

KG

11366

W057

NATIONAL		NATIONAL	
Plate No	Date	Page	
✓ 13306	Sept. 4, 1917	1	
✓ 12319	Feb. 6. "	11	
✓ 12320	" " "	21	

13306

Star Measures

1

1	17860	19298	17763	17788
19.2	16232	10932	15260	10286
20.2	32	32	62	86
	60	98	63	88
	<u>19.1628</u>	<u>19.1634</u>	<u>20.2592</u>	<u>20.2498</u>

2	17762	18570	16140	17850
24.0	17078	9248	15246	8750
31.0	78	48	42	50
	62	70	40	50
	<u>24.0684</u>	<u>24.0678</u>	<u>31.0896</u>	<u>31.0900</u>

3	17250	16672	16488	17092
33.7	10802	13130 ²⁸	15138	8430
4.0	02	26	38	30
	50	72	88	92
	<u>33.6448</u>	<u>33.6456</u>	<u>4.1350</u>	<u>4.1338</u>

Moon Measures

1	16276	16228
25	1409297	840005
15.2	02	10
	76	28
	<u>15.2179</u>	<u>15.2177</u>

2	16558	16040
25.8	9528	1306466
16.0	28	68
	58	40
	<u>25.7030</u>	<u>25.7026</u>

3	16602	16000
25.9	7393	1520406
17.0	95 ⁹⁴	08 ⁰⁶
	02	00
	<u>25.9208</u>	<u>25.9206</u>

13306

Star Measures

1.

$\begin{array}{r} 1 \\ 19.2 \\ 20.2 \end{array}$
 $\begin{array}{r} 17860 \\ 16232 \\ 32 \\ 60 \end{array}$
 $\begin{array}{r} 19298 \\ 10932 \\ 32 \\ 98 \end{array}$
 $\begin{array}{r} 191628 \\ 191634 \end{array}$

$\begin{array}{r} 17763 \\ 1526061 \\ 62 \\ 63 \end{array}$
 $\begin{array}{r} 17788 \\ 10286 \\ 86 \\ 88 \end{array}$
 $\begin{array}{r} 20.2502 \\ 20.2498 \end{array}$

$\begin{array}{r} 2 \\ 240 \\ 310 \end{array}$
 $\begin{array}{r} 17762 \\ 17078 \\ 78 \\ 62 \end{array}$
 $\begin{array}{r} 18570 \\ 9248 \\ 48 \\ 70 \end{array}$
 $\begin{array}{r} 240684 \\ 240678 \end{array}$

$\begin{array}{r} 16140 \\ 1524644 \\ 4244 \\ 40 \end{array}$
 $\begin{array}{r} 17850 \\ 8750 \\ 50 \\ 50 \end{array}$
 $\begin{array}{r} 31.0896 \\ 31.0900 \end{array}$

$\begin{array}{r} 3 \\ 33.7 \\ 4.0 \end{array}$
 $\begin{array}{r} 17250 \\ 10802 \\ 02 \\ 50 \end{array}$
 $\begin{array}{r} 16672 \\ 1313028 \\ 26 \\ 72 \end{array}$
 $\begin{array}{r} 33.6448 \\ 33.6456 \end{array}$

$\begin{array}{r} 16488 \\ 15138 \\ 8 \\ 88 \end{array}$
 $\begin{array}{r} 17092 \\ 8430 \\ 30 \\ 92 \end{array}$
 $\begin{array}{r} 4.1350 \\ 4.1338 \end{array}$

Moon Measures.

$\begin{array}{r} 1 \\ 25 \\ 15.2 \end{array}$

$\begin{array}{r} 16276 \\ 1409297 \\ 02 \\ 76 \end{array}$
 $\begin{array}{r} 16228 \\ 840005 \\ 10 \\ 28 \end{array}$
 $\begin{array}{r} 15.2179 \\ 15.2177 \end{array}$

$\begin{array}{r} 2 \\ 25.8 \\ 16.0 \end{array}$
 $\begin{array}{r} 16558 \\ 9528 \\ 28 \\ 58 \end{array}$
 $\begin{array}{r} 16040 \\ 1306466 \\ 68 \\ 40 \end{array}$
 $\begin{array}{r} 25.7030 \\ 25.7026 \end{array}$

$\begin{array}{r} 3 \\ 25.9 \\ 17.0 \end{array}$
 $\begin{array}{r} 16602 \\ 739394 \\ 95 \\ 02 \end{array}$
 $\begin{array}{r} 16000 \\ 1520406 \\ 0806 \\ 00 \end{array}$
 $\begin{array}{r} 25.9208 \\ 25.9206 \end{array}$

Moon Measures

13306
 4 16642 16610
 25.7 107256 12538
 18.0 27 38
 42 10
25.5916 25.5928

5
 25.0
 18.5

16772 16380
 1087678 12274
 80 74
 72 80
18.5894 18.5894

6 15000
 24.
 18.9

17802 16980
 8716 1607270
 16 68
 02 80
18.9086 18.9090

7
 23.8
 18.9

17068 16890
 7942 16018
 42 18
 68 90
18.9126 18.9128

8 17158 17462
 23.4 13008 11608
 18.8 08 08
 58 62

16282 16628
 7804 1508894
 04 00
 82 28
18.8478 18.8466

23.4150 23.4146

Moon Measures

13306
 4 16642 16610
 25.7 11725.6 125.38
 18.0 27 38
 42 10
25.5916 25.5928

5
 25.0
 18.5

6 18650
 24
 18.9
 50

7
 23.8
 18.9

8 1715.8 17462
 23.4 13008 11608
 18.8 0.8 0.8
 5.8 6.2
23.4150 23.4146

16772 16380
 10876.8 12274
 80 74
 72 80
18.5894 18.5894

17802 16980
 8716 1607270
 16 68
 02 80
18.9086 18.9090

17068 16890
 7942 16018
 42 18
 68 90
18.9126 18.9128

16282 16628
 7864 1508894
 04 00
 82 28
18.8478 18.8466

13306.

Times Etc.

3

Date Sept. 4, 1917

Exp. to Stars	02	22	"	02	39	"
" " Moon	02	27	44.9"	02	27	45.2"
Clock Slow			+ 31.9"			
H. Sid. Time	02	28	16.95"			
H. Long	04	44	31.05"	$\theta = +0$	22	"
M. S. T	07	12	48.00"			
" " " M.N	10	52	08.33"			
Interval	20	20	39.67"			
Red		03	19.97"			
G. M. T.	20	17	19.70"	20.2888"		

From Naut. Alman.

Moon 20 ^h	02	05	35.46"	+17	33	0.2"
motion 1 ^m			2.3512"			+10.674"
" 17 ^m 3283"			40.74"	+3		05.0"
Tabular Place	02	06	16.20"	+17	36	05.2"

$$934 = 14.1"$$

Moon age 18^d

$$\begin{aligned}
 a &= -507.0 \\
 &+24.0 \\
 &-483.0
 \end{aligned}$$

Parallax	59	7.8"
Semi-dian	16	8.3"
R		968.3"
Aug		15.2"
Int 4		-0.4
R		983.1"
R		2.107.4"
1a R		-1018"
(1+a) R		2.005.6"
= R ²		4.022.4"

13306

Times etc.

3

Date Sept 4, 1917

Exp to Stars	02	22		02	34
" " Moon	02	27	44.9	02	27 45.2
Clock Slow			31.9		

71 Sec. Time	02	28	16.95
H. Long	04	44	31.05
M. S. T	07	12	48.00
" " " M.N	10	52	08.33
Interval	20	20	39.61
Red		03	19.91
G.M.T.	20	17	19.70

20.2888

From Naut. Alman.

Moon 20 ^h	02	05	35.46	+17	33	02
Moon 1 ^m			23.512			+10.674
" 17.3283			40.74		+3	05.0
Tabular Place	02	06	16.20	+17	36	05.2

934 = 14.1

Means age 18¹

$a = -507.0$
 $+24.0$
 -483.0

Parallax	59	7.8
Semi-dian	16	8.3
R		968.3
Aug		15.2
2R	4	-0.4
R		983.1
R		2.107.4
1a R		-1018
(1+a)/R		2.005.6
= R ²		4.022.4

13306

Plate Constants.

4.

$$\begin{array}{r} x \quad 19.1631 \\ \quad 19.1114 \\ x-y \quad + 0517 \end{array}$$

$$\begin{array}{r} 24.0681 \\ 24.2718 \\ - 2037 \end{array}$$

$$\begin{array}{r} 33.6452 \\ 34.3181 \\ - 6729 \end{array}$$

$$\begin{array}{r} y \quad 20.2500 \\ \quad 20.1953 \\ y-\eta \quad + 0547 \end{array}$$

$$\begin{array}{r} 31.0898 \\ 31.5820 \\ - 4922 \end{array}$$

$$\begin{array}{r} 4.1344 \\ 3.2570 \\ + 8774 \end{array}$$

$$\begin{array}{r} x-y \quad + 500x \\ + 0517 + 9581 = 10098 \\ - 2037 + 12034 = 9997 \\ - 6729 + 16823 = 10094 \\ 23.9136 + 11957 \end{array}$$

$$+ 61y$$

$$+ 123 = 10221$$

$$+ 189 = 10186$$

$$+ 35 = 10119$$

$$+ 103 \checkmark$$

$$+ 7x \quad - 10355$$

$$+ 134 = 10355$$

$$+ 168 = 10354$$

$$+ 236 = 10355$$

$$+ 167 \checkmark = 24.1008 \checkmark$$

$$\begin{array}{r} y-\eta \\ + 0547 + 10125 = 10672 \\ - 4922 + 15545 = 10623 \\ + 8.774 + 2067 = 10841 \\ 16.9045 + 8452 \end{array}$$

