

KG
11366
v.1066

 Plate	 Date	 Page
✓ 13959	Oct. 31. 1917	1
✓ 14027	Nov. 2 "	11
✓ 14028	" " "	21

13959

Star Measures

L	16180	16478	16740	16124
14.7	9040	1361214	8290	1456474
8.9	3638	16	8688	84
	80	78	40	24
	<u>14.7142</u>	<u>14.7136</u>	<u>8.8452</u>	<u>8.8450</u>

2	17430	17088	16097	16808
23.9	813032	1638586	6250	16640
27.9	34	87	525-1	48
	30	88	97	88
	<u>23.9298</u>	<u>23.9298</u>	<u>27.9846</u>	<u>27.9840</u>

3	16852	16832	16390	16582
26.3	1414846	954442	13508	9460
4.3	44	40	0406	60
	52	32	90	82
	<u>26.2706</u>	<u>26.2710</u>	<u>4.2884</u>	<u>4.2878</u>

Mean

L		17150	16526
24		1060096	13078
14.8		92	78
		50	26
		<u>14.6554</u>	<u>14.6552</u>

2	17823	16140
24.3	1407875	9882
15.0	72	82
	22	40
	<u>24.3748</u>	<u>24.3742</u>

3	17850	16940
24.8	962832	15152
16.	36	52
	50	40
	<u>24.8218</u>	<u>24.8212</u>

13959

Star Measures

1	16180	16478	16740	16124
14.7	9040 ³⁸	13612.14	8290 ⁸⁸	14564.74
8.1	36	16	86	84
	80	78	40	24
	<u>14.7142</u>	<u>14.7136</u>	<u>8.8452</u>	<u>8.8450</u>

2	17430	17088	16097	16808
23.9	8130 ³²	16385.86	6250	16640
21.9	34	87	525-1	48
	30	88	97	08
	<u>23.9298</u>	<u>23.9298</u>	<u>27.9846</u>	<u>27.9840</u>

3	16852	16832	16390	16582
26.3	14148.46	9544.42	13508	9460
4.3	44	40	0406	60
	52	32	90	82
	<u>26.2706</u>	<u>26.2710</u>	<u>4.2884</u>	<u>4.2878</u>

Mean

1		17150	16526
24		1060096	13078
14.8		72	78
		50	26
		<u>14.6554</u>	<u>14.6552</u>

2	17823	16140
24.3	14078.75	9882
15.0	72	82
	22	40
	<u>24.3748</u>	<u>24.3742</u>

3	17850	16940
24.8	9628.32	15152
16.	36	52
	50	40
	<u>24.8218</u>	<u>24.8212</u>

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Moon

4	17850	16470
24.8	946266	1485261
16.2	70	70
	50	70
	<u>24,8384</u>	<u>24,8391</u>

5	17855	16476
24.7	1088081	1345852
17.0	82	46
	55	76
	<u>24,6974</u>	<u>24,6976</u>

6
24.
17.9

16554	16302
773026	15126
22	26
54	02
<u>17,8828</u>	<u>17,8824</u>

7
23
18.2

16736	16928
1433236	932224
40	26
36	28
<u>18,2400</u>	<u>18,2396</u>

8
22.8
18.2

16102	16418
1367876	8850
74	50
02	18
<u>18,2426</u>	<u>18,2432</u>

Star:

4.

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Moon

4	178 50	164 70
24.8	946 266	148 5261
16.2	70	70
	50	70
	<u>24.8384</u>	<u>24.8391</u>

5	178 55	164 76
4.7	1088081	1345852
17.0	82	46
	55	76
	<u>24.6974</u>	<u>24.6976</u>

2	16554	16302
4	773026	15126
7.9	22	26
	54	02
	<u>17.8828</u>	<u>17.8824</u>

1	16736	16928
3	1433236	932224
8.2	40	26
	36	28
	<u>18.2400</u>	<u>18.2396</u>

1	16102	16418
8	13678	8850
8.2	7976	50
	02	18
	<u>18.2426</u>	<u>18.2432</u>

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Times etc.

3

Date Oct. 31, 1917

Exp. to Stars	06	44		06	56	
" " Moon	06	50	124	06	50	126
Clock slow		+ 01	2118			
H. Sid. Time	06	51	34.30			
" " " "	04	44	31.05			
S. Sid. Time	11	36	05.35			
" " " M.N	14	36	51.87			
Interval	20	59	13.48			
Red		03	26.29			
G.M.T	20	55	47.19			
						20.9298

 $\Theta = +2^h 37^m$

From Naut. Alm.

R.A.

Dec.

Moon 20 ^h	4	12	31.06	+23	32	18.6
Motion 1 ^m			2.4854			+3.425
" 55.7865		02	18.65		03	11.1
Tabular Place.	4	14	49.71	+23	35	29.7

 $934'' = 12.5'$ Moon's Age 16^d

$$\begin{aligned}
 a &= -504.0 \\
 &+ 24.0 \\
 &- 480.0
 \end{aligned}$$

Parallax	58	12.42
Semi-diam	15	53.2
R		953.2
Aug		13.0
July 4		-0.4
R		965.8
R		2.0703
a.R		-994
(1+a)A		1.9709
R ²		3.8842

13 9 5⁹

Times etc.

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Date Oct. 31, 1917

Exp to Stars	06	44		06	56	
" " Moon	06	50	124	06	50	120
Clock slow		+ 01	21.8			

H. Sid. Time	06	51	34.3		
" Young	04	44	31.05		E = +2 ^h 37 ^m
to Sid. Time	11	36	05.35		
" " " M. IV	14	36	51.87		
Interval	20	59	13.48		
Red		03	26.29		
C. M. T	20	55	47.19	20	49 29.8

From Naut. Alman.	RA:		Dec.	
Moon 20 ^h	4	12	31.06	+23 32 18.6
Motion 1 ^m			2.4859	+3.425
" 5 ^h 5 ^m 7 ^s 8 ^s 6 ^s 5 ^s		02	18.65	03 11.1
Tabular Place.	4	14	49.71	+23 35 29.7

934^m = 12.5^mMoon's Age 16^d

$a = -5^{\circ} 04' 0''$
 $+ 24.0$
 $- 480.0$

Parallax	58	12.42
Semi-diam	15	53.2
R		953.2
Aug		13.0
Incr 4		-0.4
R		965.8
R		2.0703
a R		-994
11+a/R		1.9709
R ²		3.8842

1395⁹

Plate Constants -

4.

X	14.7139	23.9298	26.2708
g	14.9963	24.7882	27.1091
X-S	-2824	-8584	-8383

y	8.8451	27.9843	4.2881
η	8.5091	28.5612	36549
y-η	+3360	-5769	+6332

$$\begin{array}{rcl}
 X-S & +500X & +58.38 \\
 -2824 & +7357 = 4533 & +516 = 5049 + 59 = 5108 \\
 -8584 & +11965 = 3381 & +1631 = 5012 + 96 = 5108 \\
 -8383 & +13135 = 4752 & +250 = 5002 + 105 = 5107 \\
 22.8681 & +11434 & +948 \\
 & & +91 = 23,6046
 \end{array}$$

$$\begin{array}{rcl}
 y-\eta + 500y & -58.1X & +4.9y-6970 \\
 +3360 & +4422 = 7782 & -855 = 6927 + 43 = 6970 \\
 -5769 & +13992 = 8223 & -1390 = 6833 + 137 = 6970 \\
 +6332 & +2144 = 8476 & -1526 = 6950 + 21 = 6971 \\
 16.2711 & +81.36 & -1329 \\
 & & +79 = 16.2627
 \end{array}$$

$$\begin{array}{rcl}
 \text{Tables } a = -1.2 & b = -1.1 & a-b = -0.1 & t+d = -1.8 \\
 \text{Alt } -504.0 & -504.9 & +0.9 & -0.2 \\
 & -502.8 & -503.8 & +1.0 \\
 & & & +1.6
 \end{array}$$

1395⁹

Plate Constants.

4.

X	14.7139	23.9298	26.2708
S	14.9963	24.7882	27.1091
X-S	-28.24	-8.8584	-8.8383

y	8.8451	27.9843	4.2881
η	8.5091	28.5612	36.549
$y-\eta$	+ .3360	- .5769	+ .6332

$$\begin{array}{rcl}
 -S & +500X & +58.38 \\
 28.24 + 735.7 = 45.33 + 51.6 = 50.99 + 5.9 = 51.08 \\
 8.584 + 119.65 = 33.81 + 16.31 = 50.12 + 9.6 = 51.08 \\
 8.383 + 131.35 = 47.52 + 25.0 = 50.02 + 10.5 = 51.07 \\
 22.8681 + 1143.8 & +948 & +91 = 23,6046
 \end{array}$$

$$\begin{array}{rcl}
 l-\eta + 500y & -58.1x & +4.9y - 6970 \\
 .3360 + 4422 = 77.82 - 855 = 69.27 + 43 = 6970 \\
 .5709 + 13992 = 82.23 - 1390 = 68.33 + 137 = 6970 \\
 .6332 + 2144 = 84.76 - 1526 = 69.50 + 21 = 6971 \\
 16.2721 + 8136 & -1329 & +79 = 162627
 \end{array}$$

$$\begin{array}{rcl}
 \text{Tables } a & -1.2 & l & -1.1 & q-l & -0.1 & t+d & -1.8 \\
 \text{Aps} & -504.0 & & -504.9 & & +0.9 & & -0.2
 \end{array}$$

1
2
3
4
5
6
7
8

1
2
3
4
5
6
7
8

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Moon's Center

5

O-C

1	24.0000	+1.1340	-3	1.2853	3.8955	+	83
2	24.3745	+1.5085	-2	2.2753	3.8882	+	40
3	24.8215	+1.9555	-0	3.8240	3.8969	+	127
4	24.8387	+1.9727	0	3.8915	3.8915	+	73
5	24.6975	+1.8315	+1	3.3548	3.8877	+	35
6	24.0000	+1.1340	+3	1.2867	3.8872	+	30
7	23.0000	+0.1340	+3	0.0180	3.8981	+	139
8	22.8660	0.0000	+3	0.0000	3.8923	+	81

R2 3.8842

arc.

