

K6
11366
v. 422

Polaris.
Circle Readings
From Mar. 1/1880 to Oct-14. 1880

Polair Feb. 29 1880

(1) R	(2) R	(3) R	(4) R	(5) R
50 0 32.6	36.2	38.0	40.0	40.8
36.2	39.3	42.2	42.8	44.1
39.9	43.2	45.8	46.8	47.8
41.5	45.0	47.6	49.0	49.9

T-1

This observation of Polair made with Chron. No. 236, not able to get the fourth clock in circuit.

Reading of Chron.	Reading of Series
14 ^m 38.5 = 47	(1) = 17 ^m 56.0
15 50 = 72	(2) = 21 31.0
15 34.0 = 80	(3) = 23 32.0
16 10.5 = 8	(4) = 25 13.0
16 34.0 = 12	(5) = 27 16.0
17 4.0 = 90	

Comparison of 236 with S.C.

$$S.C. = 1^h 13^m 05^s$$

$$236 = 19 17^s$$

$$S.C. - 236 = + 13 43$$

May 1880
Helium

	R	R	R	R	R	R	R	R
45 4	312	388	400	467	526	579	47	106
	346	427	467	528	576	13	64	139
	371	447	508	549	02	35	95	107
	360	439	498	541	592	22	97	106
	1391	1701	1943	2105	2318	49	323	558
	3478	4252	4858	5262	5795	122	808	1395

	R	R	R	R	R	R	R	R
50 0	386	420	430	440	464	484	477	470
	417	448	460	471	487	508	512	506
	442	469	479	494	513	532	520	511
	440	468	482	491	511	536	540	522
	2185	1805	1851	1896	1975	2060	2049	2009
	5462	4512	4628	4740	4938	5150	5122	5022

Lat A_{10} 3, 3, 3

Mar 1
Pulvin L. 6.

	R	R	R	R	R	R	R
10 1	243	216	202	187	175	178	171
	268	233	221	206	202	192	187
	266	217	218	202	200	197	182
	268	230	220	201	200	192	187
	1045	896	861	796	787	759	717
	2612	2240	2152	1990	1968	1898	1792

A₇₀ to B₀

4

Polaris
Mar 2 1852

	R	R	R	R
45 4	28.8	37.2	54.3	11.9
	31.4	40.7	57.4	15.6
	30.6	38.5	54.4	13.2
	30.8	38.8	55.0	13.0
	12.16	15.52	22.11	5.37
49	30.40	38.80	55.28	13.42

$\frac{A}{+1} 2$ $\frac{A}{+1} 1, 1_2 2_0 2_1$

Mar 4 1880
 Britain N.B.

	R	R
45- 4	328	407
	376	456
	405	480
	400	479
	1509	1822
49	37.72	45.55

M. A. R.

6

Memb
Palanis

	R	R	R	R	R	R	R	R
50 0	381	403	426	450	472	499	525	520
	417	433	459	483	512	528	542	549
	414	433	450	474	502	520	538	547
	447	470	490	514	530	561	582	590
	1659	1789	1825	1921	2046	2112	2180	2206
	4148	4472	4562	4802	5118	5280	5375	5515

A_{80} to γ_0

Mar 1880

	R	R	R	R	R	R	R	R
10	565	1 288	268	241	248	238	215	211
	580	302	288	250	261	257	237	227
	532	260	242	208	227	215	202	206
	560	284	268	240	242	237	210	205
	2237	1134	1066	939	973	947	874	849
	5592	2835	2665	2348	2432	2368	2185	2122

R R
 206 207
 225 220
 180 182
 207 200
 818 809
 2045 2022
 A 90 5 30

87

Mar 10 1972

	R		R	R	R	R	R
454	15.2	500	450	479	478	507	516
	20.8		483	512	512	536	546
	16.2		487	461	467	495	503
	19.6		479	510	502	532	546
	718		1849	1962	Reg	2070	2113
	17.95		46.22	49.05		51.75	52.82

A₁₂ 3, 3, 4, 4, 4, 5, 6, 6, 6

Mar 10, 1880

9

Polaris Lc.

10

	R	R	R	R	R	R	R	R	R
10 2	11.3	11.9	8.4	5.7	2.3	59.8	56.6	29.8	28.3
	18.8	14.0	10.8	8.0	4.2	13	57.8	30.3	29.7
	12.9	8.0	4.8	2.2	58.7	55.4	53.1	25.3	24.0
	15.2	11.1	7.2	5.2	4.0	58.0	55.2	29.0	27.2
	38.2	45.0	31.2	21.1	6.2	234.5	2.7	114.4	109.2
	14.55	11.25	7.80	5.28	61.55	58.62	55.68	28.60	27.30
									6.25

$A_{80} - A_{20}$

10

May 17 1872
 Ocean N.B.

	R	R	R	R	R	R	R
(35)	44.6	55.9	258	287	304	306	322
	521	62	280	308	321	324	339
	482	550	238	260	278	282	298
	522	589	278	298	312	307	331
	2011	2300	1054	1153	1213	1219	1290
39	5028	5750	2635	2882	3032	3048	3225

June Stone m.

R	R	R	R	R
312	321	327	320	322
338	342	346	341	342
289	297	302	297	293
324	330	337	330	330
1263	1290	1312	1288	1287
3158	3225	3280	3220	3218

CA
 4

March 17 1880

Polaris

	R	W	R	W	R	W	R	W	W
10 2	3.8	50.6	44.3	40.7	40.7	36.3	34.2	30.1	29.4
	56.4	52.0	46.8	42.6	42.2	37.9	36.9	32.1	30.6
	49.7	46.4	40.7	37.1	37.0	33.0	30.7	26.7	24.9
	52.5	47.6	42.5	38.0	38.4	34.6	32.9	27.2	26.2
	162.4	196.6	174.3	158.4	158.3	141.8	134.7	116.1	111.1
	40.60	49.15	43.58	39.60	39.58	35.45	33.68	29.03	27.78

 $A_{80} - A_{20}$

	m		R	W
	0.1			
0 1	7.9	4.8	2.0	
	10.2	7.0	4.1	
	5.0	1.0	58.0	
	5.8	3.1	58.0	
	28.9	15.9	2.1	
1	7.22	3.98	0.52	
	A_{20}	A_{80}		

12

Mar 16 1880
Palmer Lb. (NC)

	R	R	R	R	R	R
30	4507	400259	260	302	301	310
	05	286	290	324	027	334
	542	227	223	274	275	283
	544	259	259	302	303	310
	2281	1031	1032	1202	1206	1237
	5702	2578	2580	3005	3015	3092

R	R	R	R
326	336	345	342
348	360	361	362
297	308	310	312
332	342	344	346
1303	1346	1360	1364
3258	3365	3400	3410

Seeing very bad.

A to S.

May 22 1880

Palmer H. B.

	R	R	R	R	R	R	R	R	R	R	
35-	440.6	880	540	0	0	259	295	301	303	326	323
	460	42.5	0.7			299	319	323	327	348	348
2	429	390	540			249	281	291	295	309	309
.	430	42.7	560			268	284	309	307	324	336
	1725	1622	2247			1075	1189	1224	1232	1307	1316
	43.12	40.55	56.15			26.88	29.72	30.60	30.80	32.68	32.90

R

329
350
314
328
1321
3302

Δ 2 3 Δ 1 20 2, 2 30 3, 3 70 Δ 2
 Δ 1 -1

4

Palmer W.B.
Mar 23 1870

	R	R	R	R	R	R	R
35	4378	411	468	513	548	582	1.2
	428	467	520	560	598	26	56
	397	433	471	530	557	598	22
	403	438	487	532	570	0.9	38
	1606	1749	1946	2135	2273	15	128
	40.15	43.72	48.65	53.38	56.82	0.38	3.20

R	R	R	R	R	R
0	241	278	300	299	318
	275	310	328	323	341
	238	277	292	292	303
	257	292	310	313	327
	1011	1157	1230	1227	1289
	25.28	28.92	30.75	30.68	32.22

Lost 1 - to 5.
7/12/47

See new further

Mar 24/82
Polaris Mo.

	R	R	R	R	R	R	R	R	R
35-3	576	40	91	161	218	240	263	396	430
	07	81	128	199	251	279	299	439	471
	178	48	99	171	232	255	273	410	447
	03	64	114	189	242	268	290	427	460
	2374	233	432	720	943	1042	1125	1672	1805
	59.35	582	1080	1800	2358	2605	2812	4180	4512

23-5.

1/2 20 2, 230 3, 3240-42

Low middle stroke of 40

16

Mar 25 1882

Polaris N.P.

40	0	32.6	34.2	36.0	35.7	37.4	39.3	41.3	39.8	40.2	40.5
		33.2	34.3	36.2	36.2	38.2	39.2	41.8	40.4	40.6	40.3
		25.8	27.4	29.0	29.0	30.2	33.0	35.0	33.1	33.0	38.6 33.6
		28.0	28.9	30.8	30.6	33.8	34.0	36.3	35.2	34.4	34.9
		1196	1248	1320	1315	1396	1455	1544	1485	1482	1793
		2990	3120	3300	3288	3490	3638	3860	3712	3705	4482

A 60 00 90

A 1 2 3 - 5 -

March 25 1880

Polaris
L. C.

	R	R	R	R	R	R	R	W
01	4.0	49.6	47.1	44.0	40.1	37.8	34.7	32.1
	54.1	51.1	48.1	44.6	40.7	38.3	35.0	31.7
	46.3	42.5	40.2	36.8	32.8	30.9	27.4	24.9
	46.3	42.2	40.0	36.0	32.9	30.1	27.0	25.0
	210.7	185.4	154	161.4	146.5	137.1	124.1	113.7
	52.68	46.35	43.85	40.35	41.62	34.28	31.02	28.42

 $A_{80} - A_{20}$

May 26 1880
 Dulau N6

	chf	chf	chf	chf			
	R	R	R	R	xR	R	R
25-4	370	429	467	500	566	551	0
	407	470	508	533	595	26	66
	329	389	427	456	573	548	582
	340	398	436	463	528	558	06
	1446	1686	1838	1952	2202	2323	102
	3615	4215	4595	4880	5505	5808	255

chf

R	R	R	R	R	R
332	340	367	362	371	376
345	352	380	382	387	391
266	274	299	297	306	311
287	294	300	318	330	339
1230	1260	1346	1359	1394	1417
3975	3150	3365	3398	3485	3542
387	395	393	410	413	
393	403	408	422	430	
310	336	328	340	348	
344	353	348	364	370	
1439	1477	1477	1536	1561	

xch. 0.2, 3598 3692 3692 3840 3902

A = chf. A --- 5-

Mar 30 1880
Palauis

	R	R	R	R	R	R	R	R
35 4	213	279	321	382	426	479	521	565
	257	311	357	426	466	523	561	590
	185	247	292	364	400	461	494	526
	201	258	289	377	410	468	507	541
	859	1095	1259	1549	1702	1931	2083	2222
	2148	2738	3148	3872	4255	4828	5208	5555

R	R	R	R	R	R	R	R
590	08	41	327	348	351	356	367
23	41	86	356	371	369	375	392
567	591	18	292	308	315	320	332
575	588	29	309	330	333	337	349
155	28	180	1284	1357	1368	1388	1440
388	070	450	3210	3392	3420	3470	3600

Mar. 31, 1880

Polaris L. C.

	R	W	R	W	R	W	R	W
0 1	47.0	42.0	40.0	37.0	34.8	31.1	29.6	26.3
	49.7	44.2	43.1	39.1	37.3	32.9	32.2	28.2
	46.2	41.0	39.7	35.4	33.7	30.1	28.6	25.0
	44.3	40.0	37.9	34.0	33.3	29.0	27.0	24.0
	187.2	72	160.7	25.5	19.1	31	11.74	103.5
	46.80	41.80	40.18	36.38	4.78	30.78	29.	25.88

	W	R	W	R	W	W
0	58.1	56.2	56.5	55.0	54.6	53.6
	59.5	57.4	57.4	56.6	55.0	54.0
	56.2	54.3	53.4	53.0	52.1	50.4
	55.0	53.0	53.2	52.6	51.6	50.1
	28.8	22.09	22.08	21.72	21.35	20.81
	57.20	55.22	55.20	54.30	53.38	52.02

A₈ W 2.

~~Phi~~ ~~Mar 31~~ 1880

Pulain Uls

		R	R	R	R	R	R	R
35	4	230	296	347	370	407	0	303
		287	346	393	428	458		332
		233	308	357	384	418		292
		238	290	348	378	412		298
		988	1245	1445	1560	1695		1225
		2470	3112	3612	3900	4238		3062
								305
								335
								291
								303
								1234
								3085

A(20)? 5₂ 6₀ 6₁ 7₀ 7₂ 8₀ 8₁ 8₂ 8₃ Cloudy

Apr 2 1880

Polaris UC

W.C.N. des

		W	W	W	W	W
40	0	42.5	32.2	36.4	36.5	37.5
		45.6	34.6	39.5	39.4	40.0
		43.4	33.2	37.6	38.1	38.9
		44.1	33.8	38.0	38.0	38.9
		1736	1338	1515	1500	1553
40		4340	33.45	37.88	37.50	38.82

 $A_{2,2}$ etc

—

 $A_{5,2}$ - etc

missed before $A_{5,2}$ and account of clouds
missed also δ_2

88.40
9' 20"

April ~~3-4~~ 1880

Polaris U. C.		W. A. R. obs	
R	W		
35 4 38.7	50.8		
43.0	54.1		
47.6	59.0		
46.0	57.2		
175.3	2241		
43.83	55.28		

ATT. 4A₁ 4A₁₂ - 3₂

clouds

24

Apr 5 1880

Polaris L.C.

	W	R	W	R	W	W	W	W	
0 1	38.2	34.7	293	27.0	242	204	191	17.1	50
	42.8	39.3	342	32.1	283	243	229	22.1	
	48.0	44.3	393	36.8	335	293	286	27.5	
	44.0	41.3	361	34.2	306	27.0	25.4	24.5	
	1730	1596	1389	1301	1166	1010	960	91.2	
	43.25	39.90	34.73	32.53	29.15	25.25	24.00	23.80	

W	R	W	W	R
496	48.0	47.4	46.6	46.0
53.7	53.1	51.6	50.9	50.4
59.0	57.8	56.4	55.8	55.1
55.8	54.8	53.5	52.3	51.7
2181	2137	2089	2056	2032
54.53	53.43	52.23	51.40	50.80

A₉₀ to A₂₀

26

April 7 1880

Polaris L.C.

	W	R	W	R	W	W	R	W
0 1	471	45.1	410	38.3	354	339	32.1	29.6
	49.3	46.6	43.0	40.7	369	352	34.7	31.6
	47.4	44.7	41.0	38.8	35.0	33.5	31.8	30.1
	44.6	42.7	38.6	35.3	32.3	30.5	29.7	26.8
	284	191	36	1531	196	131	83	1181
	47.10	44.78	40.90	38.28	34.90	33.28	32.08	29.53

	W	R	W	R	W
1	3.0	2.0	1.0	0.2	58.2
	5.7	5.0	^{2.8} 2.9	2.4	0.6
	3.2	2.3	0.8	0.3	57.6
	1.3	59.0	57.1	57.4	57.7
	13.2	8.3	17	0.3	2311
	3.30	2.08	0.43	0.08	57.78

April 8, 1880

Polaris U. C.

400 W	R	W	W	W	R	W	W
400 354	34.8	36.6	370	375	39.0	41.3	401
386	38.4	39.2	390	39.9	42.1	43.1	428
367	35.7	37.3	370	38.2	40.4	42.0	404
346	34.3	36.6	358	36.7	38.7	40.2	39.2
253	23.2	29.7	288	32.6	160.2	66	25
36.33	35.80	37.43	37.20	38.15	40.05	41.65	40.63

W	R	W	R
41.2	41.8	409	41.0
43.6	44.4	428	43.8
41.6	42.2	423	41.1
40.1	41.7	407	40.1
65	101	61	60
41.63	42.53	41.53	41.50

A₅, 90A₋₁

Apr 8-9 1880

Polaris U. C. HAR obs.

	W	W	R	R	R	W	R	W	R	N		
35	4	25.0	34.6	35.8	39.9	41.3	49.3	52.0	56.0	0.1	41	
		29.8	38.5	40.6	44.6	46.0	54.0	57.0	0.8	4.7	91	
		27.6	36.9	38.7	42.7	44.2	52.2	55.1	59.4	2.0	7.5	
		24.9	35.0	36.3	40.9	42.3	50.3	53.3	56.9	0.8	5.0	
		27.3	25.0	151	4	81	138	58	174	2331	76	25.7
		26.83	36.25	37.85	42.03	43.45	51.45	54.35	58.28	1.90	6.43	

W	W
59	400516
110.6	55.4
184	55.0
6.0	52.0
409	160
10.23	54.00

A₁-2-3-4-5 ~~6-7-8-9-10~~A₁ to 2₂ ~ 6₁ to 5₂

April 9-10, 1880

Polaris U. C.