$$- 44x$$

$$- 84 = 10588$$

$$- 105 = 10518$$

$$- 148 = 10693$$

$$- 105 \checkmark$$

$$+ 65y \quad - 10720$$

$$+ 132 = 10720$$

$$+ 202 = 10720$$

$$+ 27 = 10720$$

$$+ 110 \checkmark = 16.6782 \checkmark$$

$$\begin{array}{r} \text{Table } a = -0.6 \quad e = -1.4 \quad a-e = +0.8 \\ - 507.0 \quad - 506.5 \quad - 0.5 \\ - 5064 \quad - 505.1 \quad - 1.3 \end{array}$$

$$\begin{array}{r} t+d = 0.0 \\ - 1.7 \\ - 1.7 \end{array}$$

13306

Plate Constants

4

$$\begin{array}{r} x \quad 19.1631 \\ s \quad 19.1114 \\ x-s \quad +0517 \end{array}$$

$$\begin{array}{r} 24.0681 \\ 24.2718 \\ -2037 \end{array}$$

$$\begin{array}{r} 33.6452 \\ 34.3181 \\ -1.6729 \end{array}$$

$$\begin{array}{r} y \quad 20.2500 \\ \gamma \quad 20.1953 \\ \gamma-y \quad +0547 \end{array}$$

$$\begin{array}{r} 31.0898 \\ 31.5820 \\ -4922 \end{array}$$

$$\begin{array}{r} 4.1344 \\ 32570 \\ +.8774 \end{array}$$

$$\begin{array}{r} x-s \quad +500x \\ +0517 + 9381 = 10098 \\ -2037 + 12034 = 9997 \\ -6729 + 10823 = 10094 \\ 239136 + 11957 \\ +6.1y \\ +123 = 10221 \\ +189 = 10186 \\ +25 = 10119 \\ +103 \\ +7x \quad -10355 \\ +134 = 10355 \\ +168 = 10359 \\ +236 = 10355 \\ +167 = 241008 \end{array}$$

$$\begin{array}{r} f-y \\ 0547 + 10125 = 10672 \\ 4922 + 15545 = 10623 \\ 8774 + 2067 = 10841 \\ 169045 + 8452 \\ -4.4x \\ -84 = 10588 \\ -105 = 10508 \\ -148 = 10693 \\ -105 \\ +6.5y \quad -10720 \\ +132 = 10720 \\ +202 = 10720 \\ +27 = 10720 \\ +110 = 166782 \end{array}$$

$$\begin{array}{r} \text{Zatler } a = -0.6 \quad b = -1.4 \quad c = +0.8 \quad A+d = 0.0 \\ -507.0 \quad -506.5 \quad -0.5 \quad -1.7 \end{array}$$

18306

Mass Center

5-

 $\Delta X = 0$

D-C

1	25.0000	+1.0860	1.1794	40230	+	6
2	25.7028	+1.7888	3.1998	40172	-	52
3	25.9207	+2.0067	4.0268	4.0268	+	44
4	25.5922	+1.6782	2.8164	40178	-	46
5	25.0000	+1.0860	1.1794	40203	-	21
6	24.0000	+0.0860	0.0070	4.0262	+	38
7	23.9140	0.0000	0.0000	4.0349	+	125
8	23.4148	-0.4992	0.2492	40256	+	32
			26580	4.0224		

 Δy

ave

1	15.2178	-1.6862	-1	2.8436
2	16.0000	-0.9040	-1	0.8174
3	16.9040	0.0000	0	0.0000
4	18.0000	+1.0960	+1	1.2014
5	18.5894	+1.6854	+1	2.8409
6	18.9088	+2.0048	+1	4.0192
7	18.9127	+2.0087	+1	4.0349
8	18.8472	+1.9432	+1	3.7764

-14

Range 161

 $Y = 25$ $y =$

15.2178

18.5894

33.8072

16.9036

18.9127

2.0091

2.0056

25.9207

23.9116

 X_{max} X_0 Mass Center X_0 23.9140 Y_0 16.9036

18306

Moon Center

5-

 $\Delta A = 0$

O-C

1	25.0000	+1.0860	1.1794	40230	+	6
2	25.7028	+1.7888	3.1998	40172	-	5.2
3	25.9207	+2.0067	4.0268	40268	+	4.4
4	25.5922	+1.6782	2.8164	40178	-	4.6
5	25.0000	+1.0860	1.1794	40203	-	2.1
6	24.0000	+0.0860	0.0070	40262	+	3.8
7	23.9140	0.0000	0.0000	40349	+	12.5
8	23.9148	-0.4992	0.2492	40256	+	3.2
				4.1224		

		Δy		ave	
1	15.2178	-1.6862	-1	2.8436	14.7
2	16.0000	-0.9040	-1	0.8174	11.7
3	16.9040	0.1000	0	0.0000	9.8
4	18.0000	+1.0960	+1	1.2014	5.7
5	18.5894	+1.6854	+1	2.8409	3.3
6	18.9088	+2.0048	+1	4.0192	2
7	18.9122	+2.0087	+1	4.0349	0
8	18.8472	+1.9432	+1	3.7764	-1.4
					Range 16.1

$y = 25$	y_0	15.2178
		18.5894
		33.8072
	y_0	16.9036
	y_{max}	18.9127
	R	2.0091
	Com R	2.0056
	x_{max}	25.9207
	x_0	23.9116

Moon Center x_0 23.9140 y_0 16.9036

	9.7				
1	- 1.84	+	6.5	-	10.1
2	- 1.62	-	93.3	+	46.8
3	0.00	+	88.4		0.0
4	+ 1.85	-	77.3	-	50.6
5	+ 1.83	-	22.8	-	35.3
6	+ 0.18	+	3.4	+	76.0
7	0.00		0.0	+	251.2
8	- 0.97	-	16.0	+	62.0
	<u>+ 3.86</u>		<u>+ 98.3</u>		<u>+ 436.0</u>
	<u>- 4.43</u>		<u>- 209.4</u>		<u>- 96.0</u>
	- 0.57		- 111.1		+ 340.0

13306

Conditional Equations

6.

1	+1.09	-1.69 = +6	-9	-29 = -38	-44
2	+1.79	-0.90 = -52	-14	-15 = -29	-23
3	+2.01	0.00 = +44	-16	0 = -16	+60
4	+1.68	+1.10 = -46	-13	+19 = +6	-52
5	+1.09	+1.68 = -21	-9	+29 = +20	-41
6	+0.09	+2.00 = +38	-1	+34 = +33	+5
7	0.00	+2.01 = +125	0	+34 = +34	+91
8	-0.50	+1.94 = +32	+4	+33 = +37	-5

+156 - 165

or 40

$$+12.58 - 0.57 = -111.1$$

$$-0.57 + 19.53 = +340.0$$

$$+1 - 0.03 = -5.0$$

$$+19.5 = +335.0 \quad \text{or } +17.2$$

$$+12.58 = -111.1 + 9.8 = -101.3 \quad \text{or } -8.1$$

arc 161

$$P_n = .23^\circ$$

$$\frac{\Sigma K}{n} = -1.1^\circ$$

$$\frac{-1.1}{23} = -4.8^\circ$$

$$\Delta R = -0.06^\circ$$

13306

Conditional Equations

6.

1	+1.09	-1.69	= +6	-9	-29	= -38	-44
2	+1.79	-0.90	= -52	-14	-15	= -29	-23
3	+2.01	0.00	= +44	-16	0	= -16	+60
4	+1.68	+1.10	= -46	-13	+19	= +6	-52
5	+1.09	+1.68	= -21	-9	+29	= +20	-41
6	+0.09	+2.00	= +38	-1	+34	= +33	+5
7	0.00	+2.01	= +125	0	+34	= +34	+91
8	-0.50	+1.94	= +32	+4	+33	= +37	-5

+156 - 165

or 40

$$+12.58 - 0.57 = -111.1$$

$$-0.57 + 19.53 = +340.0$$

$$+1 - 0.8 = -5.0$$

$$+19.5 = +335.0$$

$$L = +17.2$$

$$+12.58 = -111.1 + 9.8 = -101.3$$

$$G = -8.1$$

arc 161

$$f_n = 23$$

$$\frac{\Sigma K}{n} = -1.1$$

$$\frac{-1.1}{2.3} = -0.48$$

$$\Delta R = -0.06$$

13306

Mean Position

7.

$$X_0 \quad 2391.40''$$

$$- 4''$$

$$2391.36''$$

$$Y_0 \quad 16.9136''$$

$$+ 9''$$

$$16.9045''$$

From Plate Constants.

$$24.1008''$$

$$22.$$

$$+ 2.1008''$$

$$0.32239''$$

$$9.98018''$$

$$8.50724''$$

$$1.83497''$$

$$16.6782''$$

$$18.$$

$$- 1.3218''$$

$$9.4903''$$

$$0.6448''$$

$$7.0534''$$

$$7.1885''$$

$$A \quad + 01 \quad 08.39''$$

$$02 \quad 04 \quad 46.57''$$

$$+ 0.0015''$$

$$- 1.3233''$$

$$\alpha_0 \quad 02 \quad 05 \quad 54.96''$$

$$0.12166''$$

$$7.33115''$$

$$\text{Red.} \quad 4.19''$$

$$2.79051''$$

$$x' \quad 02 \quad 05 \quad 59.15''$$

$$- 617.3$$

$$- 10 \quad 17.3''$$

$$E = +17 \quad 21 \quad 0.8''$$

$$\delta_0 \quad +17 \quad 10 \quad 43.5''$$

$$\text{Red} \quad + 21.4''$$

$$\delta' \quad +17 \quad 11 \quad 04.9''$$

13306

Mean Mean Position

7.

$$\begin{array}{r} X_0 \quad 239140 \\ \quad \quad - 4 \\ \hline 239136 \end{array}$$

$$\begin{array}{r} Y_0 \quad 10.9136 \\ \quad \quad + 9 \\ \hline 10.9045 \end{array}$$

From Plate Constants.

$$\begin{array}{r} 24.1008 \\ 22. \\ \hline + 2.1008 \end{array}$$

$$\begin{array}{r} 16.6782 \\ 18. \\ \hline - 1.3218 \end{array}$$

$$\begin{array}{r} 0.32239 \\ 9.98018 \\ 8.50729 \\ 1.83497 \end{array}$$

$$\begin{array}{r} 9.4903 \\ 0.6448 \\ 7.0534 \\ 7.1885 \end{array}$$

$$\begin{array}{r} + 01 \quad 08.39 \\ A \quad 02 \quad 04 \quad 46.57 \end{array}$$

$$\begin{array}{r} + 0.0015 \\ - 1.3233 \end{array}$$

$$X_0 \quad 02 \quad 05 \quad 54.96$$

$$\begin{array}{r} 0.12166 \\ 7.33115 \\ 2.79051 \end{array}$$

$$\text{Red.} \quad 4.19$$

$$X' \quad 02 \quad 05 \quad 59.15$$

$$- 617.3$$

$$\begin{array}{r} -10 \quad 17.3 \\ E = +17 \quad 21 \quad 0.8 \end{array}$$

$$J_0 \quad +17 \quad 10 \quad 43.5$$

$$\text{Red} \quad +21.4$$

$$S' \quad +17 \quad 11 \quad 09.9$$

13306

Lunar Parallax.

