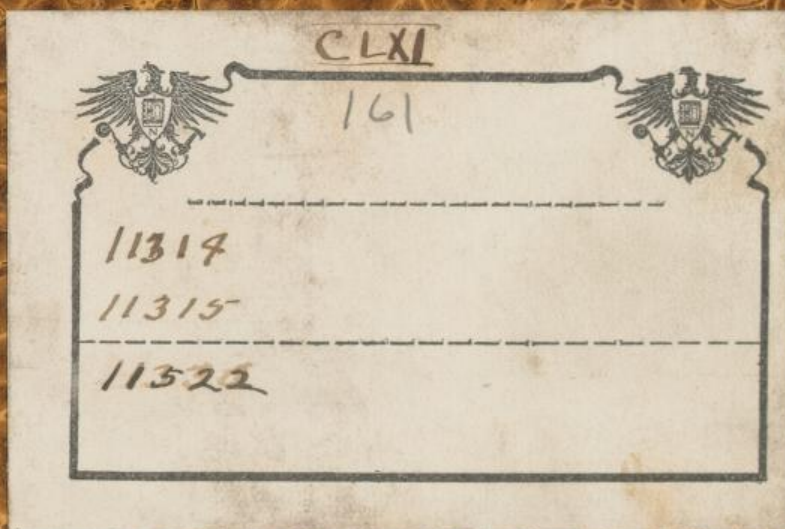


KG
11366
v.1013



11314

Star Measures

<u>1</u>	19901	20736	19786	19926
149	10002	20646	13172	15938
11.6	00	40	64	32
	03	46	188	20
	<u>14.9902</u>	<u>14.9906</u>	<u>11.6019</u>	<u>11.6011</u>

<u>2</u>	20558	20160	19406	19972
29.2	19320	11386	9562	19750
26.9	20	94	60	78
	58	64	12	78
	<u>29.1238</u>	<u>29.1226</u>	<u>26.9851</u>	<u>26.9837</u>

<u>3</u>	19912	20336	19680	19888
29.4	16088	14178	16840	12701
5.3	86	50	36	07
	08	32	76	9887
	<u>29.3824</u>	<u>29.3816</u>	<u>5.2841</u>	<u>5.2819</u>

Moon Measures.

<u>1</u>	2	19641	
23		9796	19708
1989		56	16
		38	9830
		<u>14.9887</u>	<u>14.9892</u>

<u>2</u>	
24	
1594	= 16

<u>3</u>	19910	19986	19910
24.1	18412	11470	18412
16.9	08	68	08
48	10	82	10
	<u>24.1500</u>	<u>24.1786</u>	<u>24.1500</u>

Good

✓	20 260		20 082	20 159
17.9	10 348	19 922	19 052	16 171
11.6	10 346	22	98	71
	10 251	10 000	72	42
	<u>199 909</u>	<u>19 9922</u>	11 6026	11 2028

✓	195 76	20 494	198 62	20 480
29.2	186 38	11 736	10 002	20 309
16.9	32	26	10	09
	66	88	52	69
	1240	29,1248	26,9896	26,9826

✓
29.9
5.3

11319

Star Measures

1	19901	20736	1978.6	19926
19.9	10002	20696	1317.2	15938
11.6	00	90	6.9	32
	03	96	188	20
	<u>19.9902</u>	<u>19.9906</u>	<u>11.6019</u>	<u>11.6011</u>

2	20558	20160	19406	19952
19.2	19320	11386	9562	19760
26.9	20	94	60	28
	58	64	12	48
	<u>29.1238</u>	<u>29.1226</u>	<u>26.9851</u>	<u>26.9837</u>

3	19912	20336	19680	19888
29.9	16088	19178	16890	12701
5.3	86	50	36	07
	08	32	76	9884
	<u>29.3824</u>	<u>29.3816</u>	<u>52891</u>	<u>5.2819</u>

Moon Measures.

1	2	19641	
23		9796	19708
19.9		56	16
		38	9880
		<u>19.9887</u>	<u>19.9892</u>

2	
29	
15.9	16

3	19910	19986	19410
29.1	18912	11870	19712
16.9	08	68	1.8
4.8	10	52	1.0
	<u>29.1500</u>	<u>29.1986</u>	<u>9.10500</u>

1	20 260		20 082	20 159
19.9	10 348	19 922	14 052	16 171
11.6	10 346	22	48	71
	10 251	10 000	72	42
	<u>149 909</u>	<u>14 9922</u>	11.6026	11.2028

2	198 76	20 494	198 62	20 480
29.2	186 38	11 736	10 002	20 304
26.9	32	36	10	09
	66	88	52	67
	1240	29,1248	26.9896	26.9826

3
294
53

Moon Measures

4			19640	19018
24			19738	12906
17.4			732	12
			28	02
			17.4886	17.9900
5	19258	19548		
23.6	12430	16810		
18	28	412		
	66	52		
	23.6837	23.6856		
6			19930	19370
23			14832	14480
18.6			32	72
			22	70
			18.5102	18.5106
7			18970	20306
22.2			12226	17034
18.7			32	36
+7			78	30
			18.6746	18.6728
8	20240	20950	20042	20306
21.6	17058	13626	15560	14756
18.0	48	18	60	52
20	50	56	28	99
	21.3190	21.3170	18.4476	18.4452
9	20486	20249	20350	
	19452	11288	20210	10262
	19452	84	16	62
	84	50	72	10158
	9.1037	9.1036	26.0136	26.0107

Moon Measure

19640	19018
19738	12906
732	12
28	02
<u>179826</u>	<u>179900</u>

5	19258	19388
23.6	12930	16880
18	28	442
	68	52
	<u>236839</u>	<u>236856</u>

6	14130	19930	19370
23	17226	19832	14980
18.6	22	32	72
	22	22	70
	<u>1412</u>	<u>185102</u>	<u>185106</u>

7		18970	20306
22.2		12226	17039
18.7		32	36
+7		78	10
		<u>186796</u>	<u>186128</u>

8	20290	20950	20092	20306
21.6	17058	13626	10560	19756
18.0	48	18	60	52
26	50	56	28	99
	<u>213190</u>	<u>213170</u>	<u>184976</u>	<u>184952</u>

9	20986	20299	20350	
	19952	11288	20210	10262
	19952	89	16	62
	89	50	72	10158
	<u>91039</u>	<u>91036</u>	<u>260136</u>	<u>260108</u>

$A = +3$
 $B = .5$

113 19

Times Etc

3,

Oct 12-16

Exp. to the Stars 3 5-1 7 03
 " " Moon 3 5-6 70.9 3 5-6 81.0
 Clock Fast 10 32.7

H. Sid Time 3 46 08.25" $\delta - \alpha = +1^h$ 09
 H. Long. 4 24 31.05"
 G. Sid T. 8 30 39.30"
 Sid T. M. H. 13 22 54.57"
 Internal 19 07 44.76"
 Redirection 3 8.03"
 G. M. J. 19 04 36.73"

From Mark Alm. R. A. Dec.
 Moon 19^h 2 42 29.96" +20 43 21.8"
 Motion in μ 2.2445" 8.995"
 " 46122 10.35" 41.5"
 Tabular Place 2 42 40.31" +20 44 03.3"

Moon's Age 16 days

Parallax 56 49.39"
 Semid. 15 30.5"
 R. 930.5"
 Aug. 14.0"
 ΔR (6) -1.1"
 R. 943.4"
 R. 2022.3"
 ΔR -967"
 $(1+9)/R$ 1.9256"
 R^2 3.7079"

934 = -19.15"

$a = -50.2$
 $+22$
 -47.8

	Plate	Constants
1	19.9909	29.1232
5	15.2635	29.9302
1-5 -	2.731	- 8070

4	11.6013	26.9899
24	11.0902	27.3581
24-4 +	5.613	- 3737
4-4		+ 7135

11349

Times Etc.

3.

Oct 12-16

Epp. to the Stars	3	5.1		7	0.3
" " Moon	3	5.6	70.9	3	5.6 91.0
Clock fast		10	32.7		

H Sid Time	3	9.6	08.25"	$\delta - \alpha = +1^h$	0.9
H Long	4	9.9	30.05"		
g. Sid T.	8	3.0	39.30"		
Sid T.M.H.	13	2.2	59.59"		
Interval	19	0.7	99.76"		
Reduction		3	8.03"		
g.M.T.	19	0.7	36.73"		

From Nant Alm.

R. A.

Dec.

Moon 19 ^h	2	9.2	29.96	+20	9.3	21.8"
Motion in 1 ^m			2.2993"			8.993"
" 9.6123			10.55"			91.5"
Tutular Place	2	9.3	40.31"	+20	9.4	0.33"

Mars Age 16 days

Parallax	5.6	99.39"
Sund	15"	30.5"
R		930.5"
Ang.		19.0"
Plr (6)		-1.1"
R		973.4"
R		2.0223"
are		-967"
(1+g)R		1.9256"
R ²		3.707.9"

939: -19.15"

a = -50.2

+2.2

-978

Plate Constants

x	-14.9909	29.1232	29.3820
y	15.2635	29.9302	30.4897
x-y	-2739	-8070	-10677

m	11.6015	26.9877	5.2830
n	11.0902	27.3581	9.5695
m-n	+5613	-3737	+7735
m-n			

Cur. Corr

z	n	Δz	-43	+1.1	-5
-6.73	-6.98	-15	+27	+12 - 7 =	+5
+7.93	+9.33	+28	-32	-4 + 9 =	+5
+8.97	-13.96	+51	-34	+17 - 13 =	+4
+0.80	-1.97	0	-3	-1	= -9
					= -0.03

Δn	-4.84	+2.27	= -2
-16	+33	+17 - 15 =	+2
+30	-95	-15 + 17 =	+2
-81	+65	-16 + 19 =	+3
0	+7	+2	= +7
			= +0.3

Plate Center and Constants

X	Y	X	Y
(1) 17.9907	11.6015		
29.1232	26.9888		
29.3820	5.2830	(12) 37	37.59
9.1035	26.0120		
22	18	+3	58.33
+7.0096	+6.3985	2.71	35.87
39.5	866.5	20.28	59.7

Plate A 291 90.00
Center D 20 29 00.0

$$\begin{array}{rclcl}
 X-3 & +500X & & -117.14 & +2.0X & -3971 \\
 -2731 & +7495 & = & +4764 & -1323 & = +3441 +36 = +3471 \quad 0 \\
 -8070 & +14562 & = & 6492 & -3079 & = 3413 -58 = 3971 \quad 0 \\
 -10677 & +19691 & = & 9014 & -603 & = 3411 +59 = 3470 -1 \\
 22.2230 & +11111 & & -1911 & & +67 \quad 22.8026 \\
 & & & & & 77 \quad 22.8003
 \end{array}$$

$$\begin{array}{rclcl}
 Y-7 & +300Y & & +117.9X & +23Y & -13163 \\
 -5613 & +5801 & = & 11419 +1722 & = +13136 +27 & = 13163 \quad 0 \\
 -3.757 & +13492 & = & 9753 +3396 & = 13101 +62 & = 13163 \quad 0 \\
 +7135 & +2691 & = & 9776 +3376 & = 13152 +12 & = 13164 +1 \quad \checkmark \\
 16.7780 & +8377 & & +2553 & +38 & 16.5282
 \end{array}$$

