

KG

11366

in 1058



Vepture Plates



7569 - 1915 Jan 8

7597 - 1915 Jan 9

7627 - 1915 Jan 10

7651 - 1915 Jan 13

7569

x

y

(1)

$$\begin{array}{r}
 16.7512 + 7174 - 8 \\
 16.1087 + 749 + 2 \\
 15.7982 - 2356 0 \\
 15.4771 - 5567 + 7 \\
 \hline
 1352 \\
 16.0338
 \end{array}$$

$$\begin{array}{r}
 17.3288 - 106 - 43 \\
 3393 - 1 - 1 \\
 3423 + 29 + 9 \\
 3470 + 76 + 33 \\
 \hline
 1574 \\
 17.3394
 \end{array}$$

(2)

$$\begin{array}{r}
 28.8346 + 7136 - 46 \\
 28.1956 + 746 - 1 \\
 27.8879 - 2331 + 25 \\
 27.5659 - 5551 + 23 \\
 \hline
 4840 \\
 28.1210
 \end{array}$$

$$\begin{array}{r}
 23.8431 - 31 + 32 \\
 8468 + 6 + 6 \\
 8467 + 5 - 15 \\
 8463 + 21 - 22 \\
 \hline
 249 \\
 23.8462
 \end{array}$$

(3)

$$\begin{array}{r}
 31.5442 + 7236 + 54 \\
 30.8951 + 745 - 2 \\
 30.5829 - 2377 - 21 \\
 30.2602 - 5604 - 20 \\
 \hline
 32824 \\
 30.8206
 \end{array}$$

$$\begin{array}{r}
 9.0617 - 43 - 31 + 32 \\
 0656 - 4 + 8 + 8 \\
 0657 + 9 - 11 \\
 0661 + 13 - 30 \\
 \hline
 191 \\
 9.0648
 \end{array}$$

Wep

$$\begin{array}{r}
 22.3370 + 7183 + 1 \\
 21.6934 + 747 0 \\
 21.3828 - 2359 - 3 \\
 21.0615 - 5572 + 2 \\
 \hline
 64747 \\
 21.6187
 \end{array}$$

$$\begin{array}{r}
 16.2320 - 83 - 20 \\
 16.2398 - 15 - 15 \\
 16.2450 + 37 + 17 \\
 16.2474 + 61 + 18 \\
 \hline
 52 \\
 16.2413
 \end{array}$$

$$\begin{array}{l}
 \text{Mean} \left\{ \begin{array}{l} +7182 \\ +747 \\ -2356 \\ -5574 \end{array} \right.
 \end{array}$$

$$\begin{array}{l}
 -63 \\
 0 \\
 +20 \\
 +43
 \end{array}$$

neptune 7569_x

1915 Apr 14

1st image

167
173
179 35
104 21
19 20
3.1

16.7512

2d image

179 35
168 45
50 50
31

16.1087

3d image

190 79
170 59 61
54
64

15.7982

190 79

138 38
48 41
64

15.4771

1st image

195 55
162 69 63
64
50

17.3288

2d image

175 22
141 30 25
29
19

17.3393

3d image

194 89
129 11 10
13
88

17.3423

193 90

128 59 66
64
94

17.3470

28.8

194 08

28.8

110 60 57

55

02

28.8346

175 18

163 91 97

00 97

10

27.8879

171 10

86 69 68

70

98

23.8431

162 02

146 68 64

68 64

90

23.8467

194 08

174 47 52

54

02

28.1956

175 18

131 79 72

70

10

27.5659

183 29

98 55 52

51

19

23.8468

160 91

145 76 71

71

86

23.8483

3

176 29

121 76 82

79

14

31.5442

200 25

158 55 58

54

26

30.5829

143 66

137 49 50

49

9.0617

99 80

71 81

93 20

9.0657

174 39

84 75 77

81

28

30.8951

200 25

126 32

20 33

26

30.2602

131 47

124 92 93

89

9.0656

99 29

29 35

92 70

9.0661

Neptune 7569_x

1915 Apr 14

✓ d
1st image
$$\begin{array}{r} 17935 \\ 10421 \\ 1920 \\ 31 \\ \hline 167512 \end{array}$$

2d image

$$\begin{array}{r} 17935 \\ 16845 \\ 5050 \\ 31 \\ \hline 161087 \end{array}$$
16.1087

3d image

$$\begin{array}{r} 19079 \\ 1705961 \\ 54 \\ 64 \\ \hline 157952 \end{array}$$

19079

$$\begin{array}{r} 13838 \\ 4841 \\ 64 \\ \hline 154771 \end{array}$$
154771d
1st image
$$\begin{array}{r} 19555 \\ 1626963 \\ 6463 \\ 50 \\ \hline 173268 \end{array}$$

2d image

$$\begin{array}{r} 17522 \\ 17130 \\ 2925 \\ 19 \\ \hline 173393 \end{array}$$
17.3393

3d image

$$\begin{array}{r} 19459 \\ 1291110 \\ 13 \\ 88 \\ \hline 173425 \end{array}$$

19390

$$\begin{array}{r} 1285966 \\ 6466 \\ 94 \\ \hline 173470 \end{array}$$
17.34702
488
258
$$\begin{array}{r} 19408 \\ 1106057 \\ 5557 \\ 02 \\ \hline 288346 \end{array}$$
28.8346

$$\begin{array}{r} 17518 \\ 1639197 \\ 007 \\ 10 \\ \hline 278579 \end{array}$$
27.8579

$$\begin{array}{r} 17110 \\ 866968 \\ 7068 \\ 98 \\ \hline 238431 \end{array}$$
23.8431

$$\begin{array}{r} 16202 \\ 1464864 \\ 6864 \\ 90 \\ \hline 238467 \end{array}$$
23.8467

$$\begin{array}{r} 19408 \\ 1744752 \\ 54 \\ 02 \\ \hline 281956 \end{array}$$
28.1956

$$\begin{array}{r} 17518 \\ 1317972 \\ 70 \\ 10 \\ \hline 275659 \end{array}$$
27.5659

$$\begin{array}{r} 18329 \\ 985552 \\ 5152 \\ 19 \\ \hline 238468 \end{array}$$
23.8468

$$\begin{array}{r} 16091 \\ 1457671 \\ 7171 \\ 86 \\ \hline 238483 \end{array}$$
23.84833
36
91
$$\begin{array}{r} 17629 \\ 1217682 \\ 7982 \\ 14 \\ \hline 315442 \end{array}$$
31.5442

$$\begin{array}{r} 20025 \\ 1585158 \\ 54 \\ 26 \\ \hline 205829 \end{array}$$
20.5829

$$\begin{array}{r} 14366 \\ 1374950 \\ 49 \\ \hline 90617 \end{array}$$
9.0617

$$\begin{array}{r} 9980 \\ 7181 \\ 9320 \\ \hline 90657 \end{array}$$
9.0657

$$\begin{array}{r} 17439 \\ 84755 \\ 6177 \\ 28 \\ \hline 308951 \end{array}$$
30.8951

$$\begin{array}{r} 20025 \\ 12632 \\ 2033 \\ 26 \\ \hline 302602 \end{array}$$
30.2602

