1879phae..ford..44O3R

AG
11366
v.397

Fundamental Stars.

Circle Readings.

A 3. 1879

Charles W. Sever, University Bookstore, Cambridge.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.140ik

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 June 24

Sun. C = 46.719

12 2

+23 26

	m	m
45.2	49.3	47.0
	56.0	53.1
	54.9	52.0
	55.0	52.1
	2152	42
	53.80	51.05

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

α Virginis

13 18 49

−10 32

m	m
55 3 59.9	0 020 B
63	26.2
129	325
71	271
266.2	1061
6.55	26.52

ε Bootis

14 39 42

+27 35

m	m	R	R	m
50 3 1.4	4 11.2	11.2	11.2	11.8
6.6	16.5	16.0	15.4	16.2
5.1	15.1	14.9	14.8	15.1
5.1	15.2	15.2	14.7	15.0
162	180	173	161	181
4.55	14.50	14.32	14.02	14.52

β Lo. Min.

14 51 4

+74 39

m	m	m	m	m	m
	56 ó			1'	"
45 4 50.1	2.7	25.8	48.3	1.0	11.3
51.4	4.7	26.9	48.8	2.0	12.9
51.8	3.9	25.9	48.9	1.9	12.4
53.1	5.0	28.4	51.1	3.1	13.8
64	163	270	371	80	104
5.60	4.07	26.75	49.27	2.00	12.60

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

T Virginis

13 55 29
+2 8

	m	m	R	R	M
15 4	46.5	20 14.0	7.2	7.1	6.9
	54.2	14.1	14.0	14.0	15.0
	55.1	14.8	14.3	14.8	15.0
	52.9	14.9	14.2	13.7	13.3
	8.7	50.8	49.7	49.6	50.2
	52.17	14.70	12.42	12.40	12.55

γ Bootis

14 27 12
+38 50

	m	m	R	R	M
35 3	7.1	4 9.6	10.0	10.0	9.8
	5.1	14.9	15.0	14.8	14.8
	5.0	14.8	13.7	14.2	14.9
	5.2	14.9	15.0	14.7	14.1
	16.4	53.7	13.7	13.7	53.6
	4.10	13.42	13.42	13.42	13.40

β Bootis

14 57 23
+40 52

	m	m	R	R	M
35 0	4.9	2 25.9	25.6	25.6	25.2
	8.5	29.1	29.0	28.9	28.9
	9.0	29.5	28.3	29.0	29.6
	8.9	29.9	29.2	29.4	28.9
	31.3	34.4	32.1	32.9	32.6
	7.82	28.60	28.02	28.22	28.15

α Cor. Bor.

15 29 34
+27 7

	m	m	R	R	M
20 0	53.3	1 52.9	52.8	53.0	52.9
	57.9	57.1	56.7	57.8	57.3
	56.9	56.2	55.2	56.3	56.5
	59.2	57.1	57.0	57.3	57.5
	27.3	23.9	21.7	23.9	24.2
	56.82	55.97	55.42	55.97	56.05

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ε Serpentis

15 38 18
+6 48

	m	m	R	R	M
35 4	17.1	40	30.1	30.2	30.0	30.2
	24.9		37.9	38.0	37.9	
	25.1		37.2	37.2	37.2	37.8
	23.2		36.1	36.1	36.0	36.0
	90.3		213	214	212	219
	22.57		35.32	35.35	35.30	35.47

δ Ophiuchi

16 8 0
−3 23

	m	m	R	R	M
50 0	22.7	1	45.4	45.7	45.9	45.1
	30.2		53.5	53.2	53.1	53.2
	32.1		55.4	54.4	54.1	54.9
	28.7		51.9	51.3	50.8	51.2
	113.7		62	46	39	44
	28.42		51.55	51.15	50.97	51.10

γ Persei

2 56 2
+53 2

	m	m	R	R	M
25 1	43.9	2	44.1	45.0	44.4	44.9
	46.3		46.1	46.8	46.7	46.8
	46.2		46.0	44.8	45.6	46.4
	47.9		47.1	47.2	47.3	47.0
	233		233	238	240	251
	45.82		45.82	45.95	46.00	46.27

α Persei

3 15 41
+49 26

	m	m	R	R	M
0 2	40.8	3	47.1	47.3	47.1	47.0
	42.8		48.7	49.0	48.8	48.2
	42.0		46.1	47.0	47.7	48.1
	43.0		49.1	49.6	50.1	49.5
	86		330	329	337	328
	42.15		48.25	48.22	48.42	48.20

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

γ Andromedae

1 56 28

+41 45

	M	M	R	R
40 3	26.6	4 31.9	32.1	32.1
	30.5	35.5	35.2	35.6
	30.9	36.2	35.8	35.7
	30.2	35.8	36.1	36.1
	11 82	194	192	195
	29.55	34.85	34.80	34.87

α Arietis

2 0 21

+22 53

	M	M
30 4	40.0	35 03.7
	46.1	43.1
	44.1	41.2
	44.1	41.9
	143	39
	43.57	40.97

α Tauri

4 28 59

+16 16

	M	M	R	R	M
10 1	48.8	3 11.6	11.2	10.9	11.0
	55.1	17.6	17.8	17.8	17.8
	57.1	19.9	18.3	17.8	19.2
	53.9	16.1	16.9	16.6	16.1
	2149	252	242	231	241
	53.72	16.30	16.05	15.78	16.02

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 June 25

Sun C=46.719

6 16 10

+23 24

	m	m
45 3	8.1	20 0 22.1
	13.3	26.7
	13.6	26.4
	13.3	26.5
	8 3	21 7
	12.07	25.42

Seeing moderately good.
Both limbs in R.A.

T Virginis

13 55 29

+2 8

	m	m	R	R	M
15 4	45.8	20	2.1	1.8	2.2	2.2
	53.7		9.0	8.8	8.8	9.1
	54.9		11.4	10.4	10.2	11.1
	52.4		9.5	10.2	10.4	9.5
	6 8		320	312	316	319
	51.70		8.00	7.80	7.90	7.97

B Boss. Min.

14 51 4

+74 39

	m	m	m	m	m	m
45	4 50.8	50 0	2.4	29.9	43.4	55.1	9.4
	51.3		2.5	30.1	42.9	55.1	9.4
	52.9		2.6	30.0	43.2	55.2	9.9
	53.3		5.1	32.4	46.3	58.1	12.2
	8 3		12 6	24	158	235	409
	52.07		3.15	30.60	43.95	55.87	10.22

β Bootis

14 57 23

+40 52

	m	m	R	R	M
35 1	27.4	2	22.1	22.1	22.0	22.1
	30.2		25.2	25.0	24.9	25.5
	32.2		27.1	26.2	26.5	26.1
	31.9		26.8	26.9	26.9	26.9
	12 17		2 12	202	203	206
	30.42		25.30	25.05	25.07	25.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

γ Bootis

14 27 12
+38 50

m	m	R	R	M
35 2 58.0	4 5.3	5.0	5.1	5.0
2.1	8.5	9.2	9.3	9.1
3.1	9.9	9.2	9.4	9.9
2.8	10.2	10.4	10.4	10.2
6.0	33.9	33.8	34.2	34.2
1.50	~~5.97~~ 8.47	8.45	8.55	8.55

ε Bootis

14 39 42
+27 35

m	m	R	R	M
50 3 0.8	4 9.9	9.9	10.1	10.0
5.1	14.1	14.0	14.1	14.1
4.9	14.5	13.8	13.8	14.1
5.0	13.9	14.2	14.2	14.1
15 8	52.4	51.9	12.2	12.3
3.95	13.10	12.98	13.05	13.07

δ Bootis

15 10 37
+33 46

m	m	R	R	M
40 2 40.8	3 17.9	17.4	18.0	17.8
42.3	20.1	20.2	20.3	20.2
45.1	22.6	22.0	22.1	22.1
45.1	22.8	22.2	22.6	22.5
133	34	18	30	26
43.32	20.85	20.45	20.75	20.65

α Cor. Bor.

15 29 34
+27 7

m	M	R	R
20 1 16.5	1 57.8	57.7	
19.5	1.0	0.3	
21.4	1.9	1.2	
21.1	2.4	2.8	
785	31	20	
19.62	0.78	0.50	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

8

1879 June 25

ζ Serpentis

15 38 18

+6 48

	m	m	R	R	M
35 4	17.0	40 0	26.5	26.2	26.7	26.9
	24.9		33.6	33.0	32.9	33.1
	26.3		34.9	34.9	34.5	34.9
	22.9		32.1	33.0	32.6	32.8
	9 21		71	71	67	77
	2~~3.07~~ 2.78		31.78	31.78	31.67	31.92

8 Ophiuchi

16 8 0

−3 23

	m	m	R	R	M
50 0	20.2	1 35.0	35.0	35.3	35.1
	26.1	40.9	40.6	40.8	41.1
	30.2	45.0	44.2	44.2	44.2
	26.9	41.3	41.3	41.2	41.9
	10 34	16 22	11	15	23
	2~~3.35~~ 5.85	40.55	40.27	40.38	40.58

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

m

40 1 43.4
41.7
44.1

Saw comp. δ Draconis
with bright illumination

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. June 26

Sun C = 46.719

6 20 20

+23 22

m	m
.50 0 40	20 2 61
8.8	11.1
8.9	10.2
8.9	11.1
30.6	38.5
7.65	9.62

Seeing very fine indeed

Both limbs in D+ R.A.

ε Bootis

14 39 42

+27 35

m	m
50 2 57.0	4 11.5
1.1	14.8
0.9	15.1
0.8	15.1
23.98	15.6 5
59.95	~~12.87~~ 4.13

α Virginis

13 18 49

−10 32

m	m	R	R
55 4 2.5	0 0 16.4	17.2	17.2
8.0	21.1	21.2	21.3
14.1	28.9	28.4	28.0
9.1	23.8	23.8	24.0
33.7	90.5	90.6	90.5
6.42	22.62	22.65	22.62

β Ursa. Min.

14 51 4

+74 39

m	m	m	m	m
45 4 50.1	50 0 2.1	0 29.9	44.7	56.8
49.5	1.9	27.1	42.5	56.1
52.1	2.1	29.0	44.1	56.8
52.9	3.5	33.0	47.8	59.2
20.46	11.6	11.90	19.1	28.9
51.15	2.90	29.75	44.78	57.22

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

τ Virginis

13 55 29
+2 8

m	m	R	R	M
15 4 45.9	20 1 45	4.4	4.8	4.9
52.1	1.06	10.6	10.2	10.0
54.1	1.21	11.8	11.4	12.1
51.9	1.12	11.2	11.1	11.2
40	384	380	375	385
51.00	9.60	9.50	9.38	9.62

γ Bootis

14 27 12
+38 50

m	m	R	R	M
35 3 29	4 0.1	0.4	0.4	0.0
58	3.9	3.1	3.3	3.9
7.5	4.7	3.7	4.9	4.9
8.1	4.9	5.2	5.2	5.1
23 3	136	124	138	139
5.82	3.40	3.10	3.45	3.47

β Bootis

14 57 23
+40 52

m	m	R	R	m
35 1 12.6	2 2.0.7	20.3	20.3	20.0
14.9	2.2.4	22.2	22.2	22.5
16.9	23.9	23.6	23.9	24.2
17.1	24.6	24.9	24.7	25.5
215	116	110	111	122
15.38	22.90	22.75	22.78	23.05

δ Bootis

15 10 37
+33 46

m	m	R	R	M
40 2 8.7	3 2 2.0	21.9	21.8	22.1
10.9	23.8	24.2	24.0	24.0
12.8	26.6	25.7	25.9	26.2
12.4	26.7	26.8	26.6	25.0
448	191	186	183	193
11.20	24.78	24.65	24.57	24.82

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

12

1879 June 26

ζ Cor. Bor.

15 29 34

+27 7

	m	m	R	R	M
20 0	43.0	1 57.3	57.5	57.3	57.2
	45.0	59.1	59.0	59.5	59.1
	46.9	1.0	0.1	0.3	1.0
	48.0	1.9	1.7	1.6	2.0
	229	2393	2383	2387	2393
	45.72	59.82	59.57	59.67	59.82

ζ Serpentis

15 38 18

+6 48

	m	M	R	R	M
35 4	11.6	40 0 30.1	30.2	30.4	30.1
	18.9	37.0	36.2	36.6	36.9
	19.9	38.1	37.2	37.2	37.9
	17.0	35.2	36.0	35.8	35.2
	274	204	196	200	201
	16.85	35.10	34.90	35.00	35.02

γ Pegasi

0 4 0

+14 31

	m	m	R	R	M
55 2	5.1	3 8.6	9.4	9.0	9.4
	11.2	15.1	15.1	15.2	15.1
	13.1	16.3	15.9	15.3	16.4
	8.1	12.2	13.7	13.2	12.3
	375	522	541	527	532
	9.37	13.05	13.52	13.17	13.30

Andromedæ

~~2 0 21~~ 1 56 28

~~+42 53~~ +41 45

	R	R
40 4	26.0	25.9
	27.5	27.6
	28.1	28.5
	28.8	29.4
	30.4	31.4
	27.60	27.85

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

δ Ophiuchi

16 8 0

−3 23

	m	m	R	R	m
50 0	17.9	30.9	30.8	31.0	30.2
	19.6	37.4	37.0	37.0	37.1
	27.5	40.8	39.3	39.8	40.2
	24.1	36.1	36.8	37.0	37.1
	89.1	145.2	239	248	246
	22.27	36.30	35.97	36.20	36.15

2 Androm.

0 2 8

+28 25

	m	m	R	R	m
0 2	44.1	3 45.1	45.0	45.0	45.5
	48.8	48.2	48.7	48.2	48.6
	46.9	47.1	46.8	46.1	47.2
	47.2	47.7	48.2	48.1	48.5
	270	281	287	274	298
	46.75	47.02	47.17	46.85	47.45

Lost 1st 5 lines

~~Arcturi~~ γ Persei

2 56 2

+53 2

	R	R
30 4	33.1	33.2
	37.7	37.5
	34.8	35.0
	37.0	37.0
	226	227
	35.65	35.67

β Ursa Min. L-C.

14 51 4

+105 21

	m	m	m	m	m	m
10 0	29.9	10.1	5 4	54.8	33.1	20.8	5.9
	31.1	12.1		56.3	34.1	22.1	7.9
	28.1	5.4		54.7	31.5	19.9	4.1
	31.1	12.1		54.7	33.1	21.1	6.4
	1202	397		205	118	39	24
	30.05	9.92		55.12	32.95	20.97	6.05

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 June 26

α Persei C.

3 15 41

+49 26

	m	m	R	R	M
● 2	40.1	15.5	15.7	15.7	14.9
	40.8	15.8	16.1	15.8	15.1
	39.3	15.5	14.8	14.9	15.8
	41.1	16.3	16.4	16.6	16.2
	13	231	230	230	220
	40.32	15.78	15.75	15.75	15.50

α Tauri

4 28 59

+16 16

	m	m	"	R	R	M
10	1 46.1	3.6		3.0	3.0	3.2
	50.0	8.0		8.3	8.2	8.0
	53.8	10.8		10.0	9.7	10.9
	50.7	7.2		8.0	8.1	7.9
	06	296		293	290	300
	50.15	7.40		7.32	7.25	7.50

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

x Aurigae
5 7 45
+45 52

	m	m	R	R	m
35 0	57.0	1 8.9	9.1	9.6	9.1
	59.7	11.9	12.0	11.5	11.1
	0 8	13.0	12.2	12.3	12.9
	59.2	11.3	12.1	12.2	11.6
	23 67	451	454	456	447
	59.17	11.27	11.35	11.40	11.17

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. June 28

Sun C = 46.719

6 24 29

+23 20

	m		m
.502	9.9	20 4 12.0	20 4 12.0
	13,1	16.4	16.4
	14.0	17.1	17.1
	14.1	16.1	16.1
	5 11		216
	12,78		15.40

Seeing moderately good

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 June 30

Sun C=46.719

8 36 55
+23 11

	m	m
.0 1	18.5	30.3 43.8
	18.1	48.8
	22.1	46.8
	23.9	48.1
	82.6	27 5
	20.65	46.87

Both limbs in R.A. & δ
Seeing fairly good.

β Geminor.

7 37 55
+28 19

	m	m
5 4	9.1	
	15.2	
	9.7	
	11.9	
	45 9	
	11.47	

β Ursae Min.

14 51 4
+74 39

45 4	48.9	50 0	5.9	36.3	51.2	3.9	12.5
	48.9		6.0	35.2	50.3	2.9	12.2
	48.4		4.7	35.5	50.9	3.9	11.6
	51.2		8.9	39.9	54.1	6.3	15.5
	197 4		25 5	26 9	65	170	120
	49.35		6.37	36.72	51.62	4.25	13.00

β Librae

15 10 30
−8 56

	m	m	R	R	m
20 3	20.5	4 40.1	40.3	40.8	39.9
	26.1	45.8	45.9	46.0	46.0
	29.4	48.9	48.4	48.6	49.0
	25.7	45.9	45.3	45.3	45.6
	21 7	207	199	207	205
	25.42	45.17	44.98	45.17	45.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Virginis

13 18 49
−10 32

m	m
55 4 3.0	0 0 18.1
9.1	24.0
13.4	28.9
8.8	24.1
34.3	95.1
8.57	23.78

γ Bootis

14 27 12
+38 80

m	m	R	R	M
35 2 57.2	4 11.2	11.6	11.6	11.1
1.1	15.1	15.7	15.1	15.1
0.3	14.5	14.7	14.6	14.1
2.0	16.1	16.3	16.2	16.0
0.6	16.9	18.3	17.5	16.3
0.15	14.22	14.57	14.37	14.07

α Cor. Bor.

15 29 34
+27 7

m	m	R	R	M
20 0 44.7	1 54.2	54.3	53.8	54.2
48.9	58.0	58.1	57.9	58.2
47.9	57.0	56.3	56.3	56.9
49.9	58.8	58.4	58.4	58.9
31.4	28.0	27.1	26.4	28.2
47.85	57.00	56.78	56.60	57.05

α Serpentis

15 38 18
+6 48

m	m	R	R	M
35 4 18.1	40 0 32.9	32.2	32.7	32.9
26.2	39.9	39.8	39.8	39.9
25.1	39.5	39.0	39.0	39.0
22.9	38.1	38.7	38.4	38.1
12.3	30.4	29.7	29.9	29.9
23.07	37.60	37.42	37.47	37.47

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 June 30

δ Ophiuchi

16 8 0

− 3 23

	m	m	R	R	m
50 0	16.1	1 32.8	32.3	32.8	32.6
	23.2	39.1	39.6	39.2	39.1
	24.2	40.1	40.0	39.8	40.0
	21.9	38.0	37.9	37.9	38.1
	5.4	30.0	29.8	29.7	29.8
	21.35	37.50	37.45	37.43	37.45

Ob. failed.

η Draconis.

16 22 21

+61 47

	m	m
40 1	17.3	2 26.1
	17.2	26.5
	15.8	25.1
	18.9	27.1
	29.2	24.8
	17.30	26.20

Comp = 96 very Obs. Comp.
Comp not obs for 1st ☿ and
has 1 long stroke for 2nd ☿.

η Herculis

16 38 45

+39 9

	m	m	R	R	m
4 15 4	2.9	20 0 17.4	17.4	17.4	17.7
	7.1	20.4	20.5	20.6	19.8
	5.8	19.1	19.3	19.4	19.1
	7.1	22.0	22.4	22.8	22.0
	22.9	789	796	802	786
	5.72	19.72	19.90	20.05	19.65

2 Herculis pr. C = 46.719

17 9 18

+14 32

	m	m	R	R	m
55 1	7.2	2 13.9	13.8	13.5	13.8
	13.9	20.2	20.4	19.7	19.9
	12.7	19.1	18.6	18.2	18.8
	10.4	17.1	17.7	17.8	17.1
	42	703	705	292	296
	11.05	17.57	17.62	17.30	17.40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Herculis

16 25 1

+21 45

m	m	R	R	M
40 2 56.2	3 52.9	53.3	53.2	53.5
1.9	58.4	58.4	58.6	58.3
58.1	55.0	54.7	54.8	55.5
0.9	57.8	58.0	58.0	57.7
23.71	24.1	24.4	24.6	25.0
59.27	56.02	56.10	56.15	56.25

ζ Ophiuchi

16 30 30

−10 19

m	m	R	R	m
45 1 20.1	2 41.6	42.4	42.2	41.8
26.4	47.3	47.9	48.1	47.6
29.3	51.1	50.9	50.7	51.0
25.1	46.4	47.0	46.9	46.7
20.9	18 64	28.2	27.9	27.1
25.22	46.60	47.05	46.98	46.78

γ Androm. C=46.699

1 56 28

+41 45

m	m	R
40 3 20.1	4 29.9	30.3
23.9	33.1	33.0
22.8	30.5	30.2
23.9	33.2	33.9
10.7	12.67	12.74
22.67	31.67	31.85

ε Arietis

2 0 21

+22 53

m	m
30 4 21.6	35 0 37.9
27.2	43.2
22.5	38.4
26.1	43.0
17.4	16.25
24.35	40.62

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

22

June 30 1879

β Geo. Min. L-G.

2 51 4

+105 21

		R	R	R
10	0	37.6	11.2	5 4 12.2
		35.7	14.3	14.7
		31.9	4.9	6.0
		35.3	13.0	12.8
		2.87	4.34	4.57
		37.17	10.85	11.42

γ Persei

2 56 2

+53 2

		R	R
25	1	39.3	39.6
		40.7	40.8
		37.5	37.4
		41.3	41.7
		1588	1595
		39.70	39.87

δ Persei

3 46 32

+31 31

		m	m	R	R	m
55	1	41.1	2 50.9	51.1	50.8	51.2
		45.2	54.9	54.8	55.3	55.0
		42.0	51.9	51.8	51.8	51.9
		46.0	55.9	56.1	55.9	56.0
		143	136	138	138	141
		43.57	53.40	53.45	53.45	53.52

α Aurigae

5 7 45

+45 52

		m	m	R	R	m
35	1	5.9	2 9.7	9.8	9.8	9.5
		8.9	12.2	12.7	12.4	12.9
		5.9	9.9	9.4	10.7	9.9
		8.8	12.3	13.0	13.2	12.9
		29.5	44.1	44.9	61	44.3
		7.38	11.02	11.22	11.52	11.07

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Persei

3 15 41
+49 26

m	m	R	R	M
0 2 44.9	3 47.1	47.8	47.4	47.6
46.0	48.1	48.4	48.8	47.9
43.9	44.8	44.2	44.8	44.9
46.7	49.2	50.0	49.8	49.1
21 5	29 2	19 04	30 8	29 5
45.37	47.30	47.60	47.70	47.37

η Tauri

3 40 18
+23 44

m	m	R	R	M
40 4 1.1	4 50	17.9	18.2	18.2	18.1
6.8		23.1	22.9	22.8	22.8
2.3		18.8	18.7	18.7	18.6
5.2		22.9	23.2	23.2	23.4
15 4		8 27	8 30	8 29	8 37
3.85		20.67	20.75	20.72	20.92

β Tauri

5 18 39
+28 30

m	m	R	R	M
55 2 45.7	4 1.1	1.0	1.2	1.0
48.9	6.0	5.8	5.8	5.9
45.9	1.1	0.9	0.6	1.2
49.9	5.2	5.8	5.8	5.1
30.4	13.4	13.5	13.4	13.2
47.60	3.35	3.37	3.35	3.30

β Aurigae

5 50 39
+44 56

m	m	R	R	M
30 2 22.2	3 35.9	35.4	35.2	35.1
25.0	38.1	38.2	37.9	37.9
23.3	34.9	35.0	35.2	35.1
26.2	39.7	39.0	39.7	39.0
16 7	28 6	27 6	28 0	27 1
24.17	37.15	36.90	37.00	36.78

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

24

1879 July 1

Sun. C=46.699

6 41 3

+23 7

	m		m
1 .5 o'	13.5	35 2	32.2
	17.9		37.3
	14.1		34.0
	18.9		37.8
	24 4		21 3
	16.10		35.32

1st nire 2nd limb ?

