

KG
11365
272

M25

*Reduction of
Moon Culminations
from July 1851
to* *B*
(Supplementary)

KG11365.272

Note

Owing to an ~~misunderstan-~~
ding there were some of the time stars omit-
ted in copying the Moon Culminations into
Book A. They are introduced in this
Book.

1851phae.proj. 272B

KG 11365.272



1851 July 7th $a = +.21$ $b = +.08$ $c = +.09$ Rate - 3.42 $t_0 = 13.00$

	β Leonis	γ Spica	γ Bootis	α Arcturus
Mean	11 " 4 " 21.81	13 " 15 " 15.58	13 " 45 " 29.97	14 " 06 " 46.57
Rate	+ .04	+ .02	+ .09	+ .45
a		+ .17	+ .09	+ .09
b		+ .05	+ .08	+ .08
c		+ .09	+ .10	+ .10
		+ .35	+ .38	+ .43
	13 15 15.88	13 45 30.35	14 6 46.80	
	13 17 21.81	13 47 36.30	14 8 52.91	
	+ 2 5.93	+ 2 5.95	+ 2 6.11	
	+ 2 6.04	+ 2 6.04	+ 2 6.04	
	13 17 21.92	13 47 36.39	14 8 52.84	
	+ .11	+ .09	+ .07	

1851 July 7th contin

	ϵ Bootis	α Serpentes	β Scorp.	α Leonis
Rate	14 " 36 " 23.31	15 " 34 " 50.72	15 " 51 " 41.74	9 " 57 " 46.80
a	+ .23	+ .37	+ .42	
b	+ .57	+ .15	+ .57	
c	+ .06	+ .12	+ .20	
	+ .09	+ .07	+ .04	
	+ .10	+ .09	+ .10	
	+ .48	+ .65	+ .76	
	14 36 23.79	15 34 51.37	15 51 42.50	
	14 38 29.92	15 36 57.42	15 56 48.64	
	+ 2 6.13	+ 2 6.05	+ 2 6.14	
	+ 2 6.04	+ 2 6.04	+ 2 6.04	
	14 38 29.83	15 36 57.41	15 56 48.54	
	+ .09	+ .07	+ .10	

July 11th

1851 July 11th $a = +.23$ $b = +.08$ $c = +.09$ Rate -6.00 $t_0 = 17^h 00^m$

	Arcturus.	α Cor Borealis	α Herculis	α Ophiuchi
Mean	14^h 06^m 15.01	15^h 25^m 46.31	17^h 05^m 16.13	17^h 25^m 24.80
Rate			$+ .02$	$+ .10$
a			$+ .11$	$+ .13$
b			$+ .07$	$+ .07$
c			$+ .09$	$+ .09$
			$+ .29$	$+ .38$
			17 5 16.42	17 25 25.18
			17 7 53.11	17 28 3.01
			[+2 36.69]	+ 2 37.83
			2 37.82	2 37.85
			17 7 54.24	17 28 3.03
			- .16	- .02

1851 July 11th contin Aug 5th $a =$ $b =$ $c =$ Rate $t_0 =$

	α Lyrae	α Urs Maj	γ Urs Maj	γ Bootis
Mean	18 ^h 29 ^m 17.06	11^h 45^m 37.14	13^h 41^m 17.77	13 ^h 47 ^m 13.74
Rate	$+ .37$			
a	$+ .02$			
b	$+ .10$			
c	$+ .12$			
	$+ .60$			
	18 29 17.66			
	18 31 55.82			
	+ 2 38.16			
	+ 2 37.85			
	18 31 55.51			
	+ .31			

1857 Aug 5th continued

	Arcturus	ϵ Bootis	α^2 Librae	β Urs Minor
Mean	14 ^h 04 ^m 30.26	14 ^h 38 ^m 07.43	14 ^h 42 ^m 17.6	14 ^h 50 ^m 48.71
Rate				
a				
b				
c				

1857 Aug 5th contin
~~B Libra~~

	β Librae	α Cor. Bo	α Serpentin.	δ Ophiuchi
Mean	15 ^h 04 ^m 38.90	15 ^h 28 ^m 01.9	15 ^h 36 ^m 35.11	16 ^h 06 ^m 12.09
Rate				
a				
b				
c				

1857 Aug 5 th contin	Aug 6 th a =	b =	c =	Date	l =
α Herculis	α Virginis	α Bootis	β Librae		
Mean 17 ^h . 07 ^m . 31. 48	13 ^h . 17 ^m . 04. 50	14 ^h . 08 ^m . 35. 64	15 ^h . 04 ^m . 54. 53		
Date					
a					
b					
c					

1857 Aug 6 th contin	δ Ophiuchi	α Ophiuchi	γ Draconis
β Scorpii	δ Ophiuchi	α Ophiuchi	γ Draconis
Mean 13 ^h . 56 ^m . 32. 17	16 ^h . 06 ^m . 17. 68	17 ^h . 27 ^m . 47. 15	17 ^h . 52 ^m . 55. 28
Date			
a			
b			
c			