$$\begin{array}{r} 13147 \\ 1249293 \\ 8993 \\ \hline 90656 \end{array}$$
9.0656

$$\begin{array}{r} 992935 \\ 2935 \\ 9270 \\ \hline 90661 \end{array}$$
9.0661

neptune

123
163

d

x

v

1st image

19763

16379

8990

50

22.3373

2d image

19081

1214850

48

82

21.6933

3d image

19081

1526252

49

82

21.3827

4th image

19081

1846970

70

82

21.0612

19319

1267879

8779

10

3368

19975

1059999

9099

79

1618

19975

13800

0908

79

3829

19975

1690709

1809

79

16935

1915 Apr 14

4

d

v

1st image

16939

1460000

99

40

16.2335

2d image

18698

16299

0194

90

16.2398

3d image

17709

1525153

56

09

16.2456

4th image

16739

14258

5961

38

16.2480

17700

1002121

19

94

2325

16577

897168

77

72

2399

15518

8969

6271

23

2445

19438

1190001

0101

30

2469

neptune

123
163 d

x

~

1st image

19762

16379
8990
50223373

2d image

19081

1214850
48
8221.6933

3d image

19081

1526252
49
8221.3827

4th image

19081

1846970
70
8221.0612

19319

1267879
8779
103368

19975

1059999
9099
79.6618

19975

13800
0908
793829

19975

1690709
18
79.6935

1915 Apr 14

7

d

~

1st image

16939

1460000
99
4016.2335

2d image

18498

16299
0194
9016.2398

3d image

17709

1525153
56
0916.2456

4th image

16739

1425861
59
3816.2480

17700

1002121
19
942325

16577

897168
77
722399

15518

7969
6271
232445

19438

1190001
01
302469

7
16.0338
28.1210
30.8206

4
17.3394
23.8462
9.0648

7569				Standard Coordinates				Cape No. 1149				Cape No. 1152			
Cape No.	1134							Cape No.	1149						
C	8 01	37.85						8 08	36.96			8 10	13.12		
L		93							37.03				14		
E		89							36.99				13		
Mean	8 01	37.89						8 08	36.99			8 10	13.13		
P.M.		0.17							0.01				0.02		
Pre		+ 52.40							+ 52.59				+ 51.89		
A	8 02	30.18						8 09	29.59			8 11	05.00		
A	8 06	40						8 06	40			8 06	40		
$\alpha-A$	- 4	09.82						+ 2	49.59			+ 4	25.00		
$\sin(\alpha-A)$	- 249.81							+ 169.59				+ 264.98			
log	2.39761	m						2.22940				2.42322			
log	9.97281							9.97025				9.97579			
log	0.87766	m						0.70689				0.90625			
log	- 7.5450							+ 5.0920				+ 8.0584			
log	- 12							+ 8				+ 31			
log	14.4538							27.0928				30.0615			
log	160338							28.1210				30.8206			
$\alpha-3$	+ 1.5800							+ 1.0282				+ 7591			
C	+ 20 06	23.3						+ 21 00	36.4			+ 18 59	59.5		
L		237							36.5				59.9		
E		242							37.4				59.1		
Mean	+ 20 06	23.7						+ 21 00	36.8			+ 18 59	59.2		
P.M.		0.4													
Pre	- 2	327						- 2	40.5			- 2	42.3		
S	+ 20 03	50.6						+ 20 57	56.3			+ 18 57	16.9		
D	+ 20 11	20						+ 20 11	20			+ 20 11	20		
S-D	- 7	29.4						+ 46	36.3			- 1	14 03.1		
Tan(S-D)	- 449.4							+ 2796.5				- 4443.8			
log	2.65263	m						3.44662				3.64775	m		
log	9.98378	m						0.77777				0.97890	m		
log	9.5626							9.5834				9.5358			
log	1.7553							1.4138				1.8125			
log	8.3713							8.0509				8.4017			
log	+ 0.9653							+ 5.9947				- 9.5258			
log	+ 235							+ 112				+ 252			
log	17.0602							24.0059				8.4994			
log	17.3394							23.8462				9.0648			
log	+ 2792							- 1597				+ 5654			

7569				Standard Coordinates				Cape No. 1149				Cape No. 1152			
C	8	01	37.85					8	08	36.96		8	10	13.12	
L			93							37.03				17	
E			89							36.99				13	
Mean	8	01	37.89					8	08	36.99		8	10	13.13	
Pre			0.11							0.01				0.02	
			+ 52.90							+ 52.59				+ 51.89	
α	8	02	30.18					8	09	29.59		8	11	05.00	
A	8	06	40					8	06	40		8	06	40	
$\alpha - A$	-4		09.82					+2		49.59		+4		25.00	
$\sin(\alpha - A)$	-2		49.81					+1		69.59		+2		64.98	
log			239761							222940				242322	
W.S.			997281							997025				997579	
S			087766							070689				090625	
β			-7.5450							+50920				+20584	
β			-12							+8				+31	
γ			14.4538							27.0928				30.0615	
γ			16.0338							28.1210				30.8206	
$\alpha - \beta$	+1		5800							+10282				+7591	
C	+20	06	23.3					+21	00	36.4		+18	59	19.5	
L			23.7							36.5				58.9	
E			24.2							37.4				59.1	
Mean	+20	06	23.7					+21	00	36.8		+18	59	59.2	
Pre			0.04							0.05				0.03	
S	+20	03	50.6					+20	57	56.3		+18	57	16.9	
P	+20	11	20					+20	11	20		+20	11	20	
$\alpha - D$	-	7	29.4					+46		36.3		-1	14	03.1	
$\sin(\alpha - D)$	-4		49.4					+2		796.5		-4		473.8	
log			265263							344662				364775	
W.S.			998378							077777				097890	
S			9.5626							9.5834				9.5358	
β			1.7553							1.4138				1.8125	
γ			8.3713							8.0509				8.4017	
$\beta - \gamma$	+0		9633							+59947				-95258	
$\gamma - \beta$	-2		35							-112				+252	
γ			17.0602							24.0059				8.4994	
γ			17.3394							23.8462				9.0648	
$\gamma - \beta$	+2		792							-1597				+5654	

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Plate Constants

$$\begin{array}{rclcl}
 x - \Sigma & + 100x & & & \\
 + 1.5800 + 8017 & = +2.3817 - 1561 & + 222.56 + 77 & = +22333 & = 0 \\
 + 1.0282 + 14060 & = +2.4342 - 2145 & + 221.97 + 135 & = +22332 & = -1 \\
 + 7591 + 15410 & = +2.3001 - 816 & + 221.85 + 148 & = +22333 & = 0 \\
 21.6187 + 10.809 & & -1462 & + 104 & = 20.3305
 \end{array}$$

$$\begin{array}{rclcl}
 y - \Sigma & + 500y & & & \\
 + 2792 + 8670 & = +11462 + 1446 & = +12908 + 121 & = +13029 & = 0 \\
 - 1597 + 11923 & = +10326 + 2537 & = +12863 + 167 & = +13030 & = +1 \\
 + 5654 + 4532 & = +10186 + 2780 & = +12966 + 634 & = +13029 & = 0 \\
 16.2413 + 8121 & & + 1950 & + 114 & = 15.9569
 \end{array}$$

$$\begin{array}{l}
 \xi = -1.6695 \\
 \log \xi = 0.22259m \\
 \cos \xi = 997320 \\
 \quad 850724 \\
 \quad 1.74215m
 \end{array}$$

$$\alpha - A = -55.23$$

$$A = 8 \ 06 \ 40$$

$$\alpha_0 = 8 \ 05 \ 44.77$$

$$\text{Red} = +222$$

$$\alpha' = 8 \ 05 \ 46.99$$

$$\eta = -2.0431$$

$$\begin{array}{r}
 \log \tan \delta = 9.55.90 \\
 \quad 0.4452 \\
 \quad 70534 \\
 \hline
 70576
 \end{array}$$

$$\eta_1 = +11$$

$$\eta_0 = -2.0442$$

$$\begin{array}{r}
 \log \eta_0 = 0.31052m \\
 \quad 733115 \\
 \hline
 2.97937m
 \end{array}$$

$$\delta - D = -15 \ 53.6$$

$$D = +20 \ 11 \ 20$$

$$\delta_0 = +19 \ 55 \ 26.4$$

$$\text{Red} = 0.0$$

$$\delta' = +19 \ 55 \ 26.4$$

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Plate Constants

$$\begin{array}{rclcl}
 x - z & + 100x & & -90y & +4.8x & & -22333 \\
 +1.5800 & +8017 & = & +2.3817 & -1561 & +22256 & +77 & +22333 & = & 0 \\
 +1.0282 & +14060 & = & +24342 & -2145 & +22197 & +135 & +22332 & = & -1 \\
 + & 7591 & +15410 & +23001 & -816 & +22185 & +148 & +22333 & = & 0 \\
 1.6187 & +10.809 & & -1462 & & +104 & & -203305
 \end{array}$$

