

KG
11305
137

F.8

Best Transit,
Nov. 5th to
1857—

KG 11365.137

Jan 16th 1849 (See Transit Book)

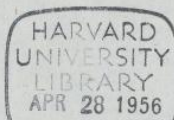
Value 1 div of level of West Transit (S & S)

1".37 —

KG 11365.137

Lower culmination. Lamp West, order of wires

1-2-3-4-5 1/2



1857

West TransitNov-4/5 Am. Illumination West
α Leonis. 2D-29.42 Read 29.40

194- 43 2964-10.5.0
 54 194-10.7.32.4
 10.03.30.3
 6.2
 2.32.4

16.2

10.03.29.94

10.03.27.94

2.32.4

10.00.55.54

10.00.56.04

.50

10.03.27.94

10.00.27.09

+3.00.85

Chr J with I.C.

2964

2964-11.45.0

194-11.47.31.9

B Leonis 11.44.30.5 mid wire

-2

-2.31.9

11.41.56.6

I.C-11.41.56.8 Chr J.

2964-.2

Polaris S.P. 194 - Ill. west - Star sometimes unsteady

1 wire lost

2-12.46.07.8

3-12.47.46.0

4-12.49.21.5

5-12.51.03.0

6-12.52.40.3

7-12.55.58.3

8-12.57.32.5

9-12.59.08.0

10-13.00.47.2

11-13.02.29.0

12-13.05.38.5

13-13.07.18.5

14-13.08.53.5

15-13.10.31.0

16-13.12.11.5

17-13.15.27.0

18-13.17.00.5

19-13.18.34.5

20-13.20.13.0

21-13.21.47.0

22-13.25.03.0

23-13.26.42.5

24-13.28.26.0

25-13.30.04.0

26-13.31.43.0

27. last wire omitted

6.33.0

360

393.0

2.59439

28.91.12.6 8.41205

10.15 = 1.00644

Reading for

Polaris S.P. 2D.40.52.50

1" wire 40.53.40

Level

W 2

+130-125

+130-125

+130-125

value of idis of level
11.87

127-127+

128-126+

128-126+

West end too high - 1.5

2964-13.44.0

194-13.46.32.0

Ill. west

B. west. min 5 last wires

5.56.3

6.06.0

6.15.2

14.56.125.0

14.57.03.3

Nov. 6/7 Am.

Illumination East-

Chron 2964

Polaris S.P. unsteady

Polaris S.P. I D 49.07

First 5 wires not including the outside one last -

20	12.53.10.5 + 4.66
19	54.48.0
18	56.26.6
17	58.05.0
16	59.36.5
15	13.02.56.0
14	04.27.6
13	13.06.06.4 mid
12	07.44.5
11	09.25.4
10	12.33.5
9	14.12.3
8	15.36.4
7	17.29.0
6	19.09.5
5	22.22.0
4	24.00.0
3	25.41.5
2	27.17.5
1	19.29.02.0

Striding Level

East	West
133	+133
133	+133
+133	132
+133	132

2964 7/8 at Polaris
 13.06.27.0
 - 39
 13.05.48.0
 13.06.18
 30

November 7/8 am Illumination East

(SP 2)

wire 1 2964 Polaris faint and unsteady

84	12	36.58.7 - 4.45
25	8	43.36.8
24	8	12 43.16.0
23	4	46.59.0
22	3	12.48.39.0 =
21	6	12.50.20.5 =
20	8	12.53.31.8 =
19	8	12.55.07.5
18	9	12.56.46.3
17	10	12.58.24.0 =
16	11	12.59.53.0 =
15	12	13.03.10.5
14	13	13.04.49.5
13	14	13.06.27.0 mid.
12	14	13.08.03.5
11	15	13.09.42.5
10	16	13.12.48.5
9	17	13.14.29.8
8	18	13.16.11.5
7	19	13.17.49.4
6	20	13.19.24.8
5	21	13.22.36.5
4	22	13.24.18.0
3	23	13.25.58.2
2	24	13.27.34.0
1	25	13.29.16.8
84	26	13.33.45.0

1851.

West Transit

L.S. - Began 12^h-15^m

(Spring Governor?)

2 C Star & fast?

Nov-10/11 Am

Polaris S.P.

J'll west

Reading 40.53.50 E.C. 12. 12.0

Time

(Appears to be by 194?)

