1899phae.proj..1866.

KG
11366
v.862

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In Superseded Table under T Cassiop.

Epoch 20, J.D. 3[illegible]05, read should be -10.

In Superseded Table under R Ves. Cruj.

Epoch 49. J.D. 27[illegible]7, read should be -7

Superseded Table under R Draconis

Epoch 33. J.D. 4[illegible]02, read should be -13

Superseded Table under R. Draconis.

~~J.D.~~ # render Rx-m correspondingly to read J.D. 2[illegible]-01.

For 166 read 10v.

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Index to Light Equation Computations in this book.

Name Var.	Light Eq. Page.
+42° 3338	24-5
R V Ophiuchi	136-7
~~146-7~~	
V Serpentis	156-7
R T Coronæ.	142 + 148-9
R W Tauri.	146-7
Eneb's Var.	190-191 = 29. 1906.

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Index.

42° 3338	Computation of Light Equation	24
S. T. Cygni	Computed Maxima	32
Circum Polars.	Derivation of the Times of Minima	34
T. Monocerotis	Computation of Diff. Absorption	50
Knotts Obs.	Determination of Mean Max & Min Magns.	39
+45° 3662	Ephemeris for 1901.	120.
	Harvard Var. (+12° 3577)	154.
	Subdivision of curves for reading.	160.
	Maxima of 58 Vars.	40

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R Ursae Majoris.

Period $302.16 + 1^{v} \sin(10^{\circ} E + 190^{\circ})$

Computation of 1st terms.

Epoch 0 = 2397gr1.2 ✓

" 39 = 2409733.1 ✓

" K1 = 2410337.3 ✓

" K2 = 2410639.K ✓

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β Ursae majoris.

$226.1\,\delta + 43 \sin(\nu - 76\,\delta + 14.5^\circ)$

Epoch 0. = 2400 v 46.0 v
" 12 = 2403299.2 v
" 27 = 2406690.7 v
" 28 = 2406916.8 v
" 29 = 2407142.9 v
" 40 =

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R. Camelopardalis.

Period = 269.56.

Epoch 0 = 2K03939

-6 = 23220

-5 = 2596.5

-4 = 2861.0

-3 = 3130.5

-2 = 3400.0

-1 = 3669.5

0 +1 = 3939.0

+1 +2 = 4209.5

+2 3 = 4478.0

3 4 = 4749.5

4 5 = 5017.0

5 6 = 5286.5

6 7 = 5556.0

7 8 = 5825.5

8 9 = 6095.0

13 14 = 7142.5

16 17 = 8201.0

17 18 = 8470.5

18 19 = 8740.0

19 20 = 9009.5

27 = 2K11215.5

28 = 11805.0

29 = 12054.5

30 = 12304.0

31 = 12553.5

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Derivation of Limiting Times for plotting
The periods are from Chandler's Cat. – The $\frac{M-m}{2}$

	Ch. Period.	$\frac{M-m}{2}$	$\frac{m-M}{2}$	$m-M$	$\frac{m-M}{2}$
T Cassiop.	444.0	260.6	130.3	184.4	92.2
S "	610.5	273.4	136.7	337.1	168.6
R Aurigae	460.2	242.3	121.2	217.9	109.0
R Leonis.	340.0	183.1	91.6	196.9	98.4
R Ven. Maj.	302.1	122.4	61.2	179.7	89.8
T " "	257.2	107.2	53.6	150.0	75.0
S " "	226.1	107.3	53.6	118.8	59.4
S Bootis	268.2	131.9	66.0	136.3	68.2
R Canol.	269.5	132.0	66.0	137.5	68.8
R Draconis.	245.6	107.3	53.6	138.3	69.2
S Cygni.	322.8	161.5	80.8	161.3	80.6
T Cephei.	387.0	206.7	103.4	180.3	90.2
S "	444.0	264.3	132.2	219.7	109.8
R Cassiop.	429.5	171.4	85.7	258.1	129.0

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Maxima & minima for standard Accumulator curves and m - M means are from H. C. O. Values, Vol. 37. Tab. VII.

For maxima.				For minima.			
Back	140	forward	100	Back	100	forward	140
"	140	"	120	"	120	"	140
"	140	"	120	"	120	"	140
"	100	"	100	"	100	"	100
"	80	"	100	"	100	"	80
"	60	"	80	"	80	"	60
"	60	"	60	"	60	"	60
"	80	"	80	"	80	"	80
"	80	"	80	"	80	"	80
"	60	"	80	"	80	"	60
"	100	"	100	"	100	"	100
"	120	"	100	"	100	"	120
"	140	"	120	"	120	"	140
"	100	"	140	"	140	"	100

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	2	3	4	5	6	7	8	9	10	11	12
	Col. 1.	Col. 1. 24									
T Cassiop.	44.0	18.54	37.08	55.62	74.16	92.70	111.24	129.78			
S "	610.5	25.44	50.88	76.32	101.76	127.20	152.64	178.08			
R Aurigæ	460.2	19.18	38.36	57.54	76.72	95.90	115.08	134.26			
R Leonis.	380.0	15.83	31.66	47.49	63.32	79.15	94.98	110.81			
R Hor. Bug.	302.1	12.59	25.18	37.77	50.36	62.95	75.54	88.13			
T " "	257.2	10.72	21.44	32.16	42.88	53.60	64.32	75.04			
S " "	226.1	9.42	18.84	28.26	37.68	47.10	56.52	65.94			
S Bootis.	262.2	11.18	22.36	33.54	44.72	55.90	67.08	78.26			
R Canal Ven.	269.5	11.23	22.46	33.69	44.92	56.15	67.38	78.61			
R Draconis.	246.6	10.23	20.46	30.69	40.92	51.15	61.38	71.61			
S Cygni.	322.8	13.45	26.90	40.35	53.80	67.25	80.70	94.15			
T Cephei.	380.0	16.12	32.24	48.36	64.48	80.60	96.72	112.84			
S "	440.0	20.17	40.34	60.51	80.68	100.85	121.02	141.19			
R Cassiop.	429.5	17.90	35.80	53.70	71.60	89.50	107.40	125.30			

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Light Equation + 42° 33 3 0 superseded

$\lambda = 30\,\nu^{\circ}\ 2\Delta'$

$\beta = +63\ 32.$

Date.	1 Sun's Long.	2 Long. * − π ☉	3 Log cos. col. 3.	Log ρ	Log First Eq.	First Eq.		
Jan. 0.	279.2	26.3	+9.9ν2ν	9.9927	+2.2923	+ 196.ν		
10.	289.4	16.1	+9.9Δ26	9.9927	+2.3224	+ 210.ν	+14	−6 −7
20.	299.ν	6.0	+9.9976X	9.9930	+2.3377	+ 217.ν	+7	−4 −6
30.	309.7	3ν5.Δ	+9.99ΔΔ3	9.993ν	+2.3394	+ 218.	+1	−4 −6
Feb. 9.	319.Δ	34ν.7	+9.9Δ633	9.994ν2	+2.3276	+ 213.ν	−ν	−4 −7
19.	329.9	33ν6	+9.9ν9	9.99ν1	+2.3016	+ 201.ν	−12	−4 −7
Mar. 1.	340.0	32ν.ν	+9.91	9.9961	+2.2ν92	+ 182.ν	−19	−ν
11.	3ν0.0	31ν.ν	+9.Δν32	9.9972	+2.197ν	+ 168.ν	−24	−ν
21.	0.0	30ν.ν	+9.76	9.994Δ	+2.109ν	+ 129.ν	−29	−4
31.	9.Δ	29ν.7	+9.637	9.9997	+1.9Δ40	+ 96.ν	−33	−2
Apr. 10.	19.6	2Δν.9	+9.437	0.0009	+1.7Δν7	+ 61.ν	−3ν	−2
20.	29.4	276.1	+9.026	0.0022	+1.37ν7	+ 24.ν	−37	−1
30.	39.2	266.3	ν9.Δ09	0.0033	ν1.1602	− 14.ν	−3Δ	0
May 10.	49.Δ	256.7	ν9.3612	0.0043	ν1.7132	− ν2.ν	−3Δ	+2
20.	νΔ.ν	247.0	ν9.ν91	0.00ν3	ν1.9443	− ΔΔ.ν	−36	+3
30.	69.1	237.4	ν9.7314	0.0060	ν2.0Δ4ν	− 121.ν	−33	+3
June 9.	79.6	227.9	ν9.Δ263	0.0066	ν2.1Δ81	− 1ν1.ν	−30	+4
19.	Δ9.2	218.3	ν9.Δ94	0.0070	ν2.2409	− 177.ν	−26	+ν
29.	99.7	208.Δ	ν9.9426	0.0072	ν2.2970	− 198.ν	−21	+6
July 9.	109.2	199.3	ν9.9742	0.0072	ν2.3292	− 213.ν	−15	+5
19.	119.Δ	189.7	ν9.9939	0.0070	ν2.3479	− 223.ν	−10	+7
29.	129.4	180.1	ν0.00008	0.0066	ν2.3537	− 226.ν	−3	+7
Aug. Δ.	139.9	170.6	ν9.9941	0.0060	ν2.3472	− 222.ν	+4	+10 +6
18.	149.ν	161.6	ν9.97ν7	0.00ν2	ν2.32Δ0	− 212.ν	+9	+15 +ν
28.	1ν9.2	1ν1.3	ν9.9431	0.0043	ν2.294ν	− 197.ν	+15	+5 +6
Sept. 7.	169.9	141.6	ν9.Δ942	0.0032	ν2.2Δ4ν	− 176.ν	+21	+6
17.	179.6	131.9	ν9.Δ247	0.0021	ν2.1739	− 149.ν	+27	+4
27.	189.4	122.1	ν9.72ν4	0.0009	ν2.0734	− 118.Δ	+31	+3

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1 Date.	2 Sun's Long.	3 Long ☆ − ☉	Log. cos. col. 3.	Log Δ	Log Fluct Eq.	Fluct Eq.	
Oct. 7.	193.2	112.3	ng. 7792	9.9996	n1.9257	− 84. +34	+3
17.	203.2	102.3	ng. 3284	9.9984	n1.6739	− 47. +37	+1
27.	213.1	92.4	n8.6220	9.9992	n0.9663	− 9. +38	+1
Nov. 6.	223.2	82.3	+9.1271	9.9961	+1.4703	+ 30. +39	−2
16.	233.2	72.3	+9.4829	9.9970	+1.8270	+ 67. +37	−2
26.	243.3	62.2	+9.6684	9.9942	+2.0101	+ 102. +35	−2
Dec. 6.	253.5	52.0	+9.7893	9.9935	+2.1299	+ 135. +33	−5
16	263.6	41.9	+9.8718	9.9930	+2.2119	+ 163. +28	−5
26	273.8	31.7	+9.9298	9.9927	+2.2696	+ 186. +23	

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+42° 333A

$\alpha = 19^h\ 22^m\ 17.^s0 = 290°\ 34'\ 15''$

$\alpha = 290°\ 34'$
$\delta = +42°\ 36.0'$

Log tan δ = 9.963 57 ✓
" sin α = −9.99140
" tan α = −9.99217
α = −44° 29'
23 27
$\alpha - \varepsilon$ = −67 56
Log cos($\alpha - \varepsilon$) = +9.57442
" tan α = −0.42573
Sum logs. = −0.00015
Log cos α = +9.94337
" tan λ = −0.15717
λ = 305 24'

Log tan ($\alpha - \varepsilon$) = −0.39214
" sin λ = −9.91047
" tan β = +0.30301
β = +63° 32'

Log cos ($\alpha - \varepsilon$) = +9.57442
" cos α = +9.94337
Diff logs = +9.72145

Log cos β = +9.64902
" sin λ = −9.91047
Sum logs = −9.55949
Log cos δ = +9.94694
" sin α = −9.99140
Sum logs. = −9.93834
Log check = +9.72145 ✓

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Computed maxima of Eggen.

1899. Oct. 4.66 = 2414202.66

3.444 × 271. = 964.444

S. M. T. 1900. Jany 29d 12h 6m = 241716.704 = Ek. 271

" " Jany 31d 4h 21m = 241717.344 = " 272

" " June 4d 4h 36m = 241717.192 = " 273

" " June 4d 0h 52m = 241719.036 = " 274

" " " 11 21h 7 = 241742.440 = " 275

" " " 15 17h 23 = 241746.972 = " 276

" " " 19 13h 38 = 241750.764 = " 277

" " " 23 9h 53 = 241754.612 = " 278

" " " 27 6h 9m = 241758.256 = " 279

" " July 1 2h 24m = 241762.100 = " 280

" " = 241765.944 = " 281

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Derivation of Times of Minima by the use of Chandler's 3d Cat. Formula $t + (m - n)$

Name of Var.	Period.	$t + (m - n)$	$t + (n - m)$
T. Cassiopeiae	44 5	240	205
S. Cassiopeiae	610.5	300	310.5
S Persei.	Irr.		
R Aurigae	460.2	248	212.2
R Lyncis	380.0	143	237
R Ursae Maj.	302.1	107	195.1
T. " "	257.2	107.5	149.7
S " "	226.1	113.0	113.1
S Boötis	268.2	126	142.2
R Camelop.	269.5	120	147.5
R Ursae Min.	Irr.		
R Draconis	245.6	112	133.6
S Cygni.	322.8	150	172.8
T. Cephei.	387	200	187
S "	484	257	227
R Cassiopeiae	429.5	188	241.5

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Computation of Times of Maxima and Minima from Chandler's Formula, using Chandler's Epoch, Period, and [A-(m-m)]. (1st term only).

Epoch	1st term. Maximum.	1st term. Minimum.
	T. Cassiopeiae.	
0	240 4515	240 4720
1	4960	5165
15	241 1190	241 1395
16	1635	1840
17	2080	2285
18	2525	2730
19	2970	3175
20	3415	3620
21	3860	4065
22	4305	4510
	S Cassiopeiae.	
16	241 1307.0	241 1661.5
17	1961.5	2272.0
18	2572.0	2882.5
19	3182.5	3493.0
20	3793.0	4103.5
	R Aurigae.	
1	240 1922.2	240 2134.4
2	2382.4	2594.6
16	8825.2	9037.4
21	241 1126.2	241 1338.4
22	1586.4	1798.6
23	2046.6	2258.8
24	2506.8	2719.0
25	2967.0	3179.2
26	3427.2	3639.4

Epoch	1st term. Maximum.	1st term. Minimum.
	R Lyncis	
14	241 1102	241 1339
15	1482	1719
16	1862	2099
17	2242	2479
18	2622	2859
19	3002	3239
20	3382	3619
21	3762	3999
22	4142	4379
23	4522	4759
	R Ursae Majoris	
14	240 2180.6	240 2376.7
15	2482.7	2677.8
16	2784.8	2979.9
17	3086.9	3282.0
18	3389.0	3584.1
19	3691.1	3886.2
20	3993.2	4188.3
21	4295.3	4490.4
29	6712.1	6907.2
30	7014.2	7209.3
38	9431.0	9626.1
40	241 0033.2	241 0230.3
41	0337.3	0532.4
43	0941.5	1136.6
44	1243.6	1438.7

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Computation of Max. & Min. (14th Cum.) Hr.

Epoch.	Maxima	Minima
	R Ursae Majoris (cont.)	
45	241 1540.7	241 1740.8
46	1847.8	2042.9
47	2149.9	2345.0
48	2402.0	2647.1
49	2754.1	2949.2
50	3006.2	3251.3
51	3358.3	3553.4
52	3660.4	3855.5
53	3962.5	4157.6
54	4264.6	4459.7
55	4566.7	4761.8
	T. Ursae Majoris.	
17	240 5078.2	240 5227.9
18	5335.4	5485.1
19	5592.6	5742.3
20	5849.8	5999.5
40	241 0993.8	241 1143.5
41	1251.0	1400.7
42	1508.2	1657.9
43	1765.4	1915.1
44	2022.6	2172.3
45	2279.8	2429.5
46	2537.0	2686.7
47	2794.2	2943.9
48	3051.4	3201.1
49	3308.6	3458.3
50	3565.8	3715.5
55	4837.8	4991.5

Epoch.	Maxima	Minima
	S Ursae Majoris.	
8	240 2394.8	240 2507.9
9	2620.9	2734.0
10	2847.0	2960.1
11	3073.1	3186.2
12	3299.2	3412.3
13	3525.3	3638.4
15	3977.5	4090.6
16	4203.6	4316.7
17	4429.7	4542.8
18	4655.8	4768.9
19	4881.9	4995.0
20	5108.0	5221.1
22	5560.2	5673.3
23	5786.3	5899.4
27	6690.7	6803.8
29	9403.9	9517.0
40	9630.0	9743.1
42	241 0082.2	241 0195.3
43	0308.3	0421.4
44	0584.4	0647.5
46	0986.6	1099.7
47	1212.7	1325.8
48	1438.8	1551.9
49	1664.9	1778.0
50	1891.0	2004.1
51	2117.1	2230.2
52	2343.2	2456.3

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Comp. of max. & min. (1st Com)

con.

