1855phae..proj...20B

KG
11365
20

A.20

Transit Circle

May 6 1855 — July 31

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1855phae.proj...20

KG 11365.20

For value of division of level —
see June 29 1855.

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1855phae.proj... 20

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1855phae.proj...20B

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1955phae.proj..1..20B

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KG-11365.20

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1855phae.proj...20

Equatoreal intervals of the transit circle wires from
8 transits of Polaris
observed between March 30, 1855 and April 27th 1855

See Book of Marks -

Illuminated East

Mid wire — mean = − 0ˢ.027

A	to Mid wire	− 40ˢ.667	A	to Mean	= − 40.640	log	=	1.60895
B	"	27.693	B	"	= 27.666		=	1.44195
C	"	13.723	C	"	= 13.696		=	1.13659
D	"	.	D	"	= 0.027		=	8.43136
E	"	+ 13.224	E	"	= + 13.251		=	1.12225
F	"	27.588	F	"	= 27.615		=	1.44117
G	"	41.157	G	"	= 41.184		=	1.61473

Signature of W.C.B. D.B. D.B. D.B.
" " D.S.C. B
" " J.F.F. D B

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1855phae.proj... 208

1855 May 7th W. S. B. Obs. Ill. West

+5.36 +28.22

Procyon β Geminor.

7h 31m 21.5	7h 35m 59.70
3 × 5.1 13.6	36 25.2 15.5
4 29.6 14.5	3 21.5 16.3
32m 02.8 13.2	4 36.4 14.9
1 × 6.7 13.9	37m 02.1 15.7
3 × 10.4 12.7	1 17.7 15.6
4 × 3.7 13.3	3 42.7 15.0
14 269.8	~~215.3~~ 145.3
× 19.8 2.83	~~2940.3~~ 325.3
7h 32m 12.53	7h 36m 46.47
−17	−.04
−5	−.7
−8	−.9
7h 32m 02.53	7h 36m 46.23
7h 31m 42.38	7h 36m 26.03
C.C. +20.15	C.C. +20.20
−20.17	−20.17
7h 31m 42.36	7h 36m 26.06

a = 2.28
b = −.06
c = −.08

Error of C.C. at 7h 30m +20.17

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1855phae.proj...20B

1855 May 7 D. S. C. Obs. W. West

Error of S.L. at 10h +20.3 (512) Rate −0.2 (519) Catalogue — Stars (523) used in red. of Cat Stars (531) a = −.28 b = −.06 c = −.08 (533)

10 0 10.9	10 22 32.8	10 33 25.5	10 49 23.8	10 53 18.7
24.5 13.6	46.4 13.6	39.0 13.5	37.5 13.7	32.3 13.6
38.9 14.4	23 0.7 14.3	53.3 14.3	51.7 14.2	46.7 14.4
52.1 13.2	13.9 13.2	34 6.6 13.3	50 4.9 13.2	59.8 13.1
1 5.8 13.7	27.7 13.8	20.2 13.6	18.7 13.8	52 13.5 13.4
19.4 13.6	41.4 13.7	34.0 13.8	32.4 13.7	27.2 13.7
32.7 13.3	57.6 13.2	47.2 13.2	45.6 13.2	40.4 13.2
184.3	217.5	225.8	214.6	238.6
364.3	97.5	45.8	34.6	418.6
10 0 52.04	10 23 13.93	10 34 6.54	10 50 4.94	10 53 59.80
a −.18	−.30	−.30	−.30	−.30
b −.04				
c −.08				
−20.34	10.23 13.63	10.34 6.24	10.50 4.64	10.53 59.50
sum −20.45	−20.45	−20.45	−20.45	−20.45
rat 00	00	00	+.01	+.01
10 00 31.59	10 22 53.48	10 33 46.09	10 49 44.50	10 53 39.36
Dy M.Sc. −0.53	−0.65	−0.71	−0.79	−0.76
Cor. for Obs. −6.15	−6.14	−6.15	−6.15	−6.20
10 00 24.91	10 22 46.69	10 33 39.23	10 49 37.56	10 53 32.40
M 1853.0				

Final Corr by Cat Stars −0.10

(with Personal equation has not been applied to W.C.W.'s error of S.L.)

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1855phae.proj . . . 208

1855 May 4 P. S. L. Obs. Ill. West

has been obs. the. East (537)	~~540~~ 538	~~543~~ 541 Catalogue Stars.	~~547~~ (545)	~~553~~ (551)
10 h 55 m 57.7 13.6	10 h 56 m 16.1 13.5	11 h 06 m 39.1 13.9	11 h 6 m 0.6 13.8	11 h 15 m 32.9 13.7
56 m 5.3 14.4	29.6 12.5	53.0 14.3	14.4 14.4	46.6 14.3
19.7 13.1	44.1 13.1	1 h 7.3 13.1	28.8 13.1	16 m 0.9 13.2
~~32.8~~ 13.4	57.2 13.8	20.4 13.4	41.9 13.7	14.1 13.8
~~46.5~~ 13.4	57 m 11.0 13.7	34.2 13.7	55.6 13.7	27.9 13.6
57 m 0.2 13.2	24.7 13.2	47.9 13.3	7 m 9.3 13.1	41.5 13.3
13.4	37.9	2 m 1.2	22.4	54.8
169.6	220.6	203.1	173.0	218.7
229.6	400.6	143.1	293.0	98.7
10 h 56 m 32.80	10 h 56 m 57.23	11 h 1 m 20.44	11 h 6 m 41.86	11 h 16 m 14.10
~~30~~	~~30~~	~~30~~	~~30~~	~~30~~

-20.45	-20.45	-20.45	-20.45	-20.45
+.01	+.01	+.01	+.01	+.01
10 h 56 m 12.36	10 h 56 m 36.79	11 h 01 m 00.00	11 h 06 m 21.42	11 h 15 m 53.66
-0.82	-0.82	-0.85	-0.87	-0.92
-6.15	-6.15	-6.14	-6.14	-6.15
10 h 56 m 05.39	10 h 56 m 29.82	11 h 00 m 53.01	11 h 06 m 14.41	11 h 15 m 46.59

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1855phae.proj...20

1855 May 7 P. S. E. Obs. Ill. West

Catalogue Stars

~~554~~ (552)	~~557~~ (557)	~~560~~ 558	~~563~~ (561)	562 ~~564~~ (564)
11 h 20 m 18.7	11 h 29 m 11.9	11 h 33 m 10.8	11 h 41 m 18.3	11 h 47 m 16.3
32.4 13.7	25.7 13.8	24.4 13.6	32.0 13.7	29.5 13.2
46.8 14.4	40.1 14.4	38.9 14.5	46.3 14.3	42.4 12.9
59.9 13.1	53.2 13.1	52.0 13.1	59.4 13.1	57.4 15.0
21 m 13.7 13.8	30 m 6.9 13.7	34 m 5.5 13.5	42 m 13.1 13.7	48 m 10.8 13.4
27.3 13.6	20.5 13.6	19.4 13.9	27.0 13.9	24.8 14.0
40.7 13.4	33.8 13.3	32.5 13.1	40.2 13.2	38.0 13.2
239.5	192.1	183.5	236.3	221.2
419.5	372.1	363.5	416.3	401.2
11 h 20 m 59.93	11 h 29 m 53.16	11 h 33 m 51.93	11 h 41 m 59.47	11 h 47 m 57.31
~~- 24~~	~~30~~	~~30~~	~~30~~	~~30~~
- 4				
- 4				
summ - 20.45	-20.45	-20.45	-20.45	-20.45
rate ± .01	± .01	± .01	± .01	± .01
11 h 20 m 39.49	11 h 29 m 32.72	11 h 33 m 31.49	11 h 41 m 39.03	11 h 47 m 36.87
Oz. Abb. Tr. -0.94	-0.99	-1.01	-1.05	-1.04
Ed. for ch. Var. -6.15	-6.15	-6.12	-6.14	-6.16
11 h 20 m 32.40	11 h 29 m 25.58	11 h 33 m 24.84	11 h 41 m 31.84	11 h 47 m 29.65
MR 1853.0				

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1855phae.proj2...203

1855 May 7 P. S. C. Obs Ill. West

Catalogue Stars

~~11 53 42.20~~	~~11 53 43~~ (56.1)	(56.6)
~~66~~	~~56~~	
11 53 42.2	11 53 43.1	11 59 26.7
56.0 13.8	56.7 13.6	40.4 13.7
54 10.4 14.4	54 11.1 14.4	54.4 14.3
23.8 13.4	24.4 13.3	12 0 8.0 13.3
37.4 13.6	38.0 13.6	21.7 13.7
	37.7 13.7	35.5 13.8
55 2.1	55 4.9 13.2	~~48.5~~ 13.0
173.9	229.9	235.5
27.46	169.9	55.5
201.36	11 54 24.27	12 0 7.93
6) 141.36	~~30~~	~~30~~
11 54 23.56		
-20.45	-20.45	-20.45
+.02	+.02	+.02
11 52 03.13	11 54 03.84	11 59 47.50
-1.11	-1.14	-1.14
-6.14	-6.14	-6.14
11 53 55.88	11 53 56.59	11 59 40.22

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1855phae.proj...208

May 9/10 Clock Stars Ill. West.

D. S. C. Obs.

	+ 28° 17'		+ 14° 23'	
	♀ Andromedæ		♃ Pegasi.	
	lost	0h	5m 23v.3	14.1
	"		5" 37.4	14.9
	"		" 52.3	13.7
	"		6" 6.0	14.2
	" 1/2'		" 20.2	14.2
	"		" 34.4	13.6
0h	1m 44v.5		" 48.0	
	" 59v.3			
	103.8		221.6	
			41.6	
log 68.38 =	1.83461	0h	6m 5v.94	
Dec 28.17 =	0.05521			
77.59	1.88982			
	25.21			
	12.60			
0h	1m 12.10	0h	5m 45.64	
a	- 08		20.30	
b	- 02			
c	- 09	0	6 5.94	
0h	1m 11.91	a+b+c	- 26	
0h	0m 53.08	0h	6m 5v.68	
+	0m 18.83	0h	5 45.67	
		+	20.01	

1

-13.723

1.83448 -6.831

0.05521

1.88969 -77.57

-38.79

-51.9

13,21

0h 1m. 13.21

a+b+c -19

0h 1m 13.02

0 0m 53.08

+ 19.94

1855phae.proj...208

W. C. B. Obs

May 10 R. L. C. [illegible] Ill. West

−25.47	+32.12	+5.36	+28.22
ε Lan. May	α² Geminor.	Procyon	β Geminor.
6 .. 57 .. 39.7		γ .. 31 .. 21.0	γ .. 35 .. 59.0
43.4		34.7	36 .. 14.6
56.8		49.1	30.9
53.14.9		32 .. 2.3	45.9
30.6		16.1	37 .. 1.4
46.3		29.9	17.0
54 .. 2.1	γ .. 26 .. 27.9	43.0	32.1
224.0	—	196.1	200.9
206.9		16.1	320.9
104.10			
26.9	1.60895 40.640		
6 .. 53 .. 3.84	0.07253 Dec 32.12	γ .. 32 .. 2.30	γ .. 36 .. 45.84
6 .. 53 .. 14.86	1.68148 48.03	− 18	− 08
− 33		− 3	− 5
− 2	7h .. 25m 39s 87	− 8	− 9
− 9	7h .. 25 20 24		
6 .. 53 .. 17.42	+ 19.63	γ .. 32 .. 2.01	γ .. 36 .. 45.62
6 52 54.99		7 31 42.18	7 36 .. 26.04
08 41		+ 19.43	+ 19.58
19.43			

a = −30
z = −4
c = −8

1.60928 40.671
0.07253 Dec 32.12
1.68281 48.17
7h .. 25m 39s 73
25 20 24
+ 19.49

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1855phae.proj...208

Error of S.C. at 12h 30m +19.81 Rate −0.31 East

May 10 U. S. L. Obs. Ill ~~East~~

used Trimed. of Cat. Stars { a = −0.33, b = −0.01, c = +0.02 }

Catalogue Stars

~~535~~ (533)	~~547~~ 541	~~547~~ (545)	~~553~~ (551)
10 h 53 m 44.8	11 h 00 m 39.0	11 h 6 m 0.50	11 h 15 m 32.6
58.9	52.1	13.60	45.8
54 m 12.0	1 6.0	27.10	59.6
26.4	19.5	41.00	16 m 13.3
40.1	32.9	54.30	26.4
First two lost.	47.1	7 m 8.60	40.9
	2 m 0.8	22.10	54.4
18 2.20	197.4	167.2	273.0
68.14	137.4	287.2	93.0
114.06	11 h 1 m 19.63	11 h 6 m 41.03	11 h 16 m 13.29
5 29 4.06			
10 h 53 m 58.81			