1857 Aug 8th a = b = c = Rate t.

2 *Lyræ* 3 *Lyræ* 3 *Aquilæ*

Mean 18 " 31 " 50.80 18 " 44 " 32.41 18 " 58 " 31.25

Rate

a

b

c

1857 Aug 9th a = b = c = Rate t.

3 *Aquilæ* 3 *Aquilæ* 4 *Aquilæ* 2 *Aquilæ*

Mean 18 " 58 " 37.68 19 " 18 " 03.16 19 " 39 " 14.50 19 " 43 " 35.04

Rate

a

b

c

1851 Aug 9th contin

	B Aquilae	α^2 Capricorni.	δ Orionis.
Mean	19.48.04.0	20.09.51.59 ?	5.25.35.56
Rate			

a

b

c

Aug 19th a = b = c = Rate t₀ =Sept 6th a =

	B Aquilae
Mean	19.47.11.50

1851 Sept 6th b =

c =

Rate

t₀

	ϵ Cygni	ζ Cygni	B Aquarii.	ϵ Pegasi.
Mean	20.59.25.84	21.55.47.98	21.23.52.97	21.36.04.19
Rate				

a

b

c

1857 Oct 1st a =

b =

c =

Rate

t =

	α Herculis	β Draconis	γ Draconis	α Lyrae
Mean	17.07.05.26	17.26.17.23	17.52.22.28	18.31.07.63
Rate				

a

b

c

1857 Oct 1st continuedOct 5th

a =

b =

	β Lyrae γ Aquilae	γ Aquilae	Regulus	α Lyrae
Mean	18.23.49.03	18.57.48.24	9.59.46.77	18.31.15.28
Rate				

a

b

c

12

1857 Oct 7th con c = Rate t₀ =

	ϵ Pegasi	γ Pegasi	α Pegasi.
Mean	21 " 36.15.8	22 " 33.25.43	22 " 56.44.16
Rate			

a

b

c

1857 Oct 7th a = b = c = Rate t₀ =

	Fomalhaut.	α Pegasi	α Andromeda	γ Pegasi.
Mean	22 " 48.49.46	22 " 56.45.21	0 " 00 " 06.70	0 " 04 " 59.04
Rate				

a

b

c

1857 Nov 1st

a =

b =

c =

Rate

t₀ =

	ϵ Cygni	γ Aquarii	29 Capricorni	β Aquarii
Mean	20 ^h 36 ^m 37.63	21 ^h 01 ^m 45.76	21 ^h 07 ^m 47.24	21 ^h 24 ^m 00.40
Rate				
a				
b				
c				

1857 Nov 1st continNov 6th

a =

b =

	ϵ Pegasi	γ Pegasi	α Andromeda	γ Pegasi
Mean	21 ^h 37 ^m 19.68	0^h 05^m 52.93	0 ^h 00 ^m 53.76	0 ^h 05 ^m 46.16
Rate				
a				
b				
c				

1851 Nov 6 th	c =	Rate	t ₀ =	Dec 3 rd	a =
a Cassiopeiæ		B Ceti.		θ' Ceti.	
Mean 0 ^h 32 ^m 17.74		0 ^h 36 ^m 18.76		1 ^h 16 ^m 46.91	
Rate					

a

b

c

1851 Dec 3 rd	b =	c =	Rate	t ₀ =	Dec 4 th	a =	b =	c =
γ Pegasi			α Arietis		α Andromedæ		γ Pegasi	
Mean 0 ^h 05 ^m 22.81			1 ^h 58 ^m 36.68		0 ^h 00 ^m 30.86		0 ^h 05 ^m 21.60	
Rate					28.86			

a

b

c

1857 Dec 4th Rate = $t_0 =$ Dec 5th a = b =

	δ^1 Beti	ϵ Auctis	α Beti	α Auctis
Mean	1.16. 22.56	1.58. 35.20	2.54. 17.98	1.58. 31.64
Rate				

a

b

c

1857 Dec 5th c = Rate $t_0 =$ Dec 6th a = b = c = Rate $t_0 =$

	α Beti	γ Beti	α Beti
Mean	2.54. 14.14	2.35. 14.28	2.54. 09.10
Rate			

a

b

c

1857 Dec 29th a = b = c = Date t =

	γ Pegasi	α Pegasi	α Andromeda	γ Pegasi
Mean	22 ^h 32 ^m 03.35	22 ^h 25 ^m 22.00	23 ^h 58 ^m 43.32	0 ^h 03 ^m 35.59

Date

a

b

c

1857 Dec 29th contin

	α Cassiopeiæ	β Ceti	α Arietis
Mean	0 ^h 30 ^m 07.20	0 ^h 34 ^m 08.30	1 ^h 56 ^m 49.48

Date

a

b

c

1857 Dec 30th $a =$ $b =$ $c =$ Rate $t_0 =$

α Andromeda γ Pegasi α Cassiopea β Ceti.
 Mean 23.58..40.22 0..03..32.66 0..30..03.70 0..34..04.84

Rate

a

b

c

1858 Jan 1st $a =$ $b =$ $c =$ Rate $t_0 =$

δ Ceti α Arietis α Ceti α Persei.
 Mean 1..14..25.69 1..56..38.63 2..52..21.17 3..11..35.18

Rate

a

b

c

1852 Jan 2nd $a =$ $b =$ $c =$ $Bate$ $t_0 =$

α Arietis α Beti α Persei γ Tauri
 Mean 1.56.35.41 2.52.17.97 3.11.32.29 3.36.26.87

Bate

a

b

c

1852 Jan 2nd $a = -35$ $b = -15$ $c = +14$ $Bate -35$ $t_0 = 0^h 0^m$

	α Cassiopei	β Beti	θ Beti	α Arietis
Mean	0.28.17.57	0.32.19.49	1.12.47.54	1.55.00.21
Bate	+ .07	+ .07	+ .18	+ .28
a	+ .14	- .32	- .28	- .13
b	- .26	- .08	- .09	- .15
c	+ .25	+ .15	+ .14	+ .15
0 28 17.77	0 32 19.31	1 12 47.49	1 55 00.26	
0 32 6.64	0 36 8.09	1 16 36.51	1 58 49.51	
- 3 48.87	- 3 48.78	- 3 49.02	- 3 49.15	
- 3 48.97	- 3 48.97	- 3 48.97	- 3 48.97	
0 32 6.74	0 36 8.28	1 16 36.46	1 58 49.37	
C=0 - .10	- .19	+ .05	+ .18	