Epoch.	Maxima	Minima
	S Ursae Majoris (cont.)	
03	24120693	24126824
04	27905	29085
05	30215	31346
06	32476	33607
07	34737	35868
08	36998	38129
09	39259	40390
62	46042	47173
	S Bootis	
00	24110230	24111605
01	12912	14334
37	10594	17016
38	18276	19698
39	20958	22380
40	23640	25062
41	26322	27744
42	29004	30426
43	31686	33108
44	34368	35790
45	37050	38472
49	47778	49200

Epoch.	Maxima	Minima
	R Camelopardilae	
26	24109460	24110935
27	12105	13630
28	14850	16325
29	17545	19020
30	20240	21715
31	22935	24410
32	25630	27105
33	28325	29800
34	31020	32495
35	33715	35190
36	36410	37885
37	39105	40580
38	41800	43275
	R Draconis.	
18	24111366	24112702
19	13822	15158
20	16278	17614
21	18734	20070
22	21190	22526
23	23646	24982
24	26102	27438
25	28558	29894
26	31014	32350
27	33470	34806
28	35926	37262
29	38382	39718
30	40838	42174
31	43294	44630

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Comps. of max. & min. (1st Com.) con.

Epoch.	Maxima	Minima
	S Cygni.	
33	241 3069.4	241 3242.2
34	3392.2	3565.0
37	4360.6	4533.4
	T. Cephei.	
7	2408068	240 8205
8	8455	8642
9	8842	9029
10	9229	9416
11	9616	9803
12	241 0003	241 0190
13	0390	0577
14	0777	0964
15	1164	1351
16	1551	1738
17	1938	2125
18	2325	2512
19	2712	2899
20	3099	3286
21	3486	3673
22	3873	4060
23	4260	4447
24	4647	4834

Epoch.	Maxima	Minima
	S Cephei.	
18	241 1121	241 1348
19	1605	1832
20	2089	2316
21	2573	2800
22	3057	3284
23	3541	3768
24	4025	4252
25	4509	4736
	R Cassiopeiae.	
21	240 7423.5	240 7665.0
29	241 0859.5	241 1101.0
30	1289.0	1530.5
31	1718.5	1960.0
32	2148.0	2389.5
33	2577.5	2819.0
34	3007.0	3248.5
35	3436.5	3678.0
36	3866.0	4107.5
37	4295.5	4537.0

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Determination of average magn. at max. and min. from Knotts. Obs. in Mem. R. A. S. Vol. 54.

Variable.	magn. max.	magn. min.	magn. max.	magn. min.	magn. max.	magn. min.
			U Ursae Majoris.		δ Cygni.	
R Ursae Maj.		13.0		11.8		
	6.4	13.0	7.9	12.0	9.4	
	7.6	13.5	7.3	12.0	9.6	
	7.3	13.5	7.9	11.8		
	7.4	13.6	8.3	12.3		
	7.7	13.5	7.7	12.5		
	7.1	13.5	7.8			
	7.7		7.6	12.0		
	7.7			13.0		
	7.1	13.6	7.8			
	7.0	13.5	8.0	12.1		
	7.0	13.2	7.4			
	7.1	13.0	7.6			
	8.05	13.35	7.5	11.8		
	7.80		7.25	12.5		
			7.7	13.05		
			7.9	11.0		
			7.8	13.0		
	14 | 103.00	12 | 147.5	16 | 123.55	14 | 131.30		
	Mean Max 7.36	Min 13.40	Mean Max 7.72	Min 12.24		
	Mean Limit = 10.38		Mean Limit = 9.98			

magn. max.	magn. min.
	δ Cephei.
	9.5
6.4	9.8
6.3	9.9
6.75	9.7
6.3	9.6
6.3	9.6
6.3	9.2
6 | 38.25	7 | 57.43
6.39	9.06
9.06	
6.39	
2.67	
1.34	
Mean Limit 7.73	

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Times of Mat. of 58 Vars. (1st term only)

T Androm.

Ep. 55	241	3431.25
56		3696.60
57		3961.95
58		4227.30
59		4492.65
60		4758.00
61		5023.35
62		5288.70
63		5554.05
64		5819.40
65		6084.75

R Androm.

Ep. 30	241	24520.
31		28627
32		32734
33		36841
34		40948
35		45055
36		49162
37		53269
38		57376
39		61483
40		65590

S Ceti

Ep. 24	241	2849.8
25		3170.0
26		3490.2
27		3810.4
28		4130.6
29		4450.8
30		4771.0
31		5091.2
32		5411.4
33		5731.6
Ep 34		6051.8

R Piscium

Ep. 33	241	42849.5
34		4629.10
35		4973.25
36		5317.40
37		5661.55
38		6005.70
39		6349.85
40		6694.00
41		
42		
43		

R Arietis

Ep. 51	241.2	3630.5
52		2549.60
53		2736.15
54		2922.70
55		3109.25
56		3295.80
57		3482.35
58		3668.90
59		3855.45
60		4042.00
61		4228.55
62		4415.10
63		4601.65
64		4788.20
65		4974.75
66		5161.30
67		5347.85
68		5534.40
69		5720.95
70		5907.50
71		6094.05
72		6280.60
73		6467.15
74		6653.70

o Ceti

Ep 29	241	2579.8
30		2911.4
31		3243.0
32		3574.6
33		3906.2
34		4237.8
35		4569.4
36		4901.0
37		5232.6
38		5564.2
39		5895.8
40		6227.4

R Ceti

Ep 76	241	5720.0
77		6887.0
78		6054.0

U Ceti

Ep 14	241	2823.2
24		5181.2
25		6417.0

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R Tauri.		S Tauri.		R Aurigae.		R Lyncis.	
Ep. 30	241 1012	Ep. 30	241 1720.5	Ep. 26	241 3427.2	Ep. 23	241 4522
	1337		2096.0		3887.4	24	4902
	1662		2471.5		4347.6	25	5282
	1987		2847.0		4807.8	26	5662
	2312		3222.5		5268.0	27	6042
	2637		3598.0		5728.2	28	6422
	2962		3973.5		6188.4	29	6802
	3287		4349.0		6648.6	30	7182
	3612		4724.5		7108.8	31	7562
	3937		5100.0		7569.0	32	7942
40	4262	40	5475.5	Ep. 36	8029.2	Ep. 33	8322
	4587		5851.0	U Orionis.		R Geminorum	
	4912		6226.5	Ep. 5	241 1752	Ep. 23	241 1884.6
	5237		6602.0	6	2127	24	2254.8
	5562		6977.5	7	2502	25	2625.0
	5887		7353.0	8	2877	26	2995.2
	6212		7728.5	9	3252	27	3365.4
	6537		8104.0	10	3627	28	3735.6
	6862		8479.5	11	4002	29	4105.8
	7187		8855.0	12	4377	30	4476.0
50	7512	50	9230.5	13	4752	31	4846.2
				14	5127	32	5216.4
				Ep. 15	5502	33	5586.6
				16	5877		5956.8
				17	6252		6327.0
				18	6627		6697.2
				19	7002	37	7067.4
				20	7377	38	7437.6

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S Can. Min.		R Cancri		V Cancri		S Hydrae	
Ep. 30	241 1538.0	Ep 42	241 2418.12	Ep 28	241 2186.8	Ep 50	241 2209.0
31	1868.3	43	2770.93	29	2458.9	51	2466.0
32	2198.6	44	3123.74	30	2731.0	52	2723.0
33	2528.9	45	3476.55	31	3003.1	53	2980.0
34	2859.2	46	3829.36	32	3275.2	54	3237.0
35	3189.5	47	4182.17	33	3547.3	55	3494.0
36	3519.8	48	4534.98	34	3819.4	56	3751.0
37	3850.1	49	4887.79	35	4091.5	57	4008.0
38	4180.4	50	5240.60	36	4363.6	58	4265.0
39	4510.7	51	5593.41	37	4635.7	59	4522.0
Ep 40	4841.0	Ep 52	5946.22	38	4907.8	60	4779.0
41	5171.3	53	6299.03	39	5179.9	61	5036.0
42	5501.6	54		40	5452.0	62	5293.0
43	5831.9	55		41	5724.1	63	5550.0
44	6162.2	56		42	5996.2	64	5807.0
45	6492.5	57		43	6268.3	65	6064.0
46	6822.8	58		44	6540.4	66	6321.0
47	7153.1	59		45	6812.5	67	6578.0
48	7483.4	60		46	7084.6	68	6835.0
49	7813.7	61		47	7356.7	69	7092.0
Ep 50	8144.0	62		48	7628.8	70	7349.0

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T Hydrae

Ep	40	241	1291.0
	41		1579.8
	42		1868.6
	43		2157.4
	44		2446.2
	45		2735.0
	46		3023.8
	47		3312.6
	48		3601.4
	49		3890.2
Ep	50		4179.0
	51		4467.8
	52		4756.6
	53		5045.4
	54		5334.2
	55		5623.0
	56		5911.8
	57		6200.6
	58		6489.4
	59		6778.2
Ep	60		7067.0

S Aquarii

Ep.	56	241	6058.2
	57		6337.9
	58		6617.6
	59		6897.3
	60		7177.0
	61		
	62		

R Leo. Min

Ep	28	241.	2682.0
	29		3052.5
	30		3423.0
	31		3793.5
	32		4164.0
	33		4534.5
	34		4905.0
	35		5275.5
	36		5646.0
	37		6016.5
Ep	38		6387.0

R Cass.

Ep.	38	241	4725.0
			5154.5
			5584.0
			6013.5
			6443.0
			6872.5
			7302.0
			7731.5
			8161.0
			8590.5
	48		9020.0

R Leonis

Ep	150	240	9827.0
	151	241	0139.8
	152		0452.6
	153		0765.4
	154		1078.2
	155		1391.0
	156		1703.8
	157		2016.6
	158		2329.4
	159		2642.2
	160		2955.0
	161		3267.8
	162		3580.6
	163		3893.4
	164		4206.2
	165		4519.0
	166		4831.8
	167		5144.6
	168		5457.4
	169		5770.2
	170		6083.0
	171		6395.8

R Vir. Maj.

Ep.	55	241	4556.7
	56		4868.8
	57		5170.9
	58		5473.0
	59		5775.1
	60		6077.2
	61		6379.3
	62		6681.4
	63		6983.5
	64		7285.6
Ep	65		7587.7

R Aquarii.

Ep.	78	241	3046.8
	79		3433.24
Ep	80		3820.40
			4207.56
			4594.72
			4981.88
			5369.04
			5756.20
			6143.36
			6530.52
Ep.	88		6917.68
Ep	89		7304.84
	90		7692.00

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R Canae Ber.			T Virginis			R Corvi			γ Virginis		
Ep. 40	241	3766.0	Ep. 38	241	3792.0	Ep. 39.	241	5897.5	Ep. 30	241	5444.0
41		4127.8	39		4131.5	40		6216.0			5662.8
42		4489.6	40		4471.0	41		6534.5			5881.6
43		4851.4	41		4810.5	42					6100.4
44		5213.2	42		5150.0	43					6319.2
45		5575.0	43		5489.5						6538.0
46		5936.8	44		5829.0	S Aquarii					6756.8
47		6298.6	45		6168.5	Ep. 50	241	1793.5			6975.6
48		6660.4	46		6508.0			2073.2			7194.4
49		7022.2	47		6847.5			2352.9			7413.2
Ep. 50		7384.0	48		7187.0			2632.6			7632.0
S Pegasi			R Pegasi					2912.3 Ep. 40			
Ep. 30	241	1735.5	Ep. 40	241	2318			3192.0			
31		2053.0	41		2698			3471.7	S Cephei.		
32		2370.5	42		3078			3751.4 Ep. 25			4509
33		2688.0	43		3458			4031.1			4993
34		3005.5	44		3838			4310.8			5477
35		3323.0	45		4218			4590.5			5961
36		3640.5	46		4598			4870.2			6445
37		3958.0	47		4978			5149.9			6929
38		4275.5	48		5358			5429.6			7413
39		4593.0	49		5738			5709.3			7897
Ep. 40		4910.5	Ep. 50		6118			5989.0			8381
41		5228.0	51		6498			6268.7			8865
42		5545.5	52		6878			6548.4 Ep. 35			9349
43		5863.0	53		7258			6828.1			
44		6180.5	54		7638			7107.8			
45		6498.0						7387.5			
46		6815.5									
47		7133.0									

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T Ursæ maj.

Ep. 55	4851.8
56	5109.0
57	5366.2
58	5623.4
59	5880.6
60	6137.8
61	6395.0
62	6652.2
63	6909.4
64	7166.6
Ep 65	7423.8

T Ophei.

Ep. 25 241	5034
	5421
	5808
	6195
	6582
	6969
	7356
	7743 Ep 220
	8130
	8517
Ep 35	8904

R Virginis

Ep 200	241	1028.80
		1174.27
		1319.74
		1465.21
		1610.68
		1756.15
		1901.62
		2047.09
		2192.56
		2338.03
Ep 210		2483.50
		2628.97
		2774.44
		2919.91
		3065.38
		3210.85
		3356.32
		3501.79
		3647.26
		3792.73
Ep 220		3938.20
		4083.67
		4229.14
		4374.61
		4520.08
		4665.55
		4811.02
		4956.49
Ep 228		5101.96

R Virginis

Ep. 229	5247.43
230	5392.90
	5538.37
	5683.84
	5829.31
	5974.78
	6120.25
	6265.72
	6411.19
	6556.66
	6702.13
Ep 240	6847.60

R Vulpeculæ

Ep. 75	241	2765.50
		2902.40
		3039.30
		3176.20
		3313.10
Ep 80		3450.00
		3586.90
		3723.80
		3860.70
		3997.60
		4134.50
		4271.40
		4408.30
		4545.20
		4682.10
Ep 90		4819.00

S Virginis

Ep 62	241	4604.2
63		4830.3
64		5056.4
65		5282.5
66		5508.6
67		5734.7
68		5960.8
69		6186.9
70		6413.0
71		6639.1
Ep 72		6865.2

R Vulpeculæ

Ep. 91	4955.90
	5092.80
	5229.70
	5366.60
	5503.50
	5640.40
	5777.30
	5914.20
	6051.10
Ep 100	6188.00
101	6324.90
102	6461.80
103	6598.70
104	6735.60
105	6872.50
106	7009.40

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U Virginis

Ep. 49	241	2921.0
50		3128.0
51		3335.0
52		3542.0
53		3749.0
54		3956.0
55		4163.0
56		4370.0
57		4577.0
58		4784.0
59		4991.0
60		5198.0
61		5405.0
62		5612.0
63		5819.0
64		6026.0
65		6233.0
66		6440.0
67		6647.0
68		6854.0
69		7061.0
70		7268.0

T Aquarii

Ep. 50	241	1261.0
51		1464.3
52		1667.6
53		1870.9
54		2074.2
55		2277.5

V Virginis

Ep. 60	241	5486.5
61		5737.0
62		5987.5
63		6238.0
64		6488.5
65		6739.0
66		6989.5
67		7240.0
68		7490.5
69		7741.0
70		7991.5

T Aquarii

55	241	2277.5
56		2480.8
57		2684.1
58		2887.4
59		3090.7
60		3294.0
61		3497.3
62		3700.6
63		3903.9
64		4107.2
65		4310.5
66		4513.8
67		4717.1
68		4920.4
69		5123.7
70		5327.0
71		5530.3

R Hydrae

Ep. 10	241	6182.50
11		6607.65
12		7032.80
13		
14		

V Cygni

11	241	2842
12		3260
13		3678
14		4096
15		4514
16		4932
17		5350
18		5768
19		6186
20		6604
21		7022

T Aquarii

72	241	5733.6
73		5936.9
74		6140.2
75		6343.5
76		6546.8
77		6750.1
78		6953.4
79		7156.7
80		7360.0

S Virginis

Ep. 40	241	2568.0
41		2944.4
42		3320.8
43		3697.2
44		4073.6
45		4450.0
46		4826.4
47		5202.8
48		5579.2
49		5955.6
50		6332.0
51		6708.4

α Cygni

18	241	2929.0
19		3392.5
20		3856.0
21		4319.5
22		4783.0
23		5246.5
24		5710.0
25		6173.5
26		6637.0
27		7100.5
28		7564.0
29		
30		

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R Can. Ven.

Ep 6	241	2746
7		3084
8		3422
9		3760
10		4098
11		4436
12		4774
13		5112
14		5450
15		5788
16		6126
17		6464
18		6802
19		7140
20		7478

R Delphini.

37	241	3038.5
38		3324.0
39		3609.5
40		3895.0
41		4180.5
42		4466.0
43		4751.5
44		5037.0
45		5322.5
46		5608.0
47		5893.5
48		6179.0
49		6464.5
50		6750.0

S Bootis

Ep. 50	241	5046.0
		5314.2
		5582.4
		5850.6
		6118.8
		6387.0
		6655.2
		6923.4
		7191.6
		7459.8
Ep 60		7728.0

S Cygni.

Ep. 38	241	4683.4
		5006.2
		5329.0
		5651.8
		5974.6
		6297.4
		6620.2
		6943.0
		7265.8
		7588.6
		7911.4

R Camelop.

Ep 38	241	4180.0
39		4449.5
40		4719.0
41		4988.5
42		5258.0
43		5527.5
44		5797.0
45		6066.5
46		6336.0
47		6605.5
Ep 48		6875.0

χ Cygni.

Ep 115	241	1828.80
116		2234.82
117		2640.84
118		3046.86
119		3452.88
120		3858.90
121		4264.92
122		4670.94
123		5076.96
124		5482.98
125		5889.00
126		6295.02
127		6701.04
128		7107.06

R Bootis.

