

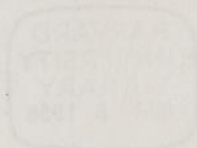
1879phae.proj..487.

KG
11365
486



KG 11365.486

June 10. 1879.



KG 11365, 48.6



May. 13.

-1

0 to 4.99

$$11 + .263$$

$$12 + .503$$

$$23 \quad 6$$

$$+ .76$$

(Sheet 1.)

5.0 to 5.9

$$13 + .104$$

$$8 + .142$$

$$9 - .853$$

$$30 \quad 9$$

$$+ .249$$

$$- .85$$

0 to 4.99

$$46 - .7713$$

$$16 + .125$$

$$62 \quad 18$$

$$+ .12$$

$$- .77$$

(5)

5.0 to 5.9

$$14 - .044$$

$$21 - .056$$

$$11 + .013$$

$$22 - .176$$

$$68 \quad 19$$

$$+ .01$$

$$- .26$$

$$+1.19 \quad 19 + 1.195$$

(2)

$$8 + .012$$

$$27 \quad 7$$

$$+1.20$$

$$23 + .184$$

X

$$9 - .232$$

X

$$16 + .215$$

X

$$14 + .444$$

X

$$13 + .033$$

X

$$12 + .073$$

X

$$16 - .065$$

X

$$17 - .435$$

X

$$11 - .163$$

X

$$12 - .433$$

X

$$79 \quad 23$$

$$+ .42$$

$$(3) - .22$$

$$15 + .084$$

X

$$79 \quad 21$$

$$+ .59$$

$$- .109$$

$$14 + .274$$

$$12 + .143$$

$$26 \quad 7$$

$$+ .41$$

(4)

$$16 - .294$$

$$9 + .343$$

$$16 + .115$$

$$12 - .093$$

$$9 - .018$$

$$14 + .424$$

$$12 - .053$$

$$8 + .072$$

$$13 - .283$$

$$109 \quad 30$$

$$+1.94$$

$$- .72$$

0 to 4.99

$$23 \quad 6$$

$$79 \quad 23$$

$$26 \quad 7$$

$$62 \quad 18$$

$$190 \quad 54$$

(11)

$$17.3 \left\{ \begin{array}{l} 4.9 \end{array} \right\}$$

5.0 to 5.9

$$30 \quad 9$$

$$27 \quad 7$$

$$79 \quad 21$$

$$109 \quad 30$$

$$68 \quad 19$$

$$313 \quad 86$$

(24)

$$13.0 \left\{ \begin{array}{l} 3.6 \end{array} \right\}$$

~~4.0 to 4.99~~ ~~5.0 to 5.9~~ ~~6.0 to 6.9~~ ~~7.0 to 7.9~~ ~~8.0 to 8.9~~ ~~9.0 to 9.99~~ ~~10.0 to 10.9~~

mag. B.

4.0 to 4.99	5.0 to 5.9	6.0 to 6.9	7.0 to 7.9
+76 —	+24 —.85	+1.33 —	+77 —.25
	+1.20 —	+2.13 +2.63 —.21	+3.08 —.69
+42 —.22	+59 —1.09	+2.36 — .46 ^{.23}	+2.14 —2.65
+41 —	+1.94 —.72	+3.37 —.87	+1.83 —
+12 —.77	+01 —.26	+1.3 —.63	+1.16 —.21
+171 —.99	+3.98 —2.92	+9.82 —2.17 +9.32 —1.94	+8.98 —3.80

3.98 2.92
9.32 1.94
~~9.82 2.17~~

8.98 3.80

11.23 3.52

9.05 4.33

11.17 1.46

5.24 .88
60.68
+61.18 ~~20.08~~
19.84 -17.84
~~20.08~~

+41.10 ~~81.56~~
40.84 80.53

(11)

+171
-99
+72
+065

270
± .245

(24)

+398
-292
+106
+044

690
.287

(~~20~~ 29)

+982
-194
+788
~~+65~~
+254
+1272

11.26
388
~~140~~

(32)

+898
-380
+518
+162

1278
.399

mag. B.

8.0 to 8.9	9.0 to 9.9	10.0 to 10.9	11.0 to 12.0
+86 -1.17	+1.41 -2.47	+3.01 -.99	+78 -.71
+6.26 -.69	+1.72 -.54	+3.37 —	+1.56 -.17
+1.61 -.60	+4.15 -.74	+.86 —	+55 —
— -.59	+.86 -.21	+2.48 -.47	+1.24 —
+2.50 -.47	+.91 -.37	+1.45 —	+1.11 —
+11.23 -3.52	+9.05 -4.33	+11.17 -1.46	+5.24 -.88

(28)

$$\begin{array}{r}
 +11.23 \\
 -3.52 \\
 \hline
 +7.71 \\
 +2.75
 \end{array}$$

14.45

.527

(29)

$$\begin{array}{r}
 +9.05 \\
 -4.33 \\
 \hline
 +4.72 \\
 +1.63
 \end{array}$$

13.38

.461

(15)

$$\begin{array}{r}
 +11.17 \\
 -1.46 \\
 \hline
 +9.71 \\
 +.647
 \end{array}$$

12.63

.842

(8)

$$\begin{array}{r}
 +5.24 \\
 -.88 \\
 \hline
 +4.36 \\
 +.545
 \end{array}$$

6.12

.765

176

Diff. mag.

0 to .99	1 to 1.99	2 to 2.99	3 to 3.99
+1.00	+1.4	+2.35 - .85	+1.87 - .32
+1.46 +1.96	+1.79 -.43	+6.06 -.61	-1.09
+1.00 -.23	+1.21 -.25	+2.54 -1.82	+2.81
+1.78 -.44	+1.02 -.54	+4.03 -.42	+1.99 -.19
+1.23 -.77	+1.03 -.09	+1.22 -.26	+1.69 -1.22
+5.47 -1.44	+4.19 -1.31	+16.20 -3.96	+6.36 -2.82

4.19 1.31
16.20 3.96

6.36 2.82

8.61 4.14

8.62 4.61

8.54 .21

2.02 .17

.67 1.18

60.68 19.84

19.84

40.84 80.52

(29)

+5.47
-1.44
+4.03
+1.39
~~+1.46~~

(21)

+4.19
-1.31
+2.88
+1.37

(37)

+16.20
-3.96
+12.24
+3.31

(27)

+6.36
-2.82
+3.54
+1.31

6.91
2.38
~~+2.56~~

5.50

.262

20.16

.545

9.18

.340

Diff. Log.

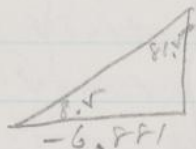
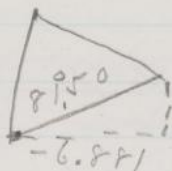
4 to 4.99	5 to 5.99	6 to 6.99	7 to 8.99	9. to —
+25 -47	+1.09 -4.09	+2.68 —	+78 —	— -71
+4.48	+89 —	+3.97 —	— -17	+67 —
+1.73 -3.23	+3.20 —	+ .19 —	— —	— —
+49 -.25	+1.99 -.34	+59 -.21	+1.24 —	— -.47
+1.66 -.19	+1.45 -.18	+1.11 —	— —	— —
+8.61 -4.14	+8.62 -4.61	+8.54 -.21	+2.02 -.17	+67 -1.18

(24)	(19)	(13)	(3)	(3)
+8.61	+8.62	+8.54	+2.02	+67
-4.14	-4.61	-.21	-.17	-1.18
<u>+4.47</u>	<u>+4.01</u>	<u>+8.33</u>	<u>+1.85</u>	<u>-.51</u>
+1.86	+2.11	+641	+617	-1.170
12.75	13.23	8.75	2.19	1.85
.531	.696	.673	.730	.617

Distance.

0 to 2.9	3.0 to 4.9	5.0 to 9.9	10.0 to 19.9
+1.88 —	+1.03 -2.4	+1.10 -.32	+3.44 -1.08
+1.31 —	+1.55 —	+6.30 -.88	+2.56 —
+1.84 —	+2.58 —	+3.68 -.23	+6.27 -.66
+3.67 —	+4.02 -.07	— -.34	— -1.09
+5.52 -.09	+1.62 —	+1.09 -.09	+1.83 -.34
+1.16 —	+9.47 -3.1	+12.17 -1.86	+2.24 —
+8.54 -.09	+9.80 .07		+13.45 -3.17
7.80 .07			+12.90
12.17 1.86			
12.90 3.17			
8.28 6.54			
3.67			
4.35 1.76			
5.22 6.35			
60.79 18.43			
60.68 19.84			
19.84			
40.84 80.52			

(16)	(23)	(31)	(31)
+8.54	+9.80	+12.17	+12.90
— .09	— .07	— 1.86	— 3.17
+8.45	+9.73	+10.31	+9.73
+1.528	+4.23	+3.33	+3.14
+1.559			
8.63	9.87	14.03	16.07
1.539	.429	.453	.518
+1.571			

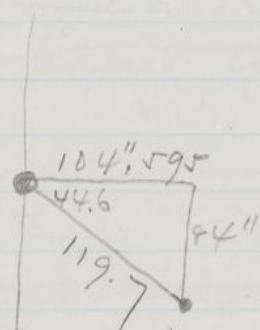
+ Cass, -6.881 278.50 $360.$ ~~8.5~~ 81.50 ans. $81.5 : 6.881 = 90$ 10.0000 0.8377 10.8377 9.9952 0.8425 $15 = 1.1761$ 2.0186

Cos.

 9.7492 $\sqrt{8.6}$ 1.7678

41 Arietis +6.973

9



$$\begin{array}{r} 1.4 \\ 1.60 \\ \hline 84.0 \end{array}$$

$$\begin{array}{r} 6.973 \\ 1.5 \\ \hline 34.65 \\ 6973 \\ \hline 104.595 \end{array}$$

$$\begin{array}{r} 84 \\ 84 \\ \hline 836 \\ 672 \\ \hline 7056 \end{array}$$

$$104.595 = 2.01949$$

$$\begin{array}{r} 10939.0 \\ 7056. \\ \hline 17995 \end{array} \quad \begin{array}{r} 4.03898 \\ 62 \\ \hline 40 \overline{) 3609} \end{array}$$

$$\begin{array}{r} 2 \overline{) 379} \\ 69 \\ \hline 264 \overline{) 1095} \\ 1056 \\ \hline 2681 \overline{) 3900} \\ 2681 \\ \hline \end{array} \quad \begin{array}{l} 84 = 1.92428 \\ 7056 = 3.84856 \end{array}$$

$$\begin{array}{r} 134.1 = 2.1274 \\ 9.9508 \\ \hline \end{array}$$

$$\begin{array}{r} 2.0782 \\ 55 \\ \hline 37 \overline{) 2701} \\ 259 \\ \hline 11 \end{array}$$

$$119.7 : 90 = 84;$$

$$\begin{array}{r} 10.0000 \\ 1.9243 \\ \hline 11.9243 \\ 2.0782 \\ \hline 9.8461 \end{array}$$

$$\begin{array}{r} 44.6 \\ 270. \\ \hline 225.4 \text{ Pos. Ang.} \end{array}$$

"Diff." = mean of "Readings A+B" - mean of "Readings C+D".

63.5
60.1

34.7 51.0
35.0 50.8

63.8
66.1

4.7
5.5

30.2 58.1
29.1 61.1

68.8
65.5

4.3
5.1

35.5 54.7
36.4 54.3

62.1
56.4

~~3.9~~

31.9
29.6

54.9
63.2

3.3
3.8

191

68.8
68.8

3.4
4.1

32.6
31.0

65.2
62.0

4.5
4.8

46.8
50.0

11/12.02 (1.09)
11
102
99

59.0
56.9

4.2
4.7

47.4
47.6

62.1
60.9

4.6
3.9

51.7
50.4

62.8
59.2

30.1
31.3

46.2
45.1

2.05537
2.0591
2.0037

4.2
3.5

31.3
31.0

54.5
51.2

3.4
4.9

34.1
35.5

54.7
54.1

3.5
4.6

37.3
37.0

53.0
58.5

4.5
4.5

35.9
35.7

8.0200
7.9409
100791
101582
2.9409
7.9567
397835

.0964

2.0591
1.9100
100791
101582
2.0591
2.0433
102165

8.8808
9.8965
8.9843

$$\text{Resid. Diff.} = \frac{\text{"Diff."} \times .076}{\sin 2V} \quad (\text{being the mean of "Diff. in Mag."})$$

$$\text{"Resid. one Setting"} = \frac{2 \times \text{Obs. book} \times .076}{\sin 2V}$$

2.63	9.0624	16.6.3	$\frac{12}{16}$	8.4559
$\sqrt{26}$	8.2	33.26	$\frac{72}{72}$	
	8.9622			
	8.8808			
	<u>9.9186</u>			
	8.6567			
		9.7391 = Log sin 2V,		
		8.8808 = ".076		
		<u>9.1417</u>		

$$\begin{array}{r} 9.9375 \\ 8.6808 \\ \hline 8.9433 \end{array}$$

$$\sqrt{1.09} = \text{mean "Diff. in Mag."}$$

$$0.2 \pm .1 = 31.2$$

$$N = 31.2$$

$$2V = 62.4$$

$$\text{mean "Diff. in Mag."} \div \sqrt{N} =$$

$$\text{Log. Cotang. } V.$$

$$\begin{array}{r} \text{Log. } .076 = 8.8808 \\ \text{Log. sin } 62.4 = 9.9475 \\ \hline .0658 \quad 8.9333 \end{array}$$

$$\left(\frac{.076}{\sin 2V} \times \frac{\text{"Diff."s.}}{\sqrt{N}} \right) = \left\{ \begin{array}{l} \text{"Resid."} \\ \text{"Diff."} \end{array} \right.$$

$$\text{"Resid. one Setting"} = \frac{.076}{\sin 2V} \times \left(\begin{array}{l} \text{mean of resid.} \\ \text{from Record Book} \end{array} \right)$$

$$\begin{array}{r} .086 \\ 27 \\ \hline 602 \\ 172 \\ \hline .2322 \end{array}$$

$$\begin{array}{r} 1.15 \\ 27 \\ \hline 230 \\ 31 \end{array}$$

$$\begin{array}{r} 1.15 \\ .086 \\ \hline 690 \\ 920 \\ \hline .09890 \end{array}$$

p9

$$\begin{array}{r} 1.65 \\ .086 \\ \hline 990 \\ 1320 \\ \hline .14190 \end{array}$$

$$\begin{array}{r} 2.15 \\ .086 \\ \hline 1710 \\ 2280 \\ \hline .24510 \end{array}$$

$$\begin{array}{r} .62 \\ .086 \\ \hline 372 \\ 498 \\ \hline .05352 \end{array}$$

$$\begin{array}{r} 4.15 \\ .086 \\ \hline 2490 \\ 3320 \\ \hline .35690 \end{array}$$

$$\begin{array}{r} .139 \\ .6 \\ \hline .0834 \end{array}$$

$$\begin{array}{r} 1.6 \\ .086 \\ \hline 96 \\ 1286 \\ \hline .1376 \end{array}$$

$$\begin{array}{r} 1.05 \\ .086 \\ \hline 630 \\ 840 \\ \hline .09030 \end{array}$$

.0.89

.139

$$\begin{array}{r} .086 \\ .66 \\ \hline .0516 \end{array}$$

.55

$$\begin{array}{r} .129 \\ .6 \\ \hline .1110 \end{array}$$

$$\begin{array}{r} 1.5 \\ .086 \\ \hline 108 \\ 144 \\ \hline .1548 \end{array}$$

$$\begin{array}{r} .23 \\ .00 \\ .10 \\ .14 \\ .24 \\ .36 \\ .00 \\ .14 \\ .09 \\ .05 \\ .15 \end{array}$$

$$\begin{array}{r} 1.5 \\ .096 \\ \hline 1390 \\ 1440 \end{array}$$

$$\begin{array}{r} .066 \\ .046 \\ .6 \\ \hline 576 \\ 96 \\ \hline .1536 \end{array}$$

$$\begin{array}{r} 11 \overline{) 1.50} (.14 \\ 11 \\ \hline 40 \\ 33 \\ \hline 7 \end{array}$$

.0192

.139

$$\sqrt{2.63} \\ .526$$

$$16.6 = 2 \\ 33.2 = 2\sqrt{}$$

$$\log .076 = 8.8808$$

$$\text{""} \sin 2\sqrt{=} 9.7344$$

$$\log .139 = 9.1424$$

$$\begin{array}{r} 139 \\ \times 5 \\ \hline 695 \\ 4170 \\ \hline 6950 \end{array}$$

$$.139$$

$$1.04$$

$$1.084$$

$$\sqrt{1.56} \\ .312$$

$$260$$

$$\log \sin \sqrt{2} = 9.8965$$

$$\text{""} \sqrt{.076} = 8.8808$$

$$.0964$$

$$89843$$

$$\begin{array}{r} 12 \overline{) 3.93} \quad (327 \\ \underline{36} \\ 334 \\ \underline{324} \\ 90 \end{array}$$

$$\sqrt{7.17}$$

$$1.434$$

$$2.1$$

$$\log \sin 4.2 = 8.8647$$

$$\text{""} .076 = 8.8808$$

$$8.8647$$

$$0.0161$$

$$1.04$$

$$11.976$$

$$\begin{array}{r} 1103 \\ \times 73 \\ \hline 771 \\ 7710 \\ \hline 80973 \end{array}$$

$$\begin{array}{r} 1176 \\ \times 576 \\ \hline 771 \\ 7710 \\ \hline 80973 \end{array}$$

$$\begin{array}{r} 1.04 \\ \times 1.75 \\ \hline 1.75 \\ 1.750 \\ \hline 3.640 \end{array}$$

14.2
36.4

E. Bantle,

$$\begin{array}{r} \text{Log. } .076 = 8.8808 \\ \text{Log. sin. } 36.4 = 9.7734 \\ \hline .128 = 9.1074 \end{array}$$

$$\begin{array}{r} 57.04 \\ \hline .008 \end{array}$$

48.5
99.0

45.5 or Draconis.

8.2502
9.9999

$$(0.760) = r. r r 09$$

q, q^6
 q, q^9

6
0.2
1.9
8.8

9.992

$$\begin{array}{r} \sqrt{2} : 66 \\ \hline \cdot 532 \end{array} \quad \begin{array}{l} 10 \\ 10 \\ 10 \end{array}$$

32, f

140

$$\begin{array}{r} 9.7332 \\ 8.8208 \\ \hline 9.1470 \end{array}$$

$$\begin{array}{r} 47 \overline{) 2013} \\ \underline{92} \\ 26 \end{array}$$

16. $2^2 3^3$
44.6
3~

~~97329~~

$$\begin{array}{r} 9.7331 \\ 8.8802 \\ \hline 9.1477 \end{array}$$

$$\begin{array}{r} 5 \overline{) 3.80} \\ \underline{.76} \end{array}$$

9.9

$$\begin{array}{r} 19.8 \\ + 224 \\ \hline 243.8 \end{array}$$

$(,225]$

ij Lyrae.

$$\begin{array}{r} 8.5504 \\ 9.5211 \\ \hline 9.3527 \end{array} \quad \begin{array}{r} 7603V \\ 76 \\ \hline 75 \end{array} \quad \begin{array}{r} 3V \\ 3r (1.5) \end{array}$$

$$\begin{array}{r} 160 \\ 76 \overline{) 76} \\ \underline{75} \\ 90 \\ 19 \end{array}$$

$$\begin{array}{r}
 1242 \\
 \times 256 \\
 \hline
 1152 \\
 11776 \\
 \hline
 1242 \\
 \times 256 \\
 \hline
 512 \\
 51276 \\
 \hline
 .05376
 \end{array}$$

$$\begin{array}{r}
 .076 \\
 \times 55 \\
 \hline
 320 \\
 6080 \\
 \hline
 .06460
 \end{array}$$

$$\begin{array}{r}
 .076 \\
 \times 55 \\
 \hline
 320 \\
 6080 \\
 \hline
 .06460
 \end{array}$$

65

$$\begin{array}{r}
 107 \\
 \times 124 \\
 \hline
 13680 \\
 1092 \\
 \hline
 1092 \\
 \times 109 \\
 \hline
 933 \\
 933 \\
 \hline
 174 \\
 \times 124 \\
 \hline
 124 \\
 \times 124 \\
 \hline
 124 \\
 \times 124 \\
 \hline
 124
 \end{array}$$

$$\begin{array}{r}
 107 \\
 \times 124 \\
 \hline
 13680 \\
 1092 \\
 \hline
 1092 \\
 \times 109 \\
 \hline
 933 \\
 933 \\
 \hline
 174 \\
 \times 124 \\
 \hline
 124 \\
 \times 124 \\
 \hline
 124 \\
 \times 124 \\
 \hline
 124
 \end{array}$$

$$\begin{array}{r}
 124 \\
 \times 17 \\
 \hline
 896 \\
 124 \\
 \hline
 .02176
 \end{array}$$

$$\begin{array}{r}
 80 \\
 \times 36 \\
 \hline
 440
 \end{array}$$

$$\begin{array}{r}
 134 \\
 \times 37 \\
 \hline
 508
 \end{array}$$

$$\begin{array}{r}
 25 \\
 \times 42 \\
 \hline
 445
 \end{array}$$

$$\begin{array}{r}
 124 \\
 \times 176 \\
 \hline
 896 \\
 124 \\
 \hline
 2176
 \end{array}$$

$$\begin{array}{r}
 33 \\
 \times 41 \\
 \hline
 513
 \end{array}$$

$$\begin{array}{r}
 440 \\
 \times 508 \\
 \hline
 485 \\
 513 \\
 \hline
 327 \\
 \hline
 2223 \\
 \times 223 \\
 \hline
 2446
 \end{array}$$

$$\begin{array}{r}
 11 \overline{) 268} (24 \\
 \underline{22} \\
 48 \\
 \underline{44}
 \end{array}$$

$$\begin{array}{r}
 .06 \\
 .04
 \end{array}$$

$$\begin{array}{r}
 .203
 \end{array}$$

$$\begin{array}{r}
 12 \overline{) 189} \\
 \underline{10768}
 \end{array}$$

$$\begin{array}{r}
 11 \overline{) 268} (24 \\
 \underline{22} \\
 48
 \end{array}$$

$$\begin{array}{r}
 235 \\
 \times 124 \\
 \hline
 1880 \\
 470 \\
 \hline
 235 \\
 \times 30080 \\
 \hline
 30080
 \end{array}$$

$$\begin{array}{r}
 124 \\
 \times 124 \\
 \hline
 256 \\
 124 \\
 \hline
 101536
 \end{array}$$

$$\begin{array}{r}
 225 \\
 \times 124 \\
 \hline
 1800 \\
 450 \\
 \hline
 225 \\
 \times 28800 \\
 \hline
 28800
 \end{array}$$

$$\begin{array}{r}
 124 \\
 \times 45 \\
 \hline
 5120 \\
 124 \\
 \hline
 .5760
 \end{array}$$

$$\begin{array}{r}
 1.63 \\
 .136
 \end{array}$$

$$\begin{array}{r}
 102 \\
 \times 124 \\
 \hline
 816 \\
 102 \\
 \hline
 102 \\
 \times 13056 \\
 \hline
 13056
 \end{array}$$

$$\begin{array}{r}
 124 \\
 \times 13 \\
 \hline
 384 \\
 124 \\
 \hline
 .1656
 \end{array}$$

B Cygni.

1.99
1.98

$$\sqrt{2.4} = 20.5$$

$$.428 = 20.5$$

$$41.0$$

$$.076 = 8.8808$$

$$(.116) = \frac{9.8169}{9.0639}$$

$$\sqrt{3.16} = 13.9$$

$$.632 = 13.9$$

$$26.2$$

C Draconis,

$$(.172) = \frac{9.6449}{8.8808}$$

$$9.2359$$

$$122 \cdot 0.00219$$

$$25.4$$

$$10.4$$

$$\frac{.172}{.05} = 3.44$$

$$.00560$$

$$\frac{.172}{.7} = 0.246$$

$$.1204$$

$$\frac{8.31125}{8.8808} = 0.5696$$

$$\frac{30879}{2464} = 12.53$$

$$31125$$

+ Lyrae.

$$\sqrt{9.97} = 3.16$$

$$1.994$$

$$0.6$$

$$1.2$$

$$.076$$

$$3.63 =$$

$$(3.71)$$

$$3.73$$

$$8.3210$$

$$8.8808$$

$$0.5598$$

$$\frac{616}{1232} = 0.5$$

$$\frac{8.30879}{8.8808} = 0.5709$$

$$\frac{1.99219}{1.998} = 0.00181$$

$$122 \cdot 1.8101$$

$$219$$

$$587$$

$$0.351$$

$$110.2$$

$$60 \cdot 110.2$$

$$6606$$

(1.076)

.17

.10

.09

.05

.16

.09

.03

.05

.41

.24

.02

.01

$$\begin{array}{r} 12 \overline{) 1.42} \\ \underline{12} \\ 22 \end{array}$$

.10

.26

.36

.19

.01

.02

.09

.06

.23

.12

$$\begin{array}{r} 142 \\ 12 \\ \hline 1815 \end{array}$$

1.08

$$\begin{array}{r} .85 \\ .14 \\ \hline 340 \\ 85 \\ \hline 1190 \end{array}$$

$$\begin{array}{r} 127.45 \\ 7.2 \\ \hline 25 \end{array} \quad (.62)$$

.08

.29

.02

.02

.41

.97

$$\begin{array}{r} 11 \overline{) 1.38} \\ \underline{11} \\ 28 \end{array} \quad (.13)$$

$$\begin{array}{r} 2.6 \\ 1.4 \\ \hline 12641692 \\ 3 \\ \hline 1974 \\ 21432 \end{array}$$

$$\begin{array}{r} .85 \\ .076 \\ \hline 510 \\ 595 \\ \hline .06460 \end{array}$$

$$\begin{array}{r} 2.92 \\ 1.14 \\ \hline 1168 \\ 292 \\ \hline 4088 \end{array}$$

$$\begin{array}{r} 1.85 \\ .076 \\ \hline 1110 \\ 1295 \\ \hline 14060 \end{array}$$

1.144

$$\begin{array}{r} .076 \\ .92 \\ \hline 6152 \\ \hline .06992 \end{array}$$

49.4

319.4

47.9

$$\begin{array}{r} 1.45 \\ .076 \\ \hline 870 \\ 1015 \\ \hline .11020 \end{array}$$

$$\begin{array}{r} 1.50 \\ .076 \\ \hline 900 \\ 1050 \\ \hline .11400 \end{array}$$

$$\begin{array}{r} 1.57 \\ .14 \\ \hline 628 \\ 127 \\ \hline .2198 \end{array}$$

$$\begin{array}{r} 139.4 \\ 90.5 \\ \hline 48.9 \end{array}$$

$$\begin{array}{r} 49.4 \\ 229.4 \\ \hline 278.8 \end{array}$$

369.2
49.8

$$\begin{array}{r} .076 \\ .35 \\ \hline 340 \\ 228 \\ \hline .02660 \end{array}$$

$$\begin{array}{r} 212 \\ .076 \\ \hline 1272 \\ 1484 \\ \hline 16112 \end{array}$$

$$\begin{array}{r} 1.45 \\ .076 \\ \hline 870 \\ 1015 \\ \hline .11020 \end{array}$$

$$\begin{array}{r} .076 \\ .62 \\ \hline 144 \\ 456 \\ \hline .04704 \end{array}$$

$$\begin{array}{r} .076 \\ .9 \\ \hline .0684 \end{array}$$

$$\begin{array}{r} .076 \\ .35 \\ \hline 340 \\ 228 \\ \hline .02660 \end{array}$$

$$\begin{array}{r} .076 \\ .9 \\ \hline .0684 \end{array}$$

$$\begin{array}{r} .076 \\ .7 \\ \hline .0228 \end{array}$$

(1.14)

$$\begin{array}{r} 45 \\ .14 \\ \hline 650 \\ 650 \\ \hline .0630 \end{array}$$

(174)

$$\begin{array}{r} 172 \\ .14 \\ \hline 688 \\ 172 \\ \hline 2408 \end{array}$$

$$\begin{array}{r} .65 \\ .14 \\ \hline 260 \\ 65 \\ \hline .0910 \end{array}$$

$$\begin{array}{r} .62 \\ .14 \\ \hline 248 \\ 62 \\ \hline .0868 \end{array}$$

$$\begin{array}{r} 1.07 \\ .14 \\ \hline 428 \\ 107 \\ \hline 1498 \end{array}$$

$$\begin{array}{r} 1.15 \\ .14 \\ \hline 460 \\ 115 \\ \hline .1610 \end{array}$$

$$\begin{array}{r} 1.57 \\ .14 \\ \hline 628 \\ 157 \\ \hline .2198 \end{array}$$

$$\begin{array}{r} .41 \\ .22 \\ .12 \\ .06 \\ .09 \\ .24 \\ .09 \\ .15 \\ .16 \end{array}$$

$$\begin{array}{r} .22 \\ \hline 1.76 \end{array}$$

$$\begin{array}{r} .224 \\ .47 \\ \hline 1568 \\ 896 \\ \hline .10528 \end{array}$$

$$\begin{array}{r} .22 \\ .47 \\ \hline 157 \\ 88 \\ \hline .10374 \end{array}$$

$$\begin{array}{r} .224 \\ .47 \\ \hline 1568 \\ 1792 \\ \hline .19488 \end{array}$$

$$\begin{array}{r} .224 \\ .52 \\ \hline 448 \\ 1120 \\ \hline .11648 \end{array}$$

$$\begin{array}{r} .11 \\ .19 \\ .12 \\ .27 \\ .04 \\ .16 \\ .24 \\ .07 \\ .04 \\ .05 \\ .24 \\ .09 \end{array}$$

$$\begin{array}{r} 48 \\ 1.20 \end{array}$$

$$\begin{array}{r} .224 \\ .47 \\ \hline 1568 \end{array}$$

$$\begin{array}{r} .224 \\ .47 \\ \hline 1568 \\ 224 \\ \hline .2688 \end{array}$$

$$\begin{array}{r} .224 \\ .2 \\ \hline .0448 \end{array}$$

$$\begin{array}{r} .224 \\ .52 \\ \hline 448 \\ 672 \\ \hline .07168 \end{array}$$

$$\begin{array}{r} 1.07 \\ .224 \\ .42 \\ \hline 448 \\ 896 \\ \hline .09408 \end{array}$$

$$\begin{array}{r} 1.07 \\ .224 \\ \hline 428 \\ 214 \\ \hline .23968 \end{array}$$

$$\begin{array}{r} .224 \\ .17 \\ \hline 1568 \\ 224 \\ \hline .03808 \end{array}$$

$$\begin{array}{r} .224 \\ .52 \\ \hline 448 \\ 448 \\ \hline .04928 \end{array}$$

(116)

$$\begin{array}{r}
 .348 \\
 .08 \\
 .116 \\
 \hline
 .232 \\
 \hline
 .232 \\
 \hline
 .2436
 \end{array}$$

$$\begin{array}{r}
 .116 \\
 .6 \\
 \hline
 .0696
 \end{array}$$

$$\begin{array}{r}
 .116 \\
 .12 \\
 \hline
 .232 \\
 \hline
 .116 \\
 \hline
 .1392
 \end{array}$$

$$\begin{array}{r}
 .116 \\
 .13 \\
 \hline
 .248 \\
 \hline
 .116 \\
 \hline
 .1508
 \end{array}$$

$$\begin{array}{r}
 .116 \\
 .67 \\
 \hline
 .812 \\
 \hline
 .696 \\
 \hline
 .67772
 \end{array}$$

$$\begin{array}{r}
 .116 \\
 .15 \\
 \hline
 .580 \\
 \hline
 .116 \\
 \hline
 .01740
 \end{array}$$

$$\begin{array}{r}
 .175 \\
 .116 \\
 \hline
 .1050 \\
 \hline
 .175 \\
 \hline
 .175 \\
 \hline
 .20300
 \end{array}$$

$$\begin{array}{r}
 .102 \\
 .116 \\
 \hline
 .612 \\
 \hline
 .102 \\
 \hline
 .102 \\
 \hline
 .11832
 \end{array}$$

$$\begin{array}{r}
 .116 \\
 .07 \\
 \hline
 .00812
 \end{array}$$

$$\begin{array}{r}
 .215 \\
 .116 \\
 \hline
 .1290 \\
 \hline
 .215 \\
 \hline
 .215 \\
 \hline
 .24940
 \end{array}$$

$$\begin{array}{r}
 .116 \\
 .22 \\
 \hline
 .232 \\
 \hline
 .232 \\
 \hline
 .02552
 \end{array}$$

$$\begin{array}{r}
 .08 \\
 .24 \\
 .07 \\
 .14 \\
 .15 \\
 .08 \\
 .02 \\
 .03 \\
 .20 \\
 .12 \\
 .01 \\
 .25
 \end{array}$$

$$\begin{array}{r}
 12 \overline{) 1.39612} \\
 \underline{12} \\
 19
 \end{array}$$

$$\begin{array}{r}
 .37 \\
 .74 \\
 .74 \\
 .00 \\
 .00 \\
 .93 \\
 .93 \\
 .130 \\
 .19 \\
 .56 \\
 .93 \\
 .93
 \end{array}$$

$$\begin{array}{r}
 12 \overline{) 7.6262} \\
 \underline{72} \\
 42 \\
 \underline{36} \\
 6
 \end{array}$$

20

(172)

$$\begin{array}{r} .172 \\ .7 \\ \hline .1204 \end{array}$$

$$\begin{array}{r} .172 \\ 1.10 \\ \hline 172 \\ 172 \\ \hline .1892 \end{array}$$

$$\begin{array}{r} .172 \\ .75 \\ \hline 860 \\ 1204 \\ \hline .12900 \end{array}$$

$$\begin{array}{r} .172 \\ .55 \\ \hline 860 \\ 860 \\ \hline .09460 \\ .172 \\ 2.02 \\ \hline 344 \\ 344 \\ \hline .34744 \end{array}$$

$$\begin{array}{r} 1.45 \\ .172 \\ \hline 290 \\ 1015 \\ 145 \\ \hline 24940 \end{array}$$

$$\begin{array}{r} .12 \\ .13 \\ .19 \\ .09 \\ .00 \\ .17 \\ .15 \\ .12 \\ .12 \\ .25 \\ \hline .134 \end{array}$$

$$\begin{array}{r} 2.65 \\ 12.0 \\ 12.0 \\ 12.0 \\ 12.1 \end{array}$$

$$12.0$$

$$\begin{array}{r} .172 \\ .62 \\ \hline 00348 \end{array}$$

$$.172$$

$$\begin{array}{r} .62 \\ 344 \\ \hline 1032 \\ 11664 \end{array}$$

$$\begin{array}{r} .172 \\ .55 \\ \hline 860 \\ 1376 \\ \hline .14620 \end{array}$$

$$\begin{array}{r} .172 \\ .67 \\ \hline 1202 \\ 1032 \\ \hline .11522 \end{array}$$

22^{1.35}₆ 1.25

May. 0 to 4.9

	no. +	no. -	Total no.	Sum +	Sum -	Total
0 to 2.9	5	0	5	¹¹³ 86	0	¹¹³ 86
3 to 4.9	3	3	6	58	94	157
5 to 9.9	12					
10 to 19.9						
20 to 39.9						
40 to 59.9						
60						

1.75
88May. 0 to 4.9
~~5.0 to 5.9~~

	no. +	no. -	Total no.	Sum +	Sum -	Total	
0 to 2.9	2	0	2	.48	0	.48	.24
3 to 4.9	4	0	4	.83	0	.83	.21
5 to 9.9	1	0	1	.26	0	.26	.26
10 to 19.9	1	1	1		11	11	.11
20 " 39.9	0	1	1	0	.77	.77	.77
40 " 59.9							
60	1	0	1	.14	0	.14	.14

May: 5.0 to 5.9							
0 to 2.9	3	1	4	1.70	.23	1.93	
3 " 4.9	0	2	2	0	1.0	1.0	
5 " 9.9	2	2	4	.09	.34	.43	
10 " 19.9	7	2	4	1.35	1.28	2.63	
20 " 39.9	4	1	5	.73	.04	.77	
40 " 59.9	0	2	2	1.0	.45	.45	
60 —	1	0	1	.11	0	.11	

100
3/5

May. 6.0 to 6.9

	no +.	no. -	Total no.	Sum +.	Sum -	Total.
0 to 2.9	5	0	5	2.98	0	2.98
3 to 4.9	4	1	5	2.50	.06	2.56
5 to 9.9	3	1	4	.81	.09	.90
10 to 19.9	2	0	2	.24	0	.24
20 to 39.9	1	2	3	.15	.43	.58
40 to 59.9	3	1	4	1.13	.21	1.34
60 -	0	2	2	0	.77	.77

May. 7.0 to 7.9

4	0 to 2.9	5	0	5	2.78	0	2.78
1	3 to 4.9	6	0	6	2.69	0	2.69
6	5 to 9.9	1	1	2	.10	.25	.35
1	10 to 19.9	4	2	6	2.04	.15	2.19
7	20 to 39.9	2	4	6	.84	.55	1.39
	40 to 59.9	1	0	1	.22		.22
4	60 -	1	4	5	2.88	2.78	3.06

May. 8.0 to 8.9

	no. +.	no. -.	Total no.	Sum +.	Sum -.	Total.
0 to 2.9	0	0	0	0	0	0
3.0 to 4.9	3	0	3	1.87	0	1.87
5.0 " 9.9	5	3	8	3.77	4.1	4.17
10.0 " 19.9	6	1	7	4.61	3.5	5.02
20.0 " 39.9	3	5	8	2.41	1.91	2.76
40.0 " 59.9	1	0	1	.36	.25	.61
60.0 " —	2	1	3	0	.60	.60
	1	1	2	1.61	.60	2.21

May, 9.0 to 9.9

	no. +.	no. -.	Total no.	Sum +.	Sum -.	Total.
0 to 2.9	1	0	1	.21	0	.21
3.0 " 4.9	2	0	2	1.32	0	1.32
5.0 " 9.9	6	1	7	4.11	.54	4.65
10.0 " 19.9	2	1	3	1.72	.23	1.95
20.0 " 39.9	5	5	10	1.65	2.14	3.79
40.0 " 59.9	1	0	1	.17	0	.17
60.0 " —	3	1	4	.49	1.42	1.91

$$\begin{array}{r}
 166 \\
 83 \\
 \hline
 249 \\
 461 \\
 \hline
 3.78
 \end{array}$$

$$D \approx 3A.1 \quad \left(\frac{0.0 (I - 0)}{I} \right)$$

May, 10.0 to 10.9

	ho +.	ho. -.	Total. no.	Sum +.	Sum. -	Total.
0 to 2.9						
3.0 " 4.9						
5.0 " 9.9	3	0	3	2.27	0	2.27
10.0 " 19.9	5	0	5	4.72	0	4.72
20.0 " 39.9	2	1	3	1.63	.99	2.62
40.0 " 59.9	2	1	3	1.59	.47	2.06
60.0 " —						

May, 11.0 to 12.0

0 to 2.9						
3.0 " 4.9						
5.0 " 9.9						
10.0 " 19.9	0	1	1	0	.17	.17
20.0 " 39.9	3	0	3	2.55	0	2.55
40.0 " 59.9						
60.0 " —	3	0	3	1.95	0	1.95

$$\begin{array}{r} 11 \overline{) 150.14} \\ \underline{11} \\ 40 \end{array}$$

$$\begin{array}{r} 1.09 \\ .218 \end{array}$$

$$31.2$$

$$8.8808$$

$$62.4$$

$$\begin{array}{r} 9.9475 \\ \hline \end{array}$$

$$.0858$$

$$8.9333$$

$$\begin{array}{r} 1.56 \\ .312 \end{array}$$

$$\begin{array}{r} 71.17 \\ 1.434 \end{array}$$

$$\cancel{34.9}$$

$$\cancel{69.8}$$

$$.0810$$

$$8.8808$$

$$\begin{array}{r} 9.9724 \\ \hline \end{array}$$

$$8.9084$$

$$\begin{array}{r} 26.0 \\ 521 \end{array}$$

$$\begin{array}{r} +.28 \\ +.44 \\ \hline +.72 \\ +.72 \\ \hline 1.44 \\ 4 \overline{) 1.44} \\ \underline{4} \\ 0 \end{array}$$

$$-19$$

$$\div 19$$

$$38$$

$$8.8808$$

$$\begin{array}{r} 9.8965 \\ \hline \end{array}$$

$$8.9843$$

$$\begin{array}{r} .0964 \\ \hline .1928 \end{array}$$

$$1.04, 0.89$$

$$\begin{array}{r} .4 \\ \hline .416 \end{array}$$

$$434$$

$$2.1$$

$$4.2$$

$$1.04$$

$$8.8808$$

$$\begin{array}{r} 8.8647 \\ \hline \end{array}$$

$$0.0161$$

$$\begin{array}{r} 12 \overline{) 395.3} \\ \underline{36} \\ 35 \end{array}$$

$$\begin{array}{r} 2.63 \\ .526 \end{array}$$

$$.066$$

$$16.6$$

$$33.2$$

$$.139$$

$$\begin{array}{r} .139 \\ \hline .1112 \end{array}$$

$$8.8808$$

$$\begin{array}{r} 9.7384 \\ \hline \end{array}$$

$$9.1424$$

E Booti
B Lyrae
39 Draconis,

14.46
3.6 ~~14~~

(162)

29

$$\begin{array}{r}
 5/9.97 \\
 \underline{1.994} \\
 219 \\
 \hline
 1259.00181.0 (.1
 \end{array}$$

$$0.34.9$$

$$1.9.8$$

$$8.29621$$

$$\begin{array}{r}
 8.30255 \\
 \underline{499} \\
 8.30754 \\
 \underline{8.8805} \\
 0.5733
 \end{array}$$

$$\begin{array}{r}
 624 \\
 \underline{.8} \\
 499.2
 \end{array}$$

cc

Kleine astronomische Ephemeriden,
für das Jahr. 1833

31

On the variability of light of Algol according
to the latest observations, taken from new tables of Algol.
By Prof. Wurm.

(Page 94)

Abstract.

