

KG
11365
315

N 32

Computation of apparent places.
and differential refraction.
Reduction of Equatorial Comparisons.
Vol. 1.

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KG-11365.313

1866 June 2

δ	14	45	15	15	14	45	Titan	Encl.
α	14	21					14	45
h	+0	24	+0	54	$\log A$	π	2.0100	15 15
$(N+\delta)$	36	10	35	31	$(\pi-\eta)$		359 52	(?)
$\cos^2 \eta$	0.4581		0.4717		$\log \sin (\pi-\eta)$		354 23	
$\log a$	9.7395		9.7501		$\log \cos "$		8.9907	n
$\log \delta \cos^2$	0.1976		0.2218		$\log k \tan^2 \zeta$		9.9979	
$\log^2 \sec^2 \zeta$	0.4607		0.4849		$\log d \pi$		6.7192	
$\log \tan^2 \zeta$	0.2761		0.3127		$d \pi$		1.7581	3.5363
$\log k$	6.4431		6.4428				7.4599	2441
$\log k \tan^2 \zeta$	6.7192		6.7555		$\log \cos^2 (\pi-\eta)$		0.2	
$\log \sec (N+\delta)$	0.0930		0.0894		$\log \tan^2 \zeta$		9.9958	
$\log \cot n$	8.8890		9.2432		$\cos^2 (\pi-\eta) \tan^2 \zeta$		0.2761	
$\log \tan \eta$	8.9820		9.3326		$\log (1+ ")$		1.870	
η	5 29		12 8		$\log k \Delta$		0.4579	
					$d \Delta$		8.9110	
							+ 0.08	

1866 June 7

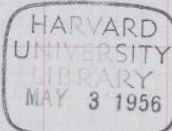
	14	30	14	50	15	20	Titan	Encl.	Jethys	Rhea	Dione
δ	14	30	14	50	15	20	14 32	15 20	15 3	15 11	15 15
α	14	20					2.208	1.446	1.470	1.605	1.682
h	0	10	0	30	0	50	100 57	288 22	112.1	306.42	257.9
$N + \delta$	36	22	36	8	35	42	98 12	274 52	104.6	294.9	245.5
$\cos^2 \eta$	0.454		0.460		0.468		9.996	9.998 _n	9.986	9.957 _n	9.959 _n
$\log a$	9.737		9.741		9.748		9.154 _n	8.932	9.402 _n	9.621	9.618 _n
	0.191		0.201		0.216		6.713	6.765	6.727	6.750	6.757
$\cos^2 \zeta$	0.454		0.464		0.479		3.536	3.536	3.536	3.536	3.536
$\tan^2 \zeta$	0.268		0.280		0.306		9.399 _n	9.231 _n	9.651 _n	9.867 _n	9.870
$\log k$	6.443		6.443		6.443		-0.3	-0.2	-0.4	-0.7	+0.7
$k \tan^2 \zeta$	6.711		6.723		6.749		8.308	7.864	8.804	9.248	9.236
							0.270	0.321	0.284	0.308	0.315
$\sec(N + \delta)$	0.094		0.093		0.090		0.038	0.015	0.122	0.360	0.36
$\cot n$	8.508		8.986		9.209		0.016	0.006	0.050	0.133	0.133
$\tan \eta$	8.602		9.079		9.299		8.651	7.889	7.913	8.048	8.125
η	2 18		6 50		11 17		+0.05	+0.01	+0.01	0.02	0.02
	2.3		6.8		11.3						

1866 June 9

δ	14	0	15	20	15	40	Titan	Rhea	Dione	Titan	Dione	Titan
α	14	54					14	0	15	33	15	47
h	-0	25	+1	1	+1	21	1.871	1.605	1.620	1.866	1.336	1.871
$(N+\delta)$	36	12	35	17	34	28	243.3	15.9	347.2	139.9	280.3?	136.1
$\cos^2 \eta$	0.458		0.476		0.494		247.5	359.6	328.1	127.2	258.6	140.3
$\log a$	9.739		9.754		9.766		9.986		9.722	9.901	9.991	9.805
$\cos^2 \zeta$	0.197		0.230		0.260		9.583		9.728	9.781	9.296	9.886
$\tan^2 \zeta$	0.460		0.493		0.523		0.220		6.820	6.757	6.860	6.720
$\tan^2 \zeta$	0.277		0.326		0.366		3.536		3.536	3.536	3.536	3.536
$\log k$	6.443		6.443		6.442		0.366		0.006	9.975	9.683	9.947
$k \tan^2 \zeta$	6.720		6.769		6.808		9.805		-1.0	-0.9	+0.5	-0.9
$\sec (N+\delta)$	0.093		0.088		0.084		4.016	0.0	9.856	9.562	8.592	9.772
$\cot n$	8.787		9.297		9.422		0.277	0.000	0.378	0.316	0.408	0.277
$\tan \eta$	8.880		9.385		9.506		6.28	0.352	0.433	9.878	0.041	0.326
η	-4.2		13.7		17.7		0.107	0.512	8.501	8.309	7.778	8.314
							8.314	8.048	0.03	0.02	0.01	0.04
							0.03	0.04				

$$\tan \zeta \sin (\pi-\eta) = \tan \eta$$

$$\tan \zeta \cos (\pi-\eta) = \tan$$



Formulae for precession (taking account of secular variations). α and δ in the formulae apply to the mean date, half way between the epoch of the catalogue and the time of observation.

1825 to 1866	+ 2 ^m 5 ^s 891	+ [1.73892] $\sin \alpha \tan \delta$	[2.91501] $\cos \alpha$
1850 to 1866	+ 49 ^s 132	+ [1.33023] $\sin \alpha \tan \delta$	[2.50632] $\cos \alpha$
1825 to 1867	+ 2 8.962	+ [1.74938] $\sin \alpha \tan \delta$	[2.92547] $\cos \alpha$
1800 to 1867	+ 3 25.708	+ [1.95223] $\sin \alpha \tan \delta$	[3.12833] $\cos \alpha$
1850 to 1867	+ 52.203	+ [1.35655] $\sin \alpha \tan \delta$	[2.53264] $\cos \alpha$
1855 to 1867	+ 36.850	+ [1.20528] $\sin \alpha \tan \delta$	[2.38137] $\cos \alpha$
1825 to 1868	+ 2 12.033	+ [1.75960] $\sin \alpha \tan \delta$	[2.93569] $\cos \alpha$
1855 to 1868	+ 39.921	+ [1.24004] $\sin \alpha \tan \delta$	[2.41614] $\cos \alpha$
1850 to 1868	+ 55.274	+ [1.38138] $\sin \alpha \tan \delta$	[2.55747] $\cos \alpha$
1836 to 1868	1 ^m 38.298	+ [1.63150] $\sin \alpha \tan \delta$	[2.80759] $\cos \alpha$

The log. fact. parall. or $\pi \times \Delta$ is calculated from manuscript tables based on the value 8".5776

Diff. Refr.

W XXII 607
Aug 10

	1	2
$\Delta\alpha$	-22 ⁹	-23 ⁹
$\Delta\delta$	2'8	
π_α	23 23.9	23 47.4
π_δ	23 28.5	23 53.4
α_0	22 29.4	22 29.4
δ_0	-12 54	
t_α	0 54	1 48
t_δ	0 59	1 24
(1)	Comp star c. (Thiele)	
(2)	0.002	0.002

Aug 28

Sept 1

Sept 2

(1)	~	~
(2)	0.13	0.13

W XXII 543
Aug 13

	+30 ^s
	-9.1
	22 32.7
	22 20.4
	22 27.2
	-13 9 ^m
	0 5.5
	0 6.8
	0.000

0.47

Thiele

Aug 28

Sept 1

Sept 2

$\Delta\alpha$	-26	-48	-49
$\Delta\delta$	+1.2	+2.9	+3.4
π_α	20 13.8	19 33.1	19 45.3
π_δ	20 14.2	19 46.8	20 8.5
α_0	19 39	19 39	19 39
δ_0	-16 58	-16 58	-16 58
t_α	0 35	0 6	0 6
t_δ	0 35	0 8	0 29
(1)	~	~	~
(2)	+0.001	0.000	0.000
(1)	~	~	~
(2)	0.07	0.18	0.22

23
+ 2
8.6
9.2
7.9
7.
- 0
12.
+ 87.
23 2/
2 49

Weisse XXII 304 reduction to Aug. 26, 1866

$$\alpha 1825 = 22^{\text{h}} 13^{\text{m}} 43.89 \quad \mu = +3.232$$

$$\mu 414n = +2 \quad 12.51$$

$$\alpha 1866 = 22 \quad 15 \quad 56.40$$

$$\delta 1825 = -15^{\circ} 05' 32.9 \quad \mu = +17.94$$

$$\mu 414n = +12 \quad 15.5$$

$$-14.53 \quad 17.4$$

$$E \quad 0.01$$

$$f \quad 32.06$$

$$g \cos(G+\alpha) \quad 1.2166 \quad 16.47$$

$$\cos(G+\alpha) \quad 9.9970$$

$$g \quad 1.2196$$

$$\sin(G+\alpha) \quad 9.0670$$

$$\tan \delta \quad -9.4245$$

$$g \sin(G+\alpha) \tan \delta \quad -51 \quad -9.7111$$

$$h \sin \delta \cos(H+\alpha) \quad 9.3005$$

$$\sin \delta \quad -9.4097$$

$$\cos(H+\alpha) \quad -8.6097$$

$$h \quad 1.2811$$

$$\sin(H+\alpha) \quad 9.9996$$

$$\sec \delta \quad 0.0149$$

$$h \sin(H+\alpha) \sec \delta \quad 19.74 \quad 1.2956$$

$$i \quad .8626$$

$$\cos \delta \quad 9.9852$$

$$i \cos \delta \quad .8478 \quad 7.04$$

$$\text{Aug. 26.} \quad \Delta \alpha = 51.30 = 3.42 \quad \Delta \delta = 23.71$$

Weisse XXII 304 reduction to Aug. 27, 1866

$$\alpha 1845.5 \quad 22 \quad 14 \quad 50$$

$$\cos \alpha \quad -14 \quad 59 \quad 24$$

$$\cos \alpha \quad 9.95257$$

$$\sin \alpha \quad 9.64635n$$

$$\tan \delta \quad 9.42775n$$

$$41 (n \cos \alpha) \quad 737.19 \quad -14 \quad 53 \quad 15.71$$

$$\log n \sin \alpha \tan \delta \quad 9.07410$$

$$41 n \sin \alpha \tan \delta \quad +6.502$$

$$(m+n \sin \alpha \tan \delta) \quad 132.393 \quad 22 \quad 15 \quad 56.283$$

$$0.01$$

$$32.64$$

$$1.2168 \quad 16.48$$

diff. defr.

$$9.9968$$

$$1.2200$$

$$9.0797$$

$$-9.4245$$

$$-9.7242$$

$$9.0516$$

$$-9.4097$$

$$-8.3613$$

$$1.2806$$

$$9.9999$$

$$0.0149$$

$$1.2954$$

$$.8660$$

$$9.9852$$

$$.8512 \quad 7.10$$

$$\text{Aug. 27.} \quad \Delta \alpha = 51.36 = 3.42 \quad \Delta \delta = 23.69$$

$$+0.002$$

$$+0.002$$

$$+0.002$$

$$+0.002$$

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$$+0.002$$

Weisse XXIII 418 reduction to Sept. 16, 1866

$$\alpha 1825 = 23^{\text{h}} 19^{\text{m}} 34.19 \quad \mu = +3.056$$

$$\mu 414n = +2 \quad 05.30$$

$$\alpha 1866 = 23 \quad 21 \quad 39.49$$

$$\delta 1825 = +2^{\circ} 36' 13.2 \quad \mu = +19.75$$

$$\mu 414n = +13 \quad 29.8$$

$$\delta 1866 = 2 \quad 49 \quad 43.0$$

$$E \quad 00.00$$

$$f \quad 33.64$$

$$g \cos(G+\alpha) \quad 1.2018 \quad 15.92$$

$$\cos(G+\alpha) \quad 9.9691$$

$$g \quad 1.2327$$

$$\sin(G+\alpha) \quad 9.5615$$

$$\tan \delta \quad 8.6945$$

$$g \sin(G+\alpha) \tan \delta \quad 31 \quad 9.4887$$

$$h \sin \delta \cos(H+\alpha) \quad 8.6913$$

$$\sin \delta \quad 8.6940$$

$$\cos(H+\alpha) \quad 8.7236$$

$$h \quad 1.2737$$

$$\sin(H+\alpha) \quad 9.9994$$

$$\sec \delta \quad 0.0006$$

$$h \sin(H+\alpha) \sec \delta \quad 18.78 \quad 1.2737$$

$$i \quad .9078$$

$$\cos \delta \quad 9.9995$$

$$i \cos \delta \quad .9073 \quad 8.08$$

$$\text{Sept. 16} \quad \Delta \alpha = 52.73 = 3.52 \quad \Delta \delta = 24.05$$

Weisse XXIII 310 reduction to Sept. 22, 1866

$$\alpha 1825 = 23^{\text{h}} 13^{\text{m}} 57.37 \quad \mu = +3.160$$

$$\mu 414n = +2 \quad 09.56$$

$$\alpha 1866 = 23 \quad 16 \quad 06.93$$

$$\delta 1825 = +1^{\circ} 51' 38.9 \quad \mu = +19.66$$

$$\mu 414n = +13 \quad 26.1$$

$$\delta 1866 = 2 \quad 05 \quad 05.0$$

$$E \quad 00.00$$

$$f \quad 34.15$$

$$g \cos(G+\alpha) \quad 1.2110 \quad 16.26$$

$$\cos(G+\alpha) \quad 9.9743$$

$$g \quad 1.2367$$

$$\sin(G+\alpha) \quad 9.5242$$

$$\tan \delta \quad 8.5608$$

$$g \sin(G+\alpha) \tan \delta \quad .21 \quad 9.3217$$

$$h \sin \delta \cos(H+\alpha) \quad 9.1116$$

$$\sin \delta \quad 8.5605$$

$$\cos(H+\alpha) \quad 9.2779$$

$$h \quad 1.2732$$

$$\sin(H+\alpha) \quad 9.9920$$

$$\sec \delta \quad 0.0003$$

$$h \sin(H+\alpha) \sec \delta \quad 18.43 \quad 1.2655$$

$$i \quad .9103$$

$$\cos \delta \quad 9.9997$$

$$i \cos \delta \quad .9100 \quad 8.13$$

$$\text{Sept. 22.} \quad \Delta \alpha = 52.79 = 3.52 \quad \Delta \delta = 24.52$$

$$R_s - 0.06$$

$$+0.03$$

Weisse XXII 313 Reduction to Aug. 27. 1866

$$\begin{aligned}\alpha 1825 &= 22^h 14^m 19.60 & \mu &= +3.229 \\ \mu 414m &= +2 & 12.39 \\ \alpha 1866 &= 22 16 31.99 \\ \delta 1825 &= -15^\circ 09' 36.6 & \mu &= +17.96 \\ \mu 414m &= +12 & 16.4 \\ \alpha 1866 &= -14^\circ 57' 20.2\end{aligned}$$

		334 8	
$G+\alpha$		6 42	
$H+\alpha$		91 27	
$E+f$	+32.16		
$g \cos(G+\alpha)$		1.2174	+16.50
$\cos(G+\alpha)$		9.9971	
g		1.2203	
$\sin(G+\alpha)$		9.0669	
$\tan \delta$		9.4266 n	
$g \sin(G+\alpha) \tan \delta$	-1.52	9.7138 n	
$h \sin \delta \cos(H+\alpha)$		9.0954	+1.12
$\sin \delta$		9.4116 n	
$\cos(H+\alpha)$		8.4032 n	
h		1.2806	
$\sin(H+\alpha)$		9.9999	
$\sec \delta$		0.0150	
$h \sin(H+\alpha) \sec \delta$	+19.74	1.2955	
i		0.8660	
$i \cos \delta$		0.8510	+7.10
Aug. 27.	+51.38		+23.72
	= 3.425		

Weisse XXII 313 Reduction to Aug. 27. 1866

22 15 26	-15 3 28	
9.64404 n	9.95813	
9.42980 n	2.86814	
9.07384		
+126.010	+738.14	
+132.389		
22 16 25.610	-14 57 18.46	
22 16 31.989		
334 8		
6 42		
92 28		-8.8
$\Delta \alpha$ -50		
$\Delta \delta$ +1.7		
α 22 16.2		
δ -14 55.2		
For α		
T 22 41.7		
t_0 0 25.5	-53	
(1) ~~~~		
(2) 0.000		
Sum		
For δ		
T 22 41.7	+19.75	
t_0 0 25.5		
(1) ~~~~		
(2) +0.09		
Sum		

Comparison star "c" for Thioe.

$$\alpha 1866 \quad 19^h 39^m 5.9$$

$$\delta 1866 \quad -16^\circ 57' 57''$$

α		294 46	
$G+\alpha$		327 20	
$H+\alpha$		52 5	
$E+f$	+32.16		
$g \cos(G+\alpha)$		1.1455	+13.98
$\cos(G+\alpha)$		9.9252	
g		1.2203	
$\sin(G+\alpha)$		9.7322 n	
$\tan \delta$		9.4844 n	
$g \sin(G+\alpha) \tan \delta$	+2.73	0.4369	
$h \cos(H+\alpha) \sin \delta$		0.5342 n	-3.42
$\sin \delta$		9.4651 n	
$\cos(H+\alpha)$		9.7885	
h		1.2806	
$\sin(H+\alpha)$		9.8970	
$\sec \delta$		0.0193	
$h \sin(H+\alpha) \sec \delta$	+15.74	1.1969	
i		0.8660	
$i \cos \delta$		0.8467	+7.03
Aug 27	+50.63		+17.59
	= 3.375		

α 1866

18 45 43.5

Comp. star "a" for Nemausa

 δ 1866

-7 6 4

 α

231 26

 $G+\alpha$

320 30

 $H+\alpha$

80 41

 $E+f$

+27.27

 $g \cos(G+\alpha)$

1.0717 +11.79

 $\Delta\alpha$ +1.3 $\cos(G+\alpha)$

9.8874 +0.77

 $\Delta\delta$ -1.1 g

1.1843

 $\sin(G+\alpha)$ 9.8035 m Π_α 21 34.4 $\tan \delta$ 9.0953 m Π_δ 21 36.9 $g \sin(G+\alpha) \tan \delta$

+1.21 0.0831

 α 18 45.8 $h \cos(H+\alpha) \sin \delta$ 9.6067 m -0.40 δ -7 6.3 $\sin \delta$ 9.0920 m t_α 21 48.6 $\cos(H+\alpha)$

9.2092

 t_δ 21 51.1 h

1.3065

 $\sin(H+\alpha)$

9.9942

(1) $\sim$ $\sec \delta$

0.0033

(2) 0.003

 $h \sin(H+\alpha) \sec \delta + 20.09$

1.3030

Sum

 i

0.4904

(1) $\sim$ $i \cos \delta$

0.4871 +3.07

(2) 0.08

July 14

+48.57

+10.82

Sum

= 3.238

+14.46

 α 186618 54 46
or 55 36?

Comp. star "b" for Melpomene

 δ 1866

-10 33 58

 α

233 42

 $(G+\alpha)$

321 54

 $(H+\alpha)$

78 27

 $E+f$

+27.94

 $g \cos(G+\alpha)$

1.0855 +12.18

 $\cos(G+\alpha)$

9.8959

 g

1.1896

 $\sin(G+\alpha)$ 9.7903 m $\tan \delta$ 9.2708 m $g \sin(G+\alpha) \tan \delta$

+1.78 0.2507

 $h \cos(H+\alpha) \sin \delta$ -0.74 9.8660 m $\sin \delta$ 9.2633 m $\cos(H+\alpha)$

9.3015

 h

1.3032

 $\sin(H+\alpha)$

9.9911

 $\sec \delta$

0.0075

 $h \sin(H+\alpha) \sec \delta + 20.03$

1.3018

 i

0.5694

 $i \cos \delta$

0.5619 +3.65

July 19

+49.75

+15.09

= +3.317

α 1825	23	19	34.19			
α 1866	23	21	59			
δ 1825	+2	36	13.2			
δ 1866	+2	49	43			
α		350	25			
$G + \alpha$		21	17			
$H + \alpha$		86	53			
$E + f$	+33.71					
$\sin(G + \alpha)$		1.2021	+15.89	$\Delta\alpha - 5^s$	$\Delta\delta$	
$\cos(G + \alpha)$		9.9694		$\Delta\delta - 1.9$	$\Delta\delta$	
$\sin(G + \alpha)$		1.2327		0	14.5	T_α
$\tan \delta$		9.5599		0	23.9	T_δ
	+0.31	9.4863		23	21.6	α_0
		8.7023	+0.05	+2	50	δ_0
$\sin \delta$		8.6933		0	52.9	t_α
$\cos(H + \alpha)$		8.7354		1	2.3	t_δ
$\sin(H + \alpha)$		1.2737				
$\sec \delta$		9.9993				
	+18.77	1.2735		0.000	1	
					2	
i		0.9078				
		0.9073	+8.08	0.06	1	
Sept 16	52.79	35.19	+24.03		2	
					Sum	

W. XXIII 418

See page 1.

α 1825	23	13	57.37			
α 1866	23	16	3			
δ 1825	+1	51	28.9			
δ 1866	+2	5	5			
α		349	1			
$G + \alpha$		19	31			
$H + \alpha$		79	5			
$E + f$	+34.15					
		1.2110	+16.26	$\Delta\alpha + 50^s$	$\Delta\delta + 0.9$	
$\cos(G + \alpha)$		9.9743		T_α 21	24.9	
$\sin(G + \alpha)$		1.2367		T_δ 21	44.1	
$\tan \delta$		9.5238		α_0 23	16.5	
	+21	9.3216		δ_0 +2	6	
		9.1113	+13	t_α 1	51.6	
$\sin \delta$		8.5608		t_δ 1	32.4	
$\cos(H + \alpha)$		9.2773		1		
$\sin "$		1.2732		2	0.001	
$\sec \delta$		9.9920				
	+18.43	1.2655		Sum		
i		0.9103		1		
		0.9105	+8.13	2	0.03	
Sept 22	+52.79	+35.19	+34.52	Sum		

W. XXIII 310

α 1825	0	20	24.61	0	21	27	-14	24	56	
		2	4.6							
α 1866	0	22	29	9.99810			8.97061			
				2.91311			9.41001 _n			
δ 1825	-14	31	45.7	+818.67			8.38062 _n			W 0 361
	+13	40								
δ 1866	-14	18	6	124.574			-1.317			
				0 22 29.184			-14 18 7.03			
α		5	37							
$G+\alpha$		36	7							
$H+\alpha$		95	41							
$E+f$	+34.15									
		1.1440	+13.93	$\Delta\alpha$		+35.5				
$\cos(G+\alpha)$		9.9073		$\Delta\delta$		-2.7				
g		1.2367		T_α	22	26.5				
$\sin$		9.7705		T_δ	22	54.5				
$\tan \delta$		9.4067 _n		α_0	0	22.8				
	-2.59	0.4139 _n		δ_0	-14	19				
		9.6617	+46	t_α	1	56.3				
$\sin \delta$		9.3927 _n		t_δ	1	28.3				
$\cos(H+\alpha)$		8.9958 _n		1						
h		1.2732		2		+0.004				
$\sin$		9.9979		Sum						
$\sec \delta$		0.0137		1						
	+17.27	1.3848		2		-0.16				
i		0.9103		Sum						
		0.8966	+7.88	1						
Sept 22	+50.83	= 3.389	+22.27	2						

α 1825	23	11	6.85	23	12	10	+1	14	25	
		2	5.6							
α 1866	23	13	12	9.99047			9.31639 _n			
				2.90548			8.33546			
δ 1825	+1	7	43.5	804.42			7.65185 _n			W XXIII 248
	+13	23.6		125.645			-0.246			
δ 1866	+1	21	7							
				23 13 12.495			+1 21 7.92			
α		348	18							
$G+\alpha$		18	35							
$H+\alpha$		73	1							
$E+f$	+34.50									
		1.2170	+16.48	$\Delta\alpha$		-9				
$\cos(G+\alpha)$		9.9768		$\Delta\delta$		+10.1				
g		1.2402		T_α	23	52.3				
$\sin$		9.5033		T_δ	0	1.3				
$\tan \delta$		8.3729		α_0	23	13.2				
	+13	9.1164		δ_0	+1	27				
		9.1118	+13	t_α	0	39.1				
$\sin \delta$		8.3728		t_δ	0	48.1				
$\cos(H+\alpha)$		9.4655		1						
h		1.2735		2		0.000				
$\sin$		9.9806		Sum						
$\sec \delta$		0.0001		1						
	+17.96	1.2542		2		0.31				
i		0.9087		Sum						
		0.9086	+8.10	1						
Sept 27	+52.59	= 3.506	+24.71	2						

α 1825	0	49	17.20	0	50	23	+11	17	32		
α 1866	0	51	27	9.98942	9.33860						
δ 1825	+11	10	59.9	2.90443	9.30033						
δ 1866	+11	24	14	802.47	8.63893	W	0	884			
				128.278	+2.387						
α		12	52	0	51	27	478	+11	24	12.37	
$G+\alpha$		43	9								
$H+\alpha$		97	35								
$E+f$	+34.50						+34.57				
		1.1032	+12.69					1.1043	+12.72		
$\cos(G+\alpha)$		9.8630		$\Delta\alpha$	+53			9.8634		-5	
g		1.2402		$\Delta\delta$	+5.6			1.2409		+2.3	
$\sin$		9.8350		π_α	1	2.1		9.8345		0	36.0
$\tan \delta$		9.3047		π_δ	0	49.5		9.3047		0	45.4
	+2.40	9.3799		α_0	0	52.0		+2.40	0.3801	0	51.5
		9.6899	-0.49	δ_0	+11	27			9.6246	-42	+11 2.6
$\sin \delta$		9.2960		t_α	0	10.1			9.2960	0	15.5
$\cos(H+\alpha)$		9.1204		t_δ	0	2.6			9.0530	0	6.1
h		1.2735		(1)					1.2736		
$\sin$		9.9962		(2)		0.000			9.9972		
$\sec \delta$		0.0087		$\text{Sum} = R_\alpha$			+19.03		1.2775		
	+12.99	1.2784									
i		0.9087		(1)					0.9083		
		0.9000	+7.94	(2)		+0".12				+7.94	+0".05
Sept 27	+55.89	+3.726	+2.0".14	$\text{Sum } R_\delta$			Sept 28	+56.00	+3.7133	+2.0".24	0".05

 α 1866 20 25 51 δ 1866 -11 12 α 306 28 $G+\alpha$ 336 38 $H+\alpha$ 27 59 $E+f$ +34.71 1.2052 +16.04 $\cos(G+\alpha)$ 9.9628 g 1.2424 $\sin$ 9.5984 $\tan \delta$ 9.2966

+1.37 0.1374

0.5083 -3.22

 $\sin \delta$ 9.2883 $\cos(H+\alpha)$ 9.9460 h 1.2740 $\sin(H+\alpha)$ 9.6715 $\sec \delta$ 0.0083

+8.99 0.9538

 i 0.9061

0.8978

Sept 30

+42.33

+45.07

+2.822

+3.005

+20".72

Comp. star "d" for (89)

336 36

26 55

+34.79 1.2059 +16.07

 $\Delta\alpha$ -50" $\Delta\delta$ 0 π_α 20 42 π_δ α_0 20 25.5 δ_0 -11 8 t_α 0 16.5 t_δ

(1) -0.018

(2) 0.000

 R_α

(1) 0".02

(2) 0.00

 R_δ

Oct 1 +42.09

+44.85

+2.806

+2.990

+20".69

α 1850	19 49 39.77	19 50 7 -16 20 43	
α 1866	19 50 55	9.66483	9.94781 n
δ 1850	-16 21 56.7	2.17115	9.46728 n
δ 1866	-16 19 29	5.563	7.41509
		54.695	2 28.30
α	297 39	19 50 34.485	-16 19 28.40
$G + \alpha$	327 47		
$H + \alpha$	18 6		
$E + f$	+34.79	1.1706 +14.81	-10.3' +0.5'
$\cos(G + \alpha)$	9.9274	-1.0 -1.0	
g	1.2432		
$\sin "$	9.7263 n	20 42.0 21 9.0	
$\tan \delta$	9.4667 n	20 46.5 21 3.2	
	+2.73	0.4367	19 50.6
		0.7011 n -5.02	-16 20
$\sin \delta$	9.4489 n	0.51.4	18.4
$\cos(H + \alpha)$	9.9780	0 55.9	12.6
h	1.2742		
$\sin "$	9.4923	0.000 0.000	
$\sec \delta$	0.0179	-0.001 -0.001	
	+6.09	0.7844	
i	0.9050	0.000	0.00
	0.8871 +7.71	-0.06 -0.07	
Oct 1	+43.61 = 2.907 +17.50		

Delta. 20115

α 1825	20 20 33.01	20 21 40 -11 15 54	
α 1866	20 22 48	9.763	
δ 1825	-11 19 50.6	9.76307	9.91114 n
δ 1866	-11 17 57	2.67808	9.29926 n
		+8.899 +7.068	9.21040
		152.959	47.652
		20 22 45.967	-11 11 54.08
α	305 42	134.790	
$G + \alpha$	335 50	20 22 47.800	
$H + \alpha$	26 9		
$E + f$	+34.79	1.2041 +16.00	$\Delta \alpha$ -2 ^m 19 ^s
$\cos(G + \alpha)$	9.9602		$\Delta \delta$ +7.5'
g	1.2439		
$\sin "$	9.6121 n	$T \alpha$ 23 55.6	
$\tan \delta$	9.2966 n	$T \delta$	
	+1.42	0.1526	α_0 20 21.7
		0.5156 n -3.28	δ_0 -11 8
$\sin \delta$	9.2883 n	$t \alpha$ -3 33.9	
$\cos(H + \alpha)$	9.9531	$t \delta$	
h	1.2742		
$\sin "$	9.6141	(1)	
$\sec \delta$	0.0084	(2) +0.044	
	+8.45	0.9267	R_a
i	0.9050	1	
	0.8966 +7.88	2	
Oct 1	+44.66 +2.977 +20.60	R_δ	

W XX 544

α 1825	0	11	33.65	0	12	56	-14	29	22
α 1866	0	13	57	9.99931	8.75130				
δ 1825	-14	26	12.3	2.71432	9.41233 _n				
δ 1866	-14	22	31	-0.799	8.16363 _n W	0	227		
				125.092	320.96				
				0	13	58	42	-14	22
α		3	30						
G+ α		33	38						
H+ α		83	57						
E+f	+34.79			1.1644	+14.60				
cos G+ α				9.9205	-4 ^s				
g				1.2437	-2.1				
sin "				9.7434	1.9.9	1	20.9		
tan δ				9.4087 _n	0.59.0	1	14.2		
	-2.49			0.3960 _n	0	14.0			
				9.6919 _n	-49	-14	23		
sin δ				9.3949 _n	0	55.9	1	6.9	
cos (H+ α)				9.0228	0	45.0	1	0.2	
h				1.2742					
sin "				9.9976	-0.002	-0.002			
sec δ				0.0138	-0.001	-0.002			
	+19.30			1.2856					
i				0.9050	-0.01	-0.01			
				0.8912	+7.78	-0.12	-0.12		
Oct 1	+51.60			+23.440	+21.87				
α 1855	1	1	26	14.4					
α 1866	1	26	43.4	+34.6					
δ 1855	+3			1.0					
δ 1866	+3			+3.4					
α		21	42						
G+ α		51	48						
H+ α		101	5						
E+f	+34.86			1.0352	+10.84				
cos (G+ α)				9.7913	+10 ^s				
g				1.2437	-1.5				
sin "				9.8956	1	14.1			
tan δ				8.7299	1	5.0			
	+0.74			9.8691	1	26.9			
	+7.40			9.2925 _n	-0.20	+3	4		
sin δ				8.7293	-0.96				
cos (H+ α)				9.2888 _n	0	12.9			
h				1.2742	0	21.9			
sin "				9.9918	0.000				
sec δ				0.0006	0.000				
	+1.3.48			1.2668					
i				0.9039	0.00				
				0.9033	+8.00	0.04			
Oct 2	+60.74			+40.49	+16.88				
	+54.08			+3.605	+18.64				

Arg. Z. + 3° No 215

α 1850	19	51	58.6	19	52	26	-16	16	11
α 1866	19	52	53.3						
δ 1850	-16	17	26.1						
δ 1866	-16	14	56						
α		298	13						
$G+\alpha$		328	17						
$H+\alpha$		16	32						
$E+f$	+34.93								
$\cos(G+\alpha)$		9.9298							
$\sin "$		1.2447							
$\tan \delta$		9.7207 n							
	+2.67	0.4299							
$\sin \delta$		0.7031 n	-5.05						
$\cos(H+\alpha)$		9.4469 n							
$\sin "$		9.9816							
$\sec \delta$		1.2746							
	+5.58	0.7465							
i		0.9028							
$OA 3$	+43.20	0.8851	+7.67						

Oeltz. 20146 = Lab 38104

328 14

$+ 35.08$	$1.1758 + 14.99$ 9.9295 1.2463 $9.7214w$ $9.4645w$	0.44 $+ 11.0$ $+ 3.0$ $+ 0.5$
$+ 2.71$	0.4322 $0.7082w - 5.11$ $9.4469w$ 9.9861 1.2752 9.3957 0.0177	21 20 19 -16 1 1 $+$ $+ 0.005$
$+ 4.88$	0.6886 0.8993 $0.8816 + 7.62$	21 20 19 -16 1 1 $+$ $+ 0.005$
$+ 42.67 = + 2.845 + 17.50$		0.44 $+ 11.0$ $+ 3.0$ $+ 0.5$