Seeing pretty bad.

α Virginis

13 18 49

+10 32

	m
55 4	1.0
	6.0
	11.1
	8.1
	26 2
	6.55

Rej. 2nd 8

β Librae

15 10 30

−8 56

	m	m	R	R	M
5 20 3	30.9	4 45.3	45.6	45.8	45.1
	36.0	50.9	51.2	51.0	50.3
	38.7	52.4 51.4	52.1	52.2	52.9
	36.2	51.1	51.0	51.2	50.9
	21 8	1997	1999	02	1992
	35.45	49.92	49.98	50.05	49.80

α Serpentis

15 38 18

+6 48

	m	m	R	R	M
35 4	16.1	40 0	34.6	34.8	34.7 35.0
	23.4		41.7	41.1	40.8 41.1
	22.2		39.9	39.7	39.2 39.9
	20.8		40.0	40.2	40.2 40.1
	25		1562	1558	1549 1561
	20.62		39.05	38.95	38.72 39.02

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Meas. Min.
14 51 4
+74 39

m	m	m	m	m	m	m
45 4	52.2	50-0-4.6	29.7	41.3	54.1	1-7.1	13.9
	53.0	3.9	28.1	39.9	53.9	6.1	13.5
	50.1	2.5	27.1	38.0	51.0	4.6	11.4
	54.1	7.5	32.0	43.1	56.4	9.8	16.9
	94	18 5	1169	1623	154	276	157
	52.35	4.62	29.22	40.57	53.85	6.90	13.92

δ Ophiuchi
16 8 0
−3 23

m	m	R	R	m
50 0	17.4	134.1	34.2	34.1	34.1
	24.3	40.7	41.0	41.2	40.8
	24.7	40.5	40.1	40.2	40.9
	33.8	39.9	40.0	39.9	40.1
	1002	1552	1553	1554	1559
	25.05	38.80	38.82	38.85	38.97

η Draconis.
16 22 21
+61 47

m	m	R
40 1	21.8	2 2.9	3.2
	21.5	2.2	3.1
	19.9	0.9	0.9
	23.3	4.7	4.2
	65	10.7	11.4
	21.62	2.67	2.85

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 July 1

β Herculis

16 25 1

+21 45

m	m	R	R	m
40 2 49.1	3 58.7	59.1	58.8	58.9
48.9	4.1	4.3	4.2	4.1
50.1	59.9	59.7	59.7	59.5
53.1	3.3	3.5	3.3	3.7
12	60	66	60	62
50.30	1.50	1.65	1.50	1.55

η Herculis

16 38 45

+39 9

m	m	R	R	m
15 4 9.4	20 0 12.1	11.9	12.0	12.1
12.1	15.1	15.2	15.4	15.7
9.8	12.2	12.1	11.9	12.0
13.1	16.4	16.6	16.8	16.8
444	158	158	161	161
11.10	13.95	13.95	14.02	14.02

β Ursa. Min. L.C.

14 51 4

+105 21

m	m	m	m	m
10 0 11.8	5 4 50.5	25.9	11.9	7.7
13.9	52.9	28.2	14.3	10.0
5.5	45.4	21.5	7.1	3.1
13.5	52.1	26.8	13.1	9.1
47	09	224	64	299
11.17	50.22	2560	11.60	7.47

Strike for last S

γ Persei

2 56 2

+53 2

m	m	R	R	m
25 1 47.1	2 43.3	43.2	43.3	42.9
50.1	44.8	44.3	44.4	44.9
45.9	41.4	41.6	41.4	41.9
50.0	45.7	45.6	45.4	45.8
41.4 1931	152	149	145	155
48.27	43.80	43.72	43.62	43.87

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Herculis

17 9 18
+14 32

m	m	R	R	m
55 12.4	2 20.0	19.8	19.8	19.8
8.3	25.1	25.7	25.8	25.1
6.9	24.1	24.4	23.9	24.1
6.3	23.7	24.0	24.0	23.8
23 9	129	139	135	128
5.97	23.22	23.47	23.37	23.20

ζ Aurigæ

2 0 21
+22 53

R	R
30 4 30.6	31.4
34.1	36.8
30.2	30.1
35.6	35.5
135	138
33.37	33.45

ζ Persei

3 15 41
+49 26

m	m	R	R	m
0 2 42.8	3 52.2	50.4	50.8	50.8
43.0	50.3	51.5	51.8	52.1
39.3	47.9	47.1	46.7	47.3
44.1	52.9	53.1	53.6	52.9
92	13	21	29	2031
42.30	50.32	50.52	50.72	50.78

δ Persei

3 34 19
+47 24

m	m	R	R	m
0 4 29.9	5 0 21.2	21.3	21.2	21.8
30.2	22.8	22.5	22.9	21.9
26.9	19.3	19.6	19.1	19.9
31.9	24.1	24.7	24.5	24.8
11 89	74	81	77	84
29.72	21.85	22.02	21.92	22.10

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. July 1

ζ Persei

3 46 32

+31 31

m	m	R	R	M
55 1 39.1	25 7.0	56.6	56.1	56.5
42.5	1.5	1.3	1.4	1.2
40.1	5.3	57.3	57.0	57.1
44.9	1.8	1.8	2.1	1.8
76	2376	2370	2366	2366
41.90	59.40	59.25	59.15	59.15

ι Aurigae

4 49 7

+32 58

m	m	R	R	M
25 4 44.1	30 0	56.1	56.3	55.1	55.9
46.0		58.9	58.7	58.1	58.0
45.8		56.7	56.8	57.1	56.8
47.8		2.3	1.3	1.4	1.7
237		2340	2331	2317	2319
45.92		58.50	58.27	57.92	57.98

β Leo. Min. July 2 #

14 51 4

+74 39

m	m	m	m	m
45 4 46.2	50 0 18.6	42.9	55.9	1 9.1
47.9	18.1	42.9	55.9	9.8
47.1	17.9	42.9	55.1	8.8
47.1	19.9	45.1	58.0	11.1
283	345	138	249	388
47.08	18.62	43.45	56.22	9.70

δ Bootis July 2 #

15 10 37

+33 46

m	m	R	R	M
40 2 10.9	3 23.7	24.2	23.9	23.9
13.7	26.9	26.9	26.8	27.0
15.1	28.4	28.2	28.0	28.2
16.1	28.8	28.9	~~30.9~~ 29.1	28.9
158	278	282	278	278
13.95	26.95	27.05	26.95	26.95

These four stars on the foll. page

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Aurigae
5 7 45
+45 52

m	m	R	R	M
35 0 57.1	2 8.1	7.7	7.9	8.2
58.2	9.9	10.2	10.2	9.5
56.6	7.2	7.2	7.2	7.1
0.9	11.0	11.0	10.3	10.5
2328	362	361	356	353
58.20	9.05	9.02	8.90	8.82

α Orionis
5 48 37
+7 23

m	m	R	R	M
30 4 36.1	5 0 16.9	57.3	57.2	57.8
44.1	4.1	4.9	4.3	3.9
42.1	2.1	2.6	2.4	2.1
41.0	3.1	2.8	2.7	2.9
33	62	76	66	67
40.82	1.55	1.90	1.65	1.67

1st pl cat ✓

η Draconis July 2 ✱
16 22 21
+61 47

m	m
40 1 26.9	2 13.0
27.1	14.1
27.5	13.5
28.2	15.0
29.7	15.6
27.42	13.90

β Herculis July 2 ✱
16 25 1
+21 45

m	M	R	R	M
40 3 16.9	58.2	58.8	58.7	58.1
22.8	4.1	5.0	5.0	4.1
20.7	1.7	1.8	2.0	2.0
21.9	2.9	3.2	3.2	3.1
23	69	88	89	73
20.58	1.72	2.20	2.22	1.82

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 July 2

Sun C=46.699

6 45 11

+23 3

	m		m
5 4	18.1	40 1	43.9
	23.6		49.1
	21.2		45.9
	22.1		48.8
	50		277
	21.25		46.92

Seeing pretty bad.
Lost Pt 2 wires 2nd limb.

α Can. Min.

7 32 58

+5 32

	m	m	R	R
55 0	29.1	1 52.9	53.3	53.9
	36.1	2.0	3.4	3.8
	33.0	55.6	54.3	54.0
	34.1	57.1	56.7	56.9
	1323	2276	2277	2286
	33.07	56.90	56.92	57.15

β Ursa. Min

14 51 4

+74 39

	m	m	m	m	m
45 4	46.2	50 0 18.6	42.9	55.9	1 9.1
	47.9	18.1	42.9	55.9	9.8
	47.1	17.9	42.9	55.1	8.8
	47.1	19.9	45.1	58.0	11.1
	283	345	138	249	388
	47.08	18.62	43.45	56.22	9.70

δ Bootis

15 10 37

+33 46

	m	m	R	R	m
40 2	10.9	3 23.7	24.2	23.9	23.9
	13.7	26.9	26.9	26.8	27.0
	15.1	28.4	28.2	28.0	28.0
	16.1	28.8	28.9	29.1	28.9
	158	278	282	278	278
	13.95	26.95	27.05	26.95	26.95

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Geminor

7 37 55

+28 19

m

5 3 56.2

5.2

53.2

56.3

23 09

57.72

Lost A 4 Foll.

ζ Virginis

13 18 49

−10 32

m m

55 4 59.3 0 0 22.8

55 24.1

11.1 35.0

7.1 30.4

2 30 11 56

575 28.90

8.25

Lost A+1

η Draconis

16 22 21

+61 47

m m

40 1 26.9 2 13.0

27.1 14.1

27.5 13.5

28.2 15.0

29.7 15.6

27.42 13.90

β Herculis

16 25 1

+21 45

m m R R m

40 3 16.9 3 58.2 58.8 58.7 58.1

22.8 4.1 5.0 5.0 4.1

20.7 1.7 1.8 2.0 2.0

21.9 2.9 3.2 3.2 3.1

23 69 88 89 7.3

20.58 1.72 2.20 2.22 1.82

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879, July 2

η Herculis

16 38 45

+39 9

	m	m	R	m
15 4	35.1	20 0	17.9	17.9	18.1
	39.3		20.9	21.3	20.9
	39.1		20.5	20.9	20.9
	39.8		22.1	22.1	22.2
	33.3		14	22	21
	38.32		20.35	20.55	20.52

ζ Herculis

17 9 18

+14 32

	m	m	R	R	m
55 1	23	2	17.6	17.6	17.4	17.1
	1.8		22.9	23.8	23.9	22.8
	8.5		23.8	23.8	23.8	24.0
	5.2		21.0	21.3	21.7	20.8
	23.8		15.3	65	68	47
	5.95		21.32	21.62	21.70	21.17

γ Androm. C=46.690

1 56 28

+41 45

	m	m	R
40 3	17.7	4	32.9	32.7
	20.4		34.2	34.9
	20.0		35.1	34.7
	20.9		36.4	36.0
	7.90		186	183
	19.75		34.65	34.57

ζ Aurigæ

2 0 21

+22 53

	m	m	R	R	m
30 4	25.0	85	39.1	39.9	38.9	39.1
	30.1		43.0	43.4	43.2	43.0
	26.9		40.1	40.2	40.3	40.1
	28.9		43.1	43.2	43.2	43.4
	11.09		53	67	56	56
	27.72		41.32	41.67	41.40	41.40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Draconis

17 27 42

+52 23

m
0 4 58.2
1.0
59.0
0.1

Ch. failed

ζ Ophiuchi C=46.699

17 29 19

+12 39

m	m	R
45 3 46.9	50 0 56	58
52.1	11.8	11.8
54.0	12.1	12.2
51.0	10.2	9.8
40	3.97	3.96
57.00	9.92	9.90

β Ursa Min. L.C.

14 21 4

+105 21

m	m	m	m	m
10 0 19.1	00	54 47.1	22.8	6.1
20.2	2.1	48.9	24.8	8.1
16.1	57.0	44.2	20.1	3.1
20.9	1.9	47.8	23.7	7.2
763	10	280	114	245
19.07	0.25	47.00	22.85	6.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 July 3

Sun. C = 46.690

6 49 19

+22 58

m m

10 4 21.9 45 1 38.1

21.9 38.3

23.8 40.3

8.4 26.0

76.0 14 27

19.00 35.67

Both limbs in δ + R.A.

Seeing pretty fair.

---

2 Virginis

13 18 49

−10 32

m m

55 4 18.2 0 0 36.0

36.4

27.5 44.8

6.1 25.1

Ref. bh. failed

β Librae

15 10 30

−8 56

m m R R M

20 3 38.9 45 58.3 58.1 57.9

37.9 57.9 58.2 58.3 58.2

46.4 6.8 6.0 6.2 6.9

27.1 46.9 47.7 48.0 47.9

15 03 22 99 23 02 23 07 23 09

37.57 57.47 57.55 57.67 57.72

---

2 Serpentis

15 38 18

+6 48

m

40 0 9.1

11.5

14.5

57.9

27 30

8.25

A 1, 3 + c.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

Bkes. Min.
14 51 4
+74 39

	h m	m	m	m	m	m
50 0	10.1	24.1	38.9	55.6	12.1	24.7
	3.8	17.4	32.0	48.2	5.3	15.2
	7.9	21.9	36.2	53.1	7.9	19.1
	55.2	9.7	24.1	41.0	57.1	6.2
	2570	731	1312	1979	2624	622
	4.25	18.27	32.80	49.47	5.60	15.55

3 strokes for last 8.

δ Ophiuchi
16 8 0
−3 23

	m	m	R	R	m
50 0	34.0	1 49.1	49.2	49.0	49.1
	34.9	50.1	50.8	50.8	49.9
	40.0	55.9	55.4	55.2	54.9
	21.9	37.1	37.2	37.0	37.9
	1308	1922	1926	1920	1918
	32.70	48.05	48.15	48.00	47.95

η Draconis
16 22 21
+61 47

	m	m	R	R	m
40 1	36.1	R 42.3	42.6	42.6	42.2
	29.2	35.9	35.1	35.4	35.1
	33.1	38.1	38.0	38.6	38.0
	21.0	45.9	25.8	25.7	26.1
	1194	1422	1415	1423	1414
	29.85	35.55	35.37	35.57	35.35

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

36

1879 July 3

γ Androm. C=46690

1 56 28

+41 45

m	m	R
40 3 34.1	4 41.5	41.2
30.1	38.1	38.4
31.3	39.1	39.2
18.6	26.1	26.0
11 41	14 48	14 48
28.52	36.20	36.20

α Arietis

2 0 21

+22 53

m	m	R
30 4 40.5	350 55.9	55.8
39.9	55.0	55.7
36.3	52.0	52.5
26.1	41.5	40.8
14 28	44	48
35.70	51.10	51.20

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

Obs. Min L.C.

14 51 4

+105 21

	m	m	m
5 4	48.1	27.1	15.2
	44.1	23.9	11.8
	40.2	19.9	7.8
	30.1	9.4	57.2
	25	803	2720
	40.62	20.07	800

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 July 4
Sun c=46.690
6 53 27
+22 53

.154	20.1	50	23.0
	20.2		22.9
	19.9		22.2
	5.7		9.8
	659		779
	16.47		19.47

Seeing very fine

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. July 5

Bl Obs. Min. C=46.690

14 51 4

+74 39

m	m	m	m	m	m
50 0	1.9	17.2	40.2	54.9	1'15.2	25.3
	55.9	11.0	33.8	48.9	9.8	18.2
	47.1	1.9	24.6	39.5	0.1	9.7
	45.2	1.2	22.9	36.9	57.9	8.0
21 01		313	1215	1802	2630	612
52.52		7.82	30.37	45.05	5.75	15.30

α Aurigæ

20 21

+22 53

m	m	R	R	m
30 4 56.4	35 0	57.5	51.7	51.8	51.9
55.4		50.8	56.8	51.1	51.0
40.9		36.9	36.9	37.1	36.6
37.9		31.9	35.6	35.2	35.9

Bl Obs. Min. L. C.

14 51 4

+10 5 21

m	m	m	m
10 0 50.3	9.0	5 4 47.8	26.6
46.2	5.0	44.5	25.1
31.1	48.8	28.5	8.8
30.1	50.1	28.9	9.4
15 77	2329	1497	1919
39.42	58.22	37.42	47.97

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Librae

15 10 30

−8 56

m	m	R	R	m
20 3 24.9	45 28	52.2	53.2	52.9
34.5	53.1	53.1	53.0	52.9
30.9	47.4	47.8	47.7	47.1
19.9	38.1	38.8	38.3	38.3
11 02	19 14	19 19	19 22	19 22
27.55	47.85	47.97	48.05	48.05

γ Androm.

1 56 28

+41 45

R	R
40 3 37.6	36.9 ~~37~~
33.3	33.8
22.8	23.0
19.3	19.7

γ Persei

2 56 2

+53 2

m	m	R	R	m
25 2 7.9	31.0	0.8	0.6	1.1
6.2	57.2	57.2	57.3	6~~8~~.2
52.0	44.9	45.3	44.9	44.9
51.1	44.3	43.8	43.3	43.9
23 62	20 74	20 71	20 61	20 81
59.05	51.85	51.78	51.52	52.02

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Only 6

Sun C=46.690

1 1 40

+ 22 42

Sn. A. R. only.

Lost A 8.

ζ Virginis

13 18 49

−10 32

		m		m
0	0	5.2	1	0.9
		19.0		15.1
		22.4		19.0
		21.9		16.1
		6 85		5 11
		17.12		12,78

δ Bootis

15 10 37

+33 46

	m	m	R	R m
40 2	57.0	4 12.1	12.8	12.7 13.1
	9.3	25.1	24.9	25.1 24.9
	7.1	22.9	23.0	23.3 23.1
	18.2	29.0	29.0	29.2 27.8
	26.66	91	97	903 904
	6.65	22.27	22.42	22.57 22.60

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

T Virginis

13 55 29

+2 8

	m	m
20 0	47.6	1461
	29	1.8
	1.0	0.0
	4.8	3.1
	2363	2310
	59.07	57.75

B Vir. Min.

14 51 4

+74 39

	m	m	m	m	m
50 0	28.8	42.1	53.1	127	31.2
	29.1	51.2	3.0	21.9	39.9
	35.9	49.1	58.9	17.5	86.9
	44.9	58.0	8.8	26.7	45.0
	1397	2004	38	791	1530
	34.92	50.10	0.95	19.78	38.25

m	m
47.0	56.3
56.1	6.1
52.8	1.9
11	10.5
2170	2548
54.25	3.70

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

14

1879 July 8

η Leonis C = 46.690

16 22 21

+61 47

m	m	R
40 2 21.6	3 9.1	8.8
30.1	16.0	17.9
27.9	15.9	15.9
32.1	20.1	21.0
111.7	63.7	63.6
27.92	15.92	15.90

Sun Comp easily

α Herculis

17 9 18

+14 32

m	m	R	R	m
55 1 50.1	30.2	0.4	0.9	0.9
5.9	15.9	16.5	16.5	16.4
3.1	13.9	14.0	13.7	14.0
3.1	14.7	15.3	15.4	14.6
22	44.7	46.2	46.5	45.9
0.55	11.17	11.55	11.62	11.48

β Cors. Min Lib.

14 51 4

+10 5 21

m	m	m	m	m	m
10 1	18.9	0 58.2	4.29	2.18	5.7	15.8
	29.9	9.9	4.8.9	3.21	16.1	17.0
	21.9	1.9	4.5.9	2.48	6.8	5.9.1
	28.2	8.8	5.2.9	3.19	15.0	5.9
	9.8.9	25.8.8	19.5.6	11.0.6	4.3.0	7.8
	24.72	4.70	48.90	27.65	10.75	1.95

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

γ Androm

1 56 28

+41. 45

m	m	R	
40 4 5.2	45 0 16.1	16.8	
17.4	28.1	28.0	
14.9	25.2	24.3	
18.1	29.1	29.4	
5 56	985	985	
13.90	24.62	24.62	

α Arietis

2 0 21

+22 53

m	m	
35 0 40.1	1 23.8	
54.1	37.9	
48.2	32.0	
5 39	36.9	
19 63	13 06	
49.07	32.65	

α Tauri

4 28 59

+16 16

m	′	″	R
10 2 38.3	34	78	47.8
52.2	2	2	2.5
50.8	0	9	0.6
50.9	1	1	0.3
19 22	23	20	23 12
48.05	58	00	57.80

α Aurigae

5 7 45

+45 52

m	m	R
35 1 48.5	2 58.1	58.1
59.1	9 9	10.0
56.8	6 9	6.2
59.1	9 0	8.9
22 35	26 39	26 32
55.87	5.97	5.80

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. July 9

Sun C=46.690

7 13 58

+22 22

m	m
50 1 2.9	20 3 17.1
17.9	32.1
14.5	28.1
19.5	31.9
5 48	10 92
13.70	27.30

Illumin'g 4th bod

Both limbs in R.A. 48

Seeing pretty fair.

