

KG

11366

977

CXXIV

124

8635

8636

8637

Miss Fowler

Star 4.

18977
117215-19
90
137267

16898
1416969
69
29
7263

18525
1210609
12
15
206411

18041
1443139
30
69
16383

19799
1371919
15
03
206382

8635

Steps measures

1936 May 30

$$\begin{array}{r} 167.6 \\ 167.641 \\ 167.64154 \\ 167.6415440 \\ 167.641544088 \end{array}$$
$$\begin{array}{r} 17774 \\ 1543235 \\ \hline 2835 \\ 94 \\ \hline .7653 \end{array}$$
$$\begin{array}{r} 17091 \\ 957971 \\ 71 \\ 65 \\ \hline 9.7498 \end{array}$$
$$\begin{array}{r} 190347 \\ 1653030 \\ 3230 \\ 55 \\ \hline 17491 \end{array}$$
$$\begin{array}{r} 2 \\ 154 \quad 20171 \\ - 264 \quad 17080 \\ \hline 183070 \end{array}$$
$$\begin{array}{r} 17850 \\ 10930 \\ \hline 2730 \\ 70 \\ \hline 3065 \end{array}$$
$$\begin{array}{r} 19030 \\ 16365 \\ \hline 6569 \\ 27 \\ \hline 210.2663 \end{array}$$
$$\begin{array}{r} 18165 \\ 1083740 \\ 4040 \\ 80 \\ \hline 2663 \end{array}$$
$$\begin{array}{r} 3 \\ 28.5 \quad 18470 \\ 187 \quad 1316059 \\ \hline 79 \\ 28.5315 \end{array}$$

$$\begin{array}{r} 16534 \\ 11834 \\ \hline 2940 \\ 49 \\ \hline 5294 \end{array}$$

$$\begin{array}{r} 19275 \\ 11695 \\ \hline 9490 \\ 80 \\ \hline 187586 \end{array}$$
$$\begin{array}{r} 17006 \\ 14588 \\ 9085 \\ 18 \\ \hline 7579 \end{array}$$

More measures

1
22.0
14.4
min
in y

$$\begin{array}{r} 17200 \\ 14470 \\ 74 \\ 98 \\ \hline 142631 \end{array} \begin{array}{l} \\ 62 \\ \\ \end{array}$$
$$\begin{array}{r} 18375 \\ 110211 \\ 1211 \\ 90 \\ \hline 2629 \end{array}$$

2
23.0
14.5

$$\begin{array}{r} 18565 \\ 13625 \\ 2020 \\ 79 \\ \hline 144950 \end{array}$$

19259
1427050
500720850

$$\begin{array}{r} 3 \\ \hline 236 \\ 150 \\ \hline 16594 \\ 10399 \\ \hline 9505 \\ 01 \\ \hline 236199 \end{array}$$
$$\begin{array}{r} 19303 \\ 15480 \\ \hline 8881 \\ 20 \\ \hline 6173 \end{array}$$

Star 4.

$$\begin{array}{r}
 18977 \\
 11724 \\
 1519 \\
 90 \\
 \hline
 137267
 \end{array}$$

$$\begin{array}{r}
 16898 \\
 14169 \\
 6969 \\
 29 \\
 \hline
 2263
 \end{array}$$

$$\begin{array}{r}
 18575 \\
 12108 \\
 1209 \\
 15 \\
 \hline
 20.6411
 \end{array}$$

$$\begin{array}{r}
 18041 \\
 14431 \\
 3039 \\
 69 \\
 \hline
 .6383
 \end{array}$$

$$\begin{array}{r}
 19799 \\
 13419 \\
 1519 \\
 03 \\
 \hline
 20.6382
 \end{array}$$

8635

Star measures

1916 May 29

17641
 995154
 12
 40
167688

17774
 1543235
 2835
 94
7655

17091
 9579
 71771
 65
9.7798

19035
 16530
 3230
 55
7491

20171
 170805
 68
 80
182070

17850
 1093030
 2730
 70
3065

19030
 16365
 6569
 27
26263

18165
 1083740
 40
 80
2663

18470
 1316059
 5859
 79
283315

16534
 1183740
 3940
 49
5294

19275
 11695
 9490
 80
18.7586

17006
 14588
 9085
 18
7579

Unwon measures

220
 144
 14
 0

17200
 1457062
 74
 98
14.2681

18375
 110211
 1211
 90
2629

230
 14.1

18565
 1562520
 2020
 79
14.4950

19259
 1427050
 7850
 70
5002

16594
 1039905
 9505
 01
230199

19305
 15480881
 20
6175

8635 x known-measures 1916 May 30
 α α α α

$$\begin{array}{r} 4 \\ 24.1 \\ 16.0 \end{array} \begin{array}{r} 12061 \\ 1135050 \\ 51 \end{array}$$

$$\begin{array}{r} 1365997 \\ 1268597 \\ 12983 \end{array}$$

$$24.0711$$

$$.0711$$

$$\begin{array}{r} 5 \\ 24.1 \\ 16.4 \\ \text{max} \end{array} \begin{array}{r} 11086 \\ 1014951 \\ 60 \end{array}$$

$$\begin{array}{r} 1390119 \\ 11019 \\ 12966 \end{array}$$

$$24.0933$$

$$.0943$$

$$\begin{array}{r} 6 \\ 23.9 \\ 17.0 \end{array} \begin{array}{r} 1143219 \\ 1919 \\ 11150 \end{array}$$

$$\begin{array}{r} 12880 \\ 1264540 \\ 50 \end{array}$$

$$23.9727$$

$$.9765$$

$$\begin{array}{r} 7 \\ 23.3 \\ 18.0 \end{array} \begin{array}{r} 16030 \\ 1407058 \\ 80 \\ 30 \end{array}$$

$$\begin{array}{r} 18266 \\ 1024960 \\ 69 \\ 80 \end{array}$$

$$23.1961$$

$$.1982$$

$$\begin{array}{r} 8 \\ 23.0 \\ 18.2 \end{array}$$

$$\begin{array}{r} 15885 \\ 1471510 \\ 30 \\ 80 \end{array}$$

$$18.1166$$

$$\begin{array}{r} 18920 \\ 1008800 \\ 9500 \\ 48 \end{array}$$

$$.1171$$

$$\begin{array}{r} 9 \\ 22.5 \\ 18.4 \end{array} \begin{array}{r} 19411 \\ 1470910 \\ 0810 \\ 20 \end{array}$$

$$22.4706$$

$$\begin{array}{r} 19070 \\ 1380000 \\ 0000 \\ 79 \end{array}$$

$$.4726$$

$$\begin{array}{r} 20160 \\ 17076 \\ 7369 \end{array}$$

$$18.3088$$

$$\begin{array}{r} 19409 \\ 1248372 \\ 80 \\ 10 \end{array}$$

$$.3068$$

8635 * known measures 1916 May 30

$$\begin{array}{r} 4 \\ 12061 \\ 241 \quad 1135050 \\ 160 \quad 51 \end{array}$$

$$\begin{array}{r} 13659 \\ 1208597 \\ 12983 \end{array}$$

$$\underline{240711}$$

$$\underline{0711}$$

$$\begin{array}{r} 241 \\ 11086 \\ 1014951 \\ 160 \quad 60 \end{array}$$

$$\begin{array}{r} 1390119 \\ 1 \quad 1019 \\ 12966 \end{array}$$

$$\underline{240933}$$

$$\underline{0943}$$

$$\begin{array}{r} 6 \\ 11432 \\ 239 \quad 1915 \\ 170 \quad 11150 \end{array}$$

$$\begin{array}{r} 12880 \\ 1264540 \\ 50 \end{array}$$

$$\underline{239727}$$

$$\underline{9765}$$

$$\begin{array}{r} 2 \\ 16030 \\ 233 \quad 1407058 \\ 180 \quad 80 \\ 30 \end{array}$$

$$\begin{array}{r} 18266 \\ 1024960 \\ 69 \\ 80 \end{array}$$

$$\underline{231961}$$

$$\underline{1982}$$

$$\begin{array}{r} 8 \\ 230 \\ 182 \end{array}$$

$$\begin{array}{r} 15885 \\ 1471510 \\ 30 \\ 80 \\ 181166 \end{array}$$

$$\begin{array}{r} 18920 \\ 1008800 \\ 9500 \\ 48 \\ 1171 \end{array}$$

$$\begin{array}{r} 225 \\ 19411 \\ 114 \quad 1470910 \\ 0810 \\ 20 \end{array}$$

$$\begin{array}{r} 19070 \\ 1380000 \\ 00 \\ 79 \end{array}$$

$$\begin{array}{r} 20160 \\ 17076 \\ 7369 \\ 62 \end{array}$$

$$\begin{array}{r} 19409 \\ 1248372 \\ 80 \\ 10 \end{array}$$

$$\underline{224706}$$

$$\underline{4726}$$

$$\underline{183088}$$

$$\underline{3068}$$

8635

Times etc

Exp. to stars	1915 May 29, 17 ^h 51 ^m	-18 ^h 03 ^m
moon	17 57	13.8 - 17 57 14.0
clock fast	1	11.2
H. Sid T.	17 56	02.7 @ -9: +0 ^h 9 ^m
H. R. g.	4 44	31.05
G. Sid T.	22 40	33.75
Sid. T. to moon	4 23	43.45
Interval	18 16	50.30
Red.	2	59.69
G. W. T.	18 13	50.61

From bank. Allen	R. A.	Decl.
Moon 18 ^h	17 ^h 46 ^m 51.41	-27° 26' 27.6
Motion 17	2.8321	1.15-5
13.8435	+	39.21
Tabular place.	17 47	30.62 - 27 26 11.6

From bank Allen	R. A.	Decl.
Moon 18 ^h		
Motion 17		
13.		
Tabular place		
934 = 5.5		
999 = 6.3		
as - 501.0		
+24.0		
477.0		
Moon's age 16 days.		
parallax	61'	02.22
semidiam	16	39.3
R		999.3
Augmentation		+ 6.3
Irradiation (3)		- 0.3
R		1005.3
R		2155.0
AR		- 1028
(H.A.) R		2052.2
R2		4211.5

8635

Trainer to

1915 Stars 1915 May 29. $17^h 51^m - 18^h 03^m$
 Moon $17^h 57^m 1.38 - 17^h 57^m 1.40$
 Clock fast $1 1.12$

H Sid T $17 56 02.7 @ -9: 10^m 9^m$
 Helix $4 44 31.05$
 Q Sid T $22 40 33.75$
 Sid T. H. Moon $4 23 43.45$
 Internal $18 16 50.30$
 Red $2 59.69$
 Q Sid T $18 13 50.61$

From Hunt. Allen R A. Reel.
 Moon $18^h 17^m 46^s 51.41 - 27^h 26^m 27.6$
 Motion in 2.3321 1.125
 $13.8435 + 39.21 + 160$
 Tabular place. $17 47 30.62 - 27 26 11.6$

From Hunt Allen R A. Reel
 Moon 18^h
 Motion in 13
 Tabular place
 Moon's age 16 days.
 Parallax $61' 02'' 22$
 Semidiameter $16 39.3$
 R 999.3
 Augmentation $+ .63$
 Irradiation $131 - .03$
 R 10053
 R 21550
 AR $- 1028$
 (H.A.) R 20522
 R2 42115
 $934.5 5.5$
 $999 - 63$
 $av. - 501.0$
 $- 24.0$
 777.0

8635

Plate Constants + Plate Center

137 ⁸ 6 ⁵ 2	294 ⁴ 9 ² 4	17	44	03	-29	17	13
183068	262663		45	02	27	02	06
28.5-304	187582		51	20	28	03	09
3 63.60	54.77		140	25		22	28
21.20	18.26		17	46	48	-28	07 29
-22	-18		+	25		-	1 57
0.80	2.26		17	47	13	-28	09 26
31	466						
24.8	1117"						
	11" 57"						

Center $\left\{ \begin{array}{l} A = 1.7^h 47^m 10^s \\ D = -28^\circ 09' 30'' \end{array} \right.$

2-3 +500x	-24y	+1.4	-8267
+1892 + 6863 = +8755	-495 = +8260	+14 = +8274	= +5
+ 97 + 8384 = +8481	-234 = +8247	+17 = +8264	= -5
-276 + 9153 = +8877	-630 = +8247	+18 = +8265	= -4
-5570 + 14265 = +8695	-450 = +8245	+29 = +8274	= +5
22.0415 + 11021	-391	+22	-22.2797

4-7 +500y	+30x	+29.5y	-10450
-887 + 10315 = +9428	+412 = +9844	+609 = +10453	= +3
+4782 + 4875 = +9657	+503 = +10160	+287 = +10447	= -3
-4009 + 13133 = +9124	+549 = +9673	+775 = +10448	= -2
-336 + 9379 = +9043	+856 = +9899	+554 = +10453	= +3
16.3081 + 8154	+661	+482	= 16.1928

Tables $a = -0.3$ $e = -23.3$ $c - d = +23.0$ $b + d = -1.0$

Obs $a = -501.0$ $e = -529.5$ $c - e = +28.5$ $b + a = -6.0$

-500.7"

-506.2"

-5.0"

