KG
11366
v.402

Fundamental Stars

A 3 1880 Circle Readings

From July 7/1880 to Sept. 23/1880.

2 47/23

A 27

1880phae.proj.140GW

c = 45 27.1

July 7-8, 1880

☉

7^h 12^m 60^s

+ 22 39

		W			W
40	1	428	10	3	44.0
		532			55.1
		2.2			3.9
		6.1			8.2
		22 43			23 1.2
		56.08			57.80

c = 45 27.1

β Ursae Min.

14 51 7

+74 39

		R		R		R
40	2	249	2	502	3	564
		339		590		55
		431		81		149
		481		127		198
		1500		100		36.6
		37.50		2.50		9.15

Seeing pretty fair.

c = 45 27.1

α Cor. Bor.

15 29 34

+27 7

		W		W	R	R	W
10	3	20.0	4	39.7	40.2	39.9	39.9
		32.2	8	51.4	51.7	51.6	52.0
		41.9		1.2	0.6	1.0	1.2
		45.1		4.1	4.2	4.7	4.0
		1392		2164	2167	2172	2171
		34.80		54.10	54.18	54.30	54.28
				54.19	54.24		

c = 45 27.1

α Serpentis.

15 38 18

+6 48

		W		W	R	R	W
30	2	4.0	3	12.0	13.0	12.6	12.2
		19.0		27.2	26.8	27.2	27.3
		29.8		38.0	38.0	38.0	38.0
		30.1		37.2	37.6	37.8	37.6
		829		1144	1154	1156	115.1
		20.73		28.60	28.85	28.90	28.78
				28.69	2887		

c = 45 27.1

β Bootis

1.45723
+40 52

	R	R
25	3477	48.0
	58.8	58.2
	8.9	9.0
	12.6	12.6
	247.5	247.8
	1.88	1.95

c = 45 27.1

β Librae

15 10 30
−8 56

	W		W	R	R	W
15 1	7.0	2	27.0	26.8	26.8	26.9
	19.3		39.3	39.3	39.6	39.7
	35.2		54.9	54.9	54.7	54.9
	34.2		53.6	53.2	53.7	53.1
	95.7		174.8	174.2	174.8	174.6
	23.93		43.70	43.55	43.70	43.65
			43.67	43.63		

c = 45 27.1

δ Scorpii

15 53 11
−22 16

	W		W	R	R
35 1	0.5	2	5.2	5.8	5.8
	16.3		21.1	21.2	21.0
	29.6		34.4	34.3	34.6
	27.0		32.0	32.2	32.6
	73.4		92.7	93.5	94.0
	18.35		23.18	23.37	23.50
			23.18	23.43	

c = 45 27.1

β¹ Scorpii

15 58 24
−19 28

	W		W	R	R	W
45 2	54.0	3	59.3	59.9	59.8	59.8
	10.1		15.9	16.0	16.2	15.9
	2.9		28.9	28.2	27.8	28.3
	20.2		26.0	26.1	26.0	26.0
	272		70.1	69.2	69.8	70.0
	6.80		17.53	17.30	17.45	17.50
			17.51	17.38		

c = 45 27.1

July 8, 1880
δ Ophiuchi
16 8 0
− 3 23

		W		W	R	R	W
40	3	0.0	4	10.9	11.0	11.0	10.0
		15.1		26.0	25.2	25.8	25.8
		26.9		38.0	37.6	37.6	37.6
		26.0		37.0	37.0	37.1	36.9
		68.0		111.9	110.8	111.5	110.6
		17.00		27.98	27.70	27.88	27.65
				27.81	27.79		

(26 ⊙ – 29 days)

c = 45 27.1

July 8–9, 1880
⊙

7 17 . 5
+22 $\overset{16}{\cancel{19}}$

		W.			W.
45	3	29.0	20	0	53.0
		40.3			4.3
		48.0			11.4
		52.2			16.9
		169.5			256
		42.38			6.40

Seeing very good

---

c = 45 27.1

July 9, 1880 W. C. W. obs.
β Arietis

1 47 58
+20 13

		W	W
5	3	16.4	16.9
		25.9	25.7
		$\overset{7}{38}.2$	37.2
		37.0	37.0
		1165	1168
		29.13	29.20

middle wire and following.

c = 45 27.1

July 9, 1880 W. C. W. obs

γ Androm.

1 56 29

+ 41 45

		W	W
35	1	46.9	47.0
		52.1	52.0
		5.7	5.2
		6.9	7.0
		231.6	231.2
		57.90	57.80

preceding star

c = 45 27.1

α Arietis

2 0 21

+ 22 53

		W	W
25	3	9.0	9 0
		18.1	18.0
		27.2	27.4
		29.3	30.0
		836	844
		20.90	21.10

c = 45 41.21

July 13 1880

α Cor Bor

15 29 34

+27 7

R R

10 3 21.3 21.8

29.3 29.3

38.2 38.8

42.4 42.3

131 2 ~~12~~ 13 2 2

32.80 33.05

α Serpentis

15 38 18

+6 48

R R

30 3 9.3 9.5

20.9 21.2

31.0 31.1

31.6 31.2

92.8 93.0

23.20 23.25

δ Ophiuchi

16 8 0

−3 23

R R

40 2 58.2 58.0

9.3 9.5

20.8 21.1

20.6 20.4

48.9 50.0

12.~~2~~2 3 12.50

α Scorpii

16 21 59

−26 10

R

25 3 25.7

37.0

48.0

47.3

157.4

39.35

July 13, 1880

δ Scorpii
15 53 11
−22 16

	R	R
35 0	383	386
	58.0	50.0
	2.8	2.1
	1.0	1.0
	212.1	211.9
	53.03	52.98

β' Scorpii
15 58 24
−19 28

	R	R
45 2	47.3	47.4
	59.8	59.8
	10.9	11.5
	9.3	9.3
	247.3	248.0
	1.83	2.00

ζ Ophiuchi
16 30 30
−10 19

	R	R
35 4	0.1	0.0
	10.2	9.8
	24.1	24.0
	21.5	21.8
	55.9	55.6
	13.98	13.90

η Herculis
16 38 45
+39 9

	R	R
10 1	41.2	41.1
	48.2	48.3
	57.6	58.0
	1.8	2.3
	208.8	209.7
	52.20	52.43

C = 45 | 41.4

July 13 1880

η Ophiuchi
17 3 27
−15 34

	R	R
55 0	8.2	8.0
	19.2	19.8
	30.8	31.2
	30.1	30.2
	88.3	89.2
	22.08	22.30

α, Herculis
17 9 18
+14 32

	R	R
45 4	53.1	52.8
	3.9	3.8
	14.2	14.0
	14.3	14.8
	25.5	25.4
	6.38	6.35

γ Draconis
17 53 48
+51 30

	R	R
50 0	34.2	33.8
	39.1	39.1
	48.0	47.8
	52.7	52.6
	174.0	173.3
	43.50	43.33

July 13, 1880

B D Locorin

17 27 42

+5 2 23

R

5 5 2 ~~2~~ 22.2

27.9

36.6

40.7

1274

31.85

α Ophiuchi

17 29 19

+12 39

	R	R
402	37.2	37.2
	46.8	46.2
	57.2	57.3
	57.7	57.8
	1989	1985
	49.73	49.63

Lost A +1

July 13-14 1880   C = 45 41.4   C = 45 30.9

☉

7 37 25
+21 34

R

30 0 879
464
528
588
1959
48.98

~~Both~~

Upper limb in Δ
Both limbs in R A.
Seeing bad.

β Ursae Min.
14 51 17 +74 39

R	R	R	R
280	528	561	40 4107
331	582	21	161
412	61	16	231
476	120	144	302
1499	·9.1	21.2	801
3748	2.28	5.30	20.03

β Scorpii
15 58 24
-19 28

R	R
45 2442	442
587	588
87	88
80	73
239.6	23.91
59.90	59.78

α Scorpii
16 21 59
-26 10

25 3 225
340
458
454
1507
37.68

July 14. 1880

δ Bootis
15 10 37
+32 46

R R
30 4 50.3 50.3
58.6 58.8
8.7 8.9
12.1 12.2
24
~~2~~97 102
2.43 2.55

α Serpentis
15 38 18
+6 48

R R
30 3 6.3 6.9
20.0 20.0
29.0 29.0
29.7 29.6
85.0 85.5
21.25 21.38

β Herculis
16 25 1
+25 45
R R
35 1 35.3 35.1
45.8 47.2
57.8 57.8
55.8 56.1
1887 1902
47.18 47.55

η Ophiuchi
16 30 30
14 9
R R
35 4 05.0 4.8
16.2 16.1
28.0 28.6
26.8 26.8
760 763
19.00 19.08

Lost S
+1
Rig 1st-stroke after rattle

July 14 1880

η Herculis
16 38 45
+39 9

	R	R
10 1	396	396
	482	481
	558	561
	1,2	1.0
	2048	2048
	51.20	51.20

β Arietis
1 47 58
+20 13

	R	R
5 2	1,2	09
	10,9	103
	178	180
	21,0	214
	509	50.6
	12.73	12.65

July 14, 1880

J Andrews [illegible]

	R	R
35 0	33,8	33,7
	~~43,8~~ 40,8	40,8
	~~48,5~~ 48,8	48,8
	54,0	53,9
	1771	1772
	44.28	44.30

18 (15)

July 1~~8~~6 1880 C—45 399

β Ursae Minoris

14 51 7
+74 39

	Q	R	R	R
40 2	17.9	52.0	49.2	6.2
	19.0	52.9	51.0	8.0
	27.8	1.7	59.7	6.4
	32.9	7.0	4.3	21.8
	97.6	233.6	224.2	42.4
	24.15	58.40	56.05	10.60

υ Bootis

15 10 30
−8 56

	R	R
30 4	49.0	49.4
	52.6	52.5
	3.8	4.0
	7.4	7.7
	232.8	233.6
	58.20	58.40

β' Scorpii

15 58 24
−19 28

5
55

45 2	53.4	53.4
	3.3	3.3
	15.0	14.9
	12.2	13.0
	24.2	24.6
	6.05	6.15

δ Ophiuchi

16 8 0
−3 23

	R	R
40 3	4.0	4.6
	13.0	13.2
	24.8	24.6
	24.0	23.1
	65.8	65.5
	16.45	16.38

July 16, 1880

α Serpentis
15 38 18
+6 48

	R	R
30 1	58,1	58,0
	6,3	6,3
	16,0	16,6
	16,8	16,6
	37,2	37,8
	9.30	9.45

δ Scorpii
15 53 11
−22 16

	R	R
35 0	46,2	46,5
	55,4	55,5
	7,9	7,6
	6,0	6,1
	2355	2357
	58.88	58.93

α Scorpii
16 21 59
−26 10

	R	R
25 4	46,5	~~35,0~~
	56,1	
	8,2	
	6,3	
	2374	
	59.35	

β Herculis
16 25 1
+21 45

	R	R
35 0	23,2	23,0
	29,1	28,8
	37,0	36,8
	41,4	41,2
	1307	1298
	32.68	32.45

July 1~~5~~6 1880 e = 45 20.9

ζ Ophiuchi
16 30 30 −10 19

	R	R
35 4	7.9	8.1
	15.02	15.1
	29.9	30.1
	27.1	26.7
	80.1	80.0
	200.3	200.0

η Herculis
16 38 45
+39 9

	R	R
10 1	38.7	38.5
	43.2	43.0
	53.4	53.8
	56.7	56.8
	192.0	192.1
	48.00	48.03

July 16, 1880

η Ophiuchi

17 3 27

−15 34

	R	R
50 3	5 32	5 38
	33	30
	148	147
	134	132
	247	247
	6.18	6.18

α' Herculis

17 9 18

+14 32

	R	R
45 3	344	342
	415	410
	327	328
	522	518
	160.8	159.8
	40.20	39.95

July 17 1880 @ -115 309

β Herculis

R R
35 0 160 159
25.7 25.8
33.4 33.7
36.1 36.3

@ hf,

η Herculis
16 38 45

R +39 9 R 9
10 1 36.6 36.4
45.6 45.3
56.4 56.0
57.2 57.6
195.8 195.3
48.95 48.83

β Draconis
17 27 42
+52 23

~~12~~ 39 R
--- 2 20.3
27.8
30.8
38.6
124.5
31.13

γ Draconis
17 53 48
+51 30

R R
50 1 52.9 53.2
59.3 57.8
9.6 9.8
11.1 10.9
12.9 13.7
3.23 3.43

Lost 1st m,

July 17.1880

η Ophiuchi
17 3 27
−15 34

		R	R
50	3	527	528
		67	62
		174	178
		150	147
		31.8	315
		7.95	7.88

α Herculis
~~45 3 318~~
17 9 16 +14 32

		R	R
45	3	318	320
		428	427
		543	544
		575	573
		1804	1804
		45.10	45.10

C = 45 309

α Arietis
2 0 21
+22 53

		R	R
25	1	403	404
		492	492
		553	557
		598	593
		2046	2046
		51.15	51.15

C = 45 278

β Ursae Min
14 51 7
105 21

		R	R	R
0	2	304	345	150
		361	399	261
		406	444	262
		451	498	308
		1522	1686	981
		38.05	42.15	24.53

July 17 1880

γ Persei c = 45 27.8

2 56 3
+5 3 2

	R	R
15 4	26	28
	8.2	7.9
	17.2	17.0
	19.1	19.7
	471	474
	11.78	11.85

α Persei

3 15 41
+49 26

	R	R
50	4 5 27	5 22
	5 7.6	5 7.6
	5.8	5.9
	9.0	9.0
	46	47
	1.15	1.18

η Persei

3 46 32
+31 31

45 3	54.2	54.0
	3.0	2.8
	11.2	11.3
	14.3	14.9
	227	$\overset{2}{3}30$
	5.68	5.75

July 17.1880

δ Persei

3 34 19

+47 24

		R	R
55	2	599	597
		56	54
		142	141
		168	165
		365	357
		9.13	8.93

λ Tauri

3 40 18

+12 44

		R	R
20	1	203	202
		288	289
		362	365
		393	390
		1246	1246
		31.15	31.15

July 1880

☉ 7 53 32
+20 57

40 2 443
538
52
53
2266
5 6.65

Both Circles in R.A.
2nd limb in δ
Seeing good

β Librae
15 10 30
−8 56

		R	R
15	1	80	84
		192	198
		354	353
		322	323
		945	958
		23.63	23.95

η Bootis c = 45 27
13 48 55
+19 0

		R	R
20	1	431	430
		552	557
		68	71
		~~552~~ 73	73
		2324	2325
		58.10	58.13

β Herculis
16 25 1
+21 45

		R	R
35	0	154	158
		264	266
		348	354
		377	376
		1146	1154
		28.65	28.85

July 18, 1880

τ Virginis
13 55 29
+2 8

R
10 2 41.1
54.2
55.0
55.2
225.5
56.38 1.~~38~~

β Ursae Min
14 51 7
+74 39

	R	R	R	R
40	2 16.8	50.6	3 44.2	0.2
	24.2	58.7	52.4	8.0
	34.0	8.4	1.6	17.4
	37.6	11.3	4.6	20.7
	112.6	9.0	222.8	46.3
	28.15	2.25	55.70	11.58

β Draconis
17 27 42
+52 23

	R	R
55 2	18.8	19.0
	26.3	26.3
	35.8	35.3
	39.3	38.9
	120.2	119.5
	30.05	29.88

γ Draconis
17 53 48
+51 30

50 0 39.3
45.7
55.2
57.9
198.1
49.53

July 18 1880 C=45 24 July 18

α Arietis
2 0 21
+22 53

		R	R
25	2	441	448
		545	540
		12	12
		50	47
		2248	2247
		5620	56.18

β Ursae Min
14 51 7
105 21

3. 102	288	1	322
167	450		391
208	490		428
268	502		298
795	1874		1439
19.88	46.85		35.98

ζ Persei
3 46 02
+31 31

		R	R
45	4	35	40
		127	126
		212	217
		251	253
		625	636
		15.63	15.90

ι Aurigae
4 49 7
+32 58

		R	R
20	3	186	182
		262	262
		366	367
		389	388
		1203	1199
		3008	29.98

July 18, 1880

α Persei

3 15 41

+49 26

	R	R
15 0	50,2	50,2
	55,0	54,9
	3,2	3,2
	7,3	7,6
	2357	2359
	58.93	58.98

ζ Tauri

3 40 18

+23 44

	R	R
35 1	238	240
	33.0	328
	406	407
	44,2	431
	1416	1406
	35.40	35.15

July 19 1880
18

⊙ 7 57 33
+20 43

R
20 2 21
162
208
257
583
14.58

⊙ = Upper Limb

C = 45 Q78

β Ursae Min
14 51 7
+74 39

40 2 272 2 577 423 28
347 58 501 106
444 157 598 198
478 182 30 240
1541 37.4 2152 572
38.53 9.35 53.80 14.30

γ Ophiuchi 16 30 30
−10 19

R R
35 4 549 551
68 68
214 213
180 187
411 419
10.28 10.47

July 19.1880

δ Ophiuchi

16 8 0
−3 2 3
R

40 4 10.3 10.2
23.0 22.9
35.0 35.0
35.4 34.1
103.7 102.2
25.93 25.55
Lost A +1

ν Scorpii
16 21 59
−26 18

25 3 23.2 23.8
37.6 37.6
49.2 49.6
48.1 48.0
158.1 159.0
39.53 39.75

c = 45 27.8

July 20-21 1880

☉

8 5 32

+20° 20′

45 0 58

13.2

243

26.0

693

17.33

1st limb in R.A.

upper limb in δ

c = 45 26.9

July 24–25, 1880
☉

8 21 24
+19 29

	lr		lt
35 0	44,9	5 2	50.5
	53,8		59.4
	5.3		10.7
	8,2		7.1
	2272		7.7
	5680		1.93

both limbs in δ + R.A.
seeing very fine.

c = 45 26.9

July 26, 1880 W.C.W. obs.

η Urs. Maj
13 42 46
+ 49 55

		W	
25	2	23.9	23.6
		28.1	28.2
		40.0	40.0
		40.2	40.1
		13 2.2	13 1.9
		33.05	32.98

η Bootis W.C.W. obs.
13 48 55
+19 0

		W	W
20	1	54.6	54.9
		3.1	3.3
		17.0	17.0
		14.0	14.0
		28.7	29.2
		7.18	7.30

α Bootis   W. C. W. obs

14 10 8

+19 49

		W	W
30	3	19.9	20.0
		30.1	30.0
		42.9	43.0
		39.9	39.9
		1328	1329
		33.20	33.22

c = 26.9

July 27 1880

~~B Ursae Min morning~~

~~14 51 7~~

~~185 21~~

40 2 411

538

22

09

α Ceti

2 55 57

+3 37

	L	R
40 2	411	406
	537	538
	22	23
	09	13
	217.9	2180
	5 ~~7.98~~ 4.48	54.50

δ Eridani

3 37 27

L −10 10

30 0 327

428

570

522

~~205~~ 18 4.7 47

~~46.31~~

46.18

η Tauri

3 40 18

+23 44

	L	R
35 1	267	264
	362	366
	443	448
	44.3	45.0
	151.5	152 8
	37.88	38.20

c = 26.9

α Persei
3 15 41
+49 26

RR

150 23 28
87 83
178 180
187 188
47.5 47.4
11.88 11.85

δ Persei
3 34 19
+47 24

R

551 502
568
62
71
0.3
0.08

γ Eridani
3 52 23
−13 57

101 208 207
337 340
407 413
408 408
14.04 14.08
35.10 35.20

c = 26.9

July 28, 1880

☉

8 33 11

+18 48

		W
(45?) 15	1	7.9
		18.0
		28.9
		27.0
		81.8
		20.45

lower limb in δ

A 4 and fol.