Ep 60	241	3243.0
61		3666.4
62		3898
63		4132
64		4366.6
65		4600.0
66		4833.4
67		5068
68		5302
69		5536
70		5770.0
71		6004
72		6238
73		6471.2
74		6704.6
75		6938.0

R Cygni.

Ep. 34	241	2982.7
35		3408.4
36		3834.1
37		4259.8
38		4685.5
39		5111.2
40		5536.9
41		5962.6
42		6388.3
43		6814.0
44		7239.7

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S Librae

Ep. 38	241	2991.8
39		3183.9
Ep. 40		3376.0
		3568.1
		3760.2
		3952.3
		4144.4
		4336.5
		4528.6
		4720.7
		4912.8
		5104.9
Ep. 50		5297.0
		5489.1
		5681.2
		5873.3
		6065.4
		6257.5
		6449.6
		6641.7
		6833.8
		7025.9
Ep. 60		7218.0

S Serpentis

Ep. 65	241	2566.0
66		2931.4
67		3296.8
68		3662.2
69		4027.6
70		4393.0
71		4758.4
72		5123.8
73		5489.2
74		5854.6
75		6220.0
76		6585.4
77		6950.8
78		7316.2
79		
80		

R Sagittarii

Ep. 38	241	3011.6
49		5967.3
50		6236.0
51		6504.7
52		6773.4

S Coronae

Ep. 32	241	2192.6
Ep. 34	241	2914.2
		3275.0
		3635.8
		3996.6
		4357.4
		4718.2
		5079.0
		5439.8
		5800.6
		6161.4
Ep. 44		6522.2
		6883.0
		7243.8

T Herculis

Ep. 50	241	164350
51		1808.35
52		1973.20
53		2138.05
54		2302.90
55		2467.75
56		2632.60
57		2797.45
58		2962.30
59		3127.15
60		3292.00
61		3456.85
62		3621.70
63		3786.55
64		3951.40

R Herculis

Ep. 30	241	1967.0
31		2284.7
32		2602.4
33		2920.1
34		3237.8
35		3555.5
36		3873.2
37		4190.9
38		4508.6
39		4826.3
40		5144.0
41		5461.7
42		5779.4
43		6097.1
44		6414.8
45		6732.5

T Her. (cont)

65	241	4116.25
66		4281.10
67		4445.95
68		4610.80
69		4775.65
70		4940.50
71		5105.35
72		5270.20
73		5435.05
74		5599.90
75		5764.75
76		5929.60

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R Scorpii

Ep 30	241	28155
51		3040.0
52		3264.5
53		3489.0
54		3713.5
55		3938.0
56		4162.5
57		4387.0
58		4611.5
59		4836.0
60		5060.5
61		5285.0
62		5509.5
63		5734.0
64		5958.5
65		6183.0
66		6407.5
67		6632.0
68		6856.5
69		7081.0
70		7305.5

T Hercules cont.

77		6094.45
78		6259.30
79		6424.15
80		6589.00
81		6753.85

S Scorpii

Ep. 130	241	5133.4
		5310.1
		5486.8
		5663.5
		5840.2
		6016.9
		6193.6
		6370.3
		6547.0
		6723.7
Ep 140		6900.4

R Ophiuchi

Ep 45	241	3128.5
46		3431.2
47		3733.9
48		4036.6
49		4339.3
50		4642.0
51		4944.7
52		5247.4
53		5550.1
54		5852.8
55		6155.5
56		6458.2
57		6760.9

U Herculis

Ep. 30	241	2993.
31		3402.
32		3811.
33		4220.
34		4629.
35		5038.
36		5447.
37		5856.
38		6265.
39		6674.
Ep 40		7083.

S Herculis

Ep. 46	241	3374.6
47		3682.7
48		3990.8
49		4298.9
50		4607.0
51		4915.1
52		5223.2
53		5531.3
54		5839.4
55		6147.5
56		6455.6
		6763.7
		7071.8

W Herculis

Ep. 20	241	3143
21		3423
22		3703
23		3983
24		4263
25		4543
26		4823
27		5103
28		5383
29		5663
Ep 30		5943
31		6223
32		6503
33		6783
34		7063

R Draconis

Ep. 31	241	45755.0
32		4820.6
33		5066.2
34		5311.8
35		5557.4
36		5803.0
37		6048.6
38		6294.2
39		6539.8
40		6785.4
Ep 41		7031.0

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Illustrations.

$\alpha' = 6\ 17\ 23.8 \quad +7\ 10.1 = \delta'$

$\alpha = 6\ 16\ 27.7 \quad +7\ 8.7 = \delta$

$\alpha' - \alpha = +57.1 \quad +1.4 = \delta' - \delta$

$57.1 = +856'' = +14'\ 27.''$

For H. A. 4^h

$\angle P = 60°$

H. A.	Alt.	Z. D.
$4^h\ 0^m$	26.8	63.2
4 30	21.3	68.7
5 0	15.9	74.1
5 30	10.5	79.5
6 0	5.0	85.0

Log sin P = 9.93753
" " PZ = 9.86888
Sum log = 9.80597
Log sin ZS = 9.95066
" " S = 9.75532

63.2
47° 47' = (S)

For. H. A. $4^h\ 30^m$

$\angle P = 67°\ 30'$

Log sin P = 9.96562
" " PZ = 9.86888
Sum log. = 9.83406
Log sin ZS = 9.96927
" " S = 9.86479

68.7
47° 6' = (S)

For. H. A. $5^h\ 0^m$

$\angle P = 75° \ 0'$

Log sin P = 9.98496
" " PZ = 9.86888
Sum log = 9.85338
Log sin ZS = 9.98306
" " S = 9.87032

74.1
47 53 = (S)

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For H. A. 7h 30m

∠P = 42° 30′

Log sin P = 9.99627 v

" " PZ = 9.86444 v

Sum logs = 9.86071 v

79.5 v — Log sin Z v = 9.99267 v

42° 8′ — " " v = 9.87204

For H. A. 6h 0m

∠P = 90° 0′

Log sin P = 0.00000

" " PZ = 9.86444

Sum logs = 9.86444

Δ v. 0 — Log sin Z v = 9.99843

47° 01′ — " " v = 9.87010

For φ 0h 0m H. A.

Δ path for 1° = .090

14.4 — Log δ = +1.15836 v

45° 47′ — " sin s = +9.87532 v

+10.32 v = +1.01368 v

Log .090 = 8.95424 v

" 9.34 = 0.97032 v

9.92456 v

" 60 = 1.77816 v

Δ path for 1′ = .0140 = 8.14644

+1.4 — Log δ = +0.14613 v

45° 47′ — Log cos s = +9.84347

+9.98960

+0.98

+10.32

+9.34

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For 4h 30m H. A.

14.4 Log x = +1.1584236
K) 0° 6' " sin v = +9.2664779
+10.2 v = +1.0231v

Δ path for 1° = .130
Log .130 = 9.1139K
" 9.60 = 0.9822J
0.0961
" 60. = 1.7782 1v
= 2.3120 6

+1.4 Log δ = +0.1461 3
K) 6 " cos v = +9.2329 7v
+0.9 v = +9.979 10v
10.2 v
+9.60

Δ path for 1' = .020 2

For 5h 0m H. A.

14.4 Log x = +1.1584236
K) 3 (81 " sin v = +9.2702 2
+10.6 2 +1.0286K

Δ path for 1° = .160
Log .160 = 9.2041 2
" 9.7K = 0.9 2 2 v 6
0.1926 2
" 60. = 1.7782 1v
= 2.K1K v 3

+1.4 Log δ = +0.1461 3
" cos v = 9.2626 Kg
+0.9 K = +9.9 7 262
+10.6 2
+9.7K

Δ path for 1' = .0260

For 1h 30m H. A.

14.4 Log x = +1.1584236
4 2 2 " sin v = +9.2719 2
+10.72 = +1.0303K

Δ path for 1° = .430
Log .430 = 9.6334J
" 9.79 = 0.9907 2
0.6242v
" 60. = 1.7782 1v
= 2.2K610

+1.4 Log δ = +0.1461 3v
" cos v = +9.2K39 v
+0.93 = +9.970 v 2
+10.72
9.79

Δ path for 1' = .0302

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For $6^h\ 0^m$ H. A.

14.K Log r = +1.1r⌀36
47 r1 " sin s = +9.⌀7005r
+10.6⌀ = +1.02⌀F1

+1.4 Log d = +0.1F613
" cos s = +9.⌀2677
+0.9F = +9.97290
10.6⌀
+9.7F

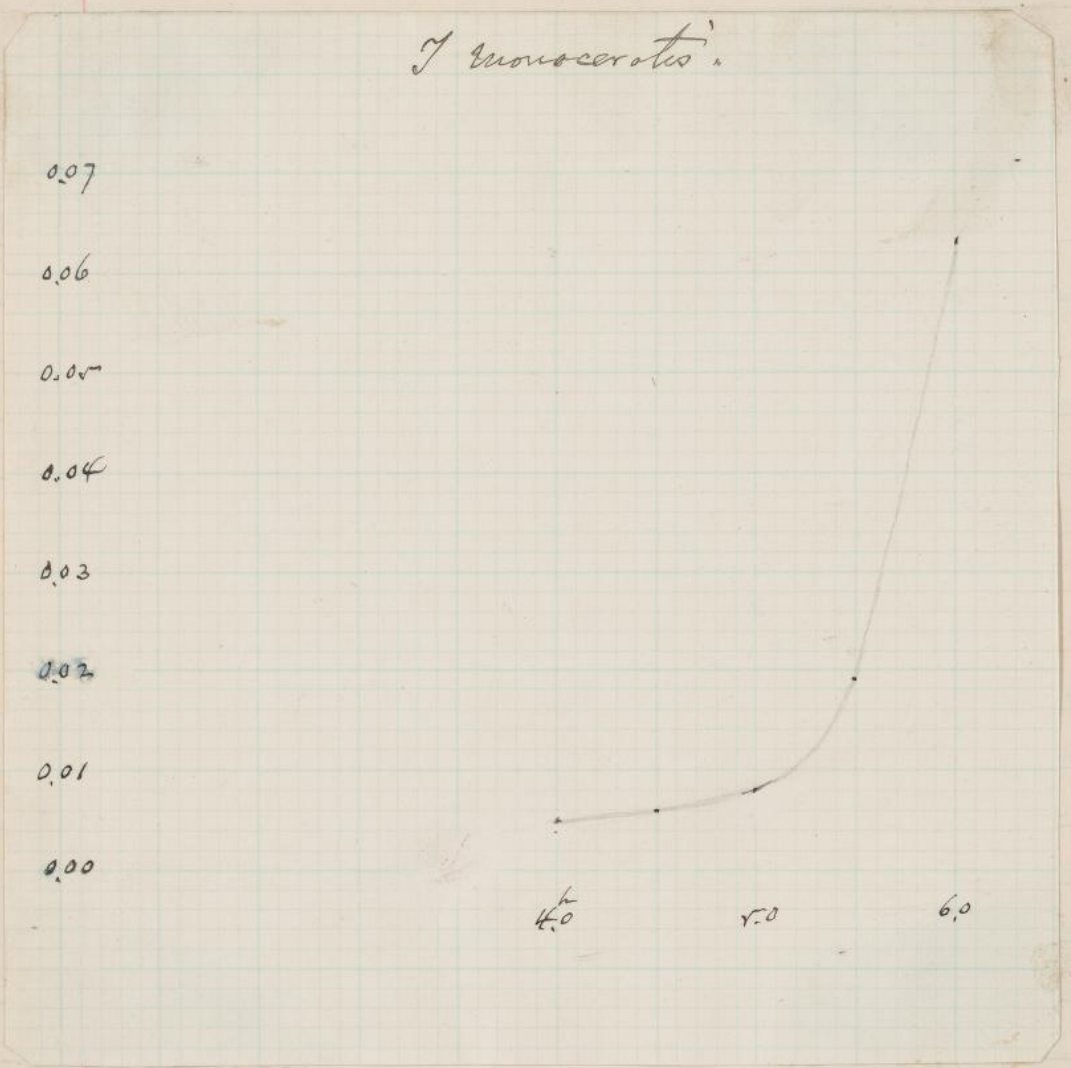
Δ path for 1° = 1.44
Log. 1.FF = 0.1r⌀36
" 9.7F = 0.9⌀⌀r6
1.1F692
" 60. = 1.77⌀1r
Δ path for 1' = 2330⌀ = 9.36⌀77

H. A.

$+4^h\ 0^m$	.01F	.00r
+4 30	.021	.006
+r 0	.026	.00⌀
+r 30	.070	.019
+6 0	.23F	.063

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1 Cassiop. Computation of Times of Maxima from Chandler's Full Formula.

Epoch 0.

Log sin r0° = +9.8842r"
" r0. = +1.6989)"
+38.30" = +1.5823 22"

2401r83."
38.30"
2401621.30"

(Epoch 2.)

10°×2 = 20
r0
Log sin 70 = +9.97299"
" r0 = +1.6989)"
+46.98" = +1.67196"

2401r83"
1221.0"
46.98"
2402830.98"

(Epoch 3.)

10×3 = 30"
r0.
Log sin 80" = +9.9933r"
" r0. = +1.6989)"
+49.2K" = +1.69232"

2402809.8"
610.r"
2403K1K.r"
49.2K"
2403K63.)K"

(Epoch 4.)

10×4 = 40
r0
Log sin 90 = +0.00000
" r0. = +1.6989)
+r0.00 = +1.6989)

2403K1K.r"
610.r"
2402K02r.0"
r0.00
2402K07r.00

(Epoch r.)

10×r = r0.
r0.
Log sin 100. = +9.9933r"
r0. = +1.6989)"
+49.2K" = +1.69232

2402K02r.0"
610.r"
2402K63r.r"
49.2K
2402K68K.)K"

(Epoch 7.)

10×7 = 70.
r0.
Log sin 120. = +9.937r3"
" r0. = +1.6989)"
+K3.30 = +1.636r0"

2402K63r.r"
1221.0"
2402r8r6.r"
K3.30"
2402r899.80"

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(Epoch 12)

$10^{\circ} \times 12 = 120^{\circ}$

Hyades	170°	$+9.23967^{v}$
"	0.	$+1.69497^{v}$
		$+0.93464^{v}$

240497.6^{v}

No.	Epoch.	Maxima from Ch. Hull Var.	Ch. Hull Var. Minima.
0		240162.3^{v}	
2		2497.0^{v}	
3		363.7^{v}	
4		407.0^{v}	
5		464.7^{v}	
7		599.4^{v}	
12		917.7^{v}	
15		241072.4^{v}	1033.9^{v}
16		1326.0^{v}	1636.5^{v}
17		1929.4^{v}	2239.9^{v}
18		2533.7^{v}	2844.2^{v}
19		3139.2^{v}	3449.7^{v}
20		3746.0^{v}	4056.5^{v}
21		4353.3^{v}	4664.8^{v}

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R Ursae Majoris. Maximum.

Computation of Times of Eustemma from Chandler's Full Formula.

Formula = 23979v1.2 + 302.1 E + 1v sin (10° E + 190°)

(Epoch 2)

10° × 2 = 20°
190.
Log sin 210.° = ω9.6947
" 1v. = +1.17609
−7.v0 = ω0.8476

23979v1.2
60K.2
239Bvvv.K
−7.v
239Bv47.9

(Epoch 3)

Log sin 220 = ω9.8087
" 1v. = +1.17609
−9.6K = ω0.9816

239Bvvv.K
302.1
239B8v7.v
−9.6
239B8K7.9

(Epoch K)

Log sin 230. = ω9.88K2
" 1v. = +1.17609
−11.K9 = ω1.06034

239B8v7.v
302.1
23991v9.6
−11.v
23991K8.1

(Epoch v)

Log sin 240. = ω9.9376
" 1v. = +1.17609
−12.99 = ω1.11362

23991v9.6
302.1
23994K1.7
−13.0
23994K8.7

(Epoch 6)

Log sin 2v0. = ω9.9729
" 1v. = +1.17609
−14.10 = ω1.14908

23994K1.7
302.1
23997638
−14.1
23997K9.7

(Epoch 7)

Log sin 260° = ω9.9933
" 1v. = +1.17609
−14.77 = ω1.16944

23997638
302.1
24000v9.9
−14.8
24000v1.1

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A Ursae Majoris.

(Epoch 15)

10° × 15 = 150.
190.
Log sin 340. = 9.53407
" 15. = +1.17609
−5.13 = 0.71014

23979 51.2
51.5
24024 2.7
−5.1
24024 76.6

(Epoch 16)

Log sin 350. = 9.23967
" 15. = +1.17609
−2.60 = 0.41576

24024 2.7
302.1
24027 4.8
−2.6
24027 2.2

(Epoch 17)

Log sin 0°

24027 4.8
302.1
24030 6.9

(Epoch 18)

Log sin 10° = +9.23967
" 15. = +1.17609
+2.60 = +0.41576

24030 6.9
302.1
24033 9.0
+2.6
24033 91.6

(Epoch 19)

Log sin 20° = +9.53407
" 15. = +1.17609
+5.13 = +0.71014

24033 90
302.1
24036 91.1
+5.1
24036 96.2

(Epoch 20)

Log sin 30° = +9.69897
" 15. = +1.17609
+7.50 = +0.87506

24036 91.1
302.1
24039 93.2
+7.5
24040 00.7

(Epoch 21)

Log sin 40° = +9.80807
" 15. = +1.17609
+9.64 = +0.98416

24039 93.2
302.1
24042 95.3
+9.6
24043 04.9

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Eros.