Tables, $a = -3$ $e = -8$ $a-e = +5$ $b+d = -.5$
 obs. $= -502$ $= -502.3$ $= +1.3$ $= -.8$
 W-C -501.7 -501.5 -0.3

Cape M-383-1195.3

8.16

8.15

2 33 08.15

2 33 08.15

02 10.22 25 01.9

59.91

2 34 02.56

2 41 40.00

- 7 37.99

- 457.36

266026 m

9.96838

1.13588h

- 13.6739

- 85

83181

9.1035

+ 7859

99.5

99.9

+ 21 31 99.9

21 31 99.6

+ 4 11.1

21 35 55.7

20 29 00

+ 1 6 55.7

40 16.2

3.60381

0.93996

9.5976

22.718

8.9228

+ 8.6092

+ 0.0837

26.6929

26.0120

- 6809

Plate Center and Constants

119.7799	11.6015						
29.1232	26.9899						
29.3820	5.2830	112	37	37.59	197	39	15.0
22	18	+3	58.33		+49	99.7	
+7.0096	+6.3985	2	91	35.87	20	28	59.7
395	966.5						

Plate A 291.40.00
Center D 20 28 00.0

$$\begin{aligned}
 X-3 & + 3208 & -119.14 & +2.01 & -3971 \\
 -2731 & + 7995 = & +9764 & -1323 = & +3891 + 30 = +3971 - 0 \\
 -8070 & + 19562 = & 6992 & - 3079 = & 3913 + 58 = 3971 - 0 \\
 -10677 & + 19691 = & 9014 & - 603 = & 3911 + 59 = 3970 - 1 \\
 22.2230 & + 11111 & - 1891 & & 1.67 = 22.8021 \\
 & & & & 2.7 = 22.8003
 \end{aligned}$$

$$\begin{aligned}
 Y-3 & + 3204 & +119.98 & +2.37 & -13163 \\
 +5613 & + 5801 = & 11919 & + 1722 = & +13136 + 27 = 13163 - 0 \\
 -3737 & + 13992 = & 9755 & + 3396 = & 13101 + 62 = 13163 - 0 \\
 +7135 & + 2691 = & 9776 & + 3376 = & 13152 + 12 = 13164 + 1 \\
 16.7480 & + 8379 & + 2553 & + 38 & 16.5282
 \end{aligned}$$

Tables, $a = -3$ $e = -8$ $a-e = +5$ $b+d = -5$
 $lba = -502$ $= -502.3$ $= +.3$ $= -.8$
 $U-C = -501.7$ -501.5 $=$ -0.3

Cape Mr 38 3 - m 95.3

P.M. 8.16
8.15

2 33 08.15

2 33 08.15

54.91

2 34 02.56

2 41 40.00

- 7 37.77

- 457.36

266026 h

9.96838

1.13588h

- 136734

- 85

83181

9.1035

+ 7859

47.5

47.9

+ 21 31 47.7

21 31 47.6

+ 4 11.1

21 33 55.7

20 29 00

+ 1 6 55.7

40 16.2

3.60381

0.93496

9.5976

22718

8.9228

+ 8.6092

+ 0.0837

26.6929

26.0120

- 6809

4.5

P.M. - P.A. + 0.0135

+ 0.18

... $\Delta \mu = -0.089$

- 1.2

11317

Standard Coordinates

net in Box 5

Cape No 393-Mag 5.7 Cape No 713-Mag 8.9 Cape No 715-Mag 6.6

C 2 36 43.56" 2 77 50.70 2 75 03.29

L PM 43.60 77 50.71 75 03.32

C 43.56 77 50.69 75 03.37

Mean 2 36 43.57" 2 77 50.70 2 75 03.33

Pres 53.97" 77 53.79" 75 53.96"

Q 2 37 37.57" 2 75 74.79" 2 75 57.29"

A 2 71 70.00 2 71 70.00 2 71 70.00

d-A - 7 02.46" + 7 74.79" + 7 17.29"

Sin(A-A) - 2 72.75" + 2 77.78" + 2 57.27"

log 2.38762" 2.38827" 2.74039"

log 9.97393" 9.96788" 9.97615"

log 0.86579" 0.86336" 0.89378"

log -7.3416" +7.3007" +7.8303"

log -17 +27 +42"

log 17.6567" 29.3037" 29.8345"

X 17.9907" 29.1232" 29.3820"

X-3 + 3.337" - 1.802" - 7.525"

See Standard C. for 2nd plate

C +19 35 07.7 21 72 01.2 +18 77 57.1

L 7.3 0.8 53.9

C 7.2 0.3 54.0

Mean +19 35 07.3" 21 72 00.8" +18 77 57.0"

Pres +7 7.7 +7 0.7"

D +19 39 15.0" 21 76 1.7" +18 78 57.7"

D 20 29 00 20 29 00 20 29 00

S-D - 7 74.50" + 1 17 1.7" - 1 70 5.3"

tail to D - 2 78.52" + 7 62.25" - 6 00.70"

log 3.77997" 3.66787" 3.77866"

log 0.80612" 0.99602" 1.10981"

log 9.5528" 9.6013" 9.5327"

log 17.316" 17.267" 17.876"

log 8.3378" 8.3817 8.3734"

log -6.3991" +9.9088" -12.8768"

log +0.218 +0.241" +0.236"

log 11.6227" 27.9329 51.768"

log 11.6015" 26.9877" 52.830"

log -2.12 -9.785" +1.368"

Standard Coordinates										
11319	Bom. 5									
Cape No	393	Mag	5.7	Cape No	713	Mag	8.9	Cape No	713	
C	2	36	93.56	2	77	50.70	2	95	03.29	
L	pm		93.60			50.71			3.32	
C			93.56			50.69			3.37	
Mean	2	36	93.57	2	77	50.70	2	95	03.33	
Tree			53.97			53.79			53.96	
x	2	37	37.59	2	75	99.77	2	95	57.29	
A	2	71	90.00	2	71	90.00	2	71	90.00	
x-A	-	4	02.96	+	4	9.79	+	4	17.29	
sin(A-A)	-	2	72.75	+	2	47.98	+	2	57.27	
log	2	38	96.2	2	38	82.9	2	7	03.9	
cos	1	9	73.93	9	96	78.8	9	7	61.5	
30	0	86	57.9	0	86	33.6	0	8	93.78	
30	-	7	341.6	+	7	300.7	+	7	830.3	
31	-	17		+	17		+	17		
31	1	9	63.67	2	9	303.9	2	9	834.8	
X	1	9	99.09	2	9	123.2	2	9	382.0	
X-3	+	3	33.7	-	1	80.2	-	2	62.6	
See St. Co. for 2nd Plate										
C	+19	35	07.9	21	72	01.2	+18	99	57.1	
I			7.3			0.8			53.9	
C			7.2			0.3			59.0	
Mean	+19	35	07.3	21	72	00.8	+18	99	59.0	
Tree	+18		7.7	+	4	0.9	+	4	0.7	
D	+19	39	15.0	21	96	1.7	+18	98	58.7	
D	20	29	00	20	29	00	20	29	00	
S-D	-	9	95.0	+	1	17	1.7	-	1	90
Tand-DI	-	2	985.2	+	4	622.5	-	6	00.70	
log	3	77	997	3	66	987	3	77	86.6	
30	0	80	61.2	0	99	60.2	1	10	98.1	
log	9	55	28	9	60	13	9	53	27	
30	1	73	16	1	72	67	1	78	78	
41	8	33	78	8	38	14	8	37	38	
40	-	6	399.1	+	9	908.8	-	12	87.68	
41	+	0	21.8	+	0	24.1	+	0	23.6	
4	1	16	22.7	2	79	32.9	5	19	88	
4	1	16	01.5	2	6	98.77	5	28	30	
4-4	-	2	12	-	9	98.5	+	1	36.2	

A = 0
B = +.4

11314		Mean	Center				6
X		$(X-X_0)$	ΔX	$(X-X_0)^2$	$(X-X_0) + (Y-Y_0)^2$	$O-C$	
1 23.0000		+0.7760	0	0.6022	3.6966	-1.13	
2 24.0000		+1.7760	0	3.1592	3.7037	-72	
3 24.1993		+1.9253	0	3.7068	3.7068	-11	
4 24.0000		+1.7760	0	3.1592	3.7037	-72	
5 23.6845		+1.4605	0	2.1330	3.7007	-72	
6 23.0000		+0.7760	0	0.6022	3.7086	+7	
7 22.2290		0.0000	0	0.0000	3.7087	+8	
8 21.3180		-0.9060	0	0.8208	3.7037	-22	

3.7079

Y		$(Y-Y_0)$	ΔY	$(Y-Y_0)^2$		
1 19.9890		-1.7590	-1	3.0949	15.6	
2 16.0000		-0.7480	-0	0.5595	11.3	
3 16.7980		0.0000	0	0.0000	9.0	
4 17.4893		+0.7413	+0	0.5495	6.7	
5 18.0000		+1.2520	+1	1.5677	4.9	
6 18.5109		+1.7629	+1	3.1064	2.4	
7 18.6737		+1.9257	+1	3.7087	0	
8 18.9967		+1.6987	+1	2.8849	3.32	18.4

X = 24

Y = 16.0000

Y = 23

Y = 19.9890

17.4893

18.5109

33.4893

33.4994

Y₀ 16.7976Y₀ 16.7997

Y max 18.6737

R 1.9267

X max 24.1993

X₀ 22.2233

Center { X₀ 22.2290
Y₀ 16.7980

11319	Moon	center				6
X	(X-X ₀)	ΔX	(X-X ₀) ²	(X-X ₀)(Y-Y ₀)	O-E	
1 23.0000	+0.7760	0	0.6022	3.6966	-1.13	
2 29.0000	+1.7760	0	3.1592	3.7037	-92	
3 29.1993	+1.9253	0	3.7068	3.7068	-11	
4 29.0000	+1.7760	0	3.1592	3.7037	-92	
5 23.6895	+1.9803	0	2.9300	3.7007	-72	
6 23.0000	+1.07760	0	0.6022	3.7086	+7	
7 22.2290	0.0000	0	0.0000	3.7087	+8	
8 21.3180	+0.9060	0	0.8208	3.7057	-22	