δ Eridani

3 37 27

+10 10

R

25	4	19.6
		30.2
		42.4
		40.0
		132.2
		33.05

seeing bad

c = 45 26.9

α' Herculis

17 9 18

+14 32

		W		W	R	R
45	3	21.1	4	50.0	50.3	50.1
		33.3		2.1	2.3	1.4
		44.0		13.1	12.7	12.8
		40.9		~~[illegible]~~ 9.9	9.9	9.9
		139.3		15.1	15.2	14.2
		34.83		3.78	3.80	3.55
				3.78	3.68	

η Persei

3 46 32

+31 31

		R	R
45	3	58.2	58.2
		7.7	7.8
		15.3	15.2
		18.7	18.9
		39.9	40.1
		9.98	10.03

c = 45 26.9

α Ophiuchi

17 29 19
+12 39

	H	W	R ~~H~~	R ~~H~~	R W
40 1	6.9	2 23.6	23.4	23.6	23.1
	18.2	35.3	35.0	35.0	35.2
	28.9	45.9	46.1	45.8	46.1
	27.0	43.4	43.1	43.0	43.0
	81.0	148.2	147.6	147.4	147.4
	20.25	37.05	36.90	36.85	36.85
		37.95	36.88		

γ Draconis

17 53 48
+51 30

	H	W	R	R	W
50 0	29.9	1 24.1	24.7	24.7	24.2
	37.0	31.3	31.4	31.3	31.1
	46.3	41.0	40.8	40.7	40.6
	47.2	42.1	41.6	41.9	41.0
	160.4	138.5	138.5	138.5	138.2
	40.10	34.63	34.63	34.63	34.55
		34.59	34.63		

γ Eridani

3 52 23
−13 51

	R	R
10 1	16.0	15.7
	28.4	28.9
	38.5	38.0
	36.1	35.9
	119.0	118.5
	29.75	29.63

ι Aurigae

4 49 7
+32 58

	H	W	R
20 2	10.7	3 29.5	29.9
	18.8	37.8	37.6
	27.3	46.1	46.2
	27.2	48.6	48.8
	86.0	162.0	162.5
	21.50	40.50	40.63

c = 45? 26.9
~~(44)~~

July 28-29, 1880

	⊙	8	37	6	
			+18	34	
		N			N
30	0	41.2	0	2	43.0
		51.1			54.1
		1.9			4.0
		1.0			3.3
		295.2			224.4
		53.80			56.10

both limbs δ & R.A.
seeing very fine

c = 45? 26.9
(44)

July 29, 1880
α Arietis

2 0 21
+22 53

~~#~~		w		n	R	R	N	
25	2	5.0	2	57.8	58.0	57.6	57.4	0
		15.0		8.0	7.7	7.8	8.1	
		18.9		12.9	12.6	12.2	13.0	
		23.0		15.9	16.0	16.0	15.4	
		61.9		34.6	34.3	33.6	33.9	
		15.48		8.65	8.58	8.40	8.47	
				8.56	8.49			

δ Persei

3 34 19
+47 24

		N		W
55	2	19.0	3	1.1
		25.4		7.9
		31.9		13.6
		32.0		14.0
		108.3		36.6
		27.08		9.15

δ Eridani

3 37 27
−10 10

		N
30	0	16.1
		26.5
		36.9
		32.3
		111.8
		27.95

Lost first two wires.
Rej second δ

c = 45? 26.9
(44)

β Urs Min L.C.

14 51 7
+ 105 21

	W	W	W
0 1	54.1	39.4	26.9
	1.0	56.1	33.3
	2.9	48.2	35.3
	5.1	57.0	38.1
	3.1	1947	1336
	0.78	48.68	33.40

α Ceti

2 55 57
+ 3 37

	W		W	R
40 2	46.4	3	56.1	56.4
	0.2		10.0	9.7
	5.2		14.0	13.8
	2.2		12.9	13.0
	2340		330	329
	58.50		8.25	8.23

A30 to 10 A+1 5, 4, 3, 21
~~for~~ δ near A+15 = short stroke

η Tauri

3 40 18
+ 23 44

	W		W	R	R	W
35 1	27.1	2	36.0	36.2	36.8	35.8
	37.1		46.1	45.5	45.9	46.2
	39.8		50.0	49.8	50.0	50.1
	41.6		50.1	50.4	50.7	50.1
	1456		1822	181.9	1834	1822
	36.40		45.55	45.48	45.85	45.55
			45.55	45.67		

Z Persei

3 46 32
+ 31 31

	W		W	R	R	[illegible]
45 3	57.2	0	17.9	17.6	17.2	17.2
	7.1		27.0	26.1	26.2	26.2
	13.1		32.0	32.0	31.9	32.0
	13.3		33.0	32.8	33.4	32.9
	307		109.9	108.5	108.7	108.3
	7.68		27.47	27.13	27.18	27.08
			27.27	27.16		

c = 45.7 26.9
(44)

July 29 1880

i ~~Aurigae~~

~~4 44~~ 7

~~+32~~ 18

α Aurigae

5 7 46 +45 52

R

25 3 284

363

414

423

1484

37.10

β Tauri

5 18 39

+28 30

		W		W	R	R	W
50	0	17.3	1	32.4	32.6	32.7	32.1
		26.1		41.1	41.1	40.8	41.1
		29.9		45.1	44.4	45.3	45.0
		32.1		47.6	47.7	47.2	47.1
		~~32~~ 105.4		166.2	165.8	166.0	165.3
		26.35		41.55	41.45	41.50	41.33
				41.44	41.47		

c = ~~40.7~~ (44) 26.9

ι Orionis

5 29 31
−6 0

	W		W	R	R	W
15 4	52.1	0	21.1	21.3	21.1	20.2
	3.9		31.1	31.2	31.5	31.4
	11.9		39.0	39.0	39.3	39.3
	9.2		36.9	37.4	37.4	37.0
	18.1		128.1	128.9	129.3	127.9
	4.53		32.03	32.23	32.33	31.98
			32.00	32.28		

c = 45 26.9

July 29–30 1880 H.C.W. obs

⊙

8 41 0

+18 19

W

30 0 35.9

45.9

54.3

53.1

1892

47.30

Lower limb in δ

preceding limb in R.A.

foll. limb A-1 and A+1

---

c = 45 26.9

July 30, 1880

η Ursae Maj. H.C.W. obs.

13 42 46

+49 55

		W	E
25 ~~30~~	2	00 3~~4.0~~	30.1
		35.3	35.1
		44.2	44.5
		48.1	—
		1576	
		39.40	

c = 45 26.9

July 30, 1880.

	η Bootis	W.C.W obs.			τ Virginis	W.C.W obs.
	13 48 55				13 55 29	
	+19 0				+2 8	
	W	W			W	W.
20 1	47.0	46.9		10 3	50.6	50.3
	56.3	56.2			2.1	2.3
	6.9	6.8			11.4	11.0
	7.0	7.0			12.0	12.2
	237.2	236.9			16.1	15.8
	59.30	$\overset{5}{8}$9.23			4.02	3.95

c = 45 26.9

July 31, 1880

η Urs. Maj. W.C.W. obs.
13 42 46
+49 55

		W	H
25	2	24.0	24.0
		29.5	30.0
		40.2	40.4
		42.2	41.9
		1359	1363
		33.98	34.08

η Bootis W.C.W. obs.
13 48 55
+19 0

		W	H
20	1	51.1	51.0
		1.1	1.1
		$1\overset{4}{3}.0$	13.9
		12.8	12.8
		19.0	18.8
		4.75	4.70

c = 45 26.9

c = 45 26.9

July 31 1880

α Herculis

~~45 4 49.1~~ 17 9 18
+14 32

		W	R	R	W
45	4	491	49.8	50.0	493
		1.2	1.8	1.5	1.2
		13.1	13.0	13.1	13.1
		10.0	10.2	10.6	10.1
		13.4	$2\overset{5}{4}4.8$	255.2	253.7
		3.35 ~~[illegible]~~	3.70	3.80	3.43
		3.39	3.75		

δ Urs. Min.
18 11 2
+86 37

		W	W	W	W	W	W
45	0	3.2	9.0	15.1	24.9	29.0	34.0
		9.1	14.9	21.2	30.3	34.9	40.0
		17.9	23.2	29.5	38.9	43.2	48.4
		21.7	27.0	33.1	43.1	47.0	52.3
		$\overset{5}{4}1.9$	741	989	1372	1541	174.7
		12.98	18.53	24.73	34.30	38.53	43.68

β Drac.
17 27 42
+52 23

		W
55	2	25.0
		34.1
		$4\overset{3}{2}.7$
		43.7
		146.5
		36.63

rej. 2nd δ

η Serpentis
18 15 29
−2 56

		W
15	1	40.0
		58.3
		5.1
		25
		219.9
		54.98

A8 etc

c=45 26.9

α Ophiuchi
17 29 19
+ 12 39

	W	R	R	W
40 2	25.0	25.2	25.6	25.0
	37.0	37.0	37.1	37.1
	48.0	48.2	48.4	48.2
	45.9	45.6	45.8	45.9
	155.9	156.0	156.9	156.2
	38.98	39.00	39.23	39.05
	39.01	39.11		

γ Draconis
17 53 48
+ 51 30

	W	W	R	R	R
50 0	24.2	‖ 45.0	45.0	44.9	44.9
	30.9	52.1	52.6	52.1	52.1
	41.2	2.1	2.3	2.7	2.7
	43.1	3.2	3.7	4.0	3.4
	139.4	222.4	223.6	223.7	223.1
	34.85	55.60	55.90	55.92	55.78
		55.69	55.91		

mid wire and foll

α Lyrae
18 32 50
+ 38 40

	W	W	R	R	W
40 0	0.8	1 18.0	18.6	18.4	18.1
	9.2	26.8	27.0	26.6	26.4
	20.2	37.3	37.2	37.2	37.0
	21.5	39.1	39.9	40.0	39.1
	51.7	121.2	122.7	122.2	120.6
	12.93	30.30	30.67	30.55	30.15
			30.61		

c = 45 26.9

July 31, 1880

β Arietis W. C. W. obs.

1 47 58

+ 20 13

	W	W
5.3	5.1	4.9
	16.0	16.0
	25.1	25.7
	25.0	24.8
	71.2	71.4
	17.80	17.85

Ch. f.

γ Androm. W. C. W. obs

1 56 29

+ 41 45

	W	W
35 1	41.1	41.0
	48.5	49.0
	59.0	59.0
	0.1	0.2
	2087	2092
	52.18	52.30

Ch. f.

α Persei

3 15 41

+ 49 26

		W		W	R	R	W
50	4	54.0	1	15.0	15.3	15.0	14.6
		0.9		21.1	20.7	20.5	21.1
		9.1		30.1	29.2	29.8	30.0
		10.0		31.6	31.7	31.8	31.1
		140		97.8	96.9	97.1	96.8
		280		24.45	24.23	24.28	24.20
				24.33	24.25		

η Tauri

3 40 18

+ 23 44

	W
35 1	22.9
	32.6
	40.6
	41.1

Ch. f.

β Urs. Min L. C. HA Rob.

14 51 4
+105 21

		W	W	W	W	W
0	2	45.9	59.0	40.9	25.9	17.1
		53.1	5.5	47.6	33.0	23.9
		58.1	11.0	52.7	37.9	29.2
		2.0	14.8	56.2	41.1	33.0
		219.1	30.3	197.4	137.9	103.2
		54.78	7.58	49.35	34.48	25.80

A -1   A (5)6789   A +1

α Ceti

2 55 57
+3 37

		W	W	R	R	W
40	2	41.9	3 55.3	55.2	55.2	55.0
		55.3	8.5	8.8	9.0	9.0
		3.9	17.1	17.1	16.2	17.1
		3.0	16.0	16.1	16.8	16.0
		224.1	36.9	37.2	37.2	37.1
		56.03	9.23	9.30	9.30	9.28
			9.26	9.30		

ζ Persei

3 46 32
+31 31

		W		W	R	R	W
30	4	0.1	0	19.6	20.0	20.0	19.6
		10.0		29.0	28.6	28.2	28.8
		19.6		38.1	38.2	38.1	38.7
		21.1		39.9	39.8	39.9	39.9
		50.8		126.6	126.6	126.2	127.0
		12.70		31.65	31.65	31.55	31.75
				31.70	31.60		

♈ c = 45 19.6

July 31 Aug 1 1880
☉

8 48 46
+17 49

		W			W
~~1~~5	0	33.5	45	2	35.4
		44.9			47.1
		56.2			59.1
		54.2			56.9
		188.8			198.5
		47.20			49.63

Seeing very fine.

C = 45 19.6

β Ursae Min.
14 51 7
+74 39

		R		R		R
40	2	188	2	308	2	591
		259		377		68
		370		588		177
		390		508		200
		1207		1781		436
		30.18		44.52		10.90

Rej. 2nd

β Draconis
17 27 42
+52 23

		R
−	2	132
		218
		330
		330
		1010
		25.25

α Ophiuchi
17 29 19
+12 39

		R	R
40	2	277	283
		398	396
		529	527
		502	497
		1706	1703
		42.65	42.58

η Draconis
16 21
+61 47

R
η — 38.8 35 0 10.0
46.7 15.7
58.2 28.4
58.6 28.3
2023 824
50.58 20.60

Companion easily seen
this. Dist = 3"?

α1 Herculis
17 9 18
+14 32

ρ R
45 0 50.6 51.6
4.1 4.2
17.5 17.2
15.1 14.8
2~~8~~73 2~~8~~7.8
6.82 6.95

Rej 15

j Draconis
17 38 0
+51 30

ρ R
50 0 34.4 34.7
42.1 42.1
54.1 54.1
55.2 54.8
185.8 185.7
46.45 46.42

β Ursae Min
14 51 7
105 21

0 3 28 227.2 ? 27.0
10.6 35.0 34.2
17.2 41.9 40.5
20.7 45.0 44.2
51.3 149.1 145.9
12.82 37.28 36.48

Aug 1 1880 e = 45 19.6

α Ceti
2 55 57
R +3 37

57.2	50.8
5.3	5.8
14.1	14.7
13.2	13.8
23.8	25.1
5.95	50.2
14.88	12.55

δ Persei
3 34 19
+47 24 R

55.1	58.6
	5.4
	16.2
	17.0
	37.2
57	9.30

γ Eridani
3 52 23
−13 51

	R	R
/0 1	22.8	22.7
	36.7	36.1
	49.0	49.0
	45.0	45.0
	1535	1528
	38.38	38.20

ι Aurigae
4 49 7
+32 58

R
15.3
23.4
35.1
35.9
1097
27.42

A (5) (4) α e

η Tauri
3h 40m 18s + 23° 44′

	R	R
35 1	23,0	22,7
	33,2	33,3
	42,4	42,6
	42,9	43,0
	1415	1416
	35,38	35,40

ξ Persei
3 46 32
+31 31

	R	R
45 4	2,3	2,9
	13,0	13,3
	24,0	23,4
	25,0	24,8
	643	644
	16.08	16.10

β Tauri
5 18 39
+28 30

	R	R
30 1	19,7	19,9
	29,0	28,8
	37,8	38,0
	40,1	40,0
	1266	1267
	31,65	31,68

δ Orionis
5 25 50
−0 24

40 3

40 3	~~54~~0	50.0
	1.3 140	1.3
	~~127~~	14.0
		12.7
		180
	44	4.50

Aug 1 1882 e = 45– 19,6

ι orionis

$5^h\ 29^m$

$-6^\circ\ 0'$

151	83	81
	19,0	18,8
	32,7	31,9
	30,0	30,0
	900	888
	22,50	22,20

Aug. 2

⊙ 0

8 52 38 +17 34

R

30,7 1,2 ~~51,0~~

41,8

51,9

5,2

4,0

2229

55,72

upper limb.

Aug 2-3 .1880

☉

$8^h\ 56^m\ 29'$

$+17^\circ\ 18'$

R.

w 1 29.2

39.7

52.4

50.0

171 3

42,82

upper limb.

Aug 4 1888
5 C = 45 196

⊙ 9 4 11
+16 46

	R
√0 0	29.8
	37.3
	48.8
	46.4
	162.3
	40.58

lower limb for δ
seeing good.

A+1 , 2 3 4 5   1 2 3 4 5
A 1 2 4 5 6 7 8 9   1 2 3 4 5 6 7 8 9
A-1 1 2 3 4 5   1 2 3 4 5

~~C =~~ 45 ~~196~~ C = 45 21.1

α Arietis

2 0 21
+22 53

	R	R
40 3	54.7	54.0
	16.8	6.3 ?=16.3
	13.4	13.7
	17.8	17.8
	42.7	41.8
	10.68	10.45

Lost – 1st m.

α Aurigae
5 7 46
+45 42

	R	R
25 4	41.4	41.4
	47.9	47.2
	56.6	58.1
	2.8	3.0
	2087	2097
	52.18	52.42

β Tauri
5 18 39
+28 30

	R	R
.5 5 1	49.9	46.0
	54.8	56.7
	4.0	4.7
	8.7	8.1
	2394	2345
	59.85	58.62

ι Persei
3 15 41
+49 26
R
50 4 ~~473~~ 534
58
588 586
6,4 6,8
13 0 12,8
11,2 11 6
55 2,80 2,90

γ' Eridani
3 52 23
−13 51
R R
10 0 133 139
252 262
371 363
371 370
1127 1134
28.18 28,35

☉ Aug $\frac{5}{6}$

9 8 1

+16 29

2

25′ 0′ ~~4~~6.2

35.8

46.2

41.4

1496

37.40

Aug 8/9

⊙ 9 19 27
+15 38

R

25 1 54.4
6.4
18.7
12.8
323
8.08

Both limbs in R A.
upper? limb in δ
Seeing very fine

β Draconis
17 27 42
+52 23

R

55 2 15.3
22.5
33.5
30.2
1015
25.38

~~Lyrae~~

δ Ursæ Minoris
18 11 02
+86 37

45 0	06.0	43.9
	10.8	49.3
	19.9	57.7
	19.9	58.7
	566	2096
	14.15	52.40

α Lyræ
18 32 50
+38 40

40 0	2.0	2.0
	~~21.7~~	10.0
	10.0	21.8
	21.7	18.7
	18.3	
	520	525
	13.00	13.12

α Ophiuchi
17 29 19
+12 39

R

40	2	29.2	28.8
		39.8	39.7
		52.5	52.8
		45.9	44.0
		1674	1673
		41.85	41.82

γ Draconis
17 53 48
+51 30

R.

50	0	19.9	19.9
		25.2	26.0
		37.2	37.5
		35.0	35.0
		1173	1184
		29.32	29.60

Ay α e

Aug $\frac{9}{10}$ 1880

⊙ 9 30 48
+14 44

Mars ∫
1st limb in R.A.
2nd A_1, 2 and 4

Aug 10 1880 ⊙ = 45 17.6

B Draconis
R

55 2 15.9 (B)
22.1
34.1
32.0
1041
26.02 ?

B Draconis
17 27 42
R
+52 23
R

55 2 15.9 (B)
221
341
320
1041
26.02

δ Ursae Minoris
18 11 02
+86 37

		R		R
40	4	53.9	0	12.8
		0.3		17.8
		9.8		28.2
		11.0		29.4
		150		882
		3.75		22.05

O

A_0 to 8_0

η Serpentis
18 15 29
−2 56

		R	R
0	1	26.7	24.0
		37.3	37.3
		51.8	51.8
		46.5	47.1
		1623	1622
		40.58	40.55

α Ophiuchi

17 29 19 +12 39

R R

40 2 33.1 32.3

43.2 43.2

57.0 54.7

51.8 52.3

1851 1845

46.28 46.12

Mid. wire & foll.
Rej 15 S) P

γ Draconis

17 53 48

+51 30

R

50 0 42.0

49.1

1.3

59.3

2117

52.92

α Lyrae

18 32 50

+38 40

R R

40 0 3.2 3.3

11.8 11.6

2~~4~~3.8 23.8

23.1 23.4

619 621

15.48 15.52

Aug $^{10}/_{11}$ /1880

C = 45 17.6

⊙ 9 27 02.

