	30.2
2.9	32.6	33.0	32.4	32.6
55.0	23.7	24.2	24.0	23.6
2267	1044	1057	1036	1043
56.68	26.10	26.42	25.90	26.08
	26.09	26.16		

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1000phae.proj:1404R

δ Orionis

5 25 50

— 0 24

W	W		
40 2 19.5	47.0	46.3	
28.5	51.1	57.2	
33.1	1.0	1.9	
25.0	52.3	53.1	
106.1	217.4	218.5	
265.3	54.35	54.63	

α Orionis

5 48 37

+ 7 23

W	W	R	R	W
55 0 12.0	1	9.66	37.1	37.1	37.2
22.6		47.1	48.0	47.8	47.1
25.6		50.7	50.7	50.4	50.0
18.0		41.9	42.2	42.5	41.9
78.2		176.3	178.0	177.8	176.2
19.55		44.08	44.50	44.45	44.05
		44.07	44.47		

A, etc

β Can Min

7 20 35

+ 8 32

W	W	R	R	W
45 1 32.8	3 0.9	1.1	0.7	0.4
43.1	11.6	12.2	12.3	11.9
45.6	14.3	14.7	14.4	14.1
36.8	5.4	6.0	5.6	5.1
15.83	322	340	33.0	31.5
39.58	8.05	8.50	8.25	7.88
	7.97	8.37		

α Can Min

7 32 58

+ 5 32

W	W	R	R	W
45 1 19.5	2 43.0	43.3	42.8	42.9
31.2	55.6	55.6	55.8	55.5
32.9	57.0	56.7	57.4	57.0
24.8	49.1	49.7	50.0	48.7
10.84	20.47	53	20.60	20.41
27.10	51.18	51.33	51.50	51.03
	51.12	51.41		

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1880phae.proj.1404R

April 8 1880

γ 45 54
+30 59

W	W	R	R	W
20 14.0	2 57.3	57.1	57.3	56.5
22.6	6.4	6.8	6.3	6.7
23.4	7.5	7.7	7.7	7.3
18.3	2.2	2.3	2.3	2.3
7 83	2534	2539	2536	2528
19.58	3.36	3.48	3.40	3.20
		3.28	3.44	

Lost A +1
Rejected 4

c = 44 35.0

ι Argus
8 2 23
−23 57

W	W	R	R	W
10 4 12.9	0 45.3	45.0	45.4	45.0
27.0	57.5	57.5	58.1	57.9
29.3	0.7	1.1	1.2	1.0
20.3	57.4	52.5	52.2	52.4
895	2149	2161	2169	2163
22.38	53.73	54.02	54.22 / ~~53.48~~	54.08

ζ Serpentis
15 38 18
+6 48

30 0 12.9	12.8	R
23.7	24.8	
25.8	25.9	
18.0	18.5	
804	820	
20.10	20.50	

δ Scorpii
15 58 11
−22 16

30 4 39.8	0 15.7	15.2
52.0	27.2	27.2
56.6	31.3	30.9
45.8	21.9	21.4
1942	961	947
48.55	24.02	23.68

Ass'd

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1000phae.proj.1404R

Am 1880

β Librae

15 10 30

−8 56

	R	R
15 0	33.6	33.4
	42.3	42.5
	49.0	48.8
	39.7	39.8
	16.6	16.5
	41.5	41.3

Com.

15 29 34

+27 7

	R	R
10 1	47.6	47.1
	55.6	55.7
	56.4	56.3
	51.4	52.1
	21.0	21.2
	52.75	52.80

β¹ Scorpii

15 58 24

−19 28

	W	W	R	R	W
45 0	37.3	2 2.0	1.3	1.4	1.5
	48.9	14.3	15.0	14.9	14.9
	53.3	17.3	17.9	17.7	17.9
	44.1	7.3	7.3	7.2	7.3
	18.36	4.09	41.5	41.2	41.6
	45.90	+2.73 +2.73 10.23	10.38	10.30	10.40
		10.32	10.39		

δ Ophiuchi

16 8 0

−3 23

	W	W	R	R	W
40 1	5.9	2 30.4	30.2	30.3	30.6
	16.2	41.4	41.9	41.5	41.4
	19.5	44.5	44.7	44.8	44.4
	11.0	36.2	36.6	36.7	35.7
	5.26	15.25	15.34	15.33	15.23
	13.15	38.13	38.36	38.32	38.08
		38.11	38.34		

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1880phae.proj.1404R

April 8 1880

α Scorpii

16 21 59

−26 10

	W	W		R
25 1	13.2	2	33.1	33.2
	25.9		46.5	46.6
	28.3		48.2	48.5
	19.3		39.8	38.5
	8.7		16.6	16.8
	21.68		41.90	41.70

c = 44 35.0

β Herculis

16 25 1

+21 45

	W	W	R	R
30 4	39.2	0	19.3	18.9 19.2
	48.7		27.4	28.2 28.2
	47.4		26.6	27.0 27.0
	42.1		23.0	23.7 23.8
	17.74		9.63	9.78 9.82
	44.35		24.08	24.45 24.55

A γ c 24.08 24.50

η Ophiuchi

17 3 27

−15 34

	W	W		R	R	W
30 1	45.9	3	12.9	13.0	12.3	13.1
	58.1		25.2	26.0	26.0	25.4
	0.3		28.2	28.0	28.2	28.0
	57.0		18.2	18.5	18.6	17.6
	21.53		8.49	8.55	8.51	8.43
	5.383		21.23	21.38	21.28	21.08
			21.16	21.33		

α' Herculis

17 9 18

+14 32

	W	W	R	R	W
45 1	57.0	3	15.9	15.8	15.6	15.4
	6.4		25.3	25.9	25.9	25.4
	8.6		27.6	27.8	27.7	27.7
	0.1		19.0	19.3	19.7	18.7
	1.21		8.78	8.88	8.89	8.76
	3.030		21.95	22.20	22.23	21.90
			21.93	22.21		

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1990phae.proj.1404R

3 Ophiuchi

16 30 30
−10 19

		N	W	R	R	W
35	2	14.4	8 30.1	30.2	30.0	31.0
		24.7	41.0	40.0	40.3	40.1
		30.1	46.0	46.3	46.1	46.0
		20.0	35.7	35.2	35.5	35.0
		8 9.2	15 22	15 17	15 19	15 21
		22.30	38.05	37.92	37.97	38.02
			38.03	37.95		

η Herculis

16 38 45
+39 9

		N	W	R	R	W
10	0	11.3	1 32.8	33.0	33.3	33.0
		17.6	39.9	40.1	39.9	39.2
		19.2	40.8	40.8	41.0	40.7
		14.8	37.1	37.1	36.7	36.6
		22.9	15 06	15 10	15 09	14 90
		15 73	37.65	37.75	37.73	37.25
			37.45	37.74		

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1880phae.proj.1404R

C = 44 35.0

April 8–9, 1880

⊙ 1 14 41

+ 7 57

		W	W
5–	8	153 40	1 11.9
		260	20.8
		286	24.5
		260	19.0
		9 19	762
		22.98	19.05

Both limits in δ and R.A.
seeing rather bad

C = 44 35.0

April 9, 1880

β Tauri

5 18 39

+ 28 30

	W	W	R	R
45 3	37.4	37.5	38.2	38.8
	44.1	45.6	45.9	45.9
	47.1	48.9	48.3	48.8
	44.1	45.0	44.9	44.8
	1727	1770	1773	1783
	[43.18]!	44.25	44.33	44.58
			44.25	44.45

perhaps lost 2nd δ

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1880phae.proj.1404R

δ Orionis

5 25 50

− 0 24

	W	W	R
40 1	25.8	2 46.6	47.2
	34.6	57.0	56.6
	41.4	3.6	3.0
	85.1	52.1	56.4
	1372	2233	2232
	34.3	55.83	55.80

ζ Orionis

5 34 39

− 2 0

	W	W	R	R	W
15	4 1.6	4 50.3	50.9	50.5	50.9
	13.6	2.6	2.8	2.7	3.0
	20.0	8.3	8.9	8.4	8.8
	11.6	58.0	59.6	59.7	58.5
	468	240.2 ~~302~~	2422	2413	2407
	11.70	0.05	0.55	0.33	0.18
		0.12	0.44		

Lost, 5T 4 W.

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1880phae.proj.1404R

C = 44 35.0

April 10, 1880

α Hydrae

9 21 38

− 8 8

	W	W	R	R	W
25 1	15.6	2 39.1	39.0	38.9	39.2
	25.1	49.6	49.4	48.8	49.1
	35.1	59.3	59.7	59.5	58.9
	24.1	48.1	48.0	48.0	47.9
	99.9	196.1	196.1	195.2	195.1
	24.98	49.03	49.03	48.80	48.78
		48.90	48.91		

ε Leonis

9 38 59

+ 24 20

	W	W	R	R	W
55 4	2.8	0 28.2	28.8	28.0	28.1
	12.0	36.6	37.0	37.0	36.6
	17.1	42.2	42.8	42.4	43.0
	10.8	36.9	36.8	37.0	37.0
	42.7	143.9	145.4	144.4	144.7
	10.68	35.98	36.36	36.10	36.18
		36.08	36.23		

γ Leonis

10 13 18

+ 20 27

	W	W	R	R	W
50 2	11.3	19.2	19.8	19.2	19.6
	11.2	29.2	29.3	29.4	30.9
	17.3	35.0	34.6	34.8	34.6
	10.3	27.8	27.8	27.5	27.2
	40.1	111.2	111.5	110.9	112.3
	10.03	27.80	27.88	27.72	38.08
		2.94	27.80		

δ Leonis

11 7 40

+ 21 11

	W	W	R	R	W
5 2	50.9	4 14.2	14.0	14.0	14.2
	0.1	24.2	24.1	23.8	24.3
	3.9	28.2	28.0	28.4	28.2
	58.6	22.7	22.8	23.5	21.8
	233.5	89.3	88.9	89.7	88.5
	58.38	22.33	22.23	22.43	22.13
		22.23	22.33		

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1880phae.proj.1404R

α Leonis

10 1 56

+ 12 33

	W	W	R	R	W
45 0	30.0	1 57.11	57.2	57.4	57.3
	39.9	1.3	1.6	1.2	0.9
	47.4	9.8	9.0	8.9	9.8
	39.2	59.2	0.3	0.0	59.2
	1565	2414	2421	2415	2412
	39.13	0.35	0.53	0.38	0.30
		0.33	0.45		

ζ Leonis

10 9 57

+ 24 1

	W	W	R
15 2	49.4	4 16.3	15.8
	58.4	25.6	25.6
	3.2	30.1	30.4
	58.1	24.7	25.2
	2291	967	970
	57.53	24.18	24.25

Perhaps hit-tel escape optic S.