1	14.6553	-1.6147	2.6072	145
2	15.0000	-1.2700	1.6129	130
3	16.0000	-0.2700	0.0729	98
4	16.2700	0.0000	0.0000	90°
5	17.0000	+0.7300	0.5329	68
6	17.8826	+1.6126	2.6005	35
7	18.2398	+1.9698	3.8801	4
8	18.2429	+1.9729	3.8923	0°

Range 145°

$$X = 24 \quad y = 14.6553$$

$$17.8826$$

$$3.25379$$

$$y_0 = 16.2690$$

$$y_{max} = 18.2429$$

$$R = 1.9739$$

$$\text{Corr } R = 1.9709$$

$$X_{max} = 24.8387$$

$$X_0 = 22.8648$$

$$X_0 = 22.8660$$

Moon's Center

$$y_0 = 16.2700$$

1
2
3
4
5
6
7
81
2
3
4
5
6
7
8

13959

Moons Center

5-

O-C

1	24.0000	+1.1340 - 3	1.2853	38955	+	83
2	24.3745	+1.5085 - 2	2.2753	38882	+	40
3	24.8215	+1.9555 - 0	3.8240	38969	+	127
4	24.8387	+1.9727 0	3.8915	38915	+	73
5	24.6975	+1.8315 + 1	3.3548	38877	+	35
6	24.0000	+1.1340 + 3	1.2867	38872	+	30
7	23.0000	+0.1340 + 3	0.0180	38981	+	139
8	22.8660	0.0000 + 3	0.0000	38923	+	89

R2 38842

arc.

1	14.6553	+1.6147	2.6072	145
2	15.0000	-1.2700	1.6129	130
3	16.0000	-0.2700	0.0729	198
4	16.2700	0.0000	0.0000	90°
5	17.0000	+0.7310	0.5329	68
6	17.8826	+1.6126	2.6005	35
7	18.2398	+1.9698	3.8801	4
8	18.2429	+1.9729	3.8923	0°

Range 145°

$$X = 24 \quad y = 14.6553$$

$$17.8826$$

$$32.5379$$

$$y_0 = 16.2690$$

$$y_{\max} = 18.2429$$

$$R = 1.9739$$

$$\text{Corr } R = 1.9709$$

$$X_{\max} = 24.8387$$

$$X_0 = 22.8648$$

Moon Center

X0 22.8660

y0 16.2900

Formation of Normals

1	-	1.82	+	93.7	-	133.8
2	-	1.92	+	60.5	-	50.7
3	-	0.53	+	248.5	-	34.4
4		0.00	+	144.0		0.0
5	+	1.33	+	64.0	+	25.6
6	+	1.82	+	33.9	+	48.3
7	+	0.26	+	18.1	+	273.5
8	+	0.00	+	0.0	+	159.6
	+	3.41	+	662.7	+	507.0
	-	4.27			-	218.9
	-	0.86			+	288.1

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Conditional Equations

6
0-c

1	+ 1.13	- 1.61	= + 83	+ 48	- 34	= + 14	+ 69
2	+ 1.51	- 1.27	= + 40	+ 64	- 27	= + 37	+ 3
3	+ 1.96	- 0.27	= + 12.7	+ 83	- 6	= + 77	+ 50
4	+ 1.97	0.00	= + 73	+ 84	0	= + 84	- 11
5	+ 1.83	+ 0.73	= + 35	+ 78	+ 16	= + 94	- 59
6	+ 1.13	+ 1.61	= + 30	+ 48	+ 34	= + 82	- 52
7	+ 0.13	+ 1.97	= + 13.9	+ 5	+ 42	= + 47	+ 92
8	+ 0.00	+ 1.97	= + 81	0	+ 42	= + 42	+ 39

$$+ 253 - 122$$

ar 47

$$+ 15.94 - 0.86 = + 662.7$$

$$- 0.84 + 15.20 = + 288.1$$

$$+ () - 0.04 = + 34.9$$

$$+ 15.16 = + 323.0$$

$$L = + 21.34$$

$$+ 15.94 = + 662.7 + 18.3 = + 681.0 \quad a = + 42.7$$

arc 145

$$P_n = .13''$$

$$\frac{\Sigma V}{n} = +16.4''$$

$$\frac{+16.4}{113} = +126''$$

$$\Delta R = + 1.33''$$

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Conditional Equations

0-C⁶

1	+1.13	-1.61	= + 83	+48	-34	= +14	+69
2	+1.51	-1.27	= + 40	+64	-27	= +37	+3
3	+1.96	-0.27	= +127	+53	-6	= +77	+50
4	+1.97	0.00	= + 73	+84	0	= +84	-11
5	+1.83	+0.73	= + 35	+78	+16	= +94	-59
6	+1.13	+1.61	= + 30	+48	+34	= +82	-52
7	+0.13	+1.97	= +139	+5	+42	= +47	+92
8	+0.00	+1.97	= + 81	0	+42	= +42	+39
							+253 -122
							or 47

$$+15.94 - 0.86 = +662.7$$

$$-0.84 + 15.20 = +248.1$$

$$+() - 0.04 = +34.9$$

$$+25.16 = +323.0$$

$$L = +21.34$$

$$+15.94 = +662.7 + 18.3 = +681.0 \quad 4 = +42.7$$

$$\text{arc } 1.45$$

$$\frac{P}{m} = .13$$

$$\frac{\Sigma V}{m} = +18.4$$

$$\frac{+16.4}{.13} = +126$$

$$\Delta R = +1.53$$

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Moss's Mean Position

7

$$\begin{array}{r}
 X_0 \quad 22.8660 \checkmark \\
 \quad \quad + 21 \\
 \hline
 \quad \quad 22.8681
 \end{array}$$

$$\begin{array}{r}
 Y_0 \quad 16.2700 \checkmark \\
 \quad \quad + 11 \\
 \hline
 \quad \quad 16.2711
 \end{array}$$

From Plate Constants

$$\begin{array}{r}
 23.6046 \checkmark \\
 \hline
 22. \\
 + 1.6046 \checkmark
 \end{array}$$

$$\begin{array}{r}
 16.2627 \checkmark \\
 \hline
 18. \\
 - 1.7373 \checkmark
 \end{array}$$

$$\begin{array}{r}
 0.20537 \checkmark \\
 9.96335 \checkmark \\
 8.50724 \\
 1.73478 \checkmark
 \end{array}$$

$$\begin{array}{r}
 9.6320 \checkmark \\
 0.4107 \checkmark \\
 7.0534 \\
 7.0961 \checkmark
 \end{array}$$

$$+ 54.30 \checkmark$$

$$\begin{array}{r}
 \eta_1 + 0.0012 \checkmark \\
 \eta_0 - 1.7385 \checkmark
 \end{array}$$

$$A = 4 \quad 11 \quad 50.97$$

$$\alpha_0 = 4 \quad 12 \quad 45.27 \checkmark$$

$$+ 5.40 \checkmark$$

$$\alpha' = 4 \quad 12 \quad 50.67 \checkmark$$

$$\begin{array}{r}
 \log H_0 \quad 0.24017 \checkmark \\
 7.33115 \checkmark \\
 2.90902 \checkmark
 \end{array}$$

$$- 811.0 \checkmark$$

$$- 13 \quad 31.0 \checkmark$$

$$\theta + 23 \quad 26 \quad 01.0$$

$$\delta_0 + 23 \quad 12 \quad 30.0 \checkmark$$

$$+ 14.0 \checkmark$$

$$\delta' + 23 \quad 12 \quad 44.0 \checkmark$$

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Moon's Mean Position.

7

$$\begin{array}{r}
 Y_0 \quad 228660 \\
 \quad + 21 \\
 \hline
 228681
 \end{array}$$

$$\begin{array}{r}
 40 \quad 162700 \\
 \quad + 11 \\
 \hline
 162711
 \end{array}$$

From Plate Constants

$$\begin{array}{r}
 23.6046 \\
 22 \\
 \hline
 + 1.6046
 \end{array}$$

$$\begin{array}{r}
 16.2627 \\
 18 \\
 \hline
 -1.7343
 \end{array}$$

$$\begin{array}{r}
 0.20537 \\
 996235 \\
 8.50724 \\
 1.73478
 \end{array}$$

$$\begin{array}{r}
 9.6320 \\
 04107 \\
 70534 \\
 7.0961
 \end{array}$$

$$+ 5430$$

$$\eta_1 + 0.0012$$

$$\eta_0 - 1.7385$$

$$A = 4 \quad 11 \quad 50.97$$

$$Q_0 = 4 \quad 12 \quad 45.27$$

$$+ 5.40$$

$$\alpha = 4 \quad 12 \quad 50.68$$

$$\begin{array}{r}
 \log H_0 \quad 0.24017 \\
 7.33115 \\
 2.90902
 \end{array}$$

$$- 811.0$$

$$- 13 \quad 31.0$$

$$E + 23 \quad 26 \quad 01.0$$

$$S_0 + 23 \quad 12 \quad 30.0$$

$$Red 1 \quad + \quad 14.0$$

$$S' + 23 \quad 12 \quad 44.0$$

13 959

8

Reduction to Apparent Place

$H + \alpha_0$	07	29.3	$112^\circ 19.5'$	$\delta_0 + 23$	12.5
H	03	16.6			
α_0	04	12.7		$\cos \delta_0$	9.9633
G	23	51.8		$\log i$	0.8050
$G + \alpha_0$	4	04.5	$61^\circ 7.5'$	$\sin \delta_0$	0.7683

$\cos G + \alpha_0$	9.6838
$\sin G + \alpha_0$	1.3613
$\sin G + \alpha_0$	9.9423
$\tan \delta_0$	9.6322
	8.8239