	10 h 56 m 32.09			
	a −.22			
	b −.01			
	c +.02			
	δt −19.81			
−20.02	sum −20.02	−20.02	−20.02	−20.02
−.01	rate −.01	−.01	−.01	−.01
10 h 53 m 38.78	10 h 56 m 12.06	11 h 00 m 59.60	11 h 06 m 21.00	11 h 15 m 53.26
Dr. Ab. Ac. −0.79	−0.80	−0.82	−0.85	−0.90
Car. for Ch. −6.20	−6.15	−6.14	−6.14	−6.15
10 h 53 m 31.79	10 h 56 m 05.11	11 h 00 m 52.64	11 h 06 m 13.97	11 h 15 m 46.21
18 2.0				

Final Corr. for ~~Ab~~ ~~Ac~~ by Cat. Stars +0.14

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1855phae.proj...208

May 10 P. S. C. Obs. Ill. ~~West~~ East

Catalogue Stars

(556) ~~554~~	(557) ~~555~~	558 ~~560~~	(561) ~~563~~	562 ~~564~~
11 20 18.4	11 29 11.8	11 33 10.8	11 41 18.0	11 47 16.0
31.6 13.2	25.0 13.2	23.8 13.0	31.2 13.2	29.0 13.0
45.4 13.8	38.8 13.8	37.5 13.7	45.0 13.8	42.8 13.8
59.1 13.7	52.3 13.5	51.1 13.6	58.6 13.6	56.5 13.7
21 12.4 13.3	30 5.7 13.4	34 4.4 13.3	42 11.7 13.3	48 9.7 13.2
26.7 14.3	20.0 14.3	18.7 14.3	26.1 14.2	24.2 14.5
40.4 13.7	33.6 13.6	32.4 13.7	39.9 13.8	37.8 13.5
234.0	187.2	178.7	230.7	215.9
414.0	367.2	358.7	410.7	395.9
11 20 59.14	11 29 52.46	11 33 51.24	11 41 58.67	11 47 56.56
-13	-13	-13	-13	-13
11 20 59.01	11 29 52.33	11 33 51.11	11 41 58.54	11 47 56.43
-20.02	-20.02	-20.02	-20.02	-20.02
00	00	00	00	00
11 20 39.12	11 29 32.44	11 33 31.22	11 41 38.65	11 47 36.54
- 0.93	- 0.98	- 1.00	- 1.03	- 1.06
- 6.15	- 6.15	- 6.14	- 6.14	- 6.14
11 20 32.04	11 29 25.31	11 33 24.08	11 41 31.48	11 47 29.34

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1855phae.proj...20B

May 11 P. S. E. 08 Ill. East

(564) ~~566~~ which ~~566~~ Catalogue (566) Stars. +0.8 12 Can. Ven. companion

11 53 42.2	11 53 42.7	11 59 26.5	12 12 9.8	12 18 42.4
55.0	55.8	39.8	43.0	59.3
54 4.0	54 9.7	53.8	36.7	49 17.0
22.8	23.3	12 00 7.1	50.3	36.6
36.1	36.6	20.3	13 3.5	51.7
50.5	50.9	34.7	18.1	50 10.3
55 4.1	55 4.7	48.3	31.6	27.9
219.7	223.7	230.0	173.0	243.2
159.7	163.7	50.0	353.0	
11 54 22.81	11 54 23.39	12 00 7.14	12 12 50.43	12 49 34.74
			-.22	
			-.01	
			+.02	
Sum -20.02	-20.02	-20.02	12 12 50.22	
rate ov	ov	ov	12 12 30.32	
11 54 02.79	11 54 03.37	11 59 47.12	+ 19.90	
Prelim. Red. -1.09	-1.09	-1.12	-19.81	
Cor. for Chron. Err. -6.14	-6.14	-6.14	12 12 30.41	
11 53 55.56	11 53 56.14	11 59 39.86		
M 1853.0				

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1855phae.proj...208

East

May 10 D. S. C. Obs. Ill. ~~Test~~

~~Catalogue Stars~~

~~Thule~~ +39.

72 Can. Venat.

12 h 48 m 43.4 17.2
49 s 0.6 17.4
18.3 17.5
35.8 17.2
53.0 18.4
50 m 11.4 17.0
28.4

190.9
250.9

12 h 49 m 35.84
-03
a ~~+17~~
t -01
+03
.83
12 h 49 m 35.~~68~~ 19.90
12 h 49 m 16.17 19.66
~~+19.51~~
+19.66
-19.81
12 h 49 m 16.02

900
396
16)1296
+19.81
12 h 00 m

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1855phae.proj...20

May 11

Ill East

26 42	+12 40	+10 3	−15 27	+62 32
D. L. C. 05	W. C. B. 05.	D. L. C	P. L. C.	W. L. C
μ Leonis	ε Leonis	ϑ Leonis	ν Hydræ	ε Ursæ Majoris
9 44 5.3 14.9	10 0 17.3 13.6	10 24 49.5 13.4	10 42 6.4 13.9	10 53 37.8 28.6
20.2 15.0	30.9 13.9	25 2.9 13.9	20.3 14.1	54 6.4 29.6
35.2 15.4	44.8 14.1	16.8 13.9	34.4 14.4	36.0 30.8
50.6 14.7	58.9 13.4	30.7 13.4	48.8 13.6	55 6.0 28.5
45 5.3 16.3	1 12.3 14.9	44.1 14.7	43 2.4 15.0	34.5 31.5
21.6 15.3	27.2 13.9	58.8 13.7	17.4 14.1	56 6.0 29.4
36.9	41.1	26 12.5	31.5	35.4
175.1	232.8	215.3	161.2	162.1
355.1	412.5		341.2	22.1
9 44 50.73	10 00 58.93	10 25 30.76	10 42 48.74	10 55 6.01

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1855phae.proj...203

May 11 P. S. C. Obs. 2 Ill. Eqt.

+21 ″ 19 — −14 ″ 09

S. Leonis		δ Hyd. et Crat.	
11 ″ 6 ″	0.7 14.2	11 ″ 11 ″	44.4 13.6
	14.9 14.7	″ ″	58.0 14.1
	29.6 14.6	12 ″ 12 ″	1.1 14.1
	44.2 14.1		26.2 13.7
	58.3 15.6		39.9 14.8
7	13.9 14.5		54.7 14.0
	28.4	13 ″ 8 ″	7
	190.0		244.0
	310.0		184.0
11 ″ 6 ″	44.29	11 ″ 12 ″	26.29

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1855phae.proj...20

May 12 W. S. B. Obs. Ill East

	+5° 36′	+24° 26′
	Procyon	ε Leonis
7h	31m 21.1	
	34.4	
	48.0	
	32m 1.7	
	15.0	9h 38m 11.2
	29.4	27.1
	43.1	42.0
	192.7	180.3
	12 7	1.43696 27.85
7h 32m	1.81	0.04075 sec 26
a	− 21	1.47771 30 04 − 12
b	− 01	9h 38m 206 77 01
c	+ 02	30 04 + 02
7h 32m	1.61	9h 37m 56.73
7h 31m	42.16	a+b+c − 11
	+1945	9h 37m 56.62
		9 37 37 41
		+19.21

Ill East
a = − 0.33
b = − 0.01
c = + 0.02

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1855phae.proj...208

May 14

Ill. East.

+ 62.32	+ 21.09	− 14°	+ 15.22	+ 54.30
W. C. B	W. C. B	W. C. B	N. P. D.	D. S. C.
α Ursæ Maj.	δ Leonis	δ Hyd. et Crat.	β Leonis	γ Urs. Maj.
10 h 53 m 37.3	11 h 6 m 0.2	11 h 11 m 43.9	11 h 42 m 28.7	11 h 45 m 22.4
28.4	14.1	13.6	42.8	22.7
54 m 5.7	14.3	57.5	first five	45.1
30.1	14.7	14.2	lost.	23.4
35.8	29.0	12 m 11.7		46 m 8.5
29.6	14.7	14.0		23.9
55 m 5.6	43.7	25.7		32.4
28.5	14.1	13.7		22.6
34.1	57.8	39.4		55.0
31.1	15.5	14.8		23.5
56 m 5.2	7 h 12.3	54.2		47 m 19.5
29.7	14.8	13.9		23.8
34.9	28.1	13 m 8.1		43.3
158.6	186.4	240.5	11 h 43 m 71.5	226.2
38.6	306.4	180.5	11 h 43 m 35.75	
10 m 55 m 5.51	11 m 6 m 43.77	11 m 12 m 25.79	1.53656 34.40	11 m 46 m 32.31
a + 21	− 13	− 28	0.01581 1st δ	+ 11
b − .02	− 01	− 01	15.52375.68	− 02
c + 04	+ 02	+ 02	11 h 43 m 00.07	+ 03
10 h 55 m 5 s 74	11 . 6 43 m 55	11 12 m 25.57	−.16	11 h 46 m 32 s 43
10 m 54 m 46.87	11 . 6 24 62	11 12 m 6 45	−01	46 13 29
+ 18 87	+ 19 03	19 12	+.02	+ 19.14
			11 h 43 m 59 s 82	
			11 h 41 40 85	
			+ 18.97	

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1855phae.proj...20

May 14 P. S. C. Obs. 2 ll East

(?) D +0.8 − 22.35
χ Virginis 3 Corvi.

12 " 10 " 54.3

11 " 7.4	13.1	12 " 26 " 37.4	15.0
21.2	13.8	32.4	14.7
34.9	13.7	27 " 4.1	14.3
48.2	13.3	21.4	15.6
12 " 2.4	14.2	37.0	14.8
16.1	13.7	51.8	
154.5		~~2[illegible]~~	
244.5			

12 " 11 " 34.93

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1855phae.proj...203

May 15 W. C. B. Obs. 9 ft East

+10°,40.

ε Leonis

10 h 0 m	16.80	13.4
	30.20	14.4
	42.60	13.8
	58.40	13.4
1 h	11.80	14.9
	26.70	14.0
	40.70	
	229.2	
	209.2	
10 h 00 m	58.46	

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1855phae.proj...20B

May 17

20-C.W.

+32.42

α² Geminor.

7h 24m 51.0
25m 6.5
22.9
39.0
54.7
26m 11.5
27.6

213.2
273.2

7h 25m 39.03

20

~~+5.36~~

Procyon

7h 31m 35.70
47.40
1.20
14.50
29.00
42.60

20. C.W.

+5.36

Procyon

7h 31m 20.3
33.7
27.4
32 1.2
14.5
29.0
42.6

188.7
8.7

7h 32m 1.24

− 4
+ 4
+ 2

7h 32m 1.26
7h 31m 42.11

+19.15

+12.40

C. D. C

α Leonis

10h 0m 16.70
30.20
44.30
58.30
1m 11.80
26.70
40.40

228.4
408.4

10h 00m 58.34

− 4
+ 4
+ 3

10h 00m 58.37
10h 00m 39.28

+19.09

Ill. East

−15.26

20-C.W.

γ Hydrae

10h 42m 5.7
19.4
35.7
48.1
43m 1.6
16.4
30.7

155.6
335.6

10h 42m 47.94

10

+24.22

20-C.W.

β Geminor

7h 35m 58.80
36m 13.70
29.20
44.80
59.9
37m 16.2
31.8

254.4
314.4

7h 36m 44.91

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1855phae.proj...208

May 17

Ill last

+5'.210	+62.31	+21.19	−14.0
20. 6. 33	20. 6. 33	P. S. C.	P. S. C.
β Urs. Maj.	α Urs. Maj.	δ Leonis	δ Hyd. et Crat.
10 " 52 " 9.2 24.5	10 " 55 " 4.9 28.4	11 " 6 " 0.0 14.0	11 " 11 " 45.6 13.6
33.7 25.2	33.6 31.2	14.0 14.8	57.2 14.1
58.9 25.3	4.8 29.8	28.8 14.6	12 " 11.3 14.2
53 " 24.2 24.2	34.6	43.4 13.3	25.5 13.7
48.4 26.4	first three	57.7 15.4	39.2 14.6
52 " 14.8 25.4	lost.	7 " 13.1 13.6	53.8 14.2
40.2		27.7	13 " 8.0
229.4		164.7	238.6
169.4		304.7	178.6
10 " 53 " 24.2		11 " 6 " 43.53	11 " 12 " 25.51
		− 3	− 6
		+ 4	+ 4
		+ 3	+ 2
		11 " 6 " 43.57	11 " 12 " 25.51
		11 " 6 " 24.56	11 " 12 " 6.41
		+16.99	+19.10

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1855phae.proj...20B

May 17/18 W. C. B. Obs. Ill. East

+9.13 −1.1

ε Pegasi α Aquarii

21 36 42.1 13.3

6 55.4 14.0 21 58 25.8 13.5

57 9.4 13.8 39.3 13.4

23.2 13.5 52.7 14.3

36.7 14.5 59 7.0 13.6

51.2 13.6 20.6

38 4.8 first two lost

2228

60

162.8

21 37 23.26

−2

21 37 23.06

4.26

+18 80

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1855phae.proj...203

May 22d 1855 P. S. Cobs. Ill. East

Clock Stars

+ 39°.6

12 Camm Venaticorum

12h	48m	41s.4	12h	48m 42s.8
"		58.5	"	59.8
49		16.2	49	17.5
"		34.0	"	36.2
"		51.1	"	52.2
50		9.6	50	10.9
"		27.1	"	28.3
		237.9		246.7

12h 49m 33.99 12h 49m 35.24

a −.01 a −.01

b +.15 b +.15

c +.04 c +0.4

12 49 34.17 12 49 35.42

This is not a catalogue star.