+15 2

R

30 4 12.7

23.1

35.0

30.5

1013

25.32

Lower limb δ
lost A_{12345} 1rst limb
seeing very good

γ Draconis

C = 45° 17.6

17^h 53^m 48

+51° 30

R

50	0	37.8	37.9
		44.1	43.9
		55.2	55.2
		53.8	53.8
		1909	1908
		47.72	47.70

Seeing so bad, observations given up.

Aug. 12/1880

Missed the Sun today.

β Draconis

$17^h\ 27^m\ 42$

$+52\ 23$

C = 45 17.6

		R	R
55	3	2.6	2.7
		10.3	10.2
		20.3	20.3
		20.7	20.7
		53.9	53.9
		13.47	13.47

α Ophiuchi

$17^h\ 29^m\ 19$

$+12\ 39$

		R	R
40	2	$36.\overset{2}{\cancel{8}}$	35.8
		47.0	47.0
		58.0	58.2
		55.7	56.0
		196.9	197.0
		49.22	49.25

γ Draconis

$17^h\ 53^m\ 48$

$+51\ 30$

50	0	30.0	29.9
		36.8	36.7
		46.9	47.2
		47.9	47.8
		161.6	161.6
		40.4	40.4

reject 1rst δ

Aug. 12 Continued

δ Ursae Minoris
18h 11m 2s
+86 37

	R	R	R	R
45 1	1.2	4.1	6.8	9.1
	5.7	9.7	11.9	14.5
	13.7	17.7	19.7	22.6
	18.0	21.0	23.5	26.4
	38.6	52.5	61.9	72.6
	9.65	13.12	15.47	18.15

η Serpentis
18h 15 29
-2 56

	R	R
0 0	23.2	22.08
	34.8	34.9
	47.0	47.0
	43.8	43.8
	148.8	148.5
	37.2	37.12

C = 45 17.6

Aug 12

α Lyrae
18 32 50
+38 40

	R	R
35 4	53.9	54.1
	3.0	3.3
	13.2	13.1
	11.9	11.6
	~~8~~22.0	~~8~~22.1
	~~20.5~~	~~20.52~~
	5.50	5.52

51 Cephei H. L. C.
6h 43 45
+92 47

	R	R	R
35 0	41.5	38.6	37.1
	46.4	44.0	42.3
	54.1	50.9	49.5
	52.0	49.1	47.2
	194.0	182.6	176.1
	48.5	45.65	44.02

Aug. 12 Continued.

σ Sagittarii

R

40 4 53.7
8.7
20.3
15.5

~~9~~38.2
~~24.55~~
9.55

Aug. 13 according to check –

ι Persei
3 15 41
+49 26

		R	R
50	4	487	489
		543	540
		20	24
		17	10
		2267	2263
		56.68	56.58

η Tauri
3 40 18
+23 44

		R	R
36	1	197	192
		280	284
		36,0	36,0
		328	33,1
		1165	1170
		29,12	29,25

Aug 13 according to sheet — R.T.R.

Aug 12 1880 Θ = 45 – 17,6

ζ Persei

3 46 32

+31 31

		D	R
45	4	1,4	1,5
		107	108
		190	194
		17,7	17,8
		488	495
		12,20	12,38

Aug 15 1880 c = 45 17.6

☉ 9 42 4
+13 48

β Ursae Min
14 51 2
+74 38

R	R
45 2 5.2	~~52~~ 5 28
1.0	58.8
8.6	5.2
7.6	6.0
9.4	2.8
2.35	0.70

No. 5

2nd limb in R.A. A 45 6 28.9
A, 1 2 34 5

α Ophiuchi
17 29 19
+12 39

	R	R
40 1	53.2	53.8
	~~53.2~~ 4.2	4.2
	13.0	12.9
	7.3	7.1
	17.7	18.0
	4.42	4.50

γ Draconis
17 53 48
+51 30

	R	R
50 0	24.6	24.4
	30.8	31.0
	38.4	37.9
	36.7	36.6
	130.5	129.9
	32.62	32.48

ι Herculis
e = 45 176

17 9 18
+44 32

	R	R
45 4	43.2	44.0
	54.8	55.0
	2.7	3.2
	58.8	58.8
	2195	2210
	54.88	55.25

β Draconis
17 27 4.2
+52 23

	R	
− 2	13.0	53.2
	20.2	[illegible]
	27.4	1.2
	25.7	
	86.3	
	21.58	

η Serpentis
18 11 29
−2 56

	R	
15 6	25.2	25.2
	36.3	36.2
	45.4	46.0
	40.0	40.2
	1469	1476
	36.72	36.90

α Lyrae
18 32 50
+38 40

	R	
40 0	4.5	3.9
	11.3	11.8
	19.1	19.0
	18.8	18.3
	537	530
	13.42	13.25

Aug. 15/1880

β Arietis

$1^h 47^m 58$

+20 13

		B		B	R	R
5	2	2.1	3	10.4	10.0	9.2
1		(6.1)?		19.4	20.0	19.8
		11.8		~~14~~.5 24.	24.9	24.3
		—		22.8	22.3	22.6
				77.1	77.2	75.9
				19.28	19.30	18.95
				19.28	19.12	

γ Androm.

$1^h 56^m 29^s$

+41 45

		B		R
35	0	29.4	1	45.4
		35.3		52.9
		41.1		58.2
		41.1		58.4
		146.9		215.1
		36.72		53.77

α Ceti

$2^h 55^m 57^s$

+3 37

		B		B	R	R	B
40	2	37.9	4	6.3	~~4~~ 4.8	4.7	5.1
		50.9		16.9	17.0	16.8	16.2
		53.7		20.4	20.1	20.6	20.2
		52.9		~~21.1~~ 18.9	19.7	19.7	~~21.4~~ 19.4
		197.4		61.5	61.6	61.8	61.9
		49.35		15.38	15.40	15.45	15.48
				15.43	15.43		

δ Persei

3 34 19

+47 24

			B		R
5	5	1	43.0	0	11.8
			46.7		16.8
			52.2		21.0
			52.3		23.0
			194.2		72.6
			48.55		18.15

α Arietis

$2^h\ 0^m\ 21^s$

+22 53

	B		B	R	R	B
2 5 1	27.8	3	1.1	1.0	0.8	1.0
	35.9		10.0	10.1	10.0	10.1
	39.1		12.4	12.7	12.8	12.9
	39.2		13.0	13.2	13.4	13.3
	142.0		36.5	37.0	37.0	37.3
	35.50		9.12	9.25	9.25	9.32
			9.22		9.25	

~~[illegible]~~ β Ursae Min

14 51 4

105 2

	B		R	R
0 2	42.8	1	58.8	31.4
	48.3		4.2	37.5
	48.3		3.8	34.9
	40.5		7.0	39.9
	1799		138	1457
	44.98		3.45	36.42

1 Stuke 15 ✓

η Tauri

3 40 18

+23 44

	B		B	R	R
35 2	8.5	2	57.0	57.1	57.1
	16.1		5.9	6.3	5.8
	20.5		9.0	~~8~~9.0	9.7
			9.5	9.8	9.4
			2624	2622	2620
			5.60	5.50	5.50
			5.60	5.50	

ζ Persei

3 46 32

+31 31

	B		B	R
50 3	56.8	0	20.0	19.6
	4.0		26.9	27.2
	8.4		31.7	31.0
	9.2		(23.4)?	32.9
	184		1016	1107
	4.60		25.40?	27.68

Ch. f.

~~Aug., 1880~~

Aug 15 1882

C = 46 17.6

α Tauri

4 28 59

+16° 16

		B		B	R	R	B
0	4	14.1	0	42.5	42.1	42.3	42.6
		22.1		50.4	50.8	51.2	51.2
		29.2		58.5	57.9	58.0	58.6
		26.2		55.0	55.0	55.0	55.0
		916		2064	2058	2065	2074
		22.90		51.60	51.45	51.62	51.85

ι Aurigae

~~5 1 34~~ 4 49 7

~~−5~~ +32 58

		B		B	R	R	B
20	2	4.7	3	32.6	32.0	31.4	32.1
		10.0		38.2	38.8	39.0	38.2
		16.1		43.7	44.3	44.8	43.9
		16.6		44.4	44.5	44.8	44.9
		474		1589	1596	1600	1591
		11.85		39.72	39.90	40.00	39.78

β Tauri

5 18 39

+28 31

		B	~~B~~	B	R	R	B
50	0	9.6	1	28.4 (23.4)	28.3	28.4	28.4
		15.45		35.0	36.0	36.1	34.5
		18.4		38.5	38.0	38.6	38.4
		21.2		39.6	40.4	40.7	39.8
		647		1415?	1427	1438	1411
		16.18		35.38	35.68	35.95	35.28

η Orionis

5 30 4

−1 17

		B		B	R	R
35	1	36.2	2	38.1	37.8	
		45.3		47.6	47.7	
		51.1		53.0	53.3	
		49.4		50.8	51.4	
		1820		1895	1902	
		45.50		47.38	47.55	

β Eridani
5 15 4
−5 15

	B		B	R	R	B
30 4	10.2	0	42.8	42.2	42.3	42.8
	19.8		51.0	57.1	57.4	50.8
	26.5		57.2	57.4	57.9	57.4
	23.6		55.0	56.0	56.0	55.4
	80.1		2060	2067	2076	2064
	20.02		51.50	51.68	51.90	51.60

β Orionis
5 8 44
−8 21

~~B~~	B	~~R~~	B	R	R	B
40 4	52.2	1	32.2	31.9	31.7	32.2
	0.8		41.0	40.4	40.8	40.2
	8.5		48.6	48.9	49.1	49.3
	4.5		44.6	45.0	45.2	45.0
	6.0		1664	1662	1668	1669
	1.50		41.60	41.55	41.70	41.68

ζ Orionis

5 34 39
−2 0

	B		B	R	R	B
35 0	8.0	1	39.4	39.7	39.7	39.9
	17.2		49.9	49.8	50.1	49.9
	23.6		56.1	54.3	55.9	56.7
			54.5	53.0	53.0	53.5
			1982	1988	1987	2000
			49.55	49.70	49.68	50.00

Aug. 15/16 c=45 17.6

⊙

9 45 48

+13 29

	B	B
3 5 0	40.8	3 34.2
	23.2	43.0
	30.1	50.5
	23.9	
	1180	
	29.50	

Both limbs in ✓

1st limb R ✓

2nd limb [illegible] 89 ✓ -1

c = 45 17.6

α' Herculis

17 9 18

+14 32 ✓

	B	B	R	R	B
45 3	28.2	4 43.9	43.0	42.9	43.0
	37.5	52.2	53.0	53.1	52.8
	46.5	0.9	1.2	1.2	0.5
	43.2	57.6	58.0	58.2	57.9
	1554	2146	2152	2154	2142
	38.85	53.65	53.80	53.85	53.55

γ Draconis

17 53 48

+51 30

	B	B	R	R	B
50 0	33.4	1 48.5	48.3	47.7	48.5
	39.1	54.6	54.1	54.2	53.9
	45.3	1.3	1.1	1.0	1.3
	45.1	0.1	0.9	0.8	0.1
	1629	2245	2244	2237	2238
	40.72	56.12	56.10	55.92	55.95

β Draconis

17 27 42

B ~~B~~ +52 23

— 2 . 210

27.4

27.1

α Ophiuchi

17 29 19 +12 39

		B	R	R	B	R
40	1	15.5	14.4	14.2	15.1	14.3
		24.2	24.3	24.3	24.4	
		33.2	33.1	33.6	33.7	
		30.2	30.1	30.1	29.9	
		1031	1019	1022	1031	
		25.78	25.48	25.55	25.78	

Aug. 17, 1880

C = 45 17.6

β Draconis
17 27 42
+52 23

		B		R
55	2	38.0	3	28.2
		44.0		34.1
		52.1		42.5
	1	50.2		42.0
		1843		1468
		46.08		36.70

α Ophiuchi
17 29 19
+12 39

		B
40	2	329
		418
		525
		483
		1755
		43.88

A7+9 A-1

51 Cephei S. C.
18 43 45
+87 13

		R	B
35	1	29.9	25.2
		35.1	30.2
		40.9	36.1
		39.9	34.6
		1458	1261
		36.45	31.52

o Sagittarii
18 17 46
−26 27

		B		B	R	R	B
45	0	6.8	1	105	10.3	109	107
		19.8		24.0	~~23~~.7	23.8	23.9
		30.1		34.2	34.0	33.8	34.1
		25.0		28.4	28.4	28.4	28.3
		817		971	964	969	970
		20.42		24.28	24.10	24.22	24.25

δ Ursæ Min.
18 11 2
+86 36

		R	R	R	R
20	2	10.6	18.3	25.0	31.8
		16.3	4.6	34.7	38.4
		21.4	30.2	36.3	43.6
		23.0	31.0	37.8	44.6
		713	1441	1358	1584
		17.82	36.02	33.95	39.60

Reject, wrong star.

α Lyræ
18 32 50
+38 40

		B		B	R
40	0	7.8	1	24.6	24.2
		14.9		31.7	31.6
		23.5		39.6	39.9
		23.4		39.9	40.8
		696		1358	1365
		17.40		33.95	34.12

ζ Aquilæ
18 59 51
−13 41

			B		B	R	R	B
35	3	5	1.9	0	20.0	20.0	19.9	20.4
			1.9		30.4	30.2	30.4	30.2
			1.2		40.9	40.7	40.3	40.5
			5.7		35.1	35.3	35.2	35.5
			107		1264	1262	1258	1263
			2.68		31.60	31.55	31.45	31.60

β Ursæ Min.
14 51 7
10 5 21

		R		R
0	2	20.2	1	45.1
		27.6		51.8
		28.8		53.7
		30.9		56.4
		1075		2070
		26.88		51.75

Perhaps lost ~~th~~
4th stroke 15s

Aug. ~~17~~ 17, 1880 c = 45 17.6

ι Ceti
2 55 57
+3 27

		~~R~~	R
40	2	322	322
		448	410
		500	497
		480	483
		1750	1752
		43.75	43.80

ε Eridani
3 27 14
−9 52

		R	
10	2	~~1~~34	38
		136	133
		239	240
		18.9	19.1
		598	602
		14.95	15.05

η Tauri
3 40 18
+23 44

		B	B	R	R	B
35	2	18.9	49.0	48.9	48.2	48.6
		27.5	57.1	57.7	57.9	57.6
		32.5	2.7	2.7	2.8	2.2
		32.3	1.7	1.7	2.1	1.8
		1112	2305	2310	2310	2302
		27.80	57.62	57.75	57.75	57.55

ζ Persei ζ ζ
3 46 32
+31 31

	B	B	R	R
5 0 0	6.5	6.4	6.1	6.0
	14.0	14.3	14.8	14.8
	21.0	20.6	20.8	21.1
	20.2	20.6	20.9	21.0
	617	619	626	629
	15.42	15.48	15.65	15.72

Lot-A$_{7,}$12

δ ~~Eridani~~ Persei

3 34 19
+47 24

		R
55	1	40.2
		45.9
		57.1
		57.9
		1891
		47.28

δ Eridani

3 37 27
−10 14

	B	R
30 0	38,0	59.0
	46,1	9.0
	57,9	20.1
	52,1	14.2
	1941	423
	48,52	10,58

Lost ~~the~~ A_{+1}

γ Eridani

3 52 23
−13 51

	B	B	R	R
10 1	17,8	18,1	17.0	17.6
	29,3	29,5	29.4	29.3
	38,8	38,4	39.0	38.2
	32,5	32,6	33.0	33.0
	1184	1186	1184	1181
	29,60	29,65	29,60	29,52

α Tauri c = 45 17.6

4 28 59
+16 16

	B	R
5 0	8,8	8.1
	17,1	17.1
	25,0	25.4
	22,0	22.0
	729	726
	18,22	18,15

A_3 αe. Rij [illegible]

Aug 17 1880 @ = 45 13.0
ι Aurigæ
4 49 07
+32 58

		B		B	R	R	B
20	2	13.9	3	290	2$\overset{8}{9}$.4	28.0	288
		20.2		346	35.4	35.8	355
		27.4		425	43.0	43.2	426
		26.4		42.2	42.3	42.2	424
		879		1483	1491	1492	1493
		21.98		37.08	37.28	37.30	37.32

C = 45 13.0

Aug. 17/18, 1880

⊙ 9 53 15

R +12 50

10 3 48.0
59.3
57.3
3.7
2283
57.08

ζ Ursae Maj

134 ~~5~~ 2 46
+~~5~~4 9 55

B B R R B
25 1 44.0 2 27.9 27.3 27.4 28.0
47.9 32.0 32.3 32.2 31.9
56.0 40.6 41.2 41.2 40.5
55.5 39.9 40.0 39.8 39.2
203.4 140.4 140.8 140.6 139.6
50.80 35.10 35.20 35.15 34.90
35.00 35.17

Seeing tolerably good
Upper limb in δ
Lost 1st 3 wires of 1st limb

Lost 1st wire.