α 1866	20	26	0
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$$\begin{array}{rcl}
 81866 & -10 & 49 \\
 \alpha & 306 & 30 \\
 G+\alpha & 336 & 34 \\
 H+\alpha & 24 & 49 \\
 E+f & +34.93 & 0.73 \\
 & 1.2105 & +16.24^{12} \\
 \cos(G+\alpha) & 9.96\overline{23} & \\
 g'' & 1.2447 & \\
 \sin'' & 9.5995n & \\
 \tan \delta & 9.8812n & \\
 & +1.33 & 0.1254 \\
 & 0.5059n & -3.21 \\
 \sin \delta & 9.2733n & \\
 \cos(H+\alpha) & 9.9580 & \\
 h & 1.2746 & \\
 \sin'' & 9.6229 & \\
 \sec \delta & 0.0078 & \\
 & +8.04 & 0.9053 \\
 i & 0.9028 & \\
 & 0.8950 & +7.85 \\
 Oct 3 & +44.30 & =+2.953 +20.84^{76}
 \end{array}$$
$$\begin{aligned} \Delta\alpha &= 0 \\ \Delta\delta &= -2'.5 \\ \Pi_\alpha &\quad 22 \quad 54 \\ \Pi_\delta &\quad 22 \quad 40 \\ &\quad 20 \quad 26 \\ &-10 \quad 49 \\ &+2 \quad 28 \\ &+2 \quad 14 \\ (1) &\sim \\ (2) &- \\ R_\alpha &= 0.005 \\ &\quad \quad \quad \cancel{0.018} \\ (1) &\sim \\ (2) &= 0'' \cdot 57^{15} \\ R_\delta &\end{aligned}$$

Comp. star "e" for (89)

		+ 28 ^s
		+ 3.7
306 30		7 ^a 21 32
336 32		21 40
	23 45	20 26
+ 35' 01	1.2090 + 16.15	- 10 49
	9.9625	1 6
	1.2455	1 14
	9.6001 n	+ 0.010
	9.2812 n	+ 0.002
+ 1.34	0.1268	+ 0.012
	0.5098 n - 3.24	
	9.2733 n	+ 0.41
	9.9616	+ 0.17
	1.2749	+ 0.58
	9.6050	
	0.0078	
+ 7.72	0.8877	
	0.9011	
	0.8933 + 7.82	
+ 44".07 = + 2.938	+ 20".73	

$\alpha 1825$ 1 23 12.41 1 24 16 +2° 53 17
 $\alpha 1866$ 1 23 19 9.96996 9.55564
 $\delta 1825$ +2 46 52.2 2.88497 8.70285
 $\delta 1866$ +2 39 48 +0.994 8.25849
 α 21 20 126.885 767.30
 $G+\alpha$ 51 24 1 25 19.295 +259.39.80
 $H+\alpha$ 99 39
 $E+f$ +34.93

W 1 420

$\cos G+\alpha$ 1.0398 +10.76
 g 9.7951
 $\sin "$ 1.2444
 $\tan \delta$ 9.8929
 $+72$ 9.8563
 $\sin \delta$ 8.7181
 $\cos(H+\alpha)$ 9.2244
 h 1.2446
 $\sin "$ 9.9938
 $\sec \delta$ 0.0006
 $+18.58$ 1.2690
 i 0.9028
 $0.9022 +7.99$
 $Oct 3$ +54.23 +3.615 +18.79

$\Delta \alpha +42$
 $\Delta \delta -3.6$
 $T_4 0.354$
 $T_8 0.444$
 $\alpha_0 1.257$
 $\delta_0 +2.58$
 $t_\alpha 0.503$
 $t_\delta 0.413$
 $1 \sim$
 $2 0.000$
 R_α

$\alpha 1825$ 0 2 59.77 0 10 2 -14 18 50
 $\alpha 1866$ 0 11 2 9.99958 8.64112
 $\delta 1825$ -14 25 40.9 2.91459 9.40680
 $\delta 1866$ -14 11 59 -0.612 8.04792
 α 20 46 2 5279 13 41.47
 $G+\alpha$ 32 48 0 11 50.69 -14 11 59.43
 $H+\alpha$ 80 1
 $E+f$ +35.01

W 0 178

$\cos(G+\alpha)$ 9.9245
 g 1.2455
 $\sin "$ 9.7338
 $\tan \delta$ 9.4032
 -2.41 0.3825
 $\sin \delta$ 9.9036
 $\cos(H+\alpha)$ 9.2390
 h 1.2449
 $\sin "$ 9.9937
 $\sec \delta$ 0.0135
 $+19.13$ 1.2818

$32 46$
 $78 57$
 $+35.08$ 1.1710 +14.83
 -2.5
 -5.8
 9.9247
 1.2463
 9.7334
 9.4032
 -2.41 0.3829
 9.9444
 9.3897
 9.2795
 1.2752
 9.9918
 0.0135
 $+19.08$ 1.2805

i 0.9011
 $0.8876 +7.72$
 $Oct 4$ +51.73 +3.449 +21.71

0.8993
 $0.8858 +7.69$
 $Oct 5$ +51.75 +3.450 +21.64

α 1855' 1 24 26.5
 α 1866 1 25 0.5
 δ 1855' +2 35.9
 δ 1866 +2 37.3

α 21 15
 $G+\alpha$ 51 17

$H+\alpha$ 98 30
 $E+f$ +35.03
 $1.0417 + 11.01$

$\cos(G+\alpha)$ 9.7962
 g 1.2455
 $\sin$ 9.7922
 $\tan \delta$ 8.6662

+0.64
~~-6.37~~ 9.8039
 -0.13
 $9.1103n + 1.27$

$\sin \delta$ 8.6658
 $\cos(H+\alpha)$ 9.1697
 h 1.2748
 $\sin$ 9.7952
 $\sec \delta$ 0.0004

+18.64 1.2704

i 0.9011
 $0.9007 + 7.96$

Oct 4 +47.30 +20.26
 $+54.31 = 3.621 + 18.84$

α 1866 20 26 38
~~28 2~~

δ 1866 -10 34
~~24 29~~

α 306 40

$G+\alpha$ 336 41

$H+\alpha$ 22 51
 $E+f$ +35.08
 $1.2093 + 16.19$

$\cos(G+\alpha)$ 9.9630
 g 1.2463
 $\sin$ 9.5975
 $\tan \delta$ 9.2708

+1.30 0.1146

$\sin \delta$ 9.2633
 $\cos(H+\alpha)$ 9.9646
 h 1.2752
 $\sin$ 9.5892
 $\sec \delta$ 0.8074

+7.44 0.8718

i 0.8993
 $0.8919 + 7.80$

Oct 5' +43.82 +2.921 +20.81

Arg Z. + 2° No 226

$\Delta \alpha$ +8.5
 $\Delta \delta$ +4.2

T_α 0 48.4
 T_δ 0 58.0

α_0 1 25.1

δ_0 +2 32

t_α 0 36.7
 t_δ 0 27.1

1 +0.002
 2 0.000

R_α

1 0.00
 2 0.02

R_δ

Comp. star "f" for (89)

+22.0
 -4.3

23 30
 23 24

20 27
 -10 36

+2 3
 +2 57

(1) +0.020
 (2) -0.014

R_α +0.006

(1) +0.22
 (2) -0.35

R_δ -0.13

α 1855	1	23	32.2	
	1	24	+34.0	
			6	
δ 1855	+2	35.7		
		+3.4		
	+2	39.1		
α		21	1	
$G+\alpha$		51	1	
$H+\alpha$		97	12	
$E+f$	+35.08			
		1.0450	+11.09	
$\cos G+\alpha$		9.7987	+11 ^s	
		1.2463	-0.8	
$\sin "$		9.8906	1	2.4
$\tan \delta$		8.6654	0	53.5
	+63	9.8023	1	24.2
		9.0383 _n	-11	+2 39
$\sin \delta$		8.6650	0	21.8
$\cos(H+\alpha)$		9.0981 _n	0	30.7
$\sin "$		1.2752		
$\sec \delta$		9.9966	+0.003	*
		0.0004	0.000	
	+18.72	1.2722		
		0.8993	0.00	
		0.8989	+7.92	0.02
$\text{Oct } 5$	+54.43	=+3.629	+18.90	

Arg. Zone + 2° No 223

α 1850	20	8	18.47	
			+54.1	
	20	9	12.6	
δ 1850	-15	38	14.7	
		+2	49	
	-15	35	2.6	
α		302	18	
$G+\alpha$		331	58	
$H+\alpha$		2	38	
$E+f$	+36.31			
		1.2056	+16.05	
$\cos(G+\alpha)$		9.9458		
$\sin "$		1.2598		
$\tan \delta$		9.6721 _n		
		9.4454 _n		
	+2.38	0.3773		
		0.7106 _n	-5.14	
$\sin \delta$		9.4292 _n		
$\cos(H+\alpha)$		9.9996		
$\sin "$		1.2818		
$\sec \delta$		8.6622		
		0.0162		
	+91	9.9602		
		0.8576		
		0.8414	+6.94	
$\text{Oct } 20$	+39.60	=+2.640	+17.85	

Oct. 20362

20	8	45.5	-15	36	51
9.72649			9.92752 _n		
2.23287			9.44634 _n		
5.059			9.37386		
54.191			2	50.93	
20	9	12.661	-15	35	23.77

α 1855 0 28 1.0
 $+34.0$
 δ 1855 0 28 35'
 $+9$ 20.8
 $+3.6$
 $+9$ 24.4

Arg. Zone + 9° No 67

α 7 9
 $G+\alpha$ 36 49
 $H+\alpha$ 67 29
 $E+f$ +36.31
 1.1622 +14.56
 $\cos(G+\alpha)$ 9.9034
 1.2598
 $\sin$ 9.7776 0 46.8
 $\tan \delta$ 9.2189 0 53.3
 $+1.80$ 0.2563 0 28.6
 0.0779 +1.20 +9 25'
 $\sin \delta$ 9.2130 0 18.2
 $\cos(H+\alpha)$ 9.5831 0 24.7
 h 1.2818
 $\sin$ 9.9656
 $\sec \delta$ 0.0059 0.000
 $+17.92$ 1.2533
 i 0.8576
 0.8517 +7.11 0.01
 $Oct 20$ +56.03 +3.735 +22.87

α 1825 1 8 20.18 1 9 23 +1 1 33
 2 6.12
 α 1866 1 10 26.30 9.97979 9.47442
 2.89480 8.25300
 δ 1825 +0 55 0.2 +0.293 7.72742
 δ 1866 +1 13 6.0 +2 6.184 +13 4.88
 1 10 26.364 1 8 5.08

W I 142

α 17 36
 $G+\alpha$ 47 16
 $H+\alpha$ 77 56
 $E+f$ +36.31
 1.0914 +12.34
 $\cos(G+\alpha)$ 9.8316
 1.2593
 $\sin$ 9.8660 1 59.5 2 10.3
 $\tan \delta$ 8.2963 2 4.0
 $+26$ 9.4221 1 10.6
 8.8983 +08 +1 6
 $\sin \delta$ 8.2962 0 48.9 0 59.7
 $\cos(H+\alpha)$ 9.3203 0 53.4
 h 1.2818
 $\sin$ 9.9903
 $\sec \delta$ 0.0001 0.000
 $+18.72$ 1.2722
 i 0.8576
 0.8575 +7.21 0.13
 $Oct 20$ +55.29 +3.686 +19.63

α 1850	20 12 34.78	20 12 58.4 -15 11 19	
	+47.26		
	20 13 22.04	9.73894	9.92239 _m
		2.24826	9.43373 _m
δ 1850	-15 15 3.3	4.857	9.35612
	+7 29.8	+53.989	2 55.90
	-15 7 33.5	20 13 28.769	-15 12 7.40
α	303 20		303 22
$G+\alpha$	333 56		332 58
$H+\alpha$	358 29		358 31
$E+f$	+36.68	+36.68	
	1.2135	+16.35	1.2137 +16.36
$\cos(G+\alpha)$	9.9496	+598	9.9498
q	1.2639	-4.4	1.2639
$\sin "$	9.6580 _m	22 44.3	9.6575 _m
$\tan \delta$	9.4321 _m	22 29.1 22 53.0	9.4341 _m
	+2.26 0.3550	20 14.4	+2.27 0.3555
	0.7008 _m -5.02	-15 9	0.7026 _m -5.04
$\sin \delta$	9.4168 _m	2 29.9	9.4347 _m
$\cos(H+\alpha)$	9.9999	2 14.7 2 38.6	9.9999
h	1.2841		1.2841
$\sin "$	8.4227 _m		8.4131 _m
$\sec \delta$	0.0154	-0.012	0.0155
	wrong	right	
	-53 9.7222 _m	-0.52	9.7127 _m
i	0.8406		0.8406
	0.8252 +6.69	0.36 0.38	0.8251 +6.68
Oct 24	+3.8"41 +2.561 +18"02		+38"43 = 2.562 +18"00

α 1866	20 15 48.7	20 15 55.5	
δ 1866	-15 7 28	-15 12 2	
α	303 57		303 59
$G+\alpha$	333 32		333 34
$H+\alpha$	358 4		358 6
$E+f$	+36.77		36.77
Δ	1.2168	+16.47	
$\cos(G+\alpha)$	9.9519	-15.5	
q	1.2649	-0.7	
$\sin "$	9.6490 _m	22 22.3	
$\tan \delta$	9.4316 _m	22 12.6	
	+2.22 0.3455	20 15.7	
	0.7007 _m -5.02	-15 8	
$\sin \delta$	9.4163 _m	2 6.6	
$\cos(H+\alpha)$	9.9998	1 56.9	
h	1.2846		
$\sin "$	8.5281 _m	-0.009	
$\sec \delta$	0.0153	-0.002	
	-67 9.8280 _m		
i	0.8354	0.07	
	0.8201 +6.61	0.05	
Oct 25	+38.32 +2.555 +18"06		
	near enough		

Comp. star "q" for Thisbe

α 1855	1	5	53.4			
"	1	6	27.2			
δ 1855	+0		38.1			
	+0		+3.5			
			41.6			
α		16	37			
$G+\alpha$		46	12			
$H+\alpha$	+	71	46			
$E+f$	+36.77					
		1.1051	+12.74			
$\cos(G+\alpha)$		9.8402		-12 ^s		
$\sin "$		1.2649		-3.7		
$\tan \delta$		9.8584		0	40.1	
		8.0870		0	47.9	
	+16	9.2103		1	6.7	
		8.8672	+07	+0	40	
$\sin \delta$		8.0870		0	26.3	
$\cos(H+\alpha)$		9.4954		0	18.5	
h		1.2848				
$\sin "$		9.9776		0.003		
$\sec \delta$		0.0000		0.000		
	+18.30	1.2624				
i		0.8354		0.00		
		0.8354	+6.84	0.11		
Oct 25	+55.23	+3.682	+19.65			

Arg. Zone +0° No 199

α 1855	0	23	51.0			
	0	19	41.9			
	0	24	34.0			
		20.7	25.0			
δ 1855	+9					
	+9		11.6			
			+3.6			
	+9		24.5			
α		6	6			
$G+\alpha$		35	39			
$H+\alpha$	+	59	11			
$E+f$	+36.96					
		1.1769	+15.03			
$\cos(G+\alpha)$		9.9099		+24 ^s		
$\sin "$		1.2670		-0.2		
$\tan \delta$		9.7655		1	20.5	
		9.2189		1	4.7	
	+1.78	0.2514		0	24.1	
		0.2085	+1.62	+9	25	
$\sin \delta$		9.2130		0	56.4	
$\cos(H+\alpha)$		9.7095		0	40.6	
h		1.2860				
$\sin "$		9.9339		0.007		
$\sec \delta$		0.0059		0.000		
	+16.82	1.2258				
i		0.8257		0.01		
		0.8198	+6.61	0.00		
Oct 27	+55.56	+3.704	+23.26			

Arg. Zone +9° No 55

		35	39			
		58	9			
	+37.06					
		1.1780	+15.07	41 ^s		
$\cos(G+\alpha)$		9.9099		-16 ^s		
$\sin "$		1.2681		-5.3		
$\tan \delta$		9.7655		1	47.4	2 0.2
		9.2189		1	57.1	
	+1.79	0.2525	+1.79	0	23.8	
		0.2220	+1.67	+9	22	
$\sin \delta$		9.2130		1	23.6	1 54.4
$\cos(H+\alpha)$		9.7224		1	33.3	
h		1.2866				
$\sin "$		9.9291		0.005		
$\sec \delta$		0.0059		0.000		
	+16.65	1.2216				
i		0.8208		0.02		
		0.8149	+6.53	0.14		
	+55.50					
Oct 28	+3.700	+23.27				

α 1825	22	15	4.27	22	16	10	-14	18	42
			+2						
α 1866	22	17	16.39	9.95381	9.64119	n			
				2.86883	9.40673	n			
δ 1825	-14	24	51.4	+6.120	9.04792		W	XXII	340
			+12						
δ 1866	-14	12	33	(22 17 16.301	12 19.30				
				-14°12'32"10					

α	334	19			
$G+\alpha$	3	42			
$H+\alpha$	18	15			
$E+f$	+37.90				
	9.2771	+18.92			
$\cos(G+\alpha)$	9.9991		+3 ^m 9 ^s		
	1.2780		+6.3		
$\sin "$	9.8098		23	41.2	0 3.7
$\tan \delta$	9.4037 _n		23	53	
	-31	9.4915 _n	22	20.5	
		0.6596 _n	-4.57	-14	9
$\sin \delta$	9.3902 _n		1	20.7	1 43.2
$\cos(H+\alpha)$	9.9776		0	44.8	
h	1.2918				
$\sin "$	9.4958		2	0.007	0.008
$\sec \delta$	0.0135				
	+6.32	0.8011			

i	0.7696				
	0.7561	+5.71	0.26		
$\text{Nov } 5 + 43.91 =$	2.927	$+20.06$			

α 1855	0	53	33	0	54	0	-0	24	52	$\text{No } 156 =$	$W. 0.954$	$\alpha = 0^h 52, 57.53$
			+32.8									$\delta = -0^{\circ} 31', 31.0$
α 1866	0	54	6.8	9.98783	9.36819							
δ 1855	-0	23		2.90284	7.85935 _n							
			+3.6	-0.93	7.32754 _n							
δ 1866	-0	19.4		2.5798	+13 19.54					$\text{Arg } Z$	-0°	$\text{No } 154 \approx 156$
				0	55 3.323	-0	18	11.46				

α	12°	32'			
$G+\alpha$	42	46			
$H+\alpha$	50	30			
$E+f$	+38.71				
	1.1515	+14.18			
$\cos(G+\alpha)$	9.8658		+50	154	W. 154
	1.2857		-2.5		
$\sin(G+\alpha)$	9.8319		2	6.2	2 55.8
$\tan \delta$	7.7500 _n		2	26.2	
	-0.07	8.8676 _n	0	54.0	
		8.8498 _n	-0.07	-0	228
$\sin \delta$	7.7500 _n		1	12.2	2 1.8
$\cos(H+\alpha)$	9.8035		1	32.2	
h	1.2963				
$\sin "$	9.8874				
$\sec \delta$	0.0000		0.000	0.000	
	+15.27	1.1837			
i	0.7128		0.09		
	0.7128	+5.16			
$\text{Nov } 12 + 53.91 =$	3.594	$+19.27$			

α 1855 4 28 18.6
 4 28 +36.7
 55.3
 δ 1855 +12 48.8
 +1.4
 +12 50.2

Arg 2 +12° No 613

α 67 14
 $G+\alpha$ 96 28

96 26

$H+\alpha$ 104 12
 $E+f$ +38.71

103 12

0.3373_m -2.18
 -21.75

+38.83

0.3363_m -2.17

$\cos(G+\alpha)$ 9.0516_m

+37.2
 -0.4

9.0494_m

-18^s
 -5.5

q 1.2857

$\sin$ " 9.9972

3 55.9 4 14.3

1.2869

6 3.0

$\tan \delta$ 9.3577

4 3.9

9.9972

6 17.0

+4.37 0.6406

4 29.6

+4.38 0.6418

4 28.7

0.0327_m -1.08 +12 50

0.0022_m -1.01 +12 48

$\sin \delta$ 9.3467

0 33.7 0 15.3

9.3467

1 34.3

$\cos(H+\alpha)$ 9.3897_m

0 25.7

9.3897_m

1 48.3

h 1.2968

$\sin$ " 9.9866

0.000

1.2969

0.000

$\sec \delta$ 0.0110

0.000

0.0110

0.000

+19.68 1.2939

+19.78 1.2963

i 0.7128

0.7018 +5.03 0.01

0.7026

0.6916 +4.92 0.13

0.13

Nov 12 +62.76 = 4^s 184 +1.77

Nov 13 +62.99 = 4^s 199 +1.74

α 1825 22 20 39.83 22 21 46 -13 42 18

2 11.57

α 1866 22 22 51.4

2.95882 9.61870_m

δ 1825 -13 48 31.2

2.87383 9.38715_m

+12 26.2

+5.555 9.00585

W XXII 466

δ 1866 -13 36 5.0

22 22 57.276 13 36 3.22

α 335 43

$G+\alpha$ 5 0

$H+\alpha$ 14 41

$E+f$ +38.48

1.2815 +19.12

-13°

$\cos(G+\alpha)$ 9.9983

-5.6

q 1.2832

$\sin$ " 9.9403

23 6.7 23 28.8

$\tan \delta$ 9.3837_m

23 13.6

-0.40 9.6072_m

22 22.8

0.6520_m -4.49 -13 39

$\sin \delta$ 9.3714_m

0 43.9 1 6.0

$\cos(H+\alpha)$ 9.9856

0 50.8

h 1.2950

$\sin$ " 9.4039

0.005

$\sec \delta$ 0.0124

0.003

0.005

0.004

+5.14 0.7113

i 0.7298

0.02

0.7174 +5.22 0.31

Nov 10 +43.22 = 2^s 881 +19.85

α 1825	21	15	31.49	21	16	36	-4	59	56
			2. 2. 71						
	21	17	40.40	9.87877	9.81563	n			
δ 1825	-5	5	5.9	2.79378	8.94185	n			
		+10	19.5	+3.948	8.95748	n	XXI	387	
	-4	54	46.4	+2	9.839	10	2.499		
				+3.136					
				+2	9.027				
α		319	25	21	17	40.517	-4	54	43.91
$G+\alpha$		348	21						
$H+\alpha$		16	33						
$E+f$	+39.85								
		1.2880	+19.41						
$\cos(G+\alpha)$		9.9909					-15		
q		1.2971					-1.1		
$\sin(G+\alpha)$		9.3052	n		1	1.5	1	17.6	
$\tan \delta$		9.9341	n		1	8.7			
	+0.34	9.5354			21	17.5			
		0.2159	n	-1.65	-4	55			
$\sin \delta$		8.9327	n		2	44.0	3	0.1	
$\cos(H+\alpha)$		9.9816			2	51.2			
h		1.8016							
$\sin(H+\alpha)$		9.4542	n						
$\sec \delta$		0.0015					0.002	0.002	
	+5.72	0.7573							
i		0.6122							
		0.6107	+4.08				0.005		
Nov 21	+45.91	-3.061	+21.84						

α 1825 23 51 31.8
+2 6.0
23 49 25.8 53 37.8

δ 1825 -3 21 53
+13 42
-3 8 11

α 357 21
17

$G+\alpha$ 26 4 27 7

$H+\alpha$ 20 44 21 47
 $E+f$ +40.53

1.2578 +18.10

$\cos(G+\alpha)$ 493 +9°
9.9542 -3.1

q 1.3036

$\sin(G+\alpha)$ 9.6422 6588 1 16.5

$\tan \delta$ 8.7388 n 0 50.7

50 7012 23 49.4

-0.47 9.6852 n

0 0.0113 n -1.00 2 -3 10

$\sin \delta$ 8.7382 n 1 27.1

$\cos(H+\alpha)$ 9.7407 9679 1 1.3

h 1.3042

$\sin "$ 9.5490 5694 +0.003

$\sec \delta$ 0.0006 -0.002

+7.48 742

+7.47 0.8538

i 0.5387 +0.01

0.5381 +3.45 -0.11

51 67 3

Nov. 26 +14. 3.15 +20.51

Comp. star "h" for Antiope.
3' 5" sp 45.9 W XXIII 1104

$$\alpha 1855 \quad 4 \quad 11 \quad 28.8$$

$$\quad \quad \quad + 26.3$$

$$\quad 4 \quad 12 \quad 5.1$$

$$\delta 1855 \quad +11 \quad 36.5$$

$$\quad \quad \quad + 1.7$$

$$\quad +11 \quad 38.2$$

Arg 2. +11° No 572

$$\alpha \quad 63 \quad 1$$

$$G + \alpha \quad 91 \quad 33$$

$$H + \alpha \quad 82 \quad 35$$

$$E + f \quad +41.08$$

$$\cos(G + \alpha) \quad 8.43237$$

$$\sin \alpha \quad 1.3088$$

$$\tan \delta \quad 9.9999$$

$$\quad 9.3137$$

$$\quad +4.19 \quad 0.6224$$

$$\quad 9.7214 \quad +0.53$$

$$\sin \delta \quad 9.3046$$

$$\cos(H + \alpha) \quad 9.1108$$

$$\sin \alpha \quad 1.3060$$

$$\tan \delta \quad 9.9964$$

$$\quad 0.0091$$

$$\quad +20.48 \quad 1.3115$$

$$\quad 0.4651$$

$$\quad 0.4560 \quad +2.86$$

$$\quad 0.00$$

$$\quad 0.03$$

$$\text{Nov 30} \quad +65.75 = 4^{\circ} 38.3 \quad +2.84$$

$$\alpha 1855 \quad 4 \quad 1 \quad 38.8$$

$$\quad \quad \quad + 26.2$$

$$\quad 4 \quad 2 \quad 15.0$$

$$\delta 1855 \quad +11 \quad 4.9$$

$$\quad \quad \quad + 1.8$$

$$\quad +11 \quad 6.7$$

$$\alpha \quad 60 \quad 34$$

$$G + \alpha \quad 88 \quad 22$$

$$H + \alpha \quad 68 \quad 49$$

$$E + f \quad +42.88$$

$$\cos(G + \alpha) \quad 8.4551$$

$$\sin \alpha \quad 1.3243$$

$$\tan \delta \quad 9.9998$$

$$\quad 9.2933$$

$$\quad +4.14 \quad 0.6174$$

$$\quad 0.1528 \quad +1.42$$

$$\sin \delta \quad 9.2851$$

$$\cos(H + \alpha) \quad 9.5579$$

$$\sin \alpha \quad 1.3098$$

$$\tan \delta \quad 9.9696$$

$$\quad 0.0082$$

$$\quad +19.39 \quad 1.2876$$

$$\quad 0.1026$$

$$\quad 0.0954 \quad +1.25$$

$$\quad 0.00$$

$$\quad 0.05$$

$$\text{Dec 12} \quad +66.41 = 4^{\circ} 42.7 \quad +3.27$$

$$91 \quad 30$$

$$81 \quad 38$$

$$+41.23$$

$$9.72827 - 0.53$$

$$8.41817$$

$$1.3101$$

$$9.9999$$

$$9.3137$$

$$+4.20 \quad 0.6237$$

$$9.7239 \quad +0.59$$

$$9.3046$$

$$9.1629$$

$$1.3064$$

$$9.9954$$

$$0.0091$$

$$+20.46 \quad 1.3109$$

$$0.4456$$

$$0.4365 \quad +2.72$$

$$0.11$$

$$\text{Dec 1} \quad +65.89 = 4^{\circ} 39.3 \quad +2.79$$

Arg 2. +11° No 579

$$\alpha 1855 \quad 6 \quad 16 \quad 43$$

$$6 \quad 17 \quad 22$$

$$S 1855 \quad +18 \quad 42$$

$$+18 \quad -0.2$$

$$+18 \quad 42$$

At mean date
Dec
S over
1866
since 3m ago
tan 8

Arg $Z + 18^\circ$ No 1212 & 1207

$$\alpha \quad 94 \quad 20$$

$$G + \alpha \quad 121 \quad 59$$

$$H + \alpha \quad 100 \quad 22$$

$$E + f \quad +43.19 \quad 508 \quad -11.24$$

$$1.0447 \quad -11.14$$

$$\cos(G + \alpha) \quad 9.7240 \quad n$$

$$1.3268$$

$$\sin(G + \alpha) \quad 9.9285$$

$$\tan 8 \quad 9.5296$$

$$+6.09 \quad 49$$

$$+6.13 \quad 0.7864$$

$$849 \quad -1.22$$

$$0.0777 \quad -1.18$$

$$\sin 8 \quad 9.5060$$

$$\cos(H + \alpha) \quad 9.2688 \quad n$$

$$1.3101$$

$$\sin \quad 9.9924$$

$$\sec 8 \quad 0.0236$$

$$+21.18 \quad 61$$

$$+21.20 \quad 1.3255$$

$$+45$$

$$-6.4$$

$$4 \quad 51.7 \quad 5 \quad 0.7 \quad 5 \quad 17.1$$

$$5 \quad 10.4$$

$$17.8$$

$$6 \quad 16.6$$

$$+18 \quad 39$$

$$1 \quad 26.1 \quad 1 \quad 17.1 \quad 0.7$$

$$1 \quad 7.4$$

$$0.002 \quad 0.002 \quad 0.002$$

$$0.000 \quad 0.000 \quad 0.000$$

$$121 \quad 55$$

$$99 \quad 46$$

$$+43.34 \quad 513 \quad 26$$

$$1.0447 \quad -11.15$$

$$-1.7^\circ$$

$$-4.6$$

$$9.7232 \quad n$$

$$1.3281$$

$$9.9288$$

$$9.5296$$

$$6.11 \quad 65$$

$$+6.14 \quad 0.7864$$

$$65.3 \quad -1.16$$

$$0.0777 \quad -1.18$$

$$+18 \quad 39$$

$$9.5260$$

$$9.2293 \quad n$$

$$1.3102$$

$$9.9937$$

$$0.0236$$

$$+21.25 \quad 5$$

$$+21.27 \quad 1.3278 \quad 21$$

$$1 \quad 25.8 \quad 1 \quad 11.5$$

$$1 \quad 20.8$$

$$0.004 \quad 0.004$$

$$0.000 \quad 0.000$$

$$i \quad 9.9860$$

$$Dec 14 \quad 46 \quad 9.9824 \quad +0.86$$

$$Dec 14 \quad +70.52 \quad -4.70 \quad -11.60$$

$$-11.46$$

$$Dec 15 \quad 70 \quad 9.8800 \quad +0.02$$

$$Dec 15 \quad +70.70 \quad -4.71 \quad -11.70$$

$$-11.56$$

$$\alpha 1855 \quad 4 \quad 46 \quad 40.6$$

$$4 \quad 47 \quad 29.4$$

$$+48.8$$

$$S 1855 \quad +48 \quad 32.4$$

$$+1.2$$

$$+48 \quad 33.6$$

Arg $Z + 48^\circ$ No 1182

$$\alpha \quad 71 \quad 52$$

$$G + \alpha \quad 99 \quad 26$$

$$H + \alpha \quad 77 \quad 18$$

$$E + f \quad +43.34 \quad 0.5427 \quad -3.49$$

$$\cos(G + \alpha) \quad 9.2146 \quad n$$

$$1.3281$$

$$\sin \quad 9.9941$$

$$\tan 8 \quad 0.0542$$

$$+23.79 \quad 1.3764$$

$$0.5272 \quad +3.37$$

$$\sin 8 \quad 9.8749$$

$$\cos(H + \alpha) \quad 9.3421$$

$$1.3102$$

$$\sin(H + \alpha) \quad 9.9892$$

$$\sec 8 \quad 0.1793$$

$$+30.11 \quad 1.4787$$

$$i \quad 9.8800$$

$$9.7007 \quad +0.50$$

$$Dec 15 \quad +97.24 \quad = 6.5483 \quad +0.38$$

α 1855 6 1 5.6

6 1 45

 δ 1855 +18 42.10
+18 42 α 90 26 $G + \alpha$ 116 51 $H + \alpha$ 82 46 $E + f$ +45.510.9994 n -9.99+6^s
+4.2 $\cos(G + \alpha)$ 9.6548 n

1.3446

6^h 9^m $\sin$ " 9.9504 $\tan \delta$ 9.5295+0 8^m

+6.68 0.8245

9.9157 +0.82

+001

+000

 $\sin \delta$ 9.5060 $\cos(H + \alpha)$ 9.1000

1.3097

 $\sin$ " 9.9965

+00

 $\sec \delta$ 0.0235

+08

+21.37 1.3297

 i 0.0535 n 0.0300 n -1.07

Dec 29 +73.56 4.904 -10.24

6 0 41.1

6 1 20

+18 45.9

+18 46

 α 90 20 $G + \alpha$ 116 39 $H + \alpha$ 81 43 $E + f$ +45.670.9977 n -9.95-28^s $\cos(G + \alpha)$ 9.6519 n

+1.9

1.3458

 $\sin(G + \alpha)$ 9.9513

5 55

 $\tan \delta$ 9.5312

-0 6

+6.73 0.8283

9.9756 +0.94

 $\sin \delta$ 9.5075

-004

 $\cos(H + \alpha)$ 9.1586

-000

1.3095

 $\sin$ " 9.9955 $\sec \delta$ 0.0237

+21.31 1.3287

 i 0.1047 n

+00

+04

0.0810 n -1.20

Dec 30 +73.71 +4.914 -10.21

Arg. Z +18° No 1107

Arg Z +18 No 1105

1867

Arg Z + 18° No 1077

 α 1855 5 56 8.1~~5 56 51~~

8 1855 +18 55.8

+18 56

 α 89 13 $G+\alpha$ 178 44 $H+\alpha$ 76 51 $E+f$ +0.19 0.9912_n -9.80+14^s
-4.8 $\cos(G+\alpha)$ 9.9999_n