$$\begin{array}{rclcl}
 1 - m & + 500y & & +90.2x & +74 & & -13029 \\
 2792 & +8670 & = & +11462 & +1446 & +12908 & +121 & +13029 & = & 0 \\
 1597 & +11923 & = & +10326 & +2537 & +12863 & +167 & +13030 & = & +1 \\
 5654 & +4532 & = & +10186 & +2780 & +12966 & +634 & +13029 & = & 0 \\
 2713 & +8121 & & +1950 & & +114 & & +159569
 \end{array}$$

$$\begin{array}{l}
 z = -1.6695 \\
 \log z = 0.22259 \\
 \log 5 = 9.97320 \\
 8.50724
 \end{array}$$

$$1.74215m$$

$$\alpha - 4 = -55.23$$

$$A \quad 8 \quad 06 \quad 40$$

$$\alpha_0 = 8 \quad 05 \quad 44.77$$

$$\text{Red} = +222$$

$$\alpha = 8 \quad 05 \quad 46.99$$

$$\eta = -2.0431$$

$$\begin{array}{r}
 \log \tan S = 9.5590 \\
 0.4452 \\
 \hline
 7.0534 \\
 7.0576
 \end{array}$$

$$\eta_1 = +11$$

$$\eta_0 = -2.0442$$

$$\begin{array}{r}
 \log \eta_0 = 0.31052 \\
 7.33115 \\
 \hline
 2.97937m
 \end{array}$$

$$S-D = -15 \quad 53.6$$

$$D = +20 \quad 11 \quad 20$$

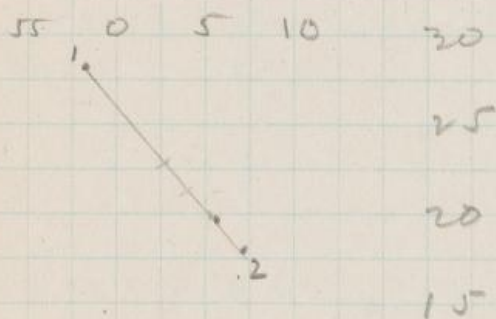
$$S_0 = +19 \quad 55 \quad 26.4$$

$$\text{Red} = 0.0$$

$$S' = +19 \quad 55 \quad 26.4$$

$$\begin{array}{r}
 7 \quad 58 \quad 20.46 \\
 \underline{18.06} \\
 + 2.40 \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 + 28 \quad 01 \quad 60.5 \\
 \underline{60.5} \\
 0.0
 \end{array}$$

$$\begin{array}{r}
 8 \quad 07 \quad 22.53 \\
 \underline{20.35} \\
 + 2.18 \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 + 17 \quad 54 \quad 18.1 \\
 \underline{18.2} \\
 - 0.1
 \end{array}$$



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Red ad l. app.

$$S = +19 \quad 55 \quad 26$$

$$\begin{array}{rcl} H + \alpha & 6^h & 59.8 = 104^\circ 57' \\ H & 22 & 54.1 \\ \alpha & 8 & 05.7 \\ \theta & 19 & 56.4 \\ \theta + \alpha & 4 & 02.1 = 60^\circ 32' \end{array}$$

$$\begin{array}{rcl} \cos S & & 9.9732 \\ i & & 0.3974 m \\ (i) & & 0.3711 m \end{array}$$

$$\begin{array}{rcl} \cos(\theta + \alpha) & & 9.6919 \\ \theta & & 0.9297 \\ \sin \theta & & 9.9398 \\ \tan \theta & & 9.5593 \\ \frac{1}{\tan \theta} & & 8.8239 \end{array}$$

$$\begin{array}{rcl} \theta' & & 0.6216 \\ \theta & & 9.2527 \end{array}$$

$$\begin{array}{rcl} f & + & 0.65 \\ \theta & + & 0.18 \\ h & + & 1.39 \\ \hline & & +2.22 \end{array}$$

$$\begin{array}{rcl} \sin S & & 9.5325 \\ \cos(H + \alpha) & & 9.4116 m \\ h & & 1.3079 \\ \sin \theta & & 9.9850 \\ \sec S & & 0.0268 \\ \frac{1}{\tan \theta} & & 8.8239 \end{array}$$

$$\begin{array}{rcl} h' & & 0.2520 m \\ h & & 0.1436 \end{array}$$

$$\begin{array}{rcl} \theta' & & +4.18 \\ h' & & -1.79 \\ i & & -2.35 \\ \hline & & +0.04 \end{array}$$

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Red and b. app.

$$S = +1.9 \quad 55^{\circ} \quad 26$$

$$\begin{array}{rcl} H + \alpha & 6 & 59.8 - 104^{\circ} 57' \\ H & 22 & 54.1 \\ \alpha & 8 & 05.7 \\ \beta & 19 & 56.4 \\ \beta + \alpha & 4 & 02.1 : 60^{\circ} 32' \end{array}$$

$$\begin{array}{rcl} k \cos(\beta + \alpha) & & 9.6919 \\ \delta & & 0.4297 \\ 1 \sin & & 9.9398 \\ 1 \sin \delta & & 9.5593 \\ \delta & & 0.8239 \end{array}$$

$$\begin{array}{rcl} \delta & & 0.6216 \\ \delta & & 9.2527 \end{array}$$

$$\begin{array}{rcl} k & + & 0.65 \\ \delta & + & 0.18 \\ k & + & 1.39 \\ \hline & + & 2.22 \end{array}$$

$$\begin{array}{rcl} 2 \cos S & & 9.9732 \\ i & & 0.3979 \\ (i) & & 0.3711 \end{array}$$

$$\begin{array}{rcl} k \sin S & & 9.5325 \\ \cos(H + \alpha) & & 9.4116 \\ k & & 1.3079 \\ \sin & & 9.9850 \\ \sec S & & 0.0268 \\ \delta & & 8.8239 \end{array}$$

$$\begin{array}{rcl} h' & & 0.2520 \\ h & & 0.1436 \end{array}$$

$$\begin{array}{rcl} \delta & & +4.18 \\ h' & & -1.79 \\ i & & -2.35 \\ \hline & & +0.04 \end{array}$$

2

7569

Position from Want. Allen.

noon Jan. 8	8 ^h 05 ^m 52. ^s 22	+19° 55' 10.9"
motion in 1 st = 6.856	-	21.05
	51.1	+ 15.7
Jan. 8.745	8 05 47.11	+19 55 26.6
Obs.	8 05 46.99	+19 55 26.4
O - C	-0.12	- 0.2

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Position from Kant Allen

noon Jan 8	8	05	52.22	+19° 55' 10.9
between 1 st = 6 8 56				21.05
			5.11	+ 15.7
Jan. 8.745	8	05	47.11	+19 55 26.6
Obs.	8	05	46.99	+19 55 26.4
O-C			-0.12	- 0.2

1915phae.proj

x

4

$$159372 + 6306$$

- 7

168256

- 50

- 54

$$153793 + 727$$

+ 6

9304

- 2

- 3

$$150970 - 2096$$

- 6

9322

+ 16

+ 18

$$148131 - 4935$$

+ 8

9341

+ 35

+ 39

$$\text{mean } 15.3066$$

$$169306$$

	27.9757	+6273	-40	23.5250	+38	+34
	274200	+716	-5	5217	+5	+4
(2)	271415	-2069	+21	5201	-11	-9
	268565	-4919	+24	5180	-32	-28
Mean	27.3484			23.5212		

	30.7846	+6351	+38	8.7615	+38	+34
	30.2222	+727	+6	7589	+12	+11
(3)	29.9393	-2102	-12	7556	-21	-19
	29.6519	-4976	-33	7548	-29	-25
Mean	30.1495			87577		

	21.3369	+6322	+9	15.9125	-8	-12
	207761	+714	-7	9123	-10	-11
(4ep)	204953	-2094	-4	9142	+9	+11
	202105	-4942	+1	9143	+10	+14
Mean	20.7047			15.9133		

Mean	+6313	+4
	+721	+1
	-2090	-2
	-4943	-4

Neptune 7597 x

1915 Apr 16.

	d	v
1st image		3d image
159 19685		19261
169 10279		10238
8185-		2926
53		50
<u>15.9372</u>		<u>15.0970</u>
2d image		
19685		19789
15881		17919
8079		1712
55-		71
<u>15.3793</u>		<u>14.8131</u>

