

KG
11366
v. 755

Flexure *A3*
Collimations
Runs
From Feb. 29/1880 to Aug. 28. 1880

Feb. 29 / 1880

Adjusted for focus of collimators

Adjusted for inclination of collimator wires

Examined ~~inclination~~ ^{the} verticality of the transit-threads and found it unchanged

Setting for collimation before commencing adjustments

46.653

Setting after adjustment.

N.C.	S.C.
46.710	46.702
700	706
713	710
704	707
<u>702</u>	<u>714</u>
29	39
46.7058	46.7078
	46.7058
	<u>6</u>
	46.706

46.706 Set at.

2

Mar 1880

Rung

R

Q

76

50 53.70 52.4

53.7 52.4

53.8 52.2

53.3 52.4

53.8 52.4

33 21

53.66 52.42

590 596

592 592

592 593

592 590

594 593

59.20 59.28

59.20 59.28

557 557

557 557

553 558

553 550

552 552

55.22 55.24

55.22 55.24

55.2 54.9

55.2 55.2

55.8 55.2

55.3 55.0

55.3 55.0

55.16 55.18

55.32 55.06

Collimation

N.C.

S.C.

46.750

723

728

740

738

179

46.7358

46.750

751

758

765

753

277

46.7554

7358

912

46.7456

~~det at 46.7456~~

Jan Feb. 29

New adjustment

46.740

713

713

730

730

126

46.7252

46.702

690

702

691

688

8483

46.6966

7252

142.18

46.7109

Jan 46.711

$$\begin{array}{r} \text{West-} \quad 65.2 \\ \text{East-} \quad 62.8 \\ \hline 2.4 \end{array}$$

$$\begin{array}{r} 71.3 \\ 56.1 \\ \hline 15.2 \end{array}$$

61

$$\begin{array}{r} 12.8 \\ 3.2 \\ \hline 17.6 \\ 4.4 \end{array}$$

~~Pet~~ Level Mar 1880

$$\begin{array}{r} 71.4 \\ 55.7 \\ \hline 15.7 \end{array}$$

$$\begin{array}{r} 64.3 \\ 63.7 \\ \hline 0.6 \end{array}$$

$$\begin{array}{r} 15.14 \\ 3.8 \\ \hline 16.3 \\ 4.07 \end{array}$$

$$\begin{array}{r} W \\ 65.2 \\ 71.3 \\ \hline 136.5 \\ 68.25 \\ \hline 59.45 \\ 2 \overline{) 8.80} \\ 4.40 \end{array}$$

$$\begin{array}{r} E \\ 62.8 \\ 56.1 \\ \hline 118.9 \\ 59.45 \end{array}$$

$$\begin{array}{r} 71.4 \\ 64.3 \\ \hline 135.7 \\ 67.85 \end{array}$$

$$\begin{array}{r} 55.7 \\ 63.7 \\ \hline 119.4 \\ 59.70 \end{array}$$

$$\begin{array}{r} 4.40 \\ 4.07 \\ \hline 4.23 \end{array}$$

$$\begin{array}{r} 1 \text{ div} = 84'' \\ = .056 \end{array}$$

815

4.07

$$t = +.24^s$$

$$\begin{array}{r} 4.23 \\ .056 \\ \hline 2.535 \\ 2.115 \\ \hline 23.688 \end{array}$$

4

Mar 1880
 $F = 3^h 0^m$

Mic. S.C.	S.P.C.	S.C.
30.5	46.800	46.576
32.0	822	580
290	798	574
304	780	580
310	792	578
<u>329</u>	<u>400.2</u>	<u>388</u>
32.680	46.800	46.578
		46.800
		<u>1378</u>
		46.689

Adjustment —
 Second Series

46.689
 46.678
 167

46.684 Set at.

S.C.	ave.	S.C.
295	46.806	46.552
292	800	547
290	813	548
290	800	562
300	801	552
<u>1457</u>	<u>20</u>	<u>261</u>
29.14	46.804	46.552
		46.804
		<u>1356</u>
		46.678

Mar 2 1880

S.E. N.E.

248

46.850

46.500

240

850

494

238

850

497

234

160

494

254

860

495

214

274

460

2428

46.855

46.496

46.855

1351

46.675 - set at

6

7!
Mar 6 1880

S C

N B

277

807

46 60.6

281

806

60.0

281

81.8

60.6

280

81.2

60.0

280

80.2

60.2

280

46

80.9

46 60.28

46.60 90

74 118x

set at

46.706

Mant 1480

170	46,940	46,380
180	950	381
200	944	374
196	946	380
200	948	370
<u>946</u>	<u>28</u>	<u>385</u>
1,892	46,9456	46,377
		46,946
		<u>1323</u>
		46,661

Set at 46,706

March 9, 1880

Provisional investigation of Transit
Reticle for Meridian Circle

Measures with Microscope Comparator
Eyepiece No 3. Measures with Roy's Comparator

[illegible]

Mar 1880

Investigation of Transit - plate

Measure of Provisional plate.

0	1	2	3	4	5	6	7
1 33.9	34.0	33.8	33.8	33.9	33.8	34.0	33.9
2 34.0	3.7	33.9	3.8	33.6	3.4	33.7	3.6
3 33.1	3.1	33.3	3.2	33.3	3.0	33.2	3.1
4 33.0	3.0	33.1	3.2	32.8	2.9	32.8	3.0
5 32.8	2.8	32.7	2.9	32.8	2.9	33.0	3.0
6 32.9	2.7	32.8	2.8	32.8	2.7	32.8	2.8
7 33.1	3.1	33.0	3.0	33.3	3.1	33.2	3.2
8 33.8	3.5	33.3	3.3	33.3	3.2	33.3	3.2
9 33.8	3.7	33.7	3.5	33.5	3.2	33.9	3.8
10 33.8	3.8	34.0	3.9	33.9	4.0	33.8	3.9
33.36	33.4	33.36	33.3	33.30	33.3	33.37	33.3

1 33.35	+02	+02	-57	-20			
2 33.36	+01	+03	-74	-68	0		
3 33.34	+05	+08	-66	-57	-59	-20	-24
4 33.37	+00	+08	-28	-35	-98	-68	-33
5 33.32	+05	+13	+30	+22	-72	-57	-28
6 33.36	+01	+14	+88	+28	-36	-35	+17
7 33.39	-02	+12	+116	+115	+20	+22	+63
8 33.40	-03	+09	+109	+122	+76	+78	+118
9 33.39	-02	+07	+102	+18	+102	+115	+129
10 33.42	-05	+02	+65	+30	+93	+122	+135
11 33.43	-06	-04	+12		+15	+18	+111
12 33.36	+01	-03			+11	+30	+46
447							
33.37							

78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	10 dia spars.	Σ
33.9	33.9	33.9	34.0	34.0	34.0	33.8	33.9	33.9	34.0	333.1	333.3	30	3.0	333.10+23+23		
33.8	3.8	33.8	3.8	33.6	3.5	33.8	3.8	33.8	3.8	333.3	3.8	3.3	3.2	333.27+07+30		
33.2	3.3	33.3	3.4	33.4	3.4	33.3	3.3	33.1	3.1	333.5	3.3	3.2	3.2	333.17+16+46		
32.8	2.8	33.0	2.9	33.1	3.0	33.1	3.1	33.0	3.0	333.6	3.4	3.2	3.1	333.20+04+50		
33.0	2.9	32.9	3.0	32.9	3.0	33.0	2.9	32.9	2.8	333.8	3.4	3.4	3.2	333.33+10+50		
33.0	2.9	32.9	2.9	33.0	2.9	32.9	2.9	32.9	3.0	333.2	3.3	3.5	3.3	333.37-04+16		
33.1	3.0	33.1	3.1	33.0	3.1	33.1	3.1	33.0	3.0	333.2	3.2	3.2	3.2	333.20+13+59		
33.5	3.4	33.4	3.3	33.6	3.5	33.4	3.3	33.3	3.3	333.7	3.4	3.7	3.7	333.60-27+32		
33.8	3.8	33.8	3.8	33.8	3.9	34.0	3.9	33.8	3.8	333.2	3.2	3.1	3.4	333.17+16+48		
33.0	4.1	33.7	3.8	33.8	2.9	34.0	4.1	33.8	3.8	333.6	3.6	3.7	3.5	333.60-27+21		
33.41	33.9	33.38	34.0	33.43	34.2	33.44	34.3	33.35	3.36	333.2	3.6	3.7	3.5	333.60+27-06		
											3.4	3.3	3.2	333.30+04-02		
														401		

2	3	1/2+3	333.33+ corr. dia. Sec. hand
-02 -9 -8 +7 -0.03	-23 -12 -24 -44 -0.31	-21	-6
-24 -48 -42 -35 -4.2	-62 -27 -63 -105 -6.5	-55	-16
-01 -37 -46 -23 -2.7	-57 -27 -53 -82 -5.5	-42	-13
+36 +4 -5 +34 +1.8	-11 +8 -23 -46 -1.8	-03	-1
+74 +60 +35 +76 +6.1	+34 +53 +23 +105 +2.9	+45	+14
+1.27 +106 +91 +115 +1.11	+85 +98 +74 +46 +7.6	+91	+27
+1.55 +147 +127 +150 +1.45	+1.14 +1.33 +1.05 +1.82 +1.09	+1.24	+37
+1.68 +145 +132 +143 +1.45	+1.22 +1.18 +1.11 +1.88 +1.10	+1.27	+38
+1.10 +1.05 +1.02 +1.00 +1.05	+1.82 +1.72 +1.57 +1.44 +1.64	+1.16	+26
+1.50 +1.46 +1.37 +1.32 +1.46	+1.46 +1.24 -6 +0 +1.5	+1.32	+10

12

May 10 1980

Conventions adopted for settings of Roper's

Rev. Screen to free it from periodic errors

No. of divisions
of screen used

FOV			$\boxed{300} + 14$	$\boxed{300.14}$	$\boxed{600} + 14$	$\boxed{600.14}$	$\boxed{900} + 14$	$\boxed{900.14}$
10	-18	9.82	10 - 3	309.97	10 - 2	609.98	10 - 4	909.96
20	-30	19.70	20 - 10	319.90	20 - 13	619.87	20 - 8	919.92
30	-22	29.78	30 - 5	329.95	30 - 14	629.86	30 - 8	929.92
40	-11	39.89	40 + 9	340.09	40 - 2	639.98	40 + 2	940.02
50	+6	50.06	50 + 21	350.21	50 + 10	650.10	50 + 16	950.16
60	+23	60.23	60 + 33	360.33	60 + 27	660.27	60 + 30	960.30
70	+31	70.31	70 + 39	370.39	70 + 38	670.38	70 + 40	970.40
80	+28	80.28	80 + 43	380.43	80 + 40	680.40	80 + 35	980.35
90	+16	90.16	90 + 29	390.29	90 + 31	690.31	90 + 22	990.22
100	+3	100.03	100 + 15	400.15	100 + 17	700.17	100 + 6	1000.06
10	-6	109.94	10 - 1	409.99	10 + 2	710.02	10 - 7	1009.93
20	-20	119.80	20 - 7	420.93	20 - 10	719.90	20 - 19	1019.81
30	-17	129.83	30 - 0	430.00	30 - 7	729.93	30 - 16	1029.84
40	-11	139.89	40 + 11	440.11	40 + 10	740.10	40 - 7	1039.93
50	+7	150.07	50 + 23	450.23	50 + 23	750.23	50 + 7	1050.07
60	+23	160.23	60 + 38	460.38	60 + 35	760.35	60 + 22	1060.22
70	+31	170.34	70 + 47	470.47	70 + 45	770.45	70 + 31	1070.31
80	+37	180.37	80 + 50	480.50	80 + 43	780.43	80 + 33	1080.33
90	+26	190.26	90 + 35	490.35	90 + 30	790.30	90 + 17	1090.17
200	+9	200.09	500 + 15	500.15	800 + 10	800.10	1100 - 2	1099.98
10	-7	209.93	10 - 3	509.97	10 - 7	809.93	10 - 19	1109.81
20	-10	219.90	20 - 14	519.86	20 - 19	819.81	20 - 32	1119.68
30	-8	229.92	30 - 11	529.89	30 - 17	829.83	30 - 25	1129.75
40	+5	240.05	40 + 1	540.01	40 - 3	839.97	40 - 14	1139.86
50	+19	250.19	50 + 18	550.18	50 + 10	850.10	50 + 2	1150.02
60	+35	260.35	60 + 32	560.32	60 + 25	860.25	60 + 14	1160.14
70	+39	270.39	70 + 44	570.44	70 + 35	870.35	70 + 25	1170.25
80	+40	280.40	80 + 44	580.44	80 + 37	880.37	80 + 26	1180.26
90	+33	290.33	90 + 32	590.32	90 + 25	890.25	90 + 13	1190.13
							1000 + 0	1200.00

3
7
8
1
8
5
36
02
14
25
26
013
7.00

$$4 = -12.8x - 61y$$

Solution of Equations

Div of Starhead

$$a = -2.546 = -2.1$$

	$\frac{a}{2} = +590$		a	b	a	b	a	b	Sum	q
0	-16	+85 + 590 + 516	-10	-13	35	66	-147	-16	-16	+0
20	-26	+85 + 95 + 31	-25	-8	80	10	-241	-06	-25	-1
30	-22	+85 + 95 + 31	-21	+7	80	10	-241	+06	-23	+1
40	-10	+0 + 59 + 51	-6	+8	35	66	-147	+16	-13	+3
50	+3	+85 + 100 + 100	+0	-3	0	100	+00	+20	+2	+1
60	+18	+85 + 59 + 51	-11	-15	15	66	+147	+16	+16	+2
70	+27	+85 + 95 + 31	-26	-8	80	10	+241	+06	+25	+2
80	+28	+85 + 95 + 31	-27	+8	80	10	+241	-06	+24	+4
90	+16	+59 + 51	-10	+13	35	66	+147	-16	+13	+3
100	+0	+00 + 100	+00	+0	0	100	+00	-21	-2	+2
			-136	+36	524	510				
			-47							
			-11							

$$524a = -136 \quad a = -2.54$$

$$524b = -11 \quad b = -2.1$$

Sample Corrections for each division of Roger's Sec.

21

Div	Corr.	Reading	Div	Corr.	Div.	Corr.
0	0	0	0	-0	51	+3
5	-9	4.91	1	-2	52	+5
10	-16	9.84	2	-4	53	+6
15	-21	14.79	3	-6	54	+8
20	-25	19.75	4	-8	55	+10
25	-25	24.75	5	-9	56	+11
30	-23	29.77	6	-10	57	+13
35	-18	34.82	7	-12	58	+14
40	-13	39.87	8	-13	59	+15
45	-5	44.95	9	-15	60	+16
50	+2	50.02	10	-16	61	+17
55	+10	55.10	11	-17	62	+18
60	+16	60.16	12	-18	63	+19
65	+22	65.22	13	-19	64	+21
70	+25	70.25	14	-20	65	+22
75	+25	75.25	15	-21	66	+23
80	+24	80.24	16	-22	67	+24
85	+20	85.20	17	-23	68	+24
90	+14	90.14	18	-24	69	+25
95	+8	95.08	19	-24	70	+25
100	-0	100.00	20	-25	71	+25
			21	-25	72	+25
			22	-25	73	+25
			23	-25	74	+25
			24	-25	75	+25
			25	-25	76	+25
			26	-25	77	+25
			27	-24	78	+25
			28	-24	79	+25
			29	-24	80	+24
			30	-23	81	+23
			31	-22	82	+22
			32	-21	83	+21
			33	-20	84	+20
			34	-19	85	+20
			35	-18	86	+19
			36	-17	87	+18
			37	-16	88	+17
			38	-15	89	+16
			39	-14	90	+14
			40	-13	91	+13
			41	-12	92	+12
			42	-11	93	+10
			43	-10	94	+9
			44	-8	95	+8
			45	-6	96	+7
			46	-5	97	+5
			47	-3	98	+4
			48	-1	99	+2
			49	+0	100	+0
			50	+2		

22

Mar 11

Measuring 2nd principal plate

00	00	0	0	00	0	0	0	0	0
167	170	167	167	167	168	168	169	168	168
1332	449	448	448	446	448	446	448	446	2666
1500	612	614	610	613	614	612	613	612	2832
168	890	891	890	894	892	890	891	890	
1331	60	59	58	58	60	57	60	58	00
1499	1333	1334	1331	1334	1338	1332	1332	1332	167
00									1332
167									1500
1332	170	167							00
1498	278	281							167
00	163	166							1336
168	278	277							1501
1331	170	168							
1499	273	275							
00									0167
166									166
2668									1330
2839									1498

00
165
1335
1499

Div

	0	1	0	0		Δ	Σ	corr. Screenhead.
40	2	1	1332	32	32+4	133,200	+147	+147 +4
80	3	2	1331	31	32+11	2130	+217	+364 +11
20	4	3	1334	32	33+12	3,300	+047	+411 +12
60	5	4	1332	31	32+15	4170	+177	+588 +15
40	5	5	2669	168	670+12	5450	-108 ²⁰⁶	+485 +18 +14
80	6		1332	33	32+15	6450	-103	+382 +10 +15
20	7		1336	34	35+10	7,230	+117	+499 +15
60	8		1332	31	35+17	8,500	-153	+346 +10
00	9		1333	34	31+19	9,130	+217	+563 +17
40	10		1335	38	37+10	10,270	+277	+640 +19
80	11		1332	32	34+12	11,670	-323	+319 +10
20	12		1332	32	33+15	12,270	+277	+390 +12
60	13		1332	32	34+17	13,230	+117	+571 +15
40	9		2668	167	670+13	14,270	+277	+588 +17
80	1		1334	32	33+11	15,410	-63	+524 +14
20	2		1338	36	36+6	16,420	-73	+452 +13
60	3		1332	30	33+12	17,300	+47	+499 +15
00	4		1338	38	38+10	18,630	-283	+216 +6
						19,170	+177	+393 +12
						20,730	-383	+010 +0
						694		
						133,347		

24

Mun 1880

N.C.		
197	46907	46366
202	893	370
198	910	374
191	911	378
193	891	381
481	4512	369
196	46902	46374
	46374	
	1276	
	46638	

N.C. out of focus
New Series

190	46917	46383
201	918	377
203	912	374
195	915	380
199	917	380
4898	29	394
19786	46916	46379
	379	
	1295	

46.647 Adopt
set at 46.647

Mar 11/56

Primerial

Setting for new

transit plate

$\begin{matrix} \text{New setting} & \text{Corr.} & \text{Corrected} \\ \text{setting} & & \text{setting} \end{matrix}$
 $\begin{matrix} 0 & +0 & 4.0 \\ 491 & +0 & 4.91 \end{matrix}$
 $\begin{matrix} 39.91 & -6 & 39.85 \\ 45.00 & -6 & 44.94 \end{matrix}$

$1 \times 39.87 + 4$
 $44.90 + 5$

$2 \times 80.24 + 11$
 $85.20 + 11$

$3 \times 19.70 + 12$
 $24.70 + 13$

$4 \times 60.16 + 14$
 $65.22 + 17$

$5 \times 39.87 + 12$
 $44.90 + 13$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$6 \times 80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$
 $51.69 + 15$