0.9913

5 40

 $\sin$ " 8.3445 $\tan \delta$ 9.5353

-0.16

+0.07 8.8711

0.2768 +1.50

+003
+000 $\sin \delta$ 9.5111 $\cos(H+\alpha)$ 9.3570 h 1.3087 $\sin$ " 9.9884 $\sec \delta$ 0.0241

-00

-00

+20.95 1.3212

 i 0.2767_n = 1.89Jan 3 +21.21 = 0.2526_n -1.79
1.414 -10.094 4 13.02 4 5 ³¹~~26~~ +29 30 54

4 2 36.6

4 6 49.6

9.68035 9.94340

2.60582 9.75291

+29 27 31.4

+6 48.48 1.44569

+6 47.8

+2 27.906 +6 43.5

29 34 19

4 6 49.89 29 34 14.9

W IV 108

 α 61 42-3^s5 $(G+\alpha)$ ~~G+α~~ 132 53+4^s95 $(H+\alpha)$ 351 0

9 45

S

 $E+f$ +6.90

+5 38

9 53

0.8020_n -6.34

+5 46

 $\cos(G+\alpha)$ 9.8328_n

-0.004

-0.04

 $\sin$ " 0.9692

+0.010

+0.24

 $\tan \delta$ 9.8649

Sum +0.006

+0.20

 $\tan \delta$ 9.7540

+3.87 0.5881

0.9648 +9.22

 $\sin \delta$ 9.6933 $\cos(H+\alpha)$ 9.9946 h 1.2769 $\sin$ " 9.1943_n $\sec \delta$ 0.0606-3.40 0.5318_n i 0.8891_n =0.8497_n -6.740.8285_n -3.86

1867 Mar 2 +7.37

Object observed	Comet 1867 I.	Mnemosyne	Planet (91)	Mnemosyne	Mnemosyne
Comparison star	W IV 108	W VIII 1526	W II 328	W VIII 978	W VIII 983
Mean α	4 4 13.02	8 58 44.72	2 12 15.18	8 36 17.93	8 36 26.60
Mean δ	29 27 31.4	-3 45 31.4	+15 21 26.5	+0 19 46.4	+0 24 41.5
App. mean place, mean date.	4 5 31 29 30 54	8 59 48	2 13 24	8 37 22	8 37 31
		-3 50 26	+15 27 20	+0 15 22	+0 20 17
cos α	9.68035	9.94340	9.92186	9.80205	9.88839
sin α	9.94340	9.84911	9.94017	9.88839	9.80240
log prec δ	2.60582	9.75291	2.84738	2.72752	2.72787
const. prec α	+27.906	1.44569	0.93123	7.65031	7.77087
prec α	+2 36.87	+6 43.5	+2 17.50	+2 9.56	+2 9.22
prec δ	+6 43.5	+2 6.294	+11 43.6	-8' 54.0	-8' 54.4
1867 Mean α	4 6 49.89	7 0 51.01	2 14 32.68	8 38 27.09	8 38 35.82
Mean δ	29 34 14.9	-3 55 26.5	+15 33 10.1	+0 10 52.4	+0 15 47.1
Mean α in arc.	61 42	135 13	63° 38'	129 37	129 39
Date	1867 Mar 2.	Jan 30	Feb 7	Mar 8	
G + α	132 53	215 1	110 54	199 80	199 32
H + α	351 0	96 44	347 4	52 27	52 29
E + f	+6.90	+3.88	+4.78	+7.37	+7.37
	0.8020n -6.34	0.8921n -7.50	0.5275n -3.37	0.9438n -3.79	0.9437n -3.78
cos(G + α)	9.8328n	9.9133n	9.5524n	9.9743n	9.9742n
sin(G + α)	9.9692	9.9788	9.9751	9.9695	9.9695
tan δ	9.8649	9.1588n	9.9704	9.5235n	9.5242n
	9.7540	8.8362n	9.4446	7.4995	7.6596
	0.5881 +3.87	9.5738 +.37	0.3901 +2.46	7.9925n -0.01	8.1533n -0.01
	0.9648 +9.22	9.1997 +.16	0.7072 +5.10	8.5592. +0.04	8.7190 +0.05
sin δ	9.6933	8.8352n	9.4284	7.4995	7.6596
cos(H + α)	9.9946	9.0692n	9.9888	9.7849	9.7846
tan δ	1.2769	1.2953	1.2900	1.2748	1.2748
sin(H + α)	9.1943n	9.9970	9.3498n	9.8992	9.8994
sec δ	0.0606	0.0010	0.0162	0.0000	0.0000
	0.5318n -3.40	1.2933 +19.65	0.6560n -4.53	1.1740 +14.93	1.1742 +14.93
i	0.8891n	0.7267n	0.7884n	0.9012n	0.9012n
	0.8285n -6.74	0.7267n -5.32	0.7722n -5.92	0.9012n -7.97	0.9012n -7.97
red. α	0.491 = +7.37	+1.593 +23.90	+0.181 = +2.71	+1.486 = +22.29	+1.486 = +22.29
red. δ	-3.86	-12.96	-4.19	-16.72	-16.70
App. α	4 6 50.381	9 0 52.603	2 14 32.861	8 38 28.576	8 38 37.306
App. δ	29 34 11.04	-3 55 39.46	+15 33 5.91	+0 10 35.68	+0 15 30.40
in rev. log $\Delta \alpha \cos \delta$	0.6679n	1.482	1.529	1.12509n	1.563
log $\Delta \delta$	9.8648	8.315	8.314	8.314	8.314
log $\Delta \alpha$	0.0608	0.0010	0.0010	0.0000	0.0000
log $\Delta \delta$	0.5435n	0.1239	0.894	0.93998n	1.24238n
log $\Delta \alpha$	0.5435n	0.1239	0.894	0.93998n	1.24238n
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Comet 1867 I				Comet 1867 I				Comet 1867 I				Comet 1867 I.				Comet 1867 I.			
W _{II} V 749				W _{II} V 880				W _{II} V 1047				Lat. 10683				W _{II} V 749			
5 23	55.16			5 27	12.13			5 30	57.89			5 29	28.14			5 29	28.14		
+34 55	56.6			+34 57	52.8			+35 5	16.1			+35 15	56.7			+35 15	56.7		
5 25	17			5 28	36			5 32	22			5 31	43			5 31	43		
+34 57	0			34 58	53			35 6	8			+35 17	25			+35 17	25		
9.17868	9.99500			9.13539	9.99591			9.08020	9.99684			9.09028	9.99668			9.09028	9.99668		
2.10415	9.84442			2.06086	9.84493			2.00567	9.84687			2.21851	9.84990			2.21851	9.84990		
+2 47.76	1.58880			+2 47.89	1.59022			+2 48.14	1.59309			+2 28.63	1.79881			+2 28.63	1.79881		
	+2 7.1				+1 55.0				+1 41.3				+2 45.4				+2 45.4		
5 26	42.92			5 30	0.02			5 33	46.03			5 33	56.77			5 33	56.77		
+34 58	3.7			34 59	47.8			35 6	57.4			35 18	42.1			35 18	42.1		
81 40				82 30				83 26				83 29				83 29			
Mar 28				Mar 29				Mar 30				Mar 31				Mar 28			
147 53				148 33				149 20				149 13				147 53			
342 53				342 39				342 31				341 30				342 53			
	+8.81				+8.89				+8.96				+9.03				+8.81		
0.9061 _n	-8.06			0.9101 _n	-8.13			0.9145 _n	-8.21			0.9147 _n	-8.22			0.9061 _n	-8.06		
9.9278 _n				9.9310 _n				9.9346 _n				9.9340				9.9278 _n			
0.9783				0.9791				0.9799				0.9807				0.9783			
9.7256				9.7175				9.7076				9.7091				9.7256			
9.8447				9.8452				9.8471				9.8503				9.8447			
0.5486	+3.54			0.5418	+3.48			0.5346	+3.42			0.5408	+3.47			0.5486	+3.54		
1.0124	+10.29			1.0125	+10.29			1.0137	+10.32			1.0136	+10.32			1.0124	+10.29		
9.7582				9.7586				9.7598				9.7620				9.7582			
9.9803				9.9798				9.9795				9.9770				9.9803			
1.2739				1.2741				1.2744				1.2746				1.2739			
9.4688 _n				9.4745 _n				9.4777 _n				9.5015 _n				9.4688 _n			
0.0864				0.0866				0.0873				0.0883				0.0864			
0.8291 _n	-6.75			0.8352 _n	-6.84			0.8394 _n	-6.91			0.8644 _n	-7.32			0.8291 _n	-6.75		
0.9062 _n				0.9050 _n				0.9038 _n				0.9024 _n				0.9062 _n			
0.8198 _n	-6.60			0.8184 _n	-6.58			0.8165 _n	-6.55			0.8141 _n	-6.52			0.8198 _n	-6.60		
+0.373	+5.60			+0.369	+5.53			+0.365	+5.47			+0.345	+5.18			+0.373	+5.60		
	-4.37				-4.42				-4.44				-4.42				-4.37		
5 26	43.293			5 30	0.389			5 33	46.395			5 33	57.115			5 26	43.293		
34 57	59.33			34 59	43.38			35 6	52.96			35 18	37.68			34 57	59.33		
1.55212	0.7614 _n			1.22337	1.3967			1.09785 _n	1.3977			0.8343 _n				1.55212	0.7614 _n		
9.81491				9.81491				9.81496				9.8149				9.81491			
0.08641				0.08672				0.08734				0.0864				0.08641			
1.45344	.118			1.12500				1.00015				1.2328				1.45344	.118		
+28.408	-56.55			+13.335	+4.417			+10.504	+4.476			+2.4660	-1.6.89			+28.408	-56.55		
10 21	10 21			9 8	9 8			10 48	10 48			10 26	10 34			10 21	10 21		
4 54	4 54			3 38	3 38			5 15	5 15			4 52	5 0			4 54	4 54		
+0.014	+0.16			+0.005	+0.04			+0.006	+0.07							+0.014	+0.16		
-0.000	-0.02			+0.000	+0.08			+0.004	+0.13			-0.000	-0.03			-0.000	-0.02		
+0.014	+0.14			+0.005	+0.12			+0.010	+0.20			-0.000	-0.03			+0.014	+0.14		
9.690	0.565			9.624	0.410			9.702	0.602			9.695	0.576			9.690	0.565		
9.425	0.300			9.366	0.152			9.444	0.344			9.435	0.316			9.425	0.300		
+2.66	+2.00			+2.32	+1.42			+2.78	+2.21			+2.27	+2.07			+2.66	+2.00		
+28.688	-54.41			+13.572	+4.571			-9.728	+4.703			+2.46872	-1.4.85			+28.688	-54.41		
5 ^h 27 ^m 11.98				5 ^h 30 ^m 13.96				5 ^h 33 ^m 36.67	+5 ^h 36 ^m 43.99			5 ^h 27 ^m 0.61				5 ^h 27 ^m 11.98			
at 10 21.9				at 9 9.6				at 10 48.6	at 10 26.1			at 8 57.5				at 10 21.9			
+34° 57' 4.9				+35° 3' 49.1				+35° 11' 0.2	+35° 17' 32.8			34 56	28.9			+34° 57' 4.9			
	4.8				49.4				30.7				28.9				4.8		

Red. to time of α.

Direct observed
Comparison star

Comet 1867 I.

Comparison (a)
of Apr 2.

Comet 1867 I.

(a)

Mean α 5 45 10.41
" δ + 35 32 33.2

Place mean date 5 46 34
35 32 34

$\cos \alpha$ $\sin \alpha$ 8.76775 9.99925
 $\log \text{prec } s$ $\tan \delta$ 1.69322 9.85404
 $\text{const} - \text{prec } \alpha$ $\log (\text{const} - \text{prec } \alpha)$ 40.056 1.60267
 $\text{prec } \alpha$ $\text{prec } s$ + 2^m 49.018 + 49.331

Mean α 5 47 59.428
1867 " in arc 37 10
" δ 35 33 22.54

Date Apr 3

Apr 3

Apr 2

Apr 3

G + α 152 15H + α 341 49

E + f

+ 9.26
0.9303_m - 8.52 $\cos(G + \alpha)$ 9.9469_m $\sin(G + \alpha)$ 0.9934 $\tan \delta$ 9.6680

9.8541

0.5055 + 3.20

1.0178 + 10.42

 $\sin \delta$ 9.7645 $\cos(H + \alpha)$ 9.7773 $\tan \delta$ 1.2755 $\sin(H + \alpha)$ 9.4942_m $\sec \delta$ 0.08960.8593_m - 7.23 i 0.8974_m0.8078_m - 6.42red α + 0.349 = + 5.23" δ - 4.52App. α 5 47 59.777" δ + 35 33 18.02 $\log \Delta \alpha \cos \delta$ $\log \Delta \delta$ 0.8959 $\log \text{rec } s$ $\log \frac{10'' - \text{rec } s}{10''}$ 1.327 $\log \sec \delta$ 0.089 $\log \Delta \alpha \sin \sec$ 9.761 $\Delta \alpha$ in sec $\Delta \delta$ - 1^m 43.865 + 1' 17.10

10 49 10 49

5 42 5 40

11 24 11 22

11 28 11 28

Diff. refr. due to $\Delta \alpha$ 0.000 + 0.03" $\Delta \delta$ - 0.005 - 0.13

Sum - 0.005 - 2.23

 $\log \pi \alpha \times \delta$ $\log \pi s \times \Delta$ 9.700 0.573

9.438 0.311

 $\pi \alpha$ πs + 0.274 + 2.05 $\Delta \alpha + R_\alpha + \pi \alpha$; $\Delta \delta + R_\delta + \pi s$ - 1^m 43.591 + 1' 15.64App. α 5^h 46^m 16.186Sid. time 10^h 48^m 48.5App. δ + 35° 34' 22.66at time of α " "- 5^m 10.920 - 3 28.02 - 3 27.95

11 24 11 22 11 28

5 42 5 40 5 46

- 2.10 - 0.13 - 0.14

- 0.005 - 2.23 - 0.14

0.000 0.0

0.000 - 0.2

0.000 - 0.2

9.563 0.316

9.304 0.057

+ 0.201 + 1.14

+ 0.5799 - 55.64

5^h 42^m 48.525^h 42^m 49.6508^h 42^m 30.5

35° 29' 48.35

35° 28' 53.20

151 5 150 55

341 33 340 29

+ 9.18 + 9.26
0.9247_m - 8.41 0.9249_m - 8.419.9422_m 9.9415_m

0.9825 0.9834

9.6844 9.6867

9.8532 9.8532

0.5201 + 3.31 0.5233 + 3.34

1.0162 + 10.38 1.0137 + 10.32

9.7639 9.7639

9.9771 9.9743

1.2752 1.2755

9.5003_m 9.5238_m

0.0893 0.0893

0.8648_m - 7.32 0.8886_m - 7.740.8992_m 0.8974_m0.8099_m - 6.45 0.8081_m - 6.43

+ 0.345 + 5.17 + 0.324 + 4.86

- 4.48 - 4.52

Change in 1 day

+ 0.021 + 0.057

9.857 0.763_m

9.815 9.070

0.089

9.761

+ 0.577 - 56.82

8 42 8 42

2 59 2 59

0.000 0.0

0.000 - 0.2

0.000 - 0.2

9.563 0.316

9.304 0.057

+ 0.201 + 1.14

+ 0.5799 - 55.64

5^h 42^m 48.525^h 42^m 49.6508^h 42^m 30.5

35° 28' 53.20

Comet 1867. I

(6)

6

W_{II} V 525W_{II} V 581

Eunomia

Isis

Orpheus 11817

W_{XII} 826

5 16 49.11 5 18 28.76
+34 32 22.7 +34 32 8.2

11 52 26.61
-17 9 53.7

12 46 47.41
+2 54 46.4
+9 10 46.4

5 18 12 5 19 52
34 33 42 34 33 24

11 52 52
-17 12 42

12 47 50
+9 3 53

9.25858 9.99274 9.24110 9.99331 9.99979 8.49304 9.99047 9.31639
2.18405 9.83814 2.16657 9.83805 2.53242 9.49105 2.91594 9.20290
38.042 1.58026 38.084 1.58074 -0.219 9.34064 -1.856 0.26867
2^m 47.004 2' 32.78 2^m 47.046 2' 26.75 +51.984 -5 40.75 2 7.106 -13 44.02

5 20 33.560
80 8
+34 41 33.2

5 19 36.114 5 21 15.806
+34 34 55.48 +34 34 34.95

11 53 18.594
-17 15 34.45
178 20

12 48 54.516
+8 57 2.38
192 14

Mar 26

Apr 4

Apr 4

Apr. 3.

Apr 5

Apr 6

146 41

243 35

257 10

257 0

343 30

73 9

84 56

83 53

+8.66
-7.92
0.8989^m
9.92210^m
0.9769
9.7398
9.8404

+9.25
0.6317^m-4.28
9.6483^m
9.9327^m
0.9834
9.9521^m
9.4922^m

+9.40
-2.15
0.3319^m
9.3466^m
0.9853
9.9890^m
9.1972

+9.48
-2.18
0.3384^m
9.3521^m
0.9863
9.9887^m
9.1972

0.5571 +3.61

0.4277 +2.68

0.1715^m-1.480.1722^m-1.49

1.0106 +10.25

0.2099^m-1.62

9.4141 +.26

9.4961 +.31

9.7553
9.9817
1.2736
9.4533^m
0.0850

9.4722^m
9.4622^m
1.2755
9.9809
0.0200

9.1919
8.9460
1.2762
9.9983
0.0053

9.1919
9.0276
1.2766
9.9975
0.0053

0.8119^m-6.48

1.2764 +18.90

1.2798 +19.05

1.2794 +19.03

0.9080^m-6.650.8974^m-7.540.8934^m-7.730.8912^m-7.69

0.8228^m
+0.386 +5.79
-4.32

+2.055 = +30.83
-13.44

+1.798 = +26.97
-9.62

+1.801 = +27.02
-9.56

5 20 33.946
34 41 28.88

11 53 20.649
-17 15 47.89

12 48 56.314
8 56 52.76

12 48 56.317
8 56 52.82

0.7497 0.338
9.8150
0.0850
0.6497

1.610

1.628

1.224

0.00527 1.4724 0.00531 0.444
1.66164 1.52183^m
9.81497 9.81497
1.48183 1.34211^m

+4.464 -21.36 +57.43 +6' 39.18
-42.23 +6' 56.52 -1^m 14.32 +2' 44.14

+30.331 -4' 50.61 -21.984 -27.24

8 40 8 40 9 18 9 22 9 12 9 32 12 38 12 36
3 20 3 20 3 58 4 2 3 52 3 52 +0 46 +0 44

14 40 14 40 12 33 12 39
1 51 1 51 -0 16 -0 10

+001 +0.01
000 -0.01 +001 +.13 +001 +.14 +002 +0.19

+010 +0.06 -005 .00
-002 -0.13 000 -0.01

+001 00 +002 +.19

+008 -07 -005 -01

9.597 0.403
9.357 0.165

8.940 0.865
8.611 0.536

+228 +1.46 +0.41 +3.44

+117 +2.88 -0.18 +2.82

+4.693 -19.90 +57.431 -42.229 +6' 56.66 -1^m 14.277 +2 47.77

+30.331 -4' 47.80 -22.007 -24.43

5 20 38.639 Mean α 5 20^m 33.545 20^m 33.577 App α 11^h 52^m 6.372

12^h 49^m 26.770 12^h 48^m 34.310

8^h 39^m 48^s Mean δ +34° 21' 34.79 31' 31.61 App δ -17° 13' 0.12

14^h 39^m 48^s 12 32 33
13 43 29 11 32 40

+34 41 8.98 12' 59.82

+8 52 49.6 +8 56 28.39
4.88 27.13

Object observed	Sappho	Oeltz. 6580	Arg. Z. +35 no 1328	Deltz. 11690-1
Comparison Star	W XII 385	BAC 2420	W II V 1554	tr. { Eunomia
Mean α	12 22 1.50	7 12 44.84	5 45 43.38	11 42 14.92
δ	-8 49 7.5	-30 31 32.8	+35 44 34.2	-16 13 35.9
Approx place mean date	12 23 6	7 13 4	5 47 7	11 42 42
δ	-8 56 7	-30 32 26	+35 46 0	-16 16 26
$\cos \alpha \sin \alpha$	9.99779n 9.00269n	9.49615n 9.97754	8.74962 9.99931	8.99876n 8.87745
$\log \text{prec} \tan \delta$	2.92326n 9.19653n	2.02379n 9.77085n	1.67509 9.85727	2.53140n 9.46527n
$\log \text{const-prec} \log \text{const-prec} \alpha$	-888 9.94860	-12.733 1.70494n	+40.361 1.60576	-500 9.69927n
$\text{prec} \alpha$	+2m 8.074	+39.470 -1 46.85	+2 49.323 +47.32	+51.703 -5 39.94
$\text{prec} \delta$	-13.6803			
Mean α	12 24 9.574	7 13 24.310	5 48 32.703	11 43 6.623
1867 " " in arc	186° 2'		87° 8'	175° 47'
δ	-9° 3' 5.53	-30 33 19.65	+35° 45' 21.52	-16 19 15.84
Date	Apr 9	Apr 13	Apr 13	Apr 13
G + α	250 20		150 48	239 27
H + α	74 31		331 28	60 7
E + f	+9.72		+10.04	+10.04
	0.5765n -3.28		0.9351n -8.61	0.7002n -5.01
$\cos(G + \alpha)$	9.5270n		9.9410n	9.7061n
$\sin(G + \alpha)$	0.9895		0.9941	0.9941
$\tan \delta$	9.9739n		0.6883	9.9351n
	9.2022n		9.8574	9.4665n
	0.1656 +1.46		0.5398 +3.47	0.3957 +2.49
	9.9012n -80		0.9902 +9.78	0.4258n -2.67
$\sin \delta$	9.1968n		9.7667	9.4487n
$\cos(H + \alpha)$	9.4264		9.9438	9.6974
$\tan \delta$	1.2778		1.2797	1.2797
$\sin(H + \alpha)$	9.9840		9.6791n	9.9380
$\sec \delta$	0.0054		0.0907	0.0178
	1.2672 +18.50		1.0495n -11.21	1.2355 +17.20
i	0.8838n		0.8719n	0.8719n
	0.8784n -7.56		0.7812n -6.04	0.2447n -7.15
red. α	+1.979 +29.68		+0.153 = +2.30	+1.982 = 29.73
" δ	-11.64		-4.87	-14.53
App α	12h 24m 11.553		5 48 32.856	11 43 8.605
" δ	-9° 3' 17.17		+35 45 16.65	-16 19 30.67
$\log \Delta \alpha \cos \delta$	1.53804	1.017	1.708	0.931
" $\log \Delta \delta$	9.81499	8.608	8.312	8.312
" $\log \frac{10''-1''}{10''}$	0.00548			
" $\Delta \alpha$ in sec	1.35851 -2.11	1.047	0.175	0.708
Corr to $\Delta \delta$				+5.137.97
$\Delta \alpha$ in sec	$\Delta \delta$	+22.830 +1' 41.89	-30.04 -8 20.42	+7m 15.05 +1' 23.60
π	13 11 13 11	9 36 9 50	10 51 10 27	12 8 11 59
h	+0 46 +0 46	2 23 2 37	4 56 4 39	0 23 0 14
Diff. of α due to $\Delta \alpha$	+0.08 +0.02			
" " $\Delta \delta$	+0.08 +0.07	-0.135	0.000 +0.03	+0.02 +0.35
Sum	+0.09 +0.09	-4.19		
$\log (\frac{\pi \alpha \Delta \alpha}{\pi \delta \Delta \delta})$	8.929 0.823			8.644 0.863
	8.689 0.583			8.307 0.526
$\pi \alpha$	+0.49 +3.83			+0.20 +3.36
$\pi \delta$				
$\Delta \alpha + R_\alpha + \pi_\alpha$	$\Delta \delta + R_\delta + \pi_\delta$	+22.888 +1' 45.81	-30.175 -8 24.61	+7 15.05 +1 23.63
App α	12h 24m 34.441	Mean α 7h 12m 54.14	App 5 55 37.906	11h 44m 30.347
sid time	13h 10m 44.9	Oeltz. red to 1867 52.48		at 12h 14m 25.3
Mean time	11 58 56	Mean δ -30° 41' 44.3	App 35° 46 40.28	-16° 13 48.99
App δ	-9° 1' 31.36	Oeltz. red to 1867 52.4		46.85
at time of α				

Comet 1867. I
Arg Z + 35° no 1328

Sappho

Isis

Isis

W XII 262

W XII 591

W XII 578

12 14 55.24
-7 23 48.7

12 33 58.42
+9 45 23.5

12 33 9.37
+9 57 53.8

12 16 0

12 35 2

12 34 13

-7 30 49
9.99894n 8.84358n
2.92441n 0.87457n
+5.17 9.71319
+2 9.479 -14 0.25

+9 38 28
9.99491n 9.18261n
2.92038n 9.23013
-1.452 0.16213n
+2 7.510 -13 52.49

+9 50 58
9.99514n 9.17244n
2.92061n 9.23960
-1.450 0.16142n
+2 7.512 -13 52.93

12 17 4.719
-7 37 48.95
184° 16'

12 36 5.930
-7 37 15.99
+9 31 31.01
189° 1'

12 35 16.882
+9 44 0.27
+188° 49'

Apr 18

Apr 18

Apr 23

247° 8'

251 53

250 53

63 28

68 13

62 57

+10.48
0.5900n -3.89

+10.48
0.4932n -3.11

+10.94
0.5225n -3.33

9.5895n
1.0005
9.9644n
9.1269n

9.4927n
1.0005
9.9779n
9.2247

9.5152n
1.0073
9.9754n
9.2344

+1.24
0.0918 +12.26

-1.60
0.2031n -15.0

-1.65
0.2171n -1.65

0.0553n -1.14

0.0705 +1.18

0.1712 +1.48

9.1230n
9.6500
1.2823
9.9517
0.0039

9.2187
9.5695
1.2823
9.9678
0.0060

9.2281
9.6578
1.2853
9.9497
0.0063

1.2379 +17.30

1.2561 +18.03

1.2413 +17.43

0.8586n
0.8497n -7.08

0.8536n
0.8476n -7.04

0.8313n
0.8250n -6.68

+1.935 = +29.02
-12.11

+1.794 = +26.91
-8.97

+1.781 +26.72
-8.53

5 55 48.044
+35 46 40.56

12 17 6.654
-7 38 1.06
+9 31 22.04

12 35 18.663
+9° 43' 52.34

1.15122 0.998
9.81500 8.308
0.09090
1.05712 0.202

1.39893 1.596n
9.81502 8.307
0.00392
1.21787 0.800

1.718
8.307
1.059

-11.2406 +1' 37.54

+16.515 -6 26.19
+1 22.87
+8 32.41

-1m 55.40 +5' 36.55

9 48 9 48
3 53 3 53

12 20 12 19 13 4 13 16
+0 3 +0 2 +0 26 +0 38

13 6 13 20
0 33 0 47

-004 +0.4
000 +0.4

+005 0.80
000 -0.26

000 +0.13

-004 00

+005 -0.26
000 +0.20

000 +0.13

9.645 0.433
9.373 0.161

7.778 0.816
7.633 0.572

8.681 0.666
8.446 0.431

+2.36 +1.45

+5.003 +3.72
+5.028 +2.70

+5.035 +2.67

-11.174 +1' 38.99

+16.523 -6 22.73
+1 22.898 +8 35.31

-1m 55.365 +5' 39.35

5h 55m 36.870
at 9h 48m 1s
+35° 48' 19.55
19.46

12 17 23.177
at 12h 19m 31s
10 32 29
-7 44 23.79
23.51

12 37 30.622
at 13 3 51
11 16 42
+9 39 57.35
56.04

Objects observed Comparison Star	Terpsichore Oeltz. 13487	Calyx W XV 755	Terpsichore Oeltz. 13380	Atiadne Oeltz. 15788-9
Mean α	14 6 16.02	15 37 41.21	13 58 13.21	16 29 29.96
" δ	-19 47 2.8	-11 46 13.4	-19 21 14.0	-23 49 24.0
Approx. place mean date	14 6 44 -19 49 27	15 38 50 -11 36 10 44 16	13 58 41 -19 23 39	16 30 0 -23 50 32
$\cos \alpha$ $\sin \delta$	9.92991n 9.72034n	9.76173n 9.91181n	9.93896n 9.69462n	9.88284n 9.96562n
$\log \mu \cos \delta$ $\tan \delta$	2.48255n 9.55690n	2.68720n 9.31760n	2.47160 9.54562n	2.11548 9.64536n
$\log \mu \cos \delta$ $\log \mu \cos \delta$	+4.303 0.63379	+9.523 0.97879	+3.952 0.59679	+9.280 0.96753
$\mu \cos \delta$ $\mu \cos \delta$	+56.506 -4 50.10	+2 18.85 -8 6.63	+56.155 -4 56.21	+1 1.483 2 10.46
1867 Mean α	14 7 12.526	15 39 59.695	13 59 9.365	16 30 31.443
" " in arc	281 48	235 0	209 47	247 38
" δ	-19 51 52.90	-11 48 20.03	-19 26 10.21	-23 51 34.46
Date	May 4	Apr 27	May 12	May 31
G + α	271 59	296 33	268 31	302 31
H + α	75 6	105 9	65 27	85 54
E + f	9.5631 +12.06 +1.37	0.6612 +11.33 +4.58	9.4499n +12.94 -28	0.7983 +15.44 +6.28
$\cos(G+\alpha)$	8.5392	9.6480	8.4131n	9.7304
$\sin(G+\alpha)$	1.0239	1.0132	1.0368	1.0679
$\tan \delta$	9.9998n	9.9522n	9.9998n	9.9260n
$\tan \delta$	9.5579n	9.3201n	9.5476n	9.6458n
$\tan \delta$	0.5816	0.2855 +1.93	0.5842 +3.84	0.6397 +4.36
$\tan \delta$	0.5577 +3.82	0.0157 +1.04	0.4378n -2.74	9.7677n -59
$\sin \delta$	0.2337n -1.71	9.3108n	9.5221n	9.6068n
$\cos(H+\alpha)$	9.4102	9.4172n	9.6186	8.8543
$\tan \delta$	1.2922	1.2877	1.2971	1.3066
$\sin(H+\alpha)$	9.9851	9.9846	9.9588	9.9989
$\sec \delta$	0.0267	0.0093	0.0255	0.0388
$\sec \delta$	1.3040 +20.14	1.2816 +19.13	1.2814 +19.12	1.3443 +22.10
$\sec \delta$	0.7657n	0.8103n	0.7002n	0.4401n -2.75
$\sec \delta$	0.7390n -5.48	0.8010n -6.32	0.6747n -4.73	0.4013n -2.52
red. α	+25.401 +36.02 -6.82	+2.159 +32.39 -0.76	+2.395 +35.93 -7.75	+25.793 +41.90 -3.127 +3.17
App. α	14 7 14.927	15 40 1.854	13 59 11.760	16 30 34.236
" δ	-19 51 59.72	-11 48 20.73	-19 26 17.96	-23 51 31.29
$\log \Delta \alpha \cos \delta$ $\log \Delta \delta$	0.60010 1.334	1.12772 1.324	1.200	0.897
" $\log \mu \cos \delta$ $\log \mu \cos \delta$	9.81496 8.310	9.81500 8.308	8.307	8.296
" $\log \mu \cos \delta$ $\log \mu \cos \delta$	0.02673	0.00922		
" $\log \mu \cos \delta$ $\log \mu \cos \delta$	0.44179 0.441	0.95194 0.429	0.321	0.1568
$\Delta \alpha$ in sec $\Delta \delta$	+2.766 -3 31.49	-8.952 +3 26.50 +1	37.97 -2 35.22	+1 4.26 +1 17.33
$\Delta \alpha$ in sec $\Delta \delta$	13 7 13 8	13 50 13 47	13 29 13 29	16 9 16 9
$\Delta \alpha$ in sec $\Delta \delta$	-1 0 -0 59	-1 50 -1 53	-1 29 -0 32	-0 22 -0 22
Diff. refr. due to $\Delta \alpha$	+0.01 -0.01	-0.05 +0.04	+0.02 -0.19	-0.01 +0.13
$\Delta \delta$	+0.04 -0.28	-0.02 +0.19	+0.02 -0.19	-0.01 +0.13
Sum = R_α R_δ	+0.05 -29	-0.09 +0.23	+0.02 -19	-0.01 +13
$\log(\pi \alpha \times \Delta)$ $\log(\pi \delta \times \Delta)$	9.064n 0.873	9.301n 0.831	8.792n 0.876	8.643n 0.893
$\log(\pi \alpha \times \Delta)$ $\log(\pi \delta \times \Delta)$	8.676n 0.485	9.005n 0.535	8.399n 0.483	8.713n 0.963
$\pi \alpha$ $\pi \delta$	-0.47 +3.06	-1.01 +3.43	-0.25 +3.04	-0.52 +9.18
$\Delta \alpha + R_\alpha + \pi \alpha$ $\Delta \delta + R_\delta + \pi \delta$	+2.724 -3 28.72	-9.062 +3 30.16 +1	37.947 -2 32.37 +1	4.207 +1 26.64
App. α	14 7 17.651	15 39 52.792	14 0 49.707	16 31 38.443
App. δ	13h 5m 36s	13 49 45	13h 29m 17s	16h 8m 10s
App. δ	10 15 32	11 27 5	10 7 41	11 31 26
App. δ	-19 55 28.44	-11 44 50.57	-19 28 50.33	-23 50 4.65
at time of obs	28.54	50.17	50.27	4.89