2 17190	18235
279 74112	963034
235 18	4034
71	18
<u>27.9757</u>	<u>27.4415</u>
16191	17839
1198980	1640001
86	0601
71	21
<u>27.4200</u>	<u>26.8565</u>

3 18347	17218
308 10489	16510
88 9082	1605-
29	05
<u>30.7846</u> (59)	<u>29.9293</u>
17351	17218
1512231	13632
26.31	3033
36	05
<u>30.2222</u>	<u>29.6519</u>

	d	v
1st image		3d image
12480		14648
7790		13920
10738		9071
<u>16.8256</u>		<u>16.9322</u>
2d image		
1255856		13559
5156		1290300
11859		9800
		2
<u>16.9304</u>		<u>16.9341</u>

19945	18333
14688	1358122
8991	2022
30	13
<u>23.5250</u>	<u>23.5201</u>
19020	18269
13791	13438
9395-	4237
00	49
<u>23.5217</u>	<u>23.5180</u>

20119	17309
1249293	1486066
8293	6266
00	99
<u>8.7615</u>	<u>17.556</u>
19211	17201
1160199	1474552
0099	502
82	99
<u>8.7589</u>	<u>17.548</u>

Neptune 7597

1915 Apr. 16.

	d	v
1st image		3d image
159 19685		19261
161 10279		10238
8185		2926
53		50

<u>15.9372</u>	<u>15.0970</u>
----------------	----------------

2d image	
19685	19789
15881	17919
8079	1712
55	71

<u>15.3793</u>	<u>14.8131</u>
----------------	----------------

	d	v
2 17190		18235
279 74112		9630
235 18		4034
71		18

<u>27.9757</u>	<u>27.4415</u>
----------------	----------------

16191	17839
11989	16400
8080	0601
71	21

<u>27.4200</u>	<u>26.8565</u>
----------------	----------------

	d	v
3 18347		17217
308 10489		16510
88 9082		1605
29		05

<u>30.7846</u>	<u>29.9393</u>
----------------	----------------

17351	17218
15122	13632
2031	3033
36	05

<u>30.2222</u>	<u>29.6419</u>
----------------	----------------

	d	v
1st image		3d image
12480		14648
7790		13970
10738		7071

<u>16.8256</u>	<u>16.9322</u>
----------------	----------------

2d image	
12558	13559
5156	12903
11859	9800
	6

<u>16.9304</u>	<u>16.9341</u>
----------------	----------------

	d	v
19945		18933
14485		13581
8991		2022
30		13

<u>23.5250</u>	<u>23.5201</u>
----------------	----------------

19020	18269
12791	13438
9395	4237
00	49

<u>23.5217</u>	<u>23.5180</u>
----------------	----------------

	d	v
20119		17309
12492		14860
8293		6266
00		99

<u>8.7615</u>	<u>7.556</u>
---------------	--------------

19211	17201
11601	14745
0099	5052
82	99

<u>8.7589</u>	<u>7.548</u>
---------------	--------------

7597

d x

213 1st image

15.9 17201

13827

2929

89

21.3369

2d image

16005

8240

3939

99

20.7761

Neptune Measures

d y

3d image

20130

15072

8081

20

.4953

4th image

20130

17879

8890

20

.7758

19420

11510

1303

00

20.2105

d y

1st image

16321

718090

8490

09

15.9125

2d image

17415

82615

5159

99

15.9144

2d image

13432

125615-3

52

.9123

1915 Apr. 17.

d y

3d image

20049

1929090

9090

34

.9142

4th image

19098

18220

1120

78

.9121

2d image

14421

1356160

59

.9139

4th image

13361

12510

0100

.9143

7597

d x

213 1st mag

159 17201

13827

29 29

89

21.3369

2d mag

16005

8240

39 39

99

20.7761

Neptune measures

N

3d mag

20120

15072

8081

20

4953

d y

1st mag

16321

718090

8490

09

15.9125

2d mag

17415

826159

517

99

15.9144

19H Apr 17.

N

3d mag

20099

1919090

9090

34

9.142

19098

18220

1120

73

9.121

x	y
15.3066	16.9306
27.3484	23.5212
30.1495	8.7577

75-97

x	15.3066	27.34184	30.1495	20.7047
3	14.4538	27.0928	30.0615	
x-3	+8.528	+2.556	+8.80	

y	16.9306	23.5212	87.577	15.9133
m	17.0602	24.0059	84.994	
y-m	-12.96	-4.847	+2.583	

x-3	+100x	-17.64	+5.64	-15.969
+8.528	+7653	=+16181	-298	=+15883
+2.556	+13674	=+16230	+14	=+15816
+8.80	+15075	=+15955	-154	=+15801
20.7047	+10352	-280	+116	=20.1266

y-m	+100y	+17.64	+6.74	-75.52
-12.96	+8465	=+7169	+269	=+7438
-4.847	+11761	=+6914	+481	=+7395
+2.583	+4379	=+6962	+531	=+7493
15.9133	+7957	+364	+107	=16.0009

$$\begin{aligned} \xi &= -1.8734 \\ \log \xi &= 0.27263 \\ &997318 \\ &\underline{.850724} \\ &1.79221 \end{aligned}$$

$$S-A = -1.01974$$

$$A = 8.0640$$

$$A_0 = 8.0538.03^{0.26}$$

$$\text{Red} + 2.24$$

$$A' = 8.0540.27^{0.6}$$

$$\begin{aligned} \eta &= -1.9991 \\ \log \eta &= 9.5594 \\ &05453 \\ &\underline{7.0534} \\ &7.1588 \end{aligned}$$

$$\begin{aligned} \eta_1 &= +14 \\ \eta_2 &= -2.9005 \\ \log \eta_2 &= 0.30114 \\ &\underline{7.33115} \\ &2.96999 \end{aligned}$$

$$S-D = 1.5332$$

$$D = 20.1120$$

$$S_0 = 19.5546.8$$

$$\text{Red} = 0.0$$

$$S' = +19.5546.8$$

7597

$$\begin{array}{rclcl}
 x & 15.3066 & 27.3484 & 30.1491 & 20.7047 \\
 y & 14.4538 & 27.0928 & 30.0615 & \\
 x-y & +8.8528 & +2.2556 & +8.80 &
 \end{array}$$

$$\begin{array}{rclcl}
 y & 16.9306 & 23.5212 & 27.177 & 11.9133 \\
 y & 17.0602 & 24.0059 & 28.4994 & \\
 y-y & -12.96 & -4.847 & +2.583 &
 \end{array}$$

$$\begin{array}{rclcl}
 x-y & +2.204 & -17.64 & +5.64 & -15.969 \\
 +8.8528 + 76.53 & +16.181 & -2.98 & +15.883 + 8.6 & +15.969 \\
 +2.556 + 136.74 & +16.230 & -4.14 & +15.816 + 15.3 & +15.969 \\
 +8.80 + 150.75 & +15.955 & -1.57 & +15.801 + 16.9 & +15.970 \\
 20.7047 + 103.52 & & -2.80 & +11.6 & = 20.1266
 \end{array}$$

$$\begin{array}{rclcl}
 y-m & +2.007 & +17.64 & +6.74 & +7.552 \\
 -12.96 + 84.65 & +71.69 & +26.7 & +74.32 + 11.3 & +75.51 \\
 -4.847 + 11.761 & +6.914 & +4.81 & +7.395 + 15.7 & +75.52 \\
 +2.583 + 43.79 & +69.62 & +5.31 & +74.93 + 5.9 & +75.52 \\
 15.9133 + 79.57 & & +36.4 & +10.7 & = 16.0009
 \end{array}$$

$$\begin{array}{rcl}
 S & = & -1.8734 \\
 \log S & = & 0.27263 \\
 & 997318 \\
 & \underline{850724} \\
 & 1.79221
 \end{array}$$

