

KG
11365
427

Miscellaneous Observations
Transit of Venus
Longitude Montreal-Cambridge

KC-11365-421

Dec. 30 - 1882

KG 1365.427

Circle East -
Russian Transit

W. A. R. Observer

E. Position

B. Position

Polaris

0.52	5.16	1.0	3.9
549		83	
58.4	58.68	124	12.52
25		168	
60		212	
130		299	
166		340	
20.1	20.14	383	38.46
236		428	
274		473	
347		558	
380		0.2	
413	41.56	44	4.46
450		88	
488		131	

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Circle East

W. A. R. Observer

1.0 5.16 1.0 3.9 549 58.4 58.68 83 124 12.52 25 168 60 212 130 299 166 340 20.1 20.14 383 38.46 236 428 274 473 347 558 380 0.2 413 41.56 44 4.46 450 88 488 131

Dec. 30 - 1882

Meridian Circle

W. V. B. Observer

W. A. R.
Polaris δ Pictoris α Triang γ Androm α Arietis β Triang

1 36	174	310.43	27H	415.53	424	590.57	384	515.59	365	515
	198	321	297	438	450	17	405	539	389	539
	219	342	320	460	478	4.3	428	562	414	565
	238	362	343	484	506	7.2	450	584	439	590
	258	384	367	508	533	10.0	473	08	465	15
		404		531		12.7		28		40
	509	427	50	585	266	155	142	52	166	6.6
	530	446	74	580	294	184	162	73	190	9.0
	552	467	98	04	322	212	186	9.7	213	11.5
	573		132		349		208		239	
	593		145		376		232		265	
		38.44	38.37	50.90	54.95	9.80	10.00	0.70	0.68	1.45
										1.50

W. A. R. Observer

 η Persei τ Persei η Eridani α Cori β Persei

2 89	22	288.42	524	126.47	472	598.53	149	272.57	335	499
	58	275	557	159	494	19	169	292	363	527
	94	311	590	193	515	40	189	313	390	553
	129	348	25	227	535	60	210	334	417	580
	168	383	60	260	556	81	230	354	444	08
		426		284		102		375		34
	02	456	463	330	207	122	480	396	170	61
	39	493	498	361	228	143	499	416	197	87
	75	531	530	395	248	165	521	437	224	117
	110		565		269		542		250	
	149		598		290		563		280	
		38.46	38.39	26.10	26.01	8.14	8.11	35.52	35.43	0.70
										0.73

Dec 30. 1882

Circle West
Russian Transit.

W.A.R. Observer

γ Persei	α Persei	24 Can	E. Eridani	Gr. 76
34 462 495 536 573 12	12 103 160 215 268 323	16 57 152 225 295 365	24 36 70 106 142 180	28 269 349 423 506 580
88 125 162 202 240	430 488 540 596 50	505 576 44 111 186	252 286 322 358 395	29 136 213 288 367 447
315 352 392 429 467	13 156 212 269 323 379	322 395 467 536 608	468 504 539 575 10	30 00 78 155 235 310
542 580 19 57 95	488 540 593 50 104	5950	83 120 156 190 225	15.48
170 207 246 283 321	14 213 270 321 378 432	32.28	299 384 370 407 443	37.06

δ Persei	η Persei	ζ Persei	ϵ Eridani	Gr. 750
331 223 274 330 380 432	37 222 331 370 409 449	43 169 211 252 294 335	49 120 159 192 230 266	52 94 464 290 135 555
538 588 40 95 146	525 565 03 42 61	419 462 502 543 586	339 377 412 450 486	56 214 57 52 58 461 59 292 117
250 301 357 408 462	158 195 235 275 313	44 68 110 151 193 235	589 595 30 70 105	0 367 1 208 2 25 3 465 310
		319 360 402 443 485	178 215 251 287 325	25.12
			398 434 470 508 540	47.14

Jan 1 1883

Meridian Circle

W. V. B. Observer

Circle East
R. T.

Polaris

α Piscis

δ Triang

β Arietis

γ Arietis

Polaris

W. A. R. Observer

γ Arietis

δ Boetis

α Praesepe

μ Boetis

γ Praesepe

γ H. Cephei

Jan. 2. 1883

Meridian Circle

W. R. B. Observer

Polaris η Piscium δ Piscium β Andromedae δ Cassiopeiae α Draco L.L. ζ Crateri

1 22	178	306 56	179	303 45	147	280 50	—	320 57	465	156 3	531
200	327	199	324	169	300	—	376	514	205	553	
221	350	220	345	190	323	—	444	560	255	573	
242	370	242	367	215	345	—	508	10	300	595	
263	391	262	388	237	368	—	580	60	353	1.5	
	413		409		390		47		401		
521	435	513	429	500	412	380	110	45	449	264	
541	456	533	450	521	433	444	176	92	499	285	
563	478	553	470	543	454	510	243	142	547	308	
584		574		564		574		188		327	
06		595		586		42		240		350	
39.19	39.18	38.70	38.72	36.72	36.72		57.82	35.16	35.17	14.01	

W. A. R. Observer

τ Eridani ζ Persae ϵ Persae γ Eridani λ Tauri ϵ Leo

3 38	522	57 43	495	39 47	08	169 49	390	518 51	172	299 57	140
544	80	519	64	34	195	411	539	183	320	212	
567 51	103	543	88	60	223	434	560	214	341	302	
589	126	568	112	87	249	453	581	235	363	323	
12	146	593	137	115	275	474	03	257	384	460	
	170		162		301		24		405	534	
283	193	283	185	437	329	129	45	510	426 58	25	
304	214	306	209	460	356	150	67	531	447	123	
327	238	329	234	490	382	170	88	552	468	196	
349		355		517		192		576		285	
372		380		545		214		597		366	
										470	
										544	
14.69	14.74	13.71	13.67	27.57	27.54	0.17	0.10	38.36	38.87	3.54	

Jan 2 1883

Circle West.
Russian Transit.

W.A.P. Observer

L Cores.

 γ^2 Ceti

36 H Cass.

11 Arietis

M Ceti

55	15	—	19	152	22	455	29	65	30	—
78		496		194		08		104		344
99		584		229	22.94	121	12.18	140	14.14	380
120		75		266		240		180		415
140		164		300		355		215		
160										
182	16	343		374		584		295		489
202		438		408		102		330		523
223		526	52.418	445	44.46	222	22.06	369	36.98	55.92
		12		480		338		408		594
		105		576		457		447		30
1399	17	288				25	90	521		100
		379					208	559		134
		468	46.76				322	599	59.78	170
		558					437	86		208
		45					555	74		241

Circle East.

41 Arietis

47 H Cephei

 α Ceti

Persic

 β Persic

2.40	06	45	328	53	83	54	314	57	227
	46		515		118		358		274
	85	8.50	100	10.02	152	15.32	403	40.32	320
	124		288		189		448		368
	164		470		224		493		415
242		47	244		295		584		508
281			424		329		28		554
323	32.22	48	15	1.50	365	36.50	74	7.40	01
363			202		400		119		48
402			390		436		165		94
480		49	154		508		257		186
520			346		544		300		233
560	56.04		527	52.94	579	57.92	348	34.62	283
02		50	116		15		392		327
40			304		50		434		376

Jan. 2. 1883

Circle East.

W. A. R. Observer.

x Persic

o Tauri

2 H Camel

f Tauri

3 12

57

110

165

220

274

385

435

492

547

61

112

166

219

273

330

439

494

546

62

55

166

221

273

328

384

16.52

49.20

22.00

54.72

27.44

15

277

312

348

382

418

491

527

560

599

35

106

140

178

214

250

34.74

56.24

17.76

Ch. f

21

210

245

281

318

354

428

462

499

535

573

46

80

119

153

192

28.16

49.94

11.80

Circle West.

E. Eridani

P. Persic

5 H Camel

7 Tauri

24

31

178

230

283

337

389

493

548

599

50

103

207

260

314

366

418

28.16

59.86

31.34

33

369

34

77

179

297

403

35

18

12.9

237

345

454

36

73

186

290

397

504

18.50

23.66

27.00

37

254

296

332

372

410

488

527

565

64

43

120

158

199

237

275

33.28

56.58

19.78

Jan. 3 - 1883

Meridian Circle

W. D. B. Observer

Polaris

 η Piscium ν Persae τ Ceti γ Androm.

1 22	—	—	27	472	58 35	452	581 53	447	1.4
—	—	—	—	502	89	472	03	475	42
—	—	375	—	535	120	474	24	503	69
—	—	396	—	563	150	576	48	530	95
—	—	418	—	597	183	588	67	557	124
—	—	440	—	—	213	—	89	—	151
547	—	460	—	367	243	196	118	290	180
568	—	483	—	395	273	217	132	319	207
589	—	504	—	429	305	239	154	345	235
10	—	—	—	459	—	260	—	374	—
31	—	—	—	490	—	282	—	403	—

18.14 18.16 6.66 6.72 12.42 12.41

 α Androm. β Triang. δ Cass.

57	410	544	59	389	540	21	00	306
432	567	—	414	565	—	48	—	357
453	589	—	438	589	—	102	—	407
477	11	—	464	14	—	152	—	458
499	32	—	489	39	—	204	—	509
—	55	—	—	64	—	—	—	560
168	79	—	190	89	—	212	—	08
190	100	—	215	115	—	265	—	60
214	124	—	240	140	—	315	—	113
236	—	—	265	—	—	365	—	—
257	—	—	289	—	—	416	—	—
338	334	—	393	394	—	5080	—	50.87

Jan-2 1883

Circle West.
Russian Transit

W.A.R. Observer

i Pass.

z' Cele

36 H. Cass.

V. Anit's

O. Persi

21.15	599	18	537	22	480	29	58	32	588
	489		573		00		96		09
	583	57.98	08	0.82	117	11.60	135	13.38	63
	68		43		233		171		115
	160		80		350		209		171
							286		
	340		150		28	583			277
	430		187		24	102			383
	520	52.06	223	22.22	219	21.76	362	36.24	381
	11		257		334		401		438
	102		294		480		439		493
	284		366		25	89	516		599
	372		420			199	554		55
	463	46.28	438	43.78	316	31.70	592	59.18	108
	551		473		430		29		160
	44		570		551		68		215

Circle East-

41 Anit's

47 H. Cephi

d. Cele

P. Persi

B. Persi

39	599	45	333	53	76	54	308	57	322
	39		518		110		354		268
	79	7.86	97	10.22	143	14.58	396	39.76	315
	118		288		180		443		361
	158		475		218		487		409
	237		47	244		287		577	500
	277			428		323		20	548
	315	31.64	48	10	152	359	35.90	68	6.68
	356			197		394		112	594
	397			382		432		157	40
									88
	475		49	150		501		247	181
	514			334		537		290	226
	553	55.42		520		573	57.26	338	274
	594		50	108		07		384	321
	33			295		45		430	369

Jan. 3 1883

Circle East.

W. A. R. Maass.

48 H Cephei

 α Persi

O Rami

24 Pamel

 α Tauri

30	556		12	432		15	295		16	
1	120			485			330			
	277	26.10		540	54.00		365	36.58		
	446			594			401			
2	06			49			438			
	330			157			508	518		
	489			212			544	585		
3	47	5.08		267	26.64		580	57.96	50	5.40
	213			320			14	123		
	375			376			521	194		
4	95			486			124			
	348			540			160			
	420	41.78		595	59.48		196	19.62		
	582			49			233			
5	144			104			268			

Circle West.

E Eridani

 α Persi

5 H Pamel

7 Tauri

7 Persi

Jan. 9. 1883

Meridian Circle

W.A.R. Observer

 γ Perse γ Mes. Min. L.P. ϵ Perse γ Esidani λ Perse

Gr. 750

Jan 4. 1883

Circle West
Russian Transit.

W.A.R. Observer.

i Cass

 γ^2 Ceti

36 H Pra

 γ Aritis β Ceti α Persi

15	395	18	533	23	—	59	30	264	32	553	
	483		568		—			289		06	
	575	67.50	04	0.42	119			334	33.50	61	6.10
	69		40		228			372		118	
	153		76		347			406		167	
	334		147		576			477		280	
	425		182		99			513		330	
	520	51.62	219	21.86	209	21.16		549	54.84	380	38.36
	05		256		330			583		438	
	97		289		444			20		490	
	276		360	25	83			90		599	
	364		398		203			128		50	
	455	45.66	431	43.26	322	31.58		162	16.20	106	10.52
	549		469		427			197		159	
	39		505		544			283		212	

Circle East.

W.A.R.

41 Aritis

47 H Cephei

 α Ceti β Persi β Persi

39	594	45	334	53	70	54	302	57	218	
	37		518		107		349		265	
	73	7.46	94	10.30	142	14.14	390	39.18	311	31.10
	114		292		176		436		356	
	155		477		212		482		405	
	285		47	231	285		575		498	
	273		426		319		20		547	
	313	31.32	48	1.9	357	35.52	63	6.36	593	59.16
	354		208		390		110		37	
	391		390		425		150		83	
	473		49	150	498		242		179	
	511		344		532		290		233	
	550	55.12	533	52.76	568	56.80	335	33.46	270	27.12
	591		50	110	63		380		319	
	31		301		39		426		365	

Jan. 4. 1883.

Meridian Circle

W.D.B.

67 Ceti

48 H. C. P. H.

3 Persei

λ Tauri

ρ Tauri

ε Tauri

2.8	138	263	1	—	199	48	233	382	51	296	13	—	18	513	415
	159	284	—	—	304	257	408	316	177	285	537	—	285	537	66
	180	304	434	—	395	284	436	337	199	306	556	—	306	556	86
	201	325	524	—	487	307	459	359	222	330	575	—	330	575	107
	221	346	13	—	575	336	481	379	242	352	598	—	352	598	130
		367	—	—	78	—	509	400	—	373	—	—	373	—	153
	470	386	543	—	164	36	537	420	502	394	262	—	394	262	175
	490	407	34	—	260	65	560	443	523	415	284	—	415	284	198
	513	429	129	—	357	90	587	464	545	437	306	—	437	306	218
	532	—	235	—	—	113	—	569	567	459	327	—	459	327	—
	554	—	322	—	—	138	—	591	590	—	349	—	—	—	—
	34.58	34.57	—	—	57.99	48.59	48.43	37.93	—	37.23	13.07	—	37.23	13.07	13.99

W.A.B.

δ Tauri

ε Eridani

ρ Persei

ν Persei

η Tauri

94 Camel.

15	360	487	24	303	428	31	313	496	34	129	299	37	353	487	4.3	541	194
	381	507	323	—	450	—	344	527	158	—	324	375	—	510	584	237	—
	403	528	344	—	470	—	374	556	187	—	354	398	—	532	28	281	—
	423	549	364	—	491	—	404	587	215	—	381	420	—	554	70	323	—
	444	570	387	—	511	—	436	618	242	—	409	444	—	578	110	366	—
		590	—	—	533	—	—	48	—	—	436	—	—	81	—	409	—
	95	10	38	—	554	—	202	80	576	—	463	11.3	—	23	1.7	448	—
	116	31	58	—	574	—	232	110	06	—	493	136	—	45	60	490	—
	137	53	79	—	596	—	263	142	32	—	520	158	—	68	102	536	—
	157	—	101	—	—	—	294	—	60	—	—	—	—	—	146	—	—
	179	—	122	—	—	—	323	—	87	—	—	182	—	—	189	—	—
	56.95	56.94	51.19	—	51.19	—	1.85	1.82	40.92	—	40.88	57.84	—	57.76	36.47	36.49	—

Dec. 26-27-1882				Diameter of Venus.				E. Eq.		W.A.R. Observer	
				- Venus South -							
2	20	30	40	45	0	0'	45	40	30	20	
15	49	276	323	346	358	430	435	470	480	50.1	54.9
		88.8	22.8	40.3	40.9						54.9
		112	7.5	5.7	5.7						
15	50	5.7	10.2	11.8	14.7	24.1	24.5	29.2	30.3	38.2	39.3
		100	17.0	18.2	20.6				30.3		
		103	7.0	7.4	5.8				30.3		
52	50.3	53.5	58.4	59.5	7.3	7.9	12.2	13.0	16.0	21.3	
	1.4	3.3	4.2	4.9							
	11.1	7.8	5.8	5.4							
53	30.2	36.0	38.8	39.8	47.8	48.1	52.4	53.2	56.2	1.6	
	41.6	43.6	44.7	45.3							
	11.4	7.6	5.9	5.5							
54	14.3	19.7	22.3	23.1	30.9	31.3	35.7	36.6	39.3	44.5	
	25.3	27.3	28.0	28.3							
	11.0	7.6	5.9	5.2							
54	52.0	57.4	6.3	1.3	8.9	9.3	13.5	14.3	16.8	22.1	
	3.6	5.1	6.1	6.5							
	11.6	7.7	5.8	5.2							
55	30.0	35.7	38.0	39.2	46.7	47.2	57.3	52.0	54.7	59.7	
	41.8	43.0	44.0	44.3							
	11.8	7.3	6.0	5.1							
56	4.7	10.0	12.7	13.7	21.2	21.7	25.7	26.4	29.1	34.2	
	16.1	17.7	18.8	19.1							
	11.4	7.7	6.1	5.4							
57	6.8	12.4	14.8	15.8	23.0	23.5	27.2	28.0	30.4	35.0	
	18.8	20.0	20.6	20.8							
	12.0	7.6	5.8	5.0							
57	45.9	51.2	54.2	55.0	3.1	3.6	7.7	8.5	11.4	17.0	
	57.1	58.1	5.3	5.4							
	11.2	7.9	6.1	5.7							
	11.41	7.63	5.88	5.29	V - 17.27						
	11.31	7.65									
	11.36	7.64	5.88	5.29							
Log.	1.0538	8.8309	7.6938	5.2346	20	30	40	45			
	6.8968	8.5460	7.3370	0.0511	9.53405	9.65457	9.60507	9.54948			
	4.4506	2.3569	1.7308	7.2557	Log 1.17609	1.17609	1.17609	1.17609			
	55.60	54.66	54.09	53.13	Log 7.1014	7.1014	7.1014	7.1014			
	9.50930	9.50930	9.50930	9.50930	Log 9.9954	9.9954	9.9954	9.9954			
	2.5436	2.4679	2.4238	2.3787	6.8568	6.8568	6.8568	6.8568			
	17.96	17.66	17.47	17.29	45	47.29					
					40	17.47					
					30	17.66					
					20	17.96					
						17.60					

Dec. 26-27 1882

Venus Ark

	20	30	40	50	60	70	80
16	59	22.7	25.7	27.3	28.0	31.6	34.4
						37.6	42.2
						6.0	7.8
0	4.3	7.2	13.0	13.5	16.1	19.0	
					23.6	30.2	
					7.5	11.2	
0	42.7	46.0	52.0	52.4	54.7	57.6	
					2.5	7.0	
					7.8	11.4	
1	20.7	23.8	29.8	30.3	32.7	36.0	
					36.7	40.8	
					40.2	47.0	
					7.5	11.0	
2	1.4	4.7	10.7	11.1	13.5	16.7	
					20.9	27.8	
					7.4	11.1	
2	32.5	46.9	47.1	47.6	49.2	57.7	
					56.8	8.0	
					7.6	11.3	
3	11.0	13.7	19.0	19.4	26.0	28.7	
					28.8	36.0	
					7.8	11.3	
3	40.9	43.8	49.0	49.4	57.0	53.9	
					58.5	5.0	
					7.5	11.1	
4	12.3	15.0	20.1	20.6	22.3	24.9	
					30.0	36.6	
					7.7	11.7	
4	44.8	47.2	52.7	53.0	54.6	57.6	
					2.5	8.9	
					7.9	11.1	
5	13.1	16.0	21.8	22.2	24.0	26.7	
					31.6	38.1	
					7.8	11.4	
5	52.0	53.6	57.9	58.4	58.0	64	
	47.5	50.0	53.6	56.0	56	12.2	
					7.6	11.8	
					7.65	11.31	

Jan. 1 1883.

Diameter of Venus -
Venus South.

H. Eg.

W. A. R. Ober.

10	v	v'	10
17	37 408	172	26.7
	1.0		564
	202		171
39	7.4	46.4	55.8
	29.0		84
	216		26.0
40	38.7	16.3	25.7
	58.2		37.0
	19.5		53.7
			18.7
44	-	18.6	28.1
	4.9		37.2
			57.7
			20.5
46	3.7	27.2	46.7
	24.5		53.8
	208		14.6
			20.8
47	22.0	54.8	4.1
	43.2	54.8	11.5
	21.2		32.0
			20.5
48	42.8	16.5	25.9
	4.5		33.9
	21.7		33.0
			19.1
50	20.9	53.6	2.9
	42.4		2.3
	21.5		28.8
			18.5
51	38.7	13.6	22.8
	59.7		31.2
	21.0		32.2
			21.0
52	59.7	34.5	43.8
	21.6		51.3
	21.9		12.0
			20.7
	21.04		19.55
			21.04
			40.52
			20.30

$$S = -17^{\circ} 1'$$

$$\begin{array}{r} \sin 10^{\circ} \quad 9.23967 \\ \log 15 \quad 1.17609 \\ \text{avg} \quad 9.98056 \\ \hline 0.39682 \end{array}$$

$$\begin{array}{r} \log 2104 \quad 19.55 \\ 132305 \quad 1.29115 \\ 29632 \quad 39682 \\ 0.71937 \quad 1.68747 \\ 5240 \quad 1708 \quad 48.69 \\ 54564 \quad 1838 \quad 54504 \\ 2441 \quad 1546.73 \quad 82251 \end{array}$$

Cambridge

Date	Position	DT	Inc.	
Aug 31	180 S	-15.450	2	-15.488 +21
	180 W	15.20	3	+21
Jan 1	180 S	14.555	2	14.981 +23
	180 W	14.972	3	+25
Jan 2	180 S	14.335	8	14.342 +22
	145 W	3.48	9	+10
Jan 4	146 S	13.324	10	13.353 +17
	146 W	470	9	+13
Jan 5	146 S	13.036	9	13.069 +13
	146 W	13.118	6	

Montreal

Jan 17	155 S	6.574	5	6.586 +022
	161 W	627	5	
19	149 S	6.644	5	6.644 +000
	149 W	6.572	5	
20	153 S	6.582	5	6.582 -022
21	159 S	6.576	9	6.572 +004
	178 W	564	10	
23	152 S	6.759	16	6.766 +009
	152 W	570	10	

$\begin{matrix} +1.40 \\ +2.64 \\ +2.95 \\ \text{May 31} \end{matrix}$
 $\begin{matrix} +1.79 \\ +1.00 \\ +1.00 \end{matrix}$
 $\begin{matrix} +1.29 \\ +1.00 \\ +1.00 \end{matrix}$
 $\begin{matrix} +10.85 \\ -8.08 \\ +13.15 \end{matrix}$
 $\begin{matrix} +5.2 \\ +8.9 \\ +1.02 \end{matrix}$
 $\begin{matrix} +2.7 \\ +1.10 \\ +1.14 \end{matrix}$
 $\begin{matrix} +.87 \\ +6.1 \\ +1.02 \end{matrix}$

Circle E. Circle E. Circle E. Circle E. Circle W. Circle W.
 S. Virginis 43. H. Cass. d. E. E. Virginis 43. Comae 2. Virginis

K. Draconis $+19^{\circ} 2'$ $85^{\circ} 35'$ $11^{\circ} 35'$ $128^{\circ} 28'$ $-10^{\circ} 33'$
 $+40.25$ $94^{\circ} 22'$ $+30.48$ $+13.55$ $+53.54$
 $2-28.2$ $+38.21$ -51.59

$\begin{matrix} 55 \\ 53 \\ 52 \\ 56 \end{matrix}$
 $\begin{matrix} 48.6 \\ 31 \\ 7 \\ 0.3 \end{matrix}$
 $\begin{matrix} 3.8 \\ 5670 \end{matrix}$
 $\begin{matrix} 13 \\ 18 \end{matrix}$
 $\begin{matrix} 31.4 \\ 35.0 \\ 38.7 \\ 42.1 \\ 45.7 \end{matrix}$
 $\begin{matrix} 3858 \end{matrix}$

$\begin{matrix} 12 \\ 27 \end{matrix}$
 $\begin{matrix} 190 \\ 300 \\ 403 \\ 510 \end{matrix}$
 $\begin{matrix} 12 \\ 44 \end{matrix}$
 $\begin{matrix} 382 \\ 36.7 \\ 103 \\ 440 \end{matrix}$
 $\begin{matrix} 11 \\ 14.6 \\ 18.3 \\ 22.0 \end{matrix}$
 $\begin{matrix} 13 \\ 6 \end{matrix}$
 $\begin{matrix} 11.3 \\ 15.4 \\ 19.6 \\ 23.6 \end{matrix}$
 $\begin{matrix} 53.0 \\ 36.6 \\ 0.2 \\ 4.0 \end{matrix}$

28
 16
 4038
 47.4
 4032
 25.5
 1830
 27.4
 8946
 74
 0.24

$\begin{matrix} 22.9 \\ 33.3 \\ 43.9 \end{matrix}$
 $\begin{matrix} 54.6 \\ 58.0 \\ 50.1.6 \end{matrix}$
 $\begin{matrix} 12 \\ 57 \end{matrix}$
 $\begin{matrix} 55.0 \\ 43.6 \\ 33.3 \end{matrix}$
 $\begin{matrix} 32.9 \\ 36.3 \\ 40.1 \end{matrix}$
 $\begin{matrix} 35.6 \\ 39.6 \\ 43.6 \end{matrix}$
 $\begin{matrix} 14.7 \\ 18.3 \\ 21.8 \end{matrix}$

29
 5.0
 4590
 9.0
 170
 56
 6.3
 47.3
 40.06
 51.6
 4362
 25.5
 29.0
 21.86

$\begin{matrix} 26.7 \\ 27.0 \end{matrix}$
 $\begin{matrix} 16.0 \\ 19.4 \end{matrix}$
 $\begin{matrix} 57 \\ 1.7 \end{matrix}$
 $\begin{matrix} 54.6 \\ 58.1 \end{matrix}$
 $\begin{matrix} 59.9 \\ 3.8 \end{matrix}$
 $\begin{matrix} 36.2 \\ 39.8 \end{matrix}$

$\begin{matrix} 47.6 \\ 57.8 \end{matrix}$
 $\begin{matrix} 22.9 \\ 26.7 \end{matrix}$
 $\begin{matrix} 57 \\ 5.4 \end{matrix}$
 $\begin{matrix} 7.9 \\ 12.0 \end{matrix}$
 $\begin{matrix} 43.5 \\ 47.1 \end{matrix}$

30
 7.5
 4183
 30.1
 2302
 9.0
 176
 16.0
 788
 50.8
 4348

$\begin{matrix} 19.8 \\ 23.3 \end{matrix}$
 $\begin{matrix} 27.1 \\ 30.7 \end{matrix}$
 $\begin{matrix} 2338 \end{matrix}$
 $\begin{matrix} 58.0 \\ 1.5 \end{matrix}$
 $\begin{matrix} 5.0 \\ 8.7 \end{matrix}$
 $\begin{matrix} 12.2 \\ 508 \end{matrix}$

$\begin{matrix} 1367 \\ 4353 \end{matrix}$
 $\begin{matrix} 50 \\ 168 \end{matrix}$
 $\begin{matrix} 19.8 \\ 23.3 \end{matrix}$
 $\begin{matrix} 27.1 \\ 30.7 \end{matrix}$
 $\begin{matrix} 2338 \end{matrix}$

$\begin{matrix} 12 \\ 29 \end{matrix}$
 $\begin{matrix} 4387 \\ 4383-77 \end{matrix}$
 $\begin{matrix} 50 \\ 1.68 \end{matrix}$
 $\begin{matrix} 53 \\ 31.52 \end{matrix}$
 $\begin{matrix} 12 \\ 56 \end{matrix}$
 $\begin{matrix} 40.04 \\ 40.02-26 \end{matrix}$
 $\begin{matrix} 6 \\ 43.65 \end{matrix}$
 $\begin{matrix} 19 \\ 21.85 \end{matrix}$

$\begin{matrix} 28 \\ 20.87 \end{matrix}$
 $\begin{matrix} 49 \\ 40.13 \end{matrix}$
 $\begin{matrix} 22 \\ 34.07 \end{matrix}$
 $\begin{matrix} 53 \\ 33.3 \end{matrix}$
 $\begin{matrix} 37.76 \\ 23.67 \end{matrix}$
 $\begin{matrix} 43.62-32 \\ 43.30 \end{matrix}$
 $\begin{matrix} 27.18 \end{matrix}$
 $\begin{matrix} 21.85 \\ 21.85 \end{matrix}$

$\begin{matrix} 28 \\ 20.87 \end{matrix}$
 $\begin{matrix} 49 \\ 40.13 \end{matrix}$
 $\begin{matrix} 22 \\ 34.07 \end{matrix}$
 $\begin{matrix} 53 \\ 33.3 \end{matrix}$
 $\begin{matrix} 37.76 \\ 23.67 \end{matrix}$
 $\begin{matrix} 43.62-32 \\ 43.30 \end{matrix}$
 $\begin{matrix} 27.18 \end{matrix}$
 $\begin{matrix} 21.85 \\ 21.85 \end{matrix}$

$\begin{matrix} 28 \\ 20.87 \end{matrix}$
 $\begin{matrix} 49 \\ 40.13 \end{matrix}$
 $\begin{matrix} 22 \\ 34.07 \end{matrix}$
 $\begin{matrix} 53 \\ 33.3 \end{matrix}$
 $\begin{matrix} 37.76 \\ 23.67 \end{matrix}$
 $\begin{matrix} 43.62-32 \\ 43.30 \end{matrix}$
 $\begin{matrix} 27.18 \end{matrix}$
 $\begin{matrix} 21.85 \\ 21.85 \end{matrix}$

$C = +20^{\circ}$ for C E

$C = -20^{\circ}$ for C W

$$\begin{aligned}
 0 &= +16.50 + 0.62 a - 106 \\
 &+ 16.19 + 0.52 a - 80 \\
 &15.44 \\
 &15.29 \\
 &15.57
 \end{aligned}$$

$$\begin{aligned}
 0 &= +12.79 - 140 a \\
 &+ 32.11 + 10.35 a
 \end{aligned}$$

$$\begin{aligned}
 0 &= +15.87 + 2.7 a - 15.34 \\
 &+ 16.77 + 8.7 a - 15.25
 \end{aligned}$$

$$0 = +16.34 + 0.57 a -$$

$$\begin{aligned}
 a &= +11.48 - 14 \\
 0 &= -3.57 - 197 a \\
 0 &= -15.77 + 9.78 a \\
 a &= -1.11 \\
 &-1.61 \\
 &1.71
 \end{aligned}$$

$$\begin{aligned}
 0 &= 42.8 - 228 a \\
 a &= 1.88
 \end{aligned}$$

$$16.31$$

$$\begin{aligned}
 \Delta T &= +15.37 \text{ for C E} \\
 &= 15.31 \text{ for C W} \\
 &+15.34
 \end{aligned}$$

$$13.1 \Delta T = 15.49$$

$$\begin{aligned}
 C E \quad h \quad 12.8 \quad 0 &= +16.30 + 6.2 a + 100 c \\
 12.9 \quad 16.08 &+ 5.2 + 1.02 \\
 13.1 \quad 16.12 &+ 0.2 + 1.14 \\
 13.3 \quad 16.97 &+ 1.1 + 1.04 \\
 13.4 \quad 15.15 &+ 1.0 + 1.27 \\
 C W \quad 0 &= +16.28 + 3.9 a + 1.15 c \\
 a &= -13.60 = -20
 \end{aligned}$$

-174
+2.94
+3.42
May 31 1883

H0
+12.6
+1.27

C. M.
Gr. 2001
73° 0'
-30 37

C. M.
17 H. Low Pass
+39 47'
+4 46

13 28 50.0
50.6
59.0
29 3.4
5.0 59.00

13 21 48.3
10.0
12.2
24.4
26.6 1230

17.1
21.4
25.9
30.5
35.0 2598

23 11.1
12.9
25.1
37.2
49.4 25.14

44.0
48.4
52.9
57.7
30 1.8 52.98

24 13.7
25.6
38.0
50.0
2.2 37.90

11.0
15.6
20.0
24.3
28.7 1992

37.8
42.4
46.8
51.4
55.8 4684

23 25.7
25.6 - 85
24.17
11.44
+12.73

29 52.84
52.81 - 36
52.45
36.70
+15.79

Equations for entire series

$$0 = +3.85 - 197a + 188c$$

$$-15.60 - 2.98a + 19.14c$$

$$* 2.51 - 2.13a - 2.127c$$

$$0 = +7.78 + 388a - 390c$$

$$+11.50 + 95.64 - 135.29$$

$$+ 7.56 + 453 + 9.82$$

$$+197.24 + 104.05 - 137.36$$

$$0 = +7.82 + 352$$

$$- 268.00 + 199.94$$

$$+ 80.5 + 5.10$$

$$- 262.23 + 209.01$$

-140 -10-0.82 +264 +3.18 +2.84 +2.55 +1.18 +1.95 June 1. 1883 b = -0.05 C. E. K Draconis +70° 26'	+62 +7.79 +1.00 b = -0.05 C. E. S Virginis +49° 2'	+10.35 -8.09 +13.13 b = -0.2 C. E. 43 H. Lepheid. C +94° 22'	+52 +8.9 +1.04 b = -0.3 C. E. E Virginis +111° 35'	+27 +1.10 +1.14 b = -0.34 C. M. 43 Comae +28° 28'	+01 +6.1 +1.02 b = -0.5 C. M. 2 Virginis -10° 33'
--	--	--	--	---	---

12 27 20.6 31.4 42.0 41.96 52.8 3.0	12 49 9.9 13.6 17.1 20.6 24.2 17.08 31.1 34.9 38.4 42.0 45.5 38.38 52.7 56.0 59.8 5.1 7.0 59.72 14.0 17.4 21.0 24.7 28.0 21.02 35.3 38.9 42.4 45.8 49.5 42.38 52.72 56.70 -0.2 58.68 45.12 +14.56 +2.20 +14.76	0 51 38.6 52 26.4 53 14.0 54 0.0 54 45.3 12.90 13.10 +1.16 13.26 52 59.61 +13.65 +2.63 +11.02	12 55 47.7 51.2 54.9 58.4 2.2 54.88 9.7 13.0 16.5 20.1 23.8 16.62 31.0 34.5 38.3 42.0 45.6 38.28 52.8 56.4 0.2 3.7 7.2 0.06 14.3 18.0 21.6 25.4 29.0 21.66 35.30 38.28 -0.03 38.28 23.66 +14.09 +2.20 14.79	13 5 46.0 50.0 53.9 57.8 2.0 53.94 9.9 14.0 18.0 22.0 26.2 18.02 34.3 38.3 42.3 46.4 50.3 42.32 58.3 2.5 6.4 10.4 14.5 6.42 22.5 26.7 30.8 34.5 38.8 30.6627 42.72 43.7025 -0.04 42.21 27.17 +15.01 -2.23 +15.26 14.81	13 19 112.4 15.9 19.5 23.2 26.7 19.54 34.1 37.8 41.2 44.9 48.6 41.32 55.7 59.2 2.8 6.4 10.0 2.82 19.54 19.54 -0.3 19.54 46.7 +14.87 -2.20 +14.67
--	---	--	--	--	---

$$\begin{aligned}
 12 \text{ } 49 \text{ } 0 &= +14.76 + 62 a + 11.20 + 14.97 \text{ } 12 \text{ } 28 \text{ } 0 = +15.35 - 140 a \\
 12 \text{ } 55 & \quad 14.79 \text{ } 15.2 a + 1.8 \quad 14.97 \text{ } 12 \text{ } 52 \quad +11.02 + 10.35 a \\
 & \quad 14.77 \text{ } 15.7 a \\
 & \quad 0 = +58 - 1.97 a = +30.26 \\
 & \quad 0 = +3.75 - 9.78 = .38 \\
 & \quad \quad \quad +.39 \text{ } 37
 \end{aligned}$$

$$\begin{aligned}
 13 \text{ } 5 \text{ } 0 &= +10.81 + 2.5 a + 0.7 + 14.92 \quad 13 \text{ } 21 \text{ } 0 = +15.64 - 1.74 a \\
 13 \text{ } 19 & \quad 14.67 + 8.1 a + 3.2 \quad 14.99 \\
 13 \text{ } 29 & \quad 14.94 + 10 + 0.4 \quad 15.00 \\
 & \quad 14.81 + 3.9 a \quad 14.97 \\
 & \quad 0 = +68 - 2.13 a = +3.71 \\
 & \quad \quad \quad +.40
 \end{aligned}$$

$$\begin{aligned}
 12.9 \text{ } 47 &= -14.97 \text{ } C E \\
 13.3 &= -14.97 \text{ } C W
 \end{aligned}$$

June 1 1883
 6.7
 Apr. 2001
 $+73^{\circ} 00'$
 $b = -0.6$

$+10$
 $+126$
 $+127$
 6.7
 17 H. P. J. J.
 $+37^{\circ} 47'$
 $b = -0.7$

13 21 51.0
 3.1
 14.8
 27.3
 39.3 27.10

23 3.2
 15.7
 27.9
 40.0
 52.2 27.50

24 16.6
 28.8
 41.4
 52.6
 5.4 40.96
 2 27.95

27.90
 -20
 -17
 27.99
 11.88
 $+16.3$
 -31.68
 $+15.647$

13 29 16.3
 20.6
 25.0
 29.6
 34.1 25.12

43.0
 47.4
 52.0
 56.4
 1.0 51.96

30 10.0
 14.5
 19.0
 23.3
 27.9 18.94
 52.01

51.98
 -0.9
 51.989
 36.69
 $+15.20$
 -12.5
 $+14.86$

C.7.