Comet II 1867

Planet (92)

"

"

Star. s. p. Oeltz. 21372

W XV 96

Oeltz. 21372

Oeltz 21372

$$\begin{array}{r} 15^{\circ} \ 4' \ 58.20 \\ -8 \ 11' \ 5.1 \end{array}$$

$$\begin{array}{r} 21 \ 17' \ 8.56 \\ -22 \ 18' \ 21.2 \end{array}$$

$$\begin{array}{r} 15^{\circ} \ 6' \ 5'' \\ -8 \ 15' \ 55'' \end{array}$$

$$\begin{array}{r} 21 \ 17' \ 37'' \\ -22 \ 20' \ 31'' \end{array}$$

$$\begin{array}{r} 9.83765n \ 9.86071n \\ 2.76312n \ 9.16216n \\ +5.919 \ 0.77325 \\ +2 \ 14.881 -9 \ 39.59 \end{array}$$

$$\begin{array}{r} 9.88042 \ 9.81339n \\ 2.41306 \ 9.61227n \\ +6.056 \ 0.78221 \\ +58.259 +4 \ 18.86 \end{array}$$

$$\begin{array}{r} 15^{\circ} \ 7' \ 13.081 \\ 226 \ 48 \\ -8 \ 20' \ 44.69 \end{array}$$

$$\begin{array}{r} 21 \ 18' \ 6.819 \\ 319 \ 32 \\ -22 \ 14' \ 2.34 \end{array}$$

June 11

July 13.5

July 14.5

July 15

July 15

279 17

4 39

27.25

4 12

55 25

119 54

119 0

118 6

$$\begin{array}{r} +17.00 \\ 0.2927 +1.96 \end{array}$$

$$\begin{array}{r} +21.67 \\ 1.1247 +13.33 \end{array}$$

$$\begin{array}{r} +21.81 \\ 1.1259 +13.37 \end{array}$$

$$\begin{array}{r} +21.95 \\ 1.1270 +13.40 \end{array}$$

$$\begin{array}{r} 9.2077 \\ 1.0850 \\ 9.9943n \\ 9.1664n \end{array}$$

$$\begin{array}{r} 9.9986 \\ 9.6976 \\ 1.1261 \\ 9.9380 \\ 8.9088 \\ 9.6115n \end{array}$$

$$\begin{array}{r} 9.9987 \\ 9.6976 \\ 1.1272 \\ 9.9418 \\ 8.8865 \\ 9.6115n \end{array}$$

$$\begin{array}{r} 9.9988 \\ 1.1282 \\ 8.8647 \\ 9.6115n \end{array}$$

0.2457 +1.76

$$\begin{array}{r} 9.6464n \\ 0.5816 +3.82 \end{array}$$

$$\begin{array}{r} 9.6252n \\ 0.5692 +3.71 \end{array}$$

$$\begin{array}{r} 9.6044n \\ 0.5562 +3.60 \end{array}$$

0.2255n -1.68

$$\begin{array}{r} 9.5780n \\ 9.6976n \\ 1.3060 \\ 9.9380 \\ 0.0335 \end{array}$$

$$\begin{array}{r} 9.5780n \\ 9.6856n \\ 1.3056 \\ 9.9418 \\ 0.0335 \end{array}$$

$$\begin{array}{r} 9.5780n \\ 9.6730n \\ 1.3052 \\ 9.9455 \\ 0.0335 \end{array}$$

9.1618n

9.5780n

9.5780n

9.5780n

9.7540

9.6976n

9.6856n

9.6730n

1.3097

1.3060

1.3056

1.3052

9.9156

9.9380

9.9418

9.9455

0.0046

0.0335

0.0335

0.0335

1.2299 +16.98

1.2775 +18.94

1.2809 +19.10

1.2842 +19.24

0.1214n

0.4697

0.4879

0.5052

0.1168n -1.31

$$\begin{array}{r} 0.4362 +2.73 \\ +2.678 +40.17 \end{array}$$

$$\begin{array}{r} 0.4544 +2.85 \\ +2.599 +40.49 \end{array}$$

$$\begin{array}{r} 0.4717 +2.96 \\ +2.719 +40.79 \end{array}$$

$$\begin{array}{r} +2.383 = +35.74 \\ -1.03 \end{array}$$

$$\begin{array}{r} +2.412 +36.18 \\ +19.88 \end{array}$$

$$\begin{array}{r} +2.446 +36.69 \\ +19.93 \end{array}$$

$$\begin{array}{r} +2.719 +40.79 \\ +19.96 \end{array}$$

$$\begin{array}{r} 15^{\circ} \ 7' \ 15.264 \\ -8 \ 20' \ 45.72 \end{array}$$

$$\begin{array}{r} 21 \ 18' \ 9.281 \\ -22 \ 13' \ 42.46 \end{array}$$

$$\begin{array}{r} 21 \ 18' \ 9.265 \\ -22 \ 13' \ 42.41 \end{array}$$

$$\begin{array}{r} 21 \ 18' \ 9.538 \\ -22 \ 13' \ 42.38 \end{array}$$

1.20374

0.98372

1.466

0.929

1.696

1.472

9.81520

9.81520

8.298

8.298

8.298

0.00462

0.03343

0.581

0.169

0.985

0.589

1.02356

0.83235

0.581

0.169

0.985

0.589

$$\begin{array}{r} -10.558 \\ -1.74 \end{array}$$

$$\begin{array}{r} -6.798 \\ +4 \ 46.59 \end{array}$$

$$\begin{array}{r} -36.940 \\ -1 \ 23.26 \end{array}$$

$$\begin{array}{r} -1 \ 10.98 \\ -8 \ 6.96 \end{array}$$

$$\begin{array}{r} -1 \ 18.47 \\ -4 \ 50.38 \end{array}$$

$$\begin{array}{r} 15^{\circ} \ 21' \ 15.22 \\ +14' \ 15 \end{array}$$

$$\begin{array}{r} 21 \ 0' \ 20.59 \\ -18' \ 19 \end{array}$$

$$\begin{array}{r} 19 \ 27' \ 19.29 \\ -1 \ 51' \ 49 \end{array}$$

$$\begin{array}{r} 19 \ 57' \ 20.0 \\ -1 \ 20' \ 17 \end{array}$$

$$\begin{array}{r} 19 \ 34' \ 19.37 \\ -1 \ 43' \ 40 \end{array}$$

$$\begin{array}{r} -003 \ 00 \\ 000 \ 00 \end{array}$$

$$\begin{array}{r} -003 \ 01 \\ -002 \ 43 \end{array}$$

$$\begin{array}{r} +005 \ 16 \\ +005 \ 16 \end{array}$$

$$\begin{array}{r} +014 \ 0.84 \\ +014 \ 0.84 \end{array}$$

$$\begin{array}{r} +015 \ 0.52 \\ +015 \ 0.52 \end{array}$$

$$\begin{array}{r} -003 \ 00 \\ 8.431 \ 0.820 \end{array}$$

$$\begin{array}{r} -005 \ 44 \\ 8.556n \ 0.886 \end{array}$$

$$\begin{array}{r} +005 \ 16 \\ 9.330n \ 0.872 \end{array}$$

$$\begin{array}{r} +014 \ 0.84 \\ 9.193n \ 0.879 \end{array}$$

$$\begin{array}{r} +015 \ 0.52 \\ 9.193n \ 0.879 \end{array}$$

$$\begin{array}{r} 8.431 \ 0.820 \\ 8.631 \ 1.020 \end{array}$$

$$\begin{array}{r} 8.556n \ 0.886 \\ 9.330n \ 0.872 \end{array}$$

$$\begin{array}{r} 9.330n \ 0.872 \\ 9.193n \ 0.879 \end{array}$$

$$\begin{array}{r} 9.193n \ 0.879 \\ 9.193n \ 0.879 \end{array}$$

$$\begin{array}{r} 9.193n \ 0.879 \\ 9.193n \ 0.879 \end{array}$$

+080 +1.047

+080 +1.047

+080 +1.047

+080 +1.047

+080 +1.047

-10.481 +8.73

-10.481 +8.73

-10.481 +8.73

-10.481 +8.73

-10.481 +8.73

15^h 7^m 4.983

21 18 2.694

21 17 32.583

21 16 58.572

15^h 20^m 48^s20^h 59^m 58^s

at 19 27 37

at 19 57 32

10 0 58

13 33 22

11 57 21

12 23 15

$$\begin{array}{r} -8^{\circ} \ 20' \ 36.99 \\ 35.90 \end{array}$$

$$\begin{array}{r} -22 \ 8' \ 55.43 \\ 55.78 \end{array}$$

$$\begin{array}{r} -22 \ 15' \ 5.83 \\ 5.49 \end{array}$$

$$\begin{array}{r} -22 \ 21' \ 50.18 \\ 49.56 \end{array}$$

$$\begin{array}{r} -22 \ 21' \ 50.18 \\ 49.56 \end{array}$$

without parallax

Object observed	Planet (92)	Momene	Comet 1867 II.	Comet 1867 II
Comparison Star	Star sp. Delta. 21372	Delta. 20429		B' Scorpii
Mean α (cat)		20 12 36.05 -23 56 49.6		
Approx place mean date		20 13 5 -23 55 15		
$\cos \alpha$ $\sin \alpha$ log prec $\tan \delta$ -const + prec $\log \text{prec}_a + \text{const}$ prec α $\text{prec } \delta$		9.73925 9.92225 2.27189 7.64697 +8.429 0.92377 +1 0.632+3 7.02		
Mean α 1867 " " in arc " δ	21 16 48.364 319 12 -22 18 53.17	20 13 36.682 303 24 -23 53 42.58		
Date	July 16	July 23	July 23	July 28
G + α	3 38	346 18		
H + α	116 52	94 44		
E + f	0.1283 +22.08 +13.43	1.1232 +23.00 +13.28		
$\cos(G + \alpha)$	9.9991 1.1292	9.9874 1.1358		
$\sin(G + \alpha)$	8.8019	9.3745		
$\tan \delta$	9.6132	9.6464		
	9.5443 - 35	0.1567 + 1.43		
	0.5393 + 3.46	9.8269 + .67		
$\sin \delta$	9.5794	9.6075		
$\cos(H + \alpha)$	9.6551	8.9180		
h	1.3048	1.3014		
$\sin(H + \alpha)$	9.9504	9.9986		
sec δ	0.0338	0.0389		
	1.2890 +19.45	1.3389 +21.83		
i	0.5217	0.6198		
	0.4879 + 3.07	0.5809 + 3.81		
red α	+2.745 = +41.18	+3.084 = +46.26		
" δ	+19.96	+17.76		
App α	21 16 51.109	20 13 39.766		15 57 44.87
" δ	-22 18 33.21	-23 53 24.82		-19 26 18.3
log $\Delta \cos \delta$ log $\Delta \delta$	1.780	1.717		
" $\log \frac{10''}{1''}$				
" $\log \frac{10''}{1''}$				
" $\Delta \alpha$ in sec corr. to $\Delta \delta$	1.197	1.028		
$\Delta \alpha$ sec $\Delta \delta$	-26.44 -9 50.51	+1 ^m 5 ^s 20 -8' 30" 48		+4 33.31 +24" 3
τ	19 41 19 45	21 56 21 46		18 1 18 5
h	-1 35 -1 31	+1 41 +1 31		2 0 2 4
Diff refr due to $\Delta \alpha$	+0.25 -1.07	-0.28 -1.05		
$\Delta \delta$				
Sum = R_α R_δ	+0.25 -1.07	-0.28 -1.05		0.00 0.00
log ($\pi_\alpha \times \Delta$) log ($\pi_\delta \times \Delta$)	9.265 0.878	9.297 0.882		9.350 0.861
π_α π_δ		+0.84 +3.24		
$\Delta \alpha + R_\alpha + \pi_\alpha$ $\Delta \delta + R_\delta + \pi_\delta$		+1 5.256 -8 28.29		
App. α without par.	21 16 24.694	with par. 20 14 45.022		parallax not applied 16 2 18.18
sid. time	19 40 38	21 55 55		18 1 40
mean "	12 2 27	21 49 51		9 36 35
App. δ at time of α	-22 28 24.79	-24 1 53.11		-19 25 54.0
	23.43	54.19		52.2

Comet 1867 II.

Oeltz. 15174.5

15	55	20.38
-18	40	56.3

15	55	50
-18	42	26

9.71236n 9.93287n
 2.24500 9.52971n
 +6.594 0.81913
 +58.777 1175.79

15 56 19.177 = 239° 3'
 43 52
 -18 44 2.09

July 24.35

281 48

29 37

0.4473 +23.13

+2.80

9.3107
 1.1366
 9.9907n
 9.5303n

0.6576 +4.54

0.7469n -5.58

9.5067n
 9.9392
 1.3010
 9.6939
 0.0237

1.0186 +10.44

0.6300

0.6063 +4.04

+2.541 = +38.11

+1.26

15	56	21.718
-18	43	50.83

1.627

8.293

.832

-57.30 +6 55.78

17	23	17 24
+1	28	+1 29

+002 +0.56

+012 +0.56

9.220 0.865
 9.971

+177 +7.83

-57.111 +7 4.17

with 15 55 24.607 without 21 8 23.811
 at 17 23 20 at 20 12 0
 parallax -18 36 46.66 parallax 11 46 33
 46.07 51.01

Planet (92)

Oeltz. 21250.1

21	7	22.885
-23	47	34.55

21	7	52
-23	45	30

9.86389 9.83405n
 2.39653 9.64363n
 +6.827 0.83423
 +59.030 +4 9.19

21 8 21.715
 = 317 5
 -23 43 25.36

July 28.5

358 56

103 49

1.1401 +23.63

+13.80

9.9999
 1.1402
 8.2699n
 9.6429n

9.0530 +.11

0.2813 +1.91

9.6046n
 9.3781n
 1.2986
 9.9872
 0.0383

1.3241 +21.09

0.6752

0.6369 +4.33

+2.989 +44.83

+20.04

21	8	24.904
-23	43	5.32

0.189

9.815

0.038

0.042

20	14	20 13
-0	54	-0 55

-0.001 +0.00

+0.009 -0.60

+008 -0.60
 9.033n 0.889

Comet 1867 II

Oeltz. 15206.7.8.9

15	57	31.522
-18	57	48.50

15	58	1
-18	59	15

9.70542n 9.93534n
 2.23806n 9.53666n
 +6.738 0.82865
 58.941 -2 53.00

15 58 30.463
 = 239 38
 -19 0 41.50

July 26

281 54

28 13

0.4528 +23.38

+2.84

9.3143
 1.1385
 9.9906n
 9.5372n

0.6663 +4.64

0.7578n -5.72

9.5329n
 9.9451
 1.2998
 9.6747
 0.0244

0.9989 +9.98

0.6543

0.6299 +4.26

+2.533 = +38.00

+1.38

15	58	32.996
-19	0	40.12

1.3949

9.8152

0.0244

1.2345

17	56	17 52
+1	58	+1 54

+0.012 +0.10

-0.003 -0.09

+009 +01
 9.342 0.861

Comet 1867 II

Oeltz. 15437

16	6	42.54
-19	51	17.8

16	7	12
-19	53	44

9.67445n 9.94513n
 2.20709n 9.55860n
 +7.249 0.86028
 59.452 -2 41.10

16 7 41.992
 = 241 55
 19 53 58.90

July 31

282 9

25 51

0.4997 +23.99

+3.16

9.3570
 1.1427
 9.9885n
 9.5587n

0.6899 +4.90

0.7831n -6.07

9.5320n
 9.9451
 1.2969
 9.6395
 0.0267

0.9631 +9.19

0.7041

0.6774 +4.76

+2.539 = +38.08

+1.85

16	7	44.531
-19	53	57.05

0.8003

9.8152

0.0267

0.6422

18	24	18 25
+2	17	+2 18

-0.004 -0.04

-0.028 -0.76

-032 -80
 9.403 0.856

without 15 58 50.165 without 16 7 40.112
 at 17 55 22 at 20 12 0
 parallax 17 55 22 parallax 18 22 28
 -19 1 38 64 -20 0 35.61
 41.29 35.17

observed
comparison star
mean α & cat. alt

from place mean date

cos α sin α
log prec δ tan δ
prec α - const log (H α - const)
prec δ

Mean α 1867

" in arc
" δ

Date

G + α

H + α

E + f

cos (G + α)

sin (G + α)

tan δ

sin δ

cos (H + α)

sin (H + α)

sec δ

i

red α
" δ

App α
" δ

log $\Delta \alpha$ cos δ

$\Delta \delta$

10" 1"

sec δ

10"

" $\Delta \alpha$ in sec

corr to $\Delta \delta$

$\Delta \alpha$ in sec

$\Delta \delta$

T = Sidereal time
hour angle

Diff. ref. due to $\Delta \alpha$
 $\Delta \delta$

Corr for diff. of time of α & δ

Complete $\Delta \alpha$ complete $\Delta \delta$

No obs.

mean time

cos time App α

App δ

log $\pi \alpha \times \Delta$ log $\pi \delta \times \Delta$

Memene

Anonyma

Memene

Oct. 203845

Memene

Oct. 203845

Memene

Anonyma

20 9 59.005
24 21 25.35

20 10 29
- 24 19 50

9.73165 9.92544_n
2.26429 9.65529_n
+ 8.655 0.93728
+ 1 0.858 + 3 3.78

20 10 59.863
- 24 18 21.57
302 45

20 8 16.200 Wash
302 4
- 24 14 19.84 "

July 24

July 26

July 28

July 30

346 1

345 1

344 36

343 45

93 45

91 20

89 29

86 57

+23.13
1.1236 +13.29

+23.38
1.1234 +13.28

+23.63
1.1243 +13.81

+23.87
1.1236 +13.29

9.9869

9.9849

9.9841

9.9817

1.1367

1.1385

1.1402

1.1419

9.3842_n

9.4125_n

9.4241_n

9.4533_n

9.6508_n

9.6547_n

9.6547_n

9.6534_n

0.1717 +1.48

0.2057 +1.61

0.2190 +1.66

0.2486 +1.77

9.7276 +.53

9.2811 +19

8.8554_n -0.7

9.6368_n -43

9.6111_n

9.6145_n

9.6145_n

9.6133_n

8.8156_n

8.3668_n

7.9423

8.7260

1.3009

1.2998

1.2986

1.2975

9.9993

9.9999

0.0000

9.9993

0.0397

0.0401

0.0401

0.0400

1.3397 +21.84

1.3398 +21.87

1.3387 +21.81

1.3368 +21.71

0.6317

0.6543

0.6752

0.6948

0.5920 +3.91

0.6142 +4.11

0.6351 +4.32

0.6548 +4.52

+3.097 +46.45

+3.124 +46.86

+3.140 = 47.10

+3.157 +47.35

+17.73

+17.58

+17.56

+17.38

20 13 25.152

20 11 2.987

20 11 3.003

20 8 19.357

- 24 6 14.07

- 24 18 3.99

- 24 18 4.01

- 24 14 2.46

1.64911 1.066

1.701

1.308

1.29835 1.520

9.81539 8.289

8.295

8.295

9.81531 8.292

0.03960

.991

.401

0.04020 .649

1.50410 .226

1.15386

+31.923 +1 54.09

+1 1.50 +8 12.57

-44.32 +3 19.22

+14.252 -5 25.88

19 26 7 19 40 50

21 23 22 21 13 32

20 42 33 20 42 12

20 18 55 20 12 30

- 20 48 7 - 0 33

+ 1 11 + 1 1

+ 0 32 + 0 32

+ 0 11 + 0 6

+ 018 - 06

+ 016 + 91

+ 003 + 34

+ 008 + 02

- 003 + 20

- 1.08

- 03

000 - 56

+1.66

- 46

+1 55.89

+1 1.516 +8 12.40

-44.317 +3 19.53

+14.260 -5 26.88

5 5

6 9

11 16 31

13 5 36

12 16 55

11 45 36

20 13 57.090

20 12 4.503

20 10 18.686

20 8 33.617

- 24 4 18.18

- 24 9 51.59

- 24 14 44.48

24 19 29.34

8.982_n 0.894

9.149 0.902

9.806 0.894

8.322 0.895

Memoria
AnonymaMemoria
Oeltz. 20281.2Planet (92)
Oeltz. 21103Comet 1867 II
Oeltz. 15910.1.220 1 55.505
24 27 27.7520 58 6.09
-25 14 54.816 36 7.74
-22 53 55.920 2 25
-24 25 5220 58 36
-25 12 5016 36 38
-22 55 109.70681 9.93485_n
2.23945 9.65732_n
+8.886 0.94872
+1^m1^s089 +2^m53^s569.84682 9.85212_n
2.37946 9.67289_n
+7.613 0.88156
+59.816 +3 59.589.55119_n 9.97063_n
2.08383_n 9.62615_n
+8.981 0.95331
+1 1.184 -2 1.2920 2 56.594
-24 24 34.19
300° 44'20 59 5.906
-25 10 55.22
314 4616 37 8.924
-22 55 57.19
249 17

July 31

Aug 2

Aug 11

Aug 18

343 18

341 34

353 54

287 3

86 0

82 48

88 14

14 54

+23.99
1.1240 +13.30+24.22
1.1215 +13.23+25.22
0.1484 +14.07+26.01
0.6232 +4.209.9813
1.1427
9.45814_n
9.6534_n9.9772
1.1443
9.5000_n
9.6568_n9.9975
1.1509
9.02813_n
9.6723_n9.4471
1.1561
9.9305_n
9.6263_n

0.2545 +1.80

0.3011 +2.00

9.8575 +.71

0.7629 +5.79

9.7538_n -570.0106_n -1.029.4080_n -260.8607_n -7.269.6133_n
8.8436
1.2969
9.9989
0.04009.6162_n
9.0981
1.2957
9.9966
0.04079.6289_n
8.4890
1.2901
9.9998
0.04349.5905_n
9.9851
1.2851
9.4103
9.9643

1.3358 +2.66

1.3330 +2.53

1.3333 +2.54

0.7317 +5.38

0.7041
0.6641 +4.610.7218
0.6811 +4.800.7882
0.7448 +5.560.8325
0.7968 +6.26+3.163 +47.45
+17.34+3.183 +47.75
+17.01+3.165 +47.47
+29.37+2.479 +37.18
+3.2020 8 19.363
-24 14 2.5020 2 59.777
-24 24 17.1820 59 9.071
-25 10 35.8516 37 11.403
22 55 53.991.674
8.2951.088
8.2951.376
8.295-39.49 -7 43.36
20 27 16 20 28 15
+0 20 +0 21+2^m52^s63 -2' 0".08
21^h43^m12^s 21 38 51
+1 38 +1 34-1 26.58 -3' 52".91
20 3 11 20 3 20
-0 54 -0 54+5 6.47 -1 57.0
18 24 39
1 42-004 -85
+09
-39.494 -7 44.12
8 7-0.06 -".26
-".39
+2 52.624 -2 0.73
2 52.624 -2 0.73+008 -46
+04
-1 26.572 -3 53.33

+5 6.47 -1 57.0

11 50 0

12 57 51

10 42 43

8 36 56

20 7 39.869
46.62
-24 21 45.8620 5 52.401
-24 26 17.9120 57 42.499
14 29.18
-25 6 42.5216 42 17.87
-22 57 51.0

8.602 0.895

9.283 0.881

9.037_n 0.894

9.297 0.877

Object observed
Comparison star

Undina
Plane (92)

Delta. 21004.5

Undina

21004.5

Undina

21004.5

Undina

21004.5

am α catad

20 50 12.81
-25 56 50.95

True place mean date

20 50 43
-25 54 50

cos α sin α
log prec δ tan δ
prec α - const log (prec α - const)
prec α log prec δ

9.83116 9.86632 n
2.36380 9.68662 n
+8.118 0.90945
+1 0.321 +3 50.57

Mean α 1867
 δ
 α in arc

20 51 13.131
-25 53 0.38
312° 48'

Date

Aug 17

Aug 19

Aug 20

Aug 21

G + α

350 53

350 34

350 24

H + α

80 24

78 25

76 26

E + f

+25.82
1.1493 +14.10

+26.01
1.4502 +14.13

+26.20
1.1511 +14.17

cos (G + α)

9.9945

9.9941

9.9937

sin (G + α)

1.1548

1.1561

1.1574

tan δ

9.2000 n

9.2144 n

9.2294 n

sec δ

9.6860 n

9.6860 n

9.6860 n

sin δ

8.0408 +1.10

0.0565 +1.14

0.0728 +1.18

cos (H + α)

0.1484 n -1.41

0.2279 n -1.69

0.2945 n -1.97

tan δ

9.6400 n

9.6400 n

9.6400 n

sec δ

9.2221

9.3028

9.3706

sin (H + α)

1.2863

1.2851

1.2839

sec δ

9.9939

9.9910

9.9876

sec δ

0.0460

0.0460

0.0460

i

1.3262 +21.20

1.3221 +21.00

1.3175 +20.77

red. α

0.8225

0.8325

0.8417

δ

0.7765 +5.98

0.7865 +6.12

0.7957 +6.25

red. α

+3.208 +48.12

+3.210 +48.15

+3.210 +48.15

δ

+18.67

+18.56

+18.45

diff α

20 51 16.339

20 51 16.341

20 51 16.342

20 51 16.341

δ

-25 52 41.77

-25 52 41.82

-25 52 41.88

-25 52 41.93

log $\Delta \alpha \cos \delta$

1.653

1.044

1.590

1.801

1 sec δ

8.292

8.292

8.292

8.294

sec δ

0.881

0.217

0.762

1.245

$\Delta \alpha$ in sec

+1 58.32 +7 20.55

+33.900 -1 48.41

-8.77 -6 21.67

-46.68 -10 19.55

T = sidereal time

20 47 18

20 55 15

20 45 58

20 44 36

hour angle

-0 6

+0 2

-0 6

-0 7

Diff refr due to $\Delta \alpha$

-0 01

+0.85

+0 00

-0.21

$\Delta \delta$

-0 10

-0.80

+0 16

-1.25

Corr. for diff of time

+1.56

-0.27

+1.00

+2.51

Complete $\Delta \alpha$

+1 58.319 +7 22.96

+33.900 -1 48.89

-8.780 -6 21.47

-46.664 -10 18.29

$\Delta \delta$

5 5 6

12 5

6 4

6 4

Pro of comp

11 3 7

10 53 56

11 42 18

9 59 33

Mean time

20 53 14.66

20 51 50.24

20 51 7.56

20 50 29.68

diff α

-25 45 18.8

-25 54 30.7

-25 59 3.4

-26 3 0.2

δ

log $\pi \alpha \times \Delta$

$\pi \delta \times \Delta$

8.079 n

0.900

log $\pi \alpha \times \Delta$

8.079 n

0.900

8.079 n

0.900

$\pi \delta \times \Delta$

8.982

0.896

8.982

0.896

Planetary neb. h 2047

W XIX 925

$$\begin{array}{r} 19 \quad 34 \quad 35.56 \\ -14 \quad 38 \quad 5.7 \end{array}$$

$$\begin{array}{r} 19 \quad 35 \quad 46 \\ -14 \quad 35 \quad 18 \end{array}$$

$$\begin{array}{r} 9.60832 \quad 9.96093^m \\ 2.53379 \quad 9.41541^m \\ 133.57 \quad 1.12572 \\ +2 \quad 22.319 + 5 \quad 41.81 \end{array}$$

$$\begin{array}{r} 19 \quad 36 \quad 57.879 \\ -14 \quad 32 \quad 23.89 \end{array}$$

Aug 26

Undina.

Oct. 20940-1.

$$\begin{array}{r} 20 \quad 45 \quad 48.135 \\ -26 \quad 34 \quad 49.1 \end{array}$$

$$\begin{array}{r} 20 \quad 46 \quad 18 \\ -26 \quad 32 \quad 54 \end{array}$$

$$\begin{array}{r} 9.82191 \quad 9.87395^m \\ 2.35455 \quad 9.67865^m \\ +8.495 \quad 0.92915 \\ +1 \quad 0.698 +3 \quad 46.23 \end{array}$$

$$\begin{array}{r} 20 \quad 46 \quad 48.833 \\ -26 \quad 31 \quad 2.87 \\ 311 \quad 42 \end{array}$$

Aug 26

348 24

70 18

$$\begin{array}{r} +26.65 \\ 1.1515 +14.18 \end{array}$$

$$\begin{array}{r} 9.9910 \\ 1.1605 \\ 9.3034^m \\ 9.6981^m \end{array}$$

0.1620 +1.45

0.4585^m -2.87
$$\begin{array}{r} 9.6497^m \\ 9.5277 \\ 1.2811 \\ 9.9738 \\ 0.0483 \end{array}$$

1.3032 +20.10

$$\begin{array}{r} 0.8620 \\ 0.8137 +6.51 \end{array}$$

$$\begin{array}{r} +3.213 = +48.20 \\ +17.82 \end{array}$$

$$\begin{array}{r} 20 \quad 46 \quad 52.046 \\ -26 \quad 30 \quad 45.05 \end{array}$$

$$\begin{array}{r} 1.64586^m \quad 1.438 \\ 9.81525 \quad 8.294 \\ 0.01406 \\ 1.47517^m \quad .540 \end{array}$$

-29.866 +4 28.84

$$\begin{array}{r} 21 \quad 40 \\ 2 \quad 4 \end{array}$$

$$\begin{array}{r} +.017 \quad +0.16 \\ +.009 \quad +0.33 \\ -.008 \quad +0.17 \end{array}$$

-29.874 +4 29.01

$$\begin{array}{r} 6 \quad 5 \end{array}$$

$$\begin{array}{r} \text{mean place } 1867.0 \\ 19 \quad 36 \quad 28.00 \end{array} \left. \begin{array}{l} \\ \\ \end{array} \right\} \text{Herschel.}$$

-14 27 54.9 } 54.8

Undina

Oct. 20940-1.

$$\begin{array}{r} 20 \quad 45 \quad 48.135 \\ -26 \quad 34 \quad 49.1 \end{array}$$

$$\begin{array}{r} 20 \quad 46 \quad 18 \\ -26 \quad 32 \quad 54 \end{array}$$

$$\begin{array}{r} 9.82191 \quad 9.87395^m \\ 2.35455 \quad 9.67865^m \\ +8.495 \quad 0.92915 \\ +1 \quad 0.698 +3 \quad 46.23 \end{array}$$

$$\begin{array}{r} 20 \quad 46 \quad 48.833 \\ -26 \quad 31 \quad 2.87 \\ 311 \quad 42 \end{array}$$

Aug 27

348 15

69 17

$$\begin{array}{r} +26.74 \\ 1.1519 +14.19 \end{array}$$

$$\begin{array}{r} 9.9908 \\ 1.1611 \\ 9.3088^m \\ 9.6981^m \end{array}$$

0.1680 +1.47

0.4790^m -3.01
$$\begin{array}{r} 9.6497^m \\ 9.5487 \\ 1.2806 \\ 9.9709 \\ 0.0483 \end{array}$$

1.2998 +19.93

$$\begin{array}{r} 0.8656 \\ 0.8173 +6.57 \end{array}$$

$$\begin{array}{r} +3.209 +48.14 \\ +17.75 \end{array}$$

$$\begin{array}{r} 20 \quad 46 \quad 52.042 \\ -26 \quad 30 \quad 45.12 \end{array}$$

$$\begin{array}{r} 1.06506^m \quad 1.479 \\ 9.81525 \\ 0.04815 \\ 0.92846^m \quad .593 \end{array}$$

-8.481 +4 55.03

$$\begin{array}{r} 21 \quad 20 \quad 2 \quad 21 \quad 15 \quad 44 \\ +0 \quad 34 \quad +0 \quad 29 \end{array}$$

$$\begin{array}{r} -.005 \quad -.0.02 \\ +.006 \quad +0.64 \end{array}$$

$$\begin{array}{r} -.80 \quad -.65 \end{array}$$

-8.480 +4' 55" 00

$$\begin{array}{r} 5 \quad 5 \end{array}$$

10 56 28

20 46 43.562

-26 25 50.12

8.845 0.901

Planetary neb h 3744

Oct. 18197

$$\begin{array}{r} 18 \quad 16 \quad 41.08 \\ -23 \quad 18 \quad 27.9 \end{array}$$

$$\begin{array}{r} 18 \quad 17 \quad 11 \\ -23 \quad 18 \quad 14 \end{array}$$

$$\begin{array}{r} 8.87452 \quad 9.99878^m \\ 1.40716 \quad 9.63422^m \\ +9.762 \quad 0.98955 \\ +1 \quad 1.965 +25.54 \end{array}$$

$$\begin{array}{r} 18 \quad 17 \quad 43.045 \\ -23 \quad 18 \quad 2.36 \end{array}$$

Aug 27

$$\begin{array}{r} 0.86487^m \quad 1.001 \\ 9.81525 \\ 0.03689 \\ 0.71701^m \quad .197 \end{array}$$

-5.212 +1' 38" 19

$$\begin{array}{r} 6 \quad 5 \end{array}$$

$$\begin{array}{r} \text{mean place } 1867.0 \\ 18 \quad 17 \quad 37.83 \end{array}$$