$$S-A: -1.0197$$

$$A: 8.0640$$

$$\alpha_0 = 8.0538.03$$

$$\text{Red.} + 2.24$$

$$\alpha' = 8.0540.27$$

$$\begin{array}{rcl}
 y & = & -1.9994 \\
 \log \tan S & = & 9.5591 \\
 & 05453 \\
 & \underline{7.0580} \\
 & 7.1578
 \end{array}$$

$$\begin{array}{rcl}
 y_1 & = & +14 \\
 y_2 & = & -2.2005 \\
 \log y_2 & = & 0.30124 \\
 & \underline{7.33115} \\
 & 2.96999
 \end{array}$$

$$S-D: -1.5332$$

$$D: 20.1120$$

$$S_0 = 19.5546.8$$

$$\text{Red.} = 0.0$$

$$S = +19.5546.8$$

7597 Red. ad locum app.

$\delta = +19 \quad 55 \quad 47$

$H + \alpha 6 \quad 559 = 104^\circ$

$H 22 \quad 50.3$

$\alpha \quad 8 \quad 05.6$

$\beta 19 \quad 58.3$

$S + \alpha 4 \quad 03.9 = 61^\circ$

$\ell \cos(S + \alpha) \quad 9.6856$

$\ell \quad 9.9293$

$\ell \sin \alpha \quad 9.9418$

$\tan S \quad 9.5594$

$\frac{1}{\cos} \quad 8.8239$

$8' \quad 0.6149$

$8 \quad 9.2544$

$\frac{1}{\cos} \quad +0.66$

$\frac{1}{\cos} \quad +0.18$

$\frac{1}{\cos} \quad +1.40$

$+2.24$

$\ell \cos S \quad 9.9732$

$\ell \quad 0.4212$

$(i) \quad 0.3944$

$\ell \sin S \quad 9.5326$

$\cos(H + \alpha) \quad 9.3837$

$\ell \quad 1.3075$

$\sin \alpha \quad 9.9869$

$\sec S \quad 0.0268$

$\frac{1}{\cos} \quad 8.8239$

$h' \quad +0.2238$

$h \quad 0.1451$

$8' \quad +4.12$

$h' \quad -1.67$

$(i) \quad -2.48$

-0.03

7597 Red. ad locum - 104°

S + 19 55 47

H + α 2 559 - 104°H + α 2 503 α 8 05.6

S 19 583

S + α 4 039 - 61°L cos(S + α) 9 6856 γ 9 9293

L sin " 9 9418

Tan S 9 5594

L' 8 8239

S' 0.6149

S 9 2544

L + 0.66

L' + 0.18

L - 1.40

+ 2.24

L cos S 9 9732

L 0.4212

(L) 0.3944

L sin S 9 5326

cos(H + α) 9 3837

L 1.3075

sin " 9 9469

sec S 0.0268

L' 8 8239

L' - 0.2238

L 0.1451

S' + 4.12

L' - 1.67

(L) - 2.48

- 0.03

7597

Position from Kant. Almanac.

Moon Jan 8	8 ^h 05 ^m 52.22 ^s	+ 19° 55' 10.9"
motion in ^h - 6.871 ^v		
" " 1.724 ^v	- 11.85 ^v	+ 36.4 ^v
Jan. 9.724	8 05 40.37 ^v	+ 19 55 47.3 ^v
Obs	8 05 40.27 ²⁶⁶	+ 19 55 46.8
O-C	- 0.108	- 0.5 ^v

7597

Position from Kant. Catalogue.

Moon Jan 8	8 ^h 05 ^m 52.22 ^s	+19° 55' 10.9"
Mercuri th	+6.871	1210.1
1724	- 11.85	+ 36.4
Jan 9. 724	8 05 40.37	+19 55 47.3
Obs.	8 05 40.27	+19 55 46.8
O-C	- 0.10	- 0.5

x

15.9476	+6017	-11
15.4090	+631	+4
15.1529	-1930	+2
14.8741	-4718	+4
mean 15.3459		

280384	+5989	-39
275032	+637	+10
(2) 272468	-1927	+5
269697	-4698	+24
mean 27.4395		

30.7300	+6074	+46
30.1844	+618	-9
(3) 29.9286	-1940	-8
29.6476	-4750	-28
mean 30.1226		

sept 21.1407	+6032	+4
20.5996	+621	-6
20.3444	-1931	+1
20.0652	-4723	-1
mean 20.5375		

mean

+6028
+627
-1932
-4722

y

17.6805	-101	-44
6909	+3	+1
6933	+27	+13
6977	+71	+30
17.6906		

24.1826	-33	+24
1866	+7	+5
1859	0	-14
1885	+26	-15
24.1859		

9.3974	-27	+30
4002	+1	-1
4012	+11	-3
4017	+16	-25
9.4001		

16.6698	-68	-11
6764	-2	-4
6784	+18	+4
6817	+51	+10
16.6766		

-57
+2
+14
+41

Neptun 7627

Star - measures

1915 Apr 19

a
1st image
17716480
700901
02
80
15.9476

2d image
15784
732011
1311
86
15.1529

d
1st image
18491
18674
7175
70
17.6805

v
2d image
17736
14670
6664
30
.6933

2d image
17479
13388
8890
80
15.4090

4th image
16334
15076
7079
30
14.8741

2d image
18545
11639
3739
48
17.6909

4th image
16700
1368072
7072
90
.6977

280
242
10676
1029890
88
28.0384

20292
1276061
63
93
27.2468

18982
17095
0096
28
24.1826

20251
121024
10
50
24.1859

20145
1511015
09
41
27.5032

13330
1303125
26
26.9697

19989
18125
2619
89
24.1866

19180
11070
6561
76
24.1888

207
95
17989
1069690
9090
93
30.7300

17549
1684130
3330
50
29.9286

19640
1566970
5970
40
9.3974

19142
1315550
50
38
4012

16990
1514048
49
90
30.1844

17549
1402522
2422
50
29.6476

18700
1469200
01
00
94002

19090
1311118
13
02
.4017

Neptune 7627		Star - measures		1915 Apr. 19.	
λ	μ	λ	μ	λ	μ
1st image	2d image	1st image	2d image	1st image	2d image
17716480	115784	18491	17736	17736	
700901	7320	18674	14670	14670	
02	1311	7175	666	666	
80	86	70	30	30	
<u>15.9476</u>	<u>15.1529</u>	<u>17.6805</u>	<u>6935</u>	<u>6935</u>	
2d image	4th image	2d image	4th image	2d image	4th image
17479	16334	18541	16700	16700	
13388	15076	11639	1369072	1369072	
8890	7079	3739	70	70	
80	30	48	90	90	
<u>15.4090</u>	<u>14.8741</u>	<u>17.6909</u>	<u>6977</u>	<u>6977</u>	
2 10676	20292	18922	20251	20251	
280 10298	1276061	17095	121024	121024	
202 8890	63	0096	10	10	
	93	28	50	50	
<u>28.0384</u>	<u>27.2468</u>	<u>24.1826</u>	<u>24.1859</u>	<u>24.1859</u>	
20145	13330	19989	19180	19180	
15110	1303125	18125	11070	11070	
09	26	2619	6561	6561	
41		89	76	76	
<u>27.5032</u>	<u>26.9697</u>	<u>24.1866</u>	<u>24.1888</u>	<u>24.1888</u>	
17989	17549	19640	19142	19142	
10696	1684130	1566970	1315550	1315550	
9090	3330	57	50	50	
93	50	40	38	38	
<u>30.7300</u>	<u>29.9286</u>	<u>93974</u>	<u>4012</u>	<u>4012</u>	
16990	17549	18700	19090	19090	
15140	1402522	1469200	1311118	1311118	
4948	28	01	13	13	
90	50	00	02	02	
<u>30.1844</u>	<u>29.6476</u>	<u>94002</u>	<u>4017</u>	<u>4017</u>	

Neptune 7627

d x
1st image

16.7 17009
1560699
0299
10

21.1407

2d image

19730
13740
3339
35

20.5996

Neptune measures

d ~
3d image

18519
1197069
70
29

20.3444

4th image

18519
9180
7881
29

20.0652

Neptune measures

d +
1st image

19528
1283838
2938
40

16.6698

2d image

19615
1285159
5659
21

16.6764

1915 Apr 19

d ~
3d image

18828
15605
0310
24

16.6784

4th image

17791
146105
0805
92

16.6817

Neptune 7627

Neptune measures 1915 Apr 19.