02.8 $0 = +14.56 + 6.2a + 100c$
 12.9 $+14.59 + 5.2$
 $14.58 + 5.7$
 $+1.02$
 $+1.01$

$a = +33$
 $c = +20$
 $+30 + 21 + 41$
 $+20 + 17 + 37$
 14.97
 $14.96 + 14.97$

12.4 $0 = +14.69 - 140a + 299c$
 12.9 $+13.67 + 10.85 + 13.13$

$0 = +11 - 1.97a + 1.98c$
 $+93 - 9.78 + 14.14$

$0 = +06 - 100a + 0$
 $+07 - 69a + c$
 $a = +26$
 $+39 + 33$

C.10

131 $0 = +15.04 + 12a + 114c$
 133 $14.57 + 51$
 13.5 $15.20 + 10$
 $+15.04 + 39$
 $+1.14$
 $-23 + 11$
 $-20 + 34$
 $-25 + 4$
 -12
 $+14$
 -21
 14.92
 15.01
 14.99
 14.97
 14.97

13.3 $0 = +16.35 - 1.74a + 842c$

$0 = +131 - 213a + 286c$
 $0 = +58 - 92a + c$
 $a = -20$
 $a = +42$

A -44	+52	+4.49	+27	+88	-20
B +1.76	+89	-2.75	+110	+46	+154
C +1.82	+102	-5.26	+114	+108	+155
June 2, 1883	$\delta = +08$				
	+03	+03	+05	+06	+08
B. M.	C. M.	C. M.	C. M.	C. M. $\Delta\alpha = +16$	C. M.
E. Urs. Maj.	E. Virgins	4th H. Cephei	43 Corinae	γ Hydrae	η Urs. Maj.
+56° 35'	+11° 35'	+100° 57'	+28° 28'	-32° 34'	+49° 54'
-19 12	+30 48	+13 55		+64 57	-7 31

l	m	s	l	m	s	l	m	s	l	m	s
12	47	39.7	12	55	47.3	13	11	57.2	13	41	53.9
		46.0			52.0			1.0			1.3
		52.6			54.6			4.9			6.9
		57.8			58.2			8.8			12.5
		64			18			12.6		4.90	17.7
		52.70			54.58						6.86
		16.6			9.0			20.1			25.8
		24.7			12.7			24.1			34.5
		31.4			16.2			28.1			40.0
		37.7			20.0			31.8			45.3
		44.3			23.6			35.6		27.94	51.1
		31.54			16.30						39.94
		57.1			30.8			43.2			2.0
		3.3			34.3			47.1		43	13.3
		10.0			38.0			51.0			13.1
		16.4			41.6			54.9			18.5
		22.9			45.2			58.6			24.0
		9.94			37.98			50.92			12.98
		35.9			52.5			6.2			35.0
		42.1			56.1			10.2			40.4
		48.6			59.6			13.9			46.0
		54.7			3.3			17.8			51.5
		1.3			6.9			21.7		13.96	56.9
		45.52			59.68						45.96
		15.4			14.2			25.4			7.7
		20.9			17.8			32.5			13.3
		27.2			21.3			37.0			19.0
		33.7			25.1			40.9			24.3
		40.0			28.8			44.7		37.10	30.0
		27.44			21.44						18.6

Not in Cato

12 49 10.03	12 56 38.00	13 2 26.24	13 6 41.48	13 12 59.96	13 43 2.92
7.4 R 10.00	37.98	26.32	46.46	50.84	12.90
7.4 B 10.05	37.98	26.32	46.46	50.84	12.90
7.4 B 10.11	37.98	26.32	46.46	50.84	12.90
7.4 B 10.14	37.98	26.32	46.46	50.84	12.90
7.4 B 10.17	37.98	26.32	46.46	50.84	12.90
7.4 B 10.20	37.98	26.32	46.46	50.84	12.90
7.4 B 10.23	37.98	26.32	46.46	50.84	12.90
7.4 B 10.26	37.98	26.32	46.46	50.84	12.90
7.4 B 10.29	37.98	26.32	46.46	50.84	12.90
7.4 B 10.32	37.98	26.32	46.46	50.84	12.90
7.4 B 10.35	37.98	26.32	46.46	50.84	12.90
7.4 B 10.38	37.98	26.32	46.46	50.84	12.90
7.4 B 10.41	37.98	26.32	46.46	50.84	12.90
7.4 B 10.44	37.98	26.32	46.46	50.84	12.90
7.4 B 10.47	37.98	26.32	46.46	50.84	12.90
7.4 B 10.50	37.98	26.32	46.46	50.84	12.90
7.4 B 10.53	37.98	26.32	46.46	50.84	12.90
7.4 B 10.56	37.98	26.32	46.46	50.84	12.90
7.4 B 10.59	37.98	26.32	46.46	50.84	12.90
7.4 B 11.02	37.98	26.32	46.46	50.84	12.90
7.4 B 11.05	37.98	26.32	46.46	50.84	12.90
7.4 B 11.08	37.98	26.32	46.46	50.84	12.90
7.4 B 11.11	37.98	26.32	46.46	50.84	12.90
7.4 B 11.14	37.98	26.32	46.46	50.84	12.90
7.4 B 11.17	37.98	26.32	46.46	50.84	12.90
7.4 B 11.20	37.98	26.32	46.46	50.84	12.90
7.4 B 11.23	37.98	26.32	46.46	50.84	12.90
7.4 B 11.26	37.98	26.32	46.46	50.84	12.90
7.4 B 11.29	37.98	26.32	46.46	50.84	12.90
7.4 B 11.32	37.98	26.32	46.46	50.84	12.90
7.4 B 11.35	37.98	26.32	46.46	50.84	12.90
7.4 B 11.38	37.98	26.32	46.46	50.84	12.90
7.4 B 11.41	37.98	26.32	46.46	50.84	12.90
7.4 B 11.44	37.98	26.32	46.46	50.84	12.90
7.4 B 11.47	37.98	26.32	46.46	50.84	12.90
7.4 B 11.50	37.98	26.32	46.46	50.84	12.90
7.4 B 11.53	37.98	26.32	46.46	50.84	12.90
7.4 B 11.56	37.98	26.32	46.46	50.84	12.90
7.4 B 11.59	37.98	26.32	46.46	50.84	12.90
7.4 B 12.02	37.98	26.32	46.46	50.84	12.90
7.4 B 12.05	37.98	26.32	46.46	50.84	12.90
7.4 B 12.08	37.98	26.32	46.46	50.84	12.90
7.4 B 12.11	37.98	26.32	46.46	50.84	12.90
7.4 B 12.14	37.98	26.32	46.46	50.84	12.90
7.4 B 12.17	37.98	26.32	46.46	50.84	12.90
7.4 B 12.20	37.98	26.32	46.46	50.84	12.90
7.4 B 12.23	37.98	26.32	46.46	50.84	12.90
7.4 B 12.26	37.98	26.32	46.46	50.84	12.90
7.4 B 12.29	37.98	26.32	46.46	50.84	12.90
7.4 B 12.32	37.98	26.32	46.46	50.84	12.90
7.4 B 12.35	37.98	26.32	46.46	50.84	12.90
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7.4 B 12.47	37.98	26.32	46.46	50.84	12.90
7.4 B 12.50	37.98	26.32	46.46	50.84	12.90
7.4 B 12.53	37.98	26.32	46.46	50.84	12.90
7.4 B 12.56	37.98	26.32	46.46	50.84	12.90
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7.4 B 13.08	37.98	26.32	46.46	50.84	12.90
7.4 B 13.11	37.98	26.32	46.46	50.84	12.90
7.4 B 13.14	37.98	26.32	46.46	50.84	12.90
7.4 B 13.17	37.98	26.32	46.46	50.84	12.90
7.4 B 13.20	37.98	26.32	46.46	50.84	12.90
7.4 B 13.23	37.98	26.32	46.46	50.84	12.90
7.4 B 13.26	37.98	26.32	46.46	50.84	12.90
7.4 B 13.29	37.98	26.32	46.46	50.84	12.90
7.4 B 13.32	37.98	26.32	46.46	50.84	12.90
7.4 B 13.35	37.98	26.32	46.46	50.84	12.90
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7.4 B 13.50	37.98	26.32	46.46	50.84	12.90
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7.4 B 15.02	37.98	26.32	46.46	50.84	12.90
7.4 B 15.05	37.98	26.32	46.46	50.84	12.90
7.4 B 15.08	37.98	26.32	46.46	50.84	12.90
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7.4 B 15.32	37.98	26.32	46.46	50.84	12.90
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7.4 B 15.38	37.98	26.32	46.46	50.84	12.90
7.4 B 15.41	37.98	26.32	46.46	50.84	12.90
7.4 B 15.44	37.98	26.32	46.46	50.84	12.90
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7.4 B 15.53	37.98	26.32	46.46	50.84	12.90
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7.4 B 15.59	37.98	26.32	46.46	50.84	12.90
7.4 B 16.02	37.98	26.32	46.46	50.84	12.90
7.4 B 16.05	37.98	26.32	46.46	50.84	12.90
7.4 B 16.08	37.98	26.32	46.46	50.84	12.90
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7.4 B 17.38	37.98	26.32	46.46	50.84	12.90
7.4 B 17.41	37.98	26.32	46.46	50.84	12.90
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7.4 B 18.53	37.98	26.32	46.46	50.84	12.90
7.4 B 18.56	37.98	26.32	46.46	50.84	12.90

June 2 1883

+42
+97
+1.06+2.53
-1.32
-8.21-90
+2.18
+2.36+80
+62
+1.01-983
+3.94
+4.85-11
+1.45
+1.466. 7. ⁺⁰⁸
7 Bootis+5.6 59
+18 59
+23 296. 7. ⁺⁰⁸
6. 7. and 6.50 load 2 to
+108 9
71 51
C.W.6. 7. ⁺⁰⁹
2 Draconis+64 56
-24.936. 7. ⁺⁰⁹
K Virginis-9 44
52 076. 7. ⁺⁰¹
4 Urs Minor+78 6
35 436. 7. ⁺⁰¹
R. Bootis+46 37
4 1413 48 31.3
35.0
38.6
42.3
46.2 384857 2.7
14.0
24.3
36.3
48.1 250814 6 5.9
9.4
12.9
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20.0 12.9014 11 0.8
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21.0 10.8653.8
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5.052 11.1 53 41.81
22.1 53 41.70
33.8 53 41.80
44.3 53 41.8053 41.81
+0.5
41.80
-0.81
53 41.81 690 23.0
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39.5
48.0
56.2 39.70
41.7 34.4611 31.4
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41.7
46.7
52.0 41.66

8.7 126

58.8 33.52
58.8 33.52
51 59.3053 41.81 69
53 41.81
+12.381 13.4
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3.3 56.0614 9 2.7
19.8
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11.5 37.0812 2.3
7.3
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23.0 12.6216.5
20.1
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27.6
31.4 239054 25.6
39.8
51.1
2.6
14.0 51.22
-1 8.182 3.7
12.0
20.3
28.4
36.9 20.26
24.8 17.626 48.9
52.5
56.0
59.6
3.3 56.0614 9 2.7
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16.1 8.7855 36.3 53 43.01
48.1 53 43.01
58.5 53 43.01
10.9 53 43.01
22.0 53 43.01
-2 16.732 14
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+0.5
-11 29.32
42.79 13.42
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24.8 14.52+19.20.74
23.72
+1.06
+23.880
24.7
+14.3355 2.52.9
54 = error
Long 9.73.239
Longitude 9.42.353
9.22.592
C = +1.17.5 for C.W.54
1 30.02
1 28.99+19
1 15.74
+14.26
+14.44
+14.446 56.05
56.05+0.5
42.43
+13.66
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+13.669 37.08
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+14.5412 12.64
12 12.62
-1
12.621
58.62
+14.00
+13.99

Pa C W

a = +58
e = -18712.8
13.2
13.20 = +16.13 - 44a + 182c + 47p
= 14.84 - .20 + 1.55c - 26 + 33 + 14.34
14.98 - 32a + 1.68c + 73 - 28 14.30 = -2.63 + 3.25a - 489c
-1.98 + 2.53 - 4.25c
+14.4812.9
13.1
13.3
13.30 = +14.30 + 52a + 1.02c + 30 - 18 14.42
+ 14.35 + 27a + 1.14c + 16 - 21 14.30
+ 14.33 + 42a + 1.06c + 24 - 19 14.38
14.33 + 40a + 1.04c + 14.37-1.88 + 1.95 - 4.29
0 = -.54 + 6.6a - c
-46 + 59a - c
-44 + 46a - c

1.8

0 = +12.35 + 293a - 321c

$+24.0$
 -84
 -254
 $+64$
 $+78$
 $+1.00$
 $+88$
 $+75$
 $+1.04$
 -59
 $+1.90$
 $+1.99$
 -2.01
 $+3.19$
 $+3.78$
 $+3.55$
 -2.25
 -4.55

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6.E.

 109 Pignis
 $+113$
 6652

6.E.

 $+2$
 23
 $+42$

6.E.

 -15
 33
 57.56

6.E.

 $+59$
 46
 17

6.E.

 $+74$
 38
 32

6.E.

 $+102$
 42
 70

 14 17 35.1
 44.0
 53.3
 2.2
 11.0 53.12

 14 39 48.2
 50.8
 54.2
 57.8
 1.4 54.28

 14 43 50.2
 53.8
 57.3
 0.8
 4.6 57.34

 14 47 6.6
 13.6
 20.7
 27.4
 34.5 20.56

 14 50 18.5
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 18 29.4
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 5.8 47.38

 40 8.6
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 15.5
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 44 12.1
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 5.0 58.10

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 21 12.3
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 41 12.3
 16.0
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 23.0
 26.4 19.42

 45 18.3
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 29.3
 33.0 25.66

 52 12.0
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 4144
 $+05$
 $+01$
 21.55
 27.45
 $+14.07$
 $+13.82$
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 36.84
 23.05
 $+13.79$
 44
 41.57
 -2
 -1
 41.48
 27.78
 $+13.70$
 45.06
 -3
 -2
 45.01
 30.84
 $+14.66$
 15.5
 44.91
 $+06$
 $+06$
 44.80
 31.69
 $+13.21$

Per C. 8WE

Per C. = -20

 14.2
 14.8
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$+38$ $+1.01$ $+1.08$ 1883.	$+1.25$ $+2.58$ $+2.79$	$.81$ $.62$ 1.02	$+3.8$ -1.81 -4.06	$+ .07$ $+1.29$ $+1.29$	-1.46 -1.79 1.85
-07 6.E	-07 6.E	-08 6.E	-08 6.E	-08 6.E	-09 6.E
β Herculis $+21$ 45 $20-37$	δ Draconis $+69$ 1 $-23-38$	ζ Ophiuchi -10 20 $+52$ 43	ϵ 1848 104 16 61 53	η Herculis $+89$ 09 $+3.14$	ϵ 2377 $+56^{\circ}59$ $-14^{\circ}33$
16 24 35.2 38.9 42.6 46.3 50.0 4260				16 38 6.1 10.5 14.9 19.7 24.0 1504	16
24 58.0 1.8 5.4 9.3 13.2 554	27 111.7 21.8 31.2 41.7 51.4 3156	16 30 58.4 0.0 3.7 7.3 10.7 3.62	32 50.8 5.0 12.7 34.0 49.0 1970	38 33.5 38.2 42.6 47.0 51.7 4260	42 30.3 36.4 42.5 48.8 56.2 4286
25 20.7 24.5 28.2 32.1 36.0 2530	28 11.5 20.9 30.7 40.9 50.6 3092			39 0.8 5.4 10.0 14.4 19.3 998	43 9.0 15.8 22.0 28.8 35.3 22.18
25 43.7 47.4 51.3 55.2 59.2 5136	29 10.4 20.3 30.2 40.4 50.1 3928			39 28.4 33.0 37.4 41.8 46.5 3742	43 48.2 52.7 1.0 7.6 14.0 110
26 6.4 10.5 14.2 17.8 21.9 1416				39 55.9 0.3 5.0 9.5 14.0 494	
25.39 -2 -7 25.32 25.1439 +13.93	3092 -05 +17 30.70 28.1603 +14.67	30 9.62 -1 -5 3.86 46.47 +18.09	1970 +6 +15 +19.1 1.88 +13.03	16 39 10.00 -2 -10 9.88 56.03 +13.88	2205 -3 -16 21.86 774 +14.12

ParC.W.

$$176 \quad 0 = +14.99 - 2.8a + 1.64c - 16 = 30.453 \quad 0 = -42.0 + 4.46a - 57.8c \quad 0 = -73 + 78a - c$$

$$171 \quad 0 = 14.25 + 49a + 104c + 29 + 19.1435 \quad 0 = -48.9 + 5.24a - 54.7c \quad 0 = -58 + 62a - c$$

$$175 \quad 0 = 14.34 + 50 + 1.03 + 29 - 19.1441$$

$$17.3 \quad 14.30 + 50 + 1.03 + 14.44$$

$$17.0 \quad 0 = -19.19 - 47.4a + 7.44c$$

$$0 = -14.2 + 25.0a + c$$

$$0 = -6.5 + 23.2a + c$$

$$a = +58$$

$$c = -1.8$$

$$a = -1.2 + 7.62a + 30.0c$$

$$+ 6.1 + 3.05 + 13.0c$$

$$0 = -4.68 + 9.84a + 6.16c$$

$$0 = -0.41 + 6.16a + 1.00c$$

$$0 = -7.6 + 1.84a + c$$

$$-0.2 + 3.6 + c$$

$$a = +60$$

$$c = -20$$

Equations between a and c

$-54 + 66a - c$	$+40 + 20$	$+60 + 4$	$+63.47 + 46$
$-46 + 58 - c$	$+26 + 20$	$+56 + 10$	$+53.17 + 41$
$-44 + 48 - c$	$+28 + 20$	$+48 + 0.4$	$+50.17 + 33$
$-44 + 46 - c$	$+40 - 20$	$+20 + 0.6$	$+63.47$
$+55 - 91 - c$	$-50 + 20$	$-30 + 2.57$	$+50.17$
$+26 - 78 - c$	$-48 + 20$	$-28 - 0.1$	$+50.17$
$+12 - 184 - c$	$+50 - 20$	$+30$	$+50.17$
$+18 + 69 + c$	$+42 - 20$	$+22 + 0.2$	$+45.17$
$+53 - 14 - c$	$-50 + 20$	$-30 + 2.37$	$+50.17$
$+08 + 55 + c$	$+23 - 20$	$+13 + 0.5$	$+50.17$
$+12 - 113 - c$	$-68 + 20$	$-48 + 0.4$	$+50.17$
$+31 - 90 - c$	$-54 + 20$	$-34 - 0.3$	$+50.17$
$+108 + 101 + c$	$+81 - 20$	$+11 + 1.9$	$+40.17$
$+14 + 60 + c$	$+36 - 20$	$+16 + 0.2$	$+40.17$
$+51 - 105 - c$	$-63 + 20$	$-43 + 0.8$	$+50.17$
$-73 + 178 - c$	$+47 + 20$	$+17 - 6$	$+50.17$
	$+42 + 20$	$+11 + 1.1$	$+50.17$

-4.74
+5.68
+7.40

-10
b. 77.

2 Mrs. Min.
+82 14

+4.9
+1.00
+1.04

-10
b. 77.

2 Hercules
+14 31
27 52

-7.8
1.62
1.64

+0.1
b. 77.

3 Draconis
+52 23
-10 00

5.7
8.9
1.63

+0.1
b. 77.

2 Ophiuchi
+12 39
+44 44

16

17

Not in list

17

7 44.8
48.5
52.4
55.8
59.3 52.36

17

17 28

16.59 58.0
0 17.0
35.8
55.0
6 13.8 35.92

8 7.0
10.7
14.3
17.8
21.8 14.32

28 18.6
22.3
25.7
29.7
33.1 25.88

56 22.4
57 58.5
57 25.0
58 50.7
58 16.7

1 51.4
2 10.3
28.5
46.6
3 6.0 28.56
3 43.8
4 2.8
20.8
39.2
57.8 20.88

8 29.0
32.5
36.0
39.8
43.3 36.12
8 51.0
54.5
58.0
1.8
5.2 58.10
9 12.8
16.5
20.2
23.9
27.4 20.16

26 18.7
24.7
30.5
36.2
42.1 30.44
26 53.8
59.4
5.0
11.2
17.3 53.4
27 28.7
34.3
40.2
46.0
52.0 40.24

28 40.5
44.2
47.6
51.2
55.0 47.70
29 2.2
5.8
9.3
13.0
16.7 9.40

66
24.76
-10
24.76.57
24.10
4.86
+19.13

17 0 28.45
+06

36.21
36.2
12
36.09
21.845
+14.22

30.44 5.34
-3
+2
30.42 5.33
50.345
000 14.98

47.66
-02
+1
17.85
3.332
+14.348

Level Survey

Pyris
12.43
13.11 13.22
13.22
13.6
13.8
13.9
14.5 14.1
14.32 14.5
14.6
15.0
16.7
16.9
16.55 16.9
17.18 17.3
17.4
17.4
17.4

6
-22 dia = -0.35
+5.1
+6.2
+9.5
+6.2
+6.0
+6.2
+0.2
+2.2
-2.7
-3.7
-9.5
-1.5
+1.0
-0.7
-2.2
+0.2

+0.6
+0.8
+0.5
+0.5
+0.8
+0.8
+0.0
+0.8
-0.3
-0.4
-1.2
-1.1
+0.1
-0.1
-0.3
+0.0

+10

13
14
15
16
17

14

16

17

12.7
12.8

13.0
13.5
14.0
14.1
15.0
15.1
16.0
16.5
17.0
17.1

+0.6
+0.7
+0.8
+0.9
-0.1
-0.3
-0.5
-0.5
-1.0
+0.1

* New setting for level. Disturbed

June 2, 1883

Clock exchange Signals between Cambridge and Montreal

Montreal clock = M. = Mean time Clock

Cambridge clock = C. = Sidereal Clock

M.	C.	M.	C.	M.	C.	M.	C.
10 ^h 26 ^m 1.0	15 ^h 26 ^m 3.8	10 ^h 37 ^m 1.0	32 ^m 4.8	10 ^h 31 ^m 0 ^s	15 ^h 26 ^m 2.83	10 ^h 36 ^m 0 ^s	15 ^h 31 ^m 3.69
31	2.0	2.0	5.9	10	10	10	13.72
	3.0	3.0	6.8		20	20	23.74
	4.0	4.0	7.8		30	30	33.78
	5.0	5.0	8.9		40	40	43.82
	6.0	6.0	9.9		50	50	53.86
	7.0	7.0	10.8		31 25.0		25.74
	8.0	8.0	11.9			33.45 27.95	
	9.0	9.0	12.8	10 32 0	27 34.0	10 37 0	32 38.5
	10.0	10.0	13.8	10	13.25	10	13.88
31 5.00	7.88	37 5.00	32 8.84	20	23.10	20	23.92
34 1.0	27 4.81			30	33.15	30	34.00
2.0	5.3			40	43.15	40	44.00
3.0	6.4			50	53.00	50	53.80
4.0	7.3				27.95		28.91
5.0	8.4				28.11		
6.0	10.3			10 33 0	28 3.16	10 38 0	33 4.02
7.0	11.4	10 31 5.00	15 26 7.88	10	13.30	10	14.00
8.0	12.3	34 5.00	29 8.37	20	23.23	20	24.05
9.0	14.4	31 5.00	30 8.58	30	33.30	30	34.10
10.0	15.4	36 5.00	31 8.77	40	43.30	40	44.16
		37 5.00	32 8.84	50	53.15	50	53.99
34 5.0	29 8.37	10 34 4.100	15 29 40.58		25.24		29.05
		+ 8.97	+ 14.33				
35 1.0	30 4.5			10 34 0	29 3.37		
2.0	5.6			10	13.40		
3.0	6.6			20	23.40		
4.0	7.5			30	33.45		
5.0	8.6			40	43.45		
6.0	10.6			50	53.35		
7.0	12.6				25.24		
8.0	13.6				41		
9.0	14.6						
10.0	15.6						
35 5.00	30 8.58			10 35 0	20 3.52		
				10	13.57		
				20	23.56		
				30	33.63		
				40	43.62		
				50	53.50		
					25.97		
36 1.0	31 4.7						
2.0	5.7						
3.0	6.7						
4.0	7.7						
5.0	8.7						
6.0	9.8						
7.0	10.7						
8.0	11.7						
9.0	12.7						
10.0	13.7						
36 5.00	8.71						

Line 2-1883

Meridian Circle

λ Mrs. May	β Mrs. May	α Mrs. May	ϕ Mrs. May	ρ Leonis	γ Mrs. May
+43° 29'	+57° 0'	+62° 22'	+45° 7'	+21° 9'	+33° 43'
cosd. 9.86068					
10 10	10 34 248	36 282	11 2 524	7 47.9	12 14
	28.6	34.7	55.2	57.0	39
	32.4 32.44	38.0	58.1 58.14	52.3 52.30	64 638
	36.3	41.5	1.1	54.6	8.9
	40.1	42.1	3.9	56.7	11.3
	47.4	56 28.2	9.9	1.1	16.3
	51.5	32.7	12.7	3.5	18.4
	55.2	37.0	15.8	5.6	21.1
	59.0	41.5	18.6	7.8	23.7
	2.7 2.84	46.1 46.03	21.6 21.59	10.0 10.06	26.3 26.20
	6.6	50.5	24.6	12.3	28.4
	10.6	53.0	27.5	14.5	31.1
-10 10 8.52 27.2 18.68	14.3	57.5	30.4	16.8	33.6
1135 30.1 18.75	18.0	3.8	33.3	18.9	36.3
18.71					
	25.5	3	39.1	23.3	41.1
	29.4		42.0	25.5	43.6
	33.0 33.12		45.0 44.96	27.8 27.78	46.1 46.10
	36.9		47.9	30.0	48.6
	40.8		50.8	32.3	51.1
10 18.720	55 28.20	56 46.030	3 21.570	8 10.050	12 26.220
18.700	27.90	46.000	21.550	10.030	26.200
3.785	46.05	31.41	6.67	5.83	11.40
+14.85	14.74	+14.56	+14.88	+15.00	+14.80

$$\begin{array}{rcl}
 10.2 & 0 = 44.95 + 1.95n & +30 = +1530 \\
 10.8 & 14.74 + 0.54n & +57 = 31 \\
 10.9 & 14.56 + 0.91n & +71 = 27 \\
 11.0 & 14.88 + 1.00n & +37 = 14 \\
 11.1 & 15.00 + 1.39n & +14 = 0.04 \\
 11.2 & 14.80 + 1.66n & +24 = 15.22 \\
 10.9 & 14.80 + 0.98n & \\
 \end{array}$$

$$\begin{array}{rcl}
 13.1 & 0 = 43.15 + 43.51n & \\
 & +14.82 + 0.99n & \\
 & 0 = 46.33 - 44.80n & \\
 & n = +37 &
 \end{array}$$

$$h = +0.18$$

$$b = -10$$

$$m = -13 - 34 = -47$$

$$\begin{array}{rcl}
 47 + m & = & -15.22 \\
 h & m & = -47 \\
 10.9 & 47 & = -14.85
 \end{array}$$

$$15.0^n = -14.68$$

$$14.34$$

June 2 - 1883

June 4 - 1883 M.C.

β Mrs. Min Colaris, L.C.	β Portis	β Mrs. May	α Mrs. May	γ Mrs. May	δ Mrs. May
	$+57$ 0	$+62$ 22	$+45$ 7	$+21$ 9	
14 30	10 54	23.9	56 =	11 2 57.2	11 7 46.9
	27.4			54.1	49.1
	31.5 31.50	35.53 2.6 45.73		57.0 57.04	57.4 51.34
	35.3	31.09 3.8 44.99		0.0	53.6
	39.1	26.65 16.4 45.03		2.9	53.7
		45.06			
13 14 25.7	46.5	27.3	8.4		0.2
14 53.5	50.4	31.4	11.4		2.4
15 23.0	54.3	36.2	14.6		4.6
15 50.0	58.1	40.6	17.6		6.9
\times 16 32.5	2.1 1.83	45.0 45.08	20.5 20.50		9.0 9.08
16 55.0	5.3	49.5	23.5		11.3
17 22.0	9.4	54.0	26.4		13.6
17 51.5	13.1	58.4	29.3		15.7
18 21.0	17.1	6.0	32.2		18.0
	24.6	11.8	38.0		22.3
	28.4	16.3	41.0		24.6
	32.2 32.16	20.4 20.74	44.0 43.94		26.7 26.76
	36.0	28.2 35.53	46.9		29.0
	39.6	29.4 45.21	49.8		31.2
16 22.69	55 1.830	56 45.117	3 20.475	8 9.065	
20.34	1.840	45.087	3 20.475	9.045	
22.19	47.78	56 31.384	3 6.63	55.00	
21.15	+13.81	+13.745	+13.84	+14.04	

Calculus

June 4

$$0 = +31.15 - 43.51m$$

$$= +71380 + 1.21$$

$$= +17228 - 44.22$$

$$n = +38$$

$$0 = +31.15 - 43.51m$$

$$+1392 + .75$$

$$+17228 - 44.22$$

$$n = +39$$

$$4$$

$$10.9 0 = +13.81 + 1.54 + 5.9$$

$$10.9 +13.75 +1.81 +5.3$$

$$11.1 13.84 +1.00 +3.8$$

$$11.1 14.04 +3.9 +1.5$$

$$12.8 14.23 +2.16$$

$$13.7 13.67 +1.19 +4.5$$

$$13.8 13.88 +3.4 +1.3$$

$$13.5 13.9 14.08 +0.3 +0.1$$

$$12.2$$

$$n = +38$$

$$14.40$$

$$48$$

$$22$$

$$19$$

$$12$$

$$10$$

$$12$$

$$01$$

$$09$$

$$14.20$$

$$n = +39$$

$$+60$$

$$+74$$

$$+38$$

$$+16$$

$$-16$$

$$+46$$

$$+13$$

$$+01$$

$$+01$$

$$+13.41$$

$$+23$$

$$20$$

$$07$$

$$13$$

$$10$$

$$09$$

$$+14.20$$

$$12.2 47 + m = -14.20$$

$$m = -35$$

$$12.2 47 = -13.85$$

$$15.0 47 = -13.80$$

$$m = +01 - 36 = -35$$

June 4-1883

U.C.