8

α' 02 05 59.15"
 δ 02 28 16.95"
 $\delta - \alpha'$ + 22 17.80
 $=$ 50 34 27.00"
 $\frac{1}{2} \alpha - \alpha'$ 02 13.73"
 $\delta - \alpha' - \frac{1}{2} \alpha - \alpha'$ 5 32 13.27"

Π 59 07.8"
 9.86913
 8.2355-1"
 8.98737"
 0.02082"
 7.11283"

9.95727"
 0.00000
 0.00203"
 9.95930

$\alpha - \alpha'$ +4 27.46"
 = +17.83"

γ 42 19 09.2"
 δ' +17 11 04.9"
 $\gamma - \delta'$ 25 08 04.3"

9.82640
 8.2355-1"
 9.62813"
 0.17182"
 7.86186"

$\delta - \delta'$ 25 0.7"

δ +17 36 05.6"

$\delta - \delta'$ +17 36 05.2"

$O - C$ +0.4"

curr. +1.3"

2nd Quad. Ref. +0.1

δ +17 36 07.0

$O - C =$ +1.8

α 02 06 16.98"

$\delta - \alpha$ 02 06 16.20"

$O - C$ +0.78"

curr. -0.08"

α 02 06 16.90

$O - C =$ +0.70

13306

Lunar Parallax.

8

α' 02 05 59.15"
 δ' 02 28 16.95"
 $6-\alpha'$ + 22 17.80
 α 05⁰⁰ 39 27.00
 $\frac{1}{2}\alpha-\alpha'$ 02 13.73
 $6-\delta'-\frac{1}{2}\alpha-\alpha'$ 5 32 13.27

Π 59 07.8
 986913
 823551"
 898737
 002082
 711283

995727
 000000
 000203
 995930

$\alpha-\alpha'$ +4 27.46"
 = +17.82

γ 42 19 09.2
 δ' +17 11 04.9
 $\gamma-\delta'$ 25 08 04.3

982640
 823551
 962813
 017182
 786186

$\delta-\delta'$ 25 0.7

δ +17 36 05.6
 $\gamma-\delta$ +17 36 05.2

$0-c$ +0.4

Circ. +1.3

3^{rd} Circ Ref +0.1

δ +17 36 07.0

$0-c$ +1.8

α 02 06 16.98"

$\gamma-\alpha$ 02 06 16.20

$0-c$ +0.78

Circ. -0.08

α 02 06 16.90

$0-c$ +0.70

1
13.4
11.
2
19.
23.
3
32.
18.3
1
15.
24.
2
25.
14.
3
26.
14.
10.

12319

Star Measures -

11

1	1 9 7 3 2	1 6 8 6 0	1 9 8 8 2	1 6 9 9 2
134	1 6 3 7 0	1 0 2 2 5 24	1 2 9 7 8 76	1 3 8 9 6
11.7	7 0	2 3	7 4	9 6
	3 2	6 0	8 2	9 2
	<u>13.9362</u>	<u>13.3364</u>	<u>11.6906</u>	<u>11.6904</u>
2	1 7 1 1 0	1 6 5 5 0	1 7 7 0 3	1 6 6 6 0
195	1 2 5 7 0	1 1 1 0 2 98	1 1 9 0 0 03	1 2 4 5 9
23.6	7 0	9 4	0 6	5 4
	1 0	5 0	0 3	6 0
	<u>19.4540</u>	<u>19.4548</u>	<u>23.5800</u>	<u>23.5794</u>
3	1 6 4 7 8	1 6 6 6 8	1 6 7 6 2	1 6 1 2 0
325	1 1 3 2 0	1 1 8 2 0	1 2 8 5 8 60	1 0 0 4 0 38
18.3	2 0	2 0	6 2	3 6
	7 8	6 8	6 2	2 0
	<u>32.5158</u>	<u>32.5152</u>	<u>18.3902</u>	<u>18.3918</u>

Moon -

1	1 7 6 2 0	1 7 3 9 2
15	9 6 6 0	1 5 3 4 0 42
24.9	6 0	4 4
	2 0	9 2
	<u>24.7960</u>	<u>24.7950</u>

2	1 6 0 3 3	1 6 1 4 0
25.0	7 8 9 2	1 4 2 7 8 80
14.9	9 4 93	8 2
	3 3	4 0
	<u>14.8140</u>	<u>14.8140</u>
3	1 6 3 7 0	1 6 7 8 3
26.2	1 2 0 7 0 66	1 1 0 9 3
14.5	6 2	9 3
	7 0	8 3
	<u>14.4304</u>	<u>14.4310</u>

1
13.4
11.
2
19.
23.
3
32.
18.3
1
15
24.
2
25
14.
3
26
14.

12319

Star Measure.

11

L	19732	16860	19882	16992
134	16370	10225 ²⁹	12978 ⁷⁶	13896
11.7	70	23	74	96
	32	60	82	92
	<u>13.9262</u>	<u>133364</u>	<u>116906</u>	<u>116904</u>

3	17110	16550	17703	16660
19.5	12570	11102 ⁹⁸	11900 ⁰³	12459
23.6	70	99	06	54
	10	50	03	60
	<u>194540</u>	<u>194548</u>	<u>235800</u>	<u>235794</u>

3	16478	16668	16762	16120
32.5	11320	11820	12848 ⁶⁰	10040 ³⁴
18.3	20	20	62	36
	78	68	62	20
	<u>32.5158</u>	<u>32.5152</u>	<u>183902</u>	<u>183918</u>

Moon.

L	17620	17392
15	9660	15340 ⁴²
24.9	60	44
	20	92
	<u>247960</u>	<u>247950</u>

3	16033	16140
25.0	789 ²	14278 ⁸⁰
14.9	94 ⁹³	82
	33	40
	<u>148140</u>	<u>148140</u>

3	16370	16783
26.2	12070 ⁶⁶	11093
14.5	62	43
	70	83
	<u>144304</u>	<u>144310</u>

2
1
2
1
Z
270
16
8
2
1

12319

4

27.

14.8

Thou Measure

12

16806

16864

10250

1341216

50

20

06

64

14.6556

14.6552

5

17858

16808

27.4

1333032

1130914

15.0

34

19

58

08

- 27.4526 27.4506

6

16244

16234

27.9

691416

1555860

16.0

18

62

44

34

27.9328 27.9326

7

16260

16950

27.9

6730

1647276

16.2

30

80

60

50

27.9530 27.9526

8

16340

16508

27.9

8398

14460

17.0

98

5256

40

08

27.7942 27.7948

12319

4

.7.

4.8

Moon Measure

12

16806

16864

10250

1241216

50

20

06

64

14.655614.6552

5

17258

16808

27.4

1333032

1130914

15.0

34

19

58

08

- 27.4526 27.4506

6

16244

16234

27.9

691416

1555860

16.0

18

62

44

34

27.9328 27.9326

2

16260

16950

19

6730

1697276

16.2

30

80

60

50

27.9530 27.9526

8

16340

16508

27.9

8398

14460

17.0

98

5256

40

08

27.7942 27.7948

12319

Jimm Etc

13

Date of Plate. Feb 6, 1917 ✓

Exp. & Stars 09 18 ✓

" " Moon 09 23 4 4.7 ✓

Clock fast 13 39.3 ✓

09 30 ✓

09 23 4 4.9 ✓

H. Sid. Time 09 10 05.50 ✓

H. Long 04 44 31.05 ✓

 $\theta = -10^m$

G. Sid Time 13 54 36.55 ✓

" " " M.N 21 04 11.70 ✓

Interval 16 50 24.85 ✓

Red 02 45.53 ✓

G. M.T. 16 47 39.32 ✓

16.479426 ✓

From Naut. Almanac R.A.

Moon 16.4 09 18 53.81 ✓

Dec

+13 03 28.6 ✓

Motion 1" 1.8756 ✓

-11.262 ✓

" 47.6553 ✓

01 29.38 ✓

-08 56.7 ✓

Tabular Place 9 20 23.19 ✓

+12 54 31.9 ✓

 $934'' = 13.6''$

Moon age 15.4

 $a = -50.3.6$

+24.0

-479.0

Parallax 53 59.0 ✓

Semi-diam 14 44.2 ✓

R 884.2 ✓

Ang 12.2 ✓

Gr 3 -0.5 ✓

R 895.9 ✓

R 1920.5 ✓

a R -4921 ✓

(1+a)R 1.8284 ✓

R2 3.3430 ✓

12319

Junes etc

13

Date of Plate Feb 6, 1917

Exp & Stars 09 18

09 30

Moon 09 23 44.7

09 23 44.9

Clock fast 13 39.3

H Sid Time 09 10 55.50

H Long 04 44 31.05

G - - 1.0^m

H Sid Time 13 54 36.55

" " " M.N 21 04 11.70

Interval 16 50 24.85

Red 02 45.53

G.M.T. 16 47 39.32

16.479425

Trans Mount. Almanac

R.A.