β Leonis

11 42 53

+ 15 15

	W	W	R	R	W
0 4	6.1	0, 33.0	33.1	33.0	33.0
	16.0	42.6	42.3	42.3	42.0
	23.1	49.7	49.7	49.2	49.6
	12.9	40.0	40.2	40.2	40.0
	581	53	53	47	46
	14.52	41.32	41.32	41.17	41.15
		41.24	41.24		

ε Corvi

12 3 54

− 21 57

	W	W	R	R	W
10! 14 4	14.9	0 43.9	44.2	43.8	43.8
	17.9	55.7	55.8	56.2	56.2
	36.0	4.6	4.8	4.9	4.3
	25.3	54.4	54.0	54.4	54.5
	941	2196	2188	2193	2188
	23.53	54.90	54.70	54.83	54.70
		54.80	54.76		

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1880phae.proj.1404R

C = 44 35.0

April 10 1880

δ Corvi 12 23 37
−15 50

W	W	R	R
5 3 28.8	4 47.9	47.2	47.1
41.5	06	0.8	0.8
48.2	7.0	7.3	7.3
38.4	57.1	57.3	57.2
1569	2326	2326	2324
39.23	58.15	58.15	58.10
		58.15	58.12

β Corvi
12 28 2
−22 44

W	W	R	R	W
0 1 9.9	2 27.2	28.0	27.6	27.3
23.1	40.4	40.7	40.9	40.4
30.7	47.9	48.6	48.0	47.9
20.0	37.3	38.0	38.0	37.7
1737	1528	1553	1545	1533
43.43	38.20	38.83	38.63	38.33
	38.27	38.73		

δ ~~Leonis~~ Virginis
12 49 30
+ 4 3

W	W	R	R	W
15 0 33.3	45.3	45.8	45.9	46.1
44.2	58.7	58.2	58.1	57.6
49.2	2.3	2.4	2.5	2.3
41.7	56.0	56.0	56.0	56.0
84	221.8	222.4	222.5	222.0
42.10	55.45	55.60	55.63	55.50
	55.48	55.61		

ε Virginis
12 56 9
+ 11 37

W	W	R
40 2 23.4	3 43.4	43.7
33.9	54.4	55.0
40.3	0.5	0.8
32.1	52.5	52.7
1297	2108	2122
32.43	52.70	53.05

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1880phae.proj.1404R

γ Virginis

12 35 32

− 0 47

	W	W	R	R	W
50	40.0	8.1	8.8	8.2	8.1
	50.5	19.0	19.4	19.5	19.0
	58.9	27.4	27.3	27.2	27.4
	50.0	18.2	17.8	17.8	18.1
	199.4	72.7	73.3	72.7	72.6
	49.85	18.18	18.33	18.18	1815
		18.17	18.25		

foll. star

Searle's Star

0 42 15

+ 109 29

50 4 24.1

Last 3 or 4 times required A R only

α Virginis

13 18 49

−10 32

	W	W	R	R	W
50	4 59.4	1 27.4	27.6	27.3	
	9.0	37.7	37.7	37.5	
	18.7	48.5	48.2	48.6	
	8.0	36.9	37.2	37.2	
	27.51	1505	1507	1506	
	8.78	37.63	37.68	37.65	
		37.63	37.66		

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1880phae.proj.1404R

C = 44 35.0 Apr 11, 1880

April 10 – 11, 1880

☉

1 22 1
+ 8 39

W W
35!
40 4 104 50 1 6.8
215 17.3
27.1 25.6
20.0 17.0
790 667
19.75 16.68

ζ Aurig
5 34 39
– 2 2

W R
15 3 592 590
11.1 11.6
198 204
9.7 9.7
2798 2809
9.95 10.23

Log A +1

51 Cephei L. C

18 43 45
+ 92 46

W W R W W W
350 345 29.2 23.1 19.6 16.6
37.8 31.0 25.0 22.2 18.8
37.0 32.0 25.1 22.2 18.8
33.3 28.2 21.7 18.3 14.6
226 4 149 25 288
35.65 30.10 23.73 20.63 17.20

σ Sagitt.

18 47 46
– 26 27

W W R R W
40 2 51.0 4 14.2 14.7 14.6 14.2
3.8 28.3 26.9 27.0 27.3
7.9 31.6 31.7 31.8 31.6
5 7.5 21.7 21.9 22.2 21.9
02 958 952 956 950
0.05 23.95 2380 2390 23.75
23.85 2385

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1880phae.proj.1404R

γ Cephei

6 30 43
+76 30

	R	R
45 2	25.2	25.2
	36.3	36.8
	44.1	44.4
	34.0	34.3
	139.7	140.7
	34.93	35.18

α Lyrae

18 32 50
+38 40

	W	W	R
35 3	48.9	0 10.2	10.4
	57.3	16.4	17.0
	59.3	19.5	19.2
	54.5	15.3	15.4
	220.0	214	220
	55.00	15.35	15.50

ζ Aquilae

18 59 51
+13 41

	W	W	R	R	W
35 2	21.9	3 42.4	42.4	42.1	42.4
	31.8	53.1	53.0	53.0	53.0
	35.1	56.2	56.3	56.2	56.1
	26.9	46.9	47.2	47.1	47.1
	1157	1986	1989	1984	1986
	28.93	49.65	49.72	49.60	49.65
		49.65	49.66		

β Cygni

19 25 50
+27 42

	W	W	R	R	W
35 1	28.9	2 53.0	53.0	52.9	53.1
	35.7	0.0	0.7	0.3	0.0
	37.0	1.1	1.7	1.7	1.5
	31.8	56.5	56.4	56.7	56.6
	134	2306	2318	2316	2312
	33.35	57.65	57.95	57.90	57.80
		57.73	57.92		

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1880phae.proj.1404R

April 11 1880

γ Aquilae

19 40 30

+ 10 19

	W	W		R	W
5 5 4	8.2	0	39.0	39.3	39.0
	16.5		48.0	48.3	48.0
	21.1		50.9	50.5	50.6
	13.8		43.9	44.0	44.7
	6 16		181.8	182.1	182.3
	15.40		45.45	45.52	45.57
			45.45	45.54	

c = 44 35.0

α Aquilae

19 44 53

+ 8 33

	W	W		R	R	W
4 5 0	12.4	1	33.7	34.2	34.1	33.6
	22.1		43.4	43.3	43.8	43.6
	23.9		45.0	44.9	44.9	45.0
	17.3		37.5	37.7	38.0	37.6
	7 5.7		159.6	160.1	160.8	159.8
	18.93		39.90	40.03	40.20	39.95
			39.93	40.11		

α² Capricorn.

20 11 20

−12 55

	W	W		R	R	W
10 2	11.3	3	41.0	40.8	40.3	40.6
	21.7		52.1	52.1	52.0	51.6
	26.8		56.2	56.8	56.6	55.9
	14.5		45.0	44.9	44.8	44.7
	7 4.3		194.3	194.6	193.7	192.8
	18.56		48.57	48.65	48.43	48.20
			48.39	48.54		

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1880phae.proj.1404R

β Aquilae

19 49 22
+6 6

	W	W	R	R	W
10 2	8.4 3	7.6	8.0	7.7	7.9
	20.0	19.8	19.0	19.1	19.1
	20.0	19.9	19.7	20.0	20.0
	18.2	12.6	12.4	12.6	12.3
	6.66	5.99	5.91	5.94	5.93
	1.665				
	~~+9.18~~	14.97	14.78	14.85	14.82
		14.89	14.81		

δ Aquilae

20 5⁻ 4

	W	W	R	R	W
25 4	0.8 4	5.80	5.79	5.79	5.80
	10.9	8.6	8.6	8.7	8.7
	15.0	10.3	10.1	10.2	10.0
	1.8	2.0	2.4	2.8	1.2
	4.15	1.89	1.90	1.96	1.73
	10.38	4.73	4.75	4.90	4.33
		4.53	4.82		

Last 1st Run

α Aquilae

22 5 44
+14 30

R	R
40 4 46.8	46.7
57.0	57.2
59.0	59.2
49.0	49.2
21.18	21.23
5-29.5	5-30.8

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1880phae.proj.1404R

C = 44 35.0

April 11–12 1880

θ

1 25 42

+ 9 0

	W		W
0 2	22.0	5	4.2
	32.1		14.6
	33.6		17.1
	24.9		6.0
	11 26		4 19
	28.15		10.46

Both limbs in δ + R.A.
Seeing "perfectly horrid"

β Eridani

5 1 34

− 5 15

W	W	R	R	W
30 2 43.9	3 56,3	56.1	56.0	56,3
54,2	6,1	6.6	6.0	6.4
57,9	9.8	10.2	10.2	10,5
49.1	0,6	1.0	1.2	0,6
2051	2528	2539	2534	2538
51.28	0320	03.48	3.35	3.45
	3.33	3.41		

δ Orionis

5 25 50

− 0 24

W	W	R	R
40 1 30.3	2 49,1	48.9	48,9
41.9	0.4	1.0	0.4
45.4	4.0	4.6	4.0
35.0	54,3	55.0	55.3
1526	2278	2295	2286
38.15	56.95	57.38	57.15
	56.95	57.26	

ζ Orionis

5 29 31

− 6 0

W	W	R	R	W
15 2 40,0	3 41,1	41.1	41.0	41.4
50.9	52.0	52.5	52.4	53.0
55,3	56,2	56.3	56.2	56,3
45,1	47,0	46.7	46.8	46,1
1933	1963	1966	1964	1968
48.33	49.08	49.15	49.10	49.20
	49.14	4913		