12 49 16.17

+ 19.25

α Bootis +19°.56

14h	8m	40s.5	
"		54.4	
9		9.1	
"		23.7	
"		37.9	
"		53.1	
10		7.8	
		226.5	
		166.5	

14h 9m 23.79

a −.06

b +.12

c +0.4

14h 9m 23.89

14 9 4.64

+ 19 25

ζ Bootis +27°.41

lost			
lost			
lost			
lost			
14h	38m	15s.2	
		31.7	
		47.0	
9	3m	9	
		31.3	

a = −.04
b = +.14
c = +0.4
+.14

M.

1.91317 by 82.029a

0.05280 sec 27.41

1.96597 by 82.463c

186.36

14h 39m 02.12

38 41 22

+ 20 90

ζ Libræ −15°.26

14h	42m	30.9	
"		44.2	
"		58.6	
43		12.8	
"		26.5	
"		41.3	
"		55.4	
		269.7	

14h 43m 12.81

−0.12

+.07

+0.3

14h 43m 12.79

14 42 53.50

+ 19 29

L.

1.91408 by 82.050

1.43696 by 27.350

0.05280 sec 27.416

1.48976 30.886

14h 39m 0.41

14h 38 41.19

+ 19.22

Ill East.

a −0.140

b +0.120

c +0.026

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1855phae.proj...20B

used in Red. of Cat. Stars: a = −0.11, b = +0.11, c = +0.06

May 23

Ill. East

Catalogue Stars

no personal equation	566	applied	(573)	(575)
20.6.33	20.6.33	20.6.33	P.S.C.	P.S.C.
11 h 59 m 25.3	12 h 1 m 39.8	12 h 10 m 53.8		12 h 18 m 59.9
38.8	53.0	11 h 7.0		19 m 13.8
52.3	2 m 6.8	20.5	12 h 12 m 35.2	27.1
12 h 00 m 5.7	20.6	34.1	49.0	40.9
19.2	33.8	47.3	13 m 2.2	54.1
33.7	48.2	12 h 1.9	16.9	20 m 8.2
47.3	3 m 0.6	15.6	30.3	21.9
222.3	203.8	179.5	133.60	225.4
42.3	143.8	89.5	68.14	85.4
12 h 00 m 6.04	12 h 2 m 20.54	12 h 11 m 34.21	65.46	12 h 19 m 40.77
a −.07			57 245.46	
b +.08			12 h 12 m 49.09	
c +.06				
δt −19.07				
sum −19.00	−19.00	−19.00	−19.00	−19.00
rate 00	00	00	00	00
11 h 59 m 47.04	12 h 02 m 01.54	12 h 11 m 15.21	12 h 12 m 30.09	12 h 19 m 21.77
Or. Ad. Dec. −1.02	−1.03	−1.08	−1.09	−1.12
Corr. for Ab. Plan. −6.14	−6.14	−6.14	−6.14	−6.14
11 h 59 m 39.88	12 h 01 m 54.37	12 h 11 m 07.99	12 h 12 m 22.86	12 h 19 m 14.51
M 1855.0				

Final Corr by Cat. Stars +0.10

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1855phae.proj... 208

Error of S.C. at 12h.0m +19s.07 Rate −0s.2

May 23 P. S. C. Ill East

Catalogue Stars.

594	~~596~~ 594	~~600~~ 598	~~608~~ (601)	~~610~~ 609
12h 25m 13.6	12h 42m 57.6	12h 47m 55.1	12h 53m 2.1	13h 14m 43.1
26.7 (13.1)	43m 10.9 (13.3)	48m 6.2 (13.1)	15.6 (13.5)	56.3 (13.2)
40.6 (13.9)	22.4 (13.5)	19.9 (13.7)	29.4 (13.8)	15m 10.1 (13.8)
54.2 (13.6)	38.2 (13.8)	33.4 (13.4)	43.1 (13.7)	23.6 (13.5)
26m 7.4 (13.2)	51.4 (13.2)	46.9 (13.2)	56.3 (13.2)	36.9 (13.3)
21.7 (14.3)	44m 5.9 (14.5)	49m 1.2 (14.3)	56m 10.7 (14.4)	51.3 (14.4)
35.3 (13.6)	19.5 (13.6)	14.9 (13.7)	24.2 (13.5)	16m 5.0 (13.7)
199.5	207.9	175.9	181.4	226.3
379.5	267.9	235.9	301.4	166.0
12m 25m 54.21	12h 43m 38.27	12h 48m 33.70	12h 55m 43.06	13h 15m 23.71
−19.00	−19.00	−19.00	−19.00	−19.00
60	+.01	+.01	+.01	+.01
12h 25m 35.21	12h 43m 19.28	12h 48m 14.71	12h 55m 24.07	13h 15m 04.72
−1.15	−1.23	−1.26	−1.29	−1.37
−6.14	−6.14	−6.13	−6.14	−6.14
12h 25m 27.92	12h 43m 11.91	12h 48m 07.32	12h 55m 16.64	13h 14m 57.21

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1855phae.proj...20

May 23

P. S. C

Catalogue Stars

Ill East

X −10.26 Spica	(615) ~~616~~	(616) ~~617~~	very faint ~~625~~ 624	very faint (628)
13 17 12.4	13 20 30.2	13 26 32.5	13 48 24.1	13 53 5.0
26.0 13.6	43.3 13.1	~~xxx~~ 46.0 13.5	37.1 13.0	18.8 13.8
39.8 13.9	57.1 13.8	59.7 13.7	50.7 13.6	First five
53.8 13.9	21 10.8 13.7	27 13.1 13.4	17.6 26.9	lost.
18 7.3 13.5	24.1 13.3	26.8 13.7	31.9 14.3	
21.9 14.6	38.3 14.2	40.9 14.1	46.0 14.1	
35.7 13.8	52.1 13.8	54.6 13.7		
197.0	255.9	273.6	207.40	23.80
377.0	75.9	93.6	.03	68.71
13 17 53.86	13 21 10.84	13 27 13.37	) 207.37	~~21 91.74~~
−.09			6) 27.37	+13 2 75.09
+.07			13 49 04.56	~~13 53 45.97~~
+.06				13 52 37.54
13 17 53.90				
13 17 34.84	−19.00	−19.00	−19.00	−19.00
+ 19.06	+.01	26 +.01	+.02	+.02
at 13 4.00	13 20 51.85	13 26 54.38	13 48 45.58	13 52 18.56
−19.07	Pr. Mt. Sc. −1.39	−1.42	−1.50	−1.51
+.01	Parfocal. Var. −6.17	−6.12	−6.13	−6.13
13 17 34.84	13 20 44.29	13 26 46.84	13 48 37.95	13 52 10.92
−1.84	M 1853.0			

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1855phae.proj...208

May 23 P. S. C Ill East

Catalogue Stars

~~633~~ 632	638-9
13h 54m 49.6	14h 00m 5.0
55m 2.8 (13.2)	18.3 (13.3)
16.5 (13.7)	32.0 (13.7)
30.3 (13.8)	45.6 (13.6)
43.4 (13.1)	59.1 (13.5)
57.7 (14.3)	27.9
56m 11.5 (13.8)	1m 27.0
211.8	167.00
	27.56
13h 55m 30.26	~~14h 00~~ 214.56
	6) 274.56
	14h 00m 45.76

-19.00	-19.00
+.02	+.02
13h 55m 11.28	14h 00m 26.78
- 1.52	- 1.54
-6.12	-6.13
13h 55m 03.64	14h 00m 19.11

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1855phae.proj...20B

May 25/26 W. C. B. Ill East

+9.13

ε Pegasi

21h 36m 44.8	13.3
55.1	13.8
37m 8.9	13.6
22.5	13.9
36.4	14.3
50.7	13.9
38m 4.6	
220.0	
4) 160.0	

21h 37m 22.86

−.08

+.10

+.03

21h 37m 22.91

21h 37m 4.51

+14.40

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May 28 · TU. East.

M. C. B. Observ.

+21,19 δ Leonis	+15,23 β Leonis	+54,30 γ Ursæ Majoris	−22,36 β Corvi	Mid wire of Polaris Sub Polo
11. 5. 58.8 14.2	11. 47. 16.5 13.6	11. 46. 20.7 22.6		
6 13.0 14.7	" 30.1 14.3	" 42.3 23.6		
" 27.7 14.3	" 44.4 14.2	47 6.9 23.8	12. 26. 50.8 14.9	13 6 5.2
" 42.0 14.7	" 58.6 13.7	" 30.7 22.8	" 5.7 14.2	11.3
" 56.7 15.2	48 12.3 14.9	" 53.5 24.5	" 19.9 15.8	18.1
7 11.9 14.8	" 27.2 14.1	48 18.0 23.5	" 35.7 14.7	
" 26.7	" 41.3	" 41.5	" 50.4	
236.8	230.4	214.6		2
296.8	410.4	~~94.6~~		
11..6..42.40	11..48..58.63	11..47..30.66		

+ 1
+ 5
+ 8

11..6..42.54
11..6 24.44

+ 18.10

1855phae.proj...20B

May 28th 1855

PSC

Ill East

	Spica		Ursae Maj		η Bootis		α Bootis		Moon
	−10.24		+50.2		+19.8		+19.56		−12.43
13	17 m 16.87	13.5	13 41 h 6.5	20.4	13 47 m 23.7	13.8	14 8 39.4	14.0	—
	25.2	14.0	26 9	21.4	37.5	14.5	53.4	14.6	—
	39.2	13.8	48 3	21.2	52.0	14.5	9 8.0	14.7	—
	53.0	13.5	42 9.5	20.6	48 6.5	14.1	22.7	14.12	14 12 55.2
18	6.5	14.7	30.1	22.5	20.6	15.3	36.9	15.2	15.1 10.3
	21.2	13.8	52.6	21.2	35.9		52 1	14.8	24.9
	35.0		43 13.8		9		10 6.7		
	191.8		187.7		176.2		219.2		~~11.12.90.4~~
	371.8		67.7		43.55		159.2		3) 39.30.4
13	17 53.11	13	42 9.67		219.75	14	9 22.74		13.10.13
	+ 2				6) 39.75		− 1		−2.68
	+ 5			13	48 6.62		+ 8		12.41.45
	+ 5						+ 12		
13	17 53.23					14	9 22.93		
13	17 32.49					14	9 4.63		
	+ 16.34						+ 18.3		

Log. 41.151 — 1.61488
Sec. 19.7½ — 10.02466
23.55 — 1.63904

41.151
27.562
13.188
3) 81.901
− 27.300

1.43616
log μ = 0.01065
.01078
~~.02144~~
1.45760
28.68

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1855phae.proj...208

28/29 May 1855

W.C.B Ns.

Ill - East.

+28°½ W.C.B Ns +14.28

α Andromedæ γ Pegasi

0h 1m 25s 5	15.0	6m 35s.8	14.1		
" 40 5	15.5	" 49.9	14.2		
" 56 0	15.6	7 4.1	13.7		
2 11.6	15.0	" 17.8	14.9		
" 26.6	16.3	" 32.8	14.0		
" 42.9	15.2	" 46.7			
" 58.3					

1st fair contact.

90. E.B

Polaris

0 " 39 " 21.0		
25.2	0 " 39 " 25.03	
28.9		
75.1		
0 " 47 " 53.5		
48 " 2.3	0 " 48 " 1.93	
10.0		
5.8		
0 " 56 " 57.6		
57 " 2.3	0 " 57 " 1.57	
4.8		
4.7		
1 " 5 " 49.4		
53.5	1 " 5 " 54.07	
59.8		
162.2		
1 " 14 " 24.7		
30.3	1 " 14 " 30.03	
35.1		
90.1		
1 " 23 " 48.0		
53.3	1 " 23 " 55.6	
24 " 5.5		
166.8		

over microm. wire see sheet.	1 " 35 " 29.8	
	33.3	1 " 35 " 33.67
	37.9	
	101.0	

26	3.4	187.0	
8	3.4	67.5	
0h 1m	10.91 63	0h 7m	9"57
0 D	53.61	1.60895	20.64
"	18"90 02	0.05521	28.17
		1.66416	46.15
		233.15	
		53.15	

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1855phae.proj...20B

May 29 P. S. b. Obs. Ill. East

−16.12	−8.51	+27.12
Moon	β Libræ	α Cor. Bor.
	15 8 51.2	15 28 7.2
	9 2.6 13.4	22.0 14.8
15 5 15.0	18.2 13.6	37.5 15.5
30.0 15.	32.3 14.1	52.9 15.4
44.2 14.2	45.4 13.1	29 7.8 14.9
6 0.0 15.8	10 0.3 14.9	24.0 16.2
14.8 14.8	13.9 13.6	39.7 15.2
104.0	165.9	190.6
120	225.9	370,6
224.0	15 9 32.27	15 28 52.94
44.80		
~~36.60~~		
~~14.76~~		
~~7.90~~		
~~15 5 30.24~~		
44.80		
14.76		
15 5 30.04		

~~41.151~~
~~27.562~~
40.681
27.459
68.140
~~34.070~~
13.628
1.13444
~~1.53237~~
.01240
10.02229
~~1.56706~~
~~36.60~~
1.16913
14.76

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1855phae.proj...208

May 30 P. S. C. Obs. All East

−10.24		+19.56	
α Virginis		α Bootis,	
13.17.11.4	13.5		
24.9	13.8		
38.7	13.7		
52.4	13.6		
18.6.0	14.7	12.10.36.2	15.6
20.7	13.9	57.18	14.4
34.6		6.2	
186.7			
368.7			
13.17.52.67			

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1855phae.proj...20B

31st May 1855 Ill. East.