1852 Jan 29th $a = -.35$ $b = -.14$ $c = +.14$ Rate $-.35$ $t_0 = 1^{h} 10^{m} 50^{s}$

	δ Ceti	α Aurigae	α Persei	γ Tauri
Mean	1.12.40.84	1.54.53.64	3.09.50.25	3.52.01.90
Rate	+ .03	+ .13	+ .32	+ .34
a	- .28	- .13	+ .06	
b	- .09	- .14	- .25	
c	+ .14	+ .15	+ .23	
	- .20	+ .01	+ .40	
	1 12 40.68	1 54 53.65	3 9 50.68	
	1 16 36.49	1 58 49.48	3 13 46.40	
	- 3 55.81	- 3 55.83	- 3 55.72	
	- 3 55.80	- 3 55.80	- 3 55.80	
Obs'd	1 16 36.48	1 58 49.45	3 13 46.48	
C-D	+ .01	+ .03	- .08	

1852 Feb 25th $a = -.30$ $b = -.08$ $c = -.17$ Rate $-.14$ $t_0 = 2^{h} 10^{m}$ ~~Rejected~~

	γ Eridani	δ Ceti	α Persei
Mean	3.57.18.67	2.54.20.43	3.13.34.19
Rate	+ .14	- .01	+ .02
a	- .26	- .40	+ .06
b	- .05	- .05	- .11
c	- .18	- .15	- .28
	- .38	- .44	- .31
	3 57 18.29	2 54 19.99	3 13 33.88
	3 51 6.92	2 54 31.84	3 13 45.64
	+ 11.37		
	+ 11.32		
	3 51 6.97		
	- .05		

1852 Mar 2nd *Rejected* $a = -.38$ $b = -.05$ $c = -.25$ Rate = $t_0 =$

	α^2 Gem	α Canis Min	β Gem	ϵ Hydrae
Mean	$\gamma = 24.57.19$	$\gamma = 31.15.91$	$\gamma = 35.57.61$	$\delta = 38.39.10$
Rate				

a

b

c

1852 Mar 2nd contin

α Cancer
 Mean $\delta = 50.06.32$
 Rate

a

b

c

185

1854)

March 11th to June 10th Rate + 0.51 a -.33 b -.05 c -.09

	ξ Lancer	δ Lancer	α Hydrae	Mercur. I.
g	1 0.42	10 52.59	20 27.62	35 9.10
R.	.00	.00	.00	.00
a	-.12	-.14	-.26	-.14
b	-.05	-.05	-.03	-.05
c	-.10	-.10	-.09	-.10
In.	g 1 0.15	g 10 52.30	g 20 27.24	g 35 8.81
Ch. R.	g 0 58.31	g 10 50.36	g 20 25.48	
	- 1.84	- 1.94	- 1.76	
Ch. cor.	- 1.80	- 1.80	- 1.80	- 1.80
Ch. R.	g 0 58.35	g 10 50.50	g 20 25.44	g 35 7.01
C-o	- .04	- .14	+ .04	

	ϵ Leonis.	α Leonis.	γ Leonis.
g	37 36.46	10 00 38.59	10 11 58.18
Rate	.00	.00	.00
a	-.12	-.17	-.13
b	-.05	-.05	-.05
c	-.10	-.09	-.10
In.	g 37 36.19	10 00 38.28	10 11 57.90
Ch. R.	g 37 34.38	10 00 36.45	10 11 56.03
	- 1.81	- 1.83	- 1.87
Ch. cor.	- 1.80	- 1.80	- 1.80
Ch. R.	g 37 34.39	10 00 36.48	10 11 56.10
C-o	- .01	- .03	-.07

(1854)

April 3. $\frac{1}{2}$ $\frac{1}{2}$ $+0.2$ $a = .21$ $b = .01$ $t = .07$

Polaris.

Moon I.

 α Orionis.

Sirius.

Orionis	5	17	10.88	5	36	30.97	5	47	23.26	6	38	50.45
Polaris			.00			-.01			-.01			-.01
α			-.06			-.07			-.12			-.19
β			-.01			-.01			-.01			-.01
γ			-.08			-.08			-.07			-.07
δ			-.15			-.17			-.21			-.28
Moon I.	5	17	10.73	5	36	30.80	5	47	22.99	6	38	50.17
α R.	5	17	3.09	5			5	47	15.54	6	38	42.57
			-7.64						-7.45			-7.60
			-7.56			-7.56			-7.56			-7.56
α R.	5	17	3.17	5	36	23.24	5	47	15.43	6	38	42.61
			-.08						+ .11			-.04

1854

April 4	h. 6 ^h	R + 0.2	a - .51	b - .01	c - .07
Shag	Shag	Shag	Shag	Shag	Shag
u. Geminorum	u. Geminorum	u. Geminorum	u. Geminorum	u. Geminorum	u. Geminorum
h. 15	14.78	h. 30	51.24	h. 38	50.34
Rate	.00	Rate	.00	Rate	.01
Alg.	-.08	Alg.	-.07	Alg.	-.19
Leg.	-.01	Leg.	-.01	Leg.	-.01
Coll.	-.08	Coll.	-.08	Coll.	-.07
h. 15	14.61	h. 30	51.08	h. 38	50.03
h. 14	7.18			h. 53	0.62

Clockwork

Ch. R.

