

KG

11365
285

N 2.

Observations with
East Equatorial.
(Original.)

No 2.

1866 July 9 to July 22

1966phae.proj.28

KG 11365.285

July 9. J.W. Observer

Measurement by rectangular coordinates, x being positive on the following side. -

Titan. -

M. Time.

$$x(RA) = 62^{\circ}.60$$

8.15

$$47^{\circ}.26.$$

$$x(RA) = +15.34 \text{ (seeing bad.)}$$

$$43^{\circ}.05$$

$$43^{\circ}.31$$

$$41.31$$

$$41.59$$

Equatorial Diam. 1.74

Eg. Diam 1.72

Wires not illuminated.

$$48^{\circ}.43$$

$$46.72$$

Eg. Diam.?

$$1.71$$

Wires Illuminated

$$\text{Titan. } 62^{\circ}.73$$

M.S. 8.26.

$$47.60$$

$$x(RA) = 15.13$$

KG 11365.285



July 9. 66.
Titan

M. Tine

$$\begin{array}{r} 62.98 \\ 47.58 \\ \hline x = +15.40 \end{array}$$

8.30

$$\begin{array}{r} 63.37 \\ 47.77 \\ \hline x = +15.60 \end{array}$$

8.33

$$\begin{array}{r} 43.51 \\ 40.66 \\ \hline y = +2.85 \end{array}$$

8.36

$$\begin{array}{r} 43.72 \\ 40.66 \\ \hline y = +3.06 \end{array} \left. \vphantom{\begin{array}{r} 43.72 \\ 40.66 \\ \hline y = +3.06 \end{array}} \right\} \text{rejected}$$

8.37

$$\begin{array}{r} 43.63 \\ 40.74 \\ \hline y = +2.89 \end{array}$$

8.40

July. 9. 66. S.P.H.

Titan.

$$\begin{array}{r} 63.83 \\ 48.42 \\ \hline x = 15.41 \end{array}$$

$$\begin{array}{r} 63.96 \\ 48.83 \\ \hline x = 15.13 \end{array}$$

$$\begin{array}{r} 64.48 \\ 49.24 \\ \hline x = 15.24 \end{array}$$

Seeing quite bad.

M.S. -

8.45

8.48.

8.51

July 10.th JW continued Object - Saturnⁿ System.

Rhea

Mean time

58.38.

50.90

$x = + 7.48$ No illumⁿ.

8.04

58.38.

50.73

$x = + 7.65$ " "

8.06

58.35.

50.83

$x = + 7.52$ " "

8.08.

49.42.

48.90

$y = - 0.52$ " "

8.10

Thomas. Jethys.

53.33.

49.14

$x = - 04.19$ " "

8.14

July 10 J.W. (Wires ill)
Tethys.

M.Y.

M.Y.

$$\begin{array}{r} 53.55 \\ 49.41 \\ \hline x = -4.14 \end{array}$$

$$\begin{array}{r} L \\ 8.22 \end{array}$$

$$\begin{array}{r} 53.49 \\ 49.35 \\ \hline x = -4.14 \end{array}$$

$$8.23$$

$$\begin{array}{r} 53.73 \\ 49.50 \\ \hline x = -4.23 \end{array}$$

$$8.24$$

$$\begin{array}{r} 53.99 \\ 49.92 \\ \hline x = -4.07 \end{array}$$

$$8.25$$

$$\begin{array}{r} 49.85 \\ 49.35 \\ \hline y = -0.50 \end{array}$$

$$8.28$$

$$\begin{array}{r} 50.12 \\ 49.44 \\ \hline y = -0.68 \end{array}$$

$$8.29$$

$$\begin{array}{r} 50.00 \\ 49.47 \\ \hline y = -0.53 \end{array} \quad 8.30$$

$$\begin{array}{r} 50.11 \\ 49.59 \\ \hline y = -0.52 \end{array} \quad 8.31$$

July 10. ^h S.P.L.

Dione

MS

MS

54.64

49.40

$$x = -5.24 \quad 8.38.$$

54.72

49.54

$$x = -5.18 \quad 8.40$$

54.90

49.53

$$x = -5.37 \quad 8.42$$

55.05

49.99

$$x = -5.06 \quad 8.45$$

50.09

49.48

$$y = +0.61 \quad 8.50$$

50.07

49.37

$$y = +0.70 \quad 8.54$$

Rhea.

50.28

50.60

$$y = -0.32 \quad 8.57$$

50.38

50.73

$$y = -0.35 \quad 9.00$$

Seeing poor.

July 10. S.P.L.

Saturn. Polar. Diam.

51.55

49.59

1.96 (poor)

45.42

47.15

1.73 (worse)

planted too. unsteady for measurement.
 Cor. to watch + 0^m.5

for adjusted

Σ .2076 [207° 4
 203 45
 205 15]
 G.M.S. focus
 poor on positions

55.82

54.93

0.89

56.02

55.01

1.01

S.P.L.

212.32

55.40

208.52

56.41 1.01

208 24

55.06

56.18 1.12

J.W.

209° 30'

208° 0'

209° 50'

~~not worth mentioning~~

2096 19 Ophiuchi

f w

263 55

263 20

Dist.

56.70

56.425

56.52

54.34

54.285

54.32

2.36

2.14

2.20

~~2114 P XVI 270~~

f w

196.

~~5.52~~

.93

61 Ophiuchi
f w

261° 15'

261° 14'

48.20

48.14

48.27

50.55

50.67

50.38

2.35

2.53

2.11

50.37

better than any

50.36

48.23

48.12

2.14

2.24

better

24
354
—
330

2272

70 ophiuchi

SP L

74° 7'

74 17'

dist.