$\sin \delta_0$	9.5958
$\cos H + \alpha_0$	9.5796m
$\log h$	1.2889
$\sin H + \alpha_0$	9.9662
$\sec \delta_0$	0.0367
	8.8239

g'	1.0451
g	9.7597

$\log h'$	0.4643m
h	0.1157

q	+3.528
q	+0.571
h	+1.305
Red.	+5.404

g'	+11.095
h'	-2.913
h'	+5.866
Red.	+14.048

13 459

Reduction to Apparent Place

8

$$H + \alpha_0 \quad 07 \quad 29.3 \quad 112^\circ \quad 19.5 \quad \delta_0 \quad +23 \quad 12.5$$

$$H \quad 03 \quad 16.6$$

$$\alpha_0 \quad 04 \quad 12.7$$

$$G \quad 23 \quad 51.8$$

$$G + \alpha_0 \quad 4 \quad 04.5$$

$$61^\circ 7.5'$$

$$\cos \delta_0 \quad 99633$$

$$\log 1 \quad 0.8050$$

$$m(1) \quad 0.7683$$

$$\cos G + \alpha_0 \quad 96838$$

$$G \quad 1.3613$$

$$\sin G + \alpha_0 \quad 99423$$

$$-\tan \delta_0 \quad 96322$$

$$88239$$

$$\sin \delta_0 \quad 95958$$

$$\cos H + \alpha_0 \quad 95776$$

$$\log h \quad 1.2889$$

$$\sin H + \alpha_0 \quad 99662$$

$$\sec \delta_0 \quad 00367$$

$$88239$$

$$g' \quad 1.0451$$

$$g \quad 9.7597$$

$$\log h' \quad 0.4643$$

$$h \quad 0.1157$$

$$A \quad +3.528$$

$$g \quad +0.571$$

$$h \quad +1.305$$

$$\text{Red.} \quad +5.404$$

$$g' + 11.095$$

$$h' - 2.913$$

$$l' + 5.806$$

$$\text{Red.} \quad +14.048$$

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Jupiter Parallax

9

$$\begin{array}{rcl}
 \alpha' & 04 & 12 & 50.67'' \\
 \theta & 06 & 51 & 34.30'' \\
 \theta\alpha & 02 & 38 & 43.63'' \\
 = & +39 & 40 & 54.45'' \\
 \frac{1}{2}\alpha-\alpha' & & +15'' & 0.10'' \\
 2 & 39 & 25 & 54.35''
 \end{array}$$

$$\begin{array}{r}
 9.95727 \\
 0.00000 \\
 0.11217'' \\
 0.06944''
 \end{array}$$

$$Y \quad 49 \quad 33 \quad 40.8''$$

$$\delta' \quad +23 \quad 12 \quad 44.0''$$

$$Y-\delta' \quad 26 \quad 20 \quad 56.8''$$

$$\begin{array}{r}
 9.82640 \\
 8.22862'' \\
 9.64723'' \\
 0.11856'' \\
 7.82087''
 \end{array}$$

by sin π

$$\delta-\delta' \quad +22 \quad 45.5''$$

$$\delta \quad +23 \quad 35 \quad 29.5''$$

$$\alpha\delta \quad +23 \quad 35 \quad 29.7''$$

$$O-C \quad -0.2''$$

$$\begin{array}{r}
 \text{curr} \quad +0.7'' \\
 \text{and Old. Ref} \quad 0.0
 \end{array}$$

$$\delta \quad +23 \quad 35 \quad 30.2$$

$$O-C \quad +0.5''$$

$$\pi \quad 58'' \quad 12.42''$$

$$\begin{array}{r}
 9.86913 \\
 8.22868'' \\
 9.80518'' \\
 0.03790'' \\
 7.94089''
 \end{array}$$

$$\alpha-\alpha' \quad +30' \quad 0.21$$

$$= \quad +2'' \quad 0.01$$

$$\alpha \quad 4 \quad 14 \quad 50.68''$$

$$\alpha\delta \quad 4 \quad 14 \quad 49.71''$$

$$O-C \quad +0.97''$$

$$\text{curr} \quad -0.02''$$

$$\alpha \quad 4 \quad 14 \quad 50.66$$

$$O-C \quad +0.95''$$

13959

Jupiter Parallax.

9

α 04 12 50.68
 θ 06 51 34.30
 δ 02 38 43.63
 $= + 34$ 40 54.45
 $\frac{1}{2} \alpha \cdot \alpha'$ $+ 15$ 0.10
 $\frac{1}{2} \theta \cdot \theta'$ 39 25 54.35

9.95727
 0.00000
 0.11212
 0.06944

γ 49 33 40.8

δ' $+ 23$ 12 44.0

$\gamma - \delta'$ 26 20 56.8

9.82640
 8.22868
 9.64723
 0.11856
 7.82087

by sum Π

$\delta - \delta'$ 22 46.5

δ $+ 23$ 35 29.5

$\gamma - \delta$ $+ 23$ 35 29.7

$\delta - \delta'$ $+ 0.2$

curr $+ 0.9$

$\frac{3}{4}$ (old Ry) 0.0

δ $+ 23$ 35 30.2

$\delta - \delta'$ $+ 0.5$

Π 58" 12.42

9.86913

8.22868

9.80518

" 0.03790

7.94089

$\gamma - \alpha'$ $+ 30'$ 0.51

$= + 2''$ 0.01

α 4 14 50.68

$\gamma - \alpha$ 4 14 49.71

$\delta - \alpha$ $+ 0.97$

curr $- 0.02$

α 4 14 50.66

$\delta - \alpha$ $+ 0.95$

1
15
14

2
2
2

3
33
12

1
24
14

2
2
1

3
2
2

14027

Star Measures

11

1	17130	17612	16520	16178
13.8	9540	1519804	733836	15342
14.9	40	10	34	92
	30	22	20	78
	<u>157590</u>	<u>157590</u>	<u>149184</u>	<u>149164</u>
2	17206	16202	16754	16740
22.5	12840	1055256	99189	1449500
22.7	4442	60	87	05
	06	12	54	6740
	<u>22.4364</u>	<u>22.4350</u>	<u>22.7765</u>	<u>22.7760</u>
3	16392	16122	16820	16262
33.9	812224	14384	13920	9156
12.3	26	84	2422	56
	92	22	20	62
	<u>33.8268</u>	<u>33.8262</u>	<u>12.2898</u>	<u>12.2894</u>

Moon

1		18326	16980
24		17446	7862
14.1		46	62
		26	80
		<u>14.0880</u>	<u>14.0882</u>
2		17680	16504
25		8502	1566572
14.9		02	79
		80	04
		<u>14.9178</u>	<u>14.9168</u>
3	16046	17230	
25	15548	7790	
15	48	90	
	46	30	
	<u>25.0458</u>	<u>25.0560</u>	

1
15
14

2
2
2

2
33
12

1
24
14

2
2
1

3
2
1

14027

Star Measures

11

1	17130	17612	16520	16178
15.8	9540	1519804	733836	15342
14.9	40	10	34	42
	30	22	20	78
	<u>15.7590</u>	<u>15.7590</u>	<u>14.9184</u>	<u>14.9164</u>
2	17206	16202	16754	16740
22.5	12840	1055256	899189	144950
22.7	4442	60	87	05
	06	12	54	40
	<u>22.4364</u>	<u>22.4350</u>	<u>22.7765</u>	<u>22.7960</u>
3	16392	16122	16820	16262
33.9	812224	14384	13920	9156
12.3	26	84	2422	56
	92	22	20	62
	<u>23.8268</u>	<u>33.8262</u>	<u>12.2898</u>	<u>12.2894</u>

Moon.

L		18326	16980
24.		17446	786
14.1		46	6
		26	80
		<u>14.0880</u>	<u>14.088</u>
25		17680	16504
14.9		8502	156657
		02	19
		80	04
		<u>14.9178</u>	<u>14.9168</u>
3	16046	17230	
25	15548	7790	
15	48	90	
	46	30	
	<u>25.0458</u>	<u>25.0560</u>	

14027

Moon

12

4	16034	17930
25.2	13340	10628
15.8	40	28
	34	30
	<u>25.2694</u>	<u>25.2698</u>

5	16030	18720
25.2	13370	11392.90
16.0	70	88
	30	20
	<u>25.2660</u>	<u>25.2670</u>

6		17176	16373
25		8442.36	15104.99
16.9		30	94
		76	73
		<u>16.8740</u>	<u>16.8826</u>

7	17360	16220
24.9	8214.12	15370
17.0	10	70
	60	20
	<u>24.9148</u>	<u>24.9150</u>

8		17700	16022
24.0		10742.46	12980
17.7		50	80
		00	22
		<u>17.6954</u>	<u>17.6958</u>

4	18230	17482.5
14.5	14260	11448
26.0	60	48
	30	82
	<u>14.3970</u>	<u>14.3966</u>

	17120	16914
	16812	7214.16
	12	18
	20	14
	<u>26.0308</u>	<u>26.0302</u>

14027

mean

12

4	16034	17930
25.2	13340	10628
15.8	40	28
	34	30
	<u>25.2699</u>	<u>25.2698</u>

5	16030	18720
25.2	13370	1139290
16.0	70	88
	30	20
	<u>25.2660</u>	<u>25.2670</u>

6		17176	16373
25		844236	15104
16.9		30	94
		76	73
		<u>168740</u>	<u>168826</u>

7	17360	16220
24.9	821412	15370
17.0	10	70
	60	20
	<u>24.9148</u>	<u>24.9150</u>

8		17700	16022
24.0		1074246	12980
17.7		50	80
		00	22
		<u>17.6954</u>	<u>17.6958</u>

4	18230	1748250
14.5	14260	11448
26.0	60	48
	30	82
	<u>14.3970</u>	<u>14.3966</u>

	17120	16914
	16812	721416
	12	18
	20	14
	<u>26.0308</u>	<u>26.0302</u>

14027

Times etc

Date Nov. 2, 1917

Exp. & Stars	07	41	00.00 ^v	7	53 ^v	
" " Moon	7	47	00.00 ^v	7	47	00.03 ^v
Clock slow		01	23.80			
H. Sid Time	07	48	23.95 ^v			
" Long	04	44	31.05 ^v			
G. Sid. Time	12	32	55.00 ^v			
" " M.N	14	44	44.98 ^v			
Interval	21	48	10.02 ^v			
Red		03	34.31 ^v			
G. M.T	21	44	35.71 ^v	21 ^h	74325 ^v	

 $\theta = +1^{\circ} 35'$

From Naut. Alman.	RA.	Dec.
Moon 21 ^h	06 11	21.40 ^v +23 26 13.2 ^v
Moon 1 ^m		2.3281 ^v -3.561 ^v
" 44.5952	01	43.82 ^v -02 38.8 ^v
Tabular Place	06 13	05.22 ^v +23 23 34.4 ^v

$$934'' = 13.9''$$

Moon age 18^d

$$\begin{aligned} Q &= -500.8 \\ &+ 24.0 \\ &- 476.8 \end{aligned}$$

Parallax	56	30.5 ^v
Semi-diam	15	25.9 ^v
R		925.4 ^v
Aug		13.6 ^v
202 5-		-03
R		938.7 ^v
R		2.0122 ^v
aR		-95.9 ^v
R+aR		1.9163 ^v
R ²		3.6722 ^v

14027

Lunes etc

Date Nov 2, 1917

Exp h Stars	0.7	41	00.00	7	53	
" Moon	7	47	00.00	7	47	00.03
Clock slow		01	23.80			
H. Sid Time	0.7	48	23.95			
" Long	0.4	44	31.05			
G. Sid Time	1.2	32	55.00			
" " M.N	1.4	44	44.98			
Interval	2.1	48	10.02			
Red		03	34.31			
G. M. T.	2.1	44	35.71			
				21.2	743.25	

$$\theta = +1^{\circ} 35''$$

From Naut Alman	RA	Dec.
Moon 21 ^h 06 11	21.40	+23 26 13.2
Motion 1 ^h	2 32.81	+3.561
" 44.59.52	01 43.82	-02 38.8
Tabular Place 06 13	05.22	+23 23 34.4

$$934'' = 13.9$$

$$\begin{aligned} G &= -5^{\circ} 00.8 \\ &+ 24.0 \\ &= -476.8 \end{aligned}$$

Moon age 18^d

Parallax	56	30.5
Semi-diam	15	25.4
R		925.4
Aug		1213.6
Dist 5		-03
R		938.7
R		2.0122
aR		-95.9
H+WA		1.9163
R ²		3.6722