Dec

Moon 16 L 09 18 53.81

+13 03 28.6

Motion 1^m

1.8756

8 11.262

" 47.6553

01 29.38

08 56.7

Tabular Place 9 20 23.19

+12 54 31.9

9.34" = 13.6

Moon age 15.4

a = -50 3.6

+24.0

-47.90

Parallax 53 59.0

Semi diam 14 44.2

R 884.2

Ang 12.2

Irr 3 -0.5

R 89.5.9

R 1920.5

a R -9.21

Irrant 1.8284

R2 3.3430

S	η	ΔS	$-3S$	-5η	-2
-9.03	-6.62	-28	+27 = -1	+3 = +2	
-2.55	+5.86	-3	+8 = +5	-3 = +2	
+11.14	+0.31	+36	-33 = +3	-0 = +3	
Σ +44.2	-1.86		-13	+1	= -14 = -0.05

$\Delta\eta$	-2η	$-4S$	$+4$
-21	+13 = -8	+4 = -4	
+6	-12 = -6	+1 = -5	
+1	-1 = 0	-4 = -4	
	+4	-2 = +6	= +0.3

12319

Standard Coordinates

14

Cape No. 1279 mag 6.3 Cape No. 1285 mag 6.6 Cape No. 1298 mag 6.9

C	09	12	25.89	9	15	50.99	9	23	08.11
E			25.90			50.91			08.10
q			25.91			50.99			08.08
m	09	12	25.90	9	15	50.96	9	23	08.10
prec			55.39			55.81			55.48
a	09	13	21.29	9	16	46.77	9	24	02.58
A	09	18	08.23	9	18	08.23	9	18	08.23
α.A	-	4	46.94	-	1	21.46	+	5	55.35
sin "		-	286.92		-	81.46		+	355.29
log "			2.45776m			1.91094m			2.55059
" log s			9.99064			9.98789			9.98916
" log s ₀			0.95564m			0.40607m			1.04699
S ₀	-		9.0290	-		2.5472	+		11.1426
S ₁	-		28	-		2			+35
S			12.9682			19.4526			33.1461
X			13.3363			19.4544			32.5155
X-S			+3.681			+0.018			-6.306
C	+11	55	12.4	+13	32	16.4	+12	49	16.6
E			11.4			16.0			16.4
q			12.3			17.1			15.8
m	+11	55	12.0	13	32	16.5	12	49	16.3
prec		-04	14.4		-04	17.5		-04	24.5
S	+11	50	57.6	13	27	59.0	12	44	51.8
D		12	42	12	42	25.0	12	42	25.0
S-D	-		51	+	45	34.0	+	2	26.8
log "		-	3087.7	+		2734.1	+		146.8
log "			3.48964m			3.43682			2.16673
" log s ₀			0.82079m			0.76797			9.49788
log S			9.3125			9.3671			9.3545
S ₀ ²			19113			0.8121			20940
η ₁			82772			72326			8.5019
η ₀	-		6.6190	+		5.8610	+		0.3147
η ₁	+		0.0189			0.0017			0.0318
η			11.3999			23.8627			18.3465
q			11.6905			23.5797			18.3910
q-m			+2906	-		2830	+		0445

12319

Standard Coordinates

14

Cape No 1274 mag 6.3 Cape No. 12745 mag 6.6 Cape No 1278 mag 6.9

C	09	12	25.89	9	15	50.99	9	23	08.11
E			25.90			50.91			08.10
L			25.91			50.99			08.08
m	09	12	25.90	9	15	50.96	9	23	08.10
Puc			55.39			55.81			55.48
a	09	13	21.29	9	16	46.77	9	24	03.58
A	09	18	08.23	9	18	08.23	9	18	08.23
X.A	-	4	46.94	-	1	21.46	+	5	55.35
Sm		-	286.92		-	81.46		+	355.29
log			2.45776m			1.91094m			2.55059
log			999.064			998.789			998.916
log			0.95564m			0.40607m			1.04699
S.	-		9.0290	-		2.5472	+		11.1426
S.	-		28	-		2			+35
S			12.9682			19.4526			83.1461
X			13.3363			19.4544			32.6555
X-S			+3.681			+0.018			-6.306

C	+11	55	12.4	+13	32	16.4	+12	49	16.6
E			11.4			16.0			16.4
L			12.3			17.1			15.8
m	+11	55	12.0	13	32	16.5	12	49	16.3
Puc	-	04	14.4	-04		17.5	-04		24.5
S	+11	50	57.6	13	27	59.0	12	44	51.8
E	12	42	25.0	12	42	25.0	12	42	25.0
S-D	-	51	27.9	+	45	34.0	+	2	26.8
log		-	3087.7	+		2734.1	+		196.8
log			3.48964m			3.43682			2.16673
log			0.82079m			0.76797			9.49788
log			9.3125			9.3671			9.3545
S.			1.9113			0.8121			2.0940
m			8.2772			7.2326			8.5019
log	-		6.6190	+		5.8610	+		0.3147
log	-		0.0189			0.0017			0.0318
log			1.13999			23.8627			18.3465
log			11.6905			23.5797			18.3910
log			+2.906			-2.830			-0.445

+
+
-
2

+
-
+
10

12319

Plate Center + Constants

15

19.4544	23.5797	9	16	46.77	13	27	59.0
22.	18.		+01	21.46		-45	34.0
+ 2.5456	-5.5797						
<u>32^s</u>	<u>490</u>						
+ 81.46							

Plate Center A=9 18 08.23

D=+12 42 25.0

X-S	+500X		+49.44		+3.6X	-10974
+3681	+6668	= 10349	+577	= 10926	+48	= 10974
+0018	+9727	= 9745	+1162	= 10907	+67	= 10974
-6306	+16258	= 9952	+907	= 10859	+116	= 10975
26.1244	+13062		+804		+94	= 26.4230

Y-7	+500Y		-49.0X		+7.5Y	-8184
+2906	+5845	= 8751	-654	= 8097	+87	= 8184
-2830	+11790	= 8960	-953	= 8007	+177	= 8184
+0445	+9195	= 9640	-1594	= 8046	+138	= 8184
16.2577	+8129		-1279		+122	= 16.1365

Tables	a=0	l=-1.2	a-l=	+1.2	t+d=0
Obs.	-503.6	-507.5		+3.9	-0.4
	-503.6	-506.3		+2.7	-0.4

2

16

12319

Plate Center + Constants

15

19.4544	23.5797	9	16	46.77	13	27	59.0
22.	18.			+0.1	21.46	-45	34.0
+ 2.5456	-5.5797						
<u>32^s</u>	<u>490</u>						
+ 81.46							

Plate Center A = 9 18 08.23

D = +12.42 25.0

X-S	+500X		+49.44		+36X	-10974
3681 + 6668	= 10349	+ 5.77	= 10926	+ 48	= 10974	
0018 + 9727	= 9745	+ 1162	= 10907	+ 67	= 10974	
6306 + 16258	= 22564	+ 907	= 10859	+ 116	= 10975	
26.1244 + 13062		+ 804		+ 94	= 26.4230	

Y-Y	+500Y		-49.0X		+7.5Y	-8184
2906 + 5845	= 8751	- 654	= 8097	+ 87	= 8184	
2830 + 11740	= 14570	- 953	= 13617	+ 177	= 13794	
0945 + 9195	= 10140	- 1594	= 8546	+ 138	= 8684	
16.2577 + 8129		- 1279		+ 122	= 16.1365	

Table	a = 0	l = 1.2	g-l = +1.2	b+d = 0
Ans.	-5036	-507.5	+3.9	-0.4

12319

Moon Center

16

0-e

1	24.7955	-1.3285	0	1.7649	3.3527	+97
2	25.0000	-1.1240	0	1.2634	3.3546	+116
3	26.1240	0.0000	0	0.0000	3.3470	+40
4	27.0000	+0.8766	0	0.7674	3.3428	-2
5	27.4516	+1.3276	0	1.7625	3.3503	+73
6	27.9327	+1.8087	0	3.2714	3.3590	+160
7	x 27.9528	+1.8288	0	3.3446	3.3446	+16
8	27.7945	+1.6705	0	2.7905	3.3383	-47
				R ²	3.3430	

arc

1	15.0000	-1.2600	-1	1.5878	226°
2	14.8140	-1.4460	-1	2.0912	218°
3	y 14.4307	-1.8293	-2	3.3470	180°
4	14.6554	-1.6046	-2	2.5754	151°
5	15.0000	-1.2600	-1	1.5878	133°
6	16.0000	-0.2608	0	0.0676	98°
7	16.2600	0.0000	0	0.0000	90°
8	17.0000	+0.7400	+1	0.5478	66°

Range 160°

$$y = 15 \quad x = 24.7955$$

$$27.4516$$

$$5 \quad 2.2471$$

$$x_0 \quad 26.1235$$

$$x_{max} \quad 27.9528$$

$$R \quad 1.8293$$

$$\cos R \quad 1.8284$$

$$y_{min} \quad 14.4307$$

$$y_0 \quad 16.2600$$

X0 26.1240

Moon Center

y0 16.2600

12319

Moon Center

16

0-E

1	24.7955	-1.3285	0	1.7649	3.3527	+ 97
2	25.0000	-1.1240	0	1.2634	3.3546	+ 116
3	26.1240	0.0000	0	0.0000	3.3470	+ 40
4	27.0000	+0.8760	0	0.7674	3.3428	- 2
5	27.4516	+1.3276	0	1.7625	3.3503	+ 73
6	27.9327	+1.8087	0	3.2714	3.3590	+ 160
7	27.9528	+1.8288	0	2.3446	3.3446	+ 16
8	27.9945	+1.6705	0	2.7905	3.3383	- 47
				22	3.3430	