$60.16 + 17$
 $65.22 + 17$

$73.55 + 18$
 $78.58 + 18$

$86.14 + 18$
 $91.28 + 19$

$9.00 + 15$
 $4.91 + 19$

$13.14 + 16$
 $18.29 + 16$

$26.43 + 13$
 $31.46 + 13$

$39.87 + 10$
 $44.90 + 10$

$53.40 + 13$
 $58.47 + 13$

$66.52 + 14$
 $71.52 + 14$

$80.24 + 15$
 $85.20 + 14$

$93.43 + 13$
 $98.37 + 13$

$6.56 + 12$
 $11.50 + 11$

$19.70 + 10$
 $24.70 + 10$

$33.13 + 12$
 $38.18 + 12$

$46.64 + 14$

28

Mar 1

1180

Measuring fine transit times

A+

00	16.7	33.0	49.8	00	16.8	33.4	50.0	00	16.9	33.6	50.3
00	00	00	00	00	00	00	00	00	00	00	00
16.7	33	31	32	16.8	33.4	33.5	33.6	16.9	33.6	33.8	33.9
33.0	16.8	16.7	16.8	33.4	33.5	33.6	33.7	33.8	33.9	34.0	34.1
49.8	20.0	19.9	20.0	33.4	33.5	33.6	33.7	33.8	33.9	34.0	34.1
00	33.4	33.5	33.6	33.4	33.5	33.6	33.7	33.8	33.9	34.0	34.1
16.7	33.4	33.5	33.6	33.4	33.5	33.6	33.7	33.8	33.9	34.0	34.1
33.0	33.4	33.5	33.6	33.4	33.5	33.6	33.7	33.8	33.9	34.0	34.1
49.8	33.4	33.5	33.6	33.4	33.5	33.6	33.7	33.8	33.9	34.0	34.1

1334.3

00	16.8	33.2	50.1	00	16.9	33.3	50.2	00	17.0	33.4	50.3
00	00	00	00	00	00	00	00	00	00	00	00
16.8	33	32	31	16.9	33.3	33.4	33.5	17.0	33.4	33.5	33.6
33.2	16.9	16.8	16.9	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	20.0	19.9	20.0	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
00	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
16.8	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
33.2	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7

1333.5

00	16.8	33.2	50.1	00	16.9	33.3	50.2	00	17.0	33.4	50.3
00	00	00	00	00	00	00	00	00	00	00	00
16.8	33	32	31	16.9	33.3	33.4	33.5	17.0	33.4	33.5	33.6
33.2	16.9	16.8	16.9	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	20.0	19.9	20.0	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
00	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
16.8	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
33.2	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7

1334.0

00	16.8	33.2	50.1	00	16.9	33.3	50.2	00	17.0	33.4	50.3
00	00	00	00	00	00	00	00	00	00	00	00
16.8	33	32	31	16.9	33.3	33.4	33.5	17.0	33.4	33.5	33.6
33.2	16.9	16.8	16.9	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	20.0	19.9	20.0	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
00	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
16.8	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
33.2	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7

1334.6

00	16.8	33.2	50.1	00	16.9	33.3	50.2	00	17.0	33.4	50.3
00	00	00	00	00	00	00	00	00	00	00	00
16.8	33	32	31	16.9	33.3	33.4	33.5	17.0	33.4	33.5	33.6
33.2	16.9	16.8	16.9	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	20.0	19.9	20.0	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
00	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
16.8	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
33.2	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7
50.1	33.4	33.3	33.4	33.3	33.4	33.5	33.6	33.4	33.5	33.6	33.7

266.73

00
170
538
503

A

<i>00</i>	<i>00</i>	<i>00</i>	<i>00</i>
168	33	32	33
168	168	167	169
199	199	198	199
333	333	332	334
369	369	367	369
500	500	499	500
167	332	531	531
331			
530			
00	00	00	00
34	33	32	33
168	168	168	168
201	199	199	
336	336	336	
370	369	368	
502	501	501	
534	533	531	
00	00	00	00
32	33	32	32
168	167	167	168
199	200	200	199
335	336	337	336
370	369	369	369
503	502	502	502
535	535	536	536
00	00	00	00
34	32	31	32
167	166	166	167
199	200	199	199
333	332	331	332
367	363	363	363
500	500	498	498
532	531	530	530
00	00	00	00
31	31	33	33
167	168	168	168
200	199	200	200
335	338	337	337
368	370	370	370
500	502	501	501
532	533	533	533

133.30

133.39

133.60

133.19

133.51

A

<i>00</i>	<i>00</i>	<i>00</i>	<i>00</i>
32	31	31	313
166	166	168	1667 991
199	198	198	1983
338	337	336	3370
370	369	370	3697 14350 133.59
500	501	501	5007
533	533	532	5327
00	00	00	00
33	34	32	320
168	169	167	1683 9.99
197	199	199	1983
332	333	334	3330
367	367	367	3670
500	502	500	5007 14330 133.31
530	532	532	5313
00	00	00	00
31	32	32	317
166	168	170	1680 998
199	199	200	1993
335	339	340	3390
370	371	372	3710 14380 133.82
505	504	504	5043
538	537	538	5377

A-1

0	00	00
31	32	32
168	168	168 1000
199	201	200
669	670	669
780	702	70.6 276.82 266.82
837	837	837
868	867	867

00	00	00
33	32	33
169	168	169 10.05
199	199	200
338	335	335
360	368	368 143.52
370	371	372
533	535	532 536

13347

00	00	00
32	32	32
169	170	169 1000
200	200	199
338	338	335
369	370	369 143.52 133.5
503	503	502
534	536	535

00	00	00
32	31	32
168	168	167 995
198	200	199
337	338	337
367	370	369 143.60 133.65
502	502	503
534	536	535

00	00	00
31	32	32 10.05
169	169	170
199	200	200
336	337	338
369	368	369 143.60 133.55
503	503	503
533	532	533

Polar Group

00 00
32 32
167 166
200 198
443 441
474 474

00 00
32 33
167 168
198 199
443 445
477 478

00 00
31 32
168 168
200 199
444 445
479 479

00 00
33 33
168 168
200 200
444 445
478 479

00 0.0
33 3.3
168 168
198 200
443 443
477 478

00 0.0
32 33
168 167
200 200
447 447
480 481
612 613
647 647

00 00

03 03
167 168
199 200
443 443
478 477
609 610
640 642

00 0
32 32
167 168
198 198
443 443
478 478
610 611
642 642

Three

Polar group

30

1
 00
 31
 167 990
 198
 443
 471
 610 5425
 642

4435

2
 00
 32
 168 1000
 200
 443
 478 5435
 610
 642

4425

3
 008
 32
 168
 199
 442 998
 474
 610 5442
 641

998

4444

44,46

00
 33
 167 1000
 200
 443
 476
 610 5428
 642

4428

00
 32
 168 1000
 200
 443
 478 5445
 612
 643

4445

00
 32
 167 992
 198
 444
 479 5442
 611
 643

4450

00
 31
 167 990
 198
 446
 477 5442
 612
 642

4452

00
 32
 168 1000
 200
 446
 478 5448
 612
 643

4468

00
 32 995
 167
 199
 445
 478 5448
 612
 644

4453

4
 00
 33
 167
 200 1000
 542
 186
 610 5425
 642

5425
 6

5
 00
 32
 167 1000
 200
 542
 473 4430
 611 5430
 643

6
 0.0
 31
 167 990
 198
 443
 474 4428
 610 5418
 640

00
 31
 167 990
 198
 441
 476 5445 5455
 610
 641

00
 31
 167 995
 200
 444
 477 4453
 612 5448
 646

00
 31
 169 1018
 200
 447
 479 4448
 612 5458
 645

00
 32
 166 992
 199
 448
 478 5446
 611 5458
 642

00
 32
 168 1000
 200
 449
 478 4442
 612 5442
 643

00
 32
 168 998
 199
 448
 478 4454
 612 5452
 643

7

00 00
 32 31
 168 168 998
 199 199
 444 443
 478 478
 609 609
 640 640

44.22

8

00 00
 32 32
 167 167 995
 199 199
 443 443
 477 477
 611 611 5432
 642 642

44.37

00 00
 31 31
 168 168 995
 199 199
 443 443
 478 478
 610 610
 642 642

44.40

00 00
 31 31
 168 168 998
 199 199
 447 447
 478 478
 612 612
 642 642

44.57

00 00
 31 31
 168 168 995
 199 199
 444 444
 478 478
 612 612
 643 643

44.47

00 00
 32 32
 168 168 998
 199 199
 446 446
 480 480
 613 613
 642 642

44.62

Recapitulation Palmerburg

$$\begin{array}{r}
 44,35 + 8 + 8 \\
 .28 + 15 + 23 \\
 .52 - 8 + 15 \\
 .25 + 18 + 33 \\
 .45 - 2 + 31 \\
 .68 - 24 + 9 \\
 46 - 3 + 6 \\
 50 - 6 + 0 \\
 53 - 10 - 10 \\
 .25 + 19 + 9 \\
 55 - 12 - 3 \\
 46 - 2 - 5 \\
 30 + 13 + 8 \\
 53 - 10 - 2 \\
 42 + 1 - 1 \\
 28 + 15 + 15 \\
 40 + 4 + 19 \\
 54 - 17 + 9 \\
 22 + 21 + 30 \\
 40 + 4 + 34 \\
 47 - 4 + 30 \\
 37 + 6 + 36 \\
 57 - 14 + 22 \\
 \hline
 .62 - 18 + 4 \\
 1040 \\
 44.433
 \end{array}$$

$$\begin{array}{l}
 \text{dim} \\
 44.433 = 0.6686^{\circ} \\
 1 \text{ dim} = .01578^{\circ}
 \end{array}$$

34

Plate II

00 10 00
 169 8 16.85 8.43
 339 8 83.85 41.57 133.54
 500 2 50.10

00 00 000
 169 69 16.90 8.45
 332 33 33.25 41.62 133.17
 500 20 50.10

00 0 000
 169 7.0 16.90 8.40 133.57
 338 3.8 133.75 41.57
 503 0.1 150.20

00 0 000
 168 17.0 16.90 8.45
 337 35 133.60 42.02 133.57
 504 50.5 150.45

00 0 000
 16.6 6.8 16.70 8.35
 667 6.8 266.75 275.10 266.75
 83.4 3.8 283.45

Plate III

0.0 0.0 00
 16.4 16.4 16.40 8.20
 33.0 33.0 33.00 41.15 132.95
 49.3 49.3 49.30

0.0 0.0
 16.2 16.2 16.20 8.10
 32.8 32.8 32.80 28.42
 49.3 49.2 32.25 32.52

0.0 0.0 0.0
 16.5 16.4 16.45 8.22
 33.1 33.0 33.05 32.95
 49.3 49.3 49.30 41.17

0.0 0.0
 16.5 16.4 16.45 8.22 32.98
 33.0 33.1 33.05 41.20
 49.4 49.3 49.35

0.0 0.0 0.0
 16.4 16.3 16.35 8.17 266.28
 266.1 266.3 266.20
 282.6 282.8 282.70 274.45

0.0 0.0
 16.4 16.6
 32.2 32.6
 48.8 48.9

Plate I	Plate III	Plate IV	Plate VII
0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0
16.7 16.5 16.7 16.6 ^{8.31}	16.4 16.6 16.5 ^{8.35} 16.6	16.5 16.8 16.6 ^{8.81}	16.7
33.2 33.1 33.4 33.2 ^{133.29}	32.2 32.6 32.4 ^{32.37} 33.3	33.3 33.3 33.3 ^{133.34}	32.9
49.9 49.9 50.1 49.9 ^{141.60}	48.8 48.9 48.8 ^{40.62} 50.0	50.0 50.0 50.0 ^{141.65}	49.5
0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0
16.7 16.7 16.8 16.7 ^{8.36}	16.3 16.6 16.4 ^{8.22} 16.7	16.7 16.9 16.7 ^{8.38}	16.7
33.2 33.3 33.6 33.6 ^{133.54}	32.2 32.2 32.2 ^{32.15} 33.2	33.1 33.2 33.1 ^{133.19}	32.7
50.2 50.2 50.2 50.2 ^{141.90}	48.5 48.6 48.5 ^{40.37} 50.0	49.9 50.0 49.9 ^{141.57}	49.2
0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0
16.8 16.8 16.8 16.8 ^{8.40}	16.7 16.8 16.8 16.8	16.9 16.8 ^{8.41}	16.5
33.3 33.5 33.4 33.4 ^{133.31}	32.1 266.7 266.9 266.9 ^{266.77}	266.9 266.8 ^{275.18}	266.5
50.1 50.0 50.0 50.0 ^{141.71}	48.9 283.3 283.6 283.7 ^{283.53}		283.1
0.0 0.0 0.0 0.0	0.0		
16.7 16.6 16.6 16.6 ^{8.31}	16.6		
35.8 35.6 35.9 35.7 ^{135.71}	32.6		
52.3 52.2 52.3 52.2 ^{144.02}	49.0		
0.0 0.0 0.0 0.0	0.0		
16.6 16.6 16.8 16.6 ^{8.33}	16.3 16.4		
32.8 32.8 33.0 32.8 ^{132.74}	32.0 32.0		
49.3 49.2 49.3 49.2 ^{141.07}	48.4		
0.0 0.0 0.0 0.0	0.0		
16.7 16.7 16.8 16.7 ^{8.32}	16.5 16.7		
33.3 33.3 33.3 33.3 ^{133.27}	32.5 32.9		
49.9 50.0 50.0 49.9 ^{141.63}	49.1 49.5		

36

0.0	0.0	0.0	0.00		0.0
16.9	16.9	16.8	16.87	8.43	16.7
33.6	33.6	33.4	33.53	133.37	33.1
50.1	50.1	50.0	50.07	141.50	50.0

0.0	0.0	0.0	0.00		0.0
16.8	16.8	16.6	16.73	8.36	16.2
33.2	33.0	33.0	33.07	133.14	33.0
49.9	49.9	50.0	49.93	141.50	49.7

0.0	0.0	0.0	0.00		0.0
16.9	16.8	16.7	16.80	8.40	16.7
33.6	33.4	33.6	33.53	133.41	33.2
50.2	50.0	50.1	50.10	141.81	49.9

0.0	0.0	0.0	0.00		0.0
17.0	16.8	16.6	16.80	8.40	16.6
33.1	33.3	33.1	33.17	133.17	32.9
50.0	49.9	49.9	49.97	141.57	49.4

Transit - Plot (provisional) 2084 x 37

Plot 4

A
+1

0.0 0.1 0.05
16.6 16.7 16.65
33.7 33.7 33.70
50.3 50.3 50.30

8.35
133.65
42.00

0.0 0.0 0.00
16.8 16.9 16.85
33.9 33.9 33.90
50.5 50.6 50.55

8.42
133.80
42.22

0.0 0.0 0.00
16.7 16.7 16.70
33.6 33.5 33.55
50.2 50.3 50.25

8.35
133.55
41.90

0.0 0.0 0.00
16.6 16.8 16.75
33.8 33.7 33.75
50.2 50.4 50.30

8.35
133.67
42.02

0.0 0.0 0.00
16.7 16.8 16.75
66.5 66.7 66.60
283.5 283.4 283.45

8.37
266.65
275.00

0.0 0.0 0.00
16.7 16.7 16.70
33.8 33.5 33.55
50.1 50.1 50.10

8.35
133.47
41.82

0.0 0.0 0.00
16.5 16.4 16.45
33.2 33.2 33.20
50.0 50.0 50.00

8.22
133.38
41.60

0.0 0.0 0.00
16.8 16.9 16.85
33.7 33.8 33.75
50.2 50.2 50.20

8.42
133.55
41.97

0.0 0.0 0.00
16.8 16.7 16.75
33.5 33.4 33.45
50.2 50.1 50.15

8.37
133.43
41.80

0.0 0.0 0.00
16.8 16.8 16.80
66.7 66.6 66.65
283.2 83.3 83.25

8.40
266.55
274.95

Plate 5
A
+1

38

Plot 4

0.0 0.0 0.00
 16.7 16.7 16.70 ^{8.35}
 33.5 33.7 33.60 ^{133.55}
 50.2 50.2 50.20 ^{41.90}

0.0 0.0 0.00
 16.7 16.8 16.75 ^{8.37}
 33.9 33.9 33.90 ^{133.75}
 50.4 50.3 50.35 ^{42.12}

0.0 0.1 0.05
 16.6 16.9 16.75 ^{8.40}
 33.5 33.7 33.60 ^{133.45}
 50.1 50.1 50.10 ^{41.85}

0.0 0.0 0.00
 16.7 16.8 16.75 ^{8.37}
 33.8 33.7 33.75 ^{133.60}
 50.2 50.2 50.20 ^{41.97}

0.0 0.0 0.00
 16.7 16.8 16.75 ^{8.37}
 33.6 33.7 33.65 ^{133.55}
 50.2 50.2 50.20 ^{41.92}

0.0 0.0 0.00
 16.7 16.9 16.80 ^{8.40}
 33.6 33.7 33.65 ^{133.55}
 50.2 50.2 50.20 ^{41.92}

0.0 0.0 0.00
 16.4 16.7 16.55 ^{8.27}
 33.7 33.8 33.75 ^{133.68}
 50.1 50.2 50.15 ^{41.95}

0.0 0.1 0.05
 16.9 16.9 16.90 ^{8.47}
 33.6 33.5 33.55 ^{133.35}
 50.1 50.1 50.10 ^{41.82}

0.0 0.1 0.05
 16.8 17.0 16.90 ^{8.47}
 33.7 33.6 33.65 ^{133.50}
 50.2 50.2 50.20 ^{41.97}

Plot 5

0.0 0.0 0.00
 16.7 16.7 16.70 ^{8.35}
 33.4 33.5 33.45 ^{133.40}
 50.0 50.1 50.05 ^{41.75}

0.0 0.0 0.00
 16.8 16.7 16.75 ^{8.37}
 33.4 33.5 33.45 ^{133.33}
 49.9 50.0 49.95 ^{41.70}

0.0 0.0 0.00
 16.6 16.4 16.50 ^{8.25}
 33.3 33.3 33.30 ^{133.40}
 50.0 50.0 50.00 ^{41.65}

0.0 0.0 0.00
 16.7 16.8 16.75 ^{8.37}
 33.9 33.9 33.90 ^{133.38}
 50.2 50.3 50.25 ^{42.15}

0.0 0.0 0.00
 16.8 16.6 16.70 ^{8.35}
 33.8 33.5 33.65 ^{133.32}
 49.8 49.6 49.70 ^{41.67}

0.0 0.0 0.00
 16.8 16.7 16.75 ^{8.37}
 33.3 33.3 33.30 ^{133.25}
 50.0 49.9 49.95 ^{41.62}

0.0 0.0 0.00
 16.7 16.6 16.65 ^{8.32}
 33.5 33.5 33.50 ^{133.50}
 50.2 50.1 50.15 ^{41.82}

0.0 0.0 0.00
 16.7 16.8 16.75 ^{8.37}
 33.4 33.5 33.45 ^{133.38}
 50.0 50.1 50.05 ^{41.75}

0.0 0.0 0.00
 16.8 16.7 16.75 ^{8.38}
 26.7 26.7 26.70 ^{266.64}
 263.3 83.4 83.35 ^{750.2}

Plate 4
A-1

0.0 0.0 0.0
16.9 17.0 16.95 ^{8.47}
33.7 33.8 33.75 ^{134.28}
50.4 50.4 50.40 ^{42.75}

0.0 0.0 0.00
16.7 16.9 16.85 ^{8.40}
33.3 33.2 33.25 ^{133.20}
49.9 50.0 49.95 ^{41.60}

0.0 0.0 0.00
16.7 16.6 16.65 ^{8.32}
33.6 33.3 33.45 ^{133.45}
50.1 50.1 50.10 ^{41.77}

0.0 0.1 0.05
16.8 16.9 16.85 ^{8.45}
33.4 33.5 33.45 ^{133.27}
50.0 50.0 50.00 ^{41.72}

Plate 5
A-1

0.0 0.0 0.00
16.7 16.8 16.75 ^{8.37}
33.5 33.3 33.40 ^{133.40}
50.2 50.1 50.15 ^{41.77}

0.0 0.0 0.00
16.9 16.8 16.85 ^{8.42}
33.2 33.3 33.25 ^{133.18}
49.9 50.0 49.95 ^{41.60}

0.0 0.0 0.00
16.8 16.8 16.80 ^{8.40}
33.6 33.6 33.60 ^{133.40}
50.0 50.0 50.00 ^{41.80}

0.00 0.00 0.00
16.4 16.7 16.55 ^{8.27}
33.2 33.1 33.15 ^{133.20}
49.8 49.8 49.80 ^{41.47}

~~Plate~~ Recapitulation. Summed Series

Plate I #	III	V	Mean Dis. index of group	Dis. index of group
-38	-16	-16-11	-28	-16
-21	+5	-46-13	-19	-6
-49	-14	-52-32	-37	-11
-44	-33	-69-39	-46	-14
-52	-34	-58-31	-44	-13
-58	-34	-45-23	-40	-12
-50	-25	-51-27	-38	-11
-39	-41	-36-24	-35	-10
-31	-34	-42-28	-34	-10
-63	-37	-60-31	-48	-14
-56	-39	-46-27	-42	-13
-34	-28	-46-16	-31	-9
-49	-24	-72-31	-44	-13
-38	-5	-82-33	-40	-12
-48	-6	-76-29	-40	-12
-59	-5	-70-26	-40	-12
-41	-4	-49-30	-31	-9
-37	+20	-19-12	-12	-4
-15	+17	-15-16	-7	-2
-1	-2	+6-1	+0	+0

Mar 15 1851

200
 200
 207
 202
 205
 — 14
 213

44,838⁸
 632
 652
 647
 634
 —
 203

44,177
 170
 163
 173
 180
 —
 363

44,6406

44,1726
 44,6406

8132
 44,406 set of

42

Mar 16 1982
 T = 9 24 5 T

NC	NC	
209	44.630	44214
216	626	218
222	630	218
202	610	211
200	613	210
<hr/> 49	<hr/> 1109	<hr/> 71

2098	44.6288	442142	
		6288	
		8386	
		44,4198	set at -

Runs.

