

KG

11366

v.1063

NATIONAL



Plate.	Date	Page
14399	Nov. 26. 1917	1
14400	" " "	11
14407	" 28 "	21

NATIONAL



3
2

31
6

2
15

2
1

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Star Measures

1

1	16890	18804	16810	16326
15.2	14670	11030	10488	12638
14.7	70	30	88	38
	90	04	10	26
	<u>15.2220</u>	<u>15.2226</u>	<u>14.6322</u>	<u>14.6312</u>

2	16410	16284	16220	16684
30.5	1136158	1133536	8526	14380
22.8	55	37	3028	80
	10	84	20	84
	<u>30.5052</u>	<u>30.5052</u>	<u>22.7692</u>	<u>22.7696</u>

3	16830	16510	16072	16022
33.8	8620	14718	13768	8322
6.2	20	18	68	22
	30	10	72	22
	<u>33.8210</u>	<u>33.8208</u>	<u>6.2308</u>	<u>6.2300</u>

Moon.

1		16260	16104
22.8		752024	14850
13.9		28	4246
		60	04
		<u>13.8736</u>	<u>13.8742</u>

2		16900	16465
22		1644650	691011
14.		54	12
		00	65
		<u>14.0450</u>	<u>14.0440</u>

3	17494	16064
21	17390	6170
15.0	90	70
	94	64
	<u>21.0104</u>	<u>21.0106</u>

14399

Star Measures

1

L	16890	18809	16810	16326
15.2	14670	11030	10488	12638
14.7	70	30	98	38
	90	09	10	26
	<u>15.2220</u>	<u>15.2226</u>	<u>14.6322</u>	<u>14.6312</u>

2	16410	16284	16220	16684
30.5	1136158	1133536	8526	14380
22.8	55	37	30	80
	10	84	20	84
	<u>30.5052</u>	<u>30.5052</u>	<u>22.7692</u>	<u>22.7696</u>

3	16830	16510	16072	16022
38.8	8620	14778	13768	8322
6.2	20	18	68	22
	30	10	72	22
	<u>38.8210</u>	<u>38.8208</u>	<u>6.2308</u>	<u>6.2300</u>

Moon

L		16260	16104
22.8		7520	14850
13.9		28	4246
		60	04
		<u>13.8736</u>	<u>13.8742</u>

2	16900	16465
22	1644650	691011
14	54	12
	00	65
	<u>14.0450</u>	<u>14.0446</u>

3	17494	16064
21	17390	6178
15.0	90	70
	94	64
	<u>21.0104</u>	<u>21.0106</u>

2
2
1

2
1

6
2
16

2

8
2
17

14399

Moon.

2

4	18972	16660
209	10824	14808
158	24	08
	72	60
	<u>20.8148</u>	<u>20.8148</u>

5	18280	16375
209	1008286	1457071
160	94	72
	80	75
	<u>20.8194</u>	<u>20.8196</u>

6		17760	16082
21		10684	13152
168		84	52
		60	82
		<u>16.7076</u>	<u>16.7070</u>

7	17998	17790
21.2	16298	9480
17.0	98	9286
	98	90
	<u>21.1700</u>	<u>21.1696</u>

8		16378	16760
22		9448	13678
17.8		48	9084
		78	60
		<u>17.6930</u>	<u>17.6924</u>

14399

Moon.

2

4	18972	16660
20.9	10824	14808
15.8	24	08
	72	60
	<u>20.8148</u>	<u>20.8148</u>

5	18280	16375
20.9	1008286	1457071
16.0	94	72
	80	75
	<u>20.8194</u>	<u>20.8196</u>

6	17760	16082
21	10684	13152
16.8	84	52
	60	82
	<u>16.7076</u>	<u>16.7070</u>

7	17998	17790
21.2	16298	948086
17.0	98	92
	98	90
	<u>21.1700</u>	<u>21.1696</u>

8	16378	16760
22	9448	136783
17.8	48	90
	78	60
	<u>17.6930</u>	<u>17.6924</u>

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3

Times Etc.
Date Nov. 26. 1917

Exp to Stars	0	09	✓	0	21	✓
" " Moon	0	15	22.4	0	15	22.8
Clock Slow		1	5-5.1			✓
H. Sid. Time	0	17	17.7			✓
H. Long	4	44	31.05	6	-2	14
G. Sid. Time	5	01	48.75			✓
" " " M.N	16	19	22.33			✓
Interval	12	42	26.42			✓
Red		2	04.91			✓
G. m. T	12	40	21.51	12	67	26

From Naut. Alman. R.A.				Dec.		
Moon 12 ^h	2	30	02.77	+19	02	16.0
Motion 1 ^m			-2.3999			+9.155
" 40.3583		01	36.86	+	06	09.5
Fatular Place	2	31	39.63	19	08	25.5

$$934'' = 12.5''$$

Moon's age 12d

$$a = -501.1$$

$$\begin{array}{r} +24.0 \\ -477.1 \end{array}$$

Parallax	58	55.0
Semi-diam	16	04.8
R		964.8
ang		13.3
Inv. 4		-04
R		977.7
R		2095.8
AR		-1000
(I+R)		1995.8
RZ		3983.2

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3

Times etc.

Date Nov 26 1917

Exp to Stars	0	09		0	21	
" " Moon	0	15	22.4	0	15	22.8
Clock Slow		1	5-5.1			
H Sid Time	0	17	17.7			
H Long	4	44	31.05			
G Sid Time	5	01	48.75			
" " " M.N	16	19	22.33			
Interval	12	42	26.42			
Red		2	04.91			
G M.T	12	40	21.51			
				12	67	26

From Naut. Alman	RA		Dec		
Moon 12 ^h	2	30	02.77	+19	02 16.0
Motion 1 ^m			-2.3999		-9.155
" 40.3583 ^m		01	36.86	+06	09.5
Fabular Place	2	31	39.63	19	08 25.5

934" = 12.5

Moon age 12d

a: -501.1

$$\begin{array}{r} +240 \\ -477.1 \end{array}$$

Parallax	58	55.0
Semi-diam	16	04.8
R		964.8
ang		13.3
Inv 4		-0.4
R		977.7
R		2.0958
AR		-1000
11711 R		1.9958
R2		39832

S_0	n_0	ΔS	-45	$+3.24$	-6
-6.82	-3.54	-10	$+27 = +17$	$-11 = +6$	
$+9.07$	$+5.29$	$+25$	$-36 = -11$	$+17 = +6$	
$+12.87$	-12.04	$+95$	$+51 = +44$	$-39 = +5$	

$$M + 1.12 \quad -2.07 \quad -4 \quad -7 = -17^v - 0.06$$

$$\begin{aligned} \Delta \eta & -5.62 & +1.95 & -2 \\ -5 + 20 & = +15 & -13 & = +2 \\ +15 - 30 & = -15 & +17 & = +2 \\ -90 + 67 & = -23 & +24 & = +1 \\ & +12 & +2 & = +12^v = +0.6 \end{aligned}$$

14399				Standard Coordinates				4
Cape No.	372	mag	6.8	Cape No.	393	mag	5.7	Cape No. 397 mag 6.2
C	02 28	00.98		2 36	43.56	2 38	44.10	
q		01.02			43.60		44.16	
E		0.95			43.56		44.09	
m	02 28	00.98		2 36	43.57	2 38	44.12	
Prec		56.88			57.37		56.82	
Q	02 28	57.86		2 37	40.94	2 39	40.94	
A	02 32	41.52		2 32	41.52	2 32	41.52	
α-A	- 3	43.66		+ 4	59.42	+ 6	59.42	
Δ "	- 22	3.65		+ 29	9.40	+ 41	9.36	
log "	2.34	95.7	m	2.47	62.5	2.62	25.9	
"Cosδ	9.97	69.2		9.97	39.2	9.97	96.3	
"S ₀	0.83	37.3	m	0.95	74.1	1.10	94.6	
S ₀	-6.81	9.2		+9.06	5.8	+12.86	6.5	
S ₁	- 10			+ 25			9.5	
S	15.17	9.8		31.06	8.3	34.87	6.0	
X	15.22	2.3		30.50	5.2	33.82	0.9	
X-S	+0.42	5		- .56	3.1	-1.05	5.1	
C +18 26	20.4			19 35	07.4	17 20	26.6	
S	20.6				07.3		26.8	
E	20.4				07.2		26.9	
m +18 26	20.5			19 35	07.3	17 20	26.8	
Prec +04	32.0			+04	23.2	+04	21.4	
S +18 30	52.5			19 39	30.5	17 24	48.2	
P 18 58	23.0			18 58	23.0	18 58	23.0	
δ-δ	- 27	30.5		+ 41	07.5	- 1	33	34.8
tan "	- 165	0.5		+ 24	67.6	- 56	15.2	
" "	3.21	76.2	m	3.39	22.8	3.74	93.7	m
"m ₀	0.54	87.7	m	0.72	34.3	1.08	05.2	m
tan δ	9.52	4.9		9.55	2.9	9.49	6.4	
S ₀ ²	1.66	7.5		1.91	4.8	2.21	8.9	
n _i	8.24	5.8		8.52	1.1	8.76	8.7	
m ₀	-3.53	8.1		+5.28	9.7	-12.03	7.0	
n _i	+0.01	7.6		+0.03	3.2	+0.05	8.7	
n	14.47	9.5		23.32	2.9	6.02	1.7	
γ	14.63	1.7		22.76	9.4	6.23	0.4	
γ-γ	+1.52	2.2		- .55	3.5	+ .20	8.7	