Cape No. 881 mg 59

	6	05	24.33	
			24.35	
			24.37	
	6	05	24.35	
		01	02.54	
N	6	06	26.89	
A	6	16	0.40	
$\alpha - A$	-	4	32.51	
		-	273.49	
			243694 m	
			9.95 923	
			0.90341 m	
			- 8.0051	
			27	
S	1	2.9922		
X	1	4.3968		
$X - S$		+ 4.046		11244
	24	26	31.9	
			31.7	
			31.8	
	24	26	31.8	
			- 9.5	
J	24	26	22.3	
$\oplus$	23	21	40.0	
$\delta - \oplus$	+ 1	04	423	
		+ 3882.8		
			3.58915	
			0.92030	
			9.6575	
			1.8068	
			8.5177	
			- 8.3234	
			0.0329	
3	26.3563			
4	26.0305			
	- 3258			9757

14027

Standard Coordinates

14

Cape No.	886	mag	6.3	Cape No.	899	mag	6.1	Cape No.	914	mag	3.2
C	06	06	15.35	06	10	12.45	6	16	54.67		
g			15.39			12.50			54.68		
E			15.34			12.49			54.66		
m	06	06	15.36	06	10	12.48	6	16	54.67		
Pre		01	01.84		01	02.29		01	01.71		
A	06	07	17.20	06	11	14.77	6	17	56.38		
A	06	11	0.40	06	11	0.40	6	11	0.40		
α -A		-03	43.20			+14.37		+6	55.98		
Sec			-223.19			+14.37			+415.92		
log		2.34	867		1.15	746		2.61	901		
"C"		9.96	426		9.96	074		9.96	544		
"S"		0.82	017		9.62	544		1.09	169		
S ₁		-6.6	095		+0.42	221		+12.35	06		
S ₁			-9			0			+57		
S		15.38	96		22.42	221		34.35	63		
X		15.75	90		22.43	57		33.82	65		
Y-S		+36	94		+013	6		-52	98		
C	+22	55	52.5	+24	0	08.5	-22	33	53.9		
g			52.0			09.0			53.7		
2			51.8			07.8			53.2		
m	+22	55	52.1	+24	0	08.4	+22	33	53.6		
Pre			-09.9			-16.3			-27.5		
S	+22	55	42.2	+23	59	52.1	+22	33	26.1		
D	23	21	40.0	+23	21	40.0	+23	21	40.0		
S-D		-25	57.8		+38	12.1		48	73.9		
Sec			-1557.8			+2292.2			-2894.1		
log		3.19	251		3.36	025		3.46	152		
"H"		0.52	366		0.69	140		0.79	267		
land		9.62	63		9.64	85		9.61	85		
S ₂		1.66	03		9.25	09		2.18	34		
n ₁		8.34	00		5.95	28		8.85	53		
n ₀		-3.33	93		+4.91	35		-6.20	40		
n ₁		+0.21	9					+0.07	17		
n		14.68	26		22.91	35		11.86	77		
g		14.91	74		22.77	62		12.28	96		
g-2		+23	48		-13	73		+42	19		

14027

Standard Coordinates

14

Cape No. 886 mag 6.3				Cape No. 899 mag 6.1				Cape No. 914 mag 3.2			
C	06	06	15.35	06	10	12.45	6	16	54.67		
g			15.39			12.50			54.68		
z			15.34			12.49			54.66		
m	06	06	15.36	06	10	12.48	6	16	54.67		
Pre		01	01.84		01	02.29		01	01.71		
A	06	07	17.20	06	11	14.77	6	17	56.38		
A	06	11	0.40	06	11	0.40	6	11	0.40		
g-A	-03		43.20			+14.37	+6		55.98		
sun			-223.19			+14.37			+415.92		
log			2.34867			1.15746			2.61901		
cos			9.96426			9.96079			9.96544		
so			0.82017			9.62544			1.09169		
S			-6.6095			+0.4221			+12.3506		
S			-9			0			+57		
S			15.3894			22.4221			34.3563		
X			15.7590			22.4357			33.8265		
Y-S			+3694			+0136			-5298		
C	+22	55	5.2.5	+24	0	08.5	+22	33	5.3.9		
g			5.2.0			09.0			5.3.7		
z			5.1.8			07.8			5.3.2		
m	+22	55	5.2.1	+24	0	08.4	+22	33	5.3.6		
Pre			-09.9			-16.3			-27.6		
S	+22	55	4.2.2	+23	59	5.2.1	+22	33	26.0		
Q	23	21	40.0	+23	21	40.0	+23	21	40.0		
S-A	+25		5.7.8	+38		12.1		48	13.9		
sun			+15.57.8			+22.92.2			-28.94.1		
log			3.19251			3.36025			3.46152		
no			0.52366			0.69140			0.79267		
cos			9.6263			9.6485			9.6185		
S ₂			1.6603			9.2509			2.1834		
m ₁			8.3400			5.9528			8.8553		
no			-3.3393			+4.9135			-6.2040		
g ₁			+0.219						+0.0717		
g			14.6826			22.9135			11.8677		
g-			14.9174			22.7762			12.2896		
g-2			+23.48			-1.373			+4.219		

S_0	η_0	ΔS	$-3S$	$+1.5\eta$	-8
-8.00	+8.32	-27	+24 = -3	+13	+10
-6.61	-3.34	-9	+20 = +11	-5	+6
+0.42	+4.91	+0	-1 = -1	+7	+6
+12.35	-6.20	+56	-37 = +19	-9	+10
M + 1.37	-2.32		-4	-3	= -15 = -0.05

$\Delta\eta$	-1.94	$+1.5S$	$+3$
+28	-16 = +12	-12 = -0	
-5	+7 = +2	-10 = -8	
+3	-10 = -7	+1 = -6	
-30	+11 = -19	+19 = +0	
	+4	+2 = +9 = +0.4	

14.3568
 15.7560
 (22.4357)
 33.8265
 26.0305
 14.9174
 (22.2762)
 12.2846
 11244
 11574
 (11347)
 11615
 9757
 9807
 (10015)
 10364

30.15
 56.26
 40.95
 35.06
 22818
 22962
 19564
 20379

3683
 49.58
 4880
 27.20
 22591
 23189
 19772
 20171

- 26.11
 + 5.89 = - 144.0 = - 815.0
 - 12.75
 + 21.60 = - 598.0 = - 399.0

+
 - 2.88 = + 703 = + 398.0

+ 18.72 = - 527.7 = - 1.0

- 26.11 = - 144 + 166 = + 2.2
 = - 815 + 3.0 = - 812

- 0.81 + 31.11
 - 28.21 - 0.51

14127

Plate Center - Constants.

15

$$\begin{array}{r}
 22.4357 \quad 22.6762 \quad 06 \quad 11 \quad 14.77 + 23 \quad 59 \quad 52.1 \\
 22 \quad 18 \quad \quad \quad \quad - 14.38 \quad - \quad 38 \quad 11.3 \\
 - 0.4357 \quad - 4.6762 \\
 \hline
 33 \quad 490
 \end{array}$$

Plate Center

$$H = 06 \quad 11 \quad 0.39$$

$$D = 23 \quad 21 \quad 408$$

$$\begin{array}{l}
 \gamma - S + 500X \quad + 28.28 \quad + 0.8X - 11998 \\
 + 4046 + 7198 = 11244 + 734 = 11978 + 11 = 11989 \\
 + 3694 + 7880 = 11574 + 421 = 11995 + 12 = 12007 \\
 + 0136 + 11218 = 71347 + 642 = 11989 + 18 = 12007 \\
 - 5298 + 16913 = 11615 + 346 = 11961 + 27 = 11988 \\
 23.3521 + 1.1676 \quad + 448 \quad + 19 = 23.3666
 \end{array}$$

$$\begin{array}{l}
 \gamma - \eta + 500\gamma \quad - 31.1X \quad + 0.2\gamma - 9317 \\
 + 3258 + 13015 = 9757 - 448 = 9309 + 5 = 9314 - 3 \\
 + 2348 + 7459 = 9807 - 490 = 9317 + 3 = 9320 + 3 \\
 - 1373 + 11388 = 10015 - 698 = 9317 + 4 = 9321 + 3 \\
 + 4219 + 6145 = 11364 - 1052 = 9312 + 2 = 9314 - 3 \\
 15.8928 + 7946 \quad - 726 \quad + 3 = 15.6834
 \end{array}$$

Tables.

$$a = -0.6$$

$$e = -1.0$$

$$a - e = +0.4$$

$$f + d = -0.5$$

Abs.

$$-500.8$$

$$-500.2$$

$$-0.6$$

$$+2.9$$

$$-500.2$$

$$-499.2$$

$$-1.0$$

$$+3.4$$

14127

Plate Center - Constants

15

$$\begin{array}{r}
 22.4357 \\
 22. \\
 \hline
 -0.4357 \\
 \hline
 33
 \end{array}
 \quad
 \begin{array}{r}
 22.6762 \\
 18. \\
 \hline
 -9.6762 \\
 \hline
 490
 \end{array}
 \quad
 \begin{array}{r}
 06 \quad 11 \quad 14.77 - 2.3 \quad 5.9 \quad 5.21 \\
 -14.38 \quad - \quad 38 \quad 11.3
 \end{array}$$

Plate Center

$$A = 06 \quad 11 \quad 0.39$$

$$D = 23 \quad 21 \quad 9.08$$

$$\begin{array}{l}
 S + 5.00X \quad + 28.28 \quad + 0.81 - 11998 \\
 + 4046 + 7198 = 11244 + 734 = 11978 + 11 = 11989 \\
 + 3694 + 7880 = 11574 + 421 = 11995 + 12 = 12007 \\
 + 0136 + 11218 = 11347 + 642 = 11989 + 18 = 12007 \\
 + 5298 + 16913 = 11615 + 346 = 11961 + 27 = 11988 \\
 23.3521 + 11676 \quad + 448 \quad + 19 = 23.3666
 \end{array}$$

$$\begin{array}{l}
 \eta + 5.00y \quad - 31.1X \quad + 0.2y - 9317 \\
 - 3258 + 13015 = 9757 - 448 = 9309 + 5 = 9314 \\
 + 2348 + 7459 = 9807 - 490 = 9317 + 3 = 9320 \\
 - 1373 + 11388 = 10015 - 698 = 9317 + 4 = 9321 \\
 + 4219 + 6145 = 10364 - 1052 = 9312 + 2 = 9314 \\
 15.8928 + 7946 \quad - 728 \quad + 3 = 15.8834
 \end{array}$$

$$\begin{array}{l}
 \text{Res.} \quad a = -0.6 \quad e = -1.0 \quad a-e = +0.4 \quad b+d = -0.5 \\
 \text{M.} \quad -5.008 \quad -5.002 \quad -0.6 \quad +2.9
 \end{array}$$