2 Cam. Mins

7 32 58 +5 32

m	m	R
55 1 18.9	2 32.4	31.6
36.1	45.7	48.8
34.8	41.9	47.2
35.1	47.1	47.4
12 49	17 56	17 50
31.22	43.90	43.75

B Hors. Mins

14 51 4

+74 39

m	m	m	m	m	m
50 0.38.1	54 8 1	11.9	30.2	45.2	53.9
59.9	5.0	21.5	40.1	55.1	4.1
46.8	1.1	19.1	37.1	52.0	0.4
50.1	5.8	22.9	41.1	57.0	5.0
19 59	6.7	7 54	14 85	9.3	3.4
48.97	1.67	18.85	37.12	52.32	0.85

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ε Virginis

13 18 49

−10 32

	m
	55 4 5.13
	8.1
	11.1
	6.0
	25 6 5
	4.12

τ Virginis

13 55 29

+2 8

	m	m	
20 0	39.1	54.2	54.8
	55.9	11.2	11.2
	53.4	9.1	9.4
	53.7	8.1	8.7
	20 2 1	26 26	26 41
	50.52	5.65	6.02

δ Bootis

15 10 37

+33 46

	m	m	R	R	m
40 3	19.8	4 9.4	10.0	10.0	9.9
	32.5	23.1	23.8	23.3	22.9
	31.9	21.9	22.1	21.9	21.3
	33.1	22.2	23.2	23.2	23.3
	11 73	766	791	784	774
	29.32	19.15	19.78	19.60	19.35

α Serpentis

15 38 18

+6 48

	m	m	R	R	m
40 0	8.9	16.1	16.4	16.0	16.1
	25.9	33.1	34.0	33.7	33.0
	23.8	31.1	31.3	30.9	30.9
	22.7	29.1	30.0	29.9	30.6
	813	1094	1117	1105	1106
	20.32	27.35	27.92	27.62	27.65

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 July 9

δ Ophiuchi

16 8 0

−3 23

m	m	R	R	M
50 1 11.9	2 23.6	23.2	23.2	23.3
29.1	41.1	41.2	40.7	40.8
28.9	39.9	39.8	39.5	39.9
26.9	38.0	37.9	38.0	38.1
96.8	14 26	14 21	14 14	14 21
24.20	35.65	35.52	35.35	35.52

η Draconis

16 22 21

+61 47

m	m
40 2 2.6	3 20.2
14.4	30.9
11.3	28.1
13.9	29.9
42.2	10 91
10.55	27.27

Comp = 10.2 mean

Comp Observed in R.A. 10

1 Comp stopped for 5 observations

~~δ Persei~~ η Tauri

3 40 18

+23 44

m	m	R	R	M
40 4 50.3	45 06.9	6.6	6.5	6.9
6.1	21.1	21.2	21.8	21.4
1.0	16.2	15.6	16.2	16.6
3.9	19.9	19.4	19.6	20.1
13	641	628	641	650
032	16.02	15.70	16.02	16.25

ζ Persei

3 46 32

+31 31

m	m	R	R	M
55 2 23.0	8 34.2	34.1	34.2	34.8
37.5	48.9	49.5	48.4	49.8
33.7	44.9	44.9	44.4	44.9
36.2	48.3	48.4	48.3	47.9
13.04	17.63	17.69	17.53	17.74
32.60	44.07	44.22	43.82	44.35

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Herculis

16 25 1
+21 45

m	m	R	R
40 4 8.1	4 37.3	37.8	38.0
24.4	53.0	53.6	54.2
18.9	48.2	47.7	48.1
21.1	51.5	50.9	51.1
7 25	19 00	19 60	19 14
18.12	47.50	47.50	47.85

δ Persei

3 34 19
+47 24

m	m	R	R	M
5 0 13.9	1 22.1	22.5	22.2	22.2
24.9	38.4	38.8	38.2	38.2
20.9	30.1	29.4	29.7	30.0
24.9	33.0	33.0	32.8	33.9
46	1186	1187	1179	1196
21.15	29.65	29.67	29.47	29.90

α Tauri

4 28 57
+16 16

m	m
10 2 32.7	3 46.6
48.7	29
46.2	0.2
46.1	59.9
1737	2296
43.42	57.40

ι Aurigae

4 49 7
+32 58

m	m	R	R
30 0 26.8	1 41.8	41.3	41.2
39.3	54.1	54.8	55.0
38.1	52.3	51.8	52.0
40.0	54.0	54.0	54.2
1942	22	19	24
36.05	53.55	50.47	50.60

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj:1401R

1879. July 9

β Orionis

5 8 43

−8 21

	m	m	R	R	M
15 3	16.2	4 28.9	28.2	28.0	28.1
	33.8	44.1	45.0	45.1	44.1
	33.3	45.9	44.3	44.0	45.5
	30.6	42.9	42.3	42.6	41.9
	11.39	18	1598	1597	1596
	28.47	40.45	39.95	39.92	39.90

ζ Orionis

5 48 37

+7 23

	m	m	R	R
35 0	15.8	1 30.0	29.6	29.9
	33.9	48.8	47.9	48.1
	31.1	44.9	43.8	43.8
	30.0	43.0	43.7	42.9
	11.08	67	50	47
	27.70	41.67	41.25	41.17

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. July 10

Sun C=46.690

17 18 4

+22 15

	h	m
55 3	33.9	40.1
	48.7	55.1
	44.8	51.8
	47.1	53.9
	17 45	2009
	43.62	50.22

Swinford

Both limbs in R.A. 48

δ Virginis

12 49 30

+4 3

		m	m	R	R	m
25	0	14.1	1 25.8	26.1	24.8	25.0
		32.9	43.0	42.8	44.0	43.9
		31.0	41.5	40.5	39.7	40.1
		30.1	39.9	39.6	38.9	40.9
		1081	1502	1490	1474	1499
		27.02	37.55	37.25	36.85	37.47

Bl Wss. Min. ♃

14 51 4

+74 39

	m	m	m	m	m	m
50	0	37.1	48.6	1 6.7	26.9	43.3	58.1
		42.1	0.9	5.9.1	37.9	53.9	4.8
		39.1	56.5	14.9	35.1	51.5	1.7
		44.1	1.9	15.9	38.0	55.9	5.9
		1564	2279	606	1389	46	55
		39.10	56.97	15.15	34.72	51.15	1.37

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ε Virginis

12 56 9
+11 37

	m	m	R	R
50	2 6.8	3 17.4	17.9	17.8
	23.9	34.1	35.6	35.0
	22.1	34.0	33.6	33.6
	20.1	32.5	32.2	32.1
	7 29	11 80	11 93	11 85
	~~20.72~~ 18.22	29.50	29.82	29.62

δ Virginis

13 18 49
−10 32

	m	m
0	0 13.1	1 2.1
	29.7	19.1
	33.9	23.0
	30.9	18.9
	10 76	6 31
	26.90	15.78

γ Andromi.

1 57 28
+41 45

	m	m	R
40	4 1.1	4 50 13.3	13.9
	15.3	25.9	26.1
	12.1	24.5	23.4
	16.3	28.9	29.3
	448	926	927
	11.20	23.15	23.17

α Arietis

2 0 21
+22 53

	m	m
35	0 24.9	1 18.1
	40.1	34.5
	34.9	28.1
	41.1	33.9
	14 10	11 46
	35.25	28.65

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

54

1879 Only 10

Perseid

8 34 19

+47 24

	m	m		m
5 0	6.6	1 18.1		18.1
	19.9	30.1		30.1
	15.1	27.1		27.1
	20.7	30.8		30.9
	623	1061		1062
	15.57	26.52		26.55

η Tauri

3 · 40 18

+23 44

	m	m	R	R	M
45 0	5.8	1 8.4	9.0	9.0	8.8
	24.7	24.1	24.8	24.8	24.1
	16.8	19.9	19.8	19.3	19.9
	19.0	23.1	23.4	23.6	24.1
	633	758	770	767	769
	15.82	18.95	19.25	19.17	19.22

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Persei

3 46 32
+31 31

	m	m	R
55 2	18.7	3 37.1	37.0
	34.2	52.9	52.8
	30.2	48.7	48.7
	34.1	52.1	52.7
	11 72	1908	1912
	29.30	47.70	47.80

ζ Tauri

4 28 59
+16 16

	m	m	R	R	M
10 2	35.9	3 45.9	45.3	45.6	45.9
	52.1	2.1	2.8	2.3	2.8
	506	0.9	1.2	1.2	0.9
	58.7	1.1	0.4	59.7	0.2
	1893	2300	2297	2288	2298
	47.32	57.50	57.42	57.20	57.45

Adjusted Micrometer B before Rise Star

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. July 11

7 12 8 Sun. C = 46.690

+.22 7

		m		m
. 5	1	11.7	35 3	17.3
		28.1		35.9
		24.9		32.5
		27.3		34.1
		9 20		11 98
		23.00		29.95

Seeing bad

Both limbs in R.A + δ

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug. 12

Sun $C_{\text{est'd}} = 46.964$ (Obs 47.007)

27 57
+14 58

m	m
10 4 47.4	45 2 28.5
46.9	27.9
8.7	50.9
0.2	41.1
22 32	14 84
55.80	37.10

$\frac{1}{2}$ tc. for 1st limb. 1 tc. for 2nd limb.
Seeing pretty bad.

α Herculis

17 9 18
+14 32

m	m
55 2 3.5	2 47.1
2.7	46.2
25.8	9.1
15.1	58.7
47 1	22 11
11.77	53.27

α Aurigae $C = 46.964$

4 49 7
+32 58

m	m	R	R
30 0 9.7	1 28 1	28.3	28.2
6.1	25.1	24.8	25.4
27.9	46.2	46.1	45.9
22.0	40.7	41.3	41.2
6 57	14 01	14 05	14 07
16.42	35.02	35.12	35.17

α Aurigae

5 7 45
+45 52

m	m
35 1 27.5	2 35.9
22.8	30.4
42.9	51.4
37.3	46.2
13 05	16 39
32.62	40.97

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Draconis.

17 27 42

+52 23

m	m
5 0 24.1	1 20.0
19.3	15.2
41.4	37.5
34.4	29.9
11 92	10 26
29.80	25.65

α Tauri

4 28 59

+16 16

m	m	R	R
10 2 9.8	3 32.1	31.3	31.3
8.1	30.7	30.7	30.2
29.9	51.9	51.9	51.8
21.4	44.2	43.9	43.6
69 2	158 9	157 8	156 9
17.30	39.72	39.45	39.22

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879, Aug. 13

Sun C = 46.964

9 31 43

+ 14 39

	m		m
1 30.3	6.5	5 0	23.0
	6.1		22.1
	31 3		46.6
	19 5		34.8
	6 34		12 65
	15.85		31.62

Both limbs in R.A. + δ

Seeing pretty bad

ε Ursa. Min.

16 58 25

+82 14

	m	m	m	m
15 0	44.2	54.9	1 10.6	21.6
	39.1	49.7	5.1	16.9
	59.6	10.0	25.4	36.6
	55.7	6.6	21.8	33.1
	19 86	24 12	6 29	10 82
	49.65	0.30	15.72	27.05

Some wires among the last 8's

ζ Ophiuchi

17 29 19

+12 39

	m	m	R	R
3 45 4	13.1	50 04 22	42.3	42.2
	13.1	41.9	42.0	41.2
	36.9	58	5.8	6.0
	25.8	54.2	54.9	54.8
	8 89	20 41	20 50	20 42
	22.22	51.02	51.25	51.05

γ Draconis

17 53 48

+51 30

	m	m	R	R
55 3	45.6	4 38.5	38.2	38.0
	30.1	33.2	33.8	33.9
	53.9	58.1	57.7	57.7
	45.9	48.7	49.8	49.8
	17 55	17 85	17 95	17 94
	43.87	44.62	44.87	44.85

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Herculis

17 9 18
+14 32

	m	m	R	R
55 1	26.4	2 42.9	42.8	42.2
	25.1	41.5	42.1	41.9
	51.0	6.9	7.2	7.2
	38.1	54.6	55.7	55.4
	14 06	20 59	20 78	20 67
	35.15	51.47	51.95	51.67

β Draconis

17 27 42
+52 23

	m	m
5 0	28.9	1 7.2
	23.9	1.9
	47.9	25.9
	39.1	16.2
	13 98	5 12
	34.95	12.80

η Serpentis

18 15 2
−2 56

	m	m.
20 3	27.2	45 9.9
	28.1	0.3
	53.8	25.9
	42.0	14.5
	15 11	28 06
	37.78	10.15

α Lyrae

18 32 50
+38 40

	m	m
45 3	13.7	4 22.6
	10.1	19.1
	33.7	42.8
	26.8	35.0
	8 43	11 9.5
	21.07	29.87

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Aug. 13

1 H. Cephei L.C.

6 43 16

+92 49

		m	m	m	m	m	m
40	4	47.9	42.4	37.0	29.3	25.7	18.6
		41.1	36.5	31.0	22.2	19.5	12.1
		2.0	58.2	52.0	44.1	40.8	33.1
		55.2	48.9	44.0	35.4	32.6	25.7
		2062	1860	1640	1310	1186	895
		51.55	46.50	41.00	32.75	29.65	22.37

3 long strokes for A.7

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Aquilae

18 59 51

+13 41

	m	m
45	1 58.0	3 32.7
	58.1	32.2
	2.1.4	56.8
	10.8	45.2
	26 86	166 9
	7.15	41.72

I struck for last δ.

β Cygni

19 25 50

+27 42

	m	m	R	R
45	1 9.8	2 18.7	18.1	18.1
	6.4	15.2	16.0	16.0
	28.9	37.9	37.6	37.7
	21.7	30.8	31.3	31.9
	6 6 8	10 2 6	10 30	10 37
	16.70	25.65	25.75	25.92

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug. 14

Sun C = 46.964

35 29

+14 20

m	m
50 1 24.1	20 3 46.5
23.2	44.9
48.1	10.6
35.6	57.8
131.0	219.8
32.75	54.95

β Draconis.

17 27 42

+52 23

	dα		dδ
5 0	17.1	1	3.2
	11.1		56.2
	34.2		20.8
	27.0		14.1
	89.8		274.3
	22.45		8.57

δ Cas. Min.

18 11 21

+86 36

m	m	m	m
50 3 10.7	4 2.9	4.1	6.9
2.9	54.8	56.1	59.1
23.9	15.4	16.9	20.1
18.9	11.0	13.1	16.2
56.4	26.41	27.02	28.23
14.10	6.02	7.55	10.57

η Serpentis

18 15 2

−2 56

m	m
20 3 36.2	4 50.8
35.2	50.1
0.8	15.9
49.6	4.5
18 18	24.13
45.45	0.32

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Aphinchi

17 29 19
+12 39

	m	m	R	R
45 4	12.6	50 03	37.1	37.0	36.8
	10.1		34.3	34.9	35.2
	36.1		59.9	59.8	59.8
	24.7		49.4	49.6	49.4
	8 35		18 07	18 13	18 12
	20.87		45.17	45.32	45.30

γ Draconis

17 53 48
+51 30

	m	m	R	R
55 3	28.1	4 46	45.9	(54.0)
	21.4	40.1	40.4	40.8
	45.4	3.9	3.9	3.4
	37.1	56.0	56.3	56.6
	13 20	20 67	20 65	21 48
	33.00	51.67	51.62	

α Lyrae

18 32 50
+38 40

	m	m	R	R
45 3	12.0	4 22.5	22.5	22.5
	7.1	18.9	19.0	19.0
	30.7	42.6	41.8	41.9
	24.1	35.4	36.0	36.0
	7 39	11 94	11 93	11 94
	18.47	29.85	29.82	29.85

51 H. Cephei L.C.

6 43 16
+82 49

	m	m	m	m	m
40 4	38.8	34.9	29.2	3 57.1	55.2
	31.4	27.0	21.9	49.4	46.9
	52.1	47.8	42.8	10.4	8.1
	45.1	40.9	35.1	3.3	1.0
	16 74	15 66	12 90	24 02	23 12
	41.85	37.65	32.25	0.05	57.80

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879, Aug, 15

Sun C -46964

		39	14
+14			2
		m	
.10	0	57	1
		55	9
		20	9
		10	2
		26	41
		6.	02

First limb A 1, 2, 3 + perhaps 4 A_{-1}
δ Upper limb

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug. 19

Sun C = 46.959

54 10

+12 46

	m		m
25 1	46.6	55 4	26.1
	46.6		28.0
	6.6		47.7
	57 2		37.8
	2170		1396
	54.25		34.90

Seeing pretty fair,
Lost A_{+1} 4.5 2d limb. also A_1

β Draconis

17 27 42

+52 23

m	m
5 0 15.3	1 19.9
13.0	19.1
31.1	37.2
25.2	31.1
846	1073
21.15	26.82

δ Cas. Min.

18 11 21

+86 36

m	m	m	m
50 2 59.5	3 9.8	17.2	20.9
54.9	5.9	13.5	16.2
11.0	21.1	28.7	32.0
7.9	18.0	25.7	29.1
2533	548	851	982
3.32	13.70	21.27	24.55

A_{+1} A 25 wins

η Serpentis

18 15 2

−2 56

m	m	R
20 3 34.1	4 48.9	48.2
36.2	52.2	52.1
55.2	9.9	10.1
45.1	0.2	1.0
1706	2312	2314
42.65	57.80	57.85

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Ophiuchi

17 29 19
+12 39

	M	R	R
45 4	14.6	14.2	13.7
	17.1	17.8	17.3
	35.9	35.3	35.7
	25.9	25.8	25.1
	935	931	918
	23.37	23.27	22.95

γ Draconis

17 53 48
+51 30

	M	M	R	R
55 3	30.9	4 44.2	43.4	42.8
	27.8	40.9	41.5	42.1
	45.6	59.2	59.0	58.6
	38.6	52.4	52.2	52.6
	14 29	1967	1961	1961
	35.72	49.17	49.02	49.02

ζ Lyrae

18 32 50
+38 40

	M	M	R	R
45 3	10.6	4 29.9	29.3	29.1
	10.1	29.3	30.0	29.9
	27.5	46.8	46.0	46.2
	21.9	41.0	41.8	41.1
	701	1470	1471	1463
	17.52	36.75	36.78	36.57

51 N. Cephei L.C.

6 43 16
+92 49

	M	M	M	M	M	M
40 4	42.2	37.4	33.9	4 0.5	3 57.2	53.1
	37.3	34.0	29.1	56.3	53.1	49.5
	53.9	48.9	44.9	11.5	8.3	5.1
	47.6	42.8	38.9	3.3	2.2	58.9
	1810	1631	1468	2536	08	2266
	45.25	40.78	36.70	3.40	0.20	56.65

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug. 19

Aquilae

18 59 51
+13 41

m	m	R	R	M
45 2 1.0	3 20.9	20.9	20.8	21.4
3.1	23.3	23.6	23.9	23.8
21.6	42.3	41.6	41.9	42.3
11.9	32.9	32.8	32.9	32.5
37.6	11.94	11.89	11.85	12.00
9.40	29.85	29.72	29.67	30.00

γ Cassiop.

0 49 25
+60 4

m	m	m	R
25 0 20.1	1 14.4	0 40.1	40.7
16.2	11.1	36.1	36.6
32.9	27.9	53.1	53.0
28.8	22.9	47.9	46.1
9.80	7.63	17.72	17.64
24.50	19.07	44.30	44.10

γ Androm.

1 56 28
+41 45

m	m	R
40 3 41.1	45 0 1.6	1.1
38.2	59.3	59.8
56.8	17.2	17.2
50.2	11.4	11.7
18.63	26.95	26.98
46.57	7.37	7.45

ζ Arietis

2 0 21
+22 53

m	m	R	R	M
35. 0 18.7	1 13.1	12.9	12.3	13.1
18.4	12.9	13.1	13.1	13.1
33.1	27.1	27.6	27.0	27.4
29.3	23.3	23.1	23.2	22.9
9.95	7.64	7.67	7.66	7.65
24.87	19.10	19.17	19.15	19.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

δ Cassiop

1 17 55

+59 36

	No	m	m	
50	2	39.9	3 24.9	52.6
		36.4	21.1	49.1
		52.3	37.3	5.7
		46.1	31.1	58.9
		1747	1144	2263
		43.67	28.60	56.57

β Arietis

1 47 57

+20 13

	m	m	R	R	M
15 0	5.2	36.2	35.7	36.0	36.0
	6.3	36.1	36.3	36.2	36.4
	23.1	53.2	53.1	53.2	53.1
	16.3	46.1	46.8	46.6	46.7
	509	1716	1719	1720	1722
	12.72	42.90	42.97	43.00	43.05

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug. 20

Sun C = 46.959

9 57 53

+12 26

m	m
4.51 37.3	15 4 2.9
40.0	6.6
57.1	23.1
47.3	13.1
18 17	457
45.42	11.42

Seeing rather bad.

Both limbs in R.A. & δ

α Virginis

13 18 49

−10 32

m	m
55 4 31.4	49.6
36.2	54.1
58.4	16.3
42.9	1.9
16 89	24 19
42.22	0.47

α' Herculis

17 9 18

+14 32

m	m	R	R	m
55 1 54.1	2 55.4	55.0	54.6	56.1
59.1	59.9	0.9	0.3	0.1
17.1	17.4	17.4	17.2	17.1
2.9	4.1	4.8	4.8	4.1
25 32	25 68	25 81	25 69	25 64
3.30	4.20	4.52	4.22	4.10

α Ophiuchi

17 29 19

+12 39

m	m	R	R	m
45 4 9.9	50 0 32.9	32.4	32.2	33.1
14.4	38.1	38.0	38.0	37.3
32.1	54.9	54.8	54.7	54.9
18.9	43.1	43.0	43.0	43.1
75 3	16 90	16 82	16 79	16 84
18.82	42.25	42.05	41.97	42.10

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Bootis

14 10 8

+19 49

m	m	R	R	m
35 4 41.8	40 1 5.1	5.9	4.8	5.8
46.0	9.7	10.6	10.3	9.5
2.0	27.4	27.2	27.2	26.9
52.1	15.3	16.0	16.0	15.9
2019	575	547	583	581
50.47	14.37	14.92	14.57	14.52

ε Bootis

14 39 42

+27 35

m	m	R	R	m
50 3 28.0	4 48.9	49.0	48.2	49.3
31.2	52.3	52.6	52.4	52.1
46.9	7.1	7.8	7.6	7.6
37.6	57.3	57.7	58.3	58.2
1437	2256	2271	2265	2272
35.92	56.40	56.78	56.62	56.80

β Cas. Min.

18 11 21

+86 36

m	m	m	m	m
50 2 51.9	57.1	3 3.9	10.2	16.8
51.3	56.2	3.1	10.4	16.1
5.0	9.9	15.9	23.9	29.2
58.5	4.4	10.1	17.9	23.9
2267	76	330	624	860
56.67	1.90	8.25	15.60	21.50

η Serpentis

18 15 3

−2 56

m	m	R	R	m
20 3 26.9	4 47.8	48.0	47.6	47.8
32.2	54.9	55.0	54.8	54.2
50.9	11.0	11.1	11.3	11.1
38.0	59.1	59.8	59.7	59.7
1480	2328	2339	2334	2328
37.00	58.20	58.47	58.35	58.20

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

74

1879 Aug 20

ζ Aquilae

18 59 51

+13 41

m	m			m
45 1 57.7	3 27.1	—	—	26.9
3.1	32.6			32.8
19.8	49.1			48.9
8.1	37.4			37.1
26 87	14 62			14 57
7.17	36.55			36.42

ε Eridani

3 27 14

−9 52

m	m	R	R	m
15 4 35.1	20 0 38.2	37.9	37.2	36.6
41.0	42.9	42.8	42.8	43.1
53.6	0.1	0.2	0.6	0.1
47.2	50.2	50.4	50.4	50.1
17 69	19 14	19 13	19 10	19 19
44.22	47.85	47.82	47.75	47.97

ζ Tauri

4 28 59

+16 16

m	m	R	R	m
10 2 16.9	3 34.9	34.8	34.1	35.1
21.1	39.2	39.2	38.8	38.6
35.2	53.4	53.0	53.2	53.1
28.1	45.9	46.0	45.7	45.8
10 13	17 34	17 30	17 18	17 26
25.32	43.35	43.25	42.95	43.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

δ Eridani

3 37 30

−10 11

M	m	R	R	m
35 2 30.1	3 52.1	51.7	51.6	52.1
35.2	57.9	58.0	57.6	57.6
52.2	14.9	14.9	14.3	14.9
41.7	3.4	3.7	3.8	3.9
1592	2483	83	78	85
39.80	2.07	2.07	1.82	2.12

ζ Persei

3 46 32

+31 31

M	m	R	R	m
55 2 1.7	3 26.8	26.0	25.2	26.3
6.8	30.1	30.2	30.3	30.1
18.9	42.8	43.0	42.7	42.5
12.9	37.1	37.4	37.8	37.2
403	1368	1366	1360	1361
10.07	34.20	34.15	34.00	34.02

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Aug. 21

Sun C = 46950

10 1 35

+12 6

m		m
.5 1 31 .2	35	4 2.1
33.1		4.9
51.6		22.9
41.6		12.1
157 5		420
39.37		10.50

Lost 1st nine of 2nd limb.
Both limbs in R.A. + δ.
Seeing pretty good.