E	F	G	H
5' 0	5.70 5.8 5.1	10.7 10.5	0.4 0.1
	5.6 5.1	10.6 10.2	0.3 -0.2
	5.5 5.2	10.5 10.0	0.1 -0.1
	5.4 5.0	10.5 10.1	0.3 -0.2
	5.7 4.8	10.4 10.0	0.4 -0.1
29 49	27 8	15 7	21 28
5.58 4.98	10.51 10.16	0.30 -0.11	2.42 1.56

May 14
20h 30m

WS

214

220

215

213

214

25
2152

NC

44 597

588

599

589

590

463

44 5926

SC

44 162

170

153

180

168

334

1668

5926

7594

8797

set-01 44.419

44

Mar 20-21

21.7	44 549	44 240
21.0	532	248
250	548	239
214	534	242
21.0	540	245
<u>11</u>	<u>203</u>	<u>215</u>
21.2	44 54.06	2430
		5406
		<u>7836</u>
		39.18 set of

March 21, 1880

DR

N. C.	N. C.	S. C.	S. C.
18.7	44 5 3.3	44 2.09	44 17.0
19.0	52.1	02.1	18.7
18.4	53.0	02.4	18.2
18.9	52.9	02.8	17.0
18.2	53.0	02.1	19.2
93.2	14.3	10.3	41.1
18.68 ⁴	44 5 2.86	2.06	18.02
	44 18.02		
	<u>54.92</u>		
	0.88		
	44 35.44		

Set at 39.2

19.0	52.7	17.0
18.0	53.3	18.0
18.2	53.0	16.8
18.1	53.0	16.9
20.6	52.8	17.4
93.9	14.8	36.1
18.78	52.96	17.22
	17.22	
	70.18	
	35.09	

We. Wols

Mar 22 1880

NC

NC

185	44,510	44,322
193	513	328
170	503	325
182	513	326
199	511	322
<hr/> 429	<hr/> 50	<hr/> 25
186	44,5100	44,3250
		510
		535
		44,417

Set at 44,352

Mar 18 80

A Mode Run adjustment for clinometer
of collimator vertical wire.

500	-	44.245	44.500
507		24.9	.500
49.9		24.4	.510
49.2		24.8	.507
500		23.7	.501
2498		23	18
49.96		44.24.46	44.5036
			2446
			7482
			44.3741

$\bar{F} = 20^{\circ} 30'$
Set at 44.374

Run

L

36

5	0	35.1	0.0	34.2	40.9	39.7	33.3	33.2	33.8	32.5
		35.6		34.2	40.5	39.8	33.5	33.1	33.7	32.7
		35.1		34.2	40.1	39.8	32.2	33.0	34.2	32.6
		35.2		33.4	40.3	39.8	33.5	32.7	34.1	32.6
		35.0		33.3	39.9	39.7	33.2	32.9	34.0	32.4
	10			193	17	39.8	7	149	198	28
		35.20		33.86	40.34	39.78 ⁶	33.14	32.98	33.96	32.56

Mar 23 1880 ~~File~~ Run

	E	F	G	H
0 1	18 541	66 73	59.8 7.2	00 00
	17 538	66 75	59.9 7.7	0.1 00
	17 541	67 76	59.8 7.8	0.4 00
	19 539	67 75	59.9 7.8	0.1 00
	18 541	63 73	59.8 7.7	0.0 00
	39 200	29 22	42 32	6

1.78 5400 6.58 7.44 59.84 7.64 0.12 0.00
~~0.58~~ 7.44 0.12

59.84	7.64	1.78	5400
0.12	0.00	6.58	7.44
2.68	24908	59.84	7.64
2.18	2127	0.12	0.00
2.27		24832	25608
		62080	6402
- 1			
- 09			

Mar 24 1880

 $P = 21.25$

NE.	have	NE.
565	44 325	44 365
570	324	352
560	320	372
560	330	365
572	330	363
<hr/> 350	<hr/> 129	320
570	44 326	44 364
		326
		690
		44 345 et al.

Mar 25 1880

N.C.

$$\begin{array}{r}
 530 \\
 540 \\
 540 \\
 534 \\
 540 \\
 \hline
 184 \\
 537
 \end{array}$$

N.E

$$\begin{array}{r}
 44 \ 329 \\
 328 \\
 344 \\
 338 \\
 343 \\
 \hline
 182 \\
 44 \ 3364
 \end{array}$$

S.E.

$$\begin{array}{r}
 44 \ 358 \\
 336 \\
 362 \\
 365 \\
 361 \\
 \hline
 212 \\
 3584 \\
 336 \\
 \hline
 92
 \end{array}$$

44.346 Del-27-44.346

Mar 29 / 80

N.C. S.C.

44 284

302

282

300

300

1468

44. 294

45 417

898

403

413

418

2049

44 410

294

704

44. 52

SA-M-44,352

Mar 30 1880

N. 6		N. 6		S. 6	
52.0	44	27.4	44	36.9	
52.0		26.8		37.4	
52.0		28.0		37.0	
51.0		27.7		37.0	
52.3		28.0		37.5	
<hr/>		<hr/>		<hr/>	
93		379		35.88	
51.86		27.58		37.186	
		37.186			
		64.784			
		32.385			

Set at 44.352

Muzi 18V

T = 22 46

N.C.

480
491
510
475
510
2469
494

N.C.

44,289
288
272
270
280
399
44,280

44,440

435
440
445
443
240

448'
280
728'

44,364⁰ sel - of 44,352

Rely me

Σ

R

0 1 58 537
56 537
60 536
08 541
58 540
40 191
5.80 5382
11.50 7.50
2.24 5.64
1.22 55.82
20.76 242.78
5.19 0.695
0.69
4.50
+ 2.25

118 6.2
113 79
118 80
113 78
113 76
25 25
11.50 7.50

5.80 2.24
5382 5.64
11.50 1.22
7.50 55.82
2583 2449.2
64.58 6123
335
1.67

Σ

76

24 57
24 58
21 57
15 53
28 57
12 32
2.24 5.64

13 553
11 561
13 560
12 560
12 557
11 291
1.22 55.82

54

Mar 31 1880

Run

		Σ		R		Q		Z	
5	0	412	402	470	465	373	372	370	353
		413	402	471	468	375	372	370	357
		417	400	472	466	371	373	370	346
		418	401	470	468	373	372	373	349
		414	401	468	463	372	376	366	350
		24	6	1	30	14	20	49	249
		41.48	40.12	47.02	46.60	37.28	37.40	36.98	34.98

56

Apr. 1, 1880

N. C.		N. C.		S. C.
49.7	44	25.1	44	48.9
50.0		23.3		50.0
51.3		23.0		50.6
50.0		24.0		50.8
<u>49.5</u>		<u>24.8</u>		<u>49.5</u>
250.5		<u>0.2</u>		249.8
50.10		24.04		49.96
		⁹ 44.96		
		⁴ 74.800		
		³ 37.00		
		38.48		

Set at 44.352

Apr. 3, 1880

N. E.		N. E.		S. E.
47.9	44	21.8	44	58.3
46.8		21.4		59.2
49.0		20.9		59.4
49.9		20.0		58.0
49.9		20.0		58.2
50.0		41		48
49.7		20.82		58.62
2485		58.62		
58.70		879 44		
44.7		39 44		
	44	70.22		

bad seeing

Adjusted South Collimator

44	21.0	44	58.0
	20.0		59.9
	21.2		59.6
	20.0		59.0
	20.6		59.0
	28		45.8
	20.56		59.1
	59.10		
	79.66		
	39.83		Set all

April 4, 1880

N.6.		N.6		S.6
54.9	44	14.8	44	64.4
55.0		15.2		65.0
54.9		15.2		64.8
54.6		14.7		64.9
<u>55.1</u>		<u>15.3</u>		<u>64.4</u>
25.5		25.2		23.5
54.90		15.04		647.0
				1504
				<u>7974</u>
				3987

Set at 44 39.8

April 6, 1880

collimation 1^h 10^m

N. C	N. C	S C
55.8	44 19.2	61.8
55.8	18.6	62.4
55.0	18.4	61.7
55.8	19.5	62.0
55.0	18.6	63.0
55.48	<u>43</u>	10 9
	18.86	62.18
	<u>62.18</u>	
	81.04	
	40.52	

Set at 44 40.5

April 6, 1880

coll. 2nd 25^m

H. C. W. obs.

N. C.	N. C.		N. C.	S. C.	N. C.	N. C.	S. C.
53.1	52.6	44	17.7	52.0	55.5	18.8	58.0
52.1	54.2		17.0	52.8	55.0	19.0	58.8
54.1	53.3 ^{4.0}		17.8	52.5	58.0	19.0	58.8
52.8	54.5		17.3	52.0	55.5	19.3	53.5
54.3	54.8		17.0	52.3	55.4	18.8	53.6
14	21		18	16	414	449	27
53.28	54.2 ⁴² 20		17.36	5 ² 0 .32	55.28	18.98	53.54
			5 ² 0 .32				53.54
			6 ⁷ 1 .68				72.52
			3 ⁴ 1 .84				36.26

Set at 44 40.5

Examine stars to see that it was properly set
at 44.405 by H. C. W.

April 7, 1880
H.A.R. obs.

23^h 30^m ~~7^h 0^m~~

N. b.	5c.
44 277	94 47,0
270	46,0
267	46,4
272	45,4
270	46,8
<u>1</u>	<u>316</u>
556	41,463
44,271	271
	<u>730</u>
	44,367

Set at 44,405

Phyrene

	E	A	G	G
01	56 537	100 70	20 63	00 553
	56 533	101 62	25 63	00 536
	56 532	99 60	22 61	597 550
	56 532	99 62	22 62	596 537
	54 533	101 64	22 61	597 536
	<u>28 17</u>	<u>00 318</u>	<u>11 10</u>	<u>40 16</u>
	5,56 53,34	10,00 6,36	2,22 6,20	59,80 55,32
	10,00 6,36			
	2,22 6,20			
	<u>59,80 55,32</u>			
	247,58 241,22			
	1,895 0,305			
	0,305			
	1,590			

April 8, 1880

1^h 35^m

HAR

N. 6		N. 6		S 6
56.1				
52.3	44	26.0	44	40.1
55.8		25.0		40.2
58.0		25.9		41.2
56.5		25.2		41.7
56.4		25.0		40.4
32.8		29.1		3.6
56.56		25.42		40.72
		40.72		
		66.14		
		33.07		

Set at 44.350

April 8 1880

1^h 45^m

war obs

Runs.

<u>F</u>		<u>F</u>		<u>G</u>		<u>N</u>	
5' 0	5.0 0' 4.6	11.1	⁹ 10.7	3.8	2.9	1.0	59.7
5.3	4.0	10.7	⁹ 10.7	3.2	3.2	1.1	60.0
5.1	4.5	10.5	⁹ 10.7	3.5	3.0	1.3	59.3
5.3	4.4	10.3	⁹ 10.7	3.5	3.3	1.2	60.6
5.3	4.3	10.6	10.0	3.5	3.2	1.2	60.0
<u>10</u>	<u>18</u>	<u>32</u>	<u>48.8</u>	25	6	8	2996
5.20	4.36	10.7 ⁶ 4	9.76	3.50	3.12	1.16	59.92

59 7 0.0
 59 3
 0.6
 0.0

64

Am. 8-9 1850

on 218
MC.

510	44.250	44.420
520	260	429
515	250	430
505	249	430
520	259	417
510	<u>268</u>	<u>126</u>

44.254	44.425
	<u>254</u>
	679
	44.340

set at 44.350

April 10-11/1880

1st Set.

H. A R obs.

0^h 45^m

N. l		N. l	S. l
62.7	44	19.7	57.1
62.0		19.8	56.2
64.0		19.8	5 ⁶ 4.8
62.8		19.5	5 ⁵ 7.3
62.0		20.1	57.4
<u>135</u>		<u>989</u>	<u>298</u>
62.7		19.7 ⁸	55.96
		56.36	56.36
		76.1 ⁴	
		38.0 ⁷	

Set at 4435.0

New adjust. microm screw S. Coll.

April 10 - 11, 1880
2nd Set.
Coll. H. A. R. obs.

1^h 40^m

N. b	N. b	N. b	S. b	N. b	N. b	S. b
66.3	67.7	19.7	52.8	67.0 ³	44 19.8	57.4
66.0	67.3	17.6	53.8	67.9 ²	20.9	53.0
67.0	66.1	19.1	52.7	63.9	19.8	52.9
65.0	66.5	20.9	53.1	63.5	20.4	52.5
64.7	66.0	18.3	52.8	62.7	20.0	52.7
29.0	6	95.6	15.2	16.0	10.0	15.5
65.80		19.12	53.0 ⁴	63.20	20.18	53.10
		53.0 ⁴			53.10	
		72.1 ⁶			73.28	
		36.08			36.64	

Set at 44 35:0

Σ				Flexure. g				H					
0	0	55.2	46.5	0	5	0.9	0.5	0	0	0.3	57.2	56.5	56.4
		55.1	46.0			0.9	0.7			0.5	57.2	56.3	56.1
		54.9	46.0			1.0	0.0			0.3	57.2	56.7	56.2
		54.9	45.9			0.9	0.2			0.0	57.6	56.7	56.1
		54.9	45.9			0.9	0.1			59.7	57.6	56.7	56.2
		25.0	30.3			4.6	1.5			60.8	1.8	2.9	1.1
		55.00	46.06			0.92	0.30			00.16	57.36	56.58	56.22
		0.92	0.30										
		0.16	57.36										
		56.58	56.22										
		232.66	213.94										
		58.16	53.48										
		53.48											
		4.68											
		+ 2.34											

55.00	46.06
0.92	0.30
0.16	57.36
56.58	56.22
232.66	219.94
58.16	54.98
53.48	3.19
	1.65

April 11, 1880

1st Set

coll MARK obs

20^h20^m

N. l.

S. l.

44

20.0

46.7

19.5

46.9

20.0

48.0

20.0

46.0

20.0

45.7

99.5

33 3

19.90

46.66

46.66

66.56

33.28

1^h30^m2nd

Set

N. l.

S. l.

~~24.8~~

43.7

25.2

42.0

24.4

42.9

26.8

44.0

26.8

42.0

28.0

14.6

25.60

42.92

412.95²68.53²

34.286

seeing rather better than at

1st set, but still bad.

Seeing very bad

set at

44

35.0

~~Phy~~ Phy

E

F

G

H

5 0

3.8 0 1.8

9.0 9.0

1.9 1.4

58.2 58.0

3.8 2.4

9.1 9.0

1.9 1.3

58.2 57.7

3.8 2.0

9.0 9.3

1.9 1.8

58.5 57.8

3.7 1.5

9.3 9.1

1.8 1.4

58.8 57.3

3.4 1.9

9.0 9.3

1.8 1.9

58.9 57.7

3.2 9.6

4 7

9.3 2.8

26 38.5

3.64 1.92

9.08 9.14

1.86 1.56

58.52 57.70

~~9.85 9.14~~~~1.86 1.56~~

58.52 57.70

253.10 250.32

3.28 2.58

2.58

1.70

10.55

3.

Apr. 14-15
 1^h 20^m
 Coll. H. A. R. obs.

N. b.	N. b.	S b.
70.1	17.0	55.1
69.8	16.6	54.9
70.4	16.9	53.7
70.7	17.7	53.8
71.0	18.4	54.9
20	36.6	22.4
70.4	17.32	54.48
	54.48	
	7180	Set at 44 35.9
44	35.90	

April 18, 1880

1st 50^m

Coll. H.A.R. obs.

N. b.	N. b.	S. b.
72.6	44 21.0	50.0
73.0	20.9	49.9
73.0	20.5	50.2
72.0	20.6	50.8
71.8	20.2	51.1
124	32	20
72.48	20.64	50.40
	50.40	
	71.784	
	35.52	

Set at 44 35.5

N. b.	N. b.	S. b.
71.9	20.5	48.0
70.0	20.3	49.0
70.0	20.3	49.2
70.5	20.5	49.6
70.0	20.4	48.0
24	20	43.8
70.48	20.40	48.76
	48.76	
	6916	
	34.58	

Flexum

	E		F		G		H.	
0 0	57.9	49.0	3.7	2.1	1.8	7.2	58.0	56.5
	58.1	49.0	4.1	2.3	1.1	7.7	58.0	56.8
	57.8	48.7	4.1	2.7	1.3	7.7	58.0	56.3
	57.9	48.8	4.1	2.6	1.7	7.2	58.1	56.5
	57.9	48.7	4.0	2.0	1.3	7.1	58.2	56.6
	39.6	44.2	0	17	2.2	19	3	27
	57.92	48.84	4.0	2.340	1.44	7.38	58.06	56.53
	4.00	52.34						
	7.44	7.38						
	58.06	56.56						
	241.42	235.10						
	60.35	58.78						
	58.78							
	1.54							

70

Apr 20-21

1 h 30^m

4.e.