W.C.B	S.Cr	S.Cl	S.Cr	SCl
Spica S. 10° 24'	η Ursæ Maj. N 50° 2'	η Bootis N 19° 8'	ε Bootis N 19° 56'	ε Bootis N 27° 41'
13h 17m 11.1	13h 41m 6.0	13h 47m 23.2	14h 8m 39.1	14h 38m 13.0
" 24.5	" 26.5	" 37.2	" 53.0	" 27.9
" 38.6	" 47.8	" 51.7	9 7.9	" 43.4
" 52.3	42 9.0	48 6.1	" 22.1	" 58.9
18 5.8	" 29.6	" 20.0	" 36.3	39 13.6
" 20.2	" 52.0	" 35.2	" 51.7	" 30.1
" 34.1	43 13.3	" 49.8	10 6.1	" 45.4

	186.5	184.2	223.2	216.2	232.3
13h	366.6	64.2	43.2	156.2	412.3
13h 17m	52.37	13h 42m 39.17	13h 48m 6.17	14h 9m 22.31	14h 38m 58.90
	− + 6				
	+ 5				
	+ 5				
13h 17m	52.53				
13h 17m	34.82				
	+ 17.71				

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1855phae.proj...208

31st May 1855 S.C. obs Ill. East.

S.C ♀ 8 Librae S 15°.24'		♀ α² Librae S 15°.26'.		♀ β Librae S 8°.51'		☾ Coronae Borealis N 27°.12		♀ Serpentis N 6.53	
14h	42m. 17s.7	14h	42m. 29s.1	15h. 8m	51s.0	15h	28m. 7s.0	15h	36m 46s.5
	31.3		42.8	9	4.2		22.0		59.7
	45.6		57.0		18.2		37.2	15.3	37 13.3
	59.9	43	11.1		32.0		52.5		27.1
43	13.5		24.8		45.3	29	7.4	16.5	40.6
	28.3		39.7		~~59.9~~		23.9	15.1	55.0
	42.5		54.0	10	~~13.7~~		39.0	38	8.7

	238.8		258.5		~~224.3~~		189.0		~~250.4~~ ~~251.2~~ 190.4
	418.8		78.5		~~164.3~~		369.0		+91.2
14h	2m 41s 59.83	14h	43m 11s.21	15h 9m	32.04	15h 28m	52s.71	h 15	m 37 27.31
			+ 6		+ 5			15h	8m 27.27
			+ 4		+ 5				
			+ 5		+ 5				
		12.. 43 .. 11.36		15.. 9.. 32.19					
		14.. 42.. 53.49		15.. 9.. 14.25					
			+17.87		+17.94				

☾

3 Urnae Min. 7m.14

lost

15h 46m.30s.0

clouds

49m 43s.3

clouds

clouds

53m. 3s.0

149m.16s.3

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1855phae.proj...20B

May 29

Ill East

D. L. C	W. C. B	D. S. C.	D. S. C.
+62.32	+21.19	+50.2	+19.8
α Urs. Maj.	δ Leonis	η Urs. Maj.	η Bootis
	11 " 5 " 58.4	13 " 11 " 47.7	13 " 47 " 23.60
10 " 54 " 42	6 " 12.6 14.2	42 " 9.2 21.5	37.30 13.7
34.2 30.0	27.4 14.8	29.7 20.5	51.90 14.6
55 " 3.7 29.5	41.9 14.5	52.3 22.6	48 " 6.40 14.5
32.3 28.6	56.2 14.3	43 " 13.3 21.0	20.30 13.9
56 " 2.7 31.4	7 " 11.7 15.5	First two	35.50 15.2
32.9 29.2	26.3 14.6	Lost.	50.10 14.6
	234.5		225.1
	294.5		45.1
	11 " 6 " 42.07		13 " 48 " 6.44

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1855phae.proj...203

May 29 P. S. C. Obs Ill East

+65.4	+19.56	+27.41	−15.26
	Doubtful		
α Draconis	α Bootis	ε Bootis	α^2 Librae
	14h 8m 53.7	14h 38m 13.2	14h 42m 29.4
13h 59m 44.0	9h 8.57	28.1	43.1
14h 00m 16.4	22.8	43.7	57.8
48.8	36.6	59.1	43h 11.4
1h 20.4	52.9	39h 13.9	25.2
54.4	10h 6.8	30.4	40.1
2h 26.9		45.7	54.2
		234.1	260.7
		414.1	80.7
		14h 38m 59.16	14h 43m 11.53

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1855phae.proj...20

June 2

	W.C.W & D.S.C.		Ill. East.	
+15.23	−10.24	+50.2	+19.8	+19.56
W.C.W	D.S.C.	R.S.C. 2.	W.S.C.L.	D.S.C. 2.
β Leonis	α Virginis	η Urs. Maj.	η Bootis	α Bootis
	13 " 17 " 11.1	13 " 41 " 5.9	13 " 47 23.0	14 " 8 " 39.0
11 " 41 " 29.6	24.5 13.4	26.3 20.4	37.0 14.0	53.0 14.0
	38.4 13.9	47.8 21.5	51.5 14.5	9 " 7.6 14.6
	52.3 13.9	42 " 9.1 21.3	48 " 6.0 14.5	22.1 14.5
	18 " 5.8 13.5	29.7 20.6	19.9 13.9	36.2 14.1
	20.3 14.5	52.0 22.3	35.2 15.3	51.4 15.2
	34.2 13.9	43 " 13.1 21.1	49.6 14.4	10 " 5.9 14.5
	186.6	183.9	222.2	215.2
	366.6	63.9	42.2	155.2
	13 " 17 " 52.37	13 " 42 " 9.13	13 " 48 " 6.03	14 " 9 " 22.17

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1855phae.proj...203

June 4th W. C. T. Ill. East

−16.31	+32,12	+5.36	+28.22
α Lan. ~~Maj~~	α² Geminor	Procyon	β Geminor
	γ 24 49.50	γ 31 18.90	γ 35 57.1
	25 51.00 (15.5)	82.1 (13.2)	36 12.2 (15.1)
	21.1 (16.1)	45.9 (13.8)	27.7 (15.5)
	37.5 (16.4)	59.7 (13.8)	43.3 (15.6)
6 39 21 (14.0)	53.1 (15.8)	32 12.9 (13.2)	58.4 (15.1)
16.1 (14.8)	26 10.0 (16.9)	27.4 (14.5)	× ~~37 17.0~~ × doubtful (16.6)
30.9 (14.3)	26,3 (16.3)	21.2 (13.8)	30.0 (13.0)
45.2			
	202.5	238.1	
	262.5	418.1	
	γ 25 37.5	γ 31 59.73	

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1855phae.proj...205

June 4th

Ill East

+39.6	+39.6	+11.44	−10.24	+0.8
D.S.B 1.	D.S.B 2.	R, R. D.	D.S.B. 1	★ W.C.33
12 Can. von Companion	12 Can. Ven.	ε. Virginis	α Virginis	ζ Virginis
12 48 20.0	12 48 41.3	12 54 35.0	13 17 11.3	13 26 56.9
12 48 57.1 17.41	58.2 16.9	48.3 13.3	24.8 13.5	27 10.1 13.2
49 14.6 17.5	49 16.0 17.8	55 2.3 14.0	38.7 13.9	23.8 13.7
32.4 14.8	33.6 17.6	16.4 14.1	52.4 13.7	37.4 13.6
49.1 16.7	50.4 16.8	29.9 13.5	18 5.9 13.5	50.7 13.3
50 8.0 14.9	50 9.1 14.7	44.6 14.7	20.8 14.9	28 4.9 14.2
25.6 17.6	26.8 17.7	58.7 14.1	34.3 13.5	28 18.7 13.8
226.8	235.4	235.2	184.2	202.5
		115.2	368.2	262.5
12 49 32.40	12 49 33.63	12 55 16.46	13 17 52.60	13 27 37.5

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1855phae.proj...203

June 4th

Ill. East

+50.2	+19.8	+65.4	+19.56	+14.21
W. C. D.	R. A. B.	P. S. C.	R. A. B.	P. S. C. L.
η Urs. Maj.	ϰ Bootis	α Draconis	α Bootis	ζ Bootis
13h 41m 55.5	13h 47. 23.0	13h 59m 12.6	14h 8m 39.0	14h 33m 51.1
26.4 20.9	37.0 14.0	43.7 31.1		34m 4.8 13.7
47.8 21.4	51.4 14.4	14h 00m 16.3 32.6		18.8 14.0
42. 4.1 21.3	48m 6.0 14.6	48.8 32.5		33.0 14.2
29.7 20.6	20.0 14.0	1m 20.2 31.4		46.7 13.7
~~18~~ 52.0 22.3	05.2 15.2	54.2 34.0		35. 1.5 14.8
43 13.2 21.2	49.8 14.6	2 26.5 32.3		15.6 14.1
183.7	222.4	222.3		171.5
63.7	424	342.3		231.5
13h 42m 9.1	13h 48m 6.06	14h 00m 48.9		14h 34m 33.07

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1855phae.proj...206

June 4th

Ill East.

+2'.41	−15'.26	+40.58	−8.50	+72.21
R. A. B	R. A. B.	W. C. B	R. A. C	R. A. B.
ε Bootis	α^2 Libræ	β Bootis	β Libræ	γ^2 Ursæ Min.
14h 38m 18.0		14h 55m 55.0	15h 8m 57.0	15h 19m 7.9
27.8		56m 12.3	9m 4.1	50.1
		30.6	18.3	
	14h 43m 11.1	48.6	82.0	
	24.7	57m 6.2	45.3	22m 5.1
	39.7	25.3	10m 0.0	52.5
	54.0	43.4	13.7	23m 37.6
		221.4	164.4	
		341.4	224.4	
		14h 56m 48.77	15h 9m 32.06	
			−2	
			+11	
			+9	
			15h 9m 32.24	
			15h 9m 14.26	
			+17.98	

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1855phae.proj...203

June 2d

Ill Cast

+6.53	+4.55	−19.24	−3.19	−26.6
R. T. B	~~D. S. b. 2~~	D. S. b. 2	R. T. B	D. S. b. 2
α Serpentis	~~β Scorpii~~ ε Serpentis	~~α T. B.~~ δ Ophiuchi	~~D. S. b. 2~~ δ Scorpii	α Herculis
				α Scorpii
15h 36m 59.7	15h 43m 14.3	15h 56m 37.5	16h 6m 23.9	16h 20m 6.1
37.13.2 13.5	27.5 13.2	51.2 13.7	37.0 13.1	20.5 14.4
27.3 14.1	41.1 13.6	57m 6.0 14.8	50.9 13.9	36.0 15.5
40.8 13.5	55.0 13.9	20.3 14.3	7m 4.5 13.6	51.2 15.2
55.0 14.2	44m 8.2 13.2	34.3 14.0	17.6 13.1	21m 5.9 14.7
38m 8.9 13.9	22.6 14.4	49.8 15.5	32.3 14.7	22.0 16.1
first wire lost.	36.2 13.6	58m 4.1 14.3	45.9 13.6	37.2 15.2
	204.9	203.2	212.1	174.9
	384.9	143.2	32.1	358.9
	15h 43m 54.99	15h 57m 20.46	16h 7m 4.59	16h 20m 51.27
			− 2	
			+13	
			+9	
			16h 7m 4.79	
			16h 6m 46.85	
			+ 17.94	

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1855phae.proj...205

June 4th

Ill. East

+14.34

D. S. C. 1

χ Herculis

17h 7m 7.0 13.5
33.5 14.2
8m 7.7 14.3
22.0 13.6
35.6 14.8
50.4 14.1
9m 4.5

213.7
153.7

17h 8m 21.96

+12.40

D. S. C. 1.

α Ophiuchi

17h 27m 50.3 13.7
28m 4.0 13.8
17.8 14.2
32.0 13.5
45.5 14.7
29m 0.2 14.0
14.2

164.0
224.0

17h 28m 32.00
− 2
+16
+9
17h 28m 32.23
17h 28m 14.14
+18.09

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1855phae.proj...203

June 4/5

Ill. East

	+9.12	−1.1	−30.23	+2 5.17
W. C. 33	W. C. 33	W. C. 33.	W. C. R.	O. S. L. L
Moon's 2d limb	ε Pegasi	α Aquarii	Fomalhaut	α Andromedæ
21 30 30.2	21 36 41.5	21 57 58.3	22 49 9.3	0 00 25.7
44.9	54.8	58 11.3	24.9	40.7
59.9	37 8.4	25.0	40.7	56.2
31 15.4	22.4	38.9	56.6	1 11.7
29.9	36.0	52.0	50 11.9	26.7
45.6	50.4	57 6.5	28.8	43.0
32 0.7	38 4.3	20.0	44.4	58.4
226.6	217.8	212.0	216.7	262.4
106.6	157.8	272.0	396.7	82.4
21 31 15.23	21 37 22.54	21 58 38.86	22 49 56.67	0 1 11.77
	− 2	− 2	− 3	− 1
	+15	+13	+ 6	+20
	+ 9	+ 9	+10	+10
	21 37 22.76	21 58 39.06	22 49 56.80	0 1 12.06
	21 37 4.85	21 58 21.01	22 49 38.64	0 0 53.96
	+17.91	+18.05	+18.13	18.10
				W 0.7 18.13
	W 0.9	W 1.0	W 0.7	18.05
				17.91
				32.19
				+18.05