17 41 1591
 92

17 41 1592
 5659

17 42 1251

17 47 10

- 4 57.49

- 89747

2.47344

994674

0.92742

-84610

- 17

13.5373

13.7265

+ 1892

-27 47 539

558

-27 47 338

- 242

-27 47 580

-28 09 30

+ 21 320

+ 12920

3.11126

044241

97220

18548

86302

+27696

- 427

207269

206382

- 887

8635

Plate Constants + Plate Center

167672	97494	17	44	03	-29	17	13
183068	262663		51	02	27	02	06
285304	187582		51	20	28	03	09
3 6360	5477		140	25		22	28
2120	18.56		17	46	48	-28	07 29
	-18				25		-1 57
0.80	0.46		17	47	13	-28	09 26
31	466						
21.5	117"						
	18 57"						

Center SA = 17' 47" 10"
 ID = -28° 09' 30"

2-3 +520x -242 +1.2 -5267
 +1892 +6863 -4875 -495 -4260 +14 = +8274 +15
 +9778384 = +8481 -238 = +8243 +17 = +8264 +15
 -276 +9153 +8573 -630 +8247 +18 = +8260 +15
 +5570 +14265 +8695 -150 +8245 +29 = +8278 +15
 220415 +11061 = 391 +22 = 222797

4-7 +1200y +30x +29.5y -10450
 -887 +10319 +9432 +412 = +9844 +609 = +10453 = +3
 +4782 +6875 +9657 +503 = +10160 -287 = +10447 = -3
 -4009 +13133 +9124 +549 = +9673 +775 = +10448 = -2
 -336 +9379 +9043 -856 +9899 +554 +10453 = +3
 163081 +8154 +661 +482 = 161928

Tables a = -03 e = -233 c = +230 f + d = +10
 Obs a = -5010 e = -5295 c = +28.5 f + d = -60

17 41 15.91
 92

17 41 15.92
 56.59
 17 42 12.51
 17 47 10
 - 4 57.49
 - 897.47
 2.47344

9.94674
 0.92742
 -8.4610
 - 17
 13.5373
 13.7265
 + 1892

3 4 85 -1.83 +3
 1 -5.27 -8.71 -13 + +9 - -4 -1
 2 -3.66 +8.67 -8 + +6 - -2 +1
 3 +7.09 +0.82 +9 - -13 - -4 -1
 4 -8.76 +2.77 -17 + +10 - -2 +1
 4 +0.28 -1.81 0 0 +3

-27 47 33.9
 33.8
 -27 47 33.8
 - 24.2
 -27 47 58.0
 -28 09 30
 + 21 32.0
 + 1292.0
 3.11126
 0.44241

Δ4 -24 +5 +7
 -22 +17.2 -5 -5.2 -10 -3
 + 18 -17.2 +1 -7.2 -3 +7
 + 1 -16.2 -13.7 +7.2 -8 -1
 + 6 -5.2 +1 -8.2 -7 0
 0 +7 0 +11

9.7220m
 18548
 8.6302m

+2.7696
 - 427
 20.7269
 20.6382
 - 887

8635

Standard Coordinates

Cap. No. 2424 mag 8.8 Cap. No. 2429 mag 6.8 Cap. No. 2448 mag 5.7

C	17	43	05.79	17	44	05.75	17	50	23.01
E									22.95
E			.81						.99
mean	17	43	05.80	17	44	05.75	17	50	22.98
Pre	+		57.30	+		56.29	+		56.76
S	17	44	03.10	17	45	02.04	17	51	19.74
A	17	47	10	17	47	10	17	47	10
K-A	-3		06.90	-2		07.96	+	4	09.74
min(A)	-		186.89	-		127.96	+		249.73
log	2.27159	m		2.10707	m		2.39747		
W	9.94060			9.94974			9.94572		
3	0.71943	m		0.56405	m		0.85043		
E	-5.2412			-3.6648			+7.0865		
E	-		13	-		8	+		9
3	16.7575			18.3344			29.0874		
K	16.7672			18.3068			28.5304		
K-3	+		97	-276			-5570		

C	-29	16	51.9	-27	01	46.2	-28	02	57.5
E									56.7
E			51.9						56.8
mean	-29	16	51.9				-29	02	57.0
Pre	-		21.5	-		20.2	-		12.0
S	-29	17	13.4	-27	02	06.4	-28	03	09.0
D	-28	09	30	-28	09	30	-28	09	30
S-D	-1	07	43.4	+1	07	23.6	+	06	21.0
min(D)	-40		63.9	+		404.1	+		381.0
log	3.60894	m		3.60682			2.58092		
W	0.94009	m		0.93797			9.91207		
W	9.7489	m		9.0778	m		9.7266	m	
3	1.4389			1.1281			1.7009		
W	8.2412	m		7.2593	m		8.4809	m	
W	-8.7114			+8.6690			+0.8167		
W	-		174	-		18	-		303
W	9.2752			26.6672			18.7864		
W	9.7494			26.2663			18.7528		
W	+		4782	-4009			-		336

8635

Standard Coordinates

Cepheus hr. 2+24 mag 8.5				Cepheus hr. 2+29 mag 6.8				Cepheus hr. 2+48 mag 5.7			
C	17	43	0579	17	44	0575	17	50	2301		
L									2295		
B			81						99		
mean	17	43	0580	17	44	0575	17	50	2298		
Pole			5732			5629			5676		
S	17	44	0310	17	45	0204	17	51	1974		
A	17	47	10	17	47	10	17	47	10		
x-A		-3	0690		-2	0796		+4	0974		
sub-A			18689			12796			249.73		
log	2	27	159	2	107	07	2	39	747		
mag	9	9	4060	9	9	4974	9	9	4572		
S	0.7	19	43	0.5	64	05	0.8	50	43		
S	-5	24	12	-3	66	48	+7	08	65		
S	-		13	-		15	+		10		
S	16	75	75	18	33	44	29	08	74		
x	16	76	72	18	30	68	28	53	04		
h-S		+9	7		-2	76		-5	570		
C	-29	16	519	-27	01	462	-28	02	575		
L									567		
S			519						568		
mean	-29	16	519				-28	02	570		
Pole			215			202			120		
S	-29	17	134	-27	02	064	-28	03	090		
D	-28	09	30	-28	09	30	-28	09	30		
S-D	-1	07	434	+1	07	236	+1	06	210		
sub-A			40639			44044.1			3810		
log	3	60	894	3	60	082	2	58	092		
mag	0	94	069	0	93	797	4	91	207		
S	9	74	89	9	07	78	9	72	66		
S	1	43	89	1	12	81	1	70	09		
mag	8	24	12	7	25	93	8	48	09		
mag	-8	71	14	+8	66	90	+0	81	67		
mag	-		174	-		18	-		303		
mag	9	27	12	26	66	22	18	78	64		
mag	9	74	94	26	26	63	18	75	28		
mag			4782			4009			336		



8635

Moon's Center

	x	$x - x_0$	Δx	$(x - x_0)^2$	$(x - x_0)^2 + (y - y_0)^2$	$0 - c$
1	22.0000	-0.0420	-2	0.0018	4.1982	-133
2	23.0000	+0.9580	-2	0.9174	4.2058	-57
3	23.6186	+1.5766	-1	2.4854	4.2012	-103
4	24.0711	+2.0291	0	4.1172	4.2119	+4
5	24.0938	+2.0518	0	4.2099	4.2099	-16
6	23.9746	+1.9326	+1	3.7353	4.2176	+61
7	23.1972	+1.1552	+2	1.3349	4.2137	+22
8	23.0000	+0.9580	+2	0.9182	4.2081	-34
9	22.4716	-0.4296	+2	0.1847	4.2055	-60

4.2115

	y	$y - y_0$	Δy	$(y - y_0)^2$	c
1	14.2630	-2.0440	-45	4.1964	+180
2	14.4976	-1.8094	-40	3.2884	152
3	15.0000	-1.3070	-29	1.7158	130
4	16.0000	-0.3070	-7	0.0947	99
5	16.3070	0.0000	0	0.0000	90
6	17.0000	+0.6930	+15	0.4823	70
7	18.0000	+1.6930	+37	2.8758	34
8	18.1168	+1.8098	+40	3.2899	28
9	18.3078	+2.0008	+44	4.0208	12

Approx. Center

$$x = 23.0 \quad y = 14.4976$$

$$18.1168$$

$$32.6144$$

$$y_0 = 16.3072$$

$$y - \text{mean} = 14.2630$$

$$c = 2.0442$$

$$\text{Comp. R.} = 2.0522$$

$$x - \text{mean} = 24.0938$$

$$x_0 = 22.0416$$

$$\text{Center} \begin{cases} x_0 = 22.0420 \\ y_0 = 16.3070 \end{cases}$$

8635

Moon's Center

	x	$x - X_0$	Δx	$(x - X_0)^2$	$(x - X_0)(y - Y_0)$	$y - Y_0$
1	220000	-00420	-2	0.0018	4.1982	-133
2	230000	+09580	+2	0.9174	4.2058	-57
3	236186	+15766	+1	2.4834	4.2012	-103
4	240711	+20291	0	4.1172	4.2119	-4
5	240938	+20518	0	4.2099	4.2099	-16
6	239746	+19326	+1	3.7353	4.2176	-61
7	231972	+11552	+2	1.3349	4.2137	+22
8	230000	+09580	+3	0.9182	4.2081	+34
9	224716	-04296	+2	0.1847	4.2055	+60
					4.2112	

	y	$y - Y_0$	Δy	$(y - Y_0)^2$	$\angle$
1	142630	-20440	-75	4.1904	+180
2	144976	-18094	-40	3.2884	152
3	150000	-13070	-29	1.7158	130
4	160000	-03070	-7	0.0949	99
5	163070	00000	0	0.0000	90
6	170000	+06930	+15	0.4823	70
7	180000	+16930	+37	2.8788	39
8	181168	+18098	+40	3.2899	28
9	183078	+20008	+47	4.0208	12
					168

Approx Center

$$X = 230 \quad Y = 144976$$

$$181168$$

$$32.6144$$

$$f_1 = 163072$$

$$y - \text{min} = 142630$$

$$E = 20442$$

$$\text{amp } R = 2.0522$$

$$x - \text{min} = 240938$$

$$X = 220416$$

$$\text{Center } \left\{ \begin{array}{l} X_0 = 220420 \\ Y_0 = 163070 \end{array} \right.$$

Formation of Wornals.

1	+ 0.08	+ 5.3	+ 271.5
2	- 1.74	- 54.7	+ 103.2
3	- 2.07	- 162.9	+ 135.0
4	- 0.63	+ 8.1	- 1.2
5	+ 0.00	- 32.8	- 0.0
6	+ 1.33	+ 117.8	+ 42.1
7	+ 1.96	+ 25.6	+ 37.2
8	+ 1.74	- 32.6	- 61.5
9	+ 0.86	- 25.8	- 120.0
	+ 1.53	- 152.0	+ 406.3

- a	- b	+ 16
+ 0	0	+ AC
- 10		+ 16 ✓
- 16		+ 6 ✓
- 20		0 ✓
- 20		- 4 ✓
- 19		- 4 ✓
- 12		- 3 ✓
- 10		+ 4 ✓
- 4		+ 6 ✓
		+ 12 ✓

8635 Moon's Center

	δ	α	$\delta - \alpha$	corr
1	$-0.04 - 2.04 = -1.33$	$+0 - 43 = -43$	$-90 - 74$	
2	$+0.96 - 1.81 = -57$	$-10 - 38 = -48$	$-9 - 3$	
3	$+1.58 - 1.31 = -1.03$	$-16 - 28 = -44$	$-59 - 59$	
4	$+2.03 - 0.31 = +4$	$-21 - 7 = -28$	$+32 + 28$	
5	$+2.05 + 0.00 = -16$	$-21 + 0 = -21$	$+5 + 1$	
6	$+1.93 + 0.69 = +61$	$-20 + 15 = -5$	$+66 + 63$	
7	$+1.16 + 1.69 = +22$	$-12 + 36 = +24$	$-2 + 2$	
8	$+0.96 - 1.81 = -34$	$-10 + 38 = -28$	$-6 0$	
9	$+0.43 + 2.00 = -60$	$-4 + 42 = +38$	$-98 - 86$	
	$+11.06 + 0.72$		$+103 - 204$	

Normal Equations

Average: 41

$$+17.90 + 1.53 = -152 \quad +11.06$$

$$+ 1.53 + 19.97 = +406 \quad + 0.72$$

$$- 1.53 - 0.13 = +13 \quad - 0.95$$

$$+ 19.84 = +419 \quad - 0.23 \quad b = +21.1 - 0.01$$

$$+17.90 = -152 - 32 = -184$$

$$a = -10.3 + 0.62$$

arc mean 168°

$$\frac{R}{n} = .25$$

$$\frac{\Sigma K}{n} = 18$$

$$\frac{-18}{25} = -.72$$

$$\Delta R = -0.9$$

$$\text{corr} = -0.2$$

$$\text{true } \Delta R = -0.7$$

$$R = 2.05$$

$$-2R = -4.10 \quad -2R_{\text{corr}} = +0.82 \quad +16$$

$$\Delta \theta = -0.0 \quad \Delta \delta = +0.0$$

$$\Delta a = +0.5.0 + 0 \quad \Delta \alpha = +0.02$$

8635 Moon's Center

	O	C	O-C
1	-004 - 204 = -133	+ 0 - 43 = -43	+90
2	+096 - 181 = -57	- 10 - 38 = -48	-9
3	+158 - 131 = -103	- 16 - 28 = -44	-59
4	+203 - 031 = +9	- 21 - 7 = -28	+32
5	+205 + 000 = -16	- 21 + 0 = -21	+5
6	+193 + 069 = +61	- 20 + 15 = -5	+66
7	+116 + 169 = +22	- 12 + 36 = +24	-2
8	+096 + 181 = -34	- 10 + 38 = -28	-6
9	+043 + 200 = -60	- 4 + 42 = +38	-98