U. C. U. obs.

	W	W	W	W	W	W	W
35 4	56.5	2 0 40 0	31.5	33.1	34.3	34.6	36.4
	1.8	7.1	33.6	36.0	37.9	37.9	39.4
	1.7	7.2	35.0	37.0	38.5	38.4	40.2
	0.0	7.0	34.3	36.5	37.8	37.6	39.0
	0 0	23.3	144	22 6	285	285	155 0
	0.0	5.83	33.60	35.65	37.13	37.13	38.75

W	W	W	W	W	W
37.0	37.4	37.2	34.6	33.0	29.9
39.9	40.0	40.4	37.0	35.7	32.3
40.5	40.8	41.0	37.9	36.6	33.0
39.4	39.5	39.3	37.5	34.8	31.6
15 68	1577	1579	270	181	68
39.20	39.43	39.48	36.75	34.53	31.70

Lost A0

Seeing poor.

30

Am. 10 1872

Polaris L. C.

W. A. R. obs.

		W	R	W	R	W	R	W	W
0	1	40.0	37.0	32.0	29.6	27.1	24.9	22.0	19.9
		43.6	41.0	35.0	33.3	30.1	28.0	24.8	23.0
		47.6	44.4	39.0	36.4	32.8	31.7	28.7	26.0
		44.0	41.0	35.3	33.2	30.3	28.9	25.4	23.1
		152	34	213	125	03	1135	1209	920
		43.86	40.85	35.33	33.13	30.08	28.38	25.23	23.00

W	R	W	R	W	R	W	W
51.0	49.3	48.2	47.6	47.6	46.8	46.4	45.7
54.3	53.3	51.4	51.3	50.6	49.8	49.0	48.4
57.1	55.7	55.0	54.0	53.8	52.9	52.0	52.0
53.7	53.3	52.1	51.8	51.0	51.0	50.1	49.3
161	116	67	47	30	05	1975	1954
54.03	52.90	51.68	51.18	50.75	50.13	49.38	48.85

A₉ to 2₀

Apr 10 - 11, 1880

Polaris U. L.

W A R obs.

	W	W	W	W	W	R	R	W
35	4 17.9	21.9	22.1	41.0	44.1	53.0	55.8	58.8
	13.1	26.7	27.2	46.5	48.8	58.5	1.0	4.6
	15.2	30.0	30.0	49.5	49.5	0.4	3.9	6.8
	13.8	28.0	28.6	49.0	49.8	59.4	7.7	5.2
	200	1066	1079	260	322	2313	84	154
	1500	26.65	26.98	46.50	48.05	57.83	210	3.85

W	W	W	R	W	R	W
2.8	5.0	40.0	31.7	36.2	36.6	36.6
8.6	10.0	35.0	39.9	40.6	40.7	40.4
9.6	10.6	38.5	43.0	43.5	43.4	43.1
10.0	11.2	36.5	40.8	41.3	41.7	41.1
31.0	36.8	21.7	159.9	2.0	2.4	1.4
7.75	9.20	35.43	39.98	40.50	40.6	40.35

At request of Mr Edmonds began practice of making a long dash before and after middle wire of Polaris

Forgot to practice the dash on middle wire.

~~A₁ - 3 4 5~~ ~~A₇ - 4 5~~
 A₁ - 3 4 5 A₇ - 4 5
~~A₁₀ - 8~~

April 11-12, 1880

M.A.R. obs.

Polaris 2h. 6.

	M	R	W	R	W	R	W	R	W	R
35-4	18.2	23.2	26.1	29.1	32.0	34.0	36.6	40.0	42.1	45.9
	22.4	27.9	30.4	33.4	36.2	38.7	41.1	44.1	47.4	50.7
	19.7	25.0	27.5	31.0	33.8	36.0	38.3	42.0	44.0	48.1
	17.2	22.8	25.2	28.9	31.6	34.0	36.0	39.3	42.0	45.3
	17.5	18.9	109.2	122.4	136	227	152.0	54	15.5	190.0
	19.38	24.72	27.30	30.60	33.40	35.68	38.00	41.35	43.88	47.50

R	W	R	W	R	W	R	W	R	W
49.2	52.1	55.0	57.1	0.0	40.0	45.9	44.9	45.3	44.0
53.7	57.0	59.8	26	4.3	48.3	48.3	48.7	47.2	48.7
50.9	53.8	58.8	0.0	1.7	46.0	45.7	46.3	45.0	46.2
49.0	51.6	55.8	57.0	59.0	44.8	44.4	45.2	43.8	45.0
202.8	145	294	2367	50	250	233	255	200	25.2
50.70	53.63	54.35	59.18	1.25	46.25	45.83	46.38	45.00	46.30

April 12, 1880

HAR obs.

Polaris L. C.

	W	R	W	R	W	R	W	R
0 1	459	43.0	393	37.6	335	31.9	285	26.6
	490	46.7	426	40.7	364	35.3	319	30.4
	47.1	44.9	41.0	39.0	35.0	33.7	30.5	28.5
	42.7	40.7	37.2	35.1	31.6	30.0	26.9	24.1
	247	153	01	1524	165	109	1178	1096
	46.18	43.83	40.03	38.10	34.13	32.73	29.45	27.40

W	R	W	R	W
00	0.1	577	58.0	56.4
43	3.0	10	0.1	59.0
19	0.9	586	58.8	57.3
57.6	57.3	55.0	55.0	53.8
38	13	2325	2319	265
0.95	0.33	58.13	57.98	56.63

Apr 12-13 1100
 Ocean's

	R	R	R	R
35 4 364	484	531.00	34	102
428	548	593	76	147
424	538	589	64	118
392	513	568	46	108
1608	2103	281	220	475
40.20	5258	57.03	550	11.88

10-12 20 2, 2-303, 3-40 4, 4-50 5, 5-60 6, 6-70 7, - 8, - 90

Long Stone after 5 only Nancy

Aug. 13

R
 40 0 82.6
 37.5
 41.9
 38.9
 15.09
 40 37.72

$A_{6_0 6_1 - (7_0)}$

April 20 1880

Polaris Lb.

	W	R	W	R	W	W	W
0 1	320	28.7	256	23.0	206	18.7	15.3
	362	32.3	292	26.6	244	21.9	24.8
	421	37.8	353	32.5	300	27.7	24.7
	372	33.8	30.6	27.8	25.7	23.0	20.1
	1475	1326	1207	1099	1007	91.3	849
	36.38	33.15	30.18	27.48	25.18	22.83	21.23

	W	R	W	R	W
0 0	493	48.5	468	46.7	46.3
	536	52.0	500	49.6	49.5
	59.1	57.5	55.5	55.3	55.1
	55.0	53.5	51.8	51.8	51.0
	2170	2115	41	34	19
	54.25	52.88	51.03	50.85	50.48

A₉₀ to A₂₀

Apr. 20 188
Bolain.

	R	R	R	R	R	R	R	R	R	R
35-4	302	342	393	440	474	528	550	590	11	0
	338	384	441	487	522	578	598	44	6.4	123
	490	427	484	529	578	13	4.0	82	9.6	122
	370	410	463	507	548	596	2.0	6.1	8.2	157
	1500	1563	1781	1963	2122	2315	08	177	253	494
	3750	3908	4452	4908	5305	5788	020	442	632	1235

R	R	R	R	R	R	R	R	R	R
345	336	370	378	376	370	389	383	401	400
388	377	411	412	413	414	437	441	442	442
432	421	454	460	459	458	479	482	490	486
414	402	438	441	438	442	460	465	468	470
1579	1536	1673	1691	1686	1684	1765	1771	1801	1798
3948	3840	4182	4228	4215	4210	4412	4428	4502	4495

Aug 21 1861
Polaris - U. C.

	R	R		R	R	R
35 4	506	56.6	40 0	14	49	50
	583	31		50	107	102
	40	87		126	167	16.6
	193	9.3		96	121	125
23 22		127		306	444	443
5805		318		765	1110	1108

R	R	R	R	R	R	R	R
299	345	340	361	382	389	385	369
350	396	392	406	432	436	435	415
404	445	445	466	489	492	488	472
36.6	411	410	427	407	407	461	442
1419	1600	1587	1660	1752	1774	1769	1701
35,22	4000	3968	4150	4380	4435	4422	4252

Apr 22 1982
Polaris h.c.

	R	R	R	R	R	R	R	R
35-4	424	496	525	560	582	20	70	103
	448	552	586	22	40	84	137	166
	533	05	34	42	86	119	181	212
	505	577	08	34	62	100	150	187
	1950	2230	2356	91	170	323	538	718
	48.75	55.75	57.15	228	425	808	1345	1795

	R	R	R	R	R	R	R	R
40 0	349	360	380	388	398	401	429	417
	404	407	435	435	445	456	469	468
	446	459	486	484	493	506	527	513
	423	438	462	462	472	494	506	492
	1622	1694	1763	1772	1808	1967	1931	1890
	4055	4235	4408	4430	4520	4918	4828	4725

Feeling very good.

Ch. stopped at star A 70
Ch started. Long rattle before $\frac{47}{2}$

Apr 24, 1880
Polaris Lb.

	W	R	W	R	W	R	W	W	W	W
0 2	14.8	9.4	20	0.0	550	49.3	46.3	449	382	33.8
	19.4	14.1	6.1	4.9	595	54.0	57.1	491	434	38.1
	25.0	19.4	11.5	10.0	4.8	58.6	56.0	54.3	486	43.3
	20.1	14.8	6.3	5.5	0.0	57.7	51.3	49.8	43.2	38.4
	79.3	57.7	439	204	2393	2166	2107	1981	¹⁷³⁴ 144	1536
	19.83	14.43	10.98	5.10	59.83	54.15	52.68	49.53	^{43.35} 43.60	38.40

W	R	W	W	W
29.8	25.8	22.1	18.8	480
34.0	30.3	26.9	23.3	525
38.9	35.1	32.3	28.7	57.2
34.8	31.0	27.8	24.1	52.8
¹³ 175	22	1091	949	2105
34.38	30.55	27.28	23.73	52.63

A₉₀ to 4₁

Am 2418W
Palanis Hb.

	R	R	R	R	R	R	R	R
35-4	421	460	549	579	08	30	68	110
	474	517	594	37	59	86	121	168
	49.3	54.3	24	69	89	103	148	197
	49.1	52.3	17	56	176	100	137	180
	279	43	238	4	141	332	319	474
	4698	51.08	59.60	3.53	8.30	7.98	11.85	16.38

W	R	N	W	N	W	N	W	R	N
358	38.2	38.7	40.0	41.9	42.1	42.5	42.0	42.7	42.6
400	42.0	42.6	44.0	46.1	46.1	46.6	46.0	46.9	47.1
429	45.0	46.0	47.5	49.4	49.5	49.9	49.1	49.6	50.6
41.0	43.7	44.2	45.6	47.7	47.3	48.8	47.1	48.2	49.1
1597	89	115	171	23.1	25.0	27.8	24.2	27.4	1894
39.93	42.23	42.88	44.28	45.78	46.25	46.95	46.05	46.85	47.35

A_{10} to 5, A_{90} A_{-1} 12.345

Seeing very bad

Apr 27 1880
 P. L. L. L. L. L. L.

	R	R	R	R	R	R	R
440	440	517	560	13	30	65	88
498	502	583	26	78	92	128	100
502	531	32	78	122	110	178	200
517	527	0.9	4.9	10.1	11.7	15.1	17.8
2020	2341	113	314	349	422	616	
5050	5852	282	785	872	1055	1540	

	R	R	R	R	R	R
337	342	366	373	371	388	400
403	408	436	438	438	461	467
452	458	489	492	495	513	520
424	426	458	458	463	487	480
1616	1634	1749	1761	1767	1849	1877
4040	4085	4372	4402	4418	4622	4692

April 30, 1880

Polaris, L. C.

H. C. H. obs.

	W	W	W	W	W
0 2	20.3	11.1	1.4	43.0	22.1
	25.9	16.0	7.0	48.5	27.1
	33.8	24.1	10.0	56.1	35.0
	28.4	18.1	8.6	49.8	28.9
	1089	693	320	1974	1131
	27.22	17.32	8.00	49.35	28.28

clouds.

	W	W	W	W	W	W	W	W	W	W	W
0 1	47.2	45.9	45.5	44.0	43.2	43.2	41.1	41.0	41.2	43.0	44.3
	52.6	51.5	51.0	48.8	48.9	48.9	47.0	46.9	46.7	49.1	49.9
	59.8	58.6	57.9	55.9	55.8	55.6	53.5	53.5	53.8	55.5	56.1
	53.8	52.9	52.1	50.2	50.7	50.6	48.5	48.7	48.0	49.9	51.3
	2134	2089	2065	1989	1986	1983	1901	1901	1897	1975	2016
	53.35	52.22	51.62	49.72	49.65	49.58	47.52	47.52	47.42	49.33	50.40

A₊₁ 2, 3, 4

A

44

May 2, 1880
Polaris L.C.

	W	W	W	W	W	W	W	W	W	W
0-1	372	325	309	292	263	231	211	200	181	162
	420	370	353	331	298	272	256	244	221	202
	482	428	415	396	366	340	322	307	281	265
	443	385	370	352	320	299	272	266	241	222
	1717	1508	1447	1371	1247	1142	1061	1017	924	851
	4292	3770	3618	3428	3118	2855	2652	2542	2310	2128

A₉ to 3₂

Long stroke follows A₅
long break

forgot preceding

May 3, 1880

Polaris L.C.

U	N	W	W	W	W	W	W	W	W	W
01	32.8	29.8	27.0	25.7	22.5	21.2	19.2	17.5	15.8	15.0
	39.8	34.9	33.1	31.6	28.9	27.2	25.3	23.5	21.9	21.1
	51.3	46.1	44.7	42.8	40.3	38.6	36.7	34.9	33.0	32.4
	43.8	38.9	37.3	36.0	33.4	31.6	29.3	27.9	26.7	25.7
	16.77	14.97	14.21	13.61	12.51	11.86	11.05	10.38	9.75	9.36
	41.92	37.42	35.52	34.02	31.28	29.65	27.62	25.95	24.38	23.40

W	W	W
13.3	12.0	9.7
19.5	18.0	15.2
30.9	29.0	26.6
23.9	21.7	19.5
9.76	8.07	7.14
21.90	20.18	17.85

Mean of 2 slots

Break before middle wire not after

46

Polair May 4 1880
N.B.

	R	R	R	R	R	R
35 4	392	468	502	534	566	587 57
	483	561	57	28	63	82 141
	01	80	110	141	167	197 258
	549	33	78	103	122	107 217
	2025	2342	97	206	318	417 667
	5062	5855	242	515	795	1042 1668

	R	R	R	R	R
40 0	307	323	328	340	357
	387	397	402	419	432
	504	518	521	540	551
	468	482	487	503	518
	1666	1720	1738	1802	1858
	4165	4300	4345	4505	4645

May 5 1870

Polaris W.B. -

	R	R	R	R	R	R	R
3 5 4	12.3	204	240	287	332	387	626
	21.2	298	331	382	421	478	716
	32.4	401	441	483	524	581	818
	28.9	372	405	449	493	541	778
	948	1275	1417	1601	1770	1987	1738
	2.37	31.88	35.18	40.02	44.25	49.68	43.45

	R	R	R	R	R
354	33.0	338	349	369	370
	40.8	420	429	443	450
	51.4	522	534	551	557
	48.1	491	504	519	523
	1733	1771	1816	1882	1900
	4332	4428	4540	47.05	47.50

A₊ 12345A_{6 to 5}A₋₁ 12345

May 6, 1880

Polaris, L. C.

Mr. C. Hobbs.

	IV	IV	IV	IV	IV
0 1	36.9	32.7	27.0	22.9	17.4
	46.0	40.7	35.1	31.9	26.1
	56.3	51.3	45.7	42.2	36.8
	49.0	44.1	37.9	35.0	29.0
	1882	1688	1457	1320	1093
	47.05	42.20	36.42	33.00	27.32

	W	W	W	W	W	W	W	W
0	44.1	38.0	36.9	36.6	36.9	36.7	36.9	35.7
0	52.9	46.2	45.0	45.0	44.1	44.5	44.0	44.0
	3.0	57.0	55.6	55.1	55.0	55.0	55.0	54.0
	56.1	49.3	48.2	48.0	47.7	47.9	47.8	46.8
	2161	1905	1857	1847	1837	1841	1837	1805
	5402	47.62	46.42	46.18	45.92	46.02	45.92	45.12

24 25

36.1 37.5

44.0 46.3

54.8 56.1

47.7 49.2

1826 1891

4565

May 6 1880

Polair

W. b.

	R	R	R	R	R	R	R	R	R
35-4	358	359	462	494	521	562	590	604	113
	448	450	552	585	10	52	81	130	209
	520	525	28	64	86	116	163	209	288
	497	500	597	330	57	100	130	181	257
	1823	1834	2239	2073	74	230	364	936	861
	4558	4585	5598	5182	185	575	910	2340	2152

	R	R	R	R	R
35-4	367	397	424	429	438
	408	452	507	505	510
	526	550	580	586	590
	499	526	566	562	567
	1800	1945	2077	2082	2105
	4500	4862	5192	5205	5262

50

Reaun's May 8, 1880
L.C.