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1880phae.proj.1404R

c = 44 35.0

β Orionis

5 8 44

−8 21

	W	W	R	R	W
35 3	16.1	4 86.7	36.7	36.0	36.1
	27.5	47.6	47.8	47.8	47.6
	33.2	58.1	52.9	53.5	53.5
	20.8	41.0	41.0	41.5	41.9
	97.6	1779	1784	1788	1791
	24.40	4448	4460	4470	4478
		4463	4465		

γ Orionis

5 18 38

+6 14

	W	W	R	R	W
0 3	51.0	0 49	5.4	5.4	5.0
	3.4	11.6	17.9	17.0	16.9
	4.9	18.7	18.9	19.0	19.0
	56.0	10.1	11.0	11.1	10.3
	2353	503	532	525	512
	58.83	1258	13.30	13.13	12.80
		12.69	13.21		

ζ Orionis

5 34 39

−2 0

	W	W	R	R	W
15 3	33.0	4 47.6	47.5	47.3	47.5
	46.7	0.2	0.6	0.2	0.2
	49.5	3.0	3.7	3.2	3.6
	38.8	53.2	53.3	53.0	53.3
	1670	2240	2251	2237	2246
	41.75	56.00	56.28	55.93	56.15
		56.07	56.10		

α Orionis

5 48 37

+7 23

	W	W	R	R	W
55 0	27.5	1 37.0	37.8	38.1	37.9
	35.9	47.8	48.6	48.8	48.1
	41.2	57.1	50.8	50.8	57.3
	32.1	41.3	42.0	41.8	42.1
	1397	1772	1792	1795	1794
	34.93	44.30	4480	44.87	4485
		44.58	44.83		

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1880phae.proj.1404R

C = 44 35.0

April 12, 1880

w Gem

6 15 39

+22 34

W	W	R	R	W
40 4 11.0	0 30.0	30.6	29.9	30.0
21.1	40.0	39.8	39.8	39.3
21.5	40.0	40.3	40.7	40.0
15.6	35.0	34.6	34.9	34.6
6.92	14.50	14.53	14.53	14.39
17.30	36.25	36.33	36.33	35.98
	36.12	36.33		

γ Gem

6 30 43

+16 30

W	W	R	R	W
45 3 35.0	4 48.9	48.8	48.9	48.9
45.7	59.1	58.8	59.3	59.0
49.3	2.5	3.0	3.2	3.1
39.9	53.1	53.4	53.8	53.0
16.99	22.36	22.40	22.42	22.40
42.48	55.90	56.00	56.05	56.00
	55.95	56.02		

α Hydrae

9 21 38

−8 8

W	W	R	R	W
25 1 27.5	2 37.1	37.0	37.0	37.3
37.8	48.2	48.4	48.0	48.1
48.6	52.9	53.1	53.2	53.2
31.7	42.0	42.0	42.0	42.0
14.56	18.02	18.05	18.02	18.06
36.40	45.05	45.12	45.05	45.15
	45.10	45.09		

ε Leonis

9 38 59

+24 20

W	W	R	R	W
55 4 1.0	0 34.3	34.6	34.8	34.6
10.3	43.1	43.6	43.2	43.5
10.6	43.8	43.9	43.5	43.4
5.0	38.6	38.5	38.0	38.6
2.69	15.98	16.06	15.95	16.01
6.73	39.95	40.15	39.88	40.03
	39.99	40.01		

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1880phae.proj.1404R

e = 44 35.0

α Can Maj

6 39 49

−16 33

	W	W	R	R	W
5 0 0	40.6	2 11.6	1.6	1.8	1.8
	53.8	15.5	15.2	15.6	15.6
	57.2	18.6	18.7	18.4	18.1
	48.1	8.8	8.8	9.2	8.9
	199.7	44.5	44.3	45.0	44.4
	49.93	11.13	11.08	11.25	11.10
		11.12	11.16		

ε Can Maj

6 53 52

−28 40

	W	W	R	R	W
0 4	49.9	1 9.5	9.1	9.1	9.9
	4.2	23.1	23.1	23.2	23.1
	6.0	24.9	24.9	25.1	25.1
	56.8	16.0	16.7	16.0	16.0
	236.9	73.37	73.8	73.4	74.1
	59.23	18.33	18.45	18.35	18.53
		18.43	18.40		

α Leonis

10 1 56

+12 33

	W	W	R	R	W
45 0	31.2	1 44.7	44.6	44.9	45.1
	40.6	54.6	55.2	55.4	55.3
	43.4	57.3	58.1	57.8	57.4
	35.0	49.1	48.9	48.1	49.0
	150.2	205.9	206.8	206.1	206.8
	37.55	51.48	51.70	51.52	51.70
		51.59	51.61		

ζ Leonis

10 9 57

+24 1

	W	W	R
15 3	0.8	4 15.7	15.2
	10.1	25.0	25.1
	10.4	25.3	25.4
	5.0	19.8	19.7
	26.3	85.7	85.4
	6.58	21.42	21.35

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1880phae.proj.1404R

C = 44 35.0

April 12 1880 Comp. ♯ of (112)

γ' Leonis

10 13 18 11 23 6

+ 20 27 + 1 23

	IV	W	R	R	W		W	W	R	R	W
50 2	1.9	3 6.8	7.2	7.2	7.3	55 0	3.0	1 35.7	36.0	36.0	35.6
	11.9	17.4	17.2	17.0	17.6		13.0	46.4	46.7	46.4	47.0
	13.0	17.4	17.9	17.8	18.0		15.3	47.4	47.5	47.8	48.0
	6.9	10.8	11.4	11.7	11.9		7.1	40.1	40.5	40.6	40.9
	42.7	5 29	53.7	53.7	54.8		38.4	169.6	170.7	170.8	171.5
	10.68	13.23	13.43	13.43	13.70		9.60	42.40	42.68	42.70	42.87
		13.46	13.43					42.64	42.69		

Jr. star.

ε Corvi

12 3 54

− 21 57

	W	W	R	R	W
10 4	36.1	0 49.4	49.0	49.1	49.1
	49.3	1.0	0.8	1.6	1.1
	52.8	4.8	5.2	4.9	4.3
	41.2	53.0	52.8	52.8	52.3
	179.4	228.2	227.8	228.4	226.8
	44.85	57.05	56.95	57.10	56.70
		56.85	57.15		

δ Corvi

12 23 37

− 15 50

	W	W	R	R	W
5 3	29.0	4 36.9	36.8	36.6	
	42.5	50.0	50.0	49.9	
	44.0	52.0	52.3	52.3	
	33.5	40.9	41.4	41.7	
	149.0	179.8	180.5	180.5	
	37.25	44.95	45.12	45.13	
		44.95	45.12		

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1880phae.proj.1404R

c = 44 35:0

Comp # (112)

11 29 37
+ 0 52

	W	W	R	R	W
25 1	21.9	2 21.1	21.6	21.1	20.8
	33.9	33.8	33.1	33.1	32.6
	34.5	34.2	34.0	33.9	34.1
	27.4	26.5	26.0	26.1	26.0
	1177	1156	1147	1142	1135
	29.43	28.90	28.68	28.55	28.38
		28.64	28.62		

β Leonis 1

11 42 53
+ 15 15

	W	W	R	R	W
0 4	17.2	0 31.1	31.3	31.1	30.9
	28.1	40.9	40.9	40.6	40.2
	30.2	42.5	43.0	42.8	42.8
	20.0	32.8	33.6	34.1	34.0
	95.5	1473	1488	1485 3206	1479
	23.88	36.83	37.20	37.13	36.98
		36.91	37.16		

β Corvi

12 28 2
− 22 44

	W	W	R	R	W
0 1	12.8	2 24.3	24.7	24.3	24.9
	25.3	37.1	37.2	37.3	37.4
	28.2	40.0	40.3	40.6	40.1
	17.0	30.0	30.0	30.0	30.0
	833	1314	1322	1322	1324
	2083	3285	3305	3305	3310
		32.98	33.05		

γ Virginis

12 35 32
− 0 47

	W	W	R	R	W
5 0	47.0	2 9.3	9.7	9.3	8.9
	57.3	19.8	20.3	20.0	20.0
	0.0	22.9	22.8	23.0	23.1
	51.1	13.1	13.6	13.4	13.6
	2154	651	664	657	656
	53.85	16.28	16.60	16.43	16.40
		16.34	16.51		

for star

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C = 44 35.0

April 12, 1880

δ Virginis

12 49 30

+ 4 3

W	W	R	R	M
15 0 27.6	1 48.1	48.5	48.3	48.3
39.3	0.8	1.2	0.5	0.3
38.6	59.6	59.9	59.5	59.6
31.5	53.3	52.8	52.5	53.1
137.0	221.8	222.4	220.8	221.3
34.25	55.45	55.60	55.20	55.33
	55.39	55.40		

ε Virginis

12 56 9

+ 11 37

W	W	R
40 2 28.0	3 44.0	43.8
38.9	55.1	55.2
39.1	56.1	56.9
31.0	47.5	47.3
17.0	202.7	203.2
34.25	50.68	50.80

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1880phae.proj.1404R

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1880phae.proj.1404R

c = 44 35.0

April 12–13, 1880

⊙

1 29 24
+ 9 22

II

40	0 57.8	3 37.9	
	0.0	47.2	
	4.6	52.2	
	58.9	44.7	
	2353	1820	
	58.83	45.50	

Both limbs δ + R.A seeing very bad indeed.