C. L. Harding &
G. Wiese
Göttingen 1832

The small Ephemeris for 1832 contains a series of observations
of Algol at its minimum from 1783 to 1825 assuming the
errors according ~~according~~ to the tables computed by me
in the to my computed table of elements in the Berlin
Jahrbuch of 1822. For a long time it has been my wish
to test ^{the accuracy of} these elements by new and more ^{2nd} difficult ob-
servations. This wish is now fulfilled through Prof.
Harding's communicating observations of 3^d Nov. 1817,
27th Dec. 1831 + 5th Feb. 1832, so that a ~~comp~~
^{range} series of about 50 yrs. is obtained.

Prof. H. also finds it difficult to accurately
observe the minimum of Algol, — also that Algol
has not ~~also~~ the same degree of does not always
reach the same degree of faintness, but that it
sometimes is ~~far~~ fainter than ρ Persei, — at another
time of very nearly the same ^{2nd} light.

The ~~times of~~ The time of minimum Prof. H. has deter-
mined nearly always by 30 different phases, and on
5th Feb. 1832 by a new photometer.

In the use of results Wurm takes the mean
of times between two phases for which the same or
very nearly the same degree of faintness was marked.
From four or five such determinations the mean
is again taken, so that he obtains for the mean
of greatest faintness 1817 3 Nov. 8^h 58^m 15.⁸⁷
1831 24 Dec. 7^h 44^m 45.¹ + 1832 5 Feb. 1^h 22^m 38.⁵
mean time of Göttingen.

Found from the light equation which by the first observation amounts to $0' 11''.5$, by the second to $2' 3''.1$, by the third to $6' 56''.4$, and with the ~~mean~~ ^{diff.} ~~reduced~~ ^{mean} diff. of longitude reduced to mean Paris time, the observations become

1817	3 Nov.	8 ^h 27' 39".2	Error of table	- 2' 27".2
1831	27 Dec.	7 11 38.6	+ 6	30.4
1832	5 Feb.	10 45 17.3	- 1	29.3

I again remark that I myself also observed the minimum of Algol on 3^d Nov. 1817 and found the error of the table to be + 2' 1".0

I give the Göttingen observation the preference over my own since by this the time is scarcely affected.

In order now to submit the principal element of the next following table, the magnitude of the light period of Algol to an accurate trial, I compare the two latest Göttingen observations of Dec. 27. 1831 + Feb. 5. 1832 with three of the oldest known to me, namely with two observations of Goodricke on the 31st January and 6th Feb. 1783, and with an observation of 3^d May 1783 by Sir William Herschel. The first of the three old observations of 31st

distant

Jan 1783 is from that of 27 Dec. 1831 ~~is~~
 about 6229, and from that of 5th Feb.
 1832 about 6243 periods of Algol.
 @: between the observation of 3^d May, 1783
 + 27th Dec. 1831 lie 6197, and to 5th Feb.
 1832, 6211 periods.

In the results here compared together
 the ~~mark~~ sign + upon one indicates an
 increase of the tabular period, ~~corresponding~~
 up to the ^{two} observations compared with each other,
 (which has been taken as 2^d 20["] 48' 58.5")
 corresponding to the two observations compared
 with each other, @! the mark - indicates
 a decrease of tabular period.

	1831 Dec. 27.	1832. Feb. 5,
1773 Jan 31.	+0".05312	+0.02415
" Feb. 6.	-0.12284	-0.05015
" May 3.	-0.01394	+0.06332

Sum of the positive alterations of the tab-
 ular period +0".146 the negative -0".083,
 so that only one remainder of +0".061
 is left and accordingly the one from six
 comparisons of two observations with each other
 changes the period of the table not even once
 as much as the ninth part of a second.

Even by the assumption of moderately strong
 errors of observation, yet the period will not
~~turn out~~ become especially incorrect.

For example, one of the observations comp-

compared was about $+8'$ in error, the other $-7'$, so by the combined error of $15'$ the observation was found only $9.00''$, or not more than $0''.14$ doubtful.

Now over the Göttingen observation of Nov. 3. 1817, when it is compared with that of the 31st Jan. 1783, ~~was~~ running back about 4427 periods, gives an increase of tabular period of $+0''.04715$.

After the preceding investigations I ~~rejoice~~^{now} believe ~~with more~~ more strongly than I hitherto dared to, 1st that in the last 50 years the light period of algal has not ~~varied~~ markedly varied, and 2^d that the magnitude of this period is determined perhaps to a half second with ~~re~~ certainty.

The new tables of algal which I give at the end, I computed many years since for my own use. ~~according to~~ corresponding to the elements I defined in the Astron. ~~Beob.~~ Jahrb. 1822 upon which they are based.

For each minimum light phase computed from these tables, in order for it to apparently vary, a light equation must be added, for which the Astr. Jahrb. for 1804 contains a small table,

For the completeness of this table I have accordingly added Table V. in which even this equation has been computed ~~again~~ anew, and put in a somewhat ~~new~~ different and partly bettered form.

However the difference, by comparison with the ~~old~~ old table in the Astron. Jahrb., 1804, S. 152. amounts to only a very few seconds.

Tab. 1.

~~Expts~~ for the ~~mean~~ middle point of greatest faintness.

In mean Paris time.

1780 B	2 ^d	14 ^h	54 ^m	40 ^s .5
1784 B	1	2	22	57.0
1800 C	1	17	54	0.0
1804 B	0	5	22	16.5
1808 B	1	13	39	31.5
1812 B	0	1	7	48.0
1816 B	1	9	25	3.0
1820 B	2	17	42	18.0
1824 B	1	15	10	34.5
1828 B	2	13	27	49.5
1832 B	1	0	56	6.0
1836 B	2	9	13	21.0

~~From Table 4.~~

OVER,

Table TV,
Algol's period.

$$\begin{array}{l} 1 \quad 2^d \quad 20^h \quad 48^m \quad 58.5^s \quad \left\{ \begin{array}{l} 2.8673 \\ 2.8673425 \end{array} \right. \\ 100 \quad 216^d \quad 17^h \quad 37^m \quad 30.0^s \end{array}$$

$$\begin{array}{r} 17^h = .7083 \\ 37^m = .02595 \\ \hline 2.8673425 \end{array}$$

$$20^h = .8333$$

$$48^m = .0333$$

$$\begin{array}{r} 58.5 = .0007 \\ \hline 2.8673 \end{array}$$

$$\begin{array}{r} 256 \\ 263 \\ \hline .0519 \\ .02595 \end{array}$$

$$\begin{array}{r} 86400 / 58.5000 \quad (.0007) \\ \hline 518400 \\ \hline 666000 \end{array}$$

38

Mag B.
Repeated stars taken but once
(β Lyrae + δ Cephei excluded)

to 4.9	5.0 to 5.9	6.0 to 6.9	7.0 to 7.9
+26	+10 - .85	+133	+29 - .25
+50	+14		+14
	+26		+34
	+50		
	+11		
+76	+24 - .85	+133	+77 - .25
	+1.19	+52 - .21	+27 - .05
	+01	+55	+83 - .07
		+52	+55 - .29
		+30	+07 - .16
		+14	+22 - .12
		+12	+49
			+65
	+1.20	+1.60 - .21	+3.08 - .64
+18 - .11	+44 - .23	+15 - .23	+76 - .03
+21 - .11	+07 - .43	+88	+75 - .72
+03	+08	+26	+10 - .01
		+20	+53 - 1.89
+42 - .11	+59 - .66	+1.49 - .23	+2.14 - 2.65

and then with their mean,

8.0 to 8.9	9.0 to 9.9	10.0 to 10.9	11.0 to 12.0
+47 -0.7	+40 -82	+96 -99	+04 -71 x
+39 -.86	+43 -1.42	+1.04	
-24	+38 -23	+33	
	+04	+76	
	+21		
<hr/> +86 -1.17	<hr/> +1.03 -2.47	<hr/> +2.05 -99	<hr/> +04 -71
<hr/>			
+58 -12	+48 -54	+1.43	+67 -17
+1.58 -22	+87	+86	+89
+83 -35	+34	+1.08	
+21	+03		
+68			
+78			
+98			
<hr/> +5.43 -69	<hr/> +1.72 -54	<hr/> +3.37	<hr/> +1.56 -17
<hr/>			
+1.61 -60	+1.23 -74	+86	+55
	+19		
	+82		
	+01		
	+17		
	+1.23		
	+50		
<hr/> +1.61 -60	<hr/> +4.15 -74	<hr/> +86	<hr/> +55

40

mag. 13.

0 to 4.9	5.0 to 5.9	6.0 to 6.9	7.0 to 7.9
-27 +14	+1.34 + .11 +.42 +07	-29 -09 -01 +60 +74 +44 +28	-42 -20 -06 -19 +28
<u>+41</u>	<u>+1.94</u>	<u>-72</u> <u>+2.65</u>	<u>+1.16</u> <u>-.68</u>
+12 -77 +01	-04 +10 -05 +03 -14	-19 -35 -09	+58 -11 -10
<u>+12</u> <u>-77</u> <u>+01</u>	<u>-24</u> <u>-.04</u>	<u>+13</u> <u>-44</u>	<u>+58</u> <u>-21</u>
+46 ~ +.24	-85 +1.33	+77	-25
~ +1.20	~ +1.60	-21 +3.08	-64
+42 -11 +59	-66 +1.49	-23 +2.14	-2.65
+41 ~ +1.94	-72 +3.37	-68 +1.16	~
+12 -77 +.01	-24 +.13	-44 +0.58	-.21
<u>+1.71</u> <u>-88</u> <u>+3.98</u>	<u>-244</u> <u>+7.92</u>	<u>-194</u> <u>+7.73</u>	<u>-3.75</u>
<u>44.75</u> <u>+54.03</u>	<u>2.27</u> <u>+7.20</u>	<u>-1.56</u>	
<u>-18.47</u> <u>-17.94</u>			
(8) (2) (12)	(9) (16)	(7) (18)	(11)

Mag. B.

41

8.0 to 8.9

9.0 to 9.9

10.0 to 10.9

11.0 to 12.0

-34

+59

-21

+49

-47

+1.24

-02

+27

+63

-23

+1.36

-59+86-21+2.48-47+1.24

+36

-30

+43

-19

+27

+1.11

+2.38

-17

+31

-18

+1.18

+50

+17

+32

+95

+2.13-47+91-37+1.45+1.11

+86

-1.17

+1.03

-2.47

+2.05

-99

+04

-11

+5.43

-69

+1.72

-54

+3.37

+1.56

-17

+1.61

-60

+4.15

-74

+86

+55

-59

+86

-21

+2.48

-47

+1.24

+2.13-47+91-37+1.45

+1.11

+10.03100-3.52-4.33+10.21-1.46+4.50-17

(13)

(12)

(20)

(8)

(12)

(2)

(6)

(1)

Mag. B.

0 to 4.9	(-06-16)
5.0 " 5.9	(-43-43) (-04-05)
6.0 " 6.9	(+55+50) (+89+86)
7.0 " 7.9	(+44+72) (+05-09) (+64+71)
8.0 " 8.9	(+85+81) (+50+23)
9.0 " 9.9	(+43+33)
10.0 " 10.9	(+88+104)
11.0 " 12.0	(+78-71)

Diff. Mag.

0 to 9.9	
1 to 1.99	(-06-16)
2 " 2.99	(-04-05) (+89+86) (+64+71)
3 " 3.99	(-05-09) (+50+23) (+44+72)
4 " 4.99	(+55+50)
5 " 5.99	
6 " 6.99	(+88+104) (+43+33) (+25+11)
7 " 7.99	
9 " ~	(+78-71)

0 to 4.9	-11.
5.0 " 5.9	-43. -04.
6.0 " 6.9	+52. +88.
7.0 " 7.9	+58. -07. +68.
8.0 " 8.9	+83. +36.
9.0 " 9.9	+38.
10.0 " 10.9	+96.
11.0 " 12.0	+04.

0 to 9.9	
1 " 1.99	-11.
2 " 2.99	-04. -43. +88. +68.
3 " 3.99	-07. +36. +58.
4 " 4.99	+52.
5 " 5.99	
6 " 6.99	+96. +38. +83.
7 " 7.99	
9 " ~	+04.

Distances.

0 to 2.9

3.0 " 4.9

5.0 " 9.9

10.0 " 19.9

20.0 " 39.9

40.0 " 59.9

60 ~

1813

9.06

Diff. mag.

$$9.06 (+72 - 71) + 0.4.$$

$$6.54 (+88 + 104) + 9.6.$$

$$6.62 (+43 + 33) + 3.8.$$

$$3.24 (-05 - 09) - 0.4.$$

$$6.24 (+85 + 81) + 8.3.$$

$$4.38 (+55 + 50) + 5.2.$$

$$2.63 (-43 - 43) - 4.3.$$

$$1.61 (-06 - 16) - 1.1.$$

$$2.42 (+89 + 86) + 8.8.$$

$$2.62 (+64 + 71) + 6.8.$$

$$3.94 (+50 + 23) + 3.6.$$

$$2.14 (-04 - 05) - 0.4.$$

$$3.02 (+44 + 72) + 5.8.$$

In this table the mean is taken
 Struve distances are also taken instead
 Distances

0 to 2.9	3.0 to 4.9	5.0 to 9.9	10.0 to 19.9
+34.	+50.	+33. -07.	(+38). -85.
+1.33.	+14.	+26. -25.	+76. -23.
+21.	+39.	+47.	
		+04.	
<u>+1.88</u>	<u>+1.03</u>	<u>+1.10</u>	<u>+1.14</u>
		-32	-1.08
<hr/>			
+1.19	+27	+87	-54
+12	+30	+52	-12
	+92	+58	-22
		+1.58	
		(+83)	
		+01	
		+1.08	
			+34
			+1.43
			+1.14
			+83
			+68
			+78
			+07
			+49
			+86
			+65
<u>+1.31</u>	<u>+1.55</u>	<u>+5.47</u>	<u>+6.27</u>
		-88	-1.68
<hr/>			
+75	+18	+1.23	(-43)
+21	+76	+1.10	(-11)
+44	+82	+86	-01
+53	+50	+1.23	
+03		+08	
(+88)		+26	
+20			
<u>+3.04</u>	<u>+2.26</u>	<u>+3.76</u>	<u>-55</u>

on repeated stars and counted once,
of binary distances. Distances,

45

[illegible]

In this table the mean
Distance, (β Lyrae)

0 to 2.9	3.0 to 4.9		5.0 to 9.9	10.0 to 19.9
+27	+86	-06	-29	+49
+45	+60	-09	-05	+1.34
+07	+20	-01		
	(+68)			
	+74			
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
+79	+3.08	-16	-34	+1.83
<hr/>				
(+58)	+50		+43 -09	+01
	+12		+32	+10
			+31	+95
			+03	+1.18
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
+58	+62		+1.09 -09	+2.24
<hr/>				
+1.88	+1.03		+1.10 -32	+6.14
+1.31	+1.55		+5.47 -88	+6.27
+3.04	+2.26		+3.76	
+79	+3.08	-16	-34	+1.83
+58	+62		+1.09 -09	+2.24
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
+7.60	+8.54	-16	+11.42	+11.48
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
54.75 - 72 = 54.03				
18.47 - 55 = 17.92				
	71.95			
(16)	(1)	(17)	(3)	(21)
			(8)	(18)
				(8)

is taken on repeated stars & counted once,
 5 Cephei excluded)

47

Distance,

20.0 to 39.9		40.0 to 59.9		60.0 —	
+59	-20	+63	-02	+11	-42
+1.36	-34	+44	-23	+27	
+42	-21	+28	-47	+14	
			-28	+124	
			-19	+28	
				+44	
<u>+2.37</u>	<u>-75</u>	<u>+135</u>	<u>-119</u>	<u>+204</u>	<u>-42</u>
		+63	-1.00		
(+36) -11		+17	-19		-10
+1.11	-77		-17		-35
+27	(-04)				
	-30				
	-17				
	-19				
	-18				
<u>+1.74</u>	<u>-1.76</u>	<u>+17</u>	<u>-36</u>		<u>-45</u>
+93 -2.91		+96	—	+04	-1.42
+1.92	-.41	+74	-21	+70	-.07
+95	-1.00	+63	-1.00	+1.80	-3.21
+2.37	-.75	+1.35	-1.19	+2.04	-.42
+1.74	-1.76	+17	-36		-.45
<u>+7.91 (60)</u>	<u>-6.83</u>	<u>+3.22</u>	<u>-1.76</u>	<u>+4.58</u>	<u>-5.57</u>
		2.50	-1.21		
(18)	(19)	⁵ (4)	⁵ (8)	(10)	(8)

Diff. Mag.
Corrected for repeated stars.

0 to .99	1 to 1.99	2 to 2.99	3 to 3.99
+1.00	+1.14	+2.35 - .15	+1.77 - .32
+1.46	+1.79 - .43	+6.06 - .63	-1.02
+1.00 - .23	+1.21 - .14	+1.67 - .139	+2.81
+1.78 - .44	+1.02 - .54	+3.36 - .42	+ .99
+ .23 - .77	+ .03 - .09	+1.01 - .21	+1.11
+5.47 - 1.44	+4.19 - 1.20	+14.52 - 3.48	+5.78 - 2.75
		.17	.72
		-3.33	+5.06
			-2.37

$$\begin{array}{r}
 +54.75 \\
 -18.47 \\
 \hline
 73.22
 \end{array}$$

$$\begin{array}{r}
 -17 \quad \left\{ \begin{array}{l} +.44 \\ +28 \\ +72 \end{array} \right. \quad \left\{ \begin{array}{l} -.19 \\ -19 \\ -38 \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 3.50 \\
 1.7 \\
 \hline
 -1.33
 \end{array}$$

Diff. mag.
Corrected for repeated stars.

4 to 4.99	5 to 5.99	6 to 6.99	7 to 8.99	9.00 —
+25 -47	+1.09 -4.09	+1.34 —	— —	+0.04 —
+3.95 —	+1.89 —	+3.14 —	— -17	+6.7 —
+1.73 -3.23	+3.20 —	+1.19 —	— —	— —
+4.9 -2.25	+1.99 -3.4	+5.9 -21	+1.24 —	— -47
+1.43 -19	+1.45 -18	+1.11 —	— —	— —
+7.85 -4.14	+8.62 -4.61	+6.37 -21	+1.24 -17	+71 -47

0 to 2.9		3.0 to 4.9		<u>Distances</u> (after applying)		10.0 to 19.9	
+93	-06	+20	-26	+06	-37	+02	-1.05
	-29		-01	+17	-55	+16	-.53
					-17		
					-36		
<hr/>		<hr/>		<hr/>		<hr/>	
+93	-.35	+20	-.27	+23	-1.45	+24	-1.58
<hr/>							
+89X	-28X	+58X	-13X	+37X	-94X	+73X	-.06X
			-10X	+22X	-42X	+63X	-.36X
			+58		-52X	+48X	-.77X
			+1.28X		-19X	+48X	-.16X
			+53X			+19X	-.23X
			+48X			+26X	-.65X
			+28X			+35X	
<hr/>		<hr/>		<hr/>		<hr/>	
+89	-28	+58	-.23	+3.16	-2.07	+3.12	-2.23
<hr/>							
+35	-53	+36	(60) -12	+23	-20		-53
+14	-09	+32		+36	-32		-21
+13	-27			+83	-14		-31
+48	-20						
<hr/>		<hr/>		<hr/>		<hr/>	
+1.10	-1.09	+68	-12	+2.02	-.66		-1.05

20.0 to 39.9

40.0 to 59.9

60.0 —

+1.20	-0.96	+0.76
-------	-------	-------

 $+10 \quad -1.12$ $+04 \quad - .34$
$$+29 \quad -1.39$$
$$+4.63 \quad -3.81 \quad +.76$$

7.76

-26

-1,42

- 1.68

$$+1.2\% \quad -0.39\% \quad +5.2\% \quad -2.1\% \quad +0.3\%$$
$$+39 \times \quad -22 \times \quad +22 \times \quad +03 \times$$
~~12/19~~ $+ 35x$

+92	-61	+74	-21	+43
-----	-----	-----	-----	-----

-0.2

- 33

- 29

-13

- 02

109

- 94

1/6

$$-1.95$$

709

+1.71

-62

$$-\sqrt{0}$$

-1.79

$$+ 1.80$$

-2.91

Distance.

to 2.9		3.0 to 4.9		5.0 to 9.9		10.0 to 19.9	
+0.5	-0.3	+4.6	-4.6	-4.9	+1.14	-0.1	
	-2.3	+2.0	-3.9	-2.5			
		+2.8	-3.1				
		+3.4	-2.0				
<hr/>		<hr/>		<hr/>		<hr/>	
+0.5	-2.6	+1.28	-1.36	-7.4	+1.14	-0.1	
<hr/>		<hr/>		<hr/>		<hr/>	
+1.8		+1.0	-1.8	+0.3	-0.9	+6.5	-1.9
				+0.2	-3.9	+4.8	-1.0
					-2.7		
<hr/>		<hr/>		<hr/>		<hr/>	
+1.8		+1.0	-1.8	+0.5	-1.45	+1.13	-0.29
<hr/>		<hr/>		<hr/>		<hr/>	
+9.3	-3.5	+2.0	-2.7	+2.3	-1.45	+2.4	-1.58
+8.9	-2.8	+5.8	-2.3	+3.16	-2.07	+3.12	-2.23
+11.0	-1.09	+6.8(00)	-1.2	+2.02	-.66		-1.05
+0.5	-2.6	+1.28	-1.36		-1.44	+1.14	-0.1
+1.8		+1.0	-1.8	+0.5	-1.45	+1.13	-0.29
+3.15	-1.98	+2.84(00)	-2.16	+5.46	-5.67	+5.63	-5.16
26.86	(8)	(9)	(9)	(10)	(13)	(16)	(12)
32.25	(8)	(9)	(9)	(10)	(13)	(16)	(14)
159.11							

Distance

20.0 to 39.9		40.0 to 59.9		60.0 —	
+29	-30	+23	-02	+31	-.32
+76	-54	114	-23	+27	-12
+42	-51	124	-87	+34	
			-18	+94	
			19		
<u>+147</u>	<u>-1.35</u>	<u>+23</u>	<u>-1.30</u>	<u>+1.86</u>	<u>-.44</u>
<hr/>					
+26	-21	+07		(00)	
+61	-84				-25
	-04				
	-40				
	-27				
	-49				
	-13				
	-38				
<u>+87</u>	<u>-2.79</u>	<u>+07</u>			<u>-25</u>
<hr/>					
+63	-3.51	+76			-1.68
+92	-.61	+74	-21	+43	
(00)	-1.95			+1.80	-2.91
+1.47	-1.35	+23	-1.30	+1.86	-.44
+87	-2.79	+07			(00) -1.25
+3.89 (00)	-10.51	+1.80	-1.51	+4.09 (00)	-5.28
(12)	(25)	(5)	(5)	(9)	(8)

to 4.9		5.0 to 5.9		Mag. 13. (after correcting) 6.0 to 6.9		7.0 to 7.9	
+06		+10	-1.05	+93		+29	-.55
+20		+04					-26
							-.06
<u>+26</u>	-	<u>+14</u>	<u>-1.05</u>	<u>+93</u>	-	<u>+29</u>	<u>-.87</u>
<hr/>							
		+89	-19	+22	-10	+03	-.39
				+52	-16	+63	-.36
					-21	+35	-.13
					-28	+22	-.22
						+19	-.23
						+35	
		<u>+89</u>	<u>-19</u>	<u>+44</u>	<u>-.45</u>	<u>+1.44</u>	<u>-1.33</u>
<hr/>							
-12	+14	-53	+48	-33	+36		-20
-09		-13		-05	+35		-13
-27		-53		-14	+13		-62
-21		-32		-20			-31
							-1.79
<u>-.69</u>	<u>+14</u>	<u>-1.51</u>	<u>+48</u>	<u>-.42</u>	<u>+84</u>		<u>-3.05</u>

$(\Sigma - 0)$
8.0 to 8.9

Mag. B.
9.0 to 9.9

10.0 to 10.9

11.0 to 12.0

+17	-.37	+20	-1.12	+76	-.17		-.26
	-.96	+08	-.36	+16	-1.39		
	-.34		-1.42				
	-.01		-.29				
			-.53				
<u>+17</u>	<u>-1.68</u>	<u>+28</u>	<u>-3.72</u>	<u>+92</u>	<u>-1.56</u>	<u>-</u>	<u>-26</u>

+28	-42	+18	-.06	+73		+37	-.77
+1.28	-.52	+37	-.94	+26		+39	
+53	-.65	+03		+48			
+48							
+48							
+58							
<u>+3.63</u>	<u>-1.59</u>	<u>+58</u>	<u>-1.00</u>	<u>+1.47</u>	<u>-</u>	<u>+76</u>	<u>-.77</u>

+1.71(00)	-.50	+1.23(00)	-.29	+36			-.05
		+09	-.03				
		+32	-.94				
		+83					
<u>+1.71(00)</u>	<u>-.50</u>	<u>+2.07(00)</u>	<u>-1.26</u>	<u>+36</u>	<u>-</u>	<u>-</u>	<u>-.05</u>

Mag. B. [after correcting]

to 4.9	5.0 to 5.9	6.0 to 6.9	7.0 to 7.9
+34 -03	+1.14 -49	+05 -32	+28 -20
	+31 -39	+46 -30	-12
	+42 -31	+20 -46	
	-25 +34		
	-23		
	-18		
<u>+34</u> <u>-03</u>	<u>+1.87</u>	<u>+1.05</u>	<u>+28</u>
	<u>-1.85</u>	<u>-1.08</u>	<u>-32</u>

-87x	-04x	-25x + 18x	(00)x - 21x
-18x	-19x	-10x	
		-39x	
		-27x	
<u>-1.05</u>	<u>-.23</u>	<u>-1.01</u>	<u>+1.8</u>
			(00)
			<u>-.21</u>

+26	+14	-1.05	+93	+29	-.87
	+89	-.19	+74	-75	+1.77
	-69 +1.14	-1.51	+48	-72	+84
+34 -03	+1.87	-1.85	+1.05	-1.08	+28
	-1.05	-.23		-1.01	+1.8
<u>+60</u>	<u>-1.77</u>	<u>+3.04</u>	<u>-4.83</u>	<u>+3.20</u>	<u>-3.56</u>
					<u>+3.36</u>
					(00)
					(00)
					<u>-5.78</u>
(3)	(7)	(4)	(14)	(8)	(15)
					(12)
					(16)

$$\begin{array}{r}
 +26.86 \\
 -32.25 \\
 \hline
 59.11
 \end{array}$$

$(\Sigma - 0)$

8.0 to 8.9

9.0 to 9.9

Mag. 13.

10.0 to 10.9

11.0 to 12.0

-54	+29	-51	+23	-01	+94
-02	+27		+76	-87	
-23					

-79	+56	-51	+99	-88	+94
-----	-----	-----	-----	-----	-----

+26x	-40x+03x	-09x+48x	-13x	+61x
+10x	-27x+07x	-49x		
+02x		-31x		
+65x				

+1.03	+67	+1.0	-96	+48	-13	+61
-------	-----	------	-----	-----	-----	-----

+17	-1.62	+28	-3.72	+92	-1.56		-26
+3.63	-1.59	+58	-1.00	+1.47		+76	-77
+1.71(00)	-50	+2.07(00)	-1.26	+36			-05
	-79	+56	-51	+99	-88	+94	
+1.03	+67	+1.0	-96	+48	-13	+61	
+6.54(00)	-5.23	+3.59(00)	-7.45	+4.22	-2.57	+2.31	-1.08

(12)	(13)	(13)	(14)	(9)	(5)	(4)	(3)
------	------	------	------	-----	-----	-----	-----

Value of side of brass square used in
cometary observations - (from disappearance
to disappearance,) = $629''.16$

Value of diagonal of same = $889''.8$

S' Cancri.

Take epoch + assumed time and obtain
difference by comparison with obs.
~~(C-O)~~ (C-O)

Epoch = $67^{\text{yr}}, 8^{\text{mo}}, 31^{\text{d}}, 14^{\text{hr}}, 12^{\text{m}}, 24^{\text{s}}$

See page 15 in Vol. 118 pamphlets.

Assumed time $\text{rv} = 9^{\text{d}}, 11^{\text{h}}, 37^{\text{m}}, 8^{\text{s}}$

Algol. (+27)

From books 22 + 29, make out tables
with (C-O) as argument (see sheet) - making
one series for each minimum and ~~taking~~
making groups for each 5 yrs. (see 9th Vol.
Brown obs.) Take means of these 5 yr or
groups. (map. of Algol. from the groups.)

alcohol

Collect all the obs. obtainable on
Algal subsequent to Schönfeld's book
and arrange them in tabular form as
in the case of Agardh's table in 7th
Vol. ^{or table in Schönfeld's book} ~~of~~ ^{of} ~~the~~ ^{the} ~~book~~ ^{book} using Schönfeld's sys-
tem and period,

6 ^d	22 ^h	✓
4	1	16
2	20	49

21	19	2
14	22	13
2	56	49
2	20	49

~~$$\begin{array}{r} 17 \\ 12 \end{array} \begin{array}{r} 4 \\ 5 \end{array} \begin{array}{r} 49 \\ 56 \end{array}$$~~

31	16	26
28	19	37
2	20	49

$$\begin{array}{r} 19 \\ 24 \\ \hline 43 \end{array}$$

observations.

No.	Epoch.	Obs. Time	Ab. Cor.	Paris M. S. with ab. Cor.
	X	1870. Sept. 3. 10 ^h 5 ^m 12.0	+2.2	1870. Sept. 3. 8 ^h 48.6
	X	" Oct. 13. 13 ^h 5.7	+6.3	" Oct. 13. 11 ^h 49.2
	X	" " 16. 10 ^h 3.5	+6.5	" Oct. 16. 8 ^h 44.9
	X	" Nov. 8. 8 ^h 52.0	+7.5	" Nov. 8. 7 ^h 33.9
9001	X	" Aug. 31. 11 ^h 50.2	+1.9	11 ^h 27.6
9010	X	" Sept. 26. 7 ^h 26.4	+4.8	7 6.7
9024	X	" Nov. 5. 10 ^h 32.5	+7.5	10 15.5
9025	X	" " 8. 7 ^h 24.0	+7.5	7 7.0
9033	X	" Dec. 1. 5 ^h 58.7	+7.3	5 41.5
9070	X	1871. Mar. 17. 8 ^h 13.2	-4.1	7 44.8
	X	" Jan. 13. 7 ^h 23.3	+3.9	
	X	" Feb. 2. 8 ^h 55.0	+1.4	
	X	" " 25. 7 ^h 27.7	-1.6	
	X	" July. 21. 14 ^h 33.7	-3.4	
	X	" Aug. 10. 14 ^h 51.6	-0.9	
	X	" Sept. 5. 10 ^h 8.0	+2.4	
	X	" " 25. 8 ^h 33.0	+5.0	
	X	" Nov. 7. 11 ^h 44.0	+7.5	
	X	" " 30. 10 ^h 15.7	+7.3	
9121	X	" Aug. 10. 13 ^h 43.5	-0.9	13 ^h 15.1
9130	X	" Sept. 5. 9 ^h 10.7	+2.4	8 48.6
9144	X	" Oct. 15. 12 ^h 26.4	+6.5	12 8.4
9197	X	1872. Mar. 15. 11 ^h 43.5	-4.0	11 15.0
9205	X	" Apr. 7. 10 ^h 23.2	-6.2	9 52.5
9249	X	" Aug. 11. 14 ^h 17.3	-0.6	13 52.2
9250	X	" " 14. 10 ^h 56.3	-0.3	10 31.5

Longitude of Paris from Mannheim.

$$- 24^m 30.2^s = 24.5^m \text{ Sub,}$$

61

$$- \text{altens from Paris, } 1^h 25^m 35.1^s = 25.6^m \text{ Sub,}$$

$$85 \quad 35.1$$

Obs.	Place.	Ref.	(C - 0)	
Schmidt.	Athens.	Vol. 77. 1832.		X
"	"	"		
"	"	"		
"	"	"		
Schoufeld.	Mannheim.	78. 1857.	+9.9	X
"	"	"	-9.1	
"	"	"	+6.7	
"	"	"	+4.1	
"	"	"	+0.8	
"	"	"	+6.8	
Schmidt.	Athens.	79. 1840.		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
Schoufeld.	Mannheim.	80. 1906	+7.4	
"	"	"	-3.0	
"	"	"	+1.8	
"	"	"	+6.9	
"	"	"	+0.6	
"	"	"	-7.5	
"	"	"	+2.1	

Observations.

no. Epoch.	Obs. time.	Ab. Cor.	Paris M. J. dist. Ab. Cor.
9257.	X 1872. Sept. 3. 12 ^h 30.6	+ 2.3	12 ^h 8.7
9258.	X " " 6. 9 ^h 23.1	+ 2.7	9 ^h 1.3
	X " Jan. 15. 7 ^h 43.4		
	X " July 22. 13 ^h 27.5		
	X " Aug. 11. 15 ^h 0.5		
	X " " 14. 11 ^h 24.5		
	X " Sept. 3. 13 ^h 39.5		
	X " " 26. 12 ^h 0.2		
	X " " 29. 8 ^h 52.6		
	X " Oct. 19. 10 ^h 24.8		
	X " " 25. 7 ^h 27.5		
	X " Nov. 11. 9 ^h 30.5		
	X " Nov. 14. 6 ^h 16.0		
	X " Dec. 1. 10 ^h 21.0		
	X " " 4. 7 ^h 28.0		
	X 1873. July. 24. 13 ^h 52.0		
	X " Sept. 8. 11 ^h 10.0		
	X " Oct. -1. 9 ^h 36.7		
	X " " 21. 10 ^h 54.6		
	X " " 24. 7 ^h 24.7		
	X " Nov. 18. 9 ^h 6.7		
	X " Dec. 26. 9 ^h 36.6		
	X " " 29. 6 ^h 39.7		
9264	X 1872. Sept. 23. 14 ^h 7.5	+ 4.6	13 ^h 47.6
9272	X " Oct. 16. 12 ^h 49.6	+ 6.6	12 31.7
9319	X 1873. Feb. 28. 7 ^h 7.8	- 2.1	6 41.2
9392	X " Sept. 25. 14 36.8	+ 4.8	14 17.1
9409	X " Nov. 13. 8 22.3	+ 7.6	8 5.4

Ephemerides.

Geocentric minima, mean Paris Time,

System.	No. Epoch.	Date.	Ref.	Place.
Schönfeld	9002	1870. Sept. 3. 8 ^h 27	76. 1807.	hr. Paris Time,
"	9016	" Oct. 13. 11 ^h 45	" "	"
"	9017	" " 16. 8 ^h 33	" "	"
"	9025	" Nov. 8. 7 ^h 45	" "	"
So		1871. Jan. 13. 5 ^h 52		"
		" Feb. 2. 7 ^h 37		"
		" " 25. 6 ^h 11		"
		" July 21. 11 47	78. 1856	"
		" Aug. 10. 13 26	"	"
		" Sept. 5. 8 43	"	"
		" " 28. 7 12	"	"
		" Nov. 7. 10 34	"	"
		" " 30. 9 5	"	"
		1872. Jan. 15. 6 11	"	"
		" July 22. 12 6	79. 1895.	"
		" Aug. 11. 13 45	"	"
		" " 14. 10 34	"	"
		" Sept. 3. 12 14	"	"
		" " 26. 10 42	"	"
		" " 29. 7 31	"	"
		" Oct. 19. 9 11	"	"
		" " 22. 6 0	"	"
		X " " 25. 2 49	"	"
		" Nov. 11. 7 42	"	"
		" " 14. 4 31	"	"
		" Dec. 1. 9 24	"	"
		" " 4. 6 13	"	"
		1873. July 24. 12 25	82. 1952	"
		" Sept. 28. 11 1	"	"
		" " 8. 9 21	"	"
		" Oct. 1. 7 50	"	"

(87-) (87-2065) 75+76

Vols. examined

77,

78,

79,

80

81

82

83

See vol 84. 2001

65

85

86

87

89

90

91

92

94

93

To be examined Vol 1874

89

Ephemerides.

Geocentric minima mean Paris time.

System.	No. Epoch.	Date.	Ref.	Place.
		1873. Oct. 21. 9 ^h 31	82, 1950.	Paris.
		" " 24. 6 19	"	"
		" Nov. 13. 8 1	"	"
		" Dec. 26. 7 16	"	"
		" " 29. 5 6	"	"
		1874. Jan. 15. 10 1	"	"
		" Feb. 10. 5 24	"	"
		1875. July. 31. 9 51	84. 2001.	"
		" Aug. 20. 11 31	"	"
		" " 23. 8 19	"	"
		" Sept. 9. 13 11	"	"
		" " 12. 9 59	"	"
		" Oct. 5. 8 28	"	"
		" " 28. 6 58	"	"
		" Nov. 20. 5 28	"	"
		1876. July 29. 13 21.5	Viertel, 1875.	
		" Aug. 21. 11 49.8	"	
		" Sept. 10. 13 29.5	"	
		" " 13. 10 18.1	"	
		" Oct. 3. 11 58.3	"	
		" " 6. 8 47.0	"	
		" " 9. 5 35.6	"	
		" Sept. 13. 10 18.1	"	
		" Oct. 6. 8 47.0	"	
		" Dec. 11. 7 30.7	"	
		" " 31. 9 14.6	"	
		1875. Sept. 6. 16 22	84, 2001.	
		1877. Jan. 3. 6 ^h 3.8	Viertel,	

Observations.

No. Epoch,	Obs. time,	Ab. Cor.	Paris M. S. incl. Ab. Cor.
X	1874. Jan. 15. 11 ^h 7.5		
X	" Feb. 10. 6 ^h 42.0		
X	1875. July. 31. 11 ^h 20		
X	" Aug. 20. 12 ^h 41		
X	" " 23. 10 ^h 9		
X	" Sept. 9. 14 ^h 38		
X	" " 12. 11 ^h 35		
X	" Oct. 5. 9 ^h 41		
X	" " 28. 8 ^h 0.5		
X	" Nov. 20. 7 ^h 3.5		
9431	X 1874. Jan. 15. 10 ^h 21.5	+3.6	10 ^h 0.6
9434	X " Feb. 4. 12 ^h 4.5	+1.1	11 ^h 40.9
9439	X " " 7. 8 ^h 51.4	-0.7	8 27.6
9446	X " " 27. 10 35.0	-1.9	10 8.6
9506	X " Aug. 18. 11 34.2	+0.2	11 9.9
9514	X " Sept. 10. 9 54.3	+3.1	9 36.9
9529	X " Oct. 23. 10 5.6	+7.0	9 51.1
9575	X 1875. Mar. 4. 7 35.3	-2.5	7 8.3
9754	X 1876. July 29. 14 ^h 15.0	-2.4	12 47.0
X	" Aug. 21. 13 2.0	+0.5	11 36.9
X	" Sept. 10. 14 39.5	+3.0	13 16.9
X	" " 13. 11 15.7	+3.4	9 53.5
X	" Oct. 3. 13 14.	+5.5	11 54.1
X	" " 6. 10 4.5	+5.7	8 44.6
X	" " 9. 6 56.3	+6.0	5 36.7
X	" Sept. 13. 11 10.0	+3.4	
X	" Oct. 6. 10 3.5		
X	" Dec. 11. 7 56.0 ~ Set. 21 22		
X	" " 31 sec. 21 22		

Observations

69

Obs.	Place.	Ref.	(C-O)	
Schmidt	Athens.	N. 2071.		} app. prob. obs. not very good
"	"	"		
"	"	87. 2074		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
Schönfeld	Wannheim.	87. 2065.	+3.9	
"	"	"	+5.9	
"	"	"	+4.1	
"	"	"	+9.4	
"	"	"	+2.1	
"	"	"	+6.3	
"	"	"	+5.6	
"	"	"	+17.8	
Schmidt	Athens.	89. 2122.		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
"	"	"		
Markusich	"	"		
"	"	"		
Schmidt	"	"		

Observations.

Mer. Epoch,	Obs. time.	Ab. Cor.	Paris M. S. + Ab. Cor.
X 1875. Sept. 6.	10 ^h 46 ^m	+ 2.5	15 ^h 53.5
X 1877. Jan. 3.	7 14	+ 5.0	5 53.4
X " Feb. 15.	7 20	- 0.3	5 54.1
X " Aug. 20.	15 37	+ 0.4	14 11.8
X " " 23.	13 9	+ 0.8	11 44.2
X " Sept. 12.	14 34	+ 3.3	13 11.7
X " " 15.	11 38.6	+ 3.6	10 16.6
X " Oct. 8.	9 30.7	+ 5.9	8 11.0
X " Dec. 10.	11 8.3	+ 6.9	9 49.6
X " " 13.	8 37.8	+ 6.7	7 18.9
X 1878. Jan. 5.	7 17.3	+ 4.8	5 56.5
X " Mar. 9. about 9 ^h	*	- 3.1	
X " Aug. 28.	10 18.2	+ 1.4	8 54.0
X " Sept. 20.	8 39.6	+ 4.2	7 18.2
X " Nov. 2.	8 53.3	+ 7.3	7 25.0
X " " 25.	7 17.1	+ 7.5	5 59.0

1855. Feb. 28. 8^h 58.8

1856. Nov. 11. 13 31.5

" Oct. 2. 10 14.2

" Nov. 8. 16 50.3

" Dec. 7. 8 56.42

" " 30. 7^h 26.98

" " 7. 9 24.54

1857. Feb. 11. 7 48.10

" Mar. 6. 6 20.57

" Sept. 11. 11 58.47

" Oct. 4. 10 24.6

" " 21. 15 21.15

" Nov. 10. 17 3.57

Also a few others.

Observations.

71

obs.	Place.	Ref.	(C-O)
Chandler.	New York.	89. 2119.	
Schmidt.	Athens.	91. 2184	
"	"	"	
"	"	"	
"	"	"	
"	"	"	
"	"	"	
"	"	"	
"	"	"	
"	"	"	
"	"	94 2309	
"	"	"	
"	"	"	
"	"	"	
"	"	"	
"	"	"	
Schott.	Washington.	ast. Jour.	
"	"	"	
Flagg.	"	"	
"	"	"	
"	"	"	
"	"	"	
Masterman.	Wald.	"	
"	"	"	
"	"	"	
"	Wash. time	"	
"	"	"	
"	"	"	
"	"	"	

Schmidt's Observations

us. Epoch.

Obs. Luni

Paris M. V. + L.