	W	R	W	R	W	BB	W	W
0 1	50.0	45.9	42.9	38.8	36.1	33.9	31.9	29.1
	49.9	44.4	41.5	37.5	35.3	33.0	30.2	27.2
	59.8	54.1	52.0	47.2	45.1	43.9	40.8	38.1
	54.2	50.0	46.1	43.0	40.0	38.2	35.1	32.4
	2139	1944	1828	1665	1565	1490	1386	1268
	5348	4860	4570	4162	39.12	37.25	34.65	31.70

	W	R	W	R	W
0	0.23	1.2	1.5	0.1	0.7
	2.0	59.6	59.1	58.0	58.4
	11.3	10.1	9.9	8.3	9.1
	6.7	4.5	4.1	3.6	4.0
	223	154	146	100	122
6	558	385	365	250	305

A₉ to A₂₀

May 9, 1880

Polaris L. C. H. C. H. obs.

	W	W
0 1	43.4	33.9
	43.3	33.3
	57.7	47.3
	48.6	38.3
	1930	1528
	48.25	38.20

	W	W	W	W	W	W	W	W	W
0 1	0.0	58.7	56.5	56.0	53.7	53.0	53.1	52.0	52.0
	0.0	56.7	54.6	54.0	51.0	57.0	57.0	50.0	50.0
	13.1	10.3	7.9	8.0	5.8	5.0	5.1	4.0	3.4
	5.0	1.0	58.6	58.7	57.0	56.0	55.8	54.8	55.0
	18.1	24.6	2376	2337	2275	2250	2250	2208	2204
	4.52	1.68	0	59.40	58.42	56.88	56.25	56.25	55.20
	52.9	53.1	54.9	56.0					
	51.0	51.0	52.8	54.0					
	4.6	4.3	6.3	8.0					
	56.1	56.0	57.8	59.5					
	224.6	224.4	231.8	237.5					
	56.15	56.10	57.95	59.38					

52

May 9 1882
 #10 Plain Hb.

	R	R	R	R	R	R	R
354	388	468	531	550	11	122	230 304
	39.2	470	530	558	15	115	219 490
	495	586	528	63	109	222	813 405
	442	527	588	10	68	180	384 358
	1717	2051	2281	2381	203	642	546 1357
39	42.92	51.28	57.02	59.52	5.08	16.05	1365 33.92

	RR	Q
0	580	589 588
	572	583 581
	80	89 94
	30	40 40
	62	101 106
1	1.55	2.52 2.65

1234 A₁ to A₂

May 10, 1880

Polaris. L. C. HARV.

a	1	W							W
		W	W	W	W	W	W	W	
		45.0	41.6	39.0	37.1	33.7	30.3	28.4	25.8
		44.7	42.2	39.5	37.3	33.7	31.1	28.4	26.0
		59.3	56.0	54.0	51.8	48.0	45.7	43.0	40.2
		50.0	46.9	44.2	42.3	38.2	35.8	33.6	30.8
		199.0	186.7	176.7	168.5	163.6	142.9	13.37	122.8
		49.75	46.68	44.18	42.12	40.90	35.72	33.42	30.70

a	0	W				W
		W	W	W	W	
		1.1	0.0	59.0	58.1	57.8
		1.5	0.0	59.0	58.0	57.2
		1.54	1.46	13.8	12.1	12.5
		5.8	5.6	14.6	3.7	2.2
		9.8	20.2	45.8	11.9	9.7
	0	2.45	5.05	3.95	2.98	2.42

May 11, 1880

Polaris L.C.

	N	N	N	N	N	N	N	N	N
0 1	494	462	445	414	390	380	350	321	29.9
	510	478	460	430	400	380	357	331	30.8
	525	540	528	494	467	442	428	396	38.0
	572	539	522	489	462	442	422	399	37.1
	2161	2019	1958	1827	1719	1634	1557	1447	1358
1	5402	5048	4895	4564	4298	4085	3892	3618	3395

	N	N	N	N	N	N	N	N	N	N
0 0	0.0	56.9	56.8	56.8	55.4	54.2	53.7	53.8	53.6	57.0
	0.4	57.2	57.1	56.9	55.9	55.1	56.1	56.1	56.0	56.9
	6.8	3.7	3.4	3.9	2.9	1.8	3.0	3.0	2.9	3.9
	6.8	3.6	3.4	3.1	2.4	1.0	2.3	2.0	2.8	3.3
	140	14	07	07	2366	2321	2371	2369	2373	11
	3.50	0.35	0.18	0.18	59.15	58.02	59.28	59.22	59.32	0.28

H.C.M. obs δ after the R.A. wires.H.A.R. obs δ before R.A. wires + R.A.Long break before middle wire only.A₉ to 3₀

May 11 1880
Polaris D.B. W.B.

	R	R	R	R	R	R	R	R	R	R	R
40 0	00	46	88	236	283	581	587	593	04	09	
	03	44	88	242	296	587	693	05	10	13	
	39	82	129	279	327	20	30	39	47	49	
	41	136	175	328	373	168	72	87	93	100	
	133	311	480	1085	1268	56	82	124	154	171	
	332	778	1200	2712	3170	140	205	310	355	428	

R R R R

20 18 30 33

28 30 38 41

63 60 78 77

111 105 123 125

222 218 270 276

355 533 675 690

11 3 10 11 12 13 14 15

12 34 5

56

May 13

No sheet -

Polaris W.C.

L		R	R	R	R	R
40	0	15	(256)	310	387	408
		591	221	267	363	381
		587	212	256	350	371
		76	299	350	448	465
		72	988	1183	1568	1625
40		180	2470	2958	3870	4062

A₄₁ 345A₁₀ 52

May 15, 1880
 H. A. R. obs.
 Polaris L. C.

L. C.

0 1	N	N	N	N	N	N	N	N
52.0	48.0	46.0	44.0	41.3	39.5	35.7	33.1	
51.0	46.8	43.8	42.6	39.1	37.1	33.1	30.8	
52.0	47.6	45.1	42.6	40.7	38.1	34.2	32.2	
57.0	52.0	50.0	48.0	45.0	43.2	40.0	36.6	
2120	1944	1849	1772	1661	1579	1430	1327	
5300	4860	4622	4430	4152	3948	3575	3318	

		N	N	N	N	N
0	1	4.9	4.2	3.8	3.9	3.0
		3.1	2.0	1.2	1.2	0.2
		4.2	3.6	2.5	2.4	1.3
		8.2	7.6	7.0	6.8	6.2
		204	174	145	143	107
	1	510	435	362	358	268

-A₉ - 2₀

May 16, 1880

Polaris L. C. H. A. R. obs.

	W	W	W	W	W	W	W	W
0 1	51.1	48.4	46.6	43.7	40.9	38.5	36.1	33.7
	50.0	47.1	44.2	42.0	39.1	36.3	34.2	31.7
	52.2	48.6	46.1	43.8	41.0	38.3	36.2	33.7
	55.0	51.8	49.0	46.1	44.1	40.7	39.1	36.0
	2083	1959	1859	1756	1651	1538	1456	1351
1	52.08	48.98	46.48	43.90	41.28	38.45	36.40	33.78
								32.02

	W	W	W	W	W	W	W	W
0 1	51	42	32	27	20	11	10	04
	59.9	57.1	54.4	51.2	48.8	46.4	44.2	42.0
	38	28	24	17	10	00	00	59.5
	58.8	57.8	56.8	55.8	54.8	53.8	52.8	51.8
	184	144	125	95	72	35	32	07
1	460	360	312	238	180	088	080	018
								59.50

A. 9. to 4.0

May 17, 1880

Polaris L. G. W. G. W. obs.

		W	W	W	W	W	W
0	2	8.1	0.9	52.0	47.6	41.5	32.2
		10.1	1.8	53.4	48.7	42.1	33.0
		16.3	8.3	59.7	54.0	48.3	40.0
		16.2	8.0	58.3	54.1	48.0	39.8
		507	190	2234	2044	1799	1450
2		1268	475	5585	5110	4498	36.25

		W	W	W	W	W	W	W	W	W	
0	1	4.1	3.7	1.0	58.8	57.3	57.1	57.0	55.7	55.9	56.3
		4.8	3.2	0.9	58.9	57.6	57.0	57.2	55.8	56.0	56.3
		10.3	9.2	6.3	4.9	3.4	3.0	3.0	1.3	1.3	2.0
		11.3	9.0	6.9	51	3.6	3.0	3.6	2.1	2.1	2.1
		305	251	151	77	19	01	08	2349	2353	2367
1		7.62	6.28	3.78	192	0.48	0.02	0.20	58.72	58.82	59.18

May 20 1880
Pulau N.C.

	R	R	R	R	R	R	R	R
40 0	56	122	149	177	232	270	294	331
	53	113	140	168	227	262	288	322
	94	154	184	217	271	305	332	369
	186	246	272	307	358	393	421	452
	389	635	745	869	1088	1230	1335	1474
40	9.72	1588	1862	2172	2720	3075	3338	3685

R	R	R	R	R
570	591	591	597	17
566	587	589	592	14
06	32	32	41	58
96	117	116	127	147
38	127	128	157	236
0.95	318	320	392	590

May 21, 1880

Polaris L. G.

H. G. H. Obs.

	N	W
0 1	33.0	27.4
	33.0	27.2
	40.0	34.4
	45.0	39.2
	151.0	128.2
1	37.75	32.05

	N	N	N	N	N	N	N	N	N	N
0 1	6.0	55.9	54.8	52.2	52.9	52.1	51.0	50.9	51.8	51.3
	0.2	54.7	54.1	51.6	51.6	51.2	50.1	50.0	50.8	50.0
	6.3	2.0	0.8	58.4	58.6	58.2	56.8	56.5	57.3	57.0
	11.5	6.4	6.2	4.0	3.8	3.2	1.9	2.0	2.2	2.2
	190	2390	2359	2262	2269	2247	2198	2194	2221	2205
	4.75	59.75	58.98	56.55	56.72	56.18	54.95	54.85	55.52	55.12
	N	N	N	N						
	52.6	53.6	55.7	56.4						
	51.8	52.8	54.1	55.8						
	58.2	59.4	1.2	2.8						
	3.3	4.7	6.2	7.9						
	22.59	23.05	23.72	29						
	56.48	57.62	59.30	0.72						

Long break before middle wire.

May 22, 1880

Polaris Lk
H.A. Roberts

	W	W	W	W	W	W	W	W	W
0	47.6	44.2	39.1	36.9	34.1	31.8	30.0	28.0	25.3
1	47.2	43.6	37.4	35.9	33.0	31.0	29.1	27.2	24.8
	53.8	50.0	44.8	42.9	39.9	37.7	36.0	33.8	31.8
	0.6	58.0	50.2	48.2	47.4	43.4	42.0	39.3	37.8
	2086	1938	1715	1639	1524	1439	1371	1283	1197
	52.5	48.45	42.88	40.98	38.10	35.98	34.28	32.08	29.92

	W	W	W	W	W	W	W	W	W
0	58.0	56.8	56.3	55.9	54.3	53.7	54.8	53.8	52.7
0	58.0	55.4	55.1	54.9	53.0	52.6	53.1	52.7	51.3
	3.7	2.3	1.9	1.8	5.4	5.0	5.6	5.91	5.72
	6.0	8.1	7.8	7.3	5.6	5.6	6.6	5.0	8.7
	8.7	2.6	1.1	23.99	23.23	23.09	23.35	23.06	22.49
	2.18	0.65	0.28	59.98	58.08	57.72	58.38	57.65	56.22

A₉ to 40A_{1, 2, 3, 4, 5}

May. 23, 1880

Polaris L.C.

	W	W	W	W	W	W	W	W	W
0 1	44.2	403	398	37.1	34.1	31.9	30.1	28.2	25.6
	44.1	390	390	354	338	310	282	255	248
	51.0	466	453	427	399	370	359	334	320
	55.9	570	501	479	442	421	409	383	360
	1952	1769	1742	1631	1520	1420	1361	1274	1184
	48.80	44.22	43.55	40.78	38.00	35.50	34.02	31.85	29.60

	W	W	W	W	W	W	W	W	W
0 0	590	579	579	570	560	551	537	530	546
	58.1	562	56.9	56.1	54.9	533	528	516	533
	5.0	6.1	3.1	2.8	1.2	0.0	59.1	58.3	59.6
	5.2	8.0	7.6	7.1	6.0	4.8	3.8	2.9	4.9
	7.3	5.2	5.5	3.0	238.1	233.2	229.4	225.8	232.6
	18.2	13.0	13.8	0.75	59.52	58.30	57.35	56.45	57.15

64

May 23 1881
 Polaris Wb.

		R	R	R	R	R	R	R	R
35	4	53.3	40.26	97	144	217	270	290	328
		59.0	20	82	137	208	264	282	329
		58.9	6.8	137	192	259	315	337	377
		6.8	14.2	20.2	126.2	331	387	404	448
		2330	256	518	735	1015	1236	1313	1481
39		58.25	40	6.40	12.95	18.38	25.38	30.90	32.82
									37.02

R	R
575	590
56.8	582
25	35
92	100
60	107
150	268

May 24/1880
 Polaris W. 6.

Long back focusing

	R	R	R	R	R	R	R	R	R	R
40	551	564	574	590	590	08	02	20	16	13
	574	583	590	10	20	29	22	40	41	34
	43	58	63	78	89	98	93	108	102	100
	108	117	124	140	150	160	158	172	168	162
	79	222	151	218	259	295	275	340	327	309
42	198	555	378	545	648	738	688	850	818	772

Perhaps omitted one ✓
 1

~~10 1 1 2 2 2 3 2 3 4~~
~~1 2 0 1 2 3 2 3 4~~

66

May 25, 1880

Polaris L. B.

	W	W	W	W	W
0	352	303	289	258	210
1	382	330	307	272	230
	463	419	391	366	322
	502	464	441	400	351
	1699	1516	1428	1296	1113
1	4248	3790	3570	3240	2782

	W	W	W	W	W	W	W	W	W	W
0	523	516	510	493	590	483	481	469	470	466
	546	530	520	511	501	501	493	481	483	481
	2.4	1.7	0.8	5.8	5.2	5.7	5.8	5.1	5.0	5.7
	7.9	5.7	5.2	3.9	3.0	3.0	2.8	0.8	1.2	0.8
	2372	2320	2290	2241	2213	2201	2183	2124	2135	2122
	5930	5800	5725	5602	5532	5502	5458	5310	5338	5305

A_{90} to 3_0 $\checkmark A_{+1}$ 345

May 25/68
Pharm U.C.

	R	R	R	R	R
40	0.86	19.1	22.7	26.7	28.8
	10.8	20.8	25.0	28.6	30.4
	18.0	28.9	32.8	36.0	38.0
	24.1	34.7	38.7	42.6	44.0
	6.15	10.35	11.92	13.39	14.12
40	15.38	25.88	29.80	33.48	35.30

R	R	R	R	R
56.2	55.1	63	56.7	57.7
56.0	57.2	86	58.7	59.5
4.2	56	7.0	7.0	8.0
9.3	11.2	12.1	12.3	13.2
2.7	9.1	34.0	14.7	18.4
0.68	2.28	8.50	3.68	4.60

68

May 26 1880
Polaris 6.6

	R	R	R	R	R
40	151	186	220	258	283
	201	236	270	309	331
	288	324	358	394	420
	354	388	424	461	487
	994	1134	1272	1420	1521
41	2485	2835	3180	3550	3802

R	R	R	R	R
503	502	520	538	541
558	557	578	588	595
46	43	64	57.8	87
104	105	128	137	148
11	07	90	41	171
028	018	225	102	428

my 27/80
 Polaris *W*

	R	R	R	<i>W</i>	R	R
40 0	48	106	140	200	242	268
	88	150	189	247	289	311
	177	239	276	332	371	398
	250	305	347	406	444	469
	563	850	952	1185	1346	1446
40	14.08	21.25	23.80	29.62	33.65	36.15

R	R	R	R	R
500	514	531	539	550
549	563	580	581	599
33	556	67	68	90
103	118	136	140	158
2385	42	114	128	197
59.62	105	285	320	492

W 4, 23 45 *A*

70

May 31, 1882
 Ocean No. -

		R	R	R	R	R	R	R
40	2	288	287	322	325	339	349	361
		320	317	356	356	366	376	388
		365	362	404	409	420	426	437
		450	450	484	488	501	508	520
		Same filling		1566	1578	1566	1656	1711
		1421	1416	3915	3945	3915	4140	4278
		(3052	3540)					
			3296					

R	R
360	371
390	394
439	449
521	530
1710	1744
4275	4360

June 2, 1880
 Polaris U.C. H. C. W. obs.