+103 - 204
Average +1

Normal Equations

$$+17.90 + 1.53z = -1.52$$

$$+ 1.53 + 19.97z = +7.06$$

$$- 1.53 - 0.13 = +13$$

$$+ 19.84 = +419$$

$$v = +21.1$$

$$+17.90 = -1.52 - 32z - 184$$

$$a = -143$$

Arc meas 168°

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

$$\frac{EK}{n} = 18$$

$$-\frac{18}{25} = -.72$$

$$\Delta R = -0.9$$

8635 Moon's Mean Position (1915.0)

$$\begin{array}{rcl}
 X = 22.0420 & Y = 16.3070 \\
 \hline
 22.0415 & 16.3081
 \end{array}$$

From plate Constants $X = 22.2797$ $Y = 16.1928$

$$z = +0.2797$$

$$\eta = -1.8072$$

$$\begin{array}{r}
 \log S = 9.44669 \\
 \log S = 9.44734 \\
 \hline
 8.50724
 \end{array}$$

$$\begin{array}{r}
 \log \tan S = 9.7318 \\
 \hline
 8.8934 \\
 \hline
 9.0534
 \end{array}$$

$$\log(\alpha - A) = 0.99511$$

$$\log \eta_1 = 5.6786$$

$$\alpha - A = + 9.89$$

$$\begin{array}{r}
 \log \eta_0 = 0.25701 \\
 \hline
 7.33115
 \end{array}$$

$$A = 17 \ 47 \ 10$$

$$(\delta - D) = 2.92586$$

$$\alpha = 17 \ 47 \ 19.89$$

$$S - D = - 14 \ 03.1$$

$$\text{Red} = + 3.74$$

$$D = -28 \ 09 \ 30$$

$$\alpha = 17 \ 47 \ 23.63$$

$$S = -28 \ 23 \ 33.1$$

$$\text{Red} = - 7.2$$

$$S = -28 \ 23 \ 40.3$$

2635 Mow's linear Position (1915.0)

$$\begin{array}{r} X = 22.0420 \\ \text{true} = \quad \quad 5 \\ \hline 22.0415 \end{array}$$

$$\begin{array}{r} Y = 16.3070 \\ \text{true} = \quad \quad +11 \\ \hline 16.3081 \end{array}$$

From plate Constant $X = 22.2797$ $Y = 16.1928$

$$z = +0.2797$$

$$\eta = -1.8072$$

$$\begin{array}{r} \log 3 \quad 99.44609 \\ \text{true} \quad 99.4734 \\ \hline 8.50724 \end{array}$$

$$\begin{array}{r} \log \tan 5 = 9.7318 \\ \quad \quad \quad 8.8934 \\ \hline 9.0534 \end{array}$$

$$(x-A) \quad 0.99511$$

$$y_1 = 5.6786$$

$$x-A \quad + \quad 989$$

$$\log \eta_0 = \begin{array}{r} 0.25701 \\ 7.33115 \end{array}$$

$$A \quad 17 \quad 47 \quad 10$$

$$(d-1) = 2.92586$$

$$x \quad 17 \quad 47 \quad 19.89$$

$$S-D = -14 \quad 031$$

$$\text{Red} \quad + \quad 3.74$$

$$D = -28 \quad 09 \quad 30$$

$$x \quad 17 \quad 47 \quad 23.63$$

$$S = -28 \quad 23 \quad 33.1$$

$$\text{Red} \quad - \quad 7.2$$

$$S = -28 \quad 23 \quad 40.3$$

$$\begin{array}{r}
 17 \quad 41 \quad 42.55 \\
 \underline{38.36} \\
 + 4.19 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 -40 \quad 05 \quad 49.0 \\
 \underline{42.5} \\
 - 6.5 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 17 \quad 54 \quad 24.07 \\
 \underline{20.79} \\
 + 3.28 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 -9 \quad 45 \quad 59.5 \\
 \underline{50.7} \\
 - 8.8 \\
 \hline
 \end{array}$$



-40

-35

-30

-25

-20

-15

-10

-5

8635 Red ad locum sp. h.

S - 28" 23' 33"

$$H + X \quad 07^h \quad 09.4^m = 107^\circ 21'$$

$$H \quad 13 \quad 22.1^m$$

$$X \quad 17 \quad 47.3^m$$

$$G \quad 22 \quad 04.4^m$$

$$G + X \quad 15 \quad 51.7^m = 237^\circ 56'$$

$$L \cos S \quad 9.9443^m$$

$$L \quad 0.4882^m$$

$$(L) \quad 0.4325^m$$

$$L \cos(G + X) \quad 9.7250^m$$

$$f \quad 1.1398$$

$$\sin \quad 9.9281^m$$

$$\tan S \quad 9.7328^m$$

$$8.8239$$

$$8' \quad 0.8648^m$$

$$8 \quad 9.6246^m$$

$$f \quad +1.851$$

$$f \quad +0.421$$

$$h \quad +1.464$$

$$+3.736^m$$

$$L \sin S \quad 9.6772^m$$

$$\cos(H + X) \quad 9.4745^m$$

$$h \quad 1.3062$$

$$\sin \quad 9.9798^m$$

$$\sec S \quad 0.0557^m$$

$$8.8239$$

$$h' \quad 0.4579$$

$$h \quad 0.1656^m$$

$$8' \quad -7.32$$

$$h' \quad +2.87$$

$$i \quad -2.71$$

$$-7.16^m$$

8635 Red ad locum of h.

S - 28° 23' 33"

H + X 07" 09.4 : 107° 21'

H 13 221

X 17 47.3

G 22 04.4

G + X 15. 51.7 - 237° 56'

L cos S 9.9443

L 0.4882

(h) 0.4325

L cos (G + X) 9.7250m

S 1.1398

L sin 9.9281m

L sin S 9.7328m

88239

S 0.8648m

8 9.6246

f + 1.851

S + 0.425

h + 1.464

+ 3.736

L sin S 9.6772m

L sin (H + X) 9.4745m

h 1.3062

L sin 9.9798

L sin S 0.0557

88239

L sin 0.4579

L 0.1656

S - 7.32

h + 2.87

i - 2.71

- 7.16

8635 Lunar parallax.

$$\begin{array}{r}
 \alpha = 17^{\circ} 47' 23.63 \\
 \theta = 17 \quad 56 \quad 02.7 \\
 + \quad 8 \quad 39.1 \\
 + \quad 2^{\circ} 09' 46'' \\
 + \quad \quad \quad 58 \\
 \hline
 2 \quad 08 \quad 48
 \end{array}$$

$$\begin{array}{r}
 9.95727 \\
 0.00000 \\
 0.00031 \\
 \hline
 9.95758
 \end{array}$$

$$\begin{array}{r}
 \delta = 42 \quad 12 \quad 23 \\
 -28 \quad 23 \quad 40 \\
 \hline
 -70 \quad 36 \quad 03
 \end{array}$$

$$\begin{array}{r}
 9.82640 \\
 8.24929 \\
 9.97461 \\
 0.17276 \\
 \hline
 8.22306
 \end{array}$$

$$\delta - \delta' = +57 \quad 27.5$$

$$\delta = -27 \quad 26 \quad 12.8$$

$$\text{Ann Eph } \delta = -27 \quad 26 \quad 11.6$$

$$O-C = -1.2$$

$$\text{Curv. of Plate} + 0.3$$

$$2^{\text{nd}} \text{ Ord. Res.} + 0.4$$

$$\text{Gen. Corr.} + 0.0$$

$$\delta = -27 \quad 26 \quad 12.4$$

$$-0.8$$

$$\delta = -28^{\circ} 23' 40.3$$

$$\pi = 61' 02.22$$

$$\begin{array}{r}
 9.86913 \\
 8.24929 \\
 8.57679 \\
 0.05182 \\
 \hline
 6.74703
 \end{array}$$

$$\alpha - \alpha' = +1' 55.20$$

$$= +07.68$$

$$\alpha = 17 \quad 47 \quad 31.31$$

$$\alpha = 17 \quad 47 \quad 30.62$$

$$+0.69$$

$$\text{curv.} + 0.01$$

$$\text{Gen. Corr.} + 0.02$$

$$\alpha = 17 \quad 47 \quad 31.34$$

$$O-C + 0.72$$

8635- Lunar parallax

$$\begin{array}{r}
 \alpha = 17^{\circ} 47' 23.63 \\
 \delta = 17^{\circ} 56' 02.7 \\
 + \quad 8' 39.1 \\
 + \quad 2' 09' 46'' \\
 + \quad \quad \quad 58 \\
 \hline
 \quad \quad \quad 2' 08' 48''
 \end{array}$$

$$\begin{array}{r}
 995727 \\
 000000 \\
 000031 \\
 \hline
 995758
 \end{array}$$

$$\begin{array}{r}
 \delta = 42' 12' 23 \\
 - 28' 23' 40 \\
 \hline
 - 70' 36' 03
 \end{array}$$

$$\begin{array}{r}
 982640 \\
 827929 \\
 997461 \\
 017276 \\
 \hline
 822306
 \end{array}$$

$$S - S' = + 57' 27.5$$

$$S = - 27' 26' 12.8$$

$$\text{Our Eph } S = - 27' 26' 11.6$$

$$O - C = - 1.2$$

$$\text{Curv of Plate} = + 0.3$$

$$2^{\text{nd}} \text{ Aed. Ref.} = + 0.4$$

$$\text{2nd Corr.} = + 0.0$$

$$S = - 27' 26' 12.8$$

$$\delta = - 28^{\circ} 23' 40.3$$

$$\Pi = 61' 02.22$$

$$\begin{array}{r}
 9.86913 \\
 8.24929 \\
 8.57679 \\
 0.05182 \\
 \hline
 6.74703
 \end{array}$$

$$\alpha - \alpha' = + 1' 55.20$$

$$= + 07.68$$

$$\alpha = 17^{\circ} 47' 31.31$$

$$\alpha = 17^{\circ} 47' 30.62$$

$$\text{Curv} = + 0.01$$

$$\text{2nd Corr.} = + 0.02$$

$$\alpha = 17^{\circ} 47' 31.34$$

$$O - C = + 0.72$$

Star

$$\begin{array}{r} 127 \\ 194 \\ \hline 17991 \\ 10029 \\ 4145 \\ 02 \\ \hline 127958 \end{array}$$

$$\begin{array}{r} 18353 \\ 16303 \\ 0910 \\ 54 \\ \hline 7954 \end{array}$$

$$\begin{array}{r} 18878 \\ 15459 \\ 6061 \\ 74 \\ \hline 19.3416 \end{array}$$

$$\begin{array}{r} 17550 \\ 10939 \\ 3939 \\ 50 \\ \hline 3389 \end{array}$$

8636 Stars Measures

μ	α	δ	μ	α	δ	μ	α
1	18260	20134	16571	15410			
158	955659	18811	12021	998787			
8.5	58	1017	1911	90			
	32	24	82	29			
	<u>15.8677</u>	<u>.8680</u>	<u>8.4559</u>	<u>.4569</u>			
2	15670	19219	11880	13058			
17.4	1206172	12815	9084	1285260			
249	6872	2110	11700	6060			
	70	09					
	<u>17.3603</u>	<u>.3604</u>	<u>24.9815</u>	<u>.9799</u>			
3	20502	19410	20010	18419			
27.6	1444048	15458	15026	1337895			
175	5048	5055	2323	02			
	07	90	19	21			
	<u>27.6059</u>	<u>.8052</u>	<u>17.4990</u>	<u>.4978</u>			

Moon's Measures

1	220	20029	17068
13.1	1963639	5260	
moon	31	16670	
4			
2		<u>13.0394</u>	<u>.0390</u>
23.0		18857	17721
13.4		16040	10562
		3835	6165
		71	30
		<u>13.2819</u>	<u>.2830</u>
3			
23.7	18098	17035	
14.0	1039712	1470514	
	10	2014	
		39	
	<u>23.7703</u>	<u>.7677</u>	

Star.