Mr. Clerke

7 26 8 2
+ 33 9

5	4 47.0	47.0	
	55.8	55.3	
	2.8	3.0	
	55.6	55.7	
	2012	2210	
	50.30	55.25	

α Hydrae

9 21 38
− 8 8

	W	W	R	R	W
25	1 50.0	2 50.1	50.9	50.0	50.0
	03	2.2	2.5	2.4	2.0
	11.0	12.1	12.5	12.7	12.0
	59.0	1.0	0.8	0.3	1.0
	2403	2454	67	84	56
	00.08	1.35	1.68	1.35	1.40
		1.38	1.51		

ε Leonis

9 38 59
+ 24 20

	W	W	R	R	W
55	4 9.8	33.0	33.3	33.4	33.0
	21.9	44.2	44.3	44.0	44.3
	28.4	50.9	51.1	51.4	51.0
	19.8	43.0	43.7	43.1	43.6
	799	1711	1724	1719	1719
	19.98	42.78	43.10	42.98	42.96
		42.88	43.04		

last 1st wire

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1880phae.proj.1404R

Bleau
7 37 05
+28 19

R R

6 1 10.8 10.5
19.3 19.2
24.4 24.4
18.0 18.1
7 25 7 28
18.13 18.20

ε Argus
8 22 23
−23 57

R R

10 4 39.7 39.5
52.9 53.8
18 20
57.8 57.9
20 60 20 92
51.50 51.80

α Leonis
10 1 56
+12 33

W W R R W
45 0 11.8 1 42.7 42.8 43.0 43.0
23.2 55.0 54.3 54.5 54.2
32.5 4.4 3.7 3.6 4.1
21.3 52.3 52.3 52.3 52.9
8 8 8 21 44 21 31 21 34 21 42
22.2 53 60 53.28 53.35 53.55
53.57 53.32

ℨ Leonis
10 9 57
+24 1

W W
15 2 56.1 4 10.0
8.1 21.8
14.8 20.9
5.9 19.9
24.9 19.6
6.23 19.90

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1880phae.proj.1404R

Apr 13 1880 C = B4 35.0

γ Leonis

		10	13	18		
			+ 20	27		
		W	W	R	R	W
50	2	28.0	8,9	9.2	10.0	9,8
		396	226	22.4	21.9	21,9
		46.2	28,9	28.2	28.8	29,0
		38.1	20,4	20.6	20.4	20,2
		159	808	804	811	809
		37.98	20.20	20.10	20.28	20.23
				20.21	20.19	

Lost A+1

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1880phae.proj.1404R

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1880phae.proj.1404R

Apr 13-14 1880

(1) 1 33 5

+9 44

15 4	18.1	2	3.9	
	~~30.0~~		15.6	
	38.9		23.6	
	30.0		14.8	
	11 7 0		5 7 9	
	29.25		14.48	

Both limbs ☌ + RA
seeing moderately good

C = 44 35.0

Apr 14, 1880
β Orionis
5 8 44
−8 21

W	W	R	R	W
35 3 14.3	4 40.4	41.2	41.2	41.5
25.0	52.6	52.8	52.7	52.8
37.3	3.9	4.8	4.7	4.8
24.7	51.3	52.2	52.0	51.9
10 1 3	20 8 2	21 1 0	21 0 6	21 1 0
25.33	52.05	52.75	52.65	52.75
	52.40	52.70		

ω Gem.
6 15 39
+22 34

W

In A R only.

γ Gem
6 30 40
+16 30

W	W	R	R	W
45 3 34.0	4 49.1	49.9	49.9	49.9
45.2	0.9	0.2	0.5	0.3
54.3	9.0	9.0	9.3	9.0
42.9	59.1	58.7	[5]9.2	59.0
17 6 4	23 8 1	23 7 8	23 8 9	23 8 2
44.0	59.52	59.45	59.73	59.55
	59.54	59.59		

Lost A+1 3 4 4 A 1 2 3

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1880phae.proj.1404R

c = 44 35.0

β Tauri

5 18 39

+28 30

W

45 4 17.9

28.8

35.4

28.0

1101

27.53

α Orionis

5 48 37

+ 7 23

W	W	R	R	W
55 0 9.1	13.6	36.2	36.1	36.1
19.6	47.0	47.3	47.2	47.1
28.0	56.0	55.3	55.7	55.9
17.2	44.6	46.0	45.5	44.9
7.39	1832	1838	1845	1840
18.48	45.80	45.95	46.12	46.00
	45.90	46.03		

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1880phae.proj.1404R

c = 44 35.9

Apr 14–15

⊙ 1 36 47

+ 10 5

55 3 11.9 1 ~~57.6~~ 50.6

21.3 0.1

28.6 7.1

21.0 0.0

82.8 237.8

20.70 59.45

Secin quality Card

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1880phae.proj.1404R

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1880phae.proj.1404R

C = 44 30.5

April 18 1880

α Tauri

4 28 59

R +16 16

	R	R
O 3	39 23	95
	488	492
	561	563
	476	480
	191.7	193.0
	47.93	48.25

Rej 15

+1 12345 A, A, 5

Betelgeuse

5 1 54

−5 15

A. R. Mcy.

ζ Orionis

5 34 39

−2 0

	R	R
15 3	24.0	23.5
	35.7	35.2
	43.2	43.7
	35.2	34.7
	138.1	137.1
	34.53	34.28

α Orionis

5 18 37

+7 23

	R	R
55 1	39.0	38.6
	49.2	48.0
	55.9	55.6
	46.7	47.0
	190.8	190.2
	47.70	47.55

Rej 15

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1880phae.proj.1404R

C = 44 35.5

Bernices
5 54 9
−8 2

	R	R
35 3	137	135
	240	236
	345	343
	234	237
	959	951
	23.98	23.78

B Tauri
5 18 39
+28 30

	R	R
45 3	28,2	28,0
	36,6	36,7
	41,5	42,0
	36,4	36,3
	142,7	143.0
	35.68	35.75

α Gem.
6 15 39
+22 34

	R	R
40 3	553	557
	57	62
	100	102
	47	50
	2559	2571
	3.98	4.28

ζ Gem.
6 30 43
+16 30

	R	R
45 2	23,8	24,0
	33,5	34,1
	42,2	41,6
	32,6	32,9
	132,4	132.6
	33.10	33.15

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1880phae.proj.1404R

C = 44 35.5

Aph 18 1882

α Cam. Min

6 39 49

−16 33

	R	R
50 0	32,9	32,5
	45,8	46,0
	53,7	53,6
	44,3	44,7
	176,7	176.8
	44.18	44.20

α Hydræ

9 21 38

−8 8

	R	R
25 1	36,0	35,8
	46,2	46,2
	55,8	55,9
	44,9	45,3
	182.9	183.2
	45.73	45.80

γ' Leonis

10 13 18

+ 20 27

	W	W	R	R	W
50 1	54.1	3 8,8	8.8	8.2	8,4
	4,7	18,7	18.7	18.9	18,8
	10,0	24,2	24.0	24.1	24,3
	3,4	18,0	18.1	17.8	17.9
	2522	697	69.6	69.0	69.4
	3.05	17.43	17.40	17.25	17.35
		17.39	17.33		

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1880phae.proj.1404R

C = 44 35.5

α Leonis

10 1 56

+12 33

	W	W	R	R	W
45 0	16.1	1 42.6	42.3	42.3	42.6
	26.1	52.4	52.9	52.7	52.6
	35.0	0.7	59.8	0.2	0.0
	25.1	50.5	50.8	51.0	51.5
10	2.3	206.2	205.8	206.2	206.7
	25.58	51.55	51.45	51.55	51.67
		51.61	51.50		

ζ Leonis

10 9 57

+24 1

	W	W	R
15 2	42.3	4 12.0	12.2
	57.9	21.8	21.6
	57.1	26.6	26.8
	51.6	20.7	20.34
	202.9	81.1	80.9
	50.73	20.28	20.23

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1880phae.proj.1404R

C =

Apr 19–18 1880

⊙ 1 51 38

+ 11 29

W	W
30 4 ~~30,4~~	51 53,4
18.3	2,5
27.6	10,1
35.7	3,2
27.5	2492
109.1	2.30
27.28	

Seeing very fine.

C =

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1880phae.proj.1404R

C=

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1880phae.proj.1404R

c = 44 35.5

Apr 20 1880

α Hydrae

9 21 38

− 8 8

	W	W	R	R	W
23 1	34.9	2 31.9	36.8	36.8	36.9
	44.1	47.4	46.4	46.8	47.0
	56.2	59.3	59.5	59.2	58.9
	46.0	48.0	48.3	48.0	48.0
	18 12	19 16	19 10	19 08	19 08
	45.30	47.90	47.75	47.70	47.70
		47.80	47.73		

c = 44 35.5

γ' Leonis

10 13 18

+ 20 27

	W	W	R	R	W
50 1	48.1	3 11.4	11.4	11.6	11.7
	57.8	21.7	21.4	21.6	21.6
	59	29.6	29.9	29.6	29.7
	58.7	22.5	22.2	22.2	22.4
	23 05	85.2	84.9	85.0	85.4
	57.63	21.30	21.23	21.25	21.35
		21.32	21.24		

β Leonis

11 42 53

+ 15 15

	W	W	R	R	W
0 3	53.4	0 22.1	22.3	22.0	22.3
	3.6	31.3	32.1	31.8	31.2
	12.5	41.3	41.8	41.5	41.4
	3.2	31.6	32.3	32.1	32.1
	25 27	12 63	12 85	12 74	12 72
	3.18	31.58	32.13	31.85	31.80
		31.69	31.99		

ε Corvi

12 3 54

− 21 57

	W	R	R	W
10 4	23.2	23.6	23.3	23.1
	36.9	36.7	36.4	36.6
	47.0	47.1	47.0	47.0
	35.0	35.6	35.6	35.3
	14 21	14 30	14 23	14 20
	35.53	35.75	35.57	35.50
		35.52	35.66	

Clouds !