	W	W	W	W	W	W	W
40 1	28.9	38.6	42.8	47.2	52.7	56.5	1.4
	30.8	40.1	44.3	48.9	54.0	58.1	3.4
	33.6	42.5	46.4	50.9	56.8	0.4	5.6
	43.1	52.0	56.7	0.8	6.4	9.8	15.2
	1364	1732	1902	2078	2299	48	256
	3410	4330	4755	5195	5748	120	640
							9.30

	W	W	W	W	W	W	W
40 2	33.3	34.9	36.6	36.9	37.8	38.1	39.1
	36.0	37.1	38.8	39.2	39.4	40.2	41.1
	38.0	39.5	40.3	41.1	41.9	42.4	43.3
	47.7	48.9	50.8	51.0	51.6	52.3	53.2
	1550	1904	1665	1682	1707	1730	1767
42	3875	4760	4162	4205	4268	4325	4418
							44.38

June 3 1880

~~W.C.W. obs.~~ in A R

A₁ to A₃ incl. and A₇ to A₉ inclusive.
 Leonard Waldo observed A₃ to A₆ inclusive

Long break before and after middle wire.

June 4, 1880

Polaris Lib. W.C. Wobs.

		W	W	W	W	W	W
0	3	32.0	23.6	16.4	11.8	8.1	1.1
		32.8	25.0	17.1	13.1	10.0	3.0
		37.4	29.4	22.0	17.0	13.7	6.8
		43.8	36.0	28.2	23.2	20.7	14.0
		1460	1140	837	651	525	249
	3	3650	2850	2092	1628	1312	622

		W	W	W	W	W	W
0	2	³⁰ 30.4	23.1	20.2	24.9	25.1	
		32.0	24.5	25.7	25.9	25.8	
		35.9	28.3	29.3	29.2	29.8	
		42.7	35.0	36.8	36.1	36.6	
		1410	1109	1170	1161	1173	
	2	3525	2772	2925	2902	2932	

Lost A₁₂ 1, 1/2 on account of clouds

Rij 1st J break on Chronograph sheet

June 9. 1880
 Opalans
 Lb.

	W	W	W	W	W	W	W
0 3	13.9	10.2	6.9	5.1	2.1	0.2	584
	15.0	10.8	7.1	4.1	2.1	598	582
	18.2	14.2	10.7	8.8	6.0	4.1	19
	24.0	20.7	16.1	15.1	11.1	10.0	7.9
	711	559	408	331	213	141	64
	1778	1398	1020	828	532	352	160

	W		W	W	W	W	W
0 2	32.9	310	290	274	270	264	252
	330	301	289	272	271	258	252
	367	343	328	311	309	297	286
	422	400	389	367	361	353	34.9
	1448	1354	1296	1224	1211	1172	1139
2	3620	3385	3240	3060	3028	2930	2848

Middle wire and following and A_{+1}

74

Polaris U.b. June 9 1874

~~40~~

	W	W	W	W	W	W	W	W	W	W
40	23.9	26.9	29.0	32.3	35.3	38.0	40.9	44.0	46.2	48.5
	23.3	26.9	29.1	32.7	35.3	38.1	41.6	44.6	46.9	49.1
	25.0	28.2	30.0	33.8	36.3	39.3	42.1	45.3	47.6	50.1
	33.7	36.6	39.0	42.4	46.0	48.3	51.1	55.1	57.1	59.3
	105.9	118.6	127.1	140.7	152.9	163.7	175.7	189.0	197.8	207.3
41	26.48	29.65	31.78	35.18	38.22	40.92	43.92	47.25	49.45	51.82

	W	W	W	W	W	W	W	W	W	W
51.5	53.6	56.1	58.1	0.9	2.3	5.4	7.2	9.9	11.3	
52.0	53.8	56.2	58.6	0.9	2.7	5.3	8.0	10.1	11.4	
53.3	55.1	57.3	59.3	2.1	4.0	6.7	8.6	11.3	13.0	
54.1	3.9	7.0	8.6	11.1	12.9	15.9	17.9	20.0	21.9	
21.89	22.64	23.66	46	150	21.9	33.3	41.7	51.3	57.6	
54.72	56.60	59.15	1.15	3.75	5.48	8.32	10.42	12.82	14.40	

A₁₀ to 5.

June 10 1850
Polaris Lb.

	N	W	W	W	W	W	W	W	W	W
0 3	19.1	15.2	12.4	8.5	6.3	4.0	3.2	0.0	58.0	56.1
	21.8	17.3	15.0	10.6	7.7	5.8	4.3	1.0	40.0	57.9
	29.2	24.9	21.7	17.7	14.9	12.2	11.3	8.2	6.2	4.2
	31.0	26.6	24.2	19.9	16.9	14.9	14.2	11.0	8.8	7.2
	1011	840	833	567	458	369	330	202	130	54
3	2528	2100	2082	1418	1145	922	825	505	325	135

	N	W	W	W	W	W	W	W	W	W
2	29.3	28.1	27.0	25.9	25.4	24.2	22.9	22.3	22.0	21.3
	30.1	28.6	27.2	26.3	26.0	24.2	23.5	23.0	22.8	22.6
	36.0	34.8	33.9	32.8	31.7	30.4	29.6	28.7	28.3	28.2
	39.9	37.9	37.1	36.1	34.8	33.7	33.0	32.2	32.2	31.9
	1353	1294	1252	1211	1179	1125	1098	1062	1053	1040
2	3382	3235	3130	3028	2948	2812	2725	2655	2632	2600

Lost 40
Aq. to H₁

June 10, 1880

Polans U. C.

	W	W	W	W	W	W	W	W	W
40	14.8	18.3	21.7	24.2	26.8	29.2	32.1	33.8	36.4
1	14.9	18.8	22.4	24.5	26.7	29.3	32.3	34.1	37.0
	19.0	22.3	25.7	29.1	31.2	33.8	37.5	38.5	41.0
	26.0	29.2	32.8	35.5	38.0	40.3	44.1	45.7	47.9
	74.7	88.6	102.6	113.3	122.7	132.6	146.0	152.1	162.3
41	18.68	22.15	25.65	28.32	30.68	33.15	36.50	38.02	40.58
									43.12

W	W	W	W	W	W	W	W	W	W
44.1	47.1	50.9	52.9	55.9	59.0	0.9	2.4	3.9	5.6
44.2	47.3	51.0	53.2	56.1	59.1	1.2	2.9	4.9	6.3
48.9	51.2	55.2	57.9	0.8	3.9	5.6	7.0	8.1	10.6
55.6	58.9	20	4.0	7.7	10.1	12.6	14.0	15.1	17.7
1928	2045	2191	2280	0.5	1.21	2.03	2.63	3.20	4.02
48.20	51.12	54.78	57.00	0.12	3.02	5.08	6.58	8.00	10.05

June 11, 1880

Polaris L. C. H. C. W. obs.

		RV	RV	RV	RV	RV
0	3	21.5	14.4	10.1	4.9	1.0
		23.9	16.4	12.0	7.1	2.9
		31.8	24.0	20.0	14.7	11.1
		34.2	26.9	23.0	17.4	13.9
		1114	817	651	441	289
3		27.85	20.42	16.28	11.02	7.22

A4, to 1,

June 12, 1880
Polaris. H. 6

	W	W	W	W	W	W	W	W	W	W
40	16.0	23.1	27.0	28.2	31.1	34.0	36.2	38.6	41.9	44.3
	18.1	25.2	28.2	30.8	32.2	35.7	38.0	41.0	44.1	47.0
	24.9	32.3	36.3	38.1	40.0	43.2	45.6	48.1	51.1	54.9
	30.0	37.1	41.1	43.0	45.3	48.4	50.1	53.3	56.4	58.9
	89.0	117.7	132.6	140.1	148.8	161.3	169.9	181.0	193.5	205.1
	222.5	294.2	331.5	350.2	37.20	40.32	42.48	45.25	48.38	51.28

W	W	W	W	W	W	W	W	W	W	W
46.9	48.8	51.7	53.0	54.5	58.1	59.8	0.8	3.0	4.9	
49.2	51.1	53.2	54.9	56.2	0.0	1.9	3.1	5.0	7.1	
56.6	58.9	1.2	2.7	4.1	8.0	9.2	10.8	12.5	14.1	
1.8	2.9	6.1	6.9	8.9	12.4	13.8	15.8	17.2	18.8	
214.5	221.7	232.2	237.5	37	18.5	24.7	30.5	37.7	44.9	
53.62	55.42	58.05	59.38	0.92	4.62	6.18	7.62	9.42	11.22	

4+1

A+1 A10 to 5,

June 10 1880

Delaware Lb

	R	R	R	W	W	W	W	W	W
0 3	232	159	88	57	08	59.9	564	56.3	53.3
	356	212	139	93	51	40	10	10	57.3
	368	293	224	180	139	127	92	8.7	60
	396	318	257	208	163	151	120	12.1	8.2
	1282	982	702	538	361	317	186	181	48
	3205	2455	1755	1345	902	792	465	452	120
									58.98

Ag. ~~55~~ to 90

	W	W	W	W	W	W	W	W	W
0 2	218	201	202	192	182	170	172	166	152
	218	238	230	220	214	202	198	199	182
	211	307	325	317	311	302	284	286	283
	337	370	361	357	334	332	321	318	319
	1176	1125	1100	1057	1030	980	974	967	907
0	2940	2812	2750	2642	2575	2450	2435	2416	2268

3 vials follows Perhaps 5 preceding

80

June 13 1880

Polaris N. 6.

	R	R	R	R	R	R	R	R	R	R
40	268	348	394	422	468	512	548	578	15	45
	290	374	416	450	500	542	574	08	43	71
	352	436	479	511	560	599	638	63	100	134
	416	504	543	577	22	64	102	135	167	202
	1326	1662	1832	1960	2150	2317	62	184	325	452
41	3315	4155	4580	4900	5375	5792	155	460	812	1130

A₁₀ to 51

June 14/1880
 Polaris Lb.

		R	R	R
0	3	148	90	2282
		189	129	317
		247	200	382
		332	273	462
		916	692	1443
	3	2290	1730	36.08

~~A 750~~ 31 30 2 2, 20 10

June 15, 1880
Polaris H. C.

17

	W	W	W	W	W	W	W	W	W
40	81.7	34.9	39.1	40.7	44.0	44.4	50.6	52.4	54.0
	35.1	38.2	43.0	44.4	44.4	51.1	54.3	56.0	57.0
	38.6	41.7	46.3	48.1	50.9	54.9	57.1	59.2	24
	50.0	53.1	57.8	59.8	28	6.0	9.0	11.0	12.5
	155.4	167.9	186.2	193.0	205.1	219.4	231.0	238.6	44.123
41	38.85	41.98	46.55	48.25	51.28	54.85	57.75	59.65	11.0
									308

W	W	W	W	W	W	W	W	W	W
58.2	0.2	18	36	55	77	94	40.2	31.6	32.7
19	4.0	5.3	7.1	9.5	11.4	13.1	31.8	35.2	36.3
5.7	7.7	9.0	11.0	13.4	15.0	17.0	36.2	38.5	40.7
17.3	18.9	20.3	22.3	24.8	26.5	28.2	38.9	50.4	51.9
23.1	30.8	36.4	44.0	53.2	60.6	67.7		156.3	161.6
5.78	7.70	9.10	11.00	13.30	15.15	16.92		39.08	40.40
									40.80

June 16, 1880
Polaris U.C.

	W	W	W	W	W	W	W	W	W	W
Lw	23.2	267	281	306	323	349	374	390	411	437
	270	301	320	340	370	388	419	430	451	481
	306	332	358	379	402	420	451	469	488	508
	388	423	441	464	490	510	539	555	572	596
	1196	1323	1400	1489	1585	1667	1783	1844	1922	2017
3	2990	3308	3500	3722	3962	4168	4458	4610	4805	5042

W	W	W	W	W	W	W	W	W	W
42	469	490	510	540	663	586	599	19	42
490	509	531	551	585	09	120	41	69	94
519	541	569	588	14	42	60	80	100	121
04	32	58	78	97	129	141	161	189	211
2055	2151	2248	2327	36	143	207	281	377	468
5138	5378	5620	5818	090	358	518	702	942	1170

A₁₀ to 5,

84

at 16/1880p
Breain R. C.

		R	R	R	R	R	R	W	W	W	W
0	3	363	292	246	193	149	59	22	08	586	560
		414	347	297	245	197	108	66	49	300	01
		468	401	352	302	251	165	130	107	9.1	7.3
		548	480	430	378	329	240	299	179	160	13.1
		1793	1520	1325	1118	926	572	417	338	267	165
3		4482	3800	3312	2795	2315	1430	1042	845	6.68	4.12

W	W	W	W	W	W	W	W	W	W	W	2r
582	0	2	278	250	246	236	226	216	212	198	189
580			317	291	282	278	261	252	249	237	239
51			381	356	350	341	326	319	316	310	309
103			440	412	409	401	379	372	350	360	360
66			1416	1309	1287	1256	1192	1159	1147	1105	1107
165			3540	3272	3218	3140	2980	2898	2868	2762	2768

A₉₀ to 40

#2, to 6

June 17, 1880

Polaris U. L.

	W	W	W	W	W	W	W	W	W	W	W
40 1	510	539	562	581	600	621	646	674	702	736	11.3
	55.1	57.8	60.1	62.2	63.7	66.2	68.4	71.1	73.8	76.6	15.0
	59.3	61.6	64.2	66.2	68.7	70.5	72.7	75.2	77.2	79.1	20.0
	71.1	79.9	124	102	128	148	169	179	195	210	23.2
	2325	32	129	167	252	336	424	461	525	593	695
	58.12	080	322	418	630	840	1060	1152	1312	1482	1738

	W	W	W	W	W
40 2	319	339	349	353	359
	366	381	389	399	400
	409	422	430	436	442
	441	462	469	480	480
	1535	1604	1637	1668	1681
	38.38	40.10	40.92	41.70	42.02

June 18, 1880

H. C. Hobbs. rec.

Polaris L.L.

	W	W	W	W	W	W
0 3	14.4	10.2	6.0	3.3	57.8	54.1
	20.9	16.1	11.9	8.8	3.3	59.9
	27.8	22.9	18.9	16.0	10.3	6.8
	28.0	22.9	18.0	15.1	10.0	6.0
	911	721	548	432	214	68
3	2278	1802	1370	1080	535	170

	W	W	W	W	W	W	W	W
0 2	28.9	25.4	24.0	23.9	23.0	21.9	20.4	19.8
	34.0	30.1	28.2	28.6	27.8	26.1	25.0	23.9
	40.2	37.0	35.7	35.7	33.8	32.6	31.9	31.0
	39.9	37.0	36.0	35.9	34.4	32.7	32.0	31.1
	1430	1295	1239	1241	1190	1133	1093	1058
	35.75	32.38	30.98	31.02	29.75	28.32	27.32	26.45

W	W
18.3	18.0
23.1	22.9
29.8	29.7
29.9	29.9
1011	1005
2528	2512

June 18, 1880 H. C. Moberg
Polaris H. C.

		W	W	W	W	W	W	W	W
40	2	32.3	36.9	37.6	39.2	40.1	40.4	40.1	39.9
		37.6	42.0	42.9	44.4	45.1	45.9	45.2	44.1
		40.5	44.8	46.0	47.4	48.3	48.8	48.4	47.9
		45.0	50.1	51.1	52.3	52.8	53.0	53.0	52.2
		1554	1738	1776	1833	1863	1881	1867	1841
42		38.85	43.45	44.40	45.82	46.58	47.02	46.68	46.02

W	W	W
39.0	37.3	36.9
43.8	42.4	41.1
46.8	45.2	44.7
51.1	49.1	48.8
1807	1740	1715
45.18	43.50	42.88

Ref. δ break after $A_{-1} 4$
 A_{62} to 90 $A_{-1} 2 3 4 5$

June 19, 1880. H. C. H. obs.

Polaris L. C.

or

0 2 57.7

5.1

12.8

14.8

30.4

3 7.60

W

W

W

W

W

W

W

W

W

W

0	2	25.6	22.2	20.9	18.8	18.6	18.1	16.9	16.9	16.1	15.9
		30.9	27.8	26.1	24.0	24.0	23.0	22.0	21.5	20.2	20.2
		38.1	35.1	33.9	32.0	31.6	30.2	29.1	29.1	28.1	28.0
		41.4	38.1	36.8	34.1	34.1	33.9	32.2	32.6	31.6	31.1
		1360	1232	1177	1089	1083	1052	1002	1001	960	952
2		34.00	30.80	29.42	27.22	27.08	26.30	25.05	25.02	24.00	23.80

Run 19, 18V
Dolain M6.