49.38

49.35

48.75

48.76

0.63

0.59

2396

232 32

43.38

43.30

gms

232 52

45.04

45.06

1.66

1.76

23 Aquilae

343 34

43.74

43.72

gms

345 15

44.05

44.00

0.31

very poor

250 Aquilae

303 45

65.06

65.12

65.88

g w.

300 15

64.14

64.26

64.95

better than
either

299 15

0.92

~~0.92~~

0.93

300 15

0.86

δ Equulei

328 15
~~298 15~~

57.61

58.77

58.84

g w

327 30

62.20

62.34

62.37

328 30

4.59

3.57

3.53

58.61 ?

20 Pegasi too close

Σ 2833

fw

16 45

17 17

17 20

65.41

64.25

1.16

65.20

64.25

0.95

65.23

64.25

0.98

α^2 Capricorn

companion 150° N to E estimated. but not ^{well} seen

Therm. Ext 61.0

Int. 67.0

Corr. to watch $+0^m 5$

July 11 Wednesday

$9^h 10^m$ α Leonis ~~small~~ companion about 200° from the apparent zenith, to the left.

f w obs.

Jupiter

~~Obs on Saturn~~

$$8^h 45^m \pm 5^m \quad y =$$

$$\begin{array}{r} 42.82 \\ 51.40 \\ \hline 9.58 \end{array}$$

$$42.00$$

$$42.07$$

$$42.10$$

$$42.06$$

$$51.40$$

$$8.34$$

(Prob. error of 5 rev.)

$$8^h 50^m \pm 5^m \quad x =$$

$$\begin{array}{r} 55.69 \\ 54.81 \\ \hline 0.88 \end{array}$$

$$\begin{array}{r} 55.68 \\ 54.78 \\ \hline 0.90 \end{array}$$

9 m s

 x
 $+$

$$\begin{array}{r} 60.07 \\ 58.66 \\ \hline 1.41 \end{array}$$

$$\begin{array}{r} 60.39 \\ 58.93 \\ \hline 1.46 \end{array}$$

$$\begin{array}{r} 60.59 \\ 59.11 \\ \hline 1.48 \end{array}$$

$$8^h 50^m$$

$$8^h 52^m$$

$$8^h 55^m$$

9 m s

 y
 $+$

$$9^h 2^m$$

$$\begin{array}{r} 64.57 \\ 78.95 \\ \hline 14.38 \end{array}$$

$$\begin{array}{r} 9^h 8^m \\ 64.83 \\ 79.26 \\ \hline 14.43 \end{array}$$

Reading of zero point $264^{\circ} 8'$

$$\begin{array}{r} \text{Titan } y \\ + \\ \hline 73.86 \\ 79.24 \end{array}$$

9 ^h 19 ^m

$$\begin{array}{r} 74.00 \\ 79.42 \\ \hline \end{array}$$

9 14

$$\begin{array}{r} x \\ + \\ \hline 53.03 \\ 49.17 \end{array}$$

9 17

All
Obsns of x tonight
doubtful on
account of wind.

$$\begin{array}{r} 53.27 \\ 49.19 \\ \hline \end{array}$$

9 19

~~Obs~~ from Titan
Dime
 x

$$51.25$$

9 21

$$53.29$$

—

$$51.26$$

9 23

$$53.41$$

Dione from Titan

51.28

9 25

y

44.28

—

51.17

9 27

44.27

Tethys from Titan

48.83

9 29

y

44.25

—

49.00

9 31

44.50

x

o

53.57

9 33

—

54.37

53.65

9 35

54.44

Rhea from Titan 53.21
 9 36
 π 54.41

53.01
 54.42 37

53.18
 54.49 38

y 48.02
 44.86 40

47.94
 44.82 41

Reading for y 264 8
 π 174 5

Obsns on Saturn system with power no. 1.

Obsns on mer. star for zero point
 J W. Obs. 84 25

Σ 2076

27° 35'
 27 15

~~20~~

Power no 1

Dist 53.92

53.81

52.91

52.85

1.01

0.96

Power no 3.

19 Ophiuchi

~~82 45~~

82 45

81 45

81 50

82 35

Dist.

45.36

45.51

47.68

47.77

2.32

2.26

61 Ophiuchi

49.68

49.77

260 20

47.64

47.75

279 15

79 45

70 Ophiuchi

49.49

49.43

Therm 76

73 4

48.87

48.74

73 15

0.62

0.69

Σ 2396	51° 30'	47.71	47.88	46.98
Therm 78	51 30	45.88	45.89	Therm 78 45.23
		<u>1.83</u>	<u>1.99</u>	<u>1.75</u>
46.78	46.83			
45.22	45.09			

5 MS Ob				
~~23~~ Aquilae	248 39	45.50	45.79	45.56
Σ 2346	249 30	43.68	43.92	43.66
(compar. red largest on white g w)	249 53	<u>1.82</u>	<u>1.87</u>	<u>1.90</u>

23 Aquilae g w
~~168 15~~
 comp. too faint to observe.

250 Aquilae	9 MS			
303 2	56.89	56.65	56.87	Last two 56.87
301 44	57.75	57.78	57.91	the best 57.92
302 20	<u>0.86</u>	<u>1.13</u>	<u>1.04</u>	<u>1.05</u>

α^2 Capricorni	g w	53.89
200 20		52.99
199 30		
399 50	199.55	1.90

Gi

components of companion
Jw 293 45

~~Set~~

Companion

G.M.S.