21.2 d
1st image
17009
15606
0299
10

21.1407

3d image
18519
1197069
70
29

20.3444

1st image
19528
12838
39
40

16.6698

3d image
18821
15605
0310
29

16.6784

2d image 4th image
19730 18519
13740 9180
3339 7881
35 29

20.599620.0652

2d image
19611
12851
5659
21

16.6764

4th image
17791
14610
0805
92

16.6817

7627

x	15.3459	27.4395	30.1226	20.5375 [✓]
3	14.4538	27.0928	30.0615	
x-3	+ 8921	+ 3467	+ 611	

y	17.6906	24.1859	9.4001	16.6766 [✓]
y	17.0602	24.0059	8.4994	
y-y	+ 6304	+ 1800	+ 9007	

2-3	+500x	-101.4y	+5.5x	-14885
+8921	+7673	+16544	-1794	+14800 + 84 = +14884
+3467	+13720	+17287	-2452	+14735 + 151 = +14886
+611	+15061	+15672	-953	+14719 + 166 = +14885
20.5375	+10269 [✓]	-1691 [✓]	+113	= 19.9181

4-y	+500y	+100.8x	+5.8y	-16799
+6304	+8845	+15149	+15+7 = +16696	+103 = +16799 = 0
+1800	+12093	+13893	+2766 = +16659	+140 = +16799 = 0
+9007	+4700	+13707	+3036 = +16743	+55 = +16798 = -1
16.6766	+8338 [✓]	+2070 [✓]	+97 [✓]	= 16.0472

$\xi = -2.0819$ ✓
 $\log \xi = 0.31846$ m
 $\log \delta = 9.97317$
 8.50724 m

(x-A) 1.83805 m

x-A → 1 08.87

A 8 06 40

x₀ = 8 05 31.13

Rice + 225

x' 8 05 33.38

$\eta = -1.9528$ ✓
 $\log \tan \delta = 9.5594$ ✓
 0.6369 ✓
 7.0534 ✓
 7.2497 ✓

$\eta_1 = + 18$ ✓

$\eta_0 = -1.9546$ ✓

$\log \eta_0 = 0.29106$ m
 7.33115 ✓
 2.95991 m

S-D = - 15 11.8

D = +20 11 20

S₀ = +19 56 08.2

Rice - 0.1

x' +19 56 08.1

$$\begin{array}{r}
 7627 \\
 \times \quad 153459 \quad 274395 \quad 30.1226 \quad \text{help.} \quad 20.5375 \\
 3 \quad 144538 \quad 270928 \quad 30.0611 \\
 \times 5 \quad + 8921 \quad + 3467 \quad + .611
 \end{array}$$

$$\begin{array}{r}
 4 \quad 176906 \quad 241859 \quad 9.4001 \quad 16.6766 \\
 7 \quad 170602 \quad 240059 \quad 8.4997 \\
 4-7 \quad + 6304 \quad + 1800 \quad + 9007
 \end{array}$$

$$\begin{array}{r}
 2-E \quad 1500x \quad -1014x \quad +55x \quad -14885 \\
 +8921 + 7673 + 16594 - 1794 = 114800 + 84 + 14884 \quad -1 \\
 +3467 + 13720 + 17187 - 2452 = 114735 - 154 = 114486 \quad -1 \\
 + 611 + 15061 + 15672 - 953 = 114719 + 166 = 114885 \quad 0 \\
 20.5375 + 10269 = 1691 \quad +113 = 19.9181
 \end{array}$$

$$\begin{array}{r}
 4-7 \quad +1500x \quad +1008x \quad +58x \quad -16799 \\
 +6304 + 8845 + 15179 + 1577 + 16696 + 103 = +16799 \quad -0 \\
 +1800 + 12093 + 13893 + 2766 + 16659 + 140 = +16799 \quad -0 \\
 +9007 + 4700 + 113707 + 3036 + 16743 + 55 = +16798 \quad -1 \\
 16.6766 + 8336 + 2070 + 97 = 16.0472
 \end{array}$$

$$\begin{array}{r}
 S = -20819 \\
 \log S = 0.31846 \\
 \log S = 9.97317 \\
 8.50724
 \end{array}$$

$$(x-A) 1.83805$$

$$x-A \rightarrow 1.0887$$

$$A \quad 8.0640$$

$$X \quad 8.053113$$

$$\text{Rice} \quad + 225$$

$$X' \quad 8.053338$$

$$\begin{array}{r}
 \gamma = -1.9528 \\
 \log \tan S = 9.5594 \\
 0.6369 \\
 7.0534 \\
 7.2497
 \end{array}$$

$$\begin{array}{r}
 \gamma_1 = +18 \\
 \gamma_0 = -1.9546 \\
 \log \gamma_0 = 0.29106 \\
 7.33115 \\
 2.95991
 \end{array}$$

$$S-D = -15.118$$

$$D = +20.1120$$

$$S = +19.56082$$

$$\text{Rice} = 0.1$$

$$X' + 19.56081$$

7627 Red. ad l. aph.

 $\delta + 19^{\circ} 56' 08''$

$$H + \alpha \quad b^{\circ} \quad 520 = 103^{\circ}$$

$$H \quad 22 \quad 46.5$$

$$\alpha \quad 8 \quad 05.5$$

$$\beta \quad 20 \quad 00.9$$

$$B + \alpha \quad 4 \quad 06.4 = 61^{\circ} 36'$$

 $\cos S$

$$9.9732$$

 i

$$0.4431^m$$

 (i)

$$0.4163^m$$

 $\sin S$

$$9.5327$$

 $\cos(H + \alpha)$

$$9.6773$$

 $\cos(H + \alpha)$

$$9.3521^m$$

 S

$$0.9295$$

 h

$$1.3071$$

 $\sin$

$$9.9443$$

 $\sin$

$$9.9887$$

 $\tan S$

$$9.5595$$

 $\sec S$

$$0.0268$$

$$8.8239$$

 $\frac{1}{\sin}$

$$8.8239$$

 S'

$$0.6068$$

 h'

$$0.1919^m$$

 S

$$9.2572$$

 h

$$0.1465$$

$$+ 0.67$$

$$+ 0.18$$

$$+ 1.40$$

$$+ 2.25$$

 S'

$$+ 4.04$$

 S

$$- 1.56$$

 i

$$- 2.61$$

$$- 0.13$$

7627

Red. ad l. aph.

 δ $+19^{\circ} 56' 08''$ $H + \alpha$ $-6^{\circ} 52' 0 - 103^{\circ}$ H 22 46.5 $\cos \delta$ 99732 α 8 05.5 i 0.4431 β 20 00.9 (i) 0.4163 $\beta + \alpha$ 4 06.4 $61^{\circ} 36'$ $\cos \delta$ 9.5327 $\cos(H + \alpha)$ 9.6773 $\cos(H + \alpha)$ 9.3521 δ 0.9295 h 1.3071 $\sin$ 9.9443 $\sin$ 9.9887 $\cos \delta$ 9.5595 $\cos \delta$ 0.0268 8.8239 $\frac{1}{\sin}$ 8.8239 δ'
 δ 0.6068 L' 0.1919 9.2572 h 0.1465 $+ 0.67$ δ'
 δ
 i $+ 4.04$ $+ 0.18$ $- 1.56$ $+ 1.40$ $- 2.61$ $+ 2.25$ $- 0.13$

7627 Position from Kant Alu

Jan 8^d 0 5^m 52^s 22 + 19° 55' 10".9
 Motion in ^d -6.886 21.13
 " 2.715 - 18.70 + 57.4

Jan 10^d 715 8 05 33.52 + 19 56 08.3

Obs. 8 05 33.38 + 19 56 08.1

O-C - 0.14 - 0.2

Jan 12^d 0 5^m 24^s 58 + 19° 56' 35".7

Motion in ^d -6.946
 " -1.285 + 89.3 - 27.4

Jan 10^d 715 8 05 33.51 + 19 56 08.3

Obs 8 05 33.38 + 19 56 08.1

O-C - 0.13 - 0.2

7627

Position from Hunt Atlas.