Ch. R.

u. Geminorum	u. Geminorum
h. 55	34.26
Rate	-.01
Alg.	-.08
Leg.	-.01
Coll.	-.07
h. 55	34.09
h. 55	26.62
h. 01	57.87
Rate	-.01
Alg.	-.05
Leg.	-.01
Coll.	-.08
h. 01	57.72
h. 01	50.33

(1854)

1851phae.proj

April 5.	γ	δ	$\alpha = -22$	$\delta = -.01$	$\epsilon = -.07$	
Moon I.			Brayford.	Pottux.		
γ	25	27.47	γ	31	46.92	
Rate		.00			.00	
Adj.		-.07			-.13	
Dev.		-.01			-.01	
Calc.		-.08			-.07	
Transit.	γ	25	27.01	γ	31	46.71
Comp. R.			γ	31	29.36	
					+ γ .35	
H. Corr.			- γ .34			- γ .34
Obs. R.	γ	25	19.67	γ	31	29.35
R. L.						- .01 + 2
				γ	36	29.90
				γ	36	22.56
						- γ .34
						- γ .34
				γ	36	22.56
						.00

1854)

May 5.	1^h	$12^h - 1^h$	$a = -04$	$b = +03$	$c = -03$
Moon I.	$+50$	Floris.	γ Virginis	-1^0	
12 5 50.59		12 21 46.06		12 29 18.31	
Rate.	.00	.00		.00	
Ay.	-.03	-.04		-.03	
Leo.	+02	+01		+02	
Soll.	-.03	-.03		-.03	
12 5 50.55		12 21 46.00		12 29 18.27	
		12 26 44.47		12 34 16.90	
153		+4 -58.43		+4 58.63	
+4 58.47		+4 58.47		+4 58.47	
12 10 49.02		12 26 44.47		12 34 16.74	
Cor. line.		.00		-16 + ?	

1854)

June 2.	to 10 ^h	R + 1.3	a = -05	b = +13	i = +07		
Regulus.	+15	Moon 5.	+17°	a	Orion Majoris.	S Leonis	
10 0	38.66	10 12	42.27	10 54	44.40	11 6	23.70
Prkr.	.10		.11		-.05		-.06
Ajij.	-.03		-.02		-.04		-.02
Em.	+ .12		+ .12		+ .27		+ .13
Cell.	+ .07		+ .07		+ .15		+ .08
10 0	38.82	10 12	42.43	10 54	44.73	11 6	23.83
10 0	35.62			10 54	41.70	11 6	20.87
	- 3.20				- 3.03		- 2.96
	- 3.07		- 3.07		- 3.07		- 3.07
10 0	35.75	10 12	39.36	10 54	41.66	11 6	20.76
Obs. time	+1.3				-.04		-.11

1854

June 5. $h = 12^h$ $A = 1.3$ $a = +.01$ $b = +.14$ $c = +.04$

S. Corvi

S. Virginis -1° Morn I. 8° S. Virginis $+4^\circ$

Rate.	12 26 50.96	12 34 23.29	12 37 33.84	12 48 22.54
Opini.	- .02	- .03	- .03	- .04
Lev.	+ .01	+ .01	+ .01	+ .01
Coll.	+ .06	+ .10	+ .10	+ .11
	+ .04	+ .04	+ .04	+ .04
	12 26 51.05	12 34 23.41	12 37 33.96	12 48 22.66
	12 26 44.25			12 48 15.91
	- 6.80			- 6.75
	- 6.80	- 6.80	- 6.80	- 6.80
	12 21 44.25	12 34 16.61	12 37 27.16	12 48 15.86
	.00			- .15

S. Virginis -5°

Rate.	13 2 31.27
Opini.	- .05
Lev.	+ .01
Coll.	+ .09
	+ .04
	13 2 31.36
	13 2 24.63
	- 6.73
	13 2 24.80
	13 2 24.56
	- .07

1854)

June 9. $\delta = 15^\circ$ $\lambda = +1.2$ $\alpha = +.09$ $\delta = +.19$ $\lambda = +.02$
a. coronae. γ *Librae.* -15° δ *Librae.* -16° δ *Sphincti.* $+2^\circ$

15 28 44.34	15 36 5.77	15 45 45.01	16 6 55.81
<i>Rate.</i> $-.02$	$-.03$	$-.04$	$-.06$
<i>Age.</i> $+.03$	$+.08$	$+.08$	$+.06$
<i>Len.</i> $+.21$	$+.11$	$+.11$	$+.13$
<i>Coll.</i> $+.02$	$+.02$	$+.02$	$+.02$
15 28 44.58	15 36 5.95	15 45 45.18	16 6 55.96
15 28 32.20	15 35 53.85	15 45 32.96	16 6 43.57
-12.38	-12.10	-12.22	-12.39
-12.39	-12.39	-12.39	-12.39
15 28 32.19	15 35 53.56	15 45 32.79	16 6 43.57
$-.01$	$-.29$	$-.17$	$-.00$

Moon I. -12° δ *Scorpii.* -28°

16 20 53.81	16 27 2.36
<i>Rate.</i> $-.07$	$-.07$
<i>Age.</i> $+.09$	$+.10$
<i>Len.</i> $+.09$	$+.07$
<i>Coll.</i> $+.02$	$+.02$
16 20 53.94	16 27 2.48
16 20 29.54	16 26 50.01
	-12.47
-12.39	-12.39
16 20 41.55	16 26 50.05
	$+.08$

1882)

July 4th δ_0 14^h $R + 1.3$ $a = +.14$ $b = +.36$ $c = -.07$ Moon I. -9° δ Virginis -10° λ Virginis -13°

Rate.
 Log.
 Lev.
 Coll.