α Boötis
14 10 8
+19 49

B B R R B
30 1 55.2 3 15.9 15.8 15.3 16.0
5.3 26.1 26.2 26.2 26.1
15.2 35.6 35.3 35.9 35.2
11.0 31.3 31.6 31.3 31.1
266.7 108.9 108.9 108.7 108.4
6.68 27.22 27.22 27.18 27.10
27.15 27.20

η Boötis
14 27 12
+38 50

B B R R B
30 0 42.4 1 56.7 57.0 57.1 57.1
49.5 4.9 5.7 6.0 5.3
0.1 14.8 15.0 14.8 14.2
51.3 11.9 12.3 12.6 12.2
209.3 26.8 2 27.00 27.05 26.98
52.35 27.08 7.50 7.62 7.45
7.27 7.56

η Bootis
13 48 55
+19 0

	B	B	R	R	B
20 0	331	1 483	47.8	$\overset{4}{5}7.7$	47.8
	41.2	56.0	56.7	57.4	51.6
	57.8	6.4	6.6	6.5	6.4
	41.6	3.1	3.4	3.7	3.0
	1747	2348	2345	2353	2388
	43.68	58.70	58.62	58.82	59.70
		58.70	58.72		

τ Virginis
13 55 29
+2 8

	B	B	R	R
10 3	53.9	53.9	53.1	53.0
	4.4	4.5	4.8	5.1
	13.2	12.8	13.1	$\overset{13}{8}.2$
	10.0	10.1	10.8	10.8
	2615	2613	2618	26.21
	5.38	5.32	5.45	5.52
	5.45	5.40		

Lost A_{+1}

ε Bootis
14 39 42
+27 35

	B	B	R
450	4189	1 56.2	56.0
	663	4.0	5.0
	55	13.1	13.1
	3.1	10.6	10.9
	2338	2649	2650
	58.45	6.22	6.25

β Ursae Min.
14 51 7
+74 39

	B	B	B
40 2	11.9	44.0	3 33.2
	23.6	49.8	39.0
	32.1	58.3	46.9
	30.6	56.9	45.9
	982	2090	1650
	24.55	52.25	41.25

Aug. 18, 1880 c = 45 B 0

δ Bootis 15 10 37
+33 46

ζ Cor. Bor.
15 29 34

	B	B	R	R	B
35 1	114	109	10.7	10.8	10.8
	17.7	17.5	18.2	18.7	17.8
	28.0	28.1	27.5	28.2	28.2
	25.0	25.1	25.3	25.6	25.4
	821	816	817	833	822
	20.52	20.40	20.42	20.82	20.55

	B		B	R	R	B
10 3	16.0	4	38.0	37.1	38.0	37.7
	24.1		46.2	44.7	47.0	46.0
	32.6		52.~~8~~9	55.0	54.9	54.4
	36.3		52.1	5~~1~~2.8	52.9	52.0
	10.30		19.12	19.16	19.25	19.07
	25.71		47.80	47.90	48.20	47.55 .68
			47.6~~7~~/74	48.05		

Rij 15 √

β¹ Scorpii
15 58 24
−19 28

	B		B	R	R	B
45 2	41.8	4	2.3	2.6	2.8 6	3.0
	52.4		16.1	17.0	18.8	16.2
	5.0		26.5	26.8	26.8	26.5
	58.3		20.0	19.9	20.1	19.8
	21.95		659	663	665	655
	54.88		16.48	16.58	16.62	16.38
			16.43	16.60		

2 Serpentis
15 38 18
+6 45

	B	B	R	R	B
30 2	0.1 3	24.2	23.5	23.2	24.2
	11.6	35.3	36.0	36.0	35.4
	21.1	44.0	44.6	44.7	44.3
	16.8	39.3	39.3	39.2	39.2
	45.6	142.8	143.4	143.1	143.1
	12.40	35.72	35.80 35.85		~~12~~ 35.78
		35.75	35.82		

δ Scorpii
15 53 11
-22 16

	B	B	R
35 0	48.4	8.8	8.2
x	~~4.6~~	20.6	21.4
	0.1 ~~11.6~~	32.3	32.6
	5.2	25.5	26.2
	5.3	87.2	88.4
	1.32	21.80	21.85

β Ursae Min

14 51 7

105 21

	B	B	B
0	2 37.9	1 50.2	1 207
	43.6	55.6	26.9
	46.5	57.6	29.9
	47.4	1.1	31.8
	1754	2255	1093
	43.85	56.38	27.32

~~Persei~~ α Ceti

2 5~~4~~5 ~~3~~ 57

~~+5~~ +3 37

	B	B	R	R	
40	2 399	4 10.0	9.2	9.0	10.0
	618	219	22.2	22.7	220
	580	280	28.2	28.7	281
	559	261	26.6	26.2	255
	2056	860	862	866	866
42	51.40	2150	2155	2165	2165
		21.57		21.60	

δ Persei

3 34 19

+47 24

	B	R
55	1 37.5	2 58.8
	42.1	5.1
	45.5	11.9
	48.9	11.4
	1780	272
	44.50	6.80

η Tauri

3 40 18

+23 44

	B		B	R	R	B
35	1 20.9	2	35.2	35.4	35.0	35.0
	29.5		44.5	44.8	44.8	44.9
	36.0		50.5	50.5	50.7	50.4
	34.4		49.3	49.4	49.3	49.5
	1208		1795	1801	1798	1798
	30.20		4485	4502	4495	4495
			4490		4498	

α Persei

3 15 41
+49 26

B B R R

55 4 57.2 1 25.0 25.1 24.5 25.2
0 56.1 29.2 29.6 30.0 29.3
29 36.1 34.3 36.0 36.1
23 36.0 36.4 36.1 26.8
23.25 12.63 12.74 12.74 12.74
58.12 31.58 31.85 31.85 31.85
31.71 31.85

ε Eridani

3 27 14
−9 52

B B R R B

10 2 18.4 41.8 42.0 41.6 41.7
17.8 51.4 51.9 51.8 51.9
29.9 3.1 3.8 4.1 3.9
23.9 57.2 57.8 58.1 57.0
9.00 21.35 21.55 21.56 21.45
22.50 53.38 53.89 53.90 53.62
53.50 53.89

Lost 1rst 2 Wires

③ Persei

3 46 32
+31 31

B ~~B~~ B R R B

45 3 57.2 50 0 13.4 13.1 13.0 13.2
6.1 21.2 21.3 21.4 21.6
13.3 28.2 28.4 28.2 28.2
12.7 28.1 28.1 28.0 28.4
29.3 8.09 8.09 8.06 8.05
7.32 20.22 20.22 20.15 20.13
20.17 20.18

α Tauri

4 28 59
+16 16

B B R R

4 4 0.2 0 27.1 26.8 26.3 26.9
8.7 35.0 35.9 35.7 35.1
18.0 44.5 44.9 45.1 44.3
14.0 41.3 41.1 41.3 41.0
5.09 14.79 14.87 14.84 14.71
12.72 36.98 37.18 37.10 36.78
36.88 37.14

Aug. 21, 1880 ☉ = 45.130

α Lyrae
18 32 50
+38 40

~~40 0 0.0~~

	B		B	R
46 0	0.0	1	27.1	27.2
	4.4		32.1	32.2
	17.8		45.0	44.2
	14.5		41.5	41.9
	36.7		145.7	145.5
	9.18		36.42	36.38

β Orionis
5 8 44
−8 21

1	R	R
35 4	47.0	47.1
	55.8	56.0
	9.9	10.2
	1.7	2.0
	224.4	235.3
	56.10	58.82

ε Orionis
5 30 04
−1 17

R	R
29.2	29.7
38.4	38.2
50.7	51.0
44.4	44.0
162.7	162.9
40.68	40.72

ζ Orionis ☉ = 45 130
5 31 39
−2 0

	R	R
20 0	10.8	10.7
	20.0	20.1
	32.3	32.0
	25.4	25.7
	88.5	88.5
	22.12	22.12

β Tauri
5-18 39
+28 30

R R
50 0 5.9 5.9
12.8 12.3
21.0 21.1
18.8 18.8
58.5 58.1

14.62 14.52

~~e = 45 16.7~~

δ Orionis
5-25 50
-0 24

R R
40 2 57.1 57.3
6.6 6.9
19.0 19.2
12.3 12.3
35.0 35.7

8.75 8.92

Aug $\frac{21}{22}$ 1880 ☉ = 45 16,7

c = 45 16,7 Same

☉ 10 8 3
+11 31

B mean Min
14 51 4 + 74 38

Am not certain about
the setting of collimating [illegible] ☉
A.H.R.

R #R R

5 0 33,7
4,3,2
5,5,1
4,5,3
18,1,3
45,32

40 2 13,2 4,34 3 4,1,1
1,8,6 5,1,2 4,1,3
2,9,2 6,4 0,7,3
2,7,7 5,9,1 5,6,2
8,8,7 21,4,1 20,2,9
22,18 53,52 50,72

Both limbs in R.A.
Lower limb in ☉
Seeing good

Perhaps lost 4th stroke for ☉

3 strokes 1st wire to the mean

λ Serpentis
18 ~~32 50~~
15 29
~~+38 4~~ −2 56

ε Lyrae
18 8 2 50
+38 40

R R

15 0 15,8 15,9
~~31,0~~ 29,0 28,7
4,2,3 4,2,4
35,0 35,2
1221 1222
3052 30,55

R R

40 12,1,8 22,3
31,8 32,0
4,3,2 4,3,1
40,0 40,0
1368 1374
34,20 34,35

c = 45 16.7

γ Draconis

17 56 48

+51 30

	R	R
50.0	25.8	25.3
	33.7	33.4
	45.4	46.0
	41.3	41.7
	146.2	146.4
	36.55	36.60

δ Ursae Min.

	R	R
40	4 54.1	05.8
	1.7	11.4
	10.3	21.9
	9.1	20.8
	15.2	59.9
	3.80	14.98

Aug 22 1880 C = 45 167

β Ursæ Min
14 51
105 21

	B	B	B
0 2	44.1	1 52.0	30.9
	50.4	59.2	38.0
	56.5	5.7	44.6
	56.3	4.9	43.2
	207.3	18	156.7
	51.82	0.45	39.18

α Ceti
2 55 57
+3 37

	B	B	R	R	B
40 0	17.9	4 10.2	9.8	10.0	9.7
	30.1	23.2	23.6	23.6	23.2
	40.0	31.9	32.1	32.6	32.2
	35.5	27.6	28.0	27.8	27.5
	1239	929	935	940	926
	30.98	23.22	23.38	23.50	23.15

Lost A_{+1}

δ Eridani
3 37 27
-10 10

	B	B	R	R
30 0	30.2	53.2	53.3	53.4
	40.1	3.1	3.8	3.9
	55.0	18.2	18.4	17.8
	47.3	10.4	11.0	11.1
	177.6	24.9	26.5	26.4
	44.40	6.22	6.62	6.60

ζ Persei
3 46 32
+31 31

	B	B	R	R	B
45 3	46.2	0 9.6	9.1	9.3	
	55.3	18.0	18.0	18.1	
	5.1	27.2	27.2	27.4	
	2.6	25.3	25.9	25.7	
	229.2	80.1	80.2	80.5	
	57.30	20.02	20.05	20.12	

ε Eridani

3 27 14

-9 52

	B	B	R	R	B
	~~40 0~~	~~27.9~~			
10 1	7.9	2 19.0	18.8	18.6	19.0
	18.0	29.2	29.3	29.9	29.3
	33.0	44.1	44.2	44.2	44.0
	25.1	36.5	37.0	36.8	36.1
	840	1288	1293	1295	1284
	2100	3220	32.32	3238	3210

δ Persei

3 34 19

+47 24

	B
55 1	44.2
	50.0
	0.2
	57.7
	2121
	5302

Lost - 2nd

γ' Eridani

3 52 23

-13 51

	B	B	R	R	B
10 1	9.2	1 28.9	29.0	29.1	29.0
	22.2	41.4	42.3	42.1	41.5
	34.8	54.0	5 84.2	5 84.2	54.0
	27.1	46.3	46.4	44.3	46.3
	933	1706	1719	1697	1708
	2332	4265	4298	4242	42.70

Lost 1st 3 wires

Aug. 23, 1880

β Draconis
+52 23

	B	~~B~~
55 2	4.0	
	13.1	
	23.2	
	20.3	
	606	
	1515	

C = 45 16.7.

α Ophiuchi
17 29 19
+12 39

	B	B	R	R	B
40 1	13.6	2 24.0	24.0	23.9	24.0
	25.3	36.0	36.3	36.2	36.9
	38.3	49.1	49.0	48.9	49.0
	31.9	42.6	42.8	43.1	42.4
	1091	1517	1521	1521	1518
	27.28	37.92	38.02	38.02	37.95

η Serpentis
18 15 29
−2 56

	B	B	R	R	B
15 0	46.3	1 42.9	42.4	42.6	42.5
	59.0	55.6	56.3	56.3	56.0
	13.9	10.0	10.3	10.2	9.6
	6.9	3.3	3.3	3.0	3.2
	2461	2318	2323	2321	2313
	61.52	57.95	58.08	58.02	57.82

α Lyrae

	B	B	R	R
35 4	54.3	1 13.0	13.2	13.6
	5.0	23.1	23.6	23.8
	17.0	35.1	35.8	35.6
	13.0	32.2	32.2	32.3
	295	1034	1048	1053
	7.38	25.85	26.20	26.32

γ Draconis
17h 53m 48
+51 30

Ursa Min.

	B	B	R	R	B		B	B	B
55 0	N 3	1 35.7	35.6	36.0	35.8	40 4	50.6	3.5	10.2
	24.3	44.8	45.0	44.8	44.9		59.2	10.2	14.8
	35.9	56.1	56.3	56.6	56.0		6.6	21.0	27.5
	31.8	52.1	52.4	52.7	52.4		6.6	20.0	24.6
	1073	1887	1893	1901	1891		44	547	811
	2682	47.18	47.32	47.52	47.28		1.10	1368	2028

Secured A_{10} to A_{70}
Lost A_{21}

51 Cephei

	B	B	B	B	B	B
35 1	24.4	19.4	14.2	8.6	0 58.0	52.6
	32.1	26.8	22.2	15.4	5.2	0.5
	42.1	37.3	31.5	25.0	15.0	9.8
	38.0	32.9	28.0	21.4	11.5	6.1
	1366	1164	959	704	297	90
	3415	2910	23.98	17.60	7.42	2.25

Aug 23 1880 c = 45 16.7

α Persei
3 15 41
+49 24
R R
50 4 47.4 47.6
55.0 53.0
4.0 3.9
3.2 3.9
2296 2304
57.40 57.60

ε Eridani
3 27 14
−9 52
R R
101 8.3 8.4
19.7 20.0
35.2 35.4
27.2 27.3
904 911
22.60 22.78

δ Persei
3 34 19
+47 24
R
55 1 38.7
46.2
55.9
53.3
1941
48.52

δ Eridani
3 37 27
−10 19
R R
25 4 17.9 17.8
29.4 29.1
44.7 44.8
36.2 36.3
1282 1280
32.05 32.00

~~35~~

η Tauri			γ Eridani		
	3 40 18			3 52 23	
	+23 44			−13 57	
	R	R		R	R
3 5 2	27.3	27.4	11 0	5.1	5.3
	37.7	38.0		19.2	18.7
	47.3	47.9		32.2	32.3
	44.2	44.0		24.2	24.0
	1565	1573		807	803
	39.12	39.32		20.18	20.08

Aug. 23, 1880

β Tauri

5 18 39
+28°30′

	R	R
500	7.1	7.0
	16.0	15.8
	25.0	25.0
	23.4	23.7
	715	715
	17.88	17.88

Aug. 23/24, 1880

⊙ 10 15 24

R +10 49

10 4 37.0
59.0
59.1
59.8

2149

5372

Upper limb in δ.
Lost 1st wire of 2nd limb
Seeing very fine.

Aug 28 1880

δ Ursae Min

	B	B	B
45	0 8.1	0 51.6	1 23
	10.9	58.1	41
	21.2	8.5	141
	20.9	8.8	140
	611	13'15	3'45
	15,28	32,88	8,62

C = 45 16.7

η Serpentis
18 45 29
−2 56

	B	B
15 1	31.9	41.6
	38.8	52.9
	53.4	7.9
	48.8	2.1
	1729	22'85
	43,22	57,12

51 H. Cephei
6 42 14
+87 14

	B	B	B	B	B	B
35 1	23.2	19.8	12.0	5.0	0 59.7	53.8
	27.7	23.6	16.1	8.1	3.4	57.5
	36.9	33.1	25.1	17.9	13.0	6.8
	35.6	32.1	24.1	16.2	12.1	5.8
	1234	1086	773	472	282	39
	30,85	27,15	19,32	11,80	7,05	0.98

o Sagittarii
18 47 46
−26 27

	B	B	R	R	B
45 0	16.8	1 27.9	27.8	27.6	28.2
	6.9	38.6	38.8	39.2	39.5
	20.9	52.7	52.2	52.6	51.5
	18.0	49.3	49.3	49.9	49.3
	42'6	168'5	1681	1693	1685
	10,65	42,12	42,02	42,32	42,12

Middle wire of foll

α Lyrae
18 32 50
+38 40

	B	R	R	B
40 1	10.2	9.9	9.9	10.5
	15.1	16.0	16.3	15.9
	26.5	27.2	27.1	26.7
	28.0	28.7	28.0	27.5
	798	818	813	806
	19.95	20.45	20.32	20.15

Adjusted
illumination
for microscope R

3 Aquilae
18 59 51
+13 41

C = 45.16.7

	B		B	R	R	B
35 4	21.9	0	23.5	22.9	23.3	23.6
	30.8		32.6	32.2	32.2	32.7
	43.1		44.8	44.0	44.0	45.0
	39.3		41.6	41.0	41.2	41.3
	1351		1425	1401	1407	1426
	33.78		35.62	35.02	35.18	35.65

Aug 28 1880 C = 45 16.7

β Cygni
19 25 58
+27 42

		B		B	R	R	B
35	3	470	4	65	6.6	6.5	73
		530 ~~27~~		128	13.2	12.8	122
		29 ~~4.0~~		227	23.0	23.1	229
		40		236	23.2	23.2	230
		2469		656	660	656	654
		61.72		16.40	16.50	16.40	16.35

h m s
4 49 07
+32 58

c Aurigae
5 7 46
+45 52

β Aquilae
19 49 22
+6 6

		B		B	R	R	B			R	R
10	3	10.0	4	405	40.4	40.2	405	20	3	228	230
		19.5		504	51.3	51.2	500			297	28
		30.4		08	1.2	0.9	09			399	407
		28.5		594	58.8	59.0	585			389	394
		884		2111	2117	2113	2099			1313	1319
		2210		5278	5292	52.82	52.48			32.82	32.98

Lost A

V Aquila
19 40 30
+10 19

	B	B	R	R
0 0	028.1	1 47.0	46.8	47.0
	35.0	54.1	55.1	54.8
	47.8	7.2	7.4	7.5
	46.2	5.5	5.7	5.9
	157.1	233.8	235.0	235.2
	39.28	58.45	58.75	58.80

α Aquilæ
19 44 53
+8 33

	B	B	R
1* 45 1	39.5	4 1.5	1.9
	46.9	10.0	10.5
	58.5	21.5	22.3
	56.9	19.2	19.0
	201.8	52.2	53.7
	50.45	13.05	13.42

B Tauri
5 18 39
~~+18~~ 30

	R	R
50 1	33.8	33.5
	39.5	39.9
	48.3	48.7
	48.8	49.0

	R	R
40 3	5.8	6.0
	15.0	14.8
	27.0	27.1
	23.7	23.4

Aug 28 188 c = 45 167

ε Orionis			ζ Orionis		
5 30 04			5 34 39		
−1 17			−2 0		
	R	R		R	R
35	1 241	241	20	0 0,5	09
	331	327		10,1	99
	457	464		216	219
	42,3	42,0		18,6	18,8
	1452	1448		511	515
	36,30	36.20		12,78	12.88

Aug $\frac{29}{30}$ 1880 ☉ = 45 16,7

☉

10 33 41

+ 9 3

5 4 560

4'6

16'2

12,3

291

7,28

Aug 31 1880 c = 45 ~~176~~ 16.7

ε Can Maj
6 39 49
−16 33

		R	R
50	2	13.8	14.1
		26.7	25.9
		33.1	33.4
		31.4	31.3
		1050	1050
		26,25	26.25

ν Draconis
17 53 48
+51 30

		B		B	R	R	B
50	0	28.4	1	44.1	43.8	43.8	44.2
		32.7		50.0	50.1	50.0	49.9
		41.5		57.3	57.9	57.4	57.1
		39.8		58.0	58.0	58.0	58.2
		1424		2094	2098	2092	2094
		35,60		52,35	52,45	52,30	52,35

Sept 1 1880 C=45 16.7

β Draconis
17 27 42
+52 23

		B
50	2	25.4
		32.1
		39.6
		38.0
		1351
		33.78

α Ophiuchi
17 29 19
+12 39

		B		B	R	R	B
40	1	16.2	2	50.4	50.0	50.0	50.1
		20.5		59.8	59.9	59.9	59.8
		35.0		8.6	8.9	8.9	8.9
		41.0		5.0	4.8	4.9	5.0
		1177		238	36	37	38
		29.42		5.95	9.00	9.20	9.50

δ Ursae Minoris
18 11 2
+86 36

		B	B			B	B
40	4	35.6	51.5	45	0	0.6	11.3
		40.5	55.9			4.7	15.2
		45.9	1.2			10.1	21.0
		48.7	3.7			14.6	24.9
		1707	2323			300	724
		42.68	58.08			7.50	18.10

η Serpentis
18 15 29
−2 56

			B		B	R	R	B
15	0	21.5		1	42.0	42.2	42.1	41.8
		30.8			52.0	52.2	52.5	52.2
		41.8			3.1	3.2	3.2	2.5
		39.9			1.0	59.9	0.1	0.6
		1340			2181	2175	2179	2171
		33.50			54.52	54.38	54.48	54.28

Sept. 1, 1880 C = 45 16.7

α Lyrae 18 32 50 +38 40

O Sagittarii 18 47 46 −26 27

	B		B	R	R	B		B	B	R	R	B
40	0 0.2	1	239	23.7	23.7	23.9	40 4	47.9	1 13.3	13.9	13.2	13.3
	6.3		30.6	31.0	30.8	30.2		0.7	25.0	25.2	25.6	25.2
	14.8		38.1	38.6	38.9	38.5		9.1	35.3	35.2	35.3	35.0
	16.5		40.0	40.2	41.1	40.0		6.9	32.1	32.0	32.3	32.0
	37.8		1326	1335	1345	1326		46	10.57	1063	1064	1055
	9.45		33.15	33.38	33.62	33.15		115	26.42	26.56	26.60	26.38

ζ Aquilae

18 59 51

+13 41

		B		B	R	R	B
35	3	46.3	0	7.9	8.0	7.9	80
		16.2		170	18.0	17.9	17.5
		5.8		275	27.2	28.8	280
		1.5		38	23.8	24.0	241
		2298		762	770	786	776
		57.45		19.05	19.25	19.65	19.40

124

Sept. $\overset{\frac{1}{2}}{1/2}$, 1880

☉

10 47 26

+7 41 37

R

5$\overset{5}{8}$ 4 52.3

3.0

10.6

8.7

146

3.65

C = 45 16.6

η Ursae Maj

13 42 46

+49 55

	R	R
252	188	187
	23.4	23.2
	32.5	32.3
	33.4	33.2
	1081	1074
	27.02	26.85

Lower limb for ∫

Seeing very good.