194-12. 15.7

0 12. 39. 15.5 =

24p

1 12. 45. 46.5 =

2 12. 47. 26.5 =

3 12. 49. 60.0

4 12. 50. 40.4

5 12. 52. 25.0 =

6 12. 55. 36.5 =

7 12. 57. 09.8

8 12. 58. 43.5 uncertain; misty

9 13. 00. 28.0 =

10 13. 02. 07.9 =

11 Lost -

12 13. 06. 56.0

13 13. 08. 34.5 mid

14 13. 10. 12.7

15 13. 11. 46.5 =

16 13. 15. 04.0 =

17 13. 16. 35.0

18 13. 18. 12.5

19 13. 19. 51.0

20 13. 21. 28.0 =

21 13. 24. 41.5 =

22 13. 26. 22.0

23 13. 28. 02.0

24 13. 29. 41.5

25 13. 31. 20.4 =

26 13. 37. 58.3

u L⁺ 49. - 31L L⁺ 69. - 61

13. 08. 34.5

Polaris

10/11 Am observed by 194 - Fast-2. 14.5

11. P.M. - observed with 194 - - 3. 15.5

12 Am observed with 2964 - - 55.0

194 gaining daily - 2.0

2964 - gaining daily - 3.0

Nov 11th P.M.

(2964?) (194)

Polaris above
first main omitted, all west

0	
25	0 .. 45 .. 18.5
24	46 .. 59.5
23	48 .. 39.0
22	50 .. 26.0
21	52 .. 02.0
20	55 .. 10.5
19	56 .. 52.0
18	58 .. 27.3
17	1 .. 00 .. 05.2
16	01 .. 36.5
15	04 .. 52.5
14	06 .. 30.0
13	08 .. 07.5 mid wire
12	09 .. 44.0
11	11 .. 26.5

very very unsteady
Reversed to all East

16	1 .. 14 .. 57.0
17	16 .. 21.7
18	17 .. 58.5
19	19 .. 36.5
20	21 .. 16.2
21	24 .. 30.0
22	26 .. 12.0
23	27 .. 48.0
24	29 .. 32.0
25	31 .. 10.8

Ill West-		Tube att. levels
Long Level		
East-	West-	Upper
+135	139	East West
+136	140	50 36
+136	141	Lower
135	+142	69 - 63
136	+141	
136	+141	

The attached level which is on the side of the axis next the eye piece is designated by "Lower" and that on the other side next the object glass "Upper."

Ill East- Tube		att. levels
Long Level		
East-	West-	Upper
+ 138	139	East West
+ 138	139	42 43
+ 139	139	Lower
138	+ 140	69 66
139	+ 139	
139	+ 139	

Mr Sadler and operator came out and worked.

1851,

964- Nov. 12th Am
Polaris L.P.

Ill. East.

Summ. Ill. East
E W
U-44 44.5
L 68 68.3

0 -- 12 .. 36 .. 33.8 = 4 beats

EC - 12 .. 57 .. 1

25 43 .. 09.5

2964-12 .. 51 .. 44.6

24 44 .. 57.5

23 46 .. 33.0

22 48 .. 13.2

21 49 .. 53.0 =

20 53 .. 09.0

19 54 .. 44.0

18 56 .. 20.6

17 57 .. 58.2

16 59 .. 33.3

15 lost one wire, 1st of 3 tally.

14 13 .. 04 .. 25.0

13 13 .. 06 .. 03.3 mid. wire

12 07 .. 39.5

11 09 .. 19.0 Reading 49.4 Z.D.

Reversed last to Ill. west

10 13 .. 12 .. 26.5 Reading 40.53.30 = 49.06.30

9 14 .. 00.8

8 15 .. 27.5

7 17 .. 17.0

6 18 .. 57.3

5 lost one wire of 5 tally

4 13 .. 23 .. 43.5

3 25 .. 24.0

2 27 .. 03.7

1 28 .. 46.5

0 13 .. 35 .. 23.0

EC - 13 .. 39 .. 0

2964-13 .. 39 .. 45 Coincidence

Table
Summ. Ill. West
E W
U 57 - 33
L 69 - 63

November 11
 Stars observed with west-transit by breaking circuit of the
 Electric Telegraph

B.A.C.

No 649 v C & B
 706 v Cambr.
 761 v C & B
 829 v C & B
 912 1st wire lost -
 1210 v C & B
 1266 v C & B
 1287 v C & B
 1364 v C & B
 1476 v C & B

1857.