3.7079

Y	(Y-Y ₀)	ΔY	(Y-Y ₀) ²		
1 19.9890	-1.7390	-1	3.0999	156	
2 16.0000	-0.7980	-0	0.5595	113	
3 16.7980	0.0000	0	0.0000	90	
4 17.9893	+0.7913	+0	0.5595	67	
5 18.0000	+1.2520	+1	1.5677	99	
6 18.5109	+1.7629	+1	3.1067	29	
7 18.6737	+1.9257	+1	3.7087	0	
8 18.9969	+1.9989	+1	2.8899	332	189

X = 29

Y = 16.0000

Y = 23

Y = 19.9890

17.9893

18.5109

329893

339999

Y₀ 16.7996Y₀ 16.7997

Y max 18.6737

19267

X max 29.1993

Y₀ 22.2233

center {
 X₀ 22.2290
 Y₀ 16.7980

Formation of Normal

1 - 036	- 21.7	+ 49.7	$\frac{1}{4}$ wt phase limit?
2 - 133	- 75.0	+ 31.5	
3 00	- 21.5	00	
4 + 133	- 75.0	- 31.2	
5 + 182	- 105.0	- 90.0	
6 + 138	+ 55	+ 12.5	
7 + 000	+ 00	+ 15.5	
8 - 155	+ 200	- 37.5	
+ 7.53	+ 23.5	+ 109.2	
- 22.8	- 298.2	- 158.7	
+ 2.29	- 272.7	- 49.5	-54

	a	b	c	new O-C $\checkmark$
	+ 20	- 28	- 62	-160
a + 26	+ 46	- 12	- 20	- 27
b + 16	+ 50	0	- 7	+ 23
c - 57	+ 76	+ 12	+ 7	- 3
	+ 38	+ 20	+ 7	-39
	+ 20	+ 28	- 6	+16
	+ 0	+ 31	- 23	-15
	- 24	+ 27	- 51	- 91 $\checkmark$

.167

+ 200

$$+ 2.29 + 13.15 = + 4.87 \Delta$$

$$+ [] + 0.38 = + 1.20 \Delta$$

$$+ 12.47 = + 3.67 \Delta$$

$$13.72 = + 7.21 \Delta - 0.63 \Delta = + 6.58 \Delta$$

113 19

Conditional Equations

7

phase limit. by wt.

						0 - c
1	+0.78	-1.76	=	-113	-15	-98
2	+1.78	-0.75	=	-92	-35	-7
3	+1.93	0.00	=	-11	-38	+27
4	+1.78	+0.79	=	-92	-35	-7
5	+1.76	+1.25	=	-72	-29	-43
6	+0.78	+1.76	=	+7	-15	+22
7	+0.00	+1.93	=	+8	-0	+8
8	-0.91	+1.70	=	-22	+18	-40

+57 - 195

Average 31

$$+13.72 + 2.29 = -272.7 + 7.21 \Delta$$

$$+2.29 + 13.15 = -99.5 + 4.87 \Delta$$

$$+1 \quad 7 + 0.38 = -45.5$$

+0.29 \Delta

$$+12.77 = -7.0$$

b = -1.31

$$13.72 = -272.7 + .7 = -272$$

a = -19.8

+0.98 \Delta

Arc Measured = 184°

$$\frac{P}{n} = .36$$

$$\frac{\Sigma V}{n} = -17.2$$

$$\text{Inv } 6 \quad R \quad 1.93$$

$$\frac{-17.2}{.36} = -47.6$$

$$\Delta R = -0.6$$

$$-2RC = -2.70$$

$$\text{Corr} = +0.7$$

$$\Delta b = -0''.80$$

$$\Delta d = -0''.4$$

$$\Delta R = -1.3$$

$$\Delta a = -1.30$$

$$\Delta q = -0''.05$$

113 19

Conditional Equations

7

→ please limit by wt.

1	+0.78	-1.76	= -	113	-12	-	0-6
2	+1.78	-0.75	= -	92	-35	-	+98
3	+1.93	0.00	= -	11	-38	-	-7
4	+1.78	+0.79	= -	92	-35	-	+27
5	+1.76	+1.25	= -	72	-29	-	+7
6	+0.78	+1.76	= +	7	-15	-	-93
7	+0.00	+1.93	= +	8	-0	-	+22
8	-0.91	+1.70	= -	22	+18	-	+8
							-90

+57 - 193

Average 31

$$+13.72 + 2.29 = -272.7$$

$$+2.29 + 13.15 = -99.5$$

$$+2 + 0.38 = -92.5$$

$$+12.77 = -9.0$$

$$b = -1.31$$

$$13.72 = -272.7 + 7 = -272$$

$$a = -19.8$$

11319 Moon's Mean Position

8

$$X_0 \ 22.2270''$$

$$-10''$$

$$22.2230''$$

$$Y_0 \ 16.7780''$$

$$0''$$

From Plate Constants

$$X \ 22.8003''$$

$$Y \ 16.5282''$$

$$Z \ +0.8003''$$

$$\eta \ -1.4718''$$

$$\log 39.90325''$$

$$\cos S \ 9.97196''$$

$$8.50727$$

$$1.92805''$$

$$\log \tan S \ 9.5700''$$

$$Z \ 9.8065''$$

$$7.0537$$

$$6.4299''$$

$$A-A \ +26.55''$$

$$\eta_1 \ +.0003''$$

$$A \ 2 \ 41 \ 20''$$

$$\log \eta_0 \ 0.16794''$$

$$7.33115''$$

$$A_0 \ 2 \ 41 \ 46.55''$$

$$283679'' - 686.7''$$

$$Red \ +4.83''$$

$$S-D \ -11 \ 26.7''$$

$$A' \ 2 \ 41 \ 51.38''$$

$$D \ 20 \ 33 \ 30''$$

$$S_0 \ 20 \ 22 \ 03.3''$$

$$Red \ +24.1''$$

$$S' \ 20 \ 22 \ 27.4''$$

11319 Moon's Mean Position

8

$$\begin{aligned} X_0 & 22.2270'' \\ & -10'' \\ & 22.2230'' \end{aligned}$$

$$\begin{aligned} Y_0 & 14.7480'' \\ & 0'' \end{aligned}$$

From Plate Constants

$$X \quad 22.8023''$$

$$Y \quad 16.5282''$$

$$Z \quad +0.8023''$$

$$h \quad -1.9718''$$

$$\log 39.90320''$$

$$\log \tan 9.5700''$$

$$\cos 39.97176''$$

$$9'' 9.8065''$$

$$8.50727$$

$$7.0537$$

$$1.92505''$$

$$6.9299''$$

$$I-A \quad +26.63''$$

$$h_1 \quad +.0003''$$

$$A \quad 2 \quad 91 \quad 20''$$

$$\log h_0 \quad 0.16799''$$

$$7.33115''$$

$$Y_0 \quad 2 \quad 91 \quad 46.65''$$

$$283679'' - 686.7''$$

$$Red \quad +7.83''$$

$$S-D \quad -11 \quad 26.7''$$

$$X' \quad 2 \quad 91 \quad 51.38''$$

$$D \quad 20 \quad 33 \quad 30''$$

$$S_0 \quad 20 \quad 22 \quad 0.33''$$

$$Red \quad +29.1''$$

$$S' \quad 20 \quad 22 \quad 27.9''$$

$$\begin{array}{r}
 2 \quad 40 \quad 28.61 \\
 23.91 \\
 + 4.70 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 + 9 \quad 45 \quad 62.57 \\
 36.78 \\
 + 25.79 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \quad 45 \quad 77.18 \\
 2.11 \\
 + 3.07 \\
 \hline
 \end{array}$$

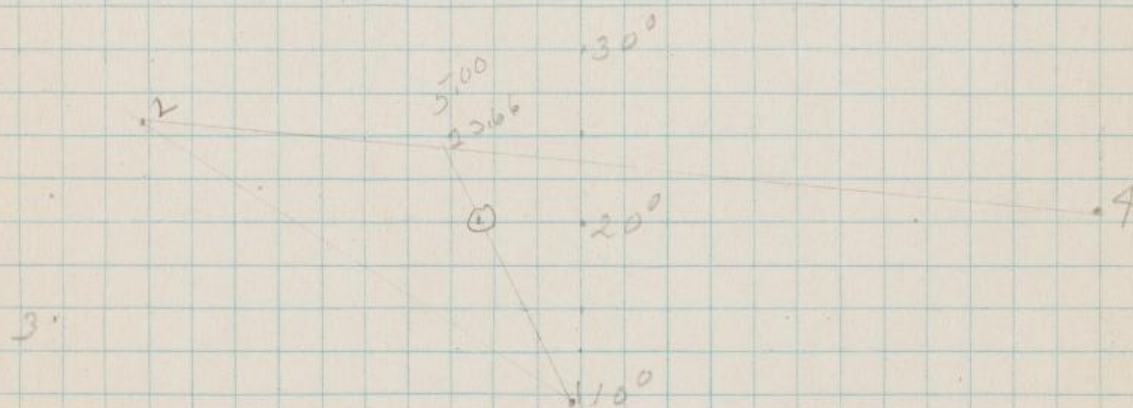
$$\begin{array}{r}
 + 26 \quad 59 \quad 77.40 \\
 57.20 \\
 + 23.20 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \quad 46 \quad 55.89 \\
 51.12 \\
 + 4.77 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 17 \quad 44 \quad 36.17 \\
 11.38 \\
 + 24.79 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \quad 39 \quad 7.96 \\
 2.61 \\
 7.85 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 21 \quad 35 \quad 80.21 \\
 55.60 \\
 24.58 \\
 \hline
 \end{array}$$



7 6 5 4 3 2 1 40 24 37m

11349

Reduction To Apparent Place.

9

$$\begin{array}{rcl}
 H + \alpha & 7 & 16.7 = 109 \quad 10.5 \delta + 20 \quad 22 \quad 03. \\
 H & 4 & 34.9 \\
 \alpha & 2 & 41.8 \\
 \delta & 23 & 17.6 \\
 G + \alpha & 1 & 56.7 = 29 \quad 6.0
 \end{array}$$

$$\begin{array}{rcl}
 \log \cos \delta & & 9.9720 \\
 \log \sin \delta & & 9.5416 \\
 \log \cos \delta & & 9.9720 \\
 \log \sin \delta & & 9.5416
 \end{array}$$

$$\begin{array}{rcl}
 \log \cos (G + \alpha) & & 9.9417 \\
 \log \sin (G + \alpha) & & 1.3393 \\
 \log \cos \delta & & 9.9720 \\
 \log \sin \delta & & 9.5416 \\
 \log \cos \delta & & 9.9720 \\
 \log \sin \delta & & 9.5416
 \end{array}$$

$$\begin{array}{rcl}
 \log \sin \delta & & 9.5416 \\
 \log \cos (H + \alpha) & & 9.5167 \\
 \log \sin (H + \alpha) & & 1.2783 \\
 \log \cos \delta & & 9.9720 \\
 \log \sin \delta & & 9.5416 \\
 \log \cos \delta & & 9.9720 \\
 \log \sin \delta & & 9.5416
 \end{array}$$

$$\begin{array}{rcl}
 \log g' & & 1.2807 \\
 \log g & & 9.4197
 \end{array}$$

$$\begin{array}{rcl}
 \log h' & & 0.3363 \\
 \log h & & 0.1057
 \end{array}$$

$$\begin{array}{rcl}
 f & + & 3.295 \\
 g & + & 0.263 \\
 h & + & 1.275 \\
 \hline
 & + & 4.833
 \end{array}$$

$$\begin{array}{rcl}
 g' & + & 19.075 \\
 h' & - & 2.169 \\
 \hline
 & + & 7.193 \\
 \hline
 & + & 27.099
 \end{array}$$

11349.