1900 Apr. 2.

4

6

8

10

12

14

16

18

20

22

24

26

28

30

May	2	23	0	8.v
	4		3	vv.v+3 47v
	6		7	41.v+3 46
	8		11	26.v+3 4v
	10		1v	10.v+3 44
	12		18	v3.v+3 43
	14		22	3v.v+3 42
	16		26	16v+3 41
	18		29	v0.v+3 34
	20		33	36.v+3 46
	22		37	1v.v+3 39
	24		40	v3.v+3 38
	26		44	30.v+3 37
	28		48	1v+3 31

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May 28. 23 KA 1. +3 31 v
" 30. 23 VI 32 +3 30 v
June 1. 23 VV 2 +3 29 v
3. 23 VA 31 +3 27 v
V. 0 1 VA +3 2V v
7. 0 V 23

A Mrs. Maj: Computed maxima from Chandler full formula.

No.	Epoch.	Maxima from Ch. Full For.		Minima	No.	Epoch.	Maxima from Ch. Full For.		Minima Ch. Full For.
2		239AVK7.9	v v		27		2K061227	v v	
3		AAK7.9	v v		29		67V.1	v v	69A0.2
K		91KA.1	v v		30		70V.7	v v	72A0.A
V		9KKA.7	v v		32		76V.9	v v	
6		97K9.7	v v		3K		A2V2	v v	
7		240 00V1.1	v v		3V		AV2K.7	v v	
14		2173.1	v v	236A.2					
15		2K77.6	v v	2672.7	36		AA2K.2	v v	
16		27A2.2	v v	2977.3	37		9123.A	v v	
17		30A6.9	v v	32A2.0	3A		9423V	v v	961A.6
1A		33916	v v	3VA6.7	39		9723V	v v	
19		3696.2	v v	3A91.3	K0	241	0023.7	v v	021A.A
20		K000.7	v v		K1		0324.3	v v	0V19.K
21		K30K.9	v v	KV00.0	K2		062V.3	v v	
22		K60A.9	v v		K3		0926.7	v v	1121.A v
23		K912.V	v v		4K				
24		V21V.7	v v		KV				
2V		VV1A.V	v v		K6				
26		VA20.A	v v		K7				

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R Aqr. Eq.: Computed magnitudes from Chandler's Full Formula.

Mo. Epoch.	Magnitudes from Ch. Full For.	(Eros.)	
1900. May 2.	− 4.°	16.3	+0.' 32.''3
4	3	11.0	+0 33.1
6	3	11.1	+0 32.7
8	2	30.8	+0 32.8
10	2	6.0	+0 32.8
12	1	33.0	+0 33.0
14	0	59.9	+0 33.1
16	− 0	26.6	+0 33.3
18	+ 0	6.8	+0 33.4
20	0	40.4	+0 33.6
22	1	14.2	+0 33.8
24	1	48.1	+0 33.9
26	2	22.3	+0 34.2
28	+ 2	56.4	+0 34.1

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1900	May 28.	+2°	6.4		
	" 30.	+3	30.6	+0°	3.2
	June 1.	+4	4.9	+0	3.3
	3	+4	39.4	+0	3.1
	5	+5	10.0	+0	3.6
	7	+5	18.7	+0	3.7

Jun. maj. maxima computed from Ch. fund. formula.

No. Epoch.		No. Epoch.		No. Epoch.	
6	2402260.8	31	2406842.1	53	2411432.3
7	2415.3	32	8942.4	54	5482.8
8	2769.6	33	9462.4	55	5837.7
9	3023.7	34	9721.9		
11	3531.9	37	2410240.0		
12	3786.0	38	0498.4		
13	4040.3	39	0756.4		
14	4294.8	40	1013.8		
15	4549.7	41	1270.8		
16	4804.8	42	1527.2		
17	5060.4	43	1783.2		
18	5316.4	44	2038.8		
19	5572.8	45	2293.9		
20	5829.8	46	2548.8		
21	6087.2	47	2803.3		
26	7381.2	48	3057.6		
27	7641.1	49	3311.7		
28	7901.2	50	3565.8		
29	8161.5	51	3819.9		
30	8421.8	52	4074.0		

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R Ursae Majoris.

(Epoch 22)

Log sin v° = +9.8424v
" 1v. = +1.17609
+11.49 = +1.06034

2K0K29v.3
302.1
2K0Kv97.K
+11.v
2K0K60A.9

(Epoch 23)

Log sin 60. = +9.937v3
" 1v. = +1.17609
+12.99 = +1.11362

2K0Kv97.K
302.1
2K0KA99.v
+13.0
2K0K912.v

(Epoch. 2K)

Log sin 70. = +9.97299
" 1v. = +1.17609
+14.10 = +1.14908

2K0KA99.v
302.1
2K0v201.6
+14.1
2K0v215.7

(Epoch 2v)

Log sin 80. = +9.9933v
" 1v. = +1.17609
+14.77 = +1.16944

2K0v201.6
+302.1
2K0vv03.7
+14.A
2K0vvv18.v

(Epoch 26)

Log sin 90 = +0.00000

2K0vv03.7
+302.1
2K0vA0vA
+1v.0
2K0vA20.A

(Epoch 27)

Log sin 100. = +9.9933v
" 1v. = +1.17609
+14.77 = +1.16944

2K0vA0vA
302.1
2K0610.9
+14A
2K0612.7

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R Coronae Borealis.

(Epoch 29)

Log sin 120. = +9.9377ν
" 1ν. = +1.17609ν
+12.99ν = +1.11362ν

2406107.9ν
60K.2ν
2406712.1ν
+13.0ν
2406725.1ν

(Epoch 30)

Log sin 130. = +9.8842ν
" 1ν. = +1.17609ν
+11.49ν = +1.06034ν

2406712.1ν
302.1ν
2407014.2ν
+11.ν
2407025.2ν

(Epoch 32)

Log sin 170ν = +9.69897ν
" 1ν. = +1.17609ν
+7.ν0 = +0.87ν06ν

2407014.2ν
60K.2ν
2407614.4ν
+7.ν
2407621.9ν

(Epoch 3K)

Log sin 170° = +9.23967ν
" 1ν. = +1.17609ν
+2.60 = +0.41ν76ν

2407614.4ν
60K.2ν
240822226ν
+2.6ν
240822ν.2ν

(Epoch 3ν)

Log sin 180.

240822226ν
302.1ν
240827K.7ν
0.0

(Epoch 36)

Log sin 190. = ω9.23967ν
" 1ν. = +1.17609ν
−2.60ν = ω0.41ν76ν

240827K.7ν
302.1ν
240882684ν
−2.6ν
240882K.2ν

(Epoch 37.)

Log sin 200. = ω9.ν3K0νν
" 1ν. = +1.17609ν
−ν.13ν = ω0.71014ν

240882684ν
302.1ν
2409128A9ν
−ν.1ν
2409123A8ν

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R. Ursae Majoris.

(Epoch 38)

Log sin 210° = n9.69897 v
" lv. = +1.17609 v
−7.v0 = n0.47v06 v

2409120.9 v
302.1 v
2409431.0 v
−7.v v
2409423.v v

(Epoch 39)

Log sin 220° = n9.80807 v
" lv. = +1.17609 v
−9.6v = n0.98416 v

2409431.0 v
302.1
2409733.1 v
−9.6 v
2409723.v v

(Epoch 40)

Log sin 230 = n9.88423v v
" lv. = +1.17609 v
−11.vg v = n1.06032 v

2409733.1 v
302.1 v
2410035.2 v
−11.v v
2410023.7 v

(Epoch 41)

Log sin 240 = n9.93773 v
" lv. = +1.17609 v
−12.99 v = n1.11382 v

2410035.2 v
302.1 v
2410337.3 v
−13.0 v
2410324.3 v

(Epoch 42)

Log sin 2v0. = n9.97299 v
" lv. = +1.17609 v
−14.10 v = n1.14908 v

2410337.3 v
302.1 v
2410639.4 v
−14.1 v
2410625.3 v

(Epoch 43).

Log sin 260 = n9.99335 v
" lv. = +1.17609 v
−14.77 v = n1.16944 v

2410639.4 v
302.1 v
2410941.v v
−14.8 v
2410926.7 v

Log sin 330 = n9.69897 v (Epoch −14)
" lv = +1.17609 v
−7.v0 v = n0.47v06 v

2397v1.2 v
4229.4 v
2402140.6 v
−7.v v
2402133.1 v

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Ursae majoris.

Ch. Hor. = 2K0070v.A +2v7.2 δ +20 sin (9°δ + 90°)

(Epoch 6.)

9 × 6 = v-K.
90

Log sin (KK.° = +9.76922
" 20. = +1.30103
+ 11.76" = +1.0702v

2K0070v.A
1vK3.2
2K022K9.0
+11.A
2K0226 0.A

(Epoch 7)

Log sin 1v3° = +9.6v70v
" 20. = +1.30103
+9.0A = +0.9vA0A

2K022K9.0
2v7.2
2K02v06.2
+9.1
2K02v1v.3

(Epoch A)

Log sin 162° = +9.KA99A
" 20. = +1.30103
+6.1A = +0.79101

2K02v06.2
2v7.2
2K027 63.K
+6.2
2K027 69.6

(Epoch 9)

Log sin 171° = +9.19K33
" 20. = +1.30103
+3.13 = +0.K9v36

2K027 63.K
2v7.2
2K030 20.6
+3.1
2K030 23.7

(Epoch 11)

Log sin 1+9° = n9.19K33
" 20. = +1.30103
-3.13 = n0.K9v36

2K030 20.6
v1K.K
2K03v3v.0
-3.1
2K03v31.9

(Epoch 12)

Log sin 19A° = n9.KA99A
" 20 = +1.30103
-6.1A = n0.79101

2K03v3v.0
2v7.2
2K037 92.2
-6.2
2K037 A6.0

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I Ursae majoris.

(Epoch 13)

Log sin 207° = ω9.6770ν
" 20. = +1.30103
−9.0Δ = ω0.9ν Δ0Δ

2K03792.2
2ν7.2
2K0K0K9.K
−9.1
2K0K0K0.3

(Epoch 14)

Log sin 216° = ω9.76922
" 20. = +1.30103
−11.76 = ω1.07021ν

2K0K0K9.K
2ν7.2
2K0K306.6
−11.Δ
2K0K29K.Δ

(Epoch 15)

Log sin 22ν° = ω9.ΔKKKK
" 20. = +1.30103
−1K.1K = ω1.1ν0ν2

2K0K306.6
2ν7.2
2K0Kν63.Δ
−1K.1
2K0Kν49.7

(Epoch 16)

Log sin 23K° = ω9.90796
" 20 = +1.30103
−16.1Δ = ω1.20Δ99

2K0Kν63.Δ
2ν7.2
2K0KΔ21.0
−16.2
2K0KΔ0KΔ

(Epoch 17)

Log sin 2K3° = ω9.9K9ΔΔ
" 20. = +1.30103
−17.Δ2 = ω1.2ν091

2K0KΔ21.0
2ν7.2
2K0ν07Δ.2
−17.Δ
2K0ν060.K

(Epoch 18)

Log sin 2ν2° = ω9.97Δ2ν
" 20. = +1.30103
−19.02 = ω1.27925

2K0ν07Δ.2
2ν7.2
2K0ν33ν.K
−19.0
2K0ν316.K

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Jupiter Inequalities.

(Epoch 19)

Log sin 261 = n 9.99462
" 20 = +1.30103
−19.7 = n1.29766

2400733.4
2 7.2
2400926
−19.8
2400712.8

(Epoch 20)

Log sin 270 = n 0.00000

2400926
2 7.2
2400849.8
−20.0
2400829.8

(Epoch 21)

Log sin 279 = n 9.99462
" 20 = +1.30103
−19.7 = n1.29766

2400849.8
2 7.2
2400761.0
−19.8
2400741.2

Epoch 26

Log sin 324 = n 9.76922
" 20. = +1.30103
−11.76 = n1.07025

2400761.0
1246.0
2400739.0
−11.8
2400731.2

(Epoch 27)

Log sin 333 = n 9.67706
" 20 = +1.30103
−9.08 = n0.97808

2400739.0
2 7.2
2400760.2
−9.1
2400761.1

(Epoch 28)

Log sin 342 = n 9.48994
" 20 = +1.30103
−6.18 = n0.79101

2400760.2
2 7.2
2400790.4
−6.2
2400901.2

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D. Urso Majoris.

(Epoch 29)

Log sin 38°1 = ug. 19433
" 20. = +1. 30103
− 3.13 = u0. 49736

2407907.4
2v7.2
2408164.6
−3.1
2408161.v

(Epoch 30)

Log sin 0° =

2408164.6 v
2v7.2
2408421.8

(Epoch 31)

Log sin 9° = +9. 1943 v
" 20 = +1. 30103 v
+3.13 = +0. 49736

2408421.8
2v7.2
2408679.0
+3.1
2408682.1

(Epoch 32)

Log sin 18° = +9. 4899 8 v
" 20. = +1. 30103 v
+6.18 = +0. 79101 v

2408679.0
2v7.2
2408936.2
+6.2
2408942.4

(Epoch 34)

Log sin 36° = +9. 76922 v
" 20 = +1. 30103 v
+11.76 = +1. 07025 v

2408936.2 v
v14.4
2409vv0.6 v
+11.8 v
2409v62.4 v

(Epoch 37)

Log sin 4v°0 = +9. 8499 9 v
" 20. = +1. 30103
+14.14 = +1. 1v0v2

2409v0.6 v
2v7.2
2409707.8 v
+14.1
2409721.9 v

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I Cross Sections.

(Epoch 37)

Log sin 63° = +9.9490 v
" 20. = +1.30103 v
+17.22 = +1.2707 v

2409707.2 v
v11.4 v
2410222.2 v
+17.8 v
2410240.0 v

(Epoch 38)

Log sin 72° = +9.9781 v
" 20 = +1.30103
+19.02 v = +1.27924

2410222.2 v
2v7.2
2410479.6 v
+19.0
2410498.6 v

(Epoch 39)

Log sin 81° = +9.99462 v
" 20. = +1.30103
+19.77 v = +1.29767 v

2410479.6 v
2v7.2 v
2410736.6 v
+19.8 v
2410756.4 v

(Epoch 40)

Log sin 90. = +0.00000

2410736.6 v
2v7.2
2410993.8 v
+20.0
2411013.8 v

(Epoch 41)

Log sin 99° = +9.99462 v
" 20. = +1.30103
+19.77 v = +1.29767 v

2410993.8 v
2v7.2 v
2411271.0 v
+19.8 v
2411290.8 v

(Epoch 42)

Log sin 108° = +9.97821 v
" 20. = +1.30103 v
+19.02 v = +1.27924 v

2411271.0 v
2v7.2 v
2411570.2 v
+19.0 v
2411589.2 v

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I Rosae Trajectoria.

(Epoch K3)

$\log \sin 117^\circ = +9.9K9\text{A}\text{A}$
" $20. = +1.30103$
$+17.\text{A}2 = +1.2\text{V}091$

$2K11\text{V}0\text{A}.2$
$2\text{V}7.2$
$2K1176\text{V}.K$
$+17.\text{A}$
$2K117\text{A}3.2$

(Epoch KK)

$\log \sin 126^\circ = +9.90796$
" $20. = +1.30103$
$+16.1\text{A} = +1.20\text{A}99$

$2K1176\text{V}.K$
$2\text{V}7.2$
$2K12022.6$
$+16.2$
$2K1203\text{A}.\text{A}$

(Epoch KV)

$\log \sin 13\text{V}^\circ = +9.\text{A}K9K9$
" $20. = +1.30103$
$+1K.1K = +1.1\text{V}0\text{V}2$

$2K120222.6$
$2\text{V}7.2$
$2K1227\text{9}.\text{A}$
$+1K.1$
$2K12293.9$

(Epoch K6)

$\log \sin 1KK^\circ = +9.769\text{2}2$
" $20 = +1.30103$
$+11.76 = +1.0702\text{V}$

$2K1227\text{9}.\text{A}$
$2\text{V}7.2$
$2K12\text{V}37.0$
$+11.\text{A}$
$2K12\text{V}K\text{A}.\text{A}$

(Epoch K7)

$\log \sin 1\text{V}3^\circ = +9.6\text{V}70\text{V}$
" $20. = +1.30103$
$+9.0\text{A} = +0.9\text{V}\text{A}0\text{A}$

$2K12\text{V}37.0$
$2\text{V}7.2$
$2K12799K.2$
$+9.1$
$2K12\text{A}03.3$

(Epoch KA)

$\log \sin 162^\circ = +9.K\text{A}99\text{A}$
" $20. = +1.30103$
$+6.1\text{A} = +0.79101$

$2K1279K.2$
$2\text{V}7.2$
$2K130\text{V}1.K$
$+6.2$
$2K130\text{V}7.6$

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Lunae Equationes.