14399				Standard Coordinates				4
Cape No.	372	mg	68	Cape No.	393	mg	57	Cape No. 397 mg 62
C	02	28	00.98	2	36	43.56	2	38 44.10
q			01.02			43.60		44.16
E			09.5			43.56		44.09
m	02	28	00.98	2	36	43.57	2	38 44.12
mc			56.88			57.37		56.82
A	02	28	57.86	2	37	40.94	2	39 40.94
A	02	32	41.52	2	32	41.52	2	32 41.52
A-A	-	3	43.66	+	4	59.42	+	6 59.42
ln			-22.3.65	+		299.40	+	419.36
log	2.34	957	m	2.47	625		2.62	2259
cos	9.97	692		9.97	392		9.97	963
S ₀	0.83	373	m	0.95	741		1.10	946
S ₀	-6.81	92		+	9.06	58	+	12.86 65
S ₁	-	10		+		25		95
S	15.17	98		31.06	83		34.87	60
X	15.22	23		30.50	52		33.82	09
X-S	+0.42	5		-	5.63	1	-	1.05 51
C + 18	26	20.4	19 35	07.4	17	20	26.6	
S		20.6		07.3			26.8	
E		20.4		07.2			26.9	
m + 18	26	20.5	19 35	07.3	17	20	26.8	
mc + 04	32.0		+04	23.2		+04	21.4	
S + 18	30	52.5	19 39	30.5	17	24	48.2	
E	18	58	18 58	23.0	18	58	23.0	
S-E	-27	30.5	+	41 07.5	-1	33	34.8	
ln		-16.5.0.5	+	24 67.6		-5.6	15.2	
	3.21	762		3.39	228		3.74	937
m ₀	0.54	877		0.72	343		1.08	052
mc	9.52	49		9.55	29		9.49	64
S ₂	16.67	5		19.14	8		2.21	89
n ₁	8.24	58		8.52	11		8.76	87
n ₀	-3.53	81	+	5.28	97	-12.03	70	
n ₁	+0.01	76	+	0.03	32	+	0.05	87
n	14.47	95	23.32	29		6.02	17	
Y	14.63	17	22.76	94		6.23	04	
Y-Y	+15.22		-	5.53	5	+	2.08	7

+
-
2

+
-
+
1

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Plate Center + Constants.

5

$$\begin{array}{r}
 15.2223 \quad 14.6317 \quad 02 \quad 28 \quad 57.86 \quad 1.8 \quad 30 \quad 52.5 \\
 22. \quad 18 \quad +03 \quad 43.66 \quad +27 \quad 30.5 \\
 \hline
 6.7777 + 3.3683 \\
 + \quad 33 \quad 490 \\
 \hline
 +223.66 \quad +165.05
 \end{array}$$

$$\text{Plate Center} \left\{ \begin{array}{l} A = 02 \quad 32 \quad 41.52 \\ D = 18 \quad 58 \quad 23.0 \end{array} \right.$$

$$\begin{array}{r}
 X-S \quad +500X \quad -197.14 \quad +1.1X -5168 \\
 +0425 +7611 = 8036 -2883 = 5153 +16 = 5169 \\
 -5631 +15253 = 9622 -4488 = 5134 +34 = 5168 \\
 -10551 +16910 = 6359 -1228 = 5131 +37 = 5168 \\
 22.8106 +11405 = -3128 +25 = 23.1240
 \end{array}$$

$$\begin{array}{r}
 y-\eta \quad +500y \quad +195.5X \quad -118.14 \\
 +1522 +7318 = 8838 +2975 = 11813 \\
 -5535 +11385 = 5850 +5964 = 11814 \\
 +2087 +3115 = 5202 +6612 = 11814 \\
 15.8682 +7934 +4460 = 15.9262
 \end{array}$$

$$\begin{array}{r}
 \text{Tables} \quad a = -0.2 \quad l = -0.6 \quad a-l = +0.4 \quad +d = +1.5 \\
 \text{ats.} \quad -501.1 \quad -500.0 \quad -1.1 \quad +1.6 \\
 -500.9 \quad -499.4 \quad -1.5 \quad +0.1
 \end{array}$$

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Plate Center + Constants

5

$$\begin{array}{rcl}
 15.2223 & 14.6317 & 0.228 \quad 57.86 \quad 1.8 \quad 30 \quad 52.5 \\
 22. & 18 & +0.3 \quad 43.66 \quad +27 \quad 30.5 \\
 \hline
 6.7777 & +3.3683 & \\
 33 & 490 & \\
 \hline
 223.66 & +165.05 &
 \end{array}$$

$$\text{Plate Center} \left\{ \begin{array}{l} A = 0.2 \quad 32 \quad 41.52 \\ D = 1.8 \quad 58 \quad 23.0 \end{array} \right.$$

$$\begin{array}{rcl}
 S & +5.00X & -197.14 \quad +1.1X \quad -5.168 \\
 +0.425 + 7611 & = 8036 & -2883 = 5.153 + 16 = 5.169 \\
 -5.631 + 15.253 & = 9622 & -4488 = 5.134 + 34 = 5.168 \\
 -105.51 + 16910 & = 6359 & -1226 = 5.131 + 37 = 5.168 \\
 2.8106 + 11405 & = & -3128 \quad +25 = 23.1240
 \end{array}$$

$$\begin{array}{rcl}
 71 & +5.00Y & +195.5X \quad -11814 \\
 5.22 + 7318 & = 8838 & +2975 = 11813 \\
 5.35 + 11385 & = 5850 & +5964 = 11814 \\
 0.87 + 3115 & = 5202 & +6612 = 11814 \\
 5.8682 + 7934 & = & +4460 \quad = 159262
 \end{array}$$

lus

1.

14399

Moon Center

6.

O-C.

1	22.8100	0.00000 + 3	0.00000	3.9804	-	28
2	22.0000	-0.8100 + 3	0.6556	3.9833	+	1
3	21.0105	-1.7995 + 1	3.2378	3.9930	+	9.8
4	20.8148	-1.9952 0	3.9808	3.9808	-	24
5	20.8195	-1.9905 - 0	3.9621	3.9793	-	39
6	21.0000	-1.8100 - 1	3.2765	3.9792	-	40
7	21.1898	-1.6402 - 2	2.6909	3.9701	-	131
8	22.0000	-0.8100 - 3	0.6566	3.9825	-	7
				3.9832		

 $\Delta y = 0$

arc

1	13.8739	-1.9951	3.9804	180°
2	14.0448	-1.8242	3.3277	204°
3	15.0000	-0.8690	0.7552	244°
4	15.8690	0.0000	0.0000	270°
5	16.0000	+0.1310	0.0172	274°
6	16.7073	+0.8383	0.7027	295°
7	17.0000	+1.1310	1.2792	305°
8	17.6927	+1.8237	3.3259	336°

Range 156

$y = 22$ $y = 14.0448$
 17.6927
 31.7375
 15.8687

$y_{mi} = 13.8739$

$R = 1.9948$
 cam R. 1.9958
 $x_{mi} = 20.8148$
 $y_0 = 22.8096$

Moon Center $x_0 = 22.8100$
 $y_0 = 15.8690$

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Moon Center

6

D-C

1	22.8100	000000 + 3	000000	3.9804	-	28
2	220000	-08100 + 3	065556	3.9833	+	1
3	21.0105	-1.7995 + 1	32378	3.9930	+	98
4	21.8148	-1.9952	0	3.9808	-	24
5	21.8195	-1.9905 - 0	3.9621	3.9793	-	39
6	21.0000	-18100 - 1	32765	3.9792	-	40
7	21.1898	-1.6402 - 2	2.6909	3.9801	-	131
✓	22.0000	-08100 - 3	0.6566	3.9825	-	1
				3.9832		

D-C

arc

1	13.8739	-1.9951	3.9804	180°
2	14.0448	-1.8242	3.3277	204
3	15.0000	-0.8690	0.7552	249
4	15.8690	00000	00000	270
5	16.0000	+01310	00172	294
6	16.7073	+08383	0.7127	295
7	17.0000	+11310	1.2792	305
8	17.6927	+1.8237	3.3259	336

Range 156

Y = 22 Z = 14.0448
 17.6927
 31.7375
 15.8687

Y min 13.8739

Y max 19.948
 com R. 19.958
 X min 20.8148
 Y 0 22.8096

Moon Center

Y 0 22.8100

Y 0 15.8690

Formation of Normals

1 0.00
 2 +1.47
 3 +1.57
 4 0.00
 5 -0.26
 6 -1.52
 7 -1.85
 8 -1.47
 +3.04
 -5.10
 -2.06

+ 0.0
 - 0.8
 - 176.5
 + 48.0
 + 77.7
 + 72.4
 + 214.6
 + 5.7
 + 418.4
 - 177.3
 + 241.1

+ 56.0
 - 1.8
 - 85.2
 0.0
 - 5.1
 - 33.6
 - 148.0
 - 12.7
 + 56.0
 - 286.4
 - 230.4

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Conditional Equations

7

0 - C

1	0.00	-2.00 = -	2.8			+31 = +31	-59
2	-0.81	-1.82 = +	1	-9	+28 = +19	-18	
3	-1.80	-0.87 = +	98	-20	+14 = -6	+104	
4	-2.00	0.00 = -	24	-23	0 = -23	-1	
5	-1.99	+0.13 = -	39	-23	-2 = -25	-14	
6	-1.81	+0.84 = -	40	-20	-13 = -33	-7	
7	-1.64	+1.13 = -	131	-18	-18 = -36	-95	
8	-0.81	+1.82 = -	7	-9	-28 = -37	+30	
					+134 =	194	

or +1

$$+18.46 - 2.06 = +24.11$$

$$-2.06 + 13.39 = -230.4$$

$$+1 \quad) - 0.23 = +26.9$$

$$+13.16 = -203.5$$

$$t = -15.7^{\circ}$$

$$+18.46 = +241.1 - 32.4 = +208.7^{\circ} = +11.3^{\circ}$$

$$\text{arc } 15^{\circ} 6' \quad \frac{p}{n} = .20^{\circ}$$

$$\frac{\Sigma r}{n} = -7.5^{\circ}$$

$$-\frac{7.5}{.20} = -37.5^{\circ}$$

$$\Delta R = -0.5^{\circ}$$

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Conditional Equations

7

0-C

1	000	-200 = -	28			+31 = +31	-59
2	-081	-182 = +	1	-	9	+28 = +19	-18
3	-180	-087 = +	98	-	20	+14 = -6	+104
4	-200	000 = -	24	-	23	0 = -23	-1
5	-199	+013 = -	39	-	23	-2 = -25	-14
6	-181	+084 = -	40	-	20	-13 = -33	-7
7	-164	+113 = -	131	-	18	-18 = -36	-95
8	-081	+182 = -	7	-	9	-28 = -37	+30