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Moon Center

			$(x-x_0)^2$	$+(y-y_0)^2$	$0-e$	16
1	24.0000	+0.6470 - 1	0.4185	3.6725	+	3
2	25.0000	+1.6470 - 1	2.7123	3.6623	-	99
3	25.0459	+1.6929 - 1	2.8653	3.6612	-	110
4	25.2696	+1.9166 0	3.6734	3.6734	+	12
5	25.2665	+1.9135 + 0	3.6615	3.6732	+	10
6	25.0000	+1.6470 + 1	2.7128	3.6759	+	37
7	24.9149	+1.5619 + 1	2.4398	3.6675	-	47
8	24.0000	+0.6470 + 1	0.4187	3.6717	-	5
			18.9026	3.6722		

 $\Delta y = 0$

arc

1	14.0881	-1.8039	3.2540
2	14.9173	-0.9747	0.9500
3	15.0000	-0.8920	0.7957
4	15.8920	0.0000	0.0000
5	16.0000	+0.1080	0.0117
6	16.8733	+0.9813	0.9630
7	17.0000	+1.1080	1.2277
8	17.6956	+1.8036	3.2530
			10.4551

Range 140°

$x = 24$	$y = 14.0881$	$x = 25$	$y = 14.9173$
	17.6956		16.8733
	31.7837		31.7906
y_0	15.8918		15.8953

x_{max} 25.2696
 $corr R =$ 1.9163
 x_0 23.3533

Moon Center

 $x_0 = 23.3530$ $y_0 = 15.8920$

14027

Moon Center

			$(x-x_0)^2$	$(y-y_0)^2$		16
					$0 - c$	
1	24.0000	+0.6470 - 1	0.4185	3.6725	+	3
2	25.0000	+1.6470 - 1	2.7123	3.6623	-	99
3	25.0459	+1.6929 - 1	2.8655	3.6612	-	110
4	25.2696	+1.9166 0	3.6734	3.6734	+	12
5	25.2665	+1.9135 + 0	3.6615	3.6732	+	10
6	25.0000	+1.6470 + 1	2.7128	3.6759	+	37
7	24.9149	+1.5619 + 1	2.4398	3.6675	-	47
8	24.0000	+0.6470 + 1	0.4187	3.6717	-	5
				3.6722		

 $a_y = 0$

arc

1	14.0881	-1.8039	3.2540	1160
2	14.9173	-0.9747	0.9500	121
3	15.0000	-0.8920	0.7957	118
4	15.8920	0.0000	0.0000	90
5	16.0000	+0.1080	0.0117	87
6	16.8733	+0.9813	0.9630	59
7	17.0000	+1.1080	1.2277	55
8	17.6956	+1.8036	3.2530	20

Range 140°

$x = 24$	$y = 14.0881$	$x = 25$	$y = 14.9173$
	17.6956		16.8733
	31.7837		31.7906
y_0	15.8918		15.8953

$x_{\max}$ 25.2696
 Cam R: 1.9163
 x_0 23.3533

Moon Center

$$x_0 = 23.3530$$

$$y_0 = 15.8920$$

Formation of Normals

$$\begin{array}{r}
 1 \quad - \quad 1.17 \\
 2 \quad - \quad 1.60 \\
 3 \quad - \quad 1.50 \\
 4 \quad \quad 0.00 \\
 5 \quad + \quad 0.25 \\
 6 \quad + \quad 1.62 \\
 7 \quad + \quad 1.73 \\
 \hline
 \checkmark \quad + \quad 1.17 \\
 \quad + \quad 4.77 \\
 904 \quad - \quad 4.27 \\
 \quad + \quad 0.50
 \end{array}$$

$$\begin{array}{r}
 + \quad 1.9 \\
 - \quad 163.2 \\
 \quad - \quad 186.0 \\
 + \quad 23.0 \\
 + \quad 19.1 \\
 + \quad 61.0 \\
 - \quad 73.2 \\
 - \quad 3.2 \\
 \hline
 + \quad 105.0 \\
 - \quad 425.6 \\
 \hline
 - \quad 320.6
 \end{array}$$

$$5306$$

$$\begin{array}{r}
 - \quad 5.4 \\
 + \quad 96.0 \\
 + \quad 97.9 \\
 \quad 0.0 \\
 + \quad 1.1 \\
 + \quad 36.3 \\
 - \quad 52.2 \\
 - \quad 9.0 \\
 \hline
 + \quad 231.3 \\
 - \quad 66.6 \\
 \hline
 + \quad 164.7
 \end{array}$$

14027

Conditional Equations

17

D - C

1	+ 0.65	- 1.80	= + 3	- 11	- 30	= + 41	+ 38
2	+ 1.65	- 0.97	= - 99	- 29	- 16	= - 45	- 54
3	+ 1.64	- 0.89	= - 110	- 29	- 15	= - 44	- 66
4	+ 1.42	0.00	= + 12	- 33	0	= - 33	+ 45
5	+ 1.41	+ 0.11	= + 10	- 33	+ 2	= - 31	+ 41
6	+ 1.65	+ 0.98	= + 37	- 29	+ 16	= - 13	+ 50
7	+ 1.56	+ 1.11	= - 47	- 27	+ 18	= - 9	- 38
8	+ 0.65	+ 1.80	= - 5	- 11	+ 30	= + 19	- 24

+ 174 - 182
or 45

$$+ 18.90 + 0.50 = - 320.6$$

$$+ 0.50 + 10.45 = + 164.7$$

$$- () - 0.01 = + 85$$

$$+ 10.44 = + 173.2$$

$$t = + 16.5''$$

$$+ 18.90 = - 320.6 - 8.2 = - 328.8$$

$$a = - 17.4''$$

Arc 140

$$\frac{P}{m} = .10''$$

$$\frac{\Sigma K}{n} = - 1.0''$$

$$\frac{- 1.0}{.10} = - 10''$$

$$DR = - 0.1''$$

14027

Conditional Equations

17

1	+ 0.65	- 1.80	= + 3	- 11	- 30	= - 41	+ 3
2	+ 1.65	- 0.97	= - 99	- 29	- 16	= - 45	- 5
3	+ 1.64	- 0.89	= - 110	- 29	- 15	= - 44	- 6
4	+ 1.42	0.00	= + 12	- 33	0	= - 33	+ 4
5	+ 1.41	+ 0.11	= + 10	- 33	+ 2	= - 31	+ 91
6	+ 1.65	+ 0.98	= + 37	- 29	+ 16	= - 13	+ 5
7	+ 1.56	+ 1.11	= - 97	- 27	+ 18	= - 7	- 38
8	+ 0.65	+ 1.80	= - 5	- 11	+ 30	= + 19	- 24

+ 179 - 1
or 45

$$+ 18.90 + 0.50 = - 320.6$$

$$+ 0.50 + 10.45 = + 164.7$$

$$- 1 - 0.01 = + 85$$

$$+ 10.44 = + 173.2$$

$$1 = + 16.5$$

$$+ 18.90 = - 320.6 - 8.2 = - 329.8$$

$$4 = - 17.4$$

Arc 140

$$\frac{P}{m} = .10$$

$$\frac{\Sigma V}{n} = - 1.0$$

$$\frac{- 1.0}{.10} = - 10$$

$$OR = - 0.1$$

14027

Mooris Mean Position

18

$$\begin{array}{r}
 Y_0 \quad 23.3530 \\
 \quad \quad -9 \\
 \hline
 23.3521
 \end{array}$$

$$\begin{array}{r}
 Y_0 \quad 15.8920 \\
 \quad \quad +8 \\
 \hline
 15.8928
 \end{array}$$

From Plate Constants -

$$\begin{array}{r}
 23.3666'' \\
 22. \\
 \hline
 +1.3666''
 \end{array}$$

$$\begin{array}{r}
 15.6834'' \\
 18. \\
 \hline
 -2.3166''
 \end{array}$$

$$\begin{array}{r}
 0.13564'' \\
 99.6383'' \\
 8.50724'' \\
 1.66457''
 \end{array}$$

$$\begin{array}{r}
 9.6289'' \\
 0.2713'' \\
 7.0534'' \\
 6.9536''
 \end{array}$$

$$\begin{array}{r}
 \eta_1 = +0.0009 \\
 \eta_0 = -2.3175''
 \end{array}$$

$$46 + 46.19''$$

$$A = 06 \quad 11 \quad 00.40$$

$$\alpha_i \quad 06 \quad 11 \quad 46.59''$$

$$\text{Red} \quad +05.11$$

$$\alpha' \quad 06 \quad 11 \quad 51.70$$

$$\begin{array}{r}
 0.36502'' \\
 7.33115'' \\
 3.03387''
 \end{array}$$

$$-1081.1''$$

$$-18 \quad 01.1''$$

$$D = +23 \quad 21 \quad 40.0$$

$$\delta_0 \quad +23 \quad 03 \quad 38.9$$

$$\text{Red} \quad -0.6$$

$$\delta' \quad +23 \quad 03 \quad 38.3$$

14027

Mean Mean Position

18

$$\begin{array}{r} \gamma_0 \quad 23.3530 \\ \quad \quad - 9 \\ \hline \quad \quad 23.3521 \end{array}$$

$$\begin{array}{r} \gamma_0 \quad 15.8920 \\ \quad \quad + 8 \\ \hline \quad \quad 15.8928 \end{array}$$

From Plate Constants.