η Serpentis

18 15 3

− 2 56

m	m	R	R	m
20 3 30.3	45 1.6	51.0	50.6	51.6
34.1	56.3	55.8	55.6	55.2
54.0	15.6	15.6	15.6	15.2
43.8	3.9	4.7	4.5	5.0
16 22	2474	2471	2463	2470
40.55	1.85	1.78	1.57	1.75

ζ Aquilae

18 59 51

+13 41

m	m	R	R	m
45 2 42.3	3 21.0	20.8	20.7	20.9
45.1	22.5	23.2	23.2	22.5
5.5	43.9	43.2	43.4	43.5
53.0	31.7	32.2	32.4	32.0
20 59	1195	1194	1197	1189
51.47	29.87	29.85	29.92	29.72

β Cygni

19 25 50

+27 42

m	m	R	R	m
45 1 5.9	2 17.1	17.2	17.0	16.9
5.1	15.9	16.1	16.2	16.0
24.2	34.8	34.2	34.8	34.8
16.5	26.7	27.3	27.6	27.1
5 N 1 7	945	948	956	948
~~10.42~~ 2.93	23.62	23.70	23.90	23.70

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Lyrae
18 32 50
+38 40

m	m	R	R	m
45 3 22.6	4 32.7	32.2	32.1	
22.4	32.1	32.0	32.0	
41.2	51.0	50.5	50.7	
34.0	43.8	43.9	44.0	
120 2	159 6	158 6	158 8	
30.05	39.90	39.65	39.70	

51 H. Cephei L.L.
6 43 16
+92 49

m	m	m	m
40 4 40.0	35.1	30.0	24.9
35.4	30.9	26.0	21.3
51.9	47.5	42.6	37.5
44.8	39.9	34.8	29.8
1721	1534	1334	1135
43.02	38.35	33.35	28.37

Clouds, obs?.
$A_{0}^{9}\ {}_{2}^{8}\ {}_{1}^{8},\ {}_{1}^{3}\ {}_{0}^{3},\ {}_{2}^{2}\ {}_{1}^{2},\ {}_{0}^{2}\ {}_{1}^{1},\ {}_{0}^{1}$

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug 22

Sun C=46.950

0 5 17

+11 46

	M.		M.				M.	M.
.25	1	40.0	55	4	8.1		40 0 43.2	1 16.6
		40.1			9.2		43.0	16.1
		4.1			31.3		8.2	40.8
		51.1			19.9		55.2	28.0
		19.53			6.85		20.96	10.15
		48.82			17.13		52.40	25.38

δ Bootis

14 10 8

+19 49

Both limbs in R.A. & δ

Seeing pretty fair

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

'79 Aug. 23

Vera. Chin. C=46.950

8 11 21

+86 36

	m	m	m	m	m	m
50 3	56.3	59.8	4 2.7	5.5	9.9	10.5
	53.0	55.2	59.2	1.5	5.1	6.2
	11.1	14.8	18.0	20.0	24.1	25.1
	5.8	8.9	11.9	14.5	17.9	18.8
	2454	2587	2718	415	570	606
	1.35	4.67	7.95	10.37	14.25	15.15

η Serpentis

18 15 3

−2 56

	m	m
20 3	30.9	4 48.6
	33.0	57.6
	57.1	141
	43.4	1.1
	1644	2354
	41.10	58.85

18 Aquilae

18 59 56

+13 41

	m	m	R	R	m
45 2	0.0	3 17.1	17.0	17.1	17.3
	3.1	19.1	19.6	19.8	18.9
	25.0	41.6	41.2	41.3	41.4
	11.9	28.3	28.7	28.7	28.3
	400	1060	1065	1069	1062
	10.00	26.50	26.62	26.72	26.55

β Cygni

19 25 50

+27 42

	m	m	R	R	m
45 0	53.1	2 12.8	12.9	12.9	13.2
	52.2	12.1	12.1	12.3	11.5
	12.9	31.9	31.8	31.8	31.9
	4.1	23.1	23.8	23.4	22.9
	2423	799	806	804	795
	0.58	19.97	20.15	20.10	19.87

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Lyrae
18 32 50
+38 40

m	m	R	R
45 3 8.7	4 27.9	27.6	28.0
7.9	26.4	26.8	27.2
28.9	48.8	48.2	48.4
20.1	39.2	40.1	39.6
6.56	14.23	14.27	14.32
16.40	35.57	35.67	35.80

57 η Cephei 2.6
6 43 16
+92 49

m	m	m	m	m
40 4 42.1	39.0	32.0	28.3	21.9
37.9	34.3	28.5	24.2	18.9
57.9	52.8	47.7	43.4	36.9
47.1	43.2	37.1	33.2	27.2
18.50	16.93	14.53	12.91	10.49
46.25	42.32	36.32	32.27	26.22

γ Aquilae
19 40 30
+10 19

m	m	R	R
5 3 44.7	10 0 2.5	2.1	2.1
45.6	5.4	4.7	5.0
7.8	25.7	26.1	25.8
57.0	14.6	15.1	14.9
21.51	4.82	4.80	4.78
53.78	12.05	12.00	11.95

ζ Aquilae
19 44 53
+8 3

m	m
50 4 52.1	10 0 14.6
53.1	16.9
14.4	38.0
2.1	24.1
24.17	9.36
0.42	23.40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj:1401R

1879 Aug. 23

β Aquilae

19 49 22

+6 6

	m	m	R	R	m
20 1	25.9	2 53.1	52.9	52.6	53.2
	28.6	56.0	56.4	56.1	56.0
	49.1	16.3	16.4	16.1	16.2
	37.9	5.0	5.2	5.2	5.1
	14.5	25.04	25.09	25.00	25.04
	35.37	2.60	2.72	2.50	2.60

δ Aquilae

20 5 4

−1 11

	m	m	R	R	m
35 3	34.9	4 42.8	43.0	42.9	42.6
	36.7	44.9	45.8	45.7	45.8
	59.7	7.9	7.2	7.5	7.4
	47.0	55.0	55.2	55.5	54.9
	17.83	21.06	21.12	21.16	21.07
	44.57	52.65	52.80	52.90	52.67

β Orionis

5 8 43

−8 21

	m	m	R	R	m
45 3	53.2	4 11.7	11.0	10.9	11.5
	55.5	14.1	14.0	14.0	13.4
	17.7	36.1	35.5	36.0	35.9
	5.5	23.9	24.3	24.1	23.9
	25.19	8.58	8.48	8.50	8.47
	2.97	21.45	21.20	21.25	21.17

β Tauri

5 18 39

+28 30

	m	m	R	R	m
55 3	12.8	4 35.1	35.0	34.7	35.6
	12.8	35.2	35.5	35.8	34.9
	29.8	51.5	51.7	51.6	51.8
	23.1	46.2	46.2	46.1	46.1
	7.85	16.80	16.84	16.82	16.84
	19.62	42.00	42.10	42.05	42.10

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Tauri

4 28 59
+16 16

	m	m	R	R	M
10 2	15.9	34.2	34.0	34.0	34.1
	16.6	35.4	34.6	35.4	35.4
	37.1	55.9	55.6	55.8	55.8
	27.0	46.1	46.0	46.0	46.0
	9.66	17.21	17.02	17.12	17.18
	24.15	43.02	42.55	42.80	42.95

β Eridani

5 1 54
−5 15

	m	m	R	R	m
40 2	3.9	3 28.4	28.5	28.0	28.8
	5.7	30.2	30.2	30.2	30.0
	26.3	50.9	50.8	50.5	50.4
	16.0	41.0	41.4	41.0	41.0
	5.19	15.05	15.09	14.97	15.02
	12.97	37.62	37.72	37.42	37.55

α Orionis

5 48 37
+7 23

	m	m	R	R	M
0 4	53.9	53.3	53.2	53.1	53.1
	57.1	57.2	57.6	58.1	57.9
	16.2	15.9	16.0	14.9	14.9
	5.5	6.9	7.2	6.8	7.0
	25.27	25.33	25.40	25.29	25.35
	3.17	3.32	3.50	3.22	3.37

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug. 24

Sun C = 46,950

0 12 39

+11 5

m	m
.5 2 23.4	35 4 38.2
26.0	40.8
45.9	1.0
36.1	500
13 1 4	1900
32.85	47,50

Both limbs in R. A. & S

Seeing very fine

α Aquilae

19 44 53

+8 33

m	m	R	R
50 4 54.6	55 0 24,5	23.7	23.1
56.9	25,1	25,0	25,2
16 1	45.6	45.3	45.8
57,4	35,8	36,0	36.0
2530	1310	1300	1301
3.25	32.75	32.50	32,52

γ Aquilae

18 59 50

+13 41

m	m	R	R	m
45 1 55.4	3 17,1	17.0	16.7	16,8
57.2	19,1	19.8	19.8	19,1
18.0	40,1	40.0	40.0	40,4
7,1	29 3	29,5	29.3	29,3
2577	105 6	1063	1058	1056
4.42	26,40	26,57	26,45	26,40

Lost A 24 Aug

This remark belongs to Harvard Obs—

R. J. R.

β Aquilae

19 49 22

+6 6

m	m	R	R	m
20 1 27,8	3 36	2,3	2.2	3,1
30.6	69	6,5	6.4	6,7
50.5	25,5	25,2	25.1	25,5
41.9	16,8	16,5	16,8	16,5
1508	531	505	505	518
37.70	13,27	12,62	12,62	12,95

Lost A 2 Aug.

3 strokes last S.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Cygni

19 25 50
+27 42

m	m	R	R	m
45 1 9.2	2 12.1	11.4	11.2	11.4
8.9	11.1	11.2	11.3	11.1
27.9	30.4	30.0	29.8	30.1
21.7	22.9	23.8	23.9	23.3
6 7.7	765	764	762	759
16.92	19.12	19.10	19.05	18.98

γ Aquilae

19 40 30
+10 19

m	m	R	R
5 3 52.5	10 0 11.9	11.3	11.5
53.1	13.4	13.1	13.0
14.1	33.6	33.2	33.5
5.6	25.1	25.0	25.1
24 53	843	836	831
1.32	21.07	20.90	20.78

β Arietis

1 47 57
+20 13

m	m	R	R	m
45 0 3.4	1 24.2	24.4	24.1	24.1
5.0	25.1	25.9	25.2	25.1
23.1	43.9	43.1	42.8	43.8
16.8	37.1	37.2	37.2	36.9
48 3	13 03	13 06	12 93	12 99
12.07	32.57	32.65	32.32	32.47

γ Androm.

1 56 28
+41 45

m	m	R
40 3 49.9	45 58.1	58.6
48.3	57.4	57.8
6.4	15.7	15.4
0.8	10.2	10.2
22 54	2 20	2 20
56.35	5.50	5.55

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Aug 24

2 Aurelia

2 0 0 21

+22 53

m	m	R	R	m
30 4 56.0	35 1 5.5	4.3	4.8	5.8
57.1	6.6	6.8	6.7	7.0
12.1	22.0	21.9	21.8	2.15
7.7	18.1	18.0	18.0	18.9
25 2 9	5 2 2	5 1 0	5 1 3	5 3 2
3.22	13.05	12.75	12.82	13.30

2 Vesta

2 55 57

+3 37

	R	R
20	2 0.2	59.7
	6.0	5.0
	20.7	20.4
	15.0	14.9
	4 0 9	28 0 0
	10.22	10.00

Lost 1st & 4th

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ε Eridani

3 27 14

−9 52

R R

W O 33.0 328

34.7 34.6

56.7 56.4

47.0 47.5

17 14 17 13

42.85 42.83

Lost 1 r 2 m

σ Eridani

3 37 00

−10 11

All the means have been checked to the end of this date

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

88

1879 Aug. 25

Sun

0 16 19

+10 44

m

25 3 49.6

52.1

11.4

2.9

23 60

59.00

Reject obs.

Failed. Clouds.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept 4

ζ Hydrae c=46.966

21 38

−8 8

		m	m	R	R	m
35 0 53.5	2	8.1	8.1	7.8	8.0	
29		17.1	17.0	17.1	17.1	
12.9		27.9	27.6	27.7	27.9	
9.0		23.3	23.8	23.8	23.2	
25 8 3		76.4	76.5	76.4	76.2	
4.57		19.10	19.12	19.10	19.05	

ζ Leonis

10 1 56

+12 33

All rely

Lost A 1, 2, 3 A −1, 3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 5

Sun C = 46.966

10 56 19

+6 47

m	m
25 0 59.8	55 2 20.7
10 0	31.9
21 1	41.6
16 1	37.1
28 7 0	13 1 3
11.75	32.82

Last Pt limb in R.A.

Seeing moderate

α Virginis

13 18 49

−10 32

m	m	R	R	M
55 4 32.6	1 2.4	3.0	3.2	3.1
42.0	13.9	13.8	13.8	13.4
58.9	29.1	28.9	29.1	29.9
48.9	20.9	21.1	20.9	20.4
18 2 4	663	668	670	668
45.60	16.57	16.70	16.75	16.70

3 strokes for last S

α Bootis

14 10 8

+19 49

m	m	R	R	M
35 4 46.0	40 1	10.0	9.8	9.8	10.4
56.5		20.2	20.7	20.9	20.3
7.0		32.2	32.2	32.1	32.1
1.1		25.8	27.0	26.8	26.2
23 0 6		882	897	896	893
57.65		22.05	22.42	22.40	22.32

ε Bootis

14 39 42

+27 35

m	R
50 4 40.0	40.0
48.3	49.0
58.8	59.1
53.9	55.0
20 1 0	20 3 1
50.25	50.78

Have S?

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

92

1879 Sept. 5

β Librae

5 10 30

− 8 56

	m	m	R	R	m		m	R
20	3 50.2	25.0	13.5	13.2	13.3	14.0	20 1 15.8	15.4
	1.2		24.2	24.8	24.5	24.9	24.9	25.0
	16.5		39.8	39.2	39.2	39.9	35.1	34.8
	6.9		30.8	31.3	31.2	30.9	31.0	31.2
	2548		1083	1085	1082	1097	1068	1064
	3.70		27.07	27.12	27.05	27.42	26.70	26.60

α Cor. Bor.

15 29 34

+ 27 7

Lost A_{+1} 4 A 1, 2 & A_{-1}

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 6

Was. Mm. C=46.966

18 11 21

+86 36

	m	m	m	m	m	m
50	2 52.9	59.3	3 4.4	10.8	16.9	21.4
	0.2	5.9	11.3	18.1	23.1	27.6
	6.8	12.4	17.3	25.1	29.9	34.2
	6.1	11.6	16.9	23.6	28.9	33.6
	60	292	499	773	988	1168
	1.50	7.30	12.48	19.32	24.70	29.20

η Serpentis

18 15 3

−2 56

	m	m	R	R	m
20	3 32.7	4 50.4	50.9	50.7	50.7
	46.2	4.3	4.6	5.2	4.2
	56.2	13.8	14.0	13.8	13.6
	48.9	8.4	8.7	8.7	8.6
	1840	2569	2582	2584	2571
	4600	4.22	4.55	4.60	4.27
		4.24	4.57		

ζ Aquilae

18 59 51

+13 41

	m	m	R	R	M
45	2 0.3	3 21.0	20.7	20.3	20.5
	13.0	38.1	38.1	38.2	32.5
	22.2	42.0	42.0	41.9	42.1
	15.8	36.1	36.1	35.9	35.9
	513	1322	1319	1313	1310
	12.82	33.05	32.97	32.82	32.75

β Cygni

19 25 50

+27 42

	m	m	R	R	m
45	0 58.2	2 18.8	18.2	18.1	17.9
	7.0	27.6	27.0	27.7	27.4
	15.2	34.9	34.8	34.9	35.0
	13.2	32.9	33.2	33.2	32.9
	2736	1142	1132	1139	1132
	8.40	28.55	28.30	28.48	28.30
		28.42	28.39		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Lyrae

18 32 50
+38 40

m	m	R	R	~~A~~
45 3 6.1	4 31.0	31.0	30.7	
15.9	40.4	40.6	40.6	
24.1	48.9	48.9	48.6	
20.5	45.9	46.2	46.2	
666	166.2	1667	1661	
16.65	41.55	41.67	41.52	

51 N. Cephei L.C.

6 43 16
+92 49

m	m	m	m	m	m
40 4 37.1	32.5	28.0	3' 5"76	55.1	51.1
43.3	38.4	34.0	4.9	2.1	57.2
49.9	45.0	40.4	10.1	7.9	38
46.4	41.0	36.7	7.2	4.5	1.9
1767	1569	1391	2598	96	2331
44.17	39.22	34.78	4.85	2.40	58.27

α Aquilae

19 44 53
+8 33

m	m	R	R
50 4 48.1	55 0 15.0	14.8	14.2
0.4	27.1	27.2	27.0
7.9	35.1	35.0	35.2
2.1	30.0	30.1	30.2
2385	1072	1071	1066
59.62	26.80	26.78	26.65

β Aquilae

19 49 22
+6 6

m	m	R	R	M
20 1 26.1	2 49.9	50.0	50.0	50.1
39.4	4.0	4.1	4.0	4.0
47.7	11.0	10.9	10.8	10.9
42.6	6.2	7.0	6.7	6.2
1558	2511	2520	2515	2512
38.95	2.78	3.00	2.87	2.80

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

96

1879 Sept. 6

δ Aquilae

20 5 4

– 1 11

	m	m	R	R	m
5 35 3	24.4	41.7	41.8	41.2	41.5
	38.8	54.2	55.0	54.2	54.4
	46.4	3.8	3.9	4.0	4.1
	40.1	57.9	58.0	58.0	57.9
	14 97	21 76	21 87	21 74	21 79
	37.42	54.40	54.67	54.35	54.48

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879, Sept. 7

Sun C = 46966

11 3 39

+6 2

		m		m
5	4	28.9	40 2	15.2
		41.8		28.9
		49.8		36.2
		45.2		32.4
		16.57		11.27
		41.42		28.17

(A+1 A-1 1,2,3,4,5 for 2nd limb)

Seeing very fine indeed.

ν Draconis

16 22 21

+61 47

	R	R	R	R
40 2	8.5	401	3 11.2	11.2
	13.4	45.0	16.4	16.6
	22.4	53.3	25.4	25.4
	21.2	52.5	23.9	23.9
	6.61	19.19	7.75	7.74
	16.52	47.97	19.38	19.35

ζ Herculis

17 9 18

+14 32

		m		m	R	R	m
55	1	27.2	2	4.96	49.2	49.1	49.3
		38.4		59.9	0.2	0.0	59.9
		48.9		10.0	9.8	9.2	9.8
		42.1		3.6	4.4	3.9	3.9
		15.66		2431	36	22	27
		39.15		0.78	0.90	0.55	0.67

ζ Ophiuchi

17 29 19

+12 39

		m		m	R	R	m
45	4	15.7	50	0 29.9	29.4	29.7	30.0
		26.2		41.1	41.1	41.1	40.6
		36.6		51.1	51.1	51.0	49.1
		30.1		46.1	46.0	46.4	46.4
		10.86		1682	1676	1682	1661
		27.15		42.05	41.90	42.05	41.52

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Ophiuchi
16 30 30
−10 19

	R	R
45-2	25,6	25,7
	37,0	36,8
	50,1	50,2
	42,2	42,4
	1549	1554
	38,72	38,85

η Ophiuchi
17 3 27
−15 34

	m	m	R
0 2	47,1	3 24,1	24,0
	1,4	35,1	37,8
	11,9	47,9	48,0
	3,9	41,1	41,2
	2443	1512	1510
	1,07	37,80	37,75

Aρq A−1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 8

Sun C = 46.966

1 7 9

+5 40

	m	m
30 2	8.8*	0 4 49.7
	20.8	1.9
	29.3	10.2
	25.9	5.5
	8 48	2473
	21.20	1.82

A 1 of 2nd limb in A. R.

ε Bootis

14 39 42

+27 35

	R	R
50 4	57.5	57.4
	0.4	0.2
	9.3	9.2
	6.0	6.5
	72	73
	1.80	1.82

Rij, 51 ✓

ζ Lyrae

18 32 50

+38 40

	m	m	R	R
45 3	6.8	4 29.2	29.1	28.8
	15.1	36.4	37.3	37.0
	24.0	46.1	46.5	46.4
	21.0	43.9	44.2	43.9
	669	1556	1571	1561
	16.72	38.90	39.27	39.02

51 H. Cephei L.C.

6 43 16

+92 49

	m	m	m	m	m	m
40 4	40.4	35.6	30.3	25.2	3 57.2	53.4
	45.2	41.1	35.8	30.3	1.9	58.2
	52.1	48.3	42.8	37.5	8.9	5.9
	50.1	46.1	39.9	34.9	6.1	2.9
	1878	1711	1488	1279	2541	04
	46.95	42.78	37.20	31.97	3.52	0.10

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ι Cor Bor.
15 29 34
+27 7

R
W 2 28.2
36.9
46.5
43.1
1547
38.67

Rij 15h
Ch. fr.

α Serpentis
15 38 18
+6 8

R R
35 44 5.2 45.0
57.3 57.5
6.6 6.9
0.7 1.0
22.98 23.04
57.45 57.60

ζ Aquilae
18 59 51
+13 41

	m	m	R	R	m
45	56.9	2 20.1	20.2	19.8	19.9
	8.2	30.2	31.2	30.9	30.4
	18.4	41.1	41.1	41.0	40.9
	12.2	35.1	35.2	35.2	35.8
	27.57	1265	1277	1269	1270
	8.92	31.62	31.92	31.72	31.75

β Cygni
19 25 50
+27 42

	m	m	R	R	m
45	0 51.9	2 13.4	13.6	13.3	13.0
	0.8	20.9	21.1	21.4	21.2
	8.6	29.8	29.7	29.8	29.8
	7.8	27.6	29.0	28.6	28.0
	83	917	934	931	920
	2.07	22.92	23.35	23.27	23.00

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 8

γ Aquilae

19 40 30

+10 19

	m	m	R	R
5 3	46.1	1.0	12.9	12.8	12.6
	56.9		22.3	22.1	22.2
	6.2		31.3	32.0	31.8
	2.9		29.1	29.4	29.2
	23 21		956	963	958
	58.02		23.90	24.07	23.95

ζ Aquilae

19 44 53

+8 33

	m	m	R	R
50 4	56.8	55	23.9	23.6	23.2
	7.1		33.1	34.2	33.9
	15.0		42.8	43.2	43.6
	11.1		39.2	39.0	39.7
	27 00		1390	1400	1404
	7.50		34.75	35.00	35.10

ζ Arietis

2 0 21

+22 53

	m	m	R	R	m
30 4	44.8	35	1 25	2.6	2.8	3.0
	55.6		13.1	13.3	13.2	12.9
	0 1		17.9	18.0	17.9	17.5
	5 9.9		19.0	18.9	18.9	18.8
	22 04		525	528	528	522
	55.10		13.12	13.20	13.20	13.05

47 h. Cephei

2 50 4

+78 56

	m	m	m	m	m	m
30 3	10.3	24.3	38.2	52.2	4 10.3	28.7
	15.3	29.7	43.0	57.2	15.1	33.2
	19.9	33.2	57.1	1.2	19.1	37.3
	23.1	37.9	51.9	6.1	23.9	42.2
	6 8.6	12 5.1	19 0.2	23 6.7	6 8.4	14 1.4
	17.15	31.27	47.55	59.17	17.10	35.35

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Aquilae

19 49 22
+6 6

	m	m	R	R	m
20 1	26.0	2 51.4	57.8	51.24	51.8
	37.2	3.6	4.2	4.1	3.9
	46.1	11.5	11.3	11.8	11.1
	42.7	4.9	8.1	8.0	8.1
	1520	2547	2554	2553	2549
	35.00	3.67	3.85	3.82	3.72

β Arietis

1 47 57
+20 13

	m	m	R	R	m
15 0	35.0	1 26.8	26.4	26.2	26.1
	45.1	3.5	36.2	36.2	36.1
	52.9	44.1	44.0	44.0	44.0
	50.4	42.1	42.0	42.0	42.2
	1834	1489	1486	1484	1484
	45.85	37.22	37.15	37.10	37.10

Lost 1st 2 wires

α Celi

2 55 57
+3 37

	m	m	R	R	m
50 0	46.9	2 14.5	14.8	14.6	14.1
	54.1	26.4	27.3	27.3	27.2
	5.0	33.5	33.7	33.5	33.5
	3.1	31.0	32.1	31.4	31.3
	2341	1054	1079	1068	1061
	58.52	26.35	26.97	26.70	2652

m m

8.7 35.9 50 04 49
3.2 44.9
37.3 48.1
12.2 58.3
1 4 1862
5.35 4655

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 8

ε Eridani

3 27 14

−9 52

	m	m	R	R	M
15 4	17.1	20 0 36.9	36.1	35.8	36.1
	27.9	45.6	46.1	46.2	45.9
	40.0	57.9	57.6	57.8	57.9
	33.1	52.7	53.0	52.6	52.2
	11 8.1	19 3.1	19 2.8	19 2.4	19 2.1
	29.52	48.27	48.20	48.10	48.02

δ Eridani

3 37 30

−10 11

	m	m	R	R	M
35 2	27.3	3 51.1	51.4	51.3	51.0
	37.4	3.4	3.1	3.3	3.5
	49.3	13.1	13.3	13.3	13.3
	42.7	6.9	7.9	7.6	7.0
	15 6.4	25 4.5	25 5.7	25 5.5	25 4.8
	39.17	3.62	3.92	3.87	3.70

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Persei

3 46 32

+31 31

	m	m	R	R	M
55	1 59.9	3 22.1	21.8	21.0	21.2
	11.1	32.2	32.5	32.6	32.0
	16.9	37.9	37.8	37.9	37.6
	16.1	37.3	37.8	37.6	36.9
	28 40	95	99	91	77
	11.00	32.37	32.48	32.28	31.93

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

Sept 8-9

79 Sept 8-9
Sun. C=46.966
21 10 45
+5 17

	m	m
50 4	50.8	25 2 ~~[illegible]~~
	4.1	27.6
	10.2	41.1
	6.3	47.2
	25 14	44.9
		16 08
	2.85	40.20

Lost 1st 2 wires 2nd V limt.
Seeing moderately good

δ Ursa. Min.
18 11 21
+86 36

	m	m	m	m	m	m
50 3	10.5	16.9	4 2.3	7.2	8.8	11.5
	16.4	22.0	8.1	13.3	14.1	17.1
	21.7	27.1	11.9	17.4	19.7	22.5
	21.9	29.0	14.1	19.8	20.1	23.9
	705	950	364	577	627	750
	17.62	23.75	9.10	14.42	15.67	18.75

3 strokes for 1st wire in R.A.