+134 = 194

or 41

$$+1846 - 206 = +2411$$

$$-206 + 1339 = -230.4$$

$$+ -023 = +26.9$$

$$+1316 = -203.5$$

$$h = -15.7$$

$$+1846 = +241.1 - 32.4 = +208.75 = +113$$

$$\text{arc } 15.6 \quad \frac{f}{h} = 20$$

$$\frac{\Sigma v}{n} = -7.5$$

$$-\frac{7.5}{20} = -37.5$$

$$DR = -0.5$$

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8

Mean Mean Position

$$\begin{array}{r} X_0 \quad 22.8100^{\vee} \\ \quad \quad + 6^{\vee} \\ \hline 22.8106^{\vee} \end{array}$$

$$\begin{array}{r} Y_0 \quad 15.8690^{\vee} \\ \quad \quad - 8^{\vee} \\ \hline 15.8682^{\vee} \end{array}$$

From Plate Constants.

$$\begin{array}{r} 23.1240^{\vee} \\ 22. \\ \hline + 1.1240^{\vee} \end{array}$$

$$\begin{array}{r} 15.9262^{\vee} \\ 18. \\ \hline - 2.0738^{\vee} \end{array}$$

$$\begin{array}{r} 0.05077^{\vee} \\ 9.97644^{\vee} \\ 8.50724 \\ 1.56709^{\vee} \end{array}$$

$$\begin{array}{r} 9.5295^{\vee} \\ 0.1015^{\vee} \\ 7.0534 \\ 6.6844^{\vee} \end{array}$$

$$+ 36.91^{\vee}$$

$$\begin{array}{r} m_1 \quad + 0.0004 \\ m_0 \quad - 2.0742^{\vee} \end{array}$$

$$A \quad 02 \quad 32 \quad 41.52^{\vee}$$

$$\begin{array}{r} 0.31685^{\vee} \\ 7.33115^{\vee} \\ 2.98570^{\vee} \end{array}$$

$$\alpha_0 \quad 02 \quad 33 \quad 18.43^{\vee}$$

$$- 967.6^{\vee}$$

$$+ 5.36^{\vee}$$

$$\alpha' \quad 02 \quad 33 \quad 23.79^{\vee}$$

$$- 16 \quad 07.6^{\vee}$$

$$D = + 18. \quad 58 \quad 23.0^{\vee}$$

$$\delta_0 \quad + 18 \quad 42 \quad 15.4^{\vee}$$

$$+ 25.7^{\vee}$$

$$\delta' \quad + 18 \quad 42 \quad 41.1^{\vee}$$

14399

Means Mean Position

8

$$\begin{array}{r} X_0 \quad 228100 \\ \quad + 6 \\ \hline 228106 \end{array}$$

$$\begin{array}{r} 40 \quad 158690 \\ \quad - 8 \\ \hline 158682 \end{array}$$

From Plate Constants.

$$\begin{array}{r} 23.1240 \\ 22. \\ \hline + 1.1240 \end{array}$$

$$\begin{array}{r} 15.9262 \\ 18. \\ \hline - 2.0738 \end{array}$$

$$\begin{array}{r} 0.05077 \\ 4.97644 \\ 8.50724 \\ 1.56709 \end{array}$$

$$\begin{array}{r} 9.5295 \\ 0.1015 \\ 7.0534 \\ 6.6844 \end{array}$$

$$+ 3691$$

$$\begin{array}{r} 71. + 00004 \\ 70. - 2.0742 \end{array}$$

$$A \quad 02 \quad 32 \quad 41.52$$

$$\begin{array}{r} 0.31685 \\ 7.33115 \\ 2.98570 \end{array}$$

$$\alpha_0 \quad 02 \quad 33 \quad 18.43$$

$$- 967.6$$

$$+ 5.36$$

$$\alpha' \quad 02 \quad 33 \quad 23.79$$

$$- 16 \quad 07.6$$

$$D = - 18.58 \quad 23.0$$

$$\delta_0 \quad + 18 \quad 42 \quad 15.4$$

$$+ 25.7$$

$$\delta' \quad + 18 \quad 42 \quad 41.1$$

$$\begin{array}{r}
 1 \quad 02 \quad 23 \quad 49.690 \\
 02 \quad 23 \quad 44.617 \\
 + 5.073 \\
 \hline
 \end{array}$$

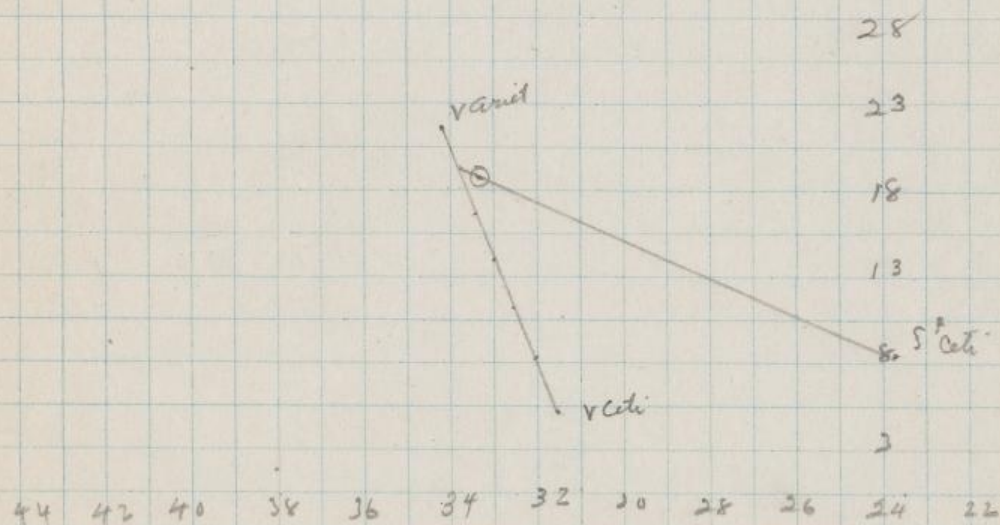
$$\begin{array}{r}
 44.09 \\
 8 \quad 05 \quad 19.19 \\
 + 2.490 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \quad 36.005 \\
 02 \quad 31 \quad 30.967 \\
 + 5.038 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 14 \quad 18.22 \\
 5- \quad 13 \quad 54.36 \\
 + 2.386 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 3 \quad 11.451 \\
 02 \quad 34 \quad 0.008 \\
 + 5.443 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 37.30 \\
 21 \quad 36 \quad 11.29 \\
 + 26.01 \\
 \hline
 \end{array}$$



14399

Reduction to Apparent Place

$H + \alpha_0$	4	08.8	62°	1.2	δ_0	18	42.3
H	01	35.5					
α_0	02	33.3	84.3				
α	23	58.2			$\cos \delta_0$	9.9764	
$\alpha + \alpha_0$	2	31.5	37	52.5	$\log 1$	0.5488	
					$\log 11$	0.5252	
$\cos \alpha + \alpha_0$					$\sin \delta_0$	9.5060	
α		1.3883			$\cos H + \alpha_0$	9.6687	
$\sin \alpha + \alpha_0$		9.7881			$\sin$	1.3045	
$\tan \delta$		9.5296			$\sin H + \alpha_0$	9.9467	
		88239			$\sec \delta_0$	0.0236	
						8.8239	

g 1.2856
 g 9.5299

L' 0.4792
 h 0.0987

g +3.762
 g +0.339
 h +1.255

Red +5.356

g +19.300
 h +3.014
 l +3.351

Red +25.665

4399

Reduction to Apparent Place

$H + \lambda_0$ 4 08.8 62° 12
 H 01 35.5
 α_0 02 33.3
 $C + \lambda_0$ 23 58.2
 $C + \lambda_0$ 2 31.5 37 52.5

 δ_0 18 42.3

$\cos \delta_0$ 99764
 $\log i$ 0.5488
 $i(1)$ 0.5252

$\cos C + \lambda_0$ 98973
 q 1.3883
 $\sin C + \lambda_0$ 97881
 $\tan i$ 95296
 88239

$\sin \delta_0$ 95060
 $\cos H + \lambda_0$ 96687
 h 1.3045
 $\sin H + \lambda_0$ 99467
 $\sec \delta_0$ 0.0236
 8.8239

q 1.2856
 q 9.5299

L 0.4792
 L 0.0987

A 43.762
 E +0.339
 L +1.255

 Red +5.356

q' +19.300
 L' +5.014
 L +3.351

 Red +25.665

14399

Lunar Parallax

10

α' 2 33 23.79^v
 θ 0 17 17.70^v
 $\theta - \alpha'$ - 2 16 06.09^v
 $=$ - 34° 01 31.35^v
 $\frac{1}{2} \alpha - \alpha'$ 12 54.48^v
 $\theta - \alpha' - \frac{1}{2} \alpha$ - 33 48 36.87^v

Π 58" 55.0^v
 9.86913
 8.23394^v
 9.74785^m
 002469^v
 7.87561^m

9.95727^v
 0.00000
 0.08046^v
 0.03773^v

$\alpha - \alpha'$ - 25 48.97
 $=$ - 1 43.26^v

γ 47 29 09.2^v
 δ +18 42 41.1^v
 $\gamma - \delta$ 28 46 28.1^v

9.82640
 8.23394^v
 9.68248
 0.13246
 7.87528^v

$\delta - \delta'$ + 25 47.8^v

δ 19 08 28.9^v
 $\frac{1}{2} \delta$ +19 08 25.5^v

α 2 31 40.53^v
 $\frac{1}{2} \alpha$ 2 31 39.63^v

$\theta - \alpha$ + 3.4^v

$\theta - \alpha$ + 0.90^v

curr. + 0.5^v

curr. - 0.05^v

340 Qud. Ref. 0.0

α 2 31 40.48

δ +19 08 29.4

$\theta - \alpha$ + 0.85^v

$\theta - \alpha$ + 3.9

14999

Lunar Parallax.