201.43
200.33
2/ 402 76
200.08

Distance

49.84
50.69
0.85

49.77
50.70
0.93

49.69
50.63
0.94

Jupiter. Jw Obs.

Equatorial diam

53.75 53.56
58.94 58.67
5.19 5.11

Polar diam.

50.83 50.85
45.88 45.95
4.95 4.90

8 Equulei

Therm 76 $[325^{\circ} 15']$ reg.

better meas. $329^{\circ} 30'$
 $329 \ 15$
 $329 \ 0$

Dist

44.78	44.73
<u>41.25</u>	<u>41.21</u>
3.53	3.52

Σ 2833 9 M S

195 15	38.38	38.36	38.33
196 36	39.33	39.35	39.31
196 34			

12 Aquarii 8 W

349 5	29.49	29.50
346 30	<u>29.93</u>	<u>29.95</u>
346 20	0.44	0.45

9 M S

162 22	39.19	39.26
159 30	<u>39.49</u>	<u>39.61</u>
159 0	0.30	0.35
161 55		

Σ 2253

f u

Therm. 75°

277° 3'

51.94

50.56

272 30

53.4949.12

better

274 4

1.551.44

SMS

92 58

53.89

53.59

94 13

52.1251.94

94 30

1.771.65Corr. to Watch $-2^m.4$

Thursday July 12 1866

Equatorial diameter of Saturn i.e diameter perpendicular
to the circle of declination

58.98	55.16	55.40
57.12	53.34	53.52
<u>1.86</u>	<u>1.82</u>	<u>1.88</u>

Polar diameter

56.44	56.55	56.58
54.64	54.78	54.82
<u>1.80</u>	<u>1.77</u>	<u>1.76</u>

The above observations were made by twilight
the last at 8 o'clock M. S. P. M. the seeing
was good. The dusky ring well seen. My first
impression was that it was less distinct and
narrower on the preceding ans. but a closer
examination did not confirm this impression
w. watch
8^h 9^m

Enceladus

y

56.11
55.24
<u>87</u>

5

x

59.10
56.35
<u>2.75</u>

8.12

x = + 2.75

JW

Planet unsteady & object faint
Encl adms (Sol's watch)

$$\begin{array}{r} 56.95 \\ 54.34 \\ \hline \end{array}$$

8.25

$$x = + 2.61$$

Jethys

$$\begin{array}{r} 54.62 \\ 51.45 \\ \hline \end{array}$$

8.27

$$x = - 3.17$$

$$\begin{array}{r} 54.75 \\ 51.61 \\ \hline .86 \end{array}$$

8.29

$$x = - 3.14$$

$$57.55$$

8.31

$$56.74$$

$$y = - .81$$

8.32

$$57.54$$

$$56.71$$

$$y = - .83$$

Dione

55.14.

56.70

8.33

$$y = + 1.56 \quad 1.56$$

55.33

56.78

8.34

$$y = + 1.45 \quad 1.45$$

55.40

57.00

8.36

$$y = + 1.60 \quad 1.60$$

55.44

57.10

8.37

$$y = + 1.66 \quad \frac{1.66}{6.27}$$

mean 1.57

58.38

55.78

8.40

$$x = + 2.60$$

58.47

55.77

$$x = + 2.70$$

58.58

56.05

$$x = + 2.53$$

$$\left\{ \begin{array}{r} 58.85 \\ 56.10 \\ \hline 2.75 \end{array} \right\} \begin{array}{l} 5. \\ 8.44 \end{array}$$

8.41

8.42

JW

Tapetus

~~54.31~~~~56.31~~ ~~$x = -2.00$~~

53.06

56.43 $x = -3.37$

53.23

56.51 $x = -3.28$

53.45

56.58 $x = -3.13$

53.48

56.62 $x = -3.14$ ^h
8.45

8.46

8.47

8.49

8.50

J.W.

Tapetus

~~44.12~~

h. m
8.52

~~47.12~~

~~y = + 3.00~~

44.16

8.53

57.66

y = + 13.50

44.18

8.55

57.60

y = + 13.42

Thursday July 12th 66. - J.R.H.

Rhea

$45.63.$	$9^h.06^m$	55.02	9.20
<u>38.76</u>		<u>53.74</u>	
$x = -6.87$		$y = +1.28$	

45.60	9.09	55.25	9.23
<u>39.04</u>		<u>53.96</u>	
$x = -6.56$		$y = +1.29$	

45.84	9.12	55.29	9.26
<u>39.03</u>		<u>54.13</u>	
$x = -6.81$		$y = +1.16$	

46.19	9.15		
<u>39.52</u>			
$x = -6.67$			

SRL

Titan. $55^{\circ}.17$ $9^h.30$ 45.60 9.44 55.34 48.57 $y = +05^{\circ}.47$ $x = -2.91$ $9.36.$ 48.85 9.46 55.87 $46.$ 50.31 $x = -2.85.$ $y = +5.56$ 56.10 9.39 $50.61.$ $y = +5.49$

ϕ w. obs.	λ Ophiuchi	Power no 3.	
Pos 156° 30'	48.92	48.97	49.04
156 45	48.63	48.76	48.87
158 20	0.29	0.21	0.17
158 0			
<u>158 20</u>			

GMS	48.81	49.56
148 33	48.60	49.37
146 24	0.21	
147 53		

ϕ w 156° 5'

Compromised

GMS 150 0 | ϕ w 153 20
152 45

Σ 2173

Power no 3.