Jan 8.0 $8^h 05^m 52.22$ $+19^\circ 58' 10.9$

Position - 6.886

21.13

- 2.715

-

187.0

+ 57.4

Jan 10.715

 $8^h 05^m 33.52$ $+19^\circ 56' 08.3$

Obs

 $8^h 05^m 33.38$ $+19^\circ 56' 08.1$

O-C

- 0.14

- 0.2

Jan 12.0

 $8^h 05^m 24.58$ $+19^\circ 56' 35.7$

Position - 1.285

- 1.285

-

+ 89.3

- 27.4

Jan 10.715

 $8^h 05^m 33.51$ $+19^\circ 56' 08.3$

Obs

 $8^h 05^m 33.38$ $+19^\circ 56' 08.1$

O-C

- 0.13

- 0.2

$$\begin{array}{r}
 16.4926 + 6075 + 2 \\
 15.9463 + 612 + 3 \\
 15.6757 - 2094 - 1 \\
 15.4259 - 4592 - 2 \\
 \hline
 \text{mean } 15.8851
 \end{array}$$

$$\begin{array}{r}
 16.0520 - 48 \\
 0557 - 11 \\
 0582 + 14 \\
 0615 + 47 \\
 \hline
 16.0568
 \end{array}$$

$$\begin{array}{r}
 28.5218 + 6036 - 37 \\
 27.9785 + 603 - 6 \\
 2) 27.7100 - 2082 + 11 \\
 27.4623 - 4559 + 31 \\
 \hline
 \text{mean } 27.9182
 \end{array}$$

$$\begin{array}{r}
 226609 + 29 \\
 6589 + 9 \\
 6555 - 25 \\
 6565 - 15 \\
 \hline
 226580
 \end{array}$$

$$\begin{array}{r}
 31.3474 + 6122 + 49 \\
 30.7962 + 610 + 1 \\
 3) 30.5246 - 2106 - 13 \\
 30.2725 - 4627 - 37 \\
 \hline
 30.7352
 \end{array}$$

$$\begin{array}{r}
 7.9016 + 52 \\
 7.8970 + 6 \\
 7.8938 - 26 \\
 7.8932 - 32 \\
 \hline
 7.8964
 \end{array}$$

$$\begin{array}{r}
 41.0695 + 6060 - 13 \\
 20.5247 + 612 + 3 \\
 20.2545 - 2090 + 3 \\
 20.0052 - 4583 + 7 \\
 \hline
 20.4635
 \end{array}$$

$$\begin{array}{r}
 15.2240 - 4 \\
 2259 + 15 \\
 2242 - 2 \\
 2236 - 8 \\
 \hline
 15.2244
 \end{array}$$

$$\begin{array}{r}
 \text{mean} + 6073 \\
 + 609 \\
 - 2093 \\
 - 4590
 \end{array}$$

7651 Neptune Plate Stars-Comparison 1915 Apr. 20

$\frac{1}{165}$	α	δ	α	δ	$\frac{1}{165}$	α	δ
161	1st image	3d image	1st image	3d image			
	19989	19390		11586			1275750
	1506758	16139145		1106467			49
	55	40		6667			12170
	79	70					
	<u>16.4926</u>	<u>15.6717</u>		<u>16.0520</u>			<u>.0582</u>
	2d image	4th image	2d image	4th image			
	1045350	19390		10620			1052019
	50	1363935		1006165			21
	9914	3635		6265			9905
		70					
	<u>15.9463</u>	<u>15.4259</u>		<u>16.0557</u>			<u>0615</u>
2	19000	18649		18170			19159
285	1377978	15757149		11550			1571018
226	70	5049		4949			40
	88	33		52			56
	<u>28.5218</u>	<u>27.7100</u>		<u>22.6609</u>			<u>22.6555</u>
	1300099	18649		19231			18145
	.0099	1326561		1263229			1467871
	12785	67		33			70
		33		11			98
	<u>27.9785</u>	<u>27.4623</u>		<u>22.6587</u>			<u>22.6565</u>
3							
314	19116	16635		19576			17313
79	15636	11869		1055155			1625150
	3231	7571		39			48
	89	18		60			07
	<u>31.3474</u>	<u>30.5246</u>		<u>7.9016</u>			<u>7.8938</u>
	20350	16636		18615			17290
	1236873	936051		961221			1622520
	69	5051		17			21
	27	26		84			90
	<u>30.7962</u>	<u>30.2725</u>		<u>7.8970</u>			<u>7.8932</u>

7651 Neptune plate Stone-Companion 1915 Apr 20

$\frac{1}{16}$	d	n	$\frac{1}{16}$	d	n
101	1st image	3d image	1st image	3d image	
	19989	19390	11586	1275750	
	1506158	1613945	1106467	44	
	55	40	6667	12170	
	79	70			
	<u>16.4926</u>	<u>15.6717</u>	<u>16.0520</u>	<u>0582</u>	
	2d image	4th image	2d image	4th image	
	1045350	19390	10620	1052019	
	50	1363935	1006165	21	
	9914	36	6265	9905	
		70			
	<u>15.9463</u>	<u>15.4259</u>	<u>16.0557</u>	<u>0615</u>	
2	19000	18649	18170	19159	
285	1377778	1575749	11550	1571014	
226	70	50	4949	40	
	88	33	52	56	
	<u>28.5218</u>	<u>27.7100</u>	<u>22.6609</u>	<u>22.6555</u>	
	1300099	18649	19231	18145	
	00	1326161	1263229	1467871	
	12785	67	33	70	
		33	11	93	
	<u>27.9785</u>	<u>27.4623</u>	<u>22.6587</u>	<u>22.6576</u>	
3					
51+	19116	16635	19576	17313	
79	15630	11869	1055155	1625150	
	3231	71	39	48	
	89	18	60	07	
	<u>31.3474</u>	<u>30.5246</u>	<u>7.9016</u>	<u>7.8938</u>	
	20350	16636	18615	17290	
	12368	9260	961221	1622520	
	6973	5057	17	21	
	27	26	84	90	
	<u>30.7962</u>	<u>30.2725</u>	<u>7.8970</u>	<u>7.8932</u>	

7651

x Neptune measures

1915 Apr. 20.

d

v

d

v

1st image

3rd image

1st image

3rd image

211 19330
 153 18638
 2934
 20

19044
 11580
 7680
 30

19256
 17016
 1310
 41

19076
 1130901
 01
 60

21.069520.254515.224015.2242

2d image

4th image

2d image

4th image

18458
 1320400
 01
 39

124117
 0912
 12359

19340
 1707872
 7872
 14

18046
 1027068
 66
 28

20.524720.005215.225915.2256

4th image partly covered by
 meridian line.

7651

x Neptune measures

1915Apr 20.

1st image	3d image	1st image	3d image
21119330	19044	19256	19076
15318638	11580	17016	11309
2934	7680	1310	01
20	30	41	60
<u>210695</u>	<u>202545</u>	<u>152240</u>	<u>151242</u>
2d image	4th image	2d image	4th image
18458	124117	19340	18046
1320400	0912	17078	1027068
01	12359	7872	66
39		14	28
<u>205247</u>	<u>200052</u>	<u>152259</u>	<u>152256</u>

4th image partly covered by
meridian line.