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1855phae.proj...205

June 4/5 — Ill. East

+55.44	+34.57	+22.46	D. S. 6
D. S. 6. 3.	D. S. 6. 1	D. S. 6. 2	Polaris
α Cassiopeae	β Cetorum.	α Arietis	
0 „ 31 „ 22.8 23.5	1 „ 1 „ 5.3	1 „ 58 „ 32.70	0 „ 39 „ 24.4
46.3 24.3	21.3 16.0	47.95 14.25	31.1 0 „ 39 „ 30.93
32 10.6 24.2	37.9 16.6	59 „ 2.65 14.70	37.3
34.8 23.4	54.7 16.8	17.70 15.05	92.8
58.2 25.6	2 „ 10.8 16.1	31.95 14.25	
33 23.8 24.3	28.3 17.5	47.50 15.55	0 „ 47 „ 2.2
48.1	44.9 16.6	2 „ 0 „ 2.65 15.15	8.7 0 „ 47 „ 8.13
244.6	203.2	184.10	13.5
	383.2	124.1	24.4
0 „ 32 „ 34.94	1 „ 1 „ 54.74	1 „ 59 „ 17.73	
			0 „ 56 „ 59.1
			57 „ 7.9 0 „ 57 „ 6.67
			13.0
			20.0
0 „ 32 „ 17.45		1 „ 58 „ 59.92	
			1 „ 5 „ 55.5
			6 „ 0.9 1 „ 6 „ 0.87
			6.2
			2.6
			1 „ 14 „ 33.2
			35.0 1 „ 14 „ 35.77
			39.1
			109.3
			1 „ 23 „ 54.5
			24 „ 1.1 1 „ 24 „ 0.07
			4.6
			0.2
			1 „ 32 „ 47.9
			54.9 1 „ 32 „ 55.03
			83 „ 2.8
			165.1 219 137.47
			41 „ 17.47
			1 „ 5 „ 59.92

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1855phae.proj...208

June 6th

a −0.03
b +0.19
c +0.08

Ill East

−10.24	+19.8	+19.56	−15.26	−8.57
20.6.33	η Bootis	D.S.C	D.S.C	D.S.C
Spica	D.S.C	α Bootis	α² Libræ	β Libræ
13ʰ 17ᵐ 11.4	13ʰ 47ᵐ 23.4	14ʰ 8ᵐ 39.3	14ʰ 42ᵐ 29.3	15ʰ 8ᵐ 51.1
24.8 13.4	37.3 13.9	53.3 14.0	43.0 13.7	9ᵐ 4.5 13.4
38.4 13.9	51.9 14.6	29.1	57.2 14.2	18.5 14.0
52.7 14.0	48ᵐ 6.2 14.3	9ᵐ 22.4	43ᵐ 11.4 14.2	32.4 13.9
18ᵐ 6.1 13.4	20.3 14.1	36.3 13.9	25.1 13.7	45.6 13.2
19.9 13.8	38.7 15.4	51.8 15.5	40.0 14.9	10ᵐ 0.2 14.6
~~34.6~~ 14.7	50.1 14.4	10ᵐ 6.1 14.3	54.1 14.1	14.1 13.9
188.2	224.9	~~9.2~~	260.1	166.4
368.2	44.9		80.1	226.4
13ʰ 17ᵐ 52.60	13ʰ 48ᵐ 6.41		14ʰ 43ᵐ 11.44	15ʰ 9ᵐ 32.34
− 02	− 01		−03	− 02
+ 12	+ 18		+11	+ 12
+ 04	+ 04		+04	+ 04
13ʰ 17ᵐ 52.74	13ʰ 48ᵐ 6.66		14ʰ 43ᵐ 11.60	15ʰ 9ᵐ 32.52
34.79	47ᵐ 28.43		42ᵐ 53.49	14.24
17.99	18.29		18.11	18.28
W 0.9	W 0.6		W 0.6	W 0.9

+16,15

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1855phae.proj...20B

June 8th W. b. B. Obs. Sid. Time

+39.6 −10.24

12 Can. Venat. α Virginis

12	48	41.6	17.1	13 17 11.9	13.6
		58.4	17.7	25.3	13.9
	49	16.4	17.6	39.2	13.9
		32.0	17.0	53.1	13.6
		51.0	18.4	18 6.7	14.4
	50	9.4	17.5	21.1	13.4
	~~51~~	26.9		34.9	
		238.8		192.2	
				372.2	

12 49 34.00 13 17 53.17

00 −.02

+ 6 + .06

12 + 23 + 15

12 49 34 31 13 17 53 40

12 49 15.83 13 17 34.77

+18.46 +18.63

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1855phae.proj...208

June 9 W.C.38. Obs. Ill. Cast

−8.2	+24.26	+12.40
α Hydræ	ε Leonis	α Leonis
9h 20m 5.1	9h 37m 10.8	10h 00m 15.8
18.4 13.3	25.2 14.4	29.4 13.6
32.2 13.8	40.2 15.0	43.3 13.9
45.9 13.7	55.3 15.1	57.4 14.1
59.4 13.5	38m 9.9 14.6	1h 11.0 13.6
21h 13.9 14.5	25.7 15.8	25.8 14.8
27.7 13.8	40.7 15.0	39.7 13.9
202.6	207.4	222.4
322.6	387.8	402.4
9h 20m 46.09	9h 37m 55.40	10h 00m 57.49

9h 20m 27.55 9h 37m 37.02 10h 00m 39.01

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1855phae.proj...206

June 11

W. C. B. Obs. Ill. East.

	+ 56.45		+ 10.24	
	ε Urs. Maj.		α Virginis	
	12. 46. 44.7	24.1	13. 17. 12.0	13.8
	47. 5.8	24.85	25.8	13.6
	33.65	25.00	39.4	14.0
	58.65	24.15	53.4	13.5
	48 22.8	26.1	18. 6.9	14.5
	46.9	24.8	21.4	13.8
	49. 13.7		35.2	
	231.2		194.1	
	411.2		374.1	
	12. 47. 58.74		13. 17. 53.44	

12. 47. 40.30 13. 17. 34.75

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1855phae.proj...20B

June 12 W. C. B. Ill. East.

−14.0	+13.23	+54.30	+22.36	+39.6
δ Hyd. et Crat.	β Leonis	γ UMa. Maj.	β Corvi	12 Canum.
11 11 42.9 13.7	11 41 16.9 13.5	11 45 21.0 24.5	12 26 57.3 15.0	12 48 42.0 17.0
56.6 14.1	30.4 14.5	~~40~~ 43.5 23.7	6.3 14.2	48 59.0 17.6
12 10.7 14.1	44.9 14.2	46 7.2 23.6	20.5 15.5	49 16.8 17.5
24.8 13.5	59.1 13.7	30.8 22.5	36.0 14.7	49 34.3 17.0
38.3 14.7	42 12.8 14.9	53.3 24.9	50.7	49 51.3 16.6
53.2 14.0	27.7 14.1	47 18.2 23.6	fits three	50 9.9 17.5
13 7.2	41.8	41.8	cent	50 27.4
233.7	233.6	215.8		240.7
173.7	413.6			
11 12 24.81	11 41 59.09	11 46 30.89		12 49 34.39
− 3	− 1	+ 1		0
+ 10	+ 17	+ 30		+ 23
+ 9	+ 9	+ 15		+ 11
11 12 24.97	11 41 59.34	11 46 31.29		12 49 34.73
11 12 6.04	11 41 40.46	11 46 12.51		12 49 15.79
+18.93	+18.88	+18.78		+18.94
18.48				
18.78				
18.94				
18.63				
4.36				
+18.87				

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1855phae.proj...20B

June 12 W. C. B. Ill. Cost.

a = -0.03
b = +0.23
c = +0.08

Polaris S.P
Mic-mire

13 6 16.60
22.20
26.20
65.0
13 6 21.67
-0.72
13 06 20.95
-0.89
-5.91
-3.14
Sum 9.94
13 06 11.73
1 05 55.17
+16.56
18.83
2.27

+10.24
Spica
13 17 12.0 13.7
28.7 13.8
39.5 13.6
53.3 13.1
18 6.9 14.4
21.3 13.8
85.1
193.8
373.6
13 17 53.40
- 2
+ 11
+ 9
13 17 53.58
13 17 34.75
S.C. +18.83

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1855phae.proj...208

June 15 W. C. H. Obs. Ill. Eott

−10.24

α Virginis

13h 17m	12.3	
	25.7	13.4
	39.7	14.0
	53.6	13.9
18h	6.9	13.3
	21.6	14.7
	35.3	13.7
	195.1	
	375.1	

13h 17m 53.59
− 2
+ 6
+ 15

13. 17. 53. 74
13h 17m 32.73
8.C. + 19.05

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1855phae.proj...20B

June 15/16 W.C.B. Ill. East

+14.26
α Pegasi

22.57.38.0 14.2
52.2 13.7
54 5.9 14.4
20.7 14.0
34.7
151.5
20.53
80.97
5) 260.97
22.57.52.19
− 1
+ 6
+ 23
22.57.52.47
22.57 33.27
S.C. +19,20

1.60895 1.44195
0.01393 0.01393
1.62288 1.45588
41.96 28.57

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1855phae.proj...208

June 17/18 W. C. B. Ill. West

a −.03
b +.25
c +.11

+22.46
Polaris x ~~Cassiopeæ~~ transits
Mid wire.

	1h 58m 38s.2		
		49.6	14.4
			14.8
8.3	59	4.4	14.8
11.6		19.2	14.5
15.9		33.7	15.5
		49.2	14.6
	2h 00m 3.8		
		195.1	
		135.1	
	1h 59m 19.30		
		− .01	
		+ .26	
		+ .11	
	1h 59	19.66	
	1h 59	00.29	
	S.C.	+ 19.37	

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1855phae.proj...20B

June 18th. M. C. B. Obs. Zll East

used in red. of Cat. Stars { a = −0.03 ; b = +0.25 ; c = +0.11 }

	−10.24	+50.2
	α Virginis	γ Ursæ Maj.
	13 17 12.4	13 41 6.9
	25.9	27.1
	39.8	48.8
	53.8	42 10.1
18	7.1	30.7
	21.8	53.0
	35.7	43 14.3
	196.5	190.9
	376.5	70.9
	13 17 59.79	13 42 10.13
	−.02	+ 01
	+ 16	+ 36
	+ 18	+ 18
	13 17 54.04	13 42 10.70
	13 17 34.70	13 41 51.37
	+ 19.34	+ 19.33
	−19.34	−19.34
	00	00
	13 17 34.70	13 41 51.36

19 33
19 34
19.34
+19 34
at 14 00

Error of Z.C
Rate +0.s1

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1855phae.proj...208

June 18th. D. F. F. Obs. Ill. East

Catalogue Stars

638-9	647 644	649 646	(653) 649	(664) 660
14 0 5.0	13.0 14 5 6.3	13.5 14 12 42.2	13.1 14 15 0.8	13.2 14 28 14.7
18.0	13.7 19.8	13.5 55.3	13.7 14.0	13.7 27.9
31.7	14.0 33.3	13.9 12 9.0	13.7 27.7	13.7 41.9
45.7	13.0 47.2	13.1 22.7	13.3 41.4	13.4 55.5
58.7	6 0.3	14.6 36.9	14.2 54.8	14.4 29 8.9
1 13.1	14.4 14.9	13.4 50.2	13.8 16 9.2	13.3 23.2
26.7	13.6 28.3	13 4.0	22.5	13.6 36.8
198.9	150.1	219.4	170.4	208.9
318.9	330.1	159.4	290.4	388.9
14 00 45.56	14 5 47.16	14 12 22.77	14 15 41.49	14 28 55.56
a -.02				
b +.19				
c +.11				
δt −19.34				
sum −19.06	−19.06	−19.06	−19.06	−19.06
rate 00	00	00	00	00
14 00 26.50	14 05 28.10	14 12 03.71	14 15 22.43	14 28 36.50
Obs. Abb. &c. −1.47	−1.49	−1.53	−1.54	−1.66
Cor. for Abs. Ref. −6.13	−6.12	−6.13	−6.14	−6.13
14 00 18.90	14 05 20.49	14 12 56.05	14 15 14.75	14 28 28.77

Pl 1853.0

Final Corr. by Cat. Stars +0.03

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1855phae.proj...20

June 18th J. F. F. Obs Ill. East

Catalogue Stars

666 ~~662~~	670 ~~666~~		(684) ~~660~~	(689) ~~685~~
very faint		very faint		
14h 31m 43.6	14h 39m 48.5	14h 43m 2.7	14h 49m 47.5	14h 54m 2.7
	40m 1.8 13.3		50 0.4 13.2	16.9 13.2
	15.4 13.6		14.6 13.9	30.7 13.8
32m 24.3	29.2 13.8		28.1 13.5	44.4 13.7
37.6 13.3	42.4 13.2		41.3 13.2	57.8 13.3
	56.8 14.4		55.8 14.5	55m 12.0 14.2
51.1	41m 10.4 13.6		57m 9.5 13.7	25.5 13.5
110.60	204.5		197.5	190.9
13.63	14h 40m 29.21			310.9
4) 96.97			14h 50m 28.21	14h 54m 44.41
14h 32m 24.24				
June −19.06	−19.06		−19.06	−19.06
rate 00	00		00	00
14h 32m 05.18	14h 40m 10.15		14h 50m 09.15	14h 54m 25.35
Eq. Abb. c − 1.62	−1.65		−1.70	−1.72
Corr. Ch. Va. −6.13	−6.13		−6.13	−6.14
14h 31m 57.43	14h 40m 02.37		14h 50m 01.32	14h 54m 17.49
AR 1853.0				

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1855phae.proj...203

June 18th J. H. F. Wis. Ill. East.