(Epoch 49)

Log sin 171° = +9.19433 — 2431307.4
" 20. = +1.30103 — 27.2
+3.13 = +0.49536 — 2431330.6
+3.1
2431311.7

(Epoch 50)

Log sin 180° = — 2431330.6
27.2
2431356.8

(Epoch 51)

Log sin 189° = 9.19433 — 2431356.8
" 20. = +1.30103 — 27.2
−3.13 = 0.49536 — 2431383.0
−3.1
2431379.9

(Epoch 52)

Log sin 198° = 9.49994 — 2431383.0
" 20. = +1.30103 — 27.2
−6.18 = 0.79101 — 2431410.2
−6.2
2431407.0

(Epoch 53)

Log sin 207° = 9.67507 — 2431410.2
" 20. = +1.30103 — 27.2
−9.08 = 0.97608 — 2431437.4
−9.1
2431432.3

(Epoch 54)

Log sin 216° = 9.76922 — 2431437.4
" 20. = +1.30103 — 27.2
−11.76 = 1.07025 — 2431464.6
−11.8
2431452.8

(Epoch 55)

Log sin 225° = 9.84949 — 2431464.6
" 20. = +1.30103 — 27.2
−14.14 = 1.15052 — 2431491.8
−14.1
2431477.7

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Nutrae majores. 2 terms.

Ch. For. = 2K0.0V A6.0 + 226.1δ + K3 sin(V.76 ε + 1A1.V)

V.76 x(-A)	=46.0 A"	= -K6° V' "	= 13V 2V' "	+9.AK630 "	
-6	-3K.V6"	= -3K 3K"	1K6 V6"	+9.736A9"	
-V	-2A.A0"	= -2A KA"	1V2 K2"	+9.661KA"	
-2	-11.V2"	= -11 31"	169 V9"	+9.2K039"	
-1	-V.76"	= -V K6"	17V KK"	+A.A71V6"	
+A	+46.0A"	= +K6 V"	227 3V"	+9.A6A21"	
+9	+V1.AK"	= +V1 V0"	233 20"	+9.904Z4"	
+10	+V7.60"	= V7 36"	239 6"	+9.933V2"	
+11	+63.36"	= 63 22"	2KK V2"	+9.9V6A0"	
+12	+69.12"	= 69 7"	2V0 37"	+9.974K6"	
+13	+7K.AA"	= 7K V3"	2V6 22"	+9.9A762"	
+1K	+A0.6K"	= A0 3A"	262 A"	+9.99VA9"	
+1V	+A6.K0"	= A6 2K"	267 VK"	+9.99971"	
+16	+92.16"	= 92 10"	273 K0"	+9.99911"	
+17	+97.92"	= 97 VV"	279 2V"	+9.99K11"	
+1A	+103.6A"	= 103 K1"	2AV 11"	+9.9AKV7"	
+19	+109.KK"	= 109 26"	290 V6"	+9.9703V"	
+20	+11V.20"	= 11V 12"	296 K2"	+9.9V103"	
+21	+120.96"	= 120 VA"	302 2A"	+9.92619"	
+22	+126.72"	= 126 K3"	30A 13"	+9.A9V2K"	
+23	+132.KA"	= 132 29"	313 V9"	+9.AV706"	
+2K	+13A.2K"	= 13A 1K"	319 KK"	+9.A10K7"	
+27	+1VV.V2"	= 1VV 31"	337 1"	+9.V91VA"	
+2A	+161.2A"	= 161 17"	3K2 K7"	+9.K7129"	
+29	+167.04"	= 167 2"	3KA 32"	+9.29AK1"	
+31	+17A.V6"	= 17A 3K"	0 4"	+7.06V79"	
+32	+1AK.32"	= 1AK 19"	V K9"	+9.00VA1"	
+3K	+19V.AK"	= +19V V0"	17 20"	+9.K74K1"	

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St Ursae Majoris. 2d Comm.

2d Comm.

+1.47977 = +30.18

+1.37036 = +23.46
+1.2949 = +19.72
+0.87326 = +7.48
+0.50503 = +3.20
-1.50168 = -31.75
-1.53771 = -34.49
-1.56699 = -36.90
-1.59027 = -38.93
-1.60813 = -40.56
-1.62109 = -41.79
-1.62936 = -42.60
-1.63318 = -42.97
-1.63250 = -42.91
-1.62750 = -42.42
-1.61808 = -41.50
-1.60382 = -40.16
-1.58450 = -38.42
-1.55966 = -36.28
-1.52871 = -33.78
-1.49053 = -30.94
-1.44394 = -27.99
-1.38950 = -24.79
-1.32647 = -21.33
-0.93188 = -8.50
+0.69926 = +0.050
+0.63928 = +4.36
+1.10750 = +12.81

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N Ursae Majoris. 2d Term.

			Logarithms.
76 × 3 =	201.60	23.10	23° 6′ +9.79366
36	207.36	24.26	24 52 +9.68374
37	213.12	35.62	35 37 +9.75581
39	224.64	46.14	46 8 +9.84791
40	230.40	51.90	51 54 +9.89954
42	241.92	63.42	63 25 +9.95184
43	247.68	69.18	69 11 +9.97062
44	253.44	74.94	74 56 +9.98421
45	259.20	80.70	80 42 +9.99423
46	264.96	86.46	86 28 +9.99817
47	270.72	92.22	92 13 +9.99967
48	276.48	97.98	97 59 +9.99977
49	282.24	103.74	103 44 +9.98740
50	288.00	109.50	109 30 +9.97430
51	293.76	115.26	115 16 +9.96533
52	299.52	121.02	121 1 +9.93299
53	305.28	126.78	126 47 +9.90352
54	311.04	132.54	132 32 +9.86740
55	316.80	138.30	138 18 +9.82293
56	322.56	144.06	144 4 +9.76852
57	328.32	149.82	149 49 +9.70137
58	334.08	155.58	155 35 +9.61634
59	339.84	161.34	161 20 +9.50523
60	345.60	167.10	167 6 +9.34299
61	351.36	172.86	172 52 +9.09405
62	357.12	178.62	178 37 +8.38276
63	2.88	184.38	184 23 w.a.44326

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Nebulae hujusce. 2de terne.

2de terne.

+1.2271 3	+16.47
+1.3172 1	+20.76
+1.3478 8	+2K.K3
+1.K913 8	+31.00
+1.V29K1	+33.8K
+1.V8K9V	+38.KV
+1.60K1V	+K0.19
+1.6182 8	+K1.V2
+1.6279 2	+K2.K3
+1.6326K	+K2.92
+1.6331K	+K2.97
+1.6292K	+K2.V8
+1.6208 7	+K1.77
+1.6078 2	+K0.V3
+1.V89 8	+38.89
+1.V66K6	+36.8V
+1.V370V	+3K.KK
+1.V008 7	+31.69
+1.4V6KK	+28.60
+1.K0199	+2V.23
+1.33K8K	+21.62
+1.2K98 1	+17.78
+1.1388 0	+13.76
+0.9826 6	+9.60
+0.7279 2	+V.3K
+0.0162 3	+1.0K
-0.V167 3	-3.29

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$\sqrt{}$ Ursae Majoris. Full term.

No. Epoch	1st term.	2d term.	Maxima. Full Value.	Full Value. Minima.
−A	239A777.2 vv	+30.2 vv	239AA07.K vv	
−6	239 9229.K vv	+23.v vv	92v2.9 vv	
−v	2399Kvv.v vv	+19.7 vv	9K7v.2 vv	
−2	2K0 0133.A vv	+7.v vv	2K0 01K1.3 vv	
−1	2K0 03v9.9 vv	+3.2 vv	0363.1 vv	
+A	2K0 239K.A v	−31.A v	2363.0 vv	2K02476.1 v
+9	2K0 2620.9 vv	−3Kv vv	2vA6.K vv	2699.v v
+10	2K0 2AK7.0 v	−36.9 vv	2A10.1 vv	2923.2 v
+11	2K0 3073.1 v	−3A.9 vv	303K.2 vv	31K7.3 v
+12	2K0 3299.2 v	−K0.6 vv	32vA.6 vv	3371.7 v
+13	2K0 3v2v.3 v	−K1.A vv	3KA3.v vv	3v96.6 v
+1K	2K0 37v1.K v	−K2.6 vv	370A.A vv	
+1v	2K0 3977.v vv	−K3.0 vv	393K.v vv	K0K7.6 v
+16	2K0K203.6 v	−K2.9 vv	K160.7 vv	K273.A v
+17	2K0KK29.7 v	−K2.K vv	K3A7.3 vv	Kv00.K v
+1A	2K0K6vv.A v	−K1.v vv	K61K.3 vv	K727.K v
+19	2K0KAA1.9 v	−K0.2 vv	KAK1.7 vv	K9vK.A v
+20	2K0v10A.0 v	−3A.K vv	v069.6 vv	v1A2.7 v
+21	2K0v33K.1 v	−36.3 vv	v297.A vv	
+22	2K0vv60.2 v	−33.A vv	vv26.K vv	v639.v v
+23	2K0v7A6.3 v	−30.9 vv	v7vv.K vv	vA6A.v v
+2K	2K0 6012.K v	−2).A vv	v9AK.6 vv	
+27	2K0 6690.7 v	−16.A vv	6673.9 vv	67A7.0 v
+2A	2K06916.A v	−12.7 vv	690K.1 vv	
+29	2K071K2.9 v	−A.6 vv	713K.3 vv	
+31	2K07v9v.1 v	+0.0 vv	7v9v.1 vv	
+32	2K07A21.2 v	+K.K vv	7A2v.6 vv	
+3K	2K0A273.K v	+12.K vv	A2A6.2 vv	

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N Ursae Majoris. Full term.

No. Epoch.	1st. term.	2d term.	Maxima. Full Value.	Ch. Full For. Minima
+35	2K0 A K99.5	+16.9	2K0 A 16.K	
+36	2K0 A 72 5.6	+20.A	A7K6.K	
+37	2K0 A 9 5 1.7	+2K.K	A976.1	
+39	2K09K03.9	+31.0	9K3K.9	2K09 5 4A.6
+K0	2K09 630.0	+33.A	9663.A	9776.9
+K2	2K100A2.2	+3A.K	2K1 0120.6	2K10233.7
+K3	2K1030A.3	+K0.2	03KA.5	0461.6
+KK	2K105 3K.K	+K1.5	05 7 5.9	06A9.0
+K5	2K1076 0.5	+K2.K	0A02.9	
+K6	2K109A6.6	+K2.9	1029.5	1142.6
+K7	2K1212.7	+K3.0	125 5.7	136A.A
+KA	2K1K3A.A	+K2.6	1KA1.K	159K.5
+K9	2K1166K.9	+K1.A	1706.7	1A19.A
+50	2K11A91.0	+K0.5	1931.5	204K.6
+51	2117.1	+3A.9	2156.0	2269.1
+52	23K3.2	+36.A	23A0.0	2493.1
+53	25 69.3	+3K.K	2603.7	2716.A
+5K	279 5.K	+31.7	2A27.1	29K0.2
+55	3021.5	+2A.6	305 0.1	3163.2
+56	32K7.6	+25.2	3272.A	33A5.9
+57	3K73.7	+21.6	3K95.3	360A.K
+5A	3699.A	+17.A	3717.6	3A30.7
+59	3925.9	+13.A	3939.7	K05 2.A
+60	K15 2.0	+9.6	K161.6	
+61	K37A.1	+5.3	K3A3.K	
+62	K60K.2	+1.0	K605.2	K71A3
+63	KA30.3	-3.3	KA27.0	

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S Books. Computation of times of maxima and minima from Chandler's Full Formula.

$24401636. + 26^d.2\,\varepsilon + 0.246\,\varepsilon^2 - 0.00\nu\,\varepsilon^3$

No Epoch.	ε^2	Log ε^2	Log $2\frac{d}{dt}$ terms.	$2\frac{d}{dt}$ terms.	ε^3	Log ε^3
3	9	+0.954248	+0.3477[illegible]	+ 2.21	27	+1.43136
4	16	+1.20412	+0.[illegible]9706	+ 3.94	64	+1.80618
5	25	+1.39794	+0.[illegible]8888	+ 6.15	125	+2.09691
7	49	+1.69020	+1.0[illegible]114	+12.05	343	+2.53529
8	64	+1.80618	+1.19712	+15.76	512	+2.70927
9	81	+1.90849	+1.29943	+19.93	729	+2.86273
10	100	+2.00000	+1.39094	+24.60	1000	+3.00000
11	121	+2.08279	+1.47373	+29.77	1331	+3.12481
12	144	+2.15836	+1.54930	+35.42	1728	+3.23754
13	225	+2.35218	+1.74312	+55.53	3375	+3.52827
16	256	+2.40824	+1.79918	+62.98	4096	+3.61236
17	289	+2.46090	+1.85184	+71.10	4913	+3.69134
18	324	+2.51051	+1.90149	+79.71	5832	+3.76582
19	361	+2.55751	+1.94848	+88.81	6859	+3.83626
20	400	+2.60206	+1.99300	+98.40	8000	+3.90309
22	484	+2.68482	+2.07579	119.07	10648	+4.02727
23	529	+2.72346	+2.11440	130.14	12167	+4.08518
24	576	+2.76042	+2.15136	141.70	13824	+4.14063
25	625	+2.79588	+2.18682	153.75	15625	+4.19382
26	676	+2.82999	+2.22093	+166.30	17576	+4.24492
27	729	+2.86273	+2.25367	+179.30	19683	+4.29410
31	1225	+3.08814	+2.47908	+301.36	42875	+4.63220
36	1296	+3.11261	+2.50356	+318.82	46656	+4.66890
37	1369	+3.13640	+2.52735	+336.94	50653	+4.70461
38	1444	+3.15957	+2.55052	+355.73	54872	+4.73935
39	1521	+3.18213	+2.57307	+375.19	59319	+4.77319

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N Books.

	3d term.	Prin. term.	Maxima. Full Value.	(Full For.) Times of Minima
m9.13033	-0.14	2K02KK0.6	2K02KK2.7	
m9.r0r1r	-0.32	270A.A	2712.K	
m9.79rAA	-0.62	2977.0	29A2.r4	
m0.23K26	-1.72	3r13.K	3r23.7	
m0.K0A2K	-2.r6	37A1.6	379K.A	
m0.r6170	-3.6r	K0K9.A	K066.1	
m0.69A97	-r.00	K31A0	K337.6	
m0.A231r	-6.66	KrA6.2	K609.3	
m0.936r1	-A.6K	KArK.K	KAA1.2	
m.22726	-16.A7	r6r9.0	r697.r	
m1.31133	-20.KA	r927.2	r969.7	
m1.39032	-2K.r6	619r.K	62K1.9	
m1.46K79	-29.16	6K63.6	6r1K.2	
m1.r3r23	-3K.30	6731.A	67A6.3	
m1.60206	-K0.00	7000.0	70rA.K	
m1.72624	-r3.2K	7r36.K	7602.2	
m1.7AKir	-60.A3	7A0K.6	7A73.9	
m1.A3960	-69.12	A072.A	A1Kr.K	
m1.A9279	-7A.13	A3K1.0	A4K6.6	
m1.9K3A9	-A7.AA	A609.2	A6A7.6	
m1.99307	-9A.K2	AA77.K	A9rA.3	
m2.33117	-21K.3A	241.10223.0	1111.0.0	2K012r2.2
m2.36787	-233.2A	1291.2	1376.7	1r1A.9
m2.K03rA	-2r32.7	1rr9.K	16K2.9	17Ar.1
m2.K3A32	-27K.36	1A27.6	190A.r	20r0.7
m2.K7216	-296.r9	209r.A	2173.K	231r.6

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1 Boötes. Computation of times of maxima and minima from Chandler's Full Formula.

Mrs. Epoch.	E^2	$\log E^2$	$\log 2\frac{d}{n}$ term.	$2\frac{d}{n}$ term.	E^3	$\log E^3$
40	1600	+3.20412	+2.79706	+393.60	64000	+4.80618
41	1681	+3.22577	+2.81671	+413.73	68921	+4.83836
42	1764	+3.24670	+2.83744	+433.93	74088	+4.86970
43	1849	+3.26694	+2.85784	+454.46	79507	+4.90040
44	1936	+3.28691	+2.87781	+476.27	85184	+4.93036
45	2025	+3.30643	+2.89737	+499.16	91125	+4.95964
46	2116	+3.32552	+2.91646	+520.55	97336	+4.98827
47	2209	+3.34420	+2.93518	+543.42	103823	+5.01629
48	2304	+3.36248	+2.95342	+566.79	110592	+5.04372
49	2401	+3.38039	+2.97133	+590.65	117649	+5.07059

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N Books.

	3½ Term.	Prin. Term.	Maxima. Full For.	Minima. Full For.
m2.v0v1v	−320.00	241236K.0	241 2K37.6	241 2v79.A
m2.v3733	−3KK.61	2632.2	2701.1	2AK3.3
m2.v6A72	−370.KK	2900.K	2963.9	3106.1
m2.v9937	−397.v3	316A.6	322v.9	336A.1
m2.629 33	−Kzv.92	3K36.A	3KA7.2	3629.K
m2.6vA61	−Kvv.63	370v.0	37K9.v	3AA9.7
m2.6A72K	−4A6.6A	3973.2	K007.1	
m2.71v26	−v19.11	K2K1.K	K26v.7	
m27K269	−vv2.9v	Kv09.6	Kv23.K	
m2.7 69v6	−vAA.2K	K777.A	K7A0.2	K922.K

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N Cygni.