1	15.0000	-1.2600	-1	1.5878	226
2	14.8140	-1.4460	-1	2.0912	218
3	14.4307	-1.8293	-2	3.3470	150°
4	14.6554	-1.6046	-2	2.5754	151
5	15.0000	-1.2600	-1	1.5878	133
6	16.0000	-0.2600	0	0.0676	98
7	16.2600	0.0000	0	0.0000	90°
8	17.0000	+0.7410	+1	0.5478	66

Range 160

$x_0 = 15$ $x = 24.7955$
 $y_0 = 16$ $y = 27.4516$
 $z_0 = 0$ $z = 2.2471$
 $x_0 = 26.1235$
 $x_{max} = 27.9528$
 $R = 1.8293$
 $com R = 1.8284$
 $y_{min} = 14.4307$
 $y_0 = 16.2600$

Moon Center

 $x_0 = 26.1240$ $y_0 = 16.2600$

$$\begin{array}{r}
 1 \quad + 1.67 \\
 2 \quad + 1.62 \\
 3 \quad 0.00 \\
 4 \quad - 4.44 \\
 5 \quad - 1.67 \\
 6 \quad - 0.47 \\
 7 \quad 0.00 \\
 8 \quad + 1.23 \\
 \hline
 + 4.52 \\
 - 35.5 \\
 \hline
 + 0.97
 \end{array}$$

$$\begin{array}{r}
 - 129.0 \\
 - 130.0 \\
 \quad 0.0 \\
 - 1.8 \\
 + 97.2 \\
 + 290.0 \\
 + 29.3 \\
 - 78.5 \\
 \hline
 + 416.5 \\
 - 339.3 \\
 \hline
 + 77.2
 \end{array}$$

$$\begin{array}{r}
 - 122.4 \\
 - 168.0 \\
 - 73.2 \\
 + 3.2 \\
 - 92.0 \\
 - 41.5 \\
 \quad 0.0 \\
 - 34.8 \\
 \hline
 + 3.2 \\
 - 531.9 \\
 \hline
 - 528.7
 \end{array}$$

1	2	3	1	9
---	---	---	---	---

Conditional Equations

17

0-2

1	-1.33	-1.26 = +	97	-11	+56 = +45	+52
2	-1.12	-1.45 = +	116	-9	+61 = +52	+64
3	0.00	-1.83 = +	40	0	+84 = +84	-44
4	+0.88	-1.60 = -	2	+7	+73 = +80	-78
5	+1.33	-1.26 = +	72	+11	+57 = +68	+5
6	+1.81	-0.26 = +	160	+15	+12 = +27	+133
7	+1.83	0.00 = +	16	+15	0 = +15	+1
8	+1.67	+0.74 = -	47	+14	-34 = -20	-27

$$+ 4.96 + 0.97 = + 77.2$$

$$+ 0.97 + 11.80 = -528.7$$

$$-() = 0.06 = \dots 5.0$$

$$+ 11.74 = -533.7$$

$$k = -4 \quad 5 \quad 4 \quad 4$$

$$+14.96 = +77.2 + 44.4 = +121.6$$

$$a \pm \frac{1}{8}$$

avg 160

$$\frac{p}{n} = .22^v$$

$$\frac{\Sigma V}{n} = +13.2 \checkmark$$

$$\frac{+13.2}{22} = +60.$$

$$\Delta R = +0.7^{\circ}$$

12319

Conditional Equations

17

		O-C		
-1.33	-1.26 = + 97	-11	+ 56 = +45	+ 52
-1.12	-1.45 = + 116	-9	+ 61 = +52	+ 64
0.00	-1.83 = + 40	0	+ 84 = +84	- 44
+0.58	-1.60 = - 2	+7	+ 73 = +80	- 78
+1.33	-1.26 = + 73	+11	+ 57 = +68	+ 5
+1.81	-0.26 = +160	+15	+ 12 = +27	+133
+1.83	0.00 = + 16	+15	0 = +15	+ 1
+1.67	+0.74 = - 47	+14	-34 = -20	- 27
			+ 285	- 149
			av	52

$$-14.96 + 0.97 = + 77.2$$

$$+ 0.97 + 11.80 = - 528.7$$

$$- (1) - 0.06 = - 5.0$$

$$+ 11.74 = - 533.7$$

$$L = - 454$$

$$+ 14.96 = + 77.2 + 44.4 = + 121.6$$

$$C = + 8.1$$

$$O-C 160$$

$$\frac{O}{n} = 22$$

$$\frac{C}{n} =$$

$$\frac{L}{n} = + 13.2$$

$$\frac{+ 13.2}{- 2} = + 6.0$$

$$DR = + 0.7$$

12319

Moon's Mean Position

18

$$\begin{array}{r} X_0 \quad 26.1240'' \\ \quad \quad + 4'' \\ \hline 26.1244'' \end{array}$$

$$\begin{array}{r} Y_0 \quad 16.2600'' \\ \quad \quad - 23'' \\ \hline 16.2577'' \end{array}$$

From Plate Constants

$$\begin{array}{r} 26.4230'' \\ \quad \quad 22'' \\ \hline + 4.4230'' \end{array}$$

$$\begin{array}{r} 16.1365'' \\ \quad \quad 18'' \\ \hline - 1.8635'' \end{array}$$

$$\begin{array}{r} 0.64572'' \\ 9.98964'' \\ 8.50724'' \\ 2.14884'' \end{array}$$

$$\begin{array}{r} 9.3440'' \\ 1.2914'' \\ 7.1534'' \\ 7.6888'' \end{array}$$

$$\alpha - A = + 02 \quad 20.88''$$

$$A \quad 9 \quad 18 \quad 08.23''$$

$$\alpha_0 \quad 9 \quad 20 \quad 29.11''$$

$$\text{Red} \quad \quad \quad + 2.84$$

$$\alpha' \quad 9 \quad 20 \quad 31.95''$$

$$\eta \quad + 0.0049''$$

$$\eta_0 \quad - 1.8684''$$

$$0.27147''$$

$$7.33115''$$

$$2.94032''$$

$$S - S_0 = - 871.6''$$

$$- 14 \quad 31.6''$$

$$D = + 12 \quad 42 \quad 25.0''$$

$$S_0 \quad + 12 \quad 27 \quad 53.4''$$

$$\text{Red} \quad \quad \quad - 11.4$$

$$\delta' \quad + 12 \quad 27 \quad 42.0''$$

12319

Means Mean Position

18

$$\begin{array}{r} X_0 \quad 26.1240 \\ \quad \quad + 4 \\ \hline 26.1244 \end{array}$$

$$\begin{array}{r} Y_0 \quad 16.2600 \\ \quad \quad - 23 \\ \hline 16.2577 \end{array}$$

From Plate Constants.

$$\begin{array}{r} 26.4230 \\ \quad \quad 22. \\ \hline + 4.4230 \end{array}$$

$$\begin{array}{r} 16.1365 \\ \quad \quad 18 \\ \hline - 1.8635 \end{array}$$

$$\begin{array}{r} 0.64572 \\ 998964 \\ 850724 \\ 2.14884 \end{array}$$

$$\begin{array}{r} 9.3440 \\ 12914 \\ 71534 \\ 76888 \end{array}$$

$$\begin{array}{r} \alpha - A = + 02 \quad 20.88 \\ A \quad 9 \quad 18 \quad 08.23 \end{array}$$

$$\begin{array}{r} m. + 0.0049 \\ m_0 - 1.8684 \end{array}$$

$$\alpha_0 \quad 9 \quad 20 \quad 29.11$$

$$\text{Red} \quad \quad \quad + 2.84$$

$$\begin{array}{r} 0.27147 \\ 733115 \\ 2.94032 \end{array}$$

$$\alpha' \quad 9 \quad 20 \quad 31.95$$

$$S - E = - 871.6$$

$$\begin{array}{r} -19 \quad 31.6 \\ D = +12 \quad 42 \quad 25.0 \end{array}$$

$$S_0 \quad +12 \quad 27 \quad 53.4$$

$$\text{Red} \quad \quad \quad - 11.4$$

$$S' \quad +12 \quad 27 \quad 42.0$$

$$\begin{array}{r}
 9 \quad 10 \quad 05.576 \\
 \underline{02.860} \\
 + 2.716 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 + 2 \quad 39 \quad 43.85 \\
 \underline{54.55} \\
 - 10.70 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 9 \quad 14 \quad 24.064 \\
 \underline{21.132} \\
 + 2.932 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 18 \quad 3 \quad 17.48 \\
 \underline{28.33} \\
 - 10.85 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 9 \quad 27 \quad 31.270 \\
 \underline{28.442} \\
 + 2.823 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 11 \quad 39 \quad 53.30 \\
 \underline{40 \quad .489} \\
 - 11.59 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2932 \\
 \underline{2823} \\
 .109
 \end{array}$$

$$\begin{array}{r}
 2.861 \\
 \underline{2.710} \\
 .145
 \end{array}$$

$$\begin{array}{r}
 11.59 \\
 \underline{10.85} \\
 .74 \\
 .25
 \end{array}$$

37

52

27

22

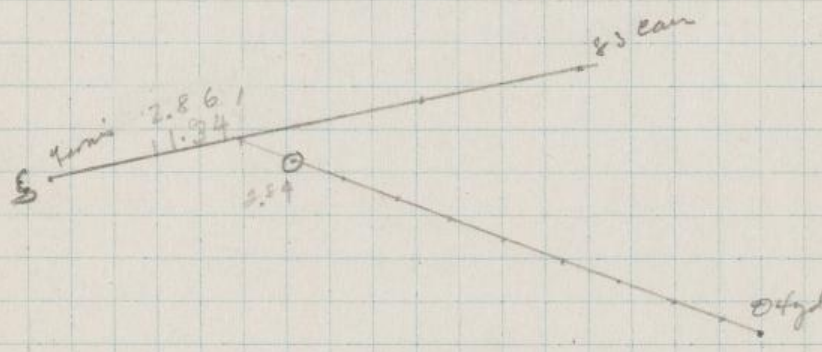
17

12

7

2

-3



30 28 26 24 22 20 18 16 14 12 10

q

12319

19

Reduction to Apparent Place

$H + \alpha'$ 6 18.8 94° 42'
 H 20 3-8.3
 α_0 9 20.5
 G 22 46.0
 $G + \alpha_0$ 8 06.5 121° 37.5