GMS

240	49.55	49.57
234	49.39	49.39
233	0.16	0.18
232 $\frac{1}{2}$		
	49.56	
	49.41	
	0.15	

GMS Σ 2234

154 35	57.01	57.15
153 56	58.71	58.80

JW τ Ophiuchus

310

107 45
284 20
283 40
285 50

GMS	287 6	59.23	59.19	59.25
	291 52	59.38	59.38	59.39
	287 30			

JW Jupiter

Equal. diam.

57.45
62.62
5.17

~~50.86~~
~~55.78~~

~~Therm~~ 74°

Ext. 70°
In alcove of dome
78°

July. 14. ^h JW

Regulus near horizon—apparently
elongation, Position 153° .

Observations of Saturnian System

J.W.
M.T.

Tapetus (?)

$$\begin{array}{r} 8.31 \quad 95.24 \\ \quad 83.77 \\ \hline x = -11.47 \end{array}$$

$$\begin{array}{r} 8.42 \quad 41.88 \\ \quad 53.26 \\ \hline y = +10.38 \end{array}$$

$$\begin{array}{r} 8.34 \quad 80.70 \\ \quad 69.00 \\ \hline x = -11.70 \end{array}$$

$$\begin{array}{r} \quad 41.75 \\ \quad 53.01 \\ \hline 8.44 \quad y = +11.26 \end{array}$$

$$\begin{array}{r} 8.37 \quad 80.56 \\ \quad 69.26 \\ \hline x = -11.30 \end{array}$$

$$\begin{array}{r} 8.39 \quad 80.63 \\ \quad 69.27 \\ \hline x = -11.36 \end{array}$$

July 14th SPL

Titan

M.Y.

$$\begin{array}{r} 8.52 \quad 45.60 \\ \quad 60.05 \\ \hline x = -14.45 \end{array}$$

$$\begin{array}{r} 9.3 \quad 50.20 \\ \quad 53.97 \\ \hline y = +3.77 \end{array}$$

$$\begin{array}{r} 8.56 \quad 45.62 \\ \quad 60.15 \\ \hline x = -14.53 \end{array}$$

$$\begin{array}{r} 9.6 \quad 50.45 \\ \quad 54.15 \\ \hline y = +3.70 \end{array}$$

$$\begin{array}{r} 8.58 \quad 45.72 \\ \quad 60.46 \\ \hline x = -14.74 \end{array}$$