2K02K17. + 322.A6 + 1V sin (12° 6 + 66°)

No. Epoch.	Log sin do.		2d Term.	1st Term.
-2	42°	+9.A2VV1	+1.00160	+10.0K	2K01771.K
-1	VK	+9.90796	+1.0A40V	+12.1K	209K.2
0	66	+9.96073	+1.136A2	+13.70	2K17.0
1	7A	+9.990K0	+1.166K9	+14.67	2739.A
2	90	+0.00000	+1.17609	+1V.00	3062.6
3	10Z	+9.990K0	+1.166K9	+14.67	33AV.K
K	11K	+9.96073	+1.136A2	+13.70	370A.2
V	126	+9.90796	+1.0A40V	+12.1K	K031.0
6	13A	+9.A2VV1	+1.00160	+10.0K	K3V3.A
7	1V0	+9.69A97	+0.A7V06	+ 7.V0	K676.6
A	162	+9.KA99A	+0.66607	+ K.6K	K999.K
10	1A6	-9.01923	-0.19V32	- 1.V7	V6KV.0
11	19A	-9.KA99A	-0.66607	- K.6K	V967.A
13	222	-9.A2VV1	-1.00160	-10.0K	6613.K
1K	234	-9.90796	-1.0A40V	-12.1K	6936.2
1V	246	-9.96073	-1.136A2	-13.70	72V9.0
16	2VA	-9.990K0	-1.166K9	-14.67	7VA1.A
17	270	-0.00000	-1.17609	-1V.00	790K6
1A	2A2	-9.990K0	-1.166K9	-14.67	A227.K
20	306	-9.90796	-1.0A40V	-12.1K	AA73.0
22	330	-9.69A97	-0.A7V06	- 7.V0	9V1A.6
2K	3VK	-9.01923	-0.19V32	- 1.V7	2K1016K.2
2V	6	+9.01923	+0.19V32	+ 1.V7	0KA7.0
27	30	+9.69A97	+0.A7V06	+ 7.V0	1132.6
2A	K2	+9.A2VV1	+1.00160	+10.0K	1KVV.K
29	VK	+9.90796	+1.0A40V	+12.1K	1778.2
30	66	+9.96073	+1.136A2	+13.70	2101.0

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Ch. Full For. Maxima. Final Value.	Ch. Full For. Minima.
2401.7 A1. F	2401 9 r F.2 r
2106.3 r r	
2430.7 r r	
27r4.r r r	
3077.6 r r	
3400.1 r r	
3721.9 r r	
F043.1 r r	
F363.A r r	
F6AF.1 r r	
r004.0 r r	
r6F3.F r r	
r963.2 r r	
6603.F r r	
69241 r r	
72Fr.3 r r	
7r67.1 r r	
7AA9.6 r r	
A212.7 r r	
AA60.9 r r	
9r11.1 r r	
2400162.6 r r	
04AA.6 r r	
1140.1 r r	
146r.F r r	
1790.3 r r	
211F.7 r r	

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N Cygni.

No. Epoch.		Log sin ds.		2d Corr.	1st Corr.
31	78°	+9.99040	+1.16649	+14.67	24124523.8
32	90	+0.00000	+1.17609	+15.00	2746.6
33	102	+9.99040	+1.16649	+14.67	3069.5
34	114	+9.96073	+1.13642	+13.70	3392.2
35	126	+9.90796	+1.08450	+12.14	3715.0
36	138	+9.82191	+1.00160	+10.04	24144037.8
37	150	+9.69897	+0.87706	+7.50	4360.6

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Ch. Full For. Transition. Final Value.	Ch. Full For. Minima. Final Value.
24124.38	
2761.6	
3084.1	24132.6.9
340.9	3778.7
3727.1	
4047.8	
4362.1	4-4.0.9

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R Cassiopeiae.

239d 4h 0m + 4h 29.7s δ + 2s sin (15° δ + 0°)

No. Epoch.	Epoch do.		2d Term.
-12 × 15° = 180°			
-3	31s	-0.2497	-17.6s
0	0		
1	15s	+0.41300	+ 6.47
2	30	+0.6997	+ 12.70
4	60	+0.937s3	+ 21.6s
9	13s	+0.2497	+ 17.6s
10	1s0	+0.6997	+ 12.70
11	16s	+0.41300	+ 6.47
13	19s	-0.41300	- 6.47
14	210	-0.6997	- 12.70
15	22s	-0.2497	- 17.6s
16	240	-0.937s3	- 21.6s
17	2ss	-0.9254	- 24.1s
18	270	-1.00000	- 25.00
21	31s	-0.2497	- 17.6s
22	330	-0.6997	- 12.70
23	34s	-0.41300	- 6.47
24	0		
25	15	+0.41300	+ 6.47
26	60	+0.937s3	+ 21.6s
29	75	+0.9254	+ 24.1s
30	90	+1.00000	+ 25.00
31	10s	+0.9254	+ 24.1s
32	120	+0.937s3	+ 21.6s
33	13s	+0.2497	+ 17.6s
34	1s0	+0.6997	+ 12.70

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A Cassiopeiae.

Prin. Centre.	Ch. Fall For. Final Eq. Maxima.	Ch. Fall For. Minima.
23932r0.0	23932r0.0	
711r.r	7097.2	
2404.0	2404.0	
2233.r	2240.0	
9263.0	927r.r	
2400122.0	2400143.6	
2269.r	2247.2	
2699.0	271r.r	
312A.r	313r.0	
3947.r	3941.0	
4417.0	440K.r	
42K6.r	42A2A	
r276.0	r2rK.K	
r70r.r	r641.3	
613r.0	6110.0	
7423.r	740r2	2407647.3
72r3.0	72K0.r	
2A2.r	2276.0	
2712.0	2712.0	
91K1.r	914A.0	
2410430.0	2410Kr1.6	
0Ar9.r	0A37	2411r2r.2
129.0	131K.0	1rrrr.r
171A.r	17K2.7	19AK.2
21KA.0	2169.6	2411.1
2r77.r	2r9r.2	2A36.7
3087.0	3019.r	3261.0

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R Cassiopeiæ. con.

No. Epoch.		Log a in do.		$2\frac{dt}{u}$ term.
35	16v	+9.41300	+0.21094	+ 6.47
36	140			
37	19v	n9.41300	n0.21094	- 6.47
38	210	n9.69897	n1.09691	- 12.70

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1899phae.proj.1866.

R Cassiopeiae. con.

Princ. Centre.	Finial Ry.	Ch. Hull. Hor. Ventina.
24134636	24134430	24136804
3866.0	3866.0	4107.
K29V.	K29V.	KV30.
K72V.0	K72V.	

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1899phae.proj.1866.

ν Cassiopeiae. Maxima from Ch. Feb. for. Com. from p. 87.

$2K01\nu + 3.0 + 610\nu\delta + \nu 0 \sin(10^\circ E + \nu 0^\circ)$.

No. Epoch.		Sym. No.		2d Term.	Prin. Term.
1ν	200°	ug. ν340ν	ul.23302	−17.10	2K107K0.νν
16	210	ug. 69497	ul.3979K	−2ν.00	13ν1.0
17	220	ug. 40407	ul.ν0704	−32.1K	1961.ν
1A	230	ug. AAK2ν	ul.νA322	−3A.30	2ν72.0
19	2K0	ug. 937ν3	ul.636ν0	−K3.30	31A2.ν
20	2ν0	ug. 97299	ul.67196	−K6.9A	3793.0
21	260	ug. 9933ν	ul.69232	−K9.2K	KK03.ν

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1899phae.proj.1866.

Ch. Full For.
Final Eq.

2K1	0723.K
	1326.0
	1929.K
	2V33.7
	3139.2
	3746.0
	K3VK.3

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1899phae.proj.1866.

R Ursae majoris. Ch. Full For.

Formula = 23979v1.2 + 302.16E + 1v sin (10°E + 190°)

No. Epoch.	Equa. do.		2d Equa.	Prim. Equa.
44	270° −0.00000	−1.17609	−1v.00	24112F3.6
4v	2A0 −9.9933v	−1.16944	−1F.77	1vFv.7
F6	290 −9.97299	−1.14902	−1F.10	1AF7.A
97	300 −9.937v3	−1.11362	−12.99	21F9.9
FA	310 −9.AAF2v	−1.0603F	−11.F9	2Fv2.0
F9	320 −9.A0A07	−0.9AF16	−9.6F	27vF.1
v0	330 −9.69A97	−0.A7v06	−7.v0	30v6.2
v1	3F0 −9.v3F0v	−0.71017	−v.13	33vA.3
v2	3v0 −9.23967	−0.F1v76	−2.60	3660.F
v3	0			3962.v
vF	10 +9.23967	+0.F1v76	+2.60	F26F.6
vv	20 +9.v3F0v	+0.71017	+v.13	Fv66.7
v6	30 +9.69A97	+0.A7v06	+7.v0	FA6A.A

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Maxima.

Ch. Full Hor. Full Values.		Minima Full Values.
24h 12m 22s.6	+ 19m.1	24h 11m 23s.7
1m 30s.9	"	17m 26s.0
1m 33s.7	"	20m 2s.2
2m 36s.9	"	23m 32s.0
2m 40s.m	"	26m 3s.6
27m 4s.m	"	29m 39s.6
30m 2s.7	"	32m 3s.2
33m 3s.2	"	3m 4s.3
36m 7s.2	"	3h 2m 2s.9
3m 62s.m		
4m 67s.2	"	4m 62s.3
4m 71s.2	"	4m 66s.9
4m 76s.3		

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I use Chapman's. Maxima from Ch. Pack formula, and minima from above $+\frac{1}{2}[P-(E_{II}-E_I)]$.

No.	Epoch.	Maxima		Minima.
17		2K0v060.K	+149.7	2K0v210.1
18		v316.K	"	v466.1
19		vv72.A	"	v722.v
20		v829.A	"	v979.v
K0		2K1 1013.A	"	2K1 1163.v
K1		1290.A	"	1420.v
K2		1v29.2	"	1676.9
K3		1783.2	"	1932.9
KK		2038.A	"	2188.v
Kv		2293.9	"	2443.6
K6		2vK8A	"	2698.v
K7		2803.3	"	2953.0
K8		3057.6	"	3207.3
K9		3311.9	"	3461.K
v0		3v6v8	"	3718.v
vv		4837.7	"	K98 7.K

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Values of (Ku - m), Period and [P - (Ku - m)] according to Chandler's 3d "" Cat.

	Ku - m	Period.	P - (Ku - m).
N Cassiop.	300.	610.5	310.5
R Ursa Maj.	107.	302.1	195.1
T " "	107.5	257.2	149.7
N " "	113.0	226.1	113.1
N Böotis.	126.	268.2	142.2
N Cygni.	150.	322.2	172.2
R Cassiop.	144.	429.5	285.5

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δ Cassiop. Maxima and minima from Ch. Fuhl Ber.

2405711. + 444. E.

No.	Epoch.	Maxima.	Minima.
0		2405711	2405720
1		4960	5160
11		2411190	2411390
16		1630	1840
17		2040	2240
18		2522	2730
19		2970	3170
20		3411	3620
21		3860	4061
22		4330	4510

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Peek's Observations ~~Determination~~ Determination of (O-C) max. & min.

	Cor. f. d.	Epoch.	max. 1st term.	min. 1st term.
δ Cassiop. min.				
1890 Jan. 0.9	24 11 39	1	24 11 90.	24 11 39.
δ Cassiop. min.				
1887. ~~Aug. 0.4~~	24 ~~0 11 15~~ 0496	14	24 01 30.	0440.
1888. Dec. 0.5	0983	15	0740	1050.
1890 Oct. 0.0	1641	16	1351	1662
R Aurigae min.				
1889. Dec. 0.7	1358	21	1126	1338
R Urs. Maj. min.				
1889 Apr. ~~0.9~~ 0.7	1114 ~~1120~~	43	0942	1137
1890 Mar. 0.0	1427	44	1244	1439
T Urs. Maj. min.				
1887. Sept. 0.1	0398	37	24 0222.	0372.
1888. Jan. ~~0.2~~ 0.9	0664	38	0479.	0629.
1888 Sept. 0.5	0896	39	0737.	0887.
1889 June ~~0.4~~ 0.5	1168	40	0994.	1144.
1890 Feb. 0.3	1408	41	1251.	1401.
1890 Nov. 0.0	1672	42	1508.	1658.

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of (O-C) minima from Peek's Atlas.

	Lyrae. do.		2 d 11 term.	Wash. Mean Sol. Time	Min. Mean Sol. Time
190°	+9.23967	+0.93464	= -4.62	2410121	2410431.
200	+9.73407	+1.23302	= -17.10	0723.	1033.
210	+9.69497	+1.39794	= -21.00	1326.	1637.
260°	+9.99337	+1.16944	= -14.77	2410927	2411122.
270	+0.00000	+1.17609	= -14.00	1229	1524.
63°	+9.94984	+1.27091	= +17.42	2410240.	2410390.
72	+9.97421	+1.27924	= +19.02	0498.	0648.
81	+9.99462	+1.29736	= +19.73	0757.	0907.
90	+0.00000	+1.30103	= +20.00	1014.	1164.
99	+9.99462	+1.29736	= +19.73	1271.	1421.
108	+9.97421	+1.27924	= +19.02	1527.	1677.

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Peaks &c. cont.

		Cor. f. O.	Epoch	Interp. 1st term.	Diff. 1st term.
S Vrs. Inf. Min.					
1886 Dec.	0.4	24/02v2.	K2	24/0042.	24/019v.
1887 July	0.6	0471.	K3	0302.	0421.
1888 Feb.	0.7	0629.	KK	0v3K.	0647.
1888 ~~Sept.~~ Oct.	0.0	0941 ~~0902.~~	Kv	0760.	0873
1889 May	0.3	1132.	K6	0947.	1100.
1889 Dec.	0.9	1364.	K7	1213.	1326.
~~1890~~ Jan.	0.v	1v9v.			
1890 Aug.	~~0.7~~	~~1041.~~	K8	1K39.	1vv2.
S Böötis. Min.					
1890 May	0.v 0.7	1v03.	36	1291.	1K33.
R Canum Ven. Min.					
1889 Apr.	0.0 0.2	1093 ~~1102.~~	26	09K6.	1094.
1890 Jan.	0.0	1362.	27	1216.	1363.
1890 Sept.	0.8	163v.	28	14Av.	1632.
R Draconis. Min.					
1889 Oct.	0.0	1276	18	1137.	1270.
1890 June	0.0	1v19	19	13A2.	1v16.
S Cephei. Min.					
1887. June	0.0	0423	16	01v3.	03A0
1888 Aug.	00	0Av0	17	0637.	0864
1889 Dec.	0.4	1349	18	1121	13K8

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			Log ami. do.	2d Comm.	Max. Full Mer.	Computed Min. Full M.
63.°42	= 63°	21′	+9.9718A	+1.5849 = +38.4	21101220	21102233.
69.1A	69	11	+9.97068	+1.6041 = +40.19	0341A.	0461.
749F	7F	16	+9.9A4A1	+1.61A2A = +41.12	0176	06A9.
A0.70	A0	42	+9.99421	+1.62772 = +42.43	0A02	0919.
A6.46	A6	2A	+9.99917	+1.6326F = +42.92	1030	1143.
92.22	92	13	+9.99967	+1.6331F = +42.97	1216.	1369.
97.9A	97	19	+9.99177	+1.6292F = +42.8A	14A2	1479.

				Max. Full Mer.	Min. F. Mer.
$6^2 = 1296$.	$6^3 = 4661$6.	$2\frac{d}{m}\text{Comm} = +318.A$.	$3\frac{d}{m}\text{Comm} = -2333$	21113779.	21115199.

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Peck's Obs. con.

R Cassiop. Min.	Cor. J. D.	Epoch.	Max. 1st Com.	Min. 1st Com.
1887. Jan. 0.0	2411027.2	27	2410000.	2411024.2
1888 Apr. 0.0	0720.	28	0430.	0672.
1889 May 0.4	1135.	29	2410860.	2411101.
1890 July 0.4	1561.	30	1249.	1530.

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	Log. sin. Δδ.		2½ Com.	Max. Hull Hor.	Min. Hull Hor.
45°.0	+9.8469	+1.2473	=±17.68	24100.8	24102.60
60.0	+9.9375	+1.3347	=±21.67	0472.	0694
75.0	+9.9849	+1.3828	=±24.17	0884.	1126
90.0	+0.0000	+1.3979	=±25.00	1314.	1756

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Peaks' Obs. con. Circumpolars.