		R	R	R	R	R	R	R	R	R	R
40	2	31.2	381	384	388	386	382	374	370	360	349
		36.2	435	428	436	432	430	427	423	408	403
		410	474	476	480	480	479	470	464	453	443
		480	550	550	558	554	551	542	541	530	518
		1564	1840	1838	1865	1855	1842	1813	1801	1751	1713
		3910	4600	4595	4662	4638	4605	4532	4502	4378	4282

A₅ to 90

90

Sun 20 / 180

Polaris U.C.

	R	R	R	R	R
40 1	30.2	38.2	42.9	2.0	5.4
	35.2	43.0	47.7	7.1	11.1
	40.5	48.7	52.8	12.2	15.7
	48.2	55.4	1.0	19.4	23.0
	154.1	185.3	204.3	40.7	55.2
41	38.52	46.32	51.08	10.18	13.80

A_{1,1,1,2,2,2,3,3,1}

June 21, 1880

Polaris L. C.

		W	W	H		W	W
0	2	54.1	52.1	49.2	2	16.9	15.1
		59.4	57.2	54.2		21.1	19.4
		77	5.1	2.2		29.1	27.0
		10.9	8.5	5.6		32.8	30.4
		121	29	231.2		99.9	91.9
3		302	0.72	57.80		24.98	22.98

$$\text{Last } \left(\frac{1}{2} + 6_2, 3_2, 3_1, \frac{1}{2}, \frac{1}{2} \right)$$

Polaris June 21, 1880

Polaris U. C.

	W	W	W	W	W	W	W	W	W	W
40	21.0	24.3	27.0	29.5	32.1	34.9	37.2	40.2	42.7	44.6
	25.8	29.5	32.1	34.9	37.1	40.1	42.8	45.1	47.9	49.6
	29.2	32.9	36.2	38.7	41.7	43.7	46.5	49.1	51.2	53.9
	37.0	41.0	43.8	46.1	48.9	51.1	54.2	57.0	59.0	1.5

1130	1277	1391	1492	1598	1698	1807	1914	2008	2096
------	------	------	------	------	------	------	------	------	------

41	28.25	31.92	34.78	37.30	39.95	42.45	45.18	47.85	50.20	52.40
----	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

W	W	W	W	W	W	W	W	W	W
47.6	49.9	51.9	54.5	58.1	61.6	1.7	4.6	6.0	7.8
52.7	54.9	56.9	59.0	63.3	5.6	6.6	9.9	11.9	13.2
56.5	58.7	11.2	4.1	7.8	9.4	11.1	13.9	15.8	17.3
4.0	6.2	8.2	11.0	14.9	16.2	18.0	21.0	22.3	24.1
2208	2297	2381	96	311	318	374	494	500	624
55.20	57.42	59.52	24.0	7.78	7.95	9.35	12.35	12.50	15.60

June 22 1880

Rolain's Lb.

	R	R	R	R	R	R
0 3	187	143	97	60	595	553
	252	204	152	114	50	10
	287	252	197	158	588	59
	343	308	260	218	159	122
	1069	907	706	550	192	144
	2672	2268	1765	1375	480	360

	R	R	R	R	R	R
2	270	249	230	223	214	198
	328	308	291	282	275	258
	371	353	330	320	310	300
	437	418	399	389	378	360
	1406	1328	1250	1214	1182	1116
	3515	3320	3125	3035	2955	2790

June 22, 1880

H. A. R. obs. 1st ♂'s and RA.

Polaris U. L.

* M. L. made three long
rattles and observed five ♂'s

	W	W	W	W	W	W	W	W	W	W
Low	28.1	31.3	33.0	36.1	38.8	40.9	44.2	45.6	49.0	51.0
	32.6	36.0	37.8	41.2	43.0	46.0	48.1	50.7	53.5	55.7
	34.6	37.9	39.6	42.9	45.2	47.6	50.1	52.2	55.0	57.0
	43.1	47.2	48.8	52.7	54.9	57.0	59.2	2.0	4.1	6.4
	138.4	152.4	159.2	172.9	181.9	191.5	201.6	210.5	221.9	230.1
	34.60	38.10	39.80	43.22	45.48	47.88	50.40	52.62	55.48	57.52

W	W	W	W	W	W	W	*	W	W	W	W	W
58.2	55.0	57.0	59.2	2.2	4.6	6.0	40.2	33.9	36.1	37.3	38.3	40.5
57.4	0.0	1.9	3.8	7.1	9.1	11.1		38.9	41.0	42.1	42.9	45.0
59.4	1.7	3.2	5.9	8.8	11.5	12.7		41.0	42.5	44.1	44.7	47.0
9.0	11.1	13.0	14.9	18.0	20.5	21.9		50.1	52.1	53.1	53.6	56.0
239.0	78	15.1	23.6	36.1	45.7	51.7		163.9	171.7	176.6	179.5	188.5
59.75	1.95	3.78	5.90	9.02	11.42	12.92		40.98	42.92	44.15	44.88	47.12

40 to 90

Jan 13 1892
Polain S.C.

		R	R	R	R	R	R	R	R	R	R	R
0	2	57.0	53.2	26.6	24.8	23.0	20.2	19.1	17.8	17.3	16.6	
		3.6	0.5	3.8	3.0	2.8	2.6	2.5	2.4	2.2	2.1	
		8.4	5.0	3.0	3.4	3.3	3.1	3.0	2.9	2.8	2.7	
		14.0	9.7	4.2	4.0	3.8	3.3	3.0	3.4	3.3	3.2	

Reg @ h 10

9₀ 8₂ 8₁ 8₀ (5₀ = 1 stroke Rij) 4, 2, 3, 2 0, (Palsen to face 3,)

4₁ 3 2 1

Oh

June 23, 1880
Polaris No.

		W	W	W	W	W	W	W	W	W
40	1	332	366	395	429	444	482	510	531	558
		383	420	448	480	498	539	556	580	598
		423	454	481	520	540	580	0.1	25	50
		500	534	565	593	13	51	71	99	127
		1638	1774	1889	2022	2095	2252	2338	35	144
		4095	4435	4722	5055	5238	5630	5845	088	360
										1302

	W	W	W
2	7.2	93	157
	12.2	15.8	220
	16.4	19.2	
	24.0	26.9	
	598	711	
	1495	1778	

Two strokes for 5, 93.

1800phatproj.1420m

Aug 24 1885
Polaris Lb

	R	R	R	R	R	R	R	R	R	R
0	2	521	504	222	200	190	182	15.7	147	141 132
	04	579	287	268	254	249	240	240	199	190
	88	52	362	349	334	327	298	290	276	274
	118	88	401	384	367	361	33.7	32.7	31.6	30.9
	131	63	1272	1201	1145	1119	1012	974	932	905
	328	108	3180	3002	2862	2798	2530	2435	2330	22.62

Lost last wire

June 24 1880

Plain Wb.

	R	R	R	R	R	R	R	R	R	R
40 2	26	61	297	352	352	359	366	365	372	370
	7.3	117	35.3	40.1	40.9	41.2	41.6	41.7	42.5	42.1
	136	174	404	460	467	469	474	47.4	48.7	480
	199	243	472	530	536	540	547	547	553	548
	434	595	1529	1741	1764	1780	1803	1703	1837	1819
42	1085	1488	3822	4352	4410	4450	4508	4258	4592	4548

Lent-A6.61

June 26 1880

Reavis No.

	R	R	R	R	R	R	R	R	R	R
40 1	9.3	164	204	25.2	306	352	432	477	514	549
	150	225	268	314	367	410	459	536	577	64
	234	307	307	394	442	490	572	13	51	107
	280	356	399	449	500	542	28	51	107	142
	757	1052	1222	1409	1615	1794	2131	2297	49	205
	1892	2630	3055	3522	4038	4485	5328	5742	122	512

R	R	R	R	R	R	R
584	23	40	2276	296	300	320
51	86		342	363	366	387
128	164		419	439	447	460
180	217		472	493	499	514
343	490		1509	1591	1612	1681
858	1225		3772	3978	4030	4202

June 27, 1880

Polaris. L. 6

	W	W	W	W	W	W	W	W	W	W
0 2	21.2	20.1	18.4	17.8	17.2	15.6	14.7	14.1	12.9	13.0
	30.0	28.4	26.9	25.3	25.1	23.2	22.6	22.0	21.1	20.9
	39.7	38.3	36.7	35.8	35.1	34.0	33.0	31.6	30.5	30.9
	42.7	40.3	38.6	37.6	37.8	36.1	35.1	34.0	33.0	32.3
	1336	1271	1206	1165	1152	1089	1054	1017	975	981
2	33.40	31.78	30.15	29.12	28.80	27.22	26.35	25.42	24.38	24.52

	W	W	W	W	W	W	W	W	W	W
0 2	12.1	11.9	11.9	11.6	11.9	11.6	11.6	11.1	11.0	11.2
	19.9	19.8	20.0	19.9	19.4	19.6	19.3	19.1	19.0	19.1
	30.0	30.0	30.2	29.8	29.8	29.5	28.9	29.1	29.8	29.2
	32.0	32.3	32.1	32.1	32.0	31.7	31.8	31.9	31.0	32.1
	940	940	942	934	931	924	916	912	908	916
2	23.50	23.50	23.55	23.35	23.28	23.10	22.90	22.80	22.70	22.90

List 1st wire.

June 27 1880
 Polaris Ab.

		R	R	R	R	R	R	R	R	W	W
40	1	177	232	292	350	391	443	534	575	33	65
		239	298	361	412	459	511	06	46	108	137
		316	368	432	483	524	580	70	112	172	201
		336	397	460	508	550	08	98	140	202	222
		1068	1295	1545	1753	1924	2142	108	273	515	625
41		2670	3238	3862	4382	4810	5355	270	682	1288	1562

		W	W	W	W	W
40	2	280	300	295	316	321
		350	371	369	383	391
		420	440	435	457	460
		440	463	460	481	484
		1490	1574	1559	1637	1659
412		3725	3935	3898	4092	4148

A₁₂₃₄₅ - cont. A₁₀

June 28, 1880

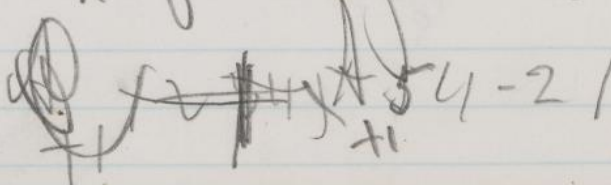
Polaris L. C.

		W	W	W	W	W	W	W	W
0	2	22.1	19.9	19.0	18.6	17.6	16.3	15.4	14.9
		28.6	25.7	24.9	24.1	23.1	22.0	21.1	20.3
		38.8	36.1	35.1	35.1	34.1	32.1	31.8	31.1
		38.8	35.9	34.2	34.2	33.2	31.9	30.9	30.3
		128.3	117.5	113.2	112.0	108.0	102.3	99.2	96.6
	2	32.08	29.38	28.30	28.00	27.00	25.58	24.80	24.15

W	W	W	W	W	W	# W	W
148	139	139	13.2	12.5	12.9	118	12.1
20.2	19.2	19.1	18.9	18.4	18.1	17.1	17.6
30.1	30.3	30.0	29.1	28.8	29.1	28.6	28.7
30.2	29.2	28.9	28.9	28.1	28.0	27.9	27.4
95.3	92.6	91.9	90.1	87.8	88.1	85.4	85.8
23.82	23.15	22.98	22.52	21.95	22.02	21.35	21.45

#Aft. Long. at 11.0

A4. to 1.0



Sun 28 1870

Plain Uls.

	R	R	R	R	R	R	R	R
40 1	268	359	408	452	498	533	573	56
	318	411	463	505	558	588	24	59
	404	497	548	589	639	71	107	142
	421	517	560	62	62	88	127	160
	1414	1784	1979	2148	2347	80	231	367
41	35.35	44.60	49.48	53.70	58.68	200	5.78	9.18

	W	W	W	W	W	W	W	W
40 2	272	28.9	29.2	29.7	30.8	30.9	31.8	320
	331	350	351	357	363	364	371	379
	410	431	432	438	449	451	458	460
	413	441	440	449	455	458	462	471
	1426	1511	1515	1541	1575	1582	1609	1630
42	35.65	37.78	37.88	38.52	39.38	39.55	40.22	40.75

W.C. W. Dusen. See long rattle.

W	W	W	W	W	W	W	W	W
33.3	33.3	34.1	34.0	34.1	33.9	33.9	32.0	29.8
39.0	39.1	39.9	39.8	39.9	39.4	39.9	37.2	34.8
47.2	47.7	49.8	48.0	48.1	48.0	47.9	46.0	43.4
48.2	48.2	49.1	48.9	49.1	49.0	48.8	47.0	44.1
1677	1683	1729	1707	1712	1703	1705	1622	1521
4192	4208	4322	4268	4280	4258	4262	4055	3802

June 29, 1880

HAR; H.C. Wds.

Polaris L.C.

H.C. Wds.		H.C. Wds.	HAR obs.			
W	W	W	W	W	W	W
54.0	49.1	20.0	20.0	18.1	16.4	15.6
2.9	57.3		280	258	234	23.1
13.0	7.8		386	361	340	338
12.0	6.2		370	351	333	323
219	0.4		1236	1151	1071	1048
2 548	0.10		3090	2878	2678	2620

H.A.R. obs.					H.C. Wds.				
W	W	W	W	W	W	W	W	W	W
15.1	14.3	13.9	13.1	13.0	16.0	16.6	16.9	11.6	11.6
22.0	21.2	21.1	20.2	20.1	18.6	18.0	18.1	18.2	18.2
33.0	32.0	31.8	30.8	30.8	28.9	28.4	28.6	29.0	28.9
31.8	31.8	31.9	30.9	31.0	29.0	28.4	29.0	29.0	29.1
1019	993	987	950	949	875	854	866	878	878
2548	2482	2468	2375	2372	2188	2135	2165	2195	2195

H.C. Wds. A.

H.A.R. obs. A.

A₁, middle + full stroke.

June 29 1890
Dolain U.B.

A_{41} in P.R. only.

A_{41}

June 30, 1880

Polaris L.C.

		W	W	W	W	W	W	W	W	W
0	2	21.4	20.6	18.3	18.2	17.1	16.0	16.0	15.1	15.2
		29.1	28.2	26.2	26.1	25.6	23.5	23.9	22.9	22.8
		39.1	38.3	37.1	36.9	35.9	34.9	34.8	33.7	33.3
		40.1	39.3	37.0	37.0	36.0	35.0	34.3	33.0	33.9
		129.7	126.4	118.6	118.2	114.6	109.4	109.0	104.7	105.2
2		32.42	31.60	29.65	29.55	28.65	27.35	27.25	26.18	26.30

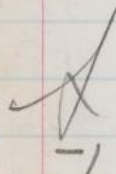
W.C.W. obs.

		W	W	W	W	W	W	W	W	W
0	2	13.9	13.1	12.9	12.1	12.2	11.2	11.4	11.0	11.1
		22.0	21.1	20.4	19.8	20.0	19.0	19.1	18.0	18.5
		33.0	31.3	31.0	30.2	30.3	29.1	29.3	28.1	28.6
		33.0	31.4	31.9	30.9	30.3	29.9	30.0	28.1	29.0
		101.9	96.9	96.5	93.0	92.8	89.2	89.8	86.8	87.2
2		25.48	24.22	24.12	23.25	23.20	22.30	22.45	21.70	21.80

June 30 1880

Polaris N.B.

		W	W	W	W	W	W	W
40	2	313	360	364	368	374	361	342
		388	437	441	440	440	433	423
		448	495	500	500	491	496	483
		500	541	550	550	441	447	532
		1649	1833	1855	1858	1726	1737	1780
		1751						
42		4122	4582	4638	4645	4315	4342	4450
		4378						


 1 2 3 4 5

July 1, 1880

Lk. Lk. Obs.

Polaris. Lk.

W.C. W. Obs.

0	3	W.C. W. Obs.					W. W. W. W. W. W.					
		W	W	W	W	W	W	W	W	W	W	W
		42.1	28.4	22.6	17.0	10.9	80	40	12	0.8	58.6	55.8
		58.6	38.6	32.9	27.0	21.0	180	137	109	102	81	5.1
		0.5	47.0	41.1	35.1	29.0	261	222	191	190	16.8	13.9
		2.0	47.9	41.0	35.0	28.7	267	221	200	192	169	15.1
		2972	1619	1376	1141	896	788	620	512	492	504	299
		5430	4048	3440	2852	2240	1970	1550	1280	1230	1260	748

W	W	W	W	W	W	W	W	W	W
520	499	480	231	220	209	190	180	171	168
512	591	576	328	305	291	278	262	261	257
100	78	60	403	390	378	360	349	347	343
119	90	70	420	400	390	378	360	353	351
151	58	2386	1382	1315	1268	1206	1151	1132	1119
378	145	59.65	34.55	32.88	31.70	30.15	28.78	28.30	27.98

July 3, 1880

H. L. Wols

Polaris H. L.

		at	at	W	W	at	at	W	W
40	2	33.2	15.4	39.2	39.1	40.0	40.0	39.7	38.9
		37.6	19.0	42.9	43.1	43.8	43.9	43.0	42.9
		41.7	24.1	47.5	48.2	48.8	48.2	48.0	47.2
		45.8	27.9	51.2	52.1	52.7	52.0	52.1	51.1
		1583	864	1808	1825	1853	1841	1828	1801
	112	39.58	21.60	45.20	45.62	46.32	46.02	45.70	45.02

W	W
37.7	37.0
41.9	41.0
46.6	45.8
50.2	49.9
1764	1737
44.10	43.42

A₇₂ to A₉₀ and A_{+1,2,4,5}

110

July 4 1891
Main Lb.