Nov. 12th - P.M. Bangor & Cambridge observations
 Tube level readings
 Ill. West. Expt. Temp. - 26

Upper Lower
 E W E W

45.40 ~ 68.65 Star No. 352 Zenith catalogue

Illumination East

U L

E W ~~E~~ W

46 - 38 ~ 67.65 Stars No. 404 - 441 - " -

Illumination West

U L

E W E W

46 ~ 38 69 - 63 - Stars No. 587 & 649 ~ No. 587 very faint & above horizon

Illumination East

U L

E W E W

45 - 39 64 ~ 68 no stars, Kepler Clock at Bangor stop'd beating.

Mr Rowe and Mr. came out and work'd

1857. November 11th P.M. Bangor and Cambridge observations for
difference of Longitude - by Electric Telegraph Records.

Cambridge Transit. Level Readings

Illumination East. B. A. Catalogue

Upper	Lower	
East West	E W	
40 — 47	67 — 69	Star No. 649 — Therm. 21°

Illumination West

Upper	Lower	
E W	E W	
45 — 43	69 — 67	Star No. 706 & 760 — 761 faintly seen

Illumination East.

Upper	Lower	
E W	E W	
43 — 44	67 — 68	Star No. 912 - gong signal after the observation lost the first wire. 967 not seen, found an error in the Tables, obs. 1210 instead

Illumination West

Upper	Lower	
E W	E W	
48 — 42	69 — 68	Stars No. 1266 and 1287

Illumination East

Upper	Lower	
E W	E W	
- 57	68 — 69	Stars. 1364 and 1476.

Striding Level

East	West
143	— 141 +
142	— 142 +
142	— 142 +
+ 142	— 142
+ 142	— 142
+ 142	— 142

857-

November 17/18th Am Illumination West Chro No 194 -
 194. Polaris S.P. Temp 32° 194 Estimate of path - 3rd 26.

0 - 12 .. 39 .. 37.8

1 12 .. 46 .. 07.0 =

2 47 .. 46.8

3 49 .. 27.0

4 57 .. 03.0

5 52 .. 43.5 =

6 55 .. 59.5 =

7 57 .. 34.0

8 59 .. 11.2

9 13 .. 00 .. 50.6

10 .. 02 .. 32.0

11 =

12 13 .. 05 .. 44.2

13 07 .. 20.3

14 08 .. 58.0

15 10 .. 36.0

16 12 .. 15.0

17 15 .. 22.5 =

18 17 .. 04.3

19 18 .. 44.5

20 20 .. 19.6

21 21 .. 56.0 =

22 13 .. 25 .. 11.5 =

23 26 .. 49.3

24 28 .. 29.3

30 .. 07.0

31 .. 45.0 =

13 .. 38 .. 16.5

star beautifully
defined

Reversed to N. East.
Reads 49.3° Ill East.

2964 - 12 .. 25 .. 0

194 - 12 .. 27 .. 16 coincide

Long level N East

+ 135.2 135

+ 135.5 134.5

+ 135.3 134

734.5 - 135 +

135 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

134.5 134.5 +

2964 - 13 .. 40 .. 0

194 - 13 .. 42 .. 15.7

Long level N East

East West

+ 136.0 131.0

+ 135.0 131.0

+ 135.0 131.0

136.0 129.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

135.0 130.0 +

Tube Levels

N L

E W E W

43 - 36 67 - 59

Adopted No. 202 in place of No. 2964. for observing.

Nov. 17/18 Am Sec East.

Arcturus
11.332
11.63
ff

Ready for Arcturus 67.32

194-14.18.0
202-14.13.82.6

14 .. 12 .. 21.7 mid

2 .. 54.5

14 .. 13 .. 09.8

5 11 .. 47.2

2 .. 21.40

-2

14 .. 12 .. 19.40

10 .. 08 .. 52.3

B + 3 .. 27.6

C.T. + 3 .. 28.7
1.6

Put back No. 194 - 3 minutes, exactly.
Put forward No. 202. one minute exactly

E.C. Slow by C.T. obs.

E.C. - 14.35.0

E.C. - 14.36.0

194 - 14.35.49.6

202 - 14.36.22.7

B Nos. min.

No 194 Sec East - Ready - 32.21

14 .. 48. 46.1

Last min - 14.54.32.3

19 .. 24.7

33.6

44.0

53.9

3.7

22.7

32.2

41.3

57.2

51 .. 2.0

20

29.6

14 .. 51 .. 39.0 mid

48.5

58.2

17.6

26.8

36.2

45.9

52 .. 55.5

14.3

24.0

33.4

43.4

53.4

will seen and steady. These are fair samples of what is done in rather hurried observing with good definition, by the old method of recording.