δ_0 12° 27.9

$\cos \delta_0$ 9.9896
 $\log l$ 0.7812 ~
 l (1) ~

$\cos \beta + \alpha_1$ 9.7196 ~
 q 0.9830
 $\sin G + \alpha_0$ 9.9302
 $\tan \delta_0$ 9.3441
 8.8239

$\sin \delta_0$ 9.3341
 $\cos H + \alpha_0$ 8.9135 ~
 h 1.2913
 $\sin H + \alpha_0$ 9.9985
 $\sec \delta_0$ 0.0104
 8.8239

q' 0.7026 ~
 q 9.0812

$\log h$ 9.5389 ~
 h 0.1239

A +1.390
 q +0.121
 A +1.330

 Red. +2.841

q' -3.042
 q' -0.346
 i' -6.043

 Red. -11.431

12319

19

Reduction to Apparent Place

$H + \alpha$ 6 18.8 94° 42'
 H 20 5.8.3
 α_0 9 20.5
 G 22 46.0
 $G + \alpha_0$ 8 06.5 121° 37.5

δ_0 12° 27.9
 $\cos \delta_0$ 99896
 $\log i$ 0.7812 ~
 $"(i)$ ~

$\cos G + \alpha_0$ 9.7196 ~
 q 0.9830
 $\sin G + \alpha_0$ 9.9302
 $\tan \delta_0$ 9.3441
 8.8239

$\sin \delta_0$ 9.3341
 $\cos H + \alpha_0$ 89135 ~
 h 1.2913
 $\sin H + \alpha_0$ 99985
 $\sec \delta_0$ 0.0104
 8.8239

q' 0.7026 ~
 q 9.0812

$\log h'$ 9.5389 ~
 h 0.1239

q +1.390
 q +0.121
 q +1.330

 Red. +2.841

q' -5.042
 q' +0.346
 q' -4.696

 Red. -11.431

12319

Lunar Parallax

20

$$\begin{array}{rcl}
 \alpha' & 9 & 20 \quad 31.95'' \\
 \delta & 9 & 10 \quad 05.50'' \\
 \delta - \alpha' & - & 10 \quad 26.45'' \\
 = & -2 & 36 \quad 36.75'' \\
 \frac{1}{2} \alpha \cdot \alpha' & & -55.98'' \\
 \delta - \alpha' - \frac{1}{2} \alpha \cdot \alpha' & -2 & 35 \quad 40.77''
 \end{array}$$

$$\begin{array}{rcl}
 \Pi & 53 & 59.0'' \\
 9.86913 \\
 8.19597'' \\
 8.65840'' \\
 001112'' \\
 6.73462''
 \end{array}$$

$$\begin{array}{rcl}
 9.95727 \\
 0.00000 \\
 000045 \\
 -4.95772''
 \end{array}$$

$$\begin{array}{rcl}
 \alpha - \alpha' & -1 & 51.96'' \\
 = & - & 7.46''
 \end{array}$$

$$\begin{array}{rcl}
 \gamma & 42^\circ & 12' \quad 55.5'' \\
 \delta' & +12 & 27 \quad 42.0'' \\
 \gamma - \delta' & 29 & 45 \quad 13.5''
 \end{array}$$

$$\begin{array}{rcl}
 9.82640 \\
 8.19597'' \\
 9.69572 \\
 0.17268'' \\
 7.89077''
 \end{array}$$

$$\begin{array}{rcl}
 \delta - \delta' & -26 & 44.0''
 \end{array}$$

$$\begin{array}{rcl}
 \delta & +12 & 54 \quad 26.0''
 \end{array}$$

$$\begin{array}{rcl}
 \alpha \delta & +12 & 54 \quad 31.9''
 \end{array}$$

$$\begin{array}{rcl}
 \delta - \alpha & - & 5.9''
 \end{array}$$

$$\begin{array}{rcl}
 \text{curr.} & + & 0.2''
 \end{array}$$

$$\begin{array}{rcl}
 2^{\text{nd}} \text{ Clrd. Ref.} & 1 & 0.0
 \end{array}$$

$$\begin{array}{rcl}
 \delta & 12 & 54 \quad 26.2
 \end{array}$$

$$\begin{array}{rcl}
 \delta - \alpha & - & 5.7
 \end{array}$$

$$\begin{array}{rcl}
 \alpha & 9 & 20 \quad 24.49''
 \end{array}$$

$$\begin{array}{rcl}
 \gamma \alpha & 9 & 20 \quad 23.19''
 \end{array}$$

$$\begin{array}{rcl}
 \delta - \alpha & + & 1.30''
 \end{array}$$

$$\begin{array}{rcl}
 \text{curr.} & - & 0.04''
 \end{array}$$

$$\begin{array}{rcl}
 \alpha & 9 & 20 \quad 24.45''
 \end{array}$$

$$\begin{array}{rcl}
 \delta - \alpha & + & 1.26''
 \end{array}$$

12319

Lunar Parallax

20

$$\begin{array}{rcl}
 X' & 9 & 20 & 31.95 \\
 \delta & 9 & 10 & 05.50 \\
 \delta - X' & - & 10 & 26.45 \\
 = & -2 & 36 & 36.75 \\
 \frac{1}{2} X \cdot X' & & & - 55.98 \\
 \delta - X' - \frac{1}{2} X \cdot X' & -2 & 35 & 40.77
 \end{array}$$

$$\begin{array}{rcl}
 \Pi & 53 & 59.0 \\
 & 9.86913 \\
 & 8.19597 \\
 & 8.65840 \\
 & 001112 \\
 & 6.73962
 \end{array}$$

$$\begin{array}{rcl}
 & 995727 \\
 & 000000 \\
 & 000045 \\
 & 995772
 \end{array}$$

$$\begin{array}{rcl}
 X - X' & -1 & 51.96 \\
 = & - & 7.46
 \end{array}$$

$$\begin{array}{rcl}
 Y & 42^{\circ} & 12' & 55.5'' \\
 \delta' & +12 & 27 & 42.0 \\
 Y - \delta' & 29 & 45 & 13.5
 \end{array}$$

$$\begin{array}{rcl}
 & 982640 \\
 & 819597 \\
 & 969592 \\
 & 017268 \\
 & 789092
 \end{array}$$

$$\begin{array}{rcl}
 \delta - \delta' & -26 & 44.0
 \end{array}$$

$$\begin{array}{rcl}
 \delta & +12 & 54 & 26.0
 \end{array}$$

$$\begin{array}{rcl}
 g/h \delta & +12 & 54 & 31.9
 \end{array}$$

$$\begin{array}{rcl}
 O - C & & & - 5.9
 \end{array}$$

$$\begin{array}{rcl}
 \text{Curv.} & & & + 0.2
 \end{array}$$

$$\begin{array}{rcl}
 \text{2nd Avel. Ref} & & & 1.00
 \end{array}$$

$$\begin{array}{rcl}
 \delta & 12 & 54 & 26.2
 \end{array}$$

$$\begin{array}{rcl}
 O - C & & & - 5.7
 \end{array}$$

$$\begin{array}{rcl}
 X & 9 & 20 & 24.99
 \end{array}$$

$$\begin{array}{rcl}
 g/h X & 9 & 20 & 23.19
 \end{array}$$

$$\begin{array}{rcl}
 O - C & & & + 1.30
 \end{array}$$

$$\begin{array}{rcl}
 \text{Curv.} & & & - 0.04
 \end{array}$$

$$\begin{array}{rcl}
 X & 9 & 20 & 24.45
 \end{array}$$

$$\begin{array}{rcl}
 O - C & & & + 1.26
 \end{array}$$

1
1
13
11

2
19
23

3
32
18

1
25
15

2
2
14

3
2
1

	12320	4	Star Measures	X	21
L	17293		16072	18698	17762
13.7	8468	65	14894	12148	14319
11.9	62		94	52	02
	93		72	98	62
	<u>18.8828</u>		<u>1.18822</u>	<u>13.6548</u>	<u>13.6546</u>
2	4			X	
19.9	18220		16372	17840	17712
23.8	10954		13644	9228	16326
	54		40	28	26
	20		72	40	12
	<u>23.7266</u>		<u>23.7270</u>	<u>19.8612</u>	<u>19.8614</u>
3	16790		17492	18264	17218
32.9	12362	66	11910	9426	16052
18.4	70		18	26	52
	90		92	64	18
	<u>18.4424</u>		<u>18.4422</u>	<u>32.8838</u>	<u>32.8834</u>

		Moon
L	17192	17470
25.5	12762	11908
15.0	62	08
	92	70
	<u>25.4430</u>	<u>25.4438</u>

2	16534	16166
26.	11782	10903
14.5	82	09
	34	66
	<u>14.4752</u>	<u>14.4740</u>
3	16852	17012
27	14700	9180
14.2	00	68
	52	12
	<u>14.2152</u>	<u>14.2162</u>

L
3
11.~~2~~
9
232
52
18

L

Star Measures

X 21

12320	4						
L	17293	16072	18698	17762			
3.7	8468 ⁶⁵	14894	12148 ⁵⁰	14314 ⁰⁸			
11.9	62	94	52	02			
	93	72	98	62			
	<u>18.8828</u>	<u>11.8822</u>	<u>13.6548</u>	<u>13.6546</u>			

2	1						
2	18220	16372	17840	17712			
9.9	10954	13644 ⁴²	9228	16326			
238	54	90	28	26			
	20	72	40	12			
	<u>23.7266</u>	<u>23.7270</u>	<u>19.8612</u>	<u>19.8614</u>			