-23 16 24.2

Object observed	W XVIII 85 = planetary neb. $\Sigma. 6$	Leda	Leda	Leda
Comparison star	W XVIII 92	Oeltz. 20180	Oeltz. 20180	Oeltz. 20180
mean α	18 3 50.95	19 54 34.11		
δ	+6 49 42.0	-18 39 23.2		
hrc place mean dot	18 4 52	19 55 3		
	+6 49 52	-18 38 2		
	8.32702 9.99990 n	9.68231 9.94281 n		
	1.25249 9.07843	2.21495 9.52788 n		
	-6.725 0.82771 n	+6.718 0.82724		
	2 2.287 +17.89	58.921 +2 44.04		
mean α 1867	18 5 53.187	19 55 33.031		
δ "	+6 49 59.89	-18 36 39.16		
α in arc		298 53		
Date	Aug 27	Aug 30	Aug 31	Sept 1
G + α		335 1		334 46
H + α		53 23		51 20
E + f		1.1202 +26.99		1.1206 +27.16
		+13.19		+13.20
cos(G + α)		9.9573		9.9565
$\sin(G + \alpha)$		1.1629		1.1641
$\tan \delta$		9.6257 n		9.6296 n
		9.5273 n		9.5273 n
		0.3159 +2.07		0.3210 +2.09
		0.5587 n -3.62		0.5779 n -3.78
$\sin \delta$		9.5040 n		9.5040 n
cos(H + α)		9.7756		9.7957
h		1.2791		1.2782
$\sin(H + \alpha)$		9.9045		9.8925
sec δ		0.0233		0.0233
		1.2069 +16.10		1.1940 +15.63
i		0.8755		0.8813
		0.8522 +7.12		0.8580 +7.21
red. α		+3.011 +45.16		+2.992 +44.88
		+1.669		+1.6.63
App α		19 55 36.042	19 55 36.032	19 55 36.023
δ		-18 36 22.47	18 36 22.50	-18 36 22.53
log $\Delta \alpha \cos \delta$	$\Delta \delta$ 1.33778 0.531	1.306	1.64908 1.289	0.7980 1.276
" $\frac{10''}{10''}$ $\frac{10''}{10''}$	9.81525	9.81520	9.81520	9.8152
" sec δ	0.00310	0.02323	0.02323	0.0232
" $\Delta \alpha$ in sec	corr to $\Delta \delta$ 1.15613 .067	.405	1.48751 .386	0.6364 .375
$\Delta \alpha$ in sec	$\Delta \delta$ -14.326 -33.27	+57.805 +3 18.31	+30.726 +3 11.05	+4.329 +3 4.96
Sid. time		21 25 40 21 27 23 21 18 51 21 19 38		21 41 4 21 46 1
Hour angle		+1 29 +1 31 +1 23 +1 24		+1 45 +1 50
diff. ref. due to $\Delta \alpha$		+5.006 +0.27	+5.018 +0.12	+0.02 +0.02
" " " $\Delta \delta$		+0.06 +0.27	+0.06 +0.27	+0.06 +0.25
Corr. for diff. of time		0.00	0.00	0.00
Complete $\Delta \alpha$	$\Delta \delta$	+57.811 +3 18.58	+30.750 +3 11.44	+4.337 +3 5.23
No. of comp	4 5	11 5	10 7	5 2
Mean time	mean α 1867.0	10 50 17	10 39 32	10 57 46
App α	18 5 38.86	19 56 33.853	19 56 6.782	19 55 40.360
δ	6 49 26.6	-18 33 3.89	-18 33 11.06	-18 33 17.30
log $\pi \alpha \times \Delta \pi \delta \times \Delta$		9.225 0.864	9.198 0.865	9.292 0.860

Planet (93)	W 0 23	Leucothoe	Planet (93)	W XXIII 891	Planet (93)	W XXIII 891
0 0 57.74		23 15 24.20	23 42 30.72		23 42 30.72	
-3 32 6.5		-6 9 31.6	-4 22 38.3		-4 22 38.3	
0 2 3		23 16 29	23 43 35		23 43 35	
-3 25 6		-6 2 37	-4 15 38		-4 15 38	
9.99998 7.95157		9.99212 9.27586 _n	9.99888 8.85473 _n		9.99888 8.85473 _n	
2.92545 8.77621 _n		2.91759 9.02479 _n	2.92435 8.87215 _n		2.92435 8.87215 _n	
- .030 8.47716 _n		+ 1.122 0.05003	+ .300 9.47626		+ .300 9.47626	
+ 2 8.932 +14' 2.27		+ 2 10.084 +13 47.16	+ 2 9.262 +14 0.13		+ 2 9.262 +14 0.13	
0 3 6.672		23 17 34.284	23 44 39.982		23 44 39.982	
-3 18 4.23		-5 55 34.44	-4 8 38.17		-4 8 38.17	
0° 47'		349° 24'	356° 10'		356° 10'	
Aug 30		Sept 19	Sept 21		Sept 22	
36 55		23 24	30 1		29 56	
115 17		82 56	87 34		86 29	
+26.99		+28.52	+28.66		+28.73	
1.0657 +11.63		1.1381 +13.74	1.1142 +13.01		1.1152 +13.04	
9.9028		9.9627	9.9375		9.9378	
1.1629		1.1754	1.1767		1.1774	
9.7786		9.5990	9.6992		9.6981	
8.7610 _n		9.0163 _n	8.8600 _n		8.8600 _n	
9.7025 _n -50		9.7907 _n -62	9.7359 _n -54		9.7355 _n -54	
9.6699 _n +47		9.3773 _n -24	8.7599 _n -57		8.9196 _n -58	
8.7603 _n		9.0141 _n	8.8588 _n		8.8588 _n	
9.6305 _n		9.0906	8.6280		8.7877	
1.2791		1.2732	1.2731		1.2731	
9.9563		9.9964	9.9996		9.9992	
0.0007		0.0022	0.0011		0.0011	
1.2361 +17.22		1.2718 +18.70	1.2738 +18.78		1.2734 +18.77	
0.8755		0.9097	0.9103		0.9104	
0.8747 +7.49		0.9075 +8.08	0.9092 +8.11		0.9093 +8.11	
+ 2.914 +43.71		+ 3.107 = +46.60	+ 3.127 +46.90		+ 3.131 +46.96	
+19.59		+21.58	+21.06		+21.07	
0 3 9.586		23 17 37.391	23 44 43.109		23 44 43.113	
-3 17 44.64		-5 55 22.86	-4 8 17.11		-4 8 17.10	
1.75322 _n 1.477		1.007			1.638	
9.81520						
0.00074						
1.56916 _n .596		.200			.867	
-37.082 -4 54.19		-1 36.98 -1 39.63	-1 40.68		-2 33.68 -7' 6.08	
23 58 0 23 58 30		22 26 35 22 26 15	23 9 58		22 23 55 22 34 19	
-0 5 -0 5		-0 49 -0 50	-0 33		-1 18 -1 8	
-011 -"00		+ 000 -"06	000		+ 003 -"26	
000 -17		-04			+1.16	
+ 04						
-37.093 -4 54.32		-1 36.98 -1 39.73	-1 40.68		-2 33.677 -7' 5.18	
10 5		12 4	6		6 4	
13 22 11		10 32 24	11 7 49		10 17 56	
0 2 32.493		23 16 0.411	23 43 2.429		23 42 9.436	
-3 22 38.96		-5 57 2.59			-4 15 22.28	
7.954 _n 0.785		8.954 _n 0.804	8.785 _n		9.149 _n 0.792	

Object observed Comparison Star	Leucothæa W XXIII 199	Leucothæa W XXIII 199	Leucothæa W XXIII 199	Leucothæa W XXIII 199
Mean α δ	23 8 52.62 -6 28 21.0			
Approx place mean date	23 9 58 -6 21 30			
	9.98957 9.33562n 2.91504 9.04701n + 1.355 0.13201 + 2 10.317 + 13 42.32			
mean α 1867 δ in arc α in arc	23 11 2.937 -6 14 38.68 347° 46'			
Date	Sept 22	Sept 23	Sept 24	Sept 25
G + α	21 32			21 20
H + α E + f	78 5 1.1460 + 28.73 + 14.00			74 53 1.1488 + 14.09 + 28.95
cos(G + α)	9.9686 1.1774			9.9692 1.1796
sin(G + α)	9.5647			9.5668
tan δ	9.0390n			9.0390n
	9.7811n - .60			9.7794n - .60
	9.6244n - .42			9.7259n - .53
sin δ	9.0364n			9.0364n
cos(H + α)	9.3149			9.4163
tan(H + α)	1.2731			1.2732
sec δ	9.9905 0.0026			9.9847 0.0026
	1.2662 + 18.46			1.2605 + 18.22
i	0.9104 0.9078 + 8.09			0.9100 0.9074 + 8.08
red. α δ	+ 3.106 + 46.59 + 21.67			+ 3.105 + 46.57 + 21.64
app α δ	23 11 6.043 -6 14 17.01	23 11 6.043 -6 14 17.02	23 11 6.042 -6 14 17.03	23 11 6.042 -6 14 17.04
log $\Delta \alpha \cos \delta$ " 1 rev $\frac{10''}{10''}$ " sec δ " $\Delta \alpha$ in Sec cor to $\Delta \delta$	1.697 .993	1.518 .658	1.182 .303	1.52450 0.382 9.81520 0.00259 1.34229 .048
$\Delta \alpha$ in Sec $\Delta \delta$	+2 35.65 + 8 6.80 + 1 53.05 + 5 22.74	+1 7.82 + 2 28.87	+21.993 - 0 23.64	
Sid. time Hour angle	23 29 43 23 14 19 22 27 26 22 36 34 + 0 16 + 0 1 - 0 58 - 0 49	23 2 5 23 10 54 - 0 9 - 0 2	23 12 49 0 19 36 + 1 0 + 1 7	
Diff. refr. due to $\Delta \alpha$ " " $\Delta \delta$	000 + 32 - 002 + 21	000 + 09	+ 007 + 03 000 - 01	
Corr. for diff. of time	- 1.88 + 1.09	+ 1.03	+ 0.77	
Complete $\Delta \alpha$ $\Delta \delta$	+2 35.65 + 8 52.41 53.048 + 5 24.04	+1 7.82 + 2 29.99	+ 22.000 - 0 22.85	
No. of comp.	8 3 6 4	9 6	6 6	
Mean time	11 23 33 10 17 31	10 48 8	11 54 43	
app α	23 13 41.693 23 12 59.091	23 12 13.862	23 11 28.042	
δ	-6 6 11.77 -6 8 52.98	-6 11 47.04	-6 14 39.89	
log $\pi \alpha \times \Delta$ $\pi \delta \times \Delta$	8.477 0.806 9.025n 0.805	8.230n 0.806	9.041 0.804	

Proserpina

W XXII 797

22 36 10.02
-13 55 23.622 37 17
-13 48 51

9.97108 9.54794_n 9.99280 9.25670
 2.89655 9.39073_n 2.91827 8.85390
 +4.876 0.68805 +0.724 9.85998
 +2 13.838 +13 8.04 +2 9.686 +13 48.46

22 38 23.858
 -13 42 15.56
 839 36

Sept 24

13 14

67 47

1.1672 +28.87
 +14.70

9.9893
 1.1789
 9.3597
 9.3871_n

9.9257_n - .840.2252_n +1.68

9.3746_n
 9.5776
 1.2732
 9.9665
 0.0125

1.2522 +17.87

0.9103

0.8978 +7.90

+3.060 +45.90
~~+24.28~~
~~+20.92~~

22 38 26.918
 -13 41 57.28
 54.64
 0.881

.152

+45.02 +1 14.47 +1 56.92 +2 10.52

22 43 3 22 35 30 23 52 40 0 52 4
 +0 4 -0 4 +0 8 +0 7

000 +06

-84

+45.02 +1 13.69 +1 56.92 +2 10.47

9 6

10 29 9

22 39 11.938

-13 40 37.59
 40.95

7.903 0.851

Themis

W 0 726

0 40 32.17
+3 58 15.4

0 41 37
 +4 55 39

9.99280 9.25670
 2.91827 8.85390
 +0.724 9.85998
 +2 9.686 +13 48.46

0 42 41.856
 +4 12 3.86
 10 40

Sept 24

44 18

98 51

1.0336 +28.87
 +10.80

9.8547
 1.1789
 9.8441
 8.8659

9.8889 +.78

9.3252_n -.21

8.8647
 9.1871_n
 1.2732
 9.9948
 0.0012

1.2692 +18.59

0.9103

0.9091 +8.11

+3.216 +48.24
 +18.70

0 42 45.072
 +4 12 22.56

1.124

.265

+1 56.92 +2 10.52

23 52 40 0 52 4
 +0 8 +0 7

000 +06

-11

+1 56.92 +2 10.47

12 4

12 38 24

0 44 41.992

+4 14 33.03

8.204 0.722

Proserpina

W XXII 797

22 38 10.02
-13 55 23.622 37 17
-13 48 51

9.97108 9.54794_n 9.99280 9.25670
 2.89655 9.39073_n 2.91827 8.85390
 +4.876 0.68805 +0.724 9.85998
 +2 13.838 +13 8.04 +2 9.686 +13 48.46

22 38 23.858
 -13 42 15.56
 839 36

Sept 25

44 14

97 47

1.1348 +28.95
 +10.84

9.8552
 1.1796
 9.8436
 8.8659

9.8891 +77

9.2696_n -19

8.8647
 9.1317_n
 1.2732
 9.9960
 0.0012

1.2704 +18.64

0.9100

0.9088 +8.11

+3.224 +48.36
 +18.76

22 38 26.912
 -13 41 54.72

0.70200 0.779

.119

+3.386 -0 58.93

23 59 44 23 51 30
 23 51 30 23 59 44
 +1 13 +1 24
 21 13

+001 +01

-001 -06

+3.386 -0 59.74

6 6

11 41 41

22 38 58.106

-13 42 54.48
 54.48

9.180 0.845

Themis

W 0 726

0 40 32.17
+3 58 15.4

0 41 37
 +4 55 39

9.99280 9.25670
 2.91827 8.85390
 +0.724 9.85998
 +2 9.686 +13 48.46

0 42 41.856
 +4 12 3.86
 10 40

Sept 25

44 14

97 47

1.1348 +28.95
 +10.84

9.8552
 1.1796
 9.8436
 8.8659

9.8891 +77

9.2696_n -19

8.8647
 9.1317_n
 1.2732
 9.9960
 0.0012

1.2704 +18.64

0.9100

0.9088 +8.11

+3.224 +48.36
 +18.76

0 42 45.080
 4 12 45.10
 22.62
 1.122

.263

+1 14.29 -2 9.90

0 53 37 0 44 27
 +0 10 0 0

-001 -02

-1.67

+1 14.289 -2 11.59

9 4

12 35 25

0 43 59.369

+4 10 11.03

8.255 0.723

Proserpina

W XXII 797

22 38 23.858
-13 42 15.56
339 36

Sept 27

13 2

64 35

+29.08
+14.78

9.9887
1.1811
9.3532
9.3870_n

9.9213_n - .830.2806_n -1.91

9.3745_n
9.6327
1.2734
9.9558
0.0125

1.2417 +17.45

0.9090
0.8965

+3.047 +45.70
+20.75

22 38 26.905
-13 41 54.81

1.463

.583

-1 11.95 -4 44.58

0 6 46 0 0 20

+1 30 +1 23

-006 - "29

- 57

-1 11.956 -4 45.44

6 5

11 40 51

-22 37 14.949

-13 46 40.25

9.220 0.845

Leucothea

W XXIII 142

23 6 37.99
-6 38 57.7

23 7 43
-6 32 8

9.98860 9.35441_n
2.91407 9.05905_n
+1.4551 0.16284
+2 10.417 +13 40.48

23 8 48.407
-6 25 17.22
347 12

Sept 27

20 38

72 11

1.1523 +29.08
+14.20

9.9712
1.1811
9.5470
9.0511_n

9.7792_n - .609.8075_n - .64

9.0484_n
9.4857
1.2734
9.9787
0.0027

1.2548 +17.98

0.9090
0.9063

+3.097 = +46.46
+21.62

23 8 51.504
-6 24 55.60

1.481

.608

+1 11.27 +4 56.88

0 20 23 0 27 46

+1 10 +1 18

+002 + "20

+ 80

+1 11.272 +4 57.88

9 5

11 54 26

23 10 2.776

-6 19 57.72

9.107 0.804

Proserpina

W XXII 797

Sept 28

22 38 26.903
-13 41 54.85

1.588

.769

-1 46.74 -6 19.41

23 16 42 23 8 8

+0 40 +0 38

-003 -34

- 60

-1 46.743 -6 20.35

8 4

10 46 59

22 36 40.160

-13 48 15.20

8.875 0.850

Leucothea

W XXIII 142

Sept 28

23 8 51.501
-6 24 55.62

1.182

.302

+31.09 +2 29.07

23 27 54 23 32 19

+0 18 +0 23

+000 + 09

+ 47

+31.090 +2 29.63

9 5

10 58 9

23 9 22.591

-6 22 25.99

8.518 0.807

Leucothea

W XXIII 142

Leucothea

W XXIII 142

Eugenia

W 0 226

Eugenia

W 0 226

Sept 29

Sept 30

Sept 28

Sept 29

20 26

36 53

68 58

87 25

1.1553 +29.30

1.0850 +29.15

+14.30

+12.17

9.9718

9.9031

1.1835

1.1819

9.5430

9.7781

9.0511n

8.9291n

9.7776n - .60

9.8891n - .77

9.8772n - .75

8.8549n - .07

9.0484n

8.9275n

9.5550

8.6539

1.2738

1.2735

9.9700

9.9796

0.0027

0.0016

1.2465 +17.64

1.2747 +18.82

0.9067

0.9084

0.9040 +8.02

0.9068 +8.07

+3.089 +46.34

+3.147 +47.20

23.07

+20.17

+21.57

23 8 51.499

23 8 51.496

0 14 4.423

0 14 4.426

-6 24 55.63

-6 24 55.65

-4 50 53.46

-4 50 53.48

1.12581 9.888

1.150

1.06651 1.464

0.968

9.81522

9.81518

0.00273

0.00154

0.94376 .015

.287

0.88323 .578

.184

-8.785 +7.57

-49.67 -2 18.58

+7.642 +4 45.32

-36.87 -1 31.10

22 38 20 22 38 17

22 54 51 22 48 41

0 46 46 0 46 0

23 36 22 23 30 48

-0 30 -0 30

-0 13 -0 19

+0 33 +0 32

-0 37 -0 43

-003 +01

000 -09

+003 +01

000 -05

000 00

000 -64

+001 +18

000 -1.53

00 00

-64

-21

-8.788 +7.58

-49.670 -2 19.31

+7.646 +4 45.30

-36.870 -1 32.68

10 5

8 4

10 10

9 5

10 4 48

10 17 20

12 16 48

11 2 40

23 8 42.711

23 8 1.826

0 14 12.069

0 13 27.556

-6 24 48.05

-6 27 14.96

-4 46 8.16

-4 52 26.16

8.740n 0.806

8.380n 0.806

8.763 0.797

8.832n 0.797

Eugenia

W 0 226

Aglacia

W I 828

Daphne

Daphne

W I 803

$$\begin{array}{r} 1 \quad 44 \quad 32.40 \\ +12 \quad 57 \quad 38.0 \end{array}$$

$$\begin{array}{r} 1 \quad 45 \quad 39 \\ +13 \quad 3 \quad 56 \end{array}$$

$$\begin{array}{r} 9.95212 \quad 9.64819 \\ 2.87759 \quad 9.36563 \\ +5.797 \quad 0.76320 \\ +2 \quad 14.759 \quad +12 \quad 34.38 \end{array}$$

$$\begin{array}{r} 1 \quad 46 \quad 47.157 \\ +13 \quad 10 \quad 12.38 \\ 26 \quad 42 \end{array}$$

Sept 30

Sept 30

Sept 30

Oct 1

36 44

59 56

59 57

85 16

108 28

107 8

$$\begin{array}{r} +29.30 \\ 1.0874 +12.23 \end{array}$$

$$\begin{array}{r} +29.30 \\ 0.8833 +7.64 \end{array}$$

$$\begin{array}{r} +29.37 \\ 0.8839 +7.65 \end{array}$$

9.9039

9.6998

9.6996

1.1835

1.1835

1.1843

9.7768

9.9372

9.9373

8.9290 n

9.3692

8.5072

9.8895 n - .78

0.4899 + 3.09

9.6288 + .43

9.1178 n - .13

0.1321 n - 1.36

9.2502 n - .18

8.9274 n

9.3576

8.5070

8.9166

9.5007 n

9.4692 n

1.2738

1.2738

1.2740

9.9985

9.9770

9.9803

0.0016

0.0116

0.0002

1.2739 + 18.78

1.2624 + 18.30

1.2545 + 17.97

0.9067

0.9067

0.9056

0.9051 + 8.04

0.8951 + 7.85

0.9054 + 8.04

+ 3.153 + 47.30

+ 3.379 + 50.69

+ 3.185 + 47.77

+ 20.14

+ 14.13

+ 15.51

0 14 4.429

1 46 50.538

1 45 52.078

-4 50 53.49

+13 10 26.51

+1 50 43.98

1.686

1.599

0.4914

1.302

1.756

.984

.805

9.8152

.405

1.148

.984

.805

0.0003

.405

1.148

.984

.805

0.3069

.405

1.148

-1 22.32 -7 55.26 -2 6.94 +6 29.66

-2.027 -3 16.39

-1 21.69 +9 17.84

23 7 14 23 13 16 1 21 14 1 31 22

2 7 49 2 6 56

0 29 55 0 18 42

-1 5 -0 59 -0 23 -0 13

+0 23 +0 22

-1 15 -1 26

+003 -31 000 +15

000 00

-002 +31

+1.63 +85

-29

-3.66

-1 22.317 -7 53.94 -2 6.940 +6 30.66

-2.027 -3 16.77

-1 21.692 +9 14.49

9 3 9 3

10 10

9 4

10 29 41 12 43 19

13 29 46

11 48 12

0 12 42.112 +1 44 43.598

1 44 27.386

-4 58 47.43 +13 16 57.17

+1 59 58.47

9.072 n 0.797 8.644 n 0.619

8.623 0.740

9.137 n 0.744

Massalia	Lutetia	Massalia	Daphne
W 0 477	W 0 954	W 0 477	W I 784
0 26 29.25	0 52 57.53		1 42 33.93
+3 19 44.2	-0 31 31.0		+1 31 8.1
0 27 34	0 54 2		1 43 39
+3 26 41	-0 24 42		+1 37 28
9.99685 9.07915	9.98782 9.36845		9.95398 9.64048
2.92232 8.77956	2.91329 7.85642 _n		2.87945 8.45270
+0.406 9.60809	-0.094 8.97426 _n		+0.696 9.84256
+2 9.368 +13 56.22	+2 8.868 +13 39.02		+2 9.658 +12 37.62
0 28 38.618	0 55 6.398		1 44 43.588
+3 33 40.42	-0 17 51.98		+1 43 45.72
7.3 10	13 46		26 11
Oct 1	Oct 1		
40 21	46 57	Oct 2	Oct 2
87 52	94 28	40 18	59 19
+29.37	+29.37	86 48	105 49
1.0663 +11.65	1.0185 +10.44	1.0674	0.8929
9.8820	9.8342	+29.45	+29.45
1.1843	1.1843	+11.68	+7.81
9.8112	9.8638	9.8823	9.7078
8.7940	7.7150 _n	1.1851	1.1851
9.7895 +62	8.7631 _n -06	9.8108	9.9345
8.6379 +04	7.8804 +01	8.7940	8.4798
8.7931	7.7150 _n	9.7899 +62	9.5994 +40
8.5708	8.8914 _n	8.8141 +07	9.1893 _n -15
1.2740	1.2740	8.7931	8.4796
9.9997	9.9987	8.7468	9.4355 _n
0.0008	0.0000	1.2742	1.2742
1.2745 +18.81	1.2727 +18.73	9.9993	9.9832
0.9056	0.9056	0.0002	0.0002
0.9048 +8.03	0.9056 +8.05	1.2743 +18.80	1.2576 +18.10
+3.253 +48.80	+3.203 +48.04	0.9044	0.9044
+19.72	+18.50	0.9036 +8.01	0.9042 +8.02
48.871		+3.258 +48.87	+3.197 +47.95
0 28 40.071	0 55 9.601	+19.76	+15.68
+3 34 0.14	-0 17 33.48	0 28 41.876	1 44 46.785
1.662	1.553	+3 34 0.18	+1 44 1.40
.925	.720	0.666	1.688
+1 46.67 +7 29.55	-1 28.76 +5 50.23	.092	.966
22 50 6 22 40 32 23 23 13 23 33 24		+47.60 +45.46	-1 1.36 +7 58.11
+1 40 -1 50 -1 30 -1 20		0 24 17 0 32 20	1 21 10 1 22 44
-003 +23 -002 +18		-0 5 +0 3	-0 23 -0 21
-2.50 +2.11		000 +02	000 +24
+1 46.667 +7 27.82	-1 28.762 +5 52.52	+2.11 +51	+51
6 3 9 4		+47.600 +47.59	-1 1.360
10 8 40	10 41 41	6 5	+43 45 425 +7 58.86
0 30 28.538	0 53 40.839	11 38 39	12 35 23
+3 41 27.42	-0 11 40.96	1.0 29 29.476	1 43 45.425
9.255 _n 0.732	9.210 _n 0.761	+3 34 47.77	+1 52 0.26
		7.954 _n 0.729	8.623 _n 0.745

Macosahia

Lutetia

Leto

Leto

W O H02	W O 832	W II 305 = Arg 2 + 9° No 321	W II 305
0 22 57.99 +2 53 42.7	0 46 36.34 -0 55 40.7	2 18 57.35 +9 54 32.5	2 19 18 9 56 30
0 24 3 +3 0 32	0 47 41 -0 48 48	2 19 26 +9 56 52	2 19 18 9 56 30
9.99760 9.02014 2.92307 8.72068 +2.952 8.47006 +3.09 9.49020	9.99053 9.31505 2.91600 8.15218n -7.94 9.90166n -1.65 9.21681n	9.91411 9.75705 2.29548 9.24400 +1.608 0.20633 +38.458 +3 17.46	9.91429 9.75669 2.29566 9.24348 +1.605 0.20545 +38.455 +3 17.54
+2 9.271 +13 57.67 0 25 7.261 +3 6.7 40.37	+2 8.797 +13 44.14 0 48 45.137 -0 41 56.56	2 19 37.805 +9 57 50.04	
Oct 6	Oct 6	Oct 6	Oct 7
39 13	45 7	67 50	67 57
81 39	87 33	110 16	109 12
1.0777 +29.75 +11.96	1.0371 +29.75 +10.89	0.7652 +29.75 +5.82	0.7670 +29.83 +5.85
9.8892 1.1885 9.8009 2.7375	9.8486 1.1885 9.8504 8.0860n	9.5767 1.1885 9.9666 9.2447	9.5776 1.1894 9.9665 9.2447
9.7269 +.53	9.1249n -.13	0.3998 +2.51	0.4006 +2.52
9.1741 ~~8.0045~~ +.15	7.9922n 9.3609n -.01	0.0530n -1.13	0.0308n -1.07
8.7368 9.1620 9.9954 1.2753 9.9954 9.1620 0.0006	8.0860n 8.6309 4.9946 1.2753 9.9996 8.6309 0.0000	9.2381 9.5396n 1.2753 9.9722 0.0066	9.2381 9.5170n 1.2757 9.9752 0.0066
0.2713 ~~8.4379~~ +18.68	1.2749 9.9062 +18.83	1.2541 +17.95	1.2575 +18.09
0.8983 0.8977 +7.90	0.8983 0.8983 +7.91	0.8983 0.8917 +7.79	0.8965 0.8999 +7.76
+3.264 +48.96 +20.01	+3.230 +48.45 +18.79	+3.347 +50.21 +12.48	+3.363 +50.44 +12.54
0 25 10.525 +3 8 0.38	0 48 48.367 -0 41 37.77	2 19 41.152 +9 58 2.52	2 19 41.168 +9 58 2.58
1.061	1.567	1.390	1.448
.233	.746	.497	.569
+39.74 +1 52.84	+17.02 +6 1.23	+3 24.90 -4 0.48	+2 37.52 -4 34.84
23 54 10 23 47 8 -0 32 -0 39	0 7 4 0 13 45 -0 42 -0 35	0 48 15 0 48 28 -1 35 -1 35	1 19 59 1 10 43 -1 3 -1 12
-000 +05 -1.83	-001 +19 +1.27	+000 -10 00	+000 -11 -24
+39.740 +1 51.06	+17.019 +6 2.69	+3 24.900 -4 0.58	+2 37.520 -4 35.19
9 5	9 5	12 3	6 3
10 52 52	11 5 45	11 46 49	12 14 33
0 25 50.265	0 49 5.386	2 23 6.052	2 22 18.688
+3 9 51.44	-0 35 35.08	+9 54 1.94	+9 53 27.39
8.771n 0.732	8.892n 0.763	9.236n 0.668	9.064n 0.664

Daphne

W I 680

1- 35 35.58
+1 5 32.0

1 36 41
+1 11 46

9.96015 9.61221
2.88562 8.31971
480 9.68130
+2 9.442 +12 48.46

1 37 45.022
+1 18 20.46
24 25

Oct 7

57 18

98 43

+29.83
0.9220 +8.36

9.7326

1.1894

9.9251

8.3577

9.4722 +30

8.8139_m -07

8.3576

9.1806_m

1.2757

9.9950

0.0001

1.2708 +18.65

0.8965

0.8964 +7.88

3.252 +48.78
+16.17

1 37 48.274
+1 18 36.63

1.530

.687

+2 23.695 -5 31.79

0 45 37 0 45 47
-0 55 -0 54

000 +16
+05

+2 23.695 -5 31.58

12 3

11 40 17

1 40 11.969

+1 13 5.05

9.004_m 0.750

Massalia

W O 397

0 22 42.99
+2 47 20.5

0 23 48
+2 54 20

9.99765 9.01561
2.92312 8.70548
+2.95 9.47047
+2 9.257 +13 57.76

0 24 52.247
+3 1 18.26
6 13

Oct 7

39 6

80 31

+29.83
1.0793 +12.00

9.8899

1.2757

9.7998

8.7225

9.7117 +.51

9.2144 +.16

8.7219

9.2168

1.2757

9.9940

0.0006

1.2703 +18.64

0.8965

0.8959 +7.87

+3.265 +48.98
+20.03

0 24 55.512
+3 1 38.29

0.0959 1.107

9.8150

0.0006

9.9115 .259

+0.816 +2 5.40

23 34 40 23 34 54
-0 50 -0 50

000 00
000 +07
+05

+0.816 +2 5.52

10 10

10 29 30

0 24 56.328

+3 3 43.81

8.964_m 0.734

Daphne

W 556

1 30 27.72
-0 16 48.7

1 31 32
-0 10 20

9.96440 9.58979
2.88987 7.47797
+0.66 8.81714
2 9.028 +12 56.02

1 32 36.728
-0 3 52.68
28 9

Oct 16

55 39

87 55

+30.55
0.9495 +8.90

9.7515

1.1980

9.9168

7.0400_m8.1548_m -01

6.8800 00

7.0400_m

8.5605

1.2795

9.9997

0.0000

1.2792 +19.02

0.8733

0.8733 +7.47

+3.301 +49.56
+16.37

1 32 40.029
-0 3 36.31

1.709

1.033

+48.11 +8 21.20

0 49 32 0 53 3
-0 44 -0 40

-002 +26
+1.08

+48.108 +8 22.54

9 6

11 8 47

1 33 28.137

+0 4 46.23

8.903_m 0.760

Daphne

W 1 556

1 30 27.72
-0 16 48.7

1 31 32
-0 10 20

9.96440 9.58979
2.88987 7.47797
+0.66 8.81714
2 9.028 +12 56.02

1 32 36.728
-0 3 52.68
28 9

Oct 17

55 39

87 55

+30.55
0.9495 +8.90

9.7515

1.1980

9.9168

7.0400_m8.1548_m -01

6.8800 00

7.0400_m

8.5605

1.2795

9.9997

0.0000

1.2792 +19.02

0.8733

0.8733 +7.47

+3.301 +49.56
+16.37

1 32 40.037
-0 3 36.34

1.709

1.033

+48.11 +8 21.20

0 49 32 0 53 3
-0 44 -0 40

-002 +26
+1.08

+48.108 +8 22.54

9 6

11 8 47

1 32 28.137

+0 4 46.23

8.903_m 0.760

Daphne
W I 556Lutetia
W 0664Leto
W II 142Nemausa
BAC 991
$$\begin{array}{r} 0 \quad 36 \quad 58.62 \\ -1 \quad 45 \quad 44.9 \end{array}$$

$$\begin{array}{r} 0 \quad 38 \quad 4 \\ -1 \quad 38 \quad 49 \end{array}$$

$$\begin{array}{r} 9.99398 \quad 9.21836 \\ 2.91945 \quad 8.45868m \\ -2.67 \quad 9.42642n \\ +2.8695 +13.5071 \end{array}$$

$$\begin{array}{r} 0 \quad 39 \quad 7.315 \\ -1 \quad 30 \quad 54.19 \\ 9 \quad 47 \end{array}$$

$$\begin{array}{r} 2 \quad 8 \quad 26.27 \\ +9 \quad 37 \quad 7.77 \end{array}$$

$$\begin{array}{r} 2 \quad 9 \quad 33 \\ +9 \quad 43 \quad 5 \end{array}$$

$$\begin{array}{r} 9.92657 \quad 9.72888 \\ 2.85204 \quad 9.23365 \\ +5.151 \quad 0.71191 \\ +2.14113 +11.5128 \end{array}$$

$$\begin{array}{r} 2 \quad 10 \quad 40.383 \\ +9 \quad 48 \quad 58.98 \\ 32 \quad 40 \end{array}$$

$$\begin{array}{r} 3 \quad 5 \quad 23.22 \\ +6 \quad 9 \quad 34.0 \\ 46 \quad 21 \end{array}$$