10

α 2 33 23.79
 θ 0 17 17.70
 $\theta - \alpha$ 2 16 06.09
 $=$ 34° 01 31.35"
 $\frac{1}{2} \alpha - \alpha$ 12 54.48
 $\theta - \alpha$ 33 48 36.87

9 9 57.27
 0 0 0 0 0
 0 0 8 0 46
 0 0 3 17 3

γ 47 29 09.2
 δ +18 42 41.1
 $\gamma - \delta$ 28 46 28.1

9 8 26.40
 8 23 39.4
 9 6 8 24.8
 0.1 3 24.6
 7.8 7 52.8

$\delta - \delta$ - 25 47.8

δ 19 08 29.0
 $\gamma - \delta$ +19 08 25.5

$\alpha - \alpha$ + 3.5

curr. + 0.5

3rd (old) Ref. 0.0

δ +19 08 29.4

$\alpha - \alpha$ + 3.9

Π 58" 55.0

9 8 69.13

8 23 39.4

9 74 78.5"

" 00 24 69

7.8 75.61"

$\alpha - \alpha$ - 25 48.97

= - 1 43.26

α 2 31 40.53

$\gamma - \alpha$ 2 31 39.63

$\alpha - \alpha$ + 0.90

curr. - 0.05

α 2 31 40.48

= $\alpha - \alpha$ + 0.85

1
1
2
29
2
3
33
6
1
2
1
1
2
2
1

14400

Star Measures.

11

1	16682	16930	16530	16312
14.7	9968	13640	8026	14800
14.8	68	40	26	00
	82	30	30	72
	<u>14.6714</u>	<u>14.6710</u>	<u>14.8504</u>	<u>14.8488</u>
2	17782	16954	16092	16630
29.9	9705	15032	13533	9180
23.2	0304	32	31	8482
	82	54	92	30
	<u>29.8078</u>	<u>29.8078</u>	<u>23.2560</u>	<u>23.2552</u>
3	16800	17342	18480	16736
33.4	12638	11505	10678	14550
6.8	38	0706	78	4648
	00	42	80	36
	<u>33.4162</u>	<u>33.4164</u>	<u>6.7802</u>	<u>6.7812</u>

Moon

1		16620	16952
22.8		11292	12270
14.6		92	70
		20	52
		<u>14.5328</u>	<u>14.5318</u>
2		16930	16540
22		936264	14100
14.8		66	00
		30	40
		<u>14.7566</u>	<u>14.7560</u>
3	16206	16254	
21.7	9924	12548	41
15.0	28	34	
	06	54	
	<u>21.6280</u>	<u>21.6287</u>	

14400

Star Measures.

11

1	16682	16930	16530	16312
4.7	9968	13640	8026	14800
4.8	68	40	26	00
	82	30	30	12
	<u>146714</u>	<u>146710</u>	<u>148504</u>	<u>148488</u>

9	17782	16954	16092	16630
2	9705	15032	13533	9180
	03	32	31	8482
	82	54	92	30
	<u>298078</u>	<u>298078</u>	<u>232560</u>	<u>232552</u>

1	16800	17342	18480	16736
4	12638	11505	10678	14550
8	38	0706	78	4648
	00	42	80	36
	<u>334162</u>	<u>334164</u>	<u>67802</u>	<u>67812</u>

Moon

2.8	16620	16952
7.6	11292	12270
	92	70
	20	52
	<u>145328</u>	<u>145318</u>

2	16930	16540
4.8	936264	14100
	66	00
	30	40
	<u>147560</u>	<u>147560</u>

1	16206	16254
11.7	9924	12548
5.0	28	34
	06	54
	<u>216280</u>	<u>216287</u>

2
16

5
20.
16

6
26
17

7
26
8

8
2
18

14400

Moon

12

4	16514	16753
21.	6590	16692
160.	8688	8086
	14	53
	<u>21.9926</u>	<u>21.9933</u>

5	16530	16750
20.9	7312	15970
165	24	70
	30	50
	<u>20.9212</u>	<u>20.9220</u>

6	16520	16296
20.9	6774	16048
17.	74	52
	20	96
	<u>28.9746</u>	<u>20.9754</u>

7	17350	16518
21.7	11698	12174
8.0	98	74
	50	18
	<u>21.5652</u>	<u>21.5656</u>

8	16658	16580
22	13638	9580
182	38	8482
	58	80
	<u>18.3021</u>	<u>18.3002</u>

1
21
16
-
-
2.8
6.3
-
0.
7.
2
1.
8
2
1.
8

14400

Moon

12

4	165°14	167°53
21.	65°90	166°92
160	86	80
	88	86
	14	53
	<u>21.9926</u>	<u>21.9933</u>

5	165°30	167°50
28	73°12	15°970
65	24	70
	30	50
	<u>20.9212</u>	<u>20.9220</u>

1	165°20	162°96
09	67°74	160°48
7.	74	52
	20	96
	<u>20.9746</u>	<u>20.9754</u>

2	173°50	165°18
1.7	116°98	121°74
80	98	74
	50	18
	<u>21.5652</u>	<u>21.5656</u>

2	166°58	165°80
1.2	136°38	95°80
82	38	82
	58	80
	<u>18.3020</u>	<u>18.3002</u>

14400

13

Times etc

Date Nov. 26 1918

Exp X Stars 0 23"

0 35"

" " Main 0 28 51.9"

0 28 52.4"

Clock slew 01 55.1"

H. Sid. Time 0 30 47.25"

H. Long. V 04 44 31.05"

 $\theta = -2^h 2^m$

b. Sid. Time 05 15 18.30"

" " " M. V 16 19 22.33"

2.5 m. T. 12 55 55.97"

Red 02 07.12"

b. m. T. 12 53 48.85"

12^h 8969"

From Naut. Alman. R.A.

Dec.

Moon 12^h 2 30 02.77"

+19 02 16.0"

motion 1^m 24003"

+ 9.141"

" 53^m 81417"

02

09.17"

08

12.2"

Tabular Place. 2 32 11.94"

+19 10 28.2"

$$934 = 12.85"$$

Moon's age 12^d

$$\begin{aligned} a &= -502.8 \\ &+ 24.0 \\ &\hline &-478.8 \end{aligned}$$

Parallax	58	54.8"
Semi-diam	16	04.7"
R		964.7"
Aug		13.7"
Gr 4		-0.4"
R		978.0"
R		20964"
aR		-1004"
1+GR		1.9960"
R ²		39840"

4400

13

Times etc

Date Nov 26 1918

Exp & Stars	0	23		0	35"
" " Moon	0	28	51.9	0	28 52.4
Clock slow		01	55.1		
	0				
H Sid Time	0	30	47.25		
H Long	04	44	37.05		$\theta = -2^h 2^m$
Sid Time	05	15	18.30		
" " M.N	16	19	22.33		
Interval	12	55	55.97		
Red		02	07.12		
to M.T	12	53	48.85	12	48.969

From Naut. Alman. R.A.

Dec.

Moon, 12 ^h	2	30	02.77	+19	02	16.0
Motion, 1 ^m			24003			+ 9.141
" 5 ³ ~ 81417		02	09.17		08	12.2
Tabular Place.	2	32	11.94	+19	10	28.2

934" = 12.85"

Means age 12^d

$$\begin{array}{r}
 a = -502.8 \\
 +240 \\
 \hline
 -478.8
 \end{array}$$

Parallax	58	54.8"
Semi-diam	16	09.7
R		964.7
Aug		13.7
Dist 4		-0.4
R		978.0
R		2096.4
a.R		-100.4
1+4R		1996.0
R ²		39840

14400

Plate Constants

14

X	14.6712	29.8078	33.4163
S	<u>15.1798</u>	<u>31.0683</u>	<u>34.8760</u>
X-S	- 5086	12605	14597

y	14.8496	23.2556	6.7807
y	<u>14.4795</u>	<u>23.3229</u>	<u>6.0217</u>
y-y	+ 3701	- 0673	+ 7590

X-S + 500 X	- 10.8 y	+ 2.8 X - 2131
- 5086 + 7336 = 2250	- 161 = 2089	+ 41 = 2130
- 12605 + 14904 = 2299	- 251 = 2048	+ 83 = 2131
- 14597 + 16718 = 2111	- 73 = 2038	+ 93 = 2131
22.9190 + 11460	- 178	+ 64 = 23.8405

y-y + 500 y	+ 10.8 X	+ 3.9 y - 11368
+ 3701 + 7450 = 11151	+ 159 = 11310	+ 58 = 11368
- 0673 + 11628 = 10955	+ 322 = 11277	+ 91 = 11368
+ 7590 + 3390 = 10980	+ 361 = 11341	+ 26 = 11367
16.5290 + 8265	+ 247	+ 64 = 16.2498

Tables	a = 0.0	e = -0.5	a-e = +0.5	t+d = +1.4
ah.	-502.8	-503.4	+1.1	= 0.0
	-502.8	-503.4	+0.6	-1.4

14400

Plate Constants

14

X	14.6712	29.8078	33.4163
S	15.1798	31.0683	34.8760
X-S	-5.086	1.2605	1.4597

4	14.8496	23.2556	6.7807
4	14.4195	23.3229	6.0217
4-7	+37.11	-0.0673	+7.590

X-S	+5.001	-10.88	+2.88	-21.31		
5.086	+73.36	= 2250	-161	= 2089	+41	= 2130
2605	+149.04	= 2299	-251	= 2048	+83	= 2131
4597	+167.08	= 2111	-73	= 2038	+93	= 2131
9190	+114.60	-178	+64	= 23.8405		

7-7	+5.008	+10.88	+3.98	-11.368		
71.1	+74.50	= 111.51	+15.9	= 113.10	+5.8	= 113.68
673	+116.28	= 109.55	+32.2	= 112.77	+9.1	= 113.68
590	+33.90	= 109.80	+36.1	= 113.41	+2.6	= 113.67
5290	+82.65	+247	+64	= 16.2498		