Like Level

u L

E W E W
42-34 - 63-59

Deviation west of North

2964 = +1.22 29.5.

to right, No working Eastward, bad weather at Bangor and the Nova Scotia line out of order.

Baine operator came out.

November 18/19 Am.

E.C. 12.30.00
202-12.30.25.7

E.C. 13.31.00
202-13.31.25.8

Chron Ill East
202 and E.C.
Polaris

12.42.29.5 - 4 hurs

44.07.0

45.47.3

47.26.5

12.49.07.0 =

12.52.19.5

12.53.57.4

12.55.36.5

12.57.12.2

12.58.45.0 =

13.02.03. =

13.03.38.8

13.05.17.0 mid

13.06.53.0

13.08.36.0

Ill West

13.11.51.0

13.22.0

13.14.57.8

13.16.37.5

13.18.15.0

— hurs

13.23.06.1

13.24.47.5 - 3

26.29.0

13.28.09.0 7.40

Ill East
Long level
East West

141 +136

141 +136

141 +136

+141 136

+141 136

+141 135

Ill West -

East - West -

+136 137

+136 137

+136 137

136 +136

135 +136

135 +136

Nov. 18/19 Am

Lower transit of Polaris observed with Chron. 202 and
Spring Governor E.C. For time of transit - log 202 see
opposite page

Ill East-

E.C.

Polaris S.P.

12..42..01.7

43..39.1

45..19.2

46..58.3

48..39.1

51..52.5

53..29.8

55..08.5

56..44.2

58..17.1

13..01..35.0

03..11.0

13..04..49.0

06..25.2

08..08.0

Ill West-

13..11..16.5

13..19..54.2

14..30.1

16..09.8

17..46.9

20..30.4

21..05.0

22..38.3

24..19.5

26..01.1

13..27..41.1

Ill West

E.C.

Arcturus

14..07..49.2

7..50.1

7 52.7

7 55.5

7 58.3

8 03.9

8 06.1

8 09.0

8 11.5

8 14.3

8 19.4

8 22.0

8 24.9

8 27.6

8 30.2

8 35.7

8 38.1

8 41.0

8 43.6

8 46.2

8 51.7

8 54.4

8 57.2

8 59.8

14 09 02.4

ee

November 11

Transits of stars observed in connection with Bangor
Time at Cambridge by Electric Clock

h m s
 3^h 33^m 42.5 commenced gong signal 3^h 44^m 15^s com. gong signal.
 34^m 48.5 2nd gong signal

E.C. 3^h 35^m 11.50

15.25

19.20

23.50

27.10

34.75

39.00

42.80

46.70

50.45

57.90

6^m 01.95

05.75

09.80

13.50

21.30

25.50

29.30

33.40

37.10

45.70

48.40

52.45

56.15

3^h 36^m 59.803^h 44^mE.C. 3^h 44^m 38.15

41.75

45.35

49.05

44 53.10

45 07.20

04.80

07.80

12.70

15.60

22.45

26.50

30.30

33.90

37.50

45.25

49.90

52.50

56.09

45 59.90

46 07.10

11.00

14.40

18.45

3^h 46^m 22.25

B.C. 492
- 25 mins -

Nov 26 '57

Illumination W

	W	E
U.	40	43.8
L.	62.	69.

McE. McE. East
 (on Polaris Dec. 1st 202)
 1
 13... 01... 17
 2... 58
 4... 31 mid wave

up
 2 60 52.50
 55 29 40.52

2
 64 - 39

Remains to 84 East
 13... 10... 50
 12... 20

McE. East
 up
 2 60
 48 35

Polaris

Dec 1st 1851

Elimination West.

Long signal before the last two wires second tally M.W.

	Lower	Upper
Alt 43.52	E 52	54
	W 29.5	37

	Striding Level	
1 st Ready	+ East 140	+ West 138.
2 ^d Ready	139.5	137.5
3 ^d	139.5	137.5

M.W.