 β Corve

-22 45

h m s
12 28 9.1
11.3
13.6 13.56
18.4
18.1

22.6
24.8
27.1
29.2
31.4 31.50
33.7
36.0
38.2
40.6

46.0
47.2
49.5 49.48
51.7
54.0

28 31.510
31.490
28 17.26
+ 14.23

 γ Virginis

h m s
12 35 39.9
42.1
44.1 44.10
46.2
48.2

52.3
54.4
56.4
58.6
0.4 0.61
2.7
4.7
6.8
8.9

13.1
13.7
17.1 17.10
19.1
21.1

35 06.05

 η Usc. Maj

h m s
13 42 52
+49 53

h m s
13 43 53
43 53
8.8
11.8 11.82
15.0
18.2

43 11.82
11.80
42 58.13
+ 13.67

 η Bootis

h m s
13 49
+18.58

h m s
13 49 19.1
21.2
23.3 23.36
25.5
27.7

49 23.36
23.34
49 9.46
+ 13.88

 τ Virginis

+2 6

55 50.3
52.3
54.2
56.3
58.5 58.48
0.7
2.6
4.7
6.7

55 58.48
58.46
55 44.38
+ 14.08

 δ Lavis

13 14 22.0

14 50.0
15 19.5
15 48.5
X 16 19.5
16 45.5
17 19.5
17 48.5
18 17.4

16 19.16
+ 67
16 19.63
54.17
+ 25.72

June 4, 1883

M C

 δ Cephei
+76.59'

 β Cass
+58.30

 δ Pegasi
+14.32'

 β Circetis
+28.14'

 δ Androm
+41.46'

9.71808

h m s

23.38 17.4

26.5

35.6 35.68

44.9

54.0

12.3

21.4

30.5

39.9

49.3 49.00

58.0

57.4

16.4

25.8

44.0

53.1

2.2 2.30

11.5

20.7

33 45.415

48.925

34 35.84

16.54

+12.77

0 3

3548.39

3154.43

2760.44

2346.51

15.18

15.14

15.10

15.26

4

15.145

15.115

58.54

16.57

0 7 7.0

9.0

11.2 11.18

13.3

15.5

19.9

22.0

24.1

26.2

28.2 28.31

30.4

32.5

34.7

36.8

41.1

43.2

45.4 45.38

47.5

49.7

7

28.305

28.285

14.44

+13.84

1.48 3.9

6.0

8.1 8.20

10.4

12.6

17.1

19.2

21.4

23.6

25.8 25.82

28.0

30.3

32.4

34.6

39.0

41.2

43.4 43.42

45.6

47.9

48

25.815

25.795

12.02

+13.77

1.56 30.8

33.5

36.0 36.02

38.0

41.8

47.4

50.1

52.8

55.6

58.3 58.38

1.1

4.0

6.6

9.5

15.0

17.8

20.7 20.58

23.4

26.0

56

58.340

58.320

41.75

+13.57

2.35 0-

0.1

1.8

1.9

35

13

0 = +13.82

13.77

13.57

13.73

+0.1

+26.2

+2.7

+1.59

+0.1

+0.1

+0.5

+0.9

+2.2

+0.1

+0.1

+13.89

13.86

13.79

13.85

-22

13.63

$$47.01 - 1.3 = 13.63$$

2.35 0 = +12.77 + 43.3 n

13.5 25.72 = 41.1

$$0 = -0.96 + 3.82n \quad n = 25$$

$$0 = +0.1 - 2.3 = -2.2$$

δ -49 +1.76 +1.52 June 4-1883	+52 +59 +1.02	+27 4.04 11.0 4.04	+98 +46 +1.08	+101 +41 +1.02	-174 +294 +342
$\alpha = +95^\circ$ C. E. E. Virgo +56 35	+02 C. E. E. Virgo +11 18	+02 C. E. 43 Comae +28 28	+02 C. E. g. Lyrae +22 134	+01 C. E. α Virgo -10 38	+00 C. E. G. 2001 +18 6

12	12 55	45.7 49.2 53.0 56.4 0.2 5290	13 5	43.6 47.7 51.7 55.8 59.6 5168	13 11	55.4 59.3 53.0 56.9 10.5 3.02	13 18	26.5 30.2 33.7 37.4 40.9 3374	
48	16.7 23.0 29.1 35.9 42.0 2934	56	7.3 11.0 14.5 18.3 21.8 14.58	6	7.8 11.9 15.8 19.8 23.9 15.86	12	18.3 22.4 26.0 30.0 33.8 26.10	18	48.0 51.9 55.4 59.0 2.6 55.38
48	55.1 1.4 8.0 14.3 20.8 792	56	29.2 32.8 36.4 39.9 43.6 3638	6	32.0 36.0 40.0 44.0 48.1 4002	12	41.4 45.3 49.0 53.0 56.9 49.12	19	9.9 13.4 17.0 20.7 24.3 1706
49	38.8 40.3 46.4 53.2 59.8 4670	56	50.8 54.4 58.0 1.7 5.4 5806	6	56.3 0.4 4.3 8.2 12.3 430	13	4.6 8.3 12.0 16.0 19.9 12.16	19	31.4 35.1 38.7 42.3 45.9 38.48
		57	12.5 16.0 19.8 23.3 27.0 1972	7	20.3 24.4 28.4 32.4 36.4 2838	27	5 31.4 35.2 39.2 42.9 35.24	19	58.1 58.8 0.5 4.0 7.6 0.40
49	7.99 -03 7.96 40.5	56	36.33 -02 36.31 +02	6	40.05 -02 40.03 +02	12	49.13 -01 49.12 +01	19	17.01 -02 16.99 +01
49	8.01 48.544 +13.24	56	36.33 56 23.64 +12.68	6	40.05 27.13 +12.92	12	49.13 36.743 +18.38 2.40	19	17.00 4.65 +12.35

$\alpha = +188$ $\alpha = +25$		C. E.	$\alpha = +22 - 142a + 1741e$ -139 +333 -500 -467 +325 -445 $\alpha = +12 - 12a + 171e$ -149 +314 -523 -177 +346 -520	$134.0 \alpha = +1339 - 174 + 342e$ 134 139 1178 + 344 - 3182 11.50 + 293 - 321
12.15	$0 = +13.24 - .44a + 1.12e$	13.31	$0 = +163 - 214 + 236$ -98 +261 -4.88 -126 +2.53 -427	
137	13.11 - .20 + 1.15	13.32	$0 = +1.02 - 264 + 2.37$ -59 +221 -4.37 -57 +2.03 -10.26	
140	13.46 - .90 + 2.36	13.25		
135	13.22 - .53 + 1.91 13.17 - .32 + 1.65	13.41		
129	$0 = +1264 + 52 + 1.02$	13.44		
131	12.92 + .27 + 1.14	13.30		
138	12.65 + .42 + 1.02			
123	12.76 + .40 + 1.06			
132	$0 = 1240 + 98 + 1.08$	13.53		
133	12.35 + .87 + 1.02 12.37 + .90 + 1.08	13.31		

+301
-1.39
-3.32
June 4/1883

-20
+1.54
+1.55

+1.12
+1.97
+1.06

+2.93
-1.32
-3.21

-0.90
-2.18
+2.36

b = 100
C.E.
40 Cas. L.C.
109 33
92 27

+50
C.E.
7 Urs. Maj.
+49 54

-01
C.E.
7 Bootis
+18 59

-8.6
C.E.
50 Cas. L.C.
+108 8
71 51

-01
C.E.
2 Draconis
+64 56

-01
C.E.
2 Draconis
+64 56

13 41 54.4
59.5
51.3
10.7
16.0 5.18

13 48 39.7
33.4
37.3
40.9
44.8 37.22

13 51 1.5
12.8
24.6
35.7
46.9 24.30

13 59 32.3
40.6
48.6
57.3
55 48.6
+40.48 29.34

14 2 4.0

13 27 50.6
2.0
14.0
26.0
37.5 14.02

42 27.2
32.7
38.2
43.7
49.1 38.18

48 52.0
56.0
59.6
63.3
7.2 59.62

52 10.1
21.3
32.8
43.8
55.7 32.74

14 0 22.0
30.6
39.0
47.3
55.7 38.92
+50.16 29.08

29 1.2
13.2
24.4
36.6
48.1 24.70

43 0.3
5.8
11.3
16.8
22.4 11.32

49 14.8
18.5
22.0
26.5
29.8 22.32

53 14.8
29.2
41.0
52.3
3.9 40.44

30 11.7
23.6
35.5
46.9
58.9 35.32

43 33.5
38.8
44.4
49.8
55.5 44.38

49 37.2
40.8
44.6
48.4
52.0 44.60

54 26.5
31.7
49.4
0.9
12.2 49.34

14 2 4.0
12.5
20.8
29.3
37.5 20.82
-50.16 30.66
37.4
2.8
11.0
19.4
27.8 11.14
-40.48 30.66

29 24.68
+0.25
24.73
+0

43 11.26
-0.2
11.24
+0

49 22.16
-0.2
22.14
-0.01

53 40.94
+0.25
40.99
-0.1

1 29.91
-0.24
29.14
-0.22

1 30.66
-0.24
30.62
-0.22

29 24.73
+12.05
+11.58

43 11.24
58.184
+13.10

49 22.13
54.5
+12.68

53 40.98
29.48
+11.50

1 29.15
15.65
+13.46

1 30.60
15.65
+19.92

C = 25
a = 88

C W

0 = 144
14.7 0 = 13.10 + 6.4 a - 1.00 C
16.3 13.33 + 4.1 - 1.06
15.0 13.27 + 5.3 a - 1.03 C
+13.41
13.43 13.41

0 = +4.22 - 3.36 - 3.82
+2.62 - 2.54 - 2.74
+4.18 - 3.35 - 3.84
+3.29 - 2.86 - 3.15

141 13.04 + 80 - 101 C +13.49
147 12.73 + 88 - 104 C 13.24
159 12.50 + 98 - 105 C 13.39 13.57

0 = +111 - 88 - C
+96 - 93 - C
+109 - 88 - C
+101 - 91 - C

149 12.86 + 99 - 104

C = 53.40 C = 1 29.21
C W 7 30.66
-1.45
-1.42
9.85 33
9.62 7.03
9.48 43.6
C = 73 of C W

140 0 = 14.91 - 80 - 23.6 13.52
142 13.96 - 11 - 1.46 13.43
148 14.03 - 59 - 1.99 13.53 45
160 14.22 - 50 - 1.83 13.24 33
1500 14.24 - 42 - 1.79 +13.49

142 0 = 12.43 - 283 - 4.55
149 15.53 - 201 - 3.77
158 12.39 - 283 - 4.55
162 15.50 - 236 - 4.55

$\begin{matrix} +50 \\ +62 \\ +101 \end{matrix}$
 June 4-1883.

$\begin{matrix} -27883 \\ +884 \\ +445 \end{matrix}$

$\begin{matrix} -11 \\ +145 \\ +146 \end{matrix}$

$\begin{matrix} +240 \\ -84 \\ -254 \end{matrix}$

$\begin{matrix} +64 \\ +78 \\ +100 \end{matrix}$

$\begin{matrix} +88 \\ +15 \\ +104 \end{matrix}$

$\begin{matrix} -01 \\ C.W. \\ K. Bregins \\ -9^{\circ}44' \end{matrix}$

$\begin{matrix} -01 \\ C.W. \\ 4 \text{ U.S. Min.} \\ +78^{\circ}6' \end{matrix}$

$\begin{matrix} -01 \\ C.W. \\ \lambda \text{ Doris} \\ +46^{\circ}37' \end{matrix}$

$\begin{matrix} -01 \\ C.W. \\ i \text{ Cass.} \\ 113^{\circ}8' \\ 66^{\circ}52' \end{matrix}$

$\begin{matrix} -01 \\ C.W. \\ 109 \text{ Breg.} \\ +2^{\circ}23' \end{matrix}$

$\begin{matrix} -01 \\ C.W. \\ \lambda \text{ Subae} \\ -1^{\circ}33' \end{matrix}$

$\begin{matrix} 14 & 6 & 26.7 \\ & & 30.2 \\ & & 33.8 \\ & & 37.3 \\ & & 41.0 \\ & 33.80 & 1 \\ & & 48.2 \\ & & 51.6 \\ & & 53.4 \\ & & 59.0 \\ & & 40 \\ & 53.64 & \\ & & 9.9 \\ & & 13.4 \\ & & 17.0 \\ & & 20.6 \\ & & 24.0 \\ & 16.99 & \end{matrix}$

$\begin{matrix} 14 & 11 & 31.3 \\ & & 36.5 \\ & & 41.7 \\ & & 46.8 \\ & & 52.0 \\ & 41.66 & \\ & & 12 & 2.4 \\ & & & 7.5 \\ & & & 12.5 \\ & & & 17.7 \\ & & 22.8 & 12.58 \\ & & 33.0 \\ & & 38.4 \\ & & 43.6 \\ & & 48.8 \\ & & 53.8 \\ & 43.52 & \end{matrix}$

$\begin{matrix} 17 & 32.0 \\ & 41.0 \\ & 50.3 \\ & 59.4 \\ & 8.0 \\ & 50.14 \\ & 18 & 26.9 \\ & & 35.5 \\ & & 44.4 \\ & & 53.2 \\ & & 2.5 \\ & & 44.50 \\ & 19 & 20.8 \\ & & 29.4 \\ & & 38.2 \\ & & 47.6 \\ & & 56.9 \\ & & 38.64 \\ & 20 & 14.8 \\ & & 23.8 \\ & & 32.4 \\ & & 41.9 \\ & & 50.8 \\ & & 32.80 \\ & 21 & 8.8 \\ & & 17.8 \\ & & 27.0 \\ & & 35.6 \\ & & 45.0 \\ & & 26.84 \end{matrix}$

$\begin{matrix} 14 & 39 & 46.6 \\ & & 50.0 \\ & & 53.4 \\ & & 57.1 \\ & & 6.7 \\ & & 53.62 \\ & 40 & 7.8 \\ & & 11.4 \\ & & 14.9 \\ & & 18.4 \\ & & 22.0 \\ & & 14.90 \\ & 40 & 29.2 \\ & & 32.4 \\ & & 36.0 \\ & & 39.4 \\ & & 43.1 \\ & & 36.14 \\ & 40 & 50.5 \\ & & 54.0 \\ & & 57.4 \\ & & 1.0 \\ & & 4.5 \\ & & 57.48 \\ & 41 & 11.4 \\ & & 15.4 \\ & & 18.8 \\ & & 22.3 \\ & & 25.9 \\ & & 18.82 \end{matrix}$

$\begin{matrix} 14 & 44 & 11.0 \\ & & 14.4 \\ & & 18.5 \\ & & 22.2 \\ & & 25.8 \\ & & 18.44 \\ & & 33.2 \\ & & 36.9 \\ & & 40.5 \\ & & 44.0 \\ & & 48.0 \\ & & 40.52 \\ & & 53.2 \\ & & 59.0 \\ & & 2.6 \\ & & 6.3 \\ & & 10.0 \\ & & 2.62 \end{matrix}$

$\begin{matrix} 6 & 53.48 \\ & -07 \\ & 6 & 58.98 \\ & -01 \\ & 6 & 58.46 \\ & 42.68 \\ & +13.083 \end{matrix}$

$\begin{matrix} 9 & 39.44 \\ & -07 \\ & 39.37 \\ & -04 \\ & 9 & 39.33 \\ & 21.808 \\ & +17.425 \end{matrix}$

$\begin{matrix} 12 & 12.39 \\ & -02 \\ & 12.57 \\ & -01 \\ & 12 & 12.56 \\ & 58.60 \\ & +13.96 \end{matrix}$

$\begin{matrix} 19 & 38.58 \\ & +04 \\ & 38.62 \\ & +01 \\ & 19 & 38.63 \\ & 27.83 \\ & +10.80 \end{matrix}$

$\begin{matrix} 40 & 36.189 \\ & -1 \\ & 36.188 \\ & -01 \\ & 40 & 36.187 \\ & 23.05 \\ & +13.102 \end{matrix}$

$\begin{matrix} 44 & 40.33 \\ & 1 \\ & 40.32 \\ & -01 \\ & 44 & 40.37 \\ & 24.78 \\ & +12.23 \end{matrix}$

$\begin{matrix} 0 = 11.20 - 98a - C \\ 11.09 - 107 - C \\ 11.18 - 107 - C \\ 11.13 - 1.02 - C \end{matrix}$

$\begin{matrix} 0 = 31.9 \times 24.1a - 306c \\ 1.59 & 1.19 & 1.88 \\ 3.05 & 2.43 & 3.00 \\ 2.26 & 1.91 & 2.39 \end{matrix}$

$\begin{matrix} 0 = 14.57 - 372a - 851c \\ 2.57 - 2.80 - 2.23 \\ 4.03 - 3.74 - 3.53 \\ 3.64 - 3.22 - 3.14 \end{matrix}$

$\begin{matrix} 0 = 11.01 \times 75a - C \\ +80 - 80 - C \\ 1.05 - 81 - C \\ +84 - 80 - C \end{matrix}$

-59
+1.90
+1.99
June 4-1883

+00
6 hr. $\Delta \alpha = +0.9$
Gr. 2164
+59 46

-201
+3.19
+3.17

+00
6 hr.
R. Vir. Min.
+74 38

6 hr.
R. Bootis
+48 57

-2.55
+3.90
+4.87

+04 $\Delta \alpha = +0.8$
6 hr.
Z. Vir. Min.
+78 9

+58
+46
+1.05

+04
6 hr.
Scorpii
-22 11

-4.55
+1.16
+1.83

+04
6 hr.
O. Draconis
+58 53

No Obs.

15 52 48.0
57.7
53.6
59.4
33 33.60

15 58 22.9
29.7
36.8
43.6
50.2 36.64

14 47 49.2
56.1
33
103
172 32.2

15 46 18.3
30.6
52.9
10.0
27.4 52.84

53 10.8
14.7
18.5
22.5
26.1 18.52

59 3.9
10.9
17.9
24.8
31.5 17.80

48 31.4
38.4
45.4
52.4
59.4 45.40
14 50 53.4
8.8
22.3
33.4
49.0 22.18

48 1.8
19.0
36.4
53.8
10.8 36.30

33.8
37.8
41.6
45.4
49.0 41.52

59 45.3
52.2
59.0
58
12.7 59.00

49 13.5
20.5
27.4
34.6
41.8 27.56

49 45.4
2.4
20.2
37.1
54.4 19.90

56.8
0.7
4.1
8.3
12.0 4.44

16 0 26.4
33.1
40.2
47.0
53.9 40.12

54 20.0
23.8
27.4
31.4
35.2 27.56

1 7.7
14.4
21.0
28.0
35.0 21.22

48 45.39
3
48 45.36
40
51 22.18
0.6
22.12
+0

48 45.36
30.8 24.09
+14.5
45
51. 22.12
66.2 30.1
+15.8 32

48 36.35
0.7
36.28
+16

48 36.44
19.8 34
+19.8 38
40

53 41.53
0.2
41.51
+0.2

40.53
28.73
+19.50

59 58.96
0.3
58.93
+0.7

59.00
44.10 49
+14.289

C. C. $a = +88$
 $c = +26$

16.6 0 = +12.98 + 0.7 + 1.29
16.9 +12.16 + 0.55 + 1.01
17.1 12.67 + 4.8a + 1.01b
16.9 12.74 + 3.7a + 1.00c

13.37
13.29
13.34
13.33

17.0 0 = 9.46 + 4.51a - 5.29c

+3.28 - 4.14a + 6.35c

0 = +57 - 6.52a + c

283
+3.48
+4.18
June 4, 1883

+4.1
+3.95
+1.06

-230
+3.45
+4.14

+0.7
+1.29
+1.29

+1.5
+1.5
+1.01

104
C. W.
1941 Mr. Min.
+76° 16

+0.1
C. W.
Herculis
+19° 26

+0.1
C. W.
Herculis
+76° 2

104
C. E.
Herculis
+76° 2

+0.8
Herculis
+39° 9

+0.3
H. Oph.
+7° 33

16 18 540
48
196
340
489 1946
+2 56.50

16 38 50
9.5
140 14.08
18.4
232

16 51 333
364
40.3
43.9
475 40.34

16 16 32.0
35.7
39.4
43.0
46.4 39.36

19 17 21 15.96
32.4
47.1
22
170 47.28
1 25.00
21 15.28

38 32.6
37.0
41.5
46.1
50.5 41.54

54.7
58.3
2.0
5.5
9.1 1.92

16 14 0.7
10.4
20.4
40.1
57.9 30.30

54.2
58.0
1.9
5.6
9.3 1.80

38 59.8
4.4
9.0
13.5
18.1 8.96

52 16.4
20.0
23.7
27.0
30.8 23.58

17 16.8
20.6
24.4
38.0
31.9 24.34

16 22 13.5
28.4
42.7
57.7
12.1 42.88
-1 28.00

39 37.5
32.0
36.5
41.0
45.6 36.52

37.9
41.5
45.0
48.7
52.2 45.06

23 41.4 21 14.88
56.1
11.1
25.4
40.5 14.90
-2 56.50

54.7
59.3
3.8
8.5
13.0 3.86

59.3
53 3.0
6.5
10.3
12.8 6.62

14 30.30
-0.2
14 30.24
+13

17 1.13
-0.2
17 1.81
+0.4

21 15.62
-0.6
21 15.56
+13

21 14.40
21 14.64
21 14.88
+1.43

39 9.00 8.99
-0.2
+0.4

52 23.50
23.01
23.48
+0.3

30.38
13.87
+16.50

17 1.85
46.54
+13.33

21 15.54

21 14.77

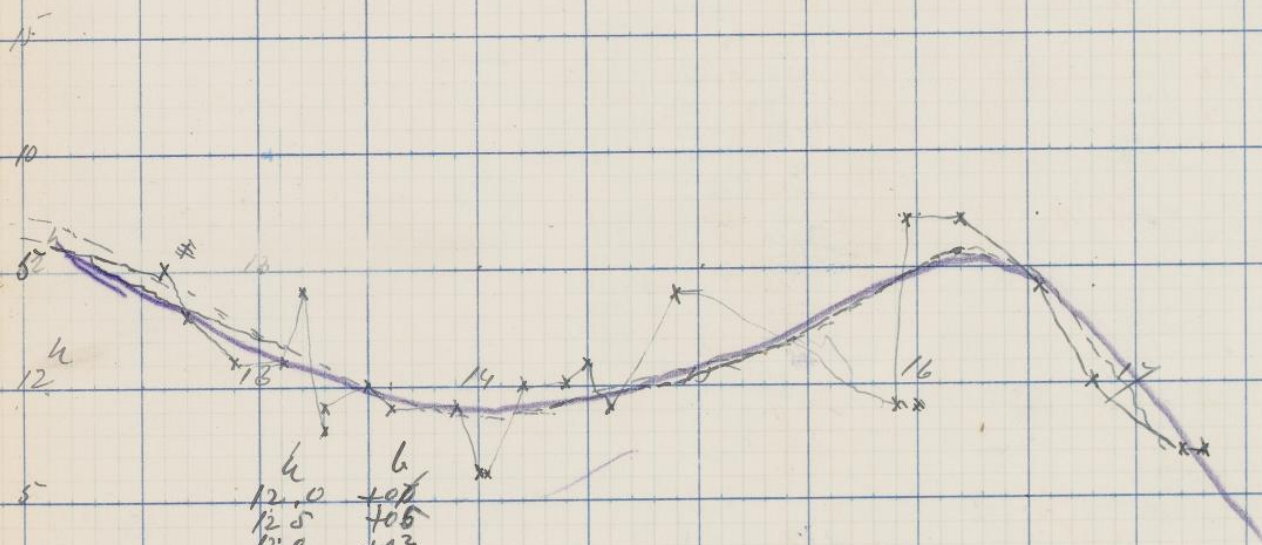
39 9.02
56.084
+12.88

52 23.43
10.86
+12.56

CW 21 15.62
CE 21 14.64
0.98
0.49
log 9 6902.0
log 9 3526.6
9.07286
C = +1.2
+30
-42
C = +2.1

Level curves

S	T	b	b	S	T	b	b	S	T	b	b
12	35	+25	+05	13	51	-05	-01	15	53	-10	-01
12	41	+23	+03	13	58	-23	-04	15	56	+52	+07
12	55	+08	+01	14	1	-32	-04	16	10	+55	+07
13	4	+05	+01	14	14	+00	+00	16	33	+30	+04
13	10	+32	+04	14	23	-02	+00	16	48	+00	+00
13	15	-17	-02	14	28	+05	+01	17	12	-25	-03
13	21	-08	-01	14	36	-08	-01	17	15	-23	-03
13	32	+23	+00	14	56	+32	+04				
13	36	-08	-01								



S	T	b	b
12	0	+05	+05
12	5	+05	+05
13	0	+02	+02
13	5	+00	+00
14	0	-01	-01
14	5	-01	-01
15	0	+01	+01
15	5	+02	+02
16	0	+04	+04
16	5	+09	+09
17	0	-01	-01
17	5	-03	-03

$$0 = -1231 + 13.86a + 30.0c$$

$$0 = -8.64 + 3.08a + 21.00c$$

$$0 = -4.00 + 4.50a + c$$

$$0 = -41 + 15a + c$$

$$a = +.82$$

$$c = +.29$$

+67	+29	-38	-35
+55	-29	+26	-2
+54	-29	+25	-9
+66	+29	-37	-105
+44	-29	+15	-14
+64	-29	+15	-05
-91	+29	-62	-49
+41	-29	+12	+8
+39	-19	+28	+00
-72	-29	-101	+10
-70	-29	-105	-9
-72	-29	-101	+08
-75	-29	-104	+01
-50	-29	-109	+11
-80	-29	-115	-01
-84	-29	-113	+0
-65	-29	-94	+7
-66	-29	-95	-15
-66	-29	-95	+10
-66	-29	-95	-11
-35	+29	-06	+45

$$0 = -16.17 + 11.11a + 6.47c$$

$$-9.98 + 6.47a + 17.00c$$

$$0 = -173 + 168a + c$$

$$0 = -587.38 + c$$

$$a = +.88 \quad c = +.25 \text{ for } c$$

June 4 - 1883 Clock Exchange Signals between Cambridge & Montreal

		M.	C.			M.	C.
10	6	0.0	15 9 52.40	10	12	0	15 16 53.55
		10	10 2.43			10	17 3.57
		20	10 12.47			20	17 13.65
		30	10 22.50			30	17 23.63
		40	10 32.50			40	17 33.67
		50	10 42.55			50	17 43.70
			17.64				18.63
			.48				
7	0		10 52.60	14	0		17 53.74
		10	11 2.60			10	18 3.76
		20	11 12.63			20	18 13.79
		30	11 22.66			30	18 23.80
		40	11 32.67			40	18 33.82
		50	11 42.72			50	18 43.88
			17.65				18.70
8	0		11 52.75	15	0		18 53.90
		10	12 2.77			10	19 3.90
		20	12 12.79			20	19 13.98
		30	12 22.80			30	19 24.00
		40	12 32.82			40	19 34.00
		50	12 42.89			50	19 44.00
			.80				18.76
9	0		12 52.90				
		10	13 2.90				
		20	13 12.93				
		30	13 22.97				
		40	13 32.98				
		50	13 43.03				
			.95				
10	0		13 53.05				
		10	14 3.05				
		20	14 13.08				
		30	14 23.13				
		40	14 33.18				
		50	14 43.23				
			18.12				
11	0		14 53.22				
		10	15 3.28				
		20	15 13.27				
		30	15 23.30				
		40	15 33.35				
		50	15 43.39				
			18.30				
12	0		15 53.35				
		10	16 3.40				
		20	16 13.45				
		30	16 23.49				
		40	16 33.57				
		50	16 43.54				
			18.46				

June 5th, 1883

M.C.

β Urs Maj
+57° 1'

α Urs Maj
+62° 123'
9.66610

δ Urs Maj
+45° 8'

ϵ Leonis
21 9

γ Pegasi
+79° 36'

ρ Polaris

10.54 23.4
27.3
31.0 31.02
34.8
38.6

46.2
50.0
53.7
57.5
11.3 1.34
5.1
9.0
12.7
16.6

24.2
28.0
31.8 31.78
35.5
39.4

55 1.370
1340
54 47.94
+ 13.37

10.56 —
+3555 9.0 44.55
+31.11 13.4 44.51
+26.46 17.9 44.56
44.59

26.8
31.3
35.7
40.0
44.7 44.61
49.0
53.5
58.0
2.5

11.3
15.8
20.2 20.28
24.8 35.55
29.3 44.73

56 44.627
44.597
56 31.381
+ 13.28
19

11.2 50.8
53.8
56.7 56.70
59.7
2.5

8.3
11.2
14.1
17.3
20.1 20.09
23.0
26.0
29.0
31.8

37.6
40.6
43.6 43.54
46.5
49.4

3 20.105
20.085
3 6.61
+ 13.47

11.7 46.5
48.7
51.0 50.90
53.0
55.3

59.7
2.0
4.2
6.3
8.6 8.60
10.8
13.0
15.3
17.5

21.9
24.0
26.3 26.30
28.5
30.8

8 8.600
8 8.580
7 59.99
+ 13.59

22.37 23.0
25.3
27.7 27.72
30.1
32.5

39.3
39.7
42.0
44.4
46.8 46.76
49.0
51.4
53.9
56.3

1.0
3.4
5.7 5.72
8.0
10.5

37 46.740
46.720
37 33.38
+ 13.33
41.333

14 47.7
14 44.5
15 16.5
15 49.0
16 16.5
16 44.5
17 16.8
17 46.0
18 11.5

16 15.43
16 16.1
54.54
+ 21.70
17

Results from the Meridian Circle Observations

Brown Observer

June 2	h	s	h	s	h	s	h
	10.9	47.7	14.70	15.0	14.68	14.680	
4	12.2		13.85 +.018	15.0	13.80	13.795	
4	1.3		13.63 +.017	15.0	13.79		
5	11.0		13.48 +.015	15.0	13.42	13.425	
5	22.8		13.22 +.014	15.0	13.43		

June 5th 1883

M. C.

α Cephei +16° 35' 9.61634	α Piscis Austr -30° 15'	α Pegasi +14° 34'	α Cephei +16° 59' 9.35263	Polaris U.S.
22.44 57.0 2.0 7.0 6.94 11.9 16.8	22.51 2.8 5.1 7.5 7.54 10.0 12.3	22.58 50.2 52.4 54.4 54.46 56.6 58.7	23 — — — —	13
27.0 32.0 36.8 41.5 46.86 46.9 52.0 56.8 6.0 6.7	17.1 19.4 21.8 24.2 26.7 26.64 29.0 31.4 33.8 36.3	3.0 5.2 7.3 9.4 11.6 11.58 13.8 15.8 18.0 20.1	— — — — — — — — — — 35.18 7.2 34.48 9.1 27.16 6.3 48.86 36.58 25.5 48.92 48.90	50 51 52 53 54 55 56 57 58 59 60 61 62
17.0 22.0 27.1 27.00 31.9 37.0	41.0 43.3 45.8 45.80 48.2 50.7	24.4 26.5 28.7 28.70 30.9 33.0	44.2 53.4 2.5 2.50 11.5 73.17 20.9 47.33	16 5.0 17 3.24 18 3.8 19 4.1 20 5.8 21 8.1 22 7.1
44 46.915 46.875 33.75 +13.12	51 26.655 26.635 12.93 +13.64	59 11.580 11.560 58.06 +13.50	34 49.115 47.045 36.26 +12.88	16 5.78 16 5.10 15 55.50 9.60

$$\begin{array}{r}
 10.9 \quad 0 = +13.27 \quad +1.15m \quad +.62 \quad +13.99 \\
 10.9 \quad 13.19 \quad +1.09 \quad +.76 \quad .95 \\
 11.0 \quad 13.47 \quad +1.00 \quad +.40 \quad .87 \\
 11.1 \quad 13.59 \quad +1.39 \quad +.16 \quad .78 \\
 \hline
 11.0 \quad 13.41 \quad +1.21 \quad \quad 13.89
 \end{array}$$

$$\begin{array}{r}
 b = .04 \\
 47m = -13.89 \\
 m = -41 \\
 -13.48
 \end{array}$$

$$\begin{array}{r}
 13.3 \quad 0 = +2.17 - 43.51m \\
 13.41 \quad +1.21 \\
 17.76 - 44.72 \quad m = -40 \\
 m = -.05 - 36 = -41
 \end{array}$$

$$\begin{array}{r}
 22.8 \quad 0 = +13.33 \quad +.57 \quad +.08 \quad 13.41 \\
 22.9 \quad 13.64 \quad +.58 \quad +.08 \quad 13.56 \\
 23.0 \quad 13.52 \quad +.26 \quad +.03 \quad 13.53 \\
 \hline
 22.8 \quad 13.49 \quad +.08 \quad \quad 13.50
 \end{array}$$

$$\begin{array}{r}
 22.7 \quad 0 = +13.12 + 2.20 \\
 23.5 \quad +12.78 + 2.33 \\
 1.3 \quad +9.60 + 4.35
 \end{array}$$

$$\begin{array}{r}
 0 = -37 + 2.12 \quad m = -17 \\
 -7.1 + 4.25 \quad 17 \\
 -3.88 + 4.43 \quad -09 \quad m = -14
 \end{array}$$

$$\begin{array}{r}
 47m - 11.0 = -10.54 \quad h = +.13 \\
 22.8 \quad -13.47 \\
 32 \\
 15.0 = -13.45
 \end{array}$$

$$\begin{array}{r}
 b = .04 \\
 m = b \sec \phi - m \tan \phi \\
 = +.08 - 13 = -12.92 \\
 47m = -13.50 \\
 m = -28.18 \\
 22.8 \quad 47m - 13.47 \\
 13.52
 \end{array}$$

-44
+1.76
+1.82

June 5, 1883

$\Delta = -0.84$
C.E.

E Urs. Maj
+56° 35'

+52
+88
+1.02

-0.24
C.E.

E Virginis
+111° 35'

+27
+1.10
+1.14

-0.24
C.E.

43 Comae
+28° 23'

+98
+46
+1.08

-0.05
C.E.

8 Hydrae
-22° 34'

+81
+61
+1.02

-0.05
C.E.