13 57 7.40

+ .11

+ .23

- .07

14 5 57.94

+ .11

+ .23

- .07

14 12 4.19

+ .12

+ .23

- .07

13 57 7.67

- 50.29

13 56 17.38

14 5 58.19

14 5 7.93

- 50.26

- 50.29

14 5 7.90

- .03

14 12 4.44

14 11 14.12

- 50.32

- 50.29

14 11 14.15

+ .03

1851) July 5. to 13th R. +1.3 $\alpha = +15$ $\delta = +36$ $\epsilon = -0.7$
 of Virgins. Moon I. -15° 5^h Librae. -16° 7^h Librae. -14°

	13	18	22.26	14	50	49.00	15	20	54.36	15	28	14.47
Rate			- .02			- .10			- .13			- .13
Age			+ .12			+ .13			+ .13			+ .13
Dev.			+ .22			+ .20			+ .20			+ .21
Coll.			- .07			- .07			- .07			- .07
	13	18	22.51	14	50	49.16	15	20	54.49	15	28	14.61
	13	17	31.44				15	20	3.35	15	27	23.45
			- 51.27						- 51.14			- 51.16
			- 51.27			- 51.24			- 51.14			- 51.14
	13	17	31.24	14	49	57.89	15	20	3.22	15	27	23.31
			.00						- .13			- .11

(1854)

July 6.

to 13^h 18. +1.3

a = +16 b = +36 c = -07

a Virginiid.

a Rookis.

51

X Librae. -16°

Note.

Arg.

Lev.

Coll.

11 142 28.94

13 18 23.29

14 9 53.40

15 20 55.69

- .02

- .07

- .13

+ .13

+ .07

+ .14

+ .22

+ .36

+ .20

- .07

- .07

- .07

13 18 23.55

14 9 53.69

15 20 55.63

13 17 31.23

14 9 1.35

15 20 23.85

- 52.32

- 52.34

- 52.29

- 52.28

- 52.28

- 52.28

13 17 31.27

14 9 1.41

15 20 3.35

+ .04

+ .06

+ .01

X Librae. -14°

Moon I. -20°

B. Scorpion

a Scorpion.

15 29 15.64

15 49 23.53

15 57 51.21

16 21 22.84

Note.

Arg.

Lev.

Coll.

- .15

- .15

- .16

- .19

+ .14

+ .15

+ .15

+ .17

+ .20

+ .18

+ .28

+ .14

- .07

- .07

- .07

- .18

15 29 15.76

15 49 23.64

15 57 51.31

16 21 21.91

15 27 23.45

15 56 59.04

16 20 29.72

- 52.26

- 52.27

- 52.19

- 52.28

- 52.28

- 52.28

- 52.28

15 27 23.43

15 48 31.36

15 56 59.03

16 20 29.63

- .02

- .01

- .09

1854)

July 17. 16. 11 + 1.3 a = + 17 b = + 34 c = - .07
 a Scorpii. Moon I. - 24° A Ophiuchi - 26° J Ophiuchi, - 25°

16	21	23.31	16	53	29.94	17	7	18.04	17	13	58.66
Note.		- .02			+ .05			- .06			- .07
Uz		+ .18			+ .17			+ .18			+ .17
Sw		+ .14			+ .16			+ .15			+ .16
Coll		- .08			- .08			- .08			- .08
16	21	23.53	16	53	30.14	17	7	18.23	17	13	58.84
16	20	29.72				17	6	24.78	17	13	58.93
		- 53.81						- 53.45			- 53.91
		- 53.81			- 53.81			- 53.81			- 53.81
16	20	29.72	16	52	26.53	17	6	24.42	17	13	58.03
		.00						- 34			+ .10

1854/ July 6. 6. 17. $k + 1.3$
a. ophiurii

$a = +.18$ $b = +.37$ $c = -.07$
γ Draconis. Moon I.

μ Sagittarii.

17	29	6.51	17	54	10.36	18	2	23.91	- 26°	18	5	59.31
Rate		+.03			-.05			-.06				-.06
Cor.		+.09			+.05			+.19				+.17
Sec.		+.33			+.59			+.15				+.18
Coll.		-.04			-.11			-.08				-.07
17	29	6.83	17	54	10.84	18	2	24.11		18	5	59.53
17	28	11.42	17	53	15.54					18	5	4.23
		55.41			55.33							55.20
		55.35			55.35			55.35				55.35
17	28	11.48	17	53	15.49	18	4	28.76		18	5	4.18
		+.06			-.02							-.05

μ Sagittarii. - 26°

18	19	55.10
Rate		-.07
Cor.		+.19
Sec.		+.15
Coll.		-.08
18	19	55.29
18	18	59.28
		55.31
		55.35
18	18	59.94
		-.04

1854/ July 17/11. to St. B + L + a = +22 b = +39 c = .00
 a. Arctis. Moon II. -12 d. Aurig. d. Aurigae

2 00 07.36	2 44 29.70	4 28 42.63	5 7 11.04
Proh. .00	- 04	- 14	- 18
Arg. + 08	+ 18	+ 10	- 02
Lw. + 40	+ 23	+ 36	+ 66
Coll. 00	.00	.00	.00
2 00 07.84	2 44 30.11	4 28 42.95	5 7 11.40
1 58 57.74		4 27 32.80	5 5 54.20
- 1 10.10		- 1 10.15	- 1 10.20
- 1 10.15	- 1 10.15	- 1 10.15	- 1 10.15
1 58 57.69	2 43 19.96	4 27 32.80	5 5 54.25
- 05		+ .00	+ .05

1854/ July 31. ¹⁴ 13. ¹⁴ 11 + 1.3. $a = +.2$ $b = +.41$ $c = .00$
 a Virginis. Mount I. - 79 of Rootis. a Rootis.