		R	R	R	R	R
0	2	27.0	24.8	23.0	21.7	19.9
		32.2	29.6	27.7	26.7	24.8
		39.0	36.7	34.9	33.8	31.9
		39.6	36.0	35.2	34.0	32.3
		1378	1271	1208.	1162	1089
2		34.45	31.78	30.20	29.05	27.22

A₅ to A₀

July 4, 1880

Polaris U. C.

H

		W	W	W	W	W	W	W	W	W	W
40	1	19.1	24.2	27.2	30.0	31.9	34.3	37.9	40.3	43.0	45.1
		23.9	28.3	31.8	34.1	36.2	38.9	42.4	44.3	47.2	49.4
		29.3	34.0	37.0	39.8	41.6	44.4	47.8	50.0	53.0	55.0
		32.7	37.1	40.4	43.2	45.0	48.0	51.0	53.7	56.3	58.7
		1050	1236	1367	1471	1547	1656	1791	1883	1995	2082
41		26.25	30.90	34.18	36.78	38.68	41.40	44.78	47.08	49.88	52.05

W	W	W	W	W	W	W	W	W	W
48.0	51.8	53.9	56.0	58.9	2.2	5.3	7.0	8.1	9.4
53.1	56.0	57.9	0.1	3.5	7.0	10.0	10.7	12.6	13.0
58.0	1.7	3.8	5.9	8.7	12.2	15.2	17.0	18.6	19.8
1.6	5.0	6.6	9.1	13.8	15.1	18.0	19.9	21.3	22.9
22.13	23.45	22	11.1	24.9	36.5	48.5	54.6	60.6	65.1
55.32	58.62	0.55	2.78	6.22	9.12	12.12	13.65	15.15	16.28

Lost last wire

112

July 6, 1880

H. C. Hobbs

Polaris L.C.

H

0 2

59.9

5.1

14.3

17.0

276.3

3

9.08

clouds!

H

W

H

W

W

W

H

W

W

H

0 2

25.1

16.1

17.6

16.0

16.0

15.8

15.3

15.5

15.9

16.3

30.1

20.8

21.4

19.9

19.9

19.7

19.9

20.0

19.5

20.5

38.3

29.7

30.0

28.8

28.9

29.0

28.2

28.8

28.3

29.4

41.3

32.6

33.2

31.9

31.9

31.9

31.2

31.8

31.8

32.8

1348

992

1022

966

967

964

946

962

955

990

2

33.70

24.80

25.55

24.15

24.18

24.10

23.65

24.05

23.88

24.75

A_7 , ^{toll. by} two false breaks 5_1 $3_1 - 1_1$
 rej. break after A_1

July 6 1880
Polaris 26.

	R	R	R	R	R	W	W	37.1	W	W
20	4.8	56.0	00	27	60	40	237.4	37.8	42.0	37.2 37.6
	53.5	0.0	4.0	6.6	97		417	43.0	48.7	41.8 42.0
	0.2	77	100	13.6	76		486	48.9	54.0	45.3 49.3
	6.2	128	16.0	19.7	222		540	54.1		54.2 54.0
	2287	165	300	426	455		1817	1838	1818	1815 1829
	57.18	4.12	7.50	10.65	11.38		4542	4595	45.45	45.38 45.72

W.C.W. observed 8 after 3 rattles

W	W	W	W
36.9	36.0	34.9	33.9
40.9	39.8	39.1	37.8
48.0	47.2	46.2	45.1
53.0	52.3	51.2	50.0
1788	1753	1714	1668
4470	4382	42.85	41.70
last from 7% (?) to %			

114

Polaris July 7, 1880

H. C. Weiss.

W

0 3

3.3

11.2

21.3

23.0

608

32 1520

W

W

W

W

W

W

W

W

W

W

W

W

0 2

24.2

21.9

18.4

18.9

17.7

17.0

15.7

15.1

14.6

14.0

14.3

15.2

29.8

26.5

23.2

23.1

22.1

21.1

20.0

19.5

19.0

19.0

19.1

20.1

38.7

36.6

33.1

33.9

32.0

31.7

29.8

29.2

29.0

28.7

29.2

29.6

41.2

38.9

35.4

35.9

34.0

34.0

32.1

31.9

31.2

30.6

31.7

32.7

1339

1239

1101

1118

1058

1038

976

957

938

923

943

976

2

3348

3098

2752

2795

2645

2595

2440

2392

2345

2308

2358

2440

missed first wiss.

July 7, 1880

Polaris U.C.

	W	W	W	W	W	W		W	W	W	W	W
40 1	57.6	1.3	31	4.9	6.4	8.7	2	30.5	32.0	32.0	33.3	34.0
	33	7.1	9.0	10.9	12.0	14.9		36.2	38.1	38.3	38.8	39.9
	10.2	13.8	15.8	17.4	18.0	21.6		43.3	44.2	45.0	46.0	46.1
	15.6	19.1	21.4	22.3	24.4	27.0		48.4	50.0	50.1	51.2	51.9
	26.7	41.3	49.3	55.5	61.8	72.2		158.4	164.3	165.4	169.3	171.9
41.2	66.8	10.32	12.32	13.88	15.45	18.05	2	39.60	41.08	41.35	42.32	42.98

	W	W	W	W	W	W	W	W	W
40 2	34.7	35.0	35.0	36.1	36.9	36.4	36.4	37.0	37.9
	40.5	40.3	41.1	43.1	42.2	42.2	42.3	43.0	43.9
	47.2	47.9	48.0	49.0	49.1	49.9	49.1	50.1	50.7
	52.3	53.1	53.0	54.2	54.9	54.9	54.1	55.1	55.6
	174.7	176.3	177.1	182.4	183.1	183.4	182.2	185.2	188.1
42	43.68	44.08	44.28	45.60	45.78	45.85	45.55	46.30	47.02

July 8, 1880

Polaris L.C.

	W	W	W	W	W	W	W	W	W	W
0 3	11.1	7.9	5.9	2.6	0.0	58.8	56.8	54.1	52.3	50.1
	20.2	17.0	14.8	11.4	9.2	7.8	5.0	3.0	1.9	59.0
	29.9	26.2	24.0	21.1	18.0	16.8	14.5	11.9	10.8	8.0
	31.8	28.1	26.0	22.5	20.0	18.7	16.7	14.1	12.8	10.3
	9.30	7.92	7.07	5.76	4.72	4.21	3.30	2.31	2.78	7.41
3	2.325	1.9.80	1.7.68	1.4.40	1.1.80	1.0.52	8.25	5.78	6.95	1.85

	W	W	W	W	W
0 2	25.0	24.0	22.9	21.8	21.0
	32.3	31.4	30.0	29.5	28.6
	41.3	40.0	38.9	37.9	37.3
	45.1	43.1	42.2	41.7	40.0
	14.37	13.85	13.40	13.09	12.69
2	3.5.92	3.4.62	3.3.50	3.2.72	3.1.72

July 9, 1880 W. L. W. obs.

Polaris U. L.

		IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
40	2	29.3	32.1	33.6	34.0	35.0	35.1	35.3	35.9	36.1	36.0
		33.2	36.8	38.0	38.0	39.4	40.1	40.0	39.3	40.0	40.0
		41.9	44.1	45.5	45.9	47.0	47.5	47.4	47.5	48.0	48.0
		47.1	49.6	51.2	51.7	52.7	53.1	53.0	53.2	54.0	53.8
		151.5	162.6	170.3	169.6	174.1	175.8	175.7	175.9	178.1	177.8
42		37.88	40.65	42.58	42.40	43.52	43.95	43.92	43.98	44.52	44.45

IV	IV	IV
35.8	34.2	33.6
39.1	38.0	37.9
47.1	46.2	45.9
53.0	51.9	51.0
175.0	170.3	168.4
43.75	42.58	42.10

A₇₀ et seq. and A-1

July 13 / 1880 C-45 41.2

Polaris Ib.

	R	R	R	R	R
0 3	173	110	74	19	58.4
	21.1	15.0	11.0	6.1	2.2
	29.8	22.3	18.0	14.0	11.0
	33.8	27.0	23.0	18.0	14.6
	1020	753	597	400	262
3	2550	1882	1492	1000	655

	R	R	R	R	R
2	280	258	243	230	220
	308	290	279	260	255
	388	370	358	342	333
	432	420	400	388	383
	1408	1338	1275	1220	1191
	3520	3345	3188	3050	2978

~~90 82.8 80 77.0 66.6 65.5~~
~~2 1 0 2 1~~

Lost 72 20 1,

Long Core July 14, 1980

Palmer (U. G)?

13 30

590

610

593

588

573

566

565

560

558

555

		RR	RR	RR	RR	RR	RR	RR	RR	RR	RR	RR
0	2	280	248	212	188	188	182	185	140	173	176	
		340	321	250	253	247	243	237	233	233	230	
		407	383	323	322	313	307	303	302	298	299	
		450	431	380	369	354	358	354	352	350	349	
		1477	1383	1185	1132	1102	1090	1079	1067	1054	1054	
2		3692	3458	2962	2830	2755	2725	2698	2668	2635	2635	

A
+154321

120

Aug 14 1880
Helen's N.b.

R R R R R

40	2	378	382	381	370	361
		43.5	43.8	44.0	42.7	42.4
		47.8	47.8	47.8	47.0	46.0
		55.1	55.8	55.4	44.8	54.2
		1842	1856	1853	1715	1787
42		46.05	46.40	46.32	42.88	44.68

A-1 5-

This was the star that Herschel
had passed the last time by a distance = to
the distance between the double stars = 10^5 nearly.

July ¹⁶~~15~~ 1880
Palmer Lb.

U		R	R	R	R	R	R	R	R
0	2	255	230	203	186	178	171	165	161
		268	246	214	198	188	185	182	179
		343	319	292	272	264	258	257	251
		379	357	328	309	300	297	290	294
		1245	1152	1037	965	930	911	894	892
2		3112	2880	2592	2412	2325	2278	2235	2230
									2248

A₄₂ 3, 1, 2, 1, 1, 0 A₄₁ 5, 4, 3, 2, 1

22

July 17 1880
Polaris Neb.

		#	R	R	R	R	R	R	R	R	R	R
40	2	312	350	361	365	373	382	382	397	373	371	
		360	399	409	413	416	431	430	444	422	421	
		413	449	462	470	474	480	481	484	476	470	
		473	511	520	528	537	544	549	561	536	533	
		1558	1709	1752	1776	1800	1837	1842	1886	1807	1795	
42		3895	4272	4380	4440	4500	4592	4605	4715	4518	4484	

Reg. preceding repetitive rattle,

A_{3.1}e

July 18 1880
Polaris Lb.

	R	R	R	R	R
0.9	12.3	7.3	3.3	5.90	56.2
	17.4	12.2	7.9	4.3	0.8
	25.9	20.0	16.6	12.4	8.9
	29.9	25.0	20.7	15.6	13.0
	8.55	6.45	4.85	3.13	1.89
3	21.38	16.12	12.12	7.82	4.72

R	R	R	R	R
26.0	23.2	22.0	20.6	19.3
32.3	28.3	27.3	25.6	24.6
39.4	36.2	35.5	34.0	32.9
43.1	39.6	39.0	36.7	35.8
14.08	12.73	12.38	11.70	11.26
35.20	31.82	30.95	29.25	28.15

124

July 18 1880
 Polaris U.B.

	R	R	R	R	R
40	441	530	572	27	41
	490	578	29	81	10.2
	357	40	91	133	160
	20	10.0	146	200	220
	1302	48	238	441	523
41	32.55	120	5.95	11.02	13.08

R	R	R	R	R
378	378	374	378	380
430	430	430	432	433
488	487	488	486	493
550	550	552	552	557
1846	1345	1844	1848	1963
46.15	33.62	46.10	46.20	49.08

July 26, 1880 H. C. W. obs.
Polaris L. C.

H
0 2 55.8
1.4
12.0
11.0
2.02
(3) 2 5.05

	H	H	H	H	H	H	H	H	H	H
0 2	26.0	22.1	21.0	20.6	19.0	17.2	17.5	16.1	16.0	16.0
	30.9	27.0	25.7	25.0	23.0	22.0	22.1	21.0	20.9	20.2
	40.7	37.0	35.3	34.9	33.1	32.1	32.1	31.0	30.7	30.3
	40.1	36.9	35.0	35.0	33.0	32.0	31.9	31.0	30.4	30.0
	1377	1230	1170	1155	1081	1033	1036	991	980	965
2	34.42	30.75	29.25	28.88	27.02	25.82	25.90	24.78	24.50	24.12

126

July 28, 1880 H. C. Hobs.

Polaris L.C.

	H	H	H	H	H	H
0 3	43.1	22.9	16.0	11.0	7.1	2.0
	50.0	29.0	22.0	17.0	13.1	8.2
	57.0	36.5	29.8	24.7	21.1	16.0
	58.2	38.0	31.1	26.5	22.2	17.1
	2083	1264	989	792	635	433
	52.08	31.60	24.72	19.80	15.88	10.82

 $A_{82} - A_{40}$ $A_{30} - A_{10}$ Clouds!

July 28 1882

40	2	287	328	368	374	370	368	366	367	359	346
		248	388	426	432	421	426	422	422	413	402
		399	437	53 53.3	480	474	472	467	473	463	447
		453	488	530	506	530	530	528	529	621	510
		1487	1641	1797	1822	1795	1796	1783	1791	1756	1705
42		3718	4102	4492	4555	4488	4490	4458	4478	4390	4262

A_{5-e}
 $A_{1, 2 3 4 5}$

July 29, 1880 H. A. R. H. L. obs.
Polaris, H. L.

		W	W	W	W	W	W	W	W	W	W
40	2	307	33.0	33.1	34.1	35.1	36.0	37.1	36.4	36.9	37.9
		36.9	38.9	39.1	40.0	41.0	41.9	42.4	42.7	42.2	43.2
		39.1	41.6	41.5	42.1	42.8	44.2	45.7	45.0	45.2	46.4
		46.0	48.0	48.2	49.1	51.0	52.0	52.8	52.0	52.3	53.6
		1527	1615	1614	1653	1699	1741	1780	1761	1766	1811
42		3818	4038	4048	4132	4248	4352	4450	4402	4415	45.28

H. L. obs. A₁₀ to A₄₂ inclusive of both
H. A. R. obs. A₅₀ to A₉₀ " " "

July 30, 1880

H. C. V. obs.

Polaris L. C.

	W.	W	W
0 3	10.0	3.0	57.9
	16.3	9.1	4.1
	23.9	16.8	11.0
	22.6	15.8	11.0
	72.8	44.7	24.0
3	1820	1118	6.00

W	W	W	W	W	W	W	W
29.1	23.2	22.9	21.2	20.0	20.0	18.9	18.0
35.0	29.1	28.1	26.9	25.1	25.2	24.7	23.2
40.9	35.1	34.7	33.0	31.6	31.8	30.8	29.9
40.9	35.3	34.9	33.1	31.9	31.3	31.0	30.0
1459	1227	1206	1142	1086	1083	1054	1011
3648	3068	3015	2855	27.15	27.08	26.35	25.28

July 31, 1880 W. C. Mohr

Polaris. L. C.

		W	W	W	W
0	3	15.8	6.0	2.7	58.9
		24.0	14.0	10.1	6.4
		32.3	22.0	18.4	14.4
		32.2	22.1	18.9	14.9
		104.3	64.1	50.1	34.6
3		2608	1602	1252	865

		W	W	W	W	W	W	W
0	2	26.2	21.9	19.8	19.0	18.0	16.9	17.0
		32.4	28.1	26.0	25.1	24.8	23.0	23.0
		41.2	35.8	33.9	33.0	32.2	30.9	30.8
		42.9	37.1	35.1	34.1	33.1	32.0	32.0
		143.7	122.9	114.8	111.2	108.1	102.8	102.8
2		35.92	30.72	28.70	27.80	27.02	25.70	25.70

July 31, 1880 H. C. Mobs.

Polaris H. C.