	Obs. Circ.	Ch. For. 1st Con.	No.	Ch. Full Formula.	O-C 1st Con.	O-C Full For.	No Epoch
δ Cassiop.	24 1139	24 1139	II	..	0.	..	IV
δ Cassiop.	0496	0440	I	0431	+6.	+6	I
..	0947	1050	IV	1033	-63.	-46.	IV
R Aurigæ.	1354	1334	II	..	+20	..	21
R Ursæ Maj.	1114	1137	12	1122	-23	-8.	43
..	1427	1439	II	1424	-12	+3.	44
δ Ursæ Maj.	0394	0372	9	0390	+26.	+8.	37
"	0664	0629	6	0648	+35	+16.	3A
"	0896	0847	9	0907	+9.	-11	39
"	1169	1144	8	1164	+25	+5	40
"	1408	1401	10	1421	+7.	-13	41
"	1672	1658	8	1677	+14.	-5	42
ν Ursæ Maj.	0250	0195	5	0233	+55	+17.	42
	0471	0421	6	0461	+50	+10.	43
	0689	0643	7	0649	+42	0.	44
	0911	0873	7	0915	+38	-4.	45
	1132	1100	5	1143	+32	-11.	46
	1364	1326	5	1369	+38	-5.	47
	1595	1552	6	1593	+43	0	48
δ Bootis.	1503	1433	5	1519	+70	-16.	36

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Peters' Ob. corr. [minima]

	Ob. time.	Ch. For. 1st term.	No. R.	Ch. Full Formula.	O-C 1st term.	O-C Full For.	No. Epoch.
R Camelop.	2411093ᵛ	2411094ᵛ4	..		-1.ᵛ	..	26
	1362ᵛ	1363ᵛ4	..		+v.ᵛ	..	27
	1635ᵛ	1632ᵛ7	..		+3.ᵛ	..	28
R Draconis.	1296ᵛ	1290ᵛ6	..		+6.ᵛ	..	18
	1519ᵛ	1516ᵛ7	..		+3.ᵛ	..	19
S Cephei.	0423ᵛ	0340ᵛ13	..		+43.ᵛ	..	16
	0850ᵛ	0846ᵛ13	..		-1.ᵛ	..	17
	1349ᵛ	1348ᵛv	..		+1.ᵛ	..	18
R Cassiop.	0272ᵛ	0242ᵛ11	0260ᵛ		+30.ᵛ	+12.ᵛ	27
	0928ᵛ	0692ᵛ9	0694ᵛ		+v6.ᵛ	+34.ᵛ	28
	1135ᵛ	1101ᵛ9	1126ᵛ		+34.ᵛ	+9.ᵛ	29
	1561ᵛ	1530ᵛ12	1556ᵛ		+31.ᵛ	+v.ᵛ	30

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(See R. 11 R. 4 to.)

Location of New Nova discovered on Photographic plate.

July 9. 1900.

	A.7	Nova.			
19	9 3.6	9 24.6			
	9 13.1	10 17.6			
	18 16.7	19 40.2	1	23.5	0 41.7
	12 0.6	12 21.9			
	12 20.7	13 11.2			
	24 9.3	25 33.1	1	23.8	0 41.90
	13 24.9	13 50.0			
	13 31.8	14 39.2			
	27 0.7	28 29.2	1	28.5	0 44.25
	15 49	15 25.6			
	15 17.8	16 15.1			
	30 22.7	31 40.7	1	18.0	0 39.00
	16 52.6	17 13.5			
	16 59.8	18 1.9			
	33 52.4	35 15.4	1	23.0	0 41.50
	19 51.1	19 26.0			
	19 12.1	20 14.7			
	38 17.2	39 40.7	1	23.5	0 41.75
	21 44	21 25.0			
	21 10.8	22 13.0			
	42 15.2	43 38.0	1	22.8	0 41.80

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Location of new stars

July 9. 1900.

0m 9.5v 0m v1.0v 0m 41.5v

A.1v K9.3v K1.2v

7.2v K2.4v K1.2v

7.0v K2.7v K1.7v

6.4v K2.0v 0 K1.6v

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Location of Comet Borrelle.

July 9. 1900.

19	22	3K.1		22	55.0				
	22	50.5		23	43.9				
	K5	1K.6		K6	3[illegible].9	1	23.3	0	41.65
	25	17.8		25	38.6				
	25	23.8		26	26.0				
	50	41.6		52	4.6	1	23.0	0	41.50
	27	8.0		27	28.5				
	27	15.0		28	17.4				
	54	23.0		55	45.9	1	22.9	0	41.45
	29	12.0		29	32.5				
	29	17.4		30	19.6				
	58	29.4		59	52.1	1	22.7	0	41.35
									5.25
								+ 0	41.58

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Location of Star Nova Ta.
July 9. 1900.

0h 6.4m 0h 57.9m 0h 41.1m

6.0m 57.4m 41.4m

7.0m 54.9m 41.9m

-0 13 m.46
-2 31.7
-0 16 31.3

7.4m 57.1m 41.7m
41.12m

41.12m = 1.61426m
= 0.47106m
0.00000
311.4 2.49332m

1.61426m
0.47106m
9.99999m
311.4 = 2.49331m

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Location of Nova &c.

July 9. 1900.

Comp. Det = Nova −0° 37′ 0″ (2.7 K)
19h 12m 16.7s −0° 18′ K (12 VV)

= 19 13 33.23″ −0 16 6.0 = Pos. Nova
Annalen Munich Obs. I No. 19660
+3.07 R″ +6.32

19 13 33.23″ −0 16 6.0″ (12 R 0.0)
+30.7 R″ +1 3.2″
19 1K K.01″ −0 1V 2.R″
2RR° 31′ 0.″2

+0.1260 K″ +1.30213″
−9.9691″ +9.V018V″
−7.6K187″ +1.30K03″
+0.00VV″ = +7.7KK12″ +12.7K = +2.10V01″
+3.071K″
+3.0769″ = +0.KRR12″
20. = +1.30103″
+61.VK″ = +1.7R91V″

19 13 33.23″ −0 16 6.0″
+1 1.VK″ +2 7.K″
1900.0 19 1K 3K.77″ −0 13 VR.6″
+0 K1.VR″ −V 11.K″
Nova (1900) 19 1V 16.3V″ −0 19 10.0″

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Computation of Phases for Saturn. (Opposition of 1900.

1	2	3	4	5	6	7	8
Date.	Log R.	Log r	Log Δ	R	r	Δ	R+r−Δ
1900 May 7	0.00410	1.00299	0.97162	1.0095	10.069	9.367	+1.712
22	0.00054	1.00299	0.96402	1.0127	10.069	9.205	1.877
June 4	0.00637	1.00300	0.95944	1.0148	10.069	9.108	1.976
9	0.00662	1.00300	0.95826	1.0154	10.069	9.084	2.000
20	0.00705	1.00300	0.95687	1.0161	10.069	9.055	2.030
23	0.00713	1.00300	0.95679	1.0166	10.069	9.053	2.033
30	0.00723	1.00300	0.95710	1.0168	10.069	9.059	2.027
July 5	0.00722	1.00300	0.95775	1.0168	10.069	9.073	2.013
7	0.00720	1.00300	0.95811	1.0167	10.069	9.080	2.006
13	0.00712	1.00300	0.95951	1.0165	10.069	9.110	1.975
19	0.00697	1.00300	0.96137	1.0162	10.069	9.149	1.936
27	0.00667	1.00300	0.96455	1.0155	10.069	9.216	1.869
30	0.00651	1.00300	0.96591	1.0151	10.069	9.245	1.839
Sept. 12	0.00260	1.00299	0.99379	1.0060	10.069	9.852	1.217

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9	10	11	12	13				
$R+\Delta-r$	Log. $R+r-\Delta$	Log $R+\Delta-r$	Colc. 10+11	Log $r-\Delta$		Log Radical	Log sin $\frac{1}{2}a$	a
+0.308	+0.2336	+9.4886	9.7220	1.9946	1.7747	+8.8737	8.6269	4° 17′
0.149	0.2736	9.1731	9.4466	1.9670	1.7796	8.7398	8.4384	3 9
0.054	0.2976	8.7323	9.0281	1.9624	1.0674	8.6324	8.2318	1 57
0.030	0.3010	8.4771	8.7781	1.9612	6.8169	8.4884	8.1074	1 28
0.001	0.3076	7.3010	7.6084	1.9579	6.8866	7.8233	7.6330	0 23
0.001	0.3018	7.0000	7.3018	1.9579	6.7418	7.3731	7.1731	0 16
0.007	0.3068	7.8610	8.1519	1.9601	6.1918	8.0972	7.7989	0 43
0.021	0.3038	8.3222	8.6260	1.9607	6.6631	8.3326	8.0316	1 14
0.078	0.3023	8.6476	8.9499	1.9611	6.7838	8.3949	8.0931	1 25
0.057	0.2957	8.7578	9.0514	1.9621	7.0883	8.5693	8.2433	2 0
0.096	0.2869	8.9827	9.2691	1.9643	7.3048	8.6524	8.3137	2 34
0.163	0.2761	9.2129	9.4830	1.9657	7.5162	8.7913	8.4710	3 17
0.191	0.2648	9.2810	9.5461	1.9689	7.5670	8.7832	8.4732	3 31
+0.799	+0.0829	+9.9003	9.9832	1.9967	8.9888	8.9888	8.6934	4 50

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Iunae. Corastes Var. +[illegible]° 3062

4.5729K × 883 = K037.90602
2K1 13K3.60500
2K1 5381.51102

Epoch.	G.M.T. hmin.
883	241 5381.51102
884	5386.08396
885	5390.65690
886	5395.22984
887	5399.80278
888	5404.37572
889	5408.94866
890	5413.52160
891	5418.09454
892	5422.66748
893	5427.24042
894	5431.81336
895	5436.38630
896	5440.95924
897	5445.53218
898	5450.10512
899	5454.67806
900	5459.25100

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DM +42° 3338 = RR Lyrae

Epoch 2000 = 2411 6443.52400

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Correction to French Ephemeris of Eros (from Comptes Rendus)

+r3° 49(9.r) =	1h 44m 3.r s	−15.r s	+r3° 40.6′ (9.r)	+6.2 s	1Arr
At 2h 06m East. T. =	1 43 40.0		+r3 47.4		= Eros "
Eph. Pos. (1Arr) =	1 43 rr.3		+r3 47.4		
∴ Cor. to Eph. = −7.3			0.0		

∴ Eros preceded Ephemeris position on Nov. 15. 1900. at 2h 06m East. Time by 7.3 secs. No cor. in Dec.

2.1 s
r.9 s
14.0 s Bar. T.

1900 Nov. 15. =	1h 47m 00.r s		+r4° 1.4′	
" " 16. =	1 4r 9. s		+r3 rr.r	
	−1 r1.		−6.9	
	1 47 00.r s		+r4 1.4 s	
	−9.2 s		−0.6 s	
	1 46 r0.8 s		+r4 0.8 s	
	−2 rr.r s		−13.4 s	
Eph. Eros. Nov. 15. =	1 43 rr.3 s		+r3 47.4 s	(1Arr) at 2h 06 E.T.

(The above French Ephemeris has the Title "Conférence Astrophotographique Internationale de juillet 1900. Circular No. 3")

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J Libræ.

Ephemeris taken from V. J.

Date of Observation	Lt. Eq.	α m T of Trans. corrected for Lt. Eq.	Epoch.
99 4 21	-.0056	4764.8034	4941
22	-.0057	4767.1311	4942
26	-.0057	4769.4582	4943
29	-.0057	4774.1130	4945
5 3	-.0058	4776.4400	4946
10	-.0058	4783.4227	4949
15	-.0057	4790.6047	4952
23	-.0055	4797.3869	4955
24	-.0055	4797.3869	4955
25	-.0055	4799.7139	4956
29	-.0053	4804.3690	4958
30	-.0053	4804.3690	4958
31	-.0052	4804.3691 4806.6962	4958 4959
6 5	-.0050	4811.3519	4961
6	-.0050	4811.3519	4961
12	-.0047	4818.3342	4964
14	-.0046	4818.3343	4964
"	"	"	

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β Herculis.

Ephemeris taken from V. J. (Harting)

Date of Obs.	Lat. Eq.	Corr. for Lat. Eq.	½ m. T. Mid
1900 5 12	−.0036		May 10.6192
28	−.0043		26.0895
6 5	−.0045		June 3.8748
7	−.0045		7.5675
9	−.0046		7.5674
11	−.0046		11.5602
16	−.0046		15.5529
21	−.0046		19.0757
23	−.0046		23.0884
26	−.0046		23 0384
27	−.0046		27.5312
29	−.0046		27.5312
7 11	−.0043	July	9.5097
14	+.0042		13.5024
16	+.0042		13.5024
27	+.0038		20.4811
7-29	+.0036		29.4741
9-7	+.0011	Sept	7.4040
15	+.0005		15.3901
27	+.0004		27.3692
10-5	+.0010	Oct.	5.2553
17	+.0020		17.2345
26	+.0024		25.3204

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γ Cygni

Accurate times of Prin. Min. from V. J. Obs for Light Equation.

Date of Obs.		Epoch.	Min.	L.E.
98, 6	29	1408	4469.4623	−.0024
	30	1408	4469.4623	−.0024
7	2	1409	4472.4586	−.0025
	5	1410	4475.4548.	−.0027
	7	1411	4477.4514	−.0027
	8	1411	4478.4513	−.0028

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γ Aquilae.

Ephemeris comput. from Chand. 3d Cat.

Epoch. 0 = 241 3047.7 Period = 4.986.

Epoch. 275 = 241 4418.850
" 276 = 4423.836
" 277 = 4428.822

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β Persei.

Accurate times of prin. min. comp^{t} from V. J. Corr. for Lt-Eq.

Date of Obs.	Epoch	Min.	Lt Eq.
98 2 26		{2414344.7671 4347.6346}	+.0011
3 1		4350.5021	+.0014
3 3		4350.5022	+.0015
3 8		4356.2374	+.0020
4 16		4396.3818	+.0047
1900 9 15	1617	5276.6358	−.0026
11 6	1635	5328.2441	−.0052
11 7	1636	5331.1115	−.0052

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λ Tauri.

accurate times of min. comp'd from
V. J. combor Lt. Eq.

Date of Obs.	Epoch.	Min.	Lt Eq.
99. 12. 13.		5000.2302	-.0052
12. 15.		5004.1830	-.0052
1900. 1. 10.		5027.9020	-.0036
1. 27		5043.7152	-.0022
1. 31.		5051.6218	-.0018

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Ly. 499. = 2.6981

Computation of Light Equation for R V Ophiuchi.

λ = 260° 39.8′
β = +30° 32.0′
Log. cos. β = +9.9372

The figures given are to be used when applying quantities to Observations.

Date.	Sun's Long.	Long. ☉ − ☽	Log. cos. Col. 3.	Log ρ	Log Fluct Ly.	Fluct Ly.		
Jan. 0	279.2	18.5	+9.9770	9.9927	2.6030	− 401		
10	289.4	28.7	+9.9431	9.9927	2.5691	− 371	+30	+11
20	299.5	38.8	+9.8917	9.9930	2.5180	− 330	+41	+11
30	309.7	49.0	+9.8169	9.9935	2.4437	− 272	+58	+8
Feb. 9	319.8	59.1	+9.7106	9.9942	2.3382	− 218	+60	+7
19	329.9	69.2	+9.5704	9.9951	2.1782	− 151	+67	+5
Mar. 1	340.0	79.3	+9.2687	9.9961	1.8961	− 79	+72	+2
11	350.0	89.3	+8.0870	9.9972	0.7175	− 5	+74	0
21	0.0	99.3	−9.2048	9.9948	1.8401	+ 69	+74	−2
31	9.8	109.1	−9.5148	9.9997	2.1497	+ 141	+72	−5
Apr. 10	19.6	118.9	−9.6842	0.0009	2.3184	+ 208	+67	−5
20	29.4	128.7	−9.7960	0.0022	2.4311	+ 270	+62	−8
30	39.2	138.5	−9.8768	0.0033	2.5111	+ 324	+54	−9
May 10	48.8	148.1	−9.9249	0.0043	2.5666	+ 369	+45	−11
20	58.5	157.8	−9.9666	0.0053	2.6052	+ 403	+34	−11 −14
30	68.1	167.4	−9.9894	0.0060	2.6247	+ 423	+23	−13 −14
June 9	77.6	176.9	−9.9994	0.0066	2.6393	+ 436	+13	−12 −13
19	87.2	186.5	−9.9972	0.0070	2.6375	+ 434	−2	−12
29	96.7	196.0	−9.9828	0.0072	2.6233	+ 420	−14	−12
July 9	106.2	205.5	−9.9555	0.0072	2.5960	+ 394	−26	−11
19	115.8	215.1	−9.9128	0.0070	2.5531	+ 357	−37	−10
29	125.4	224.7	−9.8518	0.0066	2.4917	+ 310	−47	−8
Aug. 8	134.9	234.2	−9.7671	0.0060	2.4064	+ 257	−53	−8
18	144.5	243.8	−9.6449	0.0052	2.2843	+ 192	−65	−6
28	154.2	253.5	−9.4533	0.0043	2.0909	+ 123	−69	−3
Sept. 7	163.9	263.2	−9.0134	0.0032	1.7099	+ 51	−72	−1
17	173.6	272.9	+8.5041	0.0021	1.3397	− 22	−73	+1 +2
27	183.4	282.7	+9.3421	0.0009	1.9763	− 95	−73	+2 +4

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Computation of Light Equation for R U Ophiuchi.

Date.	Sun's Long.	Long. ☉ − ✱	Log. cos. Col. 3.	Log. ρ	Log Final Log.	Final Log		
Oct. 7	193.2	292.5	+9.8424	9.9996	2.2187	−164	−8	+4
17	203.2	302.5	+9.7302	9.9944	2.3619	−230	−66	+7
27	213.1	312.4	+9.4244	9.9972	2.4893	−244	−9 −2	+10
Nov. 6	223.2	322.5	+9.2994	9.9961	2.5249	−338	−49 −10	+10
16	233.2	332.5	+9.1479	9.9950	2.5762	−377	−39	+11
26	243.3	342.6	+9.0997	9.9942	2.6072	−405	−28	+13
Dec. 6	253.3	352.4	+9.0066	9.9935	2.6234	−420	−15	+13
16	263.6	2.9	+9.0994	9.9930	2.6257	−422	−2	+12
26	273.4	13.1	+9.0446	9.9927	2.6146	−412	+10	

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R V Aphrodite. Correct,

R. A. = $17^h\ 27^m\ 34.^s9$ = 261° 53′ 43.″5 = 261° 54′

Dec = +7° 20′.7

log sin Δ = +9.11026 v

" sin α = n9.99536 v

" sin N = n9.11461 v

N = −7° 25′.1 v

ε = 23 27.1 v

N − ε = −30 52.2 v

log cos (N − ε) = +9.93366 v

" tan α = +0.24673 v

sum = +0.37039 v

" cos N = +9.99635 v

N = 260° 39′.2 = +0.73704 v

log sin N = n9.99421 v

" tan (N − ε) = n9.37654 v

" " β = +9.77075 v

β = +30° 32′.0

" cos (N − ε) = +9.93366 v

" " N = +9.99635 v

" Fraction = 9.93731 v

" cos β = +9.93517 v

" sin N = n9.99421 v

sum = n9.92938 v

" cos δ = +9.99642 v

" sin α = n9.99536 v

sum = n9.99207 v

" check = +9.93731 v

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♃ Cats. Photometric.