Reverse

1 st Ready	+ East 140	W 138
2 ^d	139.5	138
3 ^d	140	137.5

Begin with the
two last wires of the 4th tally
& five wires of last tally

Reverse - M East

M East

	Long Striding Level	
1 st Ready	+ East 142	W 136
2 ^d	142	136
3 ^d	142	135.5

Reverse Long level

1 st	East 143	+ West 135
2 ^d	142.5	134.5
3 ^d	142.5	135

Lower	E 48	W 33
Upper	53	16

Tube Level Illumination West

~~Star~~ * 829

W 47. E 52.5
W 40 42.5 lower

Star 912

Upper E 52 W 48
Lower 46 35.5

Ill. East

Star 1026

Ill. East

Upper E 53 W 48
Lower 48 34

Star 1266 Ill. West

Upper E 56 W 45
Lower 45 37

Star 1287 Ill. West

Upper E 57 W 44
Lower 45 37

Star 1320 Ill. East

Upper E 52 W 48
Lower 45 37.5

Star 1364 Ill. East

Upper E 53 W 52
Lower 42 41

Star 1476 Ill. West

	E	W
Upper	55	46
Lower	43	39

Star 1540 H₂ N

	E	W
Upper	52	49
Lower	45	36

Star 1602 H₂ EastStar 1663 H₂ East

	E	W
Upper	43	39
Lower	56	44

Star 1936 H₂ West
3 last tallies = 15 wingsStar 1963 H₂ West
double star

	E	W
Upper	54	45
Lower	46	35

Star 2044 H₂ East
obs. above, wings.Star 2200 H₂ East
$$\begin{array}{r} 37.05 \\ 16.48 \\ \hline 20.24 \end{array}$$

Ill East

Dec. 1/2⁰ Am

Palanis S.P

Began at 3 wire of 1st tally - set L.D. -

ΣC - 12.29.0

202 - 12.29.06.5 win

50.53

49.06

202

23	12.44	36.2
22	46	18.5
21	47	56.3
20	51	10.0
19	52	46.0
18	54	29.0
17	56	02.5
16	57	35.5
15	13.00	57.0
14	02	28.5
13	04	07.3 mid
12	05	25.5
11	07	24.2

Lark

Reverses to Ill West

12 .. 07.0

13 .. 46.2

15 .. 24.0

16 .. 59.6

20 .. 14.3

21 .. 53.8

23 .. 34.0

ΣC - 13.28.0

202 - 13.28.6.5 coin

Long - Ill East

W E

+139 - 147

+139.5 - 147

+139 147

139 - 147 +

139 - 147.5 +

139 - 147 +

12.29.6.5
ΣC. - 17.7.3

Ill West

W E

+142 - 144

+141.5 - 144

+141.5 - 144.5

142 - 144 +

141.5 - 144.5 +

142. - 143 +

Antares

Lower

Upper

Σ - W

Σ - W

43 - 42

54.5 - 49

No 202.

Dec 3/4 Am Slow 14.52

Rate of 202. being - 3.94

Dec 1st Am Slow - 3.78

Dec - 1/2 Am Slow 7.72

1857. Dec-1/2nd Am

2 hrs. min. lower cal.

Lic. B- No 202

Lamp West: Star unsteady and faint
7. 57. 31.0 first wire of second tally

53. 33.0

55. 35.5

57. 45.0

59. 53.0

8. 03. 56.0 interval

06. 05.0

08. 20.0 mid. wire

Reversed to Lamp East

8. 12. 50 last wire, one wire lost of middle tally.

17. 00.5 interval

19. 02.0

21. 19.5

23. 20.5

25. 21.0

Long. Level
Lamp WestW E
+139 - 141

+139 - 140.5

+139 - 140

Tube levels

ill. west W

upper 86 - 37

lower 54 - 30

Lamp East

W E

136 - 144

137 - 144

136 - 144

20. 08. 27
20. 11. 3
3 -

December 5/6 Am.

86 12.34.00
202 12.34.12.8

202
L.C. Bolan's Ill West—

12.40.42.3 - 415

12.42.22.2

43.58.5

45.88.8

12.47.18.0

12.50.38.8

12.52.09.0

53.46.2

55.26.5

12.57.08.0

13.00.14.0

01.53.8

13.03.31.0 mid

05.07.9

06.47.0

Ill East 55.8

13.09.53.8

11.37.3

13.13.22.4

13.14.56.8

13.16.31.0

13.19.49.0

13.21.27.0

13.23.09.0

24.43.2

13.26.21.5

Ill West
Long Level

157.0 + 148.5

151.0 + 149

151.0 + 149

+ 150.5 149

+ 150.0 148.5

+ 150.0 149.0

Ill East

E West
+ 152.5 146.0

+ 152.0 146.0

+ 152.5 146.0

153.0 + 146.0

152.5 + 146.5

152.0 + 146.0

$$\begin{array}{r} 6.5 \\ 12.8 \\ 4 \overline{) 6.3} \quad -1.32 \\ \quad 3.94 \\ \quad \quad 2.62 \end{array}$$

$$\begin{array}{r} 202 - 12.34.12.8 \\ \quad \quad 22.22 \\ \hline 12.34.35.02 \\ \text{S.E. } 12.34.00 \\ \hline 6^{\text{th}} \text{ Am. Slow } 35.02 \\ \hline 2^{\text{nd}} \text{ Am. Slow } - 16.2 \\ \hline 4 \overline{) 20.8} \quad 5.2 \end{array}$$

December 6 Am.
 202
 Ill West-
 Polar's U.C.