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1880phae.proj.1404R

c = 44 · 35.5

η Draconis (H)

10 24 52
+76 20

W. to E. W obs. in D R only

W	W	R	R	W
5 3 39.8	4 6.6	6.4	6.2	6.1
18.4	15.8	15.7	15.6	15.6
25.0	22.1	22.3	22.0	22.0
20.0	16.4	17.3	17.2	16.8
10 3 0	6 0 3	61.7	61.0	60.5
25.75	15.08	15.42	15.25	15.13
	15.11	15.33		

δ Leonis

11 7 40
+21 11

W	W	R	R	W
5 3 39.1	4 44.1	43.3	44.0	
52.6	57.1	57.4	57.4	
1.1	6.1	6.4	6.4	
49.7	55.9	56.0	55.3	
202.5	224.2	223.1	223.1	
50.63	56.05	55.78	55.78	
	56.05	55.78		

δ Corvi

12 23 37
−15 50

W	W	R	R	W
0 1 1.9	2 24.9	25.3	25.2	25.1
14.1	38.3	38.2	38.8	38.3
24.5	48.0	48.2	48.4	48.2
13.5	37.1	37.2	37.3	37.0
6 4 0	148 3	1489	1497	1486
16.00	37.08	37.22	37.42	37.15
	37.12	37.32		

β Corvi

12 28 2
−22 44

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1880phae.proj.1404R

C = 44 35.5

April 20 1880

γ Virginis

12 35 32

−0 47

	W	W	R	R	W
51	13.6	2 5.0	5.2	5.0	4.9
	24.4	16.2	16.1	16.1	16.1
	34.5	26.1	26.8	26.3	26.3
	24.1	16.3	16.0	15.8	15.9
	9.6.9	63.6	64.1	63.2	63.2
	24.23	15.90	16.02	15.80	15.80
		15.85	15.91		

foll *

C = 44 35.5

δ Virginis

12 49 30

+4 3

	W	W	R	R	W
150	27.7	1 44.5	44.9	45.0	44.9
	39.5	57.3	56.9	57.6	57.0
	45.8	3.6	3.7	3.3	3.4
	38.8	56.0	56.0	56.8	56.5
	15.18	22.14	22.15	22.27	22.18
	37.95	55.35	55.38	55.67	55.45
		55.40	55.52		

γ Cygni

21 7 47

+29 59

	R	R
35-1	2.6	1.8
	10.7	10.8
	16.5	16.4
	11.3	11.3
	41.1	40.3
	10.28	10.08

Ayr C

β Aquarii

21 25 11

−6 6

	R
20 4	54.0
	4.4
	13.9
	2.2
	25.58
	3.95

Lon-15 M.

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1880phae.proj.1404R

c = 44 35.5

ε Virginis

12 56 9

+ 11 37

	W	W	R	R	W
40	2 18.8	3 40.5	40.3	40.0	
	29.7	52.0	51.9	51.6	
	38.6	0.0	59.9	59.2	
	28.8	50.6	50.4	50.4	
	11 59	2031	2025	2012	
	28.98	50.77	50.63	50.30	
		50.77	50.46		

α Virginis

13 18 49

− 10 32

	W
45	4 49.9
	1.2
	14.4
	0.5
	2460
	1.50

Rej. 2nd δ

ε Pegasi

2, 38 A

+19 19

	R	R
55	3 44.0	43.4
	54.7	54.8
	1.6	1.3
	53.4	53.2
	2139	2127
	53.48	53.18

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1880phae.proj.1404R

154

c = 44, 35.5

Apr 20-21 1880

Θ

1 59 6

+12 10

50	3	22.8	25 1	26.0	
		33.5		35.2	
		43.4		45.6	
		34.9		30.9	
		13 46		14 37	
		33.65		35.93	

Seeing pretty bad.

Last 1st 3 wires of 2nd Cind

c = 44 35.5

Apr. 20 1880

α Hydrae

9 21 38

− 8 8

	W	W	R	R	W
25	2	42.6	44.3	44.5	44.2	44.8
		12.3	55.5	55.9	55.6	55.6
		27.5	10.1	10.2	10.3	10.3
		15.0	57.2	56.7	56.6	56.7
		5 7.4	27.1	22.3	22.7	22.4
		14.35	56.78	56.83	56.67	56.85
				56.81	56.75	

Lost 1 + 1

σ Sagittarii

18 47 46

−26 27

		W	W	R	R	W
40	2	49.4	10.9	11.6	11.1	10.9
		43	25.6	25.7	25.0	25.4
		14.4	35.2	35.6	35.6	35.6
		36	24.3	24.4	24.7	24.5
		121	96.4	97.3	96.4	96.4
		3.03	24.10	24.32	24.10	24.10
			24.10	24.21		

Σ Aquilae

18 59 51

+13 41

		W	W	R	R	R
35	2	15.3	3 43.6	43.9	43.1	43.9
		26.3	55.8	55.3	55.0	55.1
		36.0	5.3	4.9	5.8	5.3
		26.2	55.1	55.0	54.9	55.6
		1038	2193	2191	2183	2199
		25.95	54.83	54.78	54.58	54.97
			54.90	54.69		

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1880phae.proj.1404R

c = 44 35.5

γ' Leonis

10 13 18
+ 20 27

W	W
50 1 48.1	3 5.6
0.1	17.0
10.3	27.2
1.4	18.1
23.99	6.79
5.998	1.698

α Lyrae

18 32 50
+ 38 40

W	W	R	R	W
35 3 56.3	0 5.6	5.7	5.8	5.6
5.7	13.1	12.8	13.2	13.3
13.9	22.0	21.7	21.9	22.0
8.0	17.4	17.2	17.4	16.6
2.639	5.81	5.74	5.83	5.75
5.98	14.52	14.35	14.58	14.38
	14.45	14.47		

β Cygni (25.2)

19 21 50
+ 27 42

W	W	R	R	W
35 1 16.0	2 37.1	37.6	37.2	37.4
2.41	4.57	46.0	46.3	45.6
3.22	5.36	53.9	54.0	53.6
2.60	4.70	47.2	47.4	47.1
9.83	18.34	18.47	18.49	18.37
2.458	4.585	46.17	46.23	45.93
	45.89	46.20		

γ Aquilae

19 40 30
+ 10 19

W	W	R	R
55 41.6	0 22.6	23.3	22.7
13.6	33.3	33.3	33.5
22.3	43.5	43.4	43.7
13.8	25.8	36.0	36.0
5.183	13.52	13.60	13.59
1.283	3.380	3.40	3.398
	3.380	3.399	

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1880phae.proj.1404R

c = 44 35.5

April 21, 1880

α Aquilae

19 44 53
+ 8 33

	W	W	R	R
45 0	11.9	11.9	12.0	12.3
	22.6	22.8	22.7	22.4
	31.6	31.5	32.0	22.2 (31)
	22.1	22.1	22.8	23.0
	88.2	88.3	89.5	79.9 (81)
	22.05	22.08	~~22.98~~ 22.38	22.47
	22.07		22.42	

c = 44 35.5

β Aquilae

19 49 22
+ 6 6

	W	W	R	R	W
10 1	36.3	3 83	8.7	8.6	8.8
	49.4	21.4	21.4	21.1	21.2
	57.2	29.3	29.3	29.0	29.0
	49.4	20.1	20.6	20.5	20.1
	1923	791	80.0	792	791
	4308	19.78	20.00	19.80	19.78
		19.78	19.90		

γ Cygni

20 17 53
+ 39 32

	W	W	R	R	W
25 1	30.9	3 11	1.6	1.2	1.5
	39.4	9.9	10.0	10.0	10.1
	47.7	18.3	18.7	18.4	18.7
	41.3	11.4	11.8	12.0	11.1
	159.3	40.7	42.1	41.6	41.4
	39.83	10.18	10.53	10.40	10.35
		10.27	10.46		

α Cygni

20 37 18
+ 44 57

	W	W	R	R
25 3	39.3	4 18.2	18.5	18.3
	47.9	26.2	26.2	26.0
	57.6	34.6	34.5	34.6
	49.6	27.9	28.0	27.9
	192.4	106.9	107.2	106.8
	48.10	26.72	26.80	26.70
		26.72	26.75	

Lost 1+1

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1880phae.proj.1404R

c =

δ Aquilae

20 5 4

— 1 11

	W	W	R	R	W
25 4	0.2	4 513	50.8	57.0	50.9
	12.9	2.7	3.0	2.9	3.0
	22.7	13.0	12.2	12.0	12.8
	11.6	2.0	2.3	2.9	2.0
	47.4	90	83	88	2487
	1.185	2.25	2.08	2.20	2.18
		2.21	2.14		

α² Capricorni

20 11 20

— 12 55

	W	W	R	R
10 3	2.0	3 574	56.9	56.9
	10.9	9.9	9.8	10.0
	26.1	21.0	21.9	22.2
	13.8	8.9	9.1	9.3
	55.8	372	377	38.4
	13.95	9.30	9.42	9.60
		9.30	9.51	

last 1st hour

ε Cygni

20 41 19

+ 33 31

	W	W	R	R	W
45 2	44.4	3 590	59.9	59.0	590
	52.6	7.6	7.4	7.3	7.3
	16	16.4	17.1	16.7	17.0
	55.2	10.0	10.0	10.3	10.0
	213.8	33.0	34.4	33.3	33.3
	53.45	8.25	8.60	8.33	8.33
		8.29	8.46		

ζ Cygni

21 7 47

+ 29 44

	W	W	R	R	W
30 4	39.9	1 9.0	9.6	9.2	9.9
	49.0	19.0	18.9	18.7	18.6
	56.5	25.3	28.4	25.6	25.6
	58.6	20.0	19.3	18.7	20.0
	204.0	73.3	73.2	72.2	74.1
	51.0	18.33	18.30	18.05	18.52
		18.42	18.33		

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1880phae.proj.1404R

c = 44 35.5

April 21, 1880

α Cephei

21 15 41

+ 62 4

	W	W		W	
-10 4	32.1	0.8	0 25.6	59.3	20.2
	36.2	5.0	29.0	3.0	23.8
	44.5	12.4	38.0	11.6	33.0
	39.2	7.0	32.6	6.1	27.9
	152.0	3.52 (8.80)	125.2	20.0	105.0
	38.00	6.3	31.30	5.00	26.25

c = 44 35.5

β Aquarii

21 25 11

— 6 6

	W	R	R
20 3 41.2	4 54.7	54.4	57.3 54.9
53.6	5.2	6.0	6.2 5.8
3.1	11.9	17.0	16.9 17.0
53.0	6.3	6.3	7.0 6.4
210.9	23.1	23.7	24.4 24.1
52.73	5.78	5.92	6.10 6.03
	5.91	6.01	

α Pegasi

22 58 44

+ 18 33

		W		R	R	W
40 4	46.2	1	7.7	8.1	8.2	7.6
	58.1		19.0	19.0	19.1	18.8
	7.9		28.7	29.0	28.9	28.6
	56.3		18.0	18.1	18.7	18.2
	228.5		73.4	74.2	74.9	73.2
	57.13		18.35	18.55	18.73	18.30
			18.33	18.64		

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1880phae.proj.1404R

C= 44 35.5

ε Pegasi

21 38 14

+9 19

		M	W	R	R	
55	3	38.9	0 33	3.8	3.9	4.0
		50.4	14.8	14.3	14.9	14.4
		59.1	23.1	22.4	22.8	23.4
		49.6	14.3	24.7	14.8	14.9
		19 80	55.5	55.2	56.4	56.7
		49.50	13.87	13.80	14.10	14.17
				14.02	13.95	

α Aquarii

21 59 34

− 0 54

		M	W	R	R	W
10	2	5.9	3 18.8	18.6	18.2	18.1
		17.5	30.5	30.2	30.0	29.8
		26.9	39.9	40.1	40.7	40.2
		17.1	29.9	30.2	29.9	30.0
		67.4	119.1	119.1	118.8	118.1
		168.5	29.78	29.78	29.70	29.52
				29.65	29.74	

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1880phae.proj.1404R

c = 44 35.5

April 21–22, 1880

O 2 2 50.