51 R. Cephei L.b.
6 43 16
+92 49

	m	m	m	m	m	m
40 4	34.9	33.1	27.1	3 58.7	53.1	51.6
	40.4	38.9	32.2	4.2	58.9	57.3
	45.9	44.7	37.7	9.1	4.4	2.1
	44.9	42.1	36.0	7.9	2.1	1.6
	1661	1588	1330	199	2385	2326
	41.52	39.70	33.25	4.97	59.62	58.15

Limb follows Ebony rattles

ζ Aquilae C=46.966
18 59 51
+13 41

	m	PM	R	R	M
45 2	8.5	3 22.7	22.1	21.4	21.9
	19.8	33.6	33.3	33.4	33.1
	28.9	41.4	41.3	41.3	41.8
	23.9	37.0	36.8	37.0	37.1
	811	1341	1335	1331	1339
	20.27	33.52	33.37	33.27	33.47

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

η Serpentis

18 15 3

−2 56

m	m	R
20 3 36.0	4 47,9	47.3
48.1	1,1	1.0
57.9	8,9	8.8
50.8	3,9	4.0
1928	18	11
48.20	0.45	0.27

α Lyrae

18 32 50

+38 40

m	m	R	R	m
45 3 7.1	4 30,6	30.3	30.3	30,5
15.1	39,1	39.1	39.2	39,1
22,5	46,9	45.9	45.6	46,8
22.1	46,0	46,1	46.0	45,4
1668	1626	1614	1611	1618
16.70	40.65	40.35	40.28	40.45

α Geminor c=46.629

7 26 52

+32 9

m	m	R	R	m
15 4 36.2	20 05,1	55.1	55.2	55,9
44.9	~~36,8~~	4.1	4.0	3,9
52.1	11,0	11.1	10.9	10,9
51.1	10,8	11.1	11.3	11,1
1843	2607	2614	2614	2618
46.07	5.17	5.35	5.35	5.45

α Can. Min.

7 32 58

+5 32

m	m	R	R	m
55 1 0.1	2 23,0	22.4	22,2	~~23,9~~ ~~20,7~~
12.9	35,2	36.2	36.0	35,1
17.9	40,5	40.6	40.8	40,8
17.9	39,1	39.8	40.0	39,2
488	1378	1390	1390	1380
12.20	34.45	34.75	34.75	34.50

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 9

3 Geminor = C = 46926

7 37 55

+28 19

	m	m	R	R	W
5 4	34.1	10 05 78	57.3	57.2	58.0
	42.9	6.8	6.8	6.6	6.4
	47.1	10.9	10.9	11.1	10.9
	48.1	12.1	12.4	12.7	12.3
	17 22	26 76	26 74	26 76	26 76
	43.05	6.90	6.85	6.90	6.90

2 Leonis

10 1 56

+12 38

	m
50 4	57.1
	8.3
	14.9
	9.9
	27 02
	7.55

Lost A_{+1} 5 + A+2 Seeing bad.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

~~20 3 54.~~

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 9–10

Sun C = 46.926

1 14 20

+4 54

	m	m
.15 =	29.9	50 8.0
	43.0	19.9
	49.9	26.4
	44.9	22.4
	167	767
	41.92	19.17

Both limbs in R.A. + δ.

Seeing very bad indeed

β Tauri

5 18 39

+28 30

	m	R
55	4 43.1	42.3
	54	52.8
	54.2	54.0
	55.9	56.7
	56	58
	51.40	51.45

Δ 345

ζ Virginis

13 18 49

−10 32

	m	R
50	48.9	49.3
	59.2	0.4
	13.2	13.0
	49	4.9
	62	76
	1.55	1.90

Az + c

δ Orionis

5 25 50

−0 23

	m
50	1 15.1
	27.2
	33.6
	30.2
	10 61
	26.52

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Tauri

4 28 59
+16 16

	m	m	R	R	m
10 2	25.1	10 3 37.2	38.0	38.0	38.1
	35.1	47.1	47.7	47.8	48.0
	42.3	54.9	54.3	54.1	54.9
	39.7	52.3	52.8	52.6	52.1
	14 22	19 15	19 28	19 25	19 31
	35.55	47.87	48.20	48.12	48.27

β Eridani

5 1 54
−5 15

	m	m	R	R	m
40 2	5.1	3 30.3	30.2	30.0	30.1
	17.1	41.1	41.3	41.8	41.4
	23.9	48.2	47.3	47.5	48.3
	21.6	45.8	45.5	45.8	45.1
	6 77	54	16 43	51	49
	16.92	41.35	41.07	41.27	41.22

α Leporis

5 27 24
−17 55

	m	m	R	R	m
20 1	32.9	2 46.1	46.6	46.2	46.9
	47.4	1.8	1.4	1.8	0.9
	52.4	5.1	5.3	5.7	5.8
	48.7	2.5	3.0	2.7	3.0
	18 14	23 55	23 63	23 64	23 66
	45.35	58.87	59.07	59.10	59.15

ζ Orionis

5 34 39
−2 ∞ 0

	m	m	R	R	m
25 3	6.6	4 33.8	33.2	32.7	32.9
	19.0	45.9	46.8	46.6	46.1
	24.5	51.3	50.9	51.0	50.9
	20.8	48.1	48.3	48.4	48.3
	7 09	17 91	17 92	17 87	17 82
	17.72	44.78	44.80	44.67	44.55

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 10

κ Orionis

5 42 1

− 9 43

	m	m	R	R	M
10 0	7.9	1 26.1	26.2	26.0	25.9
	18.3	36.4	37.2	36.9	36.6
	26.9	45.8	45.3	45.8	45.7
	21.1	40.8	41.8	41.7	41.2
	74.2	14 94	1505	1504	1494
	18.55	37.35	37.62	37.60	37.35

ζ Orionis

5 48 87

+7 23

	m	m	R	R	M
0 4	56.9	5 1 17.1	16.9	17.0	17.5
	9.1	29.2	30.0	29.6	29.3
	14.1	34.1	34.0	34.3	33.9
	8.8	32.1	32.0	32.0	32.9
	28.9	11 25	1129	1129	1136
	7.22	28.12	28.22	28.22	28.40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

μ Geminor.

6 15 38

+22 34

	m	R	R	m
55-0	23.7	23.2	23.6	24.1
	34.3	34.0	34.3	33.8
	36.3	36.1	35.8	35.9
	37.1	37.3	37.2	37.9
	1314	1306	1309	1317
	32.85	32.65	32.72	32.92

Middle Wire foil

β Geminor.

7 37 55

+28 19

	m	m	R	R	m
5	4 44.9	10	1 2.1	1.8	1.8	2.1
	53.5		10.9	10.8	10.7	10.1
	56.1		13.4	13.5	13.7	13.5
	56.6		14.8	14.0	14.2	14.1
	21 11		412	401	404	398
	52.77		10.30	10.02	10.10	9.95

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

579. Sept. 10–11

Sun c = 46.926

17 57

+4 32

	m		m
40	0 25.9	10	2 49.4
	37.6		2.1
	43.3		7.1
	39.2		1.9
	14 6 0		0 5
	36.50		0.12

Both limbs in R.A. + S

Seeing absolutely Horrible

Sept 1-11

β Librae

15 10 30

−8 56

	m	m	R	R	m
20 3	54.8	25 0	14.1	14.2	14.1	14.5
	5.4		25.2	25.2	25.2	24.9
	16.8		37.1	36.7	36.8	37.1
	8.4		29.6	29.2	29.0	29.1
	26 5 5		10 6 0	10 5 3	10 5 1	10 5 6
	6.37		26.50	26.32	26.27	26.40

α Draconis

16 ~~22 28~~

11 8 13

R	R
30 1 3.0	28
10 3	10 4
8 2	8 2
9 0	8 6
30 5	30 0
7.62	7.50

Wrong. ✱

A 321 A+1

Seeing very bad

α Tauri

4 28 59

+16 16

R	R
10 3 30.8	30.5
39.9	39.8
46.9	47.0
44.2	45.0
16 1 8	16 2 6
40.45	40.65

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Coz. Bor.

15 29 34
+27 7

	m	m	R	R	M
20 1	12.7	2 33.3	33.2	32.8	33.2
	21.1	42.0	42.1	42.4	42.0
	28.2	49.0	48.8	48.7	49.1
	24.9	46.0	46.0	45.8	46.2
	69	1703	1701	1697	1705
	21.72	42.57	42.52	42.42	42.62

α Serpentis

15 38 18
+6 48

	m
B5 4	45.4
	57.2
	4.4
	58.1
	2251
	56.27

A +1 A 1, 2, 3

β Eridani

5 1 54
−5 15

	m	m	R	R	M
40 2	3.8	3 28.0	27.2	27.2	27.8
	14.1	38.1	38.2	38.0	37.2
	20.4	44.1	43.9	44.1	44.1
	17.9	41.2	42.1	41.8	42.0
	562	1514	1514	1511	1508
	14.05	37.85	37.85	37.78	37.70

β Orionis

5 8 43
−8 21

	m	m	R	R	M
45 2	49.1	4 8.8	8.6	8.9	8.9
	59.1	19.1	20.0	19.9	19.9
	8.5	28.0	27.8	27.7	27.6
	3.1	23.1	23.0	23.1	22.9
	2398	790	794	796	793
	59.95	19.75	19.85	19.90	19.82

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 11

β Tauri

18 39

+28 30

	m	m	R	R	m
55 3	17.0	4 35.9	35.8	35.5	36.1
	25.8	44.2	45.0	45.0	44.9
	28.9	44.4	46.6	46.8	47.1
	28.9	48.1	48.3	48.2	47.9
	100.6	175.9	175.7	175.5	176.0
	25.15	43.98	43.92	43.87	44.00

ε Orionis

5 25 50

−0 23

	m
50	1 59.9
	11.1
	17.9
	13.9
	28.28
	10.70

Lost 1st 2 wires

κ Orionis

5 42 1

−9 43

	m	m	R	R	m
10 0	8.1	1 39.7	39.0	39.0	38.0
	18.3	49.1	50.0	49.8	49.0
	27.8	59.1	58.8	58.8	58.9
	22.9	53.9	53.7	54.0	54.1
	772	1998	2015	2016	2010
	19.30	49.95	50.37	50.40	50.25

λ Orionis

5 48 37

+7 23

	m	m	R	R	m
0 4	58.1	5 1 12.7	12.2	11.9	12.9
	10.9	24.5	24.9	24.3	24.1
	10.1	29.9	29.6	29.6	29.1
	12.1	27.5	27.2	27.2	27.5
	2762	946	939	930	936
	9.05	23.65	23.47	23.25	23.40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Orionis

5 29 31

− 5 5-9

	m
25 1	56.6
	7.1
	14.8
	10.3
	26 88
	7.20

ζ Orionis

5 34 39

− 2 0

	m	m	R	R	M
25 3	1.4	42 94	28.8	28.5	28.9
	13.1	41.1	41.6	41.9	41.6
	19.9	47.5	46.9	46.8	47.7
	15.9	43.2	44.0	44.0	44.1
	50 3	16 16	16 13	16 12	16 23
	12.57	40.40	40.32	40.30	40.57

μ Geminor

6 15 38

+22 34

	m	m	R	R	M
50 3	57.1	55 0 31.8	31.0	30.7	31.1
	7.8	41.2	41.7	41.2	41.8
	8.1	44.1	43.6	43.3	43.4
	10.8	45.5	44.7	45.5	45.3
	26 38	28	10	07	16
	5.95	40.70	40.25	40.17	40.40

β Cam. Mm.

7 20 35

+8 32

	m	m	R	R	M
55 1	19.0	2 35.9	35.7	35.3	35.9
	28.9	46.4	46.4	46.6	46.4
	33.8	51.1	50.8	50.9	51.2
	31.4	48.1	49.0	49.0	49.0
	11 31	18 15	18 19	18 18	18 25
	28.27	45.37	45.47	45.45	45.62

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

118

1879. Sept. 11

ζ Geminor.

26 52

+32 9

	m	ss		R	R	ss
15	4	37.1	55 0 5.98	5.98	5.92	0.92
		44.9	7.5	7.8	8.0	8.9
		50.3	12.2	12.0	12.2	12.5
		50.1	13.9	13.9	13.8	13.9
		18.24	27.34	27.35	27.32	34.5
		45.60	8.35	8.37	8.30	8.62

α Can. Min.

7 32 38

+5 32

	m	ss	R	R	ss
55	0	59.9	2 19.2	18.6	18.3	18.9
		12.2	31.9	32.0	31.8	31.8
		15.8	34.9	34.6	34.7	34.9
		14.5	34.2	34.0	34.0	34.1
		28.24	12.02	11.92	11.88	11.97
		10.60	30.05	29.80	29.70	29.92

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

23 Geminor.

7 37 55

+28 19

		m	m,,	R	R	m
5	4	44.1	10 1 4,4	3.9	4.0	4,6
		52.6	13,1	12.8	12.8	13,0
		54.8	16,0	15.4	15,2	15,4
		56.1	17,8	17.7	17.7	17,2
		76	516	498	497	502
		51.90	1290	1245	12.42	12.53

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

120

1879 Sept. 11–12

Sun C=46.926

α 11 21 32

+4 9

α Bootis

14 10 8

+19 49

	R	R	R
3 5 4	43 9	43 4	43 8
	54 6	54 5	54 6
	1.2	1.2	1.6
	56.6	56.7	56.4
	21 63	21 58	21 64
	54.07	53.95	54.10

Obs. ?

A = 1 2 3 4 A 1 A 3 4 5 Clouds

+1 −1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

δ Ophiuchi
16 δ ν
−3 23

	R	R
50 1	515	516
	42	43
	134	134
	67	66
	2561	2560
	4.02	4.00

β Herculis
1625 1 +21° 45'

	R	R
40 4	24.3	24.1
	35.2	35.0
	40.1	40.0
	38.0	38.0
	1376	1371
	34.40	34.27

A–1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 14

β Arietis C = 46.926

47 57

+20 13

	m	m	R	R	M
15 0	4.1	1 25.8	26.8	26.3	26.7
	13.0	35.2	36.1	35.7	35.2
	19.0	41.1	40.9	40.8	41.4
	18.3	39.9	40.2	40.3	40.2
	54.4	1420	1440	1431	1435
	13.60	35.50	36.00	35.78	35.87

α Arietis

2 0 21

+22 53

	m	M	"	R	R	M
30 4	42.1	35 1	9.1	9.0	8.8	8.9
	51.6		18.3	18.8	19.0	18.7
	53.8		20.8	20.7	20.9	20.9
	54.1		23.1	23.0	22.9	22.9
	36		713	715	716	714
	50.90		17.82	17.87	17.90	17.85

ε Eridani

3 27 14

−9 52

	m	m	"	R	R	M
15 4	15.4	20 0	34.0	34.2	33.6	34.2
	24.7		43.1	43.0	43.3	43.0
	34.4		52.1	52.3	52.4	52.5
	28.1		48.1	48.9	48.9	48.8
	1026		1779	1784	1782	1785
	25.65		44.47	44.60	44.55	44.62

δ Eridani

3 37 30

−10 11

	m	M		R	R	M
35 2	31.7	3	55.8	55.0	54.5	55.0
	41.1		5.5	6.1	6.1	5.5
	49.9		13.9	14.0	14.0	14.1
	45.7		9.4	9.8	9.3	9.7
	1684		2646	2649	2699	2643
	42.10		6.15	6.22	5.97	6.07

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Leon. Min L.C.

14 51 4

+10 5 21

	m	m	m	m
10 0	49.3	32.5	8.1	5-4 45.0
	55.2	37.8	14.2	60.9
	56.3	40.1	15.7	61.9
	58.3	42.1	17.8	64.0
	21 91	1525	558	18
	54.78	38.12	13.95	50.45

α Ceti

2 55 57

+3 37

	m	M	R	R	M
50 0	56.8	2 17.4	17.6	16.3	16.9
	8.1	29.1	29.1	29.1	29.0
	12.6	32.9	32.4	32.5	32.3
	10.7	31.8	31.9	31.9	31.9
	26 82	1112	1110	1098	1101
	7.05	27.80	27.75	27.45	27.52

3 shutters for 151-5
Perhaps omitted 1 stroke (middle)
in 2nd

ζ Persei

3 46 32

+31 31

	m	m	R	R	M
55 2	1.4	3 23.4	22.6	22.7	23.0
	10.0	32.1	32.1	32.2	32.4
	14.0	36.1	36.2	36.0	36.1
	15.1	36.1	37.2	37.1	37.0
	4 05	80	81	80	85
	10.12	32.00	32.02	32.00	32.12

η Draconis, L.C.

16 22 21

+118 13

	m	m
30 2	11.9	29.9
	18.9	36.1
	17.2	35.7
	17.9	35.8
	25.9	13 7.5
	16.47	34.37

Wrong #. Issue setting 15h 4'

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj-1401R

1879. Sept. 14

α Aurigæ

5 28 59

+16 16

		m	m	R	R	M
10	2	17.4	3	34.1	33.7	33.2	33.6
		25.9		42.3	43.6	43.3	42.6
		33.0		48.4	48.7	49.2	49.1
		30.2		46.5	47.4	47.0	47.3
		1065		1716	1734	1727	1726
		26.62		42.90	43.35	43.17	43.15

β Eridani

5 1 54

−5 15

		m	m	R	R	M
40	2	9.2	3	24.3	23.7	23.1	23.5
		19.1		33.9	34.5	34.4	34.1
		26.0		40.2	40.2	40.0	40.8
		23.8		38.9	38.8	38.4	38.9
		781		1373	1372	1359	1376
		19.52		34.32	34.30	33.97	34.40

δ Orionis

5 25 50

−0 23

	m
50.	1 2.6
	13.7
	19.2
	17.0
	525
	13.12

α Leporis

5 27 24

−17 55

	m
20	1 23.1
	36.4
	42.1
	38.9
	1405
	35.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Orionis

5 8 43
−8 21

	m	m	R	R	m
45 3	6.1	4 9,0	8.2	8.2	8,1
	15.6	18,6	19.4	19.6	19,3
	24.0	26,8	26.3	26.8	26,9
	20,0	22,9	23.0	23.2	23,9
	6 57	7 73	7 69	7 78	7 72
	16.42	19.32	19.22	19.45	19.30

β Tauri

5 18 39
+28 30

	m	m	R	R	m
55 3	23.3	4 36,7	36.5	36.2	36,9
	31.1	45,0	45.1	45.3	44,8
	34.4	47,8	47.0	47.3	48,0
	35,1	49,3	49.3	49.6	50,0
	39	1788	1779	1784	1797
	30.97	44.70	44.47	44.60	44.92

ζ Orionis

5 29 31
−5 59

	m	m	R	R	m
25 1	50.7	3 15,1	14.3	14.2	14,9
	0.0	25,1	25.3	25.2	24,9
	6.5	31,6	31.5	31.7	31,4
	4.0	28,6	28.9	28.6	29,1
	12	1004	1000	997	1003
	0.30	25.10	25.00	24.92	25.07

ζ Orionis

5 34 39
−2 0

	m	m	R	R	m
25 3	4.0	4 26,9	26.2	25.8	26,7
	15.1	38,1	38.9	38.8	38,0
	21.1	44,4	44.1	43.7	44,5
	17.3	41,1	41.2	41.3	40,9
	575	1505	1504	1496	1501
	14.38	37,62	37,60	37,40	37,52

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 14

R Orionis

5 42 1

−9 43

M	R
10 0 4.9	4.7
14.7	14.0
23.1	23.3
19.5	19.6
6.17	6.16
15.42	15.40

Ch. failed after A+1

ζ Orionis

5 48 37

+7 23

M	M	R	R	M
0 4 54.9	5	1 27.7	27.0	27.6	27.1
7.1		38.8	39.7	39.2	38.9
10.1		43.7	43.5	44.0	43.5
8.0		41.7	42.1	42.2	42.2
26.01		15.19	15.23	15.30	15.17
5.02		37.97	38.07	38.25	37.92

BCam Min

7 20 35

+8 32

R	R
5 5 2 34.2	33.8
45.2	45.1
50.0	49.3
48.3	48.6
17.77	17.68
44.42	44.20

Reg 1st J

ε Gem

7 26 5.2

+32

R	R
15 4 41.3	40.9
49.2	49.9
53.9	53.7
55.2	55.3
20.96	19.96
52.40	49.90

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

μ Geminor

6 15 38

+22 34

	m	m	"	R	R	m
50 3	57.8	55	27.9	27.1	26.8	27.1
	6.6		36.1	36.6	36.2	36.1
	7.5		38.9	38.7	38.0	38.4
	9.9		41.2	41.7	40.6	41.2
	26.18		14.41	14.41	14.16	14.31
	5.45		36.02	36.02	35.40	35.78

γ Geminor

6 30 43

+16 30

	m	m	m
53 3	16.1	4 37.7	37.5
	23.8	45.9	46.1
	30.9	52.2	51.9
	27.9	50.1	49.8
	9.87	18.59	18.53
	24.67	46.47	46.32

Bleun.

7 37 55 +28 19

	R	R
5 4	40.6	40.3
	48.8	49.8
	51.0	50.8
	53.6	53.5
	19.40	19.47
	48.50	48.67

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept 14–15

Sun C = 46.926

1 32 19

+3 0

	m		m
10 2	22.9	25 4	59.0
	34.8		11.1
	40.8		18.1
	37.7		12.5
	13 62		28 07
	34.05		10.17

Both limbs in R.A. + δ.
Seemford

Sept.

B Obs. Mm.

14 51 4

+74 39

	m	m	m
50 1	38.1	49.7	58.0
	42.1	53.9	3.1
	48.7	0.9	9.4
	46.9	59.1	7.9
		1	
	1758	2236	184
	43.95	55.90	4.60

A 1, 2, 3, 4, 5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Librae

15 10 30

−8 56

	M	M	R	R	m	
20 4	1.9	25 0	13.0	13.1	12.9	13.1
	12.3		23.4	23.2	23.9	23.1
	25.0		36.4	36.2	36.3	36.8
	16.4		28.6	28.7	28.3	29.1
	5 5 6		10 1 4	10 1 2	10 1 4	10 2 1
	13.90		25.35	25.30	25.35	25.52

α Cor. Bor.