1870. Sept. 3.	sh	41.6
" Oct. 13.	11	49.4
" " 16	8	44.4
" Nov. 8.	7	33.8
1871. Jan. 13.	6	1.6
" Feb. 2.	7	30.8
" " 25.	6	0.5
" July 21.	12	7.7
" Aug. 10.	13	25.2
" Sept. 5.	8	44.8
" " 28.	7	12.4
" Nov. 7.	10	25.8
" " 30.	8	57.2
1872. Jan. 15.	6	21.1
" July. 22.	12	1.4
" Aug. 11.	13	35.7
" " 14.	10	1.1
" Sept. 3.	12	19.2
" " 26.	10	39.3
" " 29.	7	31.0
" Oct. 19.	9	5.9
" " 22.	6	8.2
" Nov. 11.	8	12.8
" " 14.	4	56.2
" Dec. 1.	9	2.7
" " 4.	6	7.2
1873. July. 24.	12	22.4
" Sept. 8.	9	47.1
" Oct. 1.	8	5.9
" " 21	9	34.7

since 1869.

73

$$\begin{array}{r}
 24 \\
 3600 \\
 \hline
 14400 \\
 72 \\
 \hline
 60 \overline{) 8.64.00} (15^{\text{m}} \\
 \underline{60} \\
 264
 \end{array}$$

$$\begin{array}{r}
 .35 \\
 35 \\
 \hline
 .175 \\
 175 \\
 \hline
 35 \\
 35 \\
 \hline
 .525
 \end{array}$$

74

Schmidt's Observations

Mr. Epoch.	Obs. Times.	Paris M. S. + L.	
	1873 Oct. 24.	6 ^h	14.9
	" Nov. 13.	7	48.6
	" Dec. 26.	8	13.3
	" " 29.	5	5.0
	1874 Jan. 15.	9	51.9
	" Feb. 10.	5	13.9
	1875 July 31.	9	52.3
	" Aug. 20.	11	17.6
	" " 23.	8	38.2
	" Sept. 9.	13	13.4
	" " 12.	10	13.3
	" Oct. 5.	8	21.2
	" " 25.	6	41.9
	" Nov. 20.	5	36.9

series 1 A69.

75

Rearrangement in chronological order

No Epoch.	Obs. Time	Ab. Con.	Paris M.S. + L.
9001	1870 Aug. 31. 11 ^h 50.2	+1.9	11 ^h 27.6
	" Sept. 3. 10 5.0	+2.2	8 41.6
9010	" " 26. 7 26.4	+4.8	7 6.7
	" Oct. 13. 18 8.7	+6.3	11 49.4
	" " 16. 10 3.5	+6.5	8 44.4
9024	" Nov. 5. 10 32.5	+7.5	10 15.5
9025	" " 8. 7 24.0	+7.5	7 7.0
	" " 8. 8 52.0	+7.5	7 33.8
(9026)	" Dec. 1. 5 58.7	+7.3	5 41.5
	1871 Jan. 13. 7 23.3	+3.9	6 1.6
	" Feb. 2. 8 55.0	+1.4	7 30.8
	" " 25. 7 27.7	-1.6	6 0.5
	" Mar. 17. 8 13.4	-4.1	7 44.8
X 9121	" July 21. 14 33.7	-3.4	12 7.7
	" Jan. 10. 13 43.5	-0.9	13 7.7
9130	" Aug. 10. 14 51.6	-0.9	13 25.2
	" Sept. 5. 9 10.7	+2.4	8 48.6
	" Sept. 5. 10 8.0	+2.4	8 44.8
9144	" " 28. 8 33.0	+5.0	7 12.4
	" Oct. 15. 12 26.4	+6.5	12 8.4
(9153)	" Nov. 7. 11 44.0	+7.5	10 25.8
	" " 30. 10 15.7	+7.3	8 57.2
9197	1872 Jan. 15. 7 43.9	+3.5	6 21.1
	1872 Mar. 15. 11 43.5	-4.0	11 15.0
9205	" Apr. 7. 10 23.2	-6.2	9 52.5
	" July 22. 13 30.2	+3.3	12 1.4
9249.	" Aug. 11. 14 17.3	-0.6	13 52.2
	" " " 15 2.0	+0.8	13 35.7
9250.	" " 14. 10 56.3	-0.3	10 31.5
	" " " 11 27.0	+0.4	10 1.1
9257	" Sept. 3. 12 30.6	+2.3	12 8.4
	" " " 13 39.7	+2.2	12 19.2
9258	" " 6. 9 23.1	+2.7	9 1.3
9264	" " 23. 14 7.5	+4.6	13 47.6
	" " 26. 12 0.2	+4.8	10 39.3

of all obs. since 1869.

77

Obs.	Place.	Ref.	$\Delta\alpha$	
Schon.	Wambshein.	78. 1857.	+9.9	
Schmidt.	Athens.	77. 1832.	-15.4	+
Schon.	Wam.	78. 1857.	-9.1	
Schmidt.	Athens.	77. 1832.	+1.9	+
"	"	"	-4.9	+
Schon.	Wambshein.	78. 1857.	+6.7	
"	"	"	+4.1	
Schmidt.	Athens.	77. 1832.	-22.3	+
Schon.	Wambshein.	78. 1857.	+0.8	
Schmidt.	Athens.	79. 1840.	-5.4	+
"	"	"	+7.6	+
"	"	"	+8.9	+
Schon.	Wambshein.	78. 1857.	+6.8	
Schmidt.	Athens.	79. 1840.	-14.1	+
Schon.	Wambshein.	80. 1906	+7.4	
Schmidt.	Athens.	79. 1840.	-0.1	+
Schon.	Wambshein.	80. 1906	-3.0	
Schmidt.	Athens.	79. 1840.	+0.6	+
"	"	"	+4.6	+
Schon.	Wambshein.	80. 1906	+1.8	
Schmidt.	Athens.	79. 1840.	+15.7	
"	"	"	+15.1	+
Schon.	Wambshein.	81. 1932	+6.6	+
"	"	80. 1906.	+6.9	
"	"	"	+0.6	
Schmidt.	Athens.	81. 1932	+7.9	
Schon.	Wam.	80. 1906.	-7.5	
Schmidt.	Athens.	81. 1932.	+8.7	
Schon.	Wambshein.	80. 1906.	+2.1	
Schmidt.	Athens.	81. 1932.	+32.5	
Schon.	Wambshein.	80. 1906.	+7.5	
Schmidt.	Athens.	81. 1932.	-3.0	
Schon.	Wambshein.	80. 1906.	+3.5	
Schmidt.	Athens.	83. 1991	+10.6	
"	"	81. 1932.	+7.5	

- .8 (9026)

+ 3.5 (9153)

+ 7.2 (9281)

Ephemerides.

Geocentric minima mean Paris time.

System.	No. Epoch.	Date.	Ref.	Place.
		1877. Feb. 15. 6 ^h 22.6	Ventel.	
		" Aug. 20. 15 20.2	"	
		" " 23. 12 8.7	"	
		" Sept. 12. 13 48.5	"	
		" " 15. 10 37.1	"	
		" Oct. 8. 9 6.0	"	
		" Dec. 10. 11 1.0	"	
		" " 13. 7 50.0	"	
		1878. Jan. 5. 6 23.1	"	
		" Mar. 9. 8 26.9	"	
		" Aug. 28. 9 16.2	"	
		" Sept. 20. 7 44.7	"	
		" Nov. 2. 7 55.0	"	
		" " 25. 6 26.1	"	

Rearrangement &c.

No. Epoch.	Obs. Time.	Ab. Cor.	Paris M.T. & L.
	1872. Sept 29. 8	52.6 +5.1	7 ^h 31.0
	" Oct. 16. 12	49.6 +6.6	12 31.7
	" Oct. 19. 10	24.8 +6.7	9 5.9
	" " 27. 7	37.0 +6.6	6 8.2
	" Nov. 11. 9	30.7 +7.5	8 12.8
	" " 14. 6	14.2 +7.6	4 56.2
	" Dec. 1. 10	25.0 +7.3	9 2.7
	" " 4. 7	25.6 +7.2	6 7.2
9319	1873. Feb. 28. 7	7.8 -2.1	6 41.2
	" July. 24. 13	51.0 -3.0	12 22.4
	" Sept. 8. 11	10.0 +2.8	9 47.1
9392	" " 25. 14	36.8 +4.8	14 17.1
	" Oct. 1. 9	26.2 +5.3	2 5.9
	" " 21. 10	33.6 +6.8	9 34.7
	" " 24. 7	33.6 +7.0	6 14.9
9409	" Nov. 13. 8	22.3 +7.6	8 5.4
	" " 13. 9	6.7 +7.5	7 45.6
	" Dec. 26. 9	33.2 +5.8	2 13.3
	" " 29. 6	39.7 +5.5	5 5.0
9431	1874. Jan. 15. 10	21.5 +3.6	10 0.6
	" " " 11	13.8 +3.6	9 51.9
9438	" Feb. 4. 12	4.3 +1.1	11 40.9
9439.	" " 7. 8	51.4 +0.8	2 27.6
	" Feb. 10. 6	39.5 +0.4	5 13.9
9446	" " 27. 10	35.0 -1.9	10 8.6
9506	" Aug. 18. 11	34.2 +0.2	11 9.9
9514	" Sept. 10. 9	58.3 +3.1	9 36.9
9529	" Oct. 22. 10	8.6 +7.0	9 56.1
9575	1875 Mar. 4. 7	35.3 -2.5	7 8.3

				36 36.0 17 32.7 1.9 3.3 +6 2.6 1.3 0.9	3.6 21.5 20.9
Obs.	Place.	Ref.	(C-O)		
Schmidt.	Athens.	81. 1982.	+5.1		
Schon.	Wannheim.	83. 1991.	-2.3		
Schmidt.	Athens.	81. 1992.	+11.8		
"	"	"	-1.6		
"	"	"	+23.3		
"	"	"	-17.6		
"	"	"	+28.6		
"	"	"	+13.0		
Schon.	Wannheim.	83. 1991.	+6.5		
Schmidt.	Athens.	83. 1975.	-0.4		
"	"	"	-23.3		
Schon.	Wannheim.	83. 1991.	+0.3		
Schmidt.	Athens.	83. 1975.	-10.6		
"	"	"	+3.1		
"	"	"	+11.1		
Schon.	Wannheim.	83. 1991.	+3.3		
Schmidt.	Athens.	83. 1975.	+19.9		+1.6 (9408)
"	"	"	-51.5		
"	"	"	+6.5		
Schon.	Wannheim.	87. 2065.	+3.9		
Schmidt.	Athens.	85. 2031.	+12.7		not very good.
Schon.	Wann.	87. 2065.	+5.9		
"	"	"	+8.1		
Schmidt.	Athens.	85. 2031.	+10.5		" " "
Schon.	Wann.	87. 2065.	+9.4		
"	"	"	+2.1		
"	"	"	+6.3		
"	"	"	+5.6		+8.0 (9535)
"	"	"	+17.8		

Rearrangement &c.

No. Epoch.	Obs. Time,	at. Con.	Paris W. S. & L.
1875.	July 31. 11 ^h 20.0	-2.2	9 ^h 52.3
"	Aug. 20. 12 ^{42.8} 41	+0.4	11 17.6
"	" 23. 10 ^{3.0} 7	+0.8	8 38.2
"	Sept. 6. 10 46	+2.5	15 53.8
"	" 9. 14 ^{36.2} 35	+2.9	13 13.4
"	" 12. 11 ^{35.6} 34	+3.3	10 13.3
"	Oct. 5. 9 41.0	+5.0	8 21.2
"	" 28. 8 0.5	+7.2	6 41.9
"	Nov. 20. ⁶ 7 ^{55.0} 54	+7.5	5 36.9
9754. 1876.	July 29. 14 15.0	-2.4	12 47.0
"	Aug. 21. 13 2.0	+0.5	11 26.9
"	Sept. 10. 14 39.5	+3.0	13 16.9
"	" 13. 11 15.7	+3.4	9 53.5
"	" 11 10.0	+3.4	9 47.8
"	Oct. 3. 13 18	+5.5	11 53.9
"	" 6. 10 4.5	+5.7	8 44.6
"	" 9. 10 3.5	+5.7	8 43.6
"	" 9. 6 56.3	+6.0	5 36.7
"	Dec. 11. 7 56.0	+6.8	6 37.2
"	" 31. 10 ^h 12 ^m	+5.3	8 51.7
1877.	Jan. 3 7 14	+5.0	5 53.4
"	Feb. 15. 7 20	-0.3	5 54.1
"	Aug. 20. 15 37	+0.4	14 11.4
"	" 23. 13 9	+0.8	11 44.2
"	Sept. 12. 14 34	+3.3	13 11.7
"	" 15. 11 38.6	+3.6	10 16.6
"	Oct. 8. 9 30.7	+5.9	8 11.0
"	Dec. 10. 11 8.3	+6.9	9 49.6
"	" 13. 8 37.8	+6.7	7 18.9

Obs.	Place.	Ref.	(C-o)	
Schmidt	Athens.	87.2074.	-3.5	
"	"	"	+13.8	
"	"	"	-18.4	
Chandler	New York.	89.2119.	+30.7	
Schmidt.	Athens.	87.2074.	+0.5	+7.5 (9662)
"	"	"	+11.0	
"	"	"	+11.8	
"	"	"	+23.3	
"	"	"	-1.4	
"	"	89.2122	+32.1	
"	"	"	+13.4	
"	"	"	+15.6	
"	"	"	+28.0	
Wienisch	"	"	+33.7	
Schmidt.	"	"	+9.9	+22.1 (9789)
"	"	"	+8.1	
Wienisch	"	"	+9.1	
Schmidt.	"	"	+4.9	
"	"	"	+60.3	See 2122
"	"	"	+28.2	" "
Schmidt.	Athens.	91.2184.	+15.4	
"	"	"	+28.2	
"	"	"	+69.2	
"	"	"	+25.3	
"	"	"	+40.1	
"	"	"	+24.1	+46.0
"	"	"	+60.9	(9916)
"	"	"	+78.3	
"	"	"	+37.8	

Rearrangement &c.

No. Epoch.	Obs. Time	Ab. Cor.	Paris W. V. + L.
1878 Jan. 5. 7 ^h	17.3	+4.8	5 ^h 56.5
" Mar. 9. about 9 ^h		-3.1	7 37.3
" Aug. 28. 10	18.2	+1.4	8 54.0
" Sept. 20. 8	39.6	+4.2	7 18.2
" Nov. 2. 8	53.3	+7.3	7 35.0
" " 25. 7	17.1	+7.5	5 59.0

Obs.	Place.	Ref.	(C-O)	
Schmidt	Athens	94.2239	+31.4	
"	"	"	+46.5	approx.
"	"	"	+23.6	
"	"	"	+30.7	+29.0
"	"	"	+27.3	(10043)
"	"	"	+34.6	

Constant of Photometer I.
Table. 33.

Ly. 37.95 = 1.579

9.321 7.742 5.484 4.516 11.29	9.337 7.758 5.516 4.484 11.21	9.392 7.819 5.638 4.362 10.90	9.373 7.794 5.588 4.412 11.03
9.375 7.796 5.592 4.408 11.92	9.345 7.766 5.532 4.468 11.17	9.504 7.925 5.850 4.150 10.37	9.371 7.792 5.584 4.416 11.04
9.351 7.802 5.604 4.396 10.99	9.266 7.787 5.574 4.426 11.06	9.369 7.790 5.580 4.420 11.05	9.273 7.694 5.388 4.612 11.53
9.437 7.858 5.716 4.284 10.71	9.369 7.790 5.580 4.420 11.05	9.375 7.796 5.592 4.408 11.02	9.336 7.757 5.514 4.486 11.21
9.425 7.846 5.692 4.308 10.77	9.419 7.840 5.680 4.320 10.80	9.391 7.812 5.624 4.376 10.94	9.420 7.901 5.802 4.198 10.49
9.384 7.805 5.610 4.390 10.97	9.342 7.763 5.526 4.474 11.18	9.358 7.779 5.558 4.442 11.10	9.239 7.660 5.320 4.680 11.70
9.323 7.744 5.488 4.512 11.28	9.367 7.788 5.576 4.424 11.06	9.367 7.788 5.576 4.424 11.06	9.372 7.799 5.598 4.402 11.00
9.383 7.804 5.608 4.392 10.98	9.364 7.785 5.570 4.430 11.07	9.372 7.793 5.586 4.414 11.03	

Table 34.
PhotometerI, $\log \frac{f}{F} = 1.539$ 87

$$\begin{array}{r} 25.51 = 1.407 \\ 9.946 \\ \hline .621 \\ 211 \quad 9.325 \\ 7.746 \\ 5.492 \\ 4.508 \\ 11.27 \end{array}$$

$$\begin{array}{r} 25.51 = 1.407 \\ 9.946 \\ \hline .586 \\ 229 \quad 9.360 \\ 7.781 \\ 5.562 \\ 4.438 \\ 11.09 \end{array}$$

$$\begin{array}{r} 25.51 = 1.407 \\ 9.946 \\ \hline .580 \\ 232 \quad 9.366 \\ 7.787 \\ 5.574 \\ 4.426 \\ 11.06 \end{array}$$

$$\begin{array}{r} 25.51 = 1.407 \\ 9.946 \\ \hline .586 \\ 229 \quad 9.360 \\ 7.781 \\ 5.562 \\ 4.438 \\ 11.09 \end{array}$$

$$\begin{array}{r} 25.51 = 1.407 \\ 9.946 \\ \hline .585 \\ 230 \quad 9.361 \\ 7.782 \\ 5.564 \\ 4.436 \\ 11.09 \end{array}$$

$$\begin{array}{r} 20.00 = 1.301 \\ 9.840 \\ \hline .482 \\ 228 \quad 9.358 \\ 7.779 \\ 5.558 \\ 4.442 \\ 11.10 \end{array}$$

$$\begin{array}{r} 19.07 = 1.280 \\ 9.819 \\ \hline .461 \\ 228 \quad 9.358 \\ 7.779 \\ 5.558 \\ 4.442 \\ 11.10 \end{array}$$

$$\begin{array}{r} 18.26 = 1.262 \\ 9.801 \\ \hline .430 \\ 235 \quad 9.371 \\ 7.792 \\ 5.584 \\ 4.416 \\ 11.04 \end{array}$$

$$\begin{array}{r} 17.47 = 1.242 \\ 9.781 \\ \hline .419 \\ 230 \quad 9.362 \\ 7.783 \\ 5.566 \\ 4.434 \\ 11.08 \end{array}$$

$$\begin{array}{r} 16.76 = 1.224 \\ 9.763 \\ \hline .395 \\ 233 \quad 9.368 \\ 7.789 \\ 5.578 \\ 4.422 \\ 11.08 \end{array}$$

$$\begin{array}{r} 15.99 = 1.204 \\ 9.743 \\ \hline .378 \\ 232 \quad 9.365 \\ 7.786 \\ 5.572 \\ 4.428 \\ 11.07 \end{array}$$

$$\begin{array}{r} 15.23 = 1.183 \\ 9.722 \\ \hline .379 \\ 220 \quad 9.343 \\ 7.764 \\ 5.528 \\ 4.472 \\ 11.18 \end{array}$$

$$\begin{array}{r} 14.48 = 1.161 \\ 9.700 \\ \hline .343 \\ 227 \quad 9.357 \\ 7.778 \\ 5.556 \\ 4.444 \\ 11.11 \end{array}$$

$$\begin{array}{r} 13.93 = 1.144 \\ 9.683 \\ \hline .338 \\ 221 \quad 9.348 \\ 7.766 \\ 5.532 \\ 4.468 \\ 11.17 \end{array}$$

$$\begin{array}{r} 13.26 = 1.123 \\ 9.662 \\ \hline .301 \\ 230 \quad 9.368 \\ 7.782 \\ 5.564 \\ 4.436 \\ 11.09 \end{array}$$

$$\begin{array}{r} 12.61 = 1.101 \\ 9.640 \\ \hline .297 \\ 220 \quad 9.343 \\ 7.764 \\ 5.528 \\ 4.472 \\ 11.18 \end{array}$$

$$\begin{array}{r} 12.15 = 1.085 \\ 9.624 \\ \hline .287 \\ 217 \quad 9.339 \\ 7.758 \\ 5.516 \\ 4.484 \\ 11.21 \end{array}$$

$$\begin{array}{r} 11.48 = 1.060 \\ 9.599 \\ \hline .233 \\ 232 \quad 9.366 \\ 7.787 \\ 5.574 \\ 4.426 \\ 11.06 \end{array}$$

$$\begin{array}{r} 10.99 = 1.041 \\ 9.580 \\ \hline .204 \\ 238 \quad 9.376 \\ 7.797 \\ 5.594 \\ 4.406 \\ 11.01 \end{array}$$

$$\begin{array}{r} 10.49 = 1.021 \\ 9.560 \\ \hline .194 \\ 232 \quad 9.366 \\ 7.787 \\ 5.574 \\ 4.426 \\ 11.06 \end{array}$$

$$\begin{array}{r} 10.05 = 1.002 \\ 9.541 \\ \hline .176 \\ 232 \quad 9.368 \\ 7.786 \\ 5.572 \\ 4.428 \\ 11.07 \end{array}$$

$$\begin{array}{r} 9.62 = 0.983 \\ 9.522 \\ \hline .176 \\ 222 \quad 9.346 \\ 7.767 \\ 5.534 \\ 4.466 \\ 11.16 \end{array}$$

$$\begin{array}{r} 9.16 = 0.962 \\ 9.501 \\ \hline .146 \\ 226 \quad 9.355 \\ 7.776 \\ 5.552 \\ 4.448 \\ 11.12 \end{array}$$

$$\begin{array}{r} 8.70 = 0.940 \\ 9.479 \\ \hline .125 \\ 226 \quad 9.354 \\ 7.775 \\ 5.550 \\ 4.450 \\ 11.12 \end{array}$$

88

Diff. mag.
Dist.

Bright Double Stars

(3 Lyrae + 2 Cephei omitted)

No.	Ratio.	($\Sigma - 0$)	(Cor. for mag. B.)	Cor. for ratio.	Corrected Values ($\Sigma - 0$)
1+2	.1	+0.4	-4	0	-.36
3	.1	+0.40	-1	0	+0.30
5+6	.1	+0.96	-2	0	+0.76
7	.5	-.07	0	-.4	-.47
8	.4	-.25	0	-.3	-.55
9	.0	+0.10	+1	+1	+0.30
10	.7	+0.33	-2	-.6	-.47
11	.0	+0.14	0	+1	+0.24
12+13	.4	+0.38	-1	-.3	-.02
16	.1	-.86	0	0	-.86
17	.2	-.82	-2	-1	-1.12
18	.0	+0.26	+1	+1	+0.46
19	.1	+0.29	0	0	+0.29
20	.1	+0.50	+1	0	+0.60
21	.2	-.85	+1	-1	-.85
29	.0	+0.14	0	+1	+0.24
32	1.1	+0.34	0	-7	-.3.6
33	.1	+0.47	0	0	+0.47
34	.6	+0.04	-1	-.5	-.56
36	.4	+0.76	-.4	-.3	+0.6
37	1.5	+1.33	0	-7	+0.63
38	.2	-.24	0	-1	-.34
39	1.0	+0.39	0	-7	-.31
40	.2	-.99	-.3	-1	-1.39
41	.0	-1.42	-1	+1	-1.42
43	1.8	+0.21	-1	-7	-.59
44	.3	-.23	-1	-2	-.53
45	3	+0.48	-1	-2	+0.18
46+47	0	-.07	0	+1	+0.03
		+4.06	-24	-60	
		13.36	+4		

$$\text{Ly. } 37.95 = 1.579$$

1879phae-proj. 487.

$$\begin{array}{r} 8.38 = 0.923 \\ 9.462 \\ 0.085 \\ \hline .237 \quad 9.374 \\ 7.795 \\ 5.590 \\ 4.410 \\ 11.02 \end{array}$$

$$\begin{array}{r} 7.90 = 0.898 \\ 9.437 \\ 0.090 \\ \hline .222 \quad 9.347 \\ 7.768 \\ 5.536 \\ 4.464 \\ 11.16 \end{array}$$

$$\begin{array}{r} 7.63 = 0.818 \\ 9.422 \\ 0.075 \\ \hline .222 \quad 9.347 \\ 7.768 \\ 5.536 \\ 4.464 \\ 11.16 \end{array}$$

$$\begin{array}{r} 7.31 = 0.864 \\ 9.403 \\ 0.048 \\ \hline .226 \quad 9.355 \\ 7.776 \\ 5.552 \\ 4.448 \\ 11.12 \end{array}$$

$$\begin{array}{r} 6.92 = 0.840 \\ 9.379 \\ 0.011 \\ \hline .233 \quad 9.368 \\ 7.789 \\ 5.578 \\ 4.422 \\ 11.05 \end{array}$$

$$\begin{array}{r} 6.59 = 0.819 \\ 9.358 \\ 0.004 \\ \hline .226 \quad 9.354 \\ 7.775 \\ 5.550 \\ 4.450 \\ 11.12 \end{array}$$

$$\begin{array}{r} 6.33 = 0.801 \\ 9.340 \\ 0.070 \\ \hline .234 \quad 9.370 \\ 7.791 \\ 5.582 \\ 4.418 \\ 11.04 \end{array}$$

$$\begin{array}{r} 6.08 = 0.784 \\ 9.323 \\ 0.062 \\ \hline .230 \quad 9.361 \\ 7.782 \\ 5.564 \\ 4.436 \\ 11.09 \end{array}$$

$$\begin{array}{r} 5.67 = 0.754 \\ 9.293 \\ 0.045 \\ \hline .223 \quad 9.348 \\ 7.769 \\ 5.538 \\ 4.462 \\ 11.15 \end{array}$$

$$\begin{array}{r} 5.53 = 0.743 \\ 9.282 \\ 0.015 \\ \hline .233 \quad 9.367 \\ 7.788 \\ 5.576 \\ 4.424 \\ 11.06 \end{array}$$

$$\begin{array}{r} 5.29 = 0.723 + \\ 9.262 \\ 0.002 \\ \hline .229 \quad 9.360 \\ 7.781 \\ 5.562 \\ 4.438 \\ 11.09 \end{array}$$

$$\begin{array}{r} 4.13 = 0.616 \\ 9.155 \\ 0.013 \\ \hline .220 \quad 9.342 \\ 7.763 \\ 5.526 \\ 4.474 \\ 11.18 \end{array}$$

$$\begin{array}{r} 3.31 = 0.520 \\ 9.059 \\ 0.065 \\ \hline .237 \quad 9.374 \\ 7.795 \\ 5.590 \\ 4.410 \\ 11.02 \end{array}$$

$$\begin{array}{r} 2.62 = 0.418 \\ 8.957 \\ 0.002 \\ \hline .226 \quad 9.355 \\ 7.776 \\ 5.552 \\ 4.448 \\ 11.12 \end{array}$$

$$\begin{array}{r} 2.14 = 0.330 \\ 8.869 \\ 0.002 \\ \hline .233 \quad 9.367 \\ 7.788 \\ 5.576 \\ 4.424 \\ 11.06 \end{array}$$

90

No.	Ratio.	($\Sigma - 0$)	Cor. for mag. B.		Corrected Values ($\Sigma - 0$)
48	.6	+ .87	-.2	-.5	+ .17
50	.5	+ .34	-.1	-.4	-.16
51	.0	+ .52	0	+ 1	+ .62
52	.6	+ .55	0	-.5	+ .08
53	.5	-.54	-.1	-.4	-1.04
54	.1	+ .02	-.1	0	-.07
55	.1	+ .67	-.4	0	+ .27
58	3	+ .89	-.4	-2	+ .29
59	.6	+ 1.58	0	-.5	+ 1.08
60	0	+ .15			
61	.1	-.29	0	0	-.29
62	.5	+ 1.43	-.4	-.4	+ .63
63	.5	-.12	.0	-.4	-.52
+ 64	.2	-.16	.0	-1	-.26
65	.9	+ .27	0	-7	-.43
66 + 67	.8	+ .83	0	-7	+ .13
68	.1	-.12	0	0	-.12
69 + 70	.1	+ .52	0	0	+ .52
71	.1	+ .30	0	0	+ .30
72	.5	-.17	-.4	-.4	-.97
73	.1	+ .14	0	0	+ .14
74	.1	+ .83	0	0	+ .83
75	.2	+ .68	0	-1	+ .58
76	.0	+ .55	0	+ 1	+ .65
77	.1	+ .78	0	0	+ .78
78	.1	-.22	0	0	-.22
79	.0	-.21	0	+ 1	-.11
80	.4	+ .07	0	-3	-.23
81	.2	-.35	0	-1	-.45
		<hr/>	<hr/>	<hr/>	
		+4.19	-2.1	-5.7	
		14.04		+ 3	

Table 34.

Photometer I, Recomputation.

91

$$\begin{array}{r}
 9.946 \\
 0.574 \\
 \hline
 9.372 \\
 7.793 \\
 5.586 \\
 \hline
 13.96 \\
 4.414 \\
 \hline
 11.03
 \end{array}$$

$$\begin{array}{r}
 9.946 \\
 .574 \\
 \hline
 9.368 \\
 7.789 \\
 5.578 \\
 \hline
 4.422 \\
 11.05
 \end{array}$$

$$\begin{array}{r}
 9.946 \\
 607 \\
 \hline
 9.339 \\
 7.760 \\
 5.520 \\
 \hline
 4.480 \\
 11.20
 \end{array}$$

$$\begin{array}{r}
 9.946 \\
 .609 \\
 \hline
 9.337 \\
 7.758 \\
 5.516 \\
 \hline
 4.484 \\
 11.21
 \end{array}$$

$$\begin{array}{r}
 9.946 \\
 .607 \\
 \hline
 9.339 \\
 7.760 \\
 5.520 \\
 \hline
 4.480 \\
 11.20
 \end{array}$$

$$\begin{array}{r}
 9.840 \\
 .477 \\
 \hline
 9.363 \\
 7.784 \\
 5.568 \\
 \hline
 4.432 \\
 11.08
 \end{array}$$

$$\begin{array}{r}
 9.819 \\
 465 \\
 \hline
 9.354 \\
 7.775 \\
 5.550 \\
 \hline
 4.450 \\
 11.12
 \end{array}$$

$$\begin{array}{r}
 9.801 \\
 425 \\
 \hline
 9.376 \\
 7.797 \\
 5.594 \\
 \hline
 4.406 \\
 11.01
 \end{array}$$

$$\begin{array}{r}
 9.781 \\
 414 \\
 \hline
 9.367 \\
 7.788 \\
 5.576 \\
 \hline
 4.424 \\
 11.06
 \end{array}$$

$$\begin{array}{r}
 9.763 \\
 391 \\
 \hline
 9.372 \\
 7.793 \\
 5.586 \\
 \hline
 4.414 \\
 11.03
 \end{array}$$

$$\begin{array}{r}
 9.743 \\
 370 \\
 \hline
 9.373 \\
 7.794 \\
 5.588 \\
 \hline
 4.412 \\
 11.03
 \end{array}$$

$$\begin{array}{r}
 9.722 \\
 358 \\
 \hline
 9.364 \\
 7.785 \\
 5.570 \\
 \hline
 4.430 \\
 11.07
 \end{array}$$

$$\begin{array}{r}
 9.700 \\
 331 \\
 \hline
 9.369 \\
 7.790 \\
 5.580 \\
 \hline
 4.420 \\
 11.05
 \end{array}$$

$$\begin{array}{r}
 9.683 \\
 318 \\
 \hline
 9.365 \\
 7.786 \\
 5.572 \\
 \hline
 4.428 \\
 11.07
 \end{array}$$

$$\begin{array}{r}
 9.662 \\
 298 \\
 \hline
 9.364 \\
 7.785 \\
 5.570 \\
 \hline
 4.430 \\
 11.07
 \end{array}$$

$$\begin{array}{r}
 9.640 \\
 276 \\
 \hline
 9.364 \\
 7.785 \\
 5.570 \\
 \hline
 4.430 \\
 11.07
 \end{array}$$

$$\begin{array}{r}
 9.624 \\
 250 \\
 \hline
 9.374 \\
 7.795 \\
 5.590 \\
 \hline
 4.410 \\
 11.02
 \end{array}$$

$$\begin{array}{r}
 9.599 \\
 231 \\
 \hline
 9.368 \\
 7.789 \\
 5.578 \\
 \hline
 4.422 \\
 11.05
 \end{array}$$

$$\begin{array}{r}
 9.580 \\
 201 \\
 \hline
 9.379 \\
 7.800 \\
 5.600 \\
 \hline
 4.400 \\
 11.00
 \end{array}$$

$$\begin{array}{r}
 9.560 \\
 202 \\
 \hline
 9.358 \\
 7.779 \\
 5.558 \\
 \hline
 4.442 \\
 11.10
 \end{array}$$

$$\begin{array}{r}
 9.541 \\
 163 \\
 \hline
 9.378 \\
 7.799 \\
 5.598 \\
 \hline
 4.402 \\
 11.00
 \end{array}$$

$$\begin{array}{r}
 9.522 \\
 161 \\
 \hline
 9.361 \\
 7.782 \\
 5.564 \\
 \hline
 4.436 \\
 11.09
 \end{array}$$

$$\begin{array}{r}
 9.501 \\
 113 \\
 \hline
 9.388 \\
 7.809 \\
 5.618 \\
 \hline
 4.382 \\
 10.95
 \end{array}$$

$$\begin{array}{r}
 9.479 \\
 121 \\
 \hline
 9.358 \\
 7.779 \\
 5.558 \\
 \hline
 4.442 \\
 11.10
 \end{array}$$

No.	Ratio	($\Sigma - 0$)	Cor. for mag 13.		Corrected Values ($\Sigma - 0$)
82	.1	+22	0	0	+22
83	.3	+49	0	-2	+29
84	.6	+86	-3	-5	+06
85	1.4	+119	+1	-7	+59
88	.2	+65	0	-1	+55
89	.1	+01	+1	0	+11
90	.2	+12	0	-1	+02
93	1.0	+98	0	-7	+28
94	.7	+108	-3	-6	+18
95	.8	+123	-1	-7	+43
96	.2	+18	+1	-1	+18
97	.1	+19	-2	0	-01
100	.3	+55	-4	-2	-05
101	.6	-23	+1	-5	-63
102	.1	-23	0	0	-23
103	1.2	+76	0	-7	+06
105	.9	+82	-1	-7	+02
106	1.0	+75	.0	-7	+05
107	.2	+01	-1	-1	-19
108	.0	+161	.0	+1	+171
111	.6	+21	+1	-5	-19
112	.3	+10	0	-2	-10
113	.5	+44	+1	-4	+14
114	.9	+86	-2	-7	-04
115	1.5	+53	.0	-7	-17
116	.0	-03	.0	+1	+07
117	.0	-72	.0	+1	-62
118	.0	-60	0	+1	-50
120	.2	+17	-1	-1	-03
		15,82	-18	-92	
			+6	+4	

$$\begin{array}{r}
 9.462 \\
 \underline{115} \\
 9.347 \\
 7.768 \\
 \sqrt{5.536} \\
 4.464 \\
 11.16
 \end{array}$$

$$\begin{array}{r}
 9.437 \\
 \underline{.088} \\
 9.349 \\
 7.770 \\
 \sqrt{5.540} \\
 4.460 \\
 11.15
 \end{array}$$

$$\begin{array}{r}
 9.422 \\
 \underline{.056} \\
 9.366 \\
 7.787 \\
 \sqrt{5.574} \\
 4.426 \\
 11.06
 \end{array}$$

$$\begin{array}{r}
 9.403 \\
 \underline{018} \\
 9.385 \\
 7.806 \\
 \sqrt{5.612} \\
 4.388 \\
 10.97
 \end{array}$$

$$\begin{array}{r}
 9.379 \\
 \underline{.009} \\
 9.370 \\
 7.791 \\
 \sqrt{5.582} \\
 4.417 \\
 11.04
 \end{array}$$

$$\begin{array}{r}
 9.358 \\
 \underline{9.986} \\
 9.372 \\
 7.793 \\
 \sqrt{5.586} \\
 4.414 \\
 11.03
 \end{array}$$

$$\begin{array}{r}
 9.340 \\
 \underline{9.970} \\
 9.370 \\
 7.791 \\
 \sqrt{5.582} \\
 4.418 \\
 11.04
 \end{array}$$

$$\begin{array}{r}
 9.323 \\
 \underline{9.971} \\
 9.352 \\
 7.773 \\
 \sqrt{5.546} \\
 4.454 \\
 11.13
 \end{array}$$

$$\begin{array}{r}
 9.293 \\
 \underline{9.928} \\
 9.365 \\
 7.786 \\
 \sqrt{5.572} \\
 4.428 \\
 11.07
 \end{array}$$

$$\begin{array}{r}
 9.282 \\
 \underline{9.922} \\
 9.360 \\
 7.781 \\
 \sqrt{5.562} \\
 4.438 \\
 11.09
 \end{array}$$

$$\begin{array}{r}
 9.262 \\
 \underline{9.907} \\
 9.355 \\
 7.776 \\
 \sqrt{5.552} \\
 4.448 \\
 11.12
 \end{array}$$

$$\begin{array}{r}
 9.155 \\
 \underline{9.805} \\
 9.350 \\
 7.771 \\
 \sqrt{5.542} \\
 4.458 \\
 11.14
 \end{array}$$

$$\begin{array}{r}
 9.059 \\
 \underline{9.683} \\
 9.376 \\
 7.797 \\
 \sqrt{5.594} \\
 4.406 \\
 11.01
 \end{array}$$

$$\begin{array}{r}
 8.957 \\
 \underline{9.600} \\
 9.357 \\
 7.778 \\
 \sqrt{5.556} \\
 4.444 \\
 11.11
 \end{array}$$

$$\begin{array}{r}
 8.869 \\
 \underline{9.516} \\
 9.353 \\
 7.774 \\
 \sqrt{5.548} \\
 4.452 \\
 11.13
 \end{array}$$

No.	Ratio.	$(\Sigma - 0)$	Corr. for mag. B.	Cor. for ratio.	Corrected Values $(\Sigma - 0)$
121	.1	+15	0	0	+15
122	0	+03	+1	+1	+23
123	.1	-74	-1	0	-84
124	0	+07	0	+1	+17
125	.1	-43	+1	0	-33
129	.7	+1.23	-1	-6	+53
131+2	.1	-11	+1	0	-01
135	.2	-01	0	-1	-11
136	.1	.00	0	0	.00
137	1.2	+50	-1	-7	-30
138	.2	+01	0	-1	-02
139+140	1.3	+88	0	-7	+18
142	.3	+26	0	-2	+06
143	.3	+20	0	-2	.00
144	0	-1.59	0	+1	-1.79
145	.5	+49	-2	-4	-11
146	0	-42	0	+1	-.32
147	0	+27	+1	+1	+47
148	.1	-29	+1	0	-.19
150	.2	+59	-2	-1	+29
152	3	+1.34	+1	-2	+1.24
153	0	-.20	0	+1	-.10
155	0	+45	0	+1	+55
156	.1	+63	-4	0	+23
160	0	+11	+1	+1	+31
161	.3	-.06	0	-2	-.26
162	0	+27	-1	+1	+27
163	.3	+1.36	-4	-2	+76
164	0	-.09	+1	+1	+11
		13.15	-16	-37	
			+8	+10	

No.	Ratio.	($\Sigma - 0$)	Cor. for Mag. B.	Cor. for ratio.	Corrected Value ($\Sigma - 0$)
166	.7	+86	0	-6	+26
168	.2	-34	0	-1	-.44
169	.1	-.02	0	0	-.02
170	.2	-.01	+1	-1	-.01
171	0	+14	+1	+1	+34
172	.2	-.21	-2	-1	-.51
173	.1	+42	+1	0	+52
174	.1	-.23	0	0	-.23
175	0	-.05	+1	+1	+15
176	.6	+60	0	-5	+10
179	.1	+1.24	-.4	0	+.84
181	.6	+20	0	-5	-.30
182+3	1.1	+.68	0	-7	-.02
184	0	+.28	0	+1	+.38
185	.2	-.47	-.4	-1	-.97
188	.6	+.74	0	-5	+.24
189	.1	+.07	+1	0	+.17
190	0	-.28	+1	+1	-.08
196	.1	-.11	0	0	-.11
197	0	-.77	+1	+1	-.57
198+9	.2	+.36	0	-1	+.26
202	.1	-.04	+1	0	+.06
214	0	-.10	0	+1	.00
215	.1	-.30	0	0	-.30
216	.5	+.43	-1	-4	-.07
217	1.2	+.58	0	-7	-.12
219	.9	+.50	0	-7	-.20
220	.1	-.17	0	0	-.17
221	0	-.35	0	+1	-.25
		10.55	-11	-51	
			+8	+7	

Reduction to diffs. of magnitude of Zöllner's table
for reduction of observed light of Saturn at epoch of dis-97
appearance of rings. See Phot. Centers, p. 200.

λ	Δm	Diff. mag.
0°	0.0000	0.000
1	9.955	0.041 41
2		0.081 40
3		0.120 39
4		0.158 38
5		0.193 35
6		0.229 36
7		0.264 35
8		0.297 33
9		0.330 33
10		0.363 33
11		0.395 32
12		0.427 32
13		0.458 31
14		0.489 31
15		0.520 31
16		0.550 30
17		0.581 31
18		0.612 31
19		0.642 30
20		0.673 31
21		0.704 31

98

No.	Ratio.	$(\Sigma - 0)$	Cor. for Mag. B.	Cor. for ratio.	Corrected Val. $(\Sigma - 0)$	0	
222	.5	+32	0	-4	-0.8	+10	-1.42
224	.2	+1.11	-4	-1	+61	+14	-0.7
225	.8	+31	-1	-7	-49	+26	
226	.1	+01	+1	0	+61	+14	
227	.2	-19	-1	-1	-39		
228	.1	+10	0	0	+10		
229	.2	+27	-3	-1	-13	+64	-1.49
230	.1	-18	-1	0	-28	+52	-2.1
231	.4	+95	0	-3	+65	+55	
232	.2	-09	0	-1	-19		
234	.6	+1.18	-4	-5	+28		
235	.4	+03	0	-3	-27		
236	.1	+12	+1	0	+22		
238	.1	-17					
239	.1	+17	-1	0	+07	+107	-2.1
		5.03	-15	-26	+1.61	-03	
		10.59	+2			-72	
		13.15	$\begin{pmatrix} -105 \\ +28 \end{pmatrix} \begin{pmatrix} -323 \\ +24 \end{pmatrix}$			-60	
		15.82					
		14.04					
		13.36					
		71.95	Totals				
					+1.61	-1.35	
					+03	-1.89	
					+07	-42	
					+27	-20	
					+45	-09	
					+11		
					+27		
					+1.20	-2.60	

.1	.2	.3	.4	.5	.6	.7	.8
+04. -86	-82+48	-23+38	-25	-07	+04	+33	
+40	-85	+76					
+96	-24						
+29	-99						
+50							
+47							
+266 -86	-290+48	-23+114	-25	-07	+04	+33	
+03. -29. +68. -16+89.	+07.	+34. -54. +27.					+83'
+67. -12	-35	+143. -12+51.					
+52. -22		-17. +151.					
+30.							
+14.							
+83.							
+78.							
+327 -63 +68 -51+89	+07	+1.77 -83 +3.03					+83
+22 -23 +65	+49	+44	+86	-23 +1.08			+1.23
+01	+12	+55		+21			
+19	+18	+10					
	+01						
	+17						
+42 -23 +1.13	+1.14	+44	+1.07	-23 +1.08			+1.23
+15 -74 +08 -01 +26 -06	+49			+1.23			
00 -43 +59	+20						
+63 -11	+1.34						
-29	+1.36						
+78 -157 +67 -01 +3.16 -06	+49					+1.23	

00

.9

+39

1.0

+34

1.1

1.2

1.3

1.4

1.5

+1.33

1.6

1.7

+39

+34

+1.33

+27.