Tables	a = 0.0	e = -0.5	a-e = +0.5	l+d = +1.4
Obs.	-5.028	-5.039	+1.1	= 0.0

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14400

Moon Center

15

							0 - c
1	22.9180	-0.0000	+3	0.0000	3.9868	+	8
2	22.0000	+0.9180	+2	0.8431	3.9856	-	4
3	21.6322	+1.2858	+2	1.6538	3.9916	+	56
4	21.9930	+1.9250	+1	3.7060	3.9858	-	2
5	20.9216	+1.9964	0	3.9856	3.9856	-	4
6	20.9750	+1.9430	-1	3.7748	3.9966	+	106
7	21.5654	+1.3526	-2	1.8290	3.9928	+	68
8	22.0000	+0.9180	-2	0.8423	3.9827	-	33
					3.9860		

 $\Delta\gamma=0$

arc

1	14.5323	-1.9967	3.9868	180°
2	14.7563	-1.7727	3.1425	207°
3	15.0000	-1.5240	2.3378	220°
4	16.0000	-0.5240	0.2798	255°
5	16.5290	0.0000	0.0000	270°
6	17.0000	+0.4710	0.2218	284°
7	18.0000	+1.4710	2.1638	317°
8	18.3011	+1.7721	3.1404	333°

Range 153

$$x = 22 \quad y = 14.7563$$

$$18.3011$$

$$33.0574$$

$$y_0 = 16.5287$$

$$y_{mi} = 14.5323$$

$$R = 1.9964$$

$$\text{cam } R = 1.9960$$

$$x_{mi} = 20.9216$$

$$x_0 = 22.9180$$

Moon Center

$$x_0 = 22.9180$$

$$y_0 = 16.5290$$

1440.0

Moon Center.

15

22.9180	+0.0000	+3	0.0000	3.9868	+8
22.0000	+0.9180	+2	0.8431	3.9856	-4
21.6322	+1.2858	+2	1.6838	3.9916	+5.6
21.9930	+1.9250	+1	3.7060	3.9858	-2
20.9216	+1.9964	0	3.9856	3.9856	-4
20.9750	+1.9430	-1	3.7748	3.9966	+10.6
21.5654	+1.3526	-2	1.8290	3.9928	+6.8
-22.0000	+0.9180	-2	0.8423	2.9827	-33
				3.9860	

27.0

arc

14.5328	-1.9967	3.9868
14.7563	-1.7727	3.1425
15.0000	-1.5290	2.3378
16.0000	-0.5290	0.2798
16.5290	0.0000	0.0000
17.0000	+0.4710	0.2218
18.0000	+1.4710	2.1638
18.3011	+1.7721	3.1404

180

207

2.20

2.50

270°

284

317

333

Range 153

Y-22 Z-14.7563

18.3011

33.0574

y₀ 16.5287y_{min} 14.5323

R- 1.9964

cam R- 1.9960

X_{min} 20.9216X₀ 22.9180

Moon center

X₀ 22.9180y₀ 16.5290

Formation of Normals

1	0.00	00.0	-	8.0
2	-1.62	- 3.7	+	7.0
3	-1.97	+ 72.3	-	85.8
4	-1.02	- 4.0	+	11.1
5	0.00	- 8.0		0.0
6	+0.91	+203.8	+	49.8
7	+1.99	+ 91.8	+	100.0
8	+1.63	- 30.4	-	58.4
	+4.53	+ 369.9	+	157.9
	-4.61	- 46.1	-	152.2
	-0.08	+ 323.8	+	5.7

14400

Conditional Equations

16

0 - e

1	0.00	-2.00 = + 8	+ 0	-	1 = -1	+ 9
2	+0.92	-1.77 = - 4	+ 18	-	1 = +17	- 21
3	+1.29	-1.53 = + 5.6	+ 25	-	1 = +24	+ 32
4	+1.93	-0.53 = - 2	+ 38	-	0 = +38	- 40
5	+2.00	0.00 = - 4	+ 39		0 = +39	- 43
6	+1.44	+0.47 = +10.6	+ 38	+	0 = +38	+ 68
7	+1.35	+1.47 = +6.8	+ 26	+	1 = +27	+ 41
8	+0.92	+1.77 = - 3.3	+ 18	+	1 = +19	- 52
					+ 150 = 156	
					or 36	

$$+16.63 - 0.08 = +323.8$$

$$- 0.08 + 15.27 = +5.7$$

$$+ () - 0.0 = + 11.5$$

$$+15.27 = + 7.2$$

$$b = +0.5$$

$$+16.63 = +323.8$$

$$a = +19.4$$

$$a \approx 15.3$$

$$\frac{P}{m} = .18$$

$$\frac{\Sigma V}{n} = -0.75$$

$$\frac{-0.75}{.18} = -4.2$$

$$\Delta R = -0.05$$

14400

Conditional Equations.

16

0 - e

1	0 0 0	- 2.0 0 = + 8	+ 0	- 1	= - 1	+ 9
2	+ 0.9 2	- 1.7 7 = - 4	+ 18	- 1	= + 17	- 21
3	+ 1.2 9	- 1.5 3 = + 5.6	+ 25	- 1	= + 24	+ 32
4	+ 1.9 3	- 0.5 3 = - 2	+ 38	- 0	= + 38	- 40
5	+ 2.0 0	0 0 0 = - 4	+ 39	- 0	= + 39	- 43
6	+ 1.4 4	+ 0.4 7 = + 10.6	+ 38	+ 0	= + 38	+ 68
7	+ 1.3 5	+ 1.4 7 = + 6.8	+ 26	+ 1	= + 27	+ 41
8	+ 0.9 2	+ 1.7 7 = - 3.3	+ 18	+ 1	= + 19	- 5.2
						+ 15.0 = 15.6
						av 3.6

$$+ 16.63 - 0.08 = + 323.8$$

$$- 0.08 + 15.27 = + 6.7$$

$$+ (1 - 0.0) = + 1.5$$

$$+ 10 + 15.27 = + 7.2$$

$$h = + 0.5$$

$$+ 1663 = + 323.8$$

$$a = + 19.4$$

arc 15.3

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

$$\frac{\Sigma V}{n} = - 0.75$$

$$\frac{- 0.75}{18} = - 4.2$$

$$\Delta R = - 0.05$$

14400

Moon Mean Position

17

$$\begin{array}{r} \chi_0 \quad 22.9180'' \\ \quad + 10'' \\ \hline 22.9190'' \end{array}$$

$$\begin{array}{r} 23.8405'' \\ \underline{22.} \\ + 1.8405'' \end{array}$$

$$\begin{array}{r} 0.26493'' \\ 9.97633'' \\ 8.50724'' \\ 1.78136'' \end{array}$$

$$\alpha - A \quad + 01 \quad 0.44''$$

$$A \quad 02 \quad 32 \quad 41.52''$$

$$\alpha_0 \quad 02 \quad 33 \quad 41.96''$$

$$\text{Red} \quad + 5.36''$$

$$\alpha' \quad 02 \quad 33 \quad 47.32''$$

$$\begin{array}{r} \chi_0 \quad 16.5290'' \\ \quad 0'' \\ \hline 16.5290'' \end{array}$$

$$\begin{array}{r} 16.2498'' \\ \underline{18.} \\ - 1.7502'' \end{array}$$

$$\begin{array}{r} 9.5304'' \\ 0.5299'' \\ 7.1534'' \\ 7.1137'' \end{array}$$

$$\begin{array}{r} \eta_1 \quad + 0.0013'' \\ \eta_0 \quad - 1.7515'' \end{array}$$

$$\begin{array}{r} 0.24341'' \\ 7.33175'' \\ 2.91226'' \\ - 817.1'' \end{array}$$

$$\delta - D \quad - 13 \quad 37.1''$$

$$D = + 18 \quad 58 \quad 23.0''$$

$$\delta_0 \quad + 18 \quad 44 \quad 45.9''$$

$$\text{Red} \quad + 25.7''$$

$$\delta' \quad 18 \quad 45 \quad 11.6''$$

14400

Moon Mean Position -

17

$$\begin{array}{r}
 Y_0 \quad 22.9180 \\
 \quad \quad + 1.0 \\
 \hline
 22.9190 \\
 \\
 23.8405 \\
 \hline
 22. \\
 + 1.8405
 \end{array}$$

$$\begin{array}{r}
 0.26493 \\
 9.97633 \\
 8.50724 \\
 1.78136
 \end{array}$$

$$x - A \quad 01 \quad 0.44$$

$$A \quad 02 \quad 32 \quad 41.52$$

$$\alpha_0 \quad 02 \quad 33 \quad 41.96$$

$$Red \quad + \quad 5.36$$

$$\alpha' \quad 02 \quad 33 \quad 47.32$$

$$\begin{array}{r}
 Y_0 \quad 16.5290 \\
 \quad \quad 0 \\
 \hline
 16.5290 \\
 \\
 16.2498 \\
 \hline
 18. \\
 - 1.7502
 \end{array}$$

$$\begin{array}{r}
 9.5304 \\
 0.5299 \\
 7.1534 \\
 7.1187
 \end{array}$$

$$\begin{array}{r}
 \eta_1 \quad + 0.0013 \\
 \eta_2 \quad - 1.7515
 \end{array}$$

$$\begin{array}{r}
 0.24341 \\
 7.33115 \\
 2.91226 \\
 - 817.1
 \end{array}$$

$$S \quad E \quad - \quad 13 \quad 37.3$$

$$D = + 18 \quad 58 \quad 23.0$$

$$S_0 \quad + 18 \quad 44 \quad 45.9$$

$$Red \quad + \quad 25.7$$

$$S' \quad 18 \quad 45 \quad 11.6$$

14400

Lunar Parallax.