		W	W	W	W	W	W	W	W
40	2	34.3	34.9	34.9	33.3	34.0	33.1	31.7	31.0
		40.4	40.1	40.1	39.2	39.7	38.7	37.4	36.9
		46.9	47.4	47.0	45.8	46.0	45.3	44.2	43.4
		50.9	51.1	50.9	49.9	50.1	49.1	48.0	47.3
		1725	1735	1729	1682	1698	1662	1613	1586
42		43.12	43.38	43.22	42.05	42.45	41.55	40.32	39.65

Ch. apparently failed on A_1 , and δ 's

ch

A_{82} A_{90} A_{11}

Aug 11th
Dolan Lb.

		L	R	R	R	R
0	2	50	580	538	257	200
		134	64	18	330	270
		230	168	113	420	362
		224	160	110	430	374
		638	372	179	1437	1206
2		1595	930	448	3592	3015

	R	R	R	R	R
190	141	169	164	163	
264	250	241	232	231	
358	351	332	326	330	
371	357	344	347	323	
1183	1139	1086	1069	1047	
29,58	2848	2715	2672	2618	

Reject 1st J. No rattle after the first ✓
to be used.

Aug 1 / 1889
 Davis W.B.

		R	R	R	R	R
410	2	256	349	312	316	322
		321	370	380	388	389
		402	449	457	463	473
		444	488	497	500	508
		1423	1656	1646	1667	1692
42		3558	4140	4115	4168	4230

R	R	R	R
279	271	244	230
341	337	299	296
421	412	379	372
463	449	420	415
1504	1469	1342	1313
3760	3672	3355	3282

Aug 5 1880
Polaris Lc

R						R	
0°	2	30.2		241	231	213	19.8
		35.0		284	272	256	24.0
		43.0	391	359	352	327	31.8
		431	40.0	370	368	334	32.9
		151'3	79.1	1254	1213	1130	1000
		3782	39.55	3135	3032	2825	25.00
							27.22

A 2200 A-1 7234
three rather follows.

Aug 5-188
Polaris U.S.

		R	R	R	R	R	R
40	2	29.2	329	344	351	347	358
		33.5	37.2	38.5	40.7	40.8	41.0
		39.2	42.9	44.9	46.0	46.2	46.2
		47.8	52.0	53.2	54.3	55.0	54.9
		149.7	165.0	171.4	176.1	176.8	177.9
42		37.42	41.25	42.85	44.02	44.20	44.48

		R	R	R	R	R
		354	352	342	323	312
		40.1	40.2	38.9	37.7	36.4
		45.3	45.4	44.7	43.1	41.8
		54.7	54.1	53.8	52.1	50.8
		175.5	174.9	171.6	165.2	160.2
		43.88	43.72	42.90	41.30	40.05

Don't it, !

Aug. 9/1880

$$C = 45^{\circ} \frac{26.75}{24.3}$$

Polaris L. C.

	R	R	R	R	R
	"	"	"	"	"
0° 3'	13.8	10.0	6.1	1.3	59.5
	20.0	16.6	12.6	7.8	5.0
	28.6	25.7	21.4	16.4	14.0
	25.8	22.7	18.0	13.4	11.3
	88.2	75.0	58.1	38.9	29.8
3	22.05	18.75	14.52	9.72	7.45

	R	R	R	R	R
	"	"	"	"	"
X 2'	25.4	24.3	20.9	20.4	19.7
	31.0	29.3	26.1	25.8	24.9
	39.6	38.6	34.8	34.4	33.7
	37.8	36.2	32.4	32.4	31.8
	133.8	128.4	114.2	113.0	110.1
2	33.45	32.10	28.55	28.25	27.52

Aug 11, 1880

 $C = 45^\circ 17.6$

Polaris L.C.

0	² 8	30.2	28.5	27.4	25.0	25.0	22.9
		36.8	34.4	32.8	31.2	30.8	28.4
		46.0	43.6	42.2	41.2	40.2	38.0
		43.0	41.2	40.0	37.8	37.4	35.7
		1560	1477	1424	1352	1334	1252
2		39.00	36.92	35.60	33.80	33.35	31.30

$$A \begin{matrix} 3_0 & 2_2 & 2_1 & 2_0 & 1_2 & 1_1 & 1_0 \end{matrix} \quad \begin{matrix} A \\ +1 \end{matrix} \begin{matrix} +T \\ 5 & 4 & 3 & 2 & 1 \end{matrix}$$

Aug 12 / 1880

 $C = 45 \quad 17.6$

Polaris L.C.

R R R R R

0 3 22.8 9.7 4.4 59.9 56.7

28.2 15.4 10.1 5.2 2.2

34.9 23.7 17.9 13.2 10.4

35.0 22.8 17.5 12.4 9.3

1229 716 499 307 186

3 3072 1790 1248 768 465

A-1 3 2

A A 9₀ 8₂₁₀ 7₂₁₀ 6₂₁₀ 5₂₁₀ 4₂₁

Polaris Aug 15⁻ 0 = 45-17.6
 Lb.

R R R R

0	2	301	250	229	230
		349	300	280	281
		410	370	343	321
		407	353	311.2	333
		1467	1273	1194	1165
2		36.68	31.82	29.85	29.12

A
 +1 54321

140

Aug 15 - 1880
 Poldair Wb.

	R	R	R	R	R
40 1	496	563	12	—	2 18.9
	543	1.0	63	11.2	44.2
	559	2.6	79	13.6	35.5
	592	5.8	108	16.1	38.8
	219.0	65.7	26.2	40.9	137.4
	54.75	81.42	6.55	13.63	34.35

False stroke after A₂,
 Seeing very bad

R	R	R	R	R
28.9	31.8	33.4	32.9	36.0
33.9	37.7	38.1	38.1	40.9
35.9	39.0	40.1	39.3	42.8
39.0	41.9	43.5	43.0	45.8
137.7	150.4	155.1	153.3	165.5
34.42	37.60	38.78	38.32	41.38

Aug 16 1880
Palmer L.C.

	R	R	R	R	
2	130	78	40	37.0	35.4
	168	122	78	40.7	38.8
	209	160	123	44.8	43.6
	226	178	140	46.7	45.0
	733	538	381	169.2	162.8
2	1832	1345	952	42.30	40.70

~~Aug 28 8 7 7-6~~
Lost - 462

Aug 18, 1880 @ = 45-13.2
 Polaris L.C.

		B	B	B	B	B	R*	R	R
0	2	35.5	32.4	30.1	28.0	26.0	24.8	24.7	23.8
		39.0	36.5	34.1	32.3	30.2	30.1	29.9	29.3
		43.0	41.7	40.0	38.2	36.1	35.8	35.1	34.6
		44.9	41.5	39.6	37.9	35.6	34.9	34.7	34.0
		1644	1521	1438	1364	1279	1256	1244	1217
2		4110	3802	3595	3410	3198	3140	3110	3042

R	R
25.0	24.8
29.9	29.2
35.1	34.3
35.0	33.7
125.0	122.0
31.25	30.50

B also. A B also. A₊

In A the key was pressed between each pair of wires, as well as between the two members of each pair.

* Three rattles follow

Aug. 21, 1880 C = 45° 13.0
Polaris L.C. taken by Brown.

		B	B	B	B	B	B
U	2	32.2	28.7	25.5	22.4	21.2	21.1
		33.6	29.5	27.2	24.3	22.9	22.5
		43.6	39.6	37.0	33.8	32.8	32.3
		41.2	36.8	34.3	32.1	30.1	30.1
		1506	1346	1240	1128	1070	1060
		37.65	33.65	31.00	28.20	26.75	26.50

Lost all through clouds except A_{8,12} A_{9,0}

144

Aug 22 1880
Belair
L.C.

R	R	R	R	R
03 16.0	12.0	8.2	4.4	2.8
246	20.2	161	113	55
352	30.8	266	218	198
30.0	25.9	22.0	17.7	16.0
1058	88.9	72.9	55.2	48.1
3 26.45	22.22	18.22	13.80	12.02

R	R	R	R	R	R
2 297	237	221	197	204	190
361	298	275	261	264	250
454	390	368	349	353	348
42.0	357	337	314	308	304
1532	1282	1201	1121	1127	1092
2 38.30	32.05	30.02	28.02	28.18	27.30

Big stroke is not preceding in our favour by 2nd little

1st
Big 1st stroke & C preceding stroke
followed by 3 little
Lost Aug 8th

Aug. 23, 1880
Polaris
L. C.

C=45 16.5

Taken by Brown.

	B	B	B	B	B
0 3	39.6	31.0	18.0	13.3	3.3
	47.2	37.1	24.7	20.4	9.9
	55.6	46.0	33.1	29.0	18.3
	52.0	42.0	29.8	25.9	15.0
	1944	1561	1056	886	465
	4860	3902	2640	2215	1162

	B	B	B	B	B	B
0 2	28.3	26.1	24.9	21.1	18.6	21.7
	34.9	32.2	31.0	27.8	25.0	28.0
	42.4	40.1	39.4	35.9	33.5	35.9
	40.4	38.1	37.4	33.5	31.2	33.6
	1462	1365	1327	1183	1083	1192
	3655	3412	3318	2958	2708	2980

146

Aug 24 1880
Poland L.C.

3 124

A. R.

W. J.

~~The~~ Illumination

of microwaves to

disturbance

cleaning.

wait time cleaning

for adjustment.

Sept 2 1880
Polaris L.B.

		R	R	R	R	R	R	R	R
0	0	118	78	28	342	333	317	313	287
		166	126	81	392	376	360	354	331
		227	188	139	452	432	412	411	383
		242	201	156	464	454	439	432	407
		753	593	404	1640	1597	1528	1510	1408
3		18.82	14.82	10.10	41.00	39.92	38.20	37.75	35.20

A 90 828, 80 72 6, 605, 554, 4, 433, 322, 21, 161

148

Sept. 3, 1880
Polaris
Lb

	R	B	B	B	B	B	B	B	B	B
0	6.0	2282	37.5	330	268	263	254	244	255	254
$\frac{2}{3}$	11.0	70	399	358	294	291	282	274	271	279
	21.0	16.1	492	446	380	370	368	354	363	368
	19.2	13.9	484	443	375	375	364	352	359	365
	572	598	1750	1577	1317	1299	1268	1224	1248	1266
3	1430	1495	4375	3948	3292	3248	3170	3060	3120	3165

of 90 25, 80 27, 70 50 22 21 21 10 A 71, 5-4

Sept 5th 1880
Palmer Lb

	R	R	R	R	R
0	204	173	129	96	56
3	253	207	164	136	88
	374	337	293	259	219
	350	312	270	230	189
	1181	1029	856	721	552
3	2952	2572	2140	1802	1380

	R	R	R	R	R
2	341	311	295	284	281
	378	340	326	317	311
	499	464	451	444	438
	478	450	432	428	414
	1696	1565	1504	1476	1444
2	4240	3912	3760	3690	3610

Ago 28, 1776, 6.6, 6.2 to 2 1/2

150

Sept 6 1880 $c = 45-108$
 Polaris. Lb.

		B	B	B	B	B	B	B	B
0	3	24.4	22.2	169	135	106	79	55	30
		32.2	29.8	24.2	20.9	180	149	120	9.7
		44.0	41.5	35.1	33.0	29.1	25.9	24.0	21.1
		43.3	40.5	34.3	31.7	28.9	25.6	23.7	20.1
		1439	1340	1105	991	866	743	647	539
3		35.98	33.50	27.88	24.78	21.65	18.58	16.18	13.48

	B	B	B	B	B
2	328	309	263	263	253
	39.0	376	329	327	313
	499	485	437	433	421
	502	485	438	438	429
	1719	1655	1467	1461	1416
	42.98	41.38	36.68	36.52	35.40

150 to 10

Sept. 11, 1880
Polaris L.C

	B	B	B	B	B	B	B	B	B	B
0 3	34.6	26.9	21.4	16.0	12.0	240.5	39.5	43.7	35.8	32.0
	38.8	30.2	25.8	20.0	15.4	43.8	42.0	39.2	37.4	34.3
	42.2	34.0	28.8	23.0	19.0	47.0	45.0	42.4	41.0	37.3
	47.2	38.9	34.9	28.4	23.6	53.8	57.3	49.1	47.9	43.0
	1628	1290	1111	876	700	1851	1778	1744	1623	1466
	4070	3225	2778	2190	1750	4628	44.45	4360	4058	3665

152

Sept 12 1884 $\alpha = 45^\circ 5'$
 Polaris L.C.

		R	R	R	R	R
0	3	213	180	150	119	73
		290	235	208	170	118
		320	297	259	228	180
		346	308	278	244	204
		1149	1020	895	761	571
3		2872	2550	2238	1902	1428

R	R	R	R	R
428	391	365	370	368
467	427	408	411	402
507	472	462	468	463
541	504	498	497	498
1943	1794	1733	1746	1731
48.58	44.85	43.32	43.65	43.28

Sept. 15/1870 C = 45 07.5
 Polaris W. [Bous.?

	B	B	B	B	B	B	B	B	B	B	
(48?)	2	0.0	57.2	58.6	57.4	48.5	47.0	45.2	42.9	41.1	40.0
HO.	2.9	0.1	56.4	53.8	51.2	49.3	47.8	45.5	42.9	42.6	
	7.6	4.0	0.3	58.2	54.5	52.8	51.1	49.0	46.8	46.0	
	11.3	8.1	4.4	2.9	0.0	58.5	56.6	54.6	52.0	51.7	
	218	94	2349	2263	2142	2076	2007	1920	1828	1803	
42?	545	235	58.72	56.58	53.55	51.90	50.18	48.00	45.70	45.08	

154

Sept-17 1880
Palmer Lb.

Brace numbering to sheet

R R R R R R R R R R
 0 2 426 397 378 368 360 348 327 318 315
 46.0 43.7 41.2 40.1 39.2 38.6 36.3 35.3 35.1
 50.4 48.2 45.9 44.9 44.0 43.4 41.6 39.7 39.9
 53.8 51.8 49.7 48.1 48.0 47.1 45.0 43.5 43.8
 1928 1834 1746 1699 1672 1639 1556 1503 1506
 2 48.20 45.85 43.65 42.48 41.80 40.94 38.90 37.58 37.65

Ant-A₆₂?

Sept 19 1884
Polaris L.C. -


		R	R	R	R	R	R
0	3	360	308	264	218	178	144
		40.2	353	309	261	218	179
		46.1	412	359	324	273	244
		49.2	439	391	350	304	271
		1715	1512	1323	1153	973	851
3		4288	3780	3308	2882	2432	2128

Rij ^{18.5} pr. of one precedes ten long beats.

156

Sept, 20, 1880 $C = 45^\circ 4.4$
 Polaris L.C. U.C.
 88 40 W.V. Brown
 1 15

	B	B	B	B	B
40	20.4	20.7	20.1	19.6	17.2
	23.5	23.6	23.3	22.2	20.1
	29.5	29.1	29.0	28.1	26.8
	33.3	33.9	33.2	32.5	29.7
	1067	1073	1056	1023	928
42	2668	2682	2640	2558	2320

 $A_{80} 82 90$

Got 2nd + 3rd strokes of A_{80} , 2nd stroke of 82 ,
 + 3rd stroke of 90

Sept-21 @ 45 5.6
Belair Lb.

#B	B	B	B	B	B	B	B	B	B
332	308	279	250	220	197	160	131	113	9.4
378	341	315	282	258	225	190	163	146	12.2
445	412	385	357	330	296	260	233	213	18.9
443	420	394	370	344	315	280	248	231	21.0
1598	1481	1373	1259	1152	1033	890	775	703	615
3	39.95	37.02	34.32	31.48	28.80	25.82	22.25	19.38	17.58

* Rij S's preceding 3 rather

158

Sept 22 1880

C = 0.9

Palatin Lb.

	B	B	B	B	B	B	B	B	B	B	B
04	27.9	22.2	17.4	13.5	17.8	5.0	5.80	^{5.58} 5.0	50.9	48.0	44.2
	32.7	26.9	22.3	18.0	12.9	9.7	2.8	58.1	55.1	52.6	48.9
	36.1	30.0	25.2	21.1	15.7	12.7	5.5	2.1	58.0	58.0	51.4
	39.1	33.5	28.5	24.8	19.0	15.9	8.9	5.9	1.2	55.3	55.1
	135.8	112.6	93.4	77.4	57.4	43.3	15.2	2.0	22.52	Rij.	19.96
4	33.95	28.15	23.35	19.35	14.35	10.82	3.80	0.50	56.30		49.90

	B	B	B	B
3	26.1	16.3	43.0	42.0
	30.5	20.8	49.4	46.3
	33.2	23.0	50.0	48.7
	37.1	26.9	54.4	53.1
	126.9	87.0	194.8	190.1
3	31.72	21.75	48.70	Cloud 47.52

A₋₁ 5 --- 1 A_{9.5} A₊ 5 4 3 2 1

Sept. 23, 1880 $C = 45 \quad 2.0$

159

Polaris Lc.