13	19	1.11	13	39	25.96	13	49	14.87	14	10	31.23
Rate.		- .02			- .04			- .04			- .06
Uz.		+ .17			+ .16			+ .09			+ .09
Len.		+ .25			+ .24			+ .40			+ .41
Coll.		.00			.00			.00			.00
13	19	1.51	13	39	26.35	13	49	15.32	14	10	31.67
13	17	30.96				13	47	14.82	14	9	1.05
- 1		30.55				- 1		30.50	- 1		30.62
- 1		30.55	- 1		30.55	- 1		30.55	- 1		30.55
13	17	30.96	13	37	55.80	13	47	14.77	14	9	1.22
		.00						- .05			+ .07

14
 14 Rootis.

14	40	7.86
Rate.		- .09
Uz.		+ .16
Len.		+ .45
Coll.		.00
14	40	8.28
14	38	37.73
- 1		30.55
- 1		30.55
14	38	37.73
		.00

1884.
August 1. th 13. $R + 1.5$ $a = +.21$ $b = +.41$ $c = .00$
of Molad Majoris of Rookis a Rookis.

Moon I. -13°

13	43	19.01	13	49	16.27	14	10	32.49	14	20	14.00
Mak.		$- .05$			$- .05$			$- .07$			$- .09$
Arg.		$- .04$			$+ .09$			$+ .09$			$+ .18$
Low.		$+ .63$			$+ .40$			$.41$			$+ .24$
Coll.		$.00$			$.00$			$.00$			$.00$
13	43	19.55	13	49	16.71	14	10	32.92	14	20	14.33
13	41	47.58	13	47	45.17	14	8	1.05			
- 1		31.97	- 1		31.54	- 1		31.87			
- 1		31.79	- 1		31.79	- 1		31.79			31.79
13	41	47.76	13	47	44.92	14	9	1.13	14	28	42.54
		$+ .18$			$- .25$			$- .08$			

β Libae.

15	10	42.19
Mak.		$- .15$
Arg.		$+ .17$
Low.		$+ .26$
Coll.		$.00$
15	10	42.47
15	9	10.60
- 1		31.87
- 1		31.79
15	9	10.88
		$+ .08$

852

Aug. 2. δ 14^h $R + 1.5$ $a = +.21$ $b = +.41$ $c = .00$
 α Librae. β Librae Moon I. -18° π Scorpii (ϵ). -26°

14	44	22.31	15	10	43.46	15	24	59.31	15	58	36.16
Rate.		-.01			-.07			-.09			-.12
Sign.		+.18			+.17			+.19			+.22
Len.		+.21			+.26			+.21			+.17
Coll.		.00			.00			.10			.00

14	44	22.69	15	10	43.82	15	24	59.62	15	58	36.43
14	42	49.85	15	9	10.57				15	50	3.15
-	1	33.04	-	1	33.25				-	1	33.28
-	1	33.10	-	1	33.10	-	1	33.10	-	1	33.10
14	42	49.59	15	9	10.72	15	23	26.52	15	50	3.33
		-.06			+.15						+.18

α Scorpii.

16	22	2.31
Rate.		-.15
Sign.		+.22
Len.		+.17
Coll.		.00

16	22	2.55
16	20	29.53
-	1	33.02
-	1	33.10
16	20	29.45
		-.08

1854.

Aug. 3 4.15^h 15 +1.6.

a = +20 b = +41 r = .00

*a. serpenti.**β. Serpiv.**δ. Ophiuchi.*

15 29 5.80
 Rate. - .03
 Agm. + .06
 Lev. + .44
 Coll. .00

15 37 40.29
 - .04
 - .12
 + .34
 .00

15 57 33.03
 - .06
 + .19
 + .21
 .00

16 7 17.51
 - .07
 + .14
 + .29
 .00

15 29 6.24
 15 28 34.70
 - 34.57
 - 34.52
 15 28 31.75
 + .05

15 37 40.71
 15 37 6.10
 - 34.61
 - 34.52
 15 37 6.19
 + .09

15 57 33.37
 15 56 58.81
 - 34.56
 - 34.52
 15 56 58.85
 + .04

16 7 17.87
 16 6 43.42
 - 34.45
 - 34.52
 16 6 43.35
 - .07

*a. Serpiv.*Moon Γ 22

16 21 3.63
 Rate. - .09
 Agm. + .24
 Lev. + .17
 Coll. .00

16 23 42.77
 - .09
 + .20
 + .19
 .00

16 21 3.92
 16 20 29.53
 - 34.39
 - 34.52
 16 20 29.40
 - .13

16 23 43.07
 - 34.52
 16 23 8.55

1854)

Aug. 5.	18 ^h R. + 1.6	$\alpha = +20$	$\delta = +41$	$\tau = -01$	
α Sagittarii	Sagittarii	α Lyrae.			Moon L. -26°
18 5 41.74	18 12 18.73	18 32 39.14	18 37 23.68		
Wp. - .01	- .01	- .04	- .04		
Ugm. + .19	+ .20	+ .03	+ .21		
2uz + .20	+ .14	+ .53	+ .17		
Coll. - .01	- .01	- .01	- .01		
18 5 42.11	18 12 19.07	18 32 39.64	18 37 23.96		
18 5 4.15	18 11 41.28	18 32 1.76			
- 37.96	- 37.79	- 37.88			
- 37.94	- 37.94	- 37.94	- 37.94		
18 5 4.17	18 11 41.13	18 32 1.70	18 36 46.02		
+ .02	- .15	- .06			

α Sagittarii -26° β Sagittarii -30° γ Aquilae.

18 46 02.80	18 53 59.43	18 59 21.69
Wp. - .12	- .13	- .13
Ugm. + .21	+ .22	+ .10
2uz + .17	+ .14	+ .37
Coll. - .01	- .01	- .01
18 46 53.05	18 53 59.65	18 59 22.02
18 46 15.20	18 53 21.74	18 58 44.43
- 37.55	- 37.91	- 37.99
- 37.96	- 37.94	- 37.74
18 46 15.11	18 53 21.71	18 58 44.08
- .09	- .03	+ .05

1851

Aug. 14/65.