+27

+82

+98

+76

+1.19

+53

+86

+75

+1.68

+1.73

+76

+1.19

+53

+50

+88

+50

+88

1.8
+21

Sept. 25, 1975.

+21

Distance and

	.1	.2	.3	.4	.5	.6	.7	.8	.9
+4	-0.5742	-0.2+36	-34		+43	+60	+86		
+28	-2841.24	-23	-01			+20			
-77	+0.7	-11	-21			+74			
-10		-04	-47						
-35		-30							
		-17							
+42	-1.55+1.73	-1.87+36	-1.03		+43	+1.54	+86		
	+01	-18+1.11	-19	+95	+32	+1.18		+31	
	+10	+27	-09	+03					
	+12								
	+17								
	+40	-18+1.38	-28	+98	+32	+1.18		+31	
+64	-1.49+2.66	-1.86	-290+48	-23+1.14	-25	-0.7	+0.4	+33	
+1.07	-2.1+3.27	-6.3+6.8	-5.7+89	+0.7	+1.77	-83+3.03		+83	+27
+1.61	-1.35+4.2	-2.3+1.13	+1.14		+44	+1.07	-23+1.08	+1.23	+1.6
+1.20	-2.60+7.8	-1.57+6.7	-0.1+3.16	-0.6	+49		+1.23		
+42	-1.55+1.73	-1.87+36	-1.03		+43	+1.54	+86		+80
	+40	-18+1.38	-28	+98	+32	+1.18		+31	
+4.94	-7.20+9.26	-4.34+4.22	-4.73+5.67	-2.9+2.19	-25+3.45	-90+6.86	-23+3.50	+2.37	+2.45

Sum total 71.90

Total no. incl.
one 0.0 diff. = 158.

0	+4.94	-7.20
1	9.26	4.34
2	4.22	4.73
3	5.67	.29
4	2.19	.25
5	3.45	.90
6	6.86	.23
7	3.50	—
8	2.37	—
9	2.45	—
10	2.12	—
	1.02	—
	1.26	—
	1.46	—
	1.19	—
	1.86	—
	—	—
	.21	—
	+54.02	-17.94

~~38.86~~
~~275~~

~~36.00~~

~~6.98~~
7.00

Mag B.

to 4.9	5.0 to 5.9	6.0 to 6.9	7.0 to 7.9
+1.46 +1.60	+1.30 +1.24	-1.65 +1.63	+1.29 +1.24
			-1.55 -1.36
+1.06	+1.54	-1.85 +1.63	+1.53 -1.91
	+1.59 +1.11	+1.62 +1.52 +1.30 +1.14 +1.02	-1.11 +1.03 +1.83 +1.65 +1.22 +1.29
			-1.29 -1.26 -1.43 -1.12 -1.23
	+1.70	+1.60	+1.55 +2.57
		-1.11	-1.33
+1.18 +1.23	-1.19 -1.01	+1.14 +1.17	-1.63 -1.33 -1.02
		+1.15 +1.18 +1.06	(1.00) (.00) (.00)
		-1.23	+1.06 +1.05 +1.07
			-1.10 -1.17 -1.62 -1.11
+1.41	-1.20	+1.31	-1.79 -2.79
		-1.98	+1.39 (.00)
		-1.23	+1.18

Mag. B.

105

8.0 to 8.9 { 9.0 to 9.9 { 10.0 to 10.9 { 11.0 to 12.0

+47	-47	+30	-02	+76	-47	-36
	-86		-1.12	+06	-1.39	
	-34		-56			
	-31		-1.42			
			-59			
			-53			
+47	-1.98	+30	-4.24	+82	-1.86	-36
+0.8	-52	+1.8	-16	+63	+27	-97
+1.08	-22	+17	-1.04	+06	+29	
+1.13	-45		-07	+18		
+5.8						
+7.8						
+2.8						
+2.93	-1.19	+35	-1.27	+87	+56	-97
+1.71(.00)	-50	+43	-01		-04	-05
		+02	-19			
		+53	-03			
			-84			
			-30			
+1.71(.00)	-50	+98	-1.37		-04	-05

Mag. B.

Table XX.

0 to 4.9		5.0 to 5.9		6.0 to 6.9		7.0 to 7.9	
+47		+1.24	-.19	+55	-.32	+38	-.30
+34		+.31	-.01	+26	-.10		-.02
		+.11	-.05	+10	-.26		
		+.52		+24			
		+.15					
		+.17					
+81		+2.50	-.28	+115	-.68	+38	-.32
+22	-.57	+06		+10	-.25	(.00)	-.11
		+.11			-.19		-.12
					-.27		
+22	-.57	+17		+10	-.71	(.00)	-.23
+1.06	—	+54	-.85	+63	—	+53	-.91
—	—	+.70	—	+1.60	-.11	+2.57	-1.33
+.41	-.20	+.31	-.98	+39 (00)	-.23	+.18	-2.79
+.81	—	+2.50	-.28	+115	-.68	+38	-.32
+22	-.57	+17	—	+10	-.71	(.00)	-.23
+2.50	-.77	+4.22	-2.11	+3.87 (00)	-1.73	+3.66 (00)	-5.58
+27.50							
-28.16							
55.94							
(7)	(3)	(14)	(7)	(14)	(11)	(8)	(12)
							(11)
							(16)

Total no. = 158

Table XX, Map. B.

107

8.0 to 8.9			9.0 to 9.9			10.0 to 10.9			11.0 to 12.0		
-44	+29		-51	+23		-11	+84				
-02	+27			+76		-97					
-23											
<hr/>			<hr/>			<hr/>			<hr/>		
-69	+56		-51	+99		-108	+84				
+26	-30	+07	-07	+28		-13	+61				
+65	-20		-49								
	-17		-39								
	-08		-28								
<hr/>			<hr/>			<hr/>			<hr/>		
+91	-75	+07	-123	+28		-13	+61				
<hr/>											
+47	-198	+30	-424	+82		-186			-36		
+293	-119	+35	-127	+87			+56		-97		
+171(00)	-50	+98	-137			-04			-05		
	-69	+56	-51	+99		-108	+84				
<hr/>			<hr/>			<hr/>			<hr/>		
+91	-75	+07	-123	+28		-13	+61				
+602(00)	-511	+226	-862	+296		-311	+201		-138		
<hr/>											
(10)	(11)	(15)	(9)	(19)	(8)	(6)	(4)		(3)		

Ratio *Diff. mag.*
Dist.

	.0	.1	.2	.3	.4
.30	-1.42	+.30	-.36	-1.12	-.53
+.24	+.76	-.86	-.85		-.02
+.46	+.29		-.34		
+.24	+.60		-1.39		
	+.47				
+.124	-1.42	+.242	-1.22	-3.70	-.53
+.03	-.11	+.27	-.07	+.52	-.26
+.62		+.52	-.29	+.55	+.18
+.65		+.30	-.12	+.02	+.29
		+.14	-.22		+.29
		+.83			
		+.78			
		+.22			
	+.1				
+.130	-.11	+.317	-.70	+.115	-.71
					+.76
+.171	-.62	+.15 (.00)	-.01	+.18	-.19
+.07	-.50		-.23		+.06 (.00)
+.23	-1.79		-.84		-.05
+.17			-.33		-.10
			-.01		
+.218	-2.91	+.15 (.00)	-1.42	+.18	-.35
					+.06 (.00)
					-.15

Ratio $\frac{\text{Diff. mag.}}{\text{Dist.}}$

109

.5	.6	.7 & .8	.9 + 1.0	1.1 to 1.8 incl.
-47	-56	-47	-31	+63
				-3.6
				-59

-47	-56	-47	-31	+63	-95
-----	-----	-----	-----	-----	-----

+63	-16	+17	+13	+28	-43	+59
	-1.04	+08	+18			
	-52	+1.08				
	-97	+06				

+63	-2.69	+1.39	+31	+28	-43	+59
-----	-------	-------	-----	-----	-----	-----

+14		-63	+43	+02	-04	+06	-17
		-19	+05			+18	-30
			+53				

+14		-12	+1.01	+02	-04	+24	-47
-----	--	-----	-------	-----	-----	-----	-----

Ratio $\frac{\text{Diff. mag.}}{\text{Dist.}}$

Table XX

.0	.1	.2	.3	.4
.47.	-.32 +.23.	-.19 +.29.	-.44 +1.24.	-.26
+55.	-.10 +.31.	-.02	-.01 +.76.	
+31.				
+27.	-.08 +.52.	-.23.	-.51.	
+11.	+.84.		-.97.	
+34.	+.17.			
+15.				
+38.				
+258	-.50 +1.76	-.44 +.29	-1.93 +2.00	-.26
<hr/>				
(.00)	-.57 +.06	-.11 +.26	-.39	+.65 - .27
	-.25 +.11	-.30 +.61	-.13	
	+.10	-.17	-.19	
	+.22	-.28		
	+.07			
(.00)	-.82 +.56	-.86 +.87	-.71	+.65 - .27
<hr/>				
+1.24	1.42 +2.42	-1.22	-3.70	+.06 - .57
+1.30	-.11 +3.17	-.70 +1.15	-.79 +.76	-.23
+2.18	-2.91 +.15 (.00)	-1.42 +.18	-.35 +.06 (.00)	-.15
+2.58	-.50 +1.76	-.44 +.29	-1.93 +2.00	-.26
	(.00) -.82 +.56	-.86 +.87	-.71	+.65 - .27
+7.30 (.00)	-.576 +8.06 (.00)	-4.64 +2.49	-7.40 +2.82 (.00)	-.94 +.78 - 1.07

+27.50

-28.41

55.91

(19) (1) (10) (23) (1) (18) (7) (17) (6) (1) (4) (2) (4)

Total no. = 158

Ratio $\frac{\text{Diff. mag.}}{\text{Dist.}}$

111

.5	.6	.7 + .8	.9 + 1.0	1.1 to 1.8 incl.
-11.	+10. +24.	-30. +26.		-02.

-11	+34	-30	+26	-02
-----	-----	-----	-----	-----

-07 -08	+28		-49	-20	-12
------------	-----	--	-----	-----	-----

-15	+28		-49	-20	-12
-----	-----	--	-----	-----	-----

—	-47	—	-56	—	-47	—	-31	+63	-95
+63	-2.69	+1.39	—	+31	—	+28	-43	+59	—
+14	—	—	-82	+1.01	—	+02	-04	+24	-47
—	-11	+34	-30	+26	—	—	—	—	-02
—	-15	+28	—	—	-49	—	-20	—	-12
+77	-3.42	+2.01	-1.68	+1.58	-96	+30	-98	+1.46	-1.56

(2)

(2)

(7)

(4)

(6)

(2)

(2)

(4)

(4)

(6)

S. Cancri.9^d 11^h 37^m.75

.0005208

.025694

.458333

9^d 484548 = period S. Cancri. = 13657³/₄ min.

1854 353d.

2397489

366

365

353,

2398573.538956^m = .038912^h = .5000.5389~~45~~

1460

1867

2401872

366

365

365

24205919

2403210.5919

2398573.5389

4637.0530 = 3.6662371

14^h = .523312^h = .008324^h = .0003.59193.666242112^h 56^m21^h 49^m

9.4845 = 0.9770144

2.6892277

488.9087

9.9584205

4.1353871

12411. = 4.0938076

1440

13851 min. = 1 per. + 13^h 13^m

13652

193

1854m. 353.166 9 = time of min.

Cor.

1855

$$\begin{array}{r}
 2397489 \\
 366 \\
 355 \\
 355 \\
 \hline
 64.3639
 \end{array}$$

$$44^m = .0306$$

$$8^h = .3333$$

$$.3639$$

$$\begin{array}{r}
 2398629.3639 \\
 2403210.5919 \\
 \hline
 4581.2280
 \end{array}$$

$$4581.2280 = 3.6609793$$

(63)

$$443.0227$$

$$\text{Log. } 0.227 = 8.3560259$$

$$4.1353871$$

$$310^m \quad 2.4914130$$

$$5^h \quad 18^m$$

$$8^h \quad 44^m$$

$$1855 \quad 64^d \quad \frac{1}{3}^h \quad \frac{5}{4}^m = \text{min.}$$

$$1855 = 2397489$$

$$366$$

$$355$$

$$355$$

$$102.3750 = 9^h$$

$$.0021 = 3^m$$

$$2398667.3771$$

$$2403210.5919$$

$$4543.2148 = 3.6573619$$

(101)

$$3.6573634$$

$$0.9770144$$

$$2.6803489$$

$$479.0149$$

$$\text{Log. } 0.149 = 8.1731860$$

$$4.13658 = 4.1353871$$

$$204^m = 2.3085734$$

$$3^h \quad 24^m$$

$$9 \quad 3$$

$$1855 \quad 102^d \quad \frac{9}{12}^h \quad \frac{3}{27}^m = \text{min.}$$

$$1556 = 2398950$$

Pr. 3333

.0125

$$\begin{array}{r} 2399038.3458 \\ 2403210.5919 \\ \hline \end{array}$$

$$4172.2461 = 3.6203651$$

42
6
10

$$3.6203699$$

$$0.9770144$$

$$2.6433555$$

40

15

$$439.9015$$

$$\log .9015 = 9.9549657$$

$$4.1353871$$

$$12313. =$$

$$4.0903528$$

$$1.440$$

$$1.3753$$

$$1.3658$$

$$95 = 1.435$$

$$1556 \text{ p.d. } \frac{9^h 18^m}{9^h 53^m} = \text{time min.}$$

Cor.

$$1556 = 2398950$$

$$107.3750$$

.0236

$$2399057.3986$$

$$2403210.5919$$

$$4153.1933 = 3.6183724$$

94
3
31

$$3.6183821$$

$$0.9770144$$

$$437.8927 = 2.6413677$$

50
27

$$\log .8927 = 9.9507055$$

$$4.1353871$$

$$12192. =$$

$$4.0860926$$

$$1.440$$

$$1.3632$$

$$1.3658$$

$$26^m$$

$$1556 \text{ p.d. } \frac{9^h 34^m}{9^h 8^m} = \text{time min.}$$

Cor.

$$1857 = 2398950$$

$$366$$

$$54.2083$$

$$.0118$$

$$2399370.2201$$

$$2403210.5919$$

(53)

$$3840.3718 = 3.5843652$$

$$\log 9104 = 9.9592322$$

$$4.1353871$$

$$12434 = 4.0946193$$

$$1440$$

$$13874$$

$$13652$$

$$2160$$

$$32360$$

$$1857.54d \frac{5}{8} \frac{17}{53} = \text{time min.}$$

Cor.

$$404.9104$$

$$3.5843733$$

$$0.9770144$$

$$2.6073589$$

$$85$$

$$4.00$$

$$1858 = 2398950$$

$$366$$

$$365$$

$$1860 = 2400411$$

$$40.3750$$

$$.0111$$

$$2400451.3861$$

$$2403210.5919$$

$$2759.2058 = 3.4407832$$

$$79$$

$$126$$

$$3.440784116$$

$$0.9770144$$

$$290.9174 = 2.4637697$$

$$587$$

$$110$$

$$\log.9174 = 9.9625587$$

$$4.1353871$$

$$12530. = 4.0979458$$

$$1440$$

$$13970$$

$$13658$$

$$312$$

$$12$$

$$16$$

$$1860. W. 4.0d \frac{1}{14228} = \text{time min. Cor.}$$

$$1855 \quad 2397489$$

$$366$$

$$355$$

$$355$$

$$96.383$$

$$2398661.383$$

$$2403210.5929$$

$$4549.2089 = 3.6579350$$

$$77$$

$$186$$

$$3.6579359156$$

$$0.9770144$$

$$479.6468 = 2.6809215$$

$$154$$

$$61$$

$$1855 = 2397489$$

366

355

355

101.379

2398666.379

2403210.5919

$$4544.2129 = 3.6574574$$

196

3.6574587(76)

0.9770144

$$479.1200 = 2.6804443$$

$$1858 = 2398950$$

366

355

21.512

2399692.512

2403210.5919

$$3518.0799 = 3.5462958$$

87

112

122

3.5463057

0.9770144

$$370.9294 = 2.5692913$$

803

110

Longitude of Bonn from Wash. = $-5^h 36^m 36.0^s$
 " " Paris " " = $-5^h 17^m 32.7^s$
 Cor. = $+ 19.7$

Horizontal distances each $\frac{1}{30} = 1$ large sq.

Vertical dist. = steps 1 step = 1 large sq.

$$\begin{array}{r} .70833 \\ .03750 \\ \hline 0.74583 \end{array}$$

$$52.37500$$

$$.01597$$

$$.00641$$

$$52.39138$$

$$0.74583$$

$$\log 51.64555 = 1.7130283$$

$$2.6734 = 0.4574731$$

$$\begin{array}{r} 0.4574792 \\ 1440. = 3,1583665 \\ \hline 3,6158417 \\ 2,0681154 \\ \hline 48 > 1.6140276 \end{array}$$

$$18.0117$$

$$\begin{array}{r} 1.7130329 \\ 0.4574792 \\ \hline 1.2555537 \\ 378 \\ \hline 159 \end{array}$$

June 24 finished in book
" 26 " " "

119

10.86 - 10.95

Log. 108.3	= 2.0346	$\div 4 = .086$	
135.4	2.1316	= .329	
155.2	2.1909	= .477	
162.5	2.2108	= .527	
155.2	2.1909	= .477	
135.4	2.1316	= .329	
108.3	2.0346	= .086	
81.2	1.9096	= 2.274	9.774
61.4	1.7882	= 1.970	9.470
54.1	1.7332	= 1.833	9.833
61.4	1.7882	= 1.970	9.470
81.2	1.9096	= 2.274	9.774

10.86	- .12
10.62	-.25
10.47	+.14
10.42	+.10
10.47	+.26
10.62	-.24
10.86	+.18
11.72	-.45
11.42	+.27
11.78	-.62
11.42	+.08
11.72	-.39

+1.03

+2.07

108.3 (1 + .5 km v)

10°	117.7	1.086
20	126.8	1.171
40		1.250
50		1.321
70		
80		

11.03	
10.86	+.170
10.62	+.41
10.47	+.56
10.42	+.61
10.47	+.56
10.62	+.41
10.86	+.17
11.72	-.69
11.42	-.39
11.78	-.75
11.42	-.39
11.72	-.69
	+2.89
	-2.91

		\log	$\frac{\log}{.4}$	$\frac{1103}{\log} - \frac{\log}{.4}$	$\frac{\log}{.4}$
0	100.0	.000	.000		11.03
10	108.6	.0359	.090		10.94
20	117.1	.0686	.172		10.86
30	125.0	.0969	.242		10.79
40	132.1	.1209	.302		10.73
50	138.3	.1409	.352		10.68
60	143.3	.1562	.390		10.64
70	147.0	.1673	.418		10.61
80	149.2	.1738	.434		10.60
90	150.0	.1761	.440		10.59
100	91.4	.9609	9.902		11.13
110	82.9	.9186	9.796		11.23
120	75.0	.8751	9.688		11.34
130	67.9	.8319	9.580		11.45
140	61.7	.7903	9.476		11.55
150	56.7	.7536	9.384		11.65
160	53.0	.7243	9.311		11.72
170	50.8	.7059	9.265		11.77
180	50.0	.6990	9.248		11.78

D. m. + 82° * 82.

D. m. + 87.° * 26

	Fid. 496	Car. # 456	Car. # 406.
490. R. a.	2h 48m 34.47	2h 59 51.6	2h 40m 59.7
" M.P.D.	7° 16' 6.5	7° 0' 26.4	2° 38' 26.7
+	42° 8' 37.05	44° 57' 54.0	40° 14' 55.5
+ + (2+V)=A	42° 42' 46.4	45° 7' 5.8	40° 24' 7.3
Log. $\theta \sin 1''$	3.9372545	3.3680178	3.3680178
" cot. δ	0.8943410	0.9103969	1.3360877
" cos. A	9.8661467	9.8485866	
Log. w	8.6977422	8.1270013	
" $1/(1-w)$	0.0222124	0.0058589	
" tan. A	9.9652911	0.0017931	
" tan. $(A'-A)$	8.6852457	8.1346533	
$A + (2'-V')$	43° 16' 57.4	45° 16' 19.9	
$A' - A$	2° 46' 24.6	46' 52.2	
δ'	46° 3 22.0	46° 3' 12.1	
$\frac{1}{2} (A' - A)$	1° 23' 12.3	23' 26.1	
$\frac{1}{2} (A' + A)$	44° 5' 58.4	45° 30' 31.9	
Log. θ	-3.2516869	-2.6824429	
" cos. $\frac{1}{2} (A'+A)$	9.8562035	9.8455934	
" sec. $\frac{1}{2} (A'-A)$	0.0001272	0.0000101	
" $(\delta' - \delta)$	-3.1080176	-2.5280464	
$(\delta' - \delta)$	-21' 22.4	-5' 37.3	
1879.0 R. a.	3h 4m 13.5	3h 4m 12.81	
1879.0 M.P.D.	83° 5' 15.9	83° 5' 10.9	

X

$$\begin{array}{r} 2 \quad 59 \quad 52 \\ 82^\circ \quad 59' \quad 36'' \quad (7.5 \text{ days}) \\ \hline \text{N.R.D. } 7 \quad 0 \quad 24 \end{array}$$

$$\begin{array}{r} 2^h \quad 48^m \quad 34.47 \\ \quad \quad 10 \quad 56.8 \\ \hline 2 \quad 59 \quad 31.27 \end{array}$$

$$\begin{array}{r} +10.105 \\ \quad \quad 65 \\ \hline 50 \quad 525 \\ 60 \quad 630 \\ \hline 65 \quad 6.825 \\ +10^m \quad 56.8 \end{array}$$

$$\begin{array}{r} +14.873 \\ \quad \quad 65 \\ \hline 74 \quad 365 \\ 89 \quad 238 \\ \hline 96 \quad 6.745 \\ \quad \quad 16' \quad 6.7 \\ \hline 82 \quad 43 \quad 53.5 \\ 83 \quad 0 \quad 0.2 \end{array}$$

$$t' - t = 1879 - 1790 = 89$$

$$\text{Log. } 23.0511 = 1.3623147$$

$$\text{" } 89 = 1.9493900$$

$$\begin{array}{r} 2049.77 = 3.3117047 \\ \quad \quad 6903 \\ \hline \quad \quad 144 \end{array}$$

$$\begin{array}{r} 2049.77 \\ \quad \quad 33 \\ \hline 60 \mid 2049.44 \\ \quad \quad 34' \quad 9.4 = (2+1) \end{array}$$

$$\text{Log. } 0.001922 = 4.2837534$$

$$\text{" } 10^2 = 2.0000000$$

$$0.019220 = 2.2837534$$

$$\begin{array}{r} .01922 \\ .31018 \\ \hline .32940 \end{array}$$

$$\text{Log. } 0.000497 = 5.6963564$$

$$\text{" } 79 = 1.8976271$$

$$\begin{array}{r} 1.8976271 \\ \hline .31018 = 1.4916106 \end{array}$$

$$\text{Log. } 0.001922 = 4.2837534$$

$$\text{" } 79^2 = 3.7952542$$

$$11995 = 0.0790076$$

$$\text{Log. } 0.000497 = 5.6963564$$

$$\text{" } t^2 = 100 = 2.$$

$$.00497 = 3.6963564$$

$$2049.77$$

$$\begin{array}{r} 1.1995 \\ 60 \mid 2050.97447 \end{array}$$

$$34' \quad 16.0 = 2' - 1'$$

$$\begin{array}{r} \text{Log. } 0.000432 = 5.6354837 \\ \quad \quad .00432 \end{array}$$

$$20.0611 = 1.3023548$$

$$89 = 1.9493900$$

$$1785.44 = 3.2517448$$

$$93$$

$$1785.44$$

$$\begin{array}{r} .00432 \\ 1785.44432 \\ \hline .26961 \end{array}$$

$$60 \mid 1785.17471$$

$$29' \quad 45.17 = \theta$$

$$\text{Log. } 0.000432 = 5.6354837$$

$$\text{" } 79^2 = 3.7952542$$

$$26961$$

$$1.4307379$$

$$60$$

$$19$$

Lapetus.

Diff.	Log.	Ans.	Log.	Ans.
- .73	.292	1.959	9.708	.519
- .80	.320	2.089	9.680	.479
- .79	.316	2.070	9.684	.483
- .82	.328	2.128	9.672	.470
- 1.01	.404	2.535	9.596	.394
- .79	.316	2.070	9.684	.483
- .73	.292	1.959	9.708	.510
- .33	.132	1.355	9.268	.738
+ .03	9.988	1.973	.012	1.028
+ .35	9.860	1.724	.40	1.380
+ .21	9.916	1.824	1.084	1.213
- .28	.112	1.294	9.828	.773

Constants for 1879 from Cav. Formula.

$$Z + V = +23.0311(t' - t) - 0.0001922t^2 - 0.0000497t'^2$$

$$\text{Log. } 23.0311 = 1.3623147$$

$$\text{Log. } .0001922 = \bar{4}.2837534$$

$$\text{" } 24. = 1.3802112$$

$$\text{" } 55^2 = 3.4807254$$

$$552.7 = 2.7425259$$

$$.581 = 7.7644788$$

$$\text{Log. } .0000497 = \bar{5}.6963564$$

$$\frac{552.7}{551.81} = (Z + V) = 9' 11.8''$$

$$\text{" } 79^2 = 3.7952542$$

$$.31018 \quad \bar{1}.4916106$$

$$Z' - V' = 23.0311(t' - t) + .0000497t^2 + .0001922t'^2$$

$$\text{Log. } .0000497 = \bar{5}.6963564$$

$$\text{Log. } .0001922 = \bar{4}.2837534$$

$$\text{" } 55^2 = 3.4807254$$

$$\text{" } 79^2 = 3.7952542$$

$$.15034 = \bar{1}.1770818$$

$$1.1995 = 0.0790076$$

$$552.715 +$$

$$\frac{1.20}{554.1} = (Z' - V') = 9' 14.1''$$

Constants for 1879.0 from Car. Trav. 125

$$\theta = +20.0611(t' - t) + .0000432t^2 - .0000432t'^2$$

$$\text{Log. } 20.0611 = 1.3023548$$

$$\text{" } 24. = \underline{1.3802112}$$

$$481.47 = 2.6825660$$

$$\text{Log. } .0000432 = \overline{5}.6354837$$

$$\text{" } \sqrt{52} = \underline{3.4807254}$$

$$.13068 = \overline{1}.1162091$$

$$\text{Log. } .0000432 = \overline{5}.6354837$$

$$\text{" } 792 = \underline{3.7952542}$$

$$.26961 = \overline{1}.4307379$$

$$481.47$$

$$\underline{.13}$$

$$481.60$$

$$\underline{.27}$$

$$481.33 = \theta$$

D. M. + 75° 124.

D. M. 74° 137.

Born Z, + 75° 124.

1855 R. A.	2h 51 ^m 20. ^s 35
1855 U. R. D.	14° 46' 3."4
t	42° 50' 5."25
t + (Z + P) = A	42° 59' 17.05
Log. θ sin. 1"	3.3680178
" cot. d.	0.5790435
" cos. A.	9.8642118
" "	7.8112731
" $1 \div (1 - u)$	0.0028234
" tan. A.	9.9694746
" tan. (A' - A)	7.7835711
A + (Z' - v')	43° 8' 31."15
A' - A	20' 53.1
t'	43° 29' 24."25
$\frac{1}{2} (A' - A)$	10' 26.6
$\frac{1}{2} (A' + A)$	43° 9' 43."65
Log. θ	-2.6824429
" cos. $\frac{1}{2} (A' + A)$	9.8629783
" sec. $\frac{1}{2} (A' - A)$	0.0000020
" (d' - d)	-2.5454232
d' - d	- 5' 51.1
1879. R. A.	2h 53 ^m 57. ^s 62
1879 Decl.	75° 19' 47.7

X

2h 56 ^m 15. ^s 28
150 57' 37.0
440 3' 49."20
440 13' 11.00
3.3680178
0.5426412
9.8553441
3.7670031
0.0025481
9.9881276
7.7576788
440 22' 15."10
19' 40."59
440 41 55.69
9' 50."30
440 22' 51."30
-2.6824429
9.8541272
18
-2.5365719
- 5' 44."01
2h 58 ^m 47. ^s 71
740 8' 7."0

X

D. M. + 76° , 117.D. M. + 79° . 94 127

X

X

1842. R. A.	2 ^h 5 ^m 50. ^s 38	2 ^h 5 ^m 32. ^s 32
1842. L. P. D.	13° 51' 15."1	10° 21' 36."0
α	44° 42' 35."7	43° 23' 4."8
$\alpha + (Z + \nu) = A$	44° 56' 47.2	43° 37' 16."3
log. θ sin 1"	3.556 0198	3.556 0198
" cot. δ	0.607 9598	0.733 0212
" cos. A	9.849 8906	9.859 6886
" w	8.013 8702	8.148 7296
$0.1 \div (1-w)$	0.004 5052	0.006 1583
" tan. A	9.999 1881	9.979 0896
" tan. $(A' - A)$	8.017 5635	8.133 9775
$A + (Z' - \nu')$	45° 11' 0.6	43° 51' 29.7
$A' - A$	35' 47."7	46' 47."9
α'	45° 46' 48."3	44° 38' 17."6
$\frac{1}{2}(A' - A)$	17' 53."8	23' 24.0
$\frac{1}{2}(A' + A)$	45° 14' 41."0	44° 0' 40."3
log. θ	-2.870 4449	-2.870 4449
" cos. $\frac{1}{2}(A' + A)$	9.847 6221	9.856 8521
" sin. $\frac{1}{2}(A' - A)$	59	100
" $(\delta' - \delta)$	2.718 0729	2.727 3070
$(\delta' - \delta)$	8' 42."5	8' 53.7
1879. R. A.	3 ^h 3 ^m 7. ^s 22	2 ^h 5 ^m 33. ^s 17
1879. Decl.	76° 17' 27."4	79° 40' 17.7

X

1879 Constants. (from 1842)

$$Z + V = +23.0311 (t' - t) - 0.0001922 t^2 - 0.0000497 t'^2$$

$$Z' - V' = +23.0311 (t' - t) + 0.0000497 t^2 + 0.0001922 t'^2$$

$$\theta = +20.0611 (t' - t) + 0.0000432 t^2 - 0.0000432 t'^2$$

$$\text{Log. } 23.0311 = 1.3623147$$

$$\text{Log. } 0.0001922 = \bar{4}.2837534$$

$$\text{" } 37 = 1.5682017$$

$$\text{" } 42^2 = 3.2464986$$

$$852.15 \quad 2.9305164$$

$$.33904 \quad \bar{1}.5302520$$

$$\text{Log. } 0.0000497 = \bar{5}.6963564$$

$$\text{" } 79^2 = 3.7952542$$

$$.31014 = \bar{1}.4916106$$

$$.339$$

$$-.649$$

$$852.15$$

$$851.50 = 14' 11.5'' = (Z + V)$$

$$\text{Log. } 23.0311 (t' - t) = 852.15$$

$$\text{Log. } 0.0000497 = \bar{5}.6963564$$

$$\text{Log. } 0.0001922 = \bar{4}.2837534$$

$$\text{" } 42^2 = 3.2464986$$

$$\text{" } 79^2 = 3.7952542$$

$$.087671 \quad \bar{2}.9428550$$

$$119954 = 0.0790076$$

$$1.280$$

$$852.15$$

$$853.44 = 14' 13.44'' = (Z' - V')$$

$$\text{Log. } 20.0611 = 1.3023548$$

$$\text{Log. } 0.0000432 = \bar{5}.6354837$$

$$\text{" } 37 = 1.5682017$$

$$\text{" } 42^2 = 3.2464986$$

$$742.26 = 2.8705565$$

$$.07620 \quad \bar{2}.8819823$$

$$.076$$

$$742.336$$

$$.270$$

$$742.066 = 12' 22.1'' = \theta$$

$$\text{Log. } 0.0000432 = \bar{5}.6354837$$

$$\text{" } 75^2 = 3.7952542$$

$$.26961 \quad \bar{1}.4307379$$

X

1842.

X

1842.

129

67° 230

69° 196

70° 225. X

1842 R. A.	2h 41m 38.5	2h 52m 42.99	2h 51m 25.31
" U.P.D.	22° 50' 47.0	20° 23' 53.0	19° 6' 13.5
Δ		43° 16' 44.8	42° 51' 19.6
$\Delta + (\Delta + \delta) = A$		43° 24' 56.3	43° 5' 31.1
log. θ sin. 1"		3.5560198	3.5560198
" cos. δ		0.4296228	0.4604794
" cos. A		9.8611682	9.8634763
" "		7.8468108	7.8799755
" $1/(1-w)$		0.0030639	0.0033089
" lat. A		9.9759693	9.9710534
" lat. $(A' - A)$		7.8258440	7.8543378
$A + (\Delta' - \delta')$		43° 39' 9.7	43° 19' 44.5
$A' - A$		23' 1.2	24' 34.9
Δ'		44° 2' 10.9	43° 44' 19.4
$\frac{1}{2}(A' - A)$		11' 30.6	12' 17.4
$\frac{1}{2}(A' + A)$		43° 36' 26.9	43° 17' 48.5
log. θ		-2.8704449	-2.8704449
" cos. $\frac{1}{2}(A' + A)$		9.8597877	9.8620186
" sec. $\frac{1}{2}(A' - A)$		24	28
$\delta(\delta' - \delta)$		-2.7302350	-2.7324663
$(\delta' - \delta)$		-8' 57.3	9' 0.1
1879 R. A.		2h 56m 8.73	2h 54m 57.29
" Decl.		69° 45' 4.3	71° 2' 46.6

130

X 1855. 1842. 1842. X
 70° 223, 79° 95 X D.M. 67. 233
 1842.

R. A.	2 ^h 52 ^m 19. ^s 79	2 ^h 54 ^m 2. ^s 13	2 ^h 41 ^m 38. ^s 15
U. P. D.	19° 7' 40".5	10° 30' 49".9	22° 50' 47.0
δ	43° 41' 56".85	43° 30' 31".95	40° 24' 32".2
$\delta + (\delta' - \delta) = \delta'$	43° 14' 8".6	43° 44' 43".5	40° 38' 43".7
Log. δ sin. 1"	3.3680178	3.5560198	3.5560198
" cot. δ	0.4598873	0.7314471	0.3753938
" cos. δ	9.8624544	9.8587893	9.8801013
" "	7.6903595	8.1462562	7.8115149
" $1 \div (1 - w)$	0.0021333	0.0061231	0.0028234
" tan. δ	9.9732371	9.9809748	9.9337309
" tan. $(\delta' - \delta)$	7.6657299	8.1333541	7.7480692
$\delta + (\delta' - \delta)$	43° 23' 22".7	43° 58' 56".9	40° 52' 57.1
$\delta' - \delta$	15' 55".3	46' 43".8	19' 14".8
δ'	43° 39' 18".0	44° 45' 40".7	41° 12' 11".9
$\frac{1}{2}(\delta' - \delta)$	7' 57".6	23' 21.9	9' 37.4
$\frac{1}{2}(\delta' + \delta)$	43° 22' 6".2	44° 8' 5".4	40° 48' 21".1
Log. δ	-2.6824429	-2.8704449	-2.8704449
" cos. $\frac{1}{2}(\delta' + \delta)$	9.8615067	9.8559448	9.8790547
" sec. $\frac{1}{2}(\delta' - \delta)$	12	100	17
" $(\delta' - \delta)$	-2.5439508	-2.7263997	-2.7495013
$\delta' - \delta$	5' 49".9	8' 52".6	9' 21".7
1872 R. A.	2 ^h 54 ^m 37. ^s 20	2 ^h 59 ^m 2. ^s 41	2 ^h 44 ^m 48.79
" Decl.	70° 58' 9".4	79° 38' 2".7	67° 18' 34.7

X

D. 24. 70. 223

D. 24. 87. 26,

D. 24. 80. 464

131

1855.

1855.

1842.

2^h 52^m 19.79

19° 7' 40".5

43° 4' 56.85

43° 14' 8".6

3.3680178

0.4598873

9.8624544

7.6903595

0.0021333

9.9732371

7.6657299

43° 23' 22".7

15' 55.3

43° 39' 18".0

7' 57".6

43° 22' 6".2

-2.6824429

9.8615067

12

-2.5439508

-5' 49".9

2^h 54^m 37.20

70° 58' 9".4

2^h 40^m 59.57

20° 38' 26.7

40° 14' 55.5

40° 24' 7".3

3.3680178

1.3360876

9.8816787

8.5857841

0.0170643

9.9299948

8.5328432

40° 33' 21".4

10° 57' 12".3

42° 30' 33".7

58' 36".2

41° 22' 43".5

-2.6824429

9.8752675

631

-2.5577735

-6' 1".2

2^h 50^m 28.25

87° 27' 38".5

15^h 4^m 27.55

90° 55' 30".9

226° 51' 53".2

227° 6' 4".7

3.5560198

0.7570064

-9.8329584

-8.1459846

9.9939620

0.0318838

-8.1718304

227° 20' 18".1

-51' 3".5

226° 29' 14".6

-25' 31".8

226° 41' 32".9

-2.8704449

-9.8364036

119

+2.7068604

+8' 29".2

15^h 5^m 56.97

79° 55' 59.9

X

D.M. +87° 26.

D.M. 80.466.