$$\begin{array}{r} 9.8 \quad 50.52 \\ \quad 54.12 \\ \hline y = +3.60 \end{array}$$

~~~~~  
Seeing poor

51  $\frac{3}{4}$  Librae J w. obs.

~~A B too close~~

A B too close to be measured. definition

being bad.

~~Power~~

~~Power~~

$$\frac{A+B}{2} \cdot C$$

| Position |         | <del>Power no 4</del> | Dist. Power no 3. |       |
|----------|---------|-----------------------|-------------------|-------|
| Power    | 102° 0' | 60.10                 | 60.27             | 60.34 |
| no       | 102 50  | 59.40                 | 59.59             | 59.59 |
| 4        | 102 30  | 0.70                  | 0.68              | 0.75  |
| Power    | 103 50  | 60.55                 | <del>61.65</del>  |       |
| no       | 103 30  | 59.92                 | <del>60.21</del>  |       |
| 3        | 103 50  | 0.63                  | <del>0.81</del>   |       |

$\Sigma$  1999

| Position |       | GMS   |       |
|----------|-------|-------|-------|
| 74 5     | 73 20 | 58.30 | 57.54 |
| 73 15    | 72 10 | 57.19 | 58.63 |
| 74 5     | 73 20 |       |       |
| 73 30    | 72 33 | 58.68 | 57.63 |
|          |       | 57.54 | 58.74 |

49 Serpentes 9 M S

|     |    |       |       |       |
|-----|----|-------|-------|-------|
| 209 | 2  | 61.53 | 61.90 | 61.51 |
| 207 | 30 | 61.92 | 61.55 | 61.86 |
| 210 | 23 |       |       |       |
| 210 | 19 |       |       |       |
| 208 | 19 |       |       |       |

Configuration of *Nemaisa*.

a. b. c. 1h 30m

c follows - A  $63.5^S$   $61.52$

49.23

$$A =$$

$\Delta S$  b & c. 12.29

68.00

$\Delta\delta$  a 2 c  $\overline{18.77}$

69.82

66.13

$$2.\overset{5}{\underset{4}{3}} \times \overset{5}{\underset{4}{11}} = \overset{5}{\underset{4}{169}} = 41^{11}$$
 $\Delta \alpha$  a and b

3769

$$12\frac{5}{2} \text{ } 50 = 18 \text{ } 7.5$$
 $\Delta \alpha$  b and c

49.08

17.95

2<sup>h</sup> 0<sup>m</sup> 6 = Nemausa.

68

f w obs.

~~20<sup>h</sup> 27<sup>m</sup> 55 sid. t. 68.42~~

~~56~~

~~49.87~~

29 30

47.56

Nemausa from a

21 30 0

49.56

x

47.50

2.56

31 40

49.91

47.86

2.05

33 10

50.21

48.09

2.12

y

21 34 10

54.44

47.81

6.63

35 45

54.55

47.61

37 24

54.61

47.59

21 38 55

y.

5?

34.4147.85

6.56

Correction  
to chron.- 28<sup>s</sup>

810 0

54 70

~~49.85~~47.76

6.94

21 42 50

x

~~51.54~~~~49.04~~2.50

44 40

51.65

50.49

1.16

Swept for De Vico's comet within the limits  
of  $\alpha$  laid down in the ephemer. and from  $+12^\circ$   
to  $+13^\circ 30'$  of  $\delta$ . Sky toward the last light from  
dawn, and hazy. Power no 1. Field about  $12'$   
in diam. Breadth of each sweep nearly a field.



July 15 Sunday

9 M S Obs.

|      | <i>Japetus</i><br>8 <sup>h</sup> 25 <sup>m</sup> | 27 <sup>m</sup> | 38 <sup>m</sup><br>Good | 31 <sup>m</sup> |
|------|--------------------------------------------------|-----------------|-------------------------|-----------------|
| 20 — | 44.98                                            | 44.49           | 44.86                   | 45.24           |
|      | 59.76                                            | 59.66           | 59.71                   | 60.57           |
|      | 14.78                                            | 15.17           | 14.85                   | 15.33           |

Obsns of  $x$  bad on account of wind.

|       |       |                                |                   |
|-------|-------|--------------------------------|-------------------|
| $y +$ | 48.89 | 8 <sup>h</sup> 36 <sup>m</sup> |                   |
|       | 58.95 |                                |                   |
|       | 10.06 |                                |                   |
|       | 48.82 | 8 38                           | Reading of circle |
|       | 59.09 |                                |                   |
|       | 10.27 |                                |                   |
|       | 48.93 | 8 40                           | 264° 8'           |
|       | 59.06 |                                | 84° 6'            |
|       | 10.13 |                                |                   |

|       |              |      |
|-------|--------------|------|
|       | <i>Titan</i> |      |
| $y +$ | 57.51        | 8 42 |
|       | 59.20        |      |
|       | 45.05        | 8 44 |
|       | 46.62        |      |
|       | 45.20        | 8 46 |
|       | 46.90        |      |



## Titan

dc — 45.46 8 49  
 62.89  
 45.69 8 51  
 63.21  
 45.90 8 53  
 63.53

Reading of circle 174 8  
 354 2

| Nemansu                 |                                |      |  | True readings |
|-------------------------|--------------------------------|------|--|---------------|
| Weisse XVIII 1123       | No. in centre of field in dec. |      |  | 352 51.3      |
| Readings of dec. circle | 352 54.0                       | I    |  | 172 51.3      |
|                         | 172 54.5                       | III. |  |               |

| Transit                 |    |    |      | Chron. Time       |
|-------------------------|----|----|------|-------------------|
| 2                       | 17 | 51 | 31.8 | Corr. to Chron    |
| Readings of hour circle | 23 | 9  | 54   | - 32 <sup>s</sup> |