25	00	46	20.2	
24		48	05.0	- 1.44.8
23		49	44.0	- 1.39.0
22		57	23.8	- 1.39.8
21		54	36.0	- 3.12.2 = 1.36.1
20		56	10.0	- 1.34.0
19		57	51.5	- 1.41.5
18		59	29.0	- 1.37.5
17	1	01	01.7	- 1.32.7
16		04	15.0	- 3.13.3 = 1.36.6
15		05	54.9	- 1.39.9
14		07	34.5	- 1.39.6
13		09	09.0	- 1.34.5
12		10	50.5*	- 1.41.5
11		13	54.0	- 3.03.5
10		15	39.5	- 1.45.5
9		17	17.3	- 1.37.8
8		18	54.5	- 1.37.2
7		20	31.4	- 1.36.9
6		23	47.5	- 3.16.1
5		25	25.0	- 1.37.5
4		27	05.2	- 1.40.2
3		28	41.0	- 1.45.8
2	1	30	21.2	- 1.40.2

December 5/6 Am.

Polaris L.C.
Ill West -
E.C.

Record on Spring governor.

E.C.
Arcturus
Ill East -E.C.
ε Bootis
Ill West -

12,, 59.59.20
 13,, 01.39.25
 3,, 16.30 mid
 4,, 53.25
 6,, 32.40
 Ill East - 9,, 38.90
 11,, 22.70
 13,, 07.40 -
 14,, 42.20
 16,, 16.25
 19,, 34.25
 21,, 12.45
 22,, 54.10
 24,, 26.75
 26,, 06.90

14,, 07.27.75
38.55

41.10 - 2.55
 43.80 - 2.70
 46.80 - 3.00
50.15 - 3.35
 54.55 - 4.40
 57.30 - 2.75
 08 00.80 - 3.50
 02.80 - 2.00
 05.45 - 2.65
10.35 - 4.90
 13.30 - 2.95
 15.45 - 2.15
 18.55 - 3.15
21.25 - 2.70
 26.70 - 5.45
 29.25 - 2.55
 32.15 - 2.90
 34.55 - 2.40
 37.20 - 2.65
42.65 - 5.45
 45.35 - 2.70
 47.90 - 2.55
 50.80 - 2.90
03.50 - 2.70

14, 09,, 64.4

14,, 37.01.90

12.95
 16.20
 19.25
 21.95
 24.65
 30.35
 33.25
 35.95
 39.00
 41.75
 47.30
 50.20
 53.10
 55.80
 58.80
 38 04.25
 07.25
 10.10
 13.20
 16.15
 21.50
 24.25
 27.15
 30.15
 32.80

14, 38,, 44.15

November 11 *Transits of stars at Bangor & Camh*
R.A. 649. *Time by Kessel's clock*
Bangor Lamp *Cambridge Lamp East.*

1. 59. 20.15		2. 08. 45.15
23.50	-3.40	48.65
26.85	-3.35	51.65
29.80	-2.95	54.50
32.30	-3.50	57.90
39.75	-6.45	
42.90	-3.25	2. 09. 04.30
46.45	-3.15	07.40
49.60	-3.20	10.30
52.60	-6.90	13.60
59.70	-3.40	16.75
2. 00. 03.10	-3.25	23.00
mid 2. 00. 06.35	-3.15	26.40
09.50	-3.05	29.30
12.55	-6.35	32.50
18.90	-3.85	35.75
22.75	-3.05	42.00
25.60	-3.40	45.10
29.20	-3.65	48.00
32.85	-6.20	51.90
39.05	-3.60	54.60
42.65	-3.40	2. 10. 00.70
46.05	-3.05	03.90
49.10	-3.45	04.20
2. 00. 52.55		

December 8/9 Ann.