8.e.

44,149

44,555

150

552

151

552

161

560

154

545

265267

44,153

44,553

153

706

44,353

Det of 44 353

April 21, 1880
coll 21^h 0^m

N. b	N. b.	S. b
67.8	13.7	57.3
66.9	14.0	56.3
65.2	13.0	57.1
66.0	13.3	57.0
65.6	12.5	57.0
30.7	16.5	33.7 ⁴
66.14	13.30	56.14
	56.14	
	70.04	Set at 44 35.5
	35.2	

Return

	E		F		G		He	
0 1	59.5	49.9	5.9	5.6	6.1	12.5	2.8	0.0
	59.1	49.8	5.9	5.0	6.3	12.6	2.4	0.0
	59.3	50.0	5.4	5.2	5.9	12.3	2.1	0.1
	59.3	49.7	5.9	5.5	6.0	12.2	2.1	0.0
	59.8	49.8	5.6	5.0	6.0	12.3	2.6	0.0
	22	249.2	37	13	3	19	20	0.02
	59.44	49.84	5.74	5.26	6.06	12.38	2.40	0.02
	5.74	5.26						
	6.06	12.38						
	2.40	0.02						
	13.64	249.50						
	3.41	49.38						
	1.88	3.41						
	1.53	.97						
	+.97	-0.97						

72

April 22, 1880 $T = 7^{\frac{1}{2}} \text{ min}$

Long Focus Collimator = L.F.C.

L.F.C.

44	35.7	34.2
	33.0	34.0
	33.9	33.4
	31.0	32.6
	35.0	31.5
	18.6	15.7
	33.72	33.14
	33.41	
	86	
	33.43	

	E	F	G	H.
20 1	4.8	17.3	22.7	12.2
	5.8	18.7	23.2	12.9
	5.9	18.2	23.2	13.3
	6.6	18.8	24.0	13.8
	6.3	18.2	23.0	12.7
	<u>29.4</u>		<u>16.1</u>	<u>14.9</u>
20 1	5.88	41.2	23.22	12.98
		18.24		

Separate printings upon central hole of the brass collimator plate.

Mar 22 1882
23^h 30^m

44	114	575
	122	578
	115	578
	121	588
	118	579
	<u>90</u>	<u>398</u>
44	1180	5796
		11.40
		<u>6976</u>
		3488

23 ^h 40 ^m		1 ^h 40 ^m	
I	II	I	II
44 406	412	446	458
890	392	422	430
383	389	460	470
400	398	450	443
422	395	420	430
<u>2001</u>	<u>1986</u>	<u>198</u>	<u>231</u>
4002	3972	4396	4462

23 ^h 50 ^m 1 ^h 40 ^m				23 ^h 50 ^m 1 ^h 40 ^m				23 ^h 50 ^m 1 ^h 40 ^m							
E				F				G				H			
20	1	58	106	20	1	48	16.1	208	16.3	152	207	18.9	9.4	141	10.0
		62	110			53	16.1	210	16.2	157	208	18.9	9.8	150	9.5
		53	101			6.2	156	203	16.2	141	200	19.9	84	170	10.6
		62	118			5.8	160	218	16.9	149	216	19.2	98	156	9.3
		65	111			4.4	164	217	15.8	157	209	17.8	102	148	8.0
		<u>300</u>				<u>265</u>	302		814	256	40	1894	476		474
		600				5.30	1604		16.28	15.12	20.8		9.52		9.48

74

Apr 24 1080
 oh 0^m
 44 165 94 525

182 523

182 518

190 521

190 524

489 111

44 182 44 5222

182

~~684~~ 704

44. 337.3520

Rel 44 355

L F C

0 30 I H Mean
 E 201 99 118 10.5
 F 203 203 203
 G 168 180 174
 H 147 140 14.3

oh 30^m

I II
 44.425 372

449 395

412 372

460 395

405 363

44.430 397

837.94

Seeing very good

L F C

20 100 98
 217 213
 227 224
 14.7 14.9
 8h 45^m

I II

44 371 360

349 349

346 341

349 363

356 350

Seeing very good

April 26, 1880

22^h 30^m

75

N. 6 S. 6

11.0 55.5

11.8 56.6

12.0 56.0

11.5 56.8

11.7 56.5

8 0 31 4

11.60 56.28

56.28

67.88

33.94

Set at 44 35.5

Fleure

E	F	G	H
0 56.5	2.6	4.3	0.7
56.6	3.1	4.4	0.1
56.8	3.1	3.7	0.3
56.7	3.0	3.8	0.0
56.6	2.9	4.0	0.4

Runs

E	F	G
5 0 15.0 0' 14.0	22.7 22.8	24.2 24.0 20.8 19.3
15.5 14.0	23.0 22.7	23.9 23.4 20.4 19.0
15.5 14.1	22.7 22.8	23.9 23.3 20.7 18.8
15.3 14.4	23.0 22.9	24.2 23.7 20.2 18.4
15.2 13.9	23.0 22.7	23.9 23.9 20.0 19.1
15 4	14 4 3 9	201 33 21 46
15 30 14.08	22.88 22.78	24.02 23.66 20.42 18.92

April 27, 1880
coll 21^h 50^m

N.b N.b S.b

69.1 44 9.7 44 57.1
~~87~~ 56.0
 10.2 57.4
 10.2 57.6
 10.3 57.0
 10.8 35 1
 51 ~~2~~ 57.02
 10.2 ~~8~~⁴
 57.02
 67 ~~2~~⁶
 33.6 ~~3~~

set at 44 35.5

Flexure

E	F	G	H
56.8 046.8	4.2 3.3	4.9 10.8	1.0 58.9
57.3 47.3	4.3 3.0	5.1 11.1	1.0 59.0
57.0 47.2	4.5 2.6	5.3 10.7	0.5 58.9
56.9 47.2	4.2 3.0	5.3 11.2	0.7 59.3
56.9 47.0	4.1 2.9	5.2 11.2	0.9 59.1
349 5	13 48	8 50	41 452
56.98 47.10	4.26 2.96	5.16 11.10	0.82 59.04
4.26 2.96			
5.16 11.10			
0.82 59.04			
722 260.20			
1.80 0.05			
0.05			
1.75			
+ 0.88			

APR 30 1880

5^h 45^m

77

63.9

44.861

44.598

062

057

062

050

292

44.884

596

600

597

609

0000

44.6000

44.6584

6584

44.32921

set of 44.32.9 7

78

May 2, 1880

coll. W.C. Wobbs 22^h 15^m

N.C.	N.C.	S.C.
69.6	6.8	52.0
68.6	7.3	51.7
69.6	7.0	51.8
69.6	7.2	52.0
69.9	7.2	51.8
47.3	5	9.3
69.4 ⁸⁶	7.10	51.86

51.86
58.96
29.48

Set at 44 32.9

N.C. 5.6

8.0 51.0

7.9 51.9

7.8 51.1

8.0 51.9

8.0 51.9

39.7 28

7.94 50.56

57.56

59.50

29.75

W.C.W.

E		F		Flexure		G		W.C.Wobbs		It	
0	0	57.7	0	0	49.1	4.9	4.1	5.1	12.3	1.9	0.9
		57.7			49.1	4.7	4.3	5.0	12.4	1.8	0.6
		57.7			49.2	4.6	4.1	5.0	12.4	1.9	0.8
		57.8			49.1	4.7	4.0	5.0	12.5	1.6	0.9
		57.6			49.0	4.5	4.2	5.0	12.5	1.9	0.9
		3.5			5	3.4	7	.1	2.1	4.1	4.1
		57.70			49.10	4.68	4.14	5.02	12.42	1.82	0.82
		4.68			4.14						
		5.02			12.42						
		1.82			0.82						
		9.22			246.48						
		2.30			1.62						
		1.62									
		.68									
		+0.34									

May 1880
0h 45^m

44	040	667
	42	65'3
	41	692
	39	67.0
	<u>20</u>	<u>660</u>
	182	342
44	3.24	1084
	68.84	1084
	<u>70.488</u>	<u>1084</u>
	<u>34.99</u>	
	35.24	

Let at 443 29

7^h 55^m

May 4, 1880

H.A.P. obs.

Level 22^h 55^m

N. b. S. b.

3	99.7	44	71.0
44	99.8		69.0

	97.6		71.0
--	------	--	------

	98.8		71.0
--	------	--	------

	97.3		70.0
--	------	--	------

	98.3		70.0
--	------	--	------

	<u>41.7</u>		30
--	-------------	--	----

43	98.34	44	70.60
----	-------	----	-------

44	70.60	43	98.34
----	-------	----	-------

7	76894	8	6894
		44	34.47

4	34
---	----

Set at ~~37~~ 44 34.5

May 5 1880

N.C.

43,961 ⁵	44,717
967	712
962	713
953	717
958	711 ⁵
<hr/>	<hr/>
30 4 ⁵	24
43,960 ¹⁰	44,719 ⁸
	43,960 ¹⁰
	<hr/>
	8675 ⁸
	44,337 ⁸⁹

Set at 44,338

May 9, 1880

Coll. 3^h 15^m

H. A. R. obs.

N. b. M. b. S. b.

44	0.77	0.15	44	6.73
	0.50	0.00		6.70
		0.09		6.61
		0.06		6.58
		0.00		6.80
		30		34.2
		0.06		6.68
				0.06
				6.74
				33.70

Set at 44 33.8

Runs.

E		F		G		H	
5	0	9.8	7.9	11.5	12.5	20.0 ^{19.3} 14.0	14.0/2.7
		10.0	8.5	12.0	12.2	20.7 19.7 13.9	13.9/2.0
		10.1	8.8	11.9	12.5	20.4 19.1 14.2	14.2/2.0
		9.0	7.8	12.1	12.6	21.0 19.3 14.0	14.0/2.6
		8.7	9.0	11.5	12.8	20.1 19.8 13.9	13.9/2.8
		476	420	90	26	22 24	0 21
		9.52	8.40	11.80	12.52	20.44 19.48	14.00 12.42

May 12 dr

43 866 44880
 863 877
 864 870
 879 866
 883 860

 35 44,8706

43 8710
 44 8706

 87416
 44.8708

set at 44.371 ∇ \sim

84

May 13 1500
1 h 30m

Rho

0-1992

0 1 19.5 11.6
 20.3 11.3
 20.8 11.2
 20.7 11.2
 20.4 11.2
~~22.7~~ 15
 20.42 11.30
 20.80 18.98
 14.82 21.70
 22.16 21.04
 78.20 33.02
 19.55 18.25
 18.25
 130
 +0.65

h ~
1 30

V.C.

44 21.0

19.8

20.0

19.5

20.0

100 99.3 20.06
 44 198.6
 2006

R

20.8 19.0
 20.8 18.9
 20.9 19.1
 20.8 18.9
 20.7 19.0
 40 49
 20.80 18.98

g

15.1 21.7
 14.9 21.7
 14.9 21.9
 14.4 21.8
 14.8 21.4
 41 35
 14.82 21.70

76

22.1 21.7
 22.3 21.6
 22.0 21.4
 22.4 21.0
 22.0 21.3
 8 20
 22.16 21.04

Sc

4449.9

49.2

50.1

50.4

49.2

488

444996

1996 2006
 6962982

44 348134.91

Set of ~~44~~ ~~50~~ ~~51~~
 49 34.5

May 13
Run

E R G No

6-0	20.7	24.3	24.3	25.6	25.2	20.3	18.8	28.7	26.5
	25.5	24.1	24.1	25.9	24.8	19.9	19.1	28.4	26.9
	25.3	24.1	24.1	25.8	25.4	20.0	18.9	28.0	26.4
	25.7	24.6	24.6	25.8	26.0	20.2	18.9	28.1	26.2
	25.9	24.8	24.8	26.3	25.9	19.7	18.4	28.2	26.3
	25	19		44	23	1	41	14	23
	25.50	24.38		25.88	25.46	20.02	18.82	28.28	26.46

86 May 18 + 9 1870

@ 44.

44	040	44,682
	041	681
	048	690
	040	690
	048	682
	<u>217</u>	<u>425</u>

44	0434	44,6850
4	6850	
	<u>284</u>	
46	364	Set at

$\frac{2h}{10}$
 Main 2u

43,892

90.1

907

91.0

901

4171

9022

44,820

825

814

821

820

100

44,8200

48,9022

87222

44,361

Let of 44 36.4

88

May 23 1880

 $P = 9^h$

43	914	44	848
	912		853
	910		850
	918		850
	920		853
	<u>54</u>		<u>254</u>

43	91.48	44	8508
		43	9148

	<u>87658</u>
--	--------------

44.5828⁸ Sel-a-

May 23, 1880.
23^h 30^m

43	N. 6.	S. 6.
	91.7	82.7
	91.8	82.2
	91.6	81.4
	92.1	81.0
	92.6	81.2
	9.8	6.5
	91.96	81.30
	81.20	
	17326	
	36.63	set. at 36.6

Runs.

	E		F		G		H	
5 0	38.1	37.7	39.8	39.8	39.8	38.9	26.8	44.8
	38.0	37.8	39.8	39.2	40.0	38.2	26.2	44.6
	38.0	37.0	39.7	39.6	40.1	38.7	26.2	44.4
	38.1	37.3	39.4	39.3	40.0	38.6	26.3	44.3
	38.4	37.2	39.4	39.7	40.0	38.5	26.4	44.3
	<u>6</u>	<u>20</u>	<u>31</u>	<u>26</u>	<u>49</u>	<u>32</u>	<u>19</u>	<u>24</u>
	38.12	37.40	39.62	39.52	39.98	38.64	26.38	44.48
	E.		F		G.		H.	

0 1	18.8	11.8	20.0	21.1	20.4	28.7	26.3	26.9
	18.7	11.2	20.1	21.6	20.3	28.7	26.6	26.9
	18.2	11.6	20.0	21.2	20.2	28.7	26.0	26.8
	18.5	11.7	20.7	21.1	20.1	28.7	26.4	26.8
	18.5	11.7	20.1	21.1	20.4	28.4	26.8	27.0
	27	30	9	11	14	32	21	44
	18.54	11.60	20.18	21.22	20.28	28.64	26.42	26.88
	20.18	21.22						
	20.28	28.64						
	26.42	26.88						
	21.35	22.08						
		22.08						

90

May 24, 1880.

23^h 0^m.

N. C.

S. C.

43	82.2	44	92.8
	81.8		92.8
	82.3		92.2
	83.0		92.6
	82.2		92.8
	<u>11.5</u>		<u>32</u>

43	82.30	92.64
----	-------	-------

92.64
74.94
37.47

set at 44 36.6

Flexure.

E				F			G			H			
0	1	18.1	12.0	8.7	22.8	23.8	21.2	24.9	33.4	30.8	30.1	30.9	28.1
		18.6	12.1	8.7	22.7	24.1	21.2	24.8	33.6	30.2	30.0	30.8	28.1
		18.8	12.7	9.0	22.6	24.3	21.3	24.4	33.8	29.9	30.2	30.9	28.0
		18.2	11.8	9.0	22.8	24.0	21.3	24.8	33.5	30.1	30.0	31.0	27.8
		18.2	11.7	9.2	22.7	24.0	21.3	24.9	33.7	30.2	30.0	30.9	27.8
	19		4.6		36		13	38		12	3		48
	18.38		8.92		22.72		21.26	24.76		30.24	30.06		27.96
	22.72		21.26										
	24.76		30.24										
	30.06		27.96										
	95.92		88.38										
	24.18		22.00										
	23.98		18.18										
	1.88		2.60										
	1.94		1.20										

May 25, 1880
 12^h 45^m
 Long collimator.

				Microns.	Reads.
44	31.2	20	1	45.0 E	45.3
	31.9			53.3 F	53.8
	31.3			54.3 G	55.0
	30.5			57.4 H	58.3
	31.6			<u>2100</u>	<u>2124</u>
	65			5260	5310
	3130				

14 ~~14~~ ^h 0^m

29.4	20	1	43.2	44.4
27.0			51.8	52.7
29.2			54.2	55.2
31.3			57.2	58.0
28.0			<u>2064</u>	<u>2103</u>
32.0			51.60	52.58
150.9				
30.8				
31.30				
148				
3074				

Get by coll. in meridian and began definitive reading.

92

May 25 1862

oh 25

Long Coll.

44	425	450	201	468	460
	20	400		537	537
	85	450		547	551
	20	413		588	588
	20			2140	2136
420	425			5352	5340
	148				
	4296				

44	780	94948
	782	942
	782	950
	788	960
	781	957
	413	
44	7826	957
		449574
		487826
		17340
		44.367

Set of 44,366

May 27, 1880.

	11 ^h	20 ^m	
N. b.		S. b.	
43	95.1	45 ^{11.6} 13.7	
	94.8	11.0	
	95.9	10.4	
	95.9	11.0	
	<u>96.4</u>	11.5	
	281	5	
43	95.62	11.10	
45	11.10		
89	0672		
44	53.36		

	11 ^h	35 ^m (sid. time)	
N. b.		S. b.	
43	93.7	45 10.4	
	95.4	12.0	
	95.4	12.6	
	94.5	10.7	
	<u>95.0</u>	<u>12.3</u>	
	290	580	
43	94.80	45 11.60	
45	11.60		
9	6.40		
44	53.80 53.20		Set at 44 53.7

Evidently some trouble. Perhaps let on
wrong wing.

May 28 (Thu)

N.E. 2^h 10^m

43.759 45.137

730

81

730

32

746

30

762

33

227

13

32

43.7454

45.136

43.7454

877 80

44.3689

Lony Lee 2^h 20^m

44.450

20

0

407

50.3

54.2

58.3

443

40.6

50.3

54.2

58.0

413

40.40

50.30

54.1058.15

420

442

168

203.05

50.76

44 4336

May 28/80
2^h 30^m

Adjusted North Collimation
the line of new collimation

New Series

44.468

465

467

467

453

59²⁰ 231 3

44.46²⁰₄₀

44.336

343

341

340

340

240

44.3400
44.46⁴⁰₄₀
80⁴⁰₂₀
44.40⁴⁰₂₀

44^{8m}

New Series after clearing diaphragm
and new adjustment

46.547

562

553

560

554

276

46.5552

46.440

432

430

440

437

179
46.4358

46.5552

9910
46.4955

Set at 46.495

96

May 31, 1880.

9^h 0^m

N. 6 S. 6

45	72.0	45	20.0
	72.5		22.1
	71.0		23.3
	70.0		20.8
	72.8		21.7
	83		79
45	71.66	46	21.58
46	21.58		
91	93.24		
45	56.62		

New Series

9^h 15^m

S. 6 N. 6

45	32.2	45	83.5
	33.2		82.5
	32.4		82.0
	32.8		83.5
	32.7		83.8
	13.3		15.3
45	32.66		83.06
	83.06		
	115.72		
45	57.86		

Revolution screw appeared
to bind.

