

KG

11366

v.1021

CLXIX



169



11927

11925

11931

11927

Star Measures.

1

1	16774	20720	20802
22.1	15804	16939	20542
9.9	00	31	36
		15450	08
			03
	<u>22.0972</u>	<u>22.0985</u>	<u>9.9758</u>
			<u>9.9736</u>

2	17570	20802	20090
23.2	15249	17048	19699
20.9	81	06	38
		14680	80
			100
	<u>23.2325</u>	<u>23.2325</u>	<u>20.9566</u>
			<u>20.9550</u>

3	20752	20286	17768
33.9	11164	19886	16499
25.1	66	76	99
	58	86	
	<u>23.9592</u>	<u>23.9595</u>	<u>25.1269</u>
			<u>25.1273</u>

Moon Measures.

1	20314	19946
26.7	12792	17949
15	82	97
	18	52
	<u>26.7530</u>	<u>26.7500</u>

2	14990	14720
27	13306	18
15.2	98	13072
		<u>15.1688</u>
		<u>15.1697</u>

3	20373	19156
27.7	14290	15226
16	92	16
	380	
	<u>27.6086</u>	<u>27.6065</u>

11929

Star Measures.

7

1	16779		20720	20802
22.1	15809	16939	10952	20592
9.9	00	31	50	36
		15950	08	03
	<u>22.0972</u>	<u>220985</u>	<u>9.9758</u>	<u>9.9736</u>

2	17570	20802	20079	20090
23.2	15299	17009	10517	19699
20.9	91	06	11	38
		19680	80	100
	<u>23.2325</u>	<u>23.2325</u>	<u>20.9566</u>	<u>20.9550</u>

3	20752	20286	17768	
33.9	11169	19886	16499	18782
25.1	66	76	99	88
	58	86		1.7582
	<u>23.9592</u>	<u>23.9595</u>	<u>25.1269</u>	<u>25.1228</u>

Moon Measures.

1	20319	19996
26.7	12792	17999
15	82	97
	18	52
	<u>26.7530</u>	<u>26.7500</u>

2		181990	18151
27		133062	14720
15.2		981	18
			13072
		<u>15.1688</u>	<u>15.1697</u>

3	20373	19156
27.7	14290	15226
16	92	16
	380	
	<u>27.6086</u>	<u>27.6065</u>

11927

Moon Measures

$$\begin{array}{r}
 4 \\
 27.8 \\
 16.5 \\
 +x \\
 \hline
 19784 \\
 112300 \\
 96 \\
 86 \\
 \hline
 27.7186
 \end{array}
 \quad
 \begin{array}{r}
 15489 \\
 12682 \\
 78 \\
 \hline
 27.7185
 \end{array}$$

$$\begin{array}{r}
 5 \\
 27.7 \\
 17 \\
 \hline
 19480 \\
 12681 \\
 71 \\
 79 \\
 \hline
 27.6809
 \end{array}
 \quad
 \begin{array}{r}
 12270 \\
 70 \\
 15460 \\
 \hline
 27.6810
 \end{array}$$

$$\begin{array}{r}
 6 \\
 27.1 \\
 18 \\
 \hline
 15610 \\
 19530 \\
 30 \\
 \hline
 27.1080
 \end{array}
 \quad
 \begin{array}{r}
 20558 \\
 11698 \\
 38 \\
 60 \\
 \hline
 27.1084
 \end{array}$$

$$\begin{array}{r}
 7 \\
 27 \\
 18.1 \\
 \hline
 17286 \\
 16478 \\
 470 \\
 \hline
 18.0912
 \end{array}
 \quad
 \begin{array}{r}
 19940 \\
 15842 \\
 34 \\
 \hline
 18.0898
 \end{array}$$

$$\begin{array}{r}
 8 \\
 23.9 \\
 18.5 \\
 +y \\
 \hline
 20489 \\
 15720 \\
 20 \\
 88 \\
 \hline
 18.4768
 \end{array}
 \quad
 \begin{array}{r}
 19831 \\
 19886 \\
 88 \\
 32 \\
 \hline
 18.4756
 \end{array}$$

11227

Moon Measures

$$\begin{array}{r}
 9 \\
 27.8 \\
 16.5 \\
 +1 \\
 \hline
 19989 \\
 112300 \\
 96 \\
 86 \\
 \hline
 277186
 \end{array}
 \quad
 \begin{array}{r}
 15989 \\
 12680 \\
 78 \\
 \hline
 277185
 \end{array}$$

$$\begin{array}{r}
 5 \\
 27.7 \\
 17 \\
 \hline
 19980 \\
 12681 \\
 71 \\
 79 \\
 \hline
 276809
 \end{array}
 \quad
 \begin{array}{r}
 12270 \\
 70 \\
 15460 \\
 \hline
 276810
 \end{array}$$

$$\begin{array}{r}
 6 \\
 27.1 \\
 18 \\
 \hline
 15610 \\
 19530 \\
 30 \\
 \hline
 271080
 \end{array}
 \quad
 \begin{array}{r}
 20558 \\
 11648 \\
 38 \\
 60 \\
 \hline
 271089
 \end{array}$$

$$\begin{array}{r}
 7 \\
 27 \\
 18.1 \\
 \hline
 17286 \\
 16978 \\
 470 \\
 \hline
 180812
 \end{array}
 \quad
 \begin{array}{r}
 19990 \\
 15892 \\
 39 \\
 \hline
 180898
 \end{array}$$

$$\begin{array}{r}
 8 \\
 25.9 \\
 18.5 \\
 +9 \\
 \hline
 20489 \\
 15720 \\
 20 \\
 88 \\
 \hline
 184768
 \end{array}
 \quad
 \begin{array}{r}
 19831 \\
 17586 \\
 38 \\
 32 \\
 \hline
 184756
 \end{array}$$

11929^v

Times Etc.

6

Dec 10

Exp to Stars	5	42		5	48	
" " Moon	5	48	23.5 ^v	5	48	23.7 ^v
clock fast		12	02.9 ^v			

H. Sid Time	5	36	20.7 ^v	$\delta - \alpha = - 0^h 5^m 7^s$
H. Long	4	44	31.05 ^v	
g. Sid T.	10	28	51.75 ^v	
End J. M. Moon	17	15	31.35 ^v	
Interval	17	05	20.40 ^v	
Reduction		2	47.98 ^v	
g. M. J.	17	02	32.42 ^v	

From Naut Alman	R. A.	Dec.
Moon 17 ^h	6 33	07.65 +27 21 50.7 ^v
Mahor m/m		2.1833 ^v - 2.399 ^v
" " 2.5803		+ 5.55 ^v - 11.2 ^v
Tabular Place	6 33	13.20 ^v +24 21 39.5 ^v

Moon's age	16 days
Parallax	54 28.86 ^v
Semi d.	17 52.3 ^v
R	8923 ^v
Aug	13.4 ^v
Rm (5)	-0.8
R	904.9 ^v
R	1.9398 ^v
gR	-929 ^v
(1+g)/R	1.8469
R2	3.7110

739 = 14.6

$$\begin{array}{r} a = -503 \\ + 27 \\ - 479 \end{array}$$

11729

Times Etc

6

Dec 10

Opp to Stars	5	42		5	48	
" " Moon	5	48	23.5"	5	48	23.7"
clock fast		12	02.9"			

H Sid Time	5	36	20.7"	8-X = - 0" 5.7"
H Long	9	44	31.05"	
g Sid J.	10	20	51.75"	
Sid J M. Moon	17	15	31.35"	
Internal	17	03	20.90"	
Reduction		2	97.98"	
g M J.	17	02	32.92"	

From Nant Allen	P A.	Dec.
Moon 17 ^h	6 33 07.65"	+29 21 50.7"
Moon m th	5.1833"	- 9.399"
2.5903	+ 5.555"	- 11.2"
Tabular Place	6 33 13.20"	+24 21 39.5"

Moon's Age 16 days

Parallax 59 28.86"

Semi d 19 52.3"

H 8923"

Aug 13.9"

K₁ (8) -0.8"

K 9099"

K 1.7398"

aR -929"

(1+9)R 1.8969"

R₂ 3.7110"

$$939 = 19.6$$

$$a = -503$$

$$+22$$

$$-479$$

11927 Plate Center & Constants. 9
 $\times$ 7 $\times$ S
 22.0978 9.9797 6 31 36.8 +23 10 03.0
 23.2325 20.9558
 33.9593 25.1256

22 18 -3.0 +62 92
 6 31 33.8 +27 12 96.0
 -1.0978 +80.253
31^s 966.5

Center } A 6 31 37
 { D +27 12 50

+500X +18.64 +3Y -11997
 +196 +11099 = -11195 + 185 = +11380 +66 = +11446
 -629 +11616 = 10987 + 390 = 11377 +70 = 97
 -6102 +16980 = 10878 + 967 = 11395 +102 = 97
 25.8720 + 12936 + 309 + 78 26.0596

+500Y -19.5X +2.3Y -5079
 +495 +9987 = +5982 -931 = +5051 +23 = 5079
 -9999 +10978 = 5979 - 953 = 5026 +98 = 5079
 +6885 +12563 = 5678 - 661 = 5017 +57 = 5079
 16.6281 + 8317 - 5079 + 38 16.9055

Tables a = -3 e = -3 a-e = 0 b+d = 0
 Obs = +303. -502.3 - .7 = +.9
 O-C -502.7 -502.0 +.9

11927 Plate Center & Constants. 9
 $\begin{array}{r} \times \\ 22.0978 \\ 23.2325 \\ 23.9593 \end{array}$ $\begin{array}{r} 7 \\ 9.9797 \\ 20.9558 \\ 25.1256 \end{array}$ $\begin{array}{r} \times \\ 6 \quad 31 \quad 36.8 \end{array}$ $\begin{array}{r} s \\ +23 \quad 10 \quad 03.0 \end{array}$