$$\begin{array}{r} 23.3666 \\ 22. \\ \hline +1.3666 \end{array}$$

$$\begin{array}{r} 0.13564 \\ 996383 \\ 850724 \\ 1.66957 \end{array}$$

$$\begin{array}{r} 15.6834 \\ 18. \\ \hline -2.3166 \end{array}$$

$$\begin{array}{r} 9.6289 \\ 0.2713 \\ 7.0534 \\ 6.9536 \end{array}$$

$$\begin{array}{r} \eta_1 + 0.0009 \\ \eta_0 - 2.3175 \end{array}$$

$$\eta_0 + 46.19$$

$$A = 06 \quad 11 \quad 00.40$$

$$\alpha_0 \quad 06 \quad 11 \quad 46.59$$

$$\text{Red} \quad \quad \quad + 05.11$$

$$\alpha' \quad 06 \quad 11 \quad 51.70$$

$$0.36502 \sim$$

$$7.33115 \sim$$

$$3.03387 \sim$$

$$-1081.1$$

$$-18 \quad 01.1$$

$$D = +23 \quad 21 \quad 40.0$$

$$\delta_0 + 23 \quad 03 \quad 38.9$$

$$\text{Red} \quad \quad \quad 06$$

$$\delta' + 23 \quad 03 \quad 38.3$$

$$\begin{array}{r}
 7 \quad 6 \quad 18 \quad 37.108 \\
 \underline{30.538} \\
 + 6.570 \\
 \hline
 57.186 \\
 1 \quad 6 \quad 9 \quad 52.098 \\
 \underline{+ 5.088} \\
 57.186 \\
 2 \quad 6 \quad 18 \quad 01.446 \\
 2 \quad 6 \quad 17 \quad 56.386 \\
 \underline{+ 5.060}
 \end{array}$$

$$\begin{array}{r}
 49 \quad 19 \quad 45.43 \\
 \underline{54.02} \\
 - 8.59 \\
 \hline
 54.78 \\
 22 \quad 31 \quad 54.92 \\
 \underline{- 0.14} \\
 54.78 \\
 22 \quad 33 \quad 26.30 \\
 \underline{- 1.17}
 \end{array}$$

$$\begin{array}{r}
 5.088 \\
 5.060 \\
 \hline
 0.028
 \end{array}$$

$$\begin{array}{r}
 -1.17 \\
 \underline{0.14} \\
 1.03 \\
 .26 \\
 \hline
 1.29
 \end{array}$$

48

43

38

33

28

23

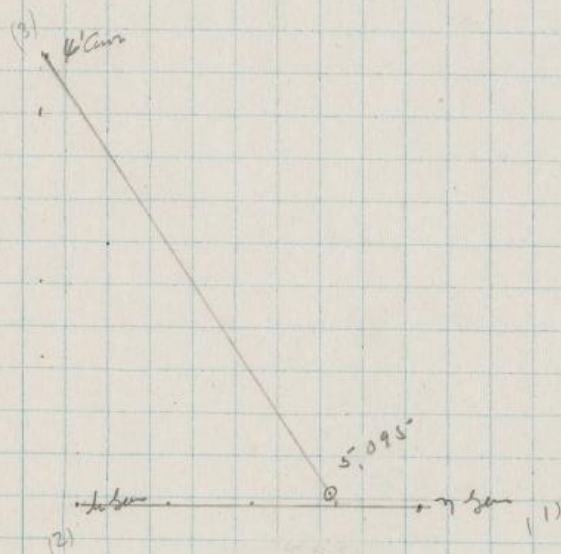
18

13

8

22 20 18 16 14 12 10 8 6 4 2 0

62



14027

Reduction to Apparent Place 19

$H + \alpha_0$	9	20.1	140°	1.5	"	
H	03	08.3			$\delta_0 + 23$	03.7
α_0	06	11.8				
G	23	52.5				
$G + \alpha_0$	6	04.3	91	4.5	$\log \cos \delta_0$	9.9638
					$\log i$	0.7922
					" (i')	0.7560

$\cos G + \alpha_0$	8.2733	m
g	1.3648	
$\sin G + \alpha_0$	9.9999	
$\tan \delta_0$	9.6291	
	8.8239	

$\log g'$	9.6381	m
g	9.8177	

g	+3.544
g'	+0.657
h	+0.908
Red.	+5.109

$\sin \delta_0$	9.5930
$\cos H + \alpha_0$	9.8844
h	1.2902
$\sin H + \alpha_0$	9.8078
$\sec \delta_0$	0.0362
	8.8239

$\log h'$	0.7646	m
h	9.9581	

g	-0.455
h'	-5.816
i	+5.702
Red.	-0.569

14027

Reduction to Apparent Place

$H + \alpha_0$	9	20.1	140°	1.5		
H	03	08.3			$\delta_0 = 23$	03.7
α_0	06	11.8				
G	23	5-2.5				
$G + \alpha_0$	6	04.3	91	45	$\log \cos \delta_0$	9.9638
					$\log i$	0.7922
					(ii)	0.7560

$\cos G + \alpha_0$	8.2733	m
q	1.3648	
$\sin G + \alpha_0$	9.9999	
$\tan \delta_0$	9.6291	
	8.8239	

$\log q'$	9.6381	m
q	9.8177	

q	+3.544
q'	+0.657
h	+0.908
Red.	+5.109

$\log h'$	0.7646	m
h	9.9581	

q'	-0.455
h'	-5.816
i	+5.702
Red.	-0.569

14027

Lunar Parallax

20

α'	06	11	51.70"
θ	07	48	23.95"
$\theta - \alpha'$	01	36	32.25"
"	+24	08	03.75"
$\frac{1}{2} \alpha - \alpha'$		09	18.72"
$\theta - \frac{1}{2} \alpha - \alpha'$	23	58	45.03"

$$\pi = 56 - 30.5''$$

	9.86913
$\log \sin \pi$	8.21582"
$\sin \theta - \alpha'$	9.61160"
$\sec \delta$	0.03725"
$\sin \alpha - \alpha'$	7.73380"

9.95727
0.00000
0.03920"
9.99647"

$$\alpha - \alpha' = + 18' 37.45''$$

$$= + 1' 14.50''$$

γ	44	46	02.3"
δ'	+23	03	38.3"
$\gamma - \delta'$	+21	42	24.0"

9.82640
8.21582"
9.56802"
0.15229"
7.76253"

$$\delta - \delta' = + 19' 53.9''$$

$$\delta = + 23' 23'' 32.2''$$

$$\alpha = 6' 13'' 06.20''$$

$$\gamma - \delta = + 23' 23'' 34.4''$$

$$\gamma - \alpha = 6' 13'' 05.22''$$

$$\alpha - \epsilon = - 2.2''$$

$$\alpha - \epsilon = + 0.98''$$

$$\text{curr} = + 0.4''$$

$$\text{curr} = - 0.04''$$

$$\text{2nd Clad. Ref.} = 0.0$$

$$= 0' 6'' 13'' 06.16''$$

$$\delta = + 23' 23'' 32.6''$$

$$\alpha - \epsilon = + 0.94''$$

$$\alpha - \epsilon = - 1.8''$$

14127

Lunar Parallax

20

α'	06	11	51.70'
θ	07	48	23.95"
$\theta - \lambda'$	01	36	32.25"
"	+24	08	03.75"
$\frac{1}{2} \lambda - \lambda'$		09	18.72
$\theta - \sqrt{\frac{1}{2} \lambda - \lambda'}$	23	58	45.03

 $\Pi = 56 - 30.5''$

	9 8 6 9 1 3
$\log \sin \Pi$	8 2 1 5 8 2
$\sin \theta - \alpha''$	9 6 1 1 6 0
$\sec \delta$	0 0 3 7 2 5
$\sin \lambda - \lambda'$	7 7 3 3 8 0

9 9 5 7 2 7
 0 0 0 0 0 0
 0 0 3 9 2 0
 9 9 9 6 4 7

 $\alpha - \lambda' = +18' 37.45''$ $= + 1 14.50''$ λ 44 46 2.3 δ +23 03 38.3 $\lambda - \delta$ +21 42 24.0

9 8 2 6 4 0
 8 2 1 5 8 2
 9 5 6 8 0 2
 0 1 5 2 2 9
 7 7 6 2 5 5

 $\delta - \delta$ +19 53.9 δ +23 23 33.0 $\lambda - \delta$ +23 23 34.4 $\theta - \theta$ - 2.2 curr. +0.4 $\text{2nd} \text{ Alt Ref}$ 0.0 δ +23 23 32.6 $\theta - \theta$ - 1.8 α 6 13 06.20 $\lambda - \lambda$ 6 13 05.22 $\theta - \theta$ +0.98 curr. -0.04 δ 6 13 06.1 $\theta - \theta$ +0.9

14028

Star Measure

21

L	16430	16348	17173	18804
13.8	929088	1348086	1609693	9884
26.1	86	92	86	84
	30	48	73	04
	<u>13.7142</u>	<u>13.7138</u>	<u>26.1080</u>	<u>26.1080</u>

2	18230	19504	16152	16214
15	17878	987066	6248	1610408
14.9	78	62	48	12
	30	04	52	14
	<u>15.0352</u>	<u>15.0362</u>	<u>14.9904</u>	<u>14.9894</u>

2	18913	17775	19225	16385
21.8	1150916	15180	10985	14630
22.8	03	80	85	2226
	13	75	25	85
	<u>21.7407</u>	<u>21.7405</u>	<u>22.8240</u>	<u>22.8241</u>

4	17990	18310	16590	16710
33.1	1704246	9250	1362822	966064
12.3	50	50	16	68
	90	10	90	10
	<u>33.0944</u>	<u>33.0940</u>	<u>12.2968</u>	<u>12.2954</u>

Moon

1		16276	16218
24		16130	6364
14.0		30	64
		76	18
		<u>14.0146</u>	<u>14.0146</u>

2		18482	16918
25		8682	16698
14.9		82	98
		02	18
		<u>14.9800</u>	<u>14.9780</u>

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Star Measures

21

	16430	16348	18173	18804
13.8	929088	1348086	1609643	9884
26.1	86	92	86	84
	30	48	73	04
	<u>13.7142</u>	<u>13.7138</u>	<u>26.1080</u>	<u>26.1080</u>
2	18230	19504	16152	16214
15	17878	987066	6248	1610408
10.4	78	62	48	12
	30	04	52	14
	<u>15.0352</u>	<u>15.0362</u>	<u>14.9908</u>	<u>14.9894</u>
2	18913	17775	19225	16385
218	1150916	15180	10985	14630
228	03	80	85	222
	13	75	25	85
	<u>21.7407</u>	<u>21.7405</u>	<u>22.8240</u>	<u>22.8281</u>
4	17990	18310	16590	16710
33.1	1704246	9250	1362822	9660
12.3	50	50	16	68
	90	10	90	10
	<u>33.0944</u>	<u>33.0940</u>	<u>12.2968</u>	<u>12.2954</u>

Moon

1	16276	16218
4	16130	6364
40	30	64
	76	18
	<u>14.0146</u>	<u>14.0146</u>
2	18482	16918
	8682	16694
	82	98
	02	18
	<u>14.9800</u>	<u>14.9780</u>