|                         | 11 | 9  | 50   |                   |

|                        |       |            |             |
|------------------------|-------|------------|-------------|
| 1. Transit.            | 39.28 |            |             |
| of Weisse XVIII, 1123. | 51.90 |            |             |
| & Nemansu              | 12.62 |            |             |
| Clock Time             |       | 17 55 54.6 | Nem. 56 0.0 |
|                        |       |            | 5.4         |

XVIII

W 1123

 $\alpha$  $\delta$ 

.1825.0

18 42 41.77

-7 11 32.3

Prec. ~~+20.5 sec. mer.~~~~3.17~~

+ 41 prec.

+ 2 2.12.70

+2 36.0

18 44 54.47

-7 8 56.3

Log a 0.5100 b 7.2116 n c 8.1166 d 8.8189 n

a' 0.5916 b' 9.9916 c' 9.4890 d' 8.3843 n

A 9.7743 B 0.9834 C 0.8719 D 1.2733 n

0.2843 8.1950 n 8.9885 0.0922

0.3658 0.9750 0.3609 9.6577

+ 3.243 + 1.925 - 0.016 + 0.097 + 1.237

+ 14.51 + 2.32 + 9.44 + 2.30 + 0.45

prec. 1866. + 3<sup>s</sup>.236 + 3".90

1845.5 + 3.2365 + 3.805

0.51008 0.5803

2.12286 2.1931

prec 41y 132<sup>s</sup>.70 + 156".0

1866.0 18 44 54.47

-7 8 56.3

July 15.5 18 44 57.71

-7 8 41.8

Wash D. C. M. J.

## II Transit.

39.22

5<sup>s</sup>.3

17 58 22.6

51.93

27.9

12.71

## III Transit.

39.35

5<sup>s</sup>.1

18 0 16.3

52.10

21.4

12.75

## IV Transit.

39.19

5<sup>s</sup>.3

2 42.0

52.17

47.3

12.98

## V Transit.

39.17

5<sup>s</sup>.3

4 32.4

52.11

37.7

12.94

## VI Transit.

39.27

5<sup>s</sup>.1

6 26.9

52.23

32.0

12.96

## VII Transit

Mean  $\Delta\delta$ 5<sup>s</sup>.2

8

18.0

23.2

Stemanswis. s.f. Weiss?

12.83

Mean  $\Delta\alpha$ 5<sup>s</sup>.24

Reading of Circle

174° 7'

wires on mer.

~~wires house~~

264 13

" " par.

Clock Time

Planet - Star

No. of comp

18<sup>h</sup> 2<sup>m</sup> 27<sup>s</sup> $\Delta\alpha$  $\Delta\delta$ + 5<sup>s</sup>.24- 12<sup>s</sup>.83

6

Corr. to Clock - 8<sup>s</sup>

# Transits

W. XVIII 1123

a

c

|    |    |      |    |      |    |      |
|----|----|------|----|------|----|------|
| 18 | 12 | 0.6  | 12 | 49.9 | 13 | 3.8  |
|    | 13 | 31.1 | 14 | 20.0 | 14 | 34.0 |
|    | 15 | 21.9 | 16 | 10.7 | 16 | 24.7 |
|    | 16 | 50.1 | 17 | 39.0 | 17 | 53.0 |
|    | 18 | 12.9 | 19 | 1.8  | 19 | 15.7 |

$\Delta \alpha$

a - W

c - W

+ 49<sup>s</sup>.3

+ 63.2

48.9

62.9

48.8

62.8

48.9

62.9

+ 48.9

+ 62.8

+ 48.96

+ 62.92

$\Delta \delta$

+ 17<sup>r</sup>.62

- 1.44

17.71

1.44

17.75

1.48

17.64

1.53

+ 17.58

- 1.52

+ 17<sup>r</sup>.66

- 1<sup>r</sup>.48

XVIII 1123

Weisse, and a c of last night.

Transits.

2<sup>d</sup> transit of weisse poorReading of circle  $174^{\circ} 8'$ meteor passing from N to S at a  
rate about  $1\frac{1}{2}$  times the diurnal motion. $\Delta 8$ 

Reading 264 12

Fixed wire set on Weiss XVIII 1123

|                         |   |       |   |       |
|-------------------------|---|-------|---|-------|
|                         | a | 69.98 | a | 70.20 |
|                         | c | 50.92 | c | 51.03 |
|                         |   | 52.36 |   | 52.56 |
| a is N                  |   |       |   |       |
| c S of Weiss XVIII 1123 | a | 70.10 | a | 70.22 |
| Order in $\alpha$       | c | 50.95 | c | 51.12 |
| Weisse, a; c.           |   | 52.39 |   | 52.64 |

stars run well  
along wires.

|   |       |
|---|-------|
| a | 70.20 |
| c | 50.97 |
|   | 52.45 |

Approx. mean  
time of comp.  
 $10^h 50^m$ .

Reading 264 12

Bar. at  $12^h$  29.990 Alt. Therm 81.5?



Line Cluster 18<sup>h</sup> 39<sup>m</sup> - 6° 20'.

ε Equulei J w Obs.

~~100° 20'~~  $\frac{A+B}{2}$  . C

100° 20'  
99 55  
100 29

|       |       |       |
|-------|-------|-------|
| 52.58 | 52.50 | 52.00 |
| 51.44 | 51.29 | 50.99 |
| 1.14  | 1.31  | 1.01  |

GMS

98 6  
96 13  
98 0 good.

|       |       |       |
|-------|-------|-------|
| 50.85 | 50.78 | 50.60 |
| 52.02 | 51.86 | 51.72 |
| 1.17  | 1.08  | 1.12  |

A B

GMS 62°  
65°

|       |       |       |
|-------|-------|-------|
| 53.30 | 53.30 | 53.31 |
| 53.19 | 53.14 | 53.16 |

J w 248°  
249°5'

|      |      |      |
|------|------|------|
| 0.11 | 0.16 | 0.15 |
|------|------|------|



# 20 Pegasi J W

J W      38° 2'      51.76      775  
              36 0               54        54

GMS      38 56      51.91      85      85  
              40 0      51.70      71      69  
              41 25  
              38 43

Sweep for De Vico's comet.

Double stars found in sweep 828  
              2<sup>h</sup> 54<sup>m</sup>      +14° 25'      dist 1"  
              2 51      14 35      989 dist 2"

Bar. at 15 1/4 W      29.980  
              Att. Therm      79.5  
              No 4      78.0



July 16

Corr. to Chronometer 236 at 8<sup>h</sup> - 32<sup>s</sup>Rate, 2<sup>s</sup> a day, gaining.

Comp. of Nemausa. with Weisse XVIII 1123

Readings 174 15 G M S Obs.  
264 12

I Transit 10.52  
51.80 41.28

II & III ~~Transit~~ IV V VI  
10.92  
52.66 41.74

VII Transit.

VIII Transit 30.69  
72.61 41.92

Nemausa's sp. W XVIII 1123. 30.74  
72.59 41.85

IX Transit 30.61  
72.68 42.07

last transit ~~observed~~ very bad on account of clouds.

|    |        |    |                     |    |        |    |                     |