E Virginis
-10° 33'

12 47 37.8
44.0
50.3
56.8
3.1 52.40

48 16.3
22.8
29.0
35.8
42.0 29.18

48 55.0
1.3
7.7
14.3
20.6 7.78

49 33.7
39.9
46.4
52.8
59.3 46.42

50 12.1
18.7
25.0
31.4
37.9 25.02

49 7.76
-0.23
-1.47
49 7.5566
54.75
+1.284
91

12 55 45.3
48.8
52.5
56.0
59.6 52.44

56 7.0
10.3
14.0
17.7
21.4 14.08

56 28.6
32.1
35.9
39.5
43.0 35.82

56 50.2
53.9
57.6
1.3
4.9 57.58

57 12.0
15.7
19.4
23.0
26.6 19.34

56 35.85
-0.2
-0.43
35.7580
23.63
4 +12.16
+ 49
- 20

13 5 43.4
47.2
51.4
55.2
59.4 57.32

6 7.4
11.4
15.4
19.5
23.6 15.26

6 31.7
35.7
39.6
43.7
47.8 39.70

55.8
59.8
4.0
7.9
12.0 3.90

20.0
24.1
28.3
32.2
36.2 28.16

6 39.67
-0.2
-0.44
6 39.5661
24.12
+12.48
9

13 11 54.7
58.7
62.4
66.4
70.0 2.44

12 17.9
21.7
25.6
29.3
33.3 25.56

13 41.0
44.9
48.7
52.5
56.4 48.70

41.0
44.9
48.7
52.5
56.4 48.70

14 4.0
8.0
11.5
15.5
19.5 11.70

13 45.62
-0.2
-0.4
13 45.54
36.73
+11.86
+11.70

13 18 26.0
29.8
33.3
37.0
40.5 33.32

18 47.8
51.4
55.0
58.7
62.4 54.98

19 9.6
13.0
16.6
20.3
24.0 16.70

31.0
34.8
38.3
42.0
45.5 36.32

52.7
56.3
59.9
63.6
67.2 59.94

19 16.65
-0.2
-0.3
19 16.60
4.65
+11.85
16

-1.74
+2.94
+3.42
June 5, 1883
b = -0.85
CE 4A = -0.6
2001
+73.80

+3.01
-1.39
-3.32
-0.85
C.E.
40 Cass. L.C.
+107.33
92.27

-20
+1.54
+1.53
-0.76
C.E.
4 Wrs. May
+49.54

+4.42
+97
+1.06
-0.86
C.E.
4 Bootes
+18.59

+29.3
-1.32
-3.21
-0.86
C.E.
50 Cass
108.9
71.51

13

13 26 38.4
50.4
27 2.4
13.9
25.7 2.16

13 41 54.0
59.5
4.8
10.4
15.7 4.88

13 48 29.6
33.0
36.8
40.4
44.2 36.80

21 18.3
22 0.6
12.8
25.0
36.9 12.70

27 49.0
28 0.9
12.5
24.5
36.0 12.56

42 26.8
32.4
38.0
43.5
49.0 37.94

48 52.0
55.6
59.2
3.0
6.8 59.32

23 1.8
13.0
25.8
37.3
49.8 25.54

28 59.8
29 11.2
23.0
34.8
46.7 23.10

43 0.2
5.3
10.9
16.7
22.2 11.06

47 14.3
18.0
21.7
25.4
29.2 21.72

53 16.9
28.0
39.7
51.2
2.3 39.62

24 14.2
26.0
138.3
50.8
3.0 38.46

30 10.4
22.0
34.0
45.6
57.0 33.80

33.0
38.5
44.0
49.3
55.0 43.96

49 36.9
40.6
44.2
48.0
51.8 44.30

31 21.0
32.3
44.4
55.7
32 7.7 44.22

44 6.0
11.5
17.0
22.8
28.2 17.10

59.4
3.0
6.9
10.6
14.3 7.04

23 25.57
-0.6
-2.15
23 25.57
23 11.17 -0.6
+14.25

29 23.17
+0.5
+0.87
29 23.3029
18.97
+9.38
10.2

43 10.99
-0.2
-1.09
43 10.878
58.6912
+12.85
6

49 21.84
-0.2
-0.86
49 21.781
9.45
+12.29
31

13 53 39.62
+0.5
+1.18
53 39.6275
29.4956
+10.80
1.19

$$0 = +12.16 + 5.2a + 10.2c + 41.115 + 5.6$$

$$+11.86 + 3.8 + 1.05c + 1.16 + 1.6 + 1.32$$

$$12.29 + 4.2 + 1.06c + 5.50 + 1.6 + 1.66$$

$$11.95 + 1.1 + 1.02c + 9.6 + 1.1 + 1.11$$

$$0 = +12.88 - 4.4a + 1.82c - 5.2 + 2.7 - 2.8$$

$$+12.47 + 2.7a + 1.14c + 3.1 + 1.7 + 1.46$$

$$12.88 - 2.0a + 1.05c - 2.4 + 2.3 - 1$$

$$+12.39 + 2.8a + 1.13c + 4.33 + 1.7 + 1.50$$

$$+12.16 + 6.5 + 2.5 + 9.0 + 13.06$$

$$+11.6 + 1.22 + 2.7 + 4.48 + 13.363$$

$$+12.29 + 5.2 + 2.4 + 7.79 + 13.08$$

$$+11.85 + 1.01 + 2.5 + 1.26 + 13.21$$

$$+12.88 - 5.5 + 4.4 - 1.0 + 12.48$$

$$+12.47 + 3.4 + 2.8 + 6.2 + 13.09$$

$$+12.78 - 2.5 + 2.9 + 1.4 + 12.92$$

$$+12.39 + 3.5 + 2.8 + 6.3 + 13.02$$

$$+13.02$$

$$0 = +12.97 + 0.68a + 1.04c$$

$$0 = +14.18 - 1.74a + 2.92c$$

$$0 = +9.33 + 3.01 - 3.32$$

$$0 = +10.07 + 2.83 - 3.27$$

$$0 = +13.53 - .90 - 2.86$$

$$0 = +18.04 - 2.83 + 4.85$$

$$0 = +2.06 - 2.42a + 2.88c$$

$$-2.74 + 2.33a - 4.36c$$

$$-2.00 + 2.25a - 4.25c$$

$$+ 4.46 - 1.58a - 3.40c$$

$$+ 2.97 - 3.51a + 3.61c$$

$$0 = +5.7 - 1.04a + c$$

$$+ 6.3 + 5.3 - c$$

$$- 4.7 + 5.3 - c$$

$$+ 4.3 - 4.7 - c$$

$$+ 7.8 - 9.2 + c$$

$$c = +25$$

$$+10.9$$

$$(1.66)$$

$$+1.17$$

$$+1.86$$

$$+1.45$$

$$+1.12$$

$$+1.24$$

+28
+1.09
+1.13

-90
+218
+2.36

-2.7683
+3.9254
+4.6585

+240
-1.84
-2.54

-0.86
CE

11 Bootis
+29° 57'

-0.86
CE

α Draco
+64° 56'

-1.45
CE

4 Urs Minor
+78° 46'

-1.45
CVR

4 Urs Minor
+78° 46'

-1.45
CVR

1 Cass
113° 8'
66 52

13 58

11 2
15.0
19.0
23.0
27.0 19.04

13 59 32.2
40.7
48.7
57.1
5.7 4888

55 35.2
39.0
43.0
47.2
51.0 4308

14 0 22.3
31.0
39.0
47.6
55.8 39.14

14 7 19.7
37.0
53.8
11.3 143.05
28.8 54.12
32.40

55 59.2
3.3
7.2
11.4
15.3 7.28

1 13.0
21.3
29.0
37.5
46.2 2940

9 2.7 37.17
19.9
37.5
54.4
11.9 37.28

56 23.5
27.4
31.4
35.4
39.3 3140

2 3.1
11.0
20.0
28.1
36.8 1950

56 47.4
51.4
55.5
59.4
3.6 55.46

3 53.0
1.5
9.7
18.5
26.7 9.88

56 7.25
-0.2
56 7.136
84.74
+12.58
42

1 29.42
-0.4
-20.13
29.425
15.65
+13.50
60

9 37.22
-0.7
+3.20
9 36.46 37.05
21.82
+15.04
2.3

C = +23
9 37.82
-1
+12.20
9 39.57 25
21.82
+17.75
43

2 19 37.45
+0.04
+0.02
+0.01
37.4584
27.4591
+19.65
0.83

+2.99
-1.87
-3.39

June 5 1883 $\Delta = +107^3$

-59
+1.90
+1.99

+0.5

-201
+3.19
+3.77

+0.5

-285
+3.85
+4.57

+0.8

+98
+46
+1.08

+0.8

+94
+50
+1.06

+0.8

cm

36 H Camel
107° 42'
92 48'

cm

4/2 2164
+59° 46'

cm

13 Uro Min
+74° 38'

cm

3 Uro Min
+78° 9'

cm

18 Scorpii
-22° 17'

cm

18 Scorpii
-19° 29'

23.0
14 24 34.3
46.4
58.0
9.2 46.18

14 47 6.5
13.4
20.3
27.9
34.4 2050

15

15 52 47.6
51.2
55.0
58.8
2.6 5504

15

25 33.3
45.1
56.2
8.0
19.8 56.48

18.7
55.8
2.9
9.7
16.7 276

46 55.3
58.0
10.5
27.8 52.80

53 10.4
14.0
18.0
21.8
25.5 1794

58 24.0
27.7
31.3
35.2
29.0 31.44

26 43.2
54.6
6.1
18.0
29.7 6.32

48 31.0
38.0
45.2
52.2
59.0 4508

14 50 56.6
8.8
23.0
36.3
49.6 2286

48 2.0
19.2
36.6
54.3
11.7 36.56

53 33.2
37.0
41.0
44.9
48.7 4096

58 46.5
50.4
54.0
57.4
1.4 54.00

27 53.3
5.0
15.9
28.3
39.5 16.40

49 13.2
20.3
27.1
34.4
41.6 2732

48 4.4
50 4.2
20.8
37.0
55.0 2.00

53 56.4
0.1
3.9
7.6
11.6 5.92

59 9.0
12.8
16.4
20.3
24.0 16.50

29 2.8
14.9
26.1
37.8
49.8 26.28

55.4
2.6
9.5
16.4
23.4 9.52

54 19.3
23.2
27.0
30.8
34.7 27.00

27 6.33
+0.5
-0.74
27 16.34
26 57.46
+8.88

48 45.04
-0.3
+1.0
48 45.11
30.50+0.9
+14.31
+1.22

50 22.86
-0.4
+1.6
22.98
6.25
+16.73

36.56
-0.7
+1.32
48 36.84
19.01
+18.74
17.00

53 40.97
-0.2
+0.3
13 40.98
24.784
+12.284

58 53.98
-0.2
+0.34
58.98+0.1
41.789
+12.28

+55
+1.86
+1.93
June 5th 1883

+0.78
CW 4 α = -0.9
 θ Draconis
+45° 15'
+58.53

-0.7
+1.29
+1.42

+0.5
CW
 θ Herculis
+45° 15'

-2.33
+3.48
+4.18

BW
19 Urs Minor
+76° 10'

+4.1
+9.8
+1.06

CW
 γ Herculis
+19° 26'

-2.30
+3.45
+4.14
+1.05

CW
 η Urs Minor
+76° 2'

-7.0
+2.00
+2.12
+0.9

4 α = 1.4
CW
 θ Draconis
+61° 48'

16 4 41.0
46.2
51.1
56.0
1.2 51.10

15 59 45.0
51.8
58.9
51.5
12.3 58.70

5 11.3
16.32
21.4
26.3
31.4 21.34

5 41.6
46.7
51.6
56.7
1.7 51.66

no Ephemeris

20 46.5
21 1.3
16.0
30.8
45.9 16.06

16 22 17.0
24.2
31.9
39.4
46.8 31.56

23 1.9
9.4
16.9
24.6
31.8 16.92
45.02
23 47.2 31.50
54.5
22.2
9.6
17.5 22.0
30.06

no Ephemeris

59 58.70
-0.25
59 58.70
49 11.9-0.9
14.12
12

5 21.37
-0.2
5 21.45

CW

Polaris.

$$0 = +12.24 + 9.62 1.9/C$$

$$0 = +17.75 - 2.83a - 4.15c$$

$$0 = +6.83 + 2.99a + 3.29c$$

$$0 = +16.73 - 2.01a - 3.77c$$

$$0 = +17.83 - 2.85a - 4.67c$$

$$\begin{aligned} \theta &= +14.31 - 8.9a - 1.98c + 4.77 \\ &+12.25 - 7.8a - 1.05c \\ &+12.23 - 7.9a - 1.06c \\ &+14.05 - 8.5a - 1.93c \\ &+14.53 - 7.0a - 2.12c \end{aligned}$$

$$\begin{aligned} \theta &= +15.53 - 3.79a - 5.52c \\ &- 3.39 + 2.03a + 2.22c \\ &+ 4.49 - 2.87a - 4.14c \\ &+ 0.69 - 2.81a - 5.94c \\ &c = +25 \mu c. 2 \end{aligned}$$

$$\begin{aligned} 0 &= +12.24 + 11.3 - 27 + 13.10 \\ &14.31 - 51 - 50 \quad 13.10 \\ &12.25 + 11.6 - 27 \quad 13.14 \\ &12.23 + 11 - 27 \quad 13.07 \\ &14.05 - 65 - 48 \quad 12.92 \\ &14.53 - 83 - 53 \quad 13.14 \end{aligned}$$

$$0 = +23 - 6.4a - c \quad a = +1.06$$

$$= +1.53 + 9.1a + c \quad +1.40$$

$$= +23 - 6.1 - c \quad +1.11$$

$$= +26 - 6.4 - c \quad +1.14$$

$$a = +1.18$$

$$\begin{aligned} 4T &= -13.08 \quad CW \\ &13.02 \quad CE \end{aligned}$$

$$4T = 13.05$$

+38
+101
+108

June 5th 1883

Polaris -
June 5 - Morning -

+09

CW

$5 \frac{1}{2} 109$

B. Hircalis
+21° 45'

16 24

56.7

0.6

4.4

8.2

12.0

456

25

25

19.6

23.4

27.2

31.0

35.0

2724

25

42.6

46.5

50.2

54.0

57.9

5024

25 27.28

25 27.28

0.2

7.08

25 27.36

14.42

+12.93

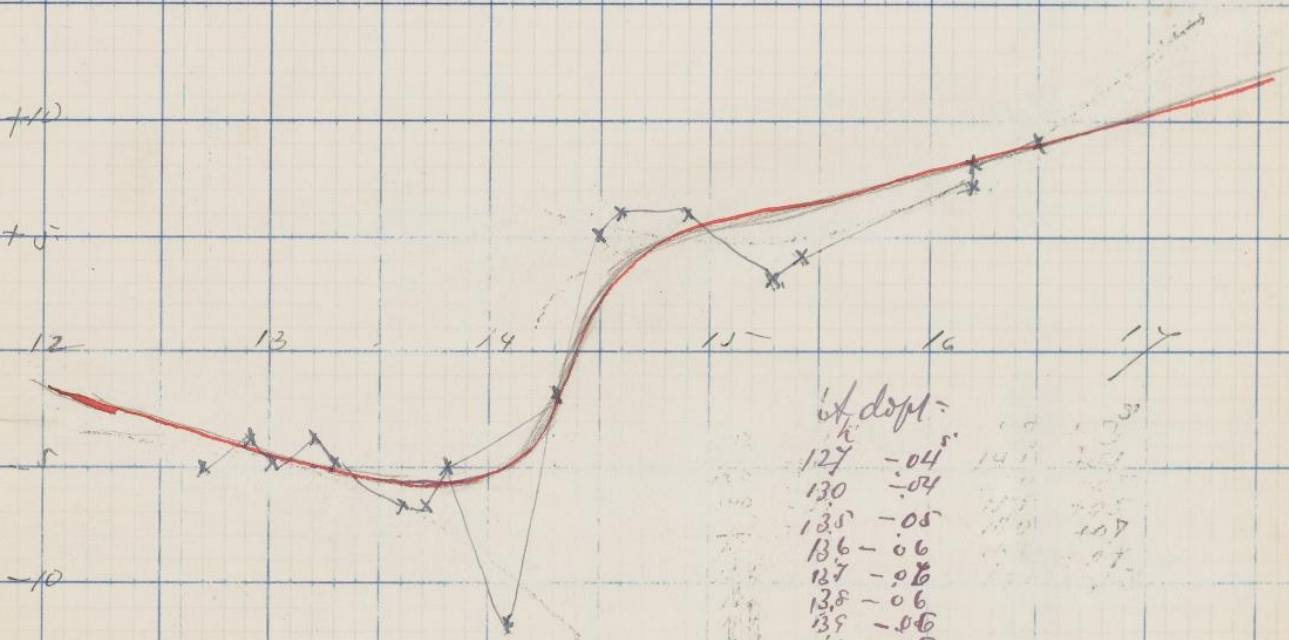
Levels June 5

C. E.

12.7	0 -35	05
12.7	-33	-04
12.9	-30	-04
13.0	-35	-05
13.2	-30	-04
13.3	-35	-05
13.6	-52	-07
13.6	-60	-08
13.7	-57	-07
13.8	-42	-05
14.4	-92	-12
C. 14.1	-90	-12
C. 14.3	-17	-02

C. M.

14.3	-17	-02
14.3	-17	-02
14.5	+35	+05
14.6	+45	+06
14.9	+43	+06
15.3	+20	+03
15.4	+28	+04
16.2	+60	+08
16.2	+52	+07
16.5	+67	+09



ix dept =

12.7	-04
13.0	-04
13.5	-05
13.6	-06
13.7	-06
13.8	-06
13.9	-06
14.0	-05
14.1	-05
14.2	-04
14.3	-02
14.4	+00
14.5	+02
14.6	+03
14.7	+04
14.8	+05
14.9	+05
15.0	+06
15.5	+07
16.0	+08
16.5	+09

June 5-1883

2. M. C.

10	4	0	15	11	48.74
	10				58.75
	20		12		8.80
	30				18.78
	40		12		28.82
	50				38.85
					13.96

5	0		12		48.90
	10				58.95
	20				9.00
	30				18.80
	40				29.00
	50				39.00
					14.11

6	0		13		49.00
	10				59.08
	20				9.12
	30				19.02
	40				29.20
	50				39.20
					26

7	0		14		49.18
	10				59.15
	20				9.27
	30				19.15
	40				29.32
	50				39.35
					40

8	0		15		49.34
	10				59.38
	20				9.43
	30				19.32
	40				29.47
	50				39.50
					56

M. C.

10	9	0	15	16	49
					50.52
		10			59.41
		20			9.58
		30			19.48
		40			29.67
		50			39.70
					14.73

10	0		17		49
					50.70
		10			59.60
		20			9.77
		30			19.64
		40			29.78
		50			39.82
					14.88

11	0		18		49
					50.83
		10			59.74
		20			
		30	19		19.77
		40			30.00
		50			40.00
					15.04

Personal Equation Observations between
W. R. and C. H. M.
with Mortimer Prange

June 13th 1885

C.

Loy.

Palmyre
1.51541
1.19668
1.19676
1.51512

R

L. 9.99962
109 110 + 2 23L. 9.98381
14 14 - 15 33L. 9.70202
14 48 + 59 46L. 9.42324
14 51 + 74 38L. 9.57677
14 57 + 40 51L. 9.99468
15 10 - 8 5714 110 + 2 23
9 12 + 44 0 214 14 - 15 33
9 16 + 57 5614 48 + 59 46
9 20 + 42 2314 51 + 74 38
9 23 + 32 4114 57 + 40 51
9 2515 10 - 8 57
9 42 + 51 2011 26.7
34.59
37.2
42.5 37.24
47.7 32.50
10.0015 29.2
15 34.4
20.0
45.5
51.0 40.06
51.0 44.9118 50.2
19 0.3
10.9
21.3
31.6
10.86
6.1307
15.98328 21.2
28.3
35.3
42.2
49.2
35.24
43.31
18.5849.1
51.7
54.2 54.28
56.9 15.72
59.5 10.0052.5 140.6
55.5
58.0 57.14
0.4 18.30
33 14.1934.2
39.2
44.8
50.0
55.2
44.68
31.249
15.98330.8
29 20.8
51.7 51.16
1.3 + 59.32
11.2 50.4828 51.0
28 54.5
57.7 57.88
1.5 + 20.76
4.7 18.6416 8.88
11.6
14.3 14.20
16.8
19.522 30.4 33.8 37.4
40.6 43.7 47.4
50.3 53.5 57.0
60.5 3.7 7.0
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50.48
50.44
50.4611.8
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18.7 18.70
22.0
25.742 22.8
25.4
27.9 27.90
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33.238.5
41.24
43.6 43.66
15.92
46.5 27.94
49.3R 11 10.00
M 11 10.01
R-M -0.0114.19
14.13
+0.0615.90
15.87
+0.0350.47
50.44
+0.0318.02
18.71
-0.0827.92
27.92
+0.1016 25.1
27.8
30.3 30.46
33.1 16.33
36.0 14.1337.3
42.7
48.0 48.20
53.8 33.99
59.2 14.2120 15.8
10.8
15.8 15.92
21.0
26.541 44.0
49.3
54.6 54.66
0.1 + 33.20
5.3 27.8642 6.6
9.4 12.08
12.2 + 15.91
14.8 27.99
17.412 20.4
23.1
23.7 25.70
28.3 15.75
31.0 9.9537.3
42.7
48.0 48.20
53.8 33.99
59.2 14.2120 36.6
42.0
47.0 47.06
52.4 31.24
57.3 10.8223 30.2
39.6
50.1 49.78
59.3 59.36
9.7 50.4220 32.6
29 36.0
39.7 39.52
43.1 20.80
46.2 18.7242 6.6
9.4 12.08
12.2 + 15.91
14.8 27.99
17.412 20.4
23.1
23.7 25.70
28.3 15.75
31.0 9.9537.3
42.7
48.0 48.20
53.8 33.99
59.2 14.2120 36.6
42.0
47.0 47.06
52.4 31.24
57.3 10.8223 30.2
39.6
50.1 49.78
59.3 59.36
9.7 50.4220 32.6
29 36.0
39.7 39.52
43.1 20.80
46.2 18.7242 6.6
9.4 12.08
12.2 + 15.91
14.8 27.99
17.412 20.4
23.1
23.7 25.70
28.3 15.75
31.0 9.9537.3
42.7
48.0 48.20
53.8 33.99
59.2 14.2120 36.6
42.0
47.0 47.06
52.4 31.24
57.3 10.8223 30.2
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50.1 49.78
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9.7 50.4220 32.6
29 36.0
39.7 39.52
43.1 20.80
46.2 18.7242 6.6
9.4 12.08
12.2 + 15.91
14.8 27.99
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23.7 25.70
28.3 15.75
31.0 9.9537.3
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48.0 48.20
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59.2 14.2120 36.6
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47.0 47.06
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57.3 10.8223 30.2
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50.1 49.78
59.3 59.36
9.7 50.4220 32.6
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46.2 18.7242 6.6
9.4 12.08
12.2 + 15.91
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17.4

[illegible]

June 13

1.51541

1.19609

1.19676

1.51512

Scorpius 9.96629

Scorpius 9.97439

Scorpius 9.97696

Scorpius 9.31250

Scorpius 9.71331

Revised

15 53 -22 17

15 58 -19 29

15 43 +18 30

15 48 +78 9

15 59 58 53

A 15 53 -22 17

B

24 41.7

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474 47.26

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527 4.24

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20 10.9

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162 16.24

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328 32.76

354 16.69

383 16.07

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482

508 50.84

564 34.73

2.0 16.17

15 23

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78 5.54

106 7.86

134

189

217 24.38

244 16.59

271 8.77

298

314

368

423 42.56

480 34.53

583 7.83

18 10.9

333

364 36.26

489 +76.49

18 52.78

19 274

317 533 19.7

360 572 14.3

407 19 183

445

489 53.05

512 31 383

519 4.34

60 48.4 46.44

97 534 -30.44

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R

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413

3.94

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16.14

16.04

+1.0

9.83

7.69

+1.9

52.90

52.56

+3.4

18.00 20

18.30 10

+2.0

29 301

360

411 41.28

468 34.73

534 16.03

538

567

593 59.38

22 116.66

49 16.04

14 322

278

332 33.22

387 34.55

441 8.16

455

483

509 51.06

538 16.56

568 54.8

7.62

B

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238 17.00

364 3.94

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336

392 29.34

450 35.39

509 3.96

20 11.9

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18.2

20 440

558

74 9.16

221 36.66

345 52.56

D

32 12

113

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215.7

63.36

18.20

18.20

L. No. 9.95304
 β Scorpii
 16 22 -26 10
 10 54

9.96793
 β Herculis
 16 25 +21 45
 10 58

9.98266
 η Ursae Min
 16 20 +76 2
 10 52

δ Draconis
 16 28 +69 1
 11 00

3 Ophiuchi
 16 30 -10 20
 11 02

Ca. 144
 16 33 +104 16
 11 05

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58 463
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53 426
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52 - 249 388 59 292 416 507
 - 282 423 374 434 531
 - 319 464 839 462 558
 - 357 497 363 485 582
 213 388

56 553
 580
 10 0.88
 3.6 -1691
 6.5 -43.97

5 30.0
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57 80
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 19.2 19.22
 34.7 -35.26
 30.6 43.96

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56 57.3
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 8.3 8.44
 14.1 +35.25
 19.6 43.69

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 26.7 26.82
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 57 5.78
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 114 48.28

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 308 -36.51
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June 13

LN 9.58958
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 11 10

9.13078
 e Mirae Mir 16 58 +82 14
 11 30

9.27668
 Haniel 17 3 +100 54
 11 35

9.73630
 Lu. 23 77 16 43 +56 59
 11 15

9.99394
 K Ophioidia 16 52 +9 33
 11 24

9.98591
 Medusa 17 2 +15 31
 11 45

A

9 273
 342
 410 4096
 478 +4222
 545 2318

22 523
 577
 30 300
 83 +3320
 137 3620

39 597
 40 48
 101 1026
 158 +3382
 310 4410

B

564
 894
 29 290
 63 +2024
 95 2314

26 511
 27 105
 297 2978
 495 +11641
 91 2619

23 150
 175
 202 2024
 229 +1595
 256 3619

222
 381
 378 2780
 306 +1625
 333 4405

C

+ 10 164
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28 474 195 447
 537 248 570
 597 320 572
 29 62 387 44
 127 2554

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 63 6.26
 307 -8319
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 27 2.48
 72 -2883
 130 33.65

36 417
 87 84
 369 3650
 88 47 -173.16
 31.8 4234

144
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 336 3366
 433 -6013
 530 3353

2315
 2285
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2586
 2452
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4321
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 +.32

8359
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 +.21

3624
 3603
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4409
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 +.19

A

32 500
 33 56
 201 1962
 339 +53.06
 485 42.68

43 138
 338
 330 3330
 432 +6009
 527 3339

B

34 154 892 570
 194 433 2.1
 249 476 5.4
 389 524 10.8
 326 4310
 392
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 45 4.50
 92 +2887
 142 3337

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E

+ 10 365
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 432 43.18
 465 -20.25
 479 22.93
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 48 502
 118 -4225
 184 2277

30 429
 31 .08
 214 2102
 400 -116.50
 00 2452

23 466
 494
 518 5198
 547 1593
 574 3605
 588
 88
 91 924
 148 3323
 300 8601

40 548
 575
 22 0.16
 29 -1622
 54 43.94
 41 66
 122
 178 1770
 232 33.85
 287 43.85

[illegible]

Personal Equations between W & R and C. N. M. of Montreal

June 14 1883 ^{8.99260} ^{9.46593} ^{9.99564} ^{9.80897} ^{9.94571}

R ^{2.1} ¹³ ¹⁹ ¹⁸³³ ¹³ ²³ ⁺⁷³ ⁰ ¹³ ³⁵ ⁻⁸ ⁶ ¹³ ⁴² ^{+49.54} ¹³ ⁴⁹ ^{+18.59} ¹³ ⁵² ^{+108.9}

L.W. ⁴⁷ ⁴⁶ ²⁴⁷ ³⁰⁰ ³⁵⁴ ³⁵³⁴ ⁴⁰⁷ ^{+33.31} ⁴⁵⁹ ⁸⁶⁵ ⁵⁰⁰ ⁵²⁶⁴ ⁵⁵⁴ ⁺¹⁶⁰⁰ ⁵⁸⁰ ⁸⁶⁴ ⁵⁰ ^{0.8} ^{2.3} ¹⁸⁷ ¹⁸⁵⁴ ²⁷⁴ ^{+53.81} ³⁶⁷ ¹²³⁵ ⁹ ⁵⁰⁰ ⁵⁸⁴ ⁶⁶ ^{6.44} ¹⁴⁵ ^{+50.83} ²²⁸ ^{57.27} ¹⁶ ²²⁵ ³⁸⁰ ³³⁶ ³³⁵⁶ ³⁹⁰ ^{+34.63} ⁴⁴⁷ ^{8.19} ¹⁰ ²⁴⁶ ³⁸⁹ ³²⁹ ^{32.92} ³⁷⁰ ^{+24.42} ⁴¹¹ ^{57.34} ⁴⁶⁰ ⁴⁸⁸ ⁵¹⁵ ^{5.46} ⁵⁴² ^{+16.63} ⁵⁶⁸ ^{8.09}

C ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

D ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

E ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

M ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

B ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

C ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

D ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

E ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

M ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

B ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

C ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

D ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

E ⁴⁷ ³² ⁶⁰ ⁸⁷ ^{8.66} ¹¹⁴ ^{14.0} ⁵⁵⁰ ⁹⁴ ²¹¹ ⁵⁷⁴ ¹²¹ ²⁴⁴ ⁰⁶ ¹⁵³ ²⁷³ ³³ ¹⁸⁴ ³⁰⁴ ⁶² ¹²³⁸ ⁸⁴ ¹⁴¹ ¹⁵³ ¹⁶⁴ ²¹¹ ²⁴⁴ ²⁷³ ³⁰⁴ ³⁷⁸ ³⁶⁴ ³ ^{43.0} ⁴⁵⁷ ⁴⁸² ⁴⁸³⁰ ⁵⁰⁹ ^{-15.87} ⁵³⁷ ^{32.43} ⁵⁵⁰ ¹⁰² ⁵⁶ ^{5.58} ¹⁰⁹ ³³¹⁰ ¹⁶² ^{32.48} ¹⁷ ²⁵ ^{5.8} ⁸² ^{8.16} ¹¹⁰ ¹³⁸

9.99957

9.9881

α Draconis
14 1 +64.56
8 29

109 Virginis
14 40 +2.83
9 8

α Librae
14 44 -15.33
9 12

47 H Cephe
14 50 +101.3
9 18

48 H Cephe
15 5 +102.42
9 33

β Librae
15 10 -8.57
9 38

Chf.

9

4

20.2
35.4
40.7 40.70
46.0 32.77
57.2 134.7
52.4
55.1
57.8 57.66
0.0 152.5
3.0 134.1

9 18 39.6 5.7
16 51.7 1.1
6.6 12.1
20.2 15.7
35.5 18.6
24.3
25.7
33.7
37.9
42.1
46.7
51.5
54.9

Chf.

Chf.

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25.9
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34.1 34.14
36.8 16.30
39.5 17.84
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46.3
45.20 57.92
57.4 34.01
2.7 16.30
17.91

13.44
13.41
+0.3

17.24
17.62
+2.5

12

11

32.8
38.1
43.6 43.58
49.0 33.89
54.4 17.57
55.7
58.3
0.7 11.0
4.0 16.32
6.8 17.30

8 8.3
10.7
13.4 13.42
18.9
18.6

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26.3
29.3 29.10
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34.3 13.88
35.8
40.7
46.3 46.22
51.5 32.80
56.8 134.2

12.1
14.9
17.7 17.66
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23.2

19 18 0.7
6.1
10.1
15.7
17.6
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50.9 37.9
4.9 42.4
17.7 46.7
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9.51337

[illegible]

29

θ Draconis
 $\begin{array}{r} 15^{\circ} 59' + 58.83 \\ 10 \quad 27 \end{array}$

δ Ophiuchi
 $\begin{array}{r} 999923 \\ 16 \quad 5 -3.24 \\ 10 \quad 26 \end{array}$

ϵ Ophiuchi
 $\begin{array}{r} 999872 \\ 16 \quad 12 -4.24 \\ 10 \quad 40 \end{array}$

η Urs Min
 $\begin{array}{r} 9.27838 \\ 16 \quad 14 +76.10 \\ 10 \quad 42 \end{array}$

δ Serpens
 $\begin{array}{r} 999452 \\ 16 \quad 16 +19.26 \\ 10 \quad 44 \end{array}$

35 $\begin{array}{r} 314 \\ 340 \\ 356 \\ 373 + 8664 \\ 419 + 1576 \\ \quad 5240 \end{array}$

28

44 $\begin{array}{r} 10 \\ 27 \\ 64 \\ 92 + 648 \\ 121 + 1668 \\ \quad 2316 \end{array}$

$\begin{array}{r} 472 \\ 497 \\ 525 \\ 550 \\ 576 \end{array}$ 5240

41 $\begin{array}{r} 257 \quad 303 \quad 340 \\ 352 \quad 405 \quad 444 \\ 474 \quad 515 \quad 556 \\ 576 \quad 17 \quad 60 \\ 97 \\ 4752 \quad 4803 \\ \quad 4778 \end{array}$

$\begin{array}{r} 176 \\ 204 \\ 231 \\ 250 \\ 268 \end{array}$ 23.18

27 $\begin{array}{r} 416 \\ 457 \\ 517 \quad 5176 \\ 568 \quad -3039 \\ 20 \quad 2137 \end{array}$

39 $\begin{array}{r} 412 \\ 439 \\ 467 \\ 492 \\ 516 \end{array}$ 46.02

D $\begin{array}{r} 571 \\ 599 \\ 24 \quad 2.44 \\ 51 \quad -15.75 \\ 77 \quad 46.69 \end{array}$

44 $\begin{array}{r} 342 \\ 370 \\ 398 \quad 3960 \\ 426 \quad -1665 \\ 454 \quad 2295 \end{array}$

$\begin{array}{r} 2137 \\ 2110 \\ +27 \end{array}$

$\begin{array}{r} 5240 \\ 5230 \\ +10 \end{array}$

$\begin{array}{r} 4660 \\ 4651 \\ +.09 \end{array}$

$\begin{array}{r} 4778 \\ 4665 \\ +1.13 \end{array}$

$\begin{array}{r} 23.10 \\ 23.02 \\ +.08 \end{array}$

39 $\begin{array}{r} 32 \\ 85 \\ 134 \quad 1362 \\ 189 + 3284 \\ 241 \quad 4646 \end{array}$

B $\begin{array}{r} 285 \\ 281 \\ 305 \quad 3078 \\ 335 + 1578 \\ 360 \quad 4656 \end{array}$

36 $\begin{array}{r} 25 \\ 54 \\ 83 \quad 8,12 \\ 108 - 1573 \\ 133 \quad 52,39 \end{array}$

42 $\begin{array}{r} 307 \\ 415 \\ 520 \quad 5234 \\ 30 \quad -6569 \\ 145 \quad 4665 \end{array}$

28 $\begin{array}{r} 40 \\ 142 \\ 346 \quad 2450 \\ 350 - 6340 \\ 447 \quad 2110 \end{array}$

$\begin{array}{r} 147 \\ 196 \\ 251 \quad 2504 \\ 302 - 8282 \\ 356 \quad 52,22 \end{array}$

44 $\begin{array}{r} 467 \\ 523 \\ 576 \quad 5776 \\ 32 - 3474 \\ 98 \quad 23.02 \end{array}$

9.38266

9.96793

9.55405

9.99290

9.88948

9.73630

16 28
10 48
+76.2

16 28
10 53
+21.45

16 28
10 56
+69.1

16 28
10 58
-10.20

16 28
11 6
+34.9

16 43
11 11
+56.59

B

47 16.4
16.4
37.6
37.6
44.4
2.7.80
+65.08
32.88

54 50.1
57.4
42 4.60
12.1 +43.86
19.2 48.46

55 33.7 35.0 38.6
41.0 43.5 46.0
48.3 50.6 53.2
55.7 57.8 0.8
48.36 48.18
48.27

25.4 30.1 31.7
33.3 34.9 36.4
37.9 39.7 41.3
42.9 44.5 46.9
47.6
10 38.02 38.06
38.04

D

49 16.8
38.0
38.0
49.0
02
38.20
-65.16
33.02

59.3
2.1
5.0 4.96
7.8 -16.94
10.6 48.02

6 40.6
44.0
47.3 47.38
50.8 -20.29
54.2 27.09

E

48 32.95
32.78
+17

12.1
17.6
23.3 23.26
28.8 -35.25
34.5 48.01

M 48.36
R 48.57
+1.21

M 27.09
R 27.27
+1.8

38.04
37.91
+1.3

A

52 1.3
7.0
12.6 12.60
18.1 +35.28
24.0 47.88

B

35.4
35.4
31.1 31.10
34.0 +16.91
36.6 48.01

C

48 10.8 15.0 18.0
21.5 25.6 29.8
32.7 36.7 40.5
43.8 47.3 51.2
54.3
32.6 32.95
32.78

42.3
45.2
48.0 48.00
51.0
53.5 48.00

D

50 18.0
25.0
32.2 32.44
39.8 -43.93
47.2 48.51

10 57.2
1.5
6.7
12.0
16.5 16.54
-28.87
19.0 37.97
28.6
35.2
47.8
52.3 38.18
10 37.96
-60.09
38.09

E

50.5
54.4
20.2 20.06
24.6 -21.43
49.3 48.63

56.1
2.8
6.4 9.50
16.2 -42.23
23.0 27.27

49 Hercules
16 46 +15 10
11 14

9.99394
K Ophiuchi
16 52 +9.33
11 20

8.13078
E Urs
16 58 +82.14
11 26

19 H Camel
17 3 +100.84
11 31

9.98980
2 Hercules
17 9 13.31
11 37

8 Ophiuchi
17 14 -24.63
11 42

18 55
60
686
12.2 +33.23
17.5 40.09

18 8
21 6
24 2 24.16
26.7 +15.93
29.5 40.09

34.7
37.5
40.0
42.7
45.5 40.08

22 57.0
23 15.4
23 35.3
24 55.0
24 14.6 30.06
+116.50
32.06

25 54.1
53
23.2
27.0
50.8 22.68
+ 83.19
45.87

36 33
57
14.2 14.18
19.6 +33.70
25.1 47.88

26 4
29 0
31 2 31.78
34.2 +16.15
37.2 47.93

42.6
45.3
48.0
50.6
53.5 48.00

26 49.0
27 49.0
27 38.6
28 47.6
28 5.9 28.96
31.86
116.41
31.75

31 41.6
31 5.9
31 38.6
31 47.6
31 5.9 31.86
31.86
116.41
31.75

4009
4814
-05

3190
3088
+102

4567
45.76
+11

4794
4825
+31

24 52.9 52.4 5.7 30 150 288 265
12.0 150 24.7 31.9 36.7 41.5
30.2 38.0 44.5 48.5 52.5 57.0
50.7 56.6 3.3 58.6 4.2 8.7
10.4 30.53 14.3 45.61
25 31.24 30.88 30 45.80 45.76

19 52.9
53.3
56.0 56.08
58.8 -15.95
1.4 40.13

2.7
5.1
12.4 1336
18.7 -33.20
23.9 40.16

36 59.0
16
45 41.0
72 -16.18
9.7 48.72

11.2
16.6
22.0 21.96
27.4 33.68
32.6 48.28

4573

17 23 66
11 51 +105.2

17 23 55
11 55 +52.23

17 23 57
11 57 +12.89

ch. f. ch.