696 (7?) Catalogue Stars.

691 ~~687~~	~~692~~		704 ~~702~~	(706) ~~702~~
	very faint	-8.51		
	15h 6m 37.0	B Libra	15h 13m 21.5	15h 16m 35.4
14h 59m 53.0	49.9		34.8	48.9
15.00 6.9	7 4.1		48.5	17 2.1
20.7	17.9	15h 9m 19.4	14m 2.1	15.5
33.8		33.3	15.3	29.0
48.2	25.3	46.8	29.8	43.3
1m 1.9	59.1	10m 1.3	43.3	57.1
		15.1		
164.50	213.30	115.9	195.2	231.4
40.68	13.19	69.13	15.2	111.4
6) 123.82	226.49	46.77	15h 14m 2.17	15h 17m 15.71
	6) 106.49	5) 166.77		
15h 00m 20.64	15h 07m 17.75	15h 9m 33.36		
-19.06	-19.06	- 02	-19.06	-19.06
00	00	+ 17	-.01	16m -.01
15h 00m 01.58	15h 06m 58.69	+ 11	15h 13m 43.10	15h 16m 56.84
-1.74	- 1.76	15h 09m 33.62	- 1.79	- 1.80
-6.12	-6.11	15h 09m 14.27	-6.13	-6.17
14h 59m 53.72	15h 06m 50.82	+ 19.35	15h 13m 35.18	15h 16m 48.87

1.60885
0.00520

1.61415
41.13

1.44195
0.00520

1.44715
28.00

-19.34

15h 09m 14.28

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1855phae.proj...20

June 18th

J. H. T. Obs. Ill. East.

Catalogue Stars

709 ~~705~~	714 ~~710~~	722 ~~716~~	~~4 declinants~~	724 ~~720~~
15 h 19 m 59.4 13.8	15 h 27 m 4.7 13.2	15 h 34 m 17.9 13.2	15 h 37 m 23.5 13.4	15 h 41 m 15.4 13.9
20 12.7 13.7	17.9 13.6	31.0 13.8	36.9 14.1	28.7 13.6
26.4 13.8	31.5 13.7	44.9 13.7	51.0 13.9	42.5 13.7
40.2 13.2	45.2 13.3	58.6 13.1	38 h 4.9 13.6	56.2 13.3
53.4 14.4	58.5 14.4	35 m 11.7 14.3	18.5 14.7	42 h 9.5 14.5
21 h 7.8 13.9	28 h 12.9 13.6	26.0 13.8	33.2 14.0	24.0 13.7
21.7	26.5	39.8	47.2	37.7
221.6	197.2	230.0		214.0
281.6	317.2	410.0		394.0
15 h 20 m 40.23	15 h 27 m 45.31	15 h 34 m 58.57		15 h 41 m 56.29

sum	−19.06	−19.06	−19.06
rate	−.01	−.01	−.01
15 h 20 m 21.16	15 h 27 m 26.24	15 h 34 m 39.50	15 h 41 m 37.22
Pr. M. Co.	−1.81	−1.83	−1.86
Cor. for the Vas.	−6.15	−6.13	−6.11
15 h 20 m 13.20	15 h 27 m 18.28	15 h 34 m 31.53	15 h 41 m 29.22

AR 1858.0

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1855phae.proj...208

June 18th 9. Fr. Fr. Obs. Ill. East.

Catalogue Stars.

25		27	
15h 45m 56.7	13.2	15h 49m 55.5	13.1
46 9.9	13.6	50 8.6	13.6
23.5	13.7	22.2	13.7
37.2	13.3	35.9	13.2
50.5	14.4	49.1	14.4
47 4.9	13.5	51 3.5	13.8
18.4		17.3	
201.1		192.1	
26 1.1		25 2.1	
15h 46m 37.90		15h 50m 36.01	

−19.06	−19.06
−.01	−.01
15h 46m 18.23	15h 50m 16.94
−1.89	−1.91
−6.11	−6.13
15h 46m 10.23	15h 50m 08.90

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1855phae.proj...20B

June 29/21 W. C. B. Obs. Ill. East

a -02
b +25
c +12

+26.17 α Androm.		+14.23 γ Pegasi		+55.44 α Cassiopeæ		Polaris
0 " 00 " 27.7	15.1	0 " 5 " 24.5	13.5	0 " 31 " 25.0	23.4	altid wire.
42.8	15.4	38.0	14.2	48.4	24.5	1 " 6 " 8.3
58.2	15.7	52.2	14.1	32 12.9	24.4	12.9
1 " 13.9	14.9	6 " 6.3	13.7	37.3	23.4	17.5
28.8	16.4	20.0	14.8	33 " 0.7	25.5	1 " 6 " 38.7
45.2	15.4	34.8	14.1	26.2	24.1	1 " 6 " 12.9
2 " 0.6		48.9		50.3		
217.2		224.7		200.8		
97.2		44.7		260.6		
0 " 1 " 13.89		0 " 6 " 6.39		0 " 32 " 37.26		
− 01		− 01				
+ 28		+ 22				
+ 14		+ 12				
0 " 01 " 14.30		0 " 06 " 06.72				
0 " 00 " 54.48		0 " 05 " 46.97				
+19.82		+19.75				

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1855phae.proj...208

June 2/22 W.C.B. Obs. Ill. Lost

+55.44		+22.46	
α Cassiopeæ		α Arietis	
0h 31m 25.0	23.7	1h 58m 35.9	14.2
48.7	24.3	50.1	14.8
32h 13.0	24.3	59m 4.9	15.0
37.3	23.5	19.9	14.3
33h 0.8	25.5	34.2	15.5
26.3	24.0	49.7	14.9
50.3	2m 0v 4.6		
201.4		199.3	
261.4		139.3	
0h 32m 37.34		1h 59m 19.90	
+ 1		− 1	
+ 21		+ 13	
+ 43		+ 25	
0h 32m 37.99		1h 59 20.27	
0h 32m 18.25		1h 59m 00.44	
+ 19.74		+ 19.83	

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1855phae.proj...205

June 27 W. C. R. Obs. Ill. East

		− 22.12		
α Cor. Bor.	α Serpentis	δ Scorpii	β' Scorpii	δ Ophiuchi
15 h 28 m 8.9	15 h 36 m 48.8	15 h 51 m 24.0	15 h 56 m 10.0	16 h 6 m 26.3
24.1	37 2.0	38.5	53.9	39.7
39.6	15.9	53.4	57 h 8.3	53.3
55.0	29.7	52 h 8.1	22.9	7 h 7.0
29 9.9	23.0	22.4	37.0	20.2
25.9	57.2	37.8	52.0	34.7
41.2	38 m 11.2	52.5	58 h 6.6	48.2
204.6	207.8	236.7	220.7	229.4
384.6		56.7	160.7	49.4
15 h 28 m 54.94	15 h 37 m 29.69	15 h 52 m 8.1	15 h 57 m 22.96	16 h 7 m 7.06

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1855phae.proj...203

June 24 W. C. B. Obs. Ill East

Antares		Moons 1st limb −24.35		Messier 1st spot		Messier A 2nd spot		A Ophiuchi −26.23	
16 20 8.4	14.9	16 34 11.3		16 34 25.6	15.0	16 34 26.1	15.0	17 6 3.4	14.6
23.3	15.4			40.6	15.4	41.1	15.7	18.0	15.2
38.7	15.1			56.0	15.9	56.8	15.5	33.2	15.4
53.8	14.6			35 11.9	15.1	35 12.3	15.3	48.9	14.2
21 8.4	15.9			27.0	15.1	27.6	16.3	7 3.1	16.4
24.3	15.3			43.1	15.8	43.9	15.5	19.5	15.2
39.6				58.9		59.4		34.7	
196.5		11.3		263.1		267.2		160.8	
376.5		46.36		83.1		87.2		340.8	
16 20 46.04		16 34 57.66		16 35 11.87		16 35 12.46		17 6 48.64	
53.79									

log. 40.681 = 1.60939
log. μ = 0.01545
10.04127
1.66611
46.36

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1855phae.proj...20B

June 27 W.C.B. 2 ll. East

−24.51
+ Ophiuchi
17.. 12.. 44.2 | 4.6
58.8 | 5.1
13 13.9 | 5.1
29.0 | 4.8
43.8 | 5.6
59.4

249.1
45.35
) 294.45
6) 174.45
17.. 13.. 29.07

3
41.15 1.614138
Log. 10.04220
1.65658
45.35

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1855phae.proj..2.2

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1855phae.proj...20B

The signs are corrected to Ill. East

Date 1854	Ellid wire − mean	Ill.	Date 1854	Ellid w. − mean	Ill	Date 1855	Ellid w. − mean	Ill
	s			s				
Nov. 27/28	−0.19	E	Dec. 14/15	−0.03	W	Jan. 1	−0.23	E
" 28	+0.23	E	" "	+0.17	"	" "	−0.13	"
" "	−0.09	E	" "	+0.06	"	" "	−0.06	"
" "	−0.19	E	" "	−0.04	"	" "	+0.01	"
" "	+0.07	E	" 20	−0.10	E	" "	−0.19	"
" "	−0.19	E	" "	+0.10	"	" "	−0.18	"
" "	+0.16	E	" 21	−0.04	"	" "	−0.39	"
" "	+0.04	E	" "	−0.09	"	" "	−0.11	"
" "	+0.04	E	" "	−0.13	"	" "	−0.01	"
" 30/31	−0.17	E	" "	−0.01	"	" "	−0.10	"
Dec 4/5	−0.20	E	" "	+0.00	"	" "	+0.13	"
" 5/6	−0.07	E	" "	+0.07	"	" "	~~+0.26~~ −0.17	"
" "	+0.01	E	" 24/25	−0.07	"	" "	+0.34	"
" 6/7	+0.03	W	" "	+0.03	"	" "	−0.01	"
" 7/8	−0.08	W	" "	−0.10	"	" "	−0.07	"
				~~−0.1~~				
" 6/9	+0.18	W	" "	−0.14	"	" "	−0.11	"
" "	−0.03	W	" "	−0.03	"	" "	+0.01	"
" 19	−0.27	E	" "	−0.04	"	" "	+0.03	"
" "	0.00	E	Dec. 30	−0.01	"	" "	+0.26	"
" "	−0.17	E	" "	−0.14	"	" "	−0.06	"
" 20	−0.14	E	" "	+0.01	"	" 7/8	−0.01	W
" "	+0.20	E	" "	−0.03	"	" 8	+0.11	"
" "	+0.03	E	" "	−0.10	"	" "	+0.07	"
" "	+0.13	E	" "	+0.07	"	" "	+0.04	"
" 12	−0.24	W	" "	−0.11	"	" "	−0.10	"
" "	−0.09	W	" 1855 "	+0.04	"	" "	+0.17	"
" 12/13	−0.16	W	Jan 1	−0.10	"	" "	−0.10	"
" "	0.00	W	" "	+0.01	"	" "	−0.24	"
" 13/14	+0.11	W	" "	−0.09	"	" "	−0.09	"
" "	−0.01	W	" "	−0.16	"	" "	+0.03	"
30)	−1.06		30)	−0.90		30)	−1.16	
	−0.035+			−0.030			−0.039−	