New Series 9^h 10^m
After adjustment

N. 6 S. 6

45	79.0	45	34.4
	81.0		33.4
	80.0		33.0
	80.2		33.4
	81.5		33.5
	401.7		17.7
45	80.34		33.54
45	33.54		
	113.88		
45	56.94		

Adjusted N. 6. in line of
collimation.9^h 20^m

* N. 6 S. 6

45	89.8	45	51.7
	88.4		52.6
	91.0		53.0
	88.7		53.9
	87.0		52.1
	89.5		12.3
	43.4		
45	88.68		52.46
	52.46		
	141.14		
45	70.57		

Revolution screw free
* Probably set on wrong wire

May 31, 1880

W.A. Roberts

9 ^h		25 ^m			
S. 6		N. 6			
45	52.3	45	62.8		
	53.5		61.4		
	53.8		60.4		
	53.7		59.0		
	53.7		60.6		
	<u>53.7</u>		<u>59.0</u>		
	170		304.2		
45	53.40		60.84		
	60.84				
	<u>114.24</u>				
45	57.12				
				57.86	
				56.94	
				57.12	
				<u>2192</u>	
				57.3	
				Set a	

cleaned and oiled pivots

9 ^h 50 ^m		Level readings.		9 ^h 54 ^m		9 ^h 58 ^m	
W	E			W	E	W	E
52.7	25.2			42.3	35.1	43.7	34.2
27.6	50.3			43.2	34.3	42.6	34.7
90.3	75.5			85.5	69.4	86.3	68.9
45.12	37.75			42.75	34.70	43.15	34.45
37.75				34.70		34.45	
7.37				8.05		8.70	
<u>7.37</u>				<u>4.02</u>		<u>4.35</u>	
+3.68							

May 31, 1880.

Level.

W. A. R. Obs.

9 ^h	59 ^m (sidereal time)		
W	E	W	E.
41.8	34.6	44.3	32.7
44.4	32.8	44.0	32.2
86.2	67.4	88.3	64.9
43.10	33.70	44.45	32.45
33.70		32.45	
99.40		11.70	
+4.70		+6.80	

10 ^h	3 ^m
W	E
47.2	29.3
39.0	37.3
86.2	66.6
43.40	33.30
9.80	
+4.90	

+3.68
+4.02
+4.35
+4.70
+5.10
+4.90
<hr/>
27.45
+4.58
<hr/>
27.98
22.90
<hr/>
25.65
<hr/>
+

b = +2.6

May 31, 1880

Level Readings MC Wobs.

10 ^{hr} 12					
N	E	N	E		
38.9	37.6	36.1	40.9	40.2	36.6
48.7	28.5	46.1	30.9	43.8	33.5
87.6	66.1	82.2	71.8	84.0	70.1
21.5		10.4		13.9	
+5.38		+2.60		+3.48	

N	E	N	E
43.6	33.4	40.9	36.1
41.0	36.1	42.5	34.8
84.6	69.5	83.4	70.9
15.1		12.5	
+3.78		+3.13	

W.C.W.

$$\begin{array}{r}
 + 5.85 \\
 2.60 \\
 3.48 \\
 3.38 \\
 3.13 \\
 \hline
 18.37 \\
 + 3.674 \\
 4.58 \\
 \hline
 825
 \end{array}$$

$$\begin{array}{r}
 + 4.12 \\
 .84 \\
 \hline
 1648 \\
 3296 \\
 \hline
 34608'' = +2.31
 \end{array}$$

$$\begin{array}{r}
 15 \text{ } 184 \text{ (05) } 6 \\
 42 \\
 \hline
 126 \\
 75 \\
 \hline
 -90
 \end{array}$$

$$\begin{array}{r}
 341 \\
 173 \\
 \hline
 20
 \end{array}$$

$$\begin{array}{r}
 3674 \\
 56 \\
 \hline
 22044 \\
 18370 \\
 \hline
 205746
 \end{array}$$

100

May 31, 1880.

16^hLong. coll
16^h 0^mCircle Reads
(1st) (2nd)

45	55.5	20	3	18.9	20.0
	53.0			27.7	28.7
	53.9			27.0	28.5
	53.9			31.9	33.8
	<u>52.3</u>			<u>1055</u>	<u>1110</u>
	186			2638	2775
45	53.72				

h m

0	0	
45	59.8	45-44.4
	60.1	44.8
	60.9	44.6
	59.7	44.1
	<u>60.0</u>	<u>44.7</u>
	30 05	26
	60.10	44.52
		<u>60.10</u>
		100.62
		52.31
		55.45
		<u>776</u>
		53.88

h m

1	45	
45	59.3	51.3
	59.7	51.2
	59.2	51.0
	58.9	52.0
	<u>59.9</u>	<u>52.0</u>
	470	75
45	59.40	51.50
	51.12	
	<u>1090</u>	
	55.45	

May 31, 1880

Long Call

2h 10^m

45	773	700
	755	710
	744	728
	765	713
	780	732
	<u>317</u>	<u>123</u>
45	7634	7246

2h 13^m

20	3	203	207
		287	293
		286	297
		348	348
		<u>324</u>	<u>1145</u>
		2648	2290
		2810	2862

Bad seeing

Placed a piece of ground glass
in front of Mirror. Definitive better2h 16^m

45	763
	697
	682
	743
	700
	<u>555</u>
	7170

194
283
280
330
<u>287</u>
2718

Open North Shutter

May 31, 1880.

2^h 30^m

H.C.W. H.A.R.

N.6 N.6

45 58.2 58.1

59.1 58.4

58.2 59.8

57.2 59.0

59.1 59.2

41.8 44.5

58.36 58.90

48.74 47.72

107.10 106.62

53.55 53.31

53.55

86

53.43

H.A.R.

S.6

48.4

47.8

47.1

47.3

48.0

386

47.72

W.C.W.

S.6

48.7

48.7

49.0

49.0

48.3

437

48.74

47.72

56.46

48.2

Adjusted focus of N.6.

2^h 30^m

H.A.R. H.A.R.

N.6 S.6

45 58.7 45 58.8

58.8 51.9

59.2 51.3

59.2 52.0

59.5 51.6

45.4 86

45 59.08 51.72

51.72

11080

55.40

53.8

53.4

53.4

12.6

54.2

57.1 = set of

2.9

+1.7

c = 4.6

May 31, 1880.

2 h 45 m

Level Readings

W	E
39.9	49.1
53.3	34.8
93.2	83.9
	9.3
	2.33

W	E
51.4	36.3
45.0	42.3
96.4	78.6
(48.2)	(39.3)
17.8	
4.45	

873
43.7

Adjusted Level

W	E
48.5	36.7
48.0	36.5
96.5	73.2
23.3	
5.83	

W & R

$$\begin{array}{r} 2.33 \\ 44.1 \\ 5.83 \\ \hline 126.1 \end{array}$$

$$\begin{array}{r} .056 \\ 42 \\ 112 \\ 224 \\ \hline 1 = +24 \end{array}$$

+4.20

H.C. Wobs 3 h 5 m

W	E
45.0	36.2
48.1	31.9
93.1	68.1
25.0	
6.25	

W	E
48.2	31.9
40.1	39.1
88.3	71.0
17.3	
4.33	

W	E
40.0	39.1
47.1	31.5
81.1	70.6
16.5	
4.13	

W	E
47.2	31.2
38.5	40.0
85.7	71.2
14.5	
3.63	

$$\begin{array}{r} 1.33 \\ 4.45 \\ 5.83 \\ +6.25 \\ +4.33 \\ +4.13 \\ +3.63 \\ +4.03 \\ \hline 22.37 \\ 4.47 \\ \hline 4.47 \end{array}$$

$$\begin{array}{r} W \& R \\ 223.7 \\ 447.4 \\ \hline 116 \\ 2882 \\ 223.5 \\ 252 \\ \hline 1 = +25 \end{array}$$

W	E
38.1	40.0
48.0	30.0
86.1	70.0
16.1	
4.03	

May 31, 1880

3^h40^m

Coll. H.C. H. obs.

N.6	N.6	S.6		
20.8	45 57.5	51.5	H.A.R.	53.43
20.5	56.6	51.2	H.C.H.	53.55
18.9	58.8	51.0	H.A.R.	55.40
19.0	58.0	51.4	H.C.H.	54.62
19.0	58.8	51.4		17.00
98.2	39.7	1.5	45	54.25
19.64	45 57.94	45 51.30		
	45 51.30			
	109.24			
	54.62			

Set at 45 54.3

Values of c for longitude comparison
between Cambridge & New Haven.

May 3 $c = +.00$

24 +.01

25 +.00

27 -.23

28 +.00

31 9^h +.0531 1^h +.0431 4^h +.00June 1 3^h -.022 7^h -.022 23^h -.053 10^h -.053 23^h -.06

6 for May 31

For 10^h S. 11^hFor 3^h S. 11^hH.A.R. $b = +.26$ H.A.R. $b = +.24$ H.C.H. $b = +.23$ H.C.H. $b = +.25$ $b = .245$ $b = +.245$

June 1 1880

H.C. obs.

3h 0m

N. 6 3 N. 6 S. 6

20.5 45 68.0 45 37.3

20.5 67.8 37.9

21.8 67.0 37.6

20.3 67.5 37.4

21.0 67.8 37.5

41 381 27

20.82 45 67.62 37.54

45 37.54

10 5 16

45 52.58

H. C. obs.

3h 15m

N. 6

20.5 68.0 37.6

20.7 67.6 37.8

21.7 68.0 37.7

21.8 67.6 37.6

21.8 67.7 37.6

65 389 33

21.30 45 67.78 45 37.66

45 37.66

10 5 44

45 52.72

Set at 45 54.3

Level 3h 30m

Adjusted bubble

N E N E N E

46.0 55.0 64.1 36.1 47.0 52.7

64.1 36.1 47.2 52.6 58.2 41.0

110.1 91.1 111.3 88.7 105.2 93.7

19.0

22.6

11.5

4.75

5.65

2.88

N E N E 4.75

58.1 40.8 48.3 50.0 5.65

48.5 50.1 38.1 39.0 2.88

106.6 90.9 106.4 89.6 3.93

15.7 17.4 4.36

3.93 4.36 21.57

Mean 4.31

7-424

June 2, 1880

St. C. H. obs.

23 ^h	58 ^m		0 ^h	20 ^m	
N. l. e	N. l. e	N. l. e	N. l. e	N. l. e	S. l. e
25.4	71.5	28.9	24.2	71.7	28.0
24.0	71.0	28.9	23.3	71.8	28.0
25.9	71.3	29.0	23.8	72.0	28.3
23.4	71.1	28.9	24.0	71.8	27.8
24.0	71.1	28.9	24.4	71.2	28.0
227	10	446	197	85	401
24.54	45 71.20	45 28.92	23.94	45 71.70	45 28.02
	45 28.92			45 28.02	
	100.12			99.72	
45	50.06		45	49.86	

Set at 45 54.3

Levels 0^h 30^m

W	E	W	E	W.	E
53.1	53.8	59.0	46.9	48.5	06.3
59.4	46.9	49.1	56.1	61.1	43.7
1125	100.7	108.1	103.0	109.6	100.0
11.8		5.1		9.6	
+2.95		+1.28		+2.40	
W	E	W	E		
61.0	43.6	46.9	57.0		+2.95
47.0	57.1	61.1	42.7		+1.28
108.0	100.7	108.0	99.7		+2.40
7.3		8.3			+1.83
+1.83		+2.08			+2.08
					10.54
					+2.11

June 3, 1880.			10 ^h 50 ^m		11 ^h	10 ^m	
N.6.		N.6	S.6		N.6	N.6	S.6
25.2	45	65.0	35.9		23.2	45	65.1 45 35.8
25.0		65.5	35.9		22.3		65.0 35.4
24.0		64.3	36.0		23.9		65.0 36.0
23.2		64.8	36.0		24.4		64.2 35.7
<u>24.2</u>		<u>64.0</u>	<u>35.3</u>		<u>24.0</u>		<u>65.1</u> 35.5
21 6		23 6	29 1		23.8		24 4 28 4
24.32	45	64.72	45 35.82		23.18 ⁵⁶	45	64.88 45 35.68
	45	35.82				45	35.68
		100 54					100.56
	45	50.27				45	50.28
				Set at 45	54.3		

		Level Readings		11 ^h	35 ^m
W	E	W	E	W	E
53.0	39.9	46.1	46.5	52.4	40.2
46.0	46.8	52.7	40.1	47.8	45.0
99.0	86.7	98.8	86.6	100.2	85.2
12.3		12.2		15.0	
+3.07		+3.05		3.75	

W	E	W	E	
47.6	45.0	53.7	38.8	+3.07
53.8	38.8	47.0	45.1	+3.05
101.4	83.8	100.7	83.9	+3.75
17.6		16.8		+4.40
4.40		4.20		+4.20
				18.47
				+3.694

36.9
 0.56
 22.4
 19.45
 21.7

b = +2.2

108

June 3, 1880

H. C. W. obs.

23 ^h	25 ^m	N. 6	23 ^h	45 ^m	S. 6
23.8	45	64.0	23.1	45	64.7
24.1		64.0	23.8		64.1
22.6		63.2	22.6		64.0
23.3		64.3	23.4		64.8
24.7		64.7	23.3		64.8
18.5		20.2	16.2		2.4
23.7	45	64.04	23.24	45	64.48
	45	34.76		45	34.10
		98.80			98.58
	45	49.40			49.29

Set at 4.5 54.3

Levels.

0^m 20^m

N	E	N	E	N	E
43.1	50.4	57.5	46.0	49.0	54.0
57.6	46.0	49.0	54.0	60.0	43.2
100.7	96.4	106.5	100.0	109.0	97.2
4.3		6.5		11.8	
+108		+1.63		+2.95	

+1.08

1.63

2.95

5.66

+1.89

0.56

1.134

945

1058.9

b = +1.1

N

E

37.5

66.0

levelled as far S. as possible

June 5, 1880

H. C. Kober.

3 ^h 15 ^m			3 ^h 30 ^m		
N. l.	N. l.	S. l.	N. l.	N. l.	S. l.
20.2	45 65.3	45 37.4	19.2	45 65.2	45 37.8
20.5	65.8	37.1	20.6	65.1	38.2
20.1	65.6	37.9	19.4	65.0	38.0
19.8	65.0	37.5	19.9	65.2	37.7
20.0	65.0	37.7	20.2	64.8	37.8
1006	17	26	993	253	395
20.12	45 65.34	45 37.02	19.86	45 65.06	45 37.90
	45 37.52			45 37.90	
	10286			10296	
	51.43			51.48	

Set at 45 54.3

Levels. 3^h 45^m
Adjusted Bubble.

N	E	N	E	N	E
49.4	48.7	56.9	40.9	46.0	51.2
57.0	40.8	46.0	51.2	57.0	40.0
106.4	89.5	102.9	92.1	103.0	91.2
16.9		10.8		12.8	
+4.22		+2.70		+2.95	

N	E	N	E	
56.8	40.2	47.9	48.8	+4.22
47.9	49.0	55.0	41.3	2.70
104.7	89.2	102.9	96.1	2.95
15.5		12.8		3.88
+3.88		+3.20		3.20
				16.95
				+3.39

16.19

June 6, 1880.

H. C. W. obs.

2 ^h	50 ^m		3 ^h	15 ^m	
N. l.	N. l.	S. l.	N. l.	N. l.	
17.2	45 64.8	45 38.2	16.6	45 63.0	45 38.3
16.8	64.3	38.1	16.9	63.6	38.7
16.3	64.0	38.3	16.0	63.8	38.3
17.0	64.2	39.0	17.0	64.0	38.6
16.3	64.7	38.4	16.8	64.0	39.1
33.6	2.0	42.0	33.3	18.4	43.0
16.72	45 64.40	45 38.40	16.66	45 63.68	45 38.60
	45 38.40			45 38.60	
	102.80			102.28	
	45 51.40			45 51.14	

Set at 45 57.3

Levels. 3^h 30^m

N	E	N	E	N	E
52.5	41.7	49.0	44.7	52.0	40.9
49.1	44.7	52.0	40.9	49.2	43.6
101.6	86.4	101.0	85.6	101.2	84.0
15.2		15.4		16.7	
+3.80		+3.85		+4.17	

N	E	N	E	
49.1	43.6	52.1	40.0	+3.80
52.1	40.0	48.1	44.0	3.85
101.2	83.6	100.2	84.0	4.17
17.6		16.2		4.40
+4.40		+4.05		4.05
				20.27
				+4.05

b = 4.23

June 7, 1880

H.C. H obs.

10 ^h 45 ^m			10 ^h 58 ^m		
N. l.	N. l.	S. l.	N. l.	N. l.	S. l.
18.1	45 63.4	45 42.2	16.5	45 64.9	45 41.4
16.3	63.0	41.5	15.5	63.2	41.3
17.2	62.0	42.8	17.0	63.4	41.2
17.8	62.4	41.9	16.6	62.9	41.0
16.0	62.4	41.1	15.6	62.8	40.3
35 4	13 2	9 5	31 2	17 2	5 2
17.08	45 62.64	45 41.90	16.24	45 63.44	45 41.04
	41.90			45 41.04	
	104 54			104 48 ⁸	
	45 52.27			45 52.24 ⁴	
			Set at 45 54.3		

Levels. 11^h 5^m

W	E	W	E	W	E
58.7	32.0	36.2	54.0	58.2	32.0
36.5	54.0	58.4	31.9	36.6	53.2
95.2	86.0	94.6	85.9	94.8	85.2
9.2		8.7		9.6	
+2.30		+2.18		+2.40	

W	E	W	E
36.5	53.2	58.5	31.3
58.7	31.3	36.0	53.8
95.2	84.5	94.5	85.2
10.7		9.3	
2.67		+2.33	
			+2.30
			+2.18
			+2.40
			+2.67
			+2.33
			188
			+2.38

b = f13

112

June 7, 1880
2^h 0^m

N. 6	N. 6	S. 6
18.5	45 74.0	45 27.0
18.9	73.8	26.3
18.0	74.1	27.2
18.9	74.9	26.7
18.8	74.4	26.7
31	21.2	33.9
18.62	45 74.24	26.78
	45 26.78	
	101.02	
	45 30.51	

Ch. C. H. ds

2^h 15^m

N. 6	N. 6	S. 6
18.3	45 75.1	45 25.9
18.1	75.1	26.0
18.7	75.7	25.5
18.8	74.9	25.8
18.6	75.5	26.1
25	26.3	29.3
18.5	45 75.26	45 25.86
	45 25.86	
	101.12	
	45 50.56	

Set at 45 54.3
Levels 2^h 25^m

N	E	N	E	N	E
50.7	52.8	49.6	43.3	50.8	57.9
59.8	43.5	50.8	57.9	57.4	44.9
110.5	96.3	100.4	95.2	108.2	96.8
142		152		114	
+3.55		+3.80		+2.85	

N	E	N	E
57.3	44.9	49.9	52.0
50.0	51.9	59.3	42.0
107.3	96.8	109.2	94.0
10.5		152	
+2.63		+3.80	
			+3.55
			+3.80
			+2.85
			+2.63
			+3.80
			166.3
			+3.33

4. +19

June 8, 1880

H. C. Wobs.

10^h 0^m10^h 5^m

N. l.	N. l.	S. l.	N. l.	N. l.	S. l.				
19.2	45	77.8	45	24.1	20.2	45	77.9	45	24.2
19.4		77.5		24.0	19.8		77.6		23.6
19.4		77.9		23.9	19.0		77.3		24.2
19.2		77.5		23.6	19.0		78.0		24.1
19.4		77.3		24.1	19.0		78.3		24.2
<u>16</u>		30		197	<u>19.0</u>		391		203
19.32	45	77.60	45	23.94	19.40	45	77.82		24.06
	45	23.94				45	24.06		
		10154					10188		
	45	50.77				45	50.94		

Set at 45x 54.3

Levels. 10^h 20^m

N	E	N	E	N	E
58.3	46.0	57.5	52.1	58.0	45.3
57.5	52.3	58.0	45.3	50.9	52.0
109.8	98.3	109.5	97.4	108.9	97.3
11.5		12.1		11.6	
+288		+3.02		+2.90	

N	E	N	E	
50.7	52.2	58.4	44.0	+2.88
58.7	48.9	49.8	52.2	+3.02
109.1	96.2	108.2	96.2	+2.90
12.9		12.0		+3.22
+3.22		+3.00		+3.00
				1502
				+3.00

b=+17

114

June 9 1880

2^h 30^m

A.C. S.B.