Reduction To Apparent Place.

9

$$H+x \quad 7 \quad 16.7 = 109 \quad 10.5 \quad 120 \quad 22 \quad 03.$$

$$H \quad 4 \quad 39.9$$

$$x \quad 2 \quad 91.8$$

$$G \quad 23 \quad 19.6$$

$$-G+x \quad 1 \quad 56.7 = 29 \quad 6.0$$

$$\log \cos \delta \quad 9.9720$$

$$L \quad 10.8899$$

$$L \quad 0.8569 +$$

$$\log \cos (G+x) \quad 9.9919$$

$$g \quad 1.3393$$

$$\text{Sum} \quad 9.6869$$

$$\text{tand} \quad 9.5696$$

$$8.8239$$

$$\log \sin \delta \quad 9.5916$$

$$\cos (H+x) \quad 9.5167 \quad \eta$$

$$h \quad 1.2783$$

$$\text{Sum} \quad 9.9752$$

$$\text{Sec d} \quad 0.0280$$

$$8.8239$$

$$\log g' \quad 1.2807$$

$$g \quad 9.4197$$

$$f \quad + 3.295$$

$$g \quad + 0.263$$

$$h \quad + 1.275$$

$$+ 9.833$$

$$\log h' \quad 0.3363 \quad \eta$$

$$h \quad 0.1059$$

$$g' + 19.075$$

$$h' - 2.169$$

$$L' + 7.192$$

$$29.099$$

11319 Lunar Parallax

TI 56 99.39

α' 2 41 51.38"
 δ 3 46 08.25"
 $\delta - \alpha'$ 1 04 16.87"
 $=$ 16 4 13.05"
 $\frac{1}{2}(\alpha' + \delta)$ 13.3"
 $\frac{1}{2}$ 15 57 59.7"

9.86913
 8.21823"
 9.77219"
 0.02908"
 7.55853"

9.93727
 0.00000
 0.01709"
 9.97436"

α' 12 26.55"
 $=$ 40 49.74"

δ 43 18 34.6

δ 20 22 27.7"

$\delta - \delta$ 22 56 07.2"

9.82670
 8.21823"
 9.59072"
 0.16373"
 7.79908"

$\delta - \delta'$ + 21 38.7

δ 20 44 06.1"

Eph δ + 20 44 03.3"

$\delta - \delta$ + 2.8

Curv. Corr. + 0.3

2nd Order Ref. 0.0

Inv Corr. - 0.4

δ + 20 44 05.7

$\delta - \delta$ + 2.7

α' 2 42 41.45"

Eph α' 2 42 40.31"

$\delta - \delta$ + 0.84"

- 0.03

- 0.05

α' 2 42 41.10

+ 0.79

not very good plate (images)

11319 Lunar Parallax

16

Ti 56 99.39

1' 2 91 51.38

+ 3 96 08.25

Eph 1 09 16.87

- 16 9 13.05

Eph + 6 13.3

13 57 59.7

9.86913

8.21828

9.77219

0.02908

7.55863

9.95727

0.00000

0.01709

9.97436

1-1' 12 26.85

= 0 49.77

x 93 18 39.8

+ 20 22 27.7

1-2 22 56 07.2

9.82690

8.21828

9.59072

0.16373

7.79908

1-1' 21 08.7

= 20 99 06.9

Eph + 20 99 03.3

O-C +2.8

Crown Cor +0.3

2nd Order Ref 0.0

x 2 92 91.45

Eph + 2 92 90.31

O-C +0.84

-0.03

11215

Star Measures 6

11

1	20849	20610	19656	19806
15.6	14930	16508	16956	12516
11.2	38	06	50	06
	52	02	58	06
	<u>15.5918</u>	<u>15.5900</u>	<u>11.2703</u>	<u>11.2705</u>

2	20488	20859	20256	18878
29.7	12978	18288	13898	16232
26.6	80	89	88	32
	408	59	58	88
	<u>29.7729</u>	<u>29.7731</u>	<u>26.6367</u>	<u>26.6357</u>

3	20320	19672	20222	20528
29.9	10582	19420	10872	19828
7.9	88	18	68	36
	26	66	22	28
	<u>29.9753</u>	<u>29.9759</u>	<u>4.9352</u>	<u>4.9319</u>

Moon Measures.

1	20541	20068
24.9	15891	14684
15	80	88
	48	59
	<u>24.7659</u>	<u>24.4631</u>

19230	18982
14426	19070
30	69
20	70
<u>15.5097</u>	<u>15.5093</u>

3	20538	19868
25.3	17020	13379
16.5	18	69
47	38	69
	<u>25.3519</u>	<u>20.3509</u>

Recessured
 I 20731
 19822
 20
 34
 155962

19702
 16992
 90
 08
 11,2712

2 19890
 12461
 61
 99
 297432

19089
 12715
 11
 68
 26,6359

3 19920
 9680
 82
 9930
299798

20208
 10870
 69
 08
99339

1P205
 1P821
 08
 8P

P20P.88

025P1
 020P1
 0E

02
5P1201

8P205
 02001
 81
 8E

P12P22

11245

Star Measures

11

✓	20899	20610	19656	19806
15.6	14930	16508	16956	12516
11.2	38	06	50	06
	52	02	58	06
	<u>15.5918</u>	<u>15.5900</u>	<u>11.2703</u>	<u>11.2705</u>

✓	20908	20859	20256	18878
29.7	12978	18288	13898	16232
26.6	80	89	88	32
	908	59	58	80
	<u>29.7929</u>	<u>29.7931</u>	<u>26.6369</u>	<u>26.6359</u>

✓	20320	19672	20222	20528
29.9	10582	19920	10872	17828
7.9	89	18	68	36
	26	66	22	28
	<u>29.9753</u>	<u>29.9759</u>	<u>9.9352</u>	<u>9.9319</u>

Moon Measures.

20068
19689
88
59
29.9631

18982
19070
67
70
15.5093

19868
13379
67
69
20.3509

Remeasured

1
20731
19822
20
34
15.5962

19702
16992
90
08
11.2712

2
19890
12461
61
94
29.7432

19084
12715
11
68
26.6357

3
19420
9680
82
9430
29.9248

20208
10870
64
08
4.9339

Moon Measures

12

4	19570	29840
25.2	16419	12992
17.8	06	96
	71	32
	<u>25.3160</u>	<u>25.3162</u>

5	19598	18780
25.0	12198	16120
17.8	209	22
	49	70
	<u>17.7348</u>	<u>17.7344</u>

6	19722	20130
24	15118	19740
18.5	12	48
	10	29
	<u>18.4602</u>	<u>18.4618</u>

7	19808	18964	18800	20100
23.4	14312	14172	13282	15602
18.6	11	82	292	02
14	02	72	798	99
	<u>18.5458</u>	<u>18.5503</u>	<u>18.5512</u>	<u>18.5502</u>

8	20398	18772	19839	20024
22.5	14776	14920	16416	13928
18.2	74	10	10	18
20	98	72	38	18
	<u>22.5623</u>	<u>22.5643</u>	<u>18.3426</u>	<u>18.3404</u>

Hydro Measures

1

2	19570	19890
25.2	16419	12992
17.8	06	76
	71	32
	<u>25.3160</u>	<u>25.3160</u>

5
25.0
17.8

19598	18780
12198	16120
209	22
99	70
<u>17.7398</u>	<u>17.7344</u>

6
29
18.5

19722	20130
15118	19790
12	88
10	29
<u>18.9602</u>	<u>18.9618</u>

7
23.7
18.6
+4

19801	18800	20100
17312	13382	15602
14	292	02
02	798	99
<u>18.5588</u>	<u>18.5512</u>	<u>18.5302</u>

8
22.5
18.2
00

20398	18772	19839	20029
19776	19920	16416	13928
79	10	10	18
98	72	38	18
<u>22.5623</u>	<u>22.5693</u>	<u>18.3926</u>	<u>18.3909</u>

11313

Jones Etc

13

Oct 12

Exp. to Stars	7	07		7	16
" Moon	7	10	20.2	7	10 20.3
Block fast		10	32.7		
H. Sid Jones	3	59	7755	6-2=+14	16"
H. Long	7	44	31.05		
q Sid J.	8	44	18.60		
Bed J.M.N.	13	22	57.57		
Interval	19	21	29.06		
Reduction		3	10.27		
g.M.J.	19	18	13.79		

From Naut Alman

P. 4.

Dec.

Moon 194	2	72	29.96	+20	93	21.8
Motion in 1 hr			2.2947			+8.980
" " 18.2298			70.92		2	43.7
Tabular Place	2	73	10.88	20	46	05.5

Moon's Age

16 days

934 18.4

Parallax

Semi-d

R.

Dec.

R. (6)

R

R

AR

(1+9/R)

R

56 48.99

15 30.4

930.4

13.9

-1.1

943.2

2.0219

-96.5

1.9254

3.7072

a = -501.3

+27

-477.3

11313

Times Etc

13

Oct 12

Exp to Stars	7	09		7	16	
Moon	7	10	20.2	7	10	20.3
Clock fast		10	32.7			
H. Sid Time	3	59	975.5	8-2	+14	16"
H long.	7	44	31.05			
G Sid T.	8	44	18.60			
Sid T.M.H.	13	22	57.54			
Interval	19	21	29.06			
Reduction		3	10.27			
G.M.T	19	18	13.79			

From Naut Alman.

R.A.

Dec.

Moon 194	2	92	29.96	+20	93	21.8
Motion in hr						+8.980
" " 18.2298			90.92		2	93.7
Tabular Place	2	73	1088	20	46	05.5

Moons Age

16 days

Parallax

56 48.99

Semi-d

15 30.9

R.

930.9

Aug.