+12 30

	W	W
30 3	22.3	5 1 06.0
	33.1	16.6
	44.9	28.2
	33.9	18.4
	1342	69.2
	33.53	17.30

Seeing very fine.

Both lines in S and R.

c = 44 35.5

April 22

β Eridani

5 1 54

−5 15

	W	W	R	R
30 3	25.0	25.6	25.8	25.9
	36.2	36.3	36.4	37.0
	33.3	33.4	33.5	33.3 ?
	43.2	43.0	42.7	42.5
	1577	1583	1384	1387
	39.42	39.58	34.60	34.68

End of the last series

Sod-A and the last were 24 clouds.

ε Orionis

5 30 4

— 1 17

	W	W	R	R	R
35 0	5.9	1 29.1	28.0	28.0	27.8
	16.3	38.1	39.4	39.3	39.4
	31.8	53.2	[G] 33.4	53.8	53.6
	29.1	41.8	41.8	41.7	41.5
	7 41.1	160.2	[G] 42.6	1628	1618
	18.53	40.05	40.65	40.70	40.45
		40.25	40.67		

κ Orionis

5 42 1

— 9 43

	W	W	R	R	W
0 0	26.6	1 [G] 50.7	51.0	51.1	51.5
	37.0	1.1	1.4	1.1	1.4
	54.9	18.7	18.7	19.5	19.4
	41.1	4.8	5.7	5.2	4.5
	1596	147	16.8	16.9	16.8
	39.90	3.68	4.20	4.23	4.20
			4.21		

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1880phae.proj.1404R

C= 44 35.5

α Aurigae

5 7 46

+45 52

		W
25	1	16.3
		23.3
		37.6
		29.5
		106.7
		26.68

β Tauri

5 18 39

+28 30

	W	W	R	R
45	3	13.0	13.0	13.1	13.2
		22.0	21.9	22.2	22.6
		33.6	33.0	33.0	33.2
		25.0	24.1	24.7	24.8
		93.6	92.0	93.0	93.8
		23.40	23.00	23.25	23.45
			23.20	23.35	

α Orionis

5 48 37

+7 23

		W	W
5	5 0	8.5	1 32.4
		19.5	45.0
		33.5	58.8
		20.6	45.1
		821	181.3
		20.53	45.33

ω Gem.

6 15 39

+22 34

		W	W	R	R	W
40	4	24.4	30.0	30.2	30.0	30.5
		35.6	40.3	40.8	40.9	40.3
		46.2	50.6	51.0	51.0	51.3
		37.1	42.1	42.1	42.9	42.0
		1435	1630	1641	1646	1641
		35.88	40.75	41.03	41.15	41.03
			4.89	41.09		

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1880phae.proj.1404R

C = 44 35.5

April 22, 1880

γ Gem

6 30 43

+16 30

W	W	R	R	W
45 3 25.3	4 46.0	47.2	47.0	46.5
37.5	57.5	58.2	57.3	58.0
51.6	11.9	10.2	10.8	12.1
39.1	~~57.0~~ 56.1	58.8	58.8	58.1
1535	2335	2344	2339	2347
38.38	58.38	58.60	58.48	58.67
	58.53	58.54		

C = 44 35.5

α Can Maj.

6 39 49

−16 33

W
50 0 42.1
56.3
10.2
57.3
22
~~56~~ 55.9
~~56.48~~
~~41.48~~

α Gem

7 26 52

+32 9

W	W	R	
5 4 41.1	0 56.3	57.1	
52.8	7.4	7.3	
6.9	20.6	20.9	
55.4	8.9	9.7	
2162	334	350	
54.05	8.35	8.75	

α Can Min

7 32 58

+5 32

W	W	R	R	W
45 1 27.9	2 40.0	40.9	40.7	40.6
42.0	55.3	55.3	55.5	55.2
54.0	8.0	6.9	6.8	6.8
41.5	54.0	54.8	54.8	54.0
1654	2163	2179	2178	2166
4135	5408	54.48	54.45	54.15
	54.12	54.46		

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1880phae.proj.1404R

c = 44 35.5

ε Can Maj

6 5 3 52

−28 40

		W	W	R	R	W
0	4	56.8	0 13.5	13.9	14.0	14.0
		12.5	28.9	28.9	29.0	28.6
		25.2	41.0	40.4	40.6	40.6
		11.2	26.5	27.0	27.7	27.0
		45 7	10 99	11 00	11 13	11 02
		11.43	27.48	27.50	27.83	27.55
			27.52	27.67		

β Can Min

7 20 35

+8 32

		W	W	R	R	W
45	1	33.3	2 53.1	54.1	54.3	54.0
		47.0	7.6	7.5	7.8	7.5
		59.3	19.9	19.9	19.8	20.1
		45.8	6.0	6.1	6.1	6.6
		18 54	26.6	27.6	28.0	28.2
		46.35	6.65	6.90	7.00	7.05
			6.85	6.95		

β Gem

7 37 55

+28 19

		W	W	R	R	W
55	4	47.9	1 25.6	6.3	6.7	6.5
		0.3	16.7	17.1	17.0	16.1
		9.9	28.3	27.7	27.9	28.4
		0.0	17.6	17.9	18.0	17.0
		23 81	68 2	69.0	69.6	68.0
		59.53	17.05	17.25	17.40	17.00
			17.03	17.32		

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1880phae.proj.1404R

c = ~~44~~ 35.5

Mu 2 Hor
α Cephei LC.
21 15 41
+11 7 56

	R	R
25 2	36.0	15 5.2
	46.0	9.1
	50.7	14.0
	42.0	5.6
	17 4.7	27.9
	43.68	6.98

c = 44 35.5

α Hydrae
α 2,38
— 8 8

	R	R
25 2	42.2	41.9
	53.9	54.0
	10.3	10.0
	56.5	56.8
	222.9	222.7
	55.73	55.68

Rej 1st w.

α Pegasi
22 57 44
+14 33

	R	R
40 4	45.0	45.8
	56	57.0
	6.0	6.0
	57.0	57.0
	224 6	225 6
	56.15	56.40

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1880phae.proj.1404R

C= 44 35.5

B Aquarii
21 25 11
−6 6

H. R. Mg.

ζ Aquarii
21 55 04
−0 52

	R	R
10	1 58.9	59.0
	10.7	10.8
	20.2	20.2
	10.8	10.9
	40.6	40.9
	10.15	10.23

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1880phae.proj.1404R

C = 44 35.5

April 22 – 23, 1880

⊙ 2 6 35

+12 40

	W	W
10 3	39.6	45.1 17.0
	52.0	29.1
	1.8	40.1
	51.4	30.0
	2048	1162
	51.20	29.05

Seeing very bad indeed

Both Circles in S & Rd.

C = 44 35.5

April 23, 1880

α Tauri

4 28 59

+16 16

	R	R
0 3	43.7	44.0
	55.3	55.5
	6.4	7.0
	56.2	56.2
	2216	2227
	55.40	55.68

Seeing bad.

ζ Orionis

5 34 39

−2 0

	W	W	R	R	W
15 3	33.9	4 45.2	45.6	44.8	45.1
	47.6	58.5	58.6	58.8	59.1
	59.4	10.0	9.3	9.2	9.8
	45.0	56.9	57.2	57.6	57.0
	1859	2306	2307	2304	2310
	46.48	57.68	57.68	57.60	57.75
		57.70	57.64		

α Orionis

5 48 37

+7 23

	W	W	R	R	W
55 0	22 31	47.9	48.8	48.5	48.6
	34.6	1.0	1.1	1.0	0.6
	45.9	11.6	10.7	11.3	12.0
	32.7	58.6	59.0	59.0	59.0
	1350	2391	2396	2398	2404
	33.75	59.78	59.90	59.95	60.10
		59.94	59.92		

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1880phae.proj.1404R

c = 44 35.5

β Orionis

5 8 44

−8 21

		W	W	R	R	W
35	3	25.0	4 33.4	33.4	33.0	32.9
		35.8	44.3	45.0	44.9	44.9
		49.6	59.0	58.8	58.7	59.0
		37.5	44.4	45.0	45.4	44.0
		147.9	181.1	182.2	182.0	180.8
		36.98	45.28	45.55	45.50	45.20
			45.24	45.52		

β Tauri

5 18 39

+28 30

		W	W	R	R	W
45	3	25.7	4 39.4	39.7	39.7	40.0
		36.3	50.0	50.3	49.8	49.9
		44.7	59.2	58.8	58.5	59.1
		36.1	49.0	49.7	49.8	49.6
		142.8	197.6	198.5	197.8	198.6
		35.70	49.40	49.62	49.45	49.65
			49.52	49.53		

Loct A_1

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1880phae.proj.1404R

C = 44 35.5

April 24, 1880

ε Corvi

12 3 54

−21 57

	W	W	R	R	W
15	27.0	2 48.3	43.1	43.0	43.4
	39.4	57.0	57.3	56.8	56.4
	50.1	7.2	7.1	7.2	7.3
	39.4	56.1	55.9	55.9	56.2
	155.9	2236	2234	2229	2233
	38.98	55.90	55.85	55.72	55.82
		55.86	55.78		