2	16790	17492	18264	17218			
529	12362 ⁶⁸	11910 ¹⁴	9420	16052			
184	70	18	26	52			
	90	92	64	18			
	<u>18.4424</u>	<u>18.4422</u>	<u>32.8838</u>	<u>32.8834</u>			

Moon

L	17182	17470					
5	12762	11908					
10	62	08					
	92	70					
	<u>25.4430</u>	<u>25.4438</u>					

	16534	16166					
	11782	10803 ⁰⁶					
	82	09					
	34	66					
	<u>14.9752</u>	<u>14.9740</u>					

	16852	17012					
7	14700	9180 ⁷⁴					
42	00	68					
	52	12					
	<u>14.2152</u>	<u>14.2162</u>					

20

2

2

2

2

2

12320

Moon Measures

22

4
28
147

16321	16094
1077174	1163031
77	32
21	94
<u>14.5547</u>	<u>14.5537</u>

5	16648	16874
28.4	1223036	11282
15.0	72	82
	48	74
	<u>28.4412</u>	<u>28.4408</u>

6	16692	16832
28.8	8980	1455246
16.0	80	40
	92	32
X	<u>28.7712</u>	<u>28.7714</u>

7	16732	16158
28.9	11740	1114648
17.0	40	52
	32	58
	<u>28.4992</u>	<u>28.4990</u>

8	17160	16430
28.	11770	11820
17.4	70	20
	60	30
	<u>17.5390</u>	<u>17.5390</u>

FIG. 2

12320

Moon Measures

2

4
28
147

16321	16094
1077174	1163021
17	32
21	94
<u>14.5547</u>	<u>14.5537</u>

5	16648	16874
284	1223036	11282
15.0	92	82
	48	74
	<u>28.4712</u>	<u>28.4408</u>

6	16692	16832
284	8980	1455246
16.0	80	40
	92	32
	<u>28.7712</u>	<u>28.7214</u>

7	16732	16158
284	11740	1114648
17.0	40	52
	32	58
	<u>28.4942</u>	<u>28.4990</u>

8	17160	16430
28.	11770	11820
17.4	70	20
	60	30
	<u>17.5390</u>	<u>17.5390</u>

12320

Juno etc.

23

Date Feb. 6. 1917

Exp. & Stars

9 31 -

9 43 -

" " Moon

9 37 14.3 -

9 37 14.5 -

Clock fast

13 39.3 -

H. Sid Time

9 23 35.1 -

" " Young

4 44 31.05 -

 $\Theta = + 3^m$

G. S. T

14 08 06.15 -

" " " M. N

21 04 11.70 -

Interval

17 03 54.45 -

Red

02 47.74 -

G. M. T

17 01 06.71 -

17^h 01 85.3 -

From Naut. Alman.

R. A.

Dec

Moon 17^h

9 20 46.33 -

+ 12 52 12.5 -

Motion 1^m

1.8740

-11.293 -

" 1^m 11/8 -

2.08 -

-12.6 -

Tabular Place.

9 20 48.41 -

+ 12 51 59.9 -

Moon's age 15.4

4.34" = 1.3.6

 $a = -5^m 03.5$ $+ 24.0$ -479.5

Parallax 33 59.1 -

Semi-dian 14' 44.2 -

R 884.2 -

ang 12.2 -

Suz 3 -0.5 -

R 895.9 -

R 1.9205 -

a R -921 -

(1+a) R 1.8284 -

R² 3.3430 -

12320

Plate Constants.

24

$$\begin{array}{r} x \\ S \end{array} \begin{array}{r} 13.6547 \\ 12.9682 \\ + .6865 \end{array}$$

$$\begin{array}{r} 19.8613 \\ 19.4526 \\ + 4087 \end{array}$$

$$\begin{array}{r} 32.8836 \\ 33.1461 \\ - 2625 \end{array}$$

$$\begin{array}{r} y \\ \eta \end{array} \begin{array}{r} 11.8825 \\ 11.3999 \\ + 4826 \end{array}$$

$$\begin{array}{r} 23.7268 \\ 23.8627 \\ - 1359 \end{array}$$

$$\begin{array}{r} 18.4423 \\ 18.3465 \\ + 0958 \end{array}$$

$$\begin{array}{r} X-S \quad +500X \quad -29.38 \quad +3.5X -13391 \\ +6865 +6827 = 13692 - 349 = 13343 + 48 = 13391 \\ +4087 +4930 = 14017 - 695 = 13322 + 69 = 13391 \\ -2625 +16442 = 13817 - 541 = 13276 + 115 = 13391 \\ 26.9427 + 13471 \quad -470 \quad +94 = 26.9131 \end{array}$$

$$\begin{array}{r} y-\eta \quad +500y \quad +28.0X \quad +7.4y \quad -11.237 \\ +4826 +5941 = 10767 + 382 = 11149 + 88 = 11237 \\ -1359 +11863 = 10504 + 556 = 11060 + 176 = 11236 \\ +0958 +9221 = 10179 + 922 = 11101 + 136 = 11237 \\ 16.0433 + 8022 \quad +754 \quad +119 = 15.8091 \end{array}$$

$$\begin{array}{r} \text{Tables} \quad a = -0.0 \quad e = -1.2 \quad a-e = +1.2 \quad f+d = 0.0 \\ -503.5 \quad -507.4 \quad +3.9 \quad +1.3 \\ -503.5 \quad -506.2 \quad +2.7 \quad +1.3 \end{array}$$

12320

Plate Constants

24

X	13.6547	19.8613	32.8836
S	12.9682	19.4526	33.1461
	+ 6865	+ 4087	- 2625

Y	11.8825	-23.7268	18.4423
3	11.3999	23.8627	18.3465
	+ 4826	- 1359	+ 0958

X-S	+5.00 X	-	-2938	+3.5 X	-13391
6865	+6827	=	13692	-349	= 13342
4087	+4930	=	14017	-695	= 13322
2625	+16442	=	13817	-541	= 13276
16.9427	+13471		-470		+94 = 26.9131

-Y	+5.00 Y	+28.0X	+7.4 Y	-1123
4826	+5941	=	10767	+382 = 11149
1359	+11863	=	10504	+556 = 11060
0958	+9221	=	10179	+922 = 11101
16.0433	+8022		+754	+119 = 15.8091

Tables	a = -0	c = -1.2	a-c = +1.2	b+d = 0.0
	-503.5	-507.9	+3.9	+1.3

12320

Mean's Center:

25-
0 - C

1	25.4434	-14996	2.2488	3.3410	-	20
2	26.0000	-09430	0.8892	3.3556	+	126
3	26.9430	0.0000	0.0000	3.3471	+	40
4	28.0000	+1.0670	1.1385	3.3613	+	183
5	28.4410	+1.4980	2.2440	3.3362	-	68
6	28.7713	+1.8283	3.3427	3.3427	-	3
7	28.4991	+1.5561	2.4214	3.3336	-	94
8	28.0000	+1.0570	0.1172	3.3495	+	65
				R ² 3.3430		

arc 370

1	15.0000	-1.0450	-1	1.0922	235°
2	14.4746	-1.5704	-1	2.4664	211°
3	14.2157	-1.8293	-2	3.3470	180°
4	14.5542	-1.4908	-1	2.2228	145°
5	15.0000	-1.0450	-1	1.0922	125°
6	16.0450	0.0000	0	0.0000	90°
7	17.0000	+0.9550	+1	0.9122	58°
8	17.5390	+1.4940	+1	2.2323	35°

Range 200

$$y = 15, x = 25.4434$$

$$28.4410$$

$$53.8844$$

$$x_0 26.9422$$

$$x_{max} 28.7713$$

$$R 1.8291$$

$$Cam A 1.8284$$

$$y_{min} 14.2157$$

$$y_0 16.0448$$

Mean Center

$$x_0 26.9430$$

$$y_0 16.0450$$

12320

Moore's Center.

1	25.4434	-14996	22488	334.10	-	20
2	26.0000	-09430	08892	3.3556	+	126
3	28.9430	00000	00000	33476	+	40
4	28.0000	+10670	1.1385°	3.3613	+	183
5	28.4410	+14990	2.2440	3.3362	-	69
6	28.7713	+18283	3.3427	3.3427	-	3
7	28.9991	+1.5561	2.4214	3.3336	-	94
8	28.0000	+1.0570	0.1172	3.3495	+	65
			R^2	33430		

GAC

1	13.0000	-1.0450	-1	1.0922	235
2	14.4746	-1.5704	-0	2.4664	211
3	14.2157	+1.8293	-2	3.3470	180
4	14.5542	-1.4908	-1	2.2228	145
5	15.0000	-1.0450	-1	1.0922	125
6	16.0450	0.0000	0	0.0000	90
7	17.0000	+0.9550	+1	0.4122	58
8	17.5390	+1.4940	+1	2.2323	35

Range 200

$$y = 15^\circ, x = 25.4434$$

28 44 10

53,8844

X_0 26.9422

Хмары 28. 7 7 1 3

R 1.8291

Cam A 1.8289

4. 14. 21 5-7

41 16.0448

$$Y_D = 26.9430$$

Moon Center

9. 16.0450

1	+ 1.57	+ 30.0	+ 20.1
2	+ 1.47	- 118.3	- 197.8
3	0.00	00	- 73.2
4	- 1.60	+ 196.0	- 272.2
5	- 1.57	- 102.0	+ 71.8
6	0.00	- 54	0.0
7	+ 1.50	- 146.5	- 90.2
8	<u>+ 1.58</u>	<u>+ 69.0</u>	<u>+ 96.8</u>
	+ 6.12	+ 295.0	+ 188.7
	- 3.17	- 372.2	- 633.4
	<u>+ 2.95</u>	- 77.2	- 444.7