13.8

R.R. (6)

-1.1

R

943.2

R

2.0219

aR

-96.5

(1+4/R)

1.9259

R

3.7072

a = -501.3

+27

-477.3

11315	Plate Center and Constants						17
X	Y						
15,5909	11,2709	2	37	37.6	19	39	15,0
29,7730	26,6359	2	45	49.5	21	46	01.7
29,9756	4,9333	2	45	57.5	18	48	53.5
3) 7,53095	42,8396	6	127	139.6	58	133	70.2
25,1032	14,2799	2	43	6.5	20	4	43.3
22	18		-1	45.5		+28	55.4
-3,1032	+3,7201	2	41	21.0	20	33	38.7
<u>39^s</u>	<u>466.5</u>						

$$A \quad 2 \quad 4 \quad 1 \quad 2 \quad 0$$

$$+20 \quad 33 \quad 30$$

$$\begin{aligned}
 X-3 \quad +500X \quad & -126.87 \quad +1.3X \quad -9661 \\
 +3277 + 7795 & = +11069 - 1729 = +9690 + 20 = +9660 -1 \\
 -1872 + 19871 & = 12999 - 3377 = 9622 + 39 = 9661 \quad 0 \\
 -4741 + 19988 & = 10297 - 625 = 9622 + 39 = 9661 \quad 0 \\
 23.9283 + 11719 & - 2108 = +30 \quad 23.9258
 \end{aligned}$$

$$\begin{aligned}
 Y-4 \quad +500Y \quad & +128.11X \quad +1.8Y \quad -9959 \\
 +2302 + 5635 & = +7937 + 1797 = +9934 + 20 = +9954 \quad 0 \\
 -7222 + 13318 & = 6096 + 3810 = 9906 + 47 = 9953 -1 \\
 +3638 + 2967 & = 6605 + 3840 = 9945 + 9 = 9954 \quad 0 \\
 16.6229 + 8311 & + 3001 = +30 \quad 16.7617
 \end{aligned}$$

Tables

$$\begin{aligned}
 a &= -.3 & e &= -.7 & a-e &= +.4 & b+d &= -.4 \\
 Abs & & & & & & & \\
 & -501.3 & & -501.8 & & +.5 & & -1.3 \\
 10-C & -501.0 & & -501.1 & & & & -0.9
 \end{aligned}$$

14315

Plate center and constants

17

X	Y	X	Y	X	Y
15.5909	11.2709	2	37	37.6	19
29.7930	26.6359	2	95	99.5	21
29.9756	9.9333	2	95	57.5	18
7.33095	92.8396	6	127	139.6	58
25.1032	19.2799	2	93	6.5	20
22	18		-1	95.5	
-3.1032	+3.7201	2	91	21.0	20
395	966.5				83

A	2	91	20
	+20	33	30

$$\begin{array}{rclcl}
 +500x & & -126.84 & & +1.5x & & -9661 \\
 +3279 + 7795 & = & +11069 & - & 1929 & - & +9670 + 20 = +9660 & -1 \\
 -1872 + 19871 & = & 12999 & - & 3377 & = & 9622 + 39 = 9661 & 0 \\
 -9791 + 19958 & = & 10297 & - & 625 & = & 9622 + 39 = 9661 & 0 \\
 23.9283 + 11719 & & -2108 & & +30 & & 23.9258
 \end{array}$$

$$\begin{array}{r}
 y-y \quad +500y \quad +128.1x \quad +1.8y \quad -995 \\
 +2302 +5835 = +7937 +1997 = +9934 +20 = +9954 \\
 -7222 +13318 = 6096 +3810 = 9906 +97 = 9953 \\
 +3638 +2967 = 6605 +3890 = 9995 +9 = 9959 \\
 16.6229 +8311 \quad +3001 \quad +30 \quad 16.7617
 \end{array}$$

Tables
lbs

$$a = -3 \quad e = -7 \quad a - e = +7 \quad b + d = -7$$

$$-501.3 = -501.8 \quad +7.5 = -1.3$$

11315-

Standard Coordinates

15-

Cape No 393 - Mg 5.17 Cape No 713 - Mg 8.7 Cape No 715 - Mg 6.6

C

I

E

P.M.

with P.M.

with a.g.
P.M.

Mean	2	36	93.57	2	77	50.70	2	75	03.33
Prec			59.00			58.79			57.19
δ	2	37	87.57	2	75	75.99	2	75	57.77
A	2	71	20	2	71	20	2	71	20
$\delta-A$			-372.93			+725.99			+737.87
$\sin(\delta-A)$			-222.72			+265.97			+277.95
$\log u$	2	34	71.7	2	72	70.1	2	77	31.8
$\log v$	9	97	39.3	9	96	78.8	9	97	61.6
$\log w$	0	82	83.7	0	89	91.3	0	92	65.8
$\log z$	-6	73	50	+7	92	79	+8	97	76
$\log t$			-13			+28			+51
$\log y$	-13	26	35	29	93	02	30	77	97
$\log x$	15	59	09	29	77	30	29	77	56
$\log q$	+3	27	79	-1	87	72	-7	74	71

C

I

E

Mean	19	35	07.3	21	72	00.8	18	77	57.0
Prec			+77.7			70.9			+359.5
δ	19	39	15.0	21	76	01.7	18	78	53.5
D	20	33	39.0	20	33	30.0	20	33	30.0
$\delta-D$			-5715.0	+112	31.7		-177	36.5	
$\sin(\delta-D)$			-3265.3			+7352.3			-6278.7
$\log u$	3	54	25.7	3	63	87.2	3	79	78.5
$\log v$	0	87	37.7	0	96	87.2	1	12	90.0
$\log \tan \delta$	9	55	28	9	60	13	9	53	27
$\log z$	1	65	67	1	79	83	1	85	32
$\log t$	8	26	29	8	45	30	8	73	90
$\log y$	-6	97	80	+9	32	97	-13	45	80
$\log x$	+0	18	3	+0	28	9	+0	27	5
$\log q$	11	07	02	27	35	81	7	56	93
$\log r$	11	27	07	26	63	59	7	93	33
$\log s$	+2	30	2	-6	72	22	+3	63	8

11315

Standard Coordinates

15

Cape No 393 - mag 5.7 Cape No 913 - mag 8.9 Cape No 715 - mag

C

L

E

Mean	2	36	93.57	2	99	50.70	2	95	03.33
Pre			59.00			58.79			59.19
X	2	37	87.57	2	95	94.99	2	95	57.77
A	2	91	20	2	91	20	2	91	20
1-A		-3	92.93		+9	25.99		+9	37.77
Sum(1-A)		-2	22.92		+2	65.97		+2	77.95
log	2	34	71.7	2	92	80.1	2	94	31.8
log		9	973.93		9	967.88		9	976.16
log		0	828.39		0	899.13		0	926.58
log		-6	73.50		+7	92.79		+8	99.76
log		-1	3		+2	8		+5	7
X	13	26	35	29	93	08	30	79	98
X	15	59	09	29	79	30	29	77	56
X-9	+3	27	9	-1	87	2	-7	79	8

C

L

E

Mean	19	35	07.3	21	92	00.8	18	99	57.0
Pre		+9	7.7		9	0.9		+3	59.5
X	19	39	15.0	21	96	01.7	18	78	53.5
D	20	33	30.0	20	33	30.0	20	33	30.0
1-D		-5	91.50	+1	12	39.7	-1	99	46.5
Sum(1-D)		-3	255.3		+9	352.3		-6	228.3
log	3	34	259	3	63	872	3	79	275
log		0	843.79		0	862.92		1	129.00
log		9	552.8		9	601.3		9	532.7
log		1	656.7		1	798.3		1	853.2
log		8	262.9		8	953.0		8	939.0
log		-6	978.0		+1	932.97		-1	958.0
log		+0	18.3		+0	28.9		+0	27.5
log		11	090.2		27	35.86		9	562.5
log		11	270.7		26	63.59		9	733.3
log		+2	30.2		-0	722.2		+3	69.8

$\alpha = 0$
 $\beta = +1.3$

	X	$x - x_0$	Δx	$(x - x_0)^2$	$(x - x_0)(y - y_0)$	y
1	29.4675	+10.365	0	107.43	3.7055	-17
2	25.0000	+1.5720	0	2.4712	3.7088	+16
3	+25.3519	+1.9237	0	3.6995	3.6995	-77
4	25.3160	+1.8880	0	3.5645	3.7074	+2
5	25.0000	+1.5720	0	2.4712	3.7091	+19
6	24.0000	+0.5720	0	0.3272	3.7095	+23
7	23.7280	0.0000	0	0.0000	3.7202	+130
8	22.5633	-0.8644	0	0.7477	3.7047	-25

 $R = 3.7072$

	y	$y - y_0$	Δy	$(y - y_0)^2$	x
1	15.0000	-1.6220	-1	2.6312	14.7 ✓
2	15.5095	-1.1125	0	1.2376	12.6
3	16.6220	0.0000	0	0.0000	9.0
4	17.0000	+0.3780	0	0.1429	7.9
5	17.7376	+1.1126	0	1.2379	5.4
6	18.4610	+1.8390	+1	3.3823	1.7
7	+18.5507	+1.9287	+1	3.7202	0
8	18.3915	+1.7195	+1	2.9570	3.33 ✓ 17.40 ✓

Approx. Center

$$x = 25 \quad y = 15.5095$$

$$17.7376$$

$$33.2981$$

$$y_0 = 16.6220$$

$$y_{max} = 18.5507$$

$$R = 1.9687$$

$$19.254$$

$$x_{max} = 25.3519$$

$$x_0 = 23.7280$$

$$\text{Center} \begin{cases} x_0 = 23.7280 \\ y_0 = 16.6220 \end{cases}$$

11315

Minimum Center

13

	x	$x - x_0$	$(x - x_0)^2$	y	$(x - x_0)y$	
1	29.9695	+10.3650	107.93	3.7055	-17	
2	25.0000	+1.5720	2.4712	3.7088	+16	
3	+25.3519	+1.9238	3.6995	3.6995	-77	
4	25.3160	+1.8880	3.5695	3.7079	+2	
5	25.0000	+1.5720	2.4712	3.7091	+19	
6	24.0000	+0.5720	0.3272	3.7093	+23	
7	23.9280	0.0000	0.0000	3.9202	+1309	
8	22.5633	-0.8697	0.7477	3.7097	-25	

 $R = 3.7072$

7

	x	$x - x_0$	$(x - x_0)^2$	y	$(x - x_0)y$	
1	15.0000	-1.6220	2.6312	19.7	19.7	
2	15.5095	-1.1125	1.2376	12.6	12.6	
3	16.6220	0.0000	0.0000	9.0	9.0	
4	17.0000	+0.3780	0.1429	7.7	7.7	
5	17.7376	+1.1126	1.2379	5.9	5.9	
6	18.9610	+1.8390	3.3823	1.7	1.7	
7	+18.5507	+1.9287	3.7202	3.60	3.60	
8	18.3915	+1.7195	2.9570	3.33	3.33	1740

Approx. Center

 $x = 25$ $y = 15.5095$

17.1376

33.2971

 y_0 16.6220 y_{max} 18.5907 R 1.9187 x_{max} 23.3519 x_0 23.9280Center $\begin{cases} x_0 & 23.9280 \\ y_0 & 16.6220 \end{cases}$

Formation of Normals.