45- 690 45- 330

700

327

698

329

700

320

700

330

3488136

45- 8976

3272

6976

10248

45- 5124

Let us

Long. Coll

45- 802

860

805

808

875

150

45- 8300

June 10, 1880
Long collimator
5^h 25^m

85.5

82.1 H.A.R. obs

80.0

81.0

78.0

66

81.32

Long coll.
5^h 35^m

78.6

77.4

78.6

79.2

80.2

394.0

78.80

H.C.H. obs.

Circle reads.

20 3 25.4

33.8

30.1

34.6

123.9

309.8

Circle reads.

20 3 25.2

30.6

27.4

32.0

115.2

28.80

Set at 45 51.2

Rims H.C.H. obs.

E

F

G

H.

5 0 8.3 6.9

8.4 6.9

8.2 6.6

8.2 6.8

8.1 7.0

12 42

8.24 6.84

12.1 11.7

12.5 11.9

12.1 11.6

12.0 11.6

12.1 12.0

8 38

12.16 11.76

11.0 10.0

11.0 10.0

10.8 10.1

11.1 10.1

11.1 10.0

0 2

11.00 10.04

16.1 15.4

16.0 15.2

15.8 15.8

16.0 15.0

15.9 15.0

48 7

15.96 15.14

June 10, 1880.
 15^h 15^m

Long Coll.

(1 setting)

(2nd setting)

45

59.6

20 53

18.7

19.0

57.4

26.6

25.6

58.8

24.0

24.3

60.8

27.0

27.6

59.7

96.3

296.3

59.26

June 10, 1880
30^m

Long. coll.

75.0	20 3	17.7	18.1
75.3		23.7	24.6
75.0		21.2	21.9
75.0		26.3	26.4
76.1			

June 10, 1880.
Oh 30mx sub below *Figure*

	N. 6	S. 6		48	9	29	2	14	29	40	37
45	60.4	45 40.5		52.96	45.18	56.58	56.04	52.28	1.58	0.80	0.74
	60.4	41.0		56.58	56.04						
	61.3	41.3		56.28	1.58						
	61.0	41.1		0.80	0.74						
	60.7	41.6		224.62	223.54						
	38	55		56.15	55.88						
				55.88							
				.27							
				+0.14							

45 60.76 41.10 101.86 50.93 ϵ *Figure* δ γ β α

45 50.93 ϵ δ γ β α

Set at 45 51.2

	2	11	11	11	11	11	11
[5]	53.0	45.0	56.3	55.8	54.6	1.5	1.0
	52.8	45.0	57.0	56.3	54.3	1.4	1.0
	53.0	45.3	56.3	56.3	54.2	1.6	0.3
	53.0	45.6	57.0	56.0	54.1	1.6	0.8
	53.0	45.0	56.3	55.8	54.2	1.8	0.9

+
{the above}
{for means}

Runs

50	12.8	15.1	14.0	21.0			
12.7	15.1	14.0	20.9				
12.9	15.0	13.8	20.4				
13.0	15.2	13.7	20.9				
12.8	15.2	13.9	20.5				
ϵ	δ	γ	β	α			
11.7	10.1	14.0	14.0	12.7	12.2	19.3	18.2
11.8	10.0	13.8	14.0	12.3	12.6	18.8	18.0
11.7	9.8	14.2	13.7	12.2	12.5	19.0	18.0
11.7	10.0	14.3	13.6	12.7	12.5	19.2	18.0
12.0	10.1	14.0	14.0	12.3	12.3	19.0	18.0
39	0	3	43	22	21	3	2
11.78	10.00	14.06	13.86	12.44	12.42	19.06	18.04

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

June 11, 1880
5^h 35^m

Lt. C. V. obs.

Lb.

		Circle	Reads. (2 settings)
59.0	20. 3	22.0	19.2
59.4		30.6	27.1
62.4		31.9	28.9
58.0		32.7	29.0
60.2			

120

0^h 20^m

June 12, 1880.

Long. Coll.

Circle Reads (separate settings)
(1st setting) (2nd setting)

45	59.0	20	3	15.3	15.4
	58.9			23.6	24.0
	61.1			24.8	24.7
	62.7			27.0	26.8
	64.4				

Collimation.

p. 6.

Flexure.

		E		F		G		H	
0	2	57.0	42.5	56.8	54.8	57.4	4.7	1.7	1.0
		58.7	42.2	55.9	54.6	57.5	4.4	1.7	0.7
		58.4	42.0	55.7	54.7	57.3	4.2	1.5	1.0
		57.1	42.3	55.7	54.4	57.8	4.1	1.7	0.4
		50.7	42.1	56.0	54.9	57.5	4.3	1.9	0.0
		39	11	301	34	25	4.34	1.70	0.62
		50.78	42.22	56.02	54.68	57.50			
		56.02	42.68						
		57.50	4.34						
		170	0.62						
		226.00	22.86						
		56.50	55.47						
		55.47							
		1.03							
		+0.52							

Runs

		E		F		G		H	
5	0	32.7	31.4	36.8	36.3	38.7	38.1	43.1	42.0
		32.0	31.3	36.4	36.2	38.8	38.3	43.0	42.2
		32.3	31.2	36.3	36.8	38.9	38.2	43.3	42.0
		32.7	31.1	36.2	36.4	39.0	38.1	43.0	42.0
		32.7	31.3	36.4	36.6	39.0	38.1	43.2	42.0
		24	13	21	23	44	8	6	2
		32.48	31.26	36.42	36.46	38.88	38.16	43.12	42.04

June 12, 1880.

0^h 30^m

N. 6

S. 6

45 57.8 45 50.2

53.0 49.9

52.3 50.2

52.1 49.9

52.7 49.7

11.9 249.9

45 52.38 45 49.98

49.98

102.36

45 51.18

set at 45 57.2

N.E. S.E.

50.78 42.22

56.02 54.68

57.80 4.34

1.70 0.62

46.00 22.86

56.50 55.46

55.46

1.04

40.52

June 13, 1880

5^h 40^m

Long. Coll.

(Separate settings)

Circle Reads.

45

60.0

20

3

16.7

17.5

17.0

59.7

26.0

26.7

26.4

60.0

28.1

29.2

28.4

61.5

29.9

30.9

30.2

61.3

June 14, 1980
 3th 55^{min} H. G. Hobs.

N 6

15.9 45 56.1 45 44.5

16.1 55.7 44.4

16.2 56.1 44.5

15.4 56.0 45.1

15.6 56.1 45.0

29.2 0 23.5

15.84 45 56.00 45 44.70

45 44.70

100.70

45 50.35

Set at 45 51.2

June 15, 1880. H. K. H. S.
 0^h 37^m

N. l.	N. l.	S. l.
21.8	45 55.8	45 42.6
22.0	55.9	42.2
21.5	55.6	42.8
21.2	55.9	42.2
<u>21.1</u>	<u>56.1</u>	<u>42.6</u>
76	293	
21.52	5586	42.36
	42.36	
	9822	
	49.11	Set at

Long Coll. H. A. R. S.

0 ^h	40 ^m
	67.3
45	64.6
	68.4
	65.9
	69.5
	69.0

H. A. R. S.
 0^h 46^m

N. l.	S. l.
57.0	39.8
57.3	40.3
57.7	40.0
57.7	40.0
<u>57.1</u>	<u>40.0</u>
18	1
57.36	40.02
40.02	
97.36	
48.68	
<u>47.11</u>	
17.79	
48.89	

set at 48.9

Circle Reads.

(separate settings)

20	3	17.2	17.4	17.0
		26.2	26.0	26.0
		24.3	24.4	23.9
		32.6	32.7	32.0

In all circle readings with long coll. a separate setting was made in δ for each series of microscope readings.

June 16, 1880 K. C. Stobs.
Long coll 6^h 0^m

60.0	20.3	21.4	21.7
59.1		31.6	32.1
39.1		31.8	31.6
59.8		34.0	34.0
64.1			

Str. A. R. Obs.

Long coll.
15^h 23^m

50.3	20 3	# 23.7	20.1
50.4		34.9	30.8
52.0		33.1	28.0
50.4		37.2	33.0
50.7		#	

Light bod.

June 16, 1880 H. A. R. Obs.

Long coll.

0 25^m

0^h

27^m

45

64.7

~~77.7~~

62.4

65.3

71.1

69.3

8

20 3

16.2

18.0

25.3

28.0

23.1

25.2

28.7

31.0

0^h

30^m

N. l.

S. l.

45

56.0

45

37.0

37.4

37.2

36.6

36.7

36.7

36.8

36.9

36.8

33.6

34.5

45

56.72

36.90

36.90

93.62

45

46.87

Flamm

N. l.

S. l.

51.14

41.64

37.42

53.72

55.12

0.98

3.85

1.32

227.53

219.66

56.88

54.91

54.91

1.97

+0.99

Flexure

E.

F

G

H

0 3

51.3

41.7

57.7

53.7

55.3

1.1

3.5

1.2

51.0

41.3

57.4

56.0

55.3

1.0

3.0

1.4

51.2

41.8

57.0

55.7

55.3

0.8

3.2

1.3

51.0

41.8

57.3

55.7

54.7

0.9

3.0

1.4

51.2

41.6

57.7

55.5

55.0

1.1

2.7

1.3

7

32

21

28.6

25.6

4.9

15.4

6.6

51.14

41.64

57.42

53.72

55.12

0.98

3.85

1.32

June 16

Long Coll.

3 h 5 m

North shutter open since 4:30 m

★

682

20 3 164 160

670

26.1 257

682

232 227

682

297 294

682

1 1

0

68.00

June 16-17, 1880

Long Coll.

3 h 55 m

59.9

20 3 19.0 18.0

59.9

29.3 29.0

61.0

29.2 27.7

59.6

34.1 33.3

58.2

11 8 108.0

298.6

27.90 27.00

59.72

June 17, 1880

St. 6 Hobs.

0^h 15^m

N. 6. N. 6. S. 6.

19.5 45 52.6 45 37.1

21.0 52.4 39.9

20.0 53.0 39.1

19.0 53.1 39.1

19.6 52.8 39.1

99.1 13 9 443

19.82 45 52.78 45 38.86

45 38.86

9164

45 45.82

Set at 45 45.8

Fluence

	E	F	G	H
0 2	50.1	56.9	56.8	3.0

50.0 57.0 56.9 3.3

50.2 56.9 56.3 2.7

50.0 56.7 56.6 3.0

50.2 56.8 56.7 3.0

5 34 3 33 156

50.10 56.86 56.66 3.00

56.66 3.00

106.76 11986

53.38 59.93

52.58 59.04

0.83 0.89

59

172

+ 0.43 E

	E	F	G	H
	42.1	56.1	2.8	2.0

42.3 56.0 3.0 1.9

42.1 56.1 3.0 2.0

42.1 56.0 3.0 1.8

42.1 56.5 3.0 2.0

7 7 148 97

42.14 56.14 2.96 1.94

2.96 1.94

19.510 118.08

52.58 59.04

Runs.

	E		F		G		H	
5 0	13.2	12.0	19.2	19.1	19.0	19.0	26.5	25.9
	13.2	12.0	19.0	19.3	19.1	19.0	26.8	25.6
	13.7	12.2	19.2	19.0	19.0	19.0	26.8	25.9
	13.7	12.0	19.0	19.0	19.1	19.0	26.8	26.0
	13.2	12.1	19.3	19.0	18.8	18.8	26.6	26.3
	20	3	7	4	0	48	35	47
	13.40	12.06	19.14	19.08	19.00	18.96	26.70	25.94

June 18, 1880.

H. C. H. obs.

Long Coll.

5 not read as Gas turned off
from the building.

58.0

59.0

57.4

58.6

58.0

130

June 19, 1880. H. 6 H. obs.

Long. Coll.
6^h 10^m

50.0	20	3	18.1	18.4
47.2			30.0	29.6
49.0			29.2	28.7
48.0			32.1	31.9
49.9			109.4	108.6
<hr/> 2441			27.35	27.15
48.82				

June 20, 1880 H. C. Hobbs.

6^h 15^m

H. C.

H. C.

S. C.

12.0

52.8

42.6

12.0

52.5

42.0

12.8

53.0

42.2

11.9

52.7

42.8

12.6

52.6

42.0

10 3

14³⁶

1 6

12.06

45 52⁷²

45 42.32

45 42.32

95⁰⁴45 47⁵²

Set at 45 45.8

June 21, 1880

H. C. W. obs.

6 ^h	10 ^m	
N. 6.	N. 6.	S. 6
12.5	50.8	41.7
12.2	50.7	42.0
13.1	51.2	41.1
13.0	50.8	42.0
<u>12.9</u>	<u>50.1</u>	<u>41.8</u>
13 7	3 6	8 6
12.74	45 50.72	41.72
	45 41.72	
	93 44	
	45 46.22	

Set at 45 45.8

June 21, 1880 Hb Mobs.

1^h 30^m

N.6 N.6 S.6

17.4 45 53.8 45 35.0

17.7 53.2 35.0

16.5 53.2 35.8

17.6 53.8 35.8

16.4 53.8 35.7

35.6 28 23

17.12 45 53.56 45 35.46

45 35.46

8902

45 44.51

set at 45 45.8

Long Collimation

2^h 15^m

45 600 20 3 158 150

630

453 252

640

264

640

238 228

613

288 276

123

948 908

6246

2370 2270

June 22, 1880

H. G. Wobs.

6^h 15^m

Long coll

45	55.0	20	3	15.0	15.0
	57.0			26.2	25.9
	55.0			24.8	24.9
	57.1			28.5	28.2
	57.2			94.5	94.0
	31 3			2363	2350
	56.26				

H. A R obs

63.3	20	3	15.1	
66.1			26.0	
64.0			24.9	
62.8			29.4	
61.3			95.4	
17 5			23.85	
63.50				

H. G. Wobs.

58.1	20	3	15.6	15.8
58.0			25.8	26.4
57.1			24.8	25.6
58.1			29.0	29.2
58.0			95.2	97.0
39 3			23.80	24.25
57.86				

June 22, 1880.
 15th 17th
 Long Coll.

45	48.2	20	3	18.7	17.7
	48.0			30.4	29.6
	48.1			27.5	27.6
	49.1			32.5	32.0
	48.0			1091	1069
	414			27.28	26.73
45	48.28				

St. le Mobs.

1^h 40^m

St. le

19.6	45	54.1	45	26.3
20.0		54.6		25.7
19.2		53.9		26.5
19.2		54.8		26.7
20.0		54.7		26.0
980		221		312
19.60		5442		26.24
		2624		
		8066		
	45	40.33		

Set at 45 45.8

136

22
 Jan 22 1880

Larry Cole

3h 30^m

45-	620	20	3	128	183
	621			297	287
	636			249	257
	648			322	324
	641			<u>1040</u>	<u>1046</u>
	<u>166</u>			2600	2610 ⁻
	6332				

June 23, 1880
16^m

W. L. W. L.

N. L.		N. L.		S. L.
14.6	45	46.5	45	33.4
14.0		46.0		32.8
14.3		46.3		32.5
14.9		46.0		33.0
14.3		46.0		32.6
21		29.8		14.3
14.42	45	45.96	45	32.86
	45	32.86		
	90	78.82		
	45	39.40		

Set at 45 39.4

138

June 24, 1880

H. C. Woods.

6^h 26^m

N. 6

N. 6

S. 6

15.0 45 51.9

45 37.0

14.0 51.8

36.2

14.1 51.0

36.1

13.2 51.0

37.7

13.3 50.8

37.4

21.6 65

34.4

14.32 45 51.30

36.88

36.88

88.8

45 44.88

Set at 45 45.8

Long coll.

6^h 45

45

49.0

20 3 22.1

22.1

48.8

35.0

34.6

49.0

36.0

35.9

48.0

38.2

38.0

47.9

1313

1306

42.7

3282

32.65

48.54

Ivison ~~15~~ 2
 24-5-2
 for

41-436
 437
 420
 433
 443
 169
 3138

41-448
 430
 400
 440
 448
 196

45,4352
~~4 3 3 8~~
 4 3 3 8
 8738 838

45,4465
 4365

41-45,418

140

Sun 26 1880

1^h 30^m

N.C.

45-384	468
374	478
385	492
370	470
383	475
<u>386</u>	<u>363</u>

45-3872	4726
	8772
	8498
	4249

Del-7-45 458

Long C

45-488	20' 3"	12.2	12.2
450		24.0	24.0
480		26.1	26.3
450		28.7	28.0
470		91.0	90.5
<u>418</u>		227.5	226.5
4836			

June 27, 1880.

W. C. Wells

6^h 45^m

45 47.3

47.0

48.9

47.3

47.2

37.7

45 47.54

20

3

14.2

14.0

28.0

28.0

32.3

31.8

32.5

32.3

107.0

106.1

26.75

26.53

W. A. Robe.

1^h 45^m

N. E.

N. E.

N. E.

S. E.

~~12.1~~

45

12.0

45-41.9

47.0

~~12.2~~

12.2

41.2

48.1

~~13.0~~

12.4

40.9

47.8

12.7

41.3

46.8

12.0

42.2

47.5

12.06

75

37.2

45

41.50

47.44

41.50

8894

44.44

- 2.50

41.94

June 27, 1880

St. L. St. obs.

1^h 45^m

N. L.		N. L.		S. L.
12.0	45	38.8	45	42.9
12.2		39.1		42.8
12.4		39.1		43.1
12.7		38.8		42.9
<u>12.0</u>		<u>39.1</u>		<u>42.6</u>
13		44.9		14.3
12.26	45	38.98	45	42.86
	45	42.86		
		818.4		
	45	40.92		

Fluxion

E	3	5	H	E	P	S	76
47.2	56.8	59.1	0.0	39.9	56.9	6.2	0.0
47.3	57.0	59.1	0.0	40.0	57.0	6.2	0.0
47.0	56.9	59.1	59.8	39.9	57.1	6.2	0.0
47.0	56.7	59.2	0.0	39.9	57.0	6.2	0.0
<u>47.5</u>	<u>57.0</u>	<u>59.1</u>	0.0	40.0	56.6	6.0	0.1
1.0	34.4	6	2998	1997	2846	8	1
47.20	56.88	59.12	59.96	39.94	56.92	6.16	0.02

Long. Coll

45	132	2' 3'	132	134
553			257	260
552			271	276
560			264	269
<u>540</u>			<u>924</u>	<u>939</u>
237				1008
5474			2310	2348

Fluxion

47.20	56.88	39.91	56.92
59.12	59.96	6.16	0.02
106.32	116.84	106.07	116.94
53.16	58.42	53.03	58.47
53.03	58.47		
0.16	- .05		
- 0.05			
21			
+ 0.10			

June 27
H. G. H. obs.