	Cor. 406.	Fed. Sup. 195,
R. A.	2 ^h 40 ^m 59 ^s .7	15 ^h 19 ^m 25 ^s .85
U. P. D.	2° 38' 26".7	9° 1' 2".1
t	40° 14' 55".5	229° 51' 27".85
++(Z+V)-A.	40° 24' 7".3	230° 25' 37".3
Log. t sin. 1"	3.3680178	3.9372374
" cot. d,	1.3360877	0.7994420
" cos. d,		-9.8041807
" w		-8.5408601
" 1/(1-w)		9.9851856
" tan. A.		0.0827688
" tan. (A'-A)		-8.6088145
A+(Z'-V')		230° 59' 48".3
A' - A		-2° 19' 35".3
d'		228° 40' 13".0
1/2(A'-A)		-1° 9' 47".6
1/2(A'+A)		229° 15' 49".7
Log. t		-3.2516625
" cos. 1/2(A'+A)		-9.8146319
" sec. 1/2(A'-A)		0.0000895
" (d'-d)		-3.0663839
d' - d		+ 19' 25".2
1879. R. A.		15 ^h 14 ^m 40 ^s .87
" Decl.		80° 39' 32".7

$$\begin{aligned}
 Z + V &= 23.0311(t' - t) - .0001922t^2 - .0000497t'^2 \\
 Z' - V' &= 23.0311(t' - t) + .0000497t^2 + .0001922t'^2 \\
 \theta &= +20.0611(t' - t) + .0000432t^2 - .0000432t'^2
 \end{aligned}$$

$$\begin{array}{rcl}
 \text{Log. } 23.0311 & = & 1.3623147 \\
 \text{" } 89 & = & 1.9493900 \\
 \hline
 2049.5 & & 3.3117047
 \end{array}
 \quad
 \begin{array}{rcl}
 \text{Log. } .0001922 & = & \overline{4}.2837534 \\
 \text{" } 100 & = & 2. \\
 \hline
 .01922 & = & \overline{2}.2837534
 \end{array}$$

$$\begin{array}{rcl}
 \text{" } .0000497 & = & \overline{5}.6963564 \\
 \text{" } 79^{\text{m}} & = & 3.7952542 \\
 \hline
 .3102 & & 1.4916106 \\
 .0192 & & \\
 \hline
 .3294 & & \\
 2049.5 & & \\
 \hline
 2049.5 & = & 34' \quad 9''.5 = (Z + V)
 \end{array}$$

$$\begin{array}{rcl}
 \text{Log. } .0000497 & = & \overline{5}.6963564 \\
 \text{" } 100 & = & 2. \\
 \hline
 .004970 & = & \overline{3}.6963564 \\
 \text{" } .0001922 & = & \overline{4}.2837534 \\
 \text{" } 79^{\text{m}} & = & 3.7952542 \\
 \hline
 1200 & = & 0.0790076 \\
 .005 & & \\
 \hline
 2049.5 & & \\
 \hline
 2051.0 & = & 34' \quad 11''.0 = (Z' - V')
 \end{array}$$

$$\begin{array}{rcl}
 \text{Log. } 20.0611 & = & 1.3023541 \\
 \text{" } 89 & = & 1.9493900 \\
 \hline
 1785.4 & & 3.2517441
 \end{array}$$

$$100(.0000432) = \overline{3}.6354137$$

$$.004320$$

$$1785.4$$

$$1785.4$$

$$1785.1 = \theta$$

$$\begin{array}{r}
 \overline{5}.6354837 \\
 3.7952542 \\
 \hline
 \overline{1}.4307379 \\
 .2696
 \end{array}$$

Red. of stars from mean to app. place,

$$2^h 44^m 48.79 = \text{Conet.}$$

Sid. Time mean
noon + 12^h

		Comet.				Days of a days
x Middle	June 24.	19 ^h 46 ^m	18 ^h 9 ^m	+1 ^h 37 ^m		+0.07
x Tuies.	" 26.	18 4	18 17	-13 ^m		-0.01
x	" 27.	18 44	18 21	+23 ^m		+0.02
	" 30.	19 22	18 33	+49 ^m		+0.03
July	1.	19 20	18 37	+43 ^m		+0.03
"	2.	19 54	18 41	+1 ^h 13 ^m		+0.05
"	5.	19 14	18 52	+22 ^m		+0.02
"	8.	20 34	19 4	+1 ^h 30 ^m		+0.06
"	12.	19 35	19 20	+15 ^m		+0.01
"	23.	22 12	20 3	+2 ^h 9 ^m		+0.09
"	24.	20 10	20 7	+3 ^m		.00
<hr/>						
Aug.	10.	21 48	9 14	12 34		+0.02
"	11.	21 34	9 18	12 16		+0.01

$$\begin{array}{r} 24 \\ 60 \\ \hline 1440 \end{array}$$

$$\begin{array}{r} 1440/97.00 \quad (.07) \\ \hline 1060 \end{array}$$

73

$$\begin{array}{r} 1440/129.00 \quad (.09) \\ \hline 12960 \end{array}$$

Aug. 27, 1877, to

136

$$\begin{array}{r} .012 \\ .07 \\ \hline 0.0084 \end{array}$$

$$\begin{array}{r} 3.5 \\ .07 \\ \hline 245 \end{array}$$

$$.0.3.5$$

$$\begin{array}{r} .67 \\ 1.33 \\ \hline \end{array}$$

$$\delta = 67^{\circ} 18' 34''$$

$$23^h \ 9.0 = 9.$$

$$23^h = 345^{\circ}$$

$$9^m = \frac{2 \ 15'}{347 \ 15'}$$

$$(+.07)$$

$$\begin{array}{r} .07 \\ 1.26 \\ \hline \end{array}$$

$$2^h = 30^{\circ}$$

$$44^m = 11$$

$$49^s =$$

$$\begin{array}{r} 127 \ 0'' \\ 41^{\circ} \ 12' \ 11.85'' = \delta \\ 347 \ 15 \\ \hline 28 \ 27 \ 11.85 = \delta + t \end{array}$$

$$11^h \ 47.9 = H$$

$$11^h = 165^{\circ}$$

$$47^m = 11 \ 45'$$

$$54^s = 13 \ 30''$$

$$176 \ 58 \ 30''$$

$$41 \ 12 \ 11.85$$

$$218 \ 10 \ 41.85 = H + t$$

$$f = 2.424$$

$$\begin{array}{r} 11 \ 45 \ 6 \\ 11 \ 47 \ 15 \\ \hline 11 \ 47 \ 51 \end{array}$$

$$9.6780$$

$$\begin{array}{r} 23^h \ 9^m \ 0 \\ 2 \ 44 \ 49 \\ \hline 1 \ 52 \ 49 = (g+t) \end{array}$$

$$\begin{array}{r} \log. \sin \delta + t = 9.6780 \\ " \ g = 1.2096 \\ " \ \tan \delta = 0.3787 \\ \hline 1.2663 \\ " \ i5 = 1.1761 \end{array}$$

$$\begin{array}{r} + 1.231 = 0.0902 \\ 2.424 \\ \hline 3.655 \\ 2.183 \\ \hline 1.472 = (t' - t) \end{array}$$

$$\begin{array}{r} 11^h \ 47^m \ 54^s \\ 2 \ 44 \ 49 \\ \hline \log. \sin. 14^h \ 32 \ 43 = -9.7910 \\ \log. h = 1.3105 \\ " \ \sec. \delta = 0.4137 \\ \hline -1.5152 \\ " \ i5 = 1.1761 \\ \hline -2.183 = 0.3391 \end{array}$$

$$\begin{array}{r} \log. g = 1.2096 \\ " \ \cos(\delta+t) = 9.9440 + \\ 14.243 = +1.1536 \\ \hline +14.422 \\ -14.821 \\ \hline -0.399 = (\delta' - \delta) \end{array}$$

$$\begin{array}{r} \log. h = 1.3105 \\ " \ \cos(H+t) = -9.8954 \\ " \ \sin \delta = 9.9650 \\ -14.821 = -1.1709 \\ \hline 29/6.0(21) \\ \hline 2. \end{array}$$

$$\begin{array}{r} \log. i' = +9.6673 \\ " \ \cos. \delta = +9.5863 \\ +.179 \quad +9.2536 \end{array}$$

$\delta = 74^{\circ} 8' 7''$ $75^{\circ} 19' 47''$ $76^{\circ} 17' 27''$ $79^{\circ} 40' 17''$ June 30.
+0.3July 1.
+0.3July 2.
+0.5July 5.
+0.2

f.	+2.491	+2.502	2.514	+2.546
Top. g.	+1.2212	+1.2226	+1.2244	+1.2297
" air. (G+t)	+9.7288	+9.7145	+9.7428	+9.7311
" low d.	+0.5464	+0.5821	+0.6127	+0.7394
" sum.	+1.4964	+1.5192	+1.5799	+1.7002
" 15	+1.1761	+1.1761	+1.1761	+1.1761
" result.	+0.3203	+0.3431	+0.4035	+0.5241
2y.	+2.5091	2.204	+2.534	+3.343
" h.	+1.3097	+1.3096	+1.3094	+1.3086
" air. (H+t)	-9.7742	-9.7517	-9.7667	-9.7242
" acc. d.	+0.5633	+0.5965	+0.6253	+0.7465
" sum.	-1.6472	-1.6578	-1.7014	-1.7793
" 15	+1.1761	+1.1761	+1.1761	+1.1761
" res.	-0.4711	-0.4817	-0.5253	-0.6032
2y.	-2.959	-3.032	-3.352	-4.011
Final 2y.	+1.5623	+1.674	+1.696	+1.788

$$\begin{array}{r} 2^h 5^m 48^s \\ 23 \quad 10 \quad 42 \\ (G+t) = 2^h 9^m 30^s \end{array}$$

$$\begin{array}{r} 44^m \\ .63 \\ \hline 13.26 \\ 1022 \\ \hline 1035 \end{array}$$

$$\begin{array}{r} 2.494 \\ 2.091 \\ \hline 4.585 \\ 2.959 \\ \hline 1.626 = (t' - t) \end{array}$$

$$\begin{array}{r} 11^h \quad 23^m \quad 30^s = H \\ 2 \quad 53 \quad 58 \\ \hline 14^h \quad 17^m \quad 28^s \end{array}$$

$$\begin{array}{r} G = 23^h \quad 11^m \quad 48^s \\ t = 2 \quad 58 \quad 33 \\ \hline 2^h \quad 10 \quad 21 = (G+t) \end{array}$$

$$\begin{array}{r} 18 \\ .03 \\ \hline .54 \\ 23^h \quad 10^m \quad 54^s = G \\ 2 \quad 53 \quad 58 = t \\ \hline 2^h \quad 4^m \quad 52^s = (G+t) \end{array}$$

$$\begin{array}{r} 2.502 \\ 2.204 \\ \hline 4.706 \\ 3.032 \\ \hline +1.674 = (t' - t) \end{array}$$

$$\begin{array}{r} H = 11^h \quad 9^m \quad 26^s \\ t = 2 \quad 58 \quad 33 \\ \hline 14^h \quad 7^m \quad 59^s = (H+t) \end{array}$$

$$\begin{array}{r} 11^h \quad 27^m \quad 6^s \\ 2 \quad 58 \quad 42 \\ \hline 14^h \quad 25^m \quad 48^s = (H+t) \end{array}$$

$$\begin{array}{r} 23^h \quad 11^m \quad 12^s \\ 3 \quad 3 \quad 7 \\ \hline 2^h \quad 14^m \quad 19^s = G+t \end{array}$$

$$\begin{array}{r} H = 11^h \quad 19^m \quad 56^s \\ 3 \quad 3 \quad 7 \\ \hline 14^h \quad 23^m \quad 3^s = (H+t) \end{array}$$

$$\begin{array}{r} 2.514 \\ 2.534 \\ \hline 5.048 \\ 3.352 \\ \hline 1.696 \end{array}$$

$$\begin{array}{r} 2.546 \\ 3.343 \\ \hline 5.889 \\ 4.011 \\ \hline +1.878 \end{array}$$

June 30.

July 1.

July 2.

July 5. 139

+0.3

+0.3

+0.5

+0.2

Log. g.	1.2212	+1.2226	+1.2244	+1.2297
" cor. (G+r)	+9.9266	+9.9321	+9.9207	+9.9256
Log. sum.	+1.1478	+1.1547	+1.1451	+1.1553
<u>2y.</u>	14."55	+14."28	+13."97	+14."30
Log. h.	+1.3097	+1.3096	+1.3094	+1.3086
" cor. (H+r)	-9.9053	-9.9167	-9.9092	-9.9284
" sum. d	+9.9831	+9.9856	+9.9874	+9.9929
" sum.	-1.1981	-1.2119	-1.2060	-1.2299
<u>2y.</u>	-15."78	-16."29	-16."07	-16.98
" i	+0.1035	+0.1476	+0.1871	+0.2659
" cor. d	+9.4367	+9.4035	+9.3747	+9.2535
Log. sum.	+9.5402	+9.5511	+9.5618	+9.5394
<u>2y.</u>	+."347	+."356	+."365-	+."346
Final 2y.	-1."38	-1."65+	-1."74	-2."28

$$\begin{array}{r}
 14.055 \\
 .347 \\
 \hline
 14.402 \\
 15.78 \\
 \hline
 -1.38
 \end{array}$$

$$\begin{array}{r}
 14.28 \\
 -16.29 \\
 \hline
 -2.01 \\
 .36 \\
 \hline
 -2.65+
 \end{array}$$

$$\begin{array}{r}
 13.97 \\
 .36 \\
 \hline
 14.33 \\
 -16.07 \\
 \hline
 -1.74
 \end{array}$$

$$\begin{array}{r}
 14.30 \\
 .36 \\
 \hline
 14.666 \\
 -16.95 \\
 \hline
 -2."28
 \end{array}$$

$$\begin{array}{r}
 14.30 \\
 .346 \\
 \hline
 14.646 \\
 16.98 \\
 \hline
 -2.33
 \end{array}$$

140

	79° 38' 2.7 (+0.2) July 5.	83° 5' 10.9 (+0.6) July 8.	87° 27' 34.5 (+0.1) July 12.	80° 39' 32.7 (+0.9) July 23.
f	2.546	+2.580	+2.622	+2.735
Log. g.	+1.2297	+1.2352	+1.2420	+1.2601
Log. sin(G+t)	+9.7326	+9.7499	+9.7084	-9.7813
" lat. d.	+0.7377	+0.9163	+1.3529	+0.7839
" sum.	+1.7000	+1.9006	+2.3033	-1.8253
" 15	+1.1761	+1.1761	+1.1761	+1.1761
" result.	+0.5239	+0.7245	+1.1272	-0.6492
2y.	+3.342	+5.302	+13.403	-4.459
" h	+1.3086	+1.3078	+1.3064	+1.3013
" sin.(H+t)	-9.7256	-9.7053	-9.6037	+9.5308
" sec. d.	+0.7449	0.9195	+1.3534	+0.7897
" sum.	-1.7791	-1.9356	-2.2635	+1.6218
" 15	+1.1761	+1.1761	+1.1761	+1.1761
" result.	-0.6030	-0.7595	-1.0874	+0.4457
2y.	-4.808	-5.748	-12.229	+2.791
t' - t	+1.88	+2.13	+3.80	+1.07

$$t = 2^h 59^m 3. \\ G = 23 \quad 11 \quad 48 \\ (G+t) = 2 \quad 10 \quad 51$$

$$H = 11^h 9^m 26.0 \\ t = 2 \quad 59 \quad 3 \\ (H+t) = 14 \quad 8 \quad 29$$

$$3^h 4^m 13.0 = t \\ 23 \quad 12 \quad 79 \quad 9. \\ 2 \quad 16 \quad 32 \quad (G+t)$$

$$\begin{array}{r} 2.546 \\ 3.342 \\ \hline 5.888 \\ 4.008 \\ \hline 1.88 \end{array}$$

$$\begin{array}{r} 2.10 \\ +0.6 \\ \hline 1260 \end{array}$$

$$\begin{array}{r} +2.580 \\ +5.302 \\ +7.882 \\ -5.748 \\ \hline +2.134 \end{array}$$

$$\begin{array}{r} +2.622 \\ 13.403 \\ \hline +16.025 \\ 12.229 \\ \hline +31.796 \end{array}$$

$$H = 10^h 44^m 40.0 \\ t = 2 \quad 50 \quad 2 \\ 13^h 34^m 42.0$$

$$\begin{array}{r} 10 \quad 58 \quad 50. \\ 10 \quad 58 \quad 50. = H \\ 3 \quad 4 \quad 13 = t \\ \hline 14 \quad 2 \quad 54 = (H+t) \end{array}$$

$$t = 2^h 50^m 2.0 \\ G = 23 \quad 12 \quad 54 \\ (G+t) = 2^h 2^m 56$$

$$G = 23^h 14^m 14.0 \\ t = 15 \quad 14 \quad 41 \\ (G+t) = 1^h 28^m 42$$

$$H = 10^h 4^m 40.0 \\ t = 15 \quad 14 \quad 41 \\ (H+t) = 1^h 19^m 21.0$$

$$\begin{array}{r} 2.735 \\ 4.791 \\ \hline 5.526 \\ 4.459 \\ \hline 1.067 \end{array}$$

Lof. g.	+1.2297	+1.2352	+1.2420	+1.2601
" cos. (6 ^h + t)	+9.9249	+9.9180	+9.9342	-9.9014
" sum.	+1.1546	+1.1532	+1.1762	-1.1615
2y.	+14 ^h 2 ^m 8 ^s	+14 ^h 2 ^m 8 ^s	+15 ^h 0 ^m 0 ^s	-14 ^h 5 ^m 0 ^s
Lof. h.	+1.3086	+1.3078	+1.3064	+1.3013
" cos. (4 ^h + t)	-9.9278	-9.9342	-9.9618	+9.9735
" sin. d	+9.9929	+9.9968	+9.9996	+9.9942
" sum.	-1.2293	-1.2388	-1.2678	+1.2690
2y.	-16 ^h 9 ^m 5 ^s	-17 ^h 3 ^m 3 ^s	-18 ^h 5 ^m 3 ^s	+18 ^h 5 ^m 8 ^s
" d	+0.2459	+0.3672	+0.4530	+0.6220
" cos. d.	+9.2551	+9.0805	+8.6466	+9.2103
" sum.	+9.5410	+9.4477	+9.0996	+9.8323
2y.	+ ^h 3 ^m 4 ^s 8 ^s	+ ^h 2 ^m 4 ^s 0 ^s	+ ^h 1 ^m 2 ^s 6 ^s	+ ^h 6 ^m 4 ^s 0 ^s
d' - d	-2 ^h 3 ^m 2 ^s	-2 ^h 2 ^m 8 ^s 2 ^s	-3 ^h 4 ^m 0 ^s	+4 ^h 7 ^m 6 ^s
	$\begin{array}{r} 14.28 \\ .35 \\ \hline 14.63 \\ -16.95 \\ \hline -2.32 \end{array}$	$\begin{array}{r} 14.28 \\ .280 \\ \hline 14.57 \\ -17.33 \\ \hline -2.82 \end{array}$	$\begin{array}{r} 15.00 \\ .13 \\ \hline +15.13 \\ -18.53 \\ \hline -3.40 \end{array}$	$\begin{array}{r} +18.58 \\ .68 \\ \hline +19.26 \\ -14.50 \\ \hline -4.76 \end{array}$

142

	69° 45' 4.3	71° 2' 46.6	70° 58' 9.4	79° 55' 59.9
	- .01	+ .02	+ .02	.00
	June 26.	June 27.	June 27.	July 24.
f	+2.446	+2.457	2.457	+2.744
Log. g.	+1.2133	+1.2151	+1.2151	+1.2615
Log. sin. (G+t)	+9.7173	+9.7144	+9.7135	-9.7587
" lat. S.	+0.4331	+0.4642	+0.4623	+0.7507
" sum.	+1.3637	+1.3937	+1.3909	-1.7709
" 15.	+1.1761	+1.1761	+1.1761	+1.1761
" result.	+0.1876	+0.2176	+1.2148	-0.5948
2d.	+1.540	+1.6510	+1.640	-3.934
" h	+1.3103	+1.3102	+1.3102	+1.3008
" sin. (H+t)	-9.8019	-9.7905	-9.7897	+9.4613
" sec. S.	+0.4608	+0.4884	+0.4867	+0.7575
" sum.	-1.5730	-1.5891	-1.5866	+1.5196
" 15.	1.1761	+1.1761	+1.1761	+1.1761
" result.	-0.3969	-0.4130	-0.4105	+0.3435
2d.	-2.494	-2.588	-2.574	+2.206
$t' - t$	+1.49	+1.52	+1.52	+1.016

$$2^h 56^m 9^s = t$$

$$23 \quad 9 \quad 36 = g$$

$$2^h 5 \quad 45 = (g+t)$$

$$11^h 41^m 8^s = H$$

$$2 \quad 56 \quad 9$$

$$14 \quad 37 \quad 17 = (H+t)$$

$$t = 2^h 54 \quad 57$$

$$H = 11 \quad 37 \quad 32$$

$$14 \quad 32 \quad 29 = (H+t)$$

$$\begin{array}{r} 2.446 \\ 1.540 \\ \hline 3.986 \\ 2.494 \\ \hline 1.492 \end{array}$$

$$\begin{array}{r} 2.10 \\ .02 \\ \hline 4.20 \\ 11 \quad 37 \quad 36. \\ \hline 11 \quad 37 \quad 32 \end{array}$$

$$\begin{array}{r} 2 \quad 54 \quad 57 \\ 23 \quad 9 \quad 56 = g \\ \hline 2 \quad 4 \quad 51 = (g+t) \end{array}$$

$$\begin{array}{r} 2.457 \\ 1.640 \\ \hline 4.097 \\ 2.574 \\ \hline +1.523 \end{array}$$

$$\begin{array}{r} 23 \quad 9 \quad 54 = g \\ 2 \quad 54 \quad 37 = t \\ \hline 2 \quad 4 \quad 31 = (g+t) \end{array}$$

$$\begin{array}{r} 2^h 54 \quad 37 \\ 11^h 37 \quad 32 = H \\ \hline 14 \quad 32 \quad 9 = H+t \end{array}$$

$$23^h \quad 14 \quad 6 = g.$$

$$15 \quad 5 \quad 57 = t$$

$$14 \quad 20 \quad 3 = (g+t)$$

$$10 \quad 1 \quad 18 = H$$

$$15 \quad 5 \quad 57 = t$$

$$1^h \quad 7 \quad 13 = (H+t)$$

$$\begin{array}{r} 2.4570 \\ 1.6570 \\ \hline 4.1140 \\ 2.1588 \\ \hline 1.9552 \end{array}$$

$$\begin{array}{r} 2.744 \\ 2.206 \\ \hline 4.950 \\ 3.934 \\ \hline 1.016 \end{array}$$

$$\begin{array}{r} 2.457 \\ 1.640 \\ \hline 4.097 \\ 2.574 \\ \hline 1.523 \end{array}$$

Log. g.	+1.2133	+1.2151	+1.2151	+1.2615
" cor. (S+r)	+9.9310	+9.9321	+9.9325	-9.9133
" sum.	+1.1443	+1.1472	+1.1476	-1.1748
2y.	+13".94	+14.04	+14.05	-14".95
Log. h	+1.3103	+1.3102	+1.3102	+1.3008
" cor. (H+d)	-9.8885	-9.8957	-9.8962	+9.9810
" sum.	+9.9723	+9.9758	+9.9756	+9.9933
" sum.	-1.1711	-1.1817	-1.1820	+1.2751
2y.	-14.83	-15.20	-15.21	+18.84
" i	+9.8608	+9.9368	+9.9368	+0.6328
" cor. d	+9.5392	+9.5116	+9.5133	+9.2425
" sum.	+9.4000	+9.4484	+9.4501	+9.8753
2y.	+1.25	+1.281	+1.282	+1.750
d' - d	-".64	-0".88	-0.88	+4".64

$$\begin{array}{r}
 +13".94 \\
 .25 \\
 +14.19 \\
 -14.83 \\
 \hline
 -.64
 \end{array}$$

$$\begin{array}{r}
 14.04 \\
 281 \\
 \hline
 14.32 \\
 15.20 \\
 \hline
 -0.88
 \end{array}$$

$$\begin{array}{r}
 14.05 \\
 .282 \\
 \hline
 14.332 \\
 15.21 \\
 \hline
 -0.88
 \end{array}$$

$$\begin{array}{r}
 18.84 \\
 .75 \\
 \hline
 +19.59 \\
 -14.95 \\
 \hline
 +4.64
 \end{array}$$

$$\begin{array}{r}
 3.935 \\
 \sim
 \end{array}$$

$$\begin{array}{r}
 2.744 \\
 2.206 \\
 \hline
 5.950 \\
 3.935 \\
 \hline
 1.016
 \end{array}$$

D. M., +62° 1414 = O. A. N. 15424

D. M., +63° 1194 = O. A. N. 15367

Aug. 11.

Aug. 10. (1842)

	D. M. 62° 1414. O. A. N. 15424.	D. M. 63° 1194. O. A. N. = 15367.
R. A.	15 ^h 24 ^m 53.05	15 ^h 20 ^m 20.92
W. P. D.	27° 10' 37".2	26° 19' 23".1
δ	231° 13' 15".75	230° 5' 13".8
$\alpha + (\alpha' - \alpha) = \alpha'$	231° 27' 27".3	230° 19' 25".3
Log. A sin. 1"	3.556 0198	3.556 0198
" cot. δ	0.289 5248	0.305 6299
" cos. A.	-9.794 5535	-9.805 1266
" "	-3.640 0981	-3.666 7763
" $1 \div (1 - w)$	9.998 0933	9.998 0068
" tan. A.	0.098 7349	0.081 1744
" tan. (A' - A)	-7.736 9263	-7.745 9575
$A + (\alpha' - \alpha)$	231° 41' 40".7	230° 33' 38".7
A' - A	-18' 45".5	-19' 9".2
δ'	231 22' 55".2	230° 14' 29".5
$\frac{1}{2} (A' - A)$	-9' 22".8	-9 34".6
$\frac{1}{2} (A' + A)$	231° 18' 47".5	230° 9' 50".7
Log. A	-2.870 4449	-2.870 4449
" cos. $\frac{1}{2} (A' + A)$	-9.796 0368	-9.806 5809
" sec. $\frac{1}{2} (A' - A)$	16	17
" $(\delta' - \delta)$	+2.666 4833	+2.677 0275
$\delta' - \delta$	+ 7' 44".0	+ 7' 55".4
1879 R. A.	15 ^h 25 ^m 31.68	15 ^h 20 ^m 57.97
" Decl.	62° 41' 38".8	63° 32' 41".5

 f

 $\log. g.$
 $\log. \sin. (B+r)$
 $" \tan. d.$
 $" \sin.$
 $" 15$
 $" \text{ result.}$
 $2y.$
 $" h$
 $" \sin. (H+r)$
 $" \sec. d.$
 $" \sin.$
 $" 15$
 $" \text{ result.}$
 $2y.$
 $x' - x$

146

	62° 41' 39"	63° 32' 41.5"	63° 32' 41.5"	62° 41' 38.8"
	Aug. 10. (+0.2)	Aug. 11. (+0.1)	Aug. 10. +0.2	Aug. 11. +0.1 Cor.
f	+2.900	+2.909	+2.900	+2.909
Sy. g.	+1.2853	+1.2866	+1.2853	+1.2866
" sin. (g+t)	-9.8082	-9.7976	-9.7976	-9.8082
" tan. S.	+0.2872	+0.3031	+0.3031	+0.2871
" sin.	-1.3807	-1.3873	-1.3860	-1.3819
" 15	+1.1761	+1.1761	+1.1761	+1.1761
" result.	-0.2046	-0.2112	-0.2099	-0.2054
Sy.	-1.602	-1.626	-1.621	-1.606
" h	+1.2906	+1.2900	+1.2906	+1.2900
" sin. (H+t)	+8.9980	+8.7989	+8.9034	+8.9196
" sec. S.	+0.3384	+0.3511	+0.3511	+0.3384
" sin.	+0.6270	+0.4400	+0.5451	+0.5480
" 15	+1.1761	+1.1761	+1.1761	+1.1761
" result.	+9.4509	+9.2639	+9.3690	+9.3719
Sy.	+1.282	+1.184	+1.234	+1.235
$t' - t$	+1.558	+1.547	+1.51	+1.538

$$\begin{array}{lcl}
 t = 15^h & 20^m & 57.97 \\
 g = 23 & 14 & 30. \\
 g+t = 14 & 35 & 28.
 \end{array}
 \quad
 \begin{array}{lcl}
 H = 2^h & 57^m & 24.5 \\
 t = 15 & 20 & 57 \\
 H+t = 24 & 18 & 22
 \end{array}$$

$$\begin{array}{lcl}
 t = 15^h & 25^m & 31.68 \\
 g = 23 & 14 & 30. \\
 g+t = 14 & 40 & 2.
 \end{array}
 \quad
 \begin{array}{lcl}
 H = 2^h & 53^m & 32.5 = H \\
 t = 15 & 25 & 32 = t \\
 H+t = 3 & 19 & 4 = (H+t)
 \end{array}$$

	Aug. 10.	Aug. 11.	Aug. 10	Aug. 11. 147
Log. g.	+1. 2853	+1. 2866	+1. 2853	+1. 2866
" cos. (5+)	-9. 8843	-9. 8913	-9. 8913	-9. 8842
" sum.	-1. 1696	-1. 1779	-1. 1766	-1. 1708
2y.	-14.78	-15.06	-15.02	-14.82
Log. h.	+1. 2906	+1. 2900	+1. 2906	+1. 2900
" cos. (4+)	+9. 9978	+9. 9991	+9. 9986	+9. 9985
" sin. d	+9. 9487	+9. 9520	+9. 9520	+9. 9487
" sum.	+1. 2377	+1. 2411	+1. 2412	+1. 2372
2y.	+17.26	+17.43	+17.43	+17.27
" i	+0. 7826	+0. 7890	+0. 7825	+0. 7888
" cos. d.	+9. 6616	+9. 6489	+9. 6489	+9. 6616
" sum.	+0. 4442	+0. 4379	+0. 4314	+0. 4504
2y.	+2.78	+2.74	+2.70	+2.82
d'-d	+5.26	+5.11	+5.11	+5.27

$$\begin{array}{r}
 +17.26 \\
 \underline{+2.78} \\
 +20.04 \\
 \underline{+14.78} \\
 +5.26
 \end{array}$$

$$\begin{array}{r}
 +17.43 \\
 \underline{+2.74} \\
 +20.17 \\
 \underline{-15.06} \\
 +5.11
 \end{array}$$

Value of diagonal of square 889".8

June 24. Dec. app. = $67^{\circ} 18' 34.3''$ $(9.58631) 10.5''$

9.58420	67	25'	32.1"
9.58417		25	38.3
9.58415		25	42.1
9.58412		25	47.1

~~| |
|---------|
| 9.58207 |
| 9.58201 |
| 9.58197 |
| 9.58192 |~~

$$140.3 = 2.14706$$

$$9.58631$$

$$1.73337$$

$$= -54.1 + 119.8 = 85.7 = 13' 55.7'' \div 2 = 6' 57.8''$$

$$108.0 = 2.03342$$

$$9.58631$$

$$1.61973$$

$$= -41.7 + 119.8 = 84.1 = 14' 2.1'' = 7' 4.0''$$

$$88.4 = 1.94645$$

$$9.58631$$

$$1.53276$$

$$= -34.1 + 119.8 = 85.7 = 14' 15.7'' = 7' 7.8''$$

$$63.0 = 1.79934$$

$$9.58631$$

$$1.38565$$

$$= -24.3 + 119.8 = 86.5 = 14' 25.5'' = 7' 12.8''$$

Comet.



E =

8 * 15

*

= * 15

$$45.0 \times 15 = 11' 15'' = 5' 37.5''$$

$$26.3 = 6' 34.5'' = 3' 17.25''$$

$$39.7 \times 15 = 9' 55.5'' = 4' 57.75''$$

$$25.3 = 6' 19.5'' = 3' 9.75''$$

$$37.9 \times 15 = 9' 28.5'' = 4' 48.25''$$

$$26.1 = 6' 31.5'' = 3' 15.75''$$

$$36.7 \times 15 = 9' 10.5'' = 4' 35.25''$$

$$24.3 = 7' 4.5'' = 3' 32.25''$$

$$889.8 - 337.50 = 552.3 + 197.25 = 749.5 = 12' 29.5''$$

$$889.8 - 297.75 = 592.0 + 189.8 = 781.8 = 13' 1.8''$$

$$889.8 - 284.25 = 605.6 + 195.8 = 801.4 = 13' 21.4''$$

$$889.8 - 275.25 = 614.6 + 212.2 = 826.8 = 13' 46.8''$$

$$\frac{15}{2} (\text{Obs} - E) =$$

$$197.2 - 337.50 = -140.3$$

$$189.8 - 297.75 = -108.0$$

$$195.8 - 284.25 = -88.4$$

$$212.2 - 275.25 = -63.0$$

$$140.3 = 2.14706$$

$$\begin{array}{r} 9.58420 \\ 11.73126 \\ \hline \end{array} = -53.9 + 889.8 = 835.9$$

$$108.0 = 2.03042$$

$$\begin{array}{r} 9.58417 \\ 1.61759 \\ \hline \end{array} = -41.5 + 889.8 = 848.3$$

$$88.4 = 1.94645$$

$$\begin{array}{r} 9.58417 \\ 1.53060 \\ \hline \end{array} = -33.9 + 889.8 = 855.9$$

$$63.0 = 1.79934$$

$$\begin{array}{r} 9.58412 \\ 1.38346 \\ \hline \end{array} = -24.2 + 889.8 = 865.6$$

$$R.A. + 2^m 53.504 \text{ (June 24.)}$$

$$\begin{array}{r} 4) 3405.7 \\ + 851.4 \\ \hline \end{array}$$

mean.

150

June 26.

69° 45' 37

9.53920 $(\frac{15}{2})$

Comet.

2 ^h	8.4	=	12 8.4	=	32' 6"	16' 3".0
2	1.4	=	12 1.4	=	30' 21"	15 10.50
1	46.4	=	106.4	=	26' 36"	13 18.0
1	38.8	=	98.8	=	24' 42"	12 21.0
1	34.0	=	94.0	=	23' 30"	11 45.0

Star.

 $(\frac{15}{2})$

36.6	=	9' 9"	4' 34.5
37.0	=	9 15	4 37.5
41.0	=	10 15	5 7.5
43.2	=	10 42	5 24.0
44.4	=	11 6	5 33.0

 $(\frac{15.4}{2} - \frac{15.0}{2})$

11'	28.5	= -686.5
10	33.0	= -633.0
8	10.5	= -490.5
6	57.0	= -417.0
6	12.0	= -372.0

$$\begin{aligned} \log. 688.5 &= 2.83790 \\ - (288.3) &= \frac{9.53920}{2.37710} \end{aligned}$$

$$\begin{aligned} \log. 633.0 &= 2.80140 \\ - (219.1) &= \frac{9.53920}{2.34060} \end{aligned}$$

$$\begin{aligned} 490.5 &= 2.69064 \\ - (169.8) &= \frac{9.53920}{2.22984} \end{aligned}$$

$$\begin{aligned} 417.0 &= 2.62014 \\ - (144.3) &= \frac{9.53920}{2.15934} \end{aligned}$$

$$\begin{aligned} 372.0 &= 2.57054 \\ - (128.7) &= \frac{9.53920}{2.10974} \end{aligned}$$

$$\begin{array}{rcl}
 -231.3 + 889.8 & = & 651.5 \\
 -219.1 + 889.8 & = & 670.7 \\
 -169.8 + & " & = 720.0 \\
 -144.3 + & " & = 745.5 \\
 -128.7 + & " & = 761.1
 \end{array}
 \quad
 \begin{array}{rcl}
 \div 325.8 & = & 5' 9'' 20.6 \\
 335.4 & = & 5' 35.4 \\
 360.0 & = & 6' 0.0 \\
 372.8 & = & 6' 12.8 \\
 380.6 & = & 6' 20.6
 \end{array}$$

	69°	45'	3.7"	
Log. Cos.	69	50	29.5	99.53734
		50	39.1	9.53728
		51	3.7	9.53714
		51	46.5	99.53707
		51	24.3	9.53702

$$\begin{array}{r}
 -686.5 = 2.83790 \\
 \underline{9.53734} \\
 2.37524
 \end{array}
 = -237.3 + 889.8 = 652.5$$

$$\begin{array}{r}
 633.0 = 2.80140 \\
 \underline{9.53728} \\
 2.33868
 \end{array}
 = -218.1 + 889.8 = 671.7$$

$$\begin{array}{r}
 490.5 = 2.69064 \\
 \underline{9.53714} \\
 2.22778
 \end{array}
 = -169.0 + 889.8 = 720.8$$

$$\begin{array}{r}
 417.0 = 2.62014 \\
 \underline{9.53707} \\
 2.15726
 \end{array}
 = -143.6 + 889.8 = 746.2$$

$$\begin{array}{r}
 372.0 = 2.57054 \\
 \underline{9.53702} \\
 2.10756
 \end{array}
 = -128.1 + 889.8 = 761.7$$

$$\begin{array}{r}
 \sqrt{3552.9} \\
 + 710.6
 \end{array}$$

152

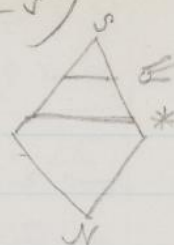
71° 2' 45.4"

9.51163

all in southern half.

June 27.

(* 225)



1	54.7	= 28'	40.5	= 14'	20.25
2	2.6	= 30	39.0	= 15	19.50
2	11.8	= 32	57.0	= 16	28.50
2	20.0	= 35	0.0	= 17	30.00
2	26.0	= 36	30.0	= 18	15.00

* 225

2	27.0	= 36'	45.0	= 18'	22.50
2	26.5	= 36'	37.5	= 18	18.75
2	24.7	= 36	10.5	= 18	5.25
2	23.3	= 35	49.5	= 17	54.75
2	21.9	= 35	28.5	= 17	44.25

* - 8

+ 4'	2.25	= 242.2
+ 2	59.25	= 179.2
+ 1	36.75	= 96.8
+ 0	24.75	= 24.75
- 0	30.75	= -30.8

$$+ 242.2 = 2.38417$$

$$\begin{array}{r} 9.51163 \\ 78.67 \\ \hline 1.89580 \end{array}$$

$$+ 24.8 = 1.39445$$

$$\begin{array}{r} 9.51163 \\ 8.06 \\ \hline 0.90608 \end{array}$$

$$+ 179.2 = 2.25334$$

$$\begin{array}{r} 9.51163 \\ 58.21 \\ \hline 1.76497 \end{array}$$

$$- 30.8 = 1.48855$$

$$\begin{array}{r} 9.51163 \\ 10.00 \\ \hline 1.00018 \end{array}$$

$$+ 96.8 = 1.98588$$

$$\begin{array}{r} 9.51163 \\ 31.44 \\ \hline 1.49751 \end{array}$$

June 27.

153

$$\begin{array}{rcl}
 - 78.67 & \div 2 = & 39.34 \\
 - 58.21 & & = 29.10 \\
 - 31.44 & & = 15.72 \\
 - 8.06 & & = 4.03 \\
 + 10.00 & & 5.00
 \end{array}$$

$$710 \quad 2' \quad 45.7$$

$$\begin{array}{rcl}
 71 & 2 & 6.4 \quad 9.51184 \\
 & 2 & 16.6 \quad 9.51181 \\
 & 2 & 30.0 \quad 9.51173 \\
 & 2 & 41.7 \quad 9.51165 \\
 & 2 & 50.7 \quad 9.51160
 \end{array}$$

$$\begin{array}{rcl}
 242.2 & = & 2.31417 \\
 (78.71) & = & \frac{9.51184}{1.89604}
 \end{array}$$

$$- 78.71$$

$$\begin{array}{rcl}
 179.2 & = & 2.25334 \\
 (58.23) & = & \frac{9.51181}{1.76515}
 \end{array}$$

$$- 58.23$$

$$\begin{array}{rcl}
 96.8 & = & 1.92581 \\
 (31.45) & = & \frac{9.51173}{1.49761}
 \end{array}$$

$$- 31.45$$

$$\begin{array}{rcl}
 24.75 & = & 1.39445 \\
 (8.06) & = & \frac{9.51165}{0.90610}
 \end{array}$$

$$- 8.06$$

$$\begin{array}{rcl}
 30.8 & = & 1.42255 \\
 (10.00) & = & \frac{9.51160}{1.00015}
 \end{array}$$

$$\begin{array}{rcl}
 + 10.00 \\
 5) - 166.45 \\
 - 33.3 \text{ mean}
 \end{array}$$

154

 $70^{\circ}52' 8.5''$
 (9.51333)

June 27.

#223



33.4	8'	21.0	$\div 2 = 4'$	10.5
29.6	7	24.0	= 3	42.0
30.1	7	31.5	= 3	45.8
29.8	7	27.0	= 3	40.5
28.9	7	13.5	= 3	36.8

ϵ		$*$	$(\epsilon - *)$
14'	20.25	- 4'	10.50 = 10'
15	19.50	- 3	42.00 = 11
16	28.50	- 3	45.80 = 12
17	30.00	- 3	43.50 = 13
18	15.00	- 3	36.80 = 14
			9.75 = 609.75
			37.50 = 697.50
			42.70 = 762.70
			46.50 = 826.50
			38.20 = 878.20

$$609.8 = 2.71519$$

$$198.8 \quad \begin{array}{r} 9.51333 \\ \hline 2.29852 \end{array} = +198.8 \div 2 = 99.4 = 1' \quad 39.4$$

$$697.5 = 2.84354$$

$$\begin{array}{r} 9.51333 \\ \hline 2.35687 \end{array} = +227.4 = 113.7 = 1' \quad 53.7$$

$$762.7 = 2.88235$$

$$\begin{array}{r} 9.51333 \\ \hline 2.39568 \end{array} = +248.7 = 124.4 = 2' \quad 4.4$$

$$826.5 = 2.91724$$

$$\begin{array}{r} 9.51333 \\ \hline 2.43057 \end{array} = +269.5 = 134.8 = 2' \quad 14.8$$

$$878.2 = 2.94359$$

$$\begin{array}{r} 9.51333 \\ \hline 2.45692 \end{array} = +286.4 = 143.2 = 2' \quad 23.2$$

June 27,

155

$$70^{\circ} \quad 58' \quad 8.5''$$

$$70 \quad 59 \quad 47.9 = 9.51271$$

$$71 \quad 0 \quad 2.2 = 9.51263$$

$$71 \quad 0 \quad 12.9 = 9.51256$$

$$71 \quad 0 \quad 23.3 = 9.51250$$

$$71 \quad 0 \quad 31.7 = 9.51244$$

$$609.5 = 2.74519$$

$$\begin{array}{r} 9.51271 \\ \hline 2.29790 \end{array} + 198.6$$

$$697.5 = 2.84354$$

$$\begin{array}{r} 9.51263 \\ \hline 2.35617 \end{array} + 227.1$$

$$762.7 = 2.84235$$

$$\begin{array}{r} 9.51256 \\ \hline 2.39491 \end{array} + 248.3$$

$$826.5 = 2.91724$$

$$\begin{array}{r} 9.51250 \\ \hline 2.42974 \end{array} + 269.0$$

$$878.2 = 2.94359$$

$$\begin{array}{r} 9.51244 \\ \hline 2.45603 \end{array} + 285.8$$

$$\begin{array}{r} 5/1228.8 \\ \hline + 245.8 \text{ mean.} \end{array}$$

156



June 30,

74° 2' 5.6"

9.4367565

E

1"	38.7 = 24'	40.50	÷ 2 = 12'	20.25
1	27.1 = 21	57.0	= 10	55.50
1	18.2 = 19	33.0	= 9	46.50
1	9.2 = 17	18.0	= 8	39.00
0	59.8 = 14	57.0	= 7	28.50

*

1"	50.7 = 27'	40.5	= 13'	50.25
1	51.1 = 27	46.5	= 13	53.25
1	48.7 = 27	10.5	= 13	35.25
1	47.2 = 26	45.0	= 13	24.00
1	45.8 = 26	27.0	= 13.	13.50

* + E

26'	10.50 = 1570.5 = 3.1960379
24	51.75 = 1491.75 = 3.1736961
23	21.75 = 1401.75 = 3.1466706
22	3.00 = 1323.0 = 3.1215598
20	42.00 = 1242.0 = 3.0941216

$$\begin{array}{r} 3.1960379 \\ 9.4367565 \\ \hline 2.6327944 = 429.33 \end{array}$$

$$\begin{array}{r} 3.1736961 \\ 9.4367565 \\ \hline 2.6104526 = 407.81 \end{array}$$

$$\begin{array}{r} 3.1466706 \\ 9.4367565 \\ \hline 2.5834271 \quad 343.20 \end{array}$$

$$\begin{array}{r} 3.1215598 \\ 9.4367565 \\ \hline 2.5583163 \quad 361.67 \end{array}$$

$$\begin{array}{r} 3.0941216 \\ 9.4367565 \\ \hline 2.5308781 \quad 339.53 \end{array}$$

$$\begin{array}{rclclcl}
 \text{FF9.F} - 429.3 & = & 460.5 & \div 2 & = & 230.2 & = & 3' & 50.2 \\
 " & - & 407.8 & = & 482.0 & = & 241.0 & = & 4 & 1.0 \\
 & & 383.2 & = & 506.6 & = & 253.3 & = & 4 & 13.3 \\
 & & 361.7 & = & 528.1 & = & 264.0 & = & 4 & 24.0 \\
 & & 339.5 & = & 550.3 & = & 275.2 & = & 4 & 35.2
 \end{array}$$

$$74^{\circ} \quad 8' \quad 5.6$$

$$74 \quad 11 \quad 55.8 = 9.4350473$$

$$74 \quad 12 \quad 6.6 = 9.4349670$$

$$74 \quad 12 \quad 18.9 = 9.4348755$$

$$74 \quad 12 \quad 29.6 = 9.4347959$$

$$74 \quad 12 \quad 40.8 = 9.4347124$$

$$3.1960379$$

$$9.4350473$$

$$\hline 2.6310852$$

$$-427.65 + \text{FF9.F} = 462.15$$

$$3.1736961$$

$$9.4349670$$

$$\hline 2.6086631$$

$$-406.13 + \text{FF9.F} = 483.67$$

$$3.1466706$$

$$9.4348755$$

$$\hline 2.5815461$$

$$-381.55 + \text{FF9.F} = 508.25$$

$$3.1215598$$

$$9.4347959$$

$$\hline 2.5563557$$

$$-360.04 + \text{FF9.F} = 529.76$$

$$3.0941216$$

$$9.4347124$$

$$\hline 2.5288340$$

$$-337.94 + \text{FF9.F} = 551.56$$

$$\sqrt{2535.69}$$

$$+ 507.1 \text{ mean.}$$



July 1.