Oct 18

55 35

85 50

0.9523 +30.73 +8.96

9.7522

1.2001

9.9164

7.0400m

8.1565n - .01

7.1818n - .00

7.0400n

8.8613

1.2805

9.9989

0.0000

1.2794 +19.03

0.8665

0.8665 +7.35

+5.317 +49.75 +16.31

$$\begin{array}{r} 1 \quad 32 \quad 40.045 \\ -0 \quad 3 \quad 36.37 \end{array}$$

1.590

.767

-43.835 -6 21.41 -1 5.72 +7 53.29 +57.51 -7 25.15 +24.92 -7 37.51

$$\begin{array}{r} 1 \quad 32 \quad 7 \quad 1 \quad 31 \quad 25 \quad 23 \quad 49 \quad 43 \quad 23 \quad 54 \quad 36 \quad 1 \quad 15 \quad 31 \quad 1 \quad 13 \quad 33 \quad 1 \quad 35 \quad 50 \quad 1 \quad 35 \quad 43 \\ 0 \quad 6 \quad -0 \quad 1 \quad -0 \quad 48 \quad -0 \quad 43 \quad -0 \quad 56 \quad -0 \quad 58 \quad -1 \quad 30 \quad -1 \quad 30 \end{array}$$

000

-21

-001

+25

+002

+19

+003

-21

-21

+55

-08

-04

-43835 -6 21.83 -1 5.721 +7 54.09 +57.512 -7 25.42 +24.923 -7 37.76

18

5

18

5

9

5

15

5

11 43 28

9 57 21

11 22 54

11 43 10

1 31 56.210

0 38 4.837

2 11 41.404

3 5 51.528

-0.9 58.20

-1 23 41.19

+9 41 47.20

+6 2 5.96

inf. neg 0.758

8.940n 0.771

9.017n 0.666

9.212n 0.708

Leto

W II 57

$$\begin{array}{r} 2 \quad 3 \quad 10.82 \\ +9 \quad 30 \quad 13.1 \end{array}$$

$$\begin{array}{r} 2 \quad 4 \quad 18 \\ +9 \quad 36 \quad 14 \end{array}$$

$$\begin{array}{r} 9.93272 \quad 9.71278 \\ 2.85819 \quad 9.22842 \\ +4.9041 \quad 0.69058 \\ +2 \quad 13.866 \quad +12 \quad 1.42 \end{array}$$

$$\begin{array}{r} 2 \quad 5 \quad 24.686 \\ +9 \quad 42 \quad 14.52 \\ 31 \quad 21 \end{array}$$

Oct 23

63 36

$$\begin{array}{r} 88 \quad 49 \\ 0.8536 \quad +31.18 \\ +7.14 \end{array}$$

$$\begin{array}{r} 9.6480 \\ 1.2056 \\ 9.9522 \\ 9.2330 \end{array}$$

0.3908 +2.46

8.8251 +07

$$\begin{array}{r} 9.2268 \\ 8.3150 \\ 1.2833 \\ 9.9999 \\ 0.0062 \end{array}$$

1.2894 +19.47

$$\begin{array}{r} 0.8465 \\ 0.8403 \quad +6.92 \end{array}$$

$$\begin{array}{r} +3.541 \quad +53.11 \\ +14.13 \end{array}$$

$$\begin{array}{r} 2 \quad 5 \quad 28.227 \\ +9 \quad 42 \quad 28.65 \\ 1.166 \end{array}$$

.301

+2 22.067 -2 23.56

$$\begin{array}{r} 1 \quad 12 \quad 16 \quad 0 \quad 44 \quad 23 \\ -0 \quad 56 \quad -1.23 \end{array}$$

$$\begin{array}{r} +000 \quad -06 \\ -1.08 \end{array}$$

+2 22.067 -2 24.70

6 3

11 3 56

2 7 50.294

+9 40 3.95

9.017 π 0.668

Leto

W II 57

Oct 24

63 36

$$\begin{array}{r} 88 \quad 49 \\ 0.8536 \quad +31.18 \\ +7.14 \end{array}$$

$$\begin{array}{r} 9.6480 \\ 1.2056 \\ 9.9522 \\ 9.2330 \end{array}$$

0.3908 +2.46

8.8251 +07

$$\begin{array}{r} 9.2268 \\ 8.3150 \\ 1.2833 \\ 9.9999 \\ 0.0062 \end{array}$$

1.2894 +19.47

$$\begin{array}{r} 0.8465 \\ 0.8403 \quad +6.92 \end{array}$$

$$\begin{array}{r} 2 \quad 5 \quad 28.234 \\ +9 \quad 42 \quad 28.66 \end{array}$$

1.318

.426

+1 19.078 -3 23.64

$$\begin{array}{r} 3 \quad 1 \quad 43 \quad 2 \quad 53 \quad 0 \\ +0 \quad 55 \quad +0 \quad 46 \end{array}$$

$$\begin{array}{r} -000 \quad -08 \\ -33 \end{array}$$

+1 19.078 -3 24.05

9 4

12 49 10

2 6 47.312

+9 39 4.61

9.009 0.665

Aglaiä

W I 366

$$\begin{array}{r} 1 \quad 20 \quad 32.39 \\ +11 \quad 51 \quad 30.6 \end{array}$$

$$\begin{array}{r} 1 \quad 21 \quad 38 \\ +11 \quad 58 \quad 6 \end{array}$$

$$\begin{array}{r} 9.97185 \quad 9.54246 \\ 2.89732 \quad 9.32629 \\ +4.151 \quad 0.61813 \\ 2 \quad 13.113 \quad +13 \quad 9.44 \end{array}$$

$$\begin{array}{r} 1 \quad 22 \quad 45.503 \\ +12 \quad 4 \quad 40.04 \\ 20 \quad 41 \end{array}$$

Oct 24

52 54

$$\begin{array}{r} 77 \quad 7 \\ 0.9872 \quad +31.27 \\ +9.71 \end{array}$$

$$\begin{array}{r} 9.7805 \\ 1.2067 \\ 9.9018 \\ 9.3304 \end{array}$$

0.4389 +2.75

9.9530 +.90

$$\begin{array}{r} 9.3208 \\ 9.3483 \\ 1.2839 \\ 9.9889 \\ 0.0097 \end{array}$$

1.2825 +19.16

$$\begin{array}{r} 0.8420 \\ 0.8323 \quad +6.80 \end{array}$$

$$\begin{array}{r} +3.545 \quad +53.18 \\ +17.41 \end{array}$$

$$\begin{array}{r} 1 \quad 22 \quad 49.048 \\ +12 \quad 4 \quad 57.45 \\ 0.616 \end{array}$$

.085

+1 19.333 +40.42

$$\begin{array}{r} 2 \quad 28 \quad 53 \quad 2 \quad 39 \quad 46 \\ +1 \quad 5 \quad +1 \quad 16 \end{array}$$

$$\begin{array}{r} +000 \quad +02 \\ +1.57 \end{array}$$

+1 19.333 +42.01

9 3

12 16 24

1 24 8.381

+12 5 39.46

9.083 0.642

Leto

W II 57

Oct 27

63 28

$$\begin{array}{r} 84 \quad 41 \\ 0.8603 \quad +31.56 \\ +7.25 \end{array}$$

$$\begin{array}{r} 9.6500 \\ 1.2103 \\ 9.9517 \\ 9.2330 \end{array}$$

0.3950 +2.48

9.4795 +30

$$\begin{array}{r} 9.2268 \\ 8.9669 \\ 1.2858 \\ 9.9981 \\ 0.0062 \end{array}$$

1.2901 +19.50

$$\begin{array}{r} 0.8274 \\ 0.8212 \quad +6.62 \end{array}$$

$$\begin{array}{r} +3.569 \quad +53.54 \\ +14.17 \end{array}$$

$$\begin{array}{r} 2 \quad 5 \quad 28.255 \\ +9 \quad 42 \quad 28.68 \\ 28.68 \end{array}$$

8.568

.750

-1 35.51 -6 2.46

$$\begin{array}{r} 2 \quad 54 \quad 45 \quad 3 \quad 1 \quad 47 \\ +0 \quad 51 \quad +0 \quad 58 \end{array}$$

$$\begin{array}{r} -000 \quad -14 \\ +25 \end{array}$$

-1 35.510 -6 2.35

9 5

12 30 24

2 3 52.745

+9 36 26.34

8.978 0.668

Daphne

W I 417

1 23 3.55
-1 28 26.2
1 24 8
-1 21 53
9.97005 9.55499
2.89552 8.37700n
- .480 9.68137n
+ 2 8.482 +13 6.18
1 25 12.032
-1 15 20.02
21 18

Oct 27

53 25
74 38
0.9855 +31.56
+9.67

9.7752
1.2103
9.9047
8.3408n

9.4558n - .28

9.0497n - 11

8.3407n

9.4232

1.2858

9.9842

0.0001

1.2701 +18.63

0.8274

0.8273 +6.72

+3.327 +49.91
+16.28

1 25 15.359
-1 15 3.74

1.420
.533

Aglia

W I 354

1 19 39.71
+11 33 42.4
1 20 46
+11 40 18
9.97245 9.53802
2.89792 9.31508
+4.004 0.60248
+ 2 12.966 +13 10.53
1 21 52.676
+11 46 52.93
20 28

Oct 27

52 35
73 48
0.9939 +31.56
+9.86

9.7836
1.2103
9.9000
9.3192

0.4295 +2.69

0.0413 +1.10

9.3099

9.4456

1.2858

9.9824

0.0093

1.2775 +18.95

0.8274

0.8181 +6.58

+3.547 +53.20
+17.54

1 21 56.223
+11 47 10.47

1.702
1.021

Nemauoa

W II 1076

2 58 55.63
+4 50 51.7
3 0 2
+4 55 50
9.84942 9.84955
2.77489 8.93585
+3.426 0.53478
+ 2 12.388 +9 55.51
3 1 8.018
+5 0 47.21
45 17

Oct 27

77 24
98 37
0.5490 +31.56
+3.54

9.3387
1.2103
9.9894
8.9431

0.1428 +1.39

9.4028n - .25

8.9414

9.1756n

1.2858

9.9951

0.0017

1.2826 +19.17

0.8274

0.8257 +6.69

+3.475 +52.12
+9.98

3 1 11.493
+5 0 57.19

1.533
.692

Nebula

W I 390

1 21 37.79
-1 44 41.7
1 22 42
-1 38 7
9.97109 9.54786
2.89656 8.45559n
- .566 9.75283n
+ 2 8.396 +13 8.06
1 23 46.186
-1 31 33.64
20 56

1.619
.832

-0.373 +4 17.49

2 7 17 2 2 29

+0 52 +0 47

+002 +0.17

-1.25

-0.375 +4 16.41

15 5

11 43 4

1 25 14.988

-1 10 47.33

-1 19 22.65

8.978 0.769

-18.589 +8 13.80

2 36 27 2 31 56

+1 15 +1 10

+002 +0.19

-0.65

-18.587 +8 13.34

9 6

12 12 9

1 21 37.636

+11 55 23.81

9.143 0.642

-1 57.28 -5 34.36

3 24 51 3 18 30

+0 26 +0 19

-001 -0.14

-2.15

-1 57.281 -5 36.65

6 8

13 0 25

2 59 14.212

+4 55 20.54

8.681 0.714

-1 35.08 -6 47.45

3 31 15 3 40 54

+2 9 +2 20

-005 -24

00

-1 35.085 -6 47.69

6 2

Daphne

W I 390

Aglaia

W I 257

1 14 45.31
+11 29 38.0

1 15 51
+11 36 17

9.97577 9.51182
2.90124 9.31251
+3.747 0.57371
+2 12.709 +13 16.60

1 16 58.019
11 42 54.60
19 15

Oct 31

52 54

70 10

+31.96
0.9956 +9.90

9.7805
1.2151
9.9018
8.4254_n

9.5423_n - 359.2441_n - 18

8.4252_n
9.5306
1.2883
9.9734
0.0002

1.2619 +18.27

0.8050
0.8048 +6.38

+3.325 +49.88
+16.10

1 23 49.511
-1 31 17.54

1.364
462

-1 24.20 -3 46.38 +1 23.17 -1 25.05

3 31 26 3 36 59 4 7 40 3 59 30

+2 9 +2 13 +2 19 +2 41

-003 -12 -001 -04

+1.33 -1.12

-1 24.203 -3 45.17 +1 23.169 -1 26.21

6 3 9 5

12 51 17

1 22 25.308

-1 35 2.71

9.352 0.770

Aglaia

W I 257

1 14 45.31
+11 29 38.0

1 15 51
+11 36 17

9.97577 9.51182
2.90124 9.31251
+3.747 0.57371
+2 12.709 +13 16.60

1 16 58.019
11 42 54.60
19 15

Oct 31

51 13

68 29

+31.96
1.0119 +10.29

9.7968
1.2151
9.8918
9.3167

0.4236 +2.65

0.1603 +1.45

9.3076
9.5644
1.2883
9.9686
0.0091

1.2660 +18.45

0.8050
0.7959 +6.25

+3.537 +53.06
+17.99

1 17 1.556
+11 43 12.59

0.938
173

+1 23.17 -1 25.05

4 7 40 3 59 30

+2 19 +2 41

-001 -04

-1.12

+1 23.169 -1 26.21

9 5

13 27 25

1 18 8.387

+11 41 46.38

9.462 0.668

Daphne

Arg 2 -1° 190

1 20 4.16
-1 56 58.2

1 20 23
-1 53 16

9.97272 9.53604
2.35409 8.52499_m
-185 9.26631_m
+36.665 +3 45.99

1 20 40.825
-1 53 12.21
20 10

Nov 2

52 4

67 22

+32.17
1.0065 +10.15

9.7987
1.2176
9.8969
8.5177_n

9.6322_n - .439.3924_n - .25

8.5175_n
9.5853
1.2896
9.9652
0.0002

1.2550 +17.99

0.7925
0.7923 +6.20

+3.315 +49.73
+16.10

1 20 44.140
-1 52 56.11

1.55512 1.647
9.81516
0.00022 9.947
1.37050 0.885

+23.470 +7 14.91

2 7 34 1 53 37

+0 32 +0 46

+007 +01

-3.20

+23.477 +7 11.94

4 5

11 19 46

1 21 7.617

-1 45 44.17

8.924 0.774

Aglaia

W I 257

1 20 4.16
-1 56 58.2

1 20 23
-1 53 16

9.97272 9.53604
2.35409 8.52499_m
-185 9.26631_m
+36.665 +3 45.99

1 20 40.825
-1 53 12.21
20 10

Nov 2

51 9

66 27

+32.17
1.0151 +10.36

9.7975
1.2176
9.8914
9.3167

0.4257 +2.66

0.1988 +1.58

9.3076
9.6016
1.2896
9.9622
0.0091

1.2609 +18.24

0.7925
0.7834 +6.07

+3.538 +53.07
+18.01

1 17 1.557
+11 43 12.61

0.88093 1.679
9.81516
0.00925 9.979
0.70534 1.953

-5.074 -7 47.85

3 22 45 3 18 9

+2 6 +2 1

-001 -01

-006 -18

-5.081 -7 48.66

5 5

12 34 45

1 16 56.476

+11 35 23.95

9.354 0.655

Thiobe

W IV 717

4 31 7.06
+26 37 57.3

4 32 24
+26 40 36

9.57169 9.96747
2.49716 9.70108
+26.178 1.41793
+2 35.140 +5 14.17

4 33 42.200
+26 43 11.47
68 26

Nov 4

100 15

113 37

+32.39
0.4705_n -2.96

9.2503_n

1.2202

9.9930

9.7019

0.9851 +8.22

0.5465_n -3.52

9.6529

9.6027_n

1.2909

9.9620

0.0490

1.3019 +20.04

0.7772

0.7302

+5.37
+4.043 +60.65
-1.11

4 33 46.243
+26 43 10.36

1.83530 1.725

9.81500

0.04878

1.69908 1.084

-50.013 -8 30.26

5 57 31 5 42 42
+1 24 +1 11

-013 -05
000 -0.16

-1.02

-50.026 -8 41.49

M J 15 1 13

α 4 32 56.217

δ +26 34 28.87

Nov 6s. 4 5

log π x Δ 9.220 0.387

Thiobe

Anonyma

=

Thiobe

Anonyma

4 32 3
+26 33 33

Nov 5

1.22073 0.449

9.81493

0.04833

1.08399 0.58

+12.134 -27.48

1 31 51 1 36 56
-3 0 -2 55

+004 -03
000 00

+12.138 +44

+12.138 -27.07

10 32 31

5 5

9.525_n 0.489

Nov 6

1.211

.334

-38.03 -2 39.31

2 40 55 2 36 3
-1 51 -1 55

000 -04

-43

-38.030 -2 39.78

11 37 18

6 5

7342_n 0.420

Europa

W IV 266

4 12 5.49
+10 20 54.5

4 13 13
+10 24 5

9.65249 9.95105
2.57796 9.26378
+9.209 0.96421
+2 18.171 +6 18.41

4 14 23.661
+10 27 12.91
63 36

Nov 5

95 23

107 47

+32.50
0.1938_n 8.2383_n -1.56

9.2660

8.9723_n

1.2215

9.9981

9.2660

0.4856

0.1919_n +3.060.0351_n -1.08

9.2586

9.4849_n

1.2916

9.9787

0.0073

1.2776 +18.95

0.7721

0.7648

+5.82
+3.634 54.57
+3.226 +48.39
+3.18

27.295
4 14 26.887
+10 27 16.09

1.289

.398

-41.63 -3 10.57

2 58 7 2 56 59
-1 16 -1 17

+000 -08

-13

-41.630 -3 10.78

11 58 23

4 13 45.257

+10 24 5.31

15 4

9.140_n 0.661

Eurynome

W₂ III 908
$$\begin{array}{r} 3 \quad 39 \quad 2.81 \\ +15 \quad 55 \quad 12.6 \end{array}$$

$$\begin{array}{r} 3 \quad 40 \quad 15 \\ +15 \quad 59 \quad 16 \end{array}$$

$$\begin{array}{r} 9.75791 \quad 9.91370 \\ 2.68338 \quad 9.45715 \\ +13.190 \quad 1.12023 \\ +2 \quad 22.152 \quad +8 \quad 2.37 \end{array}$$

$$\begin{array}{r} 3 \quad 41 \quad 24.962 \\ +16 \quad 3 \quad 14.97 \\ 55 \quad 21 \end{array}$$

Nov 5

87 8

99 32

$$\begin{array}{r} +32.50 \\ 9.9206 \quad +.83 \end{array}$$

$$\begin{array}{r} 8.6991 \\ 1.2215 \\ 9.9995 \\ 9.4591 \end{array}$$

0.6801 + 4.79

9.9525_n - .90
$$\begin{array}{r} 9.4418 \\ 9.2191 \text{ n} \\ 1.2916 \\ 9.9940 \\ 0.0173 \end{array}$$

1.3029 + 20.09

0.7721

0.7548 + 5.68

$$\begin{array}{r} +3.825 \quad +57.38 \\ +5.61 \end{array}$$

$$\begin{array}{r} 3 \quad 41 \quad 28.787 \\ +16 \quad 3 \quad 20.58 \end{array}$$

1.589

.794

+1 3.27 - 6 20.68

$$\begin{array}{r} 3 \quad 42 \quad 6 \quad 3 \quad 49 \quad 26 \\ 0 \quad 0 \quad +0 \quad 7 \end{array}$$

000

- .13

+ 2.03

+1 3.270 - 6 18.78

12 42 15

3 42 32.057

+15 57 1.80

6 4

inf. neg 0.580

Eurynome

W₂ III 842
$$\begin{array}{r} 3 \quad 35 \quad 42.04 \\ +15 \quad 42 \quad 22.8 \end{array}$$

$$\begin{array}{r} 3 \quad 36 \quad 53 \\ +15 \quad 46 \quad 31 \end{array}$$

$$\begin{array}{r} 9.76691 \quad 9.90917 \\ 2.69238 \quad 9.45103 \\ +12.870 \quad 1.10958 \\ +2 \quad 21.832 \quad +8 \quad 12.47 \end{array}$$

$$\begin{array}{r} 3 \quad 38 \quad 3.872 \\ +15 \quad 50 \quad 35.27 \\ 54 \quad 31 \end{array}$$

Nov 6

86 16

97 41

$$\begin{array}{r} 0.0365 \quad +32.61 \\ +1.09 \end{array}$$

$$\begin{array}{r} 8.8137 \\ 1.2228 \\ 9.9991 \\ 9.4530 \end{array}$$

0.6749 + 4.73

9.8566_n - .72
$$\begin{array}{r} 9.4362 \\ 9.1261 \text{ n} \\ 1.2923 \\ 9.9961 \\ 0.0168 \end{array}$$

1.3052 + 20.19

0.7648

0.7480 + 5.60

$$\begin{array}{r} +3.835 \quad +57.53 \\ +5.97 \end{array}$$

$$\begin{array}{r} 3 \quad 38 \quad 7.707 \\ +15 \quad 50 \quad 41.24 \end{array}$$

0.389

.050

+3 35.75 - 24.00

$$\begin{array}{r} 3 \quad 33 \quad 15 \quad 3 \quad 40 \quad 0 \\ -0 \quad 8 \quad -0 \quad 2 \end{array}$$

000

00

+ 1.88

+3 35.750 - 22.12

12 29 29

3 41 43.457

+15 50 19.12

6 4

8.176_n 0.580

Europa

W IV 255

$$\begin{array}{r} 4 \quad 11 \quad 41.26 \\ +10 \quad 13? \quad 57.4 \end{array}$$

$$\begin{array}{r} 4 \quad 12 \quad 50 \\ +10 \quad 17 \quad 8 \end{array}$$

$$\begin{array}{r} 9.65393 \quad 9.95068 \\ 2.57940 \quad 9.25881 \\ +9.096 \quad 0.95887 \\ +2 \quad 18.058 \quad +6 \quad 19.66 \end{array}$$

$$\begin{array}{r} 4 \quad 13 \quad 59.318 \\ +10 \quad 20 \quad 17.06 \\ 63 \quad 30 \end{array}$$

Nov 6

95 15

106 20

$$\begin{array}{r} 0.1842 \text{ n} \quad +32.61 \\ -1.53 \end{array}$$

$$\begin{array}{r} 8.9614 \text{ n} \\ 1.2228 \\ 9.9982 \\ 9.2611 \end{array}$$

0.4821 + 3.03

0.0039_n - 1.01
$$\begin{array}{r} 9.2540 \\ 9.4576 \text{ n} \\ 1.2923 \\ 9.9814 \\ 0.0071 \end{array}$$

1.2808 + 19.09

0.7648

0.7577 + 5.72

$$\begin{array}{r} +3.649 \quad +54.73 \\ +3.18 \end{array}$$

$$\begin{array}{r} 4 \quad 14 \quad 2.967 \\ +10 \quad 20 \quad 20.24 \end{array}$$

0.768

.120

-1 0.90 + 57.37

$$\begin{array}{r} 3 \quad 57 \quad 42 \quad 3 \quad 50 \quad 34 \\ -0 \quad 15 \quad -0 \quad 22 \end{array}$$

000

+03

80

-1 0.900 + 56.60

12 53 51

4 13 2.067

10 21 16.84

6 5

8.447_n 0.657

Undina

Anonyma

$$\begin{array}{r} 21 \quad 7 \quad 1.9.06 \\ -24 \quad 5 \quad 37.72 \\ 316 \quad 45 \end{array}$$

July 30

358 11

100 38

$$\begin{array}{r} +23.87 \\ 1.1417 \quad +13.86 \end{array}$$

$$\begin{array}{r} 9.9998 \\ 1.1419 \\ 8.5011 \text{ n} \\ 9.6504 \text{ n} \end{array}$$

9.2934 + 2.0

0.2130 + 1.63

$$\begin{array}{r} 9.6109 \text{ n} \\ 9.3046 \text{ n} \\ 1.2975 \\ 9.9909 \\ 0.0396 \end{array}$$

1.3280 + 21.28

0.6948

0.6552 + 4.52

$$\begin{array}{r} +3.023 \quad +4.535 \\ +2.01 \end{array}$$

$$\begin{array}{r} 21 \quad 7 \quad 4.929 \\ -24 \quad 5 \quad 17.71 \end{array}$$

1.21294 1.300

9.81528 8.293

0.03950 392

1.06772 410

- 11.688 + 3 15.78

$$\begin{array}{r} 20 \quad 43 \quad 25 \quad 20 \quad 43 \quad 22 \\ -0 \quad 23 \quad -0 \quad 23 \end{array}$$

- 006 + 02

- 003 + 32

00

- 11.697 + 3 16.12

12 10 11

21 6 53.232

- 24 2 1.59

12 7

8.663_n 0.894

Europa

B.A.C. 1244

 $\alpha_1 1850.0$
 $\delta_1 1850.0$
 $3^h 53^m 35.5^s$
 $80^\circ 25' 40.9''$
 $\alpha_2 1858.5$
 $3^h 54^m 32.4^s$
 $9^\circ 40' 6.7''$
 $\cos \delta_1$
 $\sin \delta_1$
 $\cos \delta_2$
 $\sin \delta_2$
 $\alpha_1 1850.0$
 $\delta_1 1850.0$
 $\alpha_2 1858.5$
 $\delta_2 1858.5$

Date Nov 30

Q₁ α μ $89^\circ 2' + .001$
 $H + \alpha$ μ $78 24 + .09$
 $E + f$ $+ 35.72$
 9.4833 $.30$
 $\cos(\delta_1)$
 $\sin(\delta_1)$
 $\cos(\delta_2)$
 $\sin(\delta_2)$
 0.4703 2.95
 9.8324 $.68$
 9.2181
 9.3083
 1.3060
 9.9910
 61
 1.3031 20.09
 0.4729
 0.4668 2.93
 3.917 58.76
 4.00
 822
 $3^h 54^m 31.6^s$
 $9^\circ 37' 10.70''$ 9.01
 $1.67574n$ $1.208n$
 9.81479 8.318
 618 $9.526n$
 $1.49668n$
 $-31.382 - 2' 37.78$
 $3^h 8^m 03.15^s$ 7.4
 -0.46^m -0.39^m
 $-0.5008 + 0.02$
 -0.06
 $-31.390 + 2.9$
 $-31.390 - 2' 37.73$
 $10^h 30^m 34.5$
 0.432
 $3^h 54^m 31.28^s$
 $+9^h 34^m 32.97^s$
 5 5
 $8.934n$ 0.666

Galatea

B.A.C. 1377

 $4^h 19^m 52.15^s$
 $+16^m 1^m 12.5''$
 $4^h 20^m 28^s$
 $+16^m 2^m 24''$
 9.62452 9.95758
 2.15716 9.45864
 $+5.926$ 0.77277
 $+5.8129$ $+2.2360$
 $\mu + 0.50$ $+ .67$
 4 20 50.329
 $+16$ 3 36.77
 65 13

Dec 1

 $95 34$
 $84 3$
 $+35.87$
 $0.2444n$ -1.76
 $8.9868n$
 1.2576
 9.9980
 9.4592
 0.7148 $+5.19$
 9.7639 $+5.58$
 9.4419
 9.0156
 1.3064
 9.9976
 0.0873
 1.3213 $+20.96$
 0.4528
 0.4255 $+2.73$
 $+4.135$ $+62.02$
 $+1.55$
 4 20 54.464
 $+16$ 3 38.32

Eurynome

W III. 306

 $3^h 16^m 1.84^s$
 $+12^m 59^m 51.5''$
 $3^h 17^m 2^s$
 $+13^m 4^m 25''$
 9.81461 9.87953
 2.74008 9.36590
 $+9.881$ 0.99481
 $+2$ 18.843 $+9$ 9.64
 3 18 20.683
 $+13$ 9 1.14
 49 35

Dec 2

 $79 51$
 $67 28$
 $+36.01$
 0.5051 $+3.20$
 9.2461
 1.2590
 9.9932
 9.3685
 0.6207 $+4.18$
 0.2471 $+1.77$
 9.3570
 9.5834
 1.3067
 9.9655
 0.0115
 1.2837 $+19.22$
 0.4315
 0.4200 $+2.63$
 $+3.961$ $+59.41$
 $+7.60$
 3 18 24.644
 $+13$ 9 8.74
 1.433
 $.562$
 $+1^m 29.07^s + 4' 25.43''$
 $4^h 14^m 28^s$ $4^h 19^m 57^s$
 $+0.55$ $+1.07$
 000 $+10$
 $+1.04$
 $+1$ 29.070 $+4$ 26.57
 11 28 22
 3 19 53.714
 $+13$ 13 35.31
 6 3
 9.013 0.623

Salatea

B.A.C. 1377

 $3^h 16^m 1.84^s$
 $+12^m 59^m 51.5''$
 $3^h 17^m 2^s$
 $+13^m 4^m 25''$
 9.81461 9.87953
 2.74008 9.36590
 $+9.881$ 0.99481
 $+2$ 18.843 $+9$ 9.64
 3 18 20.683
 $+13$ 9 1.14
 49 35

Dec 2

 $95 29$
 $83 6$
 $+36.01$
 $0.2393n$ -1.73
 $8.9803n$
 1.2590
 9.9980
 9.4592
 0.7162 $+5.20$
 9.8283 $+6.7$
 9.4419
 9.0797
 1.3067
 9.9968
 0.0173
 1.3208 $+20.93$
 0.4315
 0.4142 $+2.60$
 $+4.143$ $+62.14$
 $+1.54$
 4 20 54.472
 $+16$ 3 38.31
 0.137
 $.029$
 -3 45.45 -13.45
 $4^h 50^m 36^s$ $4^h 52^m 28^s$
 $+0.83$ $+0.35$
 000 00
 $+2.24$
 -3 45.450 -13.21
 12 4 24
 4 17 9.022
 $+16$ 3 25.10
 6 4
 8.799 0.580

Antiope

W₂ V 610
$$\begin{array}{r} 5 \quad 19 \quad 24.34 \\ +23 \quad 36 \quad 34.3 \end{array}$$

$$\begin{array}{r} 5 \quad 20 \quad 41 \\ +23 \quad 37 \quad 47 \end{array}$$

$$\begin{array}{r} 9.23226 \quad 9.99358 \\ 2.15773 \quad 9.64099 \\ +24.208 \quad 1.38395 \\ +2 \quad 33.170 \quad +2 \quad 23.79 \end{array}$$

$$\begin{array}{r} 5 \quad 21 \quad 57.510 \\ +23 \quad 38 \quad 58.09 \\ 80 \quad 29 \end{array}$$

Dec 5

110 31

95 32

$$\begin{array}{r} +36.45 \\ 0.8080n \quad -6.43 \end{array}$$

$$\begin{array}{r} 9.5447n \\ 1.2633 \\ 9.9715 \\ 9.6414 \end{array}$$

$$0.8762 \quad +7.52$$

$$9.8954n \quad -79$$

$$\begin{array}{r} 9.6033 \\ 8.9842n \\ 1.3079 \\ 9.9986 \\ 0.0381 \end{array}$$

$$1.3440 \quad +22.08$$

$$\begin{array}{r} 0.3597 \\ 0.3216 \quad +2.09 \end{array}$$

$$\begin{array}{r} +4.403 \quad +66.05 \\ -5.13 \end{array}$$

$$\begin{array}{r} 5 \quad 22 \quad 1.913 \\ +23 \quad 38 \quad 52.96 \end{array}$$

1.645

.906

$$-2 \quad 55.94 \quad -7 \quad 12.75$$

$$\begin{array}{r} 6 \quad 54 \quad 26 \quad 6 \quad 56 \quad 8 \\ +1 \quad 32 \quad +1 \quad 32 \end{array}$$

$$\begin{array}{r} 000 \quad -13 \\ 00 \end{array}$$

$$\begin{array}{r} -2 \quad 55.940 \quad -7 \quad 12.88 \\ 13 \quad 56 \quad 6 \end{array}$$

$$5 \quad 19 \quad 5.973$$

$$+23 \quad 31 \quad 40.08$$

$$\begin{array}{r} 5 \quad 4 \\ 9.258 \quad 0.470 \end{array}$$

Calliope

Arg 2. + 30 No 1098

$$\begin{array}{r} 5 \quad 55 \quad 15.74 \\ +30 \quad 14 \quad 4.2 \end{array}$$

$$\begin{array}{r} 5 \quad 55 \quad 36 \\ +30 \quad 14 \quad 6 \end{array}$$

$$\begin{array}{r} 8.28324 \quad 9.97992 \\ 0.66461 \quad 9.76554 \\ +9.348 \quad 0.97074 \\ +46.198 \quad +4.62 \end{array}$$

$$\begin{array}{r} 5 \quad 56 \quad 1.938 \\ +30 \quad 14 \quad 8.82 \\ 89 \quad 0 \end{array}$$