$$\begin{array}{r} 127 \\ 19.4 \end{array} \begin{array}{r} 17991 \\ 10039 \\ 4145 \\ 02 \\ \hline 12.7958 \end{array}$$

$$\begin{array}{r} 18353 \\ 16303 \\ 0910 \\ 54 \\ \hline 7954 \end{array}$$

$$\begin{array}{r} 18878 \\ 15459 \\ 6061 \\ 74 \\ \hline 19.3416 \end{array}$$

$$\begin{array}{r} 17550 \\ 10939 \\ 2939 \\ 50 \\ \hline .3389 \end{array}$$

2636 Stars measures

d	n	d	n
1 18260	20134	16571	15410
158 955659	18811	12021	998787
85 58	1017	1911	90
32	24	82	29
<u>158677</u>	<u>8680</u>	<u>8.4559</u>	<u>4569</u>
2 15670	19219	1188084	13058
174 1206172	1281510	90	1285260
249 6872	24	1.1700	6060
70	09		
<u>17.3603</u>	<u>3604</u>	<u>24.9815</u>	<u>9799</u>
3 20502	19410	20010	18419
276 1444048	15458	15026	1337895
175 5048	505	23 23	02
07	90	19	21
<u>27.6059</u>	<u>6052</u>	<u>17.4990</u>	<u>4978</u>

known measures

1 120	20029	17068
131	1963639	5260
134	31	16670
2 230	<u>13.0394</u>	<u>.0390</u>
134	18851	17721
	1.6040	10562
	3835	6165
	71	30
	<u>13.2819</u>	<u>.2836</u>
3 237 18098	17035	
140 1039712	1470514	
10	2014	
	39	
<u>23.7303</u>	<u>7677</u>	

8636

Moon's measures

1916 June 5.

a

a

b

N

$$\begin{array}{r}
 4 \quad 16488 \\
 24.1 \quad 1570097 \\
 11.0 \quad 0689 \\
 \hline
 24.0787
 \end{array}$$

$$\begin{array}{r}
 1298978 \\
 8478 \\
 12198 \\
 \hline
 0796
 \end{array}$$

$$\begin{array}{r}
 5 \quad 15494 \\
 24.1 \quad 14696 \\
 11.2 \quad 8550 \\
 \text{max} \quad 98 \\
 \hline
 24.0804
 \end{array}$$

$$\begin{array}{r}
 13998 \\
 5801 \\
 13181 \\
 \hline
 0819
 \end{array}$$

$$\begin{array}{r}
 6 \quad 16571 \\
 23.8 \quad 796055 \\
 16.0 \quad 5155 \\
 \hline
 23.8628
 \end{array}$$

$$\begin{array}{r}
 18439 \\
 1709084 \\
 8584 \\
 46 \\
 \hline
 8646
 \end{array}$$

$$\begin{array}{r}
 7 \\
 23.0 \\
 16.8
 \end{array}$$

$$\begin{array}{r}
 17278 \\
 837089 \\
 9089 \\
 79 \\
 \hline
 16.8896
 \end{array}$$

$$\begin{array}{r}
 19621 \\
 18582 \\
 1821 \\
 30 \\
 \hline
 16.8898
 \end{array}$$

8 scratch

$$\begin{array}{r}
 22.6 \quad 20474 \\
 17.1 \quad 1462937 \\
 29 \\
 79 \\
 \hline
 22.5845
 \end{array}$$

$$\begin{array}{r}
 19311 \\
 1516160 \\
 70 \\
 01 \\
 \hline
 22.5857
 \end{array}$$

$$\begin{array}{r}
 18631 \\
 1808550 \\
 7180 \\
 \hline
 17.0552
 \end{array}$$

$$\begin{array}{r}
 1476567 \\
 6067 \\
 14205 \\
 \hline
 0559
 \end{array}$$

Density 3.

8636 Gross harvest 1916 June 5.
 4 1.6488 1298978
 241 1.5700 84
 110 06 12188
 27.0787 0796
 5 1.5494 1399801
 241 1.4696 9801
 112 8150 13181
 27.0804 0819
 6 1.6571 18439
 238 7960 1709084
 160 5155 81
 84 46
 13.8628 8646
 7 17278 19621
 30 8370 18582
 168 9089 1821
 79 30
 16.8896 16.8898
 8 Scratch
 26 20474 19311 18631 14765
 171 14629 1516160 1808550 6067
 29 70 7180 14205
 79 01
 22.5845 22.5857 170152 0559
 Density 3.

8636 Times etc.

Exposition	1915 May 29.	18 ^h	08 ^m	-18 ^h	20 ^m
" " noon		18	14	15.0	-18 14 15.3
clock fast			1	11.2	
H. Sid T.		18	13	03.95	0-02+0 ^h 25 ^m
H. long		4	44	31.05	
G. Sid T.		22	57	35.00	
Sid T. to noon		4	23	43.45 ^v	
Intervals		18	33	51.55	
Red.			3	02.48	
B. M. T.		18	30	49.07	

From Nant Allen		R. A.	Decl.
known 18 ^h	17 ^h 46 ^m	51.41	-27 26 27.6
motion in R	2.8317		1.182
" " 30.818	+1	27.27 ^v	+ 36.4
Tabular place	17 48	28.68	-27 25 51.2

Moon's age 16 days.

	parallax	61	01.79
	semidiam	16	39.2
	R		999.2
	Augmentation		+6.1
	Irradiation (3)		-0.3
	R		1005.0
	R		2.1543
	ak		-10.26
	(1+a)R		2051.7
	R ²		42095
934 = 5.3			
989 = ~~55~~ 6.1			
a = -500.4			
= 24.			
-476.4			

8636

Times etc.

Exposure 1915 May 29. $18^{\circ} 03^m - 18^{\circ} 20^m$
 Moon $18 \quad 14 \quad 15.0 - 18 \quad 14 \quad 15.3$
 Clock fast $1 \quad 112$

H. Sid T. $18 \quad 13 \quad 039.5 \quad 0.02 + 0^{\circ} 25^m$
 H. long $4 \quad 44 \quad 31.05$
 G. Sid T. $22 \quad 57 \quad 35.00$
 Sid T. in hour $4 \quad 23 \quad 43.75$
 Interval $18 \quad 33 \quad 51.55$
 Red $3 \quad 02.48$
 G. in T $18 \quad 30 \quad 49.07$

From Mount Allen R.A. Decl.
 Moon $18^{\circ} \quad 17^{\circ} 46' \quad 51.41 \quad -27 \quad 26 \quad 27.6$
 Instrument $28317 \quad 1182$
 $30.818 \quad +1 \quad 27.27 \quad + \quad 36.4$
 Tabular place $17 \quad 48 \quad 18.68 \quad -27 \quad 25 \quad 51.2$

Moon's age 16 days.

Parallax $61 \quad 01.79'$
 Semidiameter $16 \quad 39.2$

R

9.992

Augmentation
 Irradiation (2)

+ 6.11

- 0.3

R

1.0050

R

2.1543

AR

- 1.026

(1+AR)

2.0517

R

4.2095

934 = 53

985 = 59

C = -500.4

$\frac{24}{-426.4}$

8636

Plate Constants + Plate Center

R.A

Decl.

X

Y

15.8678

8.4564

17.3604

24.9807

27.6056

17.4984

360.83

50.94

20.28

16.98

22

18

1.72

1.02

31

466

53

475

= 7' 55"

18 13 04

17 47 10

25 54

28 09 30

✓

3

4

1

X 15.8678

17.3604

27.6056

12.7956

5 16.7575

15.3344

29.0874

13.5373

2-3 -8.897

-9.740

-1.4818

-7.417

Y 8.4564

24.9807

17.4984

19.3402

7 9.2712

26.6672

18.7864

20.7269

g-m -8.148

-1.6865

-1.2880

-1.3867

2-3 +500y

+5.8y

+0.4y

+905

-7.417 + 63.98 = -10.19 + 11.2 = -9.07 + 5 = -9.02

= +3

-8.897 + 79.34 = -9.63 + 4.9 = -9.14 + 6 = -9.08

= -3

-9.740 + 86.80 = -10.60 + 14.5 = -9.15 + 7 = -9.08

= -3

-14.818 + 138.03 = -10.15 + 10.2 = -9.14 + 11 = -9.03

= +2

22.0291 + 11.015

+ 87

+ 9

= 23.2307

y-m +500y

-1x

+27.6y

+3689

-1.3867 + 96.70 = -41.97 - 1.3 = -42.10 + 53.4 = -36.76

= +13

-8.148 + 42.28 = -39.20 - 1.6 = -39.36 + 23.3 = -37.03

= -14

-1.6865 + 124.90 = -43.75 - 1.7 = -43.92 + 68.9 = -37.03

= -14

-1.2880 + 87.49 = -41.31 - 2.8 = -41.59 + 48.3 = -36.76

= +13

15.0860 + 75.43

- 22

+ 41.6

= 16.2486

Table a = -0.3 2 = -23.3 a - 2 = +23.0 b + a = -4.5

Obs a = -500.4 c = -527.6 a - c = +127.2 b + a = -4.8

O-C -500.1 -504.3

-0.3

8636 Plate Constants + Plate Center

R A

Decl

X	Y
158678	84564
173604	249807
276056	174984
36083	5094
2028	1698
22	-18
172	102
31	466
53	775
	7' 55"

	2	3	4	1
X	158678	173604	276056	127956
Y	167575	163344	290874	135373
	-8897	-9740	-14818	-7417

8	84564	249807	174984	193402
7	92712	266673	187864	207269
1	-8148	-16865	-12880	-13867

5	+5001	+589	+047	+905
4	17 + 6398 = -1019 + 112 = -907 + 5 = -902			+3
8	57 + 7434 = -963 + 49 = -914 + 6 = -908			-3
7	40 + 8684 = -1060 + 145 = -915 + 7 = -908			-3
8	18 + 13803 = -1015 + 102 = -914 + 11 = -903			+2
22	0291 + 17013 =	+87	+9	= 23.2307

4	+5004	-18	+2768	+3689
18	67 + 9670 = -4157 - 13 = -4210 + 534 = -3676			+13
14	8 + 4228 = -3920 - 16 = -3936 + 233 = -3703			-14
08	65 + 12490 = -4371 - 17 = -4392 + 689 = -3703			-14
28	80 + 8749 = -4131 - 28 = -4159 + 483 = -3676			+13
10	0860 = 19543	-22	+716	= 16.2486

Table 2	-0.3	R = -23.3	a = 2 = +230	fid = -45
Table 2	-500.4	-5276	a = 2 = +272	fid = -48

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

8630

Innovis Center

	x	$x - X_0$	Δx	$(x - X_0)^2$	$(x - X_0)^2 + (y - Y_0)^2$	$O - C$
1	22.00000	-0.03000	-8	0.0010	4.2138	+43
2	23.00000	+0.97000	-7	0.9396	4.2096	+1
3	23.76900	+1.73900	-4	3.0227	4.2093	-2
4	24.07920	+2.04920	0	4.1992	4.2068	-27
5	24.08120	+2.05120	0	4.2074	4.2074	-21
6	23.86370	+1.83370	+4	3.3640	4.2010	-85
7	23.00000	+0.97000	+7	0.9422	4.2067	-28
8	22.58510	+0.55510	+8	0.3090	4.2021	-74

4.2095

	y	$y - Y_0$	Δy	$(y - Y_0)^2$	$\angle$
1	13.0392	-2.0478	-47	4.2128	180°
2	13.2828	-1.8042	-41	3.2700	152°
3	14.0000	-1.0870	-23	1.1866	122°
4	15.0000	-0.0870	-02	0.0076	92°
5	15.0870	0.0000	0	0.0000	90°
6	16.0000	+0.9130	+19	0.8370	63°
7	16.8897	+1.8027	+41	3.2645	28°
8	17.0556	+1.9686	+45	3.8931	16°

Approx. Center

$$x = 230 \quad y = 13.2828$$

$$16.8897$$

$$\hline 30.1725$$

$$Y_0 = 15.0862$$

$$y_{\text{max}} = 13.0392$$

$$R = 2.0470$$

$$\text{comp } R = 2.0517$$

$$x_{\text{max}} = 24.0812$$

$$X_0 = 22.0295$$

$$\text{Center } \begin{cases} X_0 = 22.0300 \\ Y_0 = 15.0870 \end{cases}$$

863C

Known Center

	x	$x - X_0$	Δx	$(x - X_0)^2$	$(x - X_0)(y - Y_0)$	$y - C$
1	220000	-00300	-8	0.0010	42138	+43
2	230000	+0.9700	-7	0.9396	42096	+1
3	237690	+1.7390	-4	3.0227	42093	-2
4	240792	+2.0492	0	4.1992	42068	-27
5	240812	+2.0512	0	4.2074	42074	-21
6	238637	+1.8337	+4	3.3640	42010	-85
7	230000	+0.9700	17	0.9422	42067	-28
8	225851	+0.5551	+8	0.3090	42021	-74

4.2095

	y	$y - Y_0$	Δy	$(y - Y_0)^2$	
1	15.0392	-2.0478	-47	4.2128	180
2	13.2828	-1.8042	-41	3.2700	152
3	14.0000	-1.0870	-23	1.1866	122
4	15.0000	-0.0870	-02	0.0076	90 +
5	15.0870	0.0000	0	0.0000	90
6	16.0000	+0.9130	+19	0.8370	63
7	16.8897	+1.8027	+41	3.2645	28
8	17.0556	+1.9686	+45	3.8931	16

Approx Center

$$x = 230 \quad y = 1.32828$$

$$\begin{array}{r} 1.68897 \\ \hline 30.1725 \end{array}$$

$$y = 15.0862$$

$$R = 20470$$

$$\text{comp } R = 20517$$

$$x_{\text{max}} = 240812$$

$$X_0 = 22'029.5$$

$$\text{Center } \left\{ \begin{array}{l} X_0 = 220300 \\ Y_0 = 150870 \end{array} \right.$$

Formation of Normals.