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Moon Measures

22

3	17992	16320
25.0	17884	6422
15.0	8886	22
	92	20
	<u>25.0106</u>	<u>25.0102</u>

4	16460	16784
25.2	14660	8590
15.6	6462	90
	60	84
	<u>25.1798</u>	<u>25.1806</u>

5	16909	16144
25.1	15248	7818
16.0	4446	78
	09	44
	<u>25.1663</u>	<u>25.1674</u>

6		16235	16602
25.1		10300.5	12540.44
16.5		10	48
		35	02
		<u>16.5930</u>	<u>16.5942</u>

7	16794	16202
24.8	9378	13614
17.0	8281	1012
	94	02
	<u>24.7414</u>	<u>24.7410</u>

8	18330	16720
24	12796	12256
17.5	94	60
	92	64
	30	20
	<u>17.5536</u>	<u>17.5540</u>

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Moon Measures

22

3	17992	16320
0	18884	6422
5.0	88 ⁴⁶	22
	92	20
	<u>25.0106</u>	<u>25.0102</u>

+	16460	16724
5.2	14660	8890
5.6	64 ⁶²	90
	60	84
	<u>25.1792</u>	<u>25.1806</u>

-	16909	16144
5.1	15248	7818
6.0	44 ⁴⁶	78
	09	44
	<u>25.1663</u>	<u>25.1674</u>

5	16235	16602
16.5	10300 ⁵	12540 ⁴⁴
	10	42
	35	02
	<u>16.5930</u>	<u>16.5942</u>

1	16794	16202
24.8	9378 ⁸⁰	13614 ¹²
17.0	82	10
	94	02
	<u>24.7414</u>	<u>24.7410</u>

1	12330	16720
4	12796 ⁹⁹	12256 ⁶⁰
7.5	92	64
	30	20
	<u>17.5536</u>	<u>17.5540</u>

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Times Etc

23

Date Nov. 2, 1917

Exp. to Stars	07	55	✓	8	07	✓
" " Moon	08	00	50.0 ✓	8	00	50.2 ✓
Clock Slow		01	23.9 ✓			
H. Sid. Time	08	02	14.0 ✓			
H. Hour	04	44	31.05 ✓	G = +1 ^h 49		
G. Sid. Time	12	46	45.05 ✓			
" " " M.M	14	44	44.98 ✓			
Interval	22	02	0.07 ✓			
Red		03	36.58 ✓			
C. M.T.	21	58	23.49 ✓	21	57	32

From Naut. Alman.			R.A.		Dec.	
Moon 21 ^h	6	11	21.40 ✓	+23	26	13.2 ✓
Mars 1			2.3275 ✓			-3.576 ✓
" 58 ^h 39.15 ✓		02	15.91 ✓		-13	28.8 ✓
Jabular Place	6	13	37.31 ✓	+23	22	44.4 ✓

93.4^h = 13.6^h

$$\begin{array}{r}
 a = -500.5 \\
 + 24.0 \\
 \hline
 -476.5
 \end{array}$$

Moon's age 18^d

Parallax	56	30.04 ✓
Semi-diam	15	25.3 ✓
R		925.3 ✓
Aug		13.3 ✓
Dr 5		-0.3
R		938.3 ✓
R		2011.4 ✓
AR		-95.8 ✓
Q+AR		1.915.6 ✓
R2		3.669.5 ✓

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Times etc

23

Date Nov 2 1918

Exp. to Stars	07	55		8	07
" " Moon	08	00	50.0	8	00 50.2
clock slow		01	23.9		
H Sid Time	08	02	140		
H. Gang	04	44	31.05	E = +1 ^L 49	
G Sid Time	12	46	45.05		
" " " M.M.	14	44	44.98		
Interval	32	02	0.07		
Red		03	36.58		
C. M.T.	21	58	23.49	21 59 73.2	

From Naut. Alman.		RA		Dec.	
Moon 21 ^L	6	11	21.40	+23	26 13.2
Mars 1			2.3275		-3.576
" 58 ^m 39 15"	02		15.91	-13	28.8
Jabular Place	6	13	37.31	+23	22 44.4

934" 13.6'

$$\begin{array}{r}
 a. -5^{\circ}00.5 \\
 +24.0 \\
 \hline
 -476.5
 \end{array}$$

Moon age 18^d

Parallax	56	30.04
Semi diam	15	25.3
R		925.3
ang		13.3
Dr 5		-0.3
R		938.3
R		2011.4
AR		-95.8
A+WR		1915.6
R2		3669.5

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Plate Constants

24

X	13.7140	15.0357	21.7406	33.0942
S	13.9922	15.3896	22.4221	34.3563
X-S	-2782	-3539	-6815	-12621

y	26.1080	14.9899	22.8240	12.2961
y	26.3563	14.6826	22.9135	11.8677
y-y	-2483	+3073	-0895	+4284

$X-S$	$+50.0X$	$-10y$	$+1.5X$	-38.29	
-2782	$+6857 =$	$4075 -$	$261 -$	$3814 + 7 =$	3821
-3539	$+7518 =$	$3979 -$	$150 -$	$3829 + 8 =$	3837
-6815	$+10870 =$	$4055 -$	$228 -$	$3827 + 11 =$	3838
-12621	$+16547 =$	$3926 -$	$123 -$	$3803 + 17 =$	3820
23.2636^v	$+11632$	-158	$+12 =$	24.0293^v	

y-y	+500g	+7.5x	+4y	-106.86		
-2483	+13054	=10571	+103	=10674	+10	=10684
+3073	+7495	=10568	+113	=10681	+6	=10687
-0895	+11412	=10517	+162	=10679	+9	=10688
+4284	+6148	=10432	+248	=10680	+5	=10685
15.7848	+7892	+174	+6	=15.5234		

Tables	a = -0.6	b = -1.1	a-b = +0.5	t+d = -0.8
ass.	-500.5	-500.4	= -0.1	= +2.5
	-499.9	-499.3	-0.6	+33

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Plate Constants

24

K	13.7140	15.0357	21.7406	33.0942
S	13.9922	15.3896	22.4221	34.3562
1-3	-2782	-3539	-6815	-1.2621

4	26.1080	14.9899	22.8240	32.2961
5	26.3563	14.6826	22.9135	31.8677
-7	-2483	+3073	-0895	+4284

-5	+5008	-108	+51	-3829		
7782	+6857 =	4075	-261 =	3814	+7 =	3821
3539	+7518 =	3979	-150 =	3829	+8 =	3837
6815	+10870 =	4055	-228 =	3827	+11 =	3838
1.2621	+16597 =	3926	-123 =	3803	+17 =	3820
23.2636	+11632	-158	+12 =	24.0293		

-7	+5008		+751		+44	-10686
2483	+13059	= 10571	+103	= 10674	+10	= 10684
3073	+7995	= 10568	+113	= 10681	+6	= 10687
0895	+11412	= 10517	+162	= 10679	+9	= 10688
4284	+6148	= 10432	+248	= 10680	+5	= 10685
15.7848	+7892		+174		+6	= 15.5234

after	a = -0.6	b = +1.1	c = +0.5	d = -0.8
W.S.	-500.5	-500.4	= -0.1	= +2.5

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Moon Center

25.

0 - e

1	24.0000	+0.7350	-2	0.53.99	3.6742	+47
2	25.0000	+1.7350	-1	3.0099	3.6595	-100
3	25.0104	+1.7454	-1	3.0460	3.6622	-73
4	25.1802	+1.9152	0	3.6680	3.6680	-15
5	25.1668	+1.9018	0	3.6167	3.6629	-66
6	25.0000	+1.7350	+1	3.0106	3.6645	-50
7	24.7412	+1.4762	+1	2.1794	3.6556	-39
8	24.0000	+0.7350	+2	0.5405	3.6692	-3

R2 3.6695

anc'

1	14.0146	-1.7704	3.1343	157
2	14.9790	-0.8060	0.6496	115
3	15.0000	-0.7850	0.6162	114
4	15.7850	-0.0000	0.0000	90°
5	16.0000	+0.2150	0.0462	84
6	16.5936	+0.8086	0.6539	65
7	17.0000	+1.2150	1.4762	50
8	17.5538	+1.7688	3.1287	23

Range 134

$$\begin{array}{rcl}
 x = 24 & y = & 14.0146 \\
 & & 17.5538 \\
 & & 31.5684 \\
 & y_0 & 15.7842 \\
 \hline
 x = 25 & y = & 14.9790 \\
 & & 16.5936 \\
 & & 31.5726 \\
 & & 15.7863
 \end{array}$$

Calc R: 1.9156

Xmax: 25.1802

Xo 23.2646

Yo 23.2650

Moon Center

Yo 15.7850

14028

Moon Center

0 - C

1	24.0000	+0.7350	-2	0.53.99	3.6742	+47
2	25.0000	+1.7350	-1	3.0099	3.6595	-100
3	25.0104	+1.7454	-1	3.0460	3.6622	-73
4	25.1802	+1.9152	0	3.6680	3.6680	-15
5	25.1668	+1.9018	0	3.6167	3.6629	-66
6	25.0000	+1.7350	+1	3.0106	3.6645	-50
7	24.7412	+1.4762	+1	2.1794	3.6556	-39
8	24.0000	+0.7350	+2	0.5405	3.6692	-3

R2 3.6695

ave

1	14.0146	-1.7704	3.1343	107
2	14.9790	-0.8060	0.6496	115
3	15.0000	-0.7850	0.6162	114
4	15.7850	0.0000	0.0000	90
5	16.0000	+0.2150	0.0462	84
6	16.5936	+0.8086	0.6539	65
7	17.0000	+1.2150	1.4762	50
8	17.5538	+1.7628	3.1287	23

Range 134

X = 24	y = 14.0146	1 = 25	y = 14.9790
	17.5538		16.5936
	31.5684		31.5726
	y ₀ 15.7842		15.7863

Cen R: 1.9156

X_{max} 25.1802

10 23.2646

y₀ 23.2650

Moon Center

y₀ 15.7850

Formation of Normals

1 - 1.31
 2 - 1.41
 3 - 1.33
 4 0.00
 5 + 0.42
 6 + 1.41
 7 + 1.80
 8 + 1.31
 + 4.94
 - 4.05
 + 0.89

+ 34.8
 - 174.0
 - 127.8
 - 28.8
 - 123.5
 - 82.2
 - 57.8
 - 2.2
 + 34.8
 - 598.3
 - 563.5

- 83.2
 + 81.0
 + 60.5
 0.0
 - 14.5
 - 40.5
 - 47.6
 - 5.3
 + 131.5
 - 191.1
 - 59.6