1	- 1.68	- 17.5	+ 27.5
2	- 1.75	+ 25.0	- 18.0
3	0.0	- 15.0	0.0
4	+ 0.72	+ 7.0	+ 1.0
5	+ 1.75	+ 30.0	+ 21.0
6	+ 10.5	+ 13.0	+ 42.5
7	+ 0.0	0.0	+ 25.10
8	- 1.98	+ 21.5	- 43.0
	+ 35.2	+ 93.5	+ 343.0
	- 4.91	- 32.5	- 61.0
	- 1.99	+ 61.0	+ 282.0

	a	b	c	New a-c
a	+ 31	+ 32	- 29	- 51
b	+ 18	+ 49	- 20	- 25
c	- 57	+ 60	+ 0	+ 6
		+ 59	+ 7	+ 12
		+ 49	+ 20	+ 15
		+ 18	+ 33	- 3
		0	+ 35	- 19
		- 27	+ 31	- 50
				- 101 ✓

..107

$$-1.99 + 15.31 = +7.25 \Delta$$

$$+1.75 - 0.15 = +0.80 \Delta$$

$$+15.16 = +5.05 \Delta$$

$$+19.35 = +7.70 \Delta + 0.99 \Delta = +8.19 \Delta$$

11315

Conditional Equations

16

$$\begin{array}{rcl}
 1 & +1.09 & -1.62 = -17 \\
 2 & +1.57 & -1.11 = +16 \\
 3 & +1.92 & 0.00 = -77 \\
 4 & +1.89 & +0.38 = +2 \\
 5 & +1.57 & +1.11 = +19 \\
 6 & +0.57 & +1.89 = +23 \\
 7 & 0.00 & +1.93 = +130 \\
 8 & -0.86 & +1.72 = -25
 \end{array}$$

$$\begin{array}{rcl}
 +6 & -29 & = -23 \\
 +10 & -20 & = -10 \\
 +12 & 0 & = +12 \\
 +12 & +7 & = +19 \\
 +10 & +20 & = +30 \\
 +3 & +33 & = +36 \\
 +0 & +34 & = +34 \\
 -5 & +31 & = +26
 \end{array}$$

D-C

+6

+26

-89

-17

-11

-13

+86

-51

$$+118 - 181$$

Average 37

$$14.35 - 1.49 = +61.0$$

$$+7.70 \Delta$$

$$-1.49 + 15.31 = +282.0$$

$$+9.25 \Delta$$

$$\frac{\Sigma V}{n} = 8$$

$$+5 - 1.5 = +6.3$$

$$+0.33 \Delta$$

$$+15.46 = +275.7$$

$$b = +17.8$$

$$14.35 = +61.0 + 26.5 = +87.5$$

$$a = +6.1$$

$$+0.57 \Delta$$

Arc Measured 17.8°

$$\frac{P}{n} = 1.28$$

$$\frac{\Sigma V}{n} = -7.9$$

$$\text{Inv } 6 \quad R = 1.93$$

$$\frac{-7.9}{1.28} = -28.2$$

$$\Delta R = -0.3$$

$$-2RC = -2.70$$

$$\text{Corr} = +0.7$$

$$\Delta b = -0.90$$

$$\Delta \delta = -0.9$$

$$\Delta R = -1.0$$

$$\Delta a = -1.54$$

$$\Delta \gamma = -0.05$$

11315

Conditional Equations

16

$$\begin{array}{rcl}
 1 & +1.09 & -1.62 = -17 \\
 2 & +1.57 & -1.11 = +16 \\
 3 & +1.92 & 0.00 = -77 \\
 4 & +1.89 & +0.38 = +2 \\
 5 & +1.57 & +1.11 = +19 \\
 6 & +0.57 & +1.89 = +23 \\
 7 & 0.00 & +1.93 = +130 \\
 8 & -0.86 & +1.72 = -25
 \end{array}$$

$$\begin{array}{rcl}
 +6 & = & 29 = -23 \\
 +10 & = & 20 = -10 \\
 +12 & = & 0 = +12 \\
 +12 & + & 7 = +19 \\
 +10 & + & 20 = +30 \\
 +30 & + & 33 = +36 \\
 +0 & + & 39 = +39 \\
 -5 & + & 31 = +26
 \end{array}$$

D-e

+6

+26

-89

-17

-11

-13

+86

-51

+118 - 181

Average 37

$$19.35 - 1.49 = +61.0$$

$$-1.49 + 15.31 = +282.0$$

$$+ [] = .15 = +6.3$$

$$+15.46 = +275.7$$

$$b = +17.8$$

$$19.35 = +61.0 + 26.5 = +87.5$$

$$a = +6.1$$

Are Measured 179°

$$\frac{P}{h} = .28$$

$$\frac{\Sigma V}{h} = -7.9$$

$$\frac{-7.9}{.28} = -28.2$$

$$\Delta R = -0.3$$

113 15

Moon's Mean Position

17

$$X_0 23.4280''$$

$$+3''$$

$$23.4283''$$

$$Y_0 16.6220''$$

$$+9''$$

$$16.6229''$$

From Plate Constants

$$X 23.4258''$$

$$Y 16.7617''$$

$$Z_1 1.4258''$$

$$Z_2 -1.2383''$$

$$\log 3 0.15406''$$

$$\log 8 997188''$$

$$8.50724''$$

$$1.67494''$$

$$\log \tan \delta 9.5708''$$

$$Z_2 0.3081''$$

$$7.0534''$$

$$6.9323''$$

$$Z_1 -1.0009''$$

$$\alpha - A +47.31''$$

$$\log \mu 0.09349''$$

$$A 2 41 20''$$

$$7.33115''$$

$$2.76199'' \text{ in } 578.0''$$

$$X_0 2 42 07.31''$$

$$\delta - D - 9 38.0''$$

$$\text{Red} +4.83''$$

$$D +20 33 30.0''$$

$$X_1 - 2 42 12.14''$$

$$20 20 23 54.9''$$

$$\text{Red} +24.1''$$

$$\delta' 20 24 16.0''$$

113 15 Moon's Mean Position

17

$$x = 23.9280''$$

$$+ 3''$$

$$23.9283''$$

$$y = 16.6220''$$

$$+ 9''$$

$$16.6229''$$

from Plate Constants

$$x = 23.9258''$$

$$y = 16.7617''$$

$$z = 1.9228''$$

$$n = 1.2383''$$

$$\log 3 = 0.15406''$$

$$\log \tan \delta = 9.5708''$$

$$\cos \delta = 997.188''$$

$$s'' = 0.3081''$$

$$8.50729$$

$$7.0539$$

$$1.67994''$$

$$6.9323$$

$$n = 1.0009''$$

$$x - A = +47.31''$$

$$\log n = 0.09349''$$

$$A = 2 \ 91 \ 20''$$

$$7.33112''$$

$$2.76199'' \quad n = 578.4''$$

$$y = 2 \ 92 \ 07.31''$$

$$s - D = -9 \ 38.4''$$

$$Red = +9.83''$$

$$D = +20 \ 33 \ 30.0''$$

$$x_1 = 2 \ 92 \ 12.19''$$

$$20 \ 20 \ 23 \ 54.9''$$

$$Red = +29.1''$$

$$s_1 = 20 \ 29 \ 16.0''$$

11375 Lunar Parallax

18

$\alpha' 2 42 12.19^{\circ}$
 $\delta 3 59 47.55^{\circ}$
 $\alpha - \alpha' +1 17 35.41^{\circ}$
 $= +19 23 51.15^{\circ}$
 $\delta(\alpha\delta) +7 27.89^{\circ}$
 $2 19 16 23.27^{\circ}$
 9.95727
 0.00000
 0.02505°
 9.98232°

$\pi 36 98.99^{\circ}$
 9.86913
 8.21818°
 9.52130°
 002917°
 7.63778°

$\alpha - \alpha' +19 55.79^{\circ}$
 $= +0 59.72^{\circ}$

$\delta 43 50 2.4^{\circ}$

$\delta 20 29 16.0^{\circ}$

$\delta - 23 25 96.9^{\circ}$

9.82640
 8.21818°
 9.59944°
 0.15953°
 7.80358

$\delta - \delta' +21 52.2^{\circ}$

$\delta 20 46 08.2^{\circ}$

$\alpha 2 43 11.85^{\circ}$

$\text{Ephd } 20 46 05.5^{\circ}$

$\text{Ephd } 2 43 10.88^{\circ}$

$O-C +2.7^{\circ}$

$O-C +0.98^{\circ}$

$\text{Crown Corr} +0.3$

-0.03

$2^{\text{nd}} \text{ Order Ref } 0.0$

$\text{Im Corr} -0.7$

-0.06°

$\delta +20 46 07.8$

$\alpha 2 43 11.81$

$O-C +2.3$

$+0.93$

11375 Lumin + a. allap

18

$1' 2 96 12.19''$
 $+ 3 59 47.55''$
 $4-1' + 1 17 35.91''$
 $= +19 23 51.15''$
 $4(1+1) + 7 27.89''$
 $19 16 23.27''$
 9.92727
 0.00000
 $0.02505''$
 $9.98232''$

$X 93 50 2.9''$

$+ 20 29 16.0''$

$X-23 25 96.8''$

9.82690
 $8.21818''$
 $9.29997''$
 $0.15953''$
 780358

$2-3' 21 52.2''$

$+ 20 46 08.2''$

$Ephd 20 96 05.5''$

$O-C + 2.7''$

$curv low + 0.3$

$2^{nd} Order Ref 0.0$

$T_1 56 98.99''$

9.86913

$8.21818''$

$9.52130''$

$0.02917''$

$7.63779''$

$X-2' + 19 55.79''$

$= + 0 59.77''$

$X 2 43 11.86''$

$Ephix 2 43 10.88''$

$O-C + 0.98''$

$- 0.03$

11522

Star Measures.

21 21

1	20027	20612	18746	19740
11.2	18306	12327	16620	11850
12.2	12	29	42	52
	18	08	56	36
	<u>11.7720</u>	<u>11.1720</u>	<u>12.2132</u>	<u>12.2119</u>
	20282			
18.5	15110	20050	20094	20210
25.7	110	15221	19552	10718
	82	19	48	29
	<u>18.5172</u>	<u>42</u>	<u>98</u>	<u>88</u>
		<u>18.5174</u>	<u>23.0554</u>	<u>23.0520</u>
3	19992			
31	11092	19841	20168	18618
23.9	48	19778	11178	17580
	92	90	78	76
	<u>30.9997</u>	<u>37</u>	<u>576</u>	<u>18</u>
		<u>30.9993</u>	<u>23.8996</u>	<u>23.8962</u>

Moon Measures.