Ill. West E.C. A returns 15 last wires obs.	Ill. West E.C. E Burtis	E.C. B Wren Minoris Ill West	E.C. a Coram. Borealis Ill East
14.07.56.6	14.36.59.00	14.48.09.2	13.26.53.0
59.2	01.80	19.4	56.0
14.08.02.0	04.80	29.6	59.0
04.6	07.70	39.0	7 01.5
07.45	10.53	8 48.7	04.5
12.5	16.20	9 07.4	10.2
15.25	19.08	17.2	12.9
18.05	21.90	26.9	15.6
20.80	24.70	36.6	18.5
23.40	27.30	49 45.3	21.4
28.70	33.10	50 04.5	26.9
31.45	35.90	14.0	29.9
34.10	38.95	23.6	32.5
36.70	41.40	33.2	35.5
14 08 39.40	44.40	50 43.2	38.3
	50.00	Ill East	44.1
	53.00	—	46.7
	55.80	—	49.5
	7 58.60	—	52.4
	8 01.40	30.65	7 53.1
	07.10	40.25	8 00.8
	10.20	59.10	8 03.7
	12.90	08.90	8 06.5
	15.60	18.65	8 09.4
14.38. 18.40		28.50	15. 28. 12.3
22.40	14.52. 38.30		

December 10 Pm

Ill East

Long level

East West-

139.0 +128.0

139.0 +122.8

138.8 +128.0

+139.0 122.3

+138.0 122.0

Adjusted the axis of Zebrap

East-

West-

+129.0 130.0

+130.0 129.9

+129.8 130.0

127.0 +133.7

127.2 +133.5

127.8 +133.0

December 10/11 Am.

Ill East-

Polaris L.C.

202

Long level
East West

12,, 42,, 32.7 - 466	+ 141.0 148.0
44,, 16.0	+ 141.0 149.0
45,, 54.5	+ 142.0 149.0
47,, 82.8	141.0 + 151.5
50,, 49.7	142.0 + 151.6
52,, 28.0	142.3 + 151.8
54,, 04.0	
55,, 40.6	
57,, 12.5	
13,, 00,, 29.0	
02,, 04.8	
13,, 03,, 45.0 mid	
05,, 18.0	
07,, 00.5	
10,, 09.0	
11,, 47.5	
13,, 31.8	
15,, 07.5	
16,, 48.7	
19,, 57.8	
21,, 34.5	
23,, 14.2	
24,, 52.0	
13,, 26,, 32.5	

B Wras Minoris

Ill East

202

31.0 6 min
40.0
49.0
55.5
09.5
27.9
37.8
14,, 50,, 47.5 mid
57.2
14,, 51,, 06.5
Ill West
41 23 min
51 24
53 06.0 25

December 11 P.m.

Ill. West E.C.	Ill. West E.C.	Ill. East E.C.	Ill. East E.C.	EC 13. 25. 00
α Andromeda	γ Pegasi	α Cassiopea	Polaris	202.13. 25. 36.4
23. 58. 52.50	00. 03. 50.00	00. 29. 45.50	00. 52. 15.9	
9 04.00 - 2.90	4 00.40 - 2.70	03.54 - 4.56	2 53.0	
06.90 - 2.90	03.10 - 2.75	08.10 - 4.70	3 34.3	
09.80 - 3.05	05.85 - 2.55	12.80 - 4.10	57 13.6	
12.85 - 2.65	08.40 - 2.70	16.90 - 4.50	23.5	
15.50 - 5.50	11.10 - 5.10	21.70 - 8.70	04.7	
21.00 - 3.10	16.20 - 2.55	30.40 - 4.40	42.0	
24.10 - 2.90	18.75 - 2.65	34.80 - 4.65	19.0	
27.00 - 2.75	21.40 - 2.65	39.45 - 4.55	58.4	
29.75 - 2.65	24.05 - 2.25	44.00 - 4.50	56.1	
32.40 - 5.50	26.80 - 5.60	48.50 - 4.65	36.2	
38.20 - 2.80	31.90	57.15 - 4.85	18.35	
41.00 - 3.00		02.00 - 4.20	57.50	
44.00 - 2.75	37.00 - 2.40	06.20 - 4.70		
46.75 -	39.40 - 2.65	10.90 - 4.20		
47.70 -	42.05 - 5.23	15.10 - 9.10		
9 55.20	47.28 - 2.72	24.20 - 4.10		
00. 00. 01.20 - 2.80	50.00 - 2.70	28.30 - 4.70		
04.00 - 2.85	52.70 - 2.30	33.00 - 4.50		
06.85 - 5.40	55.00 - 3.00	37.50 - 4.20		
12.25 - 3.05	04. 58.00 - 4.90	41.70 - 9.05		
15.30 - 2.90	5. 02.70 - 2.70	50.75 - 4.47		
18.20 - 2.80	05.60 - 2.74	55.22 - 4.48		
21.00 - 3.00	08.34 - 2.46	59.70 - 4.80		
00. 00. 24.00	10.80 - 2.70	04.50 - 4.50		
	13.50 -	09.00 -		
	00. 05. 29.70	00. 32. 27.00		

December 11 P.m.