β Herculis

16 25 1

+21 45

	R	R
351	25.4	24.9
	34.0	33.8
	41.8	41.8
	42.2	41.7
	1434	1422
	35.85	35.55

ζ Ophiuchi

16 30 30

−10 19

	R	R
25 4	3.8	4.0
	13.8	13.7
	26.8	27.0
	21.4	21.7
	658	664
	16.45	16.60

R Bootis
13 48 55
+19 0

	R	R
20 1	394	393
	478	478
	570	57,2
	560	55.8
	2002	2001
	50.05	5002

Z Scorpii
16 21 59
−26 10

	R	R
25 3	200	203
	323	327
	424	42,3
	39,8	39.8
	1345	1351
	33.62	33.78

Lost A, 1234

R Herculis
16 08 45
+39 9

	R	R
10 1	28.0	28,1
	35,3	354
	44.1	443
	45.0	44.7
	1524	1525
	3810	38.12

R Ophiuchi
17 07
−15 34

	R	R
450	45.0	45.2
	582	578
	78	78
	4.2	4.7
	2352	2355
	5880	58.88

Sept 2 1880 C = 45 16.6

γ Draconis
17 53 48
51 30

	B	B	R	R	B
50 0	49.5 1	39.0	38.2	38.8	38.9
	54.9	43.6	43.8	43.8	43.3
	3.4	52.5	52.7	52.8	52.2
	3.9	52.5	53.0	53.0	52.3
	23.17	187.6	187.7	188.4	186.7
	57.92	46.90	46.92	47.10	46.68
		46.79	47.01		

δ Ursae Minoris
18 11 2
+86 36

	B	B	B
45 0	0.0	6.1	13.4
	2.3	8.7	16.3
	8.6	16.0	22.8
	13.2	19.9	27.2
	24.1	50.7	79.9
	~~06.5~~ 60.2	126.8	199.8

51 Cephei S.C.
6 42 14
+87 14

	B	B	B	B	B	B
35 1	31.0	23.0	20.1	13.0	7.0	2.2
	34.9	26.3	23.7	16.4	10.2	5.4
	41.2	32.2	30.2	23.6	16.6	11.6
	41.5	33.2	30.1	23.2	17.1	12.4
	1486	1147	1041	762	509	316
	37.15	28.68	26.02	19.05	12.72	7.90

o Sagittarii
18 47 46
−26 27

	B	B	R	R	B
40 4	58.6 1	21.9	21.8	21.9	22.6
	10.5	33.8	33.2	33.3	33.8
	20.2	44.3	44.1	44.2	44.5
	17.0	40.5	41.0	40.8	40.2
	~~37.6~~ 46.3 463 11.58	140.5	140.1	140.2	141.3
		35.12	35.02	35.05	35.28
		35.20	35.03		

~~Set at~~

η Serpentis
18 15 29
-2 06

	B	B	R	R
15 0	17.6	18.0	17.8	17.6
	27.3	27.2	27.8	27.6
	38.3	38.5	38.8	38.5
	35.6	35.6	35.8	36.1
	118.8	119.3	119.4	119.8
	29.70	29.82	29.85	29.95
		29.76	29.90	

α Lyrae
18 32 50
+38 40

	B	B	R
40 0	39 1	18.2	18.7
	9.0	24.6	25.0
	18.9	32.9	33.3
	20.0	35.2	35.9
	51.8	110.9	112.9
	12.95	27.72	28.22

C = 45 16.6

~~35 3 49.5~~ = ζ Aquilae
18 59 57
+13 41

	B	B	R	R	B
35 3	49.5 0	7.9	7.3	7.3	7.6
	58.3	15.5	16.3	15.8	15.7
	8.7	26.6	26.3	26.4	26.5
	5.2	23.5	23.6	23.2	23.4
	17	73.5	73.5	72.7	73.3
39	0.42	18.38	18.38	18.18	18.32
		18.35	18.23		

ε Eridani
3 27 14
-9 52

	B	B	R	R	
10 0	56.5 2	19.5	18.9	19.0	18.9
	4.1	27.0	27.2	27.1	27.4
	17.3	39.9	40.3	40.3	40.0
	13.4	35.7	35.8	35.6	35.6
	31.3	122.1	122.2	122.0	121.9
	7.82	30.52	30.55	30.50	30.48

C = 45 16.6

δ Persei
3 34 19
+47 24

	B	B
55 2	41.5 3	9.0
	45.5	12.8
	53.6	21.6
	54.4	20.8
	195.0	64.2
	48.75	16.05

δ Eridani
3 37 27
-10 10

	B	B
30 0	18.6	18.5
	26.0	36.0
	40.0	40.0
	34.4	34.2
	119.0	128.7
	29.75	32.17

Lost A_1 2 3 4
+1

γ' Eridani
3 52 23
-13 51

	B	B	R	R
10 0	28.1	20.1	20.7	20.7
	38.6	30.9	31.0	31.6
	48.9	41.7	42.0	41.9
	45.2	38.2	37.4	37.7
	160.8	130.9	131.1	131.9
	40.2	32.75	32.77	32.97
		32.75		32.87

A_2 L C.

η Draconis L.C.
16 22 22
~~+61 47~~
118 13

C = 45 16.6

η Tauri

3 40 18

+23 44

	B	B	R	R	B
35 1	34.4	3 40.0	39.8	40.0	40.1
	41.4	47.1	47.4	47.7	47.1
	48.0	54.3	54.2	54.0	54.1
	49.0	55.0	55.0	55.1	54.9
	12.8	196.4	196.4	196.8	196.2
	43.20	49.10	49.10	49.20	49.05
		49.08		49.15	

ζ Persei

3 46 32

+31 31

	B	B	R	R	B
45 3	50.6	0 9.9	9.8	9.8	10.0
	57.0	15.2	16.4	16.7	16.0
	5.5	24.0	23.8	24.0	24.0
	6.9	25.1	25.7	25.6	25.~~7~~8
	120.0	74.2	75.7	7~~8~~6.1	75.8
	30.0	18.55	18.92	19.02	18.95
		18.75		18.97	

α Tauri

4 28 59

+16 16

	B	B	R	R	B
0 4	4.0	28.1	27.7	27.6	28.1
	10.8	34.5	34.8	34.9	34.2
	21.2	45.0	44.3	44.2	45.0
	18.1	42.6	43.0	42.9	42.5
	54.1	150.2	149.8	149.6	149.8
4	13.52	37.55	37.45	37.40	37.45
		37.50		37.43	

ι Aurigae

4 49 07

+32 58

	B	B	R	R	B
20 2	8.9	3 26.1	25.9	25.4	25.7
	13.2	30.6	30.4	31.0	30.8
	22.8	40.0	39.8	39.9	40.5
	23.2	40.9	40.6	40.3	40.5
	68.1	137.6	136.7	136.6	137.5
	17.02	~~137.5~~	~~13.67~~		
		34.40	34.18	34.15	34.38

Sept. 2, 1880   C = 45 16.6

β Eridani

5 1 54
−5 15

	B	B	R	R	B
30 3	551	0 21.8	21.2	21.4	221
	24	288	29.2	29.0	286
	133	398	39.8	39.7	398
	109	376	37.8	38.0	377
	217	1080	1080	1081	1082
	5.42	2700	2700	2702	2705
		27.02		27.01	

β Orionis

5 8 44
−8 21

	~~B~~ B	B	R	R	B
35 4	48.2	1 8.2	7.3	7.6	8.1
	554	150	14.9	14.9	14.8
	80	280	28.2	28.1	276
	33	234	23.7	23.2	230
	2349	746	741	738	745
	5872	1865	1852	1845	1862
		18.63	18.48		

ε Orionis

5 30 04
−1 17

	B	B	R	R	~~B~~
35 1	222	2 466	46.0	45.9	
	304	55.2	55.3	55.4	
	409	50	5.0	4.9	
	310	2.9	3.0	3.0	
	1311	2297	2293	2292	
	3278		~~22.92~~		
		57.42	57.32	57.30	
			57.31		

ζ Orionis

5 34 39
−2 0

	B	B	R	R	B
35 0	30	1240	23.6	23.2	235
	112	328	33.1	33.3	328
	211	433	43.2	43.0	43.2
	190	398	40.1	40.1	399
	543	1399	1400	1396	1394
	1358	3498	3500	3490	3485
		34.91	34.95		

C = 45 16.6

β Tauri
5 18 39
+28 30

	B	B	R	R	B
5 0	45 1	33.2	32.9	32.8	33.2
	9.6	38.1	38.9	39.1	38.6
	16.1	45.6	46.2	45.8	45.5
	18.2	47.1	47.1	47.3	47.2
	3484	1640	1657	1650	1645
	12.10	41.40	41.28	41.25	41.12
		41.06	41.26		

δ Orionis
5 25 50
−0 24′

	B
40 3	11.9
	20.2
	30.2
	28.2
	905
	2262

κ Orionis
5 42 1
−9 43

	B	B	R	R
0 3	18.2	18.9	17.8	17.9
	25.7	26.0	24.2	24.0
	38.8	38.9	39.0	38.7
	35.0	34.9	25.0	34.9
	1177	11.87	11.80	1175
	~~11.82~~		~~11.78~~	
	29.42	29.68	29.50	29.38
		29.46		29.53

α Orionis
5 48 37
+7 23

	B		B	R	R	B
55 1	494	20	251	24.8	24.8	250
	56.9		33.1	33.3	33.0	32.5
	6.1		41.9	41.3	41.4	41.0
	4.0		39.0	39.6	39.7	39.0
	2364		13.91	1390	1389	13.76
	59.10		13.83	13.90		34.38
			34.78	34.75	34.72	34.38

So A_{-1}

Sept 21 1880 C = 45 16.6

α Geminorum
7 26 52
+32 09

				B	B	R	R	B
10	1	50.4	3	10.1	9.8	9.9	10.0
		54.9		15.1	16.3	16.8	15.6
		5.0		24.8	25.1	25.1	25.5
		5.7		26.0	25.0	25.3	25.0
		2366		76.0	76.2	871	76.1
		59.15		19.00	19.05	~~19.78~~ 28	19.02
				19.01	19.16		

α Can. Min
7 32 58
+5 32 ✓

		B	B	R	R
45	3	20	4 ~~28.8~~	27.6	27.0
		11.4	37.8	38.5	38.2
		19.0	45.8	46.1	40.4
		17.8	43.6	44.1	44.0
		502	1555	1563	1546
		12.55	38.88	39.08	38.65

α Cor Bor ✓ see next page
15 29 39
+27 7

		R	R
10	3	17.3	17.2
		24.0	23.9
		33.8	34.4
		33.7	33.9
		1088	1094
		27.20	27.35

δ Scorpii see next page
−22 16
(15^h) 16 53 11

		R	R
35	0	39.6	40.0
		49.8	49.8
		38	37
		58.9	58.8
		2121	2123
		53.02	53.08

Sept-2 C = 45 16.6

β Geminorum
7 37 55
+28 19

	B		B	R	R	B
0 1	48.0	3	5.0	4.8	4.3	5.1
	53.2		10.2	11.4	10.8	10.2
	0.2		18.4	18.2	18.2	18.2
	1.9		19.2	20.0	~~18.8~~ 18.9	19.5
	2233		528	544	532	530
	55.82		13.20	13.60	13.30	13.25

η Bootis Sept-3
14 27 12
+38 50

	R	R
30 2	00	59.8
	6.7	5.9
	16.3	17.7
	16.3	16.3
	413	397
	10.32	9.92

See next page

Post. st, 1 2 3 4
+1

β Scorpii
15 58 24
−19 28

See next page

	R	
45 2	39.8	40.0
	57.4	51.0
	4.1	4.0
	58.9	58.7
	2142	2137
	53.55	53.42

α Scorpii
16 21 59
−26 10

See next page

	R	R
25 3	27.8	27.2
	39.3	39.3
	52.2	51.4
	46.8	46.5
	1661	1644
	41.52	41.10

Sept $\frac{2}{3}$, 1880 e = 45 13.2

☉ 10 51 50
+7 14 49

B

45 4 15.9
22.0
34.9
32.2
105.0
26.25

1st limb got A_{-1}
2nd " " A_{-1}
Upper limb for δ

η Ursae Majoris
13 42 46
+49 55

	B	B	R	R	B
25 1	53.1	2 30.9	31.2	31.1	31.8
	54.5	33.1	33.2	33.8	33.0
	6.2	44.1	44.4	44.2	44.0
	5.2	43.9	44.6	44.8	44.0
	2390	1520	1534	1539	1528
	59.75	38.00	38.35	38.48	38.20
		38.10	38.41		

Lost A_{+1}

α Coronae

δ Scorpii

Sept 3

λ Bootis
134155
+19 0

γ Bootis
142712
+38 50

	B	B	R	R	B
250	259	152.2	52.7	52.3	520
	262	58.5	58.5	58.7	58.2
	896	11.0	11.0	11.3	11.1
	875	8.7	9.1	9.7	8.6
	1292	2704	2713	2720	2699
	3230	6760	782	800	748
		754	7.91		

β Scorpii

ν Scorpii

Sept 3 1880 C = +45 73.2

η Herculis
16 38 45
+39 9

	R	R
10 1	25,4	25,8
	33,2	32,9
	44,6	44,8
	43,0	43,5
	1462	1470
	36,55	36,75

η Ophiuchi
17 32 27
−15 34

	R	R
10 3	45,7	45,8
	56,7	57,0
	88	9,4
	4,3	4,8
	2355	2373
	58,88	59,32

Sept 3

β Herculis
16 25 1
+21 45

ζ Ophiuchi
16 30 30
−10 19

	R	R
35 1	23,6	23,5
	33,0	33,0
	42,3	42,7
	40,8	40,0
	1397	1392
	34,92	34,80

	R	R
40 0	13,2	13,4
	21,2	21,0
	37,3	37,7
	31,0	31,0
	1027	1031
	25,68	55,78

Lost A 1 2 3 4
+1

α Herculis
17 9 18
+14 32

	R	R
45 4	39,0	39,4
	48,0	48,4
	0,2	0,7
	55,0	56,0
	2022	2045
	50,55	51,12

A −1

Sept 4 1880 @ = 45 13.2

γ Draconis

17 53 48

+51 30

	B	B	R	R	B
50 0	23.8	430	43.2	43.2	431
	26.4	464	46.0	46.1	460
	38.8	591	58.9	59.0	585
	37.2	570	57.2	57.0	570
	1262	2055	2053	2053	2046
	31,55	~~20.50~~		~~20.53~~	
		51.38	51.32	51.32	51.15
		51.35			51.24

δ Ursæ Minoris

18 11 2

+86 36

	B	B	B
40 4	44.5	59.1	45 0 7.1
	49.4	1.1	8.2
	59.2	11.2	18.8
	0.9	12.3	21.1
	~~15~~ 21 62	83.7	55.2
	39.05	26 ~~20.92~~ 592	13.80

51 Cephei

6 42 14

+87 14

	B	B	B	B	B		B	B
35 1	25.3	18.3	13.1	6.9	0.3	0	55.8	57.2
	27.9	21.8	15.6	9.2	2.9		57.6	53.4
	39.0	31.4	27.0	20.2	13.4		8.8	4.6
	38.0	30.0	25.9	18.5	12.0		7.2	2.3
	1302	1017	816	548	286		94	2315
	32,55	25,42	20,40	13,70	7.15		2,35	57,88

o Sagittarii

18 47 46

−26 27

	B	B	R	R
45 1	13.2	13.2	12.8	12.6
	22.9	22.9	23.2	23.1
	38.0	38.2	38.0	38.~~4~~3
	33.0	33.5	33.8	33.7
	1071	1078	1078	1077
	26.78	26.95	2695	26.92
	26.86		26.93	

A 1

C = 45 13.2

η Serpentis
18 15 29
−2 56

	B	B	R	R	B
15 0	21.6	1 438	43.8	43.6	44.0
	29.0	52.2	52.3	52.0	520
	45.0	7.5	7.9	7.4	7.2
	41.1	34	3.2	3.7	2.8
	1367	2269	2272	2267	2260
	3418	5672	5680	5668	5650
		5661	5674		

α Lyrae
18 32 50
+38 40

	B	B	R
40 0	12.4	1 201	19.7
	16.3	249	25.2
	30.2	380	37.9
	29.2	380	38.2
	881	1210	1210
	2202	3025	3025

ζ Aquilae
18 59 51
+13 41

	B	B	R	R	B
35 3	56.2	0 11.3	11.0	10.5	10.7
	4.1	17.9	17.7	18.1	17.3
	19.0	32.6	32.6	32.2	32.5
	13.4	27.8	27.3	28.0	27.6
	327	896	8.86	8.88	8.81
	8.18	2240	2215	2220	2202

β Cygni
19 25 50
+27 42

	β	B	R	R	B
35 2	41.8	8 59.8	59.4	59.6	59.8
	46.7	4.6	5.2	5.2	4.6
	59.3	17.5	17.6	17.5	17.2
	58.2	15.2	15.1	15.1	15.9
	2060	2781	2773	32784	2795
	51.50	9.28	9.33	9.35	9.37
		9.32	9.34		

Sept. 4, 1880 C = 45 13.2

γ Aquilae
19 40 30
+10 19

		B		B	R	R
0	0	418	1	588	58.9	58.5
		488		8.9	6.4	5.9
		26		201	2013	19.9
		01		170	6.4	6.8
		2733		418	320	311
		53,32		10,45	8,00	7.78

β Aquilae
19 49 22
+6 6

		B		B	R	R	B
10	8	99	4	333	32.7	32.7	331
		102		41.4	42.7	42.6	418
		80.9		53.7	64.0	53.9	54.5
		268		50.2	50.7	50.7	506
		858		1886	1901	1899	1900
		2145		47,15	47.52	47.48	47,50

γ Cygni
20 17 53
+39 52

	B		B	R	R	B
252	48.0	4	19.0	18.7	18.7	193
	53.4		24.0	24.1	24.4	241
	68		37.0	34.9	37.2	368
	4.5		35.5	35.8	35.3	354
	2327		11.55	11.55	1156	1156
	58.18		28.88	28.88	28.90	28.90

δ Orionis
5 25 30
−0 24

		R
40	2	58.0
		70
		19.2
		15.9
		40.1
		10.02

θ Aquilae
20 5 4
−1 11

		B		B	R	R	B
30	1	4.5	1	279	28.1	27.8	282
		120		354	36.1	34.3	354
		262		497	50.0	50.1	500
		221		456	44.0	45.9	464
		648		1586	1602	1601	16.00
		16.20		39.65	40.05	40.02	40.00
				39.84		40.02	

α² Capricorni
20 11 20
−12 55

		B	B	R	R	
10	8	550	549	54.0	54.1	542
		41	39	53.0	4.0	40
		195	199	19.8	19.7	196
		128	122	12.9	13.0	125
		374	2569	2597	2608	303
		67.85	64.22	64.92	65.20	67.58

α Leporis
5 27 24
−17 55

		R
10	4	304
		415
		341
		488
		1548
		38.70

ι Orionis
5 25 31
−6 0

	R	R
352	372	370
	454	461
	585	589
	542	549
	1953	1969
	48.82	49.22

Sept 4 1880 Θ = 45 13.2

ζ Orionis
5 34 39
−2 0

		R	R
20	1	218	213
		309	308
		433	431
		389	391
		1349	1343
		33.72	33.58

α Orionis
5 48 37
+7 23

		R	R
55	2	39	38
		118	114
		232	234
		190	190
		579	576
		14.48	14.40

α Can Maj Θ = 41 13.2
6 39 49
−16 33

		R		R
50	2	169	~~402~~	170
		272	~~451~~	271
		402		403
		351		352
		1194		1196
		29.85		29.90

α Gem.
6 25 39
+22 34

		R	R
45	0	56.0	55.4
		23	[illegible].7
		11.7	114
		11.6	11.6
		216	201
		5.40	5.02

γ Geminorum
6 30 43
+16 30

		R	R
50	1	333	339
		3.90	3.90
		5.30	5.32
		4.89	4.89
		1742	1750
		43.55	43.75

Sept 4/5 1880 c=45 13?