1		19450	19830
23.2		13292	15950
13.7		90	56
-4		42	27
		<u>13.6154</u>	<u>13.6124</u>
2		19500	19779
22		10332	18970
13.9		16	30
		494	71
		<u>13.8176</u>	<u>13.9156</u>

3	20938	19064
21.9	11649	17871
14	49	69
	48	70
	<u>21.8798</u>	<u>21.8804</u>

not a good plate

11522

Star Measures.

21

✓	22627	20612	18746	19790
11.2	18306	12327	16620	11850
12.2	12	29	42	52
	18	08	56	36
	<u>11.7720</u>	<u>11.1720</u>	<u>12.2137</u>	<u>12.2117</u>
	29782			
35	154110	20050	20094	20210
154	110	15221	19052	10718
	82	19	48	29
	<u>18.5172</u>	<u>42</u>	<u>98</u>	<u>00</u>
		<u>18.5179</u>	<u>250559</u>	<u>250520</u>
✓	19992			
34	110092	19891	20468	18618
319	98	19778	11178	17580
	92	90	78	76
	<u>30.9997</u>	<u>37</u>	<u>176</u>	<u>18</u>
		<u>30.9993</u>	<u>238496</u>	<u>238962</u>

Moon Measures.

✓		19950	19830
132		13292	15950
137		90	56
-9		92	29
		<u>13.6159</u>	<u>13.6129</u>
✓		19500	19779
32		10332	18990
139		16	30
		999	71
		<u>13.8176</u>	<u>13.9156</u>

✓	20938	19069
1.9	11649	17871
14	49	69
	48	70
	<u>21.8798</u>	<u>21.8809</u>

not a good plate

11522

Moon Measures.

22

9	20092	19030
21.1	18998	10618
15	98	28
	98	26
	<u>21.1596</u>	<u>21.1596</u>

5	19226	20010
21.4	18047	10660
15.6	41	58
-4	24	12
	<u>21.0682</u>	<u>21.0678</u>

6	19142	19996
21.1	18056	11056
16	58	50
	47	94
	<u>21.1086</u>	<u>21.1058</u>

7	20408	19956
21.7	19008	16366
17	06	52
	08	62
	<u>21.6401</u>	<u>21.6401</u>

8	20077	18288
22	17198	12154
17.3	88	54
	78	292
	<u>17.2880</u>	<u>17.2864</u>

9	20120	20331	19096	20624
22.3	17668	12788	17890	19808
17.3	74	90	00	88
sc	20	31	104	38
	<u>22.2449</u>	<u>22.2458</u>	<u>17.9204</u>	<u>17.4770</u>

11522

Moon Measures

22

2	20092	19030
21.1	18998	16618
15	98	28
	98	26
	<u>21.1596</u>	<u>21.1396</u>

2	19226	20010
21.7	18997	10660
15.6	91	58
-X	29	12
	<u>21.0682</u>	<u>21.0698</u>

2	19192	19996
21.1	18056	11056
16	58	50
	47	99
	<u>21.1086</u>	<u>21.1058</u>

2	20908	19956
21.7	19008	16366
17	06	52
	08	62
	<u>21.6901</u>	<u>21.6901</u>

8	20077	18288
22	17198	12158
17.3	88	47
	78	292
	<u>17.2880</u>	<u>17.2869</u>

9	20120	20331	19096	20627
22.3	17668	12788	19890	19808
17.3	79	90	00	98
20	20	31	109	36
	<u>22.2999</u>	<u>22.2958</u>	<u>17.9209</u>	<u>17.9170</u>

11.1522 *Mercury* etcNov 31 - 16^v

Epp. to star	22	41		22	53
Moon	22	46	50.9 ^v	22	46 57.3 ^v
Clock fast	11	02.2 ^v			

H. Sid. Time	22	35	489 ^v	$\delta - \alpha = + 0^h 39.5^v$
H. Long	7	49	31.03 ^v	
9. Sid. T.	03	20	19.95 ^v	
Sid. T. M. noon	17	49	38.73 ^v	
Interval	12	30	4.122 ^v	
Reduction		2	32.98 ^v	
G. M. T.	121	28	38.24 ^v	

From Nant aln.	R.A.		Dec.	
Moon 12 ^h	21	55	13.73 ^v	- 9 ^h 33 ^m 13.6 ^v
Motions 1 ^m			2.1604 ^v	14.299 ^v
		28.6393 ^v	1.87 ^v	6 49.5 ^v
Tatula Place	21	56	15.60 ^v	- 9 28 24.1 ^v

Moon's Age 8 days.

Parallax	58	54.9 ^v
Semi-d.	16	7.8 ^v
R.		964.8 ^v
ang.		10.2 ^v
2R. (7)		- 0.6 ^v
R.		974.4 ^v
R.		2.0887 ^v
alt.		- 994 ^v
(1+9)/R		1.9893 ^v
11 ^v		3.9573 ^v

934 9.5⁺

a =	500
	+ 24
	- 476

111522

15 Nov 3-16

Eph. to - 14.5	22	91	22	53
Moon	22	96	50.9	22 96 51.3
Clock fast	11	02.2		

14. Sec. time	22	05	489	$\delta - \gamma = + 0^h 39.5$
14 Long	9	99	31.03	
9 Sec. 1	03	20	19.95	
Sec. 1. M. Moon	19	99	38.73	
Interval	12	30	912.2	
Reduction	2		2.98	
G. M. T.	121	28	382.7	

From Nautical Almanac	R.A.	106
Moon 725	24	55 73.73 + 9 35 13.6
Motions 1 ^m		2.1604 14.279
28.6393	1	1.877 6 49.5
Tatular Place	21	56 13.60 - 9 26 29.1

Moon's Age 8 days

Parallax	58	59.9
Signed	16	7.8
R.		969.8
Aug.		10.2
R. (7)		-0.6
H.		974.9
H.		20887
alt.		-999
119411		1.9893
H.		3.9573

939 9.5

G =	500
+	29
-	476

11522

Plate Constants

29

$$\begin{array}{rcl}
 X & 11.1720'' & 18.5173'' & 30.9995'' \\
 Y & 11.1481'' & 18.8910'' & 31.9893'' \\
 X-Y & +239'' & -3737'' & -9998''
 \end{array}$$

$$\begin{array}{rcl}
 \eta & 12.2123'' & 25.0537'' & 23.8979'' \\
 \eta - \eta & 11.9346'' & 25.4088'' & 27.1689'' \\
 \eta - \eta & +2777'' & -3551'' & -2710''
 \end{array}$$

$$\begin{array}{rcl}
 X-Z & +500X & +235\eta & +35X & -6111 \\
 +239 & +5586 = +5825 & +287 = +6112 & +35 & +1 \\
 -3737 & +9259 = +5522 & +589 = +6111 & & 0 \\
 -9998 & +15997 = +5999 & +562 = +6111 & & 0 \\
 23.0559'' & +115.28'' & +367'' & & 23.6393''
 \end{array}$$

$$\begin{array}{rcl}
 \eta - \eta & +500\eta & -20.6X & +9.5Y & -8708 \\
 +2777 & +6106 = 8883 & -230 = 8653 & +55 = +8708 & 0 \\
 -3551 & +12527 = 8976 & -381 = 8595 & +113 = 8708 & 0 \\
 -2710 & +11949 = 9239 & -638 = 8601 & +107 = 8708 & 0 \\
 15.6026'' & +7801'' & -475'' & +70'' & 15.9719''
 \end{array}$$

$$\begin{array}{rcl}
 \text{Tables } a = +1. & c = -3.5 & a-c = +4.5 & b+d = -1.0 \\
 \text{Obs } & -500 & = -509.5 & c + 7.5 & = -2.9 \\
 W-c & -799.9 & -501.0 & & -1.9
 \end{array}$$

11522

Plate Constants

27

A	11.1720"	18.5173"	30.9995"
B	11.1782	18.8910	31.9893
X-3	+239	-3737	-9998

Y	12.2123"	25.0557"	23.8979"
Y ^h	11.9396	25.9088	29.1689
Y-11	+2777	-3551	-2710

X-3	+5008	+2435.71	+35.1	-6417.1		
+239	+5586	=+5825	+2871	=+6112.37	=+607	+1
-3232	+9259	=+5822	+3489	=+6111.67	607.6	0
-9898	+15997	=+5549	+562	=+6111.17	607.8	0
23.0559	+11528	+367			23.5393	

Y-11	+5004	-20.61	+9.54	-8708			
+2777	+6106	=8883	-230	=8653	+53	=+8708	0
-3557	+12527	=8976	-381	=8595	+113	=8708	0
-2710	+11999	=9229	-638	=8601	+107	=8708	0
15.6026	+7801	-975	+17.0			15.9719	

Tables a = +1. e = -3.5 a-e = +9.5 b+d = -1.0
 Obs -500 = -509.5 = +9.5 = -2.7

$$A = +1.1$$

$$B = +9.7$$

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Moon's Center

25-

	X	$(X - X_0)$	ΔX	$(X - X_0)^2$	$(X - X_0)^2 + (Y - Y_0)^2$	O-C
1	23.0550	0.0000	-2	0.0000	3.9561	-12
2	22.0000	-1.0550	-2	1.1136	3.9569	-4
3	21.8801	-1.1749	-2	1.3808	3.9498	-75
4	21.1596	-1.8954	-1	3.5929	3.9557	-16
5	21.0665	-1.9885	0	3.9541	3.9541	-32
6	21.1072	-1.9478	+0	3.7939	3.9525	-78
7	21.6401	-1.4149	+1	2.0016	3.9580	+4
8	22.0000	-1.0550	+2	1.1126	3.9552	-21
9	22.2953	-0.8097	+2	0.6553	3.9586	+13

	Y	$(Y - Y_0)$	ΔY	$(Y - Y_0)^2$	R
1	-13.6139	-1.9881	-9	3.9561	1.80
2	13.9166	-1.6854	-8	2.8433	2.12
3	14.0000	-1.6020	-8	2.5690	2.16
4	15.0000	-0.6020	-3	0.3628	2.52
5	15.6020	0.0000	0	0.0000	2.70
6	16.0000	+0.3980	+2	0.1586	2.81
7	17.0000	+1.3980	+7	1.9564	3.15
8	17.2872	+1.6852	+8	2.8426	3.28
9	17.4187	+1.8167	+8	3.3033	3.36

Approx. Center

 $X = 22$ $Y = 13.9166$

17.2872

31.2038

 $Y_0 = 15.6019$ $Y_{min} = 13.6139$ $R = 1.9880$

1.9893

 $X_{min} = 21.0665$

23.0558

Center { $X_0 = 23.0550$
 $Y_0 = 15.6020$

11322

Miconis Center

25

	x	$(x - x_0)$	Δx	$(x - x_0)^2$	$(x - x_0) + (y - y_0)^2$	$O - C$
1	23.0550	0.0000	-2	0.0000	3.9561	-12
2	22.0000	-1.0550	-2	1.1136	3.9569	-7
3	21.8801	-1.1749	-2	1.3808	3.9498	-175
4	21.1596	-1.8954	-1	3.5929	3.9557	-16
5	21.0665	-1.9885	0	3.9541	3.9591	-32
6	21.1072	-1.9478	+0	3.7939	3.9525	-98
7	21.6401	-1.4149	+1	2.0066	3.9580	+7
8	22.0000	-1.0550	+2	1.1126	3.9552	-21
9	22.2953	-0.8097	+2	0.6553	3.9586	+13

	y	$(y - y_0)$	Δy	$(y - y_0)^2$	R	3.9573
1	-13.6139	-1.9881	-9	3.9561	1.80	
2	13.9166	-1.6857	-8	2.8433	2.12	
3	19.0000	-1.6010	-8	2.5658	2.16	
4	15.0000	-0.6020	-3	0.3628	2.52	
5	15.6020	0.0000	0	0.0000	2.70	
6	16.0000	+0.3980	+2	0.1586	2.81	
7	17.0000	+1.3980	+7	1.9564	3.15	
8	17.2872	+1.6852	+8	2.8426	3.28	
9	17.9187	+1.8167	+8	3.3033	3.36	1.56 ^u

Approx. Center

 $x = 22$ $y = 13.9166$

17.2872

31.2038

 $y_0 = 15.6019$ $y_{min} = 13.6139$ $R = 1.9880$

1.9893

 $x_{min} = 21.0665$

23.0558

Center $\left\{ \begin{array}{l} x_0 = 23.0550 \\ y_0 = 15.6020 \end{array} \right.$

Formation of Normals.