18

α'	02	33	47.32	$\checkmark$	Π	58	54.8
δ	-0	30	47.25	$\checkmark$			
$\alpha - \alpha'$	-2	3	0.07	$\checkmark$		9.86	913
$=$	-30	45	1.05	$\checkmark$		8.23	392
$\frac{1}{2}\alpha - \alpha'$	-11		47.81	$\checkmark$		9.70	868
$\frac{1}{2}\alpha - \frac{1}{2}\alpha' - \frac{1}{2}\alpha$	-30	33	13.24	$\checkmark$		0.02	479
						7.83	652
			9.95	727			
			0.00	000	$\alpha - \alpha'$	-23	35.63
			00	6492	$=$	-1	34.38
			0.02	219			

γ	46	27	48.0	$\checkmark$
δ'	-18	45	11.6	$\checkmark$
$\gamma - \delta'$	27	42	36.4	

9.82640
 8.23392
 9.66745
 0.13970
 7.86747

$\delta - \delta'$ 125 202

δ	+19	10	31.8	$\checkmark$	α	02	32	12.94	$\checkmark$
$\gamma - \delta$	+19	10	28.2	$\checkmark$	$\gamma - \alpha$	02	32	11.94	$\checkmark$
$\alpha - \alpha'$			+3.6	$\checkmark$	$\alpha - \alpha'$			+1.00	$\checkmark$

curr.

+ 0.5

curr.

- 0.05

2nd Quad. Ref. 0.0

 $\delta - 19$ 10 32.3 $\alpha - 02$ 32 12.89 $\alpha - \alpha'$ + 0.95 $\delta - \alpha$ + 41

14400

Lunar Parallax.

16

$$\begin{aligned}
 \alpha' & 02 \ 33 \ 47.32 \\
 \theta & -0 \ 30 \ 47.25- \\
 \theta - \alpha' & -2 \ 3 \ 0.07 \\
 = & -30 \ 45 \ 1.05- \\
 \frac{1}{2} \alpha' \cdot \alpha' & -11 \ 47.81- \\
 \theta - \alpha' - \frac{1}{2} \alpha' \cdot \alpha' & -30 \ 33 \ 13.24-
 \end{aligned}$$

$$\begin{aligned}
 9957.27 \\
 000000 \\
 006492 \\
 002219
 \end{aligned}$$

$$\begin{aligned}
 \gamma & 46 \ 27 \ 48.0 \\
 \delta' & -18 \ 45 \ 11.6 \\
 \gamma - \delta' & 27 \ 42 \ 36.4
 \end{aligned}$$

$$\begin{aligned}
 982690 \\
 823392 \\
 966745- \\
 013970 \\
 786747-
 \end{aligned}$$

$$\delta - \delta' \quad +25 \ 202$$

$$\delta \quad +19 \ 10 \ 31.8$$

$$\gamma - \delta \quad +19 \ 10 \ 28.2$$

$$0 - \epsilon \quad +3.6$$

$$\text{curr} \quad +0.5$$

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

$$\delta - 19 \ 10 \ 32.3$$

$$1 - \epsilon \quad +41$$

$$\pi \quad 58 \ 54.8$$

$$986413$$

$$823392$$

$$970864 \sim$$

$$002479$$

$$783652 \sim$$

$$\alpha - \alpha' \quad -23 \ 35.63$$

$$= \quad -1 \ 34.38$$

$$\alpha \quad 02 \ 32 \ 12.94$$

$$\gamma - \alpha \quad 02 \ 32 \ 11.94$$

$$0 - \epsilon \quad +1.00$$

$$\text{curr} \quad -0.05$$

$$\alpha - 02 \ 32 \ 12.89$$

$$0 - \epsilon \quad +1.95$$

14407

Star Measures -

21

1	19580	18916	18124	16480
13.	18702	9800 ⁹⁶	13484 ⁸²	11110
14.4	02	92	80	10
	80	16	24	80
	<u>13.0878</u>	<u>13.0880</u>	<u>14.4642</u>	<u>14.4630</u>
22	19112	16310	17602	17662
17.9	10458	14970	14708 ¹²	10552
28.3	58	70	16	52
	12	10	02	62
	<u>17.8654</u>	<u>17.8660</u>	<u>28.2890</u>	<u>28.2890</u>
3	17368	17672	19150	16850
28.7	11210	13838 ³⁴	11528	14470 ⁷⁶
16.8	10	30	28	82
	68	72	50	50
	<u>28.6156</u>	<u>28.6162</u>	<u>16.7622</u>	<u>16.7626</u>

Moon

+			16962	16770
23			8802	14830
15.9			02	30
			62	70
			<u>15.8160</u>	<u>15.8140</u>
2	18330	17490		
23.8	10940 ³⁷	14880		
17	34	80		
	30	90		
	<u>23.7393</u>	<u>23.7390</u>		
3	18776	17188		
23.8	10986	14968 ⁷²		
17.4	86	76		
	76	88		
	<u>23.7790</u>	<u>23.7784</u>		

4407

Star Measures.

21

L	195580	18916	18124	16480
3.	18702	980096	1348482	11110
14	02	92	80	10
	80	16	24	80
	<u>13.0888</u>	<u>13.0880</u>	<u>14.4642</u>	<u>14.4630</u>
-	19112	16310	17602	17662
1	10458	14970	1470812	10552
13	58	70	16	52
	12	10	02	62
	<u>178654</u>	<u>178660</u>	<u>28.2890</u>	<u>28.2890</u>
-	17368	17672	19150	16850
17	11210	1383834	11528	1447076
18	10	30	28	82
	68	72	50	50
	<u>28.6156</u>	<u>28.6162</u>	<u>16.7622</u>	<u>16.7626</u>

Moon

L			16962	16770
3			8802	14830
54			02	30
			62	70
			<u>15.8160</u>	<u>15.8140</u>
-	18330	17490		
3.8	1094037	14880		
1	34	50		
	30	90		
	<u>23.7393</u>	<u>23.7390</u>		
L	18776	17188		
38	10986	1496872		
74	86	76		
	76	88		
	<u>23.7790</u>	<u>23.7784</u>		

2
1
5
2
18
6
2
1
7
2
1
8
9
1

14407

Moon.

22

4	18774	17952
23.8	12068	14658
18.0	68	58
	74	52
	<u>23.6706</u>	<u>23.6706</u>

5
23
18.9

18898	16632
9540	15990
40	90
98	32
<u>18.9358</u>	<u>18.9358</u>

6
22
19.2

16070	16058
12736	9382
36	82
70	58
<u>19.3334</u>	<u>19.3324</u>

7
218
19.2

16454	16660
13052	10064
52	64
54	60
<u>19.3402</u>	<u>19.3404</u>

8
21
19.1

16762	16270
15126	7900
22	00
62	70
<u>19.1638</u>	<u>19.1630</u>

14407

Moon.

22

4	18774	17952
238	12068	14658
18.0	68	58
	74	52
	<u>23.6706</u>	<u>23.6706</u>

5
23
189

18898	16632
9540	15990
40	90
98	32
<u>18.9358</u>	<u>18.9358</u>

5
22
192

16070	16058
12736	9382
36	82
70	58
<u>19.3334</u>	<u>19.3324</u>

2
218
192

16454	16660
13052	10064
52	64
59	40
<u>19.3402</u>	<u>19.3404</u>

8
21
191

16762	16270
15126	7900
22	00
62	70
<u>19.1638</u>	<u>19.1630</u>

14907

Lunus etc

23

Date Nov. 28, 1917

Exp & Stars	02	39	02 51"
" " mean	02	44	2 44 38.1"
Clock Slow	01	55.7"	

H. Sid. Time.	02	46	33.65"	
" " "	04	44	31.05"	
G. Sid. Time	09	31	09.70"	$\phi = -1^h 49^m$
" " " MIN	16	27	15.44"	
Interval	15	03	49.26"	
Red		02	28.07"	
G. M. T	15	01	21.19"	15.02255

Lunar Mount. Colon.	R.A.	Dec
Moon 15 ^h	04 35	14.55" + 23 54 34.2"
material 1 ^m		2.4738" + 2.007"
" 1 ^m 35317		03.35" 02.7
Tatular Place.	04 35	17.90 + 23 54 36.9

934" 13.7"

Moon's age 14^d

$a = -501.0$
 $+24.0$
 -477.0

Parallax	57	50.0"
Semi-diam	15	47.0"
R		947.0"
aug.		141"
Sub 2		-0.7"
R		960.4"
R		205.87"
a R		-98.2"
(1+a)R		1.9605"
R ²		3.8436"

19401

Lunus etc

Date Nov. 28, 1917

Exp & Star 02 39

0.2 5.1

" " mean 02 44 37.4

2 44 38.1

Clock Slow 01 55.7

N. Sid Time. 02 46 33.65

" " " 04 44 31.05

G Sid Time 07 31 09.70

-1 h 49

" " " M.N 16 27 15.44

Interval 15 03 49.26

Red 02 28.07

G M.T 15 01 21.19

15.02255

Lunus Mount Colum RA

Moon 15^h 04 35 14.55

+23 54 34.2

motion 1^m 2.4738

+2.00

" 1^m 35.317 03.35

02.7

Intular Place. 04 35 17.90 +23 54 36.9

939^h 13.7Mooning 14^d

G: -5010

+24.0

-4770

Parallax 57 50.0

Semi diam 15 47.0

R 947.0

ang 14.1

Ink 2 -0.7

R 960.4

R 205.87

R -98.2

(1+4)R 1.9605

R² 38436

S_0	H_0	ΔS	$-2S$	$+1S$	$+5$
-9.19	-3.71	-22	+18 ~ -4	-0	= -4
-4.10	+10.81	-14	+8 ~ -6	+1	= -5
+7.13	-1.37	+9	-14 ~ -5	-0	= -5
M -0.01	-0.66		0	0	= <u>+5</u> = +0.02

$$\begin{aligned}
 \Delta \gamma & - 2.9 \gamma = -2 \\
 -9 & + 11 = +2 \\
 +35 & - 32 = +3 \\
 -2 & + 4 = +2 \\
 & +2 = \underline{0} \quad 0.0
 \end{aligned}$$