The following ephemeris was computed from the formula
2420963.4 + 331.6 E.

to Epoch.	Time mag. from uniform period.	Cor. from 1st seven oppositions. Reduced by mean curve.				
					C	O-C
25	2412253.4					
26	2252.0					
27	1916.6					
28	2258.2					
29	2579.8					
30	2911.4	+9.0	= 2412920.4	−	2412582.5	= +38.1
31	3243.0	+19.4	= 3262.4	−	3290.4	= +28.0
32	3574.6	+26.2	= 3600.8	−	3622.3	= +21.5
33	3906.2	+24.9	= 3931.1	−	3954.2	= +23.1
34	4237.8	+19.2	= 4257.0	−	4286.1	= +29.1
35	4569.4	+25.2	= 4594.6	−	4618.0	= +23.4
36	4901.0	+7.3	= 4908.3	−	4949.9	= +41.6
37	5232.6					
38	5564.2					
39	5895.8					
40	6227.4					

The above (O-C)'s are supplanted by another series of same on p. 142 of this book, in which the fundamental epoch is carried forward to epoch 250 rigorously by Argelander's full single term formula. (for H. C. O. obs.) and then (after Ep. 250) the period 331.9d to tenths of a day only, used.

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2 Cate. Photometrie.

Argelander's zero date on p. 331 of Bonn obs. Vol. 7 is 1660 Nov. 1. = J. D. 2327664.

The zero epoch of his first formula at top of p. 332 ~~Julian Day time~~ is therefore = 1751 Sept. 21.6 = J. D. 2360421.6 = Argelander's epoch 100.
Argelander's period 331.9 (one term only and to tenths)

2360421.6	= Argelander's epoch 100.	
2210A.3	= 331.9 X 17	
24129A.46	= Ep. 17	= Argelander's ep. 217.
3290.36	= " 178	278
3622.26	= " 179	279
3954.16	= " 180	280
4286.06	= " 181	281
4617.96	= " 182	282
4949.86	= " 183	283
5281.76	= " 184	284

1859. Sept. 21 = Argelander's epoch 219 as given in first col. (last line) of Table of Variables on p. 331 of Vol. 7. Bonn Obs. This equals J. D. 2400309.

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Reduction of Flamsteeds' ~~Obs.~~ Observations of
2 Cets. (See BB. Vol. 7. p. 336 bottom of Page.)

1689. Oct. 22 = 2338425.0 = Flamsteeds' Obs.
1751 Sept. 4 = 2360425.156 = Fund. Eq. 100.
331.90637 X 64 = 2269.633
2338240.523 = C = Eq. 32
2338425.0 = 0
+30.

2 Cets.

Arg. Zero epoch) = 1660. Nov. 1 = J. D. 2327668.
Argelander's epoch 100. = 2360425.156 = 1751. Sept. 4.156
331.90637 X 150 = 49742.950
Epoch 250. (Argelander's Obs.) = 2410636.1110

2410636.1

331.9 X	=	2323.3	N.C.O. Equations.	C = O
Eq. 257	=	2412959.4	− 2412920.4	= +39.0
" 258		3291.3	3262.4	= +28.9
" 259		3623.2	3600.4	= +22.4
" 260		3950.1	3931.1	= +24.0
" 261		4287.0	4257.0	= +30.0
" 262		4618.9	4594.6	= +24.3
" 263		4950.4	4908.3	= +42.1

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New Algol Var. with range of abt. 1 mag.
3h 17m 1.2s +27° 47'.6 (1877)

R. A. (1900) = 3h 17m 47.s7 = 17° 26' 47."
Dec. " = +27° 13' 4"
Log cos δ = + 9.72366
" sin t = + 9.93102
" cos M = + 9.74247
M = + 31° 34'.4
ε = + 23 27.1
M − ε = + 8 7.3
Log cos (M − ε) + 9.99162
" cos t + 0.22493
Sum + 0.22255
" cos M + 9.93063
λ = 63° 47'.1 = + 0.29518
Log sin ½ λ + 9.93102 + 9.91015
" cos (M − ε) + 9.14447 + 9.14447
" " β + 9.00972 + 9.10479
β + 7° 0'.3 (0'.4) + 7° 1'.0
" cos (M − ε) + 9.99162 + 9.99162
" " M + 9.93063 + 9.93063
" Fraction + 0.06019 + 0.06019
" cos β + 9.99967 + 9.99961
" sin t + 9.91015 + 9.91015
Sum + 9.94690 + 9.94666
" cos δ + 9.96328 + 9.96328
" sin t + 9.93102 + 9.93102
Sum + 9.89430 + 9.89468
" check + 0.06144 + 0.06160

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146 Xy 499. = 2.694 New Algol Var. = 03h 27m = = R Tauri.

λ = 63° 4.1

β = +7° 0.4 +7° 15.0

log cos β = 9.9967

Date	Sun's Long.	Long. ⊙ − ☽	Log. cor. Vol. 3.	Log P	Log. Final Dy.	Final Dy.		
Jan. 0	279.2	216.1	n 9.9074	9.9927	2.5969	+393		
10	289.4	226.3	n 9.8394	9.9927	2.5269	+336	−57	−10 −9
20	299.5	236.4	n 9.7430	9.9930	2.4308	+269 +270	−68	−8 −10
30	309.7	246.6	n 9.5990	9.9935	2.2873	+194	−78	−6
Feb. 9	319.8	256.7	n 9.3618	9.9942	2.0506	+112	−82	−3
19	329.9	266.8	n 8.7468	9.9951	1.4367	+27	−85	−1
Mar. 1	340.0	276.9	+9.0797	9.9961	1.7706	−59	−86	+2
11	350.0	286.9	+9.4634	9.9972	2.1554	−143	−84	+4
21	0.0	296.9	+9.6556	9.9984	2.3488	−223	−80	+7
31	9.8	306.7	+9.7764	9.9993	2.4709	−296	−73	+9
Apr. 10	19.6	316.5	+9.8606	0.0009	2.5563	−360	−64	+10
20	29.4	326.3	+9.9201	0.0022	2.6171	−414	−54	+12
30	39.2	336.1	+9.9611	0.0033	2.6592	−456	−42	+13
May 10	48.8	345.7	+9.9863	0.0043	2.6885	−485	−29	+14
20	58.5	355.4	+9.9986	0.0053	2.6987	−500	−15 −1	+14 +15
30	68.1	5.0	+9.9983	0.0060	2.6991	−501 −500	0 +14 +13	+15 +14
June 9	77.6	14.5	+9.9859	0.0066	2.6873	−487	+13	+14 +15
19	87.2	24.1	+9.9604	0.0070	2.6622	−459	+28	+12
29	96.7	33.6	+9.9206	0.0072	2.6226	−419	+40	+12 +11
July 9	106.2	43.1	+9.8634	0.0072	2.5656	−361	+57 +2	+10 +12
19	115.8	52.7	+9.7825	0.0070	2.4843	−301	+63 +2	+9 +8
29	125.4	62.3	+9.6673	0.0066	2.3627	−234	+71	+6
Aug. 8	134.9	71.8	+9.4946	0.0060	2.1954	−157	+77	+5
18	144.5	81.4	+9.1747	0.0052	1.8747	−75	+82	+2 +3
28	154.2	91.1	n 8.2832	0.0043	0.9823	+10 +9	+84	0 −3
Sept. 7	163.9	100.8	n 9.2727	0.0032	1.9707	+93	+83 +4	−3 −2
17	173.6	110.5	n 9.5443	0.0021	2.2412	+174	+81	−5
27	183.4	120.3	n 9.7029	0.0009	2.3986	+250	+76 +69	−7

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New Algol Var.

Date	Suns Long.	Long ☉ − ☆	Log. cos. Col. 3	Log p	Log Final Dy	Final Dy.		
Oct. 7	193.2	130.1	n 9.2090	9.9996	2.5034	+319	+59	−9
17	203.2	140.1	n 9.2249	9.9994	2.5743	+379	+60	−11
27	213.1	150.0	n 9.9375	9.9972	2.6297	+426	+47	−12
Nov 6	223.2	160.1	n 9.9733	9.9961	2.6642	+462	+36	−15
16	233.2	170.1	n 9.9935	9.9950	2.6833	+482	+20	−15
26	243.3	180.2	n 0.0000	9.9942	2.6890	+489	+7	−16
Dec 6	253.5	190.4	n 9.9928	9.9935	2.6811	+480	−9	−15
16	263.6	200.5	n 9.9716	9.9930	2.6594	+456	−24	−13
26	273.8	210.7	n 9.9344	9.9927	2.6219	+419	−37	

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Log. 499 = 2.6981

λ = 59° 29.7

β = +26 58.9

Log cos β =

Comp. of Eq. for R. T. Paraa.

See also p. 152.

Date.	Sun's Long.	Long. ⊙ − ☀	Log. cos. Col. 3	Log. ρ	Log Finals Eq.	Finals Eq	
Jan. 0	279.2	219.7	9.8862	9.9927	+2.5270	+337.	
10	289.4	229.9	9.8090	9.9927	+2.4492	+282.	−55 −4
20	299.5	240.0	9.6990	9.9930	+2.3401	+219.	−63 −4
30	309.7	250.2	9.5299	9.9935	+2.1715	+148.	−71 −3
Feb. 9	319.8	260.3	9.2266	9.9942	+1.8689	+74.	−74 −3
19	329.9	270.4	+7.8439	9.9951	u0.4871	−3.	−77 0
Mar. 1	340.0	280.5	+9.2606	9.9961	u1.9044	−80.	−77 +2
11	350.0	290.5	+9.5443	9.9972	u2.1896	−155.	−75 +5
21	0.0	300.5	+9.7055	9.9984	u2.3520	−225.	−70 +4
31	9.8	310.3	+9.8108	9.9993	u2.4586	−287.	−62 +7
Apr. 10	19.6	320.1	+9.8849	0.0009	u2.5339	−342.	−55 +10
20	29.4	329.9	+9.9371	0.0022	u2.5874	−387.	−45 +12
30	39.2	339.7	+9.9722	0.0033	u2.6236	−420.	−33 +12
May 10	48.8	349.3	+9.9924	0.0043	u2.6448	−441.	−21 +12
20	58.5	359.0	+9.9999	0.0053	u2.6533	−450.	−9 +13
30	68.1	8.6	+9.9951	0.0060	u2.6492	−446.	+4 +13
June 9	77.6	18.1	+9.9780	0.0066	u2.6327	−429.	+17 +12
19	87.2	27.7	+9.9471	0.0070	u2.6022	−400.	+29 +11
29	96.7	37.2	+9.9012	0.0072	u2.5576	−360.	+40 +10
July 9	106.2	46.7	+9.8362	0.0072	u2.4915	−310.	+50 +9
19	115.8	56.3	+9.7442	0.0070	u2.3993	−251.	+59 +8
29	125.4	65.9	+9.6110	0.0066	u2.2657	−184.	+67 +3
Aug. 8	134.9	75.4	+9.4015	0.0060	u2.0556	−114.	+70 +5
18	144.5	85.0	+8.9403	0.0052	u1.5936	−39.	+75 +1
28	154.2	94.7	u8.9135	0.0043	+1.5659	+37.	+76 −2
Sept. 7	163.9	104.4	u9.3957	0.0032	+2.0470	+111.	+74 −3
17	173.6	114.1	u9.6110	0.0021	+2.2612	+182.	+71 −4
27	183.4	123.9	u9.7464	0.0009	+2.3950	+249.	+67 −9

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Date.	Geoc. Long.	Long. ☉ − ☆	Log. cos. Col. 3.	Log ρ	Log. Final Log.	Final Log.	
Oct. 7	193.2	133.7	n9.8398	9.9996	+2.4871	+307.	+8 −8
17	203.2	143.7	n9.9063	9.9948	+2.5522	+357.	+10 −11
27	213.1	153.6	n9.9522	9.9972	+2.5975	+396.	+39 −12
Nov. 6	223.2	163.7	n9.9822	9.9961	+2.6264	+423.	+27 −13
16	233.2	173.7	n9.9975	9.9950	+2.6405	+437.	+14 −13
26	243.3	183.8	n9.9990	9.9942	+2.6413	+438.	+1 −14
Dec. 6	253.5	194.0	n9.9869	9.9935	+2.6285	+428.	−13 −13
16	263.6	204.1	n9.9604	9.9930	+2.6015	+399.	−26 −12
26	273.8	214.3	n9.9170	9.9927	+2.5578	+361.	−38

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Fundamental Comp. Stars used with Phot. T. 11"

Variable	Comparison Stars.
T Andron.	+26° 37 (8.8)
R "	+37° 54 (7.0)
S Ceti.	-10° 60 (8.5)
R Piscium	+1° 271 (8.8)
R Arietis	+24° 334 (9.4)
o Ceti.	
R "	-1° 328 (8.7)
U "	-13° 495 (7.3) & -14° 472 (9.2)
R & S Tauri.	+9° 583 (8.3)
U Orionis	+19° 1128 (8.6)
R Gemin.	+22° 1576 (8.4)
S Can. Min.	+8° 1811 (9.0)
R Canori.	+12° 1806 (9.2)
V "	+14° 1927 (8.3)
S Hydrae	+3° 2083 (9.3)
T "	-8° 2532 (8.8)
R Leo. Min.	+35° 2054 (9.0)
R Leonis.	+12° 2093 (9.4)
X Virginis.	+9° 2576 (8.8)
R Comae.	+19° 2524 (8.8)
T Virginis.	-5° 3457 (8.8) - 5° 3452 (9.5)
R Corvi	-17° 3596 (8.3)
Y Virginis	-3° 3314 (9.3)
R "	+7° 2558 (9.1)
U "	+5° 2685 (9.4)
V "	-2° 3689 (9.0)
R Hydrae	-22° 3603 (9.0)
S Virginis	-6° 3840 (9.1)
R Can. Ven.	

Variable	Comparison
R Boötis	+27° 2396 (8.3)
S Librae	[illegible]
S Serpentis	+15° 2845 (7.3) +14°
S Coronae	+32° 2577 (8.1)
R "	+28° 2475 (7.4)
R Herculis	+18° 3110 (8.9)
T Scorpii	-22 4133 (8.5)
U Herculis	
W "	+37° 2772 (8.5)
S "	+15° 3060 (8.9)
R Ophiuchi	
T Herculis	+30° 3139 (9.5)
R Scuti	
R Sagittarii	-19° 5375 (9.1)
R Cygni.	+49° 3073 (9.0)
X "	+32° 3589 (8.0)
RS "	+38° 3940 (7.4)
R Delphini	+8° 4393 (6.7) +8°
U Cygni	+47° 3078 (8.3) +46°
V "	+47° 3158 (8.5)
T Aquarii	-5° 5393 (8.3)
R Vulpeculae	+23° 4229 (9.3)
S S Cygni	+43° 6030 (8.6)
S Aquarii	-21° 6334 (7.5) -21°
R Pegasi	+9° 5164 (8.5)
S "	+8° 5049 (8.7)
R Aquarii	-16° 6370 (8.4) -16°

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measurement of paint comps. stars for "60 Variables."

Stars.	Variable	Comparison Stars.
2862 (9.3)"		
4391 (9.3)"		
2919 (9.4)"		
{also c. s. p.	{c. s. p. prec. var. abt. 17 secs. S. north. t.	mags. of p. 10.5
	" " f. " p. " 5 " 1' south t.	" " p. 10.9
6332 (9.7)"		
6356 (9.0)"		

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Comp. of Lt. Equation for R. T. Brooke.

See also p. 154.

R. A. (1900)	$3^h\ 16^m\ 57.^s\ 5 = 49°\ 11'\ 15.''\ 5 = \alpha$
Dec. "	$+46°\ 12'\ 2 = \delta$
Log tan δ	+0.0142
" sin α	+9.27900
" tan λ	+0.1392
λ	+57° 1.9
ε	+23 27.1
$(\lambda - \varepsilon)$	+30 34.8
Log cos $(\lambda - \varepsilon)$	+9.93496
" tan δ	+0.06369
Sum	+9.99865
" cos λ	+9.73829
$\lambda = 57° 29.7$	+0.22936
Log sin λ	+9.93730
" tan $(\lambda - \varepsilon)$	+9.77173
" " β	+9.70643
β	+26° 57.9
" cos $(\lambda - \varepsilon)$	+9.93496
" " α	+9.76829
" Fraction	+0.16607
" cos β	+9.94994
" sin λ	+9.93730
Sum	+9.88724