Dec 8

118 47

101 14

$$\begin{array}{r} +36.91 \\ 0.9501n \quad -8.91 \end{array}$$

$$\begin{array}{r} 9.6826n \\ 1.2675 \\ 9.9427 \\ 9.7656 \end{array}$$

$$0.9758 \quad +9.46$$

$$0.3005n \quad -2.00$$

$$\begin{array}{r} 9.7021 \\ 9.2896n \\ 1.3088 \\ 9.9916 \\ 0.0635 \end{array}$$

$$1.3639 \quad +23.12$$

$$\begin{array}{r} 0.2720 \\ 0.2085 \quad +1.62 \end{array}$$

$$\begin{array}{r} +4.533 \quad +69.49 \\ -9.29 \end{array}$$

$$\begin{array}{r} 5 \quad 56 \quad 6.571 \\ +30 \quad 13 \quad 59.53 \end{array}$$

$$0.7479n \quad 0.221n$$

$$\begin{array}{r} 9.8147 \\ 0.0635 \\ 0.6261n \quad .055 \end{array}$$

$$-4.228 \quad -16.09$$

$$\begin{array}{r} 4 \quad 29 \quad 46 \quad 4 \quad 35 \quad 36 \\ -1 \quad 26 \quad -1 \quad 31 \end{array}$$

$$\begin{array}{r} 000 \quad 00 \\ 000 \quad .00 \end{array}$$

-1.38

$$\begin{array}{r} -4.228 \quad -17.47 \\ 20 \quad 1 \\ 11 \quad 23 \quad 54 \end{array}$$

$$5 \quad 56 \quad 2.343$$

$$+30 \quad 13 \quad 42.06$$

$$\begin{array}{r} 5 \quad 5 \\ 9.243n \quad 0.305 \end{array}$$

Calliope

Arg 2. + 30, no 1098

Dec 9

118 42

100 17

$$\begin{array}{r} +37.06 \\ 0.9503n \quad -8.92 \end{array}$$

$$\begin{array}{r} 9.6814n \\ 1.2689 \\ 9.9431 \\ 9.7656 \end{array}$$

$$0.9776 \quad +9.50$$

$$0.2628n \quad -1.83$$

$$\begin{array}{r} 9.7021 \\ 9.2517n \\ 1.3090 \\ 9.9930 \\ 0.0635 \end{array}$$

$$1.3655 \quad +23.20$$

$$\begin{array}{r} 0.2381 \\ 0.1746 \quad +1.50 \end{array}$$

$$\begin{array}{r} +4.651 \quad +69.76 \\ -9.25 \end{array}$$

$$\begin{array}{r} 5 \quad 56 \quad 6.589 \\ +30 \quad 13 \quad 59.57 \end{array}$$

$$\begin{array}{r} 1.493 \\ +6.56 \end{array}$$

.662

.754

$$\begin{array}{r} -1 \quad 2.80 \quad +5 \quad 4.192 \\ +50.10 \quad -5 \quad 5.192 \end{array}$$

$$\begin{array}{r} 3 \quad 38 \quad 17 \quad 3 \quad 46 \quad 23 \\ 5 \quad 18 \quad 11 \quad 5 \quad 9 \quad 12 \\ -2 \quad 18 \quad -2 \quad 10 \end{array}$$

$$\begin{array}{r} 000 \quad +09 \\ -1.87 \end{array}$$

$$\begin{array}{r} -1 \quad 2.800 \quad +5 \quad 3.14 \\ 24 \quad 46 \\ 10 \quad 28 \quad 42 \end{array}$$

$$5 \quad 56 \quad 3.789$$

$$+30 \quad 19 \quad 2.71$$

$$\begin{array}{r} 9 \quad 5 \\ 9.441n \quad 0.357 \end{array}$$

Egeria

W₂ VI 282-3
$$\begin{array}{r} 6 \quad 8 \quad 47.485 \\ +42 \quad 24 \quad 18.15 \end{array}$$

$$\begin{array}{r} 6 \quad 10 \quad 18 \\ +42 \quad 24 \quad 40 \end{array}$$

$$\begin{array}{r} 8.65251n \quad 9.99956 \\ 1.57798n \quad 9.96070 \\ +51.244 \quad 1.70964 \\ +3 \quad 0.206 \quad -37.84 \end{array}$$

$$\begin{array}{r} 6 \quad 11 \quad 47.691 \\ +42 \quad 23 \quad 40.31 \\ 92 \quad 57 \end{array}$$

Dec 8

122 44

105 11

$$\begin{array}{r} +36.91 \\ 1.0005n \quad -10.01 \end{array}$$

$$\begin{array}{r} 9.7330n \\ 1.2675 \\ 9.9249 \\ 9.9604 \end{array}$$

$$1.1528 \quad +14.21$$

$$0.5558n \quad -3.60$$

$$\begin{array}{r} 9.8288 \\ 9.4182n \\ 1.3088 \\ 9.9846 \\ 0.1316 \end{array}$$

$$1.4250 \quad +26.61$$

$$\begin{array}{r} 0.2720 \\ 0.1404 \quad +1.38 \end{array}$$

$$\begin{array}{r} +5.182 \quad +77.73 \\ -12.23 \end{array}$$

$$\begin{array}{r} 6 \quad 11 \quad 52.873 \\ +42 \quad 23 \quad 28.08 \end{array}$$

$$\begin{array}{r} 1.556 \\ N624n \quad +0.76 \end{array}$$

$$\begin{array}{r} 9.8146 \\ 0.1316 \quad 757 \\ 1.1036n \quad .284 \end{array}$$

$$\begin{array}{r} +50.10 \quad -5 \quad 51.92 \\ -12.88 \quad +1 \quad 66.70 \end{array}$$

$$\begin{array}{r} 5 \quad 18 \quad 11 \quad 5 \quad 9 \quad 12 \\ 2 \quad 66 \quad 44 \quad 3 \quad 0 \quad 40 \\ -0 \quad 54 \quad -1 \quad 3 \end{array}$$

$$\begin{array}{r} 000 \quad -10 \\ +3.27 \end{array}$$

$$\begin{array}{r} +50.100 \quad +5 \quad 48.75 \\ 8 \quad 18 \\ 12 \quad 12 \quad 14 \end{array}$$

$$6 \quad 12 \quad 42.973$$

$$+42 \quad 29 \quad 16.83$$

$$\begin{array}{r} 9 \quad 5 \\ 9.124n \quad 9.146 \end{array}$$

Egna
W₂ VI 282.3

Salatea
W IV 33

Thise
W₂ III 1183

Antispe
W₂ IV 1406

4 1 16.40
32.70
+15 9 42.3
4 2 28
+15 13 12
9.69077 9.94020
2.61624 9.43468
+13.313 1.12426
+2 22.275 +6 53.28
4 3 38.675
+15 16 35.58
60 55

3 53 20.38
+23 54 39.8
3 54 35
+23 58 21
9.71628 9.93144
2.64175 9.64802
+21.323 1.32884
+2 30.285 +7 18.28
3 55 50.665
+24 1 58.08
59 28

4 58 28.91
+23 26 29.1
4 59 44
+23 28 20
9.41488 9.98481
2.24035 9.63773
+23.546 1.37192
+2 32.508 +3 38.95
5 1 1.418
+23 30 8.05
75 15

Dec 9

122 39

104 14

+37.06
1.0009_m -10.02

9.7320_m

1.2689

9.9253

9.7604

1.1546 +14.28

0.5285_m -3.38

9.8288

9.3907_m

1.3090

9.9865

0.1316

1.4271 +26.74

0.2381

0.1065 +1.28

+5.205 +78.08
-12.12

6 11 52.896
+42 23 28.19

1.1624_m 1.076

9.8146

0.1316

1.1086_m 254

-12.841 +1 56.90

2 55 44 3 0 40

-3 16 -3 11

-003 +01

000 +03

-1.74

-12.844 +1 55.20

42 19

9 46 15

6 11 40.052

+42 25 23.39

5 5

9.633_m 0.134

Dec 17

89 52

64 43

+38.29
8.6468 +0.4

7.3668

1.2800

0.0000

9.4363

0.7163 +5.20

0.3616 +2.30

9.4207

9.6305

1.3104

9.9563

0.0156

1.2823 +19.16

9.7686

9.7530 +.57

+4.177 +62.65
+2.91

4 3 42.852
+15 16 38.49

1.756

1.172

+1 15.84 +9 18.81

6 1 59 5 51 16

+1 58 +1 47

+003 +20

-80

+1 15.843 +9 18.21

16 37

12 20 23

4 4 58.695

+15 25 56.70

9 3

9.332 0.606

Dec 17

88 25

63 16

+38.29
9.7214 +.53

8.4414

1.2800

9.9998

9.6492

0.9290 +8.49

0.5734 +3.75

9.6099

9.6531

1.3104

9.9509

0.0394

1.3007 +19.98

9.7686

9.7292 +.54

+4.451 +66.76
+4.82

3 55 55.116
+24 2 2.90

0.732

.115

-1 54.44 -52.86

6 16 11 6 25 52

+2 22 +2 32

000 -02

+1.68

-1 54.440 -51.20

30 46

12 34 42

3 54 0.676

+24 1 11.70

9 3

9.430 0.506

Dec 17

104 12

79 3

+38.29
0.6097_m -4.67

9.3897_m

1.2800

9.9865

9.6383

0.9048 +8.03

0.1897 +1.55

9.6007

9.2786

1.3104

9.9920

0.0376

1.3400 +21.88

9.7686

9.7310 +.54

+4.547 +68.20
-2.58

5 1 5.965
+23 30 5.47

1.435

.579

+7 25.72 +4 26.71

8 14 12 8 12 1

+3 6 +3 4

+158 +1.08

000 -08

-05

+7 25.878 +4 25.66

28 28

14 32 24

5 8 31.843

+23 25 39.71

6 3

9.525 0.544

Galatea

W IV 33

Antiope

W₂ IV 1406

Galatea

W IV 33

Parthenope

W₂ VI 1870-1
$$\begin{array}{r} 6 \quad 58 \quad 50.81 \\ + 19 \quad 48 \quad 56.4 \end{array}$$

$$\begin{array}{r} 7 \quad 0 \quad 4 \\ + 19 \quad 47 \quad 10 \end{array}$$

$$\begin{array}{r} 9.41347_n \quad 9.98491 \\ 2.33894_n \quad 9.55600 \\ + 19.511 \quad 1.29029 \\ + 2 \quad 28.473 \quad -3 \quad 38.24 \end{array}$$

$$\begin{array}{r} 7 \quad 1 \quad 19.283 \\ + 19 \quad 45 \quad 18.16 \\ 105 \quad 20 \end{array}$$

Dec 18

Dec 18

Dec 19

Dec 26

104 6

89 46

133 20

78 7

62 51

100 42

$$+38.45$$

$$+38.60$$

$$+39.69$$

$$0.6680_n \quad -4.66$$

$$9.0473 \quad +1.1$$

$$1.1282_n \quad -13.43$$
9.3867_n

7.7647

9.8365_n

1.2813

1.2826

1.2917

9.9867

0.0000

9.8618

9.6383

9.4363

9.5552

$$0.9063 \quad +8.06$$

$$0.7189 \quad +5.23$$

$$0.7087 \quad +5.11$$

$$0.2249 \quad +1.68$$

$$0.3905 \quad +2.46$$

$$0.1080_n \quad -1.28$$

9.6007

9.4207

9.5290

9.3137

9.6593

9.2637_n

1.3105

1.3105

1.3103

9.9906

9.9493

9.9924

0.0376

0.0156

0.0263

$$1.3387 \quad +21.81$$

$$1.2754 \quad +18.85$$

$$1.3290 \quad +21.33$$

9.6464

9.4749

9.8535_n

9.6088

$$9.4593 \quad +.29$$

$$9.8272_n \quad -67$$

$$+4.555 \quad +68.32$$

$$+4.179 \quad +62.68$$

$$+4.409 \quad +66.13$$

$$-2.57$$

$$+2.86$$

$$-15.38$$

$$\begin{array}{r} 4 \quad 3 \quad 42.853 \\ + 15 \quad 16 \quad 38.46 \end{array}$$

$$\begin{array}{r} 5 \quad 1 \quad 5.973 \\ + 23 \quad 30 \quad 5.48 \end{array}$$

$$\begin{array}{r} 4 \quad 3 \quad 42.854 \\ + 15 \quad 16 \quad 38.44 \end{array}$$

$$\begin{array}{r} 7 \quad 1 \quad 23.692 \\ + 19 \quad 45 \quad 2.78 \end{array}$$

1.672

1.487

1.578

1.512

.982

.646

.805

.659

$$+37.82 + 7 \quad 40.30$$

$$+6 \quad 38.22 \quad -5 \quad 1.01$$

$$+0.66$$

$$+6 \quad 11.27$$

$$+3 \quad 2.87 \quad -5 \quad 17.72$$

$$\begin{array}{r} 5 \quad 34 \quad 41 \quad 5 \quad 44 \quad 43 \\ + 1 \quad 31 \quad + 1 \quad 41 \end{array}$$

$$\begin{array}{r} 6 \quad 30 \quad 21 \quad 6 \quad 14 \quad 49 \\ + 1 \quad 22 \quad + 1 \quad 6 \end{array}$$

$$\begin{array}{r} 5 \quad 25 \quad 34 \quad 5 \quad 35 \quad 24 \\ + 1 \quad 22 \quad + 1 \quad 32 \end{array}$$

$$\begin{array}{r} 7 \quad 2 \quad 49 \quad 7 \quad 17 \quad 1 \\ - 0 \quad 2 \quad + 0 \quad 13 \end{array}$$

$$000 \quad +15$$

$$\begin{array}{r} +104 \quad +40 \\ 000 \quad -09 \end{array}$$

$$000 \quad +12$$

$$-10$$

$$+70$$

$$-39$$

$$+68$$

$$-1.75$$

$$\begin{array}{r} +37.820 + 7 \quad 41.15 \\ 45 \quad 26 \\ 11 \quad 49 \quad 22 \end{array}$$

$$\begin{array}{r} +6 \quad 38.324 - 5 \quad 1.09 \\ 40 \quad 58 \\ 12 \quad 44 \quad 54 \end{array}$$

$$\begin{array}{r} +0.660 \quad +6 \quad 12.07 \\ 11 \quad 32 \quad 27 \end{array}$$

$$\begin{array}{r} +3 \quad 2.870 - 5 \quad 19.57 \\ 12 \quad 41 \quad 54 \end{array}$$

$$4 \quad 4 \quad 20.673$$

$$5 \quad 7 \quad 44.297$$

$$4 \quad 3 \quad 43.514$$

$$7 \quad 4 \quad 26.562$$

$$+15 \quad 24 \quad 19.61$$

$$+23 \quad 25 \quad 4.39$$

$$+15 \quad 22 \quad 50.51$$

$$+19 \quad 39 \quad 43.21$$

$$6 \quad 4$$

$$6 \quad 3$$

$$12 \quad 5$$

$$9 \quad 3$$

$$9.228 \quad 0.604$$

$$9.210 \quad 0.456$$

$$9.188 \quad 0.602$$

$$7.602_n \quad 0.517$$

Planet (93)

BAC 8281
(21 Piscum.)23 42 39.000
+0 20 10.52
355 40

Dec 26

23 40

351 2

+39.69 +04
+17.92 +08

1.2535

9.9618

1.2917

9.6036

7.7677

8.6630 +.05

9.0727 +.12

7.7677

9.9947

1.3103

9.1927ⁿ

0.0000

0.5030ⁿ -3.189.8535ⁿ9.8535ⁿ -.71+2.440 +36.60
+17.4123 42 41.440
+0 20 27.931.460ⁿ

.589

+1 29.96 -4 43.02

2 30 7 2 38 23
+2 46 +2 54

-006 -20

-2.56

+1 29.954 -4 45.78
8 9 56

23 44 11.394

+0 15 42.15

9 3

9.447 0.758

Beatrice

W₂ V 7095 22 33.04
+30 24 45.35 23 53
+30 25 52

9.19573 9.99458

2.12120 9.75895

+32.577 1.51291

+2 41.539 +2 12.19

5 25 14.579
+30 26 57.49
81 19

Dec 28

109 6

74 49

+40.00
0.8090ⁿ -6.449.5148ⁿ

1.2942

9.9754

9.7692

1.0388 +10.93

0.4331 +2.71

9.7048

9.4182

1.3101

9.9846

0.0644

1.3591 +22.86

0.0008ⁿ9.9364ⁿ -.86+4.919 +73.79
-4.595 25 19.498
+30 26 52.90

0.3925

9.8149

0.0644

0.2788

+1.870 -3 7.12

6 45 9 6 43 3
+1 20 +1 18

000 00

000 -05

-06

+1.870 -3 7.23
12 16 25

5 25 21.368

+30 23 45.67

10 5

9.223

0.288

Parthenope

W₂ VI 1870-1

Dec 28

133 7

98 50

+40.00
1.1264ⁿ -13.389.8347ⁿ

1.2917

9.8633

9.5552

0.7102 +5.13

0.8256ⁿ8.7155ⁿ -1.06

9.5290

9.1863ⁿ

1.3103

9.9948

0.0263

1.3314 +21.45

9.8535ⁿ -.679.8272ⁿ -6.72+4.439 +66.58
-20.15
-15.117 1 23.722
+19 45 3.05

0.575

.077

.777

+56.82 +36.77 -1 36.84 +1 30.93

7 43 4 7 33 5 8 13 0 8 25 34
+0 41 +0 31 +0 15 +0 28

000 +01

+1.24

+56.820 +38.02
13 14 10

7 2 20.542

+19 45 41.07

9 5

8.908 0.518

Julia

W₂ VII 1618-9.7 56 54.40
+30 56 8.47 58 13
+30 52 439.69306ⁿ 9.939462.61853ⁿ 9.77669

+29.210 1.45563

+2 38.172 -6 55.46

7 59 32.572
+30 49 12.94
119 53

Dec 28

147 40

113 23

+40.00
1.2210ⁿ -16.649.9268ⁿ

1.2942

9.7282

9.7757

0.7981 +6.28

0.6184ⁿ

9.7096

9.5937ⁿ

1.3101

9.9628

0.0661

1.3390 +21.82

0.0008ⁿ9.9347ⁿ -.86+4.540 +68.10
-21.657 59 37.112
+30 48 51.29

0.968

.191

Planet (94)

W O 431

0 24 6.54
+6 36 57.2

0 25 11
+6 43 57

9.99737 9.04006
2.92284 9.07206
+7.27 9.86150
+2 9.689 +13 57.22

0 26 16.229
+6 50 54.42
6 34

Dec 30

34 7

358 12

+40.31
1.2146 +16.39

9.9180
1.2966
9.7489
9.0795

0.1250 +1.33

0.3859 +2.43

9.0764
9.9998
1.3097
8.4971
0.0031

9.8099_n -.65

0.1100_n
0.1059_n -1.28

+2.733 +40.99
+17.54

0 26 18.962
+6 51 11.96

0.7933 1.776

0.9030

9.8147

0.6110 1.247

+4.083 -9 45.37

4 16 0 4 22 58
+3 50 +3 57

+003 +03
-018 -47

-1.60

+4.068 -9 47.41

19 39 48

0 26 23.030

+6 41 24.55

5 5

9.555 0.728

Antiope

W₂ IV 1279

4 54 19.27
+23 18 53.0

4 55 35
+23 20 52

9.44308 9.98261
2.36855 9.63514
+23.288 1.36713
+2 32.250 +3 53.63

4 56 51.520
+23 22 46.63
74 13

Dec 30

101 46

65 51

+40.31
0.6061_n -4.04

9.3095_n
1.2966
9.9908
9.6357

0.9231 +8.38

0.5192 +3.31

9.5986
9.6119
1.3097
9.9602
0.0372

1.3071 +20.28

0.1100_n
0.0728_n -1.18

+4.598 +68.97
-1.91

4 56 56.118
+23 22 44.72

1.563

.764

+1 15.50 -5 58.26

6 58 0 7 9 53
+2 0 +2 12

000 -12

+35

+1 15.500 -5 58.03

12 21 22

4 58 11.618

+23 16 46.69

12 5

9.361 0.502

Hebe

W VII 180

7 4 50.22
+9 21 4.5

7 6 0
+9 19 0

9.45334_n 9.98174
2.38903_n 9.21499
+9.043 0.95633
+2 21.076 -4 4.92

7 7 11.296
+9 16 59.58
106 48

1868

Jan 9

208 21

88 59

0.9091_n -4.26
-8.11

9.9445_n
0.9646
9.6766_n
9.2134

9.8546_n -.72

8.7635 +.06

9.2077
9.2446
9.9977
1.3068
9.9999
0.0057

1.3124 +20.53

0.4298_n
0.4241_n -2.65

+1.037 = +15.55
-10.76

7 7 12.333
+9 16 48.88

1.439

.578

+1 3.73 +4 28.72

7 28 52 7 20 53
+0 21 +0 13

000 +10

+2.93

+1 3.730 +4 31.75

12 12 49

7 8 16.063

+9 21 20.63

9 5

8.591 0.668

Julia

W₂ VII 1227

7 40 49.65
+30 40 54.0

7 42 10
+30 37 52

9.63465_n 9.95534
2.57034_n 9.77242
+3.0776 1.48736
+2 42.749 -6 11.82

7 43 32.399
+30 34 42.18
115 53

Jan 9

217 26

98 4

-4.26
0.8644_n -7.32

9.8998_n
0.9646
9.7838_n
9.7715

0.5199_n -3.310.1604_n -1.45

9.7065
9.1471_n
1.3068
9.9957
0.0650

1.3675 +23.31

0.4298_n
0.3648_n -2.32

+1.049 +15.74
-11.09

7 43 33.448
+30 34 31.09

1.394

.521

-6.62 -4 2.35

7 41 35 7 49 42
-0 2 +0 6

000 -07

+81

-6.620 -4 1.61

12 25 30

7 43 26.828

+30 30 29.48

12 5

7.602_n 0.240

See next page but two.

Parthenope

Arg Z + 20° no 1638

6	48	19.81
+20	28	38.5

6	48	43
+20	28	12

9.32422 n	9.99011
1.74036 n	9.57204
+6.341	0.80219
+2.18274	-55.00
+46.262	

6	49	6.072
+20	27	43.50
102.1	17	

Jan 10

203 28

83 31

-4.11
0.9257 n -8.43

9.9625 n

0.9632

9.6001 n

9.5718

0.1351 n	-1.36
	-12.65

9.9027 +.80

9.5435

9.0528

1.3064

9.9972

0.0283

1.3319 +21.48

0.4512 n

0.4229 n -2.65

+1.067	+16.01
	-10.28

6	49	7.139
+20	27	33.22

1.195

.330

-29.47 -2 33.31

7	34	18	7	39	0
+10	46		+0	51	

000 -05

-59

-29.470 -2 33.95

12 15 18

6 48 37.669

+20 24 59.27

9 5

8.954 0.509

Feb. 1567

Oeltz. 7260

7	35	26.05
-17	51	33.7

7	35	50
-17	52	48

9.60860 n	9.96087
2.16607 n	9.50867 n
-7.094	0.85092 n
+48.180	-2 26.58

7	36	12.230
-17	54	0.28

Jan 16

1.25734

9.81470

0.02155

1.09359

-12.405 -3.52

mean α 1868.0

7 36 1.825

mean δ 1868.0

-17 54 3.80

10 3

Eurydice

Arg Z + 29° no 1308

6	32	6.60
+29	49	1.6

6	32	31
+28	48	45

9.15047 n	9.99561
1.56661 n	9.74039
+9.463	0.97604
+49.384	-36.86

6	32	55.984
+28	48	24.74
98.0	14	

Feb 1

191 38

57 59

-1.19
0.9243 n -8.40

9.9910 n

9.3046 n

0.9332

9.3046 n

9.7402

9.9781 n -9.5

0.7014 +5.03

9.6829

9.7244

1.2941

9.9283

0.0574

1.2798 +19.04

0.7418 n

0.6844 n -4.84

+1.027	+16.90
	-8.21

6	32	57.111
+28	48	16.53

0.917

+1 7.32 +1 20.90

7	57	4	8	5	30
+1	25		+1	33	

000 +02

+57

+1 7.320 +1 21.43

11 10 0

6 34 4.431

+28 49 37.96

9 5

9.248 0.346

Eurydice

Arg Z + 29° no 1308

Feb 3

190 58

55 58

-0.96
0.9287 n -8.49

9.9920 n

0.9367

9.2793 n

9.7402

9.9562 n -9.0

0.7237 +5.29

9.6829

9.7479

1.2929

9.9184

0.0574

1.2687 +18.57

0.7579 n

0.7005 n -5.02

+1.114	+16.71
	-8.22

6	32	57.098
+28	48	16.52

1.052

-8.72 -1 50.337

9	53	56	9	57	31
+3	21		+3	25	

000 -04

+23

-8.720 -1 50.14

12 58 42

6 32 48.378

+28 46 26.38

9 4

9.568 0.496

Melpomene

W IX 416

$$\begin{array}{r} 9 \quad 18 \quad 5.81 \\ + 11 \quad 39 \quad 9.8 \end{array}$$

$$\begin{array}{r} 9 \quad 19 \quad 17 \\ + 11 \quad 33 \quad 43 \end{array}$$

$$\begin{array}{r} 9.88311n \quad 9.80968 \\ 2.81880n \quad 9.31086 \\ + 7.588 \quad 0.88014 \\ + 2 \quad 19.621 \quad -10 \quad 58.87 \end{array}$$

$$\begin{array}{r} 9 \quad 20 \quad 25.431 \\ + 11 \quad 28 \quad 10.93 \\ 140^\circ \quad 6' \end{array}$$

Feb 3

232 50

$$\begin{array}{r} 97 \quad 50 \\ 0.7118n \quad -0.96 \\ -5.15 \end{array}$$

$$\begin{array}{r} 9.7811n \\ 0.9307 \\ 9.9014n \\ 9.3072 \end{array}$$

$$0.1393n \quad -1.38$$

$$9.7259n \quad -1.53$$

$$\begin{array}{r} 9.2985 \\ 9.1345n \\ 1.2929 \\ 9.9759 \\ 0.0088 \end{array}$$

$$1.2976 \quad +19.84$$

$$\begin{array}{r} 0.7579n \\ 0.7491n \quad -5.61 \end{array}$$

$$+1.167 = +17.50 \\ -11.29$$

$$\begin{array}{r} 9 \quad 20 \quad 26.598 \\ + 11 \quad 27 \quad 59.64 \\ 1.481 \end{array}$$

Ausonia

A Z +26° no 1658

$$\begin{array}{r} 7 \quad 41 \quad 6.77 \\ + 26 \quad 53 \quad 48.4 \end{array}$$

$$\begin{array}{r} 7 \quad 41 \quad 30 \\ + 26 \quad 52 \quad 53 \end{array}$$

$$\begin{array}{r} 9.63199n \quad 9.95594 \\ 2.04813n \quad 9.70494 \\ + 7.960 \quad 0.90092 \\ + 47.881 \quad -1 \quad 51.72 \end{array}$$

$$\begin{array}{r} 7 \quad 41 \quad 54.651 \\ + 26 \quad 51 \quad 56.68 \\ 115 \quad 29 \end{array}$$

Feb 3

208 13

$$\begin{array}{r} 73 \quad 13 \\ 0.8758n \quad -0.96 \\ -7.51 \end{array}$$

$$\begin{array}{r} 9.9451n \\ 0.9307 \\ 9.6747n \\ 9.7046 \end{array}$$

$$0.3100n \quad -2.04$$

$$0.4084 \quad +2.56$$

$$\begin{array}{r} 9.6550 \\ 9.4605 \\ 1.2929 \\ 9.9811 \\ 0.0496 \end{array}$$

$$1.3236 \quad +21.07$$

$$\begin{array}{r} 0.7579n \\ 0.7083n \quad -5.11 \end{array}$$

$$+1.205 = +18.07 \\ -10.06$$

$$\begin{array}{r} 7 \quad 41 \quad 55.856 \\ + 26 \quad 51 \quad 46.62 \\ 0.746 \end{array}$$

Ausonia

A Z 26° no 1658

$$\begin{array}{r} 7 \quad 12 \quad 54.88 \\ + 28 \quad 51 \quad 57.8 \end{array}$$

$$\begin{array}{r} 7 \quad 14 \quad 16 \\ + 28 \quad 49 \quad 44 \end{array}$$

$$\begin{array}{r} 9.50298n \quad 9.97679 \\ 2.43867n \quad 9.74069 \\ + 29.997 \quad 1.47708 \\ + 2 \quad 42.030 \quad -4 \quad 34.58 \end{array}$$

$$\begin{array}{r} 7 \quad 15 \quad 36.910 \\ + 28 \quad 47 \quad 23.22 \\ 108 \quad 54 \end{array}$$

Feb 4

207 54

$$\begin{array}{r} 72 \quad 13 \\ 0.8757n \quad -0.84 \\ -7.51 \end{array}$$

$$\begin{array}{r} 9.9463n \\ 0.9294 \\ 9.6702n \\ 9.7046 \end{array}$$

$$0.3042n \quad -2.01$$

$$0.4321 \quad +2.70$$

$$\begin{array}{r} 9.6550 \\ 9.4849 \\ 1.2922 \\ 9.9787 \\ 0.0496 \end{array}$$

$$1.3205 \quad +20.92$$

$$\begin{array}{r} 0.7655n \\ 0.7159n \quad -5.20 \end{array}$$

$$+1.205 = +18.07 \\ -10.01$$

$$\begin{array}{r} 7 \quad 41 \quad 55.856 \\ + 26 \quad 51 \quad 46.67 \\ 0.617 \end{array}$$

Julia

W₂ VII 429.30.31.
$$\begin{array}{r} 7 \quad 12 \quad 54.88 \\ + 28 \quad 51 \quad 57.8 \end{array}$$

$$\begin{array}{r} 7 \quad 14 \quad 16 \\ + 28 \quad 49 \quad 44 \end{array}$$

$$\begin{array}{r} 9.50298n \quad 9.97679 \\ 2.43867n \quad 9.74069 \\ + 29.997 \quad 1.47708 \\ + 2 \quad 42.030 \quad -4 \quad 34.58 \end{array}$$

$$\begin{array}{r} 7 \quad 15 \quad 36.910 \\ + 28 \quad 47 \quad 23.22 \\ 108 \quad 54 \end{array}$$

Feb 4

201 19

$$\begin{array}{r} 65 \quad 38 \\ 0.8986n \quad -0.84 \\ -7.92 \end{array}$$

$$\begin{array}{r} 9.9692n \\ 0.9294 \\ 9.5605n \\ 9.7400 \end{array}$$

$$0.2299n \quad -1.70$$

$$0.5904 \quad +3.89$$

$$\begin{array}{r} 9.6827 \\ 9.6155 \\ 1.2922 \\ 9.9595 \\ 0.0573 \end{array}$$

$$1.3090 \quad +20.37$$

$$\begin{array}{r} 0.7655n \\ 0.7082n \quad -5.11 \end{array}$$

$$+1.189 = +17.83 \\ -9.14$$

$$\begin{array}{r} 7 \quad 15 \quad 38.099 \\ + 28 \quad 47 \quad 14.08 \\ 0.995 \end{array}$$

$$\begin{array}{r} -7.86 +4 \quad 56.37 \\ 9 \quad 10 \quad 44 \quad 9 \quad 4 \quad 31 \\ -0 \quad 10 \quad -0 \quad 16 \end{array}$$

$$\begin{array}{r} 000 \quad +12 \\ +2.34 \end{array}$$

$$-7.860 +4 \quad 58.83$$

$$12 \quad 16 \quad 7$$

$$9 \quad 20 \quad 18.738$$

$$+11 \quad 32 \quad 58.47$$

$$\begin{array}{r} 9 \quad 7 \\ 8.477n \quad 0.640 \end{array}$$

$$\begin{array}{r} +57.33 \quad +54.56 \\ 9 \quad 10 \quad 44 \quad 9 \quad 4 \quad 31 \\ +3 \quad 21 \quad +3 \quad 16 \end{array}$$

$$\begin{array}{r} 000 \quad +02 \\ -04 \end{array}$$

$$+57.330 +54.54$$

$$14 \quad 7 \quad 35$$

$$7 \quad 42 \quad 53.186$$

$$+26 \quad 52 \quad 41.16$$

$$\begin{array}{r} 6 \quad 3 \\ 9.561 \quad 0.510 \end{array}$$

$$\begin{array}{r} +4.58 \quad +40.56 \\ 8 \quad 35 \quad 43 \quad 8 \quad 40 \quad 19 \\ +0 \quad 54 \quad +0 \quad 59 \end{array}$$

$$\begin{array}{r} 000 \quad +02 \\ +06 \end{array}$$

$$+4.580 +40.64$$

$$11 \quad 37 \quad 16$$

$$7 \quad 42 \quad 0.436$$

$$+26 \quad 52 \quad 27.31$$

$$\begin{array}{r} 12 \quad 7 \\ 9.045 \quad 0.367 \end{array}$$

$$\begin{array}{r} -1 \quad 43.72 +1 \quad 36.76 \\ 9 \quad 17 \quad 46 \quad 9 \quad 10 \quad 57 \\ +2 \quad 2 \quad +1 \quad 55 \end{array}$$

$$\begin{array}{r} 000 \quad +03 \\ -1.45 \end{array}$$

$$-1 \quad 43.720 +1 \quad 35.34$$

$$12 \quad 19 \quad 12$$

$$7 \quad 14 \quad 54.379$$

$$+28 \quad 48 \quad 49.42$$

$$\begin{array}{r} 6 \quad 4 \\ 9.391 \quad 0.373 \end{array}$$

Danae
 $W_2 \times 237$
 10 10 16.58
 +15 33 4.0
 10 11 24
 +15 26 42
 9.94930n 9.65927
 2.88499n 9.44137
 +7.248 0.86024
 +2 19.281 -12 47.34
 10 12 35.861
 +15 20 16.66
 153 9