Standard Coordinates												24.
14407			Cape No. 672 mag. 6			Cape No. 679 mag. 6.3			Cape No. 691 mag. 6.2			
C	04	30	27.72	4	33	17.18	4	39	40.18			
q			27.73			17.22			40.14			
z			27.69			17.18			40.14			
m	04	30	27.71	4	33	17.19	4	39	40.15			
Prec		01	01.35		01	02.10		01	01.48			
α	04	31	29.06	4	34	19.29	4	40	41.63			
A	4	36	40.00	4	36	40.00	4	36	40.00			
q-A	-	5	10.94	-	2	20.71	+	4	01.63			
Sin			-310.91			-140.71			+241.63			
log	2.49	263	m	2.14	832	m	2.38	315	m			
"cos	9.96	347		9.95	708		9.96	248				
"s	0.96	334	m	0.61	264	m	0.85	287				
S ₀	-9.19	05		-4.09	86		+7.12	63				
S ₁	-	5		-	14			9				
S	12.80	90		17.90	00		29.12	72				
X	13.08	79		17.86	57		28.61	59				
Y-S	+2.78	9		-0.34	3		-5.11	3				
C	+23	08	13.4	+25	01	11.2	+23	26	38.9			
S			13.2			11.1			38.7			
z			12.7			10.8			38.6			
m	23	08	13.1	25	01	11.0	23	26	38.7			
Prec	+	02	08.7	+	02	05.2	+	01	56.3			
α	23	10	21.8	25	03	16.2	23	28	35.0			
θ	23	39	15.0	23	39	15.0	23	39	15.0			
S-B	-	28	53.2	+	1	24	01.2	-	10	40.0		
cos			-1733.2			+5042.2			-640.0			
log	3.23	885	m	3.70	262		2.80	618	m			
"s	0.57	000	m	1.03	377		0.13	733	m			
tan δ	9.63	15		9.66	98		9.63	78				
S ₂	1.92	67		1.22	53		1.70	57				
n ₁	8.61	16		7.94	85		8.39	69				
n ₂	-3.71	53		+10.80	85		-1.37	19				
n ₁	+0.04	09		+0.00	89		+0.02	49				
n	14.32	56		28.81	74		16.65	30				
q	14.46	36		28.28	90		16.76	24				
q-y	+1.38	0		-5.28	4		+1.09	4				

14407

Standard Coordinates

24

Cape No	672	mag. 6	Cape No	679	mag 63	Cape No	691	mag 6.2	
α	04	30	27.72	4	33	17.18	4	39	40.18
δ			27.73			17.22			40.14
ϵ			27.69			17.18			40.14
μ	04	30	27.71	4	33	17.19	4	39	40.15
ρ	01	01	01.35	01	02	02.10	01	01	01.48
α	04	31	29.06	4	34	19.29	4	40	41.63
δ	4	36	40.00	4	36	40.00	4	36	40.00
$\alpha - \delta$	-	5	10.94	-	2	20.71	+	4	01.63
$\sin$			-310.91			-140.71			+241.63
$\log$			2.49263~			2.14832~			2.38315~
" $\cos$			996347			995708			996248
" $\sin$			096334~			061264~			085287
S_0			-9.1905			-4.0986			+7.1263
S_1			-			-14			9
S_2			12.8090			17.9100			29.1272
T			13.0879			17.8657			28.6159
$T-S$			+2789			-0343			-5113
C	+23	08	13.4	+25	01	11.2	+23	26	38.1
S			13.2			11.1			38.7
Z			12.7			10.8			38.6
μ	23	08	13.1	25	01	11.0	23	26	38.7
ρ			+02			+02			+01
δ	23	10	21.8	25	03	16.2	23	28	35.0
θ	23	39	15.0	23	39	15.0	23	39	15.0
$\delta - \theta$	-	28	53.2	+	1	2.4	-	10	40.0
$\cos$			-1733.2			+5042.2			-640.0
$\log$			3.23885~			3.70262			2.80618~
" $\sin$			0.51000~			1.03317			0.13133~
$\tan \delta$			9.6315			9.6698			9.6378
S_2			19267			1.2253			17057
μ_1			86116			7.9485			8.3969
μ_2			-3.7153			+10.8085			-1.3719
μ_3			+00409			+00089			+00249
μ			14.3256			28.8174			16.6530
γ			14.4636			28.2890			16.7624
$\gamma - \gamma$			-1380			-5284			+1094

14407

25

$$\begin{array}{r}
 17.8657 \quad 28.2890 \quad 4 \quad 34 \quad 19.29 \quad 25 \quad 03 \quad 16.2 \\
 22. \quad 18 \quad +02 \quad 20.57 \quad -01 \quad 24 \quad 01.6 \\
 \hline
 +4.1343 \quad 10.289 \quad \hline
 \quad 34^s \quad 490 \\
 \hline
 140.57 \quad -5041.6
 \end{array}$$

Plate Center

$$A = 4 \quad 36 \quad 39.86$$

$$B = +23 \quad 39 \quad 14.6$$

$$\begin{array}{r}
 Y-S \quad +500X \quad +535.8 \quad +1X \quad -10117 \\
 +2789 +6544 = 9333 \quad +771 = 10104 \quad +13 = 10117 \\
 -0343 +8933 = 8590 \quad +1508 = 10098 \quad +18 = 10116 \\
 -5113 +14308 = 9195 \quad +893 = 10088 \quad +29 = 10117 \\
 21.8145 +10907 \quad +929 \quad +22 = 21.9886
 \end{array}$$

$$\begin{array}{r}
 Y-\eta \quad +500\eta \quad -55.8X \quad +1.2Y \quad -7898 \\
 +1380 +7232 = 8612 \quad -731 = 7881 \quad +17 = 7898 \\
 -5284 +14145 = 8861 \quad -997 = 7864 \quad +34 = 7898 \\
 +1094 +8381 = 9475 \quad -1597 = 7878 \quad +20 = 7898 \\
 17.3785 +8689 = \quad -1218 \quad +21 = 17.3379
 \end{array}$$

$$\begin{array}{r}
 Tables \quad a = -0.1 \quad e = -0.3 \quad a-e+0.2 \quad t+d = +0.8 \\
 a.s. \quad -501.0 \quad -501.2 \quad +0.2 \quad \quad +2.3 \\
 \quad -500.9 \quad -500.9 \quad 0 \quad \quad +1.5
 \end{array}$$

14407

25

17.8657	28.2890	4 39	19.29	25.03	16.2
22.	18	+0.2	20.57	-0.1	24
+4.1343	10.289				01.6
34 ^s	490				
140.57	-5041.6				

Plate Center

A = 4 36 39.86

B = 23 39 14.6

Y-S	+5-00 X	+5-3.5 X	+1X	-10117
2789 + 65-44 =	9333	+771 =	10104	+13 = 10117
0343 + 8932 =	8590	+15-08 =	10098	+18 = 10116
5113 + 14308 =	9195	+893 =	10088	+29 = 10117
1.8145 + 10907		+929		+22 = 21.9886

L-7	+5-00 X	-5-5.8 X	+1.2 X	-7898
1380 + 7232 =	8612	-731 =	7881	+17 = 7898
5289 + 14145 =	8861	-997 =	7864	+34 = 7898
1094 + 8381 =	9475	-1597 =	7878	+20 = 7898
7.3785 + 18689 =		-1218		+21 = 17.3379

lat-lis	a = -0.1	e = -0.3	u = 0.2	b+d = +0.8
alt.	-501.0	-501.2	+0.2	= +2.3

180
150
120

1
2
3
4
5
6
7
8

1
2
3
4
5
6
7
8

14407

Moon Center

26

 Δx

O-C

1	23.0000	+1.1840	+2	1.4023	38421	-	15
2	23.7392	+1.9232	+0	3.6987	38408	-	28
3	23.7787	+1.9627	+0	3.8522	38522	+	86
4	23.6706	+1.8546	-1	3.4391	38272	-	164
5	23.0000	+1.1840	-1	1.4007	38305	-	131
6	22.0000	+0.1840	-2	0.0338	38593	+	157
7	21.8160	0.0000	-2	0.0000	38546	+	110
8	21.0000	-0.8160	-2	0.6662	38574	+	138
				R ²	38436		

arc

 $A_7:0$

1	15.8150	-1.5620	2.4398
2	17.0000	-0.3770	0.1421
3	17.3770	0.0000	0.0000
4	18.0000	+0.6230	0.3881
5	18.9358	+1.5588	2.4298
6	19.3329	+1.9559	3.8255
7	19.3403	+1.9633	3.8546
8	19.1634	+1.7864	3.1912

143 ✓

101 ✓

90° -

72

37

5

0°

-24 -

Range 167

$$x = 23 \quad y = 15.8150$$

$$18.9358$$

$$34.7508$$

$$y_0 \quad 17.3754$$

$$y_{\max} \quad 19.3403 -$$

$$R \quad 1.9649$$

$$\text{Cos } R \quad 1.9605$$

$$x_{\max} \quad 23.7787$$

$$x_0 \quad 21.8138$$

$$x_0 \quad 21.8160$$

Moon Center

$$y_0 \quad 17.3770$$

1
2
3
4
5
6
7
8

1
2
3
4
5
6
7
8

14407

Mean Center

-1

O-C

1	230000	+1.1840	+2	1.4023	38421	-	15
2	237392	+1.9232	+0	3.6987	38408	-	28
3	237787	+1.9627	+0	3.8522	38522	+	86
4	236706	+1.8546	-1	34391	38272	-	164
5	230000	+1.1840	-1	1.4007	3.8305	-	131
6	220000	+0.1840	-2	00338	3.8593	+	157
7	218160	0.0000	-2	00000	38546	+	110
8	210000	-0.8160	-2	06662	38574	+	138
				R ²	3.8436		

arc

A₇:0

1	15.8150	-1.5620	24398
2	17.0000	-0.3770	01421
3	17.3770	0.0000	00000
4	18.0000	+0.6230	03881
5	18.9358	+1.5588	24298
6	19.3329	+1.9559	38255
7	19.3403	+1.9633	38546
8	19.1634	+1.7864	3.1912