1	+ 0.06	-	1.3	-	88.1
2	- 1.75	+	1.0	-	1.8
3	- 1.90	-	3.4	+	2.2
4	- 0.18	-	~~5.4~~	+	2.4
5	+ 0.00	-	4.30	-	0.0
6	+ 1.66	-	15.57	-	77.4
7	+ 1.75	-	27.2	-	50.4
8	+ 1.10	-	41.4	-	146.0
	+ 0.74	-	326.5	-	359.1

- a	- b	+ 16	+ AC
+ 0	- 2	+ 14	✓
- 10	- 1	+ 5	✓
- 17	- 1	- 2	✓
- 20	- 0	- 4	✓
- 20	+ 0	- 4	✓
- 18	+ 1	- 1	✓
- 10	+ 1	+ 7	✓
- 6	+ 2	+ 12	✓

8636 Luvuv's Center.

		0		C	0-C	Corr
1	-0.03 - 2.05 =	+43	+1	+42 = +43	0	+14
2	+0.97 - 1.80 =	+1	-18	+37 = +19	-18	-13
3	+1.74 - 1.09 =	-2	-32	+23 = -9	+7	+5
4	+2.05 - 0.09 =	-27	-38	+02 = -36	+9	+5
5	+2.05 + 0.00 =	-21	-38	-0 = -38	+17	+13
6	+1.83 + 0.91 =	-85	-34	-9 = -43	-42	-43
7	+0.97 + 1.80 =	-28	-18	-37 = -55	+27	+34
8	+0.56 + 1.97 =	-74	-10	-41 = -51	-23	-11
+10.14 - 0.35					+60-83	

Normal Equation.

Average = 18

$$+16.99 + 0.74 = -326 + 10.14$$

$$+ 0.74 + 16.67 = -359 - 0.35$$

$$- 0.74 - 0.03 = +14 - 0.44$$

$$+ 16.64 = -345 - 0.79 \quad -20.7 - 0.05$$

$$+16.99 = -326 + 15 = -311$$

$$a = -18.3 + 0.60$$

Arc. meas. 164

$$\frac{p}{n} = .22 \quad \frac{\Sigma r}{n} = -3 \quad \frac{-3}{.22} = -14. \quad \Delta R = -0.2$$

$$\text{corr} = -0.2$$

$$\text{True } \Delta R = 0$$

$$-2R = -4.10 \quad -2R \text{ corr} = +0.82 \quad +16$$

$$\Delta b = -0.04 - .8 \quad \Delta \delta = -0.0$$

$$\Delta a = +0.49 + 10 \quad \Delta \alpha = -0.02$$

8636

Lunar Center

X	Y	Z	U	V	W	$O-L$
1	-0.03 - 2.05 = +4.3	+1	+4.2 = +4.3			0
2	+0.97 - 1.80 = +1	-1.8	+3.7 = +1.9			-1.8
3	+1.74 - 1.09 = -2	-3.2	+2.3 = -9			+7
4	+2.05 - 0.09 = -2.7	-3.8	+0.2 = -3.6			+4
5	+2.05 + 0.00 = -2.1	-3.8	-0 = -3.8			+1.7
6	+1.83 + 0.91 = -8.5	-3.4	-9 = -4.3			-4.2
7	+0.97 + 1.80 = -2.8	-1.8	-3.7 = -5.5			+2.7
8	+0.56 + 1.97 = -7.4	-1.0	-4.1 = -5.1			-2.3
						+6.0 - 8.3
						Average = 1.8

Normal Equation

$$+16.99 + 0.74 = -326$$

$$+ 0.74 + 16.67 = -3.59$$

$$- 0.74 - 0.03 = +1.4$$

$$+ 16.64 = -3.45$$

$$b = -20.7$$

$$+16.99 - 326 + 1.5 = -311$$

$$a = -18.3$$

Arc mean 164

$$\frac{p}{n} = .22 \quad \frac{\Sigma v}{n} = -3 \quad \frac{-3}{.22} = -14 \quad OR = -0.2$$

8636 Moon's Mean Position (1915.0)

$$\begin{array}{r}
 X_0 = 220300 \quad Y_0 = 15.0870 \\
 -a = \quad \quad -9 \quad -b = \quad \quad -10 \\
 \hline
 220291 \quad 15.0860
 \end{array}$$

From plate constants $X = 23.2307 \quad Y = 16.2486$

$$\bar{z} = +1.7307$$

$$\bar{\eta} = -1.7514$$

$$\log \bar{z} = 0.99016$$

$$\cos \delta = 9.94437$$

$$8.50724$$

$$\log \tan \delta = 9.73181$$

$$0.1803$$

$$7.0534$$

$$6.9655m$$

$$(\alpha - A) = 1.63855$$

$$\eta_1 = -9$$

$$A - A + 43.51$$

$$A \quad 17 \quad 47 \quad 10$$

$$\alpha \quad 17 \quad 47 \quad 53.51$$

$$\eta_0 = -1.7505$$

$$\log \eta_0 = 0.24316m$$

$$7.33115$$

$$2.91201m$$

$$\text{Red} + 3.73$$

$$\alpha = 17 \quad 47 \quad 57.24$$

$$(\alpha - D) = -13 \quad 36.6$$

$$D = -28 \quad 09 \quad 30$$

$$S = -28 \quad 23 \quad 06.6$$

$$\text{Red.} - 7.1$$

$$S = -28 \quad 23 \quad 13.7$$

8272-1 20752

52041-5

75880+

42211

152400

23-11-11

42211

152400

42211

522411

42211

522411

20041-

01-11-11

42211

522411

42211

42211

522411

42211

522411

42211

42211

42211

42211

8636 mean Position (19150)

$$X = 220300 \quad Y = 150870$$

$$\begin{array}{r} 220300 \\ - 9 \\ \hline 220291 \end{array} \quad \begin{array}{r} 150870 \\ - 10 \\ \hline 150860 \end{array}$$

From plate constants $X = 23.2307 \quad Y = 16.2486$

$$Z = +9.2307$$

$$\eta = -1.7514$$

$$\log Z = 0.09016$$

$$\cos = 994455$$

$$8.50724$$

$$(A-A) 1.63855$$

$$A-A + 43.51$$

$$A 17.47 10$$

$$X 17.47 53.51$$

$$Red + 3.73$$

$$X 17.47 57.24$$

$$\log \tan S = 9.7318$$

$$0.9803$$

$$7.0534$$

$$6.9655m$$

$$\eta_1 = -9$$

$$\eta = -1.7505$$

$$\log \eta = 0.24316$$

$$7.3311$$

$$2.91201m$$

$$(A-A) = 18.34.6$$

$$D = 28.09.30$$

$$S = 28.23.06.6$$

$$Red. = 7.1$$

$$S = 28.23.13.7$$

8636 Red. ad locum apt.

$$S = -28^{\circ} 23' 07''$$

$$H + \alpha \quad 7^h \quad 40.0 = 107^{\circ} 30'$$

$$H \quad 13 \quad 22.1$$

$$\alpha \quad 17 \quad 47.9$$

$$G \quad 22 \quad 04.4$$

$$G + \alpha \quad 15 \quad 52.3 = 238^{\circ} 04'$$

$$L \cos(G + \alpha) \quad 9.7234m$$

$$g \quad 1.1378$$

$$\sin \quad 9.9287m$$

$$\tan S \quad 9.7327m$$

$$8.8239$$

$$g' \quad 0.8632m$$

$$8 \quad 9.6251$$

$$h \quad +1.851$$

$$8 \quad +0.422$$

$$h \quad +1.462$$

$$+3.735$$

$$L \cos S \quad 9.9444$$

$$L \quad 0.4882m$$

$$(L) \quad 0.4326m$$

$$L \sin S \quad 9.6770m$$

$$\cos(H + \alpha) \quad 9.4781m$$

$$h \quad 1.3062$$

$$\sin \quad 9.9774$$

$$\sec S \quad 0.0555$$

$$8.8239$$

$$h' \quad 0.4613$$

$$h \quad 0.1650$$

$$g' \quad -7.30$$

$$h' \quad +2.89$$

$$L \quad -2.71$$

$$-7.12$$

8636

Red. ad Echn. - h₀

$$S = -28^{\circ} 20' 25''$$

$$H + \alpha \quad 7^h \quad 09.8 = 107^{\circ} 27'$$

$$H \quad 13 \quad 22.1$$

$$\alpha \quad 17 \quad 47.7$$

$$G \quad 22 \quad 04.4$$

$$G + \alpha \quad 15 \quad 52.1 = 238^{\circ} 02'$$

$$L_{\text{cos}}(G + \alpha) \quad 9.7258m$$

$$g \quad 1.1398$$

$$m \quad 9.9286m$$

$$L_{\text{cos}} S \quad 9.7319m$$

$$8.8239$$

$$S' \quad 0.8636m$$

$$8 \quad 9.6242$$

$$f \quad +1.851$$

$$8 \quad +0.421$$

$$L \quad +1.462$$

$$+3.734$$

$$L_{\text{cos}} S \quad 9.9441m$$

$$L \quad 0.4882m$$

$$(L) \quad 0.4327m$$

$$L_{\text{cos}} S \quad 9.6764m$$

$$L_{\text{cos}}(H + \alpha) \quad 9.4769m$$

$$L \quad 1.3062$$

$$S \quad 9.9791m$$

$$L_{\text{cos}} S \quad 0.0555$$

$$8.8239$$

$$L' \quad 0.4595$$

$$L \quad 0.1651$$

$$S' \quad -7.30$$

$$L' \quad +2.88$$

$$L \quad -2.71$$

$$-7.13$$

8	6	3	6
---	---	---	---

Lunar Parallax.

$$\begin{array}{r} \alpha = 17^h \ 47^m \ 57.24^s \\ \theta = 18 \quad 13 \quad 03.95 \\ G-\alpha = \quad + 25 \quad 06.71 \\ \quad \quad + \quad 6^o \quad 16' \ 41'' \end{array}$$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

6	1	3	5	4
---	---	---	---	---

$$\begin{array}{r} 995727 \\ 000000 \\ 000258 \\ \hline 995985 \end{array}$$

$$x = 42 \quad 21 \quad 19$$

28 23 14

70 44 33

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

$$\delta - \delta' = + 57 \quad 20.2$$

S - 27 25 53.5

Ann 9/25 - 27 25 51.2

$$0.2 = 2.3$$

Curv. of Plate $+ 0.5$

2nd ord. rez. + 0.4

Inv. Corb - 0.0

8	-	27	25	53.1
---	---	----	----	------

Harvard Smithsonian Center

$$S = -28^{\circ} 23' 13.7''$$

$\pi \quad 61^{\circ} \quad 01.79$

9.86913

824924

१०३४४५

$$0.05180 \checkmark$$

7.20900

$$\alpha - \alpha' = + 5' 33.7''$$

$$= + 22.25$$

$\alpha \quad 17 \quad 48 \quad 19.49$

$$\alpha \quad 1.748 \quad 18.68$$

$$+ 0.81$$

Cur. + 0.01

Lim. Cover - 0.02

$$Q - 1.7 \quad 48 \quad 19.47$$

$$0.00 + 0.79$$

8636

Lunar Parallax

$$\begin{array}{r}
 \alpha = 17^{\circ} 47' 57.24'' \\
 \theta = 18^{\circ} 13' 03.95'' \\
 G-X = +25' 06.71'' \\
 \quad + 6' 16' 41''
 \end{array}$$

$$\Gamma = 2' 57''$$

$$\theta = 13' 54''$$

$$\begin{array}{r}
 995727 \\
 000000 \\
 000258 \\
 \hline
 995985
 \end{array}$$

$$\gamma = 42' 21' 19''$$

$$25' 23' 14''$$

$$70' 44' 33''$$

$$\begin{array}{r}
 982640 \\
 824924 \\
 997499 \\
 017151 \\
 \hline
 822214
 \end{array}$$

$$S-S = +57' 20.2''$$

$$S = -27' 25' 53.5''$$

$$\text{Corr Eph S} = -27' 25' 51.2''$$

$$G-C = -2.3''$$

$$\text{Error of Plate} +0.5''$$

$$\text{2nd ord ref.} +0.4''$$

$$\text{2nd Corr} -0.0''$$

$$S = -27' 25' 53.1''$$

$$G-C = -1.9''$$

$$S = -28' 20' 21.9''$$

$$\Pi = 61' 01.79''$$

$$986913$$

$$824924$$

$$903883$$

$$005180$$

$$\hline 7.20900$$

$$G-X = +5' 33.75''$$

$$+ 22.25''$$

$$\alpha = 17' 45' 19.49''$$

$$\alpha = 17' 48' 18.68''$$

$$+ 0.81''$$

$$\text{Corr.} +0.01''$$

$$\text{2nd Corr} -0.02''$$

$$\alpha = 17' 48' 19.47''$$

$$G-C = +0.79''$$

8639 Stan - measures 1916 June 7.

α	x	α	x	α	x	α	x
1	13561	1209710	13772	1441410			
9.0	1350001	12	13306	0410			
8.1	90	12040	9995	13950			
	<u>9,0064</u>	<u>.0066</u>	<u>80472</u>	<u>.0459</u>			
2							
245	17561	16583	16930	16921			
295	13095	11058	13060	1077180			
	9800	5870	6156	7480			
	80	85	39	28			
	<u>24.4471</u>	<u>.4476</u>	<u>29.3875</u>	<u>.3850</u>			
3							
315	20304	16285	17322	16755			
8.6	1534053	11220	11666	1241100			
	473	1820	6771	1000			
	89	80	28	60			
	<u>31.4949</u>	<u>.4937</u>	<u>28.5657</u>	<u>.5645</u>			

Moon measures.