Moon II.

3 15 10.67

1854.

Aug. 15/16, to. 3^h $K + 1.3$ $a = +.13$ $b = +.40$ $c = +.60$ α Peta. α Peta. γ Tauri. $+24^\circ$ η Tauri.

2	55	24.14	3	14	50.34	3	37	07.74	3	29	43.69
Rate.		.00			-.01			-.05			-.04
Ugm.		+.08			-.02			+.15			+.05
Sec.		+.31			+.61			+.41			+.41
Both.		.00			.00			.00			.00
2	55	34.53	3	14	50.92	3	37	8.17	3	29	44.11
2	54	40.35	3	13	56.64	3	36	13.93	3	38	49.89
-		54.18	-		54.28	-		54.24	-		54.22
-		54.22	-		54.22	-		54.22	-		54.22
2	54	40.31	3	13	56.70	3	36	13.95	3	38	49.89
		+.04			+.06			+.02			.00

Morn 15 $+19^\circ$ ϵ Tauri. α Tauri.

4	6	11.63	4	21	0.46	4	28	27.33
Rate.		-.06			-.07			-.07
Ugm.		+.06			+.06			+.06
Sec.		+.39			.39			+.37
Both.		.00			.00			.00
4	6	12.02	4	21	0.84	4	28	27.89
			4	20	6.41	4	27	33.68
					54.63			54.24
		-54.22			54.22			54.22
4	5	17.80	4	20	6.62	4	27	33.67
					+.21			-.01

1854) August 28. λ_0 13. $\lambda + 1.5$. $a = +0.5$ $b = +.3$ $c = +0.2$
 α Virginis. Moon I. α Librae. β Librae.

13	18	43.39	14	13	37.67	14	44	02.03	15	10	23.04
Nak.		- .02			- .08			- .12			- .14
Argy.		+ .04			+ .04			+ .04			+ .04
dev.		+ .23			+ .22			+ .20			+ .23
coll.		+ .02			+ .02			+ .02			+ .02
13	18	43.66	14	13	37.87	14	44	2.17	15	10	23.19
13	17	20.68				14	42	49.29 8.7	15	9	10.20
- 1		12.98				- 1		12.88	- 1		12.99
- 1		12.95	- 1		12.95	- 1		12.95	- 1		12.95
13	17	20.71	14	12	24.92	14	42	49.22	15	9	10.24
		+ .03						- .07 06.7			+ .04

1851phae
Aug. 29. $\log = 14.6$
2 Boollis $+ 2.10$

$a = 7.64$ $b = +.26$ $c = +.02$
 α^2 Librae Moon I. $+17.0$

β Librae.

14 39 51.53
Baker + .06
Ayer + .01
Lew + .39
Loh + .02

14 39 51.89

14 38 37.27

- 1 14.62

- 1 14.63

14 38 37.26

- .01

14 40 3.64
- .06

+ .04

+ .20

+ .02

14 40 3.84

14 42 49.28

- 1 14.56

- 1 14.63

14 42 49.21

- .07

15 6 17.20

- .09

+ .04

+ .19

+ .01

15 6 17.35

- 1 14.63

15 5 2.72

15 10 24.74

- .10

+ .03

+ .23

+ .02

15 10 24.92

15 9 10.21

- 1 14.71

- 1 14.63

15 9 10.29

+ .08

1854) $h = 15^h$ Aug. 30. $h = 2^h$. β Librae. $a = +.03$ $b = +.36$ $r = +.02$ $\overline{+} 22^\circ$ β Scorpii.

Moon I.

 α Scorpii. $\overline{+} 25^\circ$

Rate 15 10 26.26
 Azim. $- .01$
 Level $+ .02$
 Coll. $+ .03$
 Coll. $+ .02$

15 58 14.66
 $- .08$
 $+ .03$
 $+ .18$
 $+ .02$

16 3 2.77
 $- .09$
 $+ .03$
 $+ .17$
 $+ .02$

16 13 36.93
 $- .10$
 $+ .02$
 $+ .15$
 $+ .02$

15 10 26.52

15 58 14.81

16 3 2.90

16 13 37.03

15 9 10.20

15 58 58.42

16 12 20.53

- 1 16.32

- 1 16.39

- 1 16.50

- 1 16.36

- 1 16.36

- 1 16.36

15 9 10.16

15 58 58.45

16 1 46.54

16 12 20.67

- .04

+ .03

+ .14

 α Scorpii

16 21 45.40

Rate $- .11$ Azim. $+ .03$ Level $+ .15$ Coll. $+ .02$

16 21 45.49

16 20 29.12

- 1 16.38

- 1 16.38

16 20 29.12

+ .01

1851. Sept. 17.
Antares. $\lambda_0 = 16^h$ $\lambda = -0.2$ $a =$ $+0.8 \quad b = +3 \quad c = -0.4$ Moon. I. $\pm 24^\circ$

alpha. chi.

 γ Draconis.