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1855phae.proj.v1.208

The Signs are corrected to Ill. Post

Date 1855	Mid.w. – mean	Ill.	Date 1855	Mid.w. – mean	Ill.	Date 1855	Mid.w. – mean	Ill.
Jan. 8	−0.04	W	Jan 22	+0.03	W	Jan 22	+0.03	W
" "	+0.04	"	" "	−0.07	"	" "	+0.19	"
" "	+0.06	"	" "	−0.23	"	" "	−0.26	"
" "	−0.09	"	" "	−0.03	"	" "	0.00	"
" "	−0.07	"	" "	−0.01	"	" "	+0.16	"
" "	−0.10	"	" "	−0.01	"	" "	−0.21	"
" "	−0.04	"	" "	−0.19	"	" "	−0.17	"
" "	−0.07	"	" "	+0.10	"	" "	−0.01	"
" "	+0.06	"	" "	−0.01	"	" "	−0.20	"
" "	+0.14	"	" "	−0.01	"	" "	+0.17	"
" 9/10	+0.01	"	" "	+0.04	"	" "	+0.36	"
" "	+0.01	"	" "	−0.10	"	" "	−0.01	"
" "	+0.17	"	" "	−0.04	"	" "	+0.10	"
" "	+0.06	"	" "	+0.16	"	" "	−0.01	"
" 12	−0.23	"	" "	−0.14	"	" 23	−0.19	"
" "	−0.11	"	" "	0.00	"	" "	−0.11	"
" 22	−0.04	"	" "	−0.01	"	" "	−0.13	"
" "	+0.03	"	" "	−0.11	"	" "	−0.20	"
" "	+0.04	"	" "	+0.10	"	" "	+0.03	"
" "	+0.17	"	" "	−0.04	"	" "	−0.20	"
	~~0.09~~							
" "	−0.09	"	" "	−0.10	"	" "	−0.10	"
" "	−0.04	"	" "	+0.13	"	" "	−0.10	"
" "	−0.14	"	" "	+0.09	"	" "	+0.06	"
" "	−0.07	"	" "	+0.03	"	" "	−0.01	"
" "	−0.09	"	" "	−0.14	"	" "	+0.01	"
" "					"			
" "	−0.11	"	" "	−0.16	"	" "	−0.06	"
" "	−0.41	"	" "	−0.14	"	" 25	+0.06	E
" "	+ 0.03	"	" "	~~+0.30~~ −0.37	"	" "	−0.10	"
" "	+ 0.06	"	" "	~~+0.24~~ +0.30	"	" "	−0.04	"
" "	−0.04	"	" "	~~+0.24~~ +0.24	"	" "	−0.39	"
30)	−0.90		30)	−0.89		30)	−1.45	
	−0.03			−0.03			−0.048	

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1855phae.proj...20B

The Signs as corrected to Ill. East.

Date 1855:	Mid w. − mean	Ill
		E
Jan. 25	−0.04	E
" "	−0.07	"
" "	−0.07	"
" "	0.00	"
" "	−0.10	"
" 27	−0.16	"
" "	+0.01	"
" "	−0.19	"
" "	−0.03	"
" "	+0.01	"
" "	−0.16	"
" "	+0.06	"
" 29	−0.09	"
" "	−0.01	"
" 31	0.00	"
" "	−0.09	"
" "	+0.01	"
" "	−0.13	"
" "	−0.11	"
" "	−0.43	"
Feb. 2/3	−0.10	"
" "	−0.26	"
" "	−0.14	"
" "	−0.13	"
" "	−0.03	"
" 5	−0.10	"
" "	−0.26	"
" 6	−0.11	"
" "	−0.01	"
" 10	−0.03	"
30	−2.76	
	−0.092	

Date 1855	Mid wire − mean	Ill
Feb. 10	−0.16	E
" "	−0.04	"
" "	−0.09	"
" "	−0.10	"
" "	−0.16	"
" 11/12	+0.07	"
" "	−0.03	"
" "	−0.13	"
" 12	−0.03	"
" "	−0.06	"
" "	+0.08	"
" 12/13	−0.14	"
" 20/21	−0.07	"
" "	−0.01	"
" "	−0.40	"
" 23	−0.04	"
" "	−0.23	"
" "	−0.21	"
" "	+0.09	"
" "	−0.11	"
" "	−0.06	"
" 25/26	−0.03	"
" 24	−0.13	"
" "	+0.13	
" "	−0.17	
" "	−0.30	
" "	−0.23	
" "	−0.04	
" "	−0.24	
" 18	+0.15	
30	−0.274	
	−0.091	

On March 3rd/1855 The wires were altered.

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1855phae.proj:: 208

1855 June 29 3-5½ P.M.

A	900″ = 911.0	1 div. = 0.″989
D	900″ = 898.0	" = 1.002
F	900″ = 898.6	" = 1.011
G	900″ = 888.6	" = 1.013

Ext. Therm. 91.8
attach. " 84

* Roof closed " South window open

A

3ʰ 15ᵐ	4ʰ 09ᵈ	
3.14	4.10	
3.15	4.10	
Mean 3.14.6	4.9.6	
diff	0ʰ.55ᵐ	
val	3.″54.395	

GG

5ʰ 51ᵐ	−0ʰ.05ᵐ	
1.52	−0.07	
1.52	−0.05	
1.51.6	−0.5.6	
	0ʰ.57ᵐ.2	
	57.944	

Mean 56.″170

3ʰ 13ᵐ	4ʰ 13ᵈ	
3.14	4.11	
3.13	4.12	
Mean 3.13.3	4.12	
diff	0ʰ.59ᵐ.7	
val	59.″043	

5ʰ.50ᵈ	4ʰ.52ᵈ	
5.50	4.51	
5.49	4.53	
5.49.6	4.52.0	
Mean	− 0ʰ.57ᵈ.6	
	58.″349	

58.″696

3ʰ 11ᵈ	4ʰ.14ᵈ	
3.10	4.14	
3.11	4.14	
Mean 3.10.6	4.14	
diff	1ʰ.3ᵈ.4	
val	62.″703	

5ʰ.50ᵈ	4ʰ.51ᵈ	
5.52	4.52	
5.51	4.50	
5.51	4.51	
	1ʰ.00ᵈ.	
	60.″740	

Mean 61.″742

N	S
75.2	3.4
6.1	71.7
69.1	68.3

Mean 68.7 1 div. = 0.″818

Ext. 92
Attach. 84½

72.5	4.3
4.7	71.6
67.8	67.5

Mean 67.65 1 div. = 0.″868

Ext. 92.2
Attach. 84.8

75.0	0.9
3.0	72.7
72.0	69.8

Mean 69.9 1 div. = 0.″883

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1855phae.proj...20

Therm.
8 h t. 92.8
attach 85,

D

3.19	4.14	
3.19	4.14	
3.16	4.13	
Mean	3.18.6	4.13.6
diff	0ʰ.55ᵐ.0	
Value	55ˢ,110	

F

1.27	0.33
1.27	0.31
1.27	0.31
1.27	0.31.6
0ʰ.55ᵐ.4	
56ˢ.009	

Mean 55ˢ,560

N S

70.0	4.9
6.1	68.8
63.9	63.9

Mean 63.9
1 div = 0.869

8 h t 92.4
attach 84.8

3.20	4.19
3.19	4.18
3.20	4.18
Mean	3.19.6 4.18.3
diff	0ʰ.58ᵐ.7
Value	58ˢ.818

1.25	0.27
1.26	0.27
1.25	0.28
1.25.3	0.27.3
0ʰ.58ᵐ,0	
58ˢ.638	

Mean 58ˢ.726

69.8	4.9
1.9	72.8
67.9	67.9

Mean 63.9
1 div = 0.919

8 h t. 92.7
attach. 84.8

3.18	4.18
3.19	4.17
3.18	4.17
Mean	3.18.3 4.17.3
diff	0ʰ.59ᵐ.0
Value	59ˢ.118

1.27	0.29
1.27	0.29
1.27	0.30
1.27	0.29.3
0ʰ.57ᵐ.7	
58ˢ.335	

Mean 58ˢ.726

71.2	3.0
3.1	71.3
68.1	68.3

Mean 68.2 1 div = 0.876
8 h t. Ther. 93.0
attach 85.0

d A g D F

15ᵐ

+9.5/7	+10.6	+11.05	+12.58	+4.57	+9.50	+7.55	+7.59
−4.57	−5.16	−3.43	−1.49	−7.03	−5.10	−6.58	−6.49
	15.12	14.48	14.47	15.00	15.00	14.53	14.48

+6.07	+7.55	+12.7	Mean value	+7.03	+9.49	+7.58	Mean value
−9.3	−7.16	−2.44	14ᵐ.48.6	−7.54	−5.11	−6.53	14.50.6
15.10	15.11	14.51		14.59	15.00	14.51	

Mean value 15ᵐ.11

+9.09 Mean value
−5.46 14.58.4

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Micrometers of reading microscopes of Transit Circle.

Values of 1 div.

	1855 June 29	1852 June 28
A	0".989	0".989
B		
C		
D	1".002	
E		0".989
F	1".011	1".017
G	1".013	1".013
H		

External Thermometer	Attached Thermometer	Value of 1 Division of the Level.
91°.8	84°.0	".818
92.0	84.5	0.868
92.2	84.8	0.883
92.8	85.0	0.869
92.4	84.8	0.919
92.7	84.8	0.876
93.0	85.0	
Mean 92°.4	84°.7	".872

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July 1/2 W. C. B. Obs. Ill. East

α Andromedæ	γ Degusi / ~~α Cassiopeæ~~	β Ceti	α Cassiopeæ	β Ceti
0 h 00 m 29.8	0 h 5 m 26.3		0 h 31 m 27.2	
42.9	40.0		50.8	
1 h 0.3	54.1		32 m 15.1	
15.9	6 h 5.3	0 h 31 m 27.2	39.4	0 h 36 m 40.5
30.9	21.9	50.8	83 m 2.9	54.4
47.0	36.8	32 m 15.1	28.4	9.6
2 h 2.7	50.7	28.4	52.7	24.1

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1855phae.proj...20B

July 7/8 W.C.B. Obs. Ill West

Polaris
3 middle wires

0 " 58 " 3.2
58 " 6.5
58 " 9.7
19.4
0 " 58 " 6.47 0 " 58 " 6.47

1 " 6 " 38.3
41.6
47.8
7.7
1 " 6 " 42.57 1 " 6 " 42.57

1 " 15 " 35.1
39.9
43.9
28.9
1 " 15 " 39.63 1 " 15 " 39.63

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1855phae.proj...208

July 3/4 20. E. 33 Ill West

α Tauri		Capella		β Tauri	
4h 27m 15.4	14.3	5h 5m 21.5	19.7	5h 16m 42.8	15.4
29.7	14.7	41.2	20.6	58.2	16.4
44.4	13.8	6h 1.8	16.8	17h 14.6	15.1
58.2	14.5	20.6	19.7	29.7	15.4
28h 12.7	14.1	40.3	19.7	45.1	15.8
26.8	13.9	7h 0.0	14.9	15h 0.9	14.9
40.7		18.9		15.8	
227.9		144.3		207.1	
407.9					
4h 27m 58.27		5h 6m 20.61		5h 17m 29.59	

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1855phae.proj...20B

July 4 W. C. 33 Ill West

α Urs. Maj.	δ Leonis	β Leonis	γ Urs. Maj.	β Corvi
10 h 53 m 28.3	11 h 6 m 2.1	11 h 41 m 20.0	11 h 45 m 23.9	12 h 26 m 25.1
52 m 8.0	16.8	34.1	46.9	39.9
39.0	32.1	48.9	46 m 11.7	55.5
55 m 7.4	46.2	42 m 2.6	34.3	27 m 9.7
37.2	7 m 1.0	42 m 16.8	58.0	24.5
56 m 7.0	15.7	31.0	47 m 21.4	39.5
35.8	29.9	44.8	44.4	53.9
172.4	143.8	198.2	240.6	248.1
~~11 h 11 m~~ 52.4	323.8	18.2		18.1
10 h 55 m 7.53	11 h 6 m ~~17.69~~ 46.26	11 h 42 m 2.60	11 h 46 m 34.37	12 h 27 m 9.73

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1855phae.proj.x..203

July 4 W. C. B. Ill. West

η Bootis		Arcturus
13.. 47.. 27.0		
41.2	14.2	
56.4	15.2	
48.. 10.5	14.1	
25.0	14.5	
39.7	14.7	
53.6	13.9	14.. 10.. 9.9
25 3.4		
~~18.. 46.. 36.20~~		
73.6		
13.. 46.. 10.49		

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1855phae.proj...20B

July 5 20. C. B. Ill. West.

α^2 Librae	β Urs. elim	β Librae
14 h 42 m 33.7	14 h 49 m 0.7	15 h 8 m 55.7
47.8	52.8	9 m 9.5
43 m 2.7	50 s 47.1	23.9
16.3	51 m 36.5	37.3
30.4	52 m 29.4	51.1
44.8	53 m 21.9	10 m 5.0
58.8	54 m 11.9	18.2
234.0	200.3	200.7
114.0	260.3	260.7
14 h 13 m 16.29	14 h 51 m 37.19	15 h 9 m 37.24

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1855phae.proj.y...208

July 9 W. C. B. Ill. West

α Urs. Maj.		δ Leonis		β Leonis	
10 " 53 " 40.8	29.4	11 " 6 " 2.9	14.5	11 " 41 " 22.7	14.1
54 " 10.2	31.2	19.4	15.5	36.8	15.1
41.4	28.6	34.9	14.05	51.9	13.5
55 " 10.0	29.8	48.95	14.9	42 " 5.4	14.1
39.8	29.6	9 " 3.85	14.65	19.5	14.3
56 " 9.6	28.7	18.5	14.1	33.8	13.6
38.3		32.6		47.4	
190.1		163.1		217.5	
70.1		343.1		371.5	
10 " 55 " 10.01		11 " 6 " 49.01		11 " 42 " 5.36	
		+ 6		+ 6	
		+ 21		+ 19	
		+ 11		− 10	
		11 " 6 " 49.17		11 " 42 " 5.53	
		11 " 6 " 23.96		11 " 41 " 40.20	
		s. c. + 25.21		+ 25.33	

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1855phae.proj...20B

July 13/14 W. C. B. Ill. West.