143

Runs

	E		F		G		H	
5 0	5.7	4.1	14.4	14.9	16.8	17.6	18.8	17.8
	5.7	4.6	14.2	14.9	16.8	17.9	18.9	18.0
	5.5	4.2	14.2	14.4	17.0	17.6	19.0	18.0
	5.6	4.8	14.4	14.6	17.0	17.6	18.7	17.7
	5.6	4.8	14.6	14.9	17.1	17.8	18.9	17.5
	31	2.5	18	37	47	35	43	40
	5.62	4.50	14.36	14.74	16.94	17.70	18.86	17.80

H. A. H. obs.
2^h 30^m

N. G.

S. G.

45	40.8	45	42.5	
	40.2		42.4	
	40.1		42.0	
	40.0		42.9	
	39.8		43.1	40.92
2009			129	41.38
	40.18		42.58	230
	42.58			41.15
	8276			41.2
45	41.38			

Set at

" "

144

June 28, 1880

Long bell
7^h 3^m

H. A. R. obs.

53.0	14.6
55.4	27.7
55.8	31.5
55.8	29.0
55.9	10 2.8
25.9	25.70
55.18	

Long bell
7^h 7^m

H. G. H. obs.

55.2	15.0
54.2	28.0
55.2	31.7
54.2	28.6
55.0	183 3
23 8	25.83
54.76	

16^h 15^m

H. A. R. obs.

409	13.0	13.1
400	25.0	25.0
421	29.5	29.2
430	26.5	26.6
400	940	939
60	23.50	23.48
4120		

June 28, 1880 N. to N. obs.

2h 10m

N. to		N. to	S. to
11.9	45	36.1	41.9
11.9		36.1	42.4
11.9		36.3	42.4
11.6		36.3	42.6
12.1		35.8	42.3
94		6	116
11.88	45	35.12	45 42.32
	45	42.32	
		7744	
	45	38.72	

Set at 45 41.2

Long Coll 4h 15m

41-577	203 137 145
457	249 115
513	281 290
522	270 272
505	937 966
2549	2342 2415
5098	

1h 20m

40 378	20 3 150 132 128
355	308 268 262
340	342 308 307
364	345 310 303
360	416 1018 1000
298	2910 2545 2520
3594	

146

June 30, 1880.
Long Coll.
N^h 5^m

H. D. R. 60.

45 ~~45~~ 32.0
45.2 35.0
45.2 35.6
35.0
35.5

5 h 0^m

3 0

41.0 80.

41-41.5 348
42.2 342
42.8 348
43.2 349
42.2 352

122 239
4244 3478
4244
7722
3861

Set at 386

Long Coll

3 23

45 55.0
53.5
52.2
57.0
55.0

July 1, 1880

H. C. Woods

6^h 53^m

Long Coll

		W	W
53.3	20	3 14.4	14.8
51.0		29.0	29.1
52.6		30.8	30.4
51.4		31.1	31.0
48.9		1053	1053
612		26.33	26.33
45 51.24			

Runs H. C. Woods

	E	F	G	H
5 0	2.900 2.2	14.2 14.2	16.3 16.3	19.4 19.2
5 0	3.1 2.0	14.2 14.0	16.3 16.3	19.2 19.0
	2.9 2.0	13.9 14.1	16.0 16.2	19.0 19.0
	3.2 2.1	14.2 14.2	16.1 16.0	19.2 19.1
	3.4 2.0	14.1 14.2	16.3 16.1	19.1 19.1
155	3	206 7	10 9	9 4
3.10	2.06	14.12 14.14	16.20 16.18	19.18 19.08
1.04		.02	.02	.10

Runs W. D. R. H.

	E	F	G	H
5 0	3.3 2.2	14.1 13.9	15.8 15.1	19.9 19.0
	3.2 2.2	14.1 14.0	15.8 15.3	19.3 19.0
	3.5 2.1	14.1 14.3	15.7 15.7	19.4 19.2
	3.3 2.2	14.0 14.7	15.9 15.3	19.3 18.8
	3.1 2.2	14.3 14.3	16.1 15.3	19.3 18.5
14	2.9	6 2.2	29.3 17	22 44.5
3.28	2.18	14.12 14.24	15.86 15.34	19.44 18.90
1.10		.12	.52	.36

148

July 3, 1880

H. C. W. obs.

2^h 10^m

N. 6.		N. 6		S. 6
-------	--	------	--	------

10.6	45	52.9		16.8
------	----	------	--	------

10.8		52.8		16.5
------	--	------	--	------

12.0		52.9		16.7
------	--	------	--	------

10.7		52.8		17.0
------	--	------	--	------

10.8		52.7		16.8
------	--	------	--	------

53.9		41		33.8
------	--	----	--	------

10.78	45	52.82	45	16.76
-------	----	-------	----	-------

	45	16.76		
--	----	-------	--	--

69.58

45	34.79
----	-------

set at 45 38.6

July 4, 1880

H. A. R. obs.

1^h 3^m
25^m

N. 6

S. 6

45	42.7	45	25.0
	42.0		24.4
	42.4		24.8
	43.1		24.7
	42.6		24.0
	128		229
45	42.56		24.58
45	24.58		
45	67.14		
45	33.57		

W. C. W. obs.

7.2	44.0	24.0
6.2	43.9	23.8
7.0	43.2	23.9
6.2	44.0	23.9
6.8	43.8	23.6
334	189	190
6.9	4378	2380
		43.78
		60.58
		33.79

Set at 45 38.6

Flexure

S

N				Flexure				S			
	E	F	G	H		E	F	G	H		
0	2	50.6	57.1	57.8	0.2	41.9	56.2	4.0	59.4		
		50.1	57.5	58.0	0.6	41.7	56.8	4.0	59.3		
		50.7	57.5	57.9	0.1	42.0	56.7	3.9	59.7		
		50.5	57.6	57.5	0.6	42.0	56.3	3.3	59.2		
		50.6	57.8	57.3	0.4	42.0	56.3	3.7	59.6		
		25	25	35	19	96	23	69	22		
		50.55	57.50	57.70	0.38	41.92	56.46	3.78	59.44		
		57.70	0.38			378	59.44				
		10820	11888			10570	11560				
		5410	5894			52.85	54.05				
		52.85	57.95								
		1.25	0.99								
		+62	+50								
		+56									

July 4, 1880

H. R. R. Obs.
Runs

	E		F		G		H	
5 0	47.2	46.0	53.4	53.7	54.8	53.3	57.0	55.7
	47.0	46.0	53.8	53.4	54.9	53.1	57.7	55.8
	47.3	45.6	53.8	53.3	54.3	53.0	57.1	55.5
	47.1	45.8	53.8	53.4	54.3	53.0	57.2	55.7
	47.2	45.7	54.1	53.7	54.5	53.0	57.4	55.2
	8	41	39	25	28	4	14	39
	47.6	45.82	53.78	53.50	54.56	53.08	57.28	55.78

Long Coll

	R		R	
41-	57.6	20	5	157
	59.5			250
	59.8			237
	620			507
	600			301
	489			945
	59.78			2362
				2348

July 5, 1880
6^h 45^m
N

Th. A. R. Os.
Flexure

N				S				
	E	F	G	H		E	F	G
0 2	48.2	56.2	57.2	2.8		40.8	55.0	5.0
	48.7	56.4	57.4	2.9		40.8	55.2	5.0
	48.8	56.6	57.6	3.0		41.0	55.2	4.3
	48.8	55.9	57.7	2.7		41.2	55.6	4.6
	49.2	56.1	57.8	3.0		41.0	55.5	4.5
	43.7	31.2	27	14.4		48	15	23.4
	48.74	56.24	57.54	2.88		40.96	55.30	4.68
	57.54	2.88				4.68	2.56	
	106.28	119.12				105.64	117.86	
	53.14	59.56				52.82	58.93	
	52.82	58.93						
	.32	0.68						
	+0.16	+0.31						
	.47							
	+ .23							

July 6, 1880.

1^h 30^m

Fleasum

E	F	G	H	E	F	G	H
49.9	56.6	59.3	3.7	42.2	56.3	5.8	3.7
50.1	56.8	59.2	3.9	42.2	56.6	5.4	3.0
50.2	56.8	59.0	3.2	42.3	56.5	5.7	3.0
50.0	56.8	58.9	3.2	42.0	55.8	5.4	3.1
50.3	57.0	59.0	3.6	42.2	56.2	5.6	3.0
05	340	454	26	9	314	29	8

50.16 56.80 59.08 3.52

59.08

3.52

109.18

120.32

54.59

00.16

53.88

59.72

+0.71

+0.44

.35

.22

+57

+28

42.18 56.28 5.58 3.16

5.58

3.16

107.76

159.44

53.88

59.72

E		F		Runs		G		H	
5	0	33.7	32.2	39.9	39.0	42.7	40.2	47.0	45.2
		33.4	32.0	39.7	39.2	42.7	40.6	46.7	45.8
		33.6	32.2	39.4	39.3	42.3	40.7	46.8	46.0
		33.7	32.2	39.0	39.5	42.3	40.7	46.7	45.7
		33.7	32.2	39.0	39.8	42.7	40.2	46.7	45.8
		31	8	20	18	27	24	39	35
		33.62	32.16	39.40	39.36	42.54	40.48	46.78	45.70

1^h30^m

0.6

5.6

45

34.6

45

31.9

35.8

32.1

34.4

31.0

34.8

31.3

35.2

31.6

24.8

79

45

34.96

31.58

31.58

36.54

45

33.27

Set at 45 33.2

July 7, 1880.

W. A. R. Obs.

7^h 15^m

Long coll

45-	42.0	20	3	14.8	12.9
	43.1			24.7	23.2
	41.9			28.3	27.0
	46.3			28.8	28.3
	47.0			97.6	91.4
	20.3			19.52	18.28
45-	44.06			24.40	22.85

16^h 15^m

Long coll

34.1	20	3	14.9	15.0
31.1			25.9	26.0
31.6			30.0	30.0
34.0			31.0	30.8
33.0			18 18	10 1.8
13.8			25.45	25.45
32.66				

3^h 0^m

40.0	12.3	12.0
43.1	24.0	23.9
41.2	23.8	23.8
41.3	27.2	27.4
41.3	<hr/>	<hr/>
<hr/>	87.3	87.1
79	21.82	21.78
41.58		

July 7, 1880

M. A. R. obs.

1^h 40^m

N. b.

S. b.

45

30.3

45

23.0

seeing very bad.

31.3

22.5

31.3

23.5

31.0

23.9

30.923.0

48

159

45

30.96

23.18

45

23.18

5414

45

27.07

Set at 45 34.3

Aug 7

Long Coll.

Lm

45	480	473	505	47.4
490	500	491	46.0	
512	518	488	53.0	
480	490	486	50.1	
500	493	493	50.5	
<u>2462</u>	<u>2474</u>	<u>473</u>	2470	
41.58	49.24	49.48	49.40	

July 8

W. G. Robs.

W. A. Robs.

8^h 0^m13 30^m

14 20

15 0

47.2	42.0	39.5	35.2
47.2	42.7	40.3	34.3
48.2	45.2	40.0	30.0
48.2	42.0	41.0	35.0
49.0	44.4	40.0	35.1
41.6	16.3	21.2	24.6
46.94	43.26	40.24	34.92
48.32			

23	12.8	13.3	14.3	14.0	13.1	14.2	11.8
24.2	24.8	26.8	27.0	27.2	29.9	26.8	26.8
23.8	25.3	26.6	26.8	30.0	31.2	28.2	28.2
28.0	29.5	30.4	30.5	31.3	32.4	31.6	31.6
88.8	92.9	98.1	98.3	101.6	107.7	98.4	98.4
22.20	23.22	24.52	24.58	25.40	26.93	24.60	24.60

7^h 8^m
Long Coll.

45	47.4
	46.0
	53.0
	50.1
	50.5

20	3	14.0
		27.0
		26.8
		30.5

156

July 8, 1880

Long. coll.

$15^h 20^m$	$15^h 40^m$	$16^h 13^m$
37.8	35.1	37.0
35.6	36.1	34.8
37.8	36.0	35.3
36.0	37.0	36.4
36.6	36.8	36.2
33.8	31.0	29.7
36.76	36.20	35.94

20 3	12.7	12.0	12.7
	26.8	26.8	26.8
	29.7	28.3	27.7
	31.0	30.8	31.0
	100.2	97.9	98.2
	25.05	24.48	24.55

July 13 1881
Né. S.C.

45	443	45	378
	445		385
	462		378
	452		378
	442		375
	<u>254</u>		<u>400</u>
45	4488	45	3800
			4488
			<u>8288</u>
			41.44

It is possible that
the working of S.C. is
growing. The working may
have been 45 17.8 cc

Set at 45 91.4#

13 30			16 0	17 0	17 15	17 20	17 45	17 50		
45	550	560	603	45	488	445	445	440	482	460
	610	565	580		465	453	425	428	472	450
	593	560	552		506	460	422	420	480	450
	588	558	552		480	444	445	412	461	452
	545	555	540		506	440	450	435	450	452
	<u>2926</u>	<u>298</u>	<u>2797</u>		<u>2455</u>	<u>245</u>	<u>190</u>	<u>135</u>	<u>315</u>	<u>334</u>
	5852	5596	5590		4910	4490	4880	4270	4630	4668

20	6	100	113	111	140	149	149	149	159	
		200	212	209	238	250	244	244	248	
		214	228	218	248	253	252	252	254	
		240	260	248	281	285	289	290	297	
		<u>754</u>	<u>813</u>	<u>786</u>	<u>907</u>	<u>937</u>	<u>934</u>	<u>935</u>	<u>958</u>	
		18.85	20.32	19.65	22.68	23.42	23.35	23.38	23.95	

158

July 14 1880
7h 40mNew adj' ext. mnt - 2
N.C. for focus
7h 55m

45-50.3	180
50.0	185
47.3	171
48.2	174
48.2	185
<u>244.0</u>	<u>395</u>
45-48.80	1790
	48.80
	<u>66.00</u>
	33.35

45-47.1	133
47.2	147
48.3	150
47.4	148
46.0	151
<u>36.0</u>	<u>229</u>
47.20	1458
	47.20
	61.58
	<u>30.89</u>

Set at 45-30.9

Long Core

Sunlight Lamp Light

8h 0m	7h	13 47	6	14 42	15h	15m	16 41
45-58.5	616	58.2	618	55.8	520	556	522
63.0	623	60.4	621	55.7	531	538	535
60.0	608	59.7	580	57.2	510	548	488
57.2	598	59.1	584	57.2	522	530	488
58.0	572	59.4	578	55.8	540	523	530
<u>2967</u>	<u>3017</u>	<u>473</u>	<u>2981</u>	<u>317</u>	<u>123</u>	<u>95</u>	<u>2153</u>
59.34	6034	5946	59.62	5644	5246	53.50	5146

20	3133	143	140	130	143	139	163	150
	237	243	258	251	262	259	289	270
	234	241	258	252	252	253	290	270
	280	288	288	277	282	282	312	288
	<u>915</u>		<u>644</u>	<u>910</u>	<u>633</u>	<u>914</u>	<u>678</u>	<u>415</u>

Kelly 18/80
16

Long Coll

45-480

468

473

450

456

2327

4654

20 3 11

150

276

249

270

945

23.62

160

July 17-18

Lony Cole

61.4

61.5

2 1 0	2 1 0	2 2 0	2 4 1	3 5 3	3 2 2	5 4 0	8 0 0	13 5 0	14 0 0
45 614	625	590	530	527	561	572	560	464	472
618	603	575	557	545	560	578	562	478	491
622	607	583	537	556	564	580	560	483	461
617	644	613	534	569	556	561	542	482	460
625	611	600	554	533	553	537	548	482	462
96	64	2968	186	247	294	308	282	289	340
45-6192	6128	5534	5372	5494	5588	5616	5564	4778	4692

min
at 25 ft.

min 10 ft.

203 120	132	127	120	127	120	133	90	99
222	232	223	220	226	222	248	222	231
216	230	226	221	223	222	258	243	256
252	261	260	258	258	258	280	257	262
810	855	836	809	834	822	919	812	848
2025	2138	2090	2085	2085	2055	2295	2030	2120
		2022						

July 17

WC 86

11

Leiny myhod

45 397	45 168
403	152
412	166
400	168
380	171
1992	325

406	161
394	150
408	140
394	152
383	140
1985	248
3770	1486

3970
1486
2728
282
155
2728

45 3584 1650 3584 2817 21-1-45 278 21-2h 10m

Lamps
right

	h ~ h	h ~ h	h ~ h	h ~ h	h ~ h
15 20	16 30	16 48	16 45	17 30	17 45
403	394	430	385	376	397
410	387	422	384	390	370
434	372	430	391	375	377
440	413	404	405	389	363
440	394	405	402	389	362
<u>127</u>	<u>1960</u>	<u>91</u>	<u>1957</u>	<u>420</u>	<u>369</u>
42.54	39.20	41.82	39.14	38.40	37.38

102	116	125	130	132	130
230	246	247	251	243	241
251	252	260	263	250	247
278	280	283	282	274	272
<u>861</u>	<u>894</u>	<u>915</u>	<u>926</u>	<u>899</u>	<u>895</u>
2152	2235	2285	2315	2248	2238

July 18

15 30 ~

N.C

S.C

45-342

350

372

363

358

285

45-3570

196

192

184

180

200

952

1904

3570

5474

27.37

162

July 18 1880
Long. Coll.

1 30	2 0	3 0	3 30	5 0
540	558	566	585	588 437 565
1240	1240	1248	1255	1252 430 1255
571	562	542	420 180	189 439 585
547	529	533	435 155	171 429 182
537	523	550	410 153	188 437 588
235-	182	239	143	408 412 165
5470	5364	5478	4286	5816 5824 4330
				279 0 165 329 217
				559 0 4330 568 5574

11	11
150	143
257	252
252	252
240	287
949	934
2372	2335

118	123
230	228
219	225
258	258
825	834
2065	2085

127	112
233	219
216	216
163	256
839	803
2098	2008
2175	

1 45 se.

45	417	138
	392	152
	392	150
	384	147
	388	145
	1968	232
	3936	1464
		3936
		3400
		27.00

del 45278
 faint-point on right
 Right-edge V
 large circle on the left

	h_{10}	h_0	h_0
62.3	532	413	633
64.0	507	436	581
65.5	552	403	651
608	532	388	624
609	554	442	588
2195-	197	2082	2077
6390	5254	4164	6154
			5678
			5726

114
231
224
267
836
2090

132 129
262 252
288 277
303 296
985 954
24.62 23.85

64

July 24, 1880

8^h 12^m

N. b. S. b.

45	46.3	45	6.0
	47.0		6.9
	46.8		7.0
	46.8		7.7
	47.8		6.7
	<u>347</u>		<u>343</u>

45	46.94	45	6.86
	6.86		
	5380		

45 2690

Set at 26.9

8^h 41^m

Long. coll.