 $75^{\circ} 19' 46.6''$
 9.40357

Σ	1	$46.1 = 26'$	$31.5 \div 2 = 13'$	15.75
	1	$47.9 = 26$	$58.5 = 13$	29.25
	1	$54.0 = 28$	$30.0 = 14$	15.0
	1	$55.0 = 28$	$45.0 = 14$	22.5
	2	$2.0 = 30$	$30.0 = 15$	15.0

*	1	$10.9 = 17'$	$43.5 = 8'$	51.75
	1	$9.3 = 17$	$19.5 = 8$	39.75
	1	$9.3 = 17$	$19.5 = 8$	39.75
	1	$7.6 = 16$	$54.0 = 8$	27.0
	1	$7.8 = 16$	$57.0 = 8$	28.5

 $\Sigma - *$

41	$24.00 = 264.00$
4	$49.50 = 269.5$
5	$35.25 = 335.25$
5	$55.50 = 355.5$
6	$46.5 = 406.5$

$$264.0 = 2,42160$$

$$9.40357$$

$$66.86 = 1.82517$$

$$289.5 = 2,46165$$

$$9.40357$$

$$73.32 = 1.86522$$

$$335.25 = 2,52536$$

$$9.40357$$

$$84.90 = 1.92893$$

$$355.5 = 2,55084$$

$$9.40357$$

$$90.03 = 1.95441$$

$$406.5 = 2,60906$$

$$9.40357$$

$$102.95 = 2,01263$$

$$66.86 \div 2 = 33.4$$

$$73.32 = 36.7$$

$$84.90 = 42.4$$

$$90.03 = 45.0$$

$$102.95 = 51.5$$

$$75^{\circ} 19' 46.0''$$

$$75 \quad 20 \quad 19.4 = 9.40330$$

$$75 \quad 20 \quad 22.7 = 9.40327$$

$$75 \quad 20 \quad 28.4 = 9.40323$$

$$75 \quad 20 \quad 31.0 = 9.40321$$

$$75 \quad 20 \quad 37.5 = 9.40315$$

$$\begin{array}{r} 264.0 = 2.42160 \\ 9.40330 \\ \hline 1.82490 \end{array} \quad 66.82$$

$$\begin{array}{r} 289.5 = 2.46165 \\ 9.40327 \\ \hline 1.86492 \end{array} \quad 73.27$$

$$\begin{array}{r} 335.25 = 2.52536 \\ 9.40323 \\ \hline 1.92859 \end{array} \quad 84.84$$

$$\begin{array}{r} 355.5 = 2.55084 \\ 9.40321 \\ \hline 1.95405 \end{array} \quad 89.96$$

$$\begin{array}{r} 406.5 = 2.60906 \\ 9.40315 \\ \hline 2.01221 \end{array}$$

$$\begin{array}{r} 102.85 \\ \hline \sqrt{417.74} \\ + 8 \quad 3.55 - \text{mean.} \end{array}$$

160



July 2,

76° 17' 25.7

9.3747478

ε

$$\begin{array}{rclclcl}
 2^{\sim} & \sqrt{3} & = & 31' & 19.5 & \div 2 & = & 15' & 39.75 \\
 1 & 46.7 & = & 26 & 40.5 & & = & 13 & 20.25 \\
 1 & 30.7 & = & 22 & 40.5 & & = & 11 & 20.25 \\
 1 & 12.7 & = & 18 & 10.5 & & = & 9 & 5.25 \\
 0 & \sqrt{3.3} & = & 13 & 19.5 & & = & 6 & 39.75
 \end{array}$$

*

$$\begin{array}{rclclcl}
 1^{\sim} & 11.5 & = & 17' & 45.0 & = & 8' & 52.50 \\
 1 & 11.6 & = & 17 & 54.0 & = & 8 & 57.00 \\
 1 & 8.5 & = & 17 & 7.5 & = & 8 & 33.75 \\
 1 & 5.0 & = & 16 & 15.0 & = & 8 & 7.50 \\
 1 & 3.8 & = & 15 & 57.0 & = & 7 & 58.50
 \end{array}$$

ε + *

$$\begin{array}{rcl}
 24' & 32.25 & = 1472.25 \\
 22 & 17.25 & = 1337.25 \\
 19 & 54.00 & = 1194.00 \\
 17 & 12.75 & = 1032.75 \\
 14 & 38.25 & = 878.25
 \end{array}$$

$$\begin{array}{r}
 \log, 1472.25 = 3.1679816 \\
 \underline{9.3747478} \\
 348.92 = 2.5427294
 \end{array}$$

$$\begin{array}{r}
 1194.0 = 3.0770043 \\
 \underline{9.3747478} \\
 282.98 = 2.4517521
 \end{array}$$

$$\begin{array}{r}
 1337.25 = 3.1262126 \\
 \underline{9.3747478} \\
 316.93 = 2.5009604
 \end{array}$$

$$\begin{array}{r}
 1032.75 = 3.0139953 \\
 \underline{9.3747478} \\
 244.76 = 2.3887431
 \end{array}$$

$$\begin{array}{r}
 878.25 = 2.9436182 \\
 \underline{9.3747478} \\
 208.14 = 2.3183660
 \end{array}$$

July 2. 1879.

161

$$\begin{aligned}
 -348.92 + 889.8 &= 540.9 = 270.4 = 4' & 30.4 \\
 -316.93 + 889.8 &= 572.9 = 286.4 = 4 & 46.4 \\
 -282.98 + 889.8 &= 606.8 = 303.4 = 5 & 3.4 \\
 -244.76 + 889.8 &= 645.0 = 322.5 = 5 & 22.5 \\
 -208.14 + 889.8 &= 681.5 = 340.8 = 5 & 40.8
 \end{aligned}$$

$$76^\circ 17' 25.7$$

$$\begin{aligned}
 76^\circ 21 & \quad 56.1 = 9.3724074 \\
 22 & \quad 12.1 = 9.3722685 \\
 122 & \quad 29.1 = 9.3721208 \\
 122 & \quad 45.2 = 9.3719548 \\
 123 & \quad 6.5 = 9.3717957
 \end{aligned}$$

$$\begin{array}{r}
 1472.25 = 3.1679816 \\
 9.3724074 \\
 \hline
 2.5403890
 \end{array}
 \quad -347.05 + 889.8 = 542.75$$

$$\begin{array}{r}
 1337.25 = 3.1262126 \\
 9.3722685 \\
 \hline
 2.4984811
 \end{array}
 \quad = -315.12 + 889.8 = 574.68$$

$$\begin{array}{r}
 1194.00 = 3.0770043 \\
 9.3721208 \\
 \hline
 2.4491251
 \end{array}
 \quad -281.27 + 889.8 = 608.53$$

$$\begin{array}{r}
 1032.75 = 3.0139953 \\
 9.3719548 \\
 \hline
 2.3859501
 \end{array}
 \quad -243.19 + 889.8 = 646.61$$

$$\begin{array}{r}
 878.25 = 2.9436182 \\
 9.3717957 \\
 \hline
 2.3154139
 \end{array}
 \quad -206.73 + 889.8 = 683.07$$

$$\begin{array}{r}
 5730.5564 \\
 + 611.13 \\
 \hline
 6341.6864
 \end{array}$$

162

77.94



July 5.

79° 40' 15"K

9.25359

$$2 \quad \sqrt{9.1} = 179.1 - 165.1 = 14.0 = 3' 30.2 \quad 210''$$

$$3 \quad 7.6 = 187.6 - 155.1 = 32.5 = 8' 7.5 = 487.5$$

$$3 \quad 33.3 = 213.3 - 152.2 = 61.1 = 15' 16.5 = 916.5$$

$$3 \quad 43.8 = 223.8 - 151.2 = 72.6 = 18' 9.0 = 1089.0$$

$$3 \quad 54.3 = 237.3 - 149.1 = 88.2 = 22' 3.0 = 1323.0$$

*

$$2 \quad 45.1 = 165.1$$

$$2 \quad 35.1 = 155.1$$

$$2 \quad 32.2 = 152.2$$

$$2 \quad 31.2 = 151.2$$

$$2 \quad 29.1 = 149.1$$

$$\text{Log. } 210. = 2.32222$$

$$37.654 = \frac{9.25359}{1.57581}$$

$$\text{Log. } 487.5 = 2.68797$$

$$87.41 = \frac{9.25359}{1.94156}$$

$$\text{Log. } 916.5 = 2.96213$$

$$164.3 = \frac{9.25359}{2.21572}$$

$$1089.0 = 3.03703$$

$$195.3 = \frac{9.25359}{2.29062}$$

$$1323.0 = 3.12156$$

$$237.2 = \frac{9.25359}{2.37515}$$

$$37.65 \div 4 = 9.41$$

$$87.41 = 21.85$$

$$164.3 = 41.1$$

$$195.3 = 48.8$$

$$237.2 = 59.3$$

$$79^{\circ} 40' 15.4''$$

$$79^{\circ} 40' 24.8'' = 9.25347$$

$$40' 37.2'' = 9.25343$$

$$40' 56.5'' = 9.25311$$

$$41' 4.2'' = 9.25302$$

$$41' 14.7'' = 9.25290$$

$$210 \div 2 = 105.0 = \frac{2.02119}{9.25347} = 1.12$$

$$487.5 \div 2 = 243.75 = \frac{2.38694}{9.25343} = 43.69$$

$$916.5 = 458.25 = \frac{2.66110}{9.25311} = 82.07$$

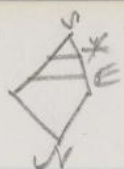
$$1089.0 = 544.5 = \frac{2.73600}{9.25302} = 97.50$$

$$1320.0 = 660.0 = \frac{2.82053}{9.25290} = 118.42$$

$$\frac{118.42}{\sqrt{360.50}} = 72.10$$

164

79° 95'



July 5.

79° 38' 0.4"

9.2551398

E

$$\begin{array}{rclclcl}
 2 \sqrt{9.1} & = & 179.1 & - & 66.6 & = & 112.5 & = & 28' 7.5'' \div 2 & = & 14' 3.75'' \\
 3 \quad 7.6 & = & 187.6 & - & 56.5 & = & 131.1 & = & 32 \quad 46.5 & = & 16 \quad 23.25 \\
 3 \quad 33.3 & = & 213.3 & - & 52.1 & = & 161.2 & = & 40 \quad 18.0 & = & 20 \quad 9.0 \\
 3 \quad 43.8 & = & 223.8 & - & 52.2 & = & 171.6 & = & 42 \quad 54.0 & = & 21 \quad 27.0 \\
 3 \quad 57.3 & = & 237.3 & - & 49.6 & = & 187.7 & = & 46 \quad 55.5 & = & 23 \quad 27.75
 \end{array}$$

*

$$\begin{array}{rcl}
 1 \quad 6.6 & = & 66.6 \\
 \sqrt{6.5} & & \\
 \sqrt{2.1} & & \\
 \sqrt{2.2} & & \\
 49.6 & &
 \end{array}
 \left\{
 \begin{array}{r}
 843.75 \\
 983.25 \\
 1209.0 \\
 1287.0 \\
 1407.75
 \end{array}
 \right\}$$

$$\begin{array}{r}
 843.75 = 2.9262138 \\
 9.2551398 \\
 \hline
 151.83 = 2.1813536
 \end{array}$$

$$\begin{array}{r}
 1407.75 = 3.1485256 \\
 9.2551398 \\
 \hline
 253.32 = 2.4036654
 \end{array}$$

$$\begin{array}{r}
 983.25 = 2.9926640 \\
 9.2551398 \\
 \hline
 176.93 = 2.2478038
 \end{array}$$

$$\begin{array}{r}
 1209 = 3.0824263 \\
 9.2551398 \\
 \hline
 217.55 = 2.3375661
 \end{array}$$

$$\begin{array}{r}
 1287 = 3.1095785 \\
 9.2551398 \\
 \hline
 231.59 = 2.3647183
 \end{array}$$

$$\begin{array}{rcl}
 151.83 & \div 2 & = 75.92 \\
 176.93 & & = 88.46 \\
 217.55 & & = 108.77 \\
 231.59 & & = 115.80 \\
 253.32 & & = 126.66
 \end{array}$$

$$79^\circ \quad 38' \quad 0.4''$$

$$\begin{array}{rcl}
 79 & 39 & 16.3 = 9.2542653 \\
 & 39 & 24.9 = 9.2541199 \\
 & 39 & 49.2 = 9.2538156 \\
 & 39 & 56.2 = 9.2538041 \\
 & 40 & 7.1 = 9.2536789
 \end{array}$$

$$\begin{array}{r}
 2.9262138 \\
 9.2542653 \\
 \hline
 2.1804791
 \end{array}
 \quad 151.52$$

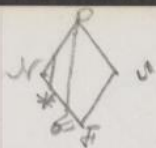
$$\begin{array}{r}
 2.9926640 \\
 9.2541199 \\
 \hline
 2.2467839
 \end{array}
 \quad 176.52$$

$$\begin{array}{r}
 3.0824263 \\
 9.2538156 \\
 \hline
 2.3363119
 \end{array}
 \quad 216.93$$

$$\begin{array}{r}
 3.1095715 \\
 9.2538041 \\
 \hline
 2.3633756
 \end{array}
 \quad 230.81$$

$$\begin{array}{r}
 3.1485256 \\
 9.2536789 \\
 \hline
 2.4022045
 \end{array}
 \quad 252.47$$

$$\begin{array}{r}
 \sqrt{1028.32} \\
 + 205.66 \text{ mean}
 \end{array}$$



Aug 10.
(63° 1194)

62° 41' 44"
9.66155

≡

$$\begin{array}{lcl}
 1'' & 29.5 & = 89.5 - 53.3 = 36.2 \div 2 = 18.1 = 4' 31.5 \\
 1 & 34.4 & = 94.4 - 54.0 = 40.4 = 20.2 = 5' 3.0 \\
 1 & 19.5 & = 79.5 - 37.7 = 41.8 = 20.9 = 5' 13.50 \\
 1 & 19.5 & = 79.5 - 37.3 = 42.2 = 21.1 = 5' 16.5 \\
 1 & 21.5 & = 81.5 - 36.4 = 45.1 = 22.55 = 5' 38.25 \\
 1 & 22.5 & = 82.5 - 36.1 = 46.4 = 23.2 = 5' 45.0
 \end{array}$$

*

$$\begin{array}{rcl}
 0'' & 53.3 & 271.5 \\
 & 54.0 & 303.0 \\
 & 37.7 & 313.5 \\
 & 37.3 & 316.5 \\
 & 36.4 & 338.25 \\
 & 36.1 & 348.0
 \end{array}$$

$$\begin{array}{r}
 271.5 = 2.43377 \\
 \underline{9.66155} \\
 (124.5) \quad 2.09532
 \end{array}$$

$$\begin{array}{r}
 338.25 = 2.52923 \\
 \underline{9.66155} \\
 (155.2) \quad 2.19078
 \end{array}$$

$$\begin{array}{r}
 303.0 = 2.48144 \\
 \underline{9.66155} \\
 (139.0) \quad 2.14299
 \end{array}$$

$$\begin{array}{r}
 348.0 = 2.54158 \\
 \underline{9.66155} \\
 (159.6) \quad 2.20313
 \end{array}$$

$$\begin{array}{r}
 313.5 = 2.49624 \\
 \underline{9.66155} \\
 (143.8) \quad 2.15779
 \end{array}$$

$$\begin{array}{r}
 316.5 = 2.50037 \\
 \underline{9.66155} \\
 (145.2) \quad 2.16192
 \end{array}$$

$$124.5 \div 2 = 62.2$$

$$139.0 = 69.5$$

$$143.5 = 71.9$$

$$145.2 = 72.6$$

$$155.2 = 77.6$$

$$159.6 = 79.8$$

$$62^{\circ} 41' 44''$$

$$62^{\circ} 40' 41.9 = 9.66180$$

$$40' 34.6 = 9.66183$$

$$40' 32.2 = 9.66184$$

$$40' 31.5 = 9.66184$$

$$40' 26.5 = 9.66186$$

$$40' 24.3 = 9.66187$$

$$\begin{array}{r} 2.43377 \\ 9.66180 \\ \hline 2.09557 \end{array} \quad 124.61$$

$$\begin{array}{r} 2.48144 \\ 9.66183 \\ \hline 2.14327 \end{array} \quad 139.02$$

$$\begin{array}{r} 2.49624 \\ 9.66184 \\ \hline 2.15808 \end{array} \quad 143.91$$

$$\begin{array}{r} 2.50037 \\ 9.66184 \\ \hline 2.16221 \end{array} \quad 145.22$$

$$\begin{array}{r} 2.52923 \\ 9.66186 \\ \hline 2.19109 \end{array} \quad 155.27$$

$$\begin{array}{r} 2.54158 \\ 9.66187 \\ \hline 2.20345 \end{array} \quad 159.75$$

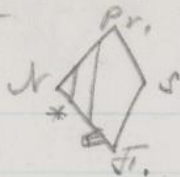
$$\begin{array}{r} 61867.90 \\ - 144.65 \text{ mean} \end{array}$$

68

(62° 14' 14") Aug. 11.

63° 32' 46".6

9.64883



$$\begin{array}{rclclcl}
 0^- & 49.5 & - & 35.3 & = & 14.2 & = & 3' & 33.0 & \div & 2 & = & 1' & 46.5 & = & 106.5 \\
 & 52.4 & - & 33.8 & = & 18.6 & = & 4 & 39.0 & & & = & 2 & 19.5 & = & 139.5 \\
 & 53.8 & - & 32.2 & = & 21.6 & = & 5 & 24.0 & & & = & 2 & 42.0 & = & 162.0 \\
 & 56.9 & - & 30.6 & = & 26.3 & = & 6 & 34.5 & & & = & 3 & 17.25 & = & 197.25 \\
 & 58.6 & - & 29.2 & = & 29.4 & = & 7 & 21.0 & & & = & 3 & 40.5 & = & 220.5 \\
 1 & 1.0 & - & 26.7 & = & 34.3 & = & 8 & 34.5 & & & = & 4 & 17.25 & = & 257.25
 \end{array}$$

$$\begin{array}{r}
 0^- \quad 35.3 \\
 \quad 33.8 \\
 \quad 32.2 \\
 \quad 30.6 \\
 \quad 29.2 \\
 \quad 26.7
 \end{array}
 \quad
 \begin{array}{r}
 \log. 106.5 = 2.02735 \\
 \underline{9.64883} \\
 1.67618 \quad 47.44
 \end{array}$$

$$\begin{array}{r}
 139.5 = 2.14457 \\
 \underline{9.64883} \\
 1.79340 \quad 62.14
 \end{array}$$

$$\begin{array}{r}
 162.0 = 2.20952 \\
 \underline{9.64883} \\
 1.85835 \quad 72.17
 \end{array}$$

$$\begin{array}{r}
 197.25 = 2.29502 \\
 \underline{9.64883} \\
 1.94385 \quad 87.87
 \end{array}$$

$$\begin{array}{r}
 220.5 = 2.34341 \\
 \underline{9.64883} \\
 1.99224 \quad 98.23
 \end{array}$$

$$\begin{array}{r}
 257.25 = 2.41035 \\
 \underline{9.64883} \\
 2.05914 \quad 114.60
 \end{array}$$

$$47.44 \div 2 = 23.72$$

$$62.14 = 31.07$$

$$72.17 = 36.08$$

$$87.87 = 43.94$$

$$98.23 = 49.12$$

$$114.60 = 57.30$$

$$63^{\circ} 32' 46.6$$

$$63 \quad 32 \quad 22.9 = 9.64892$$

$$15.5 = 9.64895$$

$$10.5 = 9.64898$$

$$2.7 = 9.64901$$

$$31 \quad 57.5 = 9.64903$$

$$31 \quad 49.3 = 9.64906$$

$$\begin{array}{r} 2.02735 \\ 9.64892 \\ \hline 1.67627 \end{array}$$

$$47.45$$

$$\begin{array}{r} 2.14457 \\ 9.64895 \\ \hline 1.79352 \end{array}$$

$$62.16$$

$$\begin{array}{r} 2.20952 \\ 9.64895 \\ \hline 1.85847 \end{array}$$

$$72.19$$

$$\begin{array}{r} 2.29502 \\ 9.64901 \\ \hline 1.94403 \end{array}$$

$$87.91$$

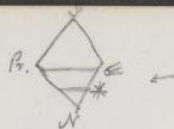
$$\begin{array}{r} 2.34341 \\ 9.64903 \\ \hline 1.99244 \end{array}$$

$$98.27$$

$$\begin{array}{r} 2.41035 \\ 9.64906 \\ \hline 2.05941 \end{array}$$

$$\begin{array}{r} 114.66 \\ 6482.64 \\ \hline 8044 \text{ mean.} \end{array}$$

170



July 8,

F3° 5' 8"

9.0805783

"

E

$$\begin{array}{rclclcl}
 59.6 & = & 1^{\circ} 29' 54'' & = & 5394.0 \div 2 & = & 2697.0 = 44' 57'' \\
 29.2 & = & 1^{\circ} 22' 19.5 & = & 4939.5 & = & 2469.75 = 41' 9.75'' \\
 4 \quad 53.5 & = & 1^{\circ} 13' 22.5 & = & 4402.5 & = & 2201.25 = 36' 41.25'' \\
 4 \quad 22.9 & = & 1^{\circ} 5' 43.5 & = & 3943.5 & = & 1971.75 = 32' 51.75'' \\
 3 \quad 56.8 & = & 0^{\circ} 59' 12.0 & = & 3552.0 & = & 1776.0 = 29' 36.0''
 \end{array}$$

*

$$\begin{array}{rclclcl}
 4.9 & = & 16' 13.5 & = & 973.5 & = & 486.75 = 8' 6.75'' \\
 10.3 & = & 17' 34.5 & = & 1054.5 & = & 527.25 = 8' 47.25'' \\
 12.5 & = & 18' 7.5 & = & 1087.5 & = & 543.75 = 9' 3.75'' \\
 17.5 & = & 19' 22.5 & = & 1162.5 & = & 581.25 = 9' 41.25'' \\
 25.7 & = & 21' 25.5 & = & 1285.5 & = & 642.75 = 10' 42.75''
 \end{array}$$

$$\begin{array}{r}
 5394.0 = 3.7319109 \\
 4.6855254 \\
 8.4174363 \\
 9.0805783 \\
 \times 7.4980146 \\
 \hline
 4.6855254 \\
 2.8124405 \\
 \hline
 (649.29)
 \end{array}$$

$$\begin{array}{r}
 3552.0 = 3.5504730 \\
 4.6855254 \\
 8.2360264 \\
 9.0805783 \\
 \times 7.3166047 \\
 \hline
 4.6855254 \\
 2.6310301 \\
 \hline
 (427.59)
 \end{array}$$

$$\begin{array}{r}
 4939.5 = 3.6936830 \\
 4.6855254 \\
 8.3792164 \\
 9.0805783 \\
 \times 7.4527947 \\
 \hline
 4.6855254 \\
 2.7742204 \\
 \hline
 (594.59)
 \end{array}$$

$$\begin{array}{r}
 973.5 = 2.9813260 \\
 4.6855254 \\
 7.6668513 \\
 9.0805783 \\
 6.7544876 \\
 4.6855254 \\
 \hline
 2.0619128 \\
 \hline
 (117.20)
 \end{array}$$

$$\begin{array}{r}
 4402.5 = 3.6436994 \\
 4.6855254 \\
 8.3292413 \\
 9.0805783 \\
 \times 7.4098196 \\
 \hline
 4.6855254 \\
 2.7242453 \\
 \hline
 (529.96)
 \end{array}$$

$$\begin{array}{r}
 1054.5 = 3.0230466 \\
 4.6855254 \\
 7.7086196 \\
 9.0805783 \\
 6.78991979 \\
 4.6855254 \\
 \hline
 2.1036231 \\
 \hline
 (126.95)
 \end{array}$$

$$\begin{array}{r}
 3943.5 = 3.5951818 \\
 4.6855254 \\
 8.2814302 \\
 9.0805783 \\
 \times 7.3620085 \\
 \hline
 4.6855254 \\
 2.6764340 \\
 \hline
 (474.72)
 \end{array}$$

$$1087.5 = 3.0364293$$

$$\begin{array}{r} 4.6855721 \\ 7.7220021 \\ 9.0805783 \end{array}$$

$$(130.92) = 6.8025804$$

$$\begin{array}{r} 4.6855748 \\ 2.1170056 \end{array}$$

$$1162.5 = 3.0653930$$

$$\begin{array}{r} 4.6855726 \\ 7.7509656 \\ 9.0805783 \end{array}$$

$$(139.95) = 6.8315439$$

$$\begin{array}{r} 4.6855748 \\ 2.1459691 \end{array}$$

$$1285.5 = 3.1090721$$

$$\begin{array}{r} 4.6855721 \\ 7.7946442 \\ 9.0805783 \end{array}$$

$$(154.76) = 6.8752225$$

$$\begin{array}{r} 4.6855748 \\ 2.1896477 \end{array}$$

$\delta 30$	δ'	δ''	
$\delta 30$	$0'$	$42''$	$= 9.0851719$
	1	14.3	$= 9.0846184$
	1	46.6	$= 9.0840281$
	2	20.7	$= 9.0834749$
	2	51.7	$= 9.0829399$

$$649.29 - 117.20 = 532.09 \div 2 = 266.04 = 4' 26.0$$

$$594.59 - 126.95 = 467.64 = 233.82 = 3 53.8$$

$$529.96 - 130.92 = 399.04 = 199.52 = 3 19.5$$

$$474.72 - 139.95 = 334.77 = 167.38 = 2 47.4$$

$$427.59 - 154.76 = 272.83 = 136.42 = 2 16.4$$

July 8, 1879.

$$\begin{array}{r}
 44' \quad \sqrt{7.0} = 8.1164434 \\
 5' \quad 24.7 = 7.1970217 \\
 0 \quad \sqrt{8.6} \\
 \hline
 4 \quad 26.1 \\
 2 \quad 13.0
 \end{array}$$

$$\begin{array}{r}
 8' \quad 6.75 = 7.3728802 \\
 0' \quad \sqrt{8.6} = 6.4534585
 \end{array}$$

$$\begin{array}{r}
 41' \quad 9.75 = 8.0782474 \\
 4' \quad \sqrt{7.3} = 7.1587957 \\
 1 \quad \sqrt{3.5} \\
 \hline
 3 \quad 33.8 \\
 1 \quad 36.9
 \end{array}$$

$$\begin{array}{r}
 8' \quad 47.25 = 7.4075906 \\
 1' \quad 3.44 = 6.4881689
 \end{array}$$

$$\begin{array}{r}
 36' \quad 41.25 = 8.0282360 \\
 4' \quad 25.8 = 7.1088143 \\
 1 \quad \sqrt{5.5} \\
 \hline
 3 \quad 19.5 \\
 1 \quad 39.8
 \end{array}$$

$$\begin{array}{r}
 9' \quad 3.75 = 7.4209735 \\
 1' \quad \sqrt{5.5} = 6.5015518
 \end{array}$$

$$\begin{array}{r}
 32' \quad \sqrt{1.75} = 7.9804201 \\
 3' \quad 57.4 = 7.9609984 \\
 1 \quad 10.0 \\
 \hline
 2 \quad 47.4 \\
 1 \quad 23.7
 \end{array}$$

$$\begin{array}{r}
 9' \quad 41.25 = 7.4499371 \\
 1' \quad 10.0 = 6.5305154
 \end{array}$$

$$\begin{array}{r}
 29' \quad 36.0 = 7.9350125 \\
 3' \quad 33.8 = 7.0155908 \\
 1 \quad 17.4 \\
 \hline
 2 \quad 16.4 \\
 1 \quad 8.2
 \end{array}$$

$$\begin{array}{r}
 10' \quad 42.75 = 7.4936161 \\
 1' \quad 17.4 = 6.5741944
 \end{array}$$

July 8. 1879.

173

$P 3^{\circ} 5' A''$		
83	2	55.1
	3	11.2
	3	25.3
	3	44.4
	3	59.9
		<u>9.0817607</u>

$$\begin{array}{r} 8.1164434 \\ 9.0828812 \\ \hline 5' 26''.4 = 7.1993246 \end{array}$$

$$\begin{array}{r} 7.3728802 \\ 9.0828812 \\ \hline 0' 58''.9 = 6.4557614 \end{array}$$

$$326''.4 - 59.9 = 267''.5$$

$$\begin{array}{r} 8.0712174 \\ 9.0826032 \\ \hline 4' 58''.7 = 7.1608206 \end{array}$$

$$\begin{array}{r} 7.4075906 \\ 9.0826032 \\ \hline 1' 3''.8 = 6.4901938 \end{array}$$

$$295.7 - 63.8 = 231.9$$

$$\begin{array}{r} 8.0212360 \\ 9.0823075 \\ \hline 4' 26''.0 = 7.1105435 \end{array}$$

$$\begin{array}{r} 7.4209735 \\ 9.0823075 \\ \hline 1' 5''.7 = 6.5032810 \end{array}$$

$$266.0 - 65.7 = 200.3$$

$$\begin{array}{r} 7.9804201 \\ 9.0820290 \\ \hline 3' 58''.2 = 7.0624491 \end{array}$$

$$\begin{array}{r} 7.4499371 \\ 9.0820290 \\ \hline 1' 10''.2 = 6.5319661 \end{array}$$

$$238.2 - 70.2 = 168.0$$

$$\begin{array}{r} 7.9350125 \\ 9.0817607 \\ \hline 3' 34''.4 = 7.0167732 \end{array}$$

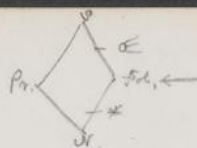
$$\begin{array}{r} 7.4936161 \\ 9.0817607 \\ \hline 1' 17''.6 = 6.5753768 \end{array}$$

$$214.4 - 77.6 = 136.8$$

$$\begin{array}{r} 5/1007.5 \\ - 201.5 \\ \hline \end{array}$$

Mean.

174



July 12. 1879. $87^{\circ} 27' 31.1''$
 8.6468013

\equiv

$$16'' \quad 42.3 = 4^{\circ} \quad 10' \quad 34.5 \div 2 = 2^{\circ} \quad 5' \quad 17.25$$

$$16 \quad 53.9 = 4 \quad 13 \quad 28.5 = 2 \quad 6 \quad 44.25$$

$*$

$$7'' \quad 36.3 = 1^{\circ} \quad 54' \quad 4.5 = 0^{\circ} \quad 57 \quad 2.25$$

$$10 \quad 56.7 = 2 \quad 44 \quad 10.5 = 1 \quad 22 \quad 5.25$$

$$\begin{array}{r} 8.5615377 \\ 8.6468013 \\ \hline 7.2023390 \end{array}$$

$$\begin{array}{r} 5' \quad 33'' 2 \\ 2 \quad 31.7 \\ \hline \end{array}$$

$$\begin{array}{r} 8' \quad 4'' 9 = 444.9 \\ 819.8 \\ \hline 202.45 = 3' \quad 22'' 45 \end{array}$$

$$\begin{array}{r} 8.2192666 \\ 8.6468013 \\ \hline 6.8666679 \quad 2' \quad 31.7 \end{array}$$

$$\begin{array}{r} 8.5665330 \\ 8.6468013 \\ \hline 7.2133343 \end{array}$$

$$\begin{array}{r} 5' \quad 37'' 1 \\ 3 \quad 38.4 \\ \hline \end{array}$$

$$\begin{array}{r} 9' \quad 15'' 5 = 555.5 \\ 819.8 \\ \hline 2334.3 \\ 167.15 = 2' \quad 47'' 15 \end{array}$$

$$\begin{array}{r} 8.3779618 \\ 8.6468013 \\ \hline 7.0247631 \quad 2' \quad 31.4 \end{array}$$

$87^{\circ} 27' 31.1$

$$87 \quad 24 \quad 8.65 = 8.6563166$$

$$24 \quad 43.9 = 8.6546614$$

P. 5615377

P. 6563003

7.2178380 $\sqrt{1} \quad 40'' 6$ $2 \quad 35.1$

$$\begin{array}{r} 8 \quad 15.7 = 495.7 \\ \hline 889.8 \\ 394.1 \end{array}$$

P. 2198666

P. 6563166

6.8761832 $2' \quad 35'' 1$

P. 5665330

P. 6546614

7.2211944 $\sqrt{1} \quad 43'' 3$ $3 \quad 42.4$

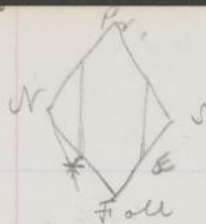
$$\begin{array}{r} 9 \quad 25.7 = 565.7 \\ \hline 889.8 \\ 324.1 \end{array}$$

P. 3779618

P. 6546614

7.0326232 $3' \quad 42.4$ $- 394'' 1$ $- 324.1$ $2 \overline{) 718.2}$ $- 359'' 1 \quad \text{mean.}$

176



July 24.

79° 56' 45"

9.2424730

$$\begin{array}{rclclclclcl}
 3^{\circ} & 25.6 & + & 2^{\circ} & 3.2 & = & 5^{\circ} & 28.8 & = & 1^{\circ} 22' 12'' \div 2 = 41' 6'' \\
 3 & 3.7 & + & 2 & 11.7 & = & 5 & 15.4 & = & 1 \quad 18 \quad 51.0 & = & 39 \quad 25.5 \\
 2 & 48.1 & + & 2 & 13.7 & = & 5 & 1.8 & = & 15 \quad 27.0 & = & 37 \quad 43.5 \\
 2 & 35.1 & + & 2 & 16.8 & = & 4 & 51.9 & = & 12 \quad 58.5 & = & 36 \quad 29.25 \\
 2 & 28.4 & + & 2 & 12.8 & = & 4 & 41.2 & = & 10 \quad 18.0 & = & 35 \quad 9.0
 \end{array}$$

$$\begin{array}{r}
 * \\
 2^{\circ} \quad 3.2 \\
 2 \quad 11.7 \\
 2 \quad 13.7 \\
 2 \quad 16.8 \\
 2 \quad 12.8
 \end{array}$$

$$\begin{array}{r}
 2466.0 = 3.3919931 \\
 9.2424730 \\
 430.99 = \underline{2.6344661}
 \end{array}$$

$$\begin{array}{r}
 2189.2 = 3.3402254 \\
 9.2424730 \\
 382.61 = \underline{2.5827524}
 \end{array}$$

$$\begin{array}{r}
 2365.5 = 3.3739230 \\
 9.2424730 \\
 413.42 = \underline{2.6163960}
 \end{array}$$

$$\begin{array}{r}
 2109.0 = 3.3240766 \\
 9.2424730 \\
 368.60 = \underline{2.5665496}
 \end{array}$$

$$\begin{array}{r}
 2263.5 = 3.3547805 \\
 9.2424730 \\
 395.60 = \underline{2.5972535}
 \end{array}$$

$$\begin{aligned}
 -430.99 + 889.8 &= 458.8 \div 2 = 229.4 = 3' & 49'' \\
 -413.42 + 889.8 &= 476.4 &= 238.2 = 3 & 58.2 \\
 -395.60 + 889.8 &= 494.2 &= 247.1 = 4 & 7.1 \\
 -382.61 + 889.8 &= 507.2 &= 253.6 = 4 & 13.6 \\
 -368.60 + 889.8 &= 521.2 &= 260.6 = 4 & 20.6
 \end{aligned}$$

79	56	4.5	
79	52	15.1	= 9.2451853
	52	6.3	= 9.2452890
	51	57.4	= 9.2453938
	51	50.9	= 9.2454704
	51	43.9	= 9.2455529

$$\begin{array}{r}
 3.3919931 \\
 9.2451853 \\
 \hline
 2.6371784
 \end{array}
 \quad -433.69$$

$$\begin{array}{r}
 3.3739230 \\
 9.2452890 \\
 \hline
 2.6192120
 \end{array}
 \quad -416.11$$

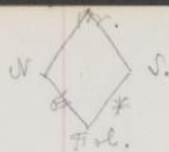
$$\begin{array}{r}
 3.3547805 \\
 9.2453938 \\
 \hline
 2.6001743
 \end{array}
 \quad -398.27$$

$$\begin{array}{r}
 3.3402854 \\
 9.2454704 \\
 \hline
 2.5857558
 \end{array}
 \quad -385.26$$

$$\begin{array}{r}
 3.3240766 \\
 9.2455529 \\
 \hline
 2.5696295
 \end{array}
 \quad -371.22$$

$$\begin{array}{r}
 2004.55 \\
 \hline
 400.91 \\
 889.8 \\
 \hline
 488.9 \text{ mean.}
 \end{array}$$

178



July 23. 1879.

80° 39' 37.5"

9.2102799

2 ¹⁸	$\sqrt{1}$	= 31'	16.5	÷ 2 = 15'	38.25 = 7.	
2	$\sqrt{5.9}$	= 43	58.5	= 21	59.25 -	
3	28.3	= 52	4.5	= 26	2.25 -	
3	49.8	= 57	27.0	= 28	43.5 -	
4	4.9	= 1° 1'	13.5	= 30'	36.75 -	
4	22.5	= 1	5	37.5	= 32	48.75 -

*

4	26.4	= 1° 6'	36.0	= 33'	18.0 -
3	59.7	= ± 59	55.5	= 29	57.75 -
4	3.9	= 1 0	58.5	= 30	29.25 -
4	9.4	= 1 2	21.0	= 31	10.5 -
4	15.5	= 1 3	52.5	= 31	56.25 -
4	24.2	= 1 6	3.0	= 33	1.5 -

7.6578919
6.8681718 2' 32.3

7.9861636
7.1964435 5' 24.2

7.8058990
7.0161789 3' 34.1

7.9402984
7.1505786 4' 51.7

7.8793212
7.0896011 4' 13.5

7.9448423
7.1581222 4' 56.9

$$D_{\text{eq}} = 889''.8 = 14' 49''.8$$

179

$$\begin{array}{r} 7.9219811 \\ 7.1322610 \end{array} \quad 4' \quad 39.7$$

$$\begin{array}{r} 7.9575266 \\ 7.1678065 \end{array} \left/ \begin{array}{l} \\ \end{array} \right. \sqrt{}' \quad 3.6$$

$$\begin{array}{r} 7.9496192 \\ 7.1598991 \end{array} \quad 4' \quad 54.1$$

$$\begin{array}{r} 7.9680208 \\ 7.1783007 \end{array} \left/ \begin{array}{l} \\ \end{array} \right. \sqrt{}' \quad 11.0$$

$$\begin{array}{r} 7.9797588 \\ 7.1900387 \end{array} \quad \sqrt{}' \quad 19.5$$

$$\begin{array}{r} 7.9825623 \\ 7.1928422 \end{array} \left/ \begin{array}{l} \\ \end{array} \right. \sqrt{}' \quad 21.6$$

$$\begin{array}{r} 2' \quad 32.3 \\ \sqrt{} \quad 24.2 \\ \hline 7 \quad 56.5 \\ 14 \quad 49.8 \\ \hline 6 \quad 53.3 \end{array} + 2 = 3' \quad 26''.6$$

$$\begin{array}{r} 4' \quad 39.7 \\ \sqrt{} \quad 7.6 \\ \hline 9 \quad 47.3 \\ 14 \quad 49.8 \\ \hline \sqrt{} \quad 6.5 \end{array} = 2' \quad 33''.2$$

$$\begin{array}{r} 3 \quad 34.1 \\ 4 \quad 51.7 \\ \hline 8 \quad 25.8 \\ 14 \quad 49.8 \\ \hline 6 \quad 24.0 \end{array} = 3' \quad 12''.0$$

$$\begin{array}{r} 4 \quad 58.1 \\ \sqrt{} \quad 11.0 \\ \hline 10 \quad 9.1 \\ 14 \quad 49.8 \\ \hline 4 \quad 40.7 \end{array} = 2' \quad 20''.4$$

$$\begin{array}{r} 4 \quad 13.5 \\ 4 \quad 56.9 \\ \hline 9 \quad 10.4 \\ 14 \quad 49.8 \\ \hline \sqrt{} \quad 39.4 \end{array} = 2' \quad 49.7$$

$$\begin{array}{r} \sqrt{} \quad 19.5 \\ \sqrt{} \quad 21.6 \\ \hline 10 \quad 41.1 \\ 14 \quad 49.8 \\ \hline 4 \quad 8.7 \end{array} = 2' \quad 4''.4$$

July 23.