50 9.5 12.7 16.2
19.6 23.0 26.0
34.7 33.0 36.1
39.2 40.7 45.9
49.6
29.60 29.40
29.52

29.52
29.37
+15

50 8.2
15.7
25.6
39.0
45.9 28.68
+60.65
29.33
45 43.0
49 3.0
23.3 23.16
43.6 +126.35
50 2.7 29.48

31.0
-6.45
24.55

51 29.60

June 14

5	log cos R-11	log(R-11)	R-11
-10 33	9.99260	+0.9	8.95424 +0.9
+73 0	9.46588	+3.8	9.57978 +11
-8 6	9.99564	+1.3	9.11394 +13
+49 54	9.80897	+2.2	9.34242 +14
+18 59	9.97571	+0.9	8.95424 +0.856
+2 23	9.99957	+0.3	8.47712 +0.3
-15 33	9.98381	+2.5	9.39794 +2.4
+70 58	9.57337	+0.0	+0.0
+15 47	9.98332	+2.6	9.41497 +2.5
+18 30	9.97696	+1.0	9.00000 +0.941
+78 9	9.31250	+9.2	9.96379 +1.9
-22 17	9.96629	+0.7	8.84570 +0.6
-19 29	9.97439	+3.3	9.57851 +3.1
+132	+58.53	9.71231	+2.9 9.93136 +1.3
-3 24	9.99923	+1.0	9.00000 +1.0471
-4 24	9.99872	+0.8	8.95424 +0.9
+76 10	9.27858	+1.13	0.05308 +2.7
+19 26	9.97402	+0.8	8.98309 +0.7
+76 2	9.38266	+1.7	9.23045 +0.4
+21 40	9.96793	+0.5	8.68497 +0.552
+69 1	9.55405	+2.1	9.32222 +0.8
+39 9	9.88748	+1.8	9.25527 +1.4
+56 59	9.73630	+1.3	9.11394 +0.7
+7 33	9.99394	-0.5	8.69597 -0.5
+82 14	9.13078	+1.02	0.00860 +1.448
+79 6	9.27668	+1.1	9.04139 +0.2
+13 31	9.98762	+3.1	9.49136 +3.0
+0.90	+74.58	9.41394	+1.5 9.17609 +0.446

+111 = June 14

+096 = June 13

+103 = Mean

R-11

30.0
28 = 1.18

June 17 th 1883	$+0.32$ $+1.10$ $+1.15$	$+0.356$ $+1.07$ $+1.12$	$+1.03$ $+1.79$ $+1.01$	$+0.51^2$ $+1.90$ $+1.04$	$+1.48$ $+1.59$ $+1.00$	$+1.94$ $+1.05$	-2.62 $+4.09$ $+4.56$
L.E.	-17	-17	-17	-17	-17	-17	-17
β Coronae	α Coronae	δ Serpantis	β Serpantis	δ Serpantis	γ Urs Minoris		
$+29.30$	$+27.7$	$+6.48$	$+15.47$	$+18.80$	$+78.9$		

15 20	15 29	15 38	15 40	15 43	15 48	15 50
chhd	chhd	chhd	chhd	chhd	chhd	chhd
38 82	44 57.6	53 42.2	55 37.0	59 06	1 34.6	
1910	57.6	47.4	26	24	1 07	
202	37	52.6	80	63	1 26.6	
260	6	57.8	136	90	52.2	
322	15.2	30	187	798	2 17.7	2636
337	167	46	202	59	2 23.7	
366	195	71	330	24	370	
397	226	97	257	63	496	
427	253	123	286	90	20	
457	282	151	312	114	137	4948
577	342	205	365	170	3 408	457 490
544	378	230	396	200	532	574 20
576	400	256	420	226	61	104 145
66	430	281	448	252	192	231 276
36	458	308	474	283	320	626 6.39
98	523	363	528	338	580	6.34
126	530	391	557	367	100	
156	550	413	584	391	237	
186	57	440	10	420	360	
218	40	466	41	447	488	2330
232	53	480	50		57	530
284	142	533	107		6	300
354	170	585	160		7	463
414	230	37	215			114
476	290	93	271	1606		360
577	342	205	365	170	3 408	457 490
544	378	230	396	200	532	574 20
576	400	256	420	226	61	104 145
66	430	281	448	252	192	231 276
36	458	308	474	283	320	626 6.39
98	523	363	528	338	580	6.34
126	530	391	557	367	100	
156	550	413	584	391	237	
186	57	440	10	420	360	
218	40	466	41	447	488	2330
232	53	480	50		57	530
284	142	533	107		6	300
354	170	585	160		7	463
414	230	37	215			114
476	290	93	271	1606		360
577	342	205	365	170	3 408	457 490
544	378	230	396	200	532	574 20
576	400	256	420	226	61	104 145
66	430	281	448	252	192	231 276
36	458	308	474	283	320	626 6.39
98	523	363	528	338	580	6.34
126	530	391	557	367	100	
156	550	413	584	391	237	
186	57	440	10	420	360	
218	40	466	41	447	488	2330
232	53	480	50		57	530
284	142	533	107		6	300
354	170	585	160		7	463
414	230	37	215			114
476	290	93	271	1606		360

$$C = +0.1$$

$$a = -6.9$$

$$-1.00$$

$$C = 0$$

$$a = -10.8$$

$$-26.2a$$

$$-6.53 + 4.6$$

$$a = -2.55 - 3.08a$$

$$a = -1.15$$

$$h$$

$$15.4 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$15.5 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$15.6 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$15.7 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$15.8 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$15.9 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.0 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.1 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.2 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.3 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.4 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.5 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.6 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.7 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.8 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$16.9 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$17.0 \quad 0 = -6.58 + 32a + 36 + 6.22 - 20.7 - 6.48$$

$$15.8 \quad 0 = -2.01 - 2.96a - 0.68$$

$$-2.17 - 3.12a - 0.70$$

$$-0.69$$

+ 0.196
+ 0.45
+ 1.06

+ .75 + .77
+ .66 + .65
+ 1.00

+ .77
+ .65
+ 1.01 1.00

- 2.13
+ 3.68 + 3.60
+ 4.18

-27
L. West

B. Scorpii
-19 29

-27

8. Ophiuchi
-3 34

-27

E. Ophiuchi
-4 24

-27

19. Minoris
+4 10

1558

168

Ch.

1612

Ch.

1614

23 210
262
313
368
420

3146

27 153
203
257
312
363 2576

14 92
122
147
177
204 1684

433
460
486
513
537 4858

377
402
428
453
480 4280

260
287
314
341
370 3144

358
16
43
70
93 420

532
537
586
10
37 5844

29 385 417 456
487 520 572
05 42 80
113 157 187
223 0.26 0.32

14 426
454
480
510
536 4510

147
173
200
224
251 1990

90
117
144
167
195 1426

366
377
372
433
476 3708

210
262
313
368
422 3150

10 14 3146
1 40855
085

10 24 4124
1 42507
073

10 27 5855
1 43000
160

10 30 0.30
1 43493
01

5 16 11952
13 42 2391
38 3586
3632
-12
3648
58 2072
4682
-564

5 25 465876
16 42 2391
8 105867
-01
-18
-8 10408
1625
-576

5 29 4121
16 42 2391
12 562
-01
-17
12 544
1228
-588

5 31 4379
16 42 2191
14 770
-28
-987
14 6.646
14 13.46
-680

a = -115

$$\begin{aligned} 0 &= -610 + .96a - 111 - 421 \\ &= -583 + .77a - 56 - 869 \\ &= -584 + .77a - 88 - 672 \end{aligned}$$

$$\begin{aligned} 0 &= -593 + .83 - 688 \\ 0 &= -682 - 213 \\ 0 &= -583 + .83 \\ 0 &= -89 - 296 \end{aligned}$$

a = -315

$$\begin{aligned} 160 \quad 0 &= -564 + 0.96a = 33 \quad -597 - 66 \quad -663 \\ 161 \quad &= -576 + .77 \quad -31 \quad 6.07 - 53 \quad -660 \\ 162 \quad &= -584 + .77 \quad -31 \quad 8.15 - 53 \quad -668 \\ &= -575 + .83a \quad -6.06 \quad 6.637 \end{aligned}$$

$$\begin{aligned} L.E \quad 4T &= + .06 \\ L.W \quad &= 6.88 \\ &+ 6.97 \end{aligned}$$

$$16.2 \quad 0 = -6.82 - 213 \quad a = -120 - 811$$

$$0 = -205 - 2.96a \quad -0.69$$

$$\begin{aligned} L.E. \quad h \quad 15.6 \quad aT &= + 6.524 \\ 16.1 &= 6.637 \\ 15.8 &= 6.580 \end{aligned}$$

June 19th 1883
 A-0.79
 B+2.23
 C+2.36

+0.53
 +0.58
 +1.01

+2.85
 -1.01
 -2.54

+2.91
 -1.53
 -3.29

+0.18
 +.73
 +1.01 +1.00

-0.49
 +1.93
 +1.99

Lamp E. h=+11

+11

i Cass+11

+12

+13

+13

α Draconis

κ Virginis

36 δ Cor

109 Virginis

γ 2164

14 -1 13 44.50
 5 51
 8 10

14 -6 14 1
 5 51
 8 15

14 19 14 19
 5 51
 8 15

14 25 56 +107.42
 5 51
 8 35

14 40 20 +2.33
 5 51
 8 49

14 45 14 45
 5 51
 8 57

Ch.

Ch.

Ch.

Reject

Ch.

Ch.

5 48.3
 45.5
 52.4
 59.1
 57

36.7
 39.3
 41.7
 44.3
 42.2

26 50.3
 57.0
 59.2
 10.1
 16.7

48 11.9
 14.6
 17.3
 19.9
 22.3

56.6
 18.8
 16.5
 12.1
 17.3

17.6 19.5 21.8
 23.7 24.6 27.4
 29.7 32.0 34.0
 36.7 37.8 40.4
 42.4 29.9 29.8

62.6
 55.1
 67.8
 24
 21

27 30.1 32.7 34.7
 36.7 38.9 41.3
 43.6 45.6 47.6
 49.5 52.3 54.9
 57.2 43.52 43.49

27.8
 30.2
 32.0
 34.3
 36.3

27.5 29.5 31.3
 33.0 35.0 36.6
 38.1 39.7 41.5
 43.2 45.0 46.7
 48.6 38.12 38.14

9 54.6
 87
 76
 13.7
 19.4

86
 110
 13.8
 16.3
 19.1

28 10.3
 17.4
 23.7
 30.2
 36.6

51.3 54.7
 53.7 57.2
 55.1 53
 53.7 57.2

56 57.0
 41
 9.3
 14.5
 20.0

20.5
 20.4
 20.330
 20.330
 20.330

31.06
 31.06
 31.06
 31.06
 31.06

27 23.28
 120
 6.63
 17.023
 23.647

8 48 34.85
 26.7437
 08.9
 59.70
 17.02

8 53 35.04
 26.057
 10.4
 6.32 13
 17.02

14 01
 14 01
 14 01
 14 01
 14 01

14 06
 14 06
 14 06
 14 06
 14 06

14 19
 14 19
 14 19
 14 19
 14 19

14 39
 14 39
 14 39
 14 39
 14 39

14 48
 14 48
 14 48
 14 48
 14 48

C=+0.35
 C
 C
 C
 C

-6.14
 +.22
 -6.14
 +.22
 -6.14

-4.676
 -4.676
 -4.676
 -4.676
 -4.676

-6.20
 +.02
 -6.17
 +.02
 -6.17

-7.25
 -7.25
 -7.25
 -7.25
 -7.25

a=76

14.0 0 = -6.11 + .83 a -6.3 -6.74
 14.7 -6.17 + .68 a -5.2 6.69
 15.1 -6.23 + .32 a -2.4 6.57
 15.5 -6.40 + .36 a +.27 6.67
 -6.668
 14.0 -1.71 -0.79 +.60
 14.8 -2.08 -4.9 +.37
 15.2 -7.21 -1.00 +.76 6.45
 15.9 -6.36 +.34 a -6.707
 14.4 -6.14 +.76 a 6.40
 14.4 -7.23 -0.76
 29

143 0 = -5.14 + 2.35 a
 148 -8.11 -1.02
 151 -3.42 + 2.52
 0 = +1.22 + 2.01 a +.61
 +1.75 + 2.18 a .80
 +2.94 + 3.48 a .82
 -4.74
 0 = +1.00 + 1.19 a -0.63
 +1.97 + 2.60 a .78
 +2.72 + 2.06 a .89
 .77
 0 = +2.15 + 3.11 a +.70
 +7.5 + 1.06 .73
 +3.51 + 4.58 .85
 .76
 7

2 Serpens	3 Serpens	4 Serpens	5 Vir	6 Serpens	3 Scorpion
15 25 80 +6 45 9 57 47	15 40 49 +15 41 9 57 49	15 43 28 +15 30 9 57 52	15 45 16 +78 9 9 57 57	15 53 25 -22 17 9 57 10 2	15 58 38 -19 29 9 57 10 7
Ch 8	Ch 8	Ch 8	Ch 8	Ch 8	Ch 8

Level Jan 19

140 ^h	b = +10 ^s	+05
143	+11	-03
145	+11	+04
150	+13	+01
151	+14	+01
155	+20	-05
156	+22	-04
	+15	

June 20

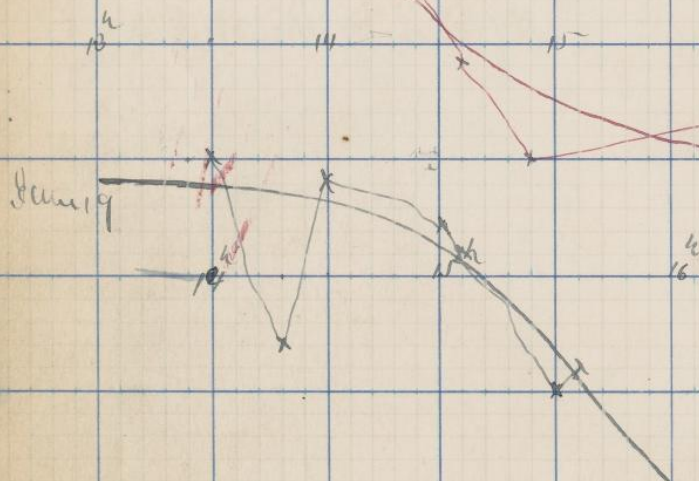
13.5	b = +19 ^s	+10
13.6	+15	+9
14.3	+20	+4
14.6	+25	-1
14.9	+28	-5
15.5	+27	-3
17.4	+33	-9
17.5	+27	-3
	+24	

June 19
Corrected level

140 ^h	+11 ^s
2	+11
4	+12
6	+12
8	+13
10.0	+14
12	+15
14	+18
16	+19
18	+22
16.0	+24

June 20

13.5	+10 ^s
13.6	+14
14.0	+18
14.5	+23
15.0	+28
15.5	+28
16.0	+29
16.5	+30
17.0	+30
17.5	+30
18.0	+29



+ 4.7
+ 9.5
+ 1.06
June 20 1883

- 0.79
+ 2.23
+ 2.36

- 2.61
+ 4.09
+ 4.85

- 0.03
+ 1.45
+ 1.46

+ 2.35
- 0.97
- 2.55

+ 2.91
- 1.53
- 3.29

$b = +11.12$
 $c = +10.7$

$b = +11.12$
 $c = +10.7$

$b = +11.12$
 $c = +10.7$

$b = +11.12$
 $c = +10.7$

$b = +11.12$
 $c = +10.7$

$b = +11.12$
 $c = +10.7$

N. Boelis
13 49 7 +18 59
5 55

2 Draco
14 1 1
5 55

4 Ursae
14 9 19 +78 6
5 54
8 15

7 Boelis
14 11 56 +46 37
5 54
8 17

1 Cass
14 19 21 +113 8
5 54
8 25

36 Cass
14 26 56 +147 42
5 54
8 32

Repe
the above

17 64
17 26 34 50

57 60 34 78
37 17

11 64
37 17 34 59

52 08
17 00 34 78
47 23 37 28

57 60 34 78
37 17

57 60 34 78
37 17

57 60 34 78
37 17

13 117 163 198
243 252 328
374 414 459
500 540 586
20 37 11

13 117 163 198
243 252 328
374 414 459
500 540 586
20 37 11

13 117 163 198
243 252 328
374 414 459
500 540 586
20 37 11

13 117 163 198
243 252 328
374 414 459
500 540 586
20 37 11

13 117 163 198
243 252 328
374 414 459
500 540 586
20 37 11

13 117 163 198
243 252 328
374 414 459
500 540 586
20 37 11

16 84
122
161
200
240 1614
814
356
396
431
471
493
520
46
121
199

16 84
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161
200
240 1614
814
356
396
431
471
493
520
46
121
199

16 84
122
161
200
240 1614
814
356
396
431
471
493
520
46
121
199

16 84
122
161
200
240 1614
814
356
396
431
471
493
520
46
121
199

16 84
122
161
200
240 1614
814
356
396
431
471
493
520
46
121
199

16 84
122
161
200
240 1614
814
356
396
431
471
493
520
46
121
199

22 547
08 547
14 547
209
344 366 388
410 432 454
476 500 522
543 564 586
10 4763

22 547
08 547
14 547
209
344 366 388
410 432 454
476 500 522
543 564 586
10 4763

22 547
08 547
14 547
209
344 366 388
410 432 454
476 500 522
543 564 586
10 4763

22 547
08 547
14 547
209
344 366 388
410 432 454
476 500 522
543 564 586
10 4763

22 547
08 547
14 547
209
344 366 388
410 432 454
476 500 522
543 564 586
10 4763

22 547
08 547
14 547
209
344 366 388
410 432 454
476 500 522
543 564 586
10 4763

30 78
164
254
340
426
597
171
262
339 1702

30 78
164
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339 1702

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339 1702

30 78
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426
597
171
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339 1702

30 78
164
254
340
426
597
171
262
339 1702

+0.71	+0.48	2.63	+1.00	+0.96
+0.50	+0.94	+4.10	+0.41	+0.45
+1.04	+1.05	+4.87	+1.08	+1.06
$6 = +5.5 + 1.8$	7.28	7.28	7.28	7.28
2 Librae	1 Serpens	2 Aquarii	5 Scorpi	$3 \text{ Scorpi Reversed}$
14 44 24 -10 33	15 43 20 +18 30	16 48 78 9	15 53 25 22 17	15 58 38 -19 29
80 50	9 49	9 54	9 59	10 54
Oh.			Oh	Oh
-47 56.3	42		56 44.2	57.2
48 7.22			44.7	28
12.7			50.4	83
18.1			10	140
19.6			68	196
22.0				538
25.0				
27.7				
30.4				
35.9				
38.6				
41.2				
44.0				
46.7				
52.2				
55.0				
57.5				
60.2				
63.0				
65.7				
68.4				
71.1				
73.8				
76.5				
79.2				
81.9				
84.6				
87.3				
90.0				
92.7				
95.4				
98.1				
100.8				
103.5				
106.2				
108.9				
111.6				
114.3				
117.0				
119.7				
122.4				
125.1				
127.8				
130.5				
133.2				
135.9				
138.6				
141.3				
144.0				
146.7				
149.4				
152.1				
154.8				
157.5				
160.2				
162.9				
165.6				
168.3				
171.0				
173.7				
176.4				
179.1				
181.8				
184.5				
187.2				
189.9				
192.6				
195.3				
198.0				
200.7				
203.4				
206.1				
208.8				
211.5				
214.2				
216.9				
219.6				
222.3				
225.0				
227.7				
230.4				
233.1				
235.8				
238.5				
241.2				
243.9				
246.6				
249.3				
252.0				
254.7				
257.4				
260.1				
262.8				
265.5				
268.2				
270.9				
273.6				
276.3				
279.0				
281.7				
284.4				
287.1				
289.8				
292.5				
295.2				
297.9				
300.6				
303.3				
306.0				
308.7				
311.4				
314.1				
316.8				
319.5				
322.2				
324.9				
327.6				
330.3				
333.0				
335.7				
338.4				
341.1				
343.8				
346.5				
349.2				
351.9				
354.6				
357.3				
360.0				
362.7				
365.4				
368.1				
370.8				
373.5				
376.2				
378.9				
381.6				
384.3				
387.0				
389.7				
392.4				
395.1				
397.8				
400.5				
403.2				
405.9				
408.6				
411.3				
414.0				
416.7				
419.4				
422.1				
424.8				
427.5				
430.2				
432.9				
435.6				
438.3				
441.0				
443.7				
446.4				
449.1				
451.8				
454.5				
457.2				
459.9				
462.6				
465.3				
468.0				
470.7				
473.4				
476.1				
478.8				
481.5				
484.2				
486.9				
489.6				
492.3				
495.0				
497.7				
500.4				
503.1				
505.8				
508.5				
511.2				
513.9				
516.6				
519.3				
522.0				
524.7				
527.4				
530.1				
532.8				
535.5				
538.2				
540.9				
543.6				
546.3				
549.0				
551.7				
554.4				
557.1				
559.8				
562.5				
565.2				
567.9				
570.6				
573.3				
576.0				
578.7				
581.4				
584.1				
586.8				
589.5				
592.2				
594.9				
597.6				
600.3				
603.0				
605.7				
608.4				
611.1				
613.8				
616.5				
619.2				
621.9				
624.6				
627.3				
630.0				
632.7				
635.4				
638.1				
640.8				
643.5				
646.2				
648.9				
651.6				
654.3				
657.0				
659.7				
662.4				
665.1				
667.8				
670.5				
673.2				
675.9				
678.6				
681.3				
684.0				
686.7				
689.4				
692.1				
694.8				
697.5				
700.2				
702.9				
705.6				
708.3				
711.0				
713.7				
716.4				
719.1				
721.8				
724.5				
727.2				
729.9				
732.6				
735.3				
738.0				
740.7				
743.4				
746.1				
748.8				
751.5				
754.2				
756.9				
759.6				
762.3				
765.0				
767.7				
770.4				
773.1				
775.8				
778.5				
781.2				
783.9				
786.6				
789.3				
792.0				
794.7				
797.4				
800.1				
802.8				
805.5				
808.2				
810.9				
813.6				
816.3				
819.0				
821.7				
824.4				
827.1				
829.8				
832.5				
835.2				
837.9				
840.6				
843.3				
846.0				
848.7				
851.4				
854.1				
856.8				
859.5				
862.2				
864.9				
867.6				
870.3				
873.0				
875.7				
878.4				
881.1				
883.8				
886.5				
889.2				
891.9				
894.6				
897.3				
900.0				
902.7				
905.4				
908.1				
910.8				
913.5				
916.2				
918.9				
921.6				
924.3				
927.0				
929.7				
932.4				
935.1				
937.8				
940.5				
943.2				
945.9				
948.6				
951.3				
954.0				
956.7				
959.4				
962.1				
964.8				
967.5				
970.2				
972.9				
975.6				
978.3				
981.0				
983.7				
986.4				
989.1				
991.8				
994.5				
997.2				
1000.0				

+3.32
-1.96
-3.86

+0.91
+3.50
+1.04

-1.84
+3.30
+3.77

+0.11
+1.32
+1.32

+3.82
-2.46
-4.55

+0.82
+0.59
+1.01

LS June 21 6-700 +.00 2 Librae 3 hrs Min 3 Bootis 484 Cephei 3 Librae
17 23 55 +1.05 2 14 44 24 -15 33 14 57 3 74 38 14 57 32 40 51 15 5 23 +1.02 42 16 10 43 -8 37
13-54 11 29 8 44 8 51 8 57 9 5 77 18 9 10

44 06
02
116
170
224

239
206
293
820
247 2930

50 11
112
213
307
412 3110

56 530
597
67
135
205

222
254
290
324
357 2890

27 210 382 443
550 48 133
211 24 -

402
430
436
483
570 4562

1 800 33 70
98 135 162
200 234 271
305 332 369
403 20127 2056

428
464
497
532
567 4976

252 303 332
373 410 454
491 530 570
05 49 89
126 4844

564
590
17
46
72 178

52 82
100
200
300
394 1992

58 837
82
136
139
177 1062

87
139
196
230
304 194852

8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

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8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

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8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

8 44 46.545 8 51 20.63 8 57 49.82

14.7 0 = -5.84 + 91.9 + 10.4C + 4.77 a = -48
15.9 6.04 +1.00 +1.08 +.44 48 6.28
16.8 5.96 +.96 +1.06 -46 6.42
5.83 +.96 +1.06 -6.41

11-55 -46 -6.50
12-40 -32 -6.76
12-58 -70 -6.66
+6.64

0 = -7.15 -14.4a + 37.7C
-4.49 + 3.52 - 3.05
-7.26 -2.23 + 4.67

15.2 0 = -6.57 + 11.0a + 1.32C
15.9 -6.23 + 32 +1.15
15.5 -6.21 + 26 +1.12
15.6 -6.04 + 63 +1.01
15.7 -6.16 + 52 +1.09
15.7 -6.13 + 48 +1.05
-6.21 + 40 +1.12

-6.6 -6.57
-16 6.38
-17 6.38
-30 6.24
-25 6.41
-23 6.36
-6.41

-15 -07 -22 6.79
-14 -19 -33 6.72
-13 -22 -35 6.78
-11 -28 -49 6.83
-11 -31 -42 6.83
-12 -29 -41 6.77
-6.78

0 = -123 -280a + 271C
-146 -248 + 561
-131 -359 + 387
-0.87 -22.4a + 26.1
-1.72 -34.3 + 56.7
-1.05 -30.3 + 37.5

a = -45 -103C + C
-26 -57 + C
-34 -96 + C
0 = -37 -89C + C
-30 -70 + C
-28 -81 + C
C = -11 C = -0.5
a = -54 -45
-78 -49
-48 -52
-60 -50

+0.52	+0.48	-2.63	+1.00	+0.96	+4.35
+ .90	+ .94	+4.10	+ .41	+0.45	-3.00
+1.04	+1.05	+4.87	+1.08	+1.06	-5.29
+0.5	+0.5 +0.06	+0.9 +0.06	+0.9 +0.07	+1.0 Lr	2W +0.23
3 Serpens	11 Serpens	8 Mus Mus	8 Scorp	3 Scorp	19 Camel
15 40 47 45 47	15 43 25 15 30	15 48 16 47 8 9	15 53 25 22 17 15	15 56 35 19 39	17 3 18 100 54
9 40	9 43	9 45	9 53	9 56	11 3 79 6
				25	2W
40 130	42 536		52 457	58 17	
187	542		541	70	
246	47		549	126	
247	103		550	152	
353	157	70	110	239	1268
		40	5480		
267	170	46 413	125	252	
394	198	47 550	152	307	1
420	226	73	180	336	241
450	253	159	208	362	371
476	283	330	237	400	522
		730	1504	420	60
529	337	47 570 34 73	246	470	202
539	364	120 154 195	324	473	520
556	390	234 282 327	350	499	567
12	417	364 412 454	379	527	13 57 105
38	447	493	409	557	157 195 247
		2402	3576	4736	290 335 380
95	502	49 146	466	583	430 1542
120	530	282	493	12	1508
146	557	410	521	38	112
174	586	533	545	66	253
203	13	62	577	95	352
	5576	4066	5210	388	526
217	27		592		61
322	82		40		3876
327	136		104		
380	193		162		
436	250		215		
	1376		1032		
9 40 5844	9 43 39178	9 47 2401	9 53 3505	9 58 4734	11 3 1508
1 35279	1 35772	1 36428	1 37415	1 38236	1 40914
161	107	066	096	130	042
9 42 3845	745	9 49 0.50	9 55 12.59	10 00 2871	11 05 0404
5 58 10.13	5 58 10.13	5 58 10.13	5 58 10.13	5 58 10.13	5 58 10.13
15 40 44.21	15 43 2519	15 48 10.63	15 53 2272	15 58 3584	17 03 14.84
-02	-02	-08	-02	-02	-03
+0.5 +0.05	+0.5 +0.06	+0.5 +0.06	+0.5 +0.03	+0.5 +0.03	+0.5 +0.03
15 40 41.58 06	15 43 252523	15 47 10.15 80	15 53 22.54 73	15 58 35.55 85	17 3 13.238
40 50.24	31.38	15.15 80	25.78	41.52	15.15
+5.16	-6.15 15	-7.26 38	-6.24	-6.26	-4.40 -4.14
-6.18	6.15	-7.26 38	-6.05	-5.97	37

+0.34	-1.47	-0.35	* 0.19	+1.13	+ .33
+1.08	+2.92	+1.78	+1.60	+0.28	+1.09
+1.13	+3.27	+1.82	+1.61	+1.16	+1.14
$6 = 2.24$ $\times .14$	$\times .14$	2.89 $\times .15$	$\times .15$	$\times .15$	$\times .15$
ψ Herculis	ψ Draco	Σ Draco	γ Draconis	γ Sapittaren	ψ Herculis
17 41 53 +27 47	17 44 1 +72 12	17 51 31 +56 53	17 53 5-3 +57 30	17 58 18 -30 25	18 2 59 28 45
11 41	11 44	11 51	11 53	11 58	12 2
40 55.1	43	50 44.1	52 32.4	57 17.7	*
07			41.6	23.3	
68			45.8	29.7	
12.7			58.0	35.8	
15.5	67.6		65	41.9	29.72
20.1		53 41.1	84	43.7	1
23.0		45.2	12.7	46.3	57.1
25.5		53.3	16.8	49.4	3.0
29.0		55.9	20.7	52.7	9.0
32.0	25.94	60	25.2	54.7	15.0
		58.56	28.78	57.7	21.0
35.0		28.78	32.7	58	22.6
41.0	43	33.7	38.0	18	25.2
44.0		42.7	42.3	48	28.3
46.8		51.4	46.2	72	31.4
49.7	43.90	60.0	50.2	108	34.4
53.7		82	52.2	127	28.38
58.7		82	54.0	200	17.52
1.7		57.1	57	230	40.5
4.6		57.1	53	260	43.6
7.3	150	57.1	53	290	45.4
9.1		57.1	53	322	52.4
15.0		57.1	53	340	68.3
21.0		57.1	53	347	1.3
26.7		57.1	53	379	4.4
32.7	20.90	57.1	53	380	10.4
11 41 43.93	11 43 51.17	11 51 19.28	11 53 42.83	11 58 7.80	12 2 46.42
1 55.706	1 55.706	1 56.799	1 56.969	1 57.949	12 2 46.39
11.9	140	10.53	11.5	10.22	12 1 46.37
11 43 35.10	11 45 46.80	11 53 16.17	11 55 39.21	12 00 05.77	12 1 46.37
5-58 10.13	5-58 10.13	5-58 10.13	5-58 10.13	5-58 10.13	12 4 45.12
17 41 49.23	17 43 56.98	17 51 26.38	17 53 49.34	17 58 10.90	18-02 55.25
02	-0.3	0.3	0.3	-0.2	-0.2
+2.3	+6.41	+2.27	+2.4	+0.6	+2.3 +1.16
+1.15				+0.4	
17 41 49.45	17 43 57.29	17 51 26.62	17 53 49.65	17 58 15.44	18 7 55.46
17 41 50.51	44 4.81	51 33.69	53 56.50	17 58 21.80	8 1.91
-6.57	-7.32	-7.02	-6.85	-6.86	-6.52
-6.59	-7.52	-7.02	-6.95	-5.88	-6.52
17 0 = -4.80 + 4.25 - 5.29					
17 4 -4.96 + 3.2 - 3.86					
17 2 -7.32 -1.47 + 3.27					
17 0 -5.55 + 2.57 + 2.84					
17 2 -18.02 -11.15 + 16.86					
$0 = +1.55 + 3.38 - 6.35$					
$x = +1.03 + 2.35 - 4.95$					
$x = +1.23 + 2.44 - 2.18$					
$x = +2.44 + 1.60 - 3.93$					
$+5.03 + 1.12 - 11.77$					
$0 = +2.01 + 3.85 - 6.39$					
$+1.45 + 2.32 - 4.96$					
$+0.81 + 1.67 - 2.17$					
$+0.86 + 2.17 - 3.54$					
$+4.61 + 1.54 - 11.76$					
$0 = +3.1 + 6.2 - 9.1$					
$+1.29 + 5.4 - 8.1$					
$+1.53 + 8.86 - 10.1$					
$+2.29 + 5.5 - 8.1$					
$+2.9 + 2.3$					
$0 = +2.3 + 4.4 - 6.7$					
$+1.27 + 3.45 - 5.4$					
$+0.45 + 1.34 - 1.68$					
$+1.22 + 2.70 - 4.92$					
$+4.25 + 1.02 - 11.28$					
$+3.5 + 6.5 - 9.1$					
$+3.2 + 6.2 - 9.1$					
$+2.6 + 7.9 - 10.1$					
$+2.8 + 6.1 - 9.1$					
$+2.8 + 7.2 - 10.1$					
$0 = +3.1 + 6.2 - 9.1$					
$+1.29 + 5.4 - 8.1$					
$+1.53 + 8.86 - 10.1$					
$+2.29 + 5.5 - 8.1$					
$+2.9 + 2.3$					
$0 = +2.3 + 4.4 - 6.7$					
$+1.27 + 3.45 - 5.4$					
$+0.45 + 1.34 - 1.68$					
$+1.22 + 2.70 - 4.92$					
$+4.25 + 1.02 - 11.28$					

+2.57
-1.19
-2.84

-1.15
+12.64
+16.86

+7.5
+6.7
1.00

$b = x.15$

$x.15$

$x.15$

22 H Camel 5 hrs 2 min 27 Sarpentis 2 Lyrae
18 5 57 +110 38 18 10 50 86 36 18 15 11 - 25.5 18 32 58 38 40
12 5 69 22 12 10 12 15 12 32

14 15.8
25.7
29.0
34.3
39.3 29.06

chf

- 4 43.8
51.0
58.2
55.5
12.2 58.40

40.7
43.9
46.7
49.3
52.0 45.80

- 5 280 307 33.3 8 236 382 507
360 386 41.0 50 203 368
481 456 47.8 507 57 180
503 528 55.3
583 45.4

56.2
59.0
62
70 162

- 6 130
208
277
354
432
27.70
18.0 50.00

12.1
14.2
17.2
20.0
22.6 1732
24.0
29.2
34.4
39.3
44.7 34.40

12 5 4308
1 58.99
118

12 8 50.20
1 57.52
138

12 15 1.64
2 0.842
204

12 7 42.80
5 58 10.13
18 08 82.43
+ 2.1

12 18 50.20
5 58 10.13
18 08 82.43
+ 2.1

12 15 1.64
2 0.842
204

18 05 52.20
5 57.77
- 5.48

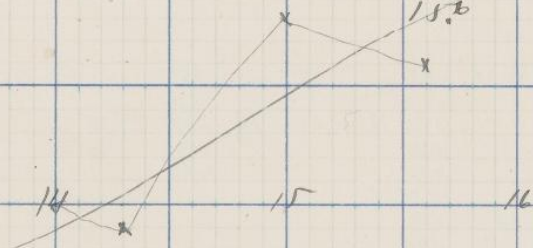
18 8 10 13.73
10 13.73
- 11.02
- 4.76
12.05

18 15 12.65
15 18.85
- 6.24

Level June 21

L.S.	14.0 ^h	b = +0.0
	14.3	-0.1
	15.0	+0.0
	15.3	+0.5
	15.6	+0.6

L.W.	17.3 ^h	b = +2.8
	17.5	+1.5
	17.8	+2.2
	18.5	+2.2
		+2.1

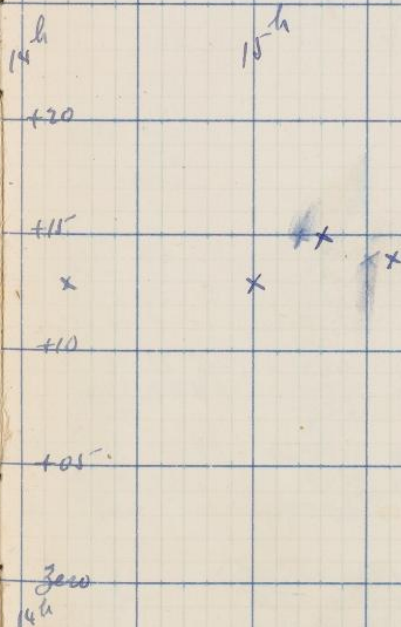


	b =
14.0	-0.1
14.5	+0.2
15.0	+0.5
15.5	+0.7
16.0	+1.0

June 28th

14.2	+0.13
15.0	+0.13
15.3	+0.15
15.6	+0.14
16.0	+0.13
16.8	+0.13
	+0.135
20.9	+0.18
21.2	+0.21
21.2	+0.17
21.2	+0.18
21.9	+0.17
22.2	+0.18
23.0	+0.20
23.1	+0.17

1944



June 23 - 1883 Sample.