15 29 34

+27 7

	m	m	m	m
20 1	7.4	2 10.1	10.0	9.4
	17.0	19.1	19.0	18.8
	24.6	26.9	26.9	26.9
	20.1	23.3	23.1	23.0
	6 9 1	7 9 4	7 9 0	7 8 1
	17.27	19.85	19.75	19.52

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 16

β Eridani C = 46,926

5 1 54

– 5 15

		m	R
40	2	7.1	6.8
		17.1	17.9
		24.0	24.1
		20.2	20.1
		68.4	68.9
		17.10	17.22

β Orionis

β Orionis

5 8 43

– 8 21

		m	m	R	R	m
45	2	56.9	4 10.9	10.8	10.8	10.3
		6.1	21.0	21.3	21.2	21.1
		15.8	30.5	30.0	30.1	29.9
		9.9	24.1	24.0	23.9	23.8
		26.87	86.5	86.1	86.0	85.1
		7.17	21.62	21.52	21.50	21.27

α Leporis

5 27 24

– 17 55

	m
20 1	21.1
	34.1
	41.1
	35.7
	132.0
	33.00

L Orionis

5 29 31

– 5 59

		m	m	R	R	m
25	1	51.1	3 11.8	11.7	11.0	12.0
		1.9	21.9	22.3	22.2	22.1
		8.9	29.3	29.2	29.1	29.5
		4.2	24.9	24.5	24.8	24.9
		61	879	877	871	885
		1.52	21.97	21.92	21.78	22.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

β Tauri
5 18 39
+28 30

	m	R	R	W
55 4	10.1	9.7	9.2	10.1
	18.3	18.8	19.0	18.2
	21.2	21.9	22.0	21.8
	21.3	21.7	21.8	21.5
	709	721	720	716
	17.72	18.02	18.00	17.90

δ Orionis
5 25 50
−0 23

	m
50 1	40.9
	51.0
	58.1
	53.7
	20 37
	50.92

A 5, 6, 7, 8, 9 A 1 2 3
−1

Lost A
+1

ζ Orionis
5 34 39
−2 0

	m	m	R	R	W
25 3	2.8	4 23.1	23.2	22.4	23.4
	14.1	34.9	35.6	35.2	34.9
	20.6	41.9	41.6	41.4	41.2
	15.4	37.1	37.3	37.4	37.1
	529	1370	1377	1364	1366
	13.22	34.25	34.42	34.10	34.15

κ Orionis
5 42 1
−9 43

	m	m	R	R	W
10 0	11.6	1 42.4	42.2	42.0	41.9
	20.9	51.5	52.0	52.1	51.8
	30.9	1.4	51.4	1.4	1.9
		56.9	57.0	57.0	56.9
		2120	2126	2125	2125
		53.00	53.15	53.12	53.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 16

ζ Orionis

5 4 8 37

+7 23

	m	m	R	R	M
5 0	1.3	1	15.9	15.0	15.0	15.0
	12.9		26.0	26.1	26.7	26.0
	17.9		31.7	31.4	31.3	31.5
	16.1		29.4	28.8	29.0	29.1
	4 8 2		10 2 5	10 1 3	10 2 0	10 1 6
	12.05		25.62	25.32	25.50	25.40

μ Geminor.

6 15 38

+22 34

	m	m	R	R	M
5 0	4. 9.9	5 5 0	31.0	31.2	30.6	31.1
	18.8		40.1	40.8	40.6	40.1
	21.1		43.1	43.0	42.8	42.9
	21.7		45.6	45.7	45.0	45.8
	7 1 5		15 9 8	0 7	15 9 0	15 9 9
	17.87		39.95	40.17	39.75	39.98

Bisemiarcus

7 37 55

+28 19

	R	R
5 4	39.0	38.9
	48.0	48.0
	51.2	50.9
	51.1	51.6
	1893	1894
	47.32	47.35

A#1 A1 A-1 345

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

γ Geminor.

6 30 43

+16 30

m	m	R	R	m
55 4 12.0	4 36.0	35.2	35.1	35.6
20.4	44.3	44.6	44.9	44.1
28.1	51.5	51.2	51.9	51.4
23.1	48.1	48.7	48.2	48.1
36	17 99	17 97	17 91	17 92
20.90	44.97	44.92	44.78	44.80

ζ Cancri

7 32 58

+ 5 33

R	R
55 1 2.5	2.2
15.2	15.1
19.2	18.9
16.8	17.1
537	533
13.42	13.32

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 16–17

Sun C = 46.926

1 39 30

+2 13

m		m
55 3	32.9	30 1 25.9
	44.1	37.2
	51.0	45.1
	46.0	39.9
	17 40	2 81
	43.50	37.02

Both limbs in R.A. + δ

Seeing very good.

α Lyrae

18 32 50

+38 40

m	m	R	R	M
45 3	36.0 4	28.4	28.7	28.3	28.1
	45.6	39.1	39.4	39.1	39.1
	51.0	43.6	44.0	43.6	44.2
	47.5	41.5	41.8	41.8	41.3
	18 01	15 26	15 39	15 28	15 27
	45.02	38.15	38.47	38.20	38.17

β Orionis

5 8 43

−8 21

m	m	R	R	~~M~~
45 2 48.9	4 9.2	9.0	9.0	
1.1	21.9	22.0	22.2	
4.5	28.9	28	28.0	
1.9	22.1	22.3	22.3	
23 94	811	761	815	
59.85	20.27	19.02	20.37	

β Tauri

5 18 39

+28 30

m	M	R	R	M
55 3 54.9	4 41.3	40.8	40.7	41.1
6.0	52.1	52.2	52.2	52.1
6.0	51.9	52.0	51.3	52.0
58	52.4	53.0	53.2	52.8
127	1977	1980	1974	1980
3.17	49.42	49.50	49.35	49.50

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Aquilae
18 59 51
+13 41

	W	M	R	R	W
45 2	31.1	3 29.1	29.0	28.8	28.6
	44.0	42.1	42.9	42.8	42.1
	50.9	47.9	48.0	47.9	48.0
	44.1	42.1	42.0	42.4	42.1
	170 1	161 2	161 9	161 9	160 8
	42.52	40.30	40.47	40.47	40.20

β Eridani
5 1 54
− 5 15

	R	R
40 2	5.3	5.3
	19.1	19.1
	22.7	23.0
	19.7	19.6
	66 8	67 0
	16.70	16.75

δ Orionis
5 25 50
− 0 23

	M
50 1	3.1
	16.1
	20.2
	16.9
	56 3
	14.07

α Leporis
5 27 24
− 17 55

	M
20 1	22.9
	38.3
	41.9
	37.1
	140 2
	35.05

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 17

ζ Orionis

5 29 31

− 5 59

	m	m	R	R	M
25	1 54.1	3 14.1	13.9	13.9	14.9
	7.1	27.0	27.0	27.1	26.9
	10.9	31.1	31.1	30.8	31.5
	6.1	26.5	26.2	26.3	27.1
	2582	987	982	981	1004
	4.55	24.67	24.55	24.52	25.10

ζ Orionis

5 34 39

− 2 0

	m	m	R	R	M
25	3 12.0	4 34.3	33.9	33.3	34.1
	25.1	48.1	48.5	48.6	48.1
	29.9	50.6	49.4	50.7	50.9
	24.9	47.0	47.0	47.2	47.1
	919	1800	1788	1798	1802
	22.97	45.00	44.70	44.95	45.05

γ Geminor.

6 30 43

+16 30

	m	m	R	R	M
55	3 17.0	4 40.7	40.1	39.7	40.8
	28.3	52.9	52.7	52.1	52.1
	31.9	55.1	54.8	54.9	55.1
	29.7	52.8	52.4	52.1	52.1
	1069	2015	00	1988	1993
	26.72	50.37	50.00	49.70	49.82

α Geminor.

7 26 52

+32 9

	m	m	R	R
15	4 34.1	4 32.8	33.1	32.9
	43.1	43.1	43.8	43.7
	46.8	46.9	45.4	45.2
	46.1	46.5	46.1	46.0
	1701	1703	1684	1678
	42.52	42.57	42.10	41.95

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

κ Orionis

5 42 1

− 9 43

m	m	R	R	M
10 0 24.9	1 39.8	39.6	39.0	39.9
36.2	51.0	51.6	51.7	51.5
43.2	57.1	57.7	57.4	57.2
37.9	52.9	53.8	53.0	52.9
14 22	20 08	20 27	20 11	20 15
35.55	50.20	50.67	50.27	50.37

λ Orionis

5 48 37

+ 7 23

m	m	R	R	M
0 4 53.9	5 1 27.9	27.4	27.2	27.9
7.8	41.0	41.2	41.3	41.0
8.9	43.9	43.4	43.6	43.8
6.1	41.1	41.1	41.3	41.3
16 7	15 39	15 31	15 34	15 40
4.17	38.47	38.27	38.35	38.50

ζ Can. Min.

7 32 58

+ 5 32

m	m	R	R	M
55 1 2.1	2 22.8	22.3	22.1	22.9
16.1	36.9	37.8	37.7	37.0
17.1	37.9	37.8	37.3	37.9
16.0	36.9	36.7	36.8	37.1
5 13	13 45	13 46	13 39	13 47
12.82	33.62	33.65	33.47	33.67

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879, Sept 17–18

Sun c = 46.895

11 43 5

+1 50

	m		m
.20	1 57.9	50 4	25.1
	12.0		38.5
	15.4		42.8
	11.2		39.2
	27 6.5		14 5 6
	9.12		36.40

Lost A 1st limb

Seeing, moderately good

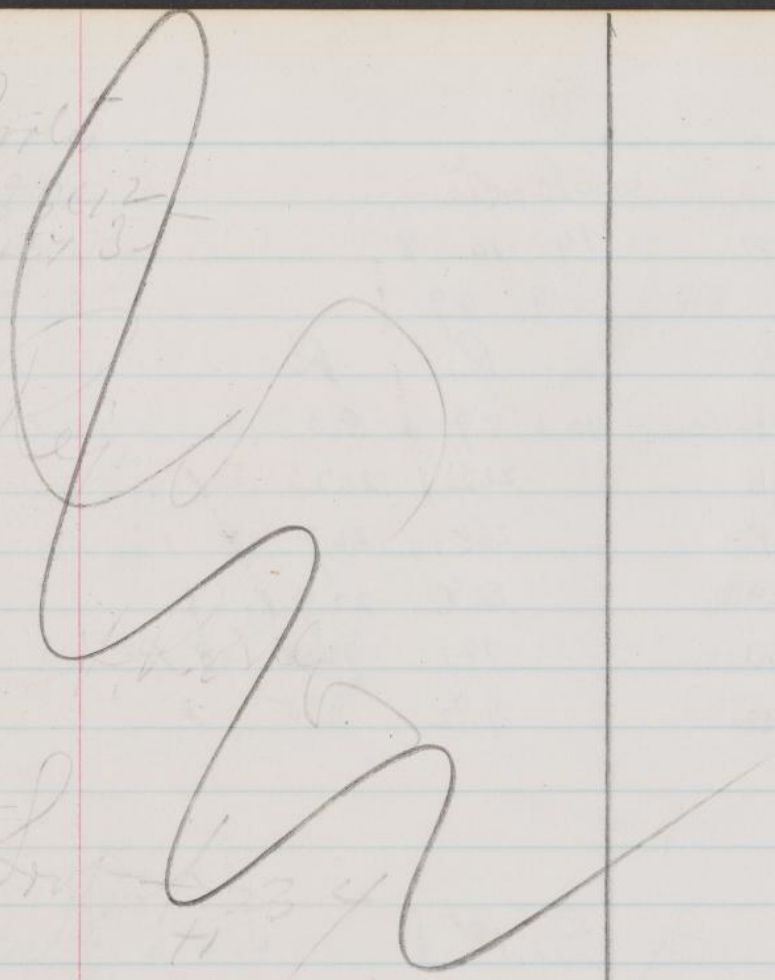
2 Bodies

14 10.5

+19 4.9

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R



John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 18–19

Sun C = 46.895

11 46 41

+1 27

m	m
.450 2.8	15 2 55.1
15.9	10.1
20.1	13.9
17.1	10.2
559	2693
13.97	7.32

Both limbs in R.A. + δ
Seeing, very bad indeed

ζ Boötis

14 10 8

+19 49

R	R
401 8.9	9.0
21.2	21.2
26.8	26.7
22.8	22.9
797	798
19.92	19.95

Rej. 1st δ

β Herculis

16 25 1

+21 45

m	m	R	R	m
403 9.9	4 31.5	31.8	31.8	32.0
22.1	45.1	45.1	45.4	45.0
25.2	47.4	47.8	48.0	46.9
23.1	45.9	46.1	46.2	46.1
803	99	1708	1714	1700
20.07	42.47	42.70	42.85	42.50

ζ Ophiuchi

16 30 30

−10 19

m	m	R	R	M
451 54.7	3 18.2	17.6	17.6	17.9
7.9	30.9	30.9	30.6	30.8
16.9	40.1	39.9	40.2	40.0
8.1	31.9	31.8	32.0	31.9
2676	1211	1202	1204	1206
6.90	30.27	30.05	30.10	30.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1079phae.proj.1401R

ε Bootis
14 39 42
+27 35

Ref. S

A.R. only

Last A 2 3 4
+1

α Serpentis
15 38 18
+6 48

m	m	R	R	m
35 4 48.7	40 1 13.1	13.2	13.1	13.9
2.9	27.4	28.1	28.0	27.2
7.1	33.1	33.4	33.4	33.1
1.2	27.6	27.9	27.8	28.1
23.99	10 12	10 26	10 23	10 23
59.98	25.30	25.65	25.57	25.57

η Ophiuchi
17 3 27
−15 34

m	m	R	R	m
0 2 5.0	8 7.8	7.8	8.0	7.8
21.7	23.9	24.1	24.3	24.1
27.4	30.0	29.9	30.2	29.9
20.0	23.1	23.2	23.2	23.6
7 41	8 48	8 50	8 57	8 54
18.52	21.20	21.35	21.42	21.35

ζ Herculis
17 9 18
+14 32

m	m	R	R	m
55 1 28.9	2 43.9	43.8	43.8	43.9
42.0	57.1	57.4	57.8	56.9
48.0	2.9	2.7	2.6	2.9
40.8	56.3	56.4	56.9	56.8
15 9 7	22 02	22 03	22 11	22 05
39.92	55.05	55.07	55.27	55.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

142

1879 Sept. 19

δ Ophiuchi

7 29 19

+12 39

	m	m	R	R	m
45 4	8.9	50 0 31,9	32.0	32.0	31.9
	21.9	45,1	45.4	45.2	45.0
	28.2	50,9	50.7	50.9	50.9
	21.1	46,1	45.8	46.0	45.9
	01	1740	1734	1741	1737
	20,02	43,50	43,47	43,52	43,42

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 20

β Cygni c=46.895

19 25 50

+27 42

	m	m
4 45 1	51.1	51.8
	2.1	1.9
	5.1	4.9
	3.8	4.2
	21	28
	0.52	0.70

A_2 + Fol.

γ Aquilae

19 40 30

+10 19

	m	m	R	R
5 3	47.9	10 0 5.7	5.9	6.0
	0.3	19.1	19.3	18.8
	4.2	23.8	24.0	23.9
	1.8	21.0	20.8	21.1
	23 42	696	700	698
	58.55	17.40	17.50	17.45

δ Aquilae

20 5 4

−1 11

	m	m	R	R	M
35 3	18.9	4 40.0	39.7	39.0	39.1
	32.1	54.1	54.8	54.4	53.9
	37.2	58.4	58.2	58.0	57.8
	32.1	54.1	54.0	53.8	54.0
	1203	66	2067	52	48
	30.07	51.65	51.67	51.30	51.20

α^2 Capricorni

20 11 20

−12 55

	m	m	R	R	M
20 2	46.1	3 39.1	39.9	38.7	39.1
	11	53.9	54.0	54.2	54.1
	6.9	59.9	59.1	59.4	59.2
	0.0	52.9	53.0	53.2	53.1
	2341	58	60	55	55
	58.52	51.45	51.50	51.38	51.37

False Ast. pr.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Aquilae

19 44 53
+8 33

m	m	R	R	M
50 4 51.7	55 11.4	17.9	17.6	18.1
6.2	81.1	31.8	31.8	30.4
8.6	85.1	36.0	35.8	35.0
4.1	8 1.2	31.2	31.1	31.1
10 6	11 58	1169	1163	1145
2.65	28.95	29.22	29.07	28.62

β Aquilae

19 49 22
+6 6

m	m	R	R	M
20 1 26.5	2 45.9	48.2	47.8	48.1
41.1	3.4	3.8	3.4	3.5
44.3	5.9	6.0	6.0	5.9
40.9	2.9	2.8	3.2	2.9
.15 28	11	08	04	'04
38.20	0.27	0.20	0.10	0.10

β Orionis

5 8 43
−8 21

	R	R
45 2 43.8		43.1
	57.6	57.2
	2.2	2.1
	56.1	57.9
	22 17	22 03
	55.42	55.07

β Tauri

5 18 39
+28 30

m	m	R	R	M
55 3 23.1	4 38.9	38.8	38.3	38.9
33.9	50.1	50.8	50.8	50.1
34.0	49.9	50.0	50.2	49.9
35.2	50.4	51.2	51.1	50.9
6.2	18 93	19 08	19 04	18 98
31.55	47.32	47.70	47.60	47.45

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 20

δ Orionis

5 25 50

−0 23

m

50 1 5.1
18.1
21.9
18.1
63 2
15,80

ζ Leporis

5 27 24

−17 55

m

20 1 16.9
32.1
34.2
30.9
11 41
28,52

κ Orionis

5 42 1

−9 43

m	m	R	R	m
10 0 4.9 1	35.9	34.1	34.1	34.1
16.9	46.1	46.9	47.2	46.5
23.1	52.1	51.8	51.6	52.1
19.0	47.9	47.6	47.2	48.2
6 39	18 10	1804	1801	1404
15.97	45.25	45.10	45,02	45.22

λ Orionis

5 48 37

+7 23

m	m	R	R	m
0 4 55.9 5 1	26.9	26.7	26.5	26.9
9.1	40.9	41.3	41.1	40.8
9.1	41.8	42.0	41.8	41.8
7.9	40.8	40.3	40.0	40.0
2620	1496	1503	1494	1495
65.50	37.40	37.57	37.35	37.38

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Orionis

5 29 31

−5 5·9

		m	m	R	R	M
25	1	51.1	3 18.1	18.1	17.9	17.9
		4.1	31.1	31.4	31.4	31.0
		7.1	34.1	33.8	33.9	34.8
		4.0	30.9	30.8	30.8	31.1
		6.3	1142	1141	1140	1158
	2	1.05	28.55	28.52	28.50	28.95

ξ Orionis

5 34 39

−2 0

		m	m	R	R	M
25	3	2.9	4 24.5	23.9	23.9	24.4
		16.4	39.0	38.8	39.0	38.7
		18.8	41.1	40.7	40.7	41.0
		14.9	37.9	38.0	37.0	37.4
		53.0	1425	1414	1406	1418
		13.25	35.62	35.35	35.15	35.45

μ Geminor.

6 15 38

+22 34

		m	m	R	R	M
50	4	4.9	55 0 26.7	26.6	26.2	26.8
		16.1	38.2	38.8	39.0	38.1
		14.9	37.9	37.7	37.8	37.9
		17.1	41.1	41.0	40.9	41.1
		53.0	1439	1441	1439	1439
		13.25	35.98	36.02	35.98	35.98

γ Geminor.

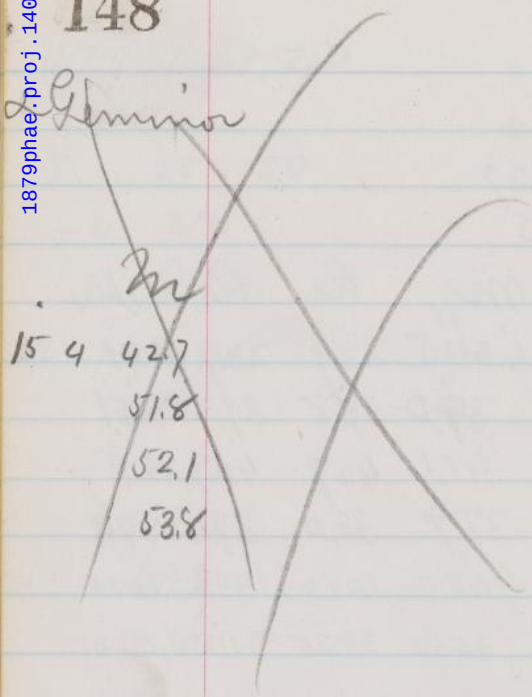
6 30 43

+16 30

		m	m	R	R	M
55	3	17.5	4 44.8	44.5	44.1	45.1
		28.8	57.0	57.2	57.6	56.9
		31.9	59.9	59.0	59.1	58.9
		29.2	57.9	57.9	58.0	58.0
		10.74	2183	2186	2188	2189
		26.85	54.58	54.65	54.70	54.72

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R



1879 Sept 20-21
Sun C = 46.895
11 53 52
+0 40

m	m
30 1 53.9	0 4 47.7
7.1	0.9
10.1	3.8
6.9	0.0
25 8 0	23 24
4.50	58.10

Rej. this ✱
Seeing very bad from 5h 8m to 7h 26m

Lost 1st wire 2nd limb
Limb indistinct on account of haze

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 22–23

Sun C = 46.861

12 1 3

– 0 7

	m		m
15 3	42.1	50 1	18.1
	54.9		30.2
	00.0		36.1
	55.9		31.7
	21 29		11 61
	53.22		29.02

Both limbs in R.A. + δ

Seeing, moderately good

51 H. Cephei L.C.

6 43 16

+92 49

	m
40 3	58.5
	49
	63
	40
	137
	3.42

γ Aquilae

19 40 30

+10 19

	m	m	R	R
5.3	44.1	10 06.9	6.8	7.1
	56.7	19.0	19.7	19.5
	1.8	24.1	24.4	24.1
	57.1	20.8	20.7	20.9
	21 97	708	716	716
	54.92	17.70	17.90	17.90

α Aquilae

19 44 53

+8 33

	m	m	′ ″	R	R
50 4	58.1	55	19.5	19.5	18.9
	10.1		31.0	32.0	32.2
	14.1		36.5	36.1	36.4
	8.1		31.0	31.2	31.3
	27 04		1180	1188	1188
	7.60		29.50	29.70	29.70

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

λ Aquilae

18 59 50
−5 4

	m	m	R	R	m
30 1	20.1	2 40.0	40.0	39.9	39.9
	32.9	52.1	52.9	52.6	51.8
	39.7	58.7	58.2	58.0	58.5
	38.8	53.1	53.0	53.1	52.9
	65	39	41	36	31
	31.62	50.97	51.02	50.90	50.78

β Cygni

19 25 50
+27 42

	m	m	R	R	m
45 0	55.8	2 12.2	11.9	11.9	12.1
	6.1	22.0	22.5	22.2	21.7
	9.5	25.1	25.2	25.3	25.2
	7.0	23.0	23.5	23.6	23.1
	184	23	31	30	21
	4.60	20.57	20.78	20.75	20.52

β Aquilae

19 49 22
+6 6

	m	m	R	R	M
20 1	30.0	2 51.9	51.2	50.8	51.6
	43.1	5.7	6.0	5.9	5.2
	47.1	8.7	8.9	8.24	8.9
	43.0	4.1	3.9	4.2	4.0
	32	104	100	93	97
	40.80	26.0	2.50	2.32	2.42

δ Aquilae

20 5 4
−1 11

	m	m	R	R	M
35 3	26.5	4 47.9	47.7	47.2	47.5
	39.2	0.9	1.8	1.8	0.9
	45.5	6.2	6.2	6.2	6.6
	39.1	0.0	0.1	0.0	0.9
	1503	2350	2358	2352	2359
	37.57	58.75	58.95	58.80	58.97

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 23

ζ^2 Capricorni

20 11 20

−12 55

m	m	R	R	m
20 2 22,0	3 44,4	44.2	44.0	44.4
36.1	58,9	59.0	59.1	58,5
43.2	5,9	4.9	5.0	5,4
35.2	57,1	57.3	57.2	57,0
13 65	2263	2254	2253	2253
34.12	56.57	56.35	56.32	56.32

β Arietis

1 47 57

+20 13

m	m	R	R	m
15 0 50.2	1 32,1	31.9	31.4	31,9
1.3	43,0	43.1	43.2	42,9
5.1	46,9	46.9	46.8	47.0
2.6	44,1	44.0	44.0	44.1
2392	61	59	54	59
59.80	41.52	41.47	41.35	41.47

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Arietis

2 0 21

+22 53

	m	m	R	R	m
30 4	41.8	30 1/4	7.8	7.8	8.3
	52.6	19.3	20.2	19.8	19.1
	53.2	25.3	20.3	20.4	20.8
	52.7	21.0	20.2	20.4	20.9
	0.3	6.94	6.85	6.84	6.91
	50.07	17.35	17.12	17.10	17.27

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept 23–24

Sun c = 46.~~883~~ 861

12 4 39

−0 30

m	m
.40 1 57.9	10 4 34.8
10.1	46.2
16.1	51.1
11.5	46.8
2756	1789
8.90	44.72

β Tauri c = 46.883

5 18 39

+28 30

m	m	R	R
55 3 35.1	4 51.6	51.1	50.9
44.0	1.1	1.8	1.7
44.5	1.0	0.8	0.7
~~45.8~~	2.1	2.5	2.4
94	2358	2362	2357
42.35	58.95	59.05	58.92

Both limbs in S + R.A.