12320

Conditional Equations

26

0-2

1	-1.50	-1.05 = -	20	+ 8	+ 35 = +	43	-	63
2	-0.94	-1.57 = +	126	+ 5	+ 53 = +	58	+	68
3	0.00	-1.83 = +	40	0	+ 62 = +	62	-	22
4	+1.07	-1.49 = +	183	- 6	+ 50 = +	44	+	139
5	+1.50	-1.05 = -	68	- 8	+ 35 = +	27	-	95
6	+1.83	0.00 = -	3	- 10	0 = -	10	+	7
7	+1.56	+0.96 = -	94	- 8	- 32 = -	40	-	54
8	+1.06	+1.49 = +	65	- 6	- 50 = -	56	+	121

+335 -234

av. 71

$$+12.40 + 2.95 = -77.2$$

$$+ 2.95 + 13.36 = -444.7$$

$$- () - 0.70 = + 18.4$$

$$+12.66 = -426.3$$

$$t = -33.7^{\circ}$$

$$+12.40 = -77.2 + 9.9 = -67.3 \quad a = -5.4^{\circ}$$

$$\text{arc} = 200$$

$$\frac{P}{m} = 46^{\circ}$$

$$\frac{\Sigma r}{n} = +12.7^{\circ}$$

$$\frac{+12.7}{46} = +27.6^{\circ}$$

$$\Delta R = +0.3^{\circ}$$

1
2
3
4
5
6
7
8

12320

Conditional Equations

26

0-6

1	-1.50	-1.05 = -	20	+ 81 + 35 = + 45	- 63
2	-0.94	-1.57 = +	126	+ 5 + 53 = + 58	+ 68
3	0.00	-1.83 = +	40	0 + 62 = + 62	- 22
4	+1.07	-1.49 = +	183	- 6 + 50 = + 44	+ 139
5	+1.50	-1.65 = -	68	- 8 + 35 = + 27	- 95
6	+1.83	0.00 = -	3	- 10 0 = - 10	+ 7
7	+1.56	+0.96 = -	94	- 8 - 32 = - 40	- 54
8	+1.06	+1.49 = +	65	- 6 - 50 = - 56	+ 121

+ 335 - 234

av. 71

$$+12.40 + 2.95 = -77.2$$

$$+ 2.95 + 13.36 = -444.7$$

$$-1 - 0.70 = + 18.4$$

$$+12.66 = -426.3$$

$$+ = -33.7$$

$$+12.40 = -77.2 + 9.9 = -67.3 \quad 4 = -5.4$$

$$RVC = 200$$

$$\frac{P}{n} = 46$$

$$\frac{E}{n} = + 12.7$$

$$+ \frac{12.7}{46} = + 27.6$$

$$\Delta R = + 0.3$$

12320

Uranus Mean Position

27

$$\begin{array}{r} X_0 \quad 26.9430'' \\ \quad - 3'' \\ \hline 26.9427 \end{array}$$

$$\begin{array}{r} Y_0 \quad 16.0450'' \\ \quad - 17'' \\ \hline 16.0433 \end{array}$$

From Plate Constants.

$$\begin{array}{r} 26.9131'' \\ 22. \\ \hline + 4.9131'' \end{array}$$

$$\begin{array}{r} 15.8091'' \\ 18. \\ \hline - 2.1909 \end{array}$$

$$\begin{array}{r} 0.69136'' \\ 9.98971'' \\ 8.50724'' \\ 2.19441'' \end{array}$$

$$\begin{array}{r} 9.3428'' \\ 1.3827'' \\ 7.0534'' \\ 7.7789'' \end{array}$$

$$+ 1.56.46''$$

$$\begin{array}{r} \eta + 0.0060 \\ \eta_0 - 2.1969'' \end{array}$$

$$\begin{array}{r} + 0.2 \quad 36.46'' \\ A \quad 9 \quad 18 \quad 08.23'' \end{array}$$

$$\alpha_0 \quad 9 \quad 20 \quad 44.69''$$

$$+ 02.84''$$

$$\alpha' \quad 9 \quad 20 \quad 47.53''$$

$$\begin{array}{r} 0.34181'' \\ 7.33115'' \\ 3.01066'' \end{array}$$

$$- 1.024.9''$$

$$- 17 \quad 04.9''$$

$$\theta = +1.2 \quad 42 \quad 25.0''$$

$$S_0 + 1.2 \quad 25 \quad 20.1''$$

$$\text{Red} \quad - 11.4$$

$$S' + 1.2 \quad 25 \quad 08.7''$$

123.20

Uranus Mean Position

27

$$\begin{array}{r} \lambda_0 \quad 26.9430 \\ \quad \quad - 3 \\ \hline 26.9427 \end{array}$$

$$\begin{array}{r} \gamma_0 \quad 16.0450 \\ \quad \quad - 17 \\ \hline 16.0433 \end{array}$$

From Plate Constants.

$$\begin{array}{r} 26.9131 \\ 27 \\ \hline + 4.9131 \end{array}$$

$$\begin{array}{r} 15.8091 \\ 18 \\ \hline - 2.1909 \end{array}$$

$$\begin{array}{r} 0.69136 \\ 9.98971 \\ 8.50724 \\ 2.19441 \end{array}$$

$$\begin{array}{r} 9.3428 \\ 1.3827 \\ 7.1534 \\ 7.7782 \end{array}$$

$$+ 156.46$$

$$\mu_0 = 0.00060$$

$$\mu_0 = 2.11969$$

$$+ 0.2 \quad 36.46$$

$$A \quad 9 \quad 18 \quad 08.23$$

$$0.34181 \sim$$

$$7.33115$$

$$\alpha_0 \quad 9 \quad 20 \quad 44.69$$

$$3.101066 \sim$$

$$+ 0.284$$

$$- 1.024.9$$

$$\alpha \quad 9 \quad 20 \quad 47.53$$

$$- 17 \quad 049$$

$$\delta = +1.2 \quad 42 \quad 25.0$$

$$S_0 + 1.2 \quad 25 \quad 20.1$$

$$Red \quad - 11.9$$

$$S' + 1.2 \quad 25 \quad 08.7$$

12320

Lunar Parallax

28

II

53 59.1"

$$\alpha' \quad 9 \quad 20 \quad 47.53''$$

$$\theta' \quad 9 \quad 23 \quad 35.10''$$

$$\theta - \alpha' \quad + \quad 2 \quad 47.57''$$

$$= \quad + \quad 41' \quad 53.55''$$

$$\frac{1}{2} \alpha \alpha' \quad 14.98$$

$$\theta - \alpha' - \frac{1}{2}(\alpha - \alpha') + 41' \quad 38.57''$$

$$9.86913$$

$$8.19598''$$

$$8.08585''$$

$$0.01104''$$

$$6.16200''$$

$$\alpha - \alpha' \quad + 29.95''$$

$$= \quad + 1.99''$$

$$9.95727$$

$$0.00000$$

$$0.00003$$

$$9.95730''$$

$$\gamma \quad 42 \quad 11 \quad 16.8''$$

$$\delta' \quad + 12 \quad 25 \quad 08.7''$$

$$\gamma - \delta' \quad 29 \quad 46 \quad 08.1''$$

$$9.82640$$

$$8.19598''$$

$$9.69592''$$

$$0.17291''$$

$$7.89121''$$

$$\delta - \delta' \quad + 26 \quad 45.6''$$

$$\delta \quad + 12 \quad 51 \quad 54.3''$$

$$\alpha \quad 9 \quad 20 \quad 49.52''$$

$$\gamma - \delta \quad + 12 \quad 51 \quad 59.9''$$

$$\gamma - \alpha \quad 9 \quad 20 \quad 48.41''$$

$$\delta - \alpha \quad - 5.6''$$

$$\delta - \alpha \quad + 1.11''$$

$$\text{Circum} \quad + 0.2''$$

$$\text{Circum} \quad - 0.09''$$

$$\text{2nd Chd. Ref.} \quad 00$$

$$\alpha \quad 9 \quad 20 \quad 49.48''$$

$$\delta - + 1.2 \quad 51 \quad 54.5''$$

$$\delta - \alpha \quad + 1.07''$$

$$\delta - \alpha \quad - 5.4''$$

12320

Lunar Parallax

28

II

53 59.1

$$\alpha' \quad 9 \quad 20 \quad 47.53$$

$$\theta' \quad 9 \quad 23 \quad 35.10$$

$$\theta - \alpha' \quad + \quad 2 \quad 47.57$$

$$= \quad + \quad 44 \quad 53.55$$

$$\frac{1}{2} \times \alpha' \quad 1498$$

$$\theta - \alpha' - \frac{1}{2} \times \alpha' \quad 91 \quad 38.57$$

$$986913$$

$$819598$$

$$808585$$

$$0.01104$$

$$6.16200$$

$$\alpha - \alpha' \quad +29.95$$

$$= \quad + \quad 1.99$$

$$995727$$

$$000000$$

$$0.00003$$

$$995730$$

$$\gamma \quad 42 \quad 11 \quad 168$$

$$\delta' \quad +12 \quad 25 \quad 08.7$$

$$\gamma - \delta' \quad 2.9 \quad 46 \quad 08.1$$

$$9.82640$$

$$8.19598$$

$$9.69592$$

$$0.17291$$

$$7.89121$$

$$\delta - \delta' \quad 26 \quad 45.6$$

$$\delta \quad +12 \quad 51 \quad 54.3$$

$$\gamma - \delta \quad +12 \quad 51 \quad 59.9$$

$$\delta - \alpha \quad -5.6$$

$$\text{Circ.} \quad +0.2$$

$$2^{\text{nd}} \text{ Circ. Ref.} \quad 0.0$$

$$\delta - +12 \quad 51 \quad 54.5$$

$$\delta - \alpha \quad -5.4$$

$$\alpha \quad 9 \quad 20 \quad 49.52$$

$$\gamma - \alpha \quad 9 \quad 20 \quad 48.41$$

$$\delta - \alpha \quad +1.11$$

$$\text{Circ.} \quad -0.09$$

$$\alpha \quad 9 \quad 20 \quad 49.48$$

$$\delta - \alpha \quad +1.07$$