45	31.03	20	2	25.7
	<u>26.8</u>			41.8
	28.0			44.0
	32.0			43.8
	<u>26.3</u>			153.3
	31.0			38.83
	31.0			
	153.3			
45	30.66			

July 29. 1880

1 h 45 m

[illegible]

45	72.6	44	5.6
	48.3		90.8
	50.0		92.7
	47.0		91.5
	48.3		91.8
	<u>47.8</u>		<u>91.2</u>
	241.4		92
45	48.28	44	91.84
45	91.84		
44	14012		probably
45	2006		observation

~~probably~~ set at 44 26.9 probably after this observation

	E		F		Runs.	G.		H	
5	0	6.7	6.3	13.9	14.0	12.0	12.0	18.6	17.0
		7.6	6.4	14.0	14.2	12.8	11.4	18.1	17.3
		7.2	6.1	13.7	14.6	12.2	12.1	18.9	17.0
		7.2	5.8	14.2	14.3	12.7	12.3	18.8	17.0
		<u>7.0</u>	<u>5.8</u>	<u>13.9</u>	<u>13.8</u>	<u>12.6</u>	<u>12.1</u>	<u>18.7</u>	<u>16.8</u>
		7	4	4.7	9	23	49	31	1
		7.14	6.08	13.94	14.18	12.46	11.98	18.62	17.02

July 29, 1880
2nd 25^m

Long. coll

91.0

20 2 - 29.1

13.0

39.8

14.0

37.3

11.9

41.3

12.4

147.5

12 3

36.88

1246

July 31. 1880

2^h25^m

Fleaur.

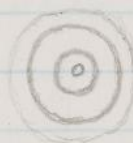
	E	F	G	H	E	F	G	H
0 2	49.0	57.7	59.0	3.4	41.2	56.6	5.2	2.7
	49.6	57.6	59.0	2.7	41.0	56.1	5.3	1.1
	49.0	57.6	58.8	3.1	41.2	56.6	5.1	1.2
	49.8	57.7	59.0	3.3	41.0	56.2	5.1	1.2
	49.0	57.4	59.0	3.0	40.7	56.4	5.1	1.2
	9	30	42.8	5	51	19	8	74
	49.18	57.60	58.56	3.10	41.02	56.38	5.76	1.48
	58.56	63.10			5.16	1.48		
	10774	12070			10618	11786		
	53.87	00.35			53.09	58.93		
	53.09	58.93						
	+0.78	+1.42						
	.39	.71						
	1.10							
	+ .55							

	E	Runs.	G	H
5 0	20.3 19.0	28.0 28.3	30.3 29.3	34.3 31.2
	20.8 18.7	27.2 27.8	29.7 29.2	34.6 32.1
	20.3 18.8	28.5 28.7	30.1 29.3	34.0 32.2
	20.7 19.2	28.4 28.2	30.2 29.2	33.3 32.0
	20.1 19.1	28.2 28.1	30.8 29.6	33.2 32.1
	22 48	3 11	11 16	34 46
	20.44 18.96			
	2 ^h 35 ^m	28.06 28.22	30.22 29.32	33.68 31.92
	N. 6	56		
45	42.3	44 98.8		
	39.2	98.7		
	39.0	99.6		
	42.1	98.8		
	40.0	99.8		
	39.6			
	2001	457		
45	40.02	99.14		
44	99.14			
	13916			
45	19.58			

C = 45 19.6

July 31, 1880
 2^h 40^m
 Long. Coll.

	Long. Coll.			E	F	G	H
45	23.8	20	2	29.7	40.0	40.0	41.8
	23.9			29.3	40.1	40.0	42.0
	22.4			28.8	40.1	40.1	41.9
	22.1			27.8	2	1	57
	21.8			29.27	40.07	40.03	41.96
	140						
	2280						



Began observations upon the new form of meridian mark represented above. Two circular grooves $\frac{1}{50}$ in wide are turned out in the surface of each disc and filled with printers ink. The center of one disc is recessed marked by a hole about $\frac{1}{50}$ in in diameter also filled with ink, and the center of the other by a plug about $\frac{1}{50}$ in in diam. projecting about $\frac{1}{50}$ in from the surface. When the plate is in position these two centres are in a vertical line.

July 31, 1880
3^h 23^m

Long. Coll.

45	23.0	20	2	28.9
	23.3			39.7
	22.1			41.0
	22.1			42.0
	22.7			1516
	132			37.90
	22.64			

170

Aug 1, 1880
sh 52 m 17.15 m

Long coll.

45	20.2	167	20	2	29.0	266
	24.6	188			43.0	401
	22.8	180			47.0	441
	22.0	200			46.4	433
	19.0	170			16.54	1541
	86	925			41.35	3852
	21.72	1850				

by coll.
~~107~~ 45 m

seeing very bad.

Aug 1880
Long Coll.

1 45 ^m	2 45 ^m	3 20 ^m	4 40 ^m
85-183-295	192	180	178
197	160	282	271
181	176	177	200
188	160	396	388
193	188	200	190
346	1576	182	401
1692	876	124	412
3940	1507	160	212
1752	899	1577	1472
3768	980	3	3
1798	3795	1960	3930

Lamps.

Lamps.

slay

slay.

3 0^m
N.C.

45-369	4578
372	81
372	83
365	60
362	64
339	366
3678	732
732	
4410	
22.05	

Set at 45 19.6

172

Aug 21/80

Long. Coll

9^h 10^m

45 19.7	277
20.8	408
18.8	442
22.0	438
20.0	1565
1013	
2026	39.12

Aug 3/88

173

Long. Coll.
ghon 92

45	22.4	26.1 ¹¹ 20.2 ^{MT1}	26.1197	26.2 ¹¹
	22.2	37.2 26	199	36.3
	22.0	40.1	198	39.6
	21.7	39.8	210	39.7
	22.0	1432	<u>220</u>	
	10.3			
	22.06	35.80		

Aug. 5 1880

N.C. 9^h 15^m S.C.

45	45.8	44	97.0
	46.0		96.0
	45.9		96.1
	46.0		96.3
	46.2		96.0
	<u>49</u>		<u>14</u>
45	45.98		96.28
44	96.28		
	42.26		
+45	21.13		

pet at 19.6 45 21.1

9 ^h 20 ^m	13 ^h 30 ^m	16 ^h 30 ^m
long. col.		
45 26.3	27.4	29.4
26.4	41.8	40.8
28.5	37.0	40.0
28.0	38.1	41.0
27.1	<u>1443</u>	27.7
363	33.8	1512
45 29.1	36.08	27.2
		35.3
		27.06
		37.80
		32.20
		36.52

18 ^h 20 ^m	11 ^h	5 ^h 0 ^m	13 ^h 30 ^m	8 ^h 15 ^m
320	28.2	20.45	26.0	28.1
310	39.2	22.1	26.0	38.3
33.5	40.8	45 26.0	28.3	37.1
29.1	39.9	26.0	27.7	43.3
29.5	1481	28.3	26.0	
<u>1504</u>		27.1	34.0	1468
31.08	3702	26.0	26.80	36.70
				28.78
				28.18

Aug 5th 1882

	N.C.	S.C.
45	44.1	44 92.3
	43.2	92.0
	44.8	93.1
	43.7	93.8
	47.0	93.0
	208	137
45	44.6	92.74
44	92.74	
10	37.00	
45	36.90	
	18.00	
	45	

Set-M-45-211

176

Aug 8/9/1880
9^h 15^m

	N.C	S.C
45	48.7	44 99.8
	41.2	99.2
	41.9	99.9
	40.7	98.0
	42.3	99.8
	68	467
45	4136	9934
45	9934	
10	4070	
45	2035	set at 45 20.3

long Collimator

	9 ^h 32 ^m	"	13 ^h 30 ^m	"	17 ^h 30 ^m
45	31.5	29.9	45 28.3	30.0	45 22.7 26.3
	31.8	41.0	26.4	42.7	23.4 38.7
	34.8	44.7	35.7	46.1	21.0 41.4
	34.9	41.0	26.8	40.7	24.0 38.3
	32.2	156.6	29.0	189.5	24.8 47
51	165.2	3	141.2	"	115.9 147
	33.04		28.24	49.87	23.18 38.67
	33.04	39.15		42.38	36.18
	18 ^h 20 ^m	"			
45	22.3	26.0			
	22.7	38.8			
	22.0	40.0			
	21.0	37.2			
	21.0				
	109.0	142.0			
	21.80	35.5			

Aug. 9/10 1880
9^h 15^m

	N.C.		S.C.
45	38.4	44	95.4
	40.4		95.7
	37.0		96.4
	40.2		96.4
	40.3		95.6
	<u>196.3</u>		<u>295</u>
45	35.26		95.90
44	95.90		
10	35.6		
45	17.6		

Set at 45 17.6

long colimator -

	9 ^h 25 ^m		18 45
44	25.9	27.0	45 37.0 25.7
	28.0	38.4	35.5 37.8
	26.9	41.0	36.8 41.7
	26.9	38.2	34.8 39.4
	27.0		37.3 144.6
	134.7	144.8	31.7
	26.94	36.20	36.28 36.15

Aug 10th 1880

94 42^{mm}

Flexure

4960 37.96 2.08 1.84

2.08 1.84

40.44 55.84

$$\begin{array}{r} 6.88 \\ 0.56 \\ \hline \end{array}$$

219.00 136.00

56.75 ~~59.00~~

54 100 54 50

- 27 C

F. of

5	0	15.10	14.0	22.9	22.9	26.9	25.2	26.9	27.0	25.8
		15.2	13.4	22.4	22.8	26.9	25.1	26.2	27.3	25.9
		15.1	13.7	23.1	22.7	27.0	25.2	26.7	27.2	26.0
		15.2	13.9	23.0	22.4	26.9	25.3	26.4	27.3	25.9
		14.8	13.4	22.9	22.4	26.8	25.4	26.4	27.0	25.3
		4	36	43	32	45	16	8	39	
		15.08	13.72	22.86	22.64	26.90	26.32	27.16	25.78	

NC S.C.

45	37.1	45	0.70, 7
	37.2	44	99.8
	34.0	45	0 1.0
	36.0		0 0.8
	35.2		0 0.8

31.5
36.30
33.62 45 0.62

$$\begin{array}{r} 0.62 \\ \hline 3692 \\ 17.1 \end{array}$$

Let $\sigma = 45.176$

Long Colimator

10^h pm18^h On

45 31.8 26.3

29.4 37.8

29.4 39.7

28.0 38.8

28.1

146.7 142.6

29.34 35.65

seeing so bad, impossible to get
an observation

Aug 12 1880 17h 20m.
 Attempted to get long Colimation but
 seeing was too bad.

18^h 5^m 5^{sec}

45- 30.3 27.2

32.1 39.0

31.0 39.5

28.0 37.0

31.5

152.9 142.7

30.58 35.67

Set at 45- 17.6

182

Aug 15 1882

N.C. S.C.

45 444	44 893
445	891
476	884
481	888
419	890
<u>285</u>	<u>446</u>

45 4570	24 88.9
44 889	
10 346	
45 178 ³	

Set at 45 17.6

Long Coll

17^h 15^m (1840)

41 460	284	373	282
458	391	388	397
450	383	372	376
488	358	376	363
436	1326	370	1318
<u>222</u>		379	

45 440	3848	376	3295
--------	------	-----	------

Aug. 15- 1880
4^h 44^m

45
XX NC S.C
65.649.044 51.3 70.7 44 61.4
68.049.1 52.8 72.8 4
65.248.9 54.8 72.6
64.349.0 52.9 72.0
64.848.7 53.2 72.9
26.9 15.0 11.0
65.844.7 50.5 72.20
48.94

set at 17.4

E 45 10.57 H G H
50 24.55 23.3 31.0 30.8 27.0 27.0 31.1 29.0
24.9 23.2 31.4 30.7 27.8 26.4 30.8 29.8
25.3 23.3 31.0 31.2 27.7 26.8 30.9 29.7
25.0 23.4 31.0 31.3 27.8 26.9 31.1 29.9
25.0 23.4 31.2 31.0 27.8 27.0 30.7 29.6
47 18 6 0 31 41 46 30
25.94 23.36 31.12 31.00 27.62 26.82 30.92 29.60

Long. Coordinates h m

H 5 30 7 0 gh 94 35^m B
45 46.2 27.6 415 277 470 273 43.8 28.1
44.4 36.6 461 374 450 378 45.8 36.7
45.3 31.4 452 329 451 326 45.9 33.2
44.8 33.0 458 346 482 342 44.4 33.7
45.1 477 458 44.4
25.8 128.6 1326 31 819 243
45.16 32.15 307

Lamp burning all night

461 3196 462 3548
33.15 32.95

set at 45- 17.6

184

Aug 16
Long Cole

13 on 11 17^h 20^m
 45 437 32.4 45.5 29.7
 44.0 435 45.6 41.2
 44.1 427 49.4 41.1
 45.0 41.6 48.8 39.7
 44.0 50.1

22.8 10.6 29.4 21.7
 44.56 42.45 45.88 45.5 at 45 17.6
 set at 45 17.6

2 21.0

27.5

Aug. 17, 1880
 Long Collimator
 18^h 55^m 4h 35^m

11
 45 41.0 29.8 44.2 28.4
 40.0 41.0 45.9 38.9
 39.0 39.8 45.4 36.7
 42.0 37.7 48.0 36.7
 40.4 41.0 40.9
 2024 1483 187 1409
 40.48 37.07 43.7 38.22

N C S.C
 45 35.3 44 90.8
 34.1 90.9
 35.1 90.9
 34.9 90.8
 35.1 90.6
 24.5 40
 49.0
 34.90 90.80

45 3490
 44.9080
 102150
 45 1285-

set at 45, 17.6

Runs
 E F G H
 50 27.3 26.0 33.5 33.7 32.6 32.1 34.0 33.3
 27.4 26.0 33.3 33.3 32.8 31.7 34.1 33.3
 27.7 26.3 33.3 33.1 32.5 31.6 34.0 33.1
 27.8 26.2 33.0 33.2 32.5 31.5 34.1 33.1
 27.3 26.3 33.0 33.3 32.3 31.4 34.0 33.1
 25 8 11 16 27 33 2 9
 27.50 26.16 33.22 33.32 32.54 31.66 34.04 33.18

Aug. 17, 1880

N.C. S.C.

2nd Series.

45	34.3	44	91.5				
	33.1		90.8				
	34.7		91.8				
	33.7		92.8				
	34.7		91.8				
	22.5		77				
45	34.50		91.90	91.54			
44	91.90						

10 26.40 26.04

45 13.20 13.02

Set at 45 13.0

1880phae.proj.1759W

Aug. 17, 1880

2.00	0.00	1.00	2.00	3.00	4.00	5.00	6.00
2.00	1.00	0.00	1.00	2.00	3.00	4.00	5.00
1.00	0.00	1.00	2.00	3.00	4.00	5.00	6.00
0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
1.00	0.00	1.00	2.00	3.00	4.00	5.00	6.00

Aug. 18, 1880
Long Colimator

4^h 0^m

16^h 05^m

4^h 15^m

45	42.4	26.8	40.3	25.8	44	42.4	27.5
	42.3	40.1	42.0	37.8		42.2	37.6
	41.0	42.1	43.1	39.1		41.0	35.4
	43.7	39.3	43.6	34.1		41.8	35.8
	43.3		42.7	1388		41.3	1363
	12.7	1483	117			87	
0.01	42.54	37.58	42.34	3470		41.74	3408
		32					3408

Fluore

	E	F	G	H		E	F	G	H
10	48.4	55.3	54.9	56.6		42.1	57.8	3.3	57.4
	48.5	55.8	54.8	56.4		42.3	57.4	2.7	57.3
	48.8	56.0	54.3	56.4		42.1	57.2	2.9	57.4
	48.7	55.7	54.2	56.1		41.8	57.2	3.1	57.3
	48.6	55.7	54.0	56.0		42.2	57.2	3.1	57.3
	30	35	22	15		5	18	1	17
	48.60	55.70	54.44	56.30		42.10	57.36	3.02	57.34
	54.44	32.30							
	42.10	57.36							
	3.02	37.34							
	208.16	206.70							
	52.04	56.68							
	67.68	52.04							
	36	4.64							
	+18	-2.22							

Apr 25 1952

H 30

	N.C	S.C	S.C
45	35.0	6.244	87.8
	35.6	6.8	87.8
	36.0	7.1	87.4
	35.1	6.9	86.5
	35.2	8.1	88.0

269

45 35.38

44 87.50

45 35.38

10 22.88

45 11.44

Set at 45 13.0

Aug 21 1880

Long Coll

5-40	"	10 ^h 10 ^m	h ~
45-42.8	262	461	269 27.6
450	309	430	374 38.2
440	360	419	410 41.8
448	337	423	364 37.2
447		436	396 39.0
213	1268	179	391 39.4
41-4426	3170	4358	

19 20

45-380	259
381	382
382	402
372	362
860	
878	
45-3750	

NC

6^h 50^m

41	37.6	45	30
	290		68
	300		38
	304		39
	310		34
	1500		79
	1520		358
	2000		3040
	3040		3398
			1699

6^h 0^m

283	40
283	40
293	50
284	50
284	50
27	
28.34	
358	
3040	
3398	
1699	

230
46

Set at 16.7

482	2900
28.34	14.50
3336	

Aug. 22, 1880
 Long Collimator
 4 h 0 m

39.9 28.0
 38.1 36.4
 34.7 36.3
 38.4 35.7
 33.0
 36.1
 37.22

Seeing very bad

N. C
 4 h 0 m

~~23.9~~
~~21.4~~ 24.3
~~21.0~~ 24.1
~~20.8~~ 23.2
 25 23.2
 24.0
 18.8

45 23.76
 45 4.76
 28.52
 14.3

S. C

45 05.4
 04.0
 04.8
 04.9
 04.7
 23.8

45 47.1

51-01-45 16.7

Aug 23, 1880
Long Colimator

1940^m

74 25^m *

74 35^m

39.0 21.9

39.2 21.8

43.0 22.2

39.8 36.3

40.3 32.5

42.8 33.6

39.5 39.0

40.2 35.0

43.0 35.7

39.2 35.4

40.1 31.6

43.0 33.0

39.0

38.8

42.0

1.5 12.6

198.6 120.9

13.8

39.30 33.15

39.72 30.22

42.76

* See ~~last till~~
~~9th~~ ~~of the~~
Col ~~...~~

N.C. S.C
74 40^m

~~43.0~~ 24.0 6.8

~~42.8~~ 23.7 7.0

25.2 7.7

~~23.8~~ 7.6

25.1 7.1

~~18.8~~ 1.2

~~28.76~~ ~~7.42~~ 7.24

7.42

31.18

15.59

218
24.36
7.24
31.60
15.80

Set at 45 16.7

Aug. 28, 1880
Long Colimator

	194	12 ^m	19	15
45	55.2	22.8	53.2	23.5
	53.1	38.3	53.4	33.3
	54.6	36.3	54.5	36.3
	54.4	35.8	54.8	35.9
	54.5	82	53.7	
	218	32.05	196	
	54.36		53.92	

5-40
530 232
527 320
546 332
539 334
530

11-325 45 16

313 20

306 13

312 10

318 17

72

3149

76

152

3144

3256

16.48

Sel-ul 45-167

16200000, proj. 1750W