|----|--------|----|---------------------|----|--------|----|---------------------|
| a  | 0.5101 | b  | 7.2116 <sub>n</sub> | c  | 8.1166 | d  | 8.8189 <sub>n</sub> |
| a' | 0.5916 | b' | 9.9916              | c' | 9.4891 | d' | 8.3843 <sub>n</sub> |

---

|                   |        |        |        |                     |
|-------------------|--------|--------|--------|---------------------|
| July 16.5<br>Wash | 9.7764 | 0.9828 | 0.8882 | 1.2701 <sub>n</sub> |
|-------------------|--------|--------|--------|---------------------|

---

|  |        |                     |        |        |
|--|--------|---------------------|--------|--------|
|  | 0.2865 | 8.1944 <sub>n</sub> | 9.0048 | 0.0890 |
|--|--------|---------------------|--------|--------|

|  |        |        |        |        |
|--|--------|--------|--------|--------|
|  | 0.3680 | 0.9744 | 0.3773 | 9.6544 |
|--|--------|--------|--------|--------|

|        |        |        |        |        |
|--------|--------|--------|--------|--------|
| +3.246 | +1.934 | -0.016 | +0.101 | +1.227 |
|--------|--------|--------|--------|--------|

|        |        |       |       |       |
|--------|--------|-------|-------|-------|
| +14.59 | +2.330 | +9.43 | +2.38 | +0.45 |
|--------|--------|-------|-------|-------|

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W XVIII 1123

Apparent

July 16.5  
Wash. M.T.

18<sup>h</sup> 44<sup>m</sup> 57.72<sup>s</sup>

-7° 8' 41.7"

Wires set to middle of field.

At 11<sup>h</sup> 45<sup>m</sup> Bar. 30.076  
 Att. Ther. 73  
 No 4 67.0

|                          |    |      |      |                    |                        |
|--------------------------|----|------|------|--------------------|------------------------|
| Transit I                | 18 | 17   | 42.8 |                    | $\Delta\alpha$         |
|                          |    | 18   | 30.9 |                    | 48.1                   |
| II                       |    | 23   | 38.5 |                    | 48.2                   |
| III                      |    | 24   | 26.7 | 26 49.8<br>27 37.9 | 48.1                   |
| <del>IV</del>            |    | 28   | 30.9 |                    | 48.3                   |
|                          |    | 29   | 19.2 |                    |                        |
| <del>V</del>             |    | 30   | 10.0 | 29 56.3<br>30 44.6 | 48.3                   |
| VI                       |    | 30   | 58.1 |                    | 48.1                   |
| VII                      |    | 35   | 43.0 |                    | 48.2                   |
|                          |    | 36   | 31.2 |                    |                        |
| VIII                     |    | 37   | 34.0 |                    | 48.4                   |
|                          |    | 38   | 22.4 |                    |                        |
| Transit <del>IX</del> IX | 48 | 59.5 |      |                    | 49.0 $\frac{1}{2}$ wt. |
|                          | 49 | 48.5 |      |                    |                        |





| Clock<br>Time                      | No of comp | $\Delta\alpha$       | Planet - Star $\Delta\delta$ |
|------------------------------------|------------|----------------------|------------------------------|
| 18 <sup>h</sup> 27 <sup>m</sup> .6 | 1          | -48 <sup>s</sup> .19 |                              |
| 27.4                               | 2          |                      | -41 <sup>r</sup> .51         |
| 43.2                               | 2          | -48.60               |                              |
| 43.6                               | 3          |                      | -41.95                       |

Or taking the mean of all

|         |   |        |        |
|---------|---|--------|--------|
| 18 31.1 | 9 | -48.28 |        |
| 37.1    | 5 |        | -41.77 |

Hourly motion  
from ephemeris

$$-2^s.17 \quad -1^r.20$$

|              |   |                         |                      |
|--------------|---|-------------------------|----------------------|
| True M. J. ? | 5 | $\Delta\delta =$        | -41 <sup>r</sup> .65 |
| 18 31.0      |   |                         |                      |
| " "          | 9 | $\Delta\alpha = -48.28$ |                      |

M. J. or Sid. T. ?



July 17 Tuesday  
J W Obs.

$$b = W XVIII$$

1075

Remauser

is  $\Delta \delta$  n f of a.

$$a = W XVIII$$

1070

N-a

$$75.18$$

$$44.42$$

$$30.76$$

17h 35m

Chron. Time

N

$$75.10$$

$$44.75$$

$$30.35$$

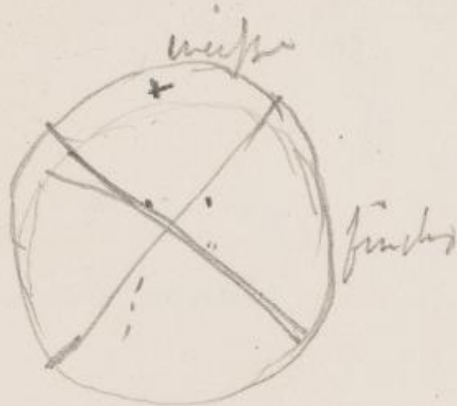
better than 1st

37m

$$\Delta \alpha \cos \delta$$

$$N - b = -0.50 \text{ at } 40m.0$$

~~N-a~~~~W XVIII~~



\_\_\_\_\_ melbourn  
+  
comb star

5 ~~Aquarii~~ 22 21 53 -0° 42'

~~41 Bootis~~

July 19 Thursday

W XVIII 1381

7<sup>M</sup> +

Melpomene.

• Melp.  
• Comp. star.

J W Obs.

+ W XVIII 1362

9<sup>M</sup>

Melpomene is sf.

xy + ~~34~~

53.12

6.13

18

Chron. time

34 45

46.99

53.12

6.14

36 15

46.98

53.13

6.14

38 0

46.98

cc

Not regarded  
as good at  
time

[83.62]

[83.48]

83.35

83.29

40 15

40 45

41 15

41 45



83.24

.34

.35

.27

.33

.23

42 15

42 45

43 15

43 45

44 0

44 30

45.95

45.97