Seeing very good

ι Orionis

5 29 31

−5 59

m	m	R
25 1 54.2	3 15.1	14.4
6.0	26.1	26.3
9.9	29.8	30.1
6.8	27.0	26.1
169	981	969
4.22	24.52	24.22

σ Orionis

5 34 39

−2 0

m	m	R	R	M
25 3 9.1	4 27.1	26.0	26.0	26.2
20.9	39.0	39.4	39.6	38.9
24.0	42.1	41.7	42.0	41.9
20.1	39.0	38.0	38.1	38.1
741	1472	1451	1457	1451
18.52	36.80	36.27	36.42	36.27

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

δ Orionis
5 25 50
−0 23

m
50 1 9.9
21.6
24.9
22.2
78.6
19.65

ζ Leporis
5 27 24
−17 55

m
20 1 21.9
36.7
38.9
35.1
126
33 15

κ Orionis
5 42 1
−9 43

m	m	R	R	m
10 0 42.2	1 35.9	35.2	34.8	35.1
52.9	46.1	46.5	46.6	45.9
59.1	52.1	51.9	51.9	51.9
	47.1	46.8	46.9	47.8
	181 2	1804	1802	1807
	45.30	45.10	45.05	45.17

λ Orionis
5 48 37
+7 23

m	m	R	R	m
0 45 53.1	5 1 25.0	24.6	24.4	24.8
6.9	39.1	38.1	37.8	37.1
7.3	38.9	39.2	38.7	38.9
5.6	37.1	37.1	36.8	37.2
12.9	181	190	177	180
3.22	34.52	34.75	34.42	34.50

Lon. A +1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 24

Phas. Min. L.C

18 11 21

+93 24

m	m	m	m
5 3 6.1	2.1	2 55.4	21.1
10.1	7.1	0.1	27.1
11.6	6.9	0.1	26.9
12.1	8.0	1.1	27.4
399	241	2367	225
9.97	6.02	59.17	25.62

μ Geminor

6 15 38

+22 34

m	m	R	R	M
50 4 0.3	55 0	33.8	33.0	33.2	33.2
1.0		43.1	43.8	44.0	43.3
8.7		41.4	42.1	42.2	42.0
12.9		45.1	44.8	45.1	45.0
229		29	37	45	35
5.72		40.72	40.92	41.12	40.87

ζ Geminor

7 26 52

+32 9

m	m	R	R	M
15 4 40.4	20 1 2.9	2.5	2.6	2.9
47.9	10.9	11.1	11.2	10.9
49.3	11.4	11.8	12.0	11.5
50.2	14.1	13.7	13.8	14.1
1878	393	391	396	394
46.95	9.82	9.78	9.90	9.85

ζ Can. Min.

7 32 58

+5 32

m	m	R	R	M
55 1 4.0	2 24.1	23.8	23.3	24.1
16.9	37.1	37.8	37.8	36.9
15.4	36.4	36.1	36.4	36.1
15.7	36.1	36.0	36.1	35.9
520	1337	1337	1336	1330
13.00	33.42	33.42	33.40	33.25

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1870phae.proj.1401R

γ Geminor.
6 30 43
+16 30

	m	m	R	R	m
55	3 19.0	4 37.9	37.2	37.1	37.1
	28.1	48.1	48.1	48.3	48.0
	31.0	50.0	49.9	50.0	49.9
	29.1	48.2	48.2	48.4	49.0
	10 72	18 42	18 34	18 38	18 40
	26.80	46.05	45.85	45.95	46.00

β Can. Min.
7 20 35
+8 32

	m	m	R	R	m
55	1 12.0	2 47.9	47.6	46.8	47.8
	23.1	58.9	58.9	59.2	58.3
	23.9	59.8	59.1	59.0	58.9
	22.2	58.9	57.9	57.2	58.0
	12	248	235	222	230
	20.30	56.20	55.87	55.55	55.75

β Geminor.
7 37 55
+28 19

	m	m	R	R	m
55	4 41.9	10 1 2.1	1.9	2.0	2.2
	50.1	11.0	11.6	11.6	11.1
	48.7	9.9	9.9	9.3	9.9
	51.9	12.2	12.8	12.4	11.9
	19 26	35 2	36 2	35 3	35 1
	48.15	8.80	9.05	8.82	8.78

α Leonis
10 1 56
+12 33

	m	m	R	R	m
55	0 0.8	1 21.9	21.4	21.2	21.6
	12.1	32.6	33.0	33.0	32.8
	13.7	34.1	34.3	34.2	34.1
	11.9	32.9	32.4	31.8	32.1
	386	15	11	02	06
	9.65	30.37	30.27	30.05	30.15

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

158

1879 Sept. 24

ζ Leonis

10 9 57

+24 1

m
25 2 43.2
53.1
52.7
53.4
24
50,60

Rej last 8.

γ' Leonis

10 13 18

+20 27

m	m	R	R	m
0 1 29.1	2 51.9	51.4	50.7	50.9
39.1	2.0	2.3	2.1	2.0
40.3	2.1	1.9	1.6	2.1
40.8	2.1	1.9	2.0	2.0
1493	2381	2375	2364	2370
37.32	59.52	59.37	59.10	59.25

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phao..proj..140I1R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept 24–25
Sun C = 46.883
12 8 15
– 0 54

m		m
5. 0 28.0	35 3	2.0
40.0		14.0
43.9		17.9
41.0		11.2
1479		451
3697		11.27

Rej. false stroke before rattle of last S

Sept. 25
α Virginis
13 18 49
–10 32

m	m	R	
55 4 34.1	0 1 14.5	13.8	
45.0	76.2	25.9	
50.2	21.9	21.9	
53.1	273	26.6	
1854	97	82	
46.35	22.42	2205	

Long Period
Last A 4 A 23 A 45 –1
18h for last A

β Scorpii
15 58 24
–19 28

m	m	R	R	m
55 1 9.3	2 3.3	2.9	3.0	2.9
24.1	17.4	17.9	17.7	17.1
27.9	21.7	21.2	21.1	21.3
26.4	15.1	14.8	14.6	15.1
877	575	568	564	564
24.42	14.37	14.20	14.10	14.10

Last A +1
1st stroke for last S

δ Ophiuchi
16 8 0
– 3 23

m	m	R	R	m
50 0 47.9	2 14.5	14.0	13.7	13.9
0.9	26.5	26.7	26.8	26.3
4.9	31.2	31.0	31.2	31.1
59.8	24.9	25.0	25.2	25.2
2335	971	967	969	965
58.37	24.27	24.17	24.22	24.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Cor. Bor.

15 29 34

+27 7

		m	R	R	m
20	1	18.9	18.0	18.6	19.1
		27.2	28.2	28.0	27.1
		30.1	30.2	30.3	30.0
		28.9	28.9	29.4	29.2
		1051	1053	1063	1054
		26.27	26.32	2657	2635

δ Scorpii

15 53 11

−22 17

		m	m	R	R	m
40	3	36.9	4 584	58.2	58.1	581
		51.1	12.9	12.9	12.8	12.9
		55.2	16.8	16.7	16.8	16.8
		49.1	10.2	10.7	10.7	10.1
		1923	2783	2785	2784	2779
		48.07	9.57	9.62	9.60	9.47

λ Scorpii

16 21 59

−26 10

		m	m	R	R
35	1	16.4	39.6	38.9	38.9
		30.9	53.1	53.3	53.1
		35.0	56.1	56.1	56.4
		29.7	51.1	51.5	51.2
		1120	09	1998	1996
		28.00	50.22	49.95	49.90

ζ Ophiuchi

16 30 30

−10 19

		m	m	R	R	m
45	1	53.2	3 21.0	20.2	20.2	21.0
		4.8	31.1	31.2	31.2	31.1
		11.7	38.9	38.4	38.4	38.6
		4.3	31.1	31.2	31.6	31.1
		2540	21	10	14	18
		3.50	30.52	30.25	30.35	30.45

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 25

η Ophiuchi

17 3 27
−15 34

m	m	R	R	m
0 1 44.9	2 47.8	47.0	47.2	
58.2	1.0	0.8	1.0	
1.9	4.0	4.0	4.1	
56.6	59.1	59.1	59.3	
22 16	23 19	23 09	23 16	
55.40	57.97	57.72	57.90	

ζ Herculis

17 9 18
+14 32

m	m	R	R	m
55 1 32.0	2 34.9	34.2	33.9	34.1
43.0	45.1	45.2	45.6	45.1
46.2	48.7	47.9	48.2	48.3
42.1	43.9	43.8	44.0	43.8
33	126	111	17 17	17 13
40.82	43.15	42.78	42.92	42.82

β Aquilae

19 49 22
+6 6

m	m	R	R	m
20 1 30.9	2 50.1	50.0	49.6	49.9
43.8	2.4	3.2	3.2	3.0
45.0	4.1	4.0	3.9	4.1
42.9	1.2	1.6	1.4	1.7
26	23 78	23 88	23 81	23 87
40.65	59.45	59.70	59.52	59.67

Long stops for A 2, +1

θ Aquilae

20 5 4 −1 11

m	m	R	R	
35 4 3.5	4 59.1	58.7	58.2	58.9
15.2	11.0	11.5	11.3	11.1
15.0	13.9	14.7	14.9	14.9
14.2	10.1	9.9	9.9	10.1
509	27 41	27 48	27 43	27 50
12.72	8.52	8.70	8.57	8.75

35 strokes for last ✓
Last A +1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.14018

γ Aquilae

19 40 30
+10 19

	m	m	R	R	m
5	3 45.3	10 0 9.9	9.9	9.8	
	56.3	20.1	20.7	20.9	
	58.9	23.1	24.1	23.8	
	57.2	21.9	21.8	22.0	
	177	750	765	765	
	5442	18.75	19.12	19.12	

ζ Aquilae

19 44 53
+8 33

	m	m	R	R
55 0	25.1	19.1	18.8	19.0
	35.9	29.2	30.2	30.1
	38.8	32.9	32.5	32.5
	35.2	29.1	29.2	29.1
	1350	1103	1107	1107
	33.75	27.58	27.67	27.67

Lost pt. 2 wires

ζ² Capricorni.

20 11 20
−12 55

	m	m	R	R	m
20 2	18.1	3 46.1	45.2	45.1	45.9
	30.5	58.3	59.0	58.8	58.9
	36.9	3.0	3.0	2.9	3.1
	29.1	56.8	56.7	57.0	57.0
	1146	22 42	22 39	22 38	22 49
	28.65	56.05	55.97	55.95	56.22

False Start.

γ Geminor.

6 30 43
+16 30

	m	m	R	R	m
55 3	21.9	4 48.0	47.3	46.7	47.1
	31.1	56.9	57.0	57.1	56.5
	34.1	59.0	58.9	59.0	58.9
	31.1	56.9	56.4	56.8	56.2
	1182	208	196	196	187
	29.55	55.20	54.90	54.90	54.67

Seeing very bad

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 25

α Can. Min.

9 32 58

+5 32

	m		m	R	R	m
55	1	7.1	2 26.5	25.7	25.9	26.2
		19.9	38.2	38.3	38.7	38.0
		18.9	37.0	37.0	37.0	37.1
		18.1	37.1	37.2	37.0	37.0
		640	1388	1382	1386	1383
		16.00	34.70	34.55	34.65	34.57

Seeing very bad

α Hydrae

9 21 38

−8 8

	m		m	R	R	m
35	1	24.9	2 17.0	16.7	16.6	16.9
		34.4	26.1	26.6	26.2	25.9
		35.1	29.9	29.8	29.7	29.1
		34.9	26.1	26.1	26.3	26.3
		123	991	992	988	982
		33.07	24.78	24.80	24.70	24.55

Seeing a little better

Lost Pt. wire

γ¹ Leonis

10 13 18

+20 27

	m		m	R	R	m
0	1	33.1	2 53.0	53.2	53.1	53.1
		42.0	2.1	2.8	2.7	2.4
		42.0	1.6	1.4	1.4	1.4
		42.2	2.1	1.7	1.8	2.0
		1593	2388	2391	2390	2389
		39.82	59.70	59.78	59.75	59.72

β¹ Scorpii

15 58 24

−19 28

	m		m	R	R	m
55	0	34.6	1 53.6	53.0	52.6	53.0
		48.4	7.1	7.7	7.8	
		52.9	11.5	11.0	11.4	
		47.2	4.6	4.9	5.0	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.14018

ε Leonis

9 38 59

+24 20

m	m	R	R	m
5 3 59.0	10 0 18.7	18.2	17.8	17.9
7.1	25.9	25.9	26.0	25.1
5.5	24.9	24.8	25.0	24.8
7.1	26.3	26.9	27.0	27.0
18.7	16.8	15.8	15.8	14.9
4.67	24.20	23.95	23.95	23.72

Seeing pretty good

ζ Leonis

10 1 56

+12 33

m	m	R	R	m
55 0 1.1	1 22.9	22.3	22.8	22.9
10.2	32.1	32.6	32.8	32.0
11.1	33.8	33.3	33.3	33.9
10.9	31.9	31.9	31.9	31.9
33.3	07	01	08	05
8.32	30.17	30.02	30.20	30.12

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept 25–26

Sun C = 46.883

2 11 50

– 1 17

m	m
25 3 39.9	0 1 16.8
50.7	27.9
54.1	31.0
49.9	27.1
1946	1028
48.65	25.70

Seeing moderately good.
Both limbs in R.A. & S

α Cor. Bor.

15 29 34

+27 7

m	m	R	R	m
20 1 16.9	2 29.2	28.9	29.7	29.1
25.1	37.8	37.9	38.2	37.9
28.1	40.8	40.3	40.3	40.9
27.1	39.9	39.8	39.2	39.5
972	1477	1469	1474	1474
24.30	36.92	36.72	36.85	36.85

δ Ophiuchi

16 8 0

– 3 23

m	m	R	R	m
50 0 46.1	2 18.6	18.7	18.7	19.1
59.0	31.2	31.3	31.3	31.1
3.9	36.6	36.4	36.5	36.9
58.0	30.2	31.2	31.0	30.1
2270	1166	1176	1175	1172
56.75	29.15	29.40	29.37	29.30

α Scorpii

16 21 59

– 26 10

m	m	R
35 1 14.9	2 35.1	35.0
28.1	49.1	49.7
32.9	53.2	53.1
26.6	47.4	47.7
1025	1848	1855
25.62	46.20	46.37

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ζ Serpentis

15 38 18

+6 48

m	′	m	R	R	m
35 4 43.1	40	1 10.5	10.2	10.6	10.9
56.0		22.8	23.0	23.2	22.9
58.2		26.0	26.1	26.2	26.0
54.1		22.2	22.2	22.3	22.2
1.14		15	15	23	20
52.85		20.37	20.37	20.57	20.50

β¹ Scorpii

15 58 24

−19 28

m	m	R	R	m
55 0 34.6	1 53.6	53.0	52.8	53.0
48.4	7.1	7.7	7.8	7.1
52.9	11.5	11.0	11.4	11.4
47.2	4.8	4.9	5.0	5.0
18 31	25 7.0	25 6.6	25 7.0	25 6.5
45.78	4.25	4.15	4.25	4.12

β Herculis

16 25 1

+21 45

m	m	R	R	m
40 3 43.0	4 33.6	33.2	33.2	33.1
53.1	43.7	43.9	44.1	43.1
53.9	44.1	44.0	43.9	44.1
53.1	44.1	44.1	44.2	43.9
31	55	52	54	42
50.78	41.37	41.30	41.35	41.05

ζ Ophiuchi

16 30 30

−10 19

m	m	R	R	m
45 1 50.1	3 15.1	14.7	14.6	14.9
1.1	25.9	26.0	25.8	25.1
8.0	33.0	33.0	32.9	32.5
0.6	26.1	26.2	26.0	25.6
23 9.8	10 0.1	9.9.9	9.9.3	9.8.1
59.95	25.02	24.98	24.82	24.52

Sm. 1st 2 nu

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 26

9 Ophiuchi

17 3 27

−15 34

m	m	R	R	m
0 1 44.9	3 0.5	0.3	1.0	0.3
58.9	14.9	15.3	14.9	14.8
2.1	17.8	17.9	17.7	17.6
57.1	12.9	13.1	12.9	12.8
22 30	64	66	65	57
55.75	11.60	11.65	11.62	11.42

21 Herculis

17 9 18

+14 32

m	m	R	R	m
55 1 29.1	2 46.9	46.8	46.2	47.0
40.2	57.2	57.9	58.0	57.9
43.0	0.1	0.2	0.0	0.1
39.6	56.9	56.1	56.2	56.3
15 19	22 01	22 10	22 04	22 13
37.97	55.02	55.25	55.10	55.32

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Ophiuchi

17 29 19

+12 39

m	M	R	R	m
45 4 12.9	50 0	31.1	30.4	31.1
23.9		41.1	42.1	42.7
26.9		44.7	44.3	44.7
23.1		42.1	42.2	42.4
68		159 0	159 0	09
21.70		39.75	39.75	40.22

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 27

α Lyrae C = 46.841

18 32 50

+38 40

	m	m	R		R	
45	3	13.7	4	27.3	26.8	
		21.6		35.4	36.1	
		24.9		38.1	38.8	
		23.1		37.9	38.1	
		3.3		18.7	19.8	
		20.82		34.67	34.95	

lch. failed

51 H. Cephei L.C.

6 43 16

+92 49

	m	m	m		m	m	
40	4	43.2	37.6	30.9	40	4	2.1	39.1
		49.0	43.1	36.9			7.9	44.7
		49.1	42.6	37.9			8.1	45.1
		48.1	42.3	36.7			7.6	45.1
		29.4	16	21.9			25.7	
		47.35	41.65	35.47			6.42	

A4.0 to 1.0

λ Aquilae

18 59 50

−5 4

	m	m	R	R	m
30	1	17.9	2	42.4	42.1	42.1	42.1
		29.1		53.6	54.0	54.0	53.9
		34.8		58.3	58.2	58.1	58.2
		29.9		54.6	54.8	54.4	54.5
		11.7		89	91	86	87
		27.92		52.22	52.27	52.15	52.17

γ Aquilae

19 40 30

+10 19

	m	m	R	R
5	3	42.5	10	0	10.6	10.1	10.2
		53.9			20.9	21.0	21.2
		58.0			23.9	24.0	24.2
		55.9			23.0	22.8	22.5
		10.3			784	779	781
		52.57			19.60	19.47	19.52

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

51 Cephei

m	m	m	m	m
3 52.4	47.1	44.7	42.1	30.1
8.0	52.1	50.0	47.7	45.1
59.4	53.9	51.1	48.9	46.1
58.4	51.9	49.9	48.1	45.1
2382	50	1957	268	64
59.55	51.25	48.92	4670	41.60

Az + Ill.

σ Sagittarii
18 47 46
−26 27

50	3	52.9
		8.0
		11.1
		5.8
		2578
		4.45

Az + Ill.

α Aquilae
19 44 53
+8 33

m	m	R	R
50 4 57.1	55.1	20.6	20.1	20.2
8.9		31.0	31.9	31.9
9.9		34.2	34.2	34.2
6.9		31.9	32.1	32.0
228		1177	1183	1183
5.70		29.42	29.57	29.57

β Aquilae
19 49 22
+6 6

m	m	R	R	m
20 1 31.1	2 48.7	48.8	48.5	48.5
43.1	1.5	2.1	1.9	1.8
45.2	2.9	2.7	2.4	2.9
43.9	54.5	0.7	0.2	0.1
33	2326	2343	2330	2333
40.82	58.15	58.57	58.25	58.32

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 27

θ Aquilae

20 5 4

−1 11

m	m	R	R	m
35 3 20.4	4 40.1	40.2	40.1	40.0
34.1	52.1	52.7	53.0	52.9
35.4	55.9	55.4	55.6	55.2
31.9	52.1	52.2	52.7	51.7
11 88	2062	2005	2014	1998
29.70	50.05	50.12	50.35	49.95
	50.00	50.23		

ζ² Capricorni

20 11 20

−12 55

m	m	R	R	m
20 2 21.1	3 34.7	34.8	34.3	34.8
33.0	47.1	47.4	48.0	47.1
38.7	52.1	52.2	52.1	52.1
32.9	47.0	47.0	47.0	47.0
59	1809	1814	1814	1810
31.42	45.22	45.35	45.35	45.25
	45.23	45.35		

κ Cygnis

5 42 1

−9 43

m	m	R	R	m
10 0 31.1	1 41.1	40.7	40.4	40.9
40.1	50.9	51.6	51.3	50.9
46.9	56.1	56.3	56.4	56.1
42.6	51.8	52.0	52.1	52.0
+11.07	1999	06	2002	1999
40.17	49.97	50.15	50.06	49.97
	49.94	50.10		

ε Cygnis

5 48 37

+7 23

m	m	R	R	m
0 4 57.8	5 125.9	25.9	25.4	25.9
9.8	37.2	38.0	37.8	37.1
10.2	38.1	38.2	38.3	37.9
8.9	36.0	36.6	36.4	36.9
26.67	1372	1387	1379	178
6.67	34.30	34.67	34.47	34.45
	34.37	34.57		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Orionis

δ −29 54
−5 59

	R	R
25 2	5 43	5 42
	5 9	6.0
	7.8	7 9
	5.0	5 2
	13 0	13 3
	3.25	3.32
	3.28	

β Orionis

δ −8 39
− 2 0

	M	M	R
25 8	9.0	8.5	8.0
	19.9	19.9	20.8
	22.2	22.1	22.2
	20.1	18.8	19.0
	7 12	6 93	7 00
	17.80	17.32	17.50
	17.56		

δ Ursæ Min. L. C.

18 11 21
+93 24

	M	M	M	M
5 3	13.9	6.3	2 57.1	55.1
	18.2	10.4	1.5	59.8
	17.0	8.9	0 0	57.6
	19.0	10.3	1.4	59.1
	281	359	00	316
	17.02	8.97	0.00	57.90

μ Geminor.

6 15 38
+22 34

	M	M	R	R	M
50 4	7.9	55 0	22.1	22.3	22.0	22.1
	16.1		31.1	31.7	31.7	31.1
	13.9		28.9	29.2	29.3	29.2
	16.9		32.1	32.0	32.0	32.6
	54 8		11 52	11 52	11 50	11 50
	13.70		28.80	28.80	28.75	28.75
			28.78	28.76		

3 strokes for 1st wire

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879. Sept. 27

ν Geminor.

6 30 43

+16 30

m	m	R	R	M
55 3 14.9	4 39.9	39.9	39.7	39.9
23.1	49.1	49.9	49.3	49.1
25.2	50.2	50.7	50.2	50.1
23.3	49.0	48.9	48.8	49.0
6.5	1882	1894	1880	1881
21.62	47.05	47.35	47.00	47.02
	47.03	47.17		

ξ Geminor.