#	B	B	B	B	B	B	B	B	B	B
0.5	385	361	323	313	191	168	140	250.4	486	466
1	422	395	356	346	231	205	174	543	528	500
2	437	408	371	360	245	215	185	552	530	514
3	505	478	442	433	312	284	256	22	0.7	580
4	1749	1642	1492	1452	979	872	755	2221	2146	2060
5	4372	4105	3730	3630	2448	2180	1888	5552	5365	5150

A 90 20121, 10 A₊ 54

160

Sept-24 1880 $\alpha = 44^h 96^m$

Polaris S.L.

	B	B	B	B	B	B	B
0	33.4	28.8	23.6	21.8	20.0	18.9	15.7
	37.5	32.7	27.8	25.5	24.0	22.4	19.3
	38.0	33.5	28.4	26.3	24.1	22.9	19.1
	44.0	39.4	34.4	32.6	30.8	29.4	26.2
	1529	1344	1145	1062	989	936	803
3	38.22	33.60	28.62	26.55	24.72	23.40	20.08

 9_0 to 3_0

Sept. 25, 1880 $C = 44$ 96.0
 Polaris L. C. Brown Observing.

161

	B	B	B	B	B	B	B	
0 2	46.9 32.4	45.3	42.4	41.4	39.8	36.4	36.2	35.1
	50.4	48.1	45.6	44.7	43.1	41.8	41.6	40.1
	52.6	51.4	48.3	47.6	50	47.9	47.6	46.9
	59.7	57.8	55.0	54.0	53.0	49.3	49.7	49.4
	2096	2026	1913	1877	9	1754	1751	1715
2	5240	5065	4782	4692		4385	4378	4288

162

Sept 26 1880

Polaris Lb.

	R	R	R	R	R
0 3	318	281	243	203	172
	39.7	31.8	28.2	24.7	21.3
	44.0	37.1	32.9	29.3	25.2
	44.5	37.2	34.1	29.3	26.3
	164.3	134.2	119.5	103.6	90.6
	+1.08	33.55	29.88	25.90	22.50

R	R	R	R	
47.0	44.7	44.0	43.4	40.7
50.2	47.4	46.4	47.0	43.1
54.2	51.4	51.2	50.9	48.0
55.4	53.0	52.2	52.0	49.6
2068	1965	1938	1933	1814
51.70	49.12	48.45	48.32	45.35

Sept. 28, 1880

C = 45° 2.0

Polaris U.C.

Observed ~~Star~~ Brown

	B	B	B	B	B	B	B	B	B	B
40	1 9.9	24.3	31.7	37.3	42.0	2 15.0	18.8	19.9	20.5	22.5
	10.4	24.9	31.9	37.9	42.0	14.6	18.7	20.0	20.3	22.6
	16.2	30.9	37.3	43.8	47.6	20.8	24.4	25.7	26.5	28.0
	17.0	31.0	38.2	44.0	48.5	20.6	25.0	26.2	27.3	29.0
535	1111	1391	1630	1801	710	869	918	946	1021	
1338	2778	3478	4075	4502	1775	2172	2295	2365	2552	

Lost A_{3_1} A_{3_2} A_{4_0} A_{4_1} Seeing very bad.

164

Apr 29 1880 C = 44 56.5
 Polaris L.L.

	B	B	B	B	B	B
0 3	29.9	24.1	22.6	20.0	17.8	15.8
	31.8	26.0	24.6	21.7	19.3	17.1
	36.3	30.0	28.2	25.9	23.2	20.8
	35.9	28.0	26.2	25.1	23.1	20.6
	1339	1004	1036	931	934	743
3	3348	2510	2590	2328	2335	1858

~~A₉ 8₂~~

	B	B	B	B	B	B
0 2	48.5	48.9	47.0	44.5	44.1	43.5
	49.6	49.0	48.5	46.3	45.3	45.1
	54.3	53.5	52.4	50.4	49.3	50.0
	54.4	53.5	52.8	50.5	49.5	49.2
	2068	2049	2008	1917	1882	1878
2	5170	5122	5020	4792	4705	4695

A₉ 8₂ 8₁ 8₀ 7₂ 7₁ — 6₂ 6₁ 6₀ 5₂ 5₁ 5₀ 4₂ 4₁ 4₀ 3₂ 3₁ 3₀ 2₂ 2₁ 2₀ 1₂ 1₁ 1₀

8pm-30 1880
Palanis Lb.

		B	B	B	B	B	B	B	B	B	B
0	3	53.8	50.6	46.8	43.2	40.0	36.0	31.0	26.9	21.9	17.9
		56.1	52.7	49.5	46.0	42.9	38.9	33.8	30.1	24.5	20.5
		58.2	55.3	51.0	47.6	45.0	40.3	35.2	31.7	26.3	22.1
		57.1	54.7	51.1	47.3	44.3	40.2	34.7	31.4	26.2	21.9
		2252	2133	1984	1841	1722	1554	1347	1201	989	844
		56.30	53.32	49.60	46.02	43.05	38.85	33.68	30.02	24.72	21.10

A-15-321
A 80727, 525, 3-2, 20121, 10

166

Sept-30 1860 $\alpha = 44^{\circ} 95.0'$
 Polaris Lb.

	B	B	B	B	B	B
0 3	430	39.1	348	305	27.6	236
	448	41.6	395	331	29.9	26.3
	450	42.1	397	338	30.0	26.0
	458	42.0	39.2	337	30.4	27.0
	1786	1648	1472	1311	1179	1079
3	4465	4120	3680	3278	2948	2698

Lost A_{40} and 3, to 1.

Oct. 1, 1880
Polaris L. C.

C = 44 95:0 167
B. Obs.

	B	B	B	B	B	B	B	B	B	B	
0 3	57.0	48.4	37.8	33.0	30.0	25.7	25.0	51.8	49.8	48.2	
3 57.0	59.3	49.3 57.4	40.5	35.8	32.2	28.0	59.1	55.6	53.3	52.0	
	0.4	63 52.5	41.0	36.8	32.1	28.3	0.3	56.7	54.7	53.1	
	1.0		52.8	42.0	37.5	33.4	29.4	58.3	55.2	53.7	52.1
23 77	2053	1613	1431	1277	1114	2327	2193	2115	2054		
59.42	51.32	40.32	35.78	31.92	27.85	58.18	54.82	52.86	51.35		

~~Gal A₉ 8, 8, 8, 7~~
Gal A₇₀ 6₂ 6₆ 5₂ 5₅ 5₀

Seeing poor

168

001-3 1480
Plain Llo.

	Q	R	R	R	R	R	R	R	R	R
0 #3	34.6	25.4	23.4	20.8	54.4	51.0	52.3	48.8	47.8	45.7
	38.1	28.4	27.2	23.8	56.7	53.8	53.1	51.4	50.4	48.3
	38.2	29.7	27.1	24.7	56.7	54.6	52.8	51.4	50.2	48.1
	39.6	31.4	29.5	26.7	59.3	56.3	55.7	54.3	53.2	51.0
	1505	1149	1072	960	2271	2157	2119	2059	2016	1931
3	3762	2872	2680	2400	56.78	53.92	52.98	51.48	50.40	48.28

Oct. 3, 1880 C = 44 90.7
 Polaris U.C. B. obs.

	B	B	B	B	B	B	B	B	B	B
90 2	13.9	17.0	17.8	19.2	19.3	20.6	21.0	21.0	20.8	18.5
	17.3	20.2	21.7	22.9	23.1	24.3	24.5	24.8	24.0	22.0
	17.5	21.3	22.1	23.5	24.0	25.0	26.2	25.3	25.0	23.9
	21.2	24.9	26.4	26.8	27.2	28.5	29.1	29.1	27.0	25.0
	699	834	872	924	936	984	998	1002	968	894
42	1748	2085	2180	2310	2340	2460	2495	2505	2420	2235

Last 1st 5 wires

170

Oct 4 1880 @ = 44 90.7
 Ocean Lb.

		B	B	B	B	B	B	B	R	R _x
0	4	7.3	51.2	48.0	45.2	40.5	35.8	32.0	46.5	42.9
		11.0	54.9	51.5	48.5	43.6	38.8	35.2	48.6	45.3
		13.8	57.1	54.1	51.2	45.7	42.0	37.7	51.0	47.4
		13.2	56.5	53.4	50.1	46.2	41.7	38.0	51.6	48.3
		45.3	219.7	207.0	195.0	176.0	158.3	142.9	197.7	183.9
		113.2	54.92	51.75	48.75	44.00	39.58	35.72	49.42	45.98

* 3 strokes 1/2 the mean

A₋₁ 54 32 A₂ 70.60 52.5, 50.42 32 3, 30.1 11 10

Oct. 5, 1880

C = 44 90.7

Polaris U.C.

B. Obs.

	B	B	B	B	B	B	B	B	B	B
40 2	13.5	17.1	19.2	19.1	20.8	21.2	21.6	21.4	21.0	20.1
	16.0	18.4	20.6	20.5	22.2	22.3	23.2	22.6	22.4	21.6
	16.2	19.1	22.2	22.3	23.5	24.1	25.0	24.9	24.2	23.3
	20.4	23.5	25.7	24.0	25.9	26.4	26.5	26.4	26.2	25.7
	651	781	877	859	924	940	963	953	938	907
	16.28	19.52	21.92	21.48	23.10	23.50	24.08	23.82	23.45	22.68

172 Dec 6 1850 $\alpha = 46$ 90.7
 Ocean Id.

		B	B	B	B	B	B	B	B	B	
0	4	4.9	0.4	56.4	53.8	50.2	45.6	44.0	39.0	36.4	34.0
		6.6	2.3	58.2	55.6	51.9	47.9	45.2	40.0	38.4	35.3
		9.2	4.2	0.3	57.9	54.1	50.1	47.3	42.0	40.8	37.4
		12.2	7.3	3.5	10	57.0	52.7	50.1	45.5	43.6	40.5
		32.9	14.2	23.8	7	22.8	3	21.3	2	19.6	5
4		8.22	3.55	59.68	57.08	53.30	49.12	46.80	41.62	39.80	36.80

		B	B	B	B	B	R	R	R	R	R
0	4	30.5	28.8	25.0	23.2	20.2	55.2	52.0	51.5	50.3	48.7
		32.1	29.9	26.4	25.2	22.2	55.3	53.5	52.2	51.5	50.0
		34.8	32.4	28.0	27.2	23.5	57.8	54.7	54.3	53.2	51.6
		36.9	35.1	31.2	29.7	27.1	59.1	56.4	55.8	54.7	52.7
		134.3	126.2	110.6	105.3	93.0	227.4	216.3	213.8	210.0	203.0
(3)	4	33.58	31.55	27.65	26.32	23.25	56.85	54.08	53.45	52.50	50.75

0017 1780 c = 46 89.4
 Polaris IIb.

		B	B	B	B	B	B	B	B	B	B
0	3	463	428	382	350	319	310	288	260	231	2215
		484	444	401	370	338	323	301	276	255	2413
		485	449	406	374	342	330	309	281	259	2419
		510	466	428	402	373	360	330	308	281	273
		1942	1787	1617	1496	1372	1323	1228	1125	1026	990
		48.55	44.68	40.42	37.40	34.30	33.08	30.70	28.12	25.65	24.75

R	R	R
576	548	538
591	567	557
599	564	549
19	0.1	587
2385	2280	2225
59.62	57.00	55.62

174

001-8 1880 C=44 89.4
Polaris L.L.

		B	B	B	B
0	3	408	311	280	26.9
		42.2	32.5	29.4	28.2
		41.8	31.2	28.2	27.3
		39.7	31.8	29.2	28.0
		1645	1266	1148	1104
3		4112	3165	2870	27.60

		B	B	B	B	B	B
0	3	0.5	542	552	521	523	520
		1.2	551	554	527	533	521
		59.6	540	549	520	530	515
		1.4	556	557	52.5	52.5	524
		27	2189	2212	2093	2111	2080
3		068	54.72	55.30	52.32	52.78	52.00

001 ~~7~~ H8010
Polaris Hb.

		R	R	R	R	R	R	R
0	2	59.7	56.1	54.3	54.6	52.7	53.7	51.8 51.3
		1.8	58.0	57.0	56.2	55.0	55.2	54.7 54.1
		0.3	57.0	55.2	55.2	53.6	54.3	53.1 52.1
		7.7	4.1	1.8	1.9	0.3	0.8	59.9 59.3
		95	2352	2283	2279	2216	2240	2195 2168
3		2.38	2 58.80	57.08	56.98	55.40	56.00	54.88 54.20

Foot Ag.

176

Oct. 11, 1880
Polaris L.C.

$$C = 44 \frac{84.1}{89.4}$$

	B	B	B	B	B	B	B	B	B	B	
0	0	1.2	2	57.6	56.5	52.8	52.3	510	499	490	499
		3.9		1.1	1.3	55.7	54.8	53.4	52.6	51.6	527
		6.0		4.1	3.2	58.4	58.1	57.1	56.0	54.8	55.9
		10.3		7.8	5.2	1.4	0.6	59.2	58.8	57.7	58.6
		214		106	7.2	228.3	225.8	220.7	217.3	213.1	217.1
3		5.35		2.65	6.2	57.08	56.45	55.18	54.32	53.28	54.28
					1.55						

A₇ etc. Lost last 6 or 8 wires of A
 Sol⁰ A₄₁ 3 ~~1~~

Oct. 11, 1880 C = 45 57.5
Polaris 'U.C. B obs.

		B	B	B	B	B
40	2	9.8	14.1	16.1	16.5	16.4
		12.1	16.3	18.5	18.4	18.1
		15.0	19.1	21.2	21.1	21.0
		19.5	23.3	26.0	25.7	25.4
		564	728	818	817	809
42		14.10	18.20	20.45	20.42	20.22

Seeing good but clouds interfered
lost 1st + 2nd taps A₆, middle tap A₇,
middle tap A₇, first tap A₈
Reject 2nd tap A₁.

178

Oct 11 1880
Polaris Lb.

C = 44 84.1

		B	B	B	B	B	B	B	B	B	B	
0	3	347	30.5	26.1	22.7	2	55.9	53.2	53.0	52.0	50.2	50.3
		37.3	32.9	29.0	25.4		57.6	55.6	55.3	54.2	52.5	52.7
		41.8	37.3	33.1	29.6		2.2	59.0	60	58.6	56.5	56.7
		43.5	39.5	35.5	31.8		4.0	2.6	2.5	6.7	59.8	59.3
		1573	1402	1237	1095		2397	2304	2308	2255	2190	2190
3		39.32	35.05	30.92	27.38		59.92	57.60	57.70	56.38	54.75	54.75

A₋₁ 21 A₄ 40 3₂ 3₁ 3₀ 2₂ A₇ 1

Oct. $\frac{12}{13}$, 1880
Polaris L.C.

C = 44 83.0

179

	R	R	R	R	R	R	R	R	R	R
0 3	43	25	04 2	595	588	571	565	553	542	530
	44	26	05	596	590	576	569	555	542	530
	83	16	596	585	577	565	555	544	533	521
	62	46	28	12	57	584	579	573	564	556
	185	113	38	2388	2362	2296	2268	2225	2181	2217
3	462	282	095	59.70	59.05	57.40	56.70	55.62	54.52	55.42

A_{90} to A_{60} A_{50} - A_{21} to 10

180

Oct $\frac{13}{14}$, 1880

C = 44 83.0

Polaris Lb.

	B	B	B	B	B	B	B	B	B	B
0	39.8	36.5	33.4	30.6	28	11	59.4	59.3	58.0	55.8
3	39.8	36.3	33.5	30.3	30	13	59.3	59.2	58.0	56.1
	37.5	33.5	30.8	27.5	0.2	5.88	57.4	57.2	55.8	54.1
	40.1	36.0	32.8	30.2	30	14	59.9	59.2	57.6	56.0
	1572	1473	1305	1186	90	26	2360	2349	2294	2220
3	39.30	36.82	32.62	29.65	3.225	0.65	59.00	58.72	57.35	55.50

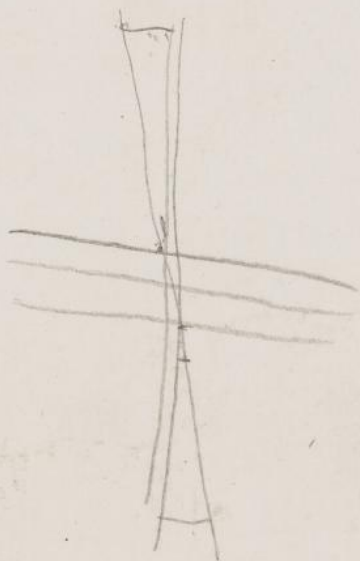
A₉₀ to A₆₀

1880phae.proj.1426M

8
1
41
60
0
0

14	38.5	- 2.7
15	35.0	= 1.72
15	34.0	8.0
16	10.5	8.1
16	34.0	8.2
17	4.0	9.0

5, 1 17.56,0
 21 31,0
 23 32,0
 25 13
 27 16



1800phae.proj.1426M