1	0	0	+	24.0
2	+1.77	+ 9.0	+	7.0
3	+1.87	+ 125.0 - 37	+	171.0 - 51
4	+1.14	+ 30.5	+	9.3
5	0.0	+ 63.5		0.0
6	-0.78	+ 93.5	-	19.0
7	-1.97	- 10.0	+	10.0
8	-1.77	+ 22.0	-	35.5
9	-1.48	- 10.5	+	23.5
+ 4.78			+	247.8
- 6.00			-	54.5
- 1.22			+	190.3
			-	51
				179.3
				-16
				new
				0-c

.069

	a	b	c	new 0-c
a	-13	+ 0	+22 +6	+18 ✓
b	-11	+ 14	+18 +16	+35
c	-16	+ 15	+18 +17	-99
		+ 25	+7 +16	+93
		+ 26	0 +10	+16
		+ 25	-7 +3	-11
		+ 18	-15 -13	+9
		+ 14	-19 -21	-92 ✓
		+ 11	-20 -25	-18 ✓

$$-1.22 + 17.98 = -0.77 \Delta$$

$$+ 17 - 0.08 = -0.79 \Delta$$

$$+ 17.90 = -1.26 \Delta$$

11522

Conditional

Equations

O-C

1	0.00	-1.99	=	-12	0	-29	=	-29	+12
2	-1.05	-1.69	=	-9	-20	-23	=	-43	+39
3	-1.17	-1.60	=	-107+32	-22	-19	=	-41	-66
4	-1.90	-0.60	=	-16	-36	-7	=	-43	+27
5	-1.99	0.00	=	-32	-38	0	=	-38	+6
6	-1.95	+0.40	=	-98	-37	+5	=	-32	-16
7	-1.91	+1.40	=	+7	-27	+17	=	-10	+17
8	-1.05	+1.69	=	-21	-20	+20	=	0	-21
9	-0.81	+1.82	=	+13	-15	+21	=	+6	+7

$$17.60 - 1.22 = +51.8 \quad 281$$

$$+108 \quad -103$$

Average 23

$$-1.22 + 17.98 = +19.5 - 199.3$$

$$-11.33 \Delta$$

$$-0.97 \Delta$$

$$+ [] - 0.08 = +22.1 \quad 18.8$$

$$-0.07 \Delta$$

$$+17.9 = +212.6 \quad 168.1$$

$$b = +9.9$$

$$17.60 = +31.8 + 14.5 = +332.5$$

$$g = +16.6$$

$$281 + 11.5 = 292.5$$

$$-1.80 \Delta$$

Arc Measured 15.6°

$$\frac{p}{n} = .17$$

$$\frac{\Sigma v}{n} = +.62$$

$$\ln 7 \quad R = 1.99$$

$$-2RC = -0.80$$

$$+ \frac{.62}{.17} = +3.6$$

$$\Delta R = 0.0$$

$$\text{Corr} +0.2$$

$$\Delta b = +0.56$$

$$\Delta d = 0.73$$

$$\Delta R = +0.2$$

$$\Delta q = +0.64$$

$$\Delta \gamma = +0.02$$

11522 Conditional Equations 0-C

1	0.00	-1.77	=	-12	0	-29	=	-29	+12
2	-1.05	-1.69	=	-9	-20	-23	=	-93	+39
3	-1.17	-1.60	=	-107	-22	-19	=	-91	-66
4	-1.90	-0.60	=	-16	-36	-7	=	-93	+27
5	-1.99	0.00	=	-32	-38	0	=	-38	+6
6	-1.95	+0.90	=	-18	-37	+5	=	-32	-16
7	-1.91	+1.90	=	+7	-27	+17	=	-10	+17
8	-1.05	+1.69	=	-21	-20	+20	=	0	-21
9	-0.81	+1.82	=	+13	-15	+21	=	+6	+7

$$17.60 - 1.22 = +378 \quad 281 \quad +108 \quad -103$$

Average 23

$$-1.22 + 17.98 = +196.5 - 199.3$$

$$+ [] - 0.08 = +221 \quad 188$$

$$+17.9 = +212.6 \quad 168.1$$

$$b = +17.9$$

$$17.60 = +378 + 19.5 = +352.5$$

$$281 + 11.5 = 292.5$$

$$a = +16.6$$

Arc Measured $15^{\circ}6'$

$$\frac{f}{h} = .17$$

$$\frac{2v}{h} = +.62$$

$$+ \frac{.62}{.17} = +3.6 \quad \Delta R = 0.0$$

11522

Moon's Mean Position

28

$$\begin{aligned} X_0 & 23.0550'' \\ & + 9'' - 1 \\ & 23.0559'' \end{aligned}$$

$$\begin{aligned} Y_0 & 15.6020'' \\ & + 6'' - 1 \\ & 15.6026'' \end{aligned}$$

From Plate Constants

$$X 23.5393''$$

$$Y 15.4714$$

$$Z 1.5393''$$

$$H - 25286''$$

$$\log Z 0.21333''$$

$$\log \tan \delta 9.2573''$$

$$\cos \delta 999301''$$

$$Z^2 0.4267''$$

$$8.50724$$

$$7.0534$$

$$1.77308''$$

$$6.7374''$$

K-A

$$5-1.65''$$

H₁

$$-0.0005''$$

$$A 21 54 50.00''$$

$$\log H 0.90280''$$

$$Y_0 21 55 47.65''$$

$$7.33113$$

$$3.07165''$$

$$1179.4$$

Red

$$+3.98''$$

S-D

$$-19 39.4$$

$$Y' 21 55 43.63''$$

$$D -9 55 30.0$$

$$S_0 -10 15 09.4$$

Red

$$+20.3''$$

$$S' -10 14 49.7''$$

11522

Moon's Mean Position

25

$$\begin{aligned} X_0 & 23.0550'' \\ & + 9'' - 1 \\ & 23.0559'' \end{aligned}$$

$$\begin{aligned} Y_0 & 15.6020'' \\ & + 6'' - 1 \\ & 15.6026'' \end{aligned}$$

From Plate Constants

$$X 23.6393''$$

$$Y 15.9714''$$

$$Z 1.6393''$$

$$H - 25286''$$

$$\log Z 0.21333''$$

$$\log \tan \delta 9.2573''$$

$$\cos \delta 999301''$$

$$Z'' 0.9267''$$

$$8.50729$$

$$7.0534$$

$$1.77308''$$

$$6.7374''$$

A-A

$$51.63''$$

$$H. - 0005''$$

$$A 21 59 50.00''$$

$$\log H 0.90227''$$

$$7.33113$$

$$T_0 21 55 41.63''$$

$$3.07185'' 11778$$

Red

$$3.98''$$

d-D

$$-19 39.8$$

$$T' 21 55 43.63''$$

$$D -9 55 30.0$$

$$20 -10 15 09.8''$$

Red

$$+20.3''$$

$$d' -10 19 47.8''$$

11522

Lunar Parallax

29

α' 21 55 25.63^v
 δ 22 35 48.9^v
 $\delta - \alpha'$ + 70 03.27^v
 $=$ 10 0 49.05^v
 $\delta(14)$ 0 3 50.5^v
 δ 9 56 38.55^v

π 58 59.9^v

9.86913
 8.23393^v
 924028^v
 0.00597^v
 734929^v

9.95727
 0.00000^v
 0.00658^v
 9.96385^v

$\delta - \alpha'$ 7 41.07^v
 $=$ + 30.78^v

δ 42 37 7.16^v
 $\delta - 10$ 17 49.1^v
 $\delta - 25$ 2 51 53.9^v

9.82690
 8.23393^v
 990158^v
 0.16934^v
 8.13125^v

$\delta - \alpha'$ + 76 30.5^v

$\delta - 9$ 28 18.6^v

Ephd -9 28 27.1^v

$\delta - C$ + 3.5^v

Curr. Corr + 0.8
 2nd Order Ref. + 0.1

Im Corr + 0.3

$\delta - 9$ 28 18.3

$\delta - C$ + 5.8

δ 21 56 16.37^v

Ephd 21 56 15.60^v

$\delta - C$ + .77^v
 - 0.03

+ 0.02

δ 21 56 16.39

+ 0.79

11522

Lunar Parallax

29

χ 21 55 75.63
 δ 22 35 98.9
 $\delta - \chi$ + 90 03.27
 $=$ 10 0 48.05
 $\delta(1.1)$ 0 3 50.5
 δ 9 56 58.55

π 58.599
 9.86913
 8.23393
 9.29026
0.00597
 7.39929

9.95727
 0.00000
0.00658
 9.96385

$\delta - \chi$ 7 91.02
 $=$ 30.79

δ 92.37 7.8
 $\delta - 10$ 19 99.5
 $\delta - 25$ 2 51 53.9

9.82690
 8.23393
 9.90158
0.16939
 8.13125

$\delta - \delta$ 96 30.5

$\delta - 9$ 28 18.6

Eph $\delta - 9$ 28 29.1

O-C + 5.5

Curv. Corr + 0.8

2nd Order Ref + 0.1

Ins Corr + 0.3

$\delta - 9$ 28 18.3

O-C + 5.8

χ 21 56 16.37

Eph χ 21 56 15.60

O-C + 7.7

-0.03

+0.02

χ 21 56 16.39

+0.79