1							
23.0			19508	19954			
13.6			13420	1606064			
			1908	6564			
			19	70			
			<u>13.6100</u>	<u>.6104</u>			

2							
23.7	19322	19909					
14.0	1197880	17230					
	79	3141					
	26	10					
	<u>23.7346</u>	<u>.7325</u>					

3							
24.0			18578	16700			
14.4			1593012	940820			
			2112	19			
			29	12			
			<u>14.2657</u>	<u>.2710</u>			

8639

Star Measures

1916 June 7.

$$\begin{array}{r}
 \alpha \quad \times \quad \nu \\
 1 \quad 13561 \quad 1209710 \\
 90 \quad 1350001 \quad 12 \\
 81 \quad 90 \quad 12040 \\
 \hline
 90064 \quad 0066
 \end{array}$$

$$\begin{array}{r}
 \alpha \quad \times \quad \nu \\
 13772 \quad 1441410 \\
 13306 \quad 04 \\
 9995- \quad 13950 \\
 \hline
 80472 \quad 0459
 \end{array}$$

$$\begin{array}{r}
 2 \\
 2+5 \quad 17561 \quad 16583 \\
 255 \quad 13095 \quad 11053 \\
 \quad 9800 \quad 5810 \\
 \quad 80 \quad 85 \\
 \hline
 244471 \quad 4476
 \end{array}$$

$$\begin{array}{r}
 16930 \quad 16921 \\
 13060 \quad 1077180 \\
 \quad 6156 \quad 74 \\
 \quad 39 \quad 28 \\
 \hline
 293875 \quad 3850
 \end{array}$$

$$\begin{array}{r}
 3 \\
 31.5 \quad 20304 \quad 16285 \\
 8.6 \quad 15340 \quad 11220 \\
 \quad 4753 \quad 1820 \\
 \quad 89 \quad 80 \\
 \hline
 314945 \quad 4937
 \end{array}$$

$$\begin{array}{r}
 17322 \quad 16755 \\
 11666 \quad 1241100 \\
 \quad 6771 \quad 1000 \\
 \quad 28 \quad 60 \\
 \hline
 285657 \quad 5645
 \end{array}$$

Moon Measures

$$\begin{array}{r}
 1 \\
 230 \\
 136
 \end{array}$$

$$\begin{array}{r}
 19508 \quad 19954 \\
 13420 \quad 16060 \\
 \quad 1908 \quad 6568 \\
 \quad 19 \quad 70 \\
 \hline
 136100 \quad 6104
 \end{array}$$

$$\begin{array}{r}
 2 \\
 237 \quad 19322 \quad 19909 \\
 140 \quad 1177880 \quad 17230 \\
 \quad 7980 \quad 3141 \\
 \quad 26 \quad 10 \\
 \hline
 237346 \quad 7325
 \end{array}$$

$$\begin{array}{r}
 3 \\
 24.0 \\
 14.4
 \end{array}$$

$$\begin{array}{r}
 18578 \quad 16700 \\
 1593012 \quad 940820 \\
 \quad 2112 \quad 1920 \\
 \quad 79 \quad 12 \\
 \hline
 142657 \quad 2710
 \end{array}$$

8639 *uvon - measures*1916 June 7
cl. *af*

$$\begin{array}{r}
 4 \quad 18289 \\
 24.4 \quad 14470 \text{ so} \\
 15.0 \quad 70 \\
 \quad 95 \\
 \hline
 24.3818
 \end{array}
 \qquad
 \begin{array}{r}
 16909 \\
 10219 \\
 \quad 0015 \\
 \quad 09 \\
 \hline
 .3802
 \end{array}$$

$$\begin{array}{r}
 5 \quad 17322 \\
 24.5 \quad 12736 \\
 14.5 \quad 4247 \\
 \text{max} \quad 40 \\
 \text{in} \quad 40 \\
 \hline
 24.4590
 \end{array}
 \qquad
 \begin{array}{r}
 17860 \\
 12441 \\
 \quad 3147 \\
 \quad 61 \\
 \hline
 .4578
 \end{array}$$

$$\begin{array}{r}
 6 \quad 17359 \\
 24.4 \quad 13338 \\
 16.0 \quad 2940 \\
 \quad 78 \\
 \hline
 24.4031
 \end{array}
 \qquad
 \begin{array}{r}
 17480 \\
 11520 \\
 \quad 4823 \\
 \quad 10 \\
 \hline
 .4032
 \end{array}$$

$$\begin{array}{r}
 7 \\
 240 \\
 168
 \end{array}$$

$$\begin{array}{r}
 16110 \\
 782550 \\
 \quad 31 \\
 \quad 20 \\
 \hline
 16.8283
 \end{array}$$

$$\begin{array}{r}
 18138 \\
 1640408 \\
 \quad 06 \\
 \quad 56 \\
 \hline
 .8266
 \end{array}$$

$$\begin{array}{r}
 8 \quad 19768 \\
 23.7 \quad 1134018 \\
 17.0 \quad 12 \\
 \quad 70 \\
 \hline
 23.8447
 \end{array}
 \qquad
 \begin{array}{r}
 18635 \\
 17110 \\
 \quad 1005 \\
 \quad 58 \\
 \hline
 .8466
 \end{array}$$

$$\begin{array}{r}
 9 \\
 23.0 \\
 17.5
 \end{array}$$

$$\begin{array}{r}
 19959 \\
 15030 \\
 \quad 2731 \\
 \quad 81 \\
 \hline
 17.4941
 \end{array}$$

$$\begin{array}{r}
 18789 \\
 13720 \\
 \quad 1015 \\
 \quad 20 \\
 \hline
 .4911
 \end{array}$$

$$\begin{array}{r}
 10 \\
 22.5 \\
 17.1 \\
 \text{min} \\
 58
 \end{array}$$

$$\begin{array}{r}
 18984 \\
 1323124 \\
 \quad 41 \\
 \quad 96 \\
 \hline
 17.5758
 \end{array}$$

$$\begin{array}{r}
 18770 \\
 14521 \\
 \quad 2130 \\
 \quad 00 \\
 \hline
 .5742
 \end{array}$$

8639 *lucan - lucanus*

1916 June 7

$$\begin{array}{r}
 2 \quad 18289 \\
 247 \quad 14470 \quad 80 \\
 150 \quad 70 \\
 \quad 95 \\
 \hline
 24.3818
 \end{array}$$

$$\begin{array}{r}
 5 \quad 17322 \\
 247 \quad 12736 \\
 150 \quad 42 \quad 47 \\
 \quad 40 \\
 \hline
 24.4550
 \end{array}$$

$$\begin{array}{r}
 6 \quad 17359 \\
 247 \quad 13338 \\
 160 \quad 29 \quad 40 \\
 \quad 78 \\
 \hline
 24.4031
 \end{array}$$

$$\begin{array}{r}
 7 \\
 240 \\
 168
 \end{array}$$

$$\begin{array}{r}
 16909 \\
 10719 \quad 15 \\
 \quad 00 \\
 \quad 09 \\
 \hline
 3802
 \end{array}$$

$$\begin{array}{r}
 17860 \\
 12441 \quad 47 \\
 \quad 31 \\
 \quad 61 \\
 \hline
 4578
 \end{array}$$

$$\begin{array}{r}
 17480 \\
 11520 \quad 23 \\
 \quad 48 \\
 \quad 10 \\
 \hline
 4032
 \end{array}$$

$$\begin{array}{r}
 16110 \\
 7825 \quad 50 \\
 \quad 31 \\
 \quad 20 \\
 \hline
 16.8283
 \end{array}$$

$$\begin{array}{r}
 18138 \\
 16404 \quad 08 \\
 \quad 06 \\
 \quad 56 \\
 \hline
 8266
 \end{array}$$

$$\begin{array}{r}
 8 \quad 19768 \\
 257 \quad 11340 \quad 18 \\
 170 \quad 12 \\
 \quad 70 \\
 \hline
 23.8447
 \end{array}$$

$$\begin{array}{r}
 18635 \\
 17110 \quad 05 \\
 \quad 10 \\
 \quad 58 \\
 \hline
 8466
 \end{array}$$

$$\begin{array}{r}
 9 \\
 250 \\
 175
 \end{array}$$

$$\begin{array}{r}
 10 \\
 225 \\
 176 \\
 18
 \end{array}$$

$$\begin{array}{r}
 19959 \\
 15030 \\
 \quad 27 \quad 31 \\
 \quad 81 \\
 \hline
 174941
 \end{array}$$

$$\begin{array}{r}
 18984 \\
 13231 \quad 24 \\
 \quad 41 \\
 \quad 96 \\
 \hline
 17.5758
 \end{array}$$

$$\begin{array}{r}
 18789 \\
 13720 \\
 \quad 10 \quad 15 \\
 \quad 20 \\
 \hline
 4911
 \end{array}$$

$$\begin{array}{r}
 18770 \\
 14521 \\
 \quad 21 \quad 30 \\
 \quad 00 \\
 \hline
 5742
 \end{array}$$

8639 ~~moon~~ Times etc.
 ext to stars 1915 May 30 $18^h 34^m$ $-18^h 46^m$
 ... moon $18 39$ -1.3 $-18 39$ 51.5
 clock fast 1 12.7

H. Sid T. $18 38$ 38.7 $\theta - \alpha = -0^h 17^m$
 H. long $4 44$ 31.05
 G. Sid T. $23 23$ 09.75
 Sid T. in Moon $4 27$ 40.01
 Interval $18 55$ 29.74
 Red 3 06.02
 G. in T. $18 52$ 23.72

Fromvant Alen. R. A. decl.
 Moon $19^h 18^m 56^s$ 112.3 $-25^{\circ} 54' 03.5''$
 Motion in $^m = 2.6935$ 5.960
 " " -7.605 -20.45 -45.3
 Tabular place $18 55 50.75$ $-25 54 50.0$

Moon's age 17 days.

parallax $60' 23.23''$
 secidiam $16 28.8$

$$934 = 57.5$$

$$988.5 = 6.4$$

$$a = 502.1$$

$$\begin{array}{r} 24. \\ -478.1 \end{array}$$

R
 Augmentation
 Irradiation(3)

R
 R
 ak
 $(1+a)R$
 R^2

$$\begin{array}{r} 988.5 \\ + 6.4 \end{array}$$

$$- 0.3$$

$$994.6 \quad 994.9$$

$$2.1321 \quad 2.1327$$

$$- 1019$$

$$2.0302 \quad 2.0308$$

$$4.1217 \quad 4.1242$$

8639 ~~known~~ Times etc
 Sept 15 1915 May 30 18" 34" - 18" 46"
 known 18 39 51.3 - 18 39 51.5
 clock fast 1 127

H. Sid T. 18 38 38.7 6-8-00 17"
 H. long 4 44 31.05
 G. Sid T. 23 23 09.75
 Sid T. in Moon 4 27 40.01
 Interval 18 55 29.74
 Red. 3 06.02
 G. Sid T. 18 52 23.72

From Hunt Allen. R. A. Decl.
 known 18" 56" 11' 23" - 25° 54' 03"
 known 18" 56" 11' 23" 59.60
 - 7.605 - 20.48 - 45.3
 Tabula place 18 55 50.75 - 25 54 50.0

known age 17 days.
 parallax 60' 23' 23"
 semidiameter 16 28.5

R 988.5
 938: 575
 9885: 64
 Augmentation 6.4
 Irradiation (V) - 0.3
 R 994.6
 R 2.1321
 AR - 1.019
 (1+AR) R 2.0302
 R² 4.1217
 502.1
 2.1
 478.1