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Conditional Equations

26

1	+0.74	-1.77	= +47	-21	+6	= -15	+62		
2	+1.74	-0.81	= -100	-50	+3	= -47	-53		
3	+1.75	-0.76	= -73	-50	+3	= -47	-26		
4	+1.92	0.00	= -15	-55	0	= -55	+40		
5	+1.90	+0.22	= -66	-54	-1	= -55	-11		
6	+1.74	+0.81	= -50	-50	-3	= -53	+3		
7	+1.48	+1.22	= -39	-42	-4	= -46	-7		
8	+0.74	+1.77	= -3	-21	-6	= -27	+24		

+129 - 97
ar. 28

$$+19.60 + 0.89 = -563.5$$

$$+ 0.89 + 9.71 = -59.6$$

$$- () - 0.04 = +25.6$$

$$+ 9.67 = -340$$

$$t = -3.5$$

$$+19.60 = -563.5 + 31 = -560.4 \quad a = -28.6$$

arc 134

$$\frac{p}{m} = .06 v$$

$$\frac{\Sigma V}{m} = +4 v$$

$$+ \frac{4}{.06} = +66.6$$

$$\Delta R = +0.8 v$$

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Conditional Equations

25

							0 - C
1	+ 0.74	- 1.77	= + 47	- 21	+ 6	= - 15	+ 62
2	+ 1.74	- 0.81	= - 100	- 50	+ 3	= - 47	- 53
3	+ 1.75	- 0.76	= - 73	- 50	+ 3	= - 47	- 26
4	+ 1.92	0.00	= - 15	- 55	0	= - 55	+ 40
5	+ 1.90	+ 0.22	= - 66	- 54	- 1	= - 55	- 11
6	+ 1.74	+ 0.81	= - 51	- 50	- 3	= - 53	+ 3
7	+ 1.48	+ 1.22	= - 39	- 42	- 4	= - 46	- 7
8	+ 0.74	+ 1.77	= - 3	- 21	- 6	= - 27	+ 24

+ 129 - 97
or 28

$$+ 19.60 + 0.89 = - 563.5$$

$$+ 0.89 + 9.71 = - 59.6$$

$$- 1 - 0.04 = + 25.6$$

$$+ 9.67 = - 34.0$$

$$t = - 3.5$$

$$+ 19.60 = - 563.5 + 31 = - 560.4 \quad a = - 28.6$$

Arc 134

$$\frac{p}{m} = .06$$

$$\frac{\Sigma V}{m} = + 4$$

$$+ \frac{4}{.06} = + 66.6$$

$$\Delta R = + 0.8$$

14028

Moon's Mean Position

27

$$\begin{array}{r} X_0 \quad 23.2650'' \\ \quad -14 \\ \hline 23.2636'' \end{array}$$

$$\begin{array}{r} Y_0 \quad 15.7850'' \\ \quad -2 \\ \hline 15.7848'' \end{array}$$

From Plate Constants.

$$\begin{array}{r} 24.0293'' \\ 22. \\ \hline +2.1293'' \end{array}$$

$$\begin{array}{r} 15.5234'' \\ 18. \\ \hline -2.4766'' \end{array}$$

$$\begin{array}{r} 0.30735'' \\ 9.96390'' \\ 8.50724'' \\ 1.83621'' \end{array}$$

$$\begin{array}{r} 9.6286'' \\ 0.6147'' \\ 7.0534'' \\ 7.2967'' \end{array}$$

$$+01 \quad 08.58''$$

$$\begin{array}{l} \eta_1 = +0.0020 \\ \eta_0 = -2.4786'' \end{array}$$

$$A \quad 6 \quad 11 \quad 0.40$$

$$0.39421''$$

$$\alpha_0 \quad 6 \quad 12 \quad 08.98''$$

$$\begin{array}{r} 7.33115'' \\ 3.06306'' \end{array}$$

$$\text{Red} \quad +5.11$$

$$-1156.3$$

$$\alpha' \quad 6 \quad 12 \quad 14.09''$$

$$-19 \quad 16.3''$$

$$\theta = +23 \quad 21 \quad 40.0$$

$$\delta_1 +23 \quad 02 \quad 23.7''$$

$$\text{Red} \quad -0.6''$$

$$\delta' +23 \quad 02 \quad 23.1''$$

14028

27

Mean Mean Position -

$$\begin{array}{r} X_0 \quad 23.2650'' \\ \quad \quad -14 \\ \hline 23.2636'' \end{array}$$

$$\begin{array}{r} Y_0 \quad 15.7850'' \\ \quad \quad -2 \\ \hline 15.7848'' \end{array}$$

From Plate Constants.

$$\begin{array}{r} 24.0293'' \\ 22. \\ \hline +2.1293'' \end{array}$$

$$\begin{array}{r} 15.5234'' \\ 18. \\ \hline -2.4766'' \end{array}$$

$$\begin{array}{r} 0.30735'' \\ 996390'' \\ 851724'' \\ 183621'' \end{array}$$

$$\begin{array}{r} 9.6286'' \\ 0.6147'' \\ 71534'' \\ 72967'' \end{array}$$

$$01 \quad 08.58''$$

$$\begin{array}{r} \eta_1 + 0.0020 \\ \eta_0 - 2.4786 \end{array}$$

$$A \quad 6 \quad 11 \quad 0.40$$

$$0.39421''$$

$$\alpha_0 \quad 6 \quad 12 \quad 0898$$

$$7.33115''$$

$$2.06306''$$

$$\text{Red} \quad \quad \quad +5.11$$

$$-1156.3$$

$$\alpha' \quad 6 \quad 12 \quad 14.09$$

$$-19 \quad 16.3''$$

$$\delta = +23 \quad 21 \quad 40.0$$

$$\delta_0 + 23 \quad 02 \quad 23.7''$$

$$\text{Red} \quad \quad \quad -0.8$$

$$\delta' + 23 \quad 02 \quad 22.1$$

14028

Lunar Parallax

29

α' 06 12 14.09"
 θ 08 02 14.00"
 $\theta - \alpha'$ +01 49 59.91"
 $=$ +27 29 58.65"
 $\frac{1}{2} \alpha - \alpha'$ +10 30.81"
 $\theta - \alpha' = "$ +27 19 27.84

9.95727
 0.00000
 0.05138
 0.00865

γ 45 34 14.4"
 δ' +23 02 23.1"
 $\gamma - \delta'$ 22 31 51.3"

9.82640
 8.21577"
 9.58340"
 0.14623"
 7.77180"

$\delta - \delta'$ 20 19.6"

δ +23 22 42.7"
 $\gamma - \delta$ +23 22 44.4"
 $\delta - c$ -1.7"

Curv. +0.4"

2nd Ord. Ref. 0.0

δ +23 22 43.1
 $\delta - c$ 1.3

π 56 30.04"

9.86913
 $\sin \pi$ 8.21577"
 $\sin \theta \alpha'$ 9.66440"
 $\sec \delta$ 0.03720"
 $\sin \alpha \alpha'$ 7.78650"

$\alpha \alpha'$ +21 01.62"
 $=$ +1 24.11"

α 6 13 38.20"
 $\gamma - \alpha$ 6 13 37.31"
 $\delta - c$ +0.89"

Curv. -0.04"

α 6 13 38.16

$\delta - c$ +0.85"

14128

Lunar Parallax

23

λ 06 12 14.09
 δ 08 02 14.00
 $\delta - \lambda' + 01$ 49 59.91
 $=$ +27 29 58.65
 $\frac{1}{2} \lambda - \lambda' + 10$ 30.81
 $\delta - \lambda' - "$ +27 19 27.84

995727
 000000
 005138
 000865

γ 45 34 14.4
 δ' +23 02 23.1
 $\gamma - \delta'$ 22 31 51.3

9.82690
 821577
 958340
 014623
 7.77180

$\delta \delta'$ 20 19.6

δ +23 22 42.7

$\gamma h \delta$ +23 22 44.4

$\delta - \alpha$ -1.7

curr. +0.4

3rd Ord. Ref. 0.0

δ +23 22 43.1

$\delta - \alpha$ -1.3

π 56 30.04

986913

$\sin T$ 821577

$\sin + \lambda'$ 966440

$\sin \delta$ 003720

$\sin \lambda \lambda'$ 7.78650

$\alpha - \lambda'$ +21 01.62

$=$ +1 24.11

α 6 13 38.20

$\gamma h \alpha$ 6 13 37.31

$\delta - \alpha$ +0.89

curr. -0.04

α 6 13 38.16

$\delta - \alpha$ +0.85

14028.

Reduction to Apparent Place.

$H + \alpha_0$	9	20.4	$140^\circ 6''$	δ_0	$+23$	02.4
H	3	08.3		$\cos \delta_0$		9.9639
α_0	6	12.1		$\log i'$		0.7922
δ	$+23$	52.5		$\log h'$		0.7561
$\delta + \alpha_0$	6	04.6	$91^\circ 9'$	$\sin \delta_0$		9.5926
$\cos \delta + \alpha_0$		83025	m	$\cos H + \alpha_0$		9.8849m
q		1.3648		h		1.2902
$\sin \delta + \alpha_0$		9.9999		$\sin H + \alpha_0$		9.8072
$\tan \delta_0$		9.6287		$\sec \delta_0$		0.0361
		8.8239				88239
$\log q'$		9.6673	m	$\log h'$		0.7677m
g		9.8173		h		9.9574
q		+3.544		q'		-0.465
g		+0.657		h'		-5.857
h		+0.907		i		+5.703
Red		5.108		Red		-0.619

14028

Reduction to Apparent Place.

$H + \alpha_0$	9	20.9	$140^\circ 6'$	S_0	$+23$	02.9
H	3	08.3		$\cos \delta_0$		99639
α_0	6	12.1		$\log i$		0.7922
b	$+23$	52.5		$\frac{1}{h}$		0.7561
$S + \alpha_0$	6	04.6	$91^\circ 9'$			
$\cos (b + \alpha_0)$		83025		$\sin S_0$		95926
q		1.3648		$\cos (H + \alpha_0)$		98849
$\sin (b + \alpha_0)$		99999		$\frac{1}{h}$		1.2902
$\tan S_0$		96287		$\sin (H + \alpha_0)$		98072
		88239		$\sec \delta_0$		00361
						88239
$\log q'$		9.6673		$\log h'$		0.7677
$\frac{q'}{q}$		9.8173		$\frac{h'}{h}$		9.9574
q'		+3.544		q'		-0.465
$\frac{q'}{q}$		+0.657		$\frac{h'}{h}$		-5.857
$\frac{h'}{h}$		-0.907		i		+5.703
Red		5.108		Red		-0.619