143

101

90°

72

37

5

0°

-24

Range 167

$$x = 23 \quad y = 15.8150$$

$$18.9358$$

$$34.7508$$

$$y_0 = 17.3754$$

$$y_{\max} = 19.3403$$

$$R = 1.9649$$

$$\text{Cam R} = 1.9605$$

$$x_{\max} = 23.7787$$

$$x_0 = 21.8138$$

Mean Center

$$x_0 = 21.8160$$

$$y_0 = 17.3770$$

$$\begin{array}{r}
 1 \quad - \quad 1.84 \\
 2 \quad - \quad 0.73 \\
 3 \quad \quad 0.00 \\
 4 \quad + \quad 1.15 \\
 5 \quad + \quad 1.84 \\
 6 \quad + \quad 0.35 \\
 7 \quad - \quad 0.00 \\
 8 \quad - \quad 1.47 \\
 \hline
 + \quad 3.34 \\
 - \quad 4.04 \\
 \hline
 = \quad 0.70
 \end{array}$$

$$\begin{array}{r}
 - \quad 17.7 \\
 - \quad 53.7 \\
 + \quad 168.6 \\
 - \quad 303.5 \\
 - \quad 154.5 \\
 + \quad 28.3 \\
 \quad \quad 0.0 \\
 - \quad 113.0 \\
 + \quad 196.9 \\
 - \quad 642.4 \\
 \hline
 = \quad 445.5
 \end{array}$$

$$\begin{array}{r}
 + \quad 23.4 \\
 + \quad 10.6 \\
 \quad \quad 0.0 \\
 - \quad 101.7 \\
 - \quad 204.2 \\
 + \quad 306.0 \\
 + \quad 216.0 \\
 + \quad 247.0 \\
 + \quad 803.0 \\
 - \quad 305.9 \\
 \hline
 + \quad 497.1
 \end{array}$$

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Conditional Equations.

0 - e 27

1	+1.18	-1.56	= -15	-35	-47	= -82	+ 67
2	+1.92	-0.38	= -28	-57	-11	= -68	+ 40
3	+1.96	0.00	= +86	-58	0	= -58	+ 144
4	+1.85	+0.62	= -164	-55	+19	= -36	+ 128
5	+1.18	+1.56	= -131	-35	+47	= +12	- 143
6	+0.18	+1.95	= +157	-5	+59	= +54	+ 103
7	0.00	+1.96	= +110	0	+59	= +59	+ 51
8	-0.82	+1.79	= +138	+24	+54	= +78	+ 68
							+601 - 143
							av 93

$$+14.49 - 0.70 = -445.5$$

$$-0.70 + 16.27 = +497.1$$

$$+() - 0.34 = -21.7$$

$$+15.93 = +475.4$$

$$h = +29.9$$

$$+14.49 = -445.5 + 20.9 = -424.6 \quad a = -29.3$$

arc 167

$$\frac{P}{n} = .27 \checkmark$$

$$\frac{\Sigma K}{n} = +57.2 \checkmark$$

$$\frac{+57.2}{.27} = +212 \checkmark$$

Edge of Moon very poor

$$\Delta R = +2.6 \checkmark$$

1
2
3
4
5
6
7
8

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Conditional Equations.

0 = 27

1	+1.18	-1.56	= -15	-35	-47	= -42	+ 6.7
2	+1.92	-0.38	= -28	-57	-11	= -68	+ 40
3	+1.96	0.00	= +86	-58	0	= -58	+ 144
4	+1.85	+0.62	= -164	-55	+19	= -36	+ 128
5	+1.18	+1.56	= -131	-35	+47	= +12	- 143
6	+0.18	+1.95	= +157	-5	+59	= +54	+ 103
7	0.00	+1.96	= +110	0	+59	= +59	+ 51
8	-0.82	+1.79	= +138	+24	+54	= +78	+ 68
							+ 601 = 143
							uv 93

$$+14.49 - 0.70 = -445.5$$

$$-0.70 + 16.27 = +497.1$$

$$+1 - 0.34 = -21.7$$

$$+15.93 = +475.4$$

$$h = +29.9$$

$$+14.49 = -445.5 + 20.9 = -424.6 \quad a = -29.3$$

arc 167

$$\frac{P}{n} = .27$$

$$\frac{\Sigma K}{n} = +57.2$$

$$\frac{+57.2}{.27} = +212$$

edge of mass very poor

$$\Delta R = +2.6$$

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Mean's Mean Position

28

$$\begin{array}{r} X_0 \quad 21.8160^\circ \\ \quad - 15^\circ \\ \hline 21.8145^\circ \end{array}$$

$$\begin{array}{r} Y_0 \quad 17.3770^\circ \\ \quad + 15^\circ \\ \hline 17.3785^\circ \end{array}$$

From Plate Constants.

$$\begin{array}{r} 21.4886^\circ \\ 22. \\ \hline - 0.0114 \end{array}$$

$$\begin{array}{r} 17.3379^\circ \\ 18. \\ \hline - 0.6621 \end{array}$$

$$\begin{array}{r} 8.05690^\circ \\ 9.96217^\circ \\ 8.50724^\circ \\ 9.58749^\circ \end{array}$$

$$\begin{array}{r} 9.6397^\circ \\ 6.1138^\circ \\ 7.1534^\circ \\ 2.8069^\circ \end{array}$$

$$-- \quad 0.39$$

$$\begin{array}{l} \eta_1 = 0 \\ \eta_0 = -0.6621 \end{array}$$

$$A = 4 \quad 36 \quad 40.00$$

$$\alpha_0 \quad 4 \quad 36 \quad 39.61^\circ$$

$$\text{Red} \quad + \quad 5.92^\circ$$

$$\alpha' \quad 4 \quad 36 \quad 45.53^\circ$$

$$\begin{array}{r} 9.82092^\circ \\ 7.33115^\circ \\ \hline 2.48977^\circ \end{array}$$

$$- 308.9^\circ$$

$$= \quad - \quad 5 \quad 08.9^\circ$$

$$\delta + \quad 23 \quad 39 \quad 15.0^\circ$$

$$\delta_0 + \quad 23 \quad 34 \quad 06.1^\circ$$

$$\text{Red} \quad + \quad 11.6^\circ$$

$$\delta' \quad 23 \quad 34 \quad 17.7^\circ$$

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Mean Position

28

$$\begin{array}{r} x_0 \quad 21.8160 \\ \quad - 1.5 \\ \hline 21.8145 \end{array}$$

$$\begin{array}{r} y_0 \quad 17.3770 \\ \quad + 1.5 \\ \hline 17.3785 \end{array}$$

From Plate Constants.

$$\begin{array}{r} 21.9886 \\ 22 \\ \hline -00117 \end{array}$$

$$\begin{array}{r} 17.3379 \\ 18 \\ \hline -06621 \end{array}$$

$$8.05640 \sim$$

$$946217$$

$$850724$$

$$958749 \sim$$

$$9.0397$$

$$61138$$

$$71234$$

$$28069$$

$$-- \quad 0.39$$

$$\eta_1 = 0$$

$$\eta_0 = -0.6621$$

$$A \quad 4 \quad 36 \quad 40.00$$

$$x_0 \quad 4 \quad 36 \quad 39.61$$

$$\text{Red} \quad + \quad 5.92$$

$$\alpha' \quad 4 \quad 36 \quad 45.53$$

$$9.82092 \sim$$

$$7.33111$$

$$2.48917 \sim$$

$$-308.9$$

$$= -508.9$$

$$\Theta + 23 \quad 39 \quad 15.0$$

$$D_0 + 23 \quad 34 \quad 0.61$$

$$\text{Red} \quad + 11.6$$

$$\delta' \quad 23 \quad 34 \quad 17.7$$

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Gunnar Parallax.

29

$$\begin{array}{rcl}
 \alpha & 4 & 36 & 45.53^{\circ} \\
 \delta & 2 & 46 & 33.65^{\circ} \\
 \delta - \alpha & -1 & 50 & 11.88^{\circ} \\
 = & -27 & 32 & 58.20^{\circ} \\
 1/x & -10 & 49.36^{\circ} \\
 \delta - \alpha & -27 & 22 & 08.84^{\circ}
 \end{array}$$

$$\begin{array}{rcl}
 \pi & 57 & 50 \\
 986913 \\
 822588^{\circ} \\
 966512^{\circ} \\
 003897^{\circ} \\
 779910
 \end{array}$$

$$\begin{array}{rcl}
 995727 \\
 0.00000 \\
 0051.56^{\circ} \\
 0.00883^{\circ}
 \end{array}$$

$$\begin{array}{rcl}
 x - x' & = & -21' 38.76^{\circ} \\
 = & -1 & 26.58^{\circ}
 \end{array}$$

$$\begin{array}{rcl}
 \gamma & 45 & 34 & 57.6^{\circ} \\
 \delta & 23 & 34 & 17.7^{\circ} \\
 \gamma - \delta & 22 & 0 & 39.9^{\circ}
 \end{array}$$

$$\begin{array}{rcl}
 9.82640 \\
 822588^{\circ} \\
 9.57379^{\circ} \\
 014615^{\circ} \\
 7.77222
 \end{array}$$

$$\delta - \delta' + 20 \quad 20.8^{\circ}$$

$$\delta \quad 23 \quad 54 \quad 38.5^{\circ}$$

$$\gamma - \delta \quad 23 \quad 54 \quad 36.9^{\circ}$$

$$O - C \quad + 1.6^{\circ}$$

$$\begin{array}{rcl}
 \text{curr} & - & 0.0^{\circ} \\
 \text{Quoted Ref} & & 0.0
 \end{array}$$

$$\alpha \quad 04 \quad 35 \quad 18.95^{\circ}$$

$$\gamma - \alpha \quad 04 \quad 35 \quad 17.90^{\circ}$$

$$O - C \quad + 1.05^{\circ}$$

$$\text{curr.} \quad + 0.01^{\circ}$$

$$\alpha = 04 \quad 35 \quad 18.96$$

$$O - C \quad + 1.06$$