η Ursae Maj

13 42 46
+49 55

R R

251 172 172
200 202
359 363
340 338
1071 1075
2678 26.88

⊙ 1059 3.
+6 30

R

5 0 258
338
467 1491
428 3728

Both limbs ~~with R~~ Ry

Lower limb in C

Seeing very bad.

ε Bootis
14 39 42
+27 15

R R

45 0 467 468
532 532
84 86
52 57
2338 2343
58.45 58.58

β Bootis
14 57 23
+40 52

R

25 3 401 406
490 491
47 45
594 594
2132 2136
53.30 53.40

α Bootis
14 10 8
+19 49

	R	R
30 1	558	562
	48	45
	229	229
	149	151
	364	367
	9,10	9.18

γ Bootis
14 27 12
38 50

		R	R
30	0	31,0	31,1
		38,5	38,3
		53,5	54,0
		50,1	50,1
		1731	1735
		43,28	43.38

α Cor Bor.
15 29 39
+27 7

104	30,3	306
	39,3	40.0
	54,4	54,7
	50,4	50,3
	1744	1756
	4360	4390

A
4 αC

α Serpentis
15 38 18
+6 48

		R	R
30	1	542	55,0
		64	6,3
		224	225
		164	15,8
		394	396
		9.85	9.90

Sept 5 1880 @ = 45 13.3

δ Scorpii
15 53 11
−22 16

	R	R
35 0	51.0	51.2
	29	31
	211	209
	136	136
	286	288
	7.15	7.20

β Scorpii
1~~6~~5 58 24
−19 28

	R	R
45 2	388	383
	521	518
	~~88~~	~~88~~
	06	04
	2203	2193
	55.08	54.82

ζ Ophiuchi
16 30 30
−10 19

	R	R
35 3	508	51.0
	18	16
	217	217
	128	129
	271	272
	6.78	6.80

η ~~Herculis~~
~~16 38~~ 45
~~+39~~ 9

δ Ophiuchi

16 8 0

−3 23

		R	R
40	2	42.9	42.4
		54.3	54.7
		12.4	12.7
		5.7	5.4

Chr f –

η Draconis

16 2 2

+61 47

		R		R
30	3	35.3	35 0	14.3
		42.4		20.2
		57.9		36.7
		53.3		33.0
		188.9		104.2
		47.22		26.05

η Ophiuchi

17 3 27

−15 34

		R	R
50	3	47^2	46.9
		04	0.2
		14.3	17.1
		9.7	9.7
		14.6	13.9
		3.65	3.48

α1 Herculis

17 9 15

+14 32

		R	R
45	3	14.4	14.6
		25.7	25.1
		41.9	41.7
		34.3	34.0
		116.3	115.4
		29.08	28.85

Sept. 5, 1880 C=45 13,2

α Persei

3 15 42
+49 26

		B		B	R		
50	4	52.5	1	19	1.3	1.2	19
		57.8		65	6.6	7.0	66
		9.6		189	19.0	19.0	189
		12.4		206	20.6	20.4	201
		123		479	475	476	475
		308		1195	~~476~~ 1188	1190	1188
				1191	1189		

ε Eridani

3 27 14
−9 5 2

		B		B	R	R	B
10	1	8.0	2	227	22.0	22.6	228
		171		322	32.9	32.7	324
		349		505	50.5	50.2	500
		311		452	45.8	46.0	462
		911		1506	1512	1515	1514
		2278		3765	3780	3788	3785
				3775	3784		

η Tauri

3 40 18
+23 44

		B		B	R	B	B
35	−1	30.1	2	322	31.7	31.8	324
		387		413	41.6	41.4	414
		509		527	52.4	52.5	522
		512		534	53.8	53.2	539
		1709		1796	1795	1789	1799
		4272		4490	4488	4472	4498
				4494	4480		

ζ Persei

3 46 32
+31 31

		B		B	R	R	B
30	3	45.3	0	114	10.9	10.8	110
		531		186	19.2	19.7	189
		62		323	32.2	32.6	323
		75		330	33.2	33.0	331
		2328		953	955	961	955
		5802		2382	2388	2403	
				2385	2395		

C = 45 13,2

δ Persei

3 34 19
+47 24

	B	B
55 2	1.0	57.5
	15.5	3.3
	18.5	16.1
	19.9	17.0
	549	339
	13.72 (?)	8.48

δ Eridani

3 37 27
−10 10

	B	B	B
30 0	13.8	~~1 50.1 0.2~~	50.1
	23.2	~~18.8~~	0.2
	41.4		18.8
	37.0	~~13.5~~	13.5
	1154		226
	28.85		5.65

Sont A+1

γ' Eridani

3 52 23
−13 51

	B	B	R	R	B
5 4 52	3 1	15.6	15.6	15.6	15.8
	5.0	28.6	29.1	29.0	28.5
	19.4	43.4	43.6	43.5	43.3
	15.1	37.0	37.2	37.0	37.4
	31.8	124.6	125.5	125.1	125.0
23.88	7.95	31.15	31.38	31.28	31.25
5		31.20	31.33		

Sont, 15 in

α Tauri

4 28 59
+16 16

	B	B	R	R	B
0 4	4.0	0 24.4	24.0	24.6	24.3
	13.8	33.1	33.6	33.7	33.0
	28.0	47.6	47.5	47.7	47.5
	23.6	43.4	43.0	43.2	43.2
	69.4	148.5	148.1	149.2	148.0
	17.35	~~14.83~~	~~14.86~~		
		37.12	37.02	37.30	37.00
		37.06		37.16	

Sept 5 1880 ☉ =

ι Aurigae

4 49 07

+32 58

		B		B	R	R	R
20	2	11.8	3	230	22.3	22.7	228
~~22 11~~		188		302	30.4	30.2	298
		328		437	44.0	43.8	440
		30.3		413	41.3	41.7	418
		937		1382	1380	1384	1384
		2342		3455	3450	3460	3460
				34.57	34.55		

β Eridani

5 1 54

−5 15

		B	B	R	R	B
35	0	15.4	347	34.1	34.0	342
		24.9	43.8	43.9	44.2	435
		39.0	584	58.2	58.1	581
		356	541	54.0	54.1	545
		1149	1910	1902	1904	1903
		2872	47.75	47.55	47.60	47.57
			47.64	47.57		

A_6 ∨ ☉

γ Orionis

5 18 38

+6 14

		B		B	R	R	
5	1	41.8	1	457	45.6	45.6	460
		53.2		570	57.9	57.8	576
		5.0		9.1	9.4	9.4	8.8
		1.9		6.0	5.9	5.3	5.0
		2219		2378	2388	2381	2374
		5548		5945	59.70	5955	5935
				59.40	59.62		

δ Orionis

5 25 50

−0 24

		B
40	2	57.1
		7.2
		21.9
		17.0
		432
		10.80

α Aurigae
5 7 46
+45 52

		B
25	3	20.2
		27.1
		40.6
		37.2
		1251
		31.28

β Orionis
5 8 44
−8 21

		B	B
40	1	4.0	4.5
		13.2	13.3
		30.9	30.0
		22.8	23.1
		709	709
		17.72	17.72

A −1

α Leporis
5 27 $\overset{2}{4}4$
−17 55

		B		B
10	3	21.0	4	36.1
		34.1		45.8
		47.3		3.5
		42.5		57.9
		1449		2273
		36.22		56.82

~~i Orionis~~ ε Orionis
~~5 29 31~~ 5 30 04
~~−6 0~~ −1 17

		B	B	R	R
35	2	36.2	50.5	50.1	50.1
		47.1	1.4	1.8	1.7
		1.3	15.8	15.8	15.1
		56.5	11.0	10.2	10.4
		2011	187	179	173
		50.28	4.68	4.48	4.32

Lost 1st W

Sept 5 1880 c = 45 13.2

ζ Orionis

5 34 39
-2 0

		B		B
20	0	8.8	1	21.6
		20.3		32.9
		34.5		46.5
		29.5		42.2
		9 31		14 32
		23.28		35.80

κ Orionis

5 42 1
-9 43

		B		B	R	R	B
0	02	4 9	3	21.8	21.3	21.2	21.5
		14.9		31.9	32.1	32.1	32.0
		31.4		48.1	48.0	48.0	48.0
		25.5		42.5	42.1	41.7	42.5
		76 7		144 3	143 5	144 0	144 3
		19.18		360.8	358 8	360.0	360.8
				360.8	35.94		

45 13.2 ⊕ = 45 10.8

α Orionis

5 48 37

+7 23

	B	B	R	R
55 1	54.1	54.0	54.0	53.9
	4.2	4.2	5.0	4.8
	16.6	17.3	17.2	16.9
	12.9	13.1	12.7	12.8
	278	286	289	284
	6.95	7.15	7.22	7.10

Sept $\frac{5}{4}$, 1880   C = 45 10.8
⊙ 11 2 40
+6 8

	B		B
55 1.	28.5	10 3	50.6
	39.1		2,9
	52,9		16,2
	49.5		12,5
	1700		222
	42,50		5,55

Both limbs in δ & R.A.
Seeing pretty fair

C = 45 10.8

η Bootis

13 48 55

+19 0

	B	B	R	R	B
Dv 0	21.9	1. 56.9	56.2	56.3	56.9
	31.7	7.1	7.3	6.9	6.9
	46.2	22.5	21.9	22.5	21.5
	44.3	18.5	18.7	18.7	18.1
	1441	450	441	444	434
	3.6.02	11.25	11.02	11.10	10.85

Sept. 11 1880 C = 45 10,8

δ Ursae Min
18 12
86 36

	R	B	B
45 0	1.7	0 569	05
	11,0	1,1	48
	12,0	6,5	9,5
	17,3	12,4	15,0
	420	169	298
	1050?	422	7.45

η Serpentis
18 15 49
−2 56

	B	B
10 0	27.8	41,3
	35.7	10,8
	40,0	0,2
	48,0	1,4
	1585	2137
	39,62	53,42

~~51 Cephei~~

θ Sagittarii
18 47 44
−26 27

	B	B
40 4	42,0	110
	53,8	22,4
	4,0	33,2
	3,8	31,9
	2236	985
	55,90	24,62

ζ Aquilae
18 59 51
+13 41

	B	B
35 3	53.1	53.5
	2,2	2.6
	12,9	12,4
	12,1	11.9
	203	204
	5,08	5,10

1880phae.prdj.1406W

C = 45 10.8

α Lyræ
18 32 50
+38 40

		B		B	R	R	B
35	3	569	1.	20.0	19.2	19.5	20.0
		3'6		25.5	25.8	26.2	25.5
		1'3		34.0	34.0	34.1	34.3
		1'5		38.0	37.6	38.0	38.0
		273		1175	1166	1178	1178
		6.82		29.38	29.15	29.45	29.45

51 Cephei
6 42 14
+87 14

		B	B	~~R~~
35	1	24.8	19.0	~~24.0~~
		29.5	23.2	
		34.6	29.5	
		36.9	31.2	
		1258	1029	
		31.45	25.72	

β Cygni
19 26 50
+27 42

		B	B	
35	2	41.8	6.1	6.8
		48.5	13.1	13.5
		55.6	20.5	20.7
		58.5	22.9	23.2
		2044	626	642
		51.10	15.65	16.05

ν Aquilæ
19 40 30
+10 19

		B		B	R	R
0	0	9.2	2	11.2	10.6	
		17.5		19.8	20.0	
		24.7		29.1	29.2	
		27.0		29.6	29.2	
		784		897	890	
		19.60		22.42	22.25	

Sept, 11, 1880 C = 45 10.8

α Aquilae
19 44 53
+8 33

	B	B	R
45 1	42.2	3 1.1	0.8
	51.2	10.6	10.7
	58.6	19.0	18.9
	59.5	17.9	18.0
	2115	486	484
	5288	1215	1210

β Aquilae
19 49 22
+6 6

	B	B	~~R~~
10 3	44.9	4 41.0	
	54.5	51.0	
	2.8	58.9	
	3.0	58.3	
	2252	2092	
	5630	5230	

γ Cygni
20 17 53
+39 52

	B	B
25 2	54.6	55.1
	1.1	1.8
	9.1	10.0
	10.2	10.0
	150	169
	3.75	4.22

α Cygni
20 37 18
+44 57

	B	B	R	R
25 4	28.8	0 31.5	31.8	31.6
	34.9	36.3	37.4	37.0
	42.3	44.2	44.5	44.6
	44.0	47.2	46.2	46.7
	.1500	1592	1599	1599
	37.50	39.80	39.98	39.98

θ Aquilae
20 5 4
−1 11

	B		B	R	R	B
30 0	25.7	1	25.5	25.7	25.3	260
	350		354	$35.\overset{2}{8}$	35.3	353
	445		449	44.8	44.8	449
	446		447	44.4	44.7	445
	1498		1505	1501	1501	1507
	37.45		37.62	37.52	37.52	37.68

α² Capricorni
20 11 20
−12 55

	B		B	R	R
10 3	57.5	0	17.2	16.7	16.3
	2.7		265	26.5	26.5
	14.0		380	38.0	37.8
	10.5		334	33.7	33.9
	187		1151	1149	1145
	4.68		28.78	28.72	28.62

ε Cygni
20 41 19
+33 31

	B		B
45 4	20.7	0	17.0
	26.2		229
	34.9		314
	37.7		340
	1195		1053
	29.88		26.32

B Orionis
5 8 44
−8 21

	R	L
35 4	100	500
	594	592
	100	99
	77	77
	71	66
	1.78	1.65

Sept 11 1880 Θ = 45 10,8

γ Orionis
5 18 38
+6 14

R R
5 0 24,8 25,0
35,2 35,6
41,0 41,0
41,8 43,0
1428 1446
35,70 36,15

δ Orionis
5 25 50
−0 24

R
40 5 53,2
3,2
10,1
10,5
170
4,25

κ Orionis
5 42 1
−9 43

R R
0 2 2,2 2,4
11,0 11,4
21,2 21,2
20,3 20,6
547 556
1368 13.90

α Orionis
5 48 37
+7 23

R R
5 5 1 5 9,8 5 9,2
9,3 9,2
14,8 14,9
16,1 15,7
400 390
10,00 9.75

ε Orionis
5 30 04
−1 17

		R	R
35	1	190	190
		288	291
		359	359
		372	370
		1209	1210
		30,22	30,25

η Orionis
5 34 39
−2 0

		R	R
15	4	54,3	541
		59	58
		122	120
		136	134
		260	253
		6,50	6.32

μ Geminorum
6 15 39
+22 34

		R	R
45	2	200	200
		288	284
		316	319
		362	364
		1166	1167
		29.15	29.18

C = 45,08
ε Can Maj.
6 39 49
−16 33

R	R
87	83
208	208
273	272
272	270
840	833
21,00	20,82

A₄ α C

Sept 11 1880 C = 45   7,5

ε ~~Can Maj~~
6 ~~▽3~~ 5 2
−28 10

α Gem
▽ 26 52 + 32 9

α Can. Min
▽ 32 58
+5 32

	R	R
10 14	41,3	41,3
	47,7	47,4
	54,0	54,0
	58,0	57,6
	2010	2003
	50,25	50,08

	R	R
45 4	28,2	28,2
	35,3	35,4
	43,3	43,8
	49,8	49,7
	1566	1571
	39,15	39,28

Rij, 5' ✓

Sept 11/12 C = 4 5 07.5

0 11 24 15
+3 51

R

10 2 279
388
444
478
1589
39.72

Upper limit in S
Bonn Comparison R at
Seeing bad.

η Draconis
16 22 22
+61 47

R 35 R

30 4 430 0 170
487 212
590 312
593 329
2100 1023
52.50 25.58

A–1

Sept 12

η Ursae Maj
13 42 46
+49 15

R R

25 1 147 148
184 187
267 266
298 293
896 894
22.40 22.35

ζ Ophiuchi
16 30 30
−10 19

R R

35 3 478 480
580 574
116 118
80 78
54 50
1.35 1.25

δ Ophiuchi
16 8 0
−3 23

		R	R
40	2	48.1	48.8
		59.1	59.1
		13.7	13.2
		11.8	11.8

Ch J.

α Scorpii
16 21 59
−26 10

A Rione.

η Herculis
16 38 45
+39 9

		R	R
10	1	28.3	28.6
		37.2	37.2
		46.2	46.6
		48.2	47.7
		1599	1601
		39.98	40.02

η Ophiuchi
17 3 27
−15 34

		R	R
50	3	42.0	41.7
		54.9	55.2
		5.4	5.4
		2.8	3.0
		225.1	225.3
		56.28	56.32

Sept 12 1880 C = 45 7.5

δ Herculis
17 9 18
14 32

		K	R
45	3	30.9	30.6
		41.2	41.5
		51.3	51.3
		48.8	48.9
		1722	1723
		43.05	43.08

Sept $\frac{12}{13}$, 1880   C = 45: 7.5

$\odot$

11 27 57
+3 28

B
2 53.0
4.0
11.2
11.9
201
502

Lower limb in δ
2nd " " R.A.

Sept. 15, 1880   C = 45 7.5

β Eridani
5 1 54
−5 15

	B		B	R	R	B
30 4	2.3	0	31.0	30.1	29.8	30.8
	9.9		38.0	38.0	38.3	37.7
	16.0		45.0	45.4	45.3	45.0
	18.8		47.4	47.6	46.5	47.1
	470		~~11.44~~	~~11.11~~	~~10.99~~	~~11.06~~
	11.75		16.14	16.11	15.99	16.06
			40.35	40.28	39.98	40.15

α Aurigae
5 7 46
+45 52

	B
25 4	23.3
	27.4
	33.2
	36.9
	1208
	30.20

δ Orionis
5 25 50
−0 24

	B
40 2	57.1
	5.41
	12.0
	13.2
	277
	6.92

μ Geminorum
6 15 39
+22 34

	B		B	R	R	B
45 1	57.3	2	23.6	22.3	22.8	23.1
	12.3		29.5	29.7	29.9	29.3
	14.8		32.6	32.7	33.0	32.8
	20.4		38.1	38.0	37.9	38.1
	528		38	27	36	33
	13.20		30.95	30.67	30.90	30.82
			~~30.82~~	30.78		30.88

C = 45 7.5

β Orionis
5 8 44
−8 21

		B		B	R	R
40	0	48.8	1	15.3	15.2	15.0
		55.6		22.4	22.9	23.0
		4.5		31.6	32.2	31.9
		4.3		31.4	30.9	31.2
		2332		1007	1012	1011
		58.30		25.18	25.30	25.28

A_2 & C.