7 26 52

+32 9

m	m	R	R	M
15 4 39.9	40.1	6.9	6.5	6.2	6.7
46.1	13.9	14.3	14.3	13.9
48.1	14.9	15.1	15.0	14.9
49.1	17.2	17.0	16.2	17.5
23.2	12.9	12.9	11.7	49.0
45.80	13.22	13.22	12.92	12.25
	12.73	13.07		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

2 Can. Prim.

7 32 58

+5 32

	Pr	M	R	R	M
55 1	37.3	2 26.9	26.2	26.1	27.2
	48.6	39.0	39.7	39.2	39.1
	47.2	37.9	38.1	38.0	37.6
	48.0	37.9	37.9	37.9	38.3
	1811	217	1419	1412	1422
	45.27	35.42	35.47	35.30	35.55
		35.48	35.38		

Lost Pt wire

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

176

1879 Sept 27–28

Sun C = 46841

2 19 4

− 2 4

m		m		m
15 0 23.9	45	3 24.9	5	3 59.7
33.9		35.9		8.4
38.8		39.9		9.2
33.9		35.2		9.8
13 05		159		271
3262		33.97		6.78

ε Leonis

9 38 59

+24 20

Seeing pretty fair

Lost 1st limb in R.A.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Leonis

10 1 5.6

+12 33

	m	R	P	M
55 1	27.9	27.3	27.1	27.9
	34.2	37.9	38.0	38.1
	41.9	41.3	41.9	41.4
	38.1	38.0	38.2	38.7
	145 1	144 5	145 2	144 1
	36.27	36.12	36.30	36.02
	36.24	36.21		

Rej 1st

Lost 1st wire

γ¹ Geminor.

10 13 18

+20 27

	m
0 1	35.1
	44.1
	47.6
	45.3
	121
	43.02

Rej. 2nd 8

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

178 1879. Sept. 28–29

Sun C=46.869

2 22 40

−2 27

m	m
.35 3 53.9	10 1 42.7
5.7	54.0
9.4	0.0
5.1	54.9
14.1	2.16
3.52	52.90

Lost 1st 2 wires of 2nd limb.
Seeing pretty fair.

γ Aquilae

19 40 30

+10 19

R R

5	3	43.2	43.3
		53.9	53.9
		59.9	59.9
		56.2	55.7
		13.2	12.8
		53.30	53.20

θ Aquilae

20 5 4

−1 11

m	m	R	R	m
35 3 23.7	4 49.5	49.8	49.3	49.0
34.4	0.7	1.3	1.1	0.9
41.9	7.0	7.0	7.1	7.1
35.1	1.4	1.3	1.3	1.1
13.51	23.86	23.94	23.88	23.81
33.78	59.65	59.85	59.70	59.52
	59.59	59.77		

α² Capricorni

20 11 20

−12 55

m	m	R	R	m
20 2 20.3	3 46.9	46.8	46.2	45.9
33.0	59.0	59.2	59.1	58.9
41.7	7.1	6.8	6.9	6.9
33.1	59.1	59.1	59.3	58.9
12.81	23.21	23.19	23.15	23.06
32.02	58.02	57.97	57.87	57.65
	57.85	57.92		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Aquilae

19 44 53
+8 33

R

50 4 563
6.8
11.1
6.3
26 0 5
5.12

β Aquilae

19 49 22
+6 6

m	m	R	R	m
20 1 30.9	2 49.4	48.9	48.9	49.0
43.0	1.6	1.8	1.6	1.4
48.2	5.9	5.9	5.7	5.9
43.1	1.5	1.8	1.2	1.9
52	2384	2384	2374	2382
41.30	59.60	59.60	59.35	59.55
	59.58	59.48		

β Arietis

1 47 57
+20 13

m	m	R	R	m
15 0 38	1 29.1	29.2	29.0	29.1
13.9	38.9	39.3	39.2	38.9
18.4	42.8	43.3	43.2	43.9
15.5	40.9	41.1	41.3	41.7
51.6	1527	1529	1527	1536
12.90	38.17	38.22	38.17	38.40
	38.25	38.20		

α Arietis

2 0 21
+22 53

m	m	s	R	R	m
30 4 44.2	35	1 29	3.1	2.9	2.9
53.1		12.9	12.6	12.6	12.1
55.0		14.1	14.0	14.2	13.9
59.1		14.8	14.7	14.9	14.9
94		47	44	46	38
52.35		11.17	11.10	11.15	1095
		11.06	11.12		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

180

Sept 29

Can Min

7 32 58 ~~+26° 16'~~

+5 32

R

5 5 01 4.9

18.0

19.8

17.8

60 5

15.12

Rem.

R 7 37 55 +28° 19'

R R R

10 1 11.6 25 23

11.3 11.4 11.1

12.8 12.4 12.9

13.7 13.7 13.2

39.1 00 39.5

9.78 10.00 9.87.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

ε Leonis

9 38 59

+24 20

	R	R	W
5	3 54,8	54.3	53.5
	39	3.6	3'8
	6.7	6.1	6.1
	5.3	5.0	5.4
	10.7	9.0	8.8
	2.67	2.25	2.20

ζ Leonis

10 1 56

+12 33

	m	m	R	R	W
55	0 2.1	1	21.9	21.6	21.8	21.1
	12.9		31.9	32.1	32.0	31.8
	17.9		36.9	37.1	37.0	37.1
	14.0		33.9	33.2	33.2	32.9
	6.9		4.6	4.0	4.0	2.9
	11.72		31.15	31.00	31.00	30.72
			30.93	31.00		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

182 1879 Sept. 29–30

Sun c = 46.869

2 26 17

– 2 51

m		m
0 2 9.9	30 4	44.8
21.5		56.9
27.9		3.5
20.9		55.1
802		2203
20.05		55.07

Seeing pretty fair
Both limbs in R.A. +8

δ Ophiuchi

16 8 0

– 3 23

m	m	R	R	m
50 0 51.9	2 15.9	16.0	16.0	15.1
7.0	31.1	31.3	31.2	31.1
17.5	42.0	42.0	41.8	41.9
6.2	29.9	30.0	30.2	29.1
2116	1189	1193	1192	1172
5.40	29.72	29.82	29.80	29.80
	29.76	29.81		

ζ¹ Herculis

17 9 18

+14 32

m	m	R	R	m
55 1 40.5	2 50.1	50.6	50.2	50.3
54.9	4.5	4.7	4.7	4.7
35	13.0	13.2	13.2	12.9
52.8	2.0	2.2	2.3	2.0
2117	2496	107	104	99
52.92	2.40	2.67	2.60	2.48
	2.44	2.63		

ζ Ophiuchi

17 29 19

+12 39

m	m	R	R	m
45 4 34.7	50.0 34.1	34.6	35.0	34.9
48.1	48.0	48.7	48.7	48.1
57.9	56.9	56.9	57.9	57.1
46.8	47.9	47.9	47.9	47.8
1885	1869	1881	1895	1879
47.12	46.72	47.02	47.37	46.98
	46.85	47.19		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

α Scorpii

16 21 59
−26 10

	m	m
35	1 55.1	2 40.1
	12.8	58.0
	22.0	7.8
	9.9	54.9
	27.98	22.08
	9.95	55.20

Lost 1st 2 wires

η Ophiuchi

17 3 27
−15 34

	m	m	R	R
0	1 45.1	3 10.1	10.1	10.7
	2.1	26.4	26.8	27.0
	11.1	~~23.9~~ 36.2	35.8	35.7
	58.6	23.9	24.1	24.3
	23.69	9.66	9.68	9.70
	59.22	24.15	24.20	24.25
		24.15	24.22	

δ Ves. Min

18 11 21
+86 36

	Rr	m	m	m	m
50	4 4.1	7.3	10.6	13.8	15.9
	13.0	15.1	19.0	21.6	23.5
	17.9	20.0	23.5	26.1	28.8
	13.9	16.1	20.1	23.1	26.1
	89	585	732	46	143
	12.22	14.62	18.30	21.15	23.57

3 to 9

η Serpentis

18 15 3
−2 56

	m	m	R	R
20	3 28.1	4 50.1	50.2	50.0
	42.2	5.1	5.3	5.6
	51.9	13.2	14.3	14.4
	41.9	4.0	4.0	4.6
	16 41	2524	2538	2546
	41.02	3.10	3.45	362
			353	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Sept. 30

α Lyrae

18 3 2 50

+38 40

m	m	R	
45 3 6.9	4 27.9	28.8	
17.9	38.4	38.7	
25.9	46.2	46.7	
19.9	41.1	40.8	
7 0.6	15 36	15 50	
17.65	38.40	38.75	

51 H. Cephei 2 Cl.

6 43 16

+9 2 49

m	m	m	m
40 4 44.9	40.7	33.4	25.9
52.1	47.9	40.2	33.1
58.1	52.0	45.9	38.1
57.1	46.1	39.8	32.1
62	267	1593	92
5 1.55	46.67	39.82	32.30

β Geminor.

7 37 55

+28 19

m	m	R	R	M
10 0 2.1	1 4.1	4.1	3.8	3.7
12.0	13.9	13.8	14.0	13.0
14.9	16.0	16.4	16.3	16.1
13.8	15.6	15.9	15.8	16.0
428	96	502	99	88
10.70	12.40	12.55	12.47	12.20
	12.30	12.51		

ε Leonis

9 38 57

+24 20

m	m	R	R	M
5 4 33.9	10 0 17.9	18.2	17.8	18.1
45.2	28.1	28.6	28.7	28.1
49.0	32.7	32.8	32.5	32.6
47.2	31.3	31.2	31.2	32.1
153	1100	1168	1102	1109
4382	27.50	27.70	27.55	27.72
	27.61	27.62		

Lyn-1st 3 W

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

δ Sagittarii

14 47 46

−26 27

m	m	R	R	m
50 3 14.9	4 25.9	26.3	25.6	25.2
31.1	42.1	42.1	42.2	41.8
40.9	50.2	50.2	50.2	50.4
30.9	41.1	41.0	41.0	40.3
11.8	15.93	15.96	15.90	15.77
29.45	39.82	39.90	39.75	39.42
	39.62	39.82		

ζ Geminia.

7 26 52

+32 9

m	m	R	R	m
15 4 41.9	20 1 1.6	1.2	1.5	1.5
51.1	10.3	11.0	10.9	10.2
58.1	15.9	15.4	15.4	15.9
54.2	14.9	14.8	15.0	14.9
53	4 27	24	28	28
51.32	10.67	10.60	10.70	10.70
	10.68	10.65		

ζ Leonis

10 1 56

+12 33

m	m	R	R	m
55 0 0.8	1 22.1	22.1	22.1	22.0
12.0	34.0	34.2	34.9	33.9
18.9	40.1	40.7	40.6	40.0
12.9	34.9	34.9	35.0	35.2
5.6	13 1.1	13.19	13.26	13.11
11.40	32.78	32.97	33.15	32.78
	32.78	38.06		

γ' Leonis

10 13 18

+20 27

m	m	R	R	m
0 1 44.9	2 52.1	52.2	52.1	51.8
56.1	3.9	4.2	4.9	4.1
1.4	9.1	9.0	8.9	8.9
56.1	4.9	4.7	4.1	4.2
21 85	100	101	100	90
54.62	2.50	2.52	2.50	2.25
	2.37	2.51		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879, Sept 30 – Oct. 1

Sun C = 46.869

2 29 54

−3 14

m		m
.25 0 30.9	55 3	27.1
+4.2		41.5
53.9		50.9
43.9		40.1
172 9		1596
43.22		3990

Last 1st 2 wires of 2nd limb,
Seeing pretty bad

α Coronæ Bor.

15 29 34

+27 7

	R	R	R
2	35.0	35.3	35.1
	49.2	49.5	49.1
	57.8	57.8	57.5
	48.8	49.1	49.2
	1908	1917	1909
	47.70	47.92	47.72
	47.78		

α Scorpii

16 21 59

−26 10

m	m	R
35 1 33.9	2 39.9	40.0
53.1	59.0	58.9
3.7	9.4	9.6
49.8	55.9	56.1
2005	2242	2246
50.12	56.05	56.15
5		

β Herculis

16 25 1

+21 45

m	m	R	R	W
40 3 11.1	4 28.1	27.9	28.0	28.1
27.2	44.2	44.8	44.3	44.0
34.9	51.1	51.3	51.0	50.9
26.0	42.9	43.1	43.3	42.9
992	1663	1671	1666	1659
24.80	41.57	41.78	41.65	41.47
	41.52	41.71		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

2 Serpentis

15 38 18
+6 48

	R	R
40 1 28		26
	19.2	19.1
	28.2	28.3
	16.8	16.4
	6.70	6.67
	16.75	16.67
	16.71	

δ Ophiuchi

16 8 0
−3 23

	m	m	R	R	M
50 1	17.9	2 15.1	15.0	15.2	14.9
	34.9	32.7	33.0	32.9	32.8
	46.1	43.9	44.0	43.9	43.4
	31.9	29.9	30.6	30.5	30.1
	13 08	12 11	12 26	12 25	12 12
	32.70	30.27	30.65	30.62	30.30
		30.28	30.63		

Lost 1st 3 series

ζ Ophiuchi

16 30 30
−10 19

	m	m	R	R	M
45 1	50.1	3 12.9	12.8	12.6	12.4
	6.5	28.1	28.3	28.9	28.1
	20.5	42.0	42.2	42.3	41.9
	5.1	26.9	26.3	27.0	26.4
	26 22	10 99	1096	1108	1088
	5.55	27.47	27.40	27.70	27.20
		27.37	27.55		

η Ophiuchi

17 3 27
−15 34

	m	m	R	R	M
0 1	57.1	3 7.0	6.8	7.1	7.0
	5.8	25.3	25.4	25.5	25.3
	26.7	36.1	36.0	36.1	35.9
	12.1	22.2	22.6	23.0	22.2
	28.17	906	908	917	904
	10.42	22.65	22.70	22.92	22.60
		22.62	22.81		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Oct. 1

ζ Herculis

17 9 18
+14 32

m	m	R	R	m
55 1 42.9	2 57.5	51.9	51.8	57.9
59.4	7.9	8.3	8.7	8.1
9.1	18.1	18.2	18.0	18.1
5.8	4.9	5.2	5.6	5.1
23 72	26 24	26 36	26 41	26 32
59.30	5.60	5.90	6.02	5.80
	5.70	5.96		

α Ophiuchi

17 29 19
+12 39

m	m	R	R	m
45 4 14.9	50 0 33.1	33.2	33.2	33.9
30.9	48.9	48.9	49.0	48.3
41.0	59.1	59.2	59.2	59.1
28.2	47.4	47.2	47.4	47.1
11 50	18 85	18 85	18 88	18 90
28.75	47.12	47.12	47.20	47.25
	47.18	47.15		

β Can. Min.

7 20 35
+8 32

m	m	R	R	m
55 1 21.9	2 33.9	34.0	33.7	34.1
34.1	47.1	47.7	47.8	47.1
41.2	53.0	53.0	53.4	53.4
35.9	47.2	48.0	47.7	48.1
18 31	18 12	18 27	18 26	18 27
33.27	45.30	45.67	45.65	45.67
	45.48	45.66		

α Geminor.

7 26 52
+32 9

m	m	R	R	m
15 4 47.5	20 1 6.1	5.9	5.9	6.9
58.1	15.8	16.2	16.2	15.9
4.9	22.1	22.4	22.9	23.1
2.1	21.1	21.0	21.1	21.1
23 26	6 51	6 55	6 61	6 60
58.15	16.27	16.27	16.52	16.50
	16.38	16.39		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

μ Geminor.

6 15 38
+22 34

		R	R	R
50	3	57.7	57.0	57.0
		10.8	10.7	10.9
		12.8	12.4	13.2
		12.2	12.2	12.0
		2735	2723	2731
		8.37	8.07	8.27
		8.24		

γ Geminor

6 30 43
+16 30

		m	m	R	R	m
55	3	15.1	4	30.9	31.2	31.0	30.9
		17.9		43.8	43.8	43.8	43.1
		35.8		50.9	50.5	50.8	50.9
		29.1		45.1	45.1	45.0	45.0
		979		1707	1706	1706	1699
		24.47		42.67	42.65	42.65	42.47
				42.57	42.65		

ζ Can. Min.

7 32 58
+ 5 32

		m	m	R	R	m
55	0	57.1	2	19.9	19.9	19.9	19.9
		12.9		34.9	34.9	34.8	34.8
		17.5		39.4	39.2	39.2	39.1
		12.9		35.1	35.2	35.4	35.1
		2804		1293	1292	1293	1289
		10.10		32.32	32.30	32.32	32.22
				32.27	32.31		

β Geminor

7 37 55
+28 19

		m	m	R	R	m
5	4	43.0	10	17.2	6.9	7.1	7.1
		53.1		17.7	17.8	18.0	17.9
		6.9		22.0	21.9	21.9	21.9
		56.1		20.9	20.8	20.8	20.9
		21 91		6.78	6.71	6.78	6.78
		54.78		16.95	16.85	16.95	16.95
				16.95	16.90		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

1879 Oct. 1

ε Leonis

9 38 59

+24 20

m		m	R	R	W
5 3	54.9	10 0	21.9	21.8	21.4	22.1
	7.5		32.9	33.0	33.1	32.3
	11.7		34.9	37.8	37.2	38.0
	9.4		35.4	35.8	35.9	36.0
26	35		81	84	76	84
	5.87		32.02	32.80	31.90	32.10
			32.06	32.35		

ζ Leonis

10 1 56

+12 33

m		m	R	R	W
55 0	0.1	1	22.1	21.6	22.0	22.0
	12.9		34.8	35.2	35.4	34.5
	19.5		41.9	41.7	41.9	42.0
	14.1		36.1	36.8	36.3	36.9
	66		1349	1353	1356	1357
	11.65		33.72	33.82	33.90	33.92
			33.82	33.86		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R

γ Leonis
10 9 57
+24 1
m

25 2 38.3
49.1
53.9
57.8
1931
48.27

γ' Leonis
10 13 18
+20 27
m

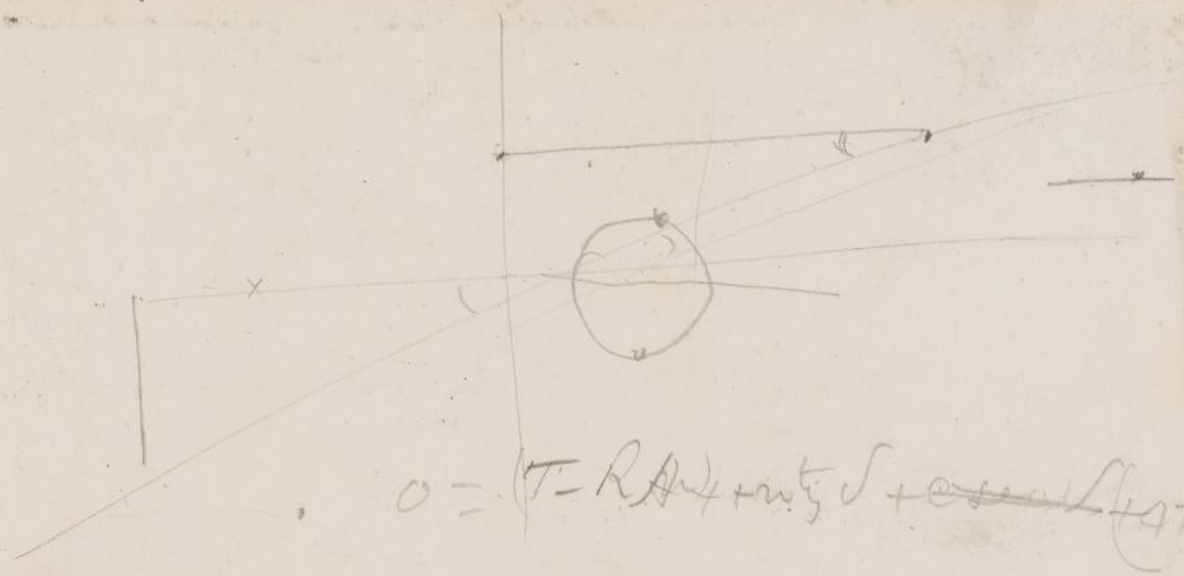
0 1 31.1
42.9
48.9
45.1
80
42.00

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

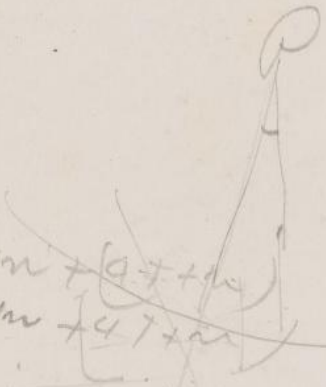
1879phae.proj.1401R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae.proj.1401R



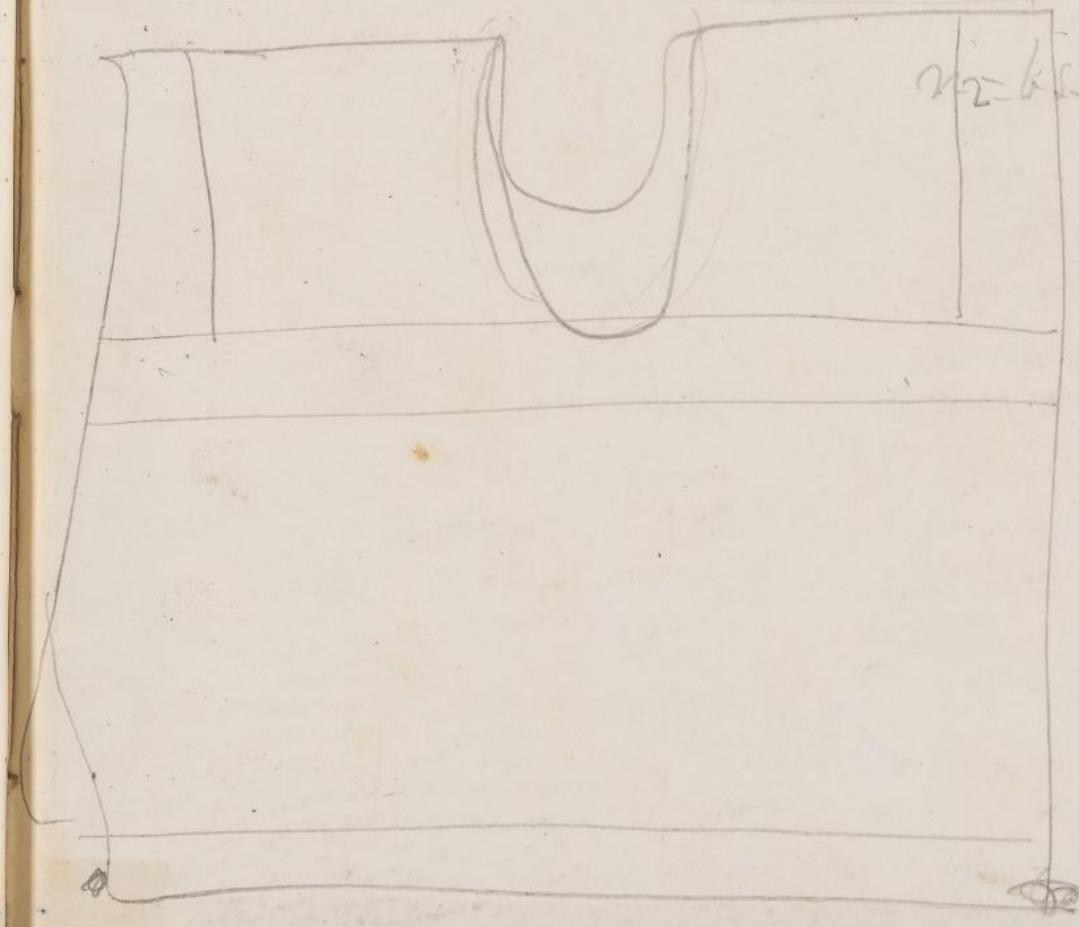
$0 = (T - RA)4 + n\zeta_3 S + \cancel{\quad} L(4T + n$



$0 = -101 + 15n + (4T + n$

$0 = 42.84 + 6.97 In + 4T + n$

$n_2 - b_{se} e\varphi - n\zeta_3 \varphi$



668

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1879phae..proj..140R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System