8639 Plate Center & Constants.

x	y	R	θ	u	v
9.0065	8.0466	18	47	48	-27
24.4474	29.3862	18	57	15	-24
31.4943	8.5653	19	01	38	-27
64.95	46.00	25	105	101	18
21.65	15.33	18	55	34	-26
22	-15			11	+20
035	2.67	18	55	45	-26
31	4665				31
115	1245				41

$$= 20^{\circ} 45'' \text{ center } \begin{cases} A = 18^{\circ} 55' 40'' \\ D = -26^{\circ} 31' 40'' \end{cases}$$

$$\begin{aligned} & x - 5 + 570x & -1.54 & + 2.1x & -8862 \\ & +4352 + 4503 = +8855 - 12 = +8843 + 19 = +8862 & = 0 \\ & -8369 + 12224 = +8855 - 44 = +8811 + 51 = +8862 & = 0 \\ & -6938 + 15747 = +8809 - 13 = +8796 + 66 = +8862 & = 0 \\ & 224259 + 11213 & -34 & +47 & = 22.6623 \checkmark \end{aligned}$$

$$\begin{aligned} & y - m + 500y & -0.7x & + 20.8y & -8590 \\ & +4407 + 4023 = +8430 - 6 = +8424 + 167 = +8591 & = +1 \\ & -6697 + 14698 = +7996 - 17 = +7979 + 611 = +8590 & = 0 \\ & +4151 + 4283 = +8434 - 22 = +8412 + 178 = +8590 & = 0 \\ & 155497 + 7775 & -16 & +324 & = 15.4990 \checkmark \end{aligned}$$

$$\begin{aligned} \text{Tables } a &= -0.5 & b &= -20.5 & a - b &= +20.0 & k + d &= +2.2 \\ \text{Obs } a &= -2.1 & b &= -20.8 & a - b &= +18.7 & k + d &= +2.2 \end{aligned}$$

$$O - C = -50.1.6 \checkmark \quad -500.3 \checkmark \quad 0.0 \checkmark$$

8639 Plate Center & Constants

x	y	u	v	w	u'	v'
90065	80466	18	47	48	-27	51
24474	293862	18	57	15	-24	57
314943	85653	19	01	38	-27	47
6495	46.00	25	105	101	18	155
21.65	15.33	18	55	34	-26	52
22	18	7	11		+20	45
035	2.67	18	55	45	-26	31
31	46.65					
112	12.45					

20' 4.5" center } $A = 18'' 55'' 40''$
 $\{ D = 26'' 31'' 40''$

$$\begin{array}{rclcl}
 x - 8 & + 520x & -1.5y & + 2.1y & - 8862 \\
 +4352 + 4503 = +8855 & -12 = +8843 & +19 = +8862 & & = 0 \\
 -3369 + 1222 = +8855 & -47 = +8808 & -51 = +8862 & & = 0 \\
 -6938 + 15747 = +8809 & -13 = +8796 & +66 = +8862 & & = 0 \\
 224259 + 11213 & -34 & +47 & & = 22.6623
 \end{array}$$

$$\begin{array}{rclcl}
 y - m & + 520y & -0.7x & + 20.8y & - 8590 \\
 +4407 + 4023 = +8430 & -6 = +8424 & +167 = +8591 & & = +1 \\
 -6697 + 14693 = +7996 & -17 = +7979 & +611 = +8590 & & = 0 \\
 +4151 + 4283 = +8434 & -22 = +8412 & +178 = +8590 & & = 0 \\
 155497 + 7775 & -16 & +324 & & = 1554990
 \end{array}$$

$$\begin{array}{lclcl}
 \text{Table } a = -0.5 & 0 = -20.5 & a - 0 = +20.0 & b + a = +22 \\
 \text{Obs } a = -2.1 & 0 = -20.8 & a - 0 = +18.7 & b + a = +22
 \end{array}$$

	ξ	η	$\Delta \xi$	-6ξ	-3η	$+9$
1	-13.82	-10.29	-90	+80 =	-10 +3 =	-7 +2
2	+2.78	+12.06	+11	-16 =	-5 -4 =	-9 0
3	+10.18	-9.79	+88	-61 =	-13 +3 =	-10 -1
M	+0.66	-2.50	0	-7	+1	+6
			$\Delta \eta$	-9η	-9ξ	+11
			-70	+87 =	-23 +12 =	-11 0
			+86	-55 =	-9 -2 =	-11 0
			-87	+85 =	-2 -9 =	-11 0
			0	+11	0	+22

3639 Standard Coordinates

Cape ho. 2593 mp 7.4 Cape ho. 2615^{P.M.} mp 5.8 Cape ho. 2624 mp 3.5

C	18	46	51.34	18	56	20.43	19	00	41.82			
L			.42			.43			.82			
g						.41			.86			
mean	18	46	51.38	18	56	20.42	19	00	41.83			
Pre		+	56.46		+	55.06		+	56.22			
X	18	47	47.84	18	57	15.48	19	01	38.05			
A	18	55	40	18	55	40	18	55	40			
A-A		- 7	52.16		+	1	35.48		+	5	58.05	
(A-A)		-	472.07		+	95.48		+	358.01			
log			2.67400m			1.97991			2.55389			
log S			9.94650			9.95739			9.94676			
S ₀			1.12774m			0.44454			1.00789			
S ₀		-	13.4197		+	2.7832		+	10.1833			
S ₁		-	90		+	11		+	48			
S ₂			8.5713			24.7843			32.1881			
S ₃			9.0065			24.4474			31.4943			
S ₄		+	4352		-	3369		-	.6938			
C	-27	52	39.5	-24	59	04.9	-27	49	00.5			
L			39.3			05.9			00.1			
g						05.6			02.0			
mean	-27	52	39.4	-24	59	05.5	-27	49	00.8			
Pre		+	1	01.6		+	1	10.1		+	1	15.5
S	-27	51	37.8	-24	57	55.4	-27	47	45.3			
TD	-26	31	40	-26	31	40	-26	31	40			
S-D	-1	49	57.8	+	1	33	44.6	-1	16	05.3		
(S-D)		-	4798.7		+	5626.0		-	4566.0			
log			3.66112m			3.75020			3.65954m			
log			1.01227m			1.08135			0.99069m			
ant			9.7231m			9.6680m			9.7217m			
S ²			2.2555			0.8891			2.0158			
η ₁			9.0320m			7.6105m			8.7911m			
η ₀		-	10.2865		+	12.0600		-	9.7880			
η ₁		-	.1076		-	.41		-	.618			
η			7.6059			30.0559			8.1502			
η			8.0466			29.3862			8.5653			
η						-1107			+4151			

sb39 Standard Coordinates

Cape No. 2593 mag 7.4 Cape No. 2611 mag 5.8 Cape No. 2627 mag 3.5

C	18	46	51.34	18	56	20.43	19	00	41.82
L			.42			.43			.82
Q						.41			.86
Mean	18	46	51.38	18	56	20.42	19	00	41.83
Pre		+	56.46		+	55.06		+	56.22
A	18	47	47.84	18	57	15.48	19	01	38.05
A	18	55	40	18	55	40	18	55	40
1-14	-	7	52.16	+	1	35.48	+	5	58.05
14-15	-		47.207	+		95.48	+		358.01
Mag			2.67400m			1.97991			2.55389
WSD			994650			995739			994676
S ₀			1.12774m			0.44454			1.00789
S ₀	-		1.34197	+		2.7832	+		10.1833
F ₁	-		90	+		11	+		48
S			8.5713			24.7843			32.1881
X			9.0065			24.4474			31.4943
1-5			+4352			-3369			-.6938
C	-27	52	39.5	-24	59	04.9	-27	49	00.5
L			39.3			05.9			00.1
Q						05.6			02.0
Mean	-27	52	39.4	-24	59	05.5	-27	49	00.8
Pre	+		1 01.6	+		10.1	+		15.5
S	-27	51	37.8	-24	57	55.4	-27	47	45.3
D	-26	31	40	-26	31	40	-26	31	40
S-D	-1	19	57.8	+	1	33 44.6	-1	16	05.3
14-15			-47.987			+5626.0			-4566.0
Mag			3.65112m			3.75020			3.65914m
WSD			1.01227m			1.08135			0.99069m
S ₀									
1-14			9.7231m			9.6680m			9.7217m
1-15			22.555			08891			20158
WSD			9.0320m			7.6105m			8.7911m
S ₀	-		10.2865	+		2.0600	-		9.7880
S ₁	-		1.076	-		41	-		618
S			7.6059			30.0559			8.1502
Y			8.0466			29.3862			8.5653
Y						-61.07			-41.51

8639

Luvorio Centur.

	x	$x - x_0$	Δx	$(x - x_0)^2$	$(x - x_0)^2 + (y - y_0)^2$	$o - c$
1	23.0000	+0.5720	+4	0.3276	4.1079	-138
2	23.7336	+1.3056	+3	1.7053	4.1196	-21
3	24.0000	+1.5720	+3	2.4731	4.1240	+23
4	24.3810	+1.9530	+1	3.8146	4.1193	-24
5	24.4584	+2.0304	0	4.1225	4.1225	+8
6	24.4032	+1.9752	-1	3.9010	4.1033	-184
7	24.0000	+1.5720	-3	2.4702	4.1052	-165
8	23.8456	+1.4176	-3	2.0087	4.1158	-59
9	23.0000	+0.5720	-4	0.3267	4.1101	-116
10	22.4280	0.0000	-4	0.0000	4.1112	-105

4.1217

4.1242 Should be

	y	$y - y_0$	Δy	$(y - y_0)^2$
1	13.6102	-1.9408	-35	3.7803
2	14.0000	-1.5510	-28	2.4143
3	14.2684	-1.2826	-23	1.6509
4	15.0000	-0.5510	-10	0.3047
5	15.5510	0.0000	0	0.0000
6	16.0000	+0.4490	+8	0.2023
7	16.8274	+1.2764	+23	1.6350
8	17.0000	+1.4490	+26	2.1071
9	17.4926	+1.9416	+35	3.7834
10	17.5750	+2.0240	+36	4.1112

163

190

129

106

90

77

51

45

16

0

163

$$x = 23.0 \quad y = 13.6102$$

$$17.4926$$

$$31.1028$$

$$y = 15.5514$$

$$y = \text{max} \quad 17.5750$$

$$R = 2.0236$$

$$\text{amp. } R = 2.0300$$

$$x - \text{max} = 24.4584$$

$$x_0 = 22.4284$$

$$\text{Center} \begin{cases} x_0 = 22.4280 \\ y_0 = 15.5510 \end{cases}$$

8639

Innovative Center

	x	$x - x_0$	Δx	$(x - x_0)^2$	$(x - x_0) \cdot y$	$y - y_0$	$0 - c$
1	23.0000	+0.5720	+4	0.3276	4.1079	-1.38	
2	23.7336	+1.3056	+3	1.7053	4.1196	-2.1	
3	24.0000	+1.5720	+3	2.4731	4.1240	+2.3	
4	24.3810	+1.9530	+1	3.8146	4.1193	-2.4	
5	24.4584	+2.0304	0	4.1225	4.1225	+8	
6	24.4032	+1.9752	-1	3.9010	4.1033	-18.4	
7	25.0000	+1.5720	-3	2.4702	4.1052	-16.5	
8	23.8456	+1.4176	-3	2.0027	4.1152	-5.9	
9	23.0000	+0.5720	-4	0.3267	4.1101	-1.16	
10	22.4280	0.0000	-4	0.0000	4.1112	-1.05	

4.1217

	x	$y - y_0$	Δy	$(y - y_0)^2$	c
1	13.6102	-1.9408	-3.5	3.7803	1.63
2	14.0000	-1.5510	-2.8	2.4143	1.90
3	14.2684	-1.2826	-2.3	1.6509	1.29
4	15.0000	-0.5510	-1.0	0.3047	1.06
5	15.5510	0.0000	0	0.0000	90
6	16.0000	+0.4490	+8	0.2023	77
7	16.8274	+1.2764	+2.3	1.6350	51
8	17.0000	+1.4490	+2.6	2.1071	45
9	17.4926	+1.9416	+3.5	3.7434	16
10	17.5750	+2.0240	+3.6	4.1112	0

$$x = 23.0 \quad y = 13.6102$$

$$17.4926$$

$$31.1028$$

$$y = 15.5514$$

$$y = 17.5750$$

$$R = 2.0236$$

$$R = 2.0300$$

$$x = 24.4584$$

$$x_0 = 22.4284$$

$$\text{Center } x = 22.4280$$

$$(y_0 = 15.5510)$$

Formation of Houals.