Feb 3

245 53

110 53

-0.96
0.5420n -3.48

9.6113n
 0.9307
 9.9603n
 9.4381

0.3291n -2.13

0.2673n -1.85

9.4224
 9.5520n
 1.2929
 9.9705
 0.0158

1.2792 +19.02

0.7579n
 0.7421n 5.52

+1.062 = +15.93
 -10.85

10 12 36.923
 +15 20 5.81

1.558

+46.24 -5 53.83

11 58 2 12 7 49
 +1 46 +1 55

000 -12

-52

+46.240 -5 54.47

15 2 57

10 13 23.163

+15 14 11.34

11 5

9.290 0.613

Danae
 $W_2 \times 237$

Feb 4

245 34

109 53

-0.84
0.5460n -3.52

9.6166n
 0.9294
 9.9592n
 9.4381

0.3267n -2.12

0.2462n -1.76

9.4224
 9.5316n
 1.2922
 9.9733
 0.0158

1.2813 +19.11

0.7655n
 0.7497n -5.62

+1.077 = +16.15
 -10.90

10 12 36.938
 +15 20 5.76

1.462

-3.05 -4 43.47

10 41 48 10 26 57
 +0 29 +0 9

000 -11

+1.05

-3.050 -4 44.41

13 43 0

10 12 33.888

+15 15 23.23

12 6

8.740 0.590

Julia

A Z +28° no 1363

7 10 11.72
 +28 31 45.4

7 11 33
 +28 29 28

9.48735n 9.97848
 1.90349n 9.79460
 0.95312

7 11 0.640
 +28 30 26.36
 107 45

Feb 7

199 12

61 26

-0.51
 0.9008n -7.96

9.9752n
 0.9256
 9.5170n
 9.7349

0.1775n -1.50
 -15.05

0.6486 +4.45

9.6788
 9.5796
 1.2902
 9.9546
 0.0561

1.2809 +19.10

0.7868n
 0.7307n -5.38

+1.139 3.54
 -8.89

7 11 1.779
 +28 30 17.47

1.269

.388

+47.80 +3 1.84 +3.62 -2 14.77

9 18 30 9 11 23 9 1 26 9 5 40
 +2 7 +2 0 +1 50 +1 54

000 +06 000 -04

-1.56 +94

+47.800 +3 0.34 +3.620 -2 13.87

12 8 9 11 47 11

7 11 49.579 7 11 5.419

+28 33 17.81 +28 28 3.67

9 5 9 5

9.403 0.394 9.346 0.380

Julia

A Z +28° no 1363

7 10 11.72
 +28 31 45.4

7 11 33
 +28 29 28

9.48173n 9.97906
 1.89787n 9.75510
 +8.999 0.95420
 +48.920 -1 19.04

Feb 8

198 53

60 25

-0.40
 0.9004n 7.95

9.9760n
 0.9244
 9.5101n
 9.7349

0.1694n -1.48
 -14.77

0.6617 +4.59

9.6788
 9.6934
 1.2895
 9.9393
 0.0561

1.2849 +19.27

0.7934n
 0.7373n -5.46

+1.159 +17.89
 -8.82

7 11 1.779
 +28 30 17.54

1.137

.286

Julia

Flora

Eurydice

Eurydice

Arg Z + 28° no 1361

W₂ IX 1143

Arg Z + 29° no 1308

$$\begin{array}{r} 7 \quad 9 \quad 38.53 \\ + 28 \quad 14 \quad 56.4 \end{array}$$

$$\begin{array}{r} 9 \quad 52 \quad 7.46 \\ + 18 \quad 35 \quad 11.0 \end{array}$$

$$\begin{array}{r} 6 \quad 32 \quad 6.60 \\ 29 \quad 49 \quad 1.6 \end{array}$$

$$\begin{array}{r} 7 \quad 10 \quad 3 \\ + 28 \quad 14 \quad 17 \end{array}$$

$$\begin{array}{r} 9 \quad 53 \quad 18 \\ + 18 \quad 29 \quad 6 \end{array}$$

$$\begin{array}{r} 6 \quad 32 \quad 31 \\ 29 \quad 48 \quad 45 \end{array}$$

$$\begin{array}{r} 9.47844m \quad 9.97939 \quad 9.92995n \quad 9.72024 \\ 1.89458n \quad 9.73002 \quad 2.86564n \quad 9.52414 \\ + 8.901 \quad 0.94945 \quad + 10.092 \quad 1.00398 \\ + 48.822 \quad -1.1845 \quad + 2 \quad 22.125 \quad -12 \quad 13.90 \end{array}$$

$$\begin{array}{r} 15.047 \\ 9.14947n \quad 9.99561 \\ 1.56661n \quad 9.75815 \\ + 9.858 \quad 0.99380 \\ + 49.779 \quad -36.86 \end{array}$$

$$\begin{array}{r} 7 \quad 10 \quad 27.352 \\ + 28 \quad 13 \quad 37.95 \\ 107 \quad 37 \end{array}$$

$$\begin{array}{r} 9 \quad 54 \quad 29.585 \\ + 18 \quad 22 \quad 57.10 \\ 148 \quad 37 \end{array}$$

$$\begin{array}{r} 6 \quad 32 \quad 56.379 \\ + 29 \quad 48 \quad 24.74 \\ 98 \quad 14 \end{array}$$

Feb 10

Feb 7

Feb 1

Feb 3

198 7

240 4

191 38

190 58

58 14

102 18

57 59

55 58

$$\begin{array}{r} -0.10 \\ 0.8898n \quad -7.914 \end{array}$$

$$\begin{array}{r} -0.51 \\ 0.6237n \quad -4.20 \end{array}$$

$$\begin{array}{r} -1.19 \\ 0.9243n \quad -8.40 \end{array}$$

$$\begin{array}{r} -0.96 \\ 0.9287n \quad -8.49 \end{array}$$

$$\begin{array}{r} 9.9779n \\ 0.9217n \end{array}$$

$$\begin{array}{r} 9.6981n \\ 0.9256n \end{array}$$

$$\begin{array}{r} 9.9910n \\ 0.6481n \end{array}$$

$$\begin{array}{r} 9.9920n \\ 0.9367n \end{array}$$

$$\begin{array}{r} 9.4927n \\ 9.7297n \end{array}$$

$$\begin{array}{r} 9.9378n \\ 9.5215n \end{array}$$

$$\begin{array}{r} 0.9333n \\ 9.3046n \end{array}$$

$$\begin{array}{r} 9.2793n \\ 9.7580n \end{array}$$

$$\begin{array}{r} 0.1443n \quad -1.39 \end{array}$$

$$\begin{array}{r} 0.3849n \quad -2.43 \end{array}$$

$$\begin{array}{r} 9.9959n \quad -0.99 \end{array}$$

$$\begin{array}{r} 9.9740n \quad -0.94 \end{array}$$

$$\begin{array}{r} 0.6864 \quad +4.86 \end{array}$$

$$\begin{array}{r} 0.1174n \quad -1.31 \end{array}$$

$$\begin{array}{r} 0.7149 \quad +5.19 \end{array}$$

$$\begin{array}{r} 0.7372 \quad +5.46 \end{array}$$

$$\begin{array}{r} 9.6748 \\ 9.7234 \end{array}$$

$$\begin{array}{r} 9.4988 \\ 9.3284n \end{array}$$

$$\begin{array}{r} 9.6964 \\ 9.7244n \end{array}$$

$$\begin{array}{r} 9.6964 \\ 9.7479n \end{array}$$

$$\begin{array}{r} 1.2882 \\ 9.9295 \end{array}$$

$$\begin{array}{r} 1.2902 \\ 9.9399 \end{array}$$

$$\begin{array}{r} 1.2941 \\ 9.9283 \end{array}$$

$$\begin{array}{r} 1.2929 \\ 9.9184 \end{array}$$

$$\begin{array}{r} 0.0550 \end{array}$$

$$\begin{array}{r} 0.0227 \end{array}$$

$$\begin{array}{r} 0.0616 \end{array}$$

$$\begin{array}{r} 0.0616 \end{array}$$

$$\begin{array}{r} 1.2727 \quad +18.74 \end{array}$$

$$\begin{array}{r} 1.3028 \quad +20.08 \end{array}$$

$$\begin{array}{r} 1.2840 \quad +19.23 \end{array}$$

$$\begin{array}{r} 1.2729 \quad +18.74 \end{array}$$

$$\begin{array}{r} 0.9059n \\ 0.7509n \quad -5.63 \end{array}$$

$$\begin{array}{r} 0.7868n \\ 0.7641n \quad -5.81 \end{array}$$

$$\begin{array}{r} 0.7418n \\ 0.6802n \quad -4.79 \end{array}$$

$$\begin{array}{r} 0.7579n \\ 0.6963n \quad -4.97 \end{array}$$

$$\begin{array}{r} +1.144 \quad +17.16 \\ -8.73 \end{array}$$

$$\begin{array}{r} +1.143 \quad +17.14 \\ -11.32 \end{array}$$

$$\begin{array}{r} +1.137 \quad +17.05 \\ -8.00 \end{array}$$

$$\begin{array}{r} +1.123 \quad +16.84 \\ -8.00 \end{array}$$

$$\begin{array}{r} 7 \quad 10 \quad 28.496 \\ + 28 \quad 13 \quad 29.24 \end{array}$$

$$\begin{array}{r} 9 \quad 54 \quad 30.728 \\ + 18 \quad 22 \quad 45.78 \end{array}$$

$$\begin{array}{r} 6 \quad 32 \quad 57.516 \\ 29 \quad 48 \quad 16.74 \end{array}$$

$$\begin{array}{r} 6 \quad 32 \quad 57.502 \\ 29 \quad 48 \quad 16.74 \end{array}$$

1.377

1.608

0.917

1.052

.498

.847

$$\begin{array}{r} -47.47 \quad +3 \quad 53.46 \end{array}$$

$$\begin{array}{r} +38.13 \quad +6 \quad 37.07 \end{array}$$

$$\begin{array}{r} +1 \quad 7.32 \quad +1 \quad 20.90 \end{array}$$

$$\begin{array}{r} -8.72 \quad -1 \quad 50.33 \end{array}$$

$$\begin{array}{r} 9 \quad 11 \quad 1 \quad 9 \quad 10 \quad 50 \\ + 2 \quad 1 \quad + 2 \quad 1 \end{array}$$

$$\begin{array}{r} 9 \quad 41 \quad 47 \quad 9 \quad 51 \quad 19 \\ -6 \quad 13 \quad -0 \quad 4 \end{array}$$

$$\begin{array}{r} 7 \quad 57 \quad 4 \quad 8 \quad 5 \quad 30 \\ +1 \quad 25 \quad +1 \quad 33 \end{array}$$

$$\begin{array}{r} 9 \quad 53 \quad 56 \quad 9 \quad 57 \quad 31 \\ +3 \quad 21 \quad +3 \quad 25 \end{array}$$

$$\begin{array}{r} 000 \quad +07 \end{array}$$

$$\begin{array}{r} 000 \quad +13 \end{array}$$

$$\begin{array}{r} 000 \quad +02 \end{array}$$

$$\begin{array}{r} 000 \quad -04 \end{array}$$

-04

-3.34

+51

+23

$$\begin{array}{r} -47.470 \quad +3 \quad 53.49 \end{array}$$

$$\begin{array}{r} +38.130 \quad +6 \quad 33.86 \end{array}$$

$$\begin{array}{r} +1 \quad 7.320 \quad +1 \quad 21.43 \end{array}$$

$$\begin{array}{r} -8.720 \quad -1 \quad 50.14 \end{array}$$

11 48 53

12 31 22

11 10 0

12 58 42

$$\begin{array}{r} 7 \quad 9 \quad 41.026 \end{array}$$

$$\begin{array}{r} 9 \quad 55 \quad 8.858 \end{array}$$

$$\begin{array}{r} 6 \quad 34 \quad 4.836 \end{array}$$

$$\begin{array}{r} 6 \quad 32 \quad 48.782 \end{array}$$

$$\begin{array}{r} + 28 \quad 17 \quad 22.73 \end{array}$$

$$\begin{array}{r} + 18 \quad 29 \quad 19.64 \end{array}$$

$$\begin{array}{r} + 29 \quad 49 \quad 38.17 \end{array}$$

$$\begin{array}{r} + 29 \quad 46 \quad 26.68 \end{array}$$

12 5

6 5

9 5

9 4

$$\begin{array}{r} 9.384 \quad 0.393 \end{array}$$

$$\begin{array}{r} 8.398n \quad 0.537 \end{array}$$

$$\begin{array}{r} 9.248 \quad 0.322 \end{array}$$

$$\begin{array}{r} 9.575 \quad 0.480 \end{array}$$

Melpomene

W IX 221

$\begin{array}{r} 9 \quad 9 \quad 23.39 \\ +13 \quad 2 \quad 55.3 \\ \hline 9 \quad 10 \quad 33 \\ +12 \quad 57 \quad 38 \\ \hline 9.86956n \quad 9.82261 \\ 2.80505n \quad 9.36200 \quad 6014 \\ +8.896915 \quad 0.94921 \\ +2 \quad 20.929 \quad -10 \quad 38.34 \\ 20.948 \quad 37.19 \end{array}$

$\begin{array}{r} 9 \quad 11 \quad 44.338 \\ +12 \quad 52 \quad 18.11 \\ \hline 137 \quad 56 \\ 56 \quad 11 \\ 228 \quad 8 \\ 87 \quad 31 \\ -09 \\ 0.7452n \quad -5.56 \\ 9.8244n \\ 0.9208 \\ 9.8720n \\ 9.3588 \\ 0.1516n \quad -1.42 \\ 9.2721 \quad +19 \\ 9.3478 \\ 8.6368 \\ 1.2875 \\ 9.9996 \\ 0.0110 \\ 1.2981 \quad +19.86 \\ 0.8118n \\ 0.8008n \quad -6.32 \\ +1.223 = +18.35 \\ -11.69 \\ 9 \quad 11 \quad 45.561 \\ +12 \quad 52 \quad 6.42 \end{array}$

1.625

.881

+33.67 -6 53.66

$\begin{array}{r} 8 \quad 57 \quad 44 \quad 9 \quad 5 \quad 19 \\ -0 \quad 15 \quad -0 \quad 7 \end{array}$

000 -15

-2.84

+33.670 -6 56.65

11 31 42

9 12 19.231

+12 45 9.77

3 3

8.447n 0.623

Flora

W₂ IX 1073

$\begin{array}{r} 9 \quad 48 \quad 33.45 \\ +19 \quad 7 \quad 11.7 \\ \hline 9 \quad 49 \quad 43 \\ +19 \quad 1 \quad 11 \\ \hline 9.92569n \quad 9.73106 \\ 2.86138n \quad 9.53746 \\ +10.669 \quad 1.02812 \\ +2 \quad 22.702 \quad -12 \quad 6.74 \end{array}$

$\begin{array}{r} 9 \quad 50 \quad 56.152 \\ +18 \quad 55 \quad 4.96 \\ \hline 147 \quad 44 \\ 56 \quad 11 \\ 237 \quad 56 \\ 97 \quad 19 \\ -09 \\ 0.6458n \quad -4.42 \\ 9.7250n \\ 0.9208 \\ 9.9281n \\ 9.5350 \\ 0.3839n \quad -2.42 \\ 9.9033n \quad -80 \\ 9.5108 \\ 9.1050n \\ 1.2875 \\ 9.9964 \\ 0.0241 \\ 1.3080 \quad +20.32 \\ 0.8118n \\ 0.7877n \quad -6.13 \\ +1.187 \quad +17.81 \\ -11.35 \\ 9 \quad 50 \quad 57.339 \\ +18 \quad 54 \quad 53.61 \end{array}$

1.656

.946

-3.27 +7 23.28

$\begin{array}{r} 10 \quad 4 \quad 21 \\ 5 \quad 44 \\ +0 \quad 13 \quad +0 \quad 6 \end{array}$

000 +15

+2.56

-3.270 +7 25.99

12 38 8

9 50 54.069

+19 2 19.60

15 5

8.380 0.528

Arelthusar

W₂ III 1281-2.

$\begin{array}{r} 3 \quad 57 \quad 57.46 \\ +16 \quad 3 \quad 16.2 \\ \hline 3 \quad 59 \quad 10 \\ +16 \quad 6 \quad 51 \\ \hline 9.70169 \quad 9.93662 \\ 2.63738 \quad 9.46075 \\ +14.354 \quad 1.15697 \\ +2 \quad 26.387 \quad +7 \quad 13.89 \end{array}$

$\begin{array}{r} 4 \quad 0 \quad 23.847 \\ +16 \quad 10 \quad 30.09 \\ \hline 60 \quad 6' \\ 56 \quad 11 \\ 147 \quad 55 \\ 1 \quad 21 \\ +0.70 \\ 0.8400n \quad -6.92 \\ 9.9280n \\ 0.9120 \\ 9.7252 \\ 9.4625 \\ 0.0997 \quad +1.26 \\ 0.7274 \quad +5.34 \\ 9.4449 \\ 9.9999 \\ 1.2826 \\ 8.3722 \\ 0.0175 \\ 9.6723 \quad +0.47 \\ 0.8519n \\ 0.8344n \quad -6.83 \\ +0.162 = +2.43 \\ -8.41 \\ 4 \quad 0 \quad 24.009 \\ +16 \quad 10 \quad 21.68 \end{array}$

0.882

.156

-1 13.53 +1 14.60

$\begin{array}{r} 6 \quad 32 \quad 22 \quad 6 \quad 31 \quad 10 \\ +2 \quad 33 \quad +2 \quad 32 \end{array}$

000 +03

+06

-1 13.530 +1 14.69

8 35 16

3 59 10.479

+16 11 36.37

7 5

9.435 0.617

Arelthusar

W₂ III 1281-2

$\begin{array}{r} 3 \quad 57 \quad 57.46 \\ +16 \quad 3 \quad 16.2 \\ \hline 3 \quad 59 \quad 10 \\ +16 \quad 6 \quad 51 \\ \hline 9.70169 \quad 9.93662 \\ 2.63738 \quad 9.46075 \\ +14.354 \quad 1.15697 \\ +2 \quad 26.387 \quad +7 \quad 13.89 \end{array}$

$\begin{array}{r} 4 \quad 0 \quad 23.847 \\ +16 \quad 10 \quad 30.09 \\ \hline 60 \quad 6' \\ 56 \quad 11 \\ 147 \quad 55 \\ 1 \quad 21 \\ +0.70 \\ 0.8400n \quad -6.92 \\ 9.9280n \\ 0.9120 \\ 9.7252 \\ 9.4625 \\ 0.0997 \quad +1.26 \\ 0.7274 \quad +5.34 \\ 9.4449 \\ 9.9998 \\ 1.2809 \\ 8.4971n \\ 0.0175 \\ 9.7955n \quad -62 \\ 0.8638n \\ 0.8463n \quad -7.02 \\ +0.109 = +1.63 \\ -8.51 \\ 4 \quad 0 \quad 23.956 \\ +16 \quad 10 \quad 21.58 \end{array}$

1.436

.564

+1 37.85 +4 28.23

$\begin{array}{r} 7 \quad 4 \quad 8 \quad 6 \quad 49 \quad 52 \\ +3 \quad 2 \quad +2 \quad 48 \end{array}$

+002 +12

+69

+1 37.852 +4 29.04

8 55 11

4 2 1.808

+16 14 50.62

8 4

9.497 0.624

Melpomene

W IX 22

$$\begin{array}{r} 9 \quad 0 \quad 43.37 \\ +14 \quad 26 \quad 22.91 \end{array}$$

$$\begin{array}{r} 9 \quad 1 \quad 54 \\ +14 \quad 21 \quad 17 \end{array}$$

$$\begin{array}{r} 9.85306n \quad 9.84585 \\ 2.78875n \quad 9.40809 \\ +10.317 \quad 1.01354 \\ +2 \quad 22.350 \quad -10 \quad 14.83 \end{array}$$

$$\begin{array}{r} 9 \quad 3 \quad 5.720 \\ +14 \quad 16 \quad 8.07 \\ 135 \quad 46 \end{array}$$

Feb 22

222 43

73 52

$$\begin{array}{r} +0.97 \\ 0.7753n -5.96 \end{array}$$

$$\begin{array}{r} 9.8661n \\ 0.9092 \\ 9.8315n \\ 9.4054 \end{array}$$

$$0.1467n -1.40$$

$$0.1164 +1.31$$

9.3917

9.4438

1.2809

9.9826

0.0136

$$1.2771 +18.93$$

0.8638n

$$0.8502n -7.08$$

$$+1.233 = +18.50 \\ -11.73$$

$$\begin{array}{r} 9 \quad 3 \quad 6.953 \\ +14 \quad 15 \quad 56.34 \end{array}$$

1.391

.411

$$-49.98 +4 \quad 2.17$$

$$9 \quad 13 \quad 51 \quad 9 \quad 20 \quad 40$$

$$+0 \quad 12 \quad +0 \quad 18$$

000 +09

-2.30

$$-49.980 +3 \quad 59.96$$

11 4 33

$$9 \quad 2 \quad 16.973$$

$$+14 \quad 19 \quad 56.30$$

9 5

$$8.362 \quad 0.604$$

Flora

A Z +20° no 2377

$$\begin{array}{r} 9 \quad 39 \quad 11 \\ +20 \quad 19 \quad 0 \\ 144 \quad 48 \end{array}$$

Feb 22

231 45

82 54

$$\begin{array}{r} +0.97 \\ 0.7010n -5.02 \end{array}$$

9.7918n

0.9092

9.8950n

9.5685

$$0.3727n -2.36$$

$$9.9135 +.82$$

9.5406

9.0920

1.2809

9.9967

0.0279

$$1.3055 +20.20$$

0.8638n

$$0.8359n -6.85$$

$$+1.254 = +18.81 \\ -11.05$$

1.338

.458

$$+10.71 +3 \quad 33.20$$

$$10 \quad 27 \quad 5 \quad 10 \quad 21 \quad 10$$

$$+0 \quad 48 \quad +0 \quad 42$$

000 +07

+1.57

$$+10.710 +3 \quad 34.84$$

12 17 35

$$9 \quad 7$$

$$8.959 \quad 0.508$$

Aethusa

B A C 1281

a fixed
star
observed
by mistake.

$$\begin{array}{r} 4 \quad 3 \quad 31.91 \\ +16 \quad 12 \quad 10.5 \\ 60 \quad 53 \end{array}$$

Feb 23

147 34

357 55

$$\begin{array}{r} +1.06 \\ 0.8347n -6.83 \end{array}$$

9.9264n

0.9083

9.7294

9.4633

$$0.1010 +1.26$$

$$0.7257 +5.32$$

9.4456

9.9977

1.2804

8.5605n

0.0176

$$9.8585n -.72$$

0.8675n

$$0.8499n -7.08$$

$$+0.107 = +1.60 \\ -8.59$$

$$\begin{array}{r} 4 \quad 3 \quad 32.017 \\ +16 \quad 12 \quad 1.91 \\ 48 \quad 13 \end{array}$$

1.075

.250

$$-32.31 -1 \quad 56.32$$

$$6 \quad 37 \quad 58 \quad 6 \quad 44 \quad 8$$

$$+2 \quad 35 \quad +2 \quad 41$$

-001 -04

-1.28

$$-32.311 -1 \quad 56.64$$

8 25 8

$$4 \quad 2 \quad 59.706$$

$$+16 \quad 10 \quad 5.27$$

12 5

$$9.441 \quad 0.619$$

Melpomene

A Z +14° no 2034

$$\begin{array}{r} 9 \quad 0 \quad 24.91 \\ +14 \quad 31 \quad 6.3 \end{array}$$

$$\begin{array}{r} 9 \quad 0 \quad 46 \\ +14 \quad 29 \quad 36 \end{array}$$

$$\begin{array}{r} 9.85093n \quad 9.84803 \\ 2.26707n \quad 9.41245 \\ +3.166 \quad 0.50052 \\ +43.087 -3 \quad 4.95 \end{array}$$

$$\begin{array}{r} 9 \quad 1 \quad 7.997 \\ +14 \quad 28 \quad 1.35 \\ 135 \quad 17 \end{array}$$

Feb 23

221 58

72 19

$$\begin{array}{r} +1.06 \\ 0.7796n -6.02 \end{array}$$

9.8713n

0.9083

9.8252n

9.4116

$$0.1451n -1.40$$

$$0.1606 +1.45$$

9.3977

9.4825

9.8516n

1.2804

9.9790

$$1.2734 +18.77$$

0.8675n

$$0.8535n -7.14$$

$$+1.229 = +18.43 \\ -11.71$$

$$\begin{array}{r} 9 \quad 1 \quad 9.226 \\ +14 \quad 27 \quad 49.64 \end{array}$$

9.998

.021

$$+18.24 +9.74$$

$$9 \quad 17 \quad 13 \quad 9 \quad 11 \quad 44$$

$$+0 \quad 16 \quad +0 \quad 10$$

000 00

+1.82

$$+18.240 +11.56$$

11 3 56

$$9 \quad 1 \quad 27.466$$

$$+14 \quad 28 \quad 1.20$$

12 7

$$8.477 \quad 0.600$$

Asia

Circ

Asia

Circ

W XI 290

AZ -1° no 2591

W XI 238

W XI 810

11 16 2.46
-1 15 1.211 49 1.47
-1 14 51.911 12 51.48
-0 46 6.711 45 52.66
-0 27 53.011 17 9
-1 22 411 49 21
-1 17 211 13 58
-0 53 711 46 59
-0 35 39.99236n 9.26924
2.92805n 8.37798n9.99953n 8.66701
2.41567n 8.35048n9.99118n 9.29997
2.92687n 8.18899n9.99930n 8.75408
2.93499n 8.00843n-2.55 9.40682n
+2 11.778 -14 7.32-0.18 8.25753n
+39.903 -4 20.42-1.177 9.24856n
+2 11.856 -14 5.02-0.33 8.52211n
+2 12.000 -14 20.9811 18 14.238
-1 29 8.52
169 3311 49 40.373
-1 19 12.32
177 2511 15 3.336
-1 0 11.72
168 4611 48 4.660
-0 42 13.98
177 1

Feb 29

Feb 29

Mar 4

Mar 4

254 36

262 28

252 47

261 2

100 11

108 3

95 6

103 21

0.3277n +1.57
-2.130.0211n +1.57
-1.050.3724n +1.89
-2.360.0938n +1.89
-1.24

9.4242n

9.1176n

9.4713n

9.1927n

0.9035

0.9035

0.9011

0.9011

9.9841n

9.9962n

9.9801n

9.9947n

8.4139n

8.3624n

8.2433n

8.0890n

9.3015 +20

9.2621 +18

9.1245 +13

8.9848 +10

8.9380 +09

9.1312 +14

8.4680 +03

8.7283 +05

8.4137n

8.3625n

8.2432n

8.0890n

9.2468n

9.4912n

8.9489n

9.3634n

1.2775

1.2775

1.2759

1.2759

9.9931

9.9781

9.9983

9.9881

0.0001

0.0001

0.0001

0.0000

1.2707 +18.65

1.2557 +18.02

1.2743 +18.80

1.2640 +18.37

0.8861n

0.8861n

0.8954n

0.8954n

0.8860n -7.69

0.8860n -7.69

0.8953n -7.86

0.8954n -7.86

+1.361 = +20.42
-9.73+1.318 +19.77
-8.60+1.388 = +20.82
-10.19+1.357 = +20.36
-9.0511 18 15.599
-1 29 18.2511 49 42.691
-1 19 20.9211 15 4.724
-1 0 21.9111 48 6.017
-0 42 23.03

1.368

0.449

1.132

1.710

.491

.059

.283

1.071

+1.59 +3 48.64

+1 6.73 +27.55

-17.39 +2 12.85

-4.51 -8 22.25

11 38 43 11 46 5

12 16 47 12 6 21

11 39 29 11 33 54

11 53 37 11 58 25

+0 20 +0 28

+0 26 +0 16

+0 25 +0 19

+0 6 +0 10

000 +12

000 +01

+06

-26

-2.03

+2.94

+1.64

-1.45

+1.590 +3 46.73

+1 6.730 +30.50

-17.390 +2 14.55

-4.510 -8 23.96

13 1 28

13 39 25

12 46 30

13 0 36

11 18 17.189

11 50 49.421

11 14 47.324

11 48 1.507

-1 25 31.52

-1 18 50.42

-0 58 7.36

-0 50 46.99

12 6

9 5

12 5

12 5

8.568 0.772

8.681 0.770

8.663 0.768

8.041 0.766

1866phae. prof. 315	Borrens	Borrens	Borrens	Borrens	Borrens
Rum. 211. 974.	Arg. +24°. 581.	W. III. 293	W. IV. 563		
3 ^h 36 ^m 51 ^s 959	3 42 31.5	3 58 20.02	4 24 20.62		
23° 6' 28.30	24 8.9	28 10 23.4	32 12 23.5		
3 ^h 37 ^m 52 ^s 23° 48'	3 ^h 42 ^m 54 ^s 24° 10.0	3 ^h 57 ^m 31 ^s 28° 14' 1.8	4 ^h 25 ^m 45 ^s 32° 15' 22"		
9.76431 9.91051 9.7805 9.9 11.2	9.70010 9.93715	9.60784 9.96102	9.60784 9.96102		
2.57190 9.63012 2.1666 9.6520	2.63579 9.72884	2.54353 9.77927	2.54353 9.77927		
1.48641 1.17213	6.4 0.8092	2.6641 1.42559	+3.4350.53589		
1 53.162 6' 13.76	46.3 2.4	2.3867 7' 12.3	2.15468 5' 49.57		
3 ^h 38 ^m 45.121	8 43 17.8	4 00 38.69	4 26 36.088		
23 12 41.46	24 11.3	28 17 35.7	32 18 13.07		
54 41 16.81	55 47' 47"		66° 39' 1.32		
Date 1868 Apr. 17	1868 Apr. 18	1868 Apr. 22	1868 Apr. 23	1868 Apr. 26.	
Q + x	129° 15'	82° 43'	138° 7'		
8.6272 8.7693	294 19	294 38	297 3		
1.2173 0.9884	5.38	+5.76	+6.16		
8.9080 9.3608	0.7187 -5.23	0.0255 +1.06	0.5523 -3.56		
0.5479 0.2211	9.8047	9.11030	9.8245		
9.0626 0.8985	0.9175	0.9225	0.7278		
1.0689 9.9091	9.8890	9.9765	9.8719		
9.8445 0.1253	9.6524	9.7310	9.8609		
9.7577 0.3492	0.5589	0.6500	0.4006		
9.6105 0.1315	+2.88	+4.47	+2.51		
9.1196 0.8076	0.5098	3.23 0.5807	0.6733		
-6.990 -1.335	9.6124	9.6757	9.7279		
-5.724 -2.235	9.6146	9.6199	9.6578		
+4.079 +1.354	1.2828	1.2851	1.2876		
+1.317 -6.421	9.9597	9.9586	9.9497		
	399	0.0552	0.1992		
1.2824 -19.16	1.2989 -19.90		1.4365 -27.32		
.8506	0.8326		0.8117		
9.9107 - .820	0.7774 -5.99		0.6125 -4.10		
- .07 -10.60	- .64 -9.67		-1.24 -18.65		
-73.8 -8.637	-2.82	-1.12	-2.95		
3 38 44.389	3 43 17.1	4 00 58.05	4 26 34.85		
23° 12' 32.02	24 11.3	28 17 34.6	32 18 10.12		
0.7007 1.2274	1.0931	1.0931	0.8224		
9.8151 8.301	8.301	8.301	8.301		
399 1.228	9.394	1.239	9.125		
0.5557 0.134	2.5	2.5	-1.32 -1' 53.7		
-22.222 +20.32	3.6 0.13	+2.48.23 -2' 1.14			
9 ^h 19 ^m	9 ^h 50 ^m	10 13 10 15 10 210 3	10 25 10 32		
6 11	6 12	6 30 6 32 6 1 6 2	5 58 6 5		
Diff. Ref. due to					
AS					
001	003				
-22.221 20.28		+2.48.24 -2' 1.5	-1 9.32 -1' 5.43		
2.50		2.5	17.70		
Asc. times	8 3 16	8 ^h 23 ^m 6	9 ^h 57 ^m 02 ^s	9 ^h 37 ^m	
Apr. x	3 38 22.168	3 ^h 43 ^m 20.7	4 3 46.29	4 25 35.53	
" 8	23 12 50.60	24 11.6	28 15 30.6	32 18 46.99	
πa	.585			.58	
πs	6.85			5.81	
3 38 22.753					
23 12 57.45					
Corr. of Eph.	+1 ^m 51 ^s +5.6	+1 ^m 52 ^s +49.8	+1 ^m 40 ^s +56.7		
John C. Wobach Library, Harvard Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System					

A_T for May 3.
= 8.14

$$\begin{array}{r}
 1840.5 \\
 - 1.35 \\
 \hline
 1842
 \end{array}$$

$$\begin{array}{r}
 40.93 \\
 - 45 \\
 \hline
 20475 \\
 20475 \\
 \hline
 184275
 \end{array}$$

$$\begin{array}{r}
 10.8 \\
 - 10.8 \\
 \hline
 0
 \end{array}$$

$$\begin{array}{r}
 0.35215 \\
 - 1.35583 \\
 \hline
 8.99635 \\
 - 1.62143 \\
 \hline
 0.61784
 \end{array}$$

$$\begin{array}{r}
 6488 \\
 - 5 \\
 \hline
 6493
 \end{array}$$

$$\begin{array}{r}
 6270
 \end{array}$$

From Mr. Bond's value of the mic. screw
Vol. I. Part. I. Obsns.

Arg. = Fahr. therm.	log 1 rev. in sec. of time	log $\frac{10'' - 1 \text{ rev.}}{10''}$
0°	9.81456	8.328
10°	81467	823
20°	81479	818
30°	81491	812
40°	81502	807
50°	81514	801
60°	81525	795
70°	81537	790
80°	9.81548	8.284

Intervals of diaphragm from result

Equatorial Obsns. Vol. 3. (1866) p. 67

ab 5.059	bc 19.011	cd 0.998
ac 24.070	bd 20.009	de 24.985
ad 25.068	ce 25.983	
ae 50.053	be 44.994	