β ~~Tauri~~ γ orionis
5 18 38
+6 14

		B		B	R	R	B
50	1	15.2	1	34.8	34.0	34.0	34.7
		20.4		39.6	40.2	40.3	40.4
		24.1		43.4	43.3	43.0	43.2
		29.2		49.8	49.5	49.0	49.2
		889		76	70	63	75
		22.22		41.90	41.75	41.57	41.87
				41.88	41.66		

γ Geminorum
6 30 43
+16 30

		B	B
50	0	20.5	19.2
		26.1	26.0
		33.2	32.9
		35.1	35.1
		1149	1132
		28.72	28.30

A_{+1} A 1 + 2

Sep. 15/16 1880

☉
11 38 37
+2 19

C = 45 7.5
η Ursae Majoris
13 42 46
+49 55

B
25 1 10.2
11.0
18.8
24.7
647
16.18

Lost last 3 wires of A & A_{-1}

β Aquilae
19 49 22
+6 6

		R	R
10	3	16.8	17.0
		27.2	27.0
		33.0	33.2
		33.3	33.6

θ Aquilae
20 5 4
−1 11

		R	R
30	1	00	59.8
		8.8	8.7
		17.9	18.0
		17.0	16.0
		43.7	42.5
		10.92	10.62

Shf

(γ Aquilae)
19 40 30
+10 19

	R	R
γ 1	246	245
	328	324
	416	412
	404	407
	1394	1388
	34.85	34.70

This seems to be Ch.f. instead of the next
R. J. R.

δ Aquilae
19 44 53
+8 33

	R	R
45 1	377	377
	462	466
	529	530
	532	531

Chf

α² Capricorni
20 11 20
−12 55

	R	R
0 0	278	279
	375	377
	47.3	480
	443	447
	1569	1583
	39.22	39.58

γ Cygni
20 17 53
+39 52

	R	R
20 2	585	586
	49	48
	128	124
	138	135
	299	293
	7.48	7.32

175

~~Sept 16 1880~~ c = 45 ~~04.5~~

ε Cygni
20 41 19
+33 31

Q R

45 3 58,4 58.8
4 4 40
11,4 12.2
1,40 14.2
~~58~~ 29.2
~~40~~ 7.30
285
7.12

β Eridani ~~c = 45 17.5~~
5 1 54
−5 15

B B R R

35 0 240 238 23.7 23.8
31.1 31.4 31.9 31.7
39.8 39.7 39.9 40.1
40.2 40.0 39.7 39.9
135.1 134.9 135.2 135.5
33.78 33.72 33.92 33.88

Ay α C Clouds.

Set Colimation wrong
by mistake.

β Tauri c = 45 04.5
5 18 39
+28 30

B B R R B

50 0 55.9 1 32.2 31.7 31.8 32.2
06 38.1 37.8 38.1 37.3
6.1 42.9 42.7 42.9 42.4
9.1 46.8 46.2 46.2 46.4
110 00 158.4 159.0 158.3
2.75 40.0 39.60 39.75 39.57
39.78 39.67

ι Orionis
5 29 31
−6 0

B B R R

45 4 21.9 0 32.0 31.6 31.3
30.1 40.0 39.4 40.0
38.9 48.2 47.9 48.0
37.9 47.3 47.3
87 75 62 119.3
32.17 41.87 41.55 /3

Sont-A T1 122

C = 45 17.5   45 17.5

α Aurigæ
5 7 46
+45 52

	B
25 3	39.1
	44.1
	51.1
	52.0
	1863
	46.58

β Orionis
5 8 44
-8 21

		B	B	R	R
40	0	57.4	57.2	56.2	57.0
		4.5	4.9	4.2	4.6
		15.1	15.1	15.6	15.4
		13.3	13.5	12.7	12.8
		2~~8~~7.03	2~~6~~7.07	26.87 ~~28.7~~	26.98
		~~78~~ 7.57	7.67	7.17	7.45
		7.62		7.31	

A 2 α e. Rej 1st m.

C = 45 4.4

ζ Orionis
5 34 39
-2 c

	B		B	R	R	B
20 0	2.2	,	24.7	23.7	23.9	24.3
	11.0		33.8	33.6	33.6	33.5
	18.2		40.4	40.6	40.4	40.4
	18.0		40.6	40.0	40.2	40.5
	494		1395	1379	1381	1387
	12.35		34.87	34.47	34.52	34.67
			34.77		34.50	

α Hydræ
9 21 38
-8 8

	B	B
25 3	11.8	34.4
	19.9	42.8
	30.2	53.1
	27.5	50.8
	894	1811
	22.35	45.28

Apr 16 1880 ☉ = 45 4.4

θ Ursæ Maj
9 24 45
+52 14

1 1	B		B	R	R	B
5 0	1.6	4	7.7	6.9	7.0	7.6
	5.2		12.0	11.8	11.6	12.0
	10.4		17.4	17.6	17.8	17.7
	14.4		21.1	21.0	20.9	20.5
	316		582	573	573	578
	7.90		14.55	14.32	14.32	14.45

ε Leonis
9 38 59
+24 20

	B		B	R	R	B
0 1	11.0	2	29.9	29.9	30.0	30.0
	17.2		36.0	36.2	36.4	35.5
	23.1		42.1	41.9	42.2	42.1 ?
	27.2		45.0	45.2	45.8	45.2
	785		1530	1532	1544	1328
	19.62		38.25	38.30	38.60	33.20

Sept. $\frac{16}{17}$, 1880 C = 45 4.4

⊙

11 42 12
+ 1 56

I limb			II limb		
		B			B
5	2	55,0	10	0	42.0
		3,1			50.0
		12.0			59,3
		13.2			59,8
		2 33			2111
		5,82			52,78

Both limbs in δ + R.A. Seeing pretty fair.

γ Boötis			ε Boötis		
14 27 12			14 39 42		
+38 50.			+27 55		
	R	R		R	R
30 0	386	382	45 0	46,3	46,6
	45,7	45,2		534	532
	54,5	53,8		1,3	1,8
	55,1	55,8		3,1	3,2
	1939	1930		2241	2248
	48,48	48.25		56.02	56.20

Sept 17

η Ursae Maj
13 42 46
+49 55

	R	R
30 2	321	319
	359	354
	432	433
	468	463
	1580	1569
	39.50	39.22

ε Bootis
14 10 8
+19 49

	R		R
30 2	86	7	86
	177		180
	267		264
	264		260
	~~86~~	794 0	790
	~~180~~	19.85	19.75

Left-Ap, 1 & 2. Right Ap, 3 4 5

β Ursae Min
14 51 7
+74 29

	R		R	R
40 2	288	20	454	453
	348		514	518
	428		584	591
	453		20	20
	1517		2175	2182
	37.92		54.38	54.55

β Bootis
14 57 23
+40 52

	R	R
25 3	500	502
	570	571
	62	61
	78	80
	10	14
	0.25	0.35

Sept 17 1880 C = 45 4.4

β Librae
15 10 30
−8 56

R R
15 1 1.0 08
8.0 8.1
23.3 23.8
21.1 20.8
534 535
13.35 13.38

β Scorpii
15 58 24
−19 28

R R
45 2 34.7 34.7
48.8 48.4
58.5 58.7
54.9 54.9

Chf.

α Coronae
15 29 39
+27 7

R R
10 3 12.1 12.2
22.2 22.0
30.4 30.5
30.6 30.8
956 955
23.90 23.88

δ Ophiuchi
16 8 0
−3 23

R R
40 4 6.8 7.0
19.9 19.4
30.0 29.8
26.0 26.0

Chf.

α Serpentis
15 38 18
+6 48

		R	R
30	2	0.9	1.2
		13.4	13.1
		21.9	21.7
		20.6	~~19.7~~ 20.3
		56.8	56.3
		14.20	14.08

δ Scorpii
15 53 11
−22 16

		R	R
35	1	5 90	5 90
		11.1	11.2
		21.9	22.5
		19.1	19.2
		51.1	51.9
		12.78	12.98

α Scorpii

		R	R
20	4	33.2	33.9
		47.8	47.7
		57.3	57.8
		54.0	53.8
		192.3	193.2
		48.08	48.30

β Herculis

		R	R
20	1	24.4	24.4
		36.6	36.7
		43.5	43.3
		43.6	43.7
		148.1	148.1
		37.02	37.02

A4ve

Sept 17 1880 ○ = 45 4,4

η Herculis
16 38 45
+39 9

1/101	R	R
	202	200
	298	301
	396	390
	392	392
	1288	1283
	32,20	32,08

Sept 18 1880   C = 45 44

δ, Cephei Lo.

18   6 42 14

9 2 47   or 8 7 14

	R	R	R	R	R
35 1	376	390	333	308	270
	423	432	377	353	311
	478	485	428	408	366
	497	510	460	431	394
	1774	1817	1598	1500	1341
	44.35	45.42	39.95	37.50	33.52

A-1 Aq_0 w 10

Sept, 18, 1880 C = 45 4.4

η Aquilae
18 59 56
−5 3

β Cygni
19 25 50
+29 42

		R	R			β	β
20	4	25.3	25.4	35	2	43.3	43.0
		35.5	35.2			50.6	50.0
		45.0	44.8			58.3	58.2
		43.8	44.7			0.5	0.5
		1496	1501			2127	2117
		37.40	37.52			53.18	52.92

Sept 18/19 1880 @ = 45 4,4
11

⊙ 11 49 23
71 10

R

5-0 4 25,0
35,6
4,21
45,2
147,9
36.98

Seeing good
Both limbs in R.A.
upper limb in √

Sept. 19/20, 1880 C = 45 4.4

⊙

11 52 58

+ 0 4$\overset{5}{6}$ 46.

~~15~~ B

15 2 5.5.2

5.9

14.0

13.9

290

7.25

Seeing good. Clouds.

Upper limb in δ

A_{+1} 1 2 5 $A_{\cancel{0}}$ A_{-1}

First limb in R. A.

Sept. 20/21, 1880 C = 45 4.4

○ 11 56 34
+0 22 24

⊙ − ~~45~~ 5.6

	B	B
40 1	34.0	10 4 7.0
	42.9	15.5
	51.8	26.6
	51.1	23.8
	1798	729
	44.95	18.22

β Libræ 15 10 30 −8 56

	B	B	R	R	B
15 1	8.5	2 25.8	24.3	24.9	25.0
	16.0	34.2	34.3	34.2	34.1
	30.2	48.7	48.2	48.4	48.2
	26.0	43.6	43.6	43.2	43.2
	807	1523	1504	1506	1505
	20.18	38.07	37.60	37.65	37.62
		37.84	37.63		

Both limbs in δ + R.A.
Lost 1st wire of each limb

δ Scorpii
15 53 11
−22 16

	B	B	R	R	B
35 0	39.2	2 00	59.2	59.7	59.5
	50.9	11.4	11.5	12.0	11.8
	4.0	24.6	24.3	23.7	23.7
	58.3	19.0	19.3	19.6	19.5
	2124	550	543	550	545
	53.10	13.75	13.57	13.75	13.62
		13.68	13.66		

β¹ Scorpii
15 58 24
−19 28

	B	B	R	R	B
45 4	0.3	18.0	18.2	17.8	18.1
	13.5	31.3	31.3	31.6	31.7
	25.0	43.0	42.9	43.0	42.9
	19.4	38.1	37.7	37.8	38.0
	58.2	1324	1301	1302	1307
	14.55	33.10	32.52	32.55	32.67
		32.88	32.53		

A7 ∝ C

Sept, 21, 1880 C = 45 5.6

α Cor. Bor.

15 29 39
+27 7

		B		B	R	R	B
10	3	32.2	4	383	38.2	38.2	390
		40.8		475	47.7	47.4	470
		50.0		578	57.5	57.1	592
		49.7		557	55.9	55.8	562
		1727		1993	1993	1985	1994
		43.18		49.82	49.82	49.62	49.85
				49.83	49.72		

α Serpentis

15 38 18
+6 48

		B		B	R	R	B
30	1	49.[illegible]	3	69	6.3	6.6	68
		1.3		189	18.3	18.3	180
		11.1		280	28.2	27.7	282
		7.9		249	24.7	24.6	245
		194		787	775	772	775
		4.85		19.67	19.38	19.30	19.38
				19.52	19.34		

δ Ophiuchi

16 8 0
−3 23

		B		B	R	R
40	2	47.8	4	118	12.6	12.0
		59.3		242	24.7	24.6
		11.2		358	35.9	35.6
		6.6		311	31.0	31.0
		49		1029	1042	1032
				25.72	2605	2580
		1.22		~~10.29~~	~~10.37~~	

α Scorpii

16 21 59
−24 10

		B
25	3	16.0
		29.1
		40.5
		35.5
		1211
		30.28

Lost A_{-1}

Sept 21 1880 C = 45 56

~~B+~~ η Draconis
16 22
+61 48

		B		B
30	9	42.2	35.0	25.9
		48.1	~~25.9~~	30.9
		59.1	Lost	41.8
		58.0	Rej.	40.2
		2074		1388
		51.85		34.70

ζ Ophiuchi
16 30 30
−10 19

		β		β	R	R	B
35	3	57.2	40	0 16.1	15.9	15.8	16.5
		7.8		25.2	25.3	25.9	25.1
		22.2		40.0	40.1	40.0	39.9
		15.5		34.4	34.0	33.8	34.1
		42.7		1157	1153	1155	1156
		10.68		28.92	28.82	28.87	28.90
				28.91		28.85	

A7αC

α' Herculis
17 9 18
+14 32

		β	B	R	R	B
45	3	~~20.5~~ 28.0	4 43.5	43.2	44.0	44.0
		38.0	54.7	54.8	54.8	55.3
		49.1	5.6	~~4~~5.8	5.8	5.1
		45.8	1.1	1.0	1.2	1.5
		1609	2249	2248	2258	2259
		40.22	56.22	56.20	56.45	56.47
			56.34		56.32	

β Draconis
17 27 42
+52 23

		B	B
55	2	9.6	3 32.6
		17.1	40.5
		16.4	50.0
		25.6	47.9
		687	1610
		17.18	40.25

Chr. f.

Sept. 21, 1880 C = 45 5.6

η Herculis
16 38 45
+39 9

		B		B	R	R	B
10	1	33.5	2	41.4	41.0	41.7	41.7
		41.5		50.1	50.9	51.0	49.9
		52.4		0.0	0.2	0.2	59.8
		51.1		59.9	59.7	59.9	59.9
		1785		2114	2118	2128	2113
11		44.62		52.85	52.95	53.20	52.82
				52.84	53.07		

η Ophiuchi
17 3 27
−15 34

		B		B	R	R
50	4	40.9	0	2.3	1.9	2.6
		53.8		14.4	15.0	14.4
		5.2		26.1	26.4	26.5
		0.3		21.0	20.8	20.9
		2202		638	641	649
		55.05		15.95	16.02	16.22

α Ophiuchi
17 29 19

		B		B	R	R	B
40	2	15.0	2	46.3	46.2	46.0	46.2
		25.8		57.0	57.1	57.3	57.0
		36.0		7.0	7.2	7.7	7.4
		31.3		3.4	4.0	3.3	3.5
							2341

γ Draconis
17 53 48
+51 30

		B		B	B
50	0	21.5	1	36.4	36.5
		26.9		42.4	42.8
		36.5		52.2	52.2
		35.5		51.5	51.5
		1204		1825	1830
		30.10		45.62	45.75

Chr. J.

Sept: 21 1880 C = 45 5.4

δ Ursa Min

18

+86 36

		B	B	B	B	B
40	4	38.0	48.3	54.6	01.1	10.1
		43.5	53.2	59.2	5.9	14.5
		50.7	0.8	57.4	12.1	21.1
		52.6	2.4	8.8	15.5	24.5
		1848	2247	00	346	702
		46.20	56.18	00.00	8.65	17.55

δ Eridani

3 37 27

-10 10

		B		B
25	4	12.0	0	38.9
		21.8		47.5
		33.5		59.0
		28.8		54.2
		961		1996
		24.02		49.90

η Tauri

3 40 18

+23 44

		B		B	R	R	B
35	2	11.8	2	35.0	35.1	35.2	35.0
		20.8		44.9	44.4	44.5	44.2
		21.5		48.9	49.2	49.2	48.9
		26.8		50.0	49.5	49.9	50.0
		849		1788	1782	1788	1781

Sept. 21, 1880 C = 45 5.5

ε Eridani
3 27 14
−9 52

	B		β	R
10 1	5.4	2	22.0	21.7
	14.9		32.9	32.8
	27.0		45.0	44.3
	21.3		39.3	39.8
	686		1392	1386
	17.15		34.80	34.65

δ Persei
3 34 19
+47 24

		B		B
5 5	1	33.0	2	53.3
		38.9		59.0
		45.9		6.1
		46.1		6.6
		1639		50
		40.98		1.25

ζ Persei
3 46 32
+31 31

	β		B	R	R	β
30 3	52.2	0	7.4	7.6	~~8.2~~ 7.4	~~7.5~~
	0.4		15.0	15.8	16.0	15.5
	8.8		21.5	22.2	22.9	9.9
	8.9		24.0	23.3	24.0	[illegible]
	103		679	689	703	
	2.58		16.98	17.22	17.58	

γ' Eridani
3 52 23
−13 57

	B		B	R	R	B
5 4	57.2	1	15.2	16.0	14.9	15.6
	9.9		27.6	27.8	28.4	27.1
	17.9		36.1	36.5	36.9	36.0
	13.2		31.2	31.8	31.9	31.8
	382		1101	1121	1118	1105
	9.55		27.52	28.02	27.95	27.62

Sept 21 1880 c = 45 5.5

η Draconis
16 22
+18 13

	B	B	B	R
40	3 4.3	2 8.3	1 43.0	43.1
	11.6	15.5	50.7	50.9
	11.5	14.8	48.9	49.2
	11.9	17.3	52.8	52.3
	393	559	1954	1955
	9.82	13.98	48.85	48.88

α Tauri
4 28 59
+16 16

	B	B	R	R	R
0	4 5.1	0 28.1	28.2	28.6	28.0
	14.2	36.2	37.1	37.7	37.0
	22.8	45.6	45.9	46.0	45.3
	22.8	44.9	44.4	44.0	44.7
	649	1548	1556	1563	1550
	16.22	38.70	38.90	39.08	38.75

α Aurigae
5 07 44
+45 52

	B
25	3 28.2
	35.1
	40.1
	42.9
	1463
	36.58

β Orionis
5 8 44
−8 21

	B	B	R	R	B
40	0 38.9	1 23.0	22.3	22.4	22.3
	47.4	31.6	32.0	31.9	31.5
	57.5	41.6	42.3	42.4	42.4
	54.5	39.0	38.8	38.6	39.0
	1983	1352	1354	1353	1352
	49.58	33.80	33.85	33.82	33.80

A g. αc

Sept. 21, 1880 C = 45 5.5

ι Aurigae
4 49 07
+32 58

	B		B	R	R	R
5 2	4.0	3	31.2	31.8	31.6	31.8 37.
	10.2		38.8	39.2	39.2	38.8
	18.2		46.0	46.3	46.3	46.6
	19.8		47.5	47.4	47.4	47.5
	5 22		1635	1647	1645	1648
	13.05		40.88	41.18	41.12	41.20

β Eridani
5 1 54
−5 15

	B		B	R	R
3 0 4	4.9	0	20.0	19.9	
	15.0		28.5	29.1	
	22.4		37.4	37.7	
	23.0		36.8	36.8	
	6 53		1227	1235	
	16.32		30.68	30.88	

γ Orionis
5 18 38
+6 14

	B		B	R
5 0	30.1	1	47.0	46.8
	41.0		58.2	58.6
	46.9		38	4.1
	47.2		4.7	4.5
	1652		2337	190
	41.30		58.42	4.75

δ Orionis
5 25 50
−0 24

	ι
40 3	2.0
	12.8
	19.2
	19.3
	533
	13.32

Sept 21 1880 C = 45 55

α Leporis

5 27 24

−17 55

	B
10	3 15.5
	28.4
	35.2
	33.9
	1130
	28.25

ι Orionis

5 29 31

−6 0

	B	B	R	B	~~B~~
15	3 47.3	0 8.8	7.6	8.5	
	57.2	17.1	17.4	18.0	
	5.7	26.2	25.2	25.8	
	3.8	23.8	23.9	24.6	
	2340	759	741	769	
	58.50	18.98	18.52	19.22	

α Orionis

5 48 37

+7 23

	B	B
55	2 8.5	3 17.0
	18.0	26.4
	25.2	32.5
	24.2	32.6
	759	1085
	18.98	27.12

δ Ursae Minoris S.C.