7651

$$\begin{array}{r}
 x \quad 15.8851 \quad 27.9182 \quad 30.7352 \\
 z \quad 14.4538 \quad 27.0928 \quad 30.0615 \\
 x-z \quad +14313 \quad +8254 \quad +6737
 \end{array}$$

 Neptune
 20.4635

$$\begin{array}{r}
 y \quad 16.0568 \quad 22.6580 \quad 7.8964 \quad 15.2244 \\
 \eta \quad 17.0602 \quad 24.0059 \quad 8.4994 \\
 y-\eta \quad -1.0034 \quad -1.3479 \quad -6.030
 \end{array}$$

$$\begin{array}{r}
 x-z \quad +1500x \quad -6.04 \quad +6.9x \quad -22270 \\
 +1.4313 +7943 = +22256 - 96 = +22160 +110 = +22270 \quad : 0 \\
 +8254 +13959 = +22213 -136 = +22077 +193 = +22270 \quad : 0 \\
 +6737 +15368 = +22105 - 47 = +22058 +212 = +22270 \quad : 0 \\
 204635 - 10232 \quad - 91 \quad +141 \quad = 19.2647
 \end{array}$$

$$\begin{array}{r}
 y-\eta \quad +1500y \quad +8.5x \quad +6.2y \quad +1772 \\
 -1.0034 +8028 = -2006 +135 = -1871 +100 = -1771 \quad : +6 \\
 -1.3479 +11329 = -2150 +238 = -1912 +140 = -1772 \quad : 0 \\
 -6.030 +3948 = -2082 +261 = -1821 +49 = -1772 \quad : 0 \\
 15.2244 +7612 \quad +174 \quad +94 \quad : 16.1596
 \end{array}$$

$$\bar{z} = -2.7353$$

$$\log \bar{z} = 0.43701 \sim$$

$$\cos S = 9.97311$$

$$8.50724$$

$$1.95666 \sim$$

$$x-A' = -1 \quad 30.50$$

$$A = 8 \quad 06 \quad 40$$

$$x_0 = 8 \quad 05 \quad 09.50$$

$$\text{Red} \quad + \quad 2.31$$

$$x = 8 \quad 05 \quad 11.81$$

$$\eta = -1.8104$$

$$\log \tan S = 9.5595$$

$$0.8740$$

$$7.0534$$

$$7.4869$$

$$\eta_1 = +31$$

$$\eta_0 = -1.8135$$

$$\log \eta_0 \quad 0.25852 \sim$$

$$7.33115$$

$$2.92737 \sim$$

$$S-D = -14 \quad 06.0$$

$$D = +20 \quad 11 \quad 20$$

$$S_0 = +19 \quad 57 \quad 14.0$$

$$\text{Red} \quad = \quad 0.4$$

$$S' = +19 \quad 57 \quad 13.6$$

7651

$$\begin{array}{rcl}
 x & 15.8851 & 27.9182 \quad 30.7352 \\
 z & 14.4538 & 27.0928 \quad 30.0611 \\
 2-z & +1.4313 & +8.254 \quad +4.737
 \end{array}$$

 height
 20.4635

$$\begin{array}{rcl}
 y & 16.0568 & 22.6580 \quad 7.8964 \\
 y & 17.0602 & 24.0059 \quad 8.4994 \\
 y-y & -1.0034 & -1.3479 \quad -6.030
 \end{array}$$

$$\begin{array}{rcl}
 x-z & +1.002 & -6.04 \quad +6.9x \quad -22270 \\
 +1.4313 & +7.943 & +22256-96 = +22160+110 = +22270 \quad 0 \\
 +8.254 & +13.959 & +22213-136 = +22077+193 = +22270 \quad 0 \\
 +6.737 & +15.368 & +22105-47 = +22058+212 = +22270 \quad 0 \\
 20.4635 & +10232 & -91 \quad +1+1 \quad -192647
 \end{array}$$

$$\begin{array}{rcl}
 y-m & +1.004 & +8.5x \quad +6.2y \quad +1.772 \\
 -1.0034 & +8.028 & -2006+135 = -1871+100 = -1771 \quad +1 \\
 -1.3479 & +11.229 & -2152+238 = -1912+140 = -1772 \quad 0 \\
 -6.030 & +3.948 & -2082+261 = -1821+49 = -1772 \quad 0 \\
 15.2244 & +7612 & +174 \quad +94 \quad = 16.1596
 \end{array}$$

$$\begin{array}{rcl}
 z & -2.7353 \\
 \log z & 0.43701 \\
 \cos z & 9.97311 \\
 & 8.50724 \\
 \hline
 & 1.95666
 \end{array}$$

$$x-A' = 1 \quad 30.50$$

$$A = 8 \quad 06 \quad 40$$

$$x_0 = 8 \quad 05 \quad 09.50$$

$$\text{Red} = 231$$

$$A = 8 \quad 05 \quad 11.81$$

$$\begin{array}{rcl}
 y & -1.8104 \\
 \log y & 5.95595 \\
 & 0.8740 \\
 & 7.0534 \\
 & 7.4869
 \end{array}$$

$$\begin{array}{rcl}
 y_1 & +31 \\
 y_0 & -1.8135 \\
 \log y_0 & 0.25852 \\
 & 7.33115 \\
 \hline
 & 6.92737
 \end{array}$$

$$S-D = 14 \quad 06.0$$

$$D = +20 \quad 11 \quad 20$$

$$S_0 = +19 \quad 57 \quad 14.0$$

$$\text{Red} = 04$$

$$S' = +19 \quad 57 \quad 13.6$$

$$\begin{array}{r}
 7 \quad 58 \quad 20.55 \\
 \underline{18.06} \\
 + 24.9
 \end{array}$$

$$\begin{array}{r}
 + 28 \quad 01 \quad 60.1 \\
 \underline{1 \quad 60.5} \\
 - 0.4
 \end{array}$$

$$\begin{array}{r}
 8 \quad 07 \quad 2262 \\
 \underline{20 \quad 35} \\
 + 225
 \end{array}$$

$$\begin{array}{r}
 + 17 \quad 54 \quad 17.9 \\
 \underline{18.2} \\
 - 0.3
 \end{array}$$

7651 Red. ad l. app.

$$S + 19^{\circ} 57' 14''$$

$$H+x \quad 6^h \quad 40.2 = 100^{\circ} 03'$$

$$N \quad 22 \quad 35.0$$

$$x \quad 8 \quad 05.2$$

$$g \quad 20 \quad 09.6$$

$$g+x \quad 4 \quad 14.8 = 63^{\circ} 42'$$

$$l \cos S \quad 99.731$$

$$i \quad 0.5022$$

$$(i) \quad 0.4753$$

$$l \cos(g+x) \quad 9.6465$$

$$g \quad 9.9370$$

$$- \sin \quad 9.9525$$

$$\tan S \quad 9.5600$$

$$8.8239$$

$$g' \quad 0.5835$$

$$8 \quad 9.2734$$

$$b \quad +0.71$$

$$g \quad +0.19$$

$$l \quad +1.41$$

$$+2.31$$

$$l \sin S \quad 9.5331$$

$$\cos(H+x) \quad 9.2418$$

$$h \quad 1.3058$$

$$\sin \quad 9.9933$$

$$\sec S \quad 0.0269$$

$$h' \quad 8.8239$$

$$h' \quad 0.0807$$

$$h \quad 0.1499$$

$$g' \quad +3.83$$

$$h' \quad -1.20$$

$$l \quad -2.99$$

$$-0.36$$

7651 Red. ad l app.

S + 19° 57' 14"

H+x 6 40.2 - 700° 03'

H 22 35.0

x 8 05.2

H 20 09.6

H+x 4 14.8 - 63° 42'

$$\begin{array}{r} \text{L cos S} \\ \text{L} \\ \hline \text{(L)} \end{array} \begin{array}{r} 99731 \\ 05022 \\ \hline 0.4753 \end{array}$$

L cos (S+x) 96465

S 99370

L sin 99525

L sin S 95600

88239

S' 05835

S 92734

S +0.71

S +0.19

L +1+1

+231

L sin S 995331

L cos (H+x) 92518

L 12058

S 99933

L cos S 00269

L 88239

L' 00807

L 01499

S' +3.83

L' -120

L -299

-036

7651

Position from Kent Allen.

Jan 12.0^d 8 05 24.58 +19 56 35.7

motion in d = 6.981

21.41

1.810 - 12.64 + 38.8

Jan 13.810 8 05 11.94 +19 57 14.5

Obs 8 05 11.81 +19 57 13.6

O-C = - 0.13 - 0.9

7651

Position from Hunt Allen

Jan 12.0	8	05	2458	+19	56"	35.7
with	6981			21.41		
1.810		-	12.64		+	38.8

Jan 13.810	8	05	11.94	7	19	57	14.5
Obs	8	05	11.81	-	19	57	13.6
0-0:		-	0.13		-		0.9