$b = +13$

$x = 13$

$+13$

$+13$

$+13$

$b = +13$

α Virginis

β Cass

α Virginis

α Librae

β Mus Min

β Bootis

$h = 14$
 $m = 6$
 $s = 9$
 44

$h = 14$
 $m = 26$
 $s = 56$
 $+107$
 42

$h = 14$
 $m = 40$
 $s = 20$
 $+2$
 23

$h = 14$
 $m = 44$
 $s = 24$
 -11
 33

$h = 14$
 $m = 57$
 $s = 3$
 $+74$
 38

$h = 14$
 $m = 57$
 $s = 32$
 $+40$
 57

58 297
352
406 40.42
458 40.50
512

16 50
226
395 39.74
575
14.0

32
11.0
161 16.26
218
267

36 53
127
192 19.14
245
300

42 95
197
298 29.58
394
492

49 02
72
140 14.02
211
276

534
551
579 57.82
56
21

17 188
273
361 35.92
446
528

380
307
332 33.18
357
353

312
341
368 36.68
392
421

396
380
366 36.60
401
437

59 85
112
138 13.82
165
191

18 103
137
164 16.42
193
220
250

438
466
490 49.02
516
541

476
506
531 53.10
558
584

43 87
197
288 28.88
384
488

502
537
572 57.24
57
44

244
270
297 29.68
323
350

20 24
112
203 19.80
381
370

594
21
49 4.70
73
98

37 41
67
94 9.48
122
150

44 77
153
277 27.76
374
477

50 114
146
182 18.18
217
250

363
415
470 47.02
523
56 57.7

406
583
153 15.52
327
507

452 33
113
167
218 21.76
268
322

168
214
271 27.04
324
380

270
340
407 40.58
472
540

270
340
407 40.58
472
540

59 137
153 59 13.76
1 18.68
038

18 277
148 18 27.52
1 21.80
077

382 48.88
382 48.97
1 24.10
134

20 36 53.09
36 53.07
1 24.96
145

43 28.74
43 28.68
1 25.86
078

49 57.32
49 57.29
1 26.80
156

8 00 32.49
14 6 35.93
14 6 35.93
+1.08

8 19 49.71
14 25 52.95
14 25 52.95
+1.08

8 35.1
14 40 16.74
14 40 16.74
+1.08

8 38 17.98
14 44 21.22
14 44 21.22
+1.08

8 44 34.67
14 50 38.91
14 50 38.91
+1.08

8 57 24.35
14 57 27.59
14 57 27.59
+1.08

14 6 35.93
14 6 35.93
14 6 35.93
+1.08

14 25 52.95
14 25 52.95
14 25 52.95
+1.08

14 40 16.74
14 40 16.74
14 40 16.74
+1.08

14 44 21.22
14 44 21.22
14 44 21.22
+1.08

14 50 38.91
14 50 38.91
14 50 38.91
+1.08

14 57 27.59
14 57 27.59
14 57 27.59
+1.08

14.5 -6.38 +6.82 +1.04
14.7 -6.40 +6.84 +1.04
14.9 -6.38 +6.82 +1.04
15.0 -6.26 +6.96 +1.06

14.5 -6.38 +6.82 +1.04
14.7 -6.40 +6.84 +1.04
14.9 -6.38 +6.82 +1.04
15.0 -6.26 +6.96 +1.06

14.5 -6.38 +6.82 +1.04
14.7 -6.40 +6.84 +1.04
14.9 -6.38 +6.82 +1.04
15.0 -6.26 +6.96 +1.06

14.5 -6.38 +6.82 +1.04
14.7 -6.40 +6.84 +1.04
14.9 -6.38 +6.82 +1.04
15.0 -6.26 +6.96 +1.06

14.5 -6.38 +6.82 +1.04
14.7 -6.40 +6.84 +1.04
14.9 -6.38 +6.82 +1.04
15.0 -6.26 +6.96 +1.06

14.5 -6.38 +6.82 +1.04
14.7 -6.40 +6.84 +1.04
14.9 -6.38 +6.82 +1.04
15.0 -6.26 +6.96 +1.06

$C = -10$

$A = -31$

ATT

-6.45 -10 -26 -36
-6.35 -10 -21 -31
-6.40 -10 -28 -38
-6.38 -11 -31 -42
-6.26 -11 -30 -41

-6.81
6.59
6.78
6.80
6.67
-6.750

-6.61 -11 -10 -21
-6.71 -11 -11 -22
-6.34 -10 -19 -29
-6.37 -10 -16 -26
-6.37 -10 -15 -25
-6.55 -11 -14 -25
-6.62 -10 -19 -29

-6.82
6.93
6.63
6.63
6.44
6.80
6.91

-6.57 -13 -03 -16
-6.63 -13 -03 -16
-7.01 -15 +11 -07
-6.74 -16 +16 -10
-6.83 -13 +05 -08
-6.76 -12 -08 -20

-7.13
6.78
7.08
6.84
7.01
6.96
-6.965

+3.82	-0.78	-1.48	+6.32	+1.0	+0.36
-246	+2.21	+2.93	+1.10	+1.33	+1.07
-4.55 934212	+2.35	+3.28	+1.19	+1.33	+1.12

 $6 = +1.14$

48 H. Cephei

 $\begin{matrix} h & m & s \\ 15 & 5 & 23 \end{matrix}$

102 42

H. Min.

 $\begin{matrix} h & m & s \\ 15 & 13 & 17 \end{matrix}$

+67 44

H. Min.

 $\begin{matrix} h & m & s \\ 15 & 20 & 53 \end{matrix}$

+72 15

B. Coronae

 $\begin{matrix} h & m & s \\ 15 & 28 & 00 \end{matrix}$

29 31

+17 8

14 1

B. Coronae

 $\begin{matrix} h & m & s \\ 15 & 26 & 44 \end{matrix}$

+41 14

+11 49

+4 16

B. Coronae

 $\begin{matrix} h & m & s \\ 15 & 29 & 49 \end{matrix}$

+27 7

 $6 = +1.14$

58 443
560
83 900
196 304
320 71.44
56.56

74
152
248 24.78
328
437

583
20
47
68
9.7
12.6
15.7
18.6
21.8
24.0
26.7
30.0
33.0

15 22.841
367
400 39.84
428 16.08
456 21.76
475
525
594 59.36
52 37.63
112 21.73

18 69
137
306
277
347
20.74²

362
400
434 43.50
468
511

572
87
42 4.26
80
112

150
218
252 25.10
287
318
340
410
478 47.82
542
21

21 160
215
277 27.52
332
392
408
440
469 46.30
498
528

583
15
44 4.30
72
102

162
190
220 22.04
250
280
295
351
412 41.16
470
530

57 53.56
57 53.63
26.215
153

59 26.0
08 28.24
-1.34

5 27.75-90

8 5 33.37
-5.62-5.47

14.4 0 = -6.05 + 2.91 a - 3.29 c
-6.72 - 1.84 + 3.77
56.2 + 3.82 - 4.05
6.97 - 1.48 + 3.25
6.92 - 2.63 + 4.07

For 181 AM = -6.750
166 6.766
172 6.968
6.828

9 13 16.04
-1.05
15.89
36.844
8.44

9 14 46.88
15 20 50.12
+1.08
+1.41

15 20 50.75-53
15 20 50.75
-5.24 7.15
-6.92

0 = +3.2 + 2.03 a - 4.33 c
+3.5 + 2.72 - 2.73
+7.5 + 2.94 - 0.79
+6.0 + 2.36 - 2.24
+5.0 + 3.51 - 3.83

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +7.9 + 2.80 a - 4.72 a - e
+1.2 + 1.03 a - 2.34
+1.22 + 3.51 - 5.58
+1.3 + 1.49 - 1.83
+0.8 + 2.64 - 3.44

0 = +1.7 + 0.62 a - e
+0.5 + 0.79 a - e
+2.0 + 0.69 a - e
+0.7 + 0.85 a - e
+1.2 + 0.77 a - e

9 15 21.74
-1.02
21.72
31.172
2.89

9 16 52.88
15 22 56.23
+2.2
+1.5

15 22 56.45-38
15 23 57.6
-6.25 6.68
-6.61

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

9 19 4.28
-1.02
4.26
31.529
1.1

9 20 36.10
15 26 39.34
+2.19
+1.5

15 26 39.61-53
15 26 40.24
-6.5
-6.63 6.71

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

9 22 43.34
-1.02
43.6
32.322
1.1

9 23 36.69
15 29 39.93
+1.5
+1.5

15 29 40.14-08
15 29 40.24
-6.64
-6.71
-6.77

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

0 = +1.0 + 4.7 a - e
+1.3 + 1.00 a - e
+1.3 + 1.53 a - e
+1.4 + 1.05 a - e
+1.4 + 7.2 a - e

+0.63 +0.78 +1.01 June 23 1583	+0.52 +0.93 90 +1.04	+0.48 +0.96 94 +1.05	-2.63 +4.10 +4.87	+1.00 +0.41 +1.08	+0.96 +0.45 +1.06
$b = +0.13$ α Serpenti h m s 15 38 30 +6 48	$+1.13$ β Serpenti h m s 15 40 47 +15 44 99.838 +26 36 +29 43	$+1.13$ γ Serpenti h m s 15 43 28 +18 30 +23 53 +28 00	$+1.13$ δ Viri h m s 15 48 16 +78 9	$+1.12$ ρ Scorpi h m s 15 58 25 -22 17	$+1.12$ β Scorpi h m s 15 58 25 -19 29
cl.					
30 65 117 169 17.00 224 275		35 12 70 124 12.42 180 235		44 56.2 20 75 7.54 132 188	950 94 147 206 20.76 278 313
387 314 34.08 341 367 395	32 486 472 500 50.06 530 +16.32 585 6.38	249 276 303 30.32 330 358	38 491 27 152 15.16 278 410	45 201 230 257 25.82 288 315	328 357 384 38.42 412 440
445 472 500 49.90 526 552	10 36 6.26 63 88 116	416 442 470 47.04 497 527	40 61 106 148 190 31.52 230 380	367 39 402 430 42.86 458 486	497 522 551 55.14 581 06
03 29 57 5.64 82 111	172 300 227 22.70 254 -16.35 282 6.35	580 07 36 3.58 64 92	41 234 354 486 48.62 395 17 140 430 477 532 572 46 69	542 570 00 59.86 27 54	62 90 118 11.74 145 172
126 177 230 23.00 282 335	296 347 404 40.32 457 -34.03 512 6.29	108 160 217 21.54 270 325		572 46 69 128 182 18.32 240 2987	188 241 298 29.80 353 410
9 30 41.12 -01 +1 33.63 137	9 33 6.32 -02 1 34.129 016	35 46.88 -02 1 34.458 119	9 40 31.77 -02 1 35.279 088	9 45 42.88 -02 1 86.101 117	9 50 55.17 -01 1 86.101 157
9 32 33.68 15 38 26.92 +1.6 +1.10	9 34 40.44 15 40 43.68 +1.9 +1.12	9 37 21.55 15 43 24.28 +1.9 +1.12	9 42 7.07 15 48 10.31 +1.82 +1.53	9 47 19.08 15 53 22.32 +1.08 +1.05	9 52 32.23 15 58 35.47 +1.08 +1.05
15 38 27.08 38 23.42 -6.34 -6.40	15 40 43.8780 40 50.24 -6.37 -6.44	15 43 24.891 43 31.38 -6.37 -6.46	15 45 11.13 10.84 48 15.045 -6.92 -7.21	15 53 22.4037 53 28.78 -6.38 -6.41	15 58 35.552 58 41.12 -6.26 -6.30

$$\begin{array}{r} -34-36 \\ +177+179 \\ \hline 117+183 \end{array}$$
$$\begin{array}{r} 4.017 \\ +1.60 \\ \hline 4.161 \end{array} \quad 9.79415$$
$$\begin{array}{r} +.44 \\ +1.00 \\ +1.09 \end{array}$$

$+1.5$
 $+1.287$
 $+1.298$

38 Dracomi
M.
17 51 31
+ 56 58
- 11 29

4.12
E Diacmysis

$+12$
 7 Dec
 $R17^{\circ} 54'$
 $+57' 36''$
 $- 600$

109 Hercules
M
18 15 45
+ 21 43
+ 23 48

109 Here.

L. L. L. L. L.
18 33 1
+ 35 41
+ 6 49

Che-

11	32	11.0	
		17.5	
		23.7	23.72
		29.8	4
		36.7	
		50.2	
		56.4	
		2.7	2.86
		9.3	
		15.7	
		29.5	
		35.0	
		41.4	41.62
		48.0	
		54.2	
34		7.6	
		13.7	
		20.3	20.28
		26.7	
		33.1	
		45.7	
		52.3	
		59.0	58.90
		5.3	
		12.2	

17	43	+	
		+	
		+	
	32		
	8.3		
17.7	19.3	21.0	
22.6	24.5	25.5	
27.6	29.2	30.5	
32.2	34.0	35.5	
37.0			
	27.42	27.4	
47.0		27.4	
57.4			
56.0	56.26		
61.2	78.72		
55.7	27.97		
44	8.5		
17.7			
27.7	27.56		
37.3	58.52		
46.6	27.64		

11	45	15.5	
		20.6	
		24.5	24.74
		29.1	+52.68
		33.0	17.37
		41.9	
		46.0	
		50.3	50.26
		54.2	+25.25
		58.9	15.47
			51
		6.9	
		11.2	
		15.5	15.53
		20.0	25.25
		24.2	084
			5031

59	564	
	598	
	40	286
	77	
	114	
	190	
	230	
	266	2470
	305	
	344	
	421	
	456	
	497	4956
	524	
	580	
1	54	
	86	
	126	1262
	164	
	201	
	278	
	313	
	353	3530
	390	
	431	

2	9	49.5	
		55.1	
	10	0.6	0.70
		6.4	
		11.9	
		13.4	
		16.3	
		19.3	19.18
		22.0	
		24.9	
		30.5	
		33.1	
		36.0	36.06
		39.0	
		41.7	
		47.2	
		50.0	
		52.9	52.86
		55.6	
		58.6	
	11	0.2	
		5.6	
		11.2	11.32
		16.9	
		22.7	

12	13	596	
		4.2	
		8.6	8.64 66
		13.1	
		17.7	
		26.7	
		31.4	
		35.8	35.80 35
		40.2	
		44.9	
		54.0	
		57.7	
		3.0	2.84 12
		7.4	
		12.1	
		21.0	
		26.0	
		30.3	30.26 48
		34.7	
		39.3	
		48.4	
		52.7	
		57.3	57.34 57
		1.9	
		6.4	

11	33	4448
	• 1	- 02 53.542 114
11	25	35.40
19	41	38.64 + 8%
17	41	33.22

		64
		<u>27.52</u>
11	43	<u>57.09</u>
		- 04
	1	<u>55.48</u>
		15
11	40	<u>32.00</u>
17	51	<u>2.60</u>
		<u>58.9</u>
		- 3
		<u>26.4</u>
17	51	<u>62</u>
17	51	<u>33.6</u>
		- 7.0
		<u>64.8</u>

11	45	50.25
5		-0.3
6	11	45
6		50.25
6		1
6		55.14
6	11	47
6		138
6	21	40.20
6		53
6		4844
6	461	132
6		4876
6		158
6		6
9	17	53
9		56.50
9	-7.20	-6.9
9	7.08	-6.9

12 0 4961
- 02
1 1 58278
136

12 2 4500
18 8 5124
19
5 18
18 18 4601

12	10	36.02
		- .03
	1	36.82
		.059
12	12	36.01
18	18	39.2
		+ .2
		+ .1
18	18	39.4
18	18	46.0
		- .66
		- .6

12	15	2.98
		- .02
2	2	0.742
		.082
2	12 14	2.48
0	18 23	.002
12		
638	18 23	
1		
7		
63		

June 23 / 883

$$\begin{array}{r} +2.25 \\ +1.187 \\ +1.19 \end{array}$$

P. J. Sample	Σ
1.62893	A+E +17
	H.26
1.32790	B+B.
	H.27

$$\begin{array}{r} -1.271 \\ +266 \\ +292 \\ \hline 953474 \end{array}$$

Cambridge
Chronograph

4.12

L. Lynce

В Луцке

B. L. Moore

Q. J. Jones

L. A. C. 1890

E. J. ...

$$\begin{array}{r} 184548 \\ + 3314 \\ \hline \end{array}$$
$$\begin{array}{r} 184548 \\ + 3314 \\ \hline \end{array}$$

19 12 20
+ 37 55

$$\begin{array}{r} +69 \quad 58 \\ -24 \quad 28 \\ \hline \end{array}$$
[illegible]

12	24	4910 -02	12	27	4786 -02	96	12	37	3419 -02	12	54	1638 -02	13	26	5924 -01	45	1722	48	4734 -04
	2	2.220 .138		2	2.713 .130			2	4.356 .083		2	7.149 .045		2	12.405 .156				

12 26	57.43	12 29	50.478	12 39	38.62	12 56	23.55	13 29	9.79
18 32	54.67	18 35	53.42	18 45	41.86	19 2	26.79	19 35	13.03
	+2.25		54.02		+2.2				
	+1.15				+1.14				
18 32	54.42	82		18 45	42.90				
28	1.85				48.85				
	-6.98				-6.76				
	-7.03				-6.85				

+61
+81
H₁₀₃

+13

L. Aguirre

1945-7

18 34

+36 56

52

10.8

16.0

21.1

22.4

25.1

27.7

30.5

33.0

38.4

40.9

43.6

46.1

48.8

54.0

56.8

58.6

2.3

4.8

6.3

11.5

16.7

22.1

27.4

13 36

43.65

0.2

2

19.048

11.9

13 38

57.80

19 48

52.04

+16-11

19 48

120.15

40

7.82

-6.62

-6.66

Pu. L. W.

h

$$21.4 \quad 0 = -6.60 + 7.92 + 1.17e$$

$$21.5 \quad 6.64 + 8.2 + 1.01$$

$$21.8 \quad 6.55 + 8.7 + 1.02$$

$$22.0 \quad 6.69 + 8.2 + 1.00$$

$$22.2 \quad 6.56 + 8.2 + 1.00$$

$$22.3 \quad 6.62 + 7.0 + 1.00$$

$$22.9 \quad 6.45 + 1.12 + 1.13$$

$$22.0 \quad 6.59 + 8.3 + 1.03$$

$$22.6 \quad 0 = -6.88 + 5.92 + 1.02e$$

$$23.0 \quad 6.64 + 5.32 + 1.03$$

$$6.57 + 6.0 + 1.01$$

$$-6.50 + 5.7 + 1.02$$

$$22.1 \quad 0 = 9.06 + 2.72 + 1.19e$$

$$21.7 \quad 7.10 - 0.82 + 1.22e$$

$$7.08 + 0.94 + 1.35e$$

$$-6.51 + 3.82 + 1.10e$$

+0.12
+1.45
+1.45

+19

o'lycni

h n s

20 9

+46 23

43.0

48.2

53.3

58.6

9 9.1

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10 10.7

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25.9

31.2

41.3

46.8

52.0

57.2

3.0

9 50.12

0.02

19 57.82

0.02

+0.2
+1.41
+1.41

+19

L. Aguirre

h n s

20 37 29

+46 52

+6 38

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44.2

49.2

59.3

4.3

9.2

14.2

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44.1

49.2

37 39.28

0.2

47 26.98

0.02

13.5

13.50

2.09

25.0

25.5

June 23 1883		+181 +1.31 +1.342	+176 +1.27 +1.287	+21 +1.101 +1.15	+16 +1.27 +1.37	-597 +2.01 +2.09	9.68052
b = +14		Gl Cygni	Gl Cygni	Gl Cygni	Gl Cygni	Gl Cygni	
v Cygni		21 18 128	21 18 128	21 18 128	21 18 128	21 18 128	
21 18 128		16.9	16.9	16.9	16.9	16.9	
+38° 18'		20.98	20.98	20.98	20.98	20.98	
+7 19		25.0	25.0	25.0	25.0	25.0	
0.440		25.2	25.2	25.2	25.2	25.2	
53.3		37.4	37.4	37.4	37.4	37.4	
57.9		41.1	41.1	41.1	41.1	41.1	
2.2		45.6	45.6	45.6	45.6	45.6	
6.9		49.3	49.3	49.3	49.3	49.3	
15.7		53.7	53.7	53.7	53.7	53.7	
20.5		57.9	57.9	57.9	57.9	57.9	
25.0		61.1	61.1	61.1	61.1	61.1	
29.3		64.3	64.3	64.3	64.3	64.3	
34.0		67.5	67.5	67.5	67.5	67.5	
2 21.6		70.7	70.7	70.7	70.7	70.7	
25.0		73.9	73.9	73.9	73.9	73.9	
28.3		77.1	77.1	77.1	77.1	77.1	
32.0		80.3	80.3	80.3	80.3	80.3	
35.3		83.5	83.5	83.5	83.5	83.5	
2 42.2		86.7	86.7	86.7	86.7	86.7	
45.7		89.9	89.9	89.9	89.9	89.9	
48.1		93.1	93.1	93.1	93.1	93.1	
52.0		96.3	96.3	96.3	96.3	96.3	
56.0		99.5	99.5	99.5	99.5	99.5	
3 2.8		102.7	102.7	102.7	102.7	102.7	
6.2		105.9	105.9	105.9	105.9	105.9	
9.8		109.1	109.1	109.1	109.1	109.1	
13.0		112.3	112.3	112.3	112.3	112.3	
16.8		115.5	115.5	115.5	115.5	115.5	
2 49.05		118.7	118.7	118.7	118.7	118.7	
1 51.89		121.9	121.9	121.9	121.9	121.9	
8 9.59		125.1	125.1	125.1	125.1	125.1	
11 39.72		128.3	128.3	128.3	128.3	128.3	
17 57.52		131.5	131.5	131.5	131.5	131.5	

$$\begin{aligned}
 113 \quad 0 &= -7.7 - 6.2a + 2.14c \\
 245 &= -7.4 - 1.21 + 2.83c \\
 217 &= -7.40 - 1.30 + 3.04c \\
 219 &= -7.34 - 1.60 + 3.45c
 \end{aligned}$$

$$\begin{aligned}
 0 &= +6.8 + 1.45a - 1.13c \\
 &= +6.5 + 1.04 - 1.10 \\
 &= +6.1 + 2.13 - 2.00 \\
 &= +7.5 + 2.43 - 2.42
 \end{aligned}$$

$$\begin{aligned}
 0 &= +6.1 + 1.31a - c \\
 &= +3.4 + 1.07a - c \\
 &= +4.0 + 1.06a - c \\
 &= +3.1 + 1.00a - c
 \end{aligned}$$

$$\begin{aligned}
 a &= -3.8 \\
 &= -2.2 \\
 &= -2.8 \\
 &= -2.1 - 2.75
 \end{aligned}$$

$$\begin{aligned}
 0 &= +4.7 + 1.19a + 1.12c \\
 &= +4.4 + 1.78 - 1.91 \\
 &= +6.0 + 1.67 - 2.03 \\
 &= +5.4 - 2.17 - 2.43
 \end{aligned}$$

$$\begin{aligned}
 a &= +4.2 + 1.06a - c \\
 &= +2.3 + 1.93a - c \\
 &= +4.0 + 1.92a - c \\
 &= +2.2 + 1.90a - c
 \end{aligned}$$

$$\begin{aligned}
 a &= -3.1 \\
 &= -1.4 \\
 &= -3.3 \\
 &= -1.4 - 2.55
 \end{aligned}$$

$$\begin{aligned}
 0 &= +1.9 + 0.76a - 0.79c \\
 &= +1.6 + 1.30 - 1.68 \\
 &= +3.2 + 1.38 - 1.69 \\
 &= +2.6 + 1.68 - 2.10
 \end{aligned}$$

$$\begin{aligned}
 0 &= +2.4 + 0.86a - c \\
 &= +1.0 + 1.84a - c \\
 &= +1.9 + 1.82a - c \\
 &= +1.2 + 1.80a - c
 \end{aligned}$$

$$\begin{aligned}
 a &= -1.5 \\
 &= -0.0 \\
 &= -1.1 \\
 &= -0.3 - 0.68
 \end{aligned}$$

-68.2 +2.05 +2.14 Lamp No 6-125 +1.19 L Cephei h m s 21 15 +62 6 -16 36	+150.79 +68.3 +1.01 +1.19 B Dgn h m s 20 25 24 -6 5 +57 35	-12.2 +2.67 +2.523 953301 +1.19 P Cephei h m s 21 27 8 +70 3 -24.33	+82 +60 +1.01 +1.19 E Cephei h m s 21 31 31 -8 22 +53 52	+66.60 +82 +1.01 +1.19 E Cephei h m s 21 38 +9 20 +36 10	-1.30 +278.4 +20.84 9.51774 +1.19 11 Cephei h m s 21 40 12 +70 46 -25 16
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15 6 380 580 120 233 340 310 372 431 487 597 14 37 52 75 10.89 91 110 334 387 446 500 548 587 93 212 320 433	10 1.06 82 134 186 238 252 280 306 332 360 412 437 463 490 517 570 596 22 50 76 90 140 195 247 300	11 82 134 186 238 316 342 368 395 423 477 502 528 555 580 316 34 60 87 113 140 153 206 260 312 366	22 92 146 197 280 302 316 342 368 395 423 477 502 528 555 580 316 34 60 87 113 140 153 206 260 312 366	29 253 277 306 331 357 411 437 465 492 517 562 588 24 50 76 32 41 131 280 361	30 522 599 162 162 187 209 226 260 318 320 346 374 401 427 453 478
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15 4 10.87 -03 +2 25.257 080 15 4 39.87 21 15 43.11 +1.39 21 15 43.66 15 50.93 -7.27 7.43	10 16 46.42 -01 +2 30.476 127 15 19 17.01 21 25 20.25 +1.12 25 20.4237 25 27.02 -6.65 -6.65	10 18 31.05 -02 2 30.504 085 10 21 15.0 21 27 5.14 +1.51 27 5.5665 27 13.10 -7.24 7.45	15 22 52.52 -01 2 31.461 143 10 25 24.41 21 31 27.65 +1.78 31 27.7776 34.43 -6.64 6.87	15 29 46.31 02 2 22.611 127 10 32 19.03 21 38 22.27 +1.22 38 22.4247 38 29.36 -6.87 -6.94	15 31 32.13 -04 2 32.940 088 15 34 5.55 21 40 6.36 +1.74 40 7.10 8.88 -7.40 7.62
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$0 = +0.36 + 90a + 28c$
 $+28 + 1.59 + 1.28$
 $+49 + 1.68 + 1.09$
 $+43 + 1.88 + 2.26$

$0 = +36 + 90a - c$
 $+19 + 80a - c$
 $+26 + 85a - c$
 $+19 + 88a - c$

$a = -28$
 -40
 -18
 -11
 -16

1883phae.proj.:428H

+70
+71
+1.00

+1.18

U. Aquarii
h m s
22 19 18
+0 44
+44 43

+58
+583
+1.02

+1.19

U. Pegasi
h m s
22 35 38
+10 13
+35 17

+112
+129
+1.126
9.93643

+1.19

U. Piscis
h m s
22 57 10
-30 15
+75 45

+53
+89
+1.043

+1.19

U. Pegasi
h m s
22 58 56
+14 35
+30 55

3

35 40
96
148 14.80
201
255

49 18.0
234
288 28.80
342
396

10 105
130
156 15.64
183
208

268
285
320 32.12
348
373

410
436
463 46.32
490
517

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315 31.42
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366

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481 48.12
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42 132
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432 43.14

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16 42 19.13
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16 50 21.60
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16 13 10.82
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16 28 30.00
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June 28 1883

Personal Equation Observations at Cambridge.
between W.R. and C.N.M.

Ti Boobis

109 Virginis

Spirae 48381

L. 2164

h m s
14 34 32.5
36.0
39.7 39.70
43.3
47.0

h m s
14 36 14+16 51
38.1
38.5
2.4

R
+16

h m s
39 41.0 39 41.0
44.9
48.3 41.40
52.0
55.8

R
M

h m s
14 44 24-15 33
43.6
47.1
50.9 50.92
54.6 44.17
58.4 35.09

R R M

h m s
14 48 28+59 48
47.1
8.2
15.2 15.18
22.1
29.3

R R M

M.

34 55.1 55.1
58.5
2.4 23.8
6.0
9.8 9.8

h m s
40 2.3
6.0
9.4 9.42
13.0
16.4

h m s
44 5.6
9.4
13.1 13.08
16.8 22.09
20.5 35.17

h m s
47 43.2
50.0
57.2 54.12
4.0
11.2

35 17.0 17.0
20.8
24.4 24.46
28.2
31.9

h m s
40 23.6
27.2
30.8 30.72
34.0
38.0

h m s
44 27.8
31.4
35.1 35.12
38.8
42.5

h m s
48 25.4
32.6
39.5 39.52
46.5
53.6

35 39.0 39.0
43.0
46.7 46.60
50.3
54.0

h m s
40 45.0
48.4
52.0 51.98
55.5
59.0

h m s
44 50.0
53.4
57.1 57.18
0.8 22.09
4.6 35.09

h m s
49 7.8
14.8
21.8 21.84
29.0
35.8

36 1.2
4.8
8.7 8.75
12.7
16.3

h m s
40 6.34
9.8
13.4 13.40
17.0
20.5

h m s
45 11.9
15.6
19.3 19.32
23.0 44.17
26.8 35.15

h m s
49 50.0 49 50.0
57.2
4.2 4.10
11.0
18.1

35 24.22 24.48

40 30.90 30.71

44 35.13 35.12

48 39.44 48 39.49

R-M +2.6
R-M 0.05 +2.5

R-M = +0.19
+1.5

+0.01
+0.1

+0.15
+0.08

1+E 162893
13+0 132790

B Mrs. Min.

u 2 3 4 3
14 37 3+1 442324
R 12+14 38
14 15

48 H. Cephei

u 2 3
15 5 23+7718
R 102 42772

2 51.6 8 15
7.8
24.0 2398.
40.0
56.5

14 H. Mrs. Min.

u 2 3
15 13 17+6748
R 15 M

J Mrs. Min.

u 2 3
15 20 53 9.44411
R 72 15 M

15

3 28.8
45.2
4 0.7 496
17.0
33.2

5 5.2
21.8
37.8 3782
54.0
6 10.3

6 42.4
58.8
7 14.9 1490
31.0
47.4

52 9.5 32 9.5
22.8
36.0 36.14.0
49.5 8029.
2.9 1585

53 29.3 53 70.3
43.0
56.4 56.24
10.0 160580
22.5 1566

8 18.5 8 18.5
35.0
50.8 5084.8
9 6.3 1 1.3
23.6 23.6

12 14.3 12 14.3
23.5
33.2 33.14
42.7 42.7
52.0

13 11.0
20.3
29.9 29.72
39.0
48.4

14 7.0 14 7.0
10.0
25.9 25.60
35.0 35.0
44.1

19 33.9 19 33.9
46.0
57.8 57.52
9.3 9.78
20.6 20.6

20 43.6
55.5
21 7.1 702
18.8
30.1

21 55.5 21 55.5
22 5.8 22 5.8
17.3 17.60
28.8 28.8
40.6 40.6
7.81

51 15.64 51 15.76
+08
+02

5 3789 3741
+48
+10

2972 2937
+35
+13

21 7.02 7.56
+54
+10

June 28-1883

1st Roris

15 26 44 41 14

R

M.

h m
15 25 48.7
53.4
58.0 5804
2.8
7.3

26 17.0 56 11.0
21.6
26.2 2624
30.7
35.7

26 45.0 56 11.0
49.7
54.5 5440
59.0
3.8

27 13.2
18.0
22.7 2272
27.4
32.3

27 41.8
46.4
51.1 5120
56.0
0.7

26 54.82 26 54.45

R-m +0.17

R-Mean +.15

2nd Roris

15 29 49 +27 7

R

M.

15 28 59.0 59.0
29 3.0 20 5.0
7.0 696
10.8
15.0

29 22.9
26.9
30.8 8088
35.0
38.8

29 46.9
50.8
54.8 5480
58.7
2.8

30 10.8
14.8
18.7 1872
22.6
26.7

30 34.6
38.5
42.5 4256
46.6
50.6

29 54.80 54.76

+0.04

+.03

3rd Roris

15 38 30 +6 48

R

M.