~~18 11 2~~

~~93 24 (?) 20~~

6 11 2 93 24

	B	B	B
55	4 47.9	39.9	—
	52.0	43.8	33.2
	55.2	47.4	37.0
	58.6	50.2	—
	2137	1813	
	53.42	45.32	

Seeing very bad.

Sept. 21, 1880

C = 45 5.5

α Columbae

5 35 16
−34 8

4 4

	B	B	R	B
~~25~~ — 0	53.3	1 20.0	1.3	1.4
	58	13.9	13.9	13.4
	11.6	19.9	19.9	20.2
	11.0	19.1	19.0	18.9
	217	549	541	539
	5.42	13.72	13.52	13.48

κ Orionis

5 42 1
−9 43

	B	B	R	B
0 2	7.9	3 23.0	22.8	23.1
	17.1	33.0	33.1	32.7
	27.1	43.0	43.7	43.0
	25.0	40.5	40.0	40.8
	771	1393	1396	1396
	19.28	34.82	34.90	34.90

μ Geminorum

6 15 39
+22 34

	B	B	R	R	B
45 1	1.0	2 19.0	19.0	18.7	18.7
	8.9	27.9	28.4	28.2	22.9
	13.3	30.9	31.2	31.3	31.0
	16.9	34.5	33.8	33.7	34.2
	401	1123	1124	1139	1068
	10.02	28.08	28.10	28.48	26.70

ν Geminorum

6 30 43
+16 30

	B	B	R	R	B
50 0	25.1	1 39.1	39.6	40.0	39.5
	33.6	48.5	48.2	48.2	48.3
	41.0	55.5	56.0	55.7	55.4
	41.9	55.5	55.2	54.8	53.5
	1416	1986	1990	1987	1987
	35.40	49.65	49.75	49.68	49.68

Apr 21 1880 C=45-5,5

α Can maj

6 39 49 − 16 33

		B	B	R
50	2	5.6	3295	28.6
		18.1	418	42.0
		24.7	414	48.2
		23.1	472	47.1
		715	1669	1659
		17.88	4172	4148

δ Canis Maj.

7 3 28

−26 12

		B	B	R	R	B
30	0	23.4	, 40.2	3$\overset{9}{8}$.6	39.9	35.8
		35.8	520	52.3	52.4	527
		42.2	585	59.2	59.0	590
		41.0	588	58.0	58.0	580
		1424	2095	2091	2093	2095
		3560	52.38	52.28	5232	52.38

α Can. Min

7 32 58

+5 32

		B	B	R
45	3	6.8	4 301	29.7
		17.8	411	42.0
		21.7	455	46.0
		22.2	464	46.4
		685	1631	1641
		17.12	4078	41.02

B Gem.

7 37 55

+28 19

		B		B
0	1	49.5	3	6.3
		56.0		14.0
		0.8		17.5
		5.0		20.6
		2313		584
		57.82		14.60

Sept. 21. 1880

C = 45 15

β Canis Min.

7 20 35 +8 32

		B	B	R	R	B
45	3	20,0	4 38.9	38.7	38.6	38.7
		29.1	49,0	49.7	49.3	48.8
		34.2	539	53.9	53.7	53.8
		35,5	540	54.1	53.8	54.5
		1188	1958	1964	1954	1958
		29.70	48.95	49.10	48.85	48.95

α Gem.

7 24 52

+32 09

		B	B	R	R	B
10	1	48.8	3 21	2,2	2,1	21
		56.2	8.5	8.8	8.8	8.6
		2,3	15.0	15.2	15.0	14.8
		4,5	16.9	17.4	17.7	17.0
		2318	425	436	436	425
		57.95	10.62	10.90	10.90	10.62

Sept $\frac{21}{22}$, 1880 C = 45 5.5

⊙

12 0 9
-0 0 59

0 4 36.2 20 2 12.0
47.5 22.5
53.8 30.0
53.8 28.1
1913 926
47.82 23.15

Both limbs in δ & R.A.
Seeing very fine.

α Leporis
5 27 24
-17 55

B
10 3 15.5
29.0
34.1
33.5
1121
28.02

ι Orionis
5 29 31
-6 0

	B		B	R	R
15 4	48.0	0	24.5	23.8	24.0
	58.1		33.5	33.8	34.1
	4.6		41.0	41.2	41.2
	4.2		40.0	40.1	40.1
	2349		1390	1389	1394
	58.72		34.75	34.72	34.85

Lost Δ+1

Sept. 22, 1880 C = 45 0.9

η Ursae Maj.
13 42 46
+49 55

		B	B
25	2	23.8	37.3
		28,3	41.8
		34.0	48.0
		37.1	51.3
		1232	1784
		30,80	44,60

δ Orionis
5 25 50
−0 24

		B
40	2	54.5
		7.2
		12.5
		12,3
		285
		7,12

α Columbae
5 35 16
−34 8

		B	B
20	4	43.2	0 59.6
		56.2	11.4
		0.8	16.0
		59.8	16.0
		240.0	430
		55,00	10,75

κ Orionis
5 42 1
−9 43

B	B	R	R
0 2 9.4	3 24,5	24.1	24.0
17.6	33,4	34.0	34.1
27.8	42,5	43.0	43.1
26.0	40,9	41.1	40.2
808	1413	1422	1414
20,20	35,32	35,55	35,35

Sept. 22, 1880   C = 45 0.9

α Orionis
5 48 37
+7 23

	B	B	R	R	R
55 1	53.1	2 17.0	16.8	14.6	16.8
	20	26.4	27.0	26.3	26.2
	7.4	31.0	31.6	31.2	31.6
	7.2	31.5	31.1	31.4	31.8
	97	1059	1065	1055	1064
	2.42	26.48	26.62	26.38	26.60

δ Ursæ Min. L.C
6 11 2 ~~93 2~~
+93 24

	B	B	B	B
0 0	19.9	13.2	2.2	4 53.4
	22.7	15.2	4.4	57.2
	25.7	19.0	7.7	59.2
	28.9	22.3	11.5	2.2
	972	697	258	2320
	24.30	17.42	6.45	58.00

α Canis Maj
6 39 49
−16 33

	B	B	B
40 2	16.9	3 23.6	23.8
	29.1	35.4	35.6
	34.0	41.1	40.0
	34.4	43.5	43.0
	1144	1436	1424
	28.60	35.90	35.60

δ Canis Maj
7 3 28
−26 12

	B
30 0	32.2
	44.0
	49.0
	51.6
	1768
	44.20

Sept. 22, 1880   C = 45 0.9

μ Geminorum
6 15 39
+22 34

		B	~~R~~ B
45	1	5.9	5.9
		139	14.1
		16.5	16.9
		20.8	21.1
		571	580
		14.28	14.50

ν Geminorum
6 30 43
+16 30

		B		B	B
50	0	14.0	1	42.1	42.0
		23.5		51.0	50.9
		28.9		56.8	57.3
		30.0		57.7	57.9
		964		2076	2081
		24.10		51.90	52.02

α Geminorum
7 24 52
+32 09

		B		B	R	R	B
10	1	39.9	3	6.8	6.5	7.0	6.6
		46.3		12.8	13.3	13.3	13.1
		52.2		18.4	18.0	17.9	17.9
		56.2		23.6	23.1	23.6	22.9
		1946		616	609	618	605
		48.65		15.40	15.22	15.45	15.12

α Can. Min.
7 32 58
+5 32

		B		B	R	R	B
45	3	4.3	4	25.9	26.0	25.4	25.4
		15.0		36.2	36.9	37.1	36.8
		17.5		39.1	39.4	39.8	40.4
		21.6		43.0	43.1	43.0	43.3
		584		1442	1454	1453	1459
		14.60		36.05	36.35	36.32	36.48

Sept. 22, 1880

β Geminorum
7 37 55
+28 19

	B	B
0 1	56.4	4.3
	2.2	10.9
	5.5	13.5
	12.2	19.6
	163	483
	4.08	12.08

C = 45 0.9

ε Hydrae
9 21 38
− 6 8

	R	R
25 3	74	76
	17.0	17.8
	23.6	23.9
	24.1	23.8
	721	731
	18.02	18.28

3 Leonis
10 9 57
+24 1

	B	B
20 0	48.8	1 21.0
	55.3	28.2
	58.2	31.0
	3.6	35.9
	2259	1161
	56.48	29.02

ν¹ Leonis
10 13 18
+20 27

	B
50	3 46.3
	55.2
	58.0
	2.9
	2224
	55.60

Sept 22, 1880

ε Leonis C = 45 0.9

9 38 5 9

+24 20

	B	B
0 1	8.0	2 27.1
	14.9	34.2
	17.0	36.8
	23.3	42.5
	63.2	140.6
	15.80	35.15

C = 45 7.8

α Leonis

10 1 56

+12 33

	B	B
45 3	33.3	51.8
	42.1	1.1
	46.4	5.2
	48.3	7.5
	170.1	5.6
	42.52	1.40

A—1

μ Ursæ Maj

10 15 7

+42 6

	B	B	R	R	B	~~B~~	~~B~~
10 4	57.4	1 20.4	20.4	20.7	20.2	~~15 4~~	~~20.4~~
	2.3	25.9	25.7	25.8	26.1		~~25.9~~
	7.1	30.2	30.2	30.1	30.6		~~30.2~~
	11.4	36.0	36.1	35.4	35.3		~~36.0~~
	182	112.5	112.4	112.0	112.2		
	4.55	28.12	28.10	28.00	28.05		

Sept 22/23, 1880 C = 45 7.8) C = 45 2.0

⑤

12 3 45
−0 24

η Draconis
16 22
+61 47

		B			B
25	2	55.6	0	0	36.8
		5.7			46.6
		11.2			52.9
		13.1			54.5
		256			1908
		6,15			47,70

		B		B			B
30	3	44.6	4	31.4	35	0	6.4
		48.0		34.3			9.2
		52.0		40.1			13.7
		58.4		44.9			19.6
		2030		1507			489
		50,75		37,68			12,22

Both limbs in δ & R.A
Seeing very unsteady.

η Herculis
16 38 45
+39 9

		B		B	R	R	B
10	1	28.5	2	45.3	45.0	45.0	45.6
		34.7		52.1	53.2	53.0	52.5
		41.0		57.2	57.2	57.6	58.4
		45.6		2.9	2.8	2.6	2.7
		1498		2175	2182	2182	2192
		37,45		54,38	54.55	54,55	54,80

η Ophiuchi
17 3 27
−15 34

		R	R
50	3	42.9	43.2
		55.9	55.6
		1.2	1.6
		2.2	2.0
		2222	2224
		55,55	55,60

-β Herculis
16 25 1
+21 45

		B
35	0	15.0
		22.8
		26.0
		31.5
		9 53
35		23.82

Rej 2nd

ζ Ophiuchi
16 30 30
-10 19

		B		B	R	R	B
35	3	56.8	0	17.8	17.0	17.6	18.0
		5.0		25.8	25.2	25.2	25.3
		15.5		35.7	35.6	35.4	35.8
		13.9		34.9	35.4	35.2	35.2
		312		1142	1132	1136	1143
		7.80		28.55	28.30	28.40	28.58

α, Herculis
17 9 18
+14 32

R
21.9
32.8
38.6
39.0
1323
33.08

β Draconis
17 27 42
+52 23

	R
55	29.2
	15.3
	20.0
	24.2
	887
	17.18

Sept 23 1880 @ = 45 20
17 29 19
+12 39

	R	R
40 1	86	90
	17.4	17.6
	24.0	24.0
	25.0	25.0
	750	746
	18.75	18.65

o Sagittarii
18 47 46
−26 27

	B		B	R	R	B
40 4	53.2	1	11.8	11.2	11.2	11.6
	5.1		23.5	24.2	24.1	23.4^{8}
	12.2		31.1	30.2	30.7	30.05
	13.1		30.7	30.2	30.3	31.0
	236		971	958	963	969
	5.90		24.28	23.95	24.08	24.22

γ Aquilae
19 40 30
+10 19

	β		B	R
0 0	31.8	1	50.5	51.0
	40.1		549.7	0.6
	46.6		60	6.1
	49.4		8.2	7.7
	1679		44	54
	41.98		1.10	1.35

α Aquilae
19 44 53
+8 33

	B		B	R	R
45 1	33.2	3	6.0	6.0	5.3
	42.1		15.6	15.7	15.7
	47.4		19.9	19.8	19.9
	49.4		22.0	21.8	21.6
	1721		635	633	625
	43.02		15.88	15.82	15.62

Sept. 23, 1880 C = 45 2.0

λ Aquilæ
18 59 56
−5 3

		B		B	R	R	B
20	3	7.0	4	309	30.2	30.4	304
		16.0		405	40.2	40.6	405
		22.2		457	46.3	46.4	456
		23.0		47.1	46.3	47.1	470
		682		1642	1630	1645	1635
		1705		4105	4075	4112	4088

β Cygni
19 25 50
+27 42

		B		B	R	R	B
35	2	36.9	3	582	57.9	57.9	582
		43.0		51	5.0	5.4	51
		46.2		85	8.3	8.7	91
		51.9		134	13.0	13.0	131
		1770		252	242	250	255
		4425		630	605	625	638

β Aquilæ
19 44^{9} 22
+6 6

		B	R
10	3	23.3	22.8
		345	34.9
		374	37.8
		408	40.1
		1360	1356
		3400	3390

		B		B	R	R
30	0	8.7	1	267	27.2	26.9
		18.2		366	37.0	37.0
		26.0		435	43.6	44.0
		26.0		445	44.3	44.1
		789		1513	1521	1520
		19.72		37.82	38.02	38.00

Sept 23 1880 ⊙ = 45 2,0

α₂ Capricorni
20 11 20
−12 55

		B	B	R
10	4	29.50	39,9	40.1
		41,4	50,0	50.8
		45,2	58,1	58.2
		47,9	56,9	57.8
		168,0	204,9	206,9
		42,00	51,22	51,72

β Orionis
5 8 44
−8 21

		R	R
40	1	2,7	1,9
		11,1	11,0
		18,1	17,9
		18,8	18,8
		50,7	49,6
		12,68	12,40

δ Orionis
5 25 50
−0 24

		R
40	25	6,4
		6,8
		10,3
		13,7
		27,2
		6.80

α Leporis
5 27 24
−17 55

		R
(10)	(4)	23,3
		36,4
		39,9
		41,9
		141,5
		35,38

γ Orionis
5 16 38
R +6 14 R

5	0	277	287
		382	39.0
		407	406
		498	45.0
		1544	1533
		37.85	38.32

α Aurigae
5 7 46
+42 5
A Roy.

ι Orionis
5 28 31
R -60 R

20	0	32	37
		130	131
		166	167
		20.3	200
		531	535
		13.28	13.38

α Columbae
5 35 16
R - R34 8

25	1	482	48.0
		598	598
		21	24
		58	58
		2359	2360
		58.98	59.00

Sept 23 1882 C = 45 2,0

κ Orionis
5 42 1
−9 43

		R	R
0	1	562	567
		53	53
		116	118
		137	13,6
		268	274
		6,70	6,85

α Orionis
5 48 37
+7 23

		R	
55	1	549	54,6
		41	48
		63	65
		101	103
		154	162
		3,85	4,05

α Can. Mai
6 39 49
−16 33

		R	R
50	2	10,6	10,5
		22,8	22,7
		25,7	25,3
		28,0	28,1
		771	866
		19,28	21,65

Can May
7 28 35
+8 32

		R	R
5	1	81	~~86~~ 7,8
		20,1	19,8
		20,9	20,7
		25,0	24,8
		741	731
		18,52	18,28

Sept. 23, 1880 C = 45 2.0

δ Ursae Mi
18 12
93 24

		L	R
0	0	4.4	1.2
		10.0	3.4
		10.0	3.3
		17.2	10.8
		44.3	19.0
		11.08	4.75

μ Geminorum
6 15 39
+22 34

		R	
45	2	17.4	17.8
		~~27.6~~ 26.1	25.9
		25.2	25.0
		32.6	32.4
		101.3	101.4
		25.32	25.35

α Hydrae
9 21 38
−8 8

		R
25	3	4.0
		14.0
		18.2
		19.7
		56.4
		14.10

θ Ursae Maj.
9 24 45
+52 14

		R	R
5	3	0.8	0.5
		5.5	5.1
		1.4	5.2
		13.0	13.0
		20.7	23.8
		5.18	5.95

Sept 23 1880 Θ = 45 2.0

ε Leonis
9 38 59
+24 20

0Z

B	2	B
1.2	~~2~~	31.2
7.4		38.3
8.2		39.2
15.1		45.0
319		1537
7.98		38.42

α Leonis
10 1 56
+12 33

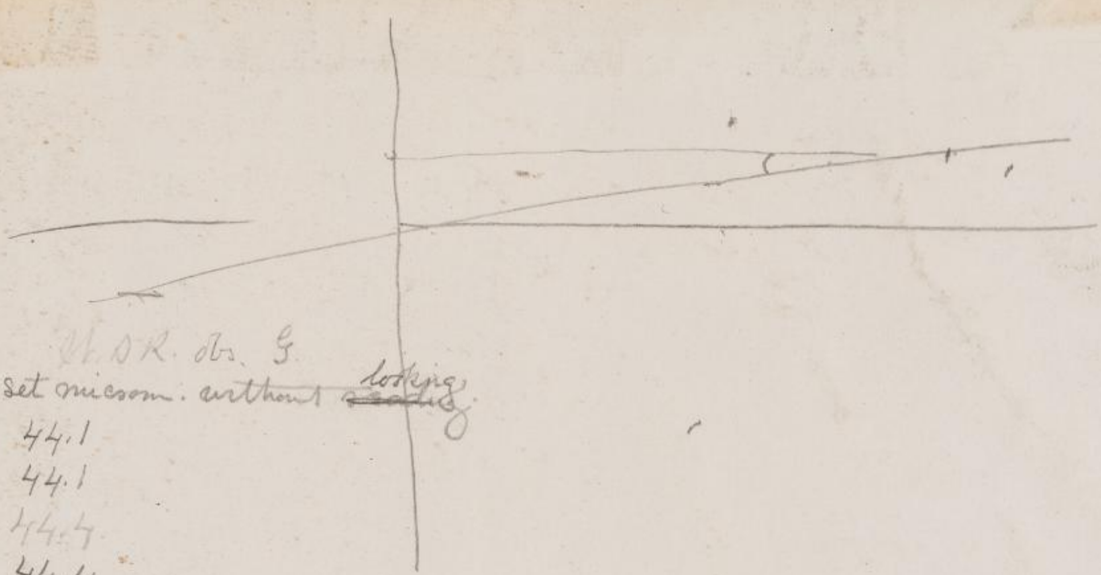
		B		B	R	R
45	2	26.2	3	36.2	36.0	35.8
		35.1		44.8	44.7	45.1
		38.9		48.5	48.1	48.1
		40.6		50.8	51.0	51.0
		1408		1803	1798	1800
		35.20		45.08	44.95	45.00

γ' Leonis
10 13 18
+20 27

		B
45	3	53.0
		1.6
		2.2
		8.0
		48
		1.20

μ Ursa Maj
10 15 7
+42 6

		B		B	R	R	B
10	4	57.3	1	20.8	20.9	21.0	20.9
		3.2		26.2	26.6	26.2	26.3
		5.6		28.0	28.7	28.6	28.6
		11.4		35.3	35.9	36.1	35.8
		175		1103	1121	1119	1116
		4.38		27.58	28.02	27.98	27.90



U. D. R. Obs. G.

set microm. without ~~seeing~~ looking

44.1
44.1
44.4
44.4
44.3
44.4
44.1
44.1
44.1
44.1
44.0
43.9