80°	$39'$	37.5	
80	43	4.1	9.2076267
	42	49.5	9.2078147
	42	27.2	9.2081017
	42	10.7	9.2083140
	41	57.9	9.2084786
	41	41.9	9.2086843

$$\begin{array}{r} 7.6578919 \\ 9.2076267 \\ \hline 6.8655186 \end{array} \quad 2' 31.3$$

$$\begin{array}{r} 7.9861636 \\ 9.2076267 \\ \hline 7.1937903 \end{array} \quad 5' 22.3$$

$$\begin{array}{r} 7.8058990 \\ 9.2078147 \\ \hline 7.0137137 \end{array} \quad 3' 32.9$$

$$\begin{array}{r} 7.9402987 \\ 9.2078147 \\ \hline 7.1481134 \end{array} \quad 4' 50.1$$

$$\begin{array}{r} 7.8793212 \\ 9.2081017 \\ \hline 7.0874229 \end{array} \quad 4' 12.3$$

$$\begin{array}{r} 7.9478423 \\ 9.2081017 \\ \hline 7.1559440 \end{array} \quad 4' 55.4$$

$$\begin{array}{r} 7.9219811 \\ 9.2083140 \\ \hline 7.1302951 \end{array} \quad 4' 38.4$$

$$\begin{array}{r} 7.9545266 \\ 9.2083140 \\ \hline 7.1658406 \end{array} \quad 5' 2.2$$

$$\begin{array}{r} 7.9496192 \\ 9.2084786 \\ \hline 7.1580978 \end{array} \quad 4' 56.8$$

$$\begin{array}{r} 7.9680208 \\ 9.2084786 \\ \hline 7.1764994 \end{array} \quad 5' 9.7$$

$$\begin{array}{r} 7.9797588 \\ 9.2086843 \\ \hline 7.1884431 \end{array} \quad 5' 18.3$$

$$\begin{array}{r} 7.9825623 \\ 9.2086843 \\ \hline 7.1912466 \end{array} \quad 5' 20.4$$

$$\begin{array}{r}
 2' \quad 31.3 \\
 \sqrt{} \quad 22.3 \\
 \hline
 7 \quad 53.6 = (473.6) \\
 14 \quad 49.8 \\
 \hline
 6 \quad 56.2 = 416.2
 \end{array}$$

$$\begin{array}{r}
 3 \quad 32.9 \\
 \sqrt{} \quad 50.1 \\
 \hline
 8 \quad 23.0 = (503.0) \\
 14 \quad 49.8 \\
 \hline
 6 \quad 26.8 = 386.8
 \end{array}$$

$$\begin{array}{r}
 4 \quad 12.3 \\
 \sqrt{} \quad 55.4 \\
 \hline
 9 \quad 7.7 = (547.7) \\
 14 \quad 49.8 \\
 \hline
 5 \quad 42.1 = 342.1
 \end{array}$$

$$\begin{array}{r}
 4 \quad 38.4 \\
 \sqrt{} \quad 2.2 \\
 \hline
 9 \quad 40.6 = (580.6) \\
 14 \quad 49.8 \\
 \hline
 5 \quad 9.2 = 309.2
 \end{array}$$

$$\begin{array}{r}
 4 \quad 56.8 \\
 \sqrt{} \quad 9.7 \\
 \hline
 10 \quad 6.5 = (606.5) \\
 14 \quad 49.8 \\
 \hline
 4 \quad 43.3 = 283.3
 \end{array}$$

$$\begin{array}{r}
 \sqrt{} \quad 18.3 \\
 \sqrt{} \quad 20.4 \\
 \hline
 10 \quad 38.7 = (638.7) \\
 14 \quad 49.8 \\
 \hline
 4 \quad 11.1 = 251.1
 \end{array}$$

$$\begin{array}{r}
 6/1988.7 \\
 + 331.4 \text{ mean}
 \end{array}$$

+56° 22' 16.7

(1855)

15h 35m 7.91

+56° 22' 16.7

$$\begin{array}{r}
 0.032736 +232 \\
 \underline{184} \\
 0.032920 \\
 \underline{-47} \\
 0.032873 \\
 0.177100 \\
 \hline
 0.209973
 \end{array}$$

$$\begin{array}{r}
 -1.62171 \\
 3.07071 \\
 \hline
 +1.44900
 \end{array}$$

$$\begin{array}{r}
 \text{Avg. } 1.449 = 0.1610684 \\
 " 24. = 1.3802112 \\
 \hline
 1.5412796
 \end{array}$$

(+ 34.7760)

$$\begin{array}{r}
 15h 35m 7.91 \\
 \underline{-34.776} \\
 15 34 33.134
 \end{array}$$

$$\begin{array}{r}
 0.032040 +2.32 \\
 \underline{37} \\
 0.032077 \\
 \underline{-97} \\
 0.031980 \\
 0.175802 \\
 \hline
 0.207782
 \end{array}$$

$$\begin{array}{r}
 -1.61355 \\
 +3.07120 \\
 \hline
 +1.45765
 \end{array}$$

$$\begin{array}{r}
 \text{Avg. } +1.45765 = 0.1636533 \\
 " 24. = 1.3802112 \\
 \hline
 1.5438645
 \end{array}$$

$$\begin{array}{r}
 34.984 \\
 34.776 \\
 \hline
 1.760
 \end{array}$$

34.880 = mean

$$\begin{array}{r}
 15 35 7.91 \\
 15 35 42.79
 \end{array}$$

$$\begin{array}{r}
 11.8595 -11.7 \\
 \underline{-93} \\
 11.8502 \\
 \underline{-0.013} \\
 11.8489 \text{ prev.}
 \end{array}$$

$$\begin{array}{r}
 \text{Avg. } 11.8489 = 1.0736720 \\
 " 24. = 1.3802112 \\
 \hline
 284.374 \quad 2.4538892 \\
 (-4' 44.374)
 \end{array}$$

$$\begin{array}{r}
 56^\circ 22' 16.7 \\
 \underline{-4' 44.37} \\
 56 17 31.33
 \end{array}$$

$$\begin{array}{r}
 11.8948 \quad 3.134 \\
 \underline{-3} \quad \underline{-11.7} \\
 11.8911 \quad 21935 \\
 \underline{.0026} \quad 3134 \\
 11.8885 \quad 36.6678
 \end{array}$$

$$\begin{array}{r}
 \text{Avg. } = 1.0751271 \\
 " 24. = 1.3802112 \\
 \hline
 2.4553383 \\
 285.32 = 4' 45.32 \\
 284.37 \\
 \hline
 9.69 \\
 284.84 \text{ mean.}
 \end{array}$$

$$\begin{array}{r}
 4' 44.84 \\
 56 22 16.7 \\
 \hline
 56 17 31.96
 \end{array}$$

.0003 diff. in time
 .001 " in arc.

183

$$\begin{array}{r}
 0.033660 \\
 \hline
 0.033724 \\
 -97 \\
 \hline
 0.033627 \\
 0.175800 \\
 \hline
 0.209427
 \end{array}$$

$$\begin{array}{r}
 1.61967 \\
 3.07120 \\
 \hline
 1.45153 = 0.1618260 \\
 24 = 1.3802112 \\
 \hline
 1.5420372 \\
 \hline
 34.8267
 \end{array}$$

$$\begin{array}{r}
 15^h \quad 35 \quad 7.91 \\
 \hline
 34.88
 \end{array}$$

Corrected on sheet,

Final values 1849.0

$$\begin{array}{r}
 15^h \quad 35^m \quad 7.91 \\
 \hline
 34.879 \\
 \hline
 1
 \end{array}$$

$$\begin{array}{r}
 11.8124 \\
 \hline
 11.8091 \\
 \hline
 236182 \\
 \hline
 236182 \\
 \hline
 .002598002
 \end{array}$$

$$\begin{array}{r}
 11.8091 \\
 \hline
 11.8065 = 1.0721213 \\
 24 = 1.3802112 \\
 \hline
 2.4523325 \\
 \hline
 283.56
 \end{array}$$

$$\begin{array}{r}
 34.9817 \\
 34.776 \\
 \hline
 1.758 \\
 34.879
 \end{array}$$

$$\begin{array}{r}
 285.529 \\
 284.574 \\
 \hline
 9.703 \\
 284.852
 \end{array}$$

$$\begin{array}{r}
 56^\circ 22' 16.7 \\
 \hline
 4 \quad 44.852 \\
 \hline
 56^\circ 22' 16.7
 \end{array}$$

15^h 35^m 7.91
56° 22' 16.7"

1st val. on page 182.

$$\begin{array}{r}
 15 \quad 35 \quad 7.91 \\
 \quad \quad 34.776 \\
 \hline
 15 \quad 35 \quad 42.686 \\
 \quad \quad 2.686 \\
 \quad \quad + 23.0 \\
 \hline
 0.033660 \quad 8058 \\
 \quad \quad 62 \quad 5372 \\
 \hline
 0.033722 \quad 61.778 \\
 \quad \quad -97 \\
 \hline
 0.033625 \\
 0.177069 \\
 \quad \quad 31 \\
 \hline
 0.210725 \\
 \quad \quad 20
 \end{array}$$

$$\begin{array}{r}
 -1.62458 \\
 +3.07120 \\
 +1.44662 = 0.160348 \\
 \quad \quad 60
 \end{array}$$

$$\begin{array}{r}
 24 = 1.3802112 \\
 1.5405657
 \end{array}$$

$$\begin{array}{r}
 +34.7189 \\
 34.7760 \\
 \quad 1.4949 \\
 34.7474 \text{ Mean.}
 \end{array}$$

$$\begin{array}{r}
 15 \quad 35 \quad 7.91 \\
 \hline
 15 \quad 35 \quad 42.6574 \\
 \quad \quad 2.6574 \\
 \quad \quad + 23.0 \\
 \hline
 0.033660 \quad 79722 \\
 \quad \quad 61 \quad 53128 \\
 \hline
 0.033721 \quad 61.1202 \\
 \quad \quad -97 \\
 \hline
 0.033624 \\
 0.175504 \\
 \hline
 0.209428
 \end{array}$$

$$\begin{array}{r}
 -1.61968 \\
 3.07120 \\
 +1.45152 = 0.1612170 \\
 \quad \quad 60
 \end{array}$$

$$\begin{array}{r}
 24 = 1.3802112 \\
 1.5420342 \\
 \quad \quad 282 \\
 \quad \quad 59 \\
 34.8365
 \end{array}$$

$$\begin{array}{r}
 56 \quad 22 \quad 16.7 \\
 \quad \quad -4 \quad 44.37 \\
 \hline
 56 \quad 17 \quad 32.33
 \end{array}$$

$$\begin{array}{r}
 \quad \quad 2.686 \\
 \quad \quad -11.8 \\
 \hline
 11.8124 \quad 21.488 \\
 \quad \quad 32 \quad 2686 \\
 \hline
 11.8092 \quad 2686 \\
 \quad \quad .00022 \quad 2686 \\
 \hline
 236184 \quad 31.6948 \\
 236184 \\
 \hline
 .002594024 \\
 11.8092 \\
 \hline
 11.8066 = 1.0721021 \\
 \quad \quad 221
 \end{array}$$

$$\begin{array}{r}
 24 = 1.3802112 \\
 2.4523361 \\
 \quad \quad 202 \\
 \hline
 129
 \end{array}$$

$$\begin{array}{r}
 283.458 \\
 284.374
 \end{array}$$

$$7.832$$

$$283.916$$

$$-4' \quad 43.916$$

$$56 \quad 22 \quad 16.7$$

$$56 \quad 17 \quad 32.784$$

$$\begin{array}{r}
 \quad \quad 2.6574 \\
 \quad \quad -11.8 \\
 \hline
 11.8124 \quad 21.2592 \\
 \quad \quad 31 \quad 26574 \\
 \hline
 11.8093 \quad 26574 \\
 \quad \quad .00022 \quad 31.35732 \\
 \hline
 236186 \quad 31.35732 \\
 236186 \\
 \hline
 .002594026 \\
 11.8093 \\
 \hline
 11.8067 = 1.0721028 \\
 \quad \quad 258
 \end{array}$$

$$\begin{array}{r}
 24 = 1.3802112 \\
 283.061 = 2.4523398
 \end{array}$$

+56° #1120,

185

$$\begin{array}{r}
 34.8365 \\
 34.7760 \\
 \hline
 1.6125 \\
 34.8062
 \end{array}$$

$$\begin{array}{r}
 283.361 \\
 284.374 \\
 \hline
 7.735 \\
 283.868 = 4' \quad 43.868
 \end{array}$$

$$\begin{array}{r}
 15^h \quad 35^m \quad 4.91 \\
 + 34.806 \\
 \hline
 15 \quad 35 \quad 42.716
 \end{array}$$

$$\begin{array}{r}
 56^0 \quad 22' \quad 16.7 \\
 - 4 \quad 43.868 \\
 \hline
 56 \quad 17 \quad 32.832
 \end{array}$$

$$\begin{array}{r}
 0.033660 \quad \begin{array}{r} 2716 \\ + 23.0 \\ \hline 5432 \end{array} \\
 6 \sim 5432 \\
 \hline
 0.033722 \quad 62.468 \\
 - 97
 \end{array}$$

$$\begin{array}{r}
 11.8124 \\
 11.8091 \\
 \hline
 .000022 \\
 236182 \\
 236182 \\
 \hline
 0.002598002 \\
 11.8091 \\
 \hline
 11.8065 = 1.0721028 \\
 1.85
 \end{array}$$

$$\begin{array}{r}
 0.033625 \\
 0.175793 \\
 \hline
 0.209418
 \end{array}$$

$$\begin{array}{r}
 24 = 1.3802112 \\
 \hline
 2.4523325 \\
 232
 \end{array}$$

$$\begin{array}{r}
 1.61964 \\
 3.07120 \\
 \hline
 1.45156 = 0.1618170 \\
 1.80 \\
 24 = 1.3802112 \\
 \hline
 1.5420462 \\
 0.7 \\
 \hline
 55
 \end{array}$$

$$\begin{array}{r}
 283.356 \\
 284.374 \\
 \hline
 7.730 \\
 283.865
 \end{array}$$

$$\begin{array}{r}
 34.8374 \\
 34.7760 \\
 \hline
 1.6134 \\
 34.8067
 \end{array}$$

$$\begin{array}{l}
 R.A. \quad 1879.0 = 15^h \quad 35^m \quad 42.72 \\
 Dec. \quad \quad \quad = 56^0 \quad 17' \quad 32.8
 \end{array}$$

Aug. 19. 1879.

$$\log. 36.6 = 1.5635$$

$$\begin{array}{r} 8.965 \\ 2.599 \\ \hline 12.995 \end{array}$$

$$\begin{array}{r} 8.950 \\ 2.614 \\ \hline 13.070 \end{array}$$

$$\begin{array}{r} 8.954 \\ 2.610 \\ \hline 13.050 \end{array}$$

$$\begin{array}{r} 8.965 \\ 2.599 \\ \hline 12.995 \end{array}$$

$$\begin{array}{r} 8.919 \\ 2.645 \\ \hline 13.225 \end{array}$$

$$\begin{array}{r} 8.957 \\ 2.607 \\ \hline 13.025 \end{array}$$

$$\begin{array}{r} 8.930 \\ 2.634 \\ \hline 13.170 \end{array}$$

$$\begin{array}{r} 9.061 \\ 2.503 \\ \hline 12.515 \end{array}$$

$$\begin{array}{r} 9.015 \\ 2.549 \\ \hline 12.745 \end{array}$$

$$\begin{array}{r} 9.016 \\ 2.548 \\ \hline 12.740 \end{array}$$

$$\begin{array}{r} 13.00 \\ 13.07 \\ 13.05 \\ 13.00 \\ 13.22 \\ 13.04 \\ 13.17 \\ 12.52 \\ 12.74 \\ 12.74 \\ \hline 12.955 \end{array}$$

$$12.96$$

$$\begin{array}{r} 1.564 \\ 9.570 \\ \hline 1.994 \end{array}$$

$$98.60$$

$$+ .04$$

$$+ .11$$

$$+ .09$$

$$+ .04$$

$$+ .26$$

$$+ .08$$

$$+ .21$$

$$- .44$$

$$- .22$$

$$- .22$$

$$\hline .171$$

$$171$$

$$36.6 = 1.56 \text{ } 9$$

187

1.050
P. 832
7.269
4.538
5.462
13.65

1.047
P. 865
7.302
4.604
5.396
13.49

1.105
P. 807
7.244
4.418
5.512
13.78

1.113
P. 799
7.236
4.472
5.528
13.82

1.141
P. 771
7.208
4.416
5.524
13.96

1.115
P. 797
7.234
4.468
5.532
13.83

1.110
P. 802
7.239
4.478
5.522
13.80

0.993
P. 919
7.356
4.712
5.288
13.22

1.045
P. 867
7.304
4.608
5.392
13.48

0.574
P. 818
7.255
4.510
5.490
13.72

0.510
P. 812
7.249
4.498
5.502
13.75

0.635
P. 757
7.194
4.318
5.612
14.03

0.634
P. 758
7.195
4.390
5.610
14.02

0.636 = 1.56
9.392 = " 6.
P. 756 = " 6.
1.564
7.192
4.384
5.616
14.04

0.566
P. 826
7.263
4.526
5.474
13.68

0.577
P. 815
7.252
4.504
5.496
13.74

0.553
P. 839
7.276
4.552
5.448
13.62

0.554 = 1.56
9.392
6.838
1.564
7.274
4.548
5.452
13.63

0.569
P. 823
7.260
4.520
5.480
13.70

0.591
P. 801
7.238
4.476
5.524
13.81

0.602
P. 790
7.227
4.454
5.546
13.86

1.071
P. 784
7.226
4.452
5.548
13.87

1.136
P. 724
7.161
4.322
5.678
14.19

1.092
P. 768
7.205
4.410
5.590
13.97

1.110
P. 750
7.187
4.374
5.626
14.06

1.091
P. 769
7.206
4.412
5.588
13.97

1.003
P. 857
7.294
4.588
5.412
13.53

1.002
9.860
P. 858
1.563
7.295
4.590
5.410
13.52

1.014
P. 846
7.283
4.566
5.434
13.58

0.620
P. 870
7.307
4.614
5.386
13.46

0.618
P. 872
7.309
4.618
5.382
13.45

0.627
P. 863
7.300
4.600
5.400
13.50

0.638
P. 852
7.289
4.578
5.422
13.55

1.248
1.102
8.854
7.291
4.582
5.415
13.54

0.760
9.643
8.883
7.320
4.640
5.360
13.40

0.732
9.643
8.911
7.348
4.696
5.204
13.26

0.777
9.643
8.866
7.303
4.606
5.394
13.48

0.750
9.643
8.893
7.330
4.660
5.340
13.35

0.841
9.643
8.802
7.239
4.478
5.522
13.80

0.755
9.643
8.885
7.322
4.644
5.256
13.39

0.762
9.643
8.881
7.318
4.636
5.364
13.41

0.852
9.643
8.791
7.228
4.456
5.544
13.86

0.576
9.423
8.847
7.284
4.568
5.432
13.58

0.611
9.423
8.812
7.249
4.498
5.502
13.75

0.712
9.643
8.861
7.298
4.596
5.404
13.51

0.767
9.643
8.876
7.313
4.626
5.374
13.43

1.239
0.102
8.863
7.300
4.600
5.400
13.50

0.782
9.643
8.861
7.298
4.596
5.404
13.51

0.760
9.643
8.883
7.320
4.640
5.360
13.40

0.848
9.643
8.795
7.232
4.464
5.536
13.84

0.834
9.643
8.809
7.246
4.492
5.508
13.77

0.801
9.643
8.842
7.279
4.558
5.442
13.60

0.776
9.643
8.867
7.304
4.608
5.392
13.48

0.764
9.643
8.879
7.316
4.632
5.368
13.42

1.231
0.102
8.871
7.308
4.616
5.384
13.46

1.257
0.102
8.845
7.282
4.564
5.436
13.59

$$\begin{aligned} 36.6 &= 1.563 \\ 23.59 &= 1.373 \\ &\quad \underline{2.936} \\ 682.8 &= 2.834 \\ &\quad \underline{0.102} \end{aligned}$$

$$\begin{aligned} 12.70 &= 1.104 \\ &\quad \underline{8.539} \\ &= 9.643 \end{aligned}$$

$$\begin{aligned} 0.884 &= 1.539 \\ &\quad \underline{9.423} \end{aligned}$$

$$\begin{aligned} 1.373 &+ \\ 2.834 &= \\ \hline 4.207 \end{aligned}$$

$$\begin{array}{r}
 363 = 9.560 \\
 366 = 1.563 \\
 \hline
 1.123 \\
 18.8 = 1.274 \\
 \hline
 9.849 \\
 \hline
 .884 \\
 7.387 \\
 4.774 \\
 5.226 \\
 13.06
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.274 \\
 \hline
 9.849 \\
 \hline
 .884 \\
 7.387 \\
 4.774 \\
 5.226 \\
 13.06
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.276 \\
 \hline
 9.847 = 18.9 \\
 \hline
 .893 \\
 7.391 \\
 4.782 \\
 5.212 \\
 13.04
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.276 \\
 \hline
 9.847 \\
 \hline
 .882 \\
 7.402 \\
 4.804 \\
 5.196 \\
 12.99
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.271 \\
 \hline
 9.942 \\
 \hline
 .083 \\
 7.356 \\
 4.712 \\
 5.244 \\
 13.22
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.281 \\
 \hline
 9.942 \\
 \hline
 .091 \\
 7.394 \\
 4.782 \\
 5.212 \\
 13.03
 \end{array}$$

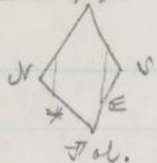
$$\begin{array}{r}
 1.123 \\
 1.276 \\
 \hline
 9.847 \\
 \hline
 .085 \\
 7.367 \\
 4.734 \\
 5.266 \\
 13.16
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.176 \\
 \hline
 9.947 \\
 \hline
 .115 \\
 7.498 \\
 4.996 \\
 5.004 \\
 12.51
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.176 \\
 \hline
 9.947 \\
 \hline
 .072 \\
 7.407 \\
 6.014 \\
 3.986 \\
 9.96
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.176 \\
 \hline
 9.947 \\
 \hline
 .104 \\
 7.452 \\
 4.904 \\
 5.096 \\
 12.74
 \end{array}$$

$$\begin{array}{r}
 1.123 \\
 1.176 \\
 \hline
 9.947 \\
 \hline
 .104 \\
 7.453 \\
 4.906 \\
 5.094 \\
 12.73
 \end{array}$$

190₂.

1842,

Aug. 20. 1879.

15h 26m 14.36

55° 44' 34.2

$$\begin{array}{r}
 0.019957 \\
 + 186 \\
 \hline
 0.020142 \\
 - 97 \\
 \hline
 0.020045 \\
 0.166234 \\
 \hline
 0.186279
 \end{array}
 \quad
 \begin{array}{r}
 + 24.1 \\
 7.36 \\
 \hline
 15.06 \\
 753 \\
 \hline
 1757 \\
 184.736
 \end{array}$$

$$\begin{array}{r}
 12.4740 \\
 - 84 \\
 \hline
 12.4656 \\
 .00022 \\
 \hline
 249312 \\
 249312 \\
 \hline
 0.002742432
 \end{array}
 \quad
 \begin{array}{r}
 - 11.4 \\
 7.36 \\
 \hline
 6.44 \\
 242 \\
 \hline
 798 \\
 13.904
 \end{array}$$

$$\begin{array}{r}
 - 1.5377 \\
 3.0712 \\
 \hline
 + 1.5335 = 0.1856438 \\
 37 \\
 \hline
 + 56.740 \\
 = 1.5682017 \\
 1.7538855
 \end{array}$$

$$\begin{array}{r}
 12.4656 \\
 12.4629 = 1.0956191 \\
 37 = 1.5682017 \\
 46.127 = 2.6638208 \\
 \hline
 140 \\
 68
 \end{array}$$

$$\begin{array}{r}
 15h \quad 26 \quad 17.36 \\
 + 56.740 \\
 \hline
 15 \quad 27 \quad 14.100
 \end{array}$$

$$\begin{array}{r}
 55^\circ \quad 44' \quad 34.2 \\
 - 7 \\
 \hline
 41.127
 \end{array}$$

$$\begin{array}{r}
 55^\circ \quad 36' \quad 57.073
 \end{array}$$

$$\begin{array}{r}
 0.021456 \\
 102 \\
 \hline
 0.021558 \\
 97 \\
 \hline
 0.021461 \\
 0.164748 \\
 \hline
 0.186209
 \end{array}
 \quad
 \begin{array}{r}
 + 24.1 \\
 4.1 \\
 \hline
 244 \\
 992 \\
 \hline
 101.68
 \end{array}$$

$$\begin{array}{r}
 - 1.53536 = 0. \\
 3.0712 \\
 \hline
 + 1.5358 = 0.1863347 \\
 37 \\
 \hline
 + 56.825 = 1.7545364
 \end{array}$$

$$\begin{array}{r}
 12.4053 \\
 - 47 \\
 \hline
 12.4006 \\
 .00022 \\
 \hline
 248012 \\
 248012 \\
 \hline
 0.002728132 \\
 12.4006 \\
 12.3979 = 1.0933166 \\
 37 = 1.5682017 \\
 \hline
 2.6615499 \\
 458.722
 \end{array}$$

(1842) Aug. 20. 1879.

191

15 26 17.36

55° 44' 31.2

0.019957
115

+25.1
7.56

0.020142
-19

150.6

75.3

1757

0.020123

0.166834

0.186957

1.5350

3.0707

1.5327 = 0.1254572

37 = 1.5682017

+56.710 = 1.7536589

15 26 17.36

15 27 14.070

0.021456
+101

+24.5
4.07

0.021557

1736

-97

992

0.021460

100.936

0.164747

0.186207

-1.5353

3.0712

1.5359 = 0.1263629

37 = 1.5682017

56.725 = 1.7545646

56.710

1.535

56.769

15 26 17.36

+56.769

15 27 14.129

12.4740

-84

12.4656

.000004

12.4656

12.4652 = 1.0956993

1.5682017

2.6639010

461.21

55 44 31.2

-7

55 36 56.99

12.4053

-11.4

-46

4.07

12.4007

798

.00022

456

248012

46.398

248014

12.4007

12.3950 = 1.0933516

37 = 1.5682017

456.73 = 2.6615533

461.52

2920.25

460.12

55° 44' 31.2

-7

55 36 58.08

+55° #1758.

15h 27m 14.129

55° 36' 58.0h

$$\begin{array}{r}
 0.021456 \quad 4.129 \\
 +102 \quad +24.8 \\
 \hline
 0.021558 \quad 3303.2 \\
 -97 \quad 1258 \\
 \hline
 0.021461 \quad 102.3992 \\
 0.164753 \\
 \hline
 0.186214
 \end{array}$$

$$\begin{array}{r}
 -1.5554 \\
 3.0712 \\
 \hline
 1.5158 = 0.1863347 \\
 37 = 1.5682017 \\
 56.825 = 1.7545364 \\
 56.710 \\
 1.535 \\
 56.768
 \end{array}$$

$$\begin{array}{r}
 12.4053 - 11.4 \\
 -47 \quad 41.3 \\
 \hline
 12.4006 \quad 342 \\
 .00022 \quad 114 \\
 \hline
 24.8012 \quad 456 \\
 24.8012 \quad 47.082
 \end{array}$$

$$\begin{array}{r}
 12.4006 \\
 12.3979 = 1.0933166 \\
 1.5682017 \\
 458.722 = 2.6615499 \\
 461.52 \\
 2/920.24 \\
 460.12
 \end{array}$$

R.A. 1879.0 = 15h 27m 14.13
 Dec. " = 55° 36' 58.1

Aug. 20. 1879,

$$\begin{array}{r}
 t = 15h 35m 40. \\
 23 \quad 14 \quad 36 \\
 (G+t) = 14 \quad 50 \quad 19
 \end{array}$$

$$\begin{array}{r}
 15 \quad 35 \quad 40 \\
 8 \quad 28 \quad 54 \\
 23 \quad 57 \quad 37 = (H+t) \\
 24 \\
 2' \quad 23''
 \end{array}$$

$$\begin{array}{r}
 15 \quad 27 \quad 14.13 \\
 23 \quad 14 \quad 36. \\
 (g+t) \quad 14 \quad 41 \quad 50.
 \end{array}$$

$$\begin{array}{r}
 15 \quad 27 \quad 14. \\
 8 \quad 18 \quad 6 \\
 23 \quad 45 \quad 20 = (H+t) \\
 24 \\
 14-405
 \end{array}$$

$$\begin{array}{r}
 23h \quad 14m \quad 53.5 = g \\
 15 \quad 27 \quad 32 = t \\
 14 \quad 42 \quad 25 = (g+t)
 \end{array}$$

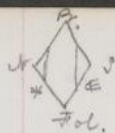
$$\begin{array}{r}
 H = 7h \quad 38m \quad 7s \\
 15 \quad 27 \quad 32 \\
 23 \quad 5 \quad 39 = (H+t)
 \end{array}$$

$$\begin{array}{r}
 15h \quad 27m \quad 32 = t \\
 23 \quad 14 \quad 42 = g \\
 14 \quad 42 \quad 14 = (g+t)
 \end{array}$$

$$\begin{array}{r}
 8 \quad 6 \quad 8 \\
 15 \quad 27 \quad 32 \\
 23 \quad 33 \quad 40 = (H+t)
 \end{array}$$

	56° 17' 32" $\sqrt{56.4}$ + .05 Aug. 19.	55° 36' $\sqrt{55.1}$.00 Aug. 20	53° 24' $\sqrt{56.4}$ - .12 = $\frac{1}{2}$ Aug. 30.	53° 24' $\sqrt{56.4}$ - .01 Aug. 23.
f	+2.973	+2.980	+3.052	+3.003
Log. g .	+1.2962	+1.2972	+1.3074	+1.3004
" sin $(\beta + \tau)$	-9.8503	-9.8121	-9.8135	-9.8131
" tan δ .	+0.1755	+0.1645	+0.1295	+0.1295
" sum.	-1.3079	-1.2741	-1.2504	-1.2430
" 15	1.1761	1.1761	1.1761	+1.1761
" result.	-0.1259	-0.0980	-0.0743	-0.0669
2y.	-1.306	-1.253	-1.186	-1.166
" h	+1.2851	+1.2845	+1.2791	+1.2827
" sin $(H + \tau)$	-8.0170	-8.8059	-9.3709	-9.0594
" sec δ .	+0.2555	+0.2482	+0.2247	+0.2248
" sum.	-9.5576	-0.3386	-0.8747	-0.5669
" 15.	+1.1761	+1.1761	+1.1761	+1.1761
" result.	8.3815	-9.1625	-9.6986	-9.3908
2y.	.024	-.1454	-.500	-.246
$\delta' - \delta$	+1.613	+1.582	+1.5366	+1.591
Log. g .	+1.2962	+1.2972	+1.3074	+1.3004
" cos $(\beta + \tau)$	-9.8671	-9.8813	-9.8803	-9.8806
" sin.	-1.1633	-1.1785	-1.1877	-1.1810
2y.	-14.56	-15.08	-15.41	-15.171
Log. h .	+1.2851	+1.2845	+1.2791	+1.2827
" cos. $(H + \tau)$	+10.0000	+9.9991	+9.9877	+9.9971
" sin. δ .	+9.9201	+9.9166	+9.9047	+9.9047
" sum.	+1.2052	+1.2002	+1.1715	+1.1845
2y.	+16.04	+15.86	+14.84	+15.293
" i	+0.8333	+0.8377	+0.8755	+0.8509
" cos. δ .	+9.7445	+9.7518	+9.7753	+9.7752
" sum.	+0.5778	+0.5895	+0.6508	+0.6261
2y.	+3.78	+3.89	+4.47	+4.228
$(\delta' - \delta)$	+5.26	+4.67	+3.90	+4.350

194

Aug. 19. 1879. $56^{\circ} 17' 32''$

9.7442571

=

$$\begin{array}{rclclclcl}
 1^{\text{m}} & 0.4 & + & 1^{\text{m}} & 7.4 & = & 2^{\text{m}} & 7.8 & = & 31' & \sqrt{7.8} \div 2 & = & 15' & \sqrt{8.50} \\
 \sqrt{8.7} & + & 1 & 4.5 & = & 2 & 3.2 & = & 30' & 46.0 & = & 15 & 24.0 \\
 \sqrt{7.3} & + & 1 & 0.8 & = & 1 & 54.1 & = & 29 & 31.5 & = & 14 & 45.75 \\
 \sqrt{6.4} & + & & \sqrt{8.0} & = & 1 & \sqrt{4.4} & = & 28 & 36.0 & = & 14 & 16.00 \\
 \sqrt{3.3} & + & & \sqrt{4.6} & = & 1 & 47.9 & = & 26 & \sqrt{8.5} & = & 13 & 29.25 \\
 \sqrt{2.9} & + & & \sqrt{1.9} & = & 1 & 44.8 & = & 26 & 12.0 & = & 13 & 6.00
 \end{array}$$

x

$$\begin{array}{rcl}
 1^{\text{m}} & 7.4 & \left\{ \begin{array}{l} 958.50 = 2.9615921 \\ \quad \quad \quad 9.7442571 \\ \hline \sqrt{31.92} = 2.7258492 \end{array} \right. \\
 1 & 4.5 & \\
 1 & 0.8 & \\
 & \sqrt{8.0} & \\
 & \sqrt{4.6} & \\
 & \sqrt{1.9} & \left\{ \begin{array}{l} 924.0 = 2.9656720 \\ \quad \quad \quad 9.7442571 \\ \hline \sqrt{12.78} = 2.7099291 \end{array} \right.
 \end{array}$$

$$\begin{array}{rcl}
 809.25 & = & 2.9080827 \\
 & \quad \quad \quad 9.7442571 \\
 \hline
 449.10 & = & 2.6523398
 \end{array}$$

$$\begin{array}{rcl}
 786.00 & = & 2.8954225 \\
 & \quad \quad \quad 9.7442571 \\
 \hline
 436.19 & = & 2.6396796
 \end{array}$$

$$\begin{array}{rcl}
 845.75 & = & 2.9473112 \\
 & \quad \quad \quad 9.7442571 \\
 \hline
 491.65 & = & 2.6915683
 \end{array}$$

$$\begin{array}{rcl}
 856.00 & = & 2.9334843 \\
 & \quad \quad \quad 9.7442571 \\
 \hline
 476.25 & = & 2.6777444
 \end{array}$$

$$\begin{array}{rclclcl}
 -531.94 + 889.8 & = & 357.9 & \div 2 & = & 178.95 & = & 2' & \sqrt{1.95} \\
 -512.8 + 889.8 & = & 377.0 & & = & 188.5 & = & 3 & 8.5 \\
 -491.6 + 889.8 & = & 398.2 & & = & 199.1 & = & 3 & 19.1 \\
 -476.2 + 889.8 & = & 413.6 & & = & 206.8 & = & 3 & 26.8 \\
 -449.1 + " & = & 440.7 & & = & 220.35 & = & 3 & 40.35 \\
 -436.2 + " & = & 453.6 & & = & 226.80 & = & 3 & 46.8
 \end{array}$$

$$\begin{array}{rcl}
 \sqrt{6} & 17 & 32.8 \\
 \hline
 \sqrt{6} & 14 & 33.8 = 9.7448215 \\
 & 14 & 24.3 = 9.7448515 \\
 & 14 & 13.7 = 9.7448848 \\
 & 14 & 6.0 = 9.7449091 \\
 & 13 & 52.4 = 9.7449519 \\
 & 13 & 46.0 = 9.7449721
 \end{array}$$

$$\begin{array}{r}
 2.9815921 \\
 9.7448215 \\
 \hline
 2.7264136 = -532.62
 \end{array}$$

$$\begin{array}{r}
 2.9656720 \\
 9.7448515 \\
 \hline
 2.7105225 = -513.42
 \end{array}$$

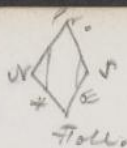
$$\begin{array}{r}
 2.9473112 \\
 9.7448848 \\
 \hline
 2.6921960 = -492.26
 \end{array}$$

$$\begin{array}{r}
 2.9334873 \\
 9.7449091 \\
 \hline
 2.6783964 = -476.87
 \end{array}$$

$$\begin{array}{r}
 2.9080827 \\
 9.7449519 \\
 \hline
 2.6530346 = -449.82
 \end{array}$$

$$\begin{array}{r}
 2.8954225 \\
 9.7449721 \\
 \hline
 2.6403946 = -436.91
 \end{array}$$

$$\begin{array}{r}
 62901.96 \\
 483.66 - 889.8 = -406.1 \text{ mean.}
 \end{array}$$



Aug. 20. 1879.

 $\sqrt{50} \quad 36' \quad \sqrt{1.1}$

9.75125

E

$$\sqrt{9.2} + 24.0 = 83.2 \div 2 = 41.6 = 10' \quad 24.0$$

$$\sqrt{9.2} + 24.0 = 83.2 = 41.6 = 10' \quad 24.0$$

$$\sqrt{6.8} + 22.4 = 79.2 = 39.6 = 9' \quad 54.0$$

$$\sqrt{7.2} + 22.0 = 79.2 = 39.6 = 9' \quad 54.0$$

$$\sqrt{6.5} + 21.0 = 77.5 = 38.75 = 9' \quad 41.25$$

$$\sqrt{5.5} + 20.4 = 76.2 = 38.10 = 9' \quad 31.50$$

$$624.0 = \begin{array}{r} 2.79515 \\ 9.75125 \\ \hline 2.54703 \end{array} = -352.4 + 819.8 = 537.4 \div 2 = 268.70$$

$$\sqrt{94.0} = \begin{array}{r} 2.77379 \\ 9.75125 \\ \hline 2.52564 \end{array} = -335.5 + 819.8 = 554.3 = 277.15$$

$$\sqrt{11.25} = \begin{array}{r} 2.76437 \\ 9.75125 \\ \hline 2.51622 \end{array} = -328.0 + 819.8 = 561.5 = 280.75$$

$$\sqrt{71.50} = \begin{array}{r} 2.75702 \\ 9.75125 \\ \hline 2.50887 \end{array} = -322.7 + 819.8 = 567.1 = 283.55$$

$$\begin{array}{r}
 4' \quad 28.7 \\
 4' \quad 37.2 \\
 4' \quad 40.8 \\
 4 \quad 43.6 \\
 \hline
 \end{array}$$

$$\sqrt{5}^{\circ} \quad 36' \quad \sqrt{A'}$$

$$\begin{array}{r}
 \sqrt{5}^{\circ} \quad 32 \quad 29.4 = 9.75267 \\
 32 \quad 20.9 = 9.75270 \\
 32 \quad 17.3 = 9.75271 \\
 32 \quad 14.5 = 9.75272 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2.79518 \\
 9.75267 \\
 \hline
 2.54785
 \end{array}
 \quad -353.06 + 889.8 = 536.74$$

$$\sqrt{36.74}$$

$$\sqrt{36.74}$$

$$\sqrt{53.68}$$

$$\sqrt{53.68}$$

$$\begin{array}{r}
 2.77379 \\
 9.75270 \\
 \hline
 2.52649
 \end{array}
 \quad -336.12 + 889.8 = 553.68$$

$$\sqrt{60.89}$$

$$\sqrt{66.40}$$

$$6/3308.13$$

$$-551.36$$

Mean,

$$\begin{array}{r}
 2.76437 \\
 9.75271 \\
 \hline
 2.51708
 \end{array}
 \quad -328.94 + 889.8 = 560.89$$

$$\begin{array}{r}
 2.75702 \\
 9.75272 \\
 \hline
 2.50974
 \end{array}
 \quad -320.40 + 889.8 = 566.40$$

Aug. 23. 1879.

*

$$50.8 - 33.3 = 17.5 \div 2 = 8.75 = 2' 11.25''$$

$$50.3 - 33.2 = 17.1 = 8.55 = 2' 8.25''$$

$$50.2 - 35.4 = 14.8 = 7.40 = 1' 51.0''$$

$$43.2 - 30.4 = 12.8 = 6.40 = 1' 36.0''$$

$$42.3 - 32.4 = 9.9 = 4.95 = 1' 14.25''$$

$$\begin{array}{r} 21 \quad 45 \quad 40.35 \text{ (Aug. 10.)} \\ 15 \quad 20 \quad 59.41 = R.A. \\ \hline 6 \quad 27 \quad 40.87 = H.A. \end{array}$$

$$\begin{array}{r} 21^h 36^m 4.23 = \text{(Aug. 11)} \\ 15 \quad 25 \quad 33.22 = R.A. \\ \hline 6^h 10^m 31.50 = H.A. \end{array}$$

$$\begin{array}{r} 15 \quad 25 \quad 33.22 \\ \quad \quad 1 \quad 33 \\ \hline 15 \quad 24 \\ 21 \quad 36 \\ \hline 6 \quad 12 \end{array}$$

$$\begin{array}{r} 21.57 \\ 97 \end{array}$$

(1842) Aug. 20. 1879,

199

15^h 26^m 17.36

55° 44' 38.2"

$$\begin{array}{r}
 0.019957 \\
 \hline
 0.020142 \\
 \hline
 0.020123 \\
 \hline
 0.166834 \\
 \hline
 0.186957 \\
 \hline
 -1.5320 = 0 \\
 3.0704 \\
 \hline
 1.5324 = 0.1253721 \\
 37 = 1.5682017 \\
 \hline
 56.699 = 1.7535738
 \end{array}$$

15 26 17.36
 15 27 14.059

$$\begin{array}{r}
 0.021456 \\
 \hline
 0.021563 \\
 \hline
 0.021466 \\
 \hline
 0.164748 \\
 \hline
 0.186214 \\
 \hline
 -1.5354 \\
 3.0712 \\
 \hline
 1.5358 = 0.1263347 \\
 37 = 1.5682017 \\
 \hline
 1.7545364
 \end{array}$$

$$\begin{array}{r}
 56.825 \\
 56.699 \\
 \hline
 1.524 \\
 56.762 \\
 17.36 \\
 \hline
 15 26 17.36 \\
 15 27 14.122 \\
 \hline
 0.021456 \\
 \hline
 0.021558 \\
 \hline
 0.021461 \\
 \hline
 0.164754 \\
 \hline
 0.186215
 \end{array}$$

$$\begin{array}{r}
 12.4740 \\
 \hline
 12.4656 \\
 \hline
 0.00004 \\
 \hline
 0.00491624 \\
 \hline
 12.4656 \\
 \hline
 12.4651 = 1.0956958 \\
 37 = 1.5682017 \\
 \hline
 2.6638975 \\
 461.21
 \end{array}$$

$$\begin{array}{r}
 55 \quad 44 \quad 38.2 \\
 -7 \quad 41.21 \\
 \hline
 55 \quad 36 \quad 56.99
 \end{array}$$

$$\begin{array}{r}
 -12.4053 \\
 \hline
 12.4007 \\
 \hline
 0.002728154 \\
 \hline
 12.3980 = 1.0933516 \\
 1.5682017 \\
 \hline
 458.73 \\
 461.21 \\
 \hline
 119.94 \\
 459.97
 \end{array}$$

$$\begin{array}{r}
 55 \quad 44 \quad 38.2 \\
 -7 \quad 39.97 \\
 \hline
 55 \quad 36 \quad 58.23
 \end{array}$$

$$\begin{array}{r}
 12.4053 \\
 \hline
 12.4006 \\
 \hline
 0.002728132 \\
 \hline
 12.3979 = 1.
 \end{array}$$

R.A. 1879.0 = 15^h 27^m 14.12 } Aug. 20. star.
 Dec. " = 55° 36' 58.2"

Table 30. (new number)
Photometric work.