Ill West		Ill East	
Long level		Long level	
West	East	West	East
150.3	+148.8	+146.0	153.7
149.8	+149.8	+146.3	153.8
150.2	+149.5	+146.3	154.0
150.0	+149.2	+146.3	153.5
149.5	+150.2	+146.5	153.8
+150.0	150.8	148.0	+153.0
+150.0	150.4	147.2	+153.0
+150.0	149.8	147.4	+152.6
+150.7	149.4	147.8	+153.0
+150.3	149.7	147.4	+153

Ill East-			
Tide levels			
upper		lower	
E	W	E	W
51.0	61.8	44.0	52.0

Ill West		after reversal	
Tide levels		Polaris.	
E	W	E	W
67.0	46.0	60.8	36.0

Long level	
West	East
150.8	152.0

857

December 16 Pm

Long level
Sll. East

West	East
141.0	153.1+
141.2	153.2+
141.5	153.2+
142.3+	153.0
142.3+	153.1
142.4+	153.2
<u>610.7</u>	<u>611.4</u>
141.78	153.23
	141.78
	<u>211.45</u>
East too high	5.82

No. 1071 B.A.B.

Tube levels Sll. East			
Upper		Lower	
East	West	East	West
60.0	51.2	57.0	39.4

No. 1287 Sll. East

Upper		Lower	
East	West	East	West
61.0	53.0	58.2	40.0

No. 1364 Sll. East

Upper		Lower	
East	West	East	West
58.0	57.0	55.0	44.0

No. 1540 Sll. West

Upper		Lower	
East	West	East	West
67.0	50.0	54.5	47.5
first 5 were East			

No. 1796 Sll. West

Upper		Lower	
East	West	East	West
65.0	52.0	53.0	49.0

No. 1963 Sll. East

Upper		Lower	
East	West	East	West
64.0	55.0	61.5	41.5

No. 2044 Sll. East

Upper		Lower	
East	West	East	West
64.3	55.0	61.7	41.0

No. 2261 Sll. West
levels not read

No. 2338 Sll. West

Upper		Lower	
East	West	East	West
64.8	55.0	52.0	51.0

No. 2429 Sll. East

Upper		Lower	
East	West	East	West
63.0	57.5	61.5	43.0

Nov. 2504 Sll. East

Upper		Lower	
East	West	East	West
62.5	58.3	61.0	43.5

Long level

Sll. West

West	East
150.2	+155.0
150.0	+155.2
150.2	+155.0
+150.0	156.0
+150.5	156.0
+150.4	155.0
<u>611.3</u>	<u>613.2</u>
150.22	155.37
	150.22
	<u>15.15</u>
East too high	2.57

No. 2609 Sll. West

Upper		Lower	
East	West	East	West
68.0	52.5	52.7	52.0

No. 2691 Sll. West

Upper		Lower	
East	West	East	West
67.5	53.7	51.5	53.8

No. 2793 Sll. East

Upper		Lower	
East	West	East	West
65.0	58.0	63.3	43.0

No. 2860 Sll. East

Upper		Lower	
East	West	East	West
64.0	58.8	62.0	43.0

December 16/17 Am continued from prec. page

No. 2952 Ill. West
 Upper Lower
 East West East West
 65.0 58.0 52.0 54.0

No. 3446 Ill West
 Long level

East West

163.0+ 157.2

163.5+ 157.0

162.7+ 157.6

161.3 + 160.0

161.8 + 160.0

162.0 + 159.3

6)143 6)3511

162.383 158.52

162.38 162.38

13.86

East too high 1.93

No. 3528 circum pole N.C.
 observed over middle 5 wires
 and the 5 prec. Ill West
 Reversed and observed only
 3 corresponding wires in
 the last of the 5 which
 were first ab. Ill West

Ext. Therm - 2°
 No 3572 Ill East

Long level
 East West

168.0 161.8+

169.0 161.2+

170.0 161.8+

172.0+ 160.2

172.0+ 160.0

172.4+ 159.8

6)4234 6)48

170.57 160.80

170.57 170.57

170.57 170.57

4.88

1 - Lamp East - East too high - 5.72

2 - " West - East too high - 2.57
 3.15

3 - Lamp East - East too high - 4.88

4 - " West - East too high - 1.93
 2.95