S M S x 82.85

46.01

36.84

For a check.

y

47.92

53.46

5.54

Nemansu

SP to Obs. Transit across two wires.

~~Planet 1 2 XVIII 1070~~~~Order of taps Planet 1  
2~~

Two transits.

~~XVIII 1070 1~~~~XVIII 1075 1~~~~XVIII 1070 2~~~~XVIII 1075 2~~



$\Delta 8$   
W 1075

43.20

45.85

2.65

19 35

(Prob. error of 5 rev.)

Fixed wire on Nemansu

19 37 30

1075

61.62

43.38

18.24

~~1075~~

1075

45.98

43.59

2.39

19 40

$\alpha$  1075

46.15

43.90

2.25

19 41 50

1075

~~0~~  
46.21

43.91

2.30

19 43 45

~~2.30~~

1070

62.22

44.04

18.18

19 46 15

two more transits.

Check on chronograph

19 52

Fixed star observed by mistake.



Nemauca. G. M. S.

Transits by Chronograph.

Order of Transits.

Nemauca. 1<sup>st</sup> Wire

" 2<sup>nd</sup> "

18. 1070 1 "

18. 1075 1 "

18 1070. 2<sup>nd</sup> "

18 1075. 2<sup>nd</sup> "

Fixed wire on Nemauca.

|                  |                  | h  | m  | sec |
|------------------|------------------|----|----|-----|
| <del>58.04</del> | <del>58.04</del> | 20 | 03 | 20  |
| <del>42.07</del> | <del>25.43</del> |    |    |     |
|                  | 32.61 W 1070     |    |    |     |

Weisse 1070 15.97

|                  |               |
|------------------|---------------|
| <del>42.07</del> | 42.07         |
| <del>25.43</del> | 25.43         |
|                  | 16.64 W. 1075 |
| 64               |               |

20 06 45

Weisse 1070 58.07

1075 42.36

Weisse

15.71

25.37

58.07

25.37

32.70 W. 1070

42.36

25.37

16.99 W 1075

wire set in  
both cases on  
W. 1075 just  
as it was  
going out  
of the field

GMS Nemusa  
Position Circle  $264^{\circ}.34'$

173.53

Transit by Chronograph

Check on Chronograph 20 20

Corr. to Chronometer  $- 36^s$

Nemusa 1  
" "  
Weisse 1070 "  
" "  
" 1075 "  
" "

The proper reading of the position circle for transits  
being the  $\Delta x$  Planet - Star should be corrected  
 $\Delta \delta \tan (\text{true reading} - \text{actual reading}) \sec \delta$

Denoting by  $\Delta x$  the difference (planet - star)  
between the <sup>apparent</sup> values of  $x$  for the points of the wires  
set upon the two objects in measuring  $\Delta \delta$ , we  
have true  $\Delta \delta = \text{meas. } \Delta \delta \cos (\text{true reading} - \text{actual})$

$\Delta x = \Delta x \sin (\text{true reading} - \text{actual})$   
If the error of the reading is small we may put  
Corr. to meas.  $\Delta \delta = - \Delta x \sin (\text{true reading} - \text{actual})$

When the comparisons in  $\alpha$  are made by the screw, the  $\Delta\alpha \cos \delta =$

$$\text{meas. } \Delta\alpha \cos \delta \sec(\text{true reading} - \text{actual}) \\ + \text{true } \Delta\delta \tan( \quad \quad \quad )$$

or, usually, correction to meas.  $\Delta\alpha \cos \delta$

$$= \Delta\delta \tan(\text{true reading} - \text{actual}) \text{ as before.}$$

|            |          |           |            |                |
|------------|----------|-----------|------------|----------------|
| I. Transit | Nem. I   | 19 58 4.2 | 19 58 13.2 |                |
|            | II.      | 22.1      |            |                |
|            |          |           |            | $\Delta\alpha$ |
| W 1070     | I        | 59 40.6   |            |                |
|            |          |           |            |                |
|            | 1075 I   | 50.1      | 59 49.9    | 1 36.7         |
|            |          |           |            |                |
|            | 1070 II  | 59.2      | 59 59.4    | 1 46.2         |
|            | 1075 II. | 20 0 8.6  |            |                |

|            |       |         |            |        |
|------------|-------|---------|------------|--------|
| II Transit | Nem I | 13 30.0 | 20 13 33.2 |        |
|            | II    | 36.3    |            |        |
|            |       |         |            | 1 37.2 |
| W 1070     | I     | 15 7.3  | 15 10.4    |        |
|            | II    | 13.5    |            | 1 46.7 |
|            |       |         |            |        |
| W 1075     | I     | 16.9    | 15 19.9    |        |
|            | II    | 22.9    |            |        |

sid. True time 20<sup>h</sup> 5<sup>m</sup> 46<sup>s</sup> from  $\Delta\alpha$  1070 -1<sup>m</sup> 36<sup>s</sup> 95 from 1075 -1<sup>m</sup> 46<sup>s</sup> 45

In the case of W XVIII 1070 we may assume  $\Delta x = 0$   
but for 1075 it was about  $+ 5'$ .

July 22 Sunday

19<sup>h</sup> Sid T. Corr. to Chron - 44<sup>s</sup>  
Check to Chronograph 19 29

Nemauw

Transits over two wires

W XVIII 946 Nemauw XVIII 979

~~Two stars taken for Nem;~~ preceding star the  
right one.

Last tap W 979 on last transit of 1<sup>st</sup> set

not very good.

Fixed wire set on Nem.

No rattle

Rattle on Chron. at time of setting wire

No rattle

on Nem.

|      |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|
| 946  | 54.24 |       | 54.35 | 36.65 | 36.76 |
| 979  | 52.50 | 52.65 | 52.66 | 34.91 | 35.04 |
| Nem. | 34.51 | 34.55 | 34.56 | 16.72 | 16.85 |

36.92

Reading 84 20

35.16

Stars run well on wires.

16.89

Reading 174 18

Three transits each star over two wires

946 Nem 979 Check 20 30



Melpomene