9.398 7.819 5.638 4.362 10.90	9.310 7.731 5.462 4.538 11.34	9.270 7.691 5.382 4.618 11.54	9.282 7.709 5.418 4.582 11.45
9.310 7.731 5.462 4.538 11.34	9.302 7.723 5.446 4.554 11.32	9.349 7.770 5.540 4.460 11.15	9.318 7.739 5.478 4.522 11.30
9.347 7.768 5.536 4.464 11.16	9.308 7.729 5.458 4.542 11.35	9.351 7.772 5.544 4.456 11.14	9.314 7.735 5.470 4.530 11.32
9.342 7.763 5.526 4.474 11.18	9.332 7.753 5.506 4.494 11.23	9.331 7.752 5.504 4.496 11.24	9.303 7.724 5.448 4.552 11.38
9.280 7.701 5.402 4.598 11.49	9.292 7.713 5.426 4.574 11.43	9.328 7.749 5.498 4.502 11.25	9.326 7.747 5.494 4.506 11.26
9.326 7.747 5.494 4.506 11.26	9.313 7.734 5.468 4.532 11.33	9.318 7.739 5.478 4.522 11.30	9.288 7.709 5.418 4.582 11.45

9.295
7.716
5.432
4.568
11.42

9.298
7.719
5.438
4.562
11.40

9.295
7.716
5.432
4.568
11.42

9.291
7.712
5.424
4.576
11.44

9.419
7.840
5.680
4.320
10.80

9.422
7.843
5.686
4.314
10.78

9.371
7.792
5.584
4.416
11.04

9.371
7.792
5.584
4.416
11.04

9.335
7.756
5.512
4.488
11.22

9.384
7.805
5.610
4.390
10.97

9.405
7.826
5.652
4.348
10.87

9.435
7.856
5.712
4.288
10.72

9.365
7.786
5.572
4.428
11.07

9.375
7.796
5.592
4.408
11.02

9.283
7.704
5.408
4.592
11.48

9.321
7.742
5.484
~~4.516~~
11.29

9.319
7.740
5.480
4.520
11.30

9.323
7.744
5.488
4.512
11.28

9.305
7.726
5.452
4.548
11.37

9.262
7.683
5.366
4.634
11.58

9.291
7.712
5.424
4.576
11.44

9.322
7.743
5.486
4.514
11.28

9.234
7.655
5.310
4.690
11.72

9.237
7.658
5.316
4.684
11.71

202 Log.

$$\frac{f}{F} = 8.539$$

$$37.95 = 1.579$$

$$\frac{8.539}{0.118}$$

$$\frac{1.104}{1.539}$$

$$9.643$$

~~$$\begin{array}{r} 331 \\ 9317 \\ 1.563 \\ \hline 7.749 \\ 5.491 \\ 4.501 \\ 11.25 \end{array}$$~~

.205

~~$$\begin{array}{r} 33A \\ 9305 \\ 1.563 \\ \hline 7.747 \\ 5.484 \\ 4.516 \\ 11.29 \end{array}$$~~

.202

$$\begin{array}{r} 242 \\ 9401 \\ 7.822 \\ 5.644 \\ 4.356 \\ 10.89 \end{array}$$

.252

$$\begin{array}{r} 2A0 \\ 9363 \\ 7.784 \\ 5.561 \\ 4.432 \\ 11.01 \end{array}$$

.231

$$\begin{array}{r} 330 \\ 9313 \\ 7.734 \\ 5.468 \\ 4.532 \\ 11.33 \end{array}$$

.206

$$\begin{array}{r} 296 \\ 9347 \\ 7.768 \\ 5.536 \\ 4.464 \\ 11.16 \end{array}$$

.222

$$\begin{array}{r} 285 \\ 9358 \\ 7.779 \\ 5.552 \\ 4.442 \\ 11.10 \end{array}$$

.22A

$$\begin{array}{r} 716 \\ 9402 \\ 7.823 \\ 5.646 \\ 4.354 \\ 10.88 \end{array}$$

.252

$$\begin{array}{r} 294 \\ 9349 \\ 7.770 \\ 5.540 \\ 4.460 \\ 11.15 \end{array}$$

.223

$$\begin{array}{r} 281 \\ 9362 \\ 7.783 \\ 5.566 \\ 4.434 \\ 11.08 \end{array}$$

.230

$$\begin{array}{r} 300 \\ 9343 \\ 7.764 \\ 5.528 \\ 4.472 \\ 11.18 \end{array}$$

.220

$$\begin{array}{r} 271 \\ 9372 \\ 7.793 \\ 5.586 \\ 4.414 \\ 11.03 \end{array}$$

.255

$$\begin{array}{r} 274 \\ 9369 \\ 7.790 \\ 5.580 \\ 4.420 \\ 11.05 \end{array}$$

.234

$$\begin{array}{r} 283 \\ 9360 \\ 7.781 \\ 5.562 \\ 4.438 \\ 11.09 \end{array}$$

.229

$$\begin{array}{r} 9.312 \\ 1.579 \\ \hline 7.733 \\ 5.466 \\ 4.534 \\ 11.34 \end{array}$$

$$\begin{array}{r} 9.305 \\ 1.579 \\ \hline 7.726 \\ 5.452 \\ 4.548 \\ 11.37 \end{array}$$

$$\begin{array}{r} 9.347 \\ 7.768 \\ 5.536 \\ 4.464 \\ 11.16 \end{array}$$

$$\begin{array}{r} 9.352 \\ 7.779 \\ 5.552 \\ 4.442 \\ 11.10 \end{array}$$

$$\begin{array}{r} 9.402 \\ 7.823 \\ 5.646 \\ 4.354 \\ 10.88 \end{array}$$

$$\begin{array}{r} 9.349 \\ 7.770 \\ 5.540 \\ 4.460 \\ 11.15 \end{array}$$

$$\begin{array}{r} 9.362 \\ 7.783 \\ 5.566 \\ 4.434 \\ 11.08 \end{array}$$

$$\begin{array}{r} 9.343 \\ 7.764 \\ 5.528 \\ 4.472 \\ 11.18 \end{array}$$

$$\begin{array}{r} 9.372 \\ 7.793 \\ 5.586 \\ 4.414 \\ 11.03 \end{array}$$

$$\begin{array}{r} 9.369 \\ 7.790 \\ 5.580 \\ 4.420 \\ 11.05 \end{array}$$

$$\begin{array}{r} 9.360 \\ 7.781 \\ 5.562 \\ 4.438 \\ 11.09 \end{array}$$

$$\begin{array}{r} 11.34 +.22 \\ 11.37 +.25 \\ 10.89 -.23 \\ 11.08 -.04 \\ 11.33 +.21 \\ 11.16 +.04 \\ 11.10 -.02 \\ 10.88 -.24 \\ 11.15 +.03 \\ 11.08 -.04 \\ 11.18 +.06 \\ 11.03 -.09 \\ 11.05 -.07 \\ 11.09 -.03 \end{array}$$

$$\begin{array}{r} 14/15.73 (1.12) \\ 14 \\ \hline 17 \\ 14 \\ \hline 33 \\ 28 \\ \hline 5 \end{array}$$

42.4	1.627	42.1	1.624	39.3	1.594	39.2 = 1.593
43.9	1.643	43.6	1.640	40.7	1.610	40.6) 1.609
	9.496		9.499		9.529	9.530
	.035		.050		.235	.264
.219	9.461	.262	9.419	.197	9.294	.144 9.266
	7.882		7.840		7.715	7.687
	5.764		5.680		5.430	5.374
	4.236		4.320		4.570	4.626
	10.59		10.80		11.42	11.56

Table 32. (new numbers)

38.4 = 1.584	38.1 = 1.581	38.0 = 1.580	37.9 = 1.579
39.8 1.600	39.5 1.597	39.4 1.596	39.4 1.595
	9.542	9.543	9.544
	.119	.124	.102
.263 9.420	.192 9.283	.229 9.359	.277 9.442
	7.841	7.780	7.863
	5.682	5.560	5.726
	4.318	4.440	4.274
	10.79	11.10	10.68

37.8 = 1.577	37.6 = 1.575	42.4	42.1
39.2 1.593	39.0 1.591	43.9 1.643	43.6 1.640
	9.548	9.496	9.499
	.117	.150	.130
.269 9.429	.221 9.344	.222 9.346	.213 9.329
	7.850	7.767	7.750
	5.700	5.534	5.500
	4.300	4.466	4.500
	10.75	11.16	11.25

39.3	39.2	39.4	39.1
40.7 1.610	40.6 1.609	39.8 1.600	39.5 1.597
	9.530	9.539	9.542
	.294	.199	.179
.172 9.235	.170 9.230	.219 9.340	.201 9.363
	7.651	7.761	7.784
	5.302	5.522	5.568
	4.698	4.478	4.432
	11.74	11.19	11.08

37.9	37.8	37.6	37.2 = 1.574
39.4 1.595	39.2 1.593	39.0 1.591	38.6 1.587
	9.546	9.548	9.552
	.158	.246	.227
.242 9.386	.1995 9.300	.188 9.275	.211 9.325
	7.721	7.696	7.746
	5.442	5.392	5.492
	4.558	4.608	4.508
	11.39	11.52	11.27

204

42.4
43.9
1.643
9.496
9.947
9.549
7.970
5.940
4.060
10.15

42.1
43.6
1.640
9.492
1.52
9.347
7.768
5.536
4.464
11.16

38.4
39.8
1.600
9.539
1.63
9.376
7.797
5.594
4.406
11.01

38.0
39.4
1.596
9.543
1.14
9.429
7.650
5.700
4.300
10.75

37.9
39.4
1.595
9.544
1.24
9.420
7.841
5.682
4.388
10.80

37.8
39.2
1.593
9.546
1.20
9.426
7.847
5.694
4.306
10.76

37.6
39.0
1.591
9.548
1.98
9.350
7.771
5.542
4.458
11.14

37.4
38.8
1.573
1.589
9.550
2.31
9.312
7.733
5.866
4.534
11.34

37.1 = 1.569
38.5
1.585
9.554
1.76
9.378
7.799
5.598
4.402
11.00

37.0 = 1.568
38.4 = 1.584
9.555
1.78
9.377
7.798
5.596
4.404
11.01

1.0.34

1.3.28

.9.12

37.4 = 1.5729

.3.12

.2.12

.2.38

.373
9.5717
1.5792
1.1509

9.5599
1.5792
1.1391

Comet Work (Refractions)

205

$$51.4 = 2.93013$$

$$0.15198$$

$$.063 = 8.79934$$

$$(.089) = 8.95132$$

$$.28 = 9.44716$$

$$0.15198$$

$$(.40) = 9.59914$$

$$710.6 = 2.85163$$

$$0.07348$$

$$.045 = 8.65321$$

$$(.053) = 8.72669$$

$$.58 = 9.76343$$

$$0.07348$$

$$(.69) = 9.83691$$

$$33.3 = 1.52244$$

$$8.74429$$

$$.072 = 8.85733$$

$$(.004) = 7.60162$$

$$.38 = 9.57978$$

$$8.74429$$

$$(.02) = 8.32407$$

$$245.8 = 2.39058$$

$$9.61243$$

$$.072 = 8.85733$$

$$(.029) = 8.46976$$

$$.38 = 9.57978$$

$$9.61243$$

$$(.16) = 9.19221$$

$$507.1 = 2.70509$$

$$9.92694$$

$$.132 = 9.12057$$

$$(.112) = 9.04751$$

$$.28 = 9.44716$$

$$9.92694$$

$$(.24) = 9.37410$$

$$83.5 = 1.92169$$

$$9.14354$$

$$.158 = 9.19866$$

$$(.022) = 8.34220$$

$$.27 = 9.43136$$

$$9.14354$$

$$(.04) = 8.57490$$

$$611.1 = 2.78611$$

$$0.00796$$

$$.196 = 9.29226$$

$$(.200) = 9.30022$$

$$.22 = 9.34242$$

$$0.00796$$

$$(.22) = 9.35038$$

$$72.1 = 1.85794$$

$$9.07979$$

$$.331 = 9.51983$$

$$(.040) = 8.59962$$

$$.25 = 9.39794$$

$$9.07979$$

$$(.03) = 8.47773$$

$$205.7 = 2.31323$$

$$9.53508$$

$$.331 = 9.51983$$

$$(.113) = 9.05491$$

$$.25 = 9.39794$$

$$9.53508$$

$$(.09) = 8.93302$$

$$201.5 = 2.30428$$

$$9.52613$$

$$.18 = 9.25527$$

$$9.52613$$

$$(.06) = 8.78140$$

$$359.1 = 2.55522$$

$$9.77707$$

$$.21 = 9.32222$$

$$(.13) = 9.09929$$

$$331.4 = 2.52035$$

$$9.74220$$

$$.445 = 9.64836$$

$$(.246) = 9.39056$$

$$.21 = 9.32222$$

$$9.74220$$

$$(.12) = 9.06442$$

$$488.9 = 2.68922$$

$$9.91107$$

$$.12(1)$$

$$144.6 = 2.16017$$

$$9.38202$$

$$.041 = 8.61278$$

$$.010 = 7.99480$$

$$.25 = 9.39794$$

$$9.38202$$

$$(.06) = 8.77996$$

$$80.4 = 1.90526$$

$$9.12711$$

$$.046 = 8.66276$$

$$(.006) = 7.78987$$

$$.23 = 9.36173$$

$$9.12711$$

$$(.03) = 8.48884$$

$$806.1 = 2.60863$$

$$9.83048$$

$$.009 = 7.95424$$

$$(.006) = 7.78472$$

$$.71 = 9.85126$$

$$9.83048$$

$$.48 = 9.68174$$

$$551.4 = 2.74147$$

$$9.96332$$

$$.010 = 8.00000$$

$$(.009) = 7.96332$$

$$.40 = 9.60206$$

$$9.96332$$

$$(.37) = 9.56538$$

206

(No. 15443)

Aug. 30. 1879

P. m. 53° 17' 57"

(1842)

15^h 26^m 30^s.62

53° 32' 35.7"

$$\begin{array}{r}
 W 0.020458 \\
 \hline
 0.020474 \\
 \hline
 0.020455 \\
 0.131477 \\
 \hline
 W 0.151932
 \end{array}$$

$$\begin{array}{r}
 -1.4188 \\
 3.0704 \\
 \hline
 1.6516 = 0.2179049 \\
 37 = 1.5682017 \\
 \hline
 1.7861066
 \end{array}$$

+61.109

15^h 26^m 30^s.62
+1 1.109

15 27 31.729

$$\begin{array}{r}
 W 0.021952 \\
 \hline
 0.021995 \\
 \hline
 0.021898 \\
 0.129449 \\
 \hline
 0.151347
 \end{array}$$

$$\begin{array}{r}
 -1.4169 \\
 3.0712 \\
 \hline
 1.6543 = 0.2186143 \\
 37 = 1.5682017 \\
 \hline
 61.209 = 1.7868160 \\
 61.109 \\
 \hline
 61.159 \text{ mean.}
 \end{array}$$

15 26 30.62
+1 1.159

15 27 31.779

$$\begin{array}{r}
 W 12.4511 \\
 \hline
 12.4504 \\
 \hline
 0.000499016 \\
 12.4504
 \end{array}$$

$$\begin{array}{r}
 12.4499 = 1.0951659 \\
 37 = 1.5682017 \\
 \hline
 -460.65 = 2.6633676
 \end{array}$$

53° 32' 35.7"
-7 40.65

53 24 55.05

$$\begin{array}{r}
 -12.3824 \\
 \hline
 -12.3804 \\
 \hline
 247608 \\
 247608
 \end{array}$$

$$\begin{array}{r}
 12.3804 \\
 \hline
 12.3777 = 1.0926400 \\
 37 = 1.5682017 \\
 \hline
 457.97 = 2.6608417 \\
 460.65 \\
 \hline
 118.62 \\
 459.31 \text{ mean.}
 \end{array}$$

53° 32' 35.7"
-7 39.31

53 24 56.39

$$\begin{array}{r}
 0.021952 \\
 \hline
 0.021996 \\
 \hline
 0.021899 \\
 0.129455 \\
 \hline
 0.151354
 \end{array}$$

$$\begin{array}{r}
 -1.4169 \\
 3.0712 \\
 \hline
 1.6543
 \end{array}$$

Same as before.

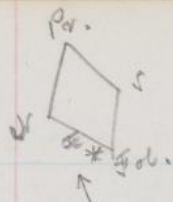
$$\begin{array}{r}
 -12.3424 \\
 \hline
 12.3404 \\
 .00022 \\
 \hline
 247608 \\
 247608 \\
 \hline
 12.002723688 \\
 12.3404 \\
 \hline
 12.3777
 \end{array}$$

$$\begin{aligned}
 \therefore R.A. 1879.0 &= 15^h 24^m 31.548 \\
 Dec. \quad \quad &= 53^\circ 24' 56.4
 \end{aligned}$$

$$\begin{array}{r}
 530 \quad 25' \quad 0.8 \\
 \hline
 53 \quad 16 \quad 27.9 = Dec. 1794
 \end{array}$$

$$\begin{array}{r}
 15^h \quad 27 \quad 30.15 \\
 \hline
 15 \quad 32 \quad 12.86 = R.A. 1794
 \end{array}$$

208



Aug. 23. 1879. $53^{\circ} 16' 29.7''$
 9.77669

$$\begin{array}{rclcl}
 * & & & & \\
 50.8 - 33.3 & = & 17.5 \div 2 & = & 8.75 = 2' \quad 11.25 \\
 50.3 - 33.2 & = & 17.1 & = & 8.55 = 2' \quad 8.25 \\
 50.2 - 35.4 & = & 14.8 & = & 7.40 = 1 \quad 51.0 \\
 43.2 - 30.4 & = & 12.8 & = & 6.40 = 1 \quad 36.0 \\
 42.3 - 32.4 & = & 9.9 & = & 4.95 = 1 \quad 14.25
 \end{array}$$

$$\begin{array}{r}
 131.25 = 2.11809 \\
 \quad \quad 9.77669 \\
 \hline
 78.48 = 1.89478
 \end{array}$$

$$\begin{array}{r}
 128.25 = 2.10806 \\
 \quad \quad 9.77669 \\
 \hline
 76.7 = 1.88475
 \end{array}$$

$$\begin{array}{r}
 111.0 = 2.04532 \\
 \quad \quad 9.77669 \\
 \hline
 66.4 = 1.82201
 \end{array}$$

$$\begin{array}{r}
 96.0 = 1.98227 \\
 \quad \quad 9.77669 \\
 \hline
 57.4 = 1.75896
 \end{array}$$

$$\begin{array}{r}
 74.25 = 1.87070 \\
 \quad \quad 9.77669 \\
 \hline
 44.4 = 1.64739
 \end{array}$$

$$\begin{array}{rcl}
 78.41 & +2 & = 39.2 \\
 76.7 & & = 38.4 \\
 66.4 & & = 33.2 \\
 \sqrt{7.4} & & = 28.7 \\
 44.4 & & = 22.2
 \end{array}$$

$$\underline{53^{\circ} 16' 29.2}$$

$$\begin{array}{rcl}
 53^{\circ} & 17 & 8.4 \\
 & 17 & 7.6 \\
 & 17 & 2.4 \\
 & 16 & \sqrt{7.4} \\
 & & \underline{\sqrt{1.4}}
 \end{array}$$

$$\begin{array}{r}
 2.11509 \\
 9.77658 \\
 \hline
 1.89467
 \end{array}
 \quad 78.46$$

$$\begin{array}{r}
 2.10506 \\
 9.77658 \\
 \hline
 1.88464
 \end{array}
 \quad 76.67$$

$$\begin{array}{r}
 2.04502 \\
 9.77659 \\
 \hline
 1.82197
 \end{array}
 \quad 66.36$$

$$\begin{array}{r}
 1.95227 \\
 9.77661 \\
 \hline
 1.75562
 \end{array}
 \quad 57.40$$

$$\begin{array}{r}
 1.87070 \\
 9.77663 \\
 \hline
 1.64732
 \end{array}
 \quad 44.39$$

$$\begin{array}{r}
 \sqrt{323.28} \\
 + 64.66 \text{ mean.}
 \end{array}$$

210

19^h 44^m 29.60

48 51.15

52 52.45

56 54.85

 19^h 50^m 47.01 = Sid. time of comets' mean Q.R. June 24. 1879.

17^h 43^m 7.00

51 25.30

18 8 21.90

17 35.50

25 37.00

 18^h 5^m 13.94

At mean position of \leq

211

			Pid. Time				Cl. cor.
June	24.	19 ^h	50 ^m 47.01	13	40	55.82	-53.
	26.	18	5 13.40	11	47	29.09	-54.
	27.	18	45 24.45	12	23	43.58	-54.
	30.	19	23 8.65	12	49	38.11	-54.
July	1.	19	20 52.30	12	43	25.20	-54.
	2.	19	54 35.07	13	13	14.41	-53.6.
	5.	19	14 59.35	12	21	46.02	-54.
	8.	20	35 52.29	13	30	49.28	-55.5.
	12.	19	42 57.05	12	22	7.81	-58.12
	23.	22	12 13.71	14	8	2.34	-153.5
	24.	20	14 5.73	12	5	57.80	-154.
Aug.	10.	21	49 20.66	12	34	11.28	-1 14
	11.	21	32 57.02	12	13	51.08	-1 15
	19.	23	20 59.97	13	30	21.59	-1 24
	20.	22	21 45.08	12	27	10.15	-1 25
	23.	21	53 34.05	11	47	9.45	-1 29
June	24.	13	37 49.				
	26.	11	44 39.				
	27.	12	20 45.				
	30.	12	46 38.				
July	1.	12	40 26.				
	2.	13	10 14.				
	5.	12	18 51				
	8.	13	27 41				
	12.	12	19 8				
	23.	14	4 40				
	24.	12	2 55				
Aug.	10.	12	30 54				
	11.	12	10 36				
	19.	13	26 45				
	20.	12	23 43				
	23.	11	43 45				

Mean times corresponding to mean positions of \leq

Refractions.

Can $N = \cot. \phi. \cos. \delta$ less than 6 hrs.
 Preceding meridian, N is negative,
 For "S" over $45^\circ \cos. (2\delta + N)$ is negative.

	R. A. Corrections						Dec.			
June 24.	+	.089	+2	53.54	+2	53.13	+	.40	+851.4	+851.8
" 26.	+	.053	-5	54.96	-5	54.91	+	.69	+710.6	+711.3
" 27.	$\overline{+}$	.024 029	-4 -3	12.67 50.25	-4 -3	12.67 50.22	$\overline{+}$	.02 .16	-33.3 +245.8	-33.3 +246.0
" 30.	+	.112	-6	24.06	-6	23.95	+	.24	+507.1	+507.3
July 1.	+	.022	-1	0.71	-1	0.69	+	.04	+83.5	+83.5
" 2.	+	.200	-9	35.50	-9	35.30	+	.22	+611.1	+611.3
" 5.	$\overline{+}$ $\overline{+}$	.040 .113	-3 -3	25.06 54.05	-3 -3	25.02 53.94	$\overline{+}$ $\overline{+}$	.03 .09	+72.1 +205.7	+72.1 +205.8
" 8.	-		-7	32.06	-7	32.06	-	.06	-201.5	-201.6
" 12.	-		+8	32.80	+8	32.80	-	.13	-359.1	-359.2
" 23.	-	.246	-6	16.97	-6	17.22	+	.12	+331.4	+331.5
" 24.	+		+3	1.37	+3	1.37	-		-488.9	-488.9
Aug. 10.	+	.014	+	40.31	+0	40.32	-	.06	-144.6	-144.7
" 11.	+	.006	-3	7.22	-3	7.21	-	.03	-80.4	-80.4
" 19.	-	.006	-6	47.42	-6	47.43	-	.48	-406.1	-406.6
" 20.	+	.009	+2	27.42	+2	27.43	-	.37	-551.4	-551.8
" 23.										

$$\begin{array}{r}
 15^h \quad 20^m \quad 59.45 \\
 + 40.32 \\
 \hline
 15^h \quad 21^m \quad 39.77
 \end{array}$$

$$\begin{array}{r}
 15 \quad 25 \quad 33.22 \\
 - 3 \quad 7.21 \\
 \hline
 15 \quad 22 \quad 26.01
 \end{array}$$

$$\begin{array}{r}
 63 \quad 32 \quad 46.6 \\
 - 2 \quad 24.7 \\
 \hline
 63 \quad 30 \quad 21.9
 \end{array}$$

$$\begin{array}{r}
 62 \quad 41 \quad 44.1 \\
 - 1 \quad 20.4 \\
 \hline
 62 \quad 40 \quad 23.7
 \end{array}$$

$$\begin{array}{r}
 .045 + .25 \\
 .042 + .23
 \end{array}$$

$$\begin{array}{rcl}
 1.8 & = & +14' \quad 11.8 \\
 3 & = & +11 \quad 51.3 \\
 3 & = & - \quad 33.3 \\
 6.0 & = & +4 \quad 6.0 \\
 7.3 & = & +8 \quad 27.3 \\
 3.5 & = & +1 \quad 23.5 \\
 1.3 & = & +10 \quad 11.3 \\
 2.1 & = & +1 \quad 12.1 \\
 5.8 & = & +3 \quad 25.8 \\
 .6 & = & -3 \quad 21.6 \\
 9.2 & = & -5 \quad 59.2 \\
 1.5 & = & +5 \quad 31.5 \\
 5.9 & = & -8 \quad 8.9 \\
 4.7 & = & -2 \quad 24.7 \\
 .4 & = & -1 \quad 20.4 \\
 6.6 & = & -6 \quad 46.6 \\
 1.8 & = & -9 \quad 11.8
 \end{array}$$

$$144.7 = 2.1605$$

$$600 = 2.7782$$

$$.045 = 8.6532$$

$$.011 = 8.0355$$

$$9.3823$$

$$.25 = 9.3979$$

$$.060 = 8.7802$$

$$A0.4 = 1.9053$$

$$2.7782$$

$$9.1271$$

$$.042 = 4.6232$$

$$.006 = 7.7503$$

$$9.1271$$

$$.25 = 9.3617$$

$$.031 = 8.4488$$

214

$$M = A, B = \log, 0.9484$$

$$\log, \rho = 9.9994$$

$$\varphi' = 42^\circ 11' 20.5''$$

$$\log, \cos. \varphi' = 9.8698$$

$$\log, \sin. \varphi' = 9.8271$$

$$\sin \varphi' = 9.8271$$

$$9.9994$$

$$0.9484$$

$$P.H.\sin. \varphi' = 0.7749$$

$$t' = 17^h 3^m 3.62 \text{ sec.} = 9.9864w$$

$$0.8176$$

$$0.8040w$$

$$\delta' = 67^\circ 32' 46.1'' = 9.5820$$

$$1.2220w$$

$$\log, 15 = 1.1761$$

$$\log(t' - \delta') = 0.0459w$$

$$15$$

$$\text{Corr.} - 0.0444$$

June 24.

$$t' = 15^h 14^m 5.81 \text{ sec.} = -9.8760$$

$$0.8176$$

$$-0.6936$$

$$\delta' = 69^\circ 56' 55.0'' \cos. = 9.5351$$

$$-1.1585$$

$$15 = 1.1761$$

$$\log(t' - \delta') = 9.9824w$$

$$15$$

$$\text{Corr.} - 9.9809$$

June 26.

$$t' = 15^h 54^m 2.81 \text{ sec.} = -9.9315$$

$$0.8176$$

$$-0.7497$$

$$\delta' = 71^\circ 2' 12.4'' \cos. = 9.5118$$

$$-1.2373$$

$$15 = 1.1761$$

$$\log(t' - \delta') = -0.0612$$

$$\text{Corr.} - 0.0597$$

June 27.

Log. fact. parallax

$$\varphi = 42^\circ 22' 46.1''$$

$$\varphi - \varphi' = 11' 27.6''$$

$$\varphi' = 42^\circ 11' 20.5''$$

$$\log \tan. \varphi' = +9.9573$$

$$\log \tan. \varphi' = 9.9573$$

$$\cos. t' = 9.3911w$$

$$-74^\circ 41' 35'' = 0.5662w = x$$

$$67^\circ 32' 46.1''$$

$$-142 121 24.1 = (x - \delta')$$

$$150$$

$$-37 32 38.9 \sin. = 9.7859$$

$$0.7749$$

$$-0.5668$$

$$\sin. -74 41 35 = 9.9846w$$

$$\log. (\delta' - \delta) = +0.5762$$

$$\text{Corr.} + 0.5747$$

$$\log \tan. \varphi' = 9.9573$$

$$\cos. t' = -9.8192$$

$$-53^\circ 57' 40'' = -0.1387 = x$$

$$69^\circ 56' 55''$$

$$-123 54 35$$

$$150$$

$$-56 52.5 \sin. = 9.9190w$$

$$0.7749$$

$$0.6939w$$

$$\sin. y = 9.9077w$$

$$\log. (\delta' - \delta) = +0.7862$$

$$\text{Corr.} + 0.7847$$

$$\log \tan. \varphi' = +9.9573$$

$$\cos. t' = -9.7161$$

$$-60 19 0 = -0.2442 = y$$

$$71 2 12$$

$$-131 11 12$$

$$150$$

$$-48 48 42 = -9.8765$$

$$+0.7749$$

$$-0.6514$$

$$\log \sin. y = -9.9382$$

$$\log. (\delta' - \delta) = +0.7132$$

$$\text{Corr.} + 0.7117$$

$$\begin{aligned}
 t' &= 16^h 30^m \frac{3}{4} = -9.9662 \\
 &\quad + 0.8176 \\
 &\quad - 0.7834 \\
 d' &= 74^\circ 16' 33'' \cos = +9.4330 \\
 &\quad - 1.3508 \\
 &\quad 15 = +1.1761 \\
 \log. (t - t') &= -0.1747 \\
 \text{Corr.} &= -0.1732
 \end{aligned}$$

June 30.

$$\begin{aligned}
 \log. \tan \varphi' &= 9.9573 \\
 \text{" } \cos. t' &= -9.5795 \\
 -67^\circ 16' &= -0.3778 = Y \\
 74 \quad 16 \quad 33 \\
 -141 \quad 32 \quad 33 \\
 150 \\
 -38 \quad 27 \quad 27 \sin = -9.7937 \\
 &\quad + 0.7749 \\
 &\quad - 0.5686 \\
 \sin. -67^\circ 16' 0'' &= -9.9649 \\
 \log. (d - d') &= +0.6037 \\
 \text{Corr.} &= +0.6022
 \end{aligned}$$

$$\begin{aligned}
 t' &= 16^h 27^m 54^s \sin = -9.9639 \\
 &\quad + 0.8176 \\
 &\quad - 0.7815 \\
 d' &= 75^\circ 21' 9.5'' \cos = +9.4029 \\
 &\quad - 1.3746 \\
 &\quad 15 = +1.1761 \\
 \log. (t - t') &= -0.2025 \\
 \text{Corr.} &= -0.2010
 \end{aligned}$$

July 1.

$$\begin{aligned}
 \log. \tan \varphi' &= +9.9573 \\
 \text{" } \cos. t' &= -9.5923 \\
 -66^\circ 39' 30'' &= -0.3650 = Y \\
 75 \quad 21 \quad 9.5 \\
 -142 \quad 0 \quad 39.5 \\
 150 \\
 -37 \quad 59 \quad 20 \sin = -9.7892 \\
 &\quad + 0.7749 \\
 &\quad - 0.5641 \\
 \sin. Y &= -9.9629 \\
 \log. (d - d') &= +0.6015 \\
 &\quad + 0.5997
 \end{aligned}$$

$$\begin{aligned}
 t' &= 17^h 1^m 4^s \sin = -9.9854 \\
 &\quad + 0.8176 \\
 &\quad - 0.8030 \\
 d' &= 76^\circ 27' 37'' \cos = +9.3694 \\
 &\quad - 1.4336 \\
 &\quad 15 = +1.1761 \\
 \log. (t - t') &= -0.2575 \\
 \text{Corr.} &= -0.2560
 \end{aligned}$$

July 2.

$$\begin{aligned}
 \log. \tan \varphi' &= +9.9573 \\
 \text{" } \cos. t' &= -9.4054 \\
 -74^\circ 19' 30'' &= -0.5519 = Y \\
 76 \quad 27 \quad 37 \\
 -150 \quad 47 \quad 7 \\
 150 \\
 -29 \quad 12 \quad 53 \sin = -9.6815 \\
 &\quad + 0.7749 \\
 &\quad - 0.4634 \\
 \sin Y &= -9.9835 \\
 \log. (d - d') &= +0.4792 \\
 \text{Corr.} &= +0.4784
 \end{aligned}$$

$$\begin{aligned}
 t' &= 16^h 19^m 49.5^s \sin = -9.9572 \\
 &\quad + 0.8176 \\
 &\quad - 0.7748 \\
 d' &= 79^\circ 41' 27.5'' \cos = +9.2527 \\
 &\quad - 1.5229 \\
 &\quad 15 = +1.1761 \\
 \log. (t - t') &= -0.3469 \\
 \text{Corr.} &= -0.3445
 \end{aligned}$$

July 5.

$$\begin{aligned}
 \log. \tan \varphi' &= +9.9573 \\
 \text{" } \cos. t' &= -9.6266 \\
 -64^\circ 58' 10'' &= -0.3307 \\
 79 \quad 41 \quad 27.5 \\
 -144 \quad 39 \quad 38 \\
 150 \\
 -35 \quad 20 \quad 22 \sin = -9.7622 \\
 &\quad + 0.7749 \\
 &\quad - 0.5371 \\
 \sin Y &= -9.9572 \\
 \log. (d - d') &= +0.5799 \\
 &\quad + 0.5784
 \end{aligned}$$

216

$$\log. \rho \cdot \pi \cdot \cos. \varphi' = +0.8176 \quad \log. \rho \cdot \pi \cdot \sin. \varphi' = +0.7749$$

$$\log. \tan. \varphi' = +9.9573$$

$$t' = 17^h 39 \quad 9.5 \sin = -9.9982$$

$$+0.8176$$

$$-0.8158$$

$$\delta' = 83^\circ 1' 46.5 \cos. = +9.0841$$

$$-1.7317$$

$$15 = +1.1761$$

$$\log. (t - t') = -0.5556$$

$$\text{Corr.} = -0.5541$$

$$\log. \tan. \varphi' = +9.9573$$

$$\text{" } \cos. t' = -8.9582$$

$$-84 \quad 16 \quad 40 = -0.9991 = \chi$$

$$83 \quad 1 \quad 46.5$$

$$-167 \quad 18 \quad 26.5$$

$$180$$

$$-12 \quad 41 \quad 33.5$$

$$-9.3419$$

$$+0.7749$$

$$-0.1168$$

$$-9.9978$$

July 8.

$$\log. (\delta - \delta') = +0.1190$$

$$\text{Corr.} = +0.1175$$

$$t' = 16^h 44^m 18.2 = -9.9759$$

$$+0.8176$$

$$-0.7935$$

$$87^\circ 21' 31.9 = +8.6635$$

$$-2.1300$$

$$15 = +1.1761$$

$$\log. (t - t') = -0.9539$$

$$\text{Corr.} = -0.9524$$

$$\log. \tan. \varphi' = +9.9573$$

$$\text{" } \cos. t' = -9.5109$$

$$-70^\circ 18' 50" = -0.4464$$

$$87 \quad 21 \quad 31.9$$

$$-157 \quad 40 \quad 21.9$$

$$180$$

$$-22 \quad 19 \quad 38.1$$

$$-9.5797$$

$$+0.7749$$

$$-0.3546$$

$$-9.9738$$

July 12

$$\log. (\delta - \delta') = +0.3808$$

$$\text{Corr.} = +0.3793$$

$$t' = 7^h 3^m 48.99 = +9.9829$$

$$+0.8176$$

$$+0.8005$$

$$80^\circ 45' 9.0 = +9.2060$$

$$+1.5945$$

$$15 = +1.1761$$

$$\log. (t - t') = +0.4184$$

$$\text{Corr.} = +0.4169$$

$$\log. \tan. \varphi' = +9.9573$$

$$\text{" } \cos. t' = -9.4391$$

$$-73 \quad 7 \quad 50 = -0.5182$$

$$80 \quad 45 \quad 9.$$

$$-153 \quad 52 \quad 59$$

$$180$$

$$-26 \quad 7 \quad 1$$

$$-9.6437$$

$$+0.7749$$

$$-0.4186$$

$$-9.9809$$

July 23.

$$\log. (\delta - \delta') = +0.4378$$

$$\text{Corr.} = +0.4362$$

$$\begin{aligned}
 t' &= 5^h 5^m 6.37 = +9.9874 \\
 &\quad +0.8176 \\
 &\quad +0.8050 \\
 \delta' &= 79^\circ 47' 55.6 \\
 &\quad +9.2482 \\
 &\quad +1.5568 \\
 &\quad 15 = +1.1761 \\
 \text{Log.}(t - t') &= +0.3807 \\
 \text{Corr.} &+0.3792
 \end{aligned}$$

July 24,

$$\begin{aligned}
 \text{Log. Lat. } \phi' &= +9.9573 \\
 \text{Corr. } t' &= +9.3752 \\
 +75 \quad 19 \quad 50 &= +0.5821 \\
 79 \quad 47 \quad 55.6 \\
 -41 \quad 28 \quad 5.6 &= -8.8916 \\
 &\quad +0.7749 \\
 &\quad -9.6665 \\
 \text{encl. } \gamma &= +9.9856 \\
 \text{Log.}(\delta - \delta') &= -9.6802 \\
 \text{Corr.} &= 9.6794
 \end{aligned}$$

$$\begin{aligned}
 t' &= 6^h 23^m 7.08 = +9.9978 \\
 &\quad +0.8176 \\
 &\quad +0.8154 \\
 \delta' &= 62^\circ 39' 19.4 \\
 &\quad +9.6621 \\
 &\quad +1.1533 \\
 &\quad 15 = +1.1761 \\
 \text{Log.}(t - t') &= +9.9772 \\
 \text{Corr.} &+9.9757
 \end{aligned}$$

Aug. 10,

$$\begin{aligned}
 \text{Log. Lat. } \phi' &= +9.9573 \\
 \text{Corr. } t' &= -9.0030 \\
 -83^\circ 39' 40 &= -0.9543 \\
 62 \quad 39 \quad 19.4 \\
 -146 \quad 18 \quad 59.4 \\
 150 \\
 -33 \quad 41 \quad 0.6 &= -9.7440 \\
 &\quad +0.7749 \\
 &\quad -0.5189 \\
 &\quad -9.9973 \\
 \text{Log.}(\delta - \delta') &= +0.5216 \\
 \text{Corr.} &+0.5201
 \end{aligned}$$

$$\begin{aligned}
 t' &= 6^h 15^m 4.79 = +9.9991 \\
 &\quad +0.8176 \\
 &\quad +0.8167 \\
 \delta' &= 63^\circ 31' 26.2 \\
 &\quad +9.6492 \\
 &\quad +1.1675 \\
 &\quad +1.1761 \\
 \text{Log.}(t - t') &= +9.9914 \\
 \text{Corr.} &+9.9899
 \end{aligned}$$

Aug. 11.

$$\begin{aligned}
 \text{Log. Lat. } \phi' &= +9.9573 \\
 \text{Corr. } t' &= -8.8176 \\
 -85^\circ 51' 13 &= -1.1397 = \gamma \\
 63 \quad 31 \quad 26 \\
 -149 \quad 22 \quad 39 \\
 150 \\
 -30 \quad 37 \quad 21 &= -9.7070 \\
 &\quad +0.7749 \\
 &\quad -0.4819 \\
 &\quad -9.9989 \\
 \text{Log.}(\delta - \delta') &= +0.4830 \\
 \text{Corr.} &+0.4815
 \end{aligned}$$

$$\begin{aligned}
 t' &= 7^h 52^m 3.07 \text{ mi.} = +9.9458 \\
 &\quad +0.8176 \\
 &\quad +0.7634 \\
 \delta' &= 56^\circ 10' 51.5 \text{ en.} = +9.7455 \\
 &\quad +1.0179 \\
 &\quad +1.1761 \\
 \text{Log.}(t - \delta') &= +9.8418 \\
 \text{Corr.} &+9.8403
 \end{aligned}$$

Aug. 19.

$$\begin{aligned}
 \text{Log. Lat. } \phi' &= +9.9573 \\
 \text{Corr. } t' &= -9.6718 \\
 -62^\circ 36' 25 &= -0.2855 \\
 56 \quad 10 \quad 51.5 \\
 -118 \quad 47 \quad 16.5 \\
 150 \\
 -61 \quad 12 \quad 43.5 &= -9.9427 \\
 &\quad -9.9483 \\
 &\quad +9.9944 \\
 &\quad +0.7749 \\
 \text{Log.}(\delta - \delta') &= +0.7693 \\
 \text{Corr.} &+0.7678
 \end{aligned}$$

$$t' = 6^h 52^m 1.95 = +9.9887$$

$$+ 0.8176$$

$$+ 0.8063$$

$$d' = 55^\circ 27' 51.1$$

$$+ 9.7535$$

$$+ 1.0528$$

$$+ 1.1761$$

$$\log(t - t') = +9.8767$$

$$\text{Cor. } +9.8752$$

Aug. 20.

$$t' = 6^h 21^m 21.62 = +9.9981$$

$$+ 0.8176$$

$$+ 0.8157$$

$$d' = 53^\circ 17' 33.9 = +9.7765$$

$$+ 1.0392$$

$$+ 1.1761$$

$$\log(t - t') = +9.8631$$

$$\text{Cor. } +9.861.6$$

Aug. 23,

$$\log. \tan \varphi' = +9.9573$$

$$\text{" cos. } t' = -9.3524$$

$$-76^\circ 3' 10'' = -0.6049$$

$$55 27 51.1$$

$$-131 31 1.1$$

$$180$$

$$-48 28 58.9$$

$$-9.8743$$

$$+0.7749$$

$$-0.6492$$

$$-9.9870$$

$$\log(d - d') = +0.6622$$

$$\text{Cor. } +0.6607$$

$$\log. \tan \varphi' = +9.9573$$

$$\text{" cos. } t' = -8.9688$$

$$-84^\circ 8' 15'' = -0.9885$$

$$53 17 33.9$$

$$-137 25 48.9$$

$$180$$

$$-42 34 11.1$$

$$-9.8303$$

$$+0.7749$$

$$-0.6052$$

$$-9.9977$$

$$\log(d - d') = +0.6075$$

$$\text{Cor. } +0.6060$$

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