15 37 51.0 51.0
37 54.5
58.1 5812
1.8
5.2

38 12.7
16.0
19.7 1972
23.2
27.0

38 34.0
37.5
41.0 4110
44.7
48.3

38 55.4
59.0
39 2.6 252
6.0
9.6

39 16.8
20.4
23.9 2390
27.4
30.0

38 41.11 38 40.91

+0.20

+.20

4th Roris

15 40 44 41 48

R

M.

15 40 6.7
10.3
13.9 1390
17.5
21.1

40 28.3
32.0
36.0 3578
39.6
43.0

40 50.6
54.5
57.9 5802
1.7
5.4

41 12.8
16.4
20.0 2004
23.7
27.3

41 35.0 4
38.7
42.2 4230
46.0
49.6

40 58.10

+.15

+.15

40 57.95

K. Serpin

 $\begin{matrix} h & m & s \\ 15 & 43 & 28 \end{matrix}$ H 830
M.

J. W. M.

 $\begin{matrix} h & m & s \\ 15 & 48 & 16 \end{matrix}$
R. 77 8 9 M.

J. Serpin 996629

 $\begin{matrix} h & m & s \\ 15 & 53 & 25 \end{matrix}$
R. -22 17 M.

B. Serpin 997439

 $\begin{matrix} h & m & s \\ 15 & 58 & 38 \end{matrix}$
R. -19 29 M.
h
15
 $\begin{matrix} 42.1 & 47.0 & 15 \\ 50.5 \\ 54.2 & 54.32 \\ 58.0 \\ 1.9 \end{matrix}$
 $\begin{matrix} 15.52 & 42.7 \\ 46.2 \\ 50.1 & 50.14 \\ 53.9 & 45.99 \\ 57.8 & 36.13 \end{matrix}$
 $\begin{matrix} 57 & 56.4 & 56.4 \\ 0.1 & 0.1 \\ 3.9 & 3.9 & 3.86 \\ 7.6 & 7.6 & 45.14 \\ 11.3 & 11.3 & 49.00 \end{matrix}$
 $\begin{matrix} 43 & 9.5 \\ 13.0 \\ 16.8 & 16.80 \\ 20.5 \\ 24.2 \end{matrix}$
 $\begin{matrix} 46 & 10.5 & 53 & 5.5 \\ 28.0 & 9.1 \\ 45.2 & 45.30 & 13.0 & 13.10 \\ 47 & 2.9 & 17.0 & 22.99 \\ 19.9 & 20.9 & 36.09 \end{matrix}$
 $\begin{matrix} 19.0 \\ 22.7 \\ 26.5 & 26.50 \\ 30.3 & 22.54 \\ 34.0 & 49.04 \end{matrix}$
 $\begin{matrix} 43 & 31.9 \\ 35.6 \\ 39.2 & 39.26 \\ 43.0 \\ 46.6 \end{matrix}$
 $\begin{matrix} 47 & 54.6 \\ 48 & 11.9 \\ 29.0 & 29.12 \\ 46.4 \\ 49 & 18.7 \end{matrix}$
 $\begin{matrix} 53 & 28.4 & 58 & 41.5 \\ 32.0 & 45.4 \\ 35.9 & 35.98 & 49.2 & 49.12 \\ 39.9 & 52.9 \\ 43.7 & 56.6 \end{matrix}$
 $\begin{matrix} 43 & 54.2 \\ 58.0 \\ 1.8 & 1.68 \\ 5.4 \\ 9.0 \end{matrix}$
 $\begin{matrix} 49 & 38.0 \\ 55.4 \\ 50 & 12.1 & 12.56 \\ 29.8 \\ 47.5 \end{matrix}$
 $\begin{matrix} 53 & 51.3 & 59 & 4.0 \\ 55.2 & 8.0 \\ 58.8 & 58.94 & 11.3 & 11.68 \\ 3.0 & 22.99 & 15.4 & 22.57 \\ 6.4 & 35.95 & 19.2 & 49.11 \end{matrix}$
 $\begin{matrix} 44 & 16.6 \\ 20.3 \\ 24.0 & 24.08 \\ 27.8 \\ 31.7 \end{matrix}$
 $\begin{matrix} 54 & 14.2 & 59 & 26.9 \\ 18.0 & 30.5 \\ 21.9 & 21.92 & 34.3 & 34.32 \\ 25.7 & 45.99 & 38.0 & 45.14 \\ 29.8 & 35.93 & 41.9 & 49.18 \end{matrix}$

43 39.25

39.22

48 29.12

48 28.93

53 36.11

35.95

58 49.14

49.04

+ 0.03

+ 19

+ 16

+ 10

+ 0.03

+ 0.04

+ 10

+ 10

June 28 1983

CW

CE.

*O. Hercules**O. Ophi*

19 No. Min. - 9.37858

19 No. Min.

$\begin{matrix} h & m & s \\ 16 & 5 & 5 \end{matrix} + 45.15$
 $\begin{matrix} h & m \\ 16 & 4 \end{matrix} \begin{matrix} R \\ 5.9 \\ 10.7 \\ 15.9 \end{matrix} 1584$
 $\begin{matrix} h & m \\ 16 & 4 \end{matrix} \begin{matrix} R \\ 5.9 \\ 10.7 \\ 15.9 \\ 20.8 \\ 25.9 \end{matrix}$

$\begin{matrix} h & m & s \\ 16 & 8 & 13 \end{matrix} - 3.23$
 $\begin{matrix} h & m \\ 16 & 7 \end{matrix} \begin{matrix} R \\ 34.0 \\ 37.6 \\ 41.2 \\ 44.5 \\ 48.0 \end{matrix} 4106$

$\begin{matrix} h & m \\ 16 & 14 \end{matrix} + 76.10$
 $\begin{matrix} h & m \\ 16 & 14 \end{matrix} \begin{matrix} R \\ 56.0 \\ 10.9 \\ 25.8 \\ 41.0 \\ 55.4 \end{matrix} 2582$
 $\begin{matrix} h & m \\ 16 & 14 \end{matrix} \begin{matrix} R \\ 56.0 \\ 10.9 \\ 25.8 \\ 41.0 \\ 55.4 \end{matrix} 2582$

$\begin{matrix} h & m \\ 16 & 14 \end{matrix} + 76.2$

$\begin{matrix} h & m \\ 4 & 35.8 \\ 40.8 \\ 45.9 \\ 51.0 \\ 56.0 \end{matrix} 4590$

$\begin{matrix} h & m \\ 7 & 35.5 \\ 39.0 \\ 42.6 \\ 46.0 \\ 49.8 \end{matrix} 258$

$\begin{matrix} h & m \\ 12 & 25.3 \\ 40.1 \\ 55.2 \\ 10.0 \\ 25.0 \end{matrix} 55.12$
 $\begin{matrix} h & m \\ 13 & 10.0 \\ 25.0 \end{matrix} 2411$

$\begin{matrix} h & m \\ 5 & 6.0 \\ 11.0 \\ 16.0 \\ 21.2 \\ 26.1 \end{matrix} 1606$

$\begin{matrix} h & m \\ 8 & 16.8 \\ 20.3 \\ 23.9 \\ 27.5 \\ 31.0 \end{matrix} 2390$

$\begin{matrix} h & m \\ 5 & 36.2 \\ 41.1 \\ 46.2 \\ 51.2 \\ 56.0 \end{matrix} 4614$

$\begin{matrix} h & m \\ 8 & 38.0 \\ 41.5 \\ 45.2 \\ 48.7 \\ 52.3 \end{matrix} 4514$

$\begin{matrix} h & m \\ 15 & 22.0 \\ 36.6 \\ 51.5 \\ 6.3 \\ 21.2 \end{matrix} 5152$
 $\begin{matrix} h & m \\ 16 & 6.3 \\ 21.2 \end{matrix} 8899$

$\begin{matrix} h & m \\ 6 & 6.6 \\ 11.4 \\ 16.7 \\ 21.7 \\ 26.7 \end{matrix} 1662$

$\begin{matrix} h & m \\ 8 & 59.3 \\ 2.9 \\ 6.3 \\ 9.9 \\ 13.5 \end{matrix} 638$

$\begin{matrix} h & m \\ 16 & 50.0 \\ 6.1 \\ 20.3 \\ 35.6 \\ 50.2 \end{matrix} 2044$
 $\begin{matrix} h & m \\ 17 & 6.1 \\ 20.3 \\ 35.6 \\ 50.2 \end{matrix} 17797$

$\begin{matrix} h & m \\ 5 & 16.43 \\ 16.03 \end{matrix} + 0.20$
 $\begin{matrix} h & m \\ 5 & 16.03 \end{matrix} + 14$

$\begin{matrix} h & m \\ 8 & 23.87 \\ 23.72 \end{matrix} + 0.15$
 $\begin{matrix} h & m \\ 8 & 23.72 \end{matrix} + 15$

$\begin{matrix} h & m \\ 14 & 24.11 \\ 23.99 \end{matrix} + 32$
 $\begin{matrix} h & m \\ 14 & 24.11 \\ 23.99 \end{matrix} + 08$

$\begin{matrix} h & m \\ 14 & 22.53 \\ 22.47 \end{matrix} + 06$
 $\begin{matrix} h & m \\ 14 & 22.53 \\ 22.47 \end{matrix} + 07$

Mrs. Klein 938317
 $\begin{matrix} h & m & s \\ 16 & 20 & 56 \end{matrix}$
 R + 76.1 ML

a. Senf 995304
 $\begin{matrix} h & m & s \\ 16 & 22 & 14 \end{matrix}$
 R - 26.10 ML

B. Herendi
 $\begin{matrix} h & m & s \\ 16 & 25 & 11 \end{matrix} + 21.45$
 R ML

A. Dugan 9.55400
 $\begin{matrix} h & m & s \\ 16 & 28 & 13 \end{matrix} + 69.1$
 R ML

16 19

16

16 26.7 28.6

16

32.3
 36.3 36.24
 40.0
 44.0

19 11.0
 25.0
 39.8 40.12
 55.4 + 85.05
 20 9.4 8.14

51.4 26 51.4
 55.3 55.3
 58.9 58.9 58.94
 2.7
 6.4

29 5.6
 15.0
 24.9 25.04
 34.9 59.42
 44.8 54.46
 1.1

24 16.8
 20.8
 24.6 24.66
 28.4
 32.7

27 14.1
 18.0
 21.8 21.82
 25.7
 29.5

30 4.8
 14.6
 20.4 24.54
 34.6
 44.3

24 40.8
 44.9
 48.5 48.64
 52.5 - 23.71
 56.5 24.93

27 07.1
 41.0
 44.7 44.72
 48.4
 52.4

31 3.73
 13.6
 23.6 23.54
 33.5 59.42
 43.3 84.12
 7

25 4.2
 80.2 + 5.2
 12.1 11.2
 16.2 47.41
 20.1 24.91

28 10.3
 4.0
 7.9 790
 11.7
 15.6

24 24.80 24.81

27 22.07 27 21.83

24.50 24.12
 3 84.8
 2.7
 + 0.38
 + 0.08

+ 0.9
 + 0.08

+ 0.24
 + 0.22

June 28-1883

J. Oph. 9.99290

$$\begin{matrix} 16.30 & 43-10 & 19 \\ R & -10 & 20.711 \end{matrix}$$

Gr. 848 9.39140

$$\begin{matrix} 16 & 33 & 4 & 544 \\ R & 104 & 16 & 711 \end{matrix}$$

4th Venus

$$\begin{matrix} 16 & 38 & 5.3 & +39 & 8 \\ R & 711 \end{matrix}$$

Gr. 2377

$$\begin{matrix} 16 & 43 & 5 & +0 & 0 \\ R & 711 \end{matrix}$$

32

$$\begin{matrix} 32 & 46.6 \\ 50.0 \\ 53.7 & 53.72 \\ 57.3 \\ 1.0 \end{matrix}$$

$$\begin{matrix} 33 & 8.3 \\ 12.0 \\ 15.5 & 15.48 \\ 19.0 & -21.63 \\ 22.6 & 53.85 \end{matrix}$$

$$\begin{matrix} 33 & 29.9 \\ 33.5 \\ 37.0 & 37.10 \\ 40.7 & -43.25 \\ 44.4 & 53.85 \end{matrix}$$

$$\begin{matrix} 33 & 53.85 & 53.72 \\ +13 \\ +13 \end{matrix}$$

$$\begin{matrix} 34 & 9.5 \\ 24.3 \\ 38.4 & 38.42 \\ 52.7 & -86.34 \\ 7.2 & 12.08 \end{matrix}$$

$$\begin{matrix} 35 & 35.8 \\ 51.0 \\ 36 & 5.2 & 52.4 \\ 19.9 & 172.68 \\ 34.3 & 12.46 \end{matrix}$$

$$\begin{matrix} 38 & 27.3 \\ 32.0 \\ 36.5 & 36.52 \\ 41.8 \\ 45.8 \end{matrix}$$

$$\begin{matrix} 38 & 54.9 \\ 59.4 \\ 40.0 & 400 \\ 8.7 \\ 13.0 \end{matrix}$$

$$\begin{matrix} 39 & 22.2 \\ 27.0 \\ 31.4 & 31.44 \\ 36.0 \\ 40.6 \end{matrix}$$

$$\begin{matrix} 39 & 49.5 \\ 54.0 \\ 58.5 & 58.52 \\ 3.0 \\ 7.6 \end{matrix}$$

$$\begin{matrix} 39 & 3.99 & 3.72 \\ +27 \\ +27 \\ 3.1 \end{matrix}$$

$$\begin{matrix} 16 & 41 & 44.8 \\ 51.7 \\ 57.8 & 57.80 \\ 4.0 \\ 10.7 \end{matrix}$$

$$\begin{matrix} 42 & 23.4 \\ 30.2 \\ 36.5 & 36.64 \\ 43.3 \\ 49.8 \end{matrix}$$

$$\begin{matrix} 43 & 2.7 \\ 9.2 \\ 15.4 & 15.74 \\ 22.4 \\ 29.0 \end{matrix}$$

$$\begin{matrix} 42.0 \\ 48.5 \\ 54.7 & 54.84 \\ 1.2 \\ 44 & 7.8 \end{matrix}$$

$$\begin{matrix} 44 & 21.0 \\ 27.8 \\ 34.1 & 34.08 \\ 40.5 \\ 47.0 \end{matrix}$$

$$\begin{matrix} 15.94 & 15.74 \\ +20 \\ +11 \end{matrix}$$

K Ophi. 999392

 α Herculis 998591

O Ophi. 995769

 β Draconis

h m s
16 52 8 +9 34
R +9 33 M
16 51 28.6
32.1
35.6 35.64
39.2 43.16
42.7 18.80

h m s
17 9 19 +14 32
R +14 31 M
17 8 38.7
41.9
45.6 45.68
49.24 43.96
53.0 29.64

h m s
17 14 49
-24 53
R M
17 14 6.3
9.9
13.9 13.88
17.7 +46.91
21.6 0.79

h m s
17 27 47 +52 23
R M

51 49.3
53.3
56.7 56.80
0.2 21.58
4.0 18.28

9
11.4
15.1

14 29.2
33.8
37.0 37.02
40.8 +23.45
44.8 0.47

27 12.0
18.0
23.8 23.64
29.4
35.0

52 11.3
14.8
18.4 18.42
21.9
25.7

9 22.4
26.2
29.9 29.80
33.3
37.2

14 52.5
56.2
0.5 0.32
4.0
8.4

27 47.2
53.1
58.9 58.86
4.7
10.4

52 32.6
36.6
40.0 40.06
43.7 21.58
47.4 18.48

9 44.5
47.9
51.7 51.68
55.3 21.98
59.0 29.70

15 16.0
20.2
23.9 23.90
27.7 23.45
31.7 0.45

28 21.6
27.6
33.1 33.34
39.3
45.1

52 52.9
58.4
1.9 1.92
5.4 43.16
9.0 18.76

10 6.2
9.8
13.4 13.40
16.8 43.96
20.8 29.44

15 39.5
43.7
47.5 47.50
51.4 46.91
55.4 0.59

52 18.78 18.43
+35
+34

9 29.75 29.54
+21
+20

15 0.63 15 0.45
+18
+16

27 58.82 58.49
+37
+23

June 28 - 1883

d. Oph

R

h m
17 29

S

17 29 30 +12 39

111

S

29 11.9
15.6
19.0 19.22
22.9
26.7

29 34.0
37.7
41.2 41.20
44.8
48.3

29 55.7
59.2
2.9 2.92
6.5
10.3

29 41.20 41.07

+13

+12

Results Collected.

S	R-M	R-M (cor)
+16.55	+2.68	+2.55
+2.23	+1.9	+1.9
-15.23	+0.1	+0.1
+59.48	+1.5	+0.8 +55
+74.35	+0.8	+0.2 +110
+102.42	+4.8	+1.0
+67.48	+3.5	+1.3
+72.15	+5.4	+1.5 +56
+41.14	+1.7	+1.5 +112
+27.7	+0.4	+0.3
+6.48	+2.0	+2.0
+15.48	+1.5	+1.0
+45.15	+2.0	+1.4 +92
-3.23	+1.5	+1.0 +144
+86.10	+3.2	+0.8
-26.10	+0.9	+0.8
+21.45	+2.4	+2.2
+69.1	+3.8	+0.8 +92
-10.19	+1.3	+1.3 +144
+39.8	+2.7	+2.1
+57.0	+2.0	+1.1
+9.34	+3.5	+3.4
+14.32	+2.1	+2.0 +116
-24.53	+1.8	+1.6 +193
+52.23	+3.7	+2.3
+12.39	+1.3	+1.2
		261.371
		+142

+122

+164

June 30 - 1883

Circle West.

109 Hercules

$$\begin{array}{r} h \quad m \quad s \\ 14 \quad 40 \quad 20 \\ + 2 \quad 23 \\ \hline \end{array}$$

R. M.

V. Lohr 9.98380

$$\begin{array}{r} h \quad m \quad s \\ 14 \quad 44 \quad 24 \\ - 15 \quad 33 \\ \hline \end{array}$$

R. M.

Gr. 2264

$$\begin{array}{r} h \quad m \quad s \\ 14 \quad 48 \quad 28 \\ + 5 \quad 46 \\ \hline \end{array}$$

R. M.

B. Mrs. Min 9.42324

$$\begin{array}{r} h \quad m \quad s \\ 14 \quad 51 \quad 3 \\ + 7 \quad 38 \\ \hline \end{array}$$

R. M.

$$\begin{array}{r} h \quad m \quad s \\ 14 \quad 39 \end{array}$$

40.4

14 43 43.3

14 47

06

14 50

$$\begin{array}{r} 442 \\ 480 \quad 4.86 \\ 514 \\ \hline 550 \end{array}$$

$$\begin{array}{r} 470 \\ 505 \quad 5.064 \\ 544 \quad 4.417 \\ \hline 580 \quad 3.481 \end{array}$$

$$\begin{array}{r} 76 \\ 146 \quad 14.72 \\ 220 \\ \hline 288 \end{array}$$

$$\begin{array}{r} 40 \quad 22 \\ 56 \\ 93 \quad 9.16 \\ 124 \\ 163 \end{array}$$

$$\begin{array}{r} 44 \quad 53 \\ 91 \\ 127 \quad 12.76 \\ 165 \quad 4.2208 \\ 202 \quad 3.484 \end{array}$$

$$\begin{array}{r} 47 \quad 431 \\ 501 \\ 574 \quad 57.28 \\ 42 \\ 116 \end{array}$$

$$\begin{array}{r} 40 \quad 233 \\ 269 \\ 307 \quad 30.50 \\ 340 \\ 376 \end{array}$$

$$\begin{array}{r} 44 \quad 273 \\ 310 \\ 349 \quad 34.70 \\ 383 \\ 420 \end{array}$$

$$\begin{array}{r} 48 \quad 257 \\ 325 \\ 396 \quad 39.64 \\ 465 \\ 539 \end{array}$$

$$\begin{array}{r} 50 \quad 480 \\ 51 \quad 29 \\ 154 \quad 15.90 \\ 300 \\ 432 \end{array}$$

$$\begin{array}{r} 40 \quad 445 \\ 482 \\ 519 \quad 51.76 \\ 554 \\ 588 \end{array}$$

$$\begin{array}{r} 44 \quad 495 \\ 530 \\ 569 \quad 56.76 \\ 604 \quad 2.208 \\ 640 \quad 3.468 \end{array}$$

$$\begin{array}{r} 49 \quad 75 \\ 147 \\ 219 \quad 21.82 \\ 290 \\ 360 \end{array}$$

$$\begin{array}{r} 52 \quad 101 \\ 231 \\ 364 \quad 36.40 \\ 499 \quad 49.29 \\ 25 \quad 16.11 \end{array}$$

$$\begin{array}{r} 41 \quad 57 \\ 93 \\ 130 \quad 12.92 \\ 166 \\ 200 \end{array}$$

$$\begin{array}{r} 45 \quad 118 \\ 152 \\ 190 \quad 18.94 \\ 224 \quad 2.417 \\ 263 \quad 3.477 \end{array}$$

$$\begin{array}{r} 49 \quad 498 \\ 573 \\ 34 \quad 3.80 \\ 110 \\ 178 \end{array}$$

$$\begin{array}{r} 40 \quad 30.47 \\ 30.39 \\ +08 \\ +08 \end{array}$$

$$\begin{array}{r} 43 \quad 34.82 \\ 34.72 \\ +10 \\ +10 \end{array}$$

$$\begin{array}{r} 48 \quad 39.58 \\ 39.26 \\ +32 \\ +17 \end{array}$$

$$\begin{array}{r} 52 \quad 16.11 \\ 15.90 \\ +21 \\ +05 \end{array}$$

June 30-1883

Circle Head-

48 71 Cygnus
 $\begin{array}{r} h \\ m \\ s \\ 15-5-3 \\ +102.42 \\ 77.18 \\ R. M. \end{array}$

144 Mus. Viri
 $\begin{array}{r} h \\ m \\ s \\ 15-13-14 \\ +67.44 \\ R. M. \end{array}$

144 Mus. Viri
 $\begin{array}{r} h \\ m \\ s \\ 15-20-53 \\ +72.15 \\ R. M. \end{array}$

144 Comae
 $\begin{array}{r} h \\ m \\ s \\ 15-29-48 \\ +29.7 \\ R. M. \end{array}$

15 2
 $\begin{array}{r} 549 \\ 70 \\ 234 \ 23.14 \\ 390 \\ 554 \end{array}$

15 11
 $\begin{array}{r} 185 \\ 278 \\ 371 \ 37.18 \\ 467 \\ 558 \end{array}$

15 19

15 28
 $\begin{array}{r} 589 \\ 29 \ 29 \\ 67 \ 68.4 \\ 108 \\ 149 \end{array}$

3 282
 $\begin{array}{r} 447 \\ 4 \ 4 \ 4.46 \\ 165 \\ 325 \end{array}$

12
 $\begin{array}{r} 140 \\ 234 \\ 331 \ 33.12 \\ 427 \\ 524 \end{array}$

19

340
 $\begin{array}{r} 460 \\ 577 \ 57.52 \\ 92 \\ 207 \end{array}$

29
 $\begin{array}{r} 225 \\ 265 \\ 305 \ 30.58 \\ 347 \\ 387 \end{array}$

5 47
 $\begin{array}{r} 213 \\ 372 \ 37.46 \\ 537 \\ 6 \ 104 \end{array}$

13
 $\begin{array}{r} 110 \\ 202 \\ 300 \ 29.72 \\ 389 \\ 485 \end{array}$

20 444
 $\begin{array}{r} 560 \\ 75 \ 7.58 \\ 190 \\ 310 \end{array}$

29
 $\begin{array}{r} 467 \\ 508 \\ 545 \ 54.58 \\ 585 \\ 34 \end{array}$

6 415
 $\begin{array}{r} 580 \\ 7 \ 14.7 \ 14.22 \\ 301 \\ 465 \end{array}$

14
 $\begin{array}{r} 70 \\ 164 \\ 256 \ 25.74 \\ 352 \\ 445 \end{array}$

21
 $\begin{array}{r} 536 \\ 52 \\ 165 \ 16.92 \\ 290 \\ 403 \end{array}$

30
 $\begin{array}{r} 704 \\ 145 \\ 184 \ 18.42 \\ 223 \\ 265 \end{array}$

8
 $\begin{array}{r} 174 \\ 344 \\ 500 \ 50.10 \\ 61 \\ 226 \end{array}$

15 38
 $\begin{array}{r} 130 \\ 224 \ 22.54 \\ 320 \\ 415 \end{array}$

30 344
 $\begin{array}{r} 383 \\ 434 \ 42.40 \\ 465 \\ 504 \end{array}$

5 37.38
 $\begin{array}{r} 366.2 \\ +.76 \\ +17 \end{array}$

13 29.86
 $\begin{array}{r} 29.53 \\ +.33 \\ +.13 \end{array}$

20 7.58
 $\begin{array}{r} 7.22 \\ +.36 \\ +.11 \end{array}$

29 54.62
 $\begin{array}{r} 54.53 \\ +.09 \\ +.08 \end{array}$

Circle Head

L. Lepuski

$$\begin{array}{r} h \quad m \quad s \\ 15-38 \quad 30 \\ +6 \quad 48 \\ \hline 9.99633 \end{array}$$

R. M.

B. Lepuski

$$\begin{array}{r} h \quad m \quad s \\ 15-40 \quad 47 \\ +15 \quad 47 \\ \hline 9.98331 \end{array}$$

R. M.

K. Lepuski

$$\begin{array}{r} h \quad m \quad s \\ 15-43 \quad 28 \\ +18 \quad 36 \\ \hline \end{array}$$

R. M.

J. Ves. Min.

$$\begin{array}{r} h \quad m \quad s \\ 15-48 \quad 16 \\ +78 \quad 9 \\ \hline \end{array}$$

R. M.

15 37

$$\begin{array}{r} 510 \\ 544 \\ 579 \quad 5796 \\ 15 \\ 50 \end{array}$$

15 40

$$\begin{array}{r} 62 \\ 98 \\ 134 \quad 1356 \\ 174 \quad 4471 \\ 210 \quad 5757 \end{array}$$

$$\begin{array}{r} 15 \quad 42 \quad 467 \\ 504 \\ 543 \quad 5422 \\ 580 \\ 17 \end{array}$$

15

$$\begin{array}{r} 38 \quad 123 \\ 158 \\ 194 \quad 1442 \\ 280 \\ 267 \end{array}$$

$$\begin{array}{r} 40 \quad 282 \\ 320 \\ 357 \quad 3576 \\ 397 \quad 2211 \\ 432 \quad 5787 \end{array}$$

$$\begin{array}{r} 43 \\ 40 \\ 127 \\ 164 \quad 1640 \\ 201 \\ 238 \end{array}$$

$$\begin{array}{r} 46 \quad 114 \\ 293 \\ 460 \quad 4598 \\ 47 \quad 30 \\ 2672 \end{array}$$

$$\begin{array}{r} 38 \quad 339 \\ 372 \\ 409 \quad 4088 \\ 445 \\ 479 \end{array}$$

$$\begin{array}{r} 40 \quad 506 \\ 541 \\ 578 \quad 5786 \\ 16 \\ 52 \end{array}$$

$$\begin{array}{r} 43 \\ 315 \\ 355 \\ 388 \quad 3894 \\ 426 \\ 463 \end{array}$$

$$\begin{array}{r} 47 \\ 48 \\ 538 \\ 118 \\ 296 \quad 2918 \\ 461 \\ 46 \end{array}$$

$$\begin{array}{r} 38 \quad 552 \\ 888 \\ 22 \quad 228 \\ 59 \\ 93 \end{array}$$

$$\begin{array}{r} 41 \quad 128 \\ 163 \\ 200 \quad 1998 \\ 235 \quad 2211 \\ 273 \quad 5787 \end{array}$$

$$\begin{array}{r} 43 \\ 539 \\ 577 \\ 12 \quad 128 \\ 50 \\ 86 \end{array}$$

$$\begin{array}{r} 49 \quad 384 \\ 554 \\ 50 \quad 140 \quad 1318 \\ 303 \\ 478 \end{array}$$

$$\begin{array}{r} 39 \\ 165 \\ 202 \\ 236 \quad 2366 \\ 372 \\ 308 \end{array}$$

$$\begin{array}{r} 41 \\ 347 \\ 384 \\ 420 \quad 4220 \\ 457 \quad 4721 \\ 492 \quad 5787 \end{array}$$

$$\begin{array}{r} 44 \quad 164 \\ 201 \\ 240 \quad 2390 \\ 276 \\ 314 \end{array}$$

38 4086

40.81

40 5787

5788

43 3906

3887

2958

2918

+05

+04

+19

+40

+05

+04

+18

+28

June 20-1883

Circle West

S. Lepus

$$\begin{array}{r} 15^{\circ} 53' 25'' \\ -22' 17'' \\ \hline \end{array}$$

R. M.

B. Lepus

$$\begin{array}{r} 15^{\circ} 58' 38'' \\ -19' 29'' \\ \hline \end{array}$$

R. M.

P. Herculis

$$\begin{array}{r} 16^{\circ} 5' 5'' \\ +45' 15'' \\ \hline 9.84758 \end{array}$$

R. M.

S. Ophi.

$$\begin{array}{r} 16^{\circ} 8' 13'' \\ -3' 24'' \\ \hline 9.99926 \end{array}$$

R. M.

15 52

$$\begin{array}{r} 418 \\ 459 \\ 498 \quad 4964 \\ 534 \\ 574 \end{array}$$

15 57 565

$$\begin{array}{r} 58 \quad 01 \\ 39 \quad 384 \\ 74 \\ 114 \end{array}$$

16

16 7

337

$$\begin{array}{r} 371 \\ 408 \quad 4078 \\ 443 \quad 1263 \\ 470 \quad 2341 \end{array}$$

53 53

$$\begin{array}{r} 88 \\ 128 \quad 1280 \\ 164 \\ 207 \end{array}$$

58

$$\begin{array}{r} 188 \\ 222 \\ 260 \quad 2614 \\ 300 \\ 337 \end{array}$$

7

550

$$\begin{array}{r} 586 \\ 22 \quad 222 \\ 59 \quad 2132 \\ 94 \quad 2354 \end{array}$$

33 282

$$\begin{array}{r} 319 \\ 358 \quad 3578 \\ 395 \\ 435 \end{array}$$

58

$$\begin{array}{r} 410 \\ 451 \\ 490 \quad 4878 \\ 528 \\ 560 \end{array}$$

5

60

$$\begin{array}{r} 109 \\ 159 \quad 1586 \\ 209 \\ 257 \end{array}$$

8

162

$$\begin{array}{r} 200 \\ 236 \quad 2352 \\ 273 \\ 305 \end{array}$$

53 570

$$\begin{array}{r} 550 \\ 588 \quad 5878 \\ 27 \\ 64 \end{array}$$

59

$$\begin{array}{r} 40 \\ 76 \\ 116 \quad 1142 \\ 150 \\ 189 \end{array}$$

5 363

$$\begin{array}{r} 413 \\ 460 \quad 4624 \\ 513 \quad 2022 \\ 563 \quad 1602 \end{array}$$

8 380

$$\begin{array}{r} 415 \\ 450 \quad 4502 \\ 486 \quad 2132 \\ 520 \quad 2380 \end{array}$$

54

$$\begin{array}{r} 140 \\ 178 \\ 216 \quad 2164 \\ 355 \\ 293 \end{array}$$

59 263

$$\begin{array}{r} 300 \\ 340 \quad 3410 \\ 378 \\ 414 \end{array}$$

6 65

$$\begin{array}{r} 115 \\ 164 \quad 1642 \\ 213 \quad 6044 \\ 364 \quad 1078 \end{array}$$

8 593

$$\begin{array}{r} 9 \quad 29 \\ 65 \quad 642 \\ 100 \quad 4263 \\ 134 \quad 2379 \end{array}$$

53 3585

$$\begin{array}{r} 3564 \\ +21 \\ +19 \end{array}$$

58 4897

$$\begin{array}{r} 4878 \\ +19 \\ +18 \end{array}$$

1600

$$\begin{array}{r} 1078 \\ 1600 \\ +14 \\ +10 \end{array}$$

2349

$$\begin{array}{r} 2379 \\ +25 \\ +25 \end{array}$$

Orion West-

Orion East

19 Mrs. Min

16 14
~~18 14~~
 16 2 9.35266
 20

16

16

12 242
 396
 541 5630
 13 194
 242

1

14 366
 520

15 210
 365
 514 5074
 16 50
 208

J. Hercules

16 16 45
 +19 26 9.97461
 R. M.

R. M.

16 481
 578
 558 5556
 591
 30

16

17 110
 148
 186 1832
 223 2256
 260 5576

17

330
 368
 407 4058
 444 4512
 480 5846

53.76

55.57

+2.5
 +2.3

J. Mrs. Min

16 20 56
 +76 2

R. M.

16 19

19

105
 250
 397 3974
 545
 90

20

20 398
 531

21 78 8.34
 230
 380

22

66
 216
 357 3592
 502
 55

23

24

21 8.34 7.83

+51
 +12

J. Hercules

16 25 11
 +29 45
 R. M.