16 20 25.07
 Hale. .11
 Lym. + .18
 a. level + .15
 Bell. - .04

16 20 25.26

16 20 28.66

+ 3.40

+ 3.24

16 20 28.46

- .20

16 43 58.79

+ .11

+ .00

+ .16

- .04

16 43 58.92

+ 3.20

16 44 2.12

17 28 7.13

+ .01

+ .04

+ .33

- .04

17 28 7.37

17 28 10.48

+ 3.11

+ 3.20

17 28 10.57

+ .09

17 53 9.89

+ .02

+ .02

+ .59

- .16

17 53 10.46

17 53 12.51

+ 3.05

+ 3.20

17 53 13.66

+ .15

1854 Sept. 28. $k_0 = 18^h 11^m$ $k = -0.7$ $a = +0.8$ $b = +37$ $c = -0.4$
 Moon I. $+26^\circ$ μ Sagittarii. δ Sagittarii. $+20^\circ$

17 47 31.99
 Plate. $- .01$
 Azim. $+ .08$
 Long. $+ .15$
 Coll. $- .04$

17 47 32.17

$+ 2.57$

17 47 34.74

18 5 0.71

$.00$

$+ .08$

$+ .17$

$.04$

18 5 0.92

18 5 3.49

$+ 2.57$

$+ 2.57$

18 5 3.49

$.00$

18 11 37.73

$+ .01$

$+ .09$

$+ .13$

$- .05$

18 11 37.91

18 11 40.50

$+ 2.59$

$+ 2.57$

18 11 40.48

$- .02$

α δ ϵ ζ η θ ι κ λ μ ν ξ π ρ σ τ υ ϕ χ ψ ω
 $\alpha = +.08$ $\beta = +.3$ $\gamma = -.04$
 γ Aquilae. ϵ Aquilae. β Aquilae. δ 25° Moon I.

19 39 16.04
 Heli. + .02
 Azim. + .04
 Lev. + .33
 Lat. - .04

19 43 36.64
 + .02
 + .04
 + .31
 - .04

19 48 5.66
 + .02
 + .05
 + .30
 - .04

19 59 2.91
 + .03
 + .08
 + .16
 - .04

19 39 16.39
 19 39 20.81
 + 4.42
 + 4.51

19 43 36.97
 19 43 41.27
 + 4.30
 + 4.31

19 48 5.94
 19 48 10.29
 + 4.30
 + 4.31

19 59 3.14
 + 4.31

19 39 20.70
 - .11

19 43 41.28
 + .01

19 48 10.30
 + .01

19 59 7.45

α^2 Capricorni.

π Capricorni. δ 19°

20 9 54.69
 Heli. + .03
 Azim. + .07
 Lev. + .21
 Lat. - .04

20 18 55.29
 + .04
 + .08
 + .28
 - .04

20 9 54.96
 20 9 54.19
 + 4.23
 + 4.31

20 18 55.55
 20 18 59.79
 + 4.24
 + 4.31

20 9 59.27
 + .08

20 18 59.86
 + .07

1851/ Sept 29. $b = 18' 14'' = -0.7$
 $a = +.08$ $b = +.3$ $r = -.04$
 γ Draconis μ Sagittarii.

Sagittarii -30°

α Lyrae.

17 53 9.46	18 4 59.83
R.A. .00	.00
Long. +.02	+ .08
Lat. +.57	+ 18
Alt. -.06	-.04

18 11 36.84	18 31 56.69
+ .01	+ .02
+ .09	+ .01
+ .13	+ .48
-.05	-.05

17 53 10.01	18 5 0.05
17 53 13.45	18 5 3.47
+ 3.44	+ 3.42
+ 3.47	+ 3.47
17 53 13.48	18 5 3.52
+ .03	+ .05

18 11 37.02	18 31 57.14
18 11 40.48	18 32 0.63
+ 3.46	+ 3.47
+ 3.47	+ 3.47
18 11 40.49	18 32 0.61
+ .01	-.02

β Lyrae.

Alcor I. $+27^\circ$

Sagittarii -28°

18 44 38.51	18 52 17.84
+ .02	+ .03
+ .02	+ .08
+ .44	+ .14
-.05	-.04
18 44 38.94	18 52 18.05
18 44 42.46	18 52 21.06
+ 3.52	+ 3.04
+ 3.47	+ 3.47
18 44 42.41	18 52 21.52
-.05	+ .46

18 57 47.86
+ .03
+ .09
+ .14
-.05
18 57 48.07
18 57 51.26
+ 3.19
+ 3.47
18 57 51.54
+ .25

1884) $\lambda_2 = 21^h$ Rate = -0.7
 Oct. 21. $a = +.08$ $b = +.36$ $c = -.04$
 Capricorn. -20°
 Capricorn. γ Reguli.

+ Aquarii. -15°

Moon I. -17°

21	28	50.24	21	36	56.37
Note	+	.01		+	.02
Azim.	+	.08		+	.14
Level.	+	.18		+	.30
Ill.	+	.04		-	.04

21	58	29.16	22	2	44.04	
		+	.03		+	.03
		+	.07		+	.07
		+	.20		+	.19
		-	.04		-	.04

21	28	50.47	21	36	56.69	
21	28	50.49	21	37	3.46	
		+	6.02		+	6.47
		+	6.31		+	6.31
		+	6.21		+	6.31
21	28	56.78	21	37	3.00	
		+	.29		-	.16

21	58	29.42	22	2	44.29	
21	58	35.35				
		+	5.93			
		+	6.31		+	6.21
21	58	35.73	22	2	50.60	
		+	.38			

+ Aquarii. -11°

γ Reguli.

Donat. Haut.

22	22	51.11	22	34	6.69
Note	+	.04		+	.05
Azim.	+	.07		+	.04
Level.	+	.22		+	.30
Ill.	-	.04		-	.04

22	49	31.04.	
		+	.05
		+	.17
		+	.12
		-	.05

22	22	51.40	22	34	7.04	
22	22	57.58	22	34	13.28	
		+	6.18		+	6.24
		+	6.31		+	6.31
22	22	57.71	22	34	13.35	
		+	.43		+	.07

22	49	31.25	
22	49	37.47	
		+	6.22
		+	6.31
22	49	37.56	
		+	.09