1	- 1.10	-	78.6	+ 266.7
2	- 203	-	27.5	+ 32.5
3	- 201	+	36.2	- 29.4
4	- 1.07	-	46.9	+ 13.2
5	+ 0.00	+	16.2	+ 0.0
6	+ 0.89	-	364.0	- 82.9
7	+ 201	-	259.0	- 211.0
8	+ 206	-	83.7	- 85.5
9	+ 1.10	-	66.1	- 225.0
10	+ 000	-	0.0	- 212.0
	<u>- 0.15</u>		<u>- 873.4</u>	<u>- 533.4</u>

- a	- b	+16 + AC
- 6	+ 4	+ 14 ✓
- 13	+ 3	+ 6 ✓
- 16	+ 2	+ 2 ✓
- 19	+ 1	- 2 ✓
- 20	- 0	- 4 ✓
- 20	- 1	- 5 ✓
- 16	- 2	- 2 ✓
- 14	- 3	- 1 ✓
- 6	- 4	+ 6 ✓
- 0	- 4	+ 12 ✓

8639 Leonis Center

		0		C	O-C	Corr
1	+0.57 - 1.94 =	-138	-24 + 52 =	+28	-166	-152
2	+1.31 - 1.55 =	-21	-54 + 42 =	-12	-9	-3
3	+1.57 - 1.28 =	+23	-65 + 34 =	-31	+54	+56
4	+1.95 - 0.55 =	-24	-81 + 15 =	-66	+42	+40
5	+2.03 + 0.00 =	+8	-84 - 0 =	-84	+92	+88
6	+1.98 + 0.45 =	-184	-82 - 12 =	-94	-90	-95
7	+1.57 + 1.28 =	-165	-65 - 34 =	-99	-66	-68
8	+1.42 + 1.45 =	-59	-59 - 39 =	-98	+39	+38
9	+0.57 + 1.94 =	-116	-24 - 52 =	-76	-40	-34
10	+0.00 + 2.02 =	-105	-0 - 54 =	-54	-51	-39
	+12.97 + 1.82				+227	-422
	Normal Equations				Images = 6.5	

$$+21.15 - 0.15 = -873 \quad +12.97$$

$$-0.15 + 19.99 = -533 \quad +1.82$$

$$+0.15 - 0.00 = -6 \quad +0.09$$

$$+14.95 = -539 \quad +1.916 = -26.9^\circ + 0.1$$

$$+21.15 = -873 - 4 = -877$$

$$a = -41.5^\circ + 0.61$$

Arc Meas 163

$$\frac{p}{n} = .21 \quad \frac{\Sigma p}{n} = -19.5 \quad \frac{-19.5}{2.1} = -9.3 \quad \Delta R = -1.1$$

$$\text{Corr} = 0.2$$

$$\text{True } \Delta R = -0.9$$

$$-2R = -4.06 \quad -2R \text{ Corr} = +0.81 \quad +16$$

$$\Delta f = +0.1 + 2 \quad \Delta \delta = 0.0$$

$$\Delta a = +0.49 + 10 \quad \Delta \alpha = 0.02$$

8639 Nervous Center.

	O	C	O-C
1	$+0.57 - 1.94 = -1.38$	$-24 + 52 = +28$	-166
2	$+1.31 - 1.55 = -24$	$-54 - 40 = -94$	-9
3	$+1.57 - 1.28 = +29$	$-65 - 34 = -99$	$+54$
4	$+1.95 - 0.55 = +1.40$	$-81 + 15 = -66$	$+42$
5	$+2.03 + 0.00 = +2.03$	$-84 - 0 = -84$	$+92$
6	$+1.98 + 0.45 = +2.43$	$-82 - 12 = -94$	-90
7	$+1.57 + 1.28 = +2.85$	$-65 - 34 = -99$	-66
8	$+1.42 + 1.45 = +2.87$	$-59 - 39 = -98$	$+39$
9	$+0.57 + 1.94 = +2.51$	$-24 - 52 = -76$	-40
10	$+0.00 + 2.02 = +2.02$	$-0 - 54 = -54$	-51
			$+227 - 422$
			Average -6.5

Normal Equations

$$+21.15 - 0.15 = -873$$

$$-0.15 + 19.99 = -533$$

$$+0.15 - 0.00 = -6$$

$$+19.99 = -539$$

$$+21.15 = -873 - 4 = -877$$

$$b = -26.9$$

$$a = -41.5$$

are means 163

$$\frac{p}{n} = .21 \quad \frac{\Sigma V}{n} = -19.5 \quad \frac{-19.5}{.21} = -93 \quad \Delta R = -1.1$$

86 ~~39~~ Luvon's Mean Position (1915.0)

$$X = 22.4280 \quad Y = 15.5510$$

$$\begin{array}{r} 22.4280 \\ - 21.26 \\ \hline 22.4259 \end{array} \quad \begin{array}{r} 15.5510 \\ - 1.3 \\ \hline 15.5497 \end{array}$$

From plate constants $X = 22.6623 \quad Y = 15.4990$

$$z = +0.6623$$

$$\eta = -2.5010$$

$$\log s = 9.82105$$

$$\log S = 9.95045$$

$$8.50724$$

$$\log \tan S = 9.7040$$

$$9.6421$$

$$7.0534$$

$$6.3995$$

$$(X-A) = 1.36336$$

$$\eta_1 = -3$$

$$X-A = +23.09$$

$$\eta_0 = -2.5007$$

$$A = 18 \ 55 \ 40$$

$$\log \eta_0 = 0.39806$$

$$7.33115$$

$$3.06691$$

$$\alpha = 18 \ 56 \ 03.09$$

$$\text{Red} = +3.58$$

$$S-D = -19 \ 26.6$$

$$\alpha = 18 \ 56 \ 06.67$$

$$D = -26 \ 31 \ 46$$

$$S = -26 \ 51 \ 06.6$$

$$\text{Red} = -1.1$$

$$S = -26 \ 51 \ 07.7$$

8640 known mean Position (1915.0)

$$X = 224280 \quad Y = 155510$$

$$\begin{array}{r} -21 \\ 224259 \end{array} \quad \begin{array}{r} -13 \\ 155497 \end{array}$$

From plate constant $X = 226623 \quad Y = 154990$

$$z = +06623$$

$$\eta = -25010$$

$$\log 8 = 9.82105$$

$$\log 3 = 9.95045$$

$$850724$$

$$W-01 = 1.36336$$

$$X-A = +23.09$$

$$A = 185540$$

$$X = 18560309$$

$$Red = +3.58$$

$$X = 18560667$$

$$\log 12.5 = 9.7040$$

$$96421$$

$$70534$$

$$63995$$

$$\eta = 3$$

$$\eta_0 = -25007$$

$$\log \eta_0 = 0.39806$$

$$733115$$

$$306691$$

$$S-D = -1926.6$$

$$D = -263140$$

$$S = -2651066$$

$$Red = -1.1$$

$$S = -2651077$$

$$\begin{array}{r}
 18 \quad 49 \quad 63.26 \\
 \underline{59.67} \\
 + 3.59 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 -26 \quad 24 \quad 14.0 \\
 \underline{12.2} \\
 - 1.8 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 18 \quad 57 \quad 15.92 \\
 \underline{12.25} \\
 + 3.67 \\
 \hline
 \end{array}$$

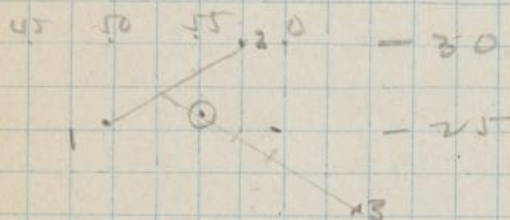
$$\begin{array}{r}
 -30 \quad 00 \quad 10.6 \\
 \underline{10.1} \\
 - 0.5 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 19 \quad 04 \quad 45.96 \\
 \underline{42.58} \\
 + 3.38 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 -21 \quad 09 \quad 36.3 \\
 \underline{34.7} \\
 - 1.6 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 3.61 \\
 \underline{2.39} \\
 1.22 \\
 \hline
 \end{array}$$

1.4



8639

Red. ad locum ship.

$$S = -26^{\circ} 51' 07''$$

$$H + \alpha \quad 8^h \quad 14.4 = 123^{\circ} 36'$$

$$H \quad 13 \quad 18.4$$

$$\alpha \quad 18 \quad 56.0$$

$$G \quad 22 \quad 05.5$$

$$G + \alpha \quad 17 \quad 01.5 = 255^{\circ} 22'$$

$$h \cos(G + \alpha) \quad 9.4025 m$$

$$g \quad 1.1432$$

$$\sin \quad 9.9857 m$$

$$\cos S \quad 9.7044 m$$

$$8.8239$$

$$8' \quad 0.5457 m$$

$$8 \quad 9.6572$$

$$h + 1.862$$

$$g + 0.454$$

$$h + 1.261$$

$$+ 3.577$$

$$h \cos S \quad 9.9504$$

$$i \quad 0.4696 m$$

$$(i) \quad 0.4200 m$$

$$h \cos S \quad 9.6548 m$$

$$\cos(H + \alpha) \quad 9.7430 m$$

$$h \quad 1.3066$$

$$\sin \quad 9.9206$$

$$\cos S \quad 0.0496$$

$$8.8239$$

$$h' \quad 0.7044$$

$$h \quad 0.1007$$

$$g' \quad -3.51$$

$$h \quad +5.06$$

$$i \quad -2.63$$

$$-1.08$$

8639

Red. ad. brown app.

S. -26° 51' 07"

$$H + X \quad 8 \quad 144 = 123^\circ 36'$$

$$H \quad 13 \quad 18.7$$

$$\lambda \quad 18 \quad 56.0$$

$$G \quad 22 \quad 05.5$$

$$G + \lambda \quad 17 \quad 015 = 253^\circ 22'$$

$$h_{\cos(G+X)} \quad 94025 \sim$$

$$g \quad 1.1432$$

$$\sin \quad 99857 \sim$$

$$\cos S \quad 97044 \sim$$

$$88239$$

$$8 \quad 05457 \sim$$

$$8 \quad 96572$$

$$f + 1.862$$

$$g + 0.454$$

$$h + 1.261$$

$$+3.577$$

$$\cos S \quad 99504$$

$$i \quad 04696 \sim$$

$$h \quad 04200 \sim$$

$$\cos S \quad 96548 \sim$$

$$\cos(H+X) \quad 97430 \sim$$

$$h \quad 13066$$

$$\sin \quad 99206$$

$$\cos S \quad 00496$$

$$88239$$

$$h' \quad 0.7044$$

$$h \quad 01007$$

$$q' \quad -3.51$$

$$p' \quad +5.06$$

$$i \quad -2.63$$

$$-1.08$$

8689

human parallel.

$$\begin{aligned} \alpha &= 18^{\circ} 56' 06.67 \\ \theta &= 18^{\circ} 38' 38.7 \\ &- 17^{\circ} 27.97 \\ &- 4^{\circ} 22' 00'' \end{aligned}$$

$$\begin{aligned} &- 1^{\circ} 53'' \\ &- 4^{\circ} 20' 07'' \end{aligned}$$

$$\begin{aligned} &995727 \\ &0.000000 \\ &0.00124 \\ \hline &995851 \end{aligned}$$

$$\begin{aligned} \gamma &= 42^{\circ} 16' 02'' \\ &- 26^{\circ} 51' 08'' \\ &69^{\circ} 07' 10'' \end{aligned}$$

$$\begin{aligned} &982640 \\ &8.24465 \\ &997050 \\ &0.17224 \\ \hline &8.21379 \end{aligned}$$

$$S-S' = +56' 14.7''$$

$$S = -25^{\circ} 54' 53.0''$$

$$\text{Empirical } S = -25^{\circ} 54' 50.0''$$

$$O-C = -3.0''$$

$$\text{Curv. of Plate} +1.1$$

$$\text{2nd Ord. red.} +0.7$$

$$\text{Sum} +0.0$$

$$S = -25^{\circ} 54' 52.3''$$

$$O-C = -3.3''$$

$$S = -26^{\circ} 51' 07.7''$$

$$\pi = 60' 23.23''$$

$$\begin{aligned} &9.86913 \\ &8.24465 \\ &8.88161 \\ &004602 \\ \hline &704141 \end{aligned}$$

$$\gamma - \alpha' = -3' 46.90''$$

$$= 15.13''$$

$$\alpha = 18^{\circ} 55' 51.54''$$

$$\alpha = 18^{\circ} 55' 50.75''$$

$$+0.79''$$

$$\text{Curv.} +0.02$$

$$\text{Sum} +0.02$$

$$\alpha = 18^{\circ} 55' 51.58''$$

$$O-C +0.83''$$

8239

human parallel

$$a = 18^{\circ} 56' 06.67''$$

$$b = 18^{\circ} 38' 38.7''$$

$$= 17^{\circ} 27' 9.7''$$

$$= 4^{\circ} 22' 00''$$

$$= 1^{\circ} 52'$$

$$= 4^{\circ} 20' 07''$$

$$995727$$

$$000000$$

$$0.00124$$

$$995851$$

$$x = 42^{\circ} 16' 02''$$

$$= 26^{\circ} 51' 08''$$

$$= 69^{\circ} 07' 10''$$

$$982640$$

$$824465$$

$$997050$$

$$0.17224$$

$$821379$$

$$s-s' = +56.14.7$$

$$s = 25^{\circ} 54' 53.0''$$

$$s = 25^{\circ} 54' 50.0''$$

$$o-c = -4.0$$

$$\text{Curv of plate} + 1.1$$

$$\text{2nd Ord ref.} + 0.7$$

$$\text{3rd} + 0.0$$

$$s = 25^{\circ} 54' 52.3''$$

$$s = 26^{\circ} 51' 07.7''$$

$$\pi = 60^{\circ} 23' 23''$$

$$986913$$

$$824465$$

$$828161$$

$$004602$$

$$704191$$

$$x-x' = -3^{\circ} 46.90''$$

$$= 1^{\circ} 51.3''$$

$$x = 18^{\circ} 55' 51.54''$$

$$x = 18^{\circ} 55' 50.75''$$

$$+0.79$$

$$\text{Curv.} + 0.02$$

$$\text{2nd.} + 0.02$$

$$x = 18^{\circ} 55' 56.58''$$

$$o-c = +0.83$$