R. M.

16 24 285
 322
 360 3604
 399
 436

24

510
 550
 588 58.78
 26
 65

25

140
 178
 217 2172
 256
 295

25

371
 408
 445 44.66
 485
 524

26 01
 39
 77 7.50
 116
 152

25 21.77 21.72

+05
 +.05

June 30 - 1883

Circle East -

L. Ophi

$$\begin{array}{r} 16 \ 30 \ 43 \\ -10 \ 20 \\ \hline \end{array}$$

R. M.

L. 848.

$$\begin{array}{r} 16 \ 33 \ 7 \\ 104 \ 16 \\ 75 \ 44 \\ \hline \end{array}$$

R. M.

9.39170

M. Hercules

$$\begin{array}{r} 16 \ 38 \ 53 \\ +39 \ 09 \\ \hline \end{array}$$

R. M.

L. 2374

$$\begin{array}{r} 16 \ 43 \ 5 \\ +56 \ 59 \\ \hline \end{array}$$

R. M.

16 30 16 30

$$\begin{array}{r} 27 \\ 63 \\ 100 \ 9.96 \\ 136 \\ \hline 172 \end{array}$$

16 30

$$\begin{array}{r} 16 \ 37 \ 597 \\ 38 \ 43 \\ 89 \ 8.86 \\ 134 \\ \hline 180 \end{array}$$

16 41

$$\begin{array}{r} 444 \\ 509 \\ 573 \ 57.36 \\ 39 \\ \hline 103 \end{array}$$

$$\begin{array}{r} 30 \ 247 \\ 283 \\ 320 \ 31.92 \\ 356 \\ \hline 390 \end{array}$$

$$\begin{array}{r} 30 \ 463 \\ 500 \\ 535 \ 53.58 \\ 572 \\ \hline 109 \end{array}$$

$$\begin{array}{r} 31 \ 80 \\ 114 \\ 152 \ 15.14 \\ 187 \\ \hline 224 \end{array}$$

$$\begin{array}{r} 32 \ 442 \\ 584 \\ 130 \ 12.88 \\ 274 \\ \hline 414 \end{array}$$

$$\begin{array}{r} 34 \ 107 \\ 253 \\ 398 \ 39.64 \\ 542 \ 54.26 \\ 82 \ 36.87 \\ \hline 2634 \end{array}$$

$$\begin{array}{r} 38 \ 270 \\ 312 \\ 358 \ 35.86 \\ 407 \\ \hline 451 \end{array}$$

$$\begin{array}{r} 38 \ 542 \\ 589 \\ 35 \ 3.42 \\ 81 \\ \hline 124 \end{array}$$

$$\begin{array}{r} 39 \ 217 \\ 263 \\ 309 \ 30.84 \\ 363 \\ \hline 400 \end{array}$$

$$\begin{array}{r} 42 \ 237 \\ 302 \\ 365 \ 36.58 \\ 433 \\ \hline 497 \end{array}$$

$$\begin{array}{r} 43 \ 28 \\ 92 \\ 157 \ 15.64 \\ 220 \\ \hline 385 \end{array}$$

$$\begin{array}{r} 43 \ 415 \\ 477 \\ 544 \ 54.42 \\ 10 \\ \hline 75 \end{array}$$

$$\begin{array}{r} 31 \ 292 \\ 330 \\ 365 \ 36.48 \\ 400 \\ \hline 437 \end{array}$$

30 53.55 53.22

$$\begin{array}{r} +.83 \\ +.82 \end{array}$$

$$\begin{array}{r} 13.30 \\ +.42 \\ +10 \end{array}$$

$$\begin{array}{r} 39 \ 494 \\ 540 \\ 585 \ 58.50 \\ 31 \\ \hline 75 \end{array}$$

368 3.41

$$\begin{array}{r} +.27 \\ +.21 \end{array}$$

$$\begin{array}{r} 44 \ 205 \\ 270 \\ 331 \ 33.42 \\ 400 \\ \hline 465 \end{array}$$

43 15.55 15.39

$$\begin{array}{r} +.16 \\ +.09 \end{array}$$

Circle East-

K^hphi.
$$\begin{array}{r} h \quad m \quad s \\ 16 \quad 52 \quad 8 \\ + 2^{\circ} 33' \end{array} \quad 9.99394$$

R. M.

E^hMs. Min
$$\begin{array}{r} h \quad m \quad s \\ 16 \quad 58 \quad 00 \\ + 82 \quad 14' \end{array}$$

R. M.

1941 Canad. I. C.

$$\begin{array}{r} h \quad m \quad s \\ 17 \quad 8 \quad 19 \\ + 100 \quad 54' \end{array}$$

R. M.

X^h Hercules
$$\begin{array}{r} h \quad m \quad s \\ 17 \quad 9 \quad 19 \\ + 14^{\circ} 31' \end{array}$$

R. M.

$$\begin{array}{r} 16 \quad 51 \quad 28.2 \\ 31.8 \\ 353 \quad 85.34 \\ 389 \quad 13.15 \\ 425 \quad 18.47 \end{array}$$

$$\begin{array}{r} 51 \quad 49.6 \\ 53.2 \\ 56.8 \quad 56.80 \\ 0.4 \quad 21.88 \\ 4.0 \quad 18.88 \end{array}$$

$$\begin{array}{r} 52 \quad 11.2 \\ 14.6 \\ 181 \quad 18.14 \\ 21.8 \\ 25.0 \end{array}$$

$$\begin{array}{r} 52 \quad 32.7 \\ 36.2 \\ 39.6 \quad 39.76 \\ 43.3 \quad 21.58 \\ 47.0 \quad 18.18 \end{array}$$

$$\begin{array}{r} 52 \quad 54.0 \\ 57.7 \\ 14 \quad 12.8 \\ 49 \quad 43.15 \\ 84 \quad 18.10 \end{array}$$

$$\begin{array}{r} 18.43 \\ + 2.7 \\ + 2.7 \end{array}$$

16 57

$$\begin{array}{r} 57 \quad 24.4 \\ 58.1 \\ 58 \quad 16.4 \quad 16.62 \\ 43.2 \\ 59 \quad 9.0 \end{array}$$

17

$$\begin{array}{r} 0 \quad 51.7 \\ 1 \quad 11.0 \\ 29.4 \quad 29.38 \\ 47.8 \\ 2 \quad 7.0 \end{array}$$

$$\begin{array}{r} 2 \quad 14.5 \\ 3 \quad 3.3 \\ 21.8 \quad 21.66 \\ 39.6 \\ 58.8 \end{array}$$

$$\begin{array}{r} 4 \quad 37.1 \\ 55.4 \\ 5 \quad 14.7 \quad 14.42 \\ 32.9 \\ 52.0 \end{array}$$

$$\begin{array}{r} 3 \quad 21.90 \quad 21.66 \\ + 2.4 \\ + 0.5 \end{array}$$

17 8

$$\begin{array}{r} 9 \quad 0.0 \\ 3.8 \\ 7.3 \quad 7.38 \\ 11.0 \\ 14.8 \end{array}$$

$$\begin{array}{r} 9 \quad 22.0 \\ 25.6 \\ 29.3 \quad 29.30 \\ 33.0 \\ 36.6 \end{array}$$

$$\begin{array}{r} 9 \quad 44.0 \\ 47.6 \\ 51.4 \quad 51.36 \\ 55.0 \\ 58.8 \end{array}$$

$$\begin{array}{r} 10 \quad 5.8 \\ 9.4 \\ 13.0 \quad 13.08 \\ 16.8 \\ 20.4 \\ 29.35 \quad 29.20 \\ + 1.5 \\ + 1.4 \end{array}$$

$$\begin{array}{r} 38.0 \\ 41.6 \\ 45.5 \quad 45.32 \\ 49.0 \\ 52.5 \end{array}$$

June 20-1883

Circle East-

Oph.

$$\begin{array}{r} h \\ 17 \end{array} \begin{array}{r} m \\ 14 \end{array} \begin{array}{r} s \\ 19 \end{array} \\ -22^{\circ} 53' \end{array}$$

R. M.

$$\begin{array}{r} 17 \ 14 \\ 52 \\ 94 \\ 130 \ 13.18 \\ 170 \\ 213 \end{array}$$

$$\begin{array}{r} 14 \ 290 \\ 330 \\ 367 \ 3652 \\ 408 \\ 446 \end{array}$$

$$\begin{array}{r} 14 \ 525 \\ 564 \\ 03 \ 032 \\ 43 \\ 81 \end{array}$$

$$\begin{array}{r} 15 \ 160 \\ 199 \\ 238 \ 2384 \\ 278 \\ 317 \end{array}$$

$$\begin{array}{r} 15 \\ 391 \\ 433 \\ 470 \ 4700 \\ 509 \\ 547 \end{array}$$

$$\begin{array}{r} 14 \ 0.32 \\ +23 \\ +21 \end{array} \quad \begin{array}{r} 0.09 \end{array}$$

Cr. 266

$$\begin{array}{r} h \\ 17 \end{array} \begin{array}{r} m \\ 23 \end{array} \begin{array}{r} s \\ 58 \end{array} \\ +105^{\circ} 2' \end{array}$$

R. M.

$$\begin{array}{r} 17 \ 20 \ 593 \\ 21 \ 131 \\ 266 \ 2676 \\ 308 \ 4407 \\ 540 \ 1063 \end{array}$$

$$\begin{array}{r} 22 \\ 207 \\ 344 \\ 475 \ 4812 \\ 23 \\ 25 \ 22.03 \\ 155 \ 10.15 \end{array}$$

$$\begin{array}{r} 23 \\ 431 \\ 562 \\ 102 \ 9.76 \\ 238 \\ 367 \end{array}$$

$$\begin{array}{r} 10.83 \\ +.87 \\ +23 \end{array} \quad \begin{array}{r} 9.96 \end{array}$$

P. Dacnis

$$\begin{array}{r} h \\ 17 \end{array} \begin{array}{r} m \\ 24 \end{array} \begin{array}{r} s \\ 47 \end{array} \\ +52^{\circ} 23' \end{array}$$

R. M.

$$\begin{array}{r} 17 \ 26 \ 372 \\ 430 \\ 488 \ 4874 \\ 544 \\ 03 \end{array}$$

$$\begin{array}{r} 27 \\ 117 \\ 174 \\ 233 \ 23.32 \\ 294 \\ 348 \end{array}$$

$$\begin{array}{r} 28 \\ 469 \\ 625 \\ 582 \ 5828 \\ 40 \\ 98 \end{array}$$

$$\begin{array}{r} 28 \\ 213 \\ 273 \\ 330 \ 3316 \\ 392 \\ 450 \end{array}$$

$$\begin{array}{r} 28 \ 568 \\ 29 \ 24 \\ 82 \ 830 \\ 141 \\ 200 \end{array}$$

$$\begin{array}{r} 27 \ 58.52 \\ +27 \\ +16 \end{array} \quad \begin{array}{r} 58.25 \end{array}$$

d. Oph.

$$\begin{array}{r} h \\ 17 \end{array} \begin{array}{r} m \\ 29 \end{array} \begin{array}{r} s \\ 30 \end{array} \\ +12^{\circ} 89' \end{array}$$

R. M.

17 29

$$\begin{array}{r} 29 \ 583 \\ 590 \\ 26 \ 26.4 \\ 64 \ 2.80 \\ 99 \ 40.84 \end{array}$$

$$\begin{array}{r} 30 \\ 170 \\ 305 \\ 342 \ 3416 \\ 276 \ 4361 \\ 315 \ 40.55 \end{array}$$

$$\begin{array}{r} +29 \\ +28 \end{array}$$

Collected Results:

Collecting results arranged
in the order of S

S R-M (R-M) P

Montana R-M

+20 23	+085	+085	
-15 33	+10	+10	
+59 46	+32	+17	
+74 35	+21	+05	
+102 42	+46	+17	+57 +114
+67 47	+33	+13	
+72 15	+36	+11	
+27 7	+08	+08	
+6 48	+05	+05	
+15 47	+04	+04	+41 +082
+18 30	+19	+18	
+78 9	+40	+08	

-30 00	+0 00	+28 00	+60 00
-188 06	+24 05	+54 03	+74 06
-89 00	+13	409 -06	22.2 +02
-223 +17	218 +20	412 +04	28.2 +07
-195 +08	95 +21	589 +10	82.2 +18
-26.2 +09	145 +18	382 +23	79.1 +06
-10.5 +08	126 +30	570 +11	74.1 +04
-8.6 +13	180 +08	499 +14	73.0 +11
-155 +24	24 +03	578 +13	71.0 +00
-223 +06	118 +20	392 +14	71.1 +19
-195 +31	145 +09	570 +07	72 +27
-3.9 +10	194 +07		76.0 +04
-4.4 +08	217 +05		68.0 +08
	95 +05		82.2 +14
	12.5 +30		71.1 +19
			72 +27

.105

-22 17	+21	+18	
-19 29	+19	+18	
+95 15	+14	+10	+73 +146
-3 24	+25	+28	
+19 20	+45	+20	
+76 2	+51	+12	
+21 48	+05	+05	
-10 20	+33	+32	116 +332
+104 16	+42	+10	
+39 9	+27	+21	
+56 59	+16	+09	
+9 33	+27	+27	
+100 24	+24	+05	+72 +144
+14 31	+15	+14	
-22 58	+23	+21	

178 +12 39 +28 +26 +63 +210+144

Cambridge

-15 00	+16.9 +25	598 +08	74.6 +02
-34 +15	2.4 +19	413 +10	67.8 +13
-26.2 +08	27.1 +03	453 +14	72.3 +10
-10.3 +13	6.8 +20	321 +21	76.2 +08
-24.9 +16	15.8 +15	570 +11	68.0 +08
-155 +10	21.8 +22	504 +22	74.6 +08
-223 +19	9.6 +34	578 +17	67.8 +13
-19.5 +18	145 +20	402 +10	72.3 +11
-34 +25	12.7 +12	392 +21	75.1 +08
-103 +32	2.4 +08		77.0 +12
+229 +21	22.1 +08		75.0 +09
	6.8 +05		
	15.8 +04		
	16.5 +18		
	19.4 +23		
	21.8 +05		
	9.5 +27		
	14.5 +14		
	12.6 +28		

+162 +163 +156 +095Rill Jan 28 +143
June 30 +144Mean +144

Reduction of the mean of each tally of Montreal Transit to
the mean of all the tallies.

For Lamp 2 East

Mean A to mean A+B+C+D+E
B to " " "
C to " " "
D to " " "
Σ to " " "

J	log cond	-8 24							
29 31	9.99961	-3 24	9.99923	-4 24	9.99872	+27 7	9.99943		
+37.65	1.57461	+32.68	+32.78	1.57561	+32.72	+32.7945	1.57785	+32.85	+36.89
+15.07	1.25696	+15.72	+15.66	1.19479	+15.63	+15.7571	1.19618	+15.66	+17.70
+0.11	9.04139	+0.07	+0.04	8.60206	+0.04	+0.11	9.04139	-0.11	-0.05
-15.05	1.25644	-15.71	-15.66	1.19479	-15.63	-15.76	1.19728	-15.70	-17.68
-37.67	1.57599	+32.78	-32.84	1.57640	+32.78	-32.79	1.57574	-32.69	-36.74

+14.37	9.98327	+78 9	9.31250	-9 44	9.99370	+66 52	9.59921		
+34.07	1.53237	+32.78	+15.58	2.20379	+32.83	+23.23	1.52153	+32.75	+83.32
+16.31	1.21245	+15.69	+7.76	1.88513	+15.76	+15.87	1.20330	+15.74	+40.02
-0.01	8.00000	-0.01	-0.02	8.30103	-0.00	-0.01	8.00000	-0.01	-0.14
-16.35	1.21352	-15.73	-7.06	1.88683	-15.82	-15.92	1.20194	-15.69	-40.14
-34.01	1.53161	-32.72	-15.50	2.20276	+32.75	-33.24	1.52166	-32.76	-83.06

+2 23	9.98962	+59 46	9.70798	+64 56	9.60703	-15 33	9.88881		
+32.74	1.51508	+32.71	1.51518	+32.90	+27.36	1.88852	+32.77	+33.54	1.53071
+15.74	1.19700	+15.73	1.33552	+15.67	+36.90	1.56702	+15.63	+16.37	1.21405
-0.02	8.30103	-0.02	-0.06	8.77815	-0.02	-0.06	8.77815	-0.02	+0.02
-15.70	1.19590	-15.69	3.130	1.32838	-15.76	-37.12	1.56961	-15.73	-16.35
-32.77	1.51547	-32.74	6.574	1.81385	32.80	-77.08	1.88694	-32.88	-33.98

$-22^{\circ} 17'$ 9.96629	$-19^{\circ} 29'$ 9.97439	$+72 18$ 9.98292	$+40^{\circ} 51'$ 9.97876
+35.48 1.54998 +32.83	+34.50 1.54095 +32.76	+107.74 2.03238 +3.276	+43.30 1.63649 +32.75
+16.88 1.23019 +15.72	+16.63 1.22089 +15.68	+12.02 1.71617 +15.82	+20.72 1.31639 +15.67
+ .03 8.47712 + .03	+ .03 8.47712 + .03	+ .12 9.07918 + .04	+ .08 8.90309 + .06
-16.88 1.23019 -15.72	-16.71 1.22298 -15.75	-51.86 1.71483 -15.77	-20.86 1.31931 -15.78
-35.57 1.55035 -32.86	-34.71 1.54045 -32.72	-108.40 1.03503 -32.96	-43.26 1.63609 -32.72

$+41^{\circ} 14'$ 9.97624	$+6^{\circ} 48'$ 9.99693	$+18^{\circ} 30'$ 9.97696	$-22^{\circ} 17'$ 9.96629
+43.52 1.63889 +32.74	+32.92 1.51746 +32.69	+34.56 1.53857 +32.77	+30.34 1.54827 +32.70
+20.78 1.31764 +15.63	+11.84 1.19975 +15.73	+16.66 1.22167 +15.80	+17.06 1.23198 +15.78
+ .02 8.30103 + .01	+ .02 8.30103 + .02	- .06 8.77815 - .04	+ .02 8.30103 + .02
-20.82 1.31848 -15.66	-11.72 1.19645 -15.75	-16.60 1.22167 -15.78	-16.98 1.22994 -15.71
-43.54 1.63889 -32.74	-33.08 1.51956 -32.85	-34.56 1.53856 -32.77	-35.44 1.54949 -32.79

$-19^{\circ} 29'$ 9.97439	$+62^{\circ} 26'$ 9.67018	$-6^{\circ} 5'$ 9.99754	$-5^{\circ} 22'$ 9.99335
+34.91 1.53668 +32.44	+70.03 1.84528 +32.76	+33.02 1.51878 +32.83	+33.12 1.52009 +32.77
+16.75 1.22401 +15.79	+33.93 1.52414 +15.64	+15.86 1.20030 +15.77	+15.86 1.20050 +15.69
+ .03 8.47712 + .03	+ .02 8.30103 + .01	- .04 8.60206 - .04	+ .02 8.30103 + .02
-16.57 1.21932 -15.62	-33.67 1.52724 -15.76	-15.78 1.19811 -15.69	-15.94 1.20249 -15.77
-34.63 1.53945 -32.65	-69.81 1.84392 -32.66	-33.06 1.51930 -32.87	-33.08 1.51956 -32.73

Reduction continued.

$-14^{\circ} 06'$ 998671	$-0^{\circ} 53'$ 999995	$+32^{\circ} 36'$ 992554	$+10^{\circ} 03'$ 999306
$+33.83$ 1.52930 $+32.81$	$+32.79$ 1.51574 $+32.78$	$+35.96$ 1.59062 $+32.82$	$+33.24$ 1.52166 $+32.71$
$+16.10$ 1.20817 $+15.66$	$+15.71$ 1.19618 $+15.71$	$+16.60$ 1.26951 $+15.67$	$+15.98$ 1.20358 $+15.73$
$+ .01$ 8.00000 $+ .01$	$+ .01$ 6.00000 $+ .01$	$- .02$ 8.30103 $- .02$	$+ .04$ 16.0206 $+ .04$
-16.25 1.21085 -15.76	-15.77 1.19783 -15.77	-16.72 1.27230 -15.77	-15.96 1.20303 -15.71
-33.73 1.52802 -32.71	-32.73 1.51495 -32.72	-38.82 1.58905 -32.70	-33.28 1.52218 -32.75

$+14^{\circ} 35'$ 998878

$+33.82$ 1.52917 $+32.73$
$+16.24$ 1.21058 $+15.79$
$+ .04$ 8.60206 $+ .04$
$+16.28$ 1.21165 -15.76
-33.80 1.52892 -32.71

For lamp E. Montreal Transit-
 Collecting results
 Reducing groups I to [I+II+III+IV+V]

	I	II	III	IV	V
17 +29 31	+32.68	+15.72	+0.8	+0.71	+32.75
8 -3 24	.72	.63	+0.4	.63	.78
7 -4 24	.83	.68	-11	.70	.69
16 +27 7	.78	.75	-0.1	.74	.79
14 -15 48	.78	.68	-.02	.73	.72
+78 9	[.83]	[.76]	+0.0	[.82]	[.70]
4 -9 44	.70	.74	-.01	.69	.76
23 +66 52	.73	.72	-.05	.77	.63
10 +2 23	.71	.73	-.02	.68	.74
+59 46	[.90]	[.69]	[-.02]	[.76]	[.80]
22 +64 56	.77	.63	-.02	.73	.66
2 -15 33	.70	.77	+0.2	.75	.73
1 -22 17	.83	.72	+0.3	.72	.86
2 -19 29	.76	.68	+0.3	.70	.72
+72 18	.76	.82	+0.04	.77	.96
19 +40 51	.75	.67	+0.6	.78	.72
20 +41 14	.74	.63	+0.1	.66	.74
11 +6 88	.69	.73	+0.2	.77	.85
15 +18 30	.77	.80	-.04	.78	.77
1 -22 17	.70	.78	+0.2	.71	.79
+72 29					
21 +62 6	.76	.64	+0.1	.76	.66
6 -6 5	[.82]	.77	-.04	.69	[.87]
5 -8 22	.77	.69	+0.2	.77	.73
3 -14 06	.81	.66	+0.1	.76	.71
9 -0 53	.78	.71	+0.1	.77	.72
18 +32 36	.82	.67	-.02	.77	.70
18 +10 03	.71	.73	+0.4	.71	.75
13 +14 30	.73	.72	+.04	.76	.71
	+32.765	+15.707	+0.02	-15.731	-32.743
Log.	1.51541	1.19609	7.30103	1.19646	1.51512
	32.751	15.710	+0.01	15.726	32.734
	1.51529	1.19618	7.30100	1.19662	1.51500

Reduction of the mean of each tally of Russian Transit Cambridge
to the mean of all the tallies

L. E.											
+46° 37' 9.83688			+2° 23' 9.99962			-15° 23' 9.98380			+21° 45' 9.86793		
A	+61.78	1.79085	+42.43	+42.60	1.62941	+42.58	+44.7	1.64513	+42.55	+45.79	1.66077
B	+30.98	1.49108	+21.28	+21.28	1.32797	+21.26	+22.63	1.34301	+21.22	+22.55	1.35889
C	+02	8.30103	+01	+08.4	8.60206	+03.4	+03	8.47712	+03	+09	8.95424
D	-30.92	1.49024	-21.24	-21.26	1.32756	-21.24	-22.07	1.34380	-21.26	-22.97	1.36116
E	-61.88	1.79155	-42.50	-42.56	1.62900	-42.52	-44.15	1.64493	+42.53	-45.77	1.66058
+39° 9' 9.88988			+11° 25' 9.99106			+28° 28' 9.94404			-22° 34' 9.96541		
A	+54.94	1.73989	+42.61	+43.43	1.63779	+42.55	+48.36	1.68449	+42.51	+46.14	1.66408
B	+27.43	1.43823	+21.27	+21.77	1.33786	+21.33	+24.30	1.38561	+21.36	+23.03	1.38229
C	+03	8.47712	+03.2	-01	8.00000	-01	+00	8.00000	.00	-01	8.60206
D	-27.48	1.43886	-21.30	-21.72	1.33886	-21.28	-24.24	1.38453	-21.31	-23.06	1.36286
E	-54.90	1.73957	-42.57	-43.43	1.63779	-42.55	-48.41	1.68493	-42.56	-46.08	1.66351
-10° 33' 9.99260			+49° 54' 9.80897			+18° 59' 9.97571			+108° 9' 9.49347		
A	+43.30	1.63649	+42.57	+66.04	1.81981	+42.54	+45.01	1.65331	+42.56	+136.64	2.13558
B	+21.65	1.33546	+21.28	+33.06	1.51930	+21.29	+22.53	1.35276	+21.30	+68.20	1.83378
C	-05	8.69597	-05	-02	8.30103	-01	+07	8.84510	+07	+10	9.00000
D	-21.57	1.33886	-21.21	-33.02	1.51878	-21.27	-22.46	1.35141	-21.24	-68.40	1.83506
E	-43.34	1.63689	-42.61	-66.06	1.81994	-42.55	-45.12	1.65437	-42.67	-136.52	2.13488
+9° 33' 9.99394			+143° 1' 9.98591			+56° 35' 9.94093			+107° 33' 9.47934		
A	+43.16	1.63508	+42.56	+43.91	1.64256	+42.51	+77.40	1.88874	+42.63	+141.01	2.14925
B	+21.58	1.33405	+21.28	+21.94	1.34124	+21.24	+38.56	1.58614	+21.23	+70.61	1.84887
C	-08	8.90309	-06	-02	8.30103	+02	-13	9.11374	-07	+07	8.84510
D	-21.56	1.33365	-21.26	-21.92	1.34084	-21.22	-38.56	1.58614	-21.23	-70.63	1.84899
E	-43.12	1.63468	-42.52	-43.91	1.64256	-42.51	-77.28	1.88807	-42.56	-141.05	2.14937
27° 57' 9.94614			64° 56' 9.62703			+113° 18' 9.59425			-22° 17' 9.96629		
A	+48.21	1.68314	+42.59	+100.54	2.00234	+42.60	+108.26	2.03447	+42.60	+46.03	1.66304
B	+24.17	1.38328	+21.35	+50.28	1.70139	+21.30	+54.22	1.73416	+21.25	+22.93	1.36040
C	+03	8.47712	+03	+02	8.30103	+01	+06	8.77815	-02	-01	8.00000
D	-24.15	1.38292	-21.33	-50.38	1.70226	-21.34	-54.08	1.73304	-21.30	-23.02	1.36210
E	-48.21	1.68314	-42.59	-100.46	2.00199	-42.56	-108.44	2.03519	-42.53	-46.93	1.66210
+58° 53' 9.71221			+107° 42' 9.48292			+59° 46' 9.70202					
A	+52.26	1.91519	+42.51	+89.95	2.14597	+42.61	+84.48	1.92695	+42.54		
B	+41.16	1.61447	+21.27	+90.07	1.84553	+21.24	+42.28	1.62613	+21.29		
C	+04	8.60206	+02	+01	8.00000	+00	+04	8.60206	+02		
D	-41.16	1.61447	-21.27	-89.85	1.84497	-21.30	-42.28	1.62613	-21.27		
E	-52.32	1.91550	-42.54	-100.15	2.14659	-42.55	-84.54	1.92706	-42.57		

For Lamp E. Russian Transit.
Collection of results.

	δ	I	II	III	IV	V
13	+46 37	+42.43	+21.28	+ .01	-21.24	-42.50
5	+2 23	.56	.26	- .04	.24	.52
3	-15 33	.55	.22	+ .03	.26	.53
9	+21 45	.53	.22	+ .08	.33	.51
12	+39 9	.61	.26	+ .02	.31	.57
7	+11 35	.55	.22	- .01	.29	.55
11	+28 28	.51	.36	.00	.31	.56
1	-22 34	.61	.27	- .04	.29	.55
4	-10 33	.57	.28	- .05	.21	.61
14	+49 54	.54	.29	- .01	.27	.55
8	+18 59	.56	.30	+ .07	.24	.67
2	+108 9	.50	.31	- .03	.24	.56
6	+9 33	.56	.28	- .06	.26	.52
8	+14 31	.51	.24	- .02	.22	.51
15	+56 35	.63	.23	- .07	.23	.54
19	+107 33	.53	.30	- .02	.29	.52
10	+27 59	.59	.35	- .03	.33	.59
18	+64 56	.60	.30	+ .01	.34	.56
22	+113 8	.60	.25	- .02	.30	.53
2	-22 17	.59	.22	- .01	.30	.50
16	+58 53	.51	.27	+ .02	.27	.64
20	+107 42	.61	.24	.00	.30	.55
17	+59 46	.54	.29	+ .02	.29	.57
		+42.556	+21.276	- .006	-21.277	-42.550
	log: 1.62896	1.32789	7.78815 _n	1.32791 _n	1.62890 _n	

Reducing groups I--V to $\frac{I+II+III+IV+V}{5}$

11^5

31	0	7	54	88	8423
	10		6	26	26
	20		14	28	30
	30		24	32	30
	40		34	30	32
	50		44	36	36
					24, 30, 36

71.5

Handwritten symbols 'M' and 'C' on a grid.

17	2	23.303	
	3	23.446	148
	4	23.620	174
	5	23.790	170
	6	23.939	149
	7	24.111	172
	8	24.304	193
	9	24.440	136

June 23 1883.

Exchange of Clock Signals Cambridge and Montreal.

+15				second reading				+13																											
L				M.				L				M.																							

Level, errors

June 17th

h	Div.	sec.
15.5	= - 0.78	- .11
16.1	= - 1.23	- .18

Montreal

June 21st

h	Div.	sec.
14.0	= 0.00	.00
14.2	- .04	- .01
15.0	+ .00	+ .00
15.3	+ .37	+ .05
15.6	+ .28	+ .04
17.3	+ .95	+ .14
17.5	+ .82	+ .12
17.8	+ 1.00	+ .15
18.6	+ 1.00	+ .15

June 19th

h	Div.	sec.
13.9	+ .043	+ .06
14.5	+ 0.55	+ .08
15.0	+ 0.60	+ .09
15.0	+ 0.62	+ .09
15.6	+ 0.85	+ .12

June 21st

Adopted values

h	sec.
14.0 = - .01	17.2 + .13
.1 - .01	.3 + .13
.2 - .01	.4 + .13
.3 - .01	.5 + .13
.4 - .01	.6 + .14
.5 - .01	.7 + .14
.6 00	.8 + .14
.7 00	.9 + .15
.8 00	18.0 + .15
.9 00	.1 + .15
10.0 + .01	.2 + .15
.1 + .02	.3 + .15
.2 + .02	.4 + .15
.3 + .03	.5 + .15
.4 + .04	
.5 + .05	
.6 + .05	
.7 + .06	
.8 + .06	
.9 + .07	
16.0	

June 23rd

Adopted values

h	Div.	sec.
14.2	+ .88	+ .13
15.0	+ .90	+ .13
15.3	+ 1.00	+ .15
15.5	+ .90	+ .13
16.0	+ .85	+ .12
18.8	+ .85	+ .12
21.2	+ 1.20	+ .17
21.3	+ 1.30	+ .19
21.3	+ 1.46	+ .21
21.9	+ 1.20	+ .17
22.2	+ 1.30	+ .19
23.1	+ 1.37	+ .20
23.1	+ 1.20	+ .17

Adopted values

h	sec.
14.2 + .13	21.2 + .19
.3 + .13	.3 + .19
.4 + .13	.4 + .19
.5 + .13	.5 + .19
.6 + .13	.6 + .19
.7 + .13	.7 + .19
.8 + .13	.8 + .18
.9 + .13	.9 + .18
15.0 + .14	22.0 + .18
.1 + .14	.1 + .18
.2 + .14	.2 + .18
.3 + .14	.3 + .18
.4 + .14	.4 + .18
.5 + .14	.5 + .18
.6 + .13	.6 + .19
.7 + .13	.7 + .19
.8 + .13	.8 + .19
.9 + .12	.9 + .19
16.0 + .12	23.0 + .19
17.0 + .12	.1
18.0 + .12	
19.0 + .12	

June 20th

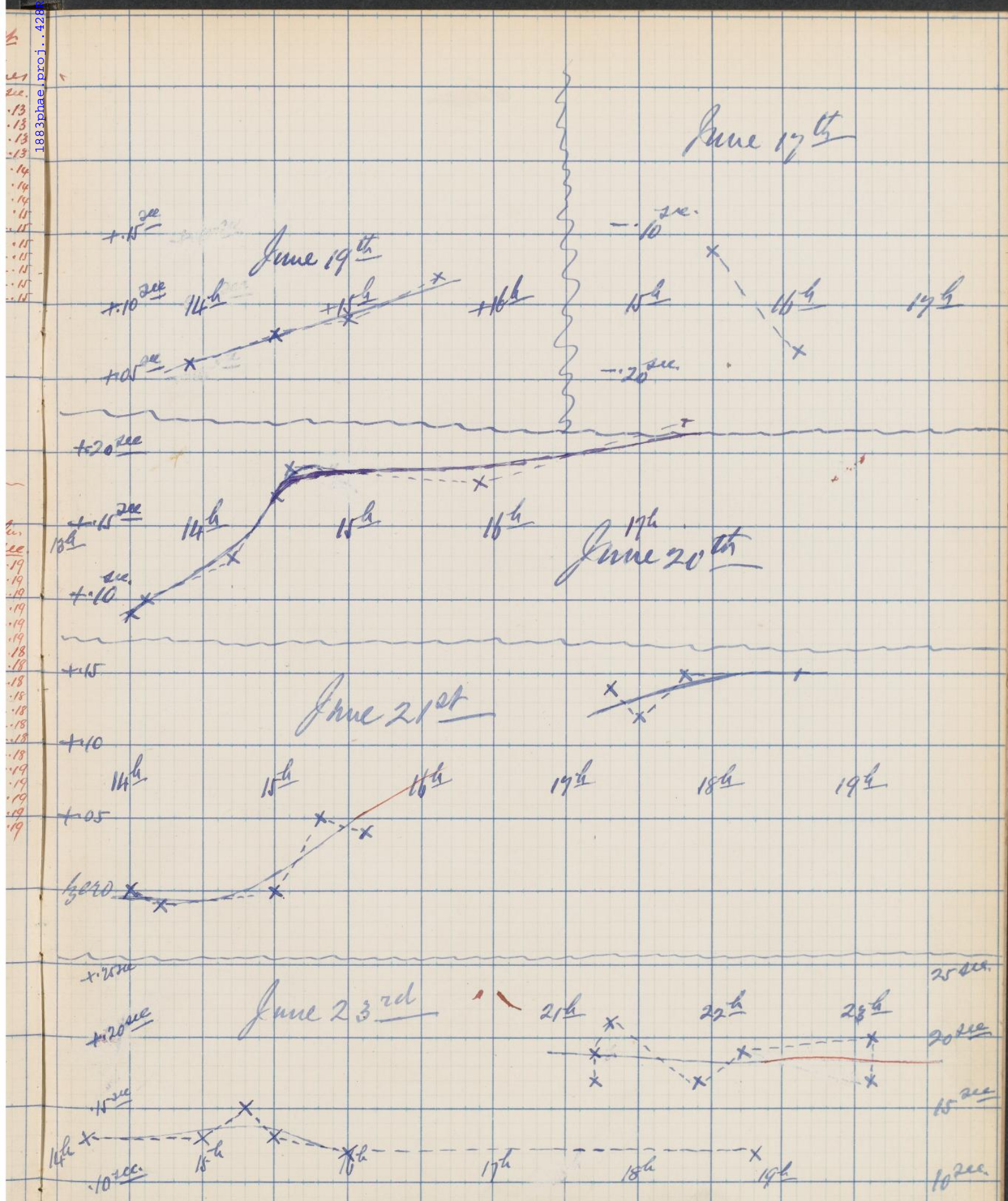
h	Div.	sec.
13.5	+ .63	+ .09
13.6	+ .70	+ .10
14.2	+ .90	+ .13
14.5	+ 1.15	+ .17
14.6	+ 1.30	+ .19
14.9	+ 1.30	+ .19
15.9	+ 1.23	+ .18
17.0	+ 1.50	+ .22

June 20th adopted

h	sec.
13.5 hours = + .09	
13.6	.10
13.7	.10
13.8	.11
13.9	.11
14.0	.12
14.1	.13
14.2	.14
14.3	.15
14.4	.16
14.5	.17
14.6	.18
14.7	.18
14.8	.18
14.9	.19
15.0	.19
15.1	.19
15.2	.19
15.3	.19
15.4	.19
15.6	.19
15.7	.19
15.8	.19
15.9	.19
16.0	.19
16.5	.20
17.0	

June 19

h	Div.	sec.
14.0	+ .11	14.0 + 0.11
14.2	+ .11	14.5 + 0.13
14.4	+ .12	15.0 + 0.15
14.6	+ .12	15.5 + 0.17
14.8	+ .13	
15.0	+ .14	
15.2	+ .15	
15.4	+ .18	
15.6	+ .19	
15.8	+ .22	
16.0	+ .24	



Explanatory Notes of a series of slides, presented to the
Society illustrating the action of a diamond in reflecting
lines of light.

A preliminary examination of Pyrothermometers.

sec
May 27 14.47 - 16.41
June 1 14.8 - 15.08
4 18.2 - 13.57
5 17.7 - 13.31

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