Perhaps wrong star

Lost A-1 Celendo Abadh

C = 44 35.5

δ Corvi

12 23 37

−15 50

	W	W	R	R
5 3	25.4	4 43.5	43.3	43.3
	39.8	57.8	57.5	57.4
	47.9	5.8	5.6	5.6
	37.8	55.3	55.2	55.1
	150.9	2224	2216	2214
	37.73	55.60	55.40	55.35
		55.60	55.57	

α Virginis

13 18 49

−10 32

	W	W	R	R
45 4	51.9	1 14.9	15.0	15.2
	38	26.0	25.8	26.2
	16.4	38.2	38.2	38.1
	36	26.2	27.0	26.9
	157	1053	1060	1064
	3.93	26.33	2650	26.60
		26.33	26.55	

α Aquarii

21 55 34

−0 54

	1.4	R	R	R
10 1	28	1.8	1.7	1.7
	2.3	1.4	1.3.0	12.7
	1.6	20.3	21.1	20.6
	29.3	11.6	12.1	12.0
	11.6	465	479	470
		11.63	11.98	11.75

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1880phae.proj.1404R

C= 44 35.5

β Corvi

12 28 2

−22 44

	Ut	W	R	R	W
0 1	10.5	2 38.3	39.2	39.0	38.5
	24.3	53.0	53.1	53.0	53.0
	34.4	2.3	2.2	2.5	2.1
	39.0	51.2	52.5	51.8	51.1
	9 22	2048	2060	2063	2047
	23.05	51.20	51.50	51.57	51.18
			51.19	51.53	

3 strokes for last 5

γ Virginis

12 35 32

−0 47

	Ut	W	R	R	W
5 0	55.9	2 7.5	7.7	7.4	7.6
	8.5	19.3	19.7	19.6	19.5
	18.0	29.1	29.5	29.3	29.0
	50	19.4	19.0	19.0	19.3
	3 04	75.3	75.9	75.3	75.4
	7.60	13.83	13.97	13.83	13.85
			13.84	13.91	

Rejected 1st of preceding 5's

Poll star

β Regani

22 37 20

+29 35

	R	R
40 4	28.0	28.6
	37.0	37.7
	41.3	41.5
	36.9	37.3
	143.2	145.1
	35.80	36.28

α Regani

22 54 4

+14 33

	R	R
45 1	5.1	5.4
	15.0	15.4
	22.1	22.7
	14.3	14.0
	56.5	57.5
	14.13	14.37

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1880phae.proj.1404R

170

c = 44 35.5

Aug 24 1880

Gas

δ 49 25 + 60 4

	R	R
15-1	49.7	39.6
	53.3	43.6
	54.0	49.8
	54.2	45.6
	216.2	178.6
	54.05	44.65

c = 44 35.5

δ Cass

	1 17	55
	+ 59	36
	W	W
40.3	2.4	3 45.3 4 3.7
	7.1	50.4 8.5
	13.4	58.9 14.3
	9.1	50.9 [illegible]
	32.0	212.5 35.2
	8.00	53.13 8.80

Seeing bad

A 30 to 9.

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1000phee.proj.1404R

$c = 44 \quad 35.5$

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1880phae.proj.1404R

c = 44 35.5

April 24 – 25, 1880

⊙ 2 14 7
+ 13 29

	W	W
30 4	23.4	5 2 02.3
	34.7	13.1
	43.3	21.2
	38.0	10.9
	1344	475
	3360	1188

Seeing very good,
Both limbs in δ + R.A.

c = 44 35.5

R Aurigæ
5 7 46
+45 52

R	R
251 142	139
225	226
305	309
227	229
899	903
2248	2257

γ Orionis
5 34 39
– 2 0

R	R
15 3 383	389
488	500
02	05
510	511
1993	2005
49.83	50.13

κ Orionis
5 42 1
– 9 43

R	R
0 0 45.8	45.7
558	562
9.4	10.3
591	592
2305	2314
57.63	57.85

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1880phae.proj.1404R

C = 44 35.5

β Tauri
5 - 18 39
+28 30

	R	R
45	2 19.8	
	29.2	
	36.0	
	29.8	
	114.8	
	28.70	

ε Orionis
5 30 4
−1 17

	R	R
35	1 5.4	6.1
	16.3	16.2
	27.0	26.9
	17.7	17.9
	66.4	66.1
	16.60	16.53

ζ Orionis
5 4 + 8 7
+ 7 23

	R	R
35	1 23.6	24.0
	35.9	30.5
	44.3	45.0
	35.7	35.6
	139.5	140.1
	34.88	35.02

J Gem.
6 30 43
+16 30

	R	R
45	3 19.7	20.0
	30.8	31.0
	41.2	41.3
	31.2	31.2
	122.9	123.5
	30.73	30.87

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1880phae.proj.1404R

c = 44 35.5

Apr 25 1880
ζ Can Maj
6 39 49
−16 23

	R	R
50 0	404	401
	53.8	54.2
	4.1	4.3
	54.2	54.2
	212.5	212.8
	53.13	53.20

c = 44 35.5

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1880phae.proj.1404R

$c =$

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1880phae.proj.1404R

C = 44 35.5

April 26, 1880

δ Lewis

11 7 40

+21 11

	W	W	R	R	W
5 2	51.1	4 10.7	10.9 ~~9.6~~	10.9	10.7
	14	21.4	21.5	21.2	21.2
	9.0	28.4	28.3	28.0	29.0
	8.6	23.2	23.0	23.0	23.0
	51	840	83.7	831	83.9
	1.28	21.00	20.93	20.78	20.98
		21.99	20.86		

C = 44 35.5

Comparison Star of (112)

11 19 34

+1 46

	W	W	r
30 3	15.2	4 9.1	
	27.4	21.4	
	31.4	30.7	
	28.4	22.2	
	102.4	834	
	25.60	20.85	

δ Cassi

12 23 37

−15 50

	W	W	R	R	W
5 3	32.0	4 53.8	53.2	53.0	53.8
	46.1	7.9	7.0	7.0	7.3
	55.9	17.2	17.4	17.3	17.3
	45.1	5.7	6.2	6.3	6.1
	1791	24.6	23.8	23.6	24.5
	44.78	6.15	5.95	5.90	6.13

57 Cephei L.b

18 43 46

+92 46

	R	R	R
30 4	23.9	18.8	16.2
	28.6	23.8	22.0
	36.2	31.3	28.8
	30.2	24.7	22.7
	1189	986	97
	29.73	24.65	22.43

$A_{3_2}\ 3,\ 2_2\ 2,\ 2_0\ 1_2\ 1,\ 1_0$ A_{+1} 2–1

Reg 5 following A_{1_0}

87 14
2 46

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1880phae.proj.1404R

C = 44 35.5

Comparison Star of (112)

11 23 6

+ 1 23

50 4 W W

50 4 54.7 12.53

6.1 3.73

16.0 4.67

17.0 3.83

33.8 14.76

8.45 3.690

A.R. bad

β Leonis

11 42 53

+ 15 15

W W

0 3 55.1 54.9

6.2 6.4

16.0 16.3

6.6 5.7

23.9 23.3

5.97 5.83

Z Aquilae

18 59 51

+ 13 41

R R

35-3 34.3 34.1

40.2 40.1

56.1 56.0

46.1 46.6

18.17 18.18

45.43 45.40

A 1 2 5-6789 A-1

β Cygni

19 25 50

+ 27 40

W W R R W

35 2.7.7 2 48.4 48.7 48.0 48.8

15.9 66.3 57.1 56.8 56.5

25.0 5.0 5.5 5.3 5.3

19.1 0.0 0.0 0.1 0.0

67.7 22.97 23.13 23.02 23.06

16.93 57.43 57.82 57.55 57.65

57.54 57.68

A 2 qe

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1880phae.proj.1404R

c = 44 35.5

April 26, 1880

γ Aquilae

19 40 30

+ 10 19

	W	W	R	R
35 3	39.6	0 23.9	25.0	24.7
	11.3	34.5	35.1	34.6
	21.2	45.4	45.1	45.3
	13.4	37.8	38.6	38.8
	45.5	141 6	143.8	143.4
	11.38	35.40	35.95	35.85
		35.40	35.90	

c = 44 35.5

α Aquilae

19 44 53

+ 8 33

	W	W	R	R	W
45 0	4.1	1 38.0	38.0	38.2	38.4
	14,9	49,1	48.8	48.7	48.9
	25.1	58.8	58.1	58.1	58.3
	17.1	50,2	50.6	50.4	50.3
	6 1 2	1961	1955	1954	1959
	15.30	49.03	48.88	48.85	48.97
		49.00	48.87		

γ Cygni

20 17 53

+ 39 52

	W	W	R	R	W
25 1	44.6	2 58.1	58.8	58.2	58.1
	53.0	6.7	6.6	6.6	6.7
	3.1	16.3	16.2	16.4	16.4
	56.9	10.0	9.6	9.8	10.1
	2176	31.1	31.2	31.0	31.3
	54.40	7.78	7.80	7.75	7.82
		7.80	7.77		

α Cygni

20 37 18

+ 44 51

	W	W	R
25 3	1.3	22,0	22.7
	9.4	30.6	30.1
	19.0	39.2	38.8
	12.9	33.1	33.9
	426	1243	1255
	10.65	3108	31.37

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1880phae.proj.1404R

C = 44 35.5

δ Aquilae

20 5 4
−1 11

	N	W	R	R	W
25	3 31.9	4 50.0	50.1	49.5	50.5
	43.4	2.0	1.8	1.4	1.2
	54.4	13.1	12.2	13.3	13.2
	44.3	2.0	3.2	2.7	2.6
	1743	7.1	7.3	5.9	7.5
	43.58	1.77	1.83	1.48	1.87
		1.82	1.66		

α² Capricorni

20 11 20
−12 55

	W	W	R	R	
10	2 36.6	8 48.1	48.0	48.1	48.1
	48.4	0.4	0.8	0.8	0.3
	1.0	13.1	13.5	13.0	13.3
	49.1	1.5	2.0	1.5	1.1
	1951	3.1	4.3	3.4	2.8
	48.78	0.78	1.08	0.85	0.70
		0.74	0.96		