Mid-Wire

Polaris,

1 h 6 m 54.3

59.9

7 2.4

176.6

1 h 6 m 58.87

α Arietis

1 h 58 m 44.4 14,8

59.2 15.6

59 14.8 14,3

29.1 14,8

43.9 14,9

58.8 14,2

2 h 0 m 13.0

263.2

203.2

1 h 59 m 29.03

+ 2

+ 24

− 14

1 h 59 m 29.19

1 h 59 m 7,18

+ 24.01

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July 15/16 W. C. B. Ill. West

Mid wire Polaris	α Arietis	δ Ceti ~~α Persei~~	α Persei
1. 6. 55.3	1. 58. 45.4	2. 54. 58.6 13.2	3 ~~13~~. 13. 25.2
58.9	59. 0.3 14.9	55 11.8 13.5	46.3 21.1
1.7	15.8 15.5	25.3 13.8	14 8.4 22.1
175.9	30.0 14.2	39.1	28.7 20.3
1. 6. 58.63	45.0 15.0	~~55~~. 52.6	49.7 21.0
	59.9 14.9	first three lost.	15. 10.8 21.1
	14.2 14.3		31.0 20.2
	210.6		200.1
	1. 59 30.09		3. 14. 28.59
	+ 2		− 1
	+ 28		+ 41
	− 14		− 20
	1. 59. 30.25		3. 14. 28.79
	1. 59. 1.25		3. 13. 59.71
	E. C. + 29.00		+ 29.08

1855phae.proj...20B

a +0.08
b +0.26
c −0.15

July 16/17

Ill. 20 est

W. C. B.	J. F. F.	J. F. F.
α Arietis ~~Capella~~	α Tauri	Capella
1.. 58.. 46.1	2.. 27.. 22.8	5.. 5.. 29.2
59 0.8 14.7	37.1 14.3	48.8 19.6
16.3 15.5	52.0 14.9	6.. 9.2 20.4
30.7 14.4	28 5.8 13.8	28.6 19.4
45.6 14.9	20.2 14.4	48.0 19.4
2.. 00 0.5 14.9	34.3 14.1	7 7.9 19.9
14.7 14.2	48.2 13.9	26.9 19.0
154.7	220.4	198.6
214.7	40.4	
1.. 59.. 30.67	2.. 28.. 5.79	5.. 6.. 28.37
+ 3	+ 4	+ 1
+ 27	+ 24	+ 37
= 16	− 16	− 22
1.. 59.. 30.81	2.. 28.. 5.89	5.. 6.. 28.53
1.. 59 1.24	2.. 28.. 36.45	5.. 5.. 58.93
+ 29.57	+ 29.44	29.60
+ 29.59		+ 29.59
W 0.7	W 0.8	0.7

W. C. B. + 29.59 W 1.5
J. F. F. + 29.51 W 0.7
Dis. syn + .08 W 1.8

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1955phae.proj...208

July 17 90.6.23 Ill. West

Spica	η Urs. Maj	η Bootis	α Bootis	ε Bootis
13.. 17.. 22.3	13 41.. 16.3	13.. 47.. 34.1	14.. 6.. 50.0	14.. 38.. 14.0
36.1	37.5	48.5	9.. 4.6	39.2
50.7	42.. 0.0	48.. 3.8	19.8	55.5
18.. 4.2	20.3	17.4	33.9	39.. 10.2
18.0	41.8	32.1	48.3	25.9
32.0	43.. 3.2	46.5	10.. 3.0	41.2
45.0	23.5	49.. 0.7	16.9	56.2
208.3	142.6	163.4	176.5	252.2
28.3		123.4	236.5	72.2
13..18.. 4.04	13..42.. 20.37	13..48..17.63	14..9.. 39.79	14..39.. 10.31

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1855phae.proj...20B

July 17 W.C.B Ill. 20 West

α^2 Libræ

14 h 42 m 40.1 s	14.0
54.4	15.1
43 m 9.5 s	13.4
22.9	14.4
37.3	14.1
51.4	13.7
44 m 5.1 s	
221.0	
161.0	
14 h 43 m 23.0 s	

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1855phae.proj - 203

July 18/19 W. C. W. Ill. West

	− 3° 31′	+ 6° 13′	+ 45° 57′
	α Ceti	α Tauri	Capella
	2h 54m 32.1	4h 27m 24.0	5h 5m 30.3
	45.8	38.2	49.9
	55m 0.1	53.0	6h 10.3
	13.2	28 6.8	29.0
	27.1	21.1	49.1
	40.8	35.5	7h 6.6
	54.1	49.0	27.8
	213.2	227.6	205.0
	93.2	47.6	
	2h 55m 13.31	4h 28m 6.80	5h 6m 29.29
	+ 07	+ .05	+ .01
	+ 14	+ 22	+ .39
	− 12	− 12	− 18
	2 55 13.45	4 28 06.95	5 06 29.51
	54 42.78	27 36.48	05 58.95
	55m 30.67	+ 30.47	+ 30.56
	47		
	56		
	170		
	Eclipse 55 30.57		
	16/17 39.55		
	102		
	151		

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1855phae.proj...20B

July 24/25

Ill West

W. C. T.	D. F. F.	
α Persei	Sirius	
3 " 13 " 32.7	6 " 38 " 37.8	
53.5	51.9	14.1
14 " 15.3	39 " 6.9	15.0
	20.9	14.0
	35.2	14.3
15 " 17.8	49.2	14.0
37.9	40 " 3.2	14.0
2	205.1	
	145.1	
	6 " 39 " 20.73	

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1855phae.proj.. 205

July 25 W. C. B. Ill. 2 West

Arcturus

14.. 8.. 56.0	14.7
9.. 10.7	15.1
25.8	14.1
39.9	14.5
54.4	14.6
10.. 9.0	14.0
23.0	
218.8	
~~14.. 9.. 31.26~~	
278.8	
14.. 9 39.83	
+ 7	
+ 28	
− 24	
14.. 9.. 39.94	
14.. 9.. 4.10	
35.84	

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1855phae.proj...20B

July 31 W.C.B. Ill. West.

β: Leonis		α Virginis		η Urs. Maj.	
		13 h 17 m 30.8		13 h 41 m 24.4	
		44.5	13.7	45.8	21.4
11 h 41 m 49.7		59.1	14.6	42 m 8.0	22.2
42 4.4	14.7	18 m 12.7	13.8	28.6	20.6
18.1	13.7	26.4	13.7	49.8	21.2
32.3	14.2	40.4	14.0	43 m 11.0	21.2
46.6	14.3	53.9	13.5	31.8	20.8
43 m 0.2	13.6				

267.8 199.4

~~13 h 16 m 38.26~~ ~~13 h 42~~

87.8

13 h 18 m 12.54 13 h 42 m 28.49

+ 13	− 4
+ 19	+ 49
− 23	− 35
13 h 18 m 12.68	13 h 42 m 28.59
13 h 17 m 34.30	13 h 41 m 50.44
38.38	38.15

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1855phae.proj.. 208

July 31 W.C.B. Ill. West

+27.12 + 6.53

α Cor. Bor.	α Serpentis	ζ Urs. Min	β' Scorpii	δ Ophiuchi
15 h 28 m 26.4 16.4	15 h 37 m 6.1 13.4	15 h 46 m 38.77 8.3	———	16 h 6 m 43.9 13.8
42.8	19.9 14.3	47 m 45.4 10.8	———	57.5 14.4
57.7 14.9	34.2 13.3	48 m 56.27 4.6	———	7 m 11.9 13.1
29 12.6 14.9	47.5 13.8	50 m 0.87 7.19	15 h 57 m 41.0 14.3	25.0 13.4
28.1 15.5	38 m 1.3 13.8	51 m 8.00 7.07	68.3 14.6	38.8 13.7
43.4 15.9	15.1 13.4	52 h 15.07 5.1	58 m 9.9 14.0	52.5 13.2
58.3 14.9	28.5	53 m 20.17	23.9	8 m 5.7
26 8.3	15 2.6	184.62	130.1	235.3
8 8.3	33 2.6	4.62		175.3
15 h 29 m 12.61	15 h 37 m 47.51	15 h 50 m 0.66		16 m 7 m 25.04

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1855phae.proj...20B

July 31/32 J. F. F. Ill. West

Scrins

6 h 38 m	40.4	14.8
	54.9	14.85
39 m	9.75	14.00
	23.75	14.15
	37.9	14.4
	52.3	13.7
40 m	6.0	
	225.3	
~~6 h 39 m 32.19~~		
	165.3	
6 h 39 m	23.61	

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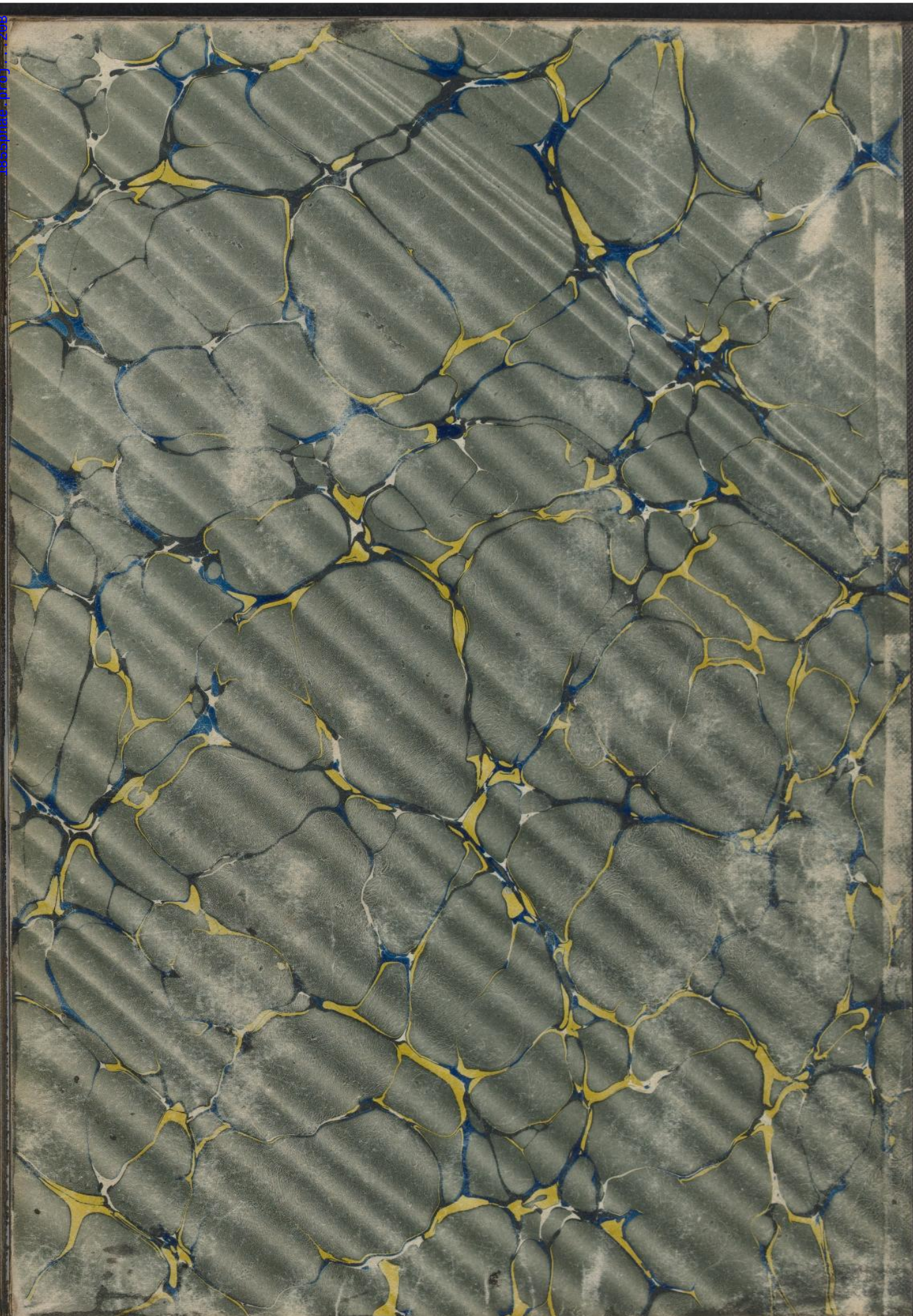
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