$\begin{array}{r} 2 \\ -1.0978 \\ 31^s \end{array}$ $\begin{array}{r} 18 \\ +8.0253 \\ 966.5 \end{array}$ $\begin{array}{r} -3.0 \\ 6 \quad 31 \quad 33.8 \end{array}$ $\begin{array}{r} +62 \quad 92 \\ +29 \quad 12 \quad 95.0 \end{array}$

Center } A 6 31 34
 D +29 12 50

$\begin{array}{r} +5024 \\ +196 \end{array}$ $\begin{array}{r} +11099 \\ +11616 \\ +16980 \end{array}$ $\begin{array}{r} = -11192 \\ = 10987 \\ = 10878 \end{array}$ $\begin{array}{r} +18.64 \\ +185 \\ +390 \\ +967 \end{array}$ $\begin{array}{r} = +11380 \\ = 11277 \\ = 11295 \end{array}$ $\begin{array}{r} +66 \\ +70 \\ +102 \end{array}$ $\begin{array}{r} = 111791 \\ = 97 \\ = 97 \end{array}$
 $25.8720 + 12936 + 309 + 78 = 26.059$

$\begin{array}{r} +5004 \\ +995 \end{array}$ $\begin{array}{r} +9987 \\ +10978 \\ +12263 \end{array}$ $\begin{array}{r} = +5982 \\ = 5979 \\ = 5678 \end{array}$ $\begin{array}{r} -19.5^s \\ -931 \\ -953 \\ -661 \end{array}$ $\begin{array}{r} = +12051 \\ = 5026 \\ = 5017 \end{array}$ $\begin{array}{r} +23 \\ +98 \\ +57 \end{array}$ $\begin{array}{r} = 5079 \\ = 5079 \\ = 5079 \end{array}$
 $16.6281 + 8319 - 509 + 38 = 16.9055$

Tables a = -.3 e = -.3 a-e = 0 b+d = 0
 Obs = +503. = -502.3 = -.7 = +.9

Cov Cor

ξ	η	$\Delta \xi$	-6.2ξ	$+8 \eta$	$+5$
+10.08	-8.08	+1	-0	+1	-5
+1.30	+3.75	0	-8	-8	-5
+12.56	+7.73	+66	-78	-12	-6
					-21
M=+7.06	-1.1	+2	-25	-1	= -19 = -0.07
					= -0.06

$\Delta \eta$	-8η	-3.3ξ	$+6$
-13	+6	-7	-0
+1	-3	-2	-4
+41	-6	+33	-41
0	+1	-13	-6
			= -0.3

Standard Coordinates												5-
11924 Cape No 971 - Mg 6.8				Cape No 973 - Mg 6.5				Cape No 961 - Mg 3.2				
C	6	30	38.55	6	31	19.77	+	6	37	46.83		
L			38.62			19.76				46.83		
E			38.57			19.73				46.82		
Mean	6	30	38.58	6	31	19.75		6	37	46.83		
Pre			+ 58.23			+ 58.88				59.10		
α	6	31	36.81	6	32	18.33		6	38	45.93		
A	6	31	37	6	31	37		6	31	37		
$\delta - A$			+ 2.81			+ 79.33				+ 7	11.93	
$\sin(\delta - A)$			+ 2.81			+ 79.33				+ 73	1.86	
$\log u$			0.49871			+ 169670				2.63539		
$\log v$			9.96399			9.95846				9.95651		
$\log w$			+ 8.91979			0.11290				1.09909		
$\log z$			+ 0.0831			+ 1.2959				+ 1.25629		
$\log t$			+ 1			0				+ 66		
$\log x$			220832			23.2959				37.5695		
$\log y$			220978			23.2325				33.9593		
$\log z$			+ 176			- 629				- 6102		
C	+23	10	46.1	+24	90	26.0	+	25	13	48.7		
L			47.0			26.2				49.0		
E			46.0			26.0				48.5		
Mean	+23	10	46.4	24	90	26.1		25	13	48.7		
Pre			- 43.4			- 44.4				- 53.1		
δ	+23	10	030	+24	39	41.7	+	25	12	55.6		
D	24	12	50	24	12	50		24	12	50		
$\delta - D$	-1	02	47.0			+ 26	51.7	+	1	0	05.6	
$\tan(\delta - D)$			- 37.677			16	11.7			36	06.0	
$\log u$			3.57604			3.20729				3.55703		
$\log v$			0.90719			0.53877				0.88818		
$\log w$			9.6514			9.6619				9.6729		
$\log x$			7.8389			0.2278				2.1982		
$\log y$			7.5237			6.9401				8.9275		
$\log z$			- 8.0758			+ 3.4598				+ 7.7300		
$\log t$			0			+	9			+ 0.0841		
$\log x$			9.9242			21.7557				25.8171		
$\log y$			9.9777			20.9558				25.1256		
$\log z$			+ 4.995			- 7.999				- 6.885		

Standard Coordinates

5

Cape No 971 - May 6.8				Cape No 973 - May 6.5				Cape No 761 May 3.			
C	6	30	38.55	6	31	19.97	+6	37	96.83		
L			38.62			19.96			96.8		
E			38.57			19.93			96.82		
Mean	6	30	38.58	6	31	19.95	6	37	96.83		
Prec			+38.23			+58.88			59.49		
x	6	31	36.81	6	32	18.33	6	38	96.93		
A	6	31	38	6	31	39	6	31	37		
x-A			+2.81			+99.33			+7	119	
Sum (x-A)											
log...			099871			+169670			263539		
...last			996399			995896			995651		
...70			+891999			011290			109909		
70			+00831			+12959			+125629		
71			+1			0			66		
71			220832			232959			395695		
71			220978			232325			339593		
x-71			+196			-629			-6102		
C	+23	10	96.1	+29	90	26.0	+25	13	98.7		
L			97.0			26.2			99.0		
E			96.0			26.0			98.5		
Mean	+23	10	96.9	29	90	26.1	25	13	98.7		
Prec			-73.9			-77.9			-53.1		
D	+23	10	030	+29	39	81.7	+25	12	55.6		
D	29	12	50	29	12	50	29	12	50		
D-D	-1	02	97.0			+26	51.7	+1	005.6		
tand (D-D)											
log...			357609			320729			355703		
...110			0907194			053899			088818		
logTand			96319			96619			96729		
...70			78389			02298			27782		
71			95237			69901			89295		
70			-80758			+39598			+77300		
71			0			+9			+00891		
71			99292			219357			258191		
71			99777			209358			251256		
71-71			+995			-7999			-6885		

A - 0

B + .3

11929

Moon's Center

6

	X	X - X ₀	ΔX	(X - X ₀) ²	(X - X ₀) + (Y - Y ₀) ²	O - C
1	26,7315	+0,8805	0	0,7753	3,4305	+195
2	27,0000	+1,1490	0	1,2796	3,4138	+28
3	27,6076	+1,7366	0	3,0158	3,4114	+04
4	+27,7183	+1,8473	0	3,4125	3,4125	+15
5	27,6807	+1,8097	0	3,2750	3,4126	+16
6	27,1082	+1,2372	0	1,5307	3,4114	+04
7	27,0000	+1,1290	0	1,2796	3,4117	+07
8	25,8710	0,0000	0	0,0000	3,4180	+30

R² 3,4110

	Y	Y - Y ₀	ΔY	(Y - Y ₀) ²	L
1	15,0000	-1,6290	-5	2,6552	131,152
2	15,1668	-1,4622	-4	2,1392	142
3	16,0000	-0,6290	0	0,3956	110
4	16,6290	0,0000	0	0,0000	90
5	17,0000	+0,3710	+0	0,1376	78
6	18,0000	+1,3710	+4	1,8804	42
7	18,0905	+1,4615	+4	2,1371	38
8	+18,9762	+1,8472	+5	3,4180	100 ✓ 157 ⁰

Approx. Center

$$X = 27 \quad Y = 15,1668$$

$$18,09,05$$

$$332,573$$

$$Y_0 = 16,6287$$

$$Y_{max} = 18,9762$$

$$Y_c = 18,976$$

$$X_{max} = 27,7183$$

$$X_0 = 25,8708$$

Approx Center { $X_0 = 25,8710$
 $Y_0 = 16,6290$

1
2
3
4
5
6
7
8

1
2
3
4
5
6
7
8

11929

Moon's Center

6

	X	$X - Y_0$	ΔX	$(X - Y_0)^2$	$(X - Y_0) + (Y - Y_0)^2$	O - C
1	26.7315	+0.8805	0	0.7753	3.4305	+195
2	27.0000	+1.6290	0	1.2796	3.4138	+25
3	27.6076	+1.7366	0	3.0158	3.4119	+09
4	+27.7183	+1.8973	0	3.9125	3.9125	+15
5	27.6807	+1.8097	0	3.2750	3.9126	+16
6	27.1082	+1.2372	0	1.5307	3.9119	+09
7	27.0000	+1.1290	0	1.2796	3.9117	+07
8	25.8710	0.0000	0	0.0000	3.9190	+30

R² 3.9110

	y	$y - y_0$	Δy	$(y - y_0)^2$	z
1	15.0000	-1.6290	-5	2.6552	131
2	15.1668	-1.9622	-4	2.1392	142
3	16.0000	-0.6290	0	0.3956	110
4	16.6290	0.0000	0	0.0000	90
5	17.0000	+0.3710	+0	0.1376	78
6	18.0000	+1.3710	+4	1.8809	42
7	18.0905	+1.9615	+4	2.1371	38
8	+18.9762	+1.8972	+5	3.9180	100
					1310

1510

Approx Center

$$X = 27 \quad Y = 15.1668$$

$$18.0905$$

$$3.32573$$

$$Y_0 = 16.6287$$

$$Y_{max} = 18.9762$$

$$Y_c = 1.8975$$

$$X_{max} = 27.7183$$

$$X_0 = 25.8708$$

$$\text{Approx Center } \begin{cases} X_0 = 25.8710 \\ Y_0 = 16.6290 \end{cases}$$

Formation of Normals.

1	- 193	+ 172.0	- 318.0
2	- 165	+ 31.6	- 81.0
3	- 110	+ 6.0	- 25
4	0.0	+ 27.8	0.0
5	+ 0.67	+ 29.0	+ 59.0
6	+ 170	+ 9.0	+ 55
7	+ 165	+ 8.0	+ 16.2
8	+ 0.0	+ 0.0	+ 55.5
	<u>+ 702</u>	<u>+ 283.7</u>	<u>+ 130.2</u>
	<u>- 7.18</u>		<u>- 361.5</u>
			- 231.3 - 37

a	b	c	new o-c
+ 23	+ 22	- 21	+ 128
+ 7	- 6	- 15	- 25 (35)
- 34	- 6	+ 7	- 37
	- 2	+ 7	- 12
	0	+ 9	- 3
	+ 1	+ 9	+ 7
	+ 5	- 1	+ 8
	+ 6	- 3	+ 32
	+ 7	- 30	

11924

Conditional Equations

7

0-C

1	+ 0.88	- 1.63	= +195	+ 17	+ 29	= +46	+199
2	+ 1.13	- 1.46	= +28	+ 22	+ 26	= +48	-20
3	+ 1.77	- 0.63	= +07	+ 34	+ 11	= +45	-71
4	+ 1.85	0.00	= +15	+ 36	0	= +36	-21
5	+ 1.81	+ 0.37	= +16	+ 35	- 7	= +28	-12
6	+ 1.27	+ 1.37	= + 8	+ 24	- 25	= -1	+5
7	+ 1.13	+ 1.46	= + 7	+ 22	- 26	= -4	+71
8	0.00	+ 1.85	= +30	0	- 32	= -32	+62

$$19.56 - 0.16 = +283.7 + 9.78 \Delta + 227 - 97$$

$$- 0.16 + 12.76 = -231.3 + 1.33 \Delta$$

$$+ [] - 0 = +3.1$$

$$+ .11 \Delta$$

$$+ 12.76 = -228.2$$

$$b = -17.9$$

$$19.56 = +283.7 - 2.9 = +280.5$$

$$a = +19.3$$

$$+ .67 \Delta$$

Arc Measured 151°

$$\frac{P}{n} = .15$$

$$\frac{\Sigma V}{n} = +16.6$$

$$\text{Irr } s^- \quad R = 1.85^-$$

$$\frac{+16.6}{.15} = 110.6$$

$$\Delta R = +1.7$$

$$-2RC = -1.85^-$$

$$\text{Corr } +0.5^-$$

$$\Delta b = -0.20$$

$$\Delta d = -0.1$$

$$\Delta R = +0.9$$

$$\Delta a = -1.27$$

$$\Delta \eta = -0.05^-$$

									U-C
1	+	0.88	-	1.63	=	+195	+	17	+199
2	+	1.13	-	1.96	=	+28	+	22	-20
3	+	1.77	-	0.63	=	+04	+	39	-91
4	+	1.85	-	0.00	=	+15	+	36	-21
5	+	1.81	+	0.27	=	+16	+	35	-12
6	+	1.27	+	1.27	=	+9	+	24	+5
7	+	1.13	+	1.96	=	+7	+	22	+71
8		0.00	+	1.85	=	+30	0	-	+62

$$19.56 - 0.16 = +283.9$$

$$+227 - 99$$

$$-0.16 + 12.76 = -231.3$$

$$+6.7 - 0 = +3.1$$

$$+12.76 = -228.2$$

$$b = -17.9$$

$$19.56 = +283.9 - 2.9 = +280.5$$

$$a = +19.3$$

are measured 15°

$$\frac{P}{h} = .15$$

$$\frac{\Sigma V}{h} = +16.6$$

$$\frac{+16.6}{.15} = 110.5$$

$$\Delta R = +1.4$$

11929 Moons Mean Position

8

$$\begin{array}{r} x_0 \quad 25,8710 \\ \quad +10 \\ \hline 25,8720 \end{array}$$

$$\begin{array}{r} y_0 \quad 16,6290 \\ \quad -9 \\ \hline 16,6281 \end{array}$$

From Plate Constants

$$x \quad 26.0596$$

$$y \quad 16.9055$$

$$z \quad +7.0596$$

$$v \quad -1.0945$$

$$\log 30.60879$$

$$\log \tan \delta \quad 9.6303$$

$$\cos 59.96099$$

$$z \quad -1.2170$$

$$8.50727$$

$$7.0537$$

$$7.14076$$

$$7.9207$$

$$\alpha - A \quad 138.28$$

$$h_1 \quad +.0083$$

$$A \quad 6 \quad 31 \quad 37.00$$

$$\log h_0 \quad 0.04230$$

$$\alpha_0 \quad 6 \quad 33 \quad 52.28$$

$$7.33113 \quad h$$

$$2.71135 \quad h = -518.5$$

$$\mu \alpha \quad +6.00$$

$$\delta - D \quad -8 \quad 34.5$$

$$\alpha_1 \quad 6 \quad 33 \quad 58.28$$

$$D \quad +29 \quad 12 \quad 50$$

$$\alpha_0 \quad 29 \quad 04 \quad 15.5$$

$$\mu \alpha \quad -2.1$$

$$\delta' \quad +29 \quad 04 \quad 13.7$$

11829 Moons Mean Position

8

$$\begin{array}{r} x_0 \quad 25,8710 \\ \quad +10 \\ \hline 25,8720 \end{array}$$

$$\begin{array}{r} y_0 \quad 16,6290 \\ \quad -9 \\ \hline 16,6281 \end{array}$$

From Plate Constants

$$x \quad 26.0596$$

$$y \quad 16.9055$$

$$z \quad +7.0596$$

$$u \quad -1.0995$$

$$\log z_0 \quad 0.60899$$

$$\log \tan \delta \quad 9.6503$$

$$\cos \delta \quad 9.96099$$

$$\xi \quad -1.2170$$

$$8.50727$$

$$7.0539$$

$$2.19076$$

$$7.9207$$

$$x - A \quad 13828$$

$$h_1 \quad +.0083$$

$$A \quad 6 \quad 31 \quad 39.00''$$

$$\log h_0 \quad 0.09250$$

$$x_0 \quad 6 \quad 33 \quad 5.229''$$

$$7.331154$$

$$2.714354 = -512.5$$

$$\mu_{\alpha} \quad +6.00$$

$$\delta - D \quad -8 \quad 39.5''$$

$$y_1 \quad 6 \quad 33 \quad 58.28''$$

$$D \quad +29 \quad 12 \quad 50$$

$$d_0 \quad 29 \quad 09 \quad 15.5$$

$$\mu_{\delta} \quad -2.1$$

$$\delta' \quad +29 \quad 09 \quad 13.9$$

$$\begin{array}{r}
 6 \quad 23 \quad 69.36^{\circ} \\
 \underline{38.57} \\
 5.82
 \end{array}$$

$$\begin{array}{r}
 +20 \quad 15 \quad 58.65^{\circ} \\
 \underline{58.87} \\
 + - 0.22
 \end{array}$$

$$\begin{array}{r}
 6 \quad 32 \quad 57.25^{\circ} \\
 \underline{50.37} \\
 6.86
 \end{array}$$

$$\begin{array}{r}
 +39 \quad 27 \quad 53.35^{\circ} \\
 \underline{57.77} \\
 -4.42
 \end{array}$$

$$\begin{array}{r}
 6 \quad 36 \quad 26.57^{\circ} \\
 \underline{21.18} \\
 2 \quad 5.41
 \end{array}$$

$$\begin{array}{r}
 +9 \quad 58 \quad 27.00 \\
 \underline{27.69} \\
 -0.69
 \end{array}$$

x 6.008

$$\begin{array}{r}
 3 \quad 5.48 \\
 -0.161
 \end{array}$$

13
 30
 20
 20
 15
 14
 5
 -0

38 36 34 32 30 28 26 24 22 20
 6 4

11924

Reduction to Apparent Place

9

Dec 10 = 5.6 h.

$$H + \alpha = 7 \quad 15.7 = 1085555 + 27 \quad 08.3$$

$$H = 0 \quad 40.8$$

$$\alpha = 6 \quad 33.9$$

$$G = 23 \quad 34.2$$

$$G + \alpha = 6 \quad 08.1 = 92015$$

log cos

$$= 0.1953$$

$$= 19.9605$$

$$0.1558$$

$$\log \cos(G + \alpha) = 8.5982$$

$$g = 1.4018$$

$$\sin(G + \alpha) = 9.9997$$

$$\tan \alpha = 9.6501$$

$$8.8239$$

$$\log \sin \delta = 9.6105$$

$$\cos(H + \alpha) = 9.5110$$

$$h = 1.3098$$

$$\sin(H + \alpha) = 9.9759$$

$$\sec \delta = 0.0395$$

$$8.8239$$

$$\log g = 99.50.0$$

$$g = 98755$$

$$h = 0.280$$

$$h = 0.1995$$

$$f = 13.838$$

$$g = +0.751$$

$$h = +17.11$$

$$+600.0$$

$$g = -0.891$$

$$h = -2.679$$

$$h = +17.32$$

$$-2.132$$

11929 Reduction 7.- Apparent Place 9

Dec 10 5.6 h.

$H+h$	7	15.7	$= 108 30.58$	$+ 29$	09.3
H	0	90.8			
K	6	33.9			
G	23	39.2			
$G+h$	6	081	$= 92 01.5$		

log cos δ

δ 0.1953

δ 19.9605

0.1557

log cos(C+1) 8.89824

δ 1.4018

sin(C+1) 9.9997

tand. 9.6501

8.8239

log sin δ 9.6105

cos(H+1) 9.5178

h 1.3098

sin(H+1) 9.9758

sec δ 0.0395

8.8239

log g' 99.50.04

g 9.8755

h' 0.2804

h 0.1995

f +3.838

g +0.754

h +1.11

+6.000

g' -0.891

h' -2.679

h +1.232

-2.122

11924 Lunar Parallax

10

α 6 33 58.28
 δ 5 36 20.70
 $\alpha - \alpha'$ - 57 37.58
 $= - 17 27 23.70$
 $\frac{1}{2}(\alpha - \alpha')$ - 57 30.16
 $- 17 18 53.54$

9.95727
 0.00000
 0.01370
 9.97097

δ 43 05 11.5
 $\delta + 27 07 13.4$
 $\delta - \delta'$ 19 00 58.1

9.82670
 8.19995
 9.51299
 0.16552
 7.70986

$\delta - \delta'$ - 17 25.4

δ 27 21 38.8

Ephd 27 21 39.5

O-C - 0.7

Curv Corr - 0.3

2nd Order Ref 0.0

In Corr = 0.1

$\delta + 27 21 38.7$

O-C - 0.8

π 57 28.86

9.86913

8.19995

9.39575

0.04050

7.50533

$\alpha - \alpha'$ - 11 00.32

= - 47.02

α 6 33 17.26

Ephd 6 33 13.20

O-C +1.06

- 1.06

= - 0.05

α 6 33 17.21

+1.01

[Good, $\bar{\pi} = +9.06$]

119 24

Lunar Parallax

10

$\lambda' \quad 6 \quad 33 \quad 58.28$
 $\mu \quad 5 \quad 36 \quad 20.71$
 $\theta - \lambda' \quad - \quad 57 \quad 37.58$
 $\quad - \quad 19 \quad 29 \quad 23.70$
 $\frac{1}{2}(\lambda - \mu) \quad - \quad 5 \quad 30.16$
 $\quad - \quad 19 \quad 18 \quad 53.58$

995.727
 0.00000
 0.01370

 9.97097

$\delta \quad 93 \quad 05 \quad 11.5$

$\delta \quad + \quad 29 \quad 09 \quad 13.9$

$\gamma - \delta \quad 19 \quad 00 \quad 58.1$

9.82690
 8.19995
 9.51299
 0.16552

 7.70986

$\delta - \delta' \quad 17 \quad 25.9$

$\delta \quad 29 \quad 21 \quad 38.8$

$\epsilon_{\text{hd}} \quad 29 \quad 21 \quad 39.5$

$0 - C \quad - \quad 0.7$

$\text{Curvature} \quad - \quad 0.3$

$2^{\text{nd}} \text{ order Ref} \quad 0.0$

$\pi \quad 59 \quad 28.86$

9.86913
 8.19995
 $9.39 \quad 75.7$
 0.84858

 7.50533

$\lambda - \lambda' \quad - \quad 41 \quad 00.32$

$\quad - \quad 47.02$

$\lambda \quad 6 \quad 33 \quad 19.26$

$\epsilon_{\text{hd}} \quad 6 \quad 33 \quad 13.20$

$0 - C \quad +1.06$

-0.06

$\text{Good.} \quad \epsilon = +4.06$

11925-

Star Measures

11

L	d	d	d
18437	18472	15712	
22.2 16377	14916	15620	
10- 71	12	58	26
	12848	-[0089]	-[0089]
<u>22.2063</u>	<u>22.2066</u>	<u>9.9911</u>	<u>9.9911</u>
2 20602	20902	-[0265]	
23.3 17400	16162	02	
20.9+ 396	58	16712	
	12938	16972	
<u>23.3204</u>	<u>23.3222</u>	<u>20.9750</u>	<u>20.9735</u>
2 17676	18834	13298	
34.1 17268	13531	19870	
25.2 64	40	80	
	10118		
<u>34.0410</u>	<u>34.0418</u>	<u>25.1587</u>	<u>25.1574</u>

Moon Measures

L			
26+	20910	20.910	
17.8	12682	18102	
	702	00	
	14	04	
	<u>197720</u>	<u>19.7692</u>	
2 20016	19869		
27.3 14868	15000		
15- 70	08		
	18	68	
<u>27.5178</u>	<u>27.5136</u>		
3 20352	19898		
28 15832	19396		
15.9 28	90		
	50	99	
<u>15.4522</u>	<u>15.4498</u>		

11925

Star Measures

11

d	1	2	d	2
L	18927		18972	15712
22.2	16377	14916	18560	15620
10-	71	12	58	26
		12898	-[0089]	-[0089]
	<u>22.2063</u>	<u>22.2066</u>	<u>9.9912</u>	<u>9.9911</u>

2	20602		20902	-[0285]
23.3	17900	16162	10661	02
20.9+	396	58	59	16712
		12938	910	16972
	<u>23.3204</u>	<u>22.3222</u>	<u>20.9750</u>	<u>209735</u>

2	17676		18839	13298
39.1	17268	13531	17299	118886
25.2	69	40	50	88
		15118		
	<u>39.0910</u>	<u>39.0948</u>	<u>25.1587</u>	<u>25.1659</u>

Moon Measures

L			20910	20910
26+			12682	18102
17.8			702	00
			19	09
			<u>197720</u>	<u>197692</u>

2	20016	19869	
27.3	14868	15000	
15-	70	08	
	18	68	
	<u>27.5178</u>	<u>27.5136</u>	

3	20352	19898
28	15882	19396
15.9	28	90
	50	99
	<u>159522</u>	<u>15.9998</u>

Moon Measures

4	19791	14220
28.9	16170	17800
16.6	72	28
+8	86	
	<u>28.3618</u>	<u>28.3609</u>

5
28
17.7

20242	20314
13740	16822
40	30
49	06
<u>17.6519</u>	<u>17.6516</u>

6	20600	18962
27.7	14020	15602
18	30	590
	32	70
	<u>27.6606</u>	<u>27.6630</u>

7
27
18.3

18532	19836
15120	13226
30	16
	70
<u>18.3397</u>	<u>18.3383</u>

8	18532
26.6	14520
18.4	20
+7	
	<u>18.4012</u>

20799
14818
10020
19800
<u>18.4022</u>

Moon Measures

$$\begin{array}{r}
 9 \\
 \hline
 28.9 \\
 16.6 \\
 + 1 \\
 \hline
 19791 \quad 19220 \\
 16170 \quad 17820 \\
 72 \quad 28 \\
 86 \\
 \hline
 28.3618 \quad 28.3609
 \end{array}$$

$$\begin{array}{r}
 5 \\
 \hline
 28 \\
 17.7
 \end{array}$$

$$\begin{array}{r}
 20292 \quad 20219 \\
 13720 \quad 16822 \\
 90 \quad 30 \\
 49 \quad 06 \\
 \hline
 17.6519 \quad 17.6516
 \end{array}$$

$$\begin{array}{r}
 6 \\
 \hline
 27.7 \\
 18 \\
 \hline
 20630 \quad 18962 \\
 19020 \quad 15602 \\
 30 \quad 590 \\
 32 \quad 70 \\
 \hline
 27.6606 \quad 27.6620
 \end{array}$$

$$\begin{array}{r}
 7 \\
 \hline
 27 \\
 18.3
 \end{array}$$

$$\begin{array}{r}
 18532 \quad 19806 \\
 15190 \quad 113226 \\
 30 \quad 16 \\
 90 \\
 \hline
 18.3397 \quad 18.3383
 \end{array}$$

$$\begin{array}{r}
 8 \\
 \hline
 26.6 \\
 18.9 \\
 + 7 \\
 \hline
 18532 \\
 14520 \\
 20 \\
 \hline
 18.9012
 \end{array}$$

$$\begin{array}{r}
 20799 \\
 19816 \\
 1020 \\
 17800 \\
 \hline
 18.9022
 \end{array}$$

Times Etc.

13

11923						
Dec 16 1/6	5	56		6	08	
Epo to stars	1					
Moon	6	01	53.7	6	01	53.8
Clock fast		12	02.9			
H. Sid Time	5	49	50.85	8-9	-0	9 8 ^m
H. Long	4	44	31.05			
g. Sid T.	10	34	21.90			
Sid T. M. Norm	17	15	31.35			
Reduction	17	18	50.55			
g. M. T.	17	16	00.36			

From Hunt Glen.	P. A.	Dec			
Moon 17 ^h	6	33	07.65	+27	21 50.7
Station int ^h			2.1829		-9.227
16.0060			39.98	-1	10.6
Tatular Place	6	33	42.59	+27	20 40.8

Mooring age	16 days	
Parallax	59	28.72
Sunrid.	14	52.3
H.		89.23
ang		13.9
g.h. (6)		-1.1
H.		909.6
H.		1.9391
ap.		-9.27
(1+9)/H		1.8464
H		3.7092

934 - 17.72

az - 502.2
+28
- 478.2

Times Etc.

13

11925						
Dec 10 16.	5	56		6	08	
Exp. to stars	1					
Moon	6	01	53.7	6	01	53.8
Clock fast		12	02.9			
H. sid time	5	49	50.85	6-49-0	49	m
H. Long	9	49	31.05			
g sid T	10	39	21.90			
sid T 11 Moon	17	15	31.35			
Internal	17	18	50.55			
Reduction		2	50.19			
G.M.T.	17	16	00.36			

From Mount Allen.	R. A.	Dec.	
Moon 17 ^h	6 33	07.65	+29 21 50.7
Moon 1 ^h		2.1829	-9.227
16.0060		39.98	-1 10.6
Tabular Place	6 33	42.59	+29 20 40.1

Moon's Age	16 days
Parallax	59 28.72
Semi-d	19 52.3
H.	89.23
ang	13.2
Δh	-1.1
H.	909.6
H.	1,939.1
alt.	-9.27
(1+4)/10	1,846.4
H	3,709.2

937 - 17.72

$$\begin{array}{r}
 a = -502.2 \\
 + 39 \\
 \hline
 - 478.2
 \end{array}$$

11925

Plate Constants

7

$$\begin{array}{rcl}
 x & 22.2069 & 233213 & 37.0919 \\
 y & 220832 & 23.2959 & 39.5695 \\
 x-y & +1232 & +259 & -5281
 \end{array}$$

$$\begin{array}{rcl}
 \eta & 9.9911 & 20.9792 & 25.1582 \\
 \eta & 9.9272 & 21.7557 & 25.8171 \\
 \eta-\eta & +669 & -7815 & -6559
 \end{array}$$

$$\begin{array}{rcl}
 x-y & +500x & +376y & +2.2x & -12761 \\
 +1232 & +11103 & = 12325 & +376 & = 12711 + 99 = 12760 \\
 +259 & +11661 & = 11920 & +789 & = 12709 + 52 = 12761 \\
 -5281 & +17021 & = 11790 & +996 & = 12686 + 75 = 12761 \\
 26.5171 & +13259 & & +622 & & +58 & 26.6399
 \end{array}$$

$$\begin{array}{rcl}
 \eta-\eta & +500y & -33.5x & +2.7y & -4998 \\
 +669 & +4996 & = +5665 & -797 & +4921 & +27 & = 4948 \\
 -7815 & +10987 & = 3672 & -781 & = 9891 & +37 & = 9948 \\
 -6559 & +12579 & = 6020 & -1190 & = 9880 & +68 & = 9948 \\
 16.5571 & +8277 & & -887 & & +95 & 16.8029
 \end{array}$$

$$\begin{array}{rcl}
 \text{Tables} & a = -2 & e = -2 & a-e = 0 & b+d = 0 \\
 \text{(Obs)} & = -502.2 & = -502.7 & = +.5 & = -4.1 \\
 b-c & -502.0 & -502.3 & & -4.1
 \end{array}$$

11925

Plate Constants

7

$$\begin{array}{rcl}
 \lambda & 22.2069 & 23.3213 & 39.0919 \\
 \gamma & 22.0832 & 23.2959 & 39.5695 \\
 \lambda - \gamma & +1.232 & +259 & -5.281
 \end{array}$$

$$\begin{array}{rcl}
 \gamma & 9.9911 & 20.9792 & 25.1582 \\
 \lambda & 9.9292 & 21.9557 & 25.8171 \\
 \gamma - \lambda & +669 & -9815 & -6559
 \end{array}$$

$$\begin{array}{rcl}
 \lambda - \gamma & +500\lambda & +37.6\gamma & +2.2\lambda & -12761 \\
 +1.232 & +11103 & = 12325 & +376 & = 12711 + 99 = 12761 \\
 +259 & +11661 & = 11920 & +789 & = 12709 + 52 = 12761 \\
 -5.281 & +17021 & = 11790 & +996 & = 12686 + 75 = 12761 \\
 26.5171 & +13259 & & +622 & +58 = 26.63
 \end{array}$$

$$\begin{array}{rcl}
 \gamma - \lambda & +500\gamma & -35.5\lambda & +2.7\gamma & -9998 \\
 +669 & +9996 & = +5665 & -799 & = 19921 + 27 = 9998 \\
 -9815 & +10987 & = 5672 & -781 & = 9891 + 57 = 9998 \\
 -6559 & +12579 & = 6020 & -1190 & = 9880 + 68 = 9998 \\
 16.5571 & +8277 & & -887 & +95 = 16.8029
 \end{array}$$

$$\begin{array}{rcl}
 \text{Tables} & a = -.2 & e = -.2 & a - e = 0 & b + d = 0 \\
 \text{Obs} & = -302.2 & = -502.7 & = +.5 & = -9.1
 \end{array}$$

A 0
B +, 3

11925

Moon Center

5

x	$x - x_0$	Δx	$(x - x_0)^2$	$(x - x_0) + (y - y_0)^2$	$O - C$
1 27.0000	+0.8860	0	0.2362	34078	-18
2 27.5192	+1.0002	0	1.0004	34072	-20
3 28.0000	+1.4860	0	2.2082	34189	+97
4 +28.3613	+1.8473	0	3.4125	34125	+33
5 28.0000	+1.4860	0	2.2082	34199	+107
6 27.6618	+1.1478	0	1.3174	34182	+90
7 27.0000	+0.8860	0	0.2362	34349	+257
8 26.5190	0.0000	0	0.0000	34273	+181

 $R^2 = 34092$

y	$y - y_0$	Δy	$(y - y_0)^2$	$\angle$
1 19.7706	-1.7804	-5	31716	165°
2 15.0000	-1.5510	-4	24068	147°
3 15.9510	-1.1000	-3	12107	127°
4 16.5510	0.0000	0	00000	90°
5 17.6515	+1.1005	+3	12117	53°
6 18.0000	+1.4490	+4	21008	39° 38'
7 18.3390	+1.7880	+5	31984	15°
8 +18.9017	+1.8507	+6	34273	0° 165°

Approx. Center

 $x = 28$ y

15.9510

17.6515

33.1025

 y_0

16.5512

approx

18.9017

 R

18.505

1.8967

 x_{max}

28.3613

 x_0

26.5190

Center

 x_0 26.5190 y_0 16.5510

11925

Moon Center

3

x	$x - x_0$	Δx	$(x - x_0)^2$	$(x - x_0)(y - y_0)$	$y - y_0$
1 27.0000	+0.8860	0	0.2362	39.078	-19
2 27.5192	+1.0002	0	1.0009	34.072	-20
3 28.0000	+1.4860	0	2.2082	34.189	+97
4 28.3613	+1.8973	0	3.9125	39.125	+33
5 28.0000	+1.4860	0	2.2082	34.199	+107
6 27.6618	+1.1478	0	1.3179	34.182	+90
7 27.0000	+0.4860	0	0.2362	39.349	+257
8 26.5190	0.0000	0	0.0000	39.273	+181

 $R^2 = 3.9092$

y	$y - y_0$	Δy	$(y - y_0)^2$	$x - x_0$
1 19.7706	-1.7809	-5	3.1716	165
2 15.0000	-1.3510	-4	2.9068	147
3 15.4510	-1.1000	-3	1.2107	127
4 16.5510	0.0000	0	0.0000	90
5 17.6515	+1.1005	+3	1.2117	53
6 18.0000	+1.4990	+4	2.1008	39
7 18.3390	+1.7880	+5	3.1987	15
8 18.9017	+1.8507	+6	3.9273	0

 165°

Approx Center

 $x = 28$

y 15.9510
17.6515
33.1025

 y_0 16.5512 y_{max} 18.9017 R 18.503 x_{max} 28.3613 x_0 26.5190

1.8969

Center $\{ x_0$ 26.5190
 y_0 16.5510

Formation of Normals:

1 - 0.87	- 17.0	+ 25.0
2 - 1.35	- 2.0	+ 31.0
2 - 1.64	+ 149.5	- 107.0
4 0.0	+ 6.0	0.0
5 + 1.64	+ 139.5	+ 118.0
6 + 1.04	+ 166.5	+ 131.0
7 + 0.88	+ 126.0	+ 460.0
8 + 0.00	+ 0.0	+ 339.5
+ 3.66	+ 657.5	+ 1099.5
- 9.66	- 27.0	- 107.0
- 0.50	+ 630.5	+ 992.5

	a	b	c	new a-c
	+ 20	- 12	- 74	+ 20
a + 40	+ 40	- 11	- 23	- 10
b + 7	+ 60	- 8	0	+ 71
c - 5.2	+ 74	0	+ 22	- 60
	+ 60	+ 8	+ 16	- 37
	+ 86	+ 10	+ 4	- 67
	+ 40	+ 12	0	+ 116
	+ 0	+ 13	- 39	+ 29

.047

$$-0.50 + 16.72 = +11.76$$

$$+ [] \div .02 = 40.37$$

$$+ 16.70 = + 2.13 \Delta$$

$$+ 10.62 = + 7.96 + .06 = + 8.02 \Delta$$

11925-

Conditional Equations

6

1	+ 0.99	- 1.78	= - 19	+ 3.1	- 109	= - 78	+ 69	0-c
2	+ 1.00	- 1.55	= - 20	+ 62	- 95	= - 33	+ 73	
3	+ 1.99	- 1.10	= + 97	+ 93	- 67	= + 26	+ 71	
4	+ 1.85	0.00	= + 23	+ 115	0	= + 115	- 82	
5	+ 1.99	+ 1.10	= + 107	+ 93	+ 67	= + 160	- 53	
6	+ 1.15	+ 1.85	= + 90	+ 72	+ 89	= + 161	- 71	
7	+ 0.99	+ 1.79	= + 257	+ 31	+ 110	= + 141	+ 116	
8	+ 0.00	+ 1.85	= + 181	+ 0	+ 113	= + 113	+ 68	
						+ 332	- 206	

$$10.62 - 0.50 = +630.5 + 7.96$$

$$- 0.50 + 16.72 = +992.5 + 1.76$$

$$+ [] - 0.02 = + 29.7$$

$$+ 16.7 = +1022.2$$

$$+ .13 \Delta$$

$$b = +61.3$$

$$10.62 = +630.5 + 30.6 = +661.1$$

$$a = +62.3$$

$$+ .75 \Delta$$

Are Measured 165⁻⁰

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

$$\frac{\Sigma v}{n} = +15.7$$

$$In = 6 \quad R \quad 1.85 \quad + \frac{15.7}{.22} = +71.2$$

$$\Delta P = +0.9$$

$$- 2 P E = - 2.59$$

$$err = +0.7$$

$$\Delta b = -0.39$$

$$\Delta s = -0.2$$

$$\Delta R = +0.2$$

$$\Delta a = -1.93$$

$$\Delta q = -0.07$$

11925

Conditional Equations

6

1	+ 0.99	- 1.78	= - 19	+ 31	- 109	= - 78	+ 69
2	+ 1.00	- 1.55	= - 20	+ 62	- 95	= - 33	+ 13
3	+ 1.99	- 1.10	= + 97	+ 93	- 67	= + 26	+ 71
4	+ 1.85	0.00	= + 33	+ 115	0	= + 115	- 82
5	+ 1.99	+ 1.10	= + 107	+ 93	+ 67	= + 160	- 53
6	+ 1.15	+ 1.95	= + 90	+ 72	+ 89	= + 161	- 71
7	+ 0.99	+ 1.79	= + 257	+ 31	+ 110	= + 141	+ 116
8	+ 0.00	+ 1.85	= + 181	+ 0	+ 113	= + 113	+ 68
						+ 332	- 206

$$10.62 - 0.50 = +630.5$$

$$- 0.50 + 16.72 = +1992.5$$

$$+ [] - 0.02 = +29.7$$

$$+ 16.7 = +1022.2$$

$$b = +613$$

$$10.62 = +630.5 + 30.6 = +661.1$$

$$a = +623$$

Are Measured 165⁰⁰

$$\frac{p}{h} = .22$$

$$\frac{\Sigma v}{h} = +15.7$$

$$\frac{+15.7}{.22} = +71.2$$

$$\Delta p = +0.9$$

119 25

Moon's Mean Position

7

$$\begin{array}{r} \gamma_0 \quad 26.5140 \\ \quad \quad + 31 \\ \hline 26.5171 \end{array}$$

$$\begin{array}{r} \gamma_0 \quad 16.55510 \\ \quad \quad + 31 \\ \hline 16.5571 \end{array}$$

From Plate Constants

 $\lambda \quad 26.6379$ $\gamma \quad 16.8027$ $\gamma \quad 26.6379$ $\eta \quad -1.1973$ $\log 30.66607$ $\log \tan \delta \quad 9.6523$ $\log 29.96053$ $\log \gamma \quad 1.3321$ 8.50727 7.0537 279827 8.0378 $\delta-A \quad 157.86$ $\eta_1 \quad 0.0109$ $A \quad 6 \quad 31 \quad 37.00$ $\delta-\gamma_0 \quad 0.08217^h$ $\gamma_0 \quad 6 \quad 37 \quad 11.86$ 7.33113^m $2.75099^s = -563.6$ $\text{Red} \quad +6.00$ $\delta-D \quad -9 \quad 23.6$ $\gamma_1 \quad 6 \quad 37 \quad 17.86$ $D \quad 27 \quad 12 \quad 50.0$ $\delta_0 \quad 27 \quad 03 \quad 26.4$ $\text{Red} \quad -2.1$ $\delta' \quad 27 \quad 03 \quad 27.3$

11925

Moon Mean Position

7

$$\begin{array}{r} \gamma_0 \quad 26.5140 \\ + 31 \\ \hline 26.5171 \end{array}$$

$$\begin{array}{r} \gamma_0 \quad 16.55510 \\ + 31 \\ \hline 16.5591 \end{array}$$

From Plate Constants

$$\lambda \quad 26.6399$$

$$\gamma \quad 16.8027$$

$$\beta \quad 9.6399$$

$$\delta \quad -1.1973$$

$$\log 30.66609$$

$$\log \tan \delta \quad 9.6523$$

$$\log 89.96053$$

$$\gamma \quad 1.3321$$

$$850729$$

$$7.0537$$

$$219827$$

$$8.0378$$

$$\alpha - A \quad 157.86$$

$$\eta_1 \quad .0109$$

$$A \quad 6 \quad 31 \quad 39.00$$

$$\log 40 \quad 0.08219$$

$$7.33115$$

$$\gamma_0 \quad 6 \quad 39 \quad 11.86$$

$$2.75099 \eta_2 = -563$$

$$\text{Red} \quad +6.00$$

$$\delta - D \quad -9 \quad 23.6$$

$$\gamma' \quad 6 \quad 39 \quad 17.86$$

$$D \quad 29 \quad 12 \quad 50.0$$

$$\delta_0 \quad 29 \quad 03 \quad 26.9$$

$$\text{Red} \quad -2.1$$

$$\delta' \quad 29 \quad 03 \quad 29.3$$

11925

Lunar

Parallax

8

α 6 39 17.86
 δ 5 49 50.85
 $\delta - \alpha$ - 11 6 45.15
 δ (x 41) - 4 15.77
 δ - 11 2 29.38

π 37 28.72
 μ 9.86913
 μ 8.19993
 μ 9.28496
 μ 0.04044
 μ 7.39446

μ 9.95727
 μ 0.00000
 μ 0.00811
 μ 9.96538

$\delta - \alpha$ - 8 31.55
 μ - 39.10

δ 42 43 7.2

$\delta + 29$ 03 24.3

δ 18 39 42.9

μ 9.82640
 μ 8.19993
 μ 9.50512
 μ 0.16851
 μ 7.69996

$\delta - \alpha$ 17 13.7

GHS +24 20 90.1 α 6 33 43.76

δ 24 20 38.0 α 6 33 42.59

$\delta - \alpha$ -2.1 $\delta - \alpha$ +1.17

$\delta - \alpha$ -0.3 $\delta - \alpha$ -0.06

2nd Order Ref 0.0

In low -0.2 -0.07

δ +24 20 37.8 α 6 33 43.69

$\delta - \alpha$ -2.3 +1.10

Good Plate
M-5 46

11925

Turner

Parallax

5

λ^1 6 39 17.86
 δ 5 49 50.85
 $\delta - \lambda^1 -$ 49 27.01
 $=$ -11 6 43.15
 $\lambda^1(1-\lambda^1)$ -4 13.77
 $\lambda^1 - 11$ 2 29.38

π 59 28.72
 9.86913
 8.19993
 9.28996
0.09099
 7.39996

9.95727
 0.00000
0.00811
 9.96538

$\lambda - \lambda^1$ - 8 31.55
 $=$ - 39.10

δ 42 43 7.2

$\delta + 29$ 03 29.3

$\delta - \lambda^1$ 18 59 42.9

9.82690
 8.19993
 9.50512
 0.16851
7.69996

$\delta - \lambda^1$ 17 13.7

Gph δ +29 20 90.1 λ 6 33 937.6

δ 29 20 38.0 Gph 6 33 42.59

0-C -2.1 0-C +1.17

Quasar Core -0.3 -0.06

2nd Order Ref 0.0

- Good Plate
 M-5 8.6

11931

Star Measures

	α	δ	α	δ
1	20 6 88	19 7 86	19 0 98	17 5 02
20.9	11 3 48	19 1 30	10 1 17	18 5 76
4.61	50	28	21	80
	72	86	94	76 48
	<u>20.9323</u>	<u>20.9343</u>	<u>4.8976</u>	<u>4.8974</u>
2	19 9 60	19 6 86	19 4 60	
22.2	17 5 58	15 9 59	11 0 52	18 0 79
28.9	52	55	60	70
	51	13 5 36	40	52
	<u>22.2403</u>	<u>22.2421</u>	<u>20.8585</u>	<u>20.8613</u>
3	20 1 24	20 1 04	10 6 82	19 6 92
26.7	1 32 49	17 0 88	15 8 40	14 5 06
11.6	48	80	40	10
	19	95	10 6 82	92
	<u>26.6869</u>	<u>26.6883</u>	<u>11.4842</u>	<u>11.4816</u>
	9	9		

Moon Measures

1	20 6 20		
22.5	13 6 40		
13.1	46		
-7	12		
2		15 0 62	19 1 99
23		14 2 92	18 4 56
15.2		96	42
			80
		10 7 68	13 0 79
		18 8 68	
		11 8 20	20 2 47
24		8 0 8	12 1 60
15.7		88	60
			30
		<u>15.7052</u>	<u>15.8073</u>
			58
			<u>15.7038</u>

Used scratches to increase
 Very Poor the no. of points on left side
 4 min too indefinite

11931

1	20 530	19 976	20 630
20.9	11 170	19 319	11 652
4.6	84	14	52
	26	68	29
	<u>20 9390</u>	<u>20,9338</u>	<u>4,8973</u>

2	20 160	20 290	19 852	19 578
22.2	17 770	18 698	11 272	18 139
20.9	68	12 692	72	91
	62	98	62	70
	<u>22,2392</u>	<u>22,2398</u>	<u>20,8588</u>	<u>20,8570</u>

3	20 522	20 079	10 678	19 154
36.7	13 346	17 058	15 830	13 952
11.6	98	56	18	52
	02	72	72	39
	<u>26,8982</u>	<u>26,6984</u>	<u>11,4852</u>	<u>11,9820</u>

11931

Star Measures

α	δ	α	δ	α	δ
1	20 6 48	19 7 86	19 10 98	17 5 00	
20.9	11 2 48	19 1 20	10 1 17	18 5 76	
40.69	50	28	21	80	
	72	86	94	76 18	
	<u>20.9323</u>	<u>20.9343</u>	<u>9.8976</u>	<u>9.8979</u>	
2	19 9 60		19 6 96	19 9 60	
22.2	17 5 58	15 9 59	11 0 52	18 0 79	
20.9	52	55	60	70	
	51	13 5 36	90	52	
	<u>22.2403</u>	<u>22.2421</u>	<u>20.8585</u>	<u>20.8613</u>	
3	20 1 24	20 1 09	10 6 82	19 6 92	
26.7	13 2 49	17 0 88	15 8 90	14 5 06	
11.6	98	80	40	10	
	19	95	10 6 82	92	
	<u>26.6869</u>	<u>26.6883</u>	<u>11.9892</u>	<u>11.9816</u>	

Moon Measures

1					
22.5	5				
13.1	1				
-7					
2		15 0 62	19 1 99		
23		19 2 92	18 4 56	16 9 50	
13.2		96	92	92	
			80	16 2 09	
		10 7 68	15 0 7 99	<u>15.0742</u>	
		18 8 68			
3		11 8 20	20 2 99	20 0 58	
24		8 0 8	12 1 60	17 0 86	
15.7		58	60	0 96	
			30	58	
		<u>15.7052</u>	<u>15.8073</u>	<u>15.7038</u>	

Used scatter to increase
 Very Poor the no. of points on left side
 4 min too indefinite

11931

L	20 530	19976	20630
20.9	11190	19314	11652
4.6	84	14	52
	26	68	24
	<u>209340</u>	<u>20,9338</u>	<u>4.8973</u>

3	20 160	20290	19852	19572
22.2	17770	12698	11272	18139
20.9	68	12692	72	71
	62	98	62	70
	<u>22.2392</u>	<u>22.2398</u>	<u>20.8588</u>	<u>20.8570</u>

3	20 522	20094	10678	19134
26.7	13346	17058	15830	13952
11.6	48	86	18	52
	02	72	72	29
	<u>26.8982</u>	<u>26.6984</u>	<u>11.4852</u>	<u>11.9820</u>

4	15171	
24.2	13256	13722
16	50	30
		11838
	<u>24.1918</u>	<u>24.1888</u>

5	14920		15576	
24.2	11818	14132	14208	15980
16.1 AC	10	32	192	86
		11536		14608
	<u>24.2606</u>	<u>24.2596</u>	<u>16.1381</u>	<u>16.1375</u>

6	20240	19206
24.4	16122	13308
16.7	20	18
-X	32	06
	<u>24.4116</u>	<u>24.4107</u>

7	20252	20199	20030
24.3	16182	14288	16036
17	90	72	48
	50	89	22
	<u>24.4065</u>	<u>24.4083</u>	<u>17.3985</u>

8	19282	19846		19972
24.2	15960	13178		13960
17.3	60	78		64
ec	76	98		68
	<u>24.3320</u>	<u>24.3330</u>		<u>17.3995</u>

9			16032	
24			15699	15620
18+			90	76
				15271
			18.0338	<u>18.0337</u>

10	19508	19948	20629	19569
23.3	16326	13124	15889	15098
16.6	28	22	89	88
AC	02	18	29	54
	<u>23.3178</u>	<u>23.3204</u>	<u>18.5580</u>	<u>18.5554</u>

2	15171	
29.2	13256	10722
16	50	30
		11838
	<u>291918</u>	<u>291888</u>

5	19920		15576	
29.2	11818	19132	19198	15980
16.1 AC	10	32	192	86
		11536		19608
	<u>292606</u>	<u>292596</u>	<u>161381</u>	<u>161375</u>

6	20290	19206
29.4	16122	13308
16.7	20	18
+	32	06
	<u>244116</u>	<u>244107</u>

7	20252	20199	20030
29.3	16182	19288	16036
17	90	72	48
	50	89	22
	<u>249065</u>	<u>249083</u>	<u>173985</u>

8	19282	19896		19972
29.2	15960	13178		13960
17.3	60	78		69
∞	76	98		68
	<u>243320</u>	<u>243330</u>		<u>173995</u>

9			16032	
29			15699	15620
18+			90	76
				15271
			<u>180338</u>	<u>180337</u>

10	19508	19948	20629	19569
23.3	16326	13129	15089	15098
14.6	28	22	89	88
AC	02	18	29	57
	<u>233178</u>	<u>233209</u>	<u>185570</u>	<u>185539</u>

Times Etc

11931

Dec 12 '16

Exp. to Stars	8	42		8	57
" " Moon	8	77	38.2	8	77 38.5
Clock fast.		12	06.6		

H. Sid Time	8	35	31.75	$\phi - \alpha = +0^h$	16.5
-------------	---	----	-------	------------------------	------

H. Longs	4	44	31.05		
----------	---	----	-------	--	--

G. Sid T.	13	20	02.80		
-----------	----	----	-------	--	--

Sid. to M. Sid	17	23	24.76		
----------------	----	----	-------	--	--

Interval	19	56	38.39		
----------	----	----	-------	--	--

Reduction		3	16.07		
-----------	--	---	-------	--	--

G. M. T.	19	53	22.30		
----------	----	----	-------	--	--

From Naut Alman			P. Cl.		Dec.
-----------------	--	--	--------	--	------

Moon 19 ^h	8	17	15.71	+ 18	33 79.9
----------------------	---	----	-------	------	---------

Michelson			1.9775		9.226
-----------	--	--	--------	--	-------

	53.3717	.1	45.54		8 12.9
--	---------	----	-------	--	--------

Instantaneous	8	19	01.26	+ 18	25 32.5
---------------	---	----	-------	------	---------

Moon's Age 1-8 days

P. Sid. Time	59	5.23
--------------	----	------

Longs	19	45.9
-------	----	------

P.	88	59
----	----	----

Red.	12.8
------	------

G. Sid (5)	-0.8
------------	------

P.	89	7.9
----	----	-----

P.	1.9	24.7
----	-----	------

Red.	-9	1.7
------	----	-----

(H. Sid.)	1.8	33.0
-----------	-----	------

P.	3.35	9.9
----	------	-----

939 - 19.3

$a = -500.5$
 $+ 24$
 476.5

Times Etc

11931

Dec 12 '16

Exp. 2 - Stars	8	92		8	59
" " Moon	8	97	38.2"	8	97 38.5"
Clock fast		12	06.6"		

H. Sid time	8	35	31.75"	$\theta = \gamma = +0^h$	16.5"
H. Long	4	99	31.05"		
G. Sid L.	13	20	02.80"		
Sid. Time	17	23	29.96"		
Internal	19	56	38.39"		
Reduction		3	16.09"		
G. M. L.	19	53	22.30"		

from Mount Wilson

P. A.

Dec.

Moon 19"	8	17	15.71"	+18	33	99.9"
Motion in 1m			1.9775"			9.226"
" " 53.3717	1		95.54"		8	12.9"
Tabular Place	8	19	01.26"	+18	25	32.5"

Moon's Age 18 days

Parallax	59	5.23"
Semid.	19	95.9"
R.	88	5.9"
Aug.		12.8"
Dr (5)		-0.8"
R	89	7.9"
R		1.9247"
AR		-97.5"
(149)R		1.8330"
RR		3.3599"

939 - 19.3"

$$\begin{array}{r}
 a = 500.5 \\
 + 29 \\
 \hline
 476.5
 \end{array}$$

11931

Plate Constants

27

x	209339	22.2395	26.6983
y	209821	22.4079	27.0574
x-y	-482	-1.679	-3.591

x	4.8975	20.8579	11.9836
y	4.0235	20.7863	10.9260
y-x	+8720	+716	5.546

$$\begin{aligned}
 & x-3 \quad +500x \quad +39y \quad +.5x \quad -10161 \\
 & -982 + 10467 = +9985 + 166 = +10151 + 10 = +10161 \quad 0 \\
 & -1679 + 11120 = +9441 + 709 = 350 + 11 = +61 \quad 0 \\
 & -3591 + 13399 = +9758 + 390 = 48 + 13 = +61 \quad 0 \\
 & 22.5791 + 11290 \quad +574 \quad +11 \quad -22,7505
 \end{aligned}$$

$$\begin{aligned}
 & y-y \quad +500y \quad -30.9x \quad +4y \quad -10552 \\
 & +8720 + 2999 = 11169 - 636 = 10533 + 19 = +10552 \quad 0 \\
 & +716 + 10929 = 11195 - 676 = 10469 + 83 = 52 \quad 0 \\
 & +3576 + 5792 = 11318 - 812 = 10506 + 47 = 53 +1 \\
 & 16.8697 + 8433 \quad -686 \quad +67 \quad 16.5961
 \end{aligned}$$

Tables $a = -.7$ $e = -.9$ $a-e = +.2$ $b+d = 0$
 10hrs $= -500.5$ -329.0 $+3.5$ -3.6
 0-c -879.8 -503.1 -3.6

11931

Plate Constants

27

$$\begin{array}{rcl}
 x & 20.9338 & 22.2395 \quad 26.6983 \\
 y & 20.9821 & 22.9079 \quad 27.0579 \\
 x-y & -982 & -1679 \quad -3594
 \end{array}$$

$$\begin{array}{rcl}
 y & 9.8975 & 20.8579 \quad 11.9824 \\
 y & 9.0255 & 20.7863 \quad 10.9260 \\
 y-y & +8720 & +716 \quad 5546
 \end{array}$$

$$\begin{array}{rcl}
 x-y & +500x & +39y \quad +.5x \quad -10161 \\
 -982 + 10967 = +9985 + 166 = +10151 + 10 = +10161 & 0 \\
 -1679 + 11120 = +9441 + 709 = 50 + 11 = +61 & 0 \\
 -3594 + 13599 = +9758 + 390 = 98 + 13 = +61 & 0 \\
 22.5791 + 11290 & +579 \quad +11 \quad -22.750
 \end{array}$$

$$\begin{array}{rcl}
 y-y & +500y & -30.9x \quad +9y \quad -10552 \\
 +8720 + 2999 = 11169 - 636 = 10533 + 19 = +10552 \\
 +716 + 10929 = 11195 - 676 = 10969 + 83 = 52 \\
 +3576 + 5792 = 11318 - 812 = 10506 + 97 = 53 \\
 16.8697 + 8935 = 686 \quad +67 \quad 16.5961
 \end{array}$$

$$\begin{array}{l}
 \text{Tables } a = -.7 \quad e = -.9 \quad a-e = +.2 \quad b+d = 0 \\
 \text{lbs } \quad \quad \quad = -500.5 \quad -529.0 \quad = +3.5 \quad \quad \quad = -3.6
 \end{array}$$

A = 0
B = +5

11931

Moon's Center

23

	x	$(x-x_0)$	Δx	$(x-x_0)^2$	$(x-x_0) + (y-y_0)^2$	
1						
2	23 0000	+04210	0	0.1772	3.3974	+375
3	24 0000	+14220	0	2.0221	3.3552	-47
4	24 1903	+16123	6	2.5995	3.3547	-52
5	24 2601	+16821	0	2.8299	3.3641	+42
6	+ 24 4111	+18331	0	3.3603	3.3603	+4
7	24 4074	+18294	6	3.3467	3.3639	+40
8	24 3325	+17545	0	3.0782	3.3589	-10
9	24 0000	+14220	0	2.0221	3.3788	+189
10	23 3191	+07911	0	0.5492	3.3844	+295

 $R^2 = 3.3599$

	y	$(y-y_0)$	Δy	$(y-y_0)^2$	
1					
2	15 0745	-17944	-1	3.2202	1670
3	15 7045	-10545	-1	1.3331	129
4	16 0000	-08690	0	0.7552	118
5	16 1378	-07312	0	0.5347	114
6	16 8690	00000	0	0.0000	90
7	17 0000	+01310	+0	0.0172	86
8	17 3990	+03300	+0	0.2809	73
9	18 0334	+11647	+1	1.3567	46.51
10	18 5537	+16837	+1	2.8352	29 1830

Moon's Center

$x = 24$ y 15 7045
 18 0337
 23 7382
 y_0 16 8691

Com R 1.8330
 x_{max} 24 4111
 y_0 22 5781

Center $\{x_0$ 22.5780
 y_0 16.8690

11931

Moon Center

23°

	x	$(x-x_0)$	Δx	$(x-x_0)^2$	$(x-x_0)(y-y_0)$	
1						
2	23.0000	+0.9210	0	0.1772	3.3979	+375
3	29.0000	+1.9220	0	2.0221	3.3552	-97
4	29.1903	+1.6123	0	2.5995	3.3597	-52
5	29.2601	+1.6821	0	2.8299	3.3691	+92
6	+ 29.9111	+1.8331	0	3.3603	3.3603	+9
7	29.9079	+1.8299	0	3.3967	3.3639	+90
8	29.3325	+1.7595	0	3.0782	3.3589	-10
9	29.0000	+1.9220	0	2.0221	3.3788	+189
10	23.3191	+0.7911	0	0.5792	3.3899	+295

 $R = 3.3599$

	y	$(y-y_0)$	Δy	$(y-y_0)^2$	
1					
2	15.0795	-1.7999	-1	3.2202	167°
3	15.7095	-1.1699	-1	1.3331	127
4	16.0000	-0.8690	0	0.7552	118
5	16.1378	-0.7312	0	0.5397	114
6	16.8690	0.0000	0	0.0000	90
7	17.0000	+0.1310	+0	0.0172	86
8	17.3990	+0.5300	+0	0.2809	73
9	18.0337	+1.1647	+1	1.3567	46
10	18.5537	+1.6837	+1	2.8352	29

193°

Moon Center

$x = 29$ $y = 15.7095$
 18.0337
 3.37382
 $y_0 = 16.8691$

y
 Com R 1.8330
 $x_{max} = 29.9111$
 $y_0 = 22.5751$

Center $\{ x_0 = 22.5780$
 $y_0 = 16.8690$

Formation of Normals.

1			
2	- 0.37	+ 74.0	- 336.0 $\frac{1}{4}$ wt
3	- 1.64	- 54.0	+ 54.0
4	- 1.90	- 84.0	+ 45.0
5	- 1.23	+ 70.0	- 30.5
6	0.0	+ 7.5	0.0
7	+ 0.24	+ 75.0	+ 5.0
8	+ 0.93	- 17.5	- 5.5
9	+ 0.82	+ 134.0	+ 109.5 $\frac{1}{4}$ wt
10	+ 0.62	+ 90.5	+ 206.0 $\frac{1}{4}$ wt
	+ 2.61	+ 498.5	+ 419.5
	- 4.64	- 101.5	- 372.0
	- 2.03	+ 397.0	+ 47.5

		a	b	c	new o-e
a	+ 25	+ 10	- 4	- 31	+ 360
b	+ 2	+ 35	- 2	- 4	- 67
c	- 37	+ 40	- 2	+ 1	- 76
		+ 42	- 1	+ 7	+ 18
		+ 46	0	+ 9	- 29
		+ 46	+ 0	+ 9	+ 5
		+ 48	+ 1	+ 8	- 99
		+ 35	+ 2	0	+ 141
		+ 18	+ 3	- 16	+ 188

$$- 2.03 + 6.63 = + 1.07 \Delta$$

$$+ 1.7 - 0.22 = + 1.38$$

$$+ 6.71 = + 0.37 \Delta$$

$$+ 18.61 = + 12.70 \Delta - .03 = + 12.67 \Delta$$

$+12.7.0 \Delta \quad -1.09 \Delta$

$$- 2.03 + 6.63 = + 47.5$$

$$+ [] - 1.22 = + 43.3$$

$$+6.91 = +90.8$$

$+103^\circ\Delta$

$$+ 6 = + 18.2$$

$$+18.61 = +397.0 + 28.8 = +425.8$$

$$a = + 22,8$$

$+ 0.68 \Delta$

Rec. Measured 193°

$$\frac{P}{h} = 125$$

$$\frac{\sum V}{4} = -15$$

$$-5 = -80$$

$\Delta R = -0,5$

Ins⁻ R 1.83

125

Corr + 0,5

$$-2PC = -1.83$$

$$\Delta P = -1.0$$

$$\Delta b = -0,09$$

$$\Delta \delta = -0,0''$$

$$\Delta q = -1.27^S$$

$$\Delta q = -0.07$$

$$\begin{array}{r} + 122 - 239 \\ 198 \end{array} \quad \begin{array}{r} \leftarrow \\ 239 \end{array}$$

$$a = + 22.8$$

$$\Delta H = -0.9$$

11931 Moon's Mean Position

27

$$\begin{array}{rcl}
 X_0 & 22.5780'' & \\
 & + 11'' & \\
 & 22.5791'' & \\
 Y_0 & 16.8690'' & \\
 & + 7'' & \\
 & 16.8697'' &
 \end{array}$$

From Plate Constants

$$\begin{array}{rcl}
 X & 22.7505'' & \\
 Y & 16.5961'' & \\
 Z & +0.7505'' & \\
 h & -1.4039'' & \\
 \log \xi & 9.87535'' & \\
 \log \tan \delta & 9.5139'' & \\
 \log \eta & 9.7507'' & \\
 \log \zeta & 8.50724'' & \\
 & 7.0539'' & \\
 & 6.3180'' & \\
 & 1.39005'' &
 \end{array}$$

$$\begin{array}{rcl}
 \alpha - A & 29.35'' & \\
 \lambda_1 & +0.002'' & \\
 A & 8 \ 18 \ 20.0'' & \log h_0 \ 0.17790'' \\
 & & 7.33115'' \\
 \alpha_0 & 8 \ 18 \ 49.55'' & 2.81625'' -655.0'' \\
 Red & +5.90'' & \delta - D \quad -10 \ 55.0'' \\
 \alpha' & 8 \ 18 \ 49.95'' & D \ +18 \ 17 \ 30.0'' \\
 & & \delta_0 \ 18 \ 03 \ 3.50'' \\
 & & Red \quad -15.1'' \\
 & & \delta' \ 18 \ 03 \ 19.9''
 \end{array}$$

11931 Moon's Mean Position

27

$$X_0 \quad 22.5780''$$

$$+ 11''$$

$$22.5791''$$

$$Y_0 \quad 16.8690''$$

$$+ 7''$$

$$16.8697''$$

From Plate Constants

$$X \quad 22.7505''$$

$$Y \quad 16.5961''$$

$$Z \quad +0.7505''$$

$$h \quad -1.9039''$$

$$\log Z \quad 9.87535''$$

$$\log \tan \delta \quad 9.5139''$$

$$\cos \delta \quad 9.97806''$$

$$Z'' \quad 9.7507''$$

$$8.50724''$$

$$7.0539''$$

$$1.39005''$$

$$6.3180''$$

A-A

$$29.55''$$

$$h_1 \quad +1.0002''$$

$$A \quad 8 \quad 18 \quad 20.0'' \quad \log h_0 \quad 0.14790''$$

$$7.33115''$$

$$Y_0 \quad 8 \quad 18 \quad 49.55''$$

$$2.81625'' \quad -655.0''$$

Red

$$+5.90'' \quad S-D$$

$$-10 \quad 55.0''$$

$$A' \quad 8 \quad 18 \quad 49.95''$$

$$D \quad +18 \quad 19 \quad 30.0''$$

$$D_0 \quad 18 \quad 03 \quad 35.0''$$

Red

$$-15.1''$$

$$D' \quad 18 \quad 03 \quad 19.9''$$

11931

Lunar Parallax

28

α' 8 18 49.95^v
 δ 8 35 31.75^v
 $\delta - \alpha'$ 16 41.80^v
 α 9 10 27.0^v
 δ (11) 1 32.1^v
 $\delta - \alpha$ 4 8 54.9^v

9.95727

0.00000

0.00113

9.95840

γ 42 15 36.0^v

$\delta + 18$ 03 19.9^v

$\delta - \delta$ 24 12 16.1^v

9.82680

8.19680^v9.61277^v0.17231^v

7.80828

$\delta - \delta'$ 22 06.5^v

$\delta + 18$ 25 26.4^v

Eph $\delta + 18$ 25 32.5^v

O-C - 6.1^v

Cum Cor + 0.5

2nd Order Ref. 0.0

In Cor - 0.0

$\delta + 18$ 20 26.4

O-C - 6.1

Ti 59 05.23^v

9.86913^v8.19680^v8.86206^v0.02285^v6.95084^v

$\delta - \delta'$ 3 07.19^v

= + 12.28^v

α 8 19 02.23^v

Eph α 8 19 01.26^v

O-C + 0.97^v

0.00

- 0.04

α 8 19 02.19

+ 0.93

11931

Lunar Parallax

28

α' 8 18 49.95"
 δ 8 35 31.75"
 $\alpha - \alpha'$ 16 41.80"
 $=$ 9 10 27.0"
 $\delta(11)$ 1 32.1"
 δ 9 8 59.9"

9.95727

0.00000

0.00113

9.95890

δ 92 15 36.0"

δ 118 03 19.9"

$\delta - \delta'$ 24 12 16.1"

9.82690

8.19680

9.61277

0.17231

7.80828

$\delta - \delta'$ 22 06.5"

$\delta + 18 25 26.9"$

$\text{Eph} \delta + 18 25 32.5"$

O-C

- 6.1"

O-C

+ 0.97"

Carr Carr

+ 0.5"

000

2nd Under Ref.

0.0

T_1 59 05.23"

9.86913

8.19680

8.86206

0.02285

69.5089

$\delta - \delta'$ 3 09.19"

$=$ 12.28"

δ 19 02.23"

δ 19 01.26"