ε Cygni

20 21 19
+33 31

	N	W	R	R	W
45	2 34.5	3 57.0	51.8	51.7	52.2
	42.6	0.0	0.0	59.9	0.0
	53.2	10.2	9.9	10.5	10.3
	47.1	4.2	4.0	4.7	3.8
	1774	5.4	5.7	6.8	6.3
	44.35	1.35	1.42	1.70	1.58
		1.47	1.56		

Z Cygni

21 7 47
+29 44

	N	W	R	R	W
30	4 55.0	1 9.9	10.0	10.0	10.2
	4.9	19.0	19.0	19.1	19.1
	12.5	26.8	26.7	27.2	27.1
	6.2	21.0	21.2	21.6	21.3
	18.6	76.7	76.9	77.9	77.7
	4.65	19.18	19.23	19.48	19.43
		19.31	19.35		

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1880phae.proj.1404R

c = 44 35.5

April 26, 1880

Capphei

21 15 41

+62 4

		W	W	W	W	W
10	4	30.2	57.1	41.0	58	26.4
		35.4	2.0	44.4	9.1	3.01
		45.2	11.6	54.8	19.8	40.1
		44.7	15.8	50.0	14.9	35.3
		155.5	26.5	190.2	49.6	131.9
		38.88	6.63	47.55	12.40	32.98

3 Strokes for cart-✓

c = 44 35.5

β Aquarii

21 25 11

− 6 6

		W	R	R	R
20	4	52.6	52.4	52.6	52.7
		4.5	4.2	4.3	4.3
		16.0	16.0	16.3	16.3
		5.2	5.0	5.0	5.1
		18.3	17.6	18.2	18.4
		4.58	4.40	4.55	4.60
		4.59	4.48		

Aq ✓ c

η Pegasi

22 37 20

+ 29 35

		W	W
40	3	11.1	4 20.0
		21.1	30.4
		29.2	38.6
		23.3	32.0
		84.7	121.0
		21.18	30.25

β Cass

0 24.9

+58 29

		R
50	0	48.3
		53.6
		2.5
		51.6
		216.0
		54.00

A > 89 A, 1234

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1880phae.proj.1404R

c = 44 35.5

ε Pegasi

21 38 14

+ 9 19

	W	W	R	R	R
5 5 3	48.0	0 5.4	5.4	5.0	5.4
	59.8	15.6	16.0	16.1	16.1
	9.4	25.7	25.1	25.3	25.7
	59.9	16.7	16.6	17.2	17.1
	23.71	63.4	63.1	63.6	63.9
	59.28	15.85	15.78	15.90	15.97
		15.91	15.84		

α Aquarii

21 59 34

— 0 54

	W	W	R	R	W
10 2	8.0	8 19.9	20.0	19.9	20.1
	20.1	32.3	32.2	32.0	31.8
	30.9	42.9	42.9	42.8	42.9
	2.13	33.2	32.8	33.3	33.5
	8.03	12.83	12.79	12.80	12.83
	20.08	32.08	31.98	32.00	32.08
		32.08	31.99		

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1880phae.proj.1404R

c = 44 35.5

April 26, 27, 1880

⊙ 2 21 · 40
+ 14 7

W W

55 1	2.4	25 4	37.5	
	14.1		50.1	
	25.3		1.4	
	14.0		50.2	
	55.8		1992	
	13.95		4980	

Seeing perfect: both limbs 5
1st limb in RA A+1 and comp A 2nd limb

c = 44 35.5

Comparison Star (112)
11 19 34
+1 46

R R

30 2	52.4	52.4	
	4.8	4.9	
	15.7	16.0	
	5.8	6.4	
	18.7	19.7	
	4.68	4.93	

J Cygni
W, 1 B
+39 52

R R

25 1	47.4	47.2	
	55.4	56.0	
	5.4	5.4	
	59.1	59.0	
	22.73	22.76	
	56.83	56.90	

α Cygni
20 37 18
+44 51

W W R

25 3	4.4	4	19.7	19.9
	12.3		25.1	28.0
	21.6		36.7	36.7
	15.6		30.9	31.0
	5.39		11.54	11.56
	13.48		28.85	28.90

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1880phae.proj.1404R

C= 44 35.5

Am 29 Hv
δ Aquilae
20 5 4
−1 11

	R	R
25 4	57.8	57.2
1	4.4	4.2
	5.7	16.1
	4.8	5.0
	17.0	16.5
	4.25	4.12

A 4 ℓ e

α 2 Cap.
20 11 20
−12 55

	R	R
10 3	41.7	42.0
	55.8	56.0
	8.3	9.0
	55.9	56.3
	22.17	22.33
	55.42	55.82

A 6 ℓ e

ε Cygni
20 41 19
+33 31

	W	W		R	R	W
45 2	38.6	3	56.4	55.9	56.2	56.0
	47.5		5.1	5.0	4.8	5.1
	57.5		15.0	14.8	15.2	15.0
	51.1		8.9	8.3	8.9	8.0
	19.47		25.4	24.0	25.1	24.1
	48.68		6.35	6.00	6.28	6.02
			6.18	6.14		

ζ Cygni
21 7 47
+29 44

	W	W	R	R	W
30 4	37.1	0	58.9	59.5	59.2	59.1
	49.9		9.0	8.9	9.2	8.4
	55.9		15.9	16.0	16.1	16.3
	49.0		11.0	10.8	11.0	10.6
	189.9		34.8	35.2	35.5	34.4
	47.48		8.70	8.80	8.87	8.60
			8.65	8.83		

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1880phae.proj.1404R

C = 44 35.5

April 27, 1880

α Cephei

21 15 41

+ 62 4

	W	W	W	W	W
15 4	34.9	57.6	50.4	10.2	26.7
	40.7	3.0	54.9	14.3	31.6
	49.9	11.7	3.9	23.9	40.3
	44.6	6.0	59.9	18.9	35.5
	1701	18.3	2291	67.3	1341
	42.53	4.58	57.28	16.83	33.53

C = 44 35.5

ε Pegasi

21 38 14

+ 9 19

	W	W	R	R	W
55 4	8.9	458.9	59.2	59.2	59.0
	21.5	11.8	12.0	12.0	12.2
	30.4	20.5	20.4	20.9	21.0
	21.0	11.3	11.1	11.3	11.7
	818	425	427	434	439
	2045	10.63	10.68	10.85	10.97
		10.80	10.77		

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1880phae.proj.1404R

C = 44 35.5

α Aquarii

21 59 54

− 0 54

γ Pegasi

0 7 0

+14 31

A Pond

		W		W	R	R	W
10	1	50.9	3	19.3	19.0	19.0	18.9
		3.3		31.3	36.6	31.7	31.7
		13.1		42.0	41.9	41.4	41.7
		4.0		32.0	32.2	32.1	32.3
		11.3		12.46	12.47	12.42	12.46
		2.83		31.15	31.18	31.05	31.15
				31.15	31.12		

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1880phae.proj.1404R

C = 44 35.5

April 27-28, 1880

⊙ 2 1 25 28

+ 14 26

50 2 9.7 | 5 | 4 52.3

22.3 4.9

32.1 15.0

21.9 4.1

86.0 16.3

21.50 4.08

Both limbs in Sec R.

During good

C = 44 35.5

α Lyrae

18 32 50

+38 40

R

40 0 S 1

13.8

23.0

18.0

59.9

14.98

α Aquilae

19 44 53

+8 53

R R

45 0 10.8 10.4

2.4 2.9

30.0 30.2

22.0 22.0

84.5 84.8

21.13 21.20

α Cygni

20 37 18

+44 57

R

25 4 22.3

30.8

38.4

33.0

124.8

31.20

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1880phae.proj.1404R

c= 44 35.5

γ Aquilae
19 50 50
+10 19

γ Aquilae
19 50 50
−5 3

	R	R	R
35	37 20	257.8	578
	18.2	9.2	9.1
	28.6	19.7	19.5
	19.6	10.9	10.9
	2	37.6	37.3
		9.40	9.33

0	0.28.4	28.9	
	39.8	39.3	
	48.4	49.0	
	41.0	41.9	
	158.2	159.1	
	39.55	39.78	

Lost A+1
Run-wind A?

A 3 ~ C

ε Cygni
20 41 19
+33 31

	R	R
45	238.7	33.9
	42.2	41.6
	57.4	57.6
	46.0	45.5
	173.3	172.8
	43.33	43.20

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1880phae.proj.1404R

188

C = 44 35.5

Apr. 28.–29.

⊙ 2 · 29 16

+ 14 44

W

15	3	7.6	5° [13]	22.5
		9.5		34.3
		19.9		44.3
		8.9		33.6
		35.9		134.7
		8.98		33.68

seeing mostly fair

C = 44 35.5

R R

404	152	157
	268	270
	369	392
	293	296

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1880phae.proj.1404R

C=

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1880phae.proj.1404R

c = ~~33~~ 44, 35.5

April 29-30, 1880

⊙ 2 33 5
+ 15 2

		W	W
0	0	29.4	30 3 1.9
		40.0	13.0
		52.7	26.5
		42.3	16.0
		164.4	5 7 4
		41.10	14.35

2nd limb RA both limbs 5

c = 44 3.29

μ Gem.
6 15 39
+22 34

	R	R
40 4	15.2	15.1
	26.5	27.0
	36.9	37.2
	29.3	29.0
	108.2	108.3
	27.05	27.07

Last A.

β Can. Min.
7 40 35
+ 32

	R	R
45 2	53.0	52.3
	50	58
	18.5	18.1
	7.2	7.0
	23.7	23.2
	5.93	5.80

ε Gem.
7 26 52
+32 9

	R	R
5 4	50.6	50.0
	0.1	0.0
	12.5	13.3
	3.5	4.2
	6.7	7.5
	1.68	1.87

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1990phec.proj.1404R

c= 44 32.9

Elsem
63043
+16 30

R R

45- 3212	213	
	321	324
	464	468
	353	353
	1350	1358
	33.75	33.95

α Can Maj
6 39 49
- 16 30

R R

60	56.1	56.0
	10.6	10.7
	~~14.8~~	24.9
	~~18.3~~	13.2
	44.3	44.8
	11.08	11.20

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1880phae..proj..1404K

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1880phae.proj.1404R

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1996ophae.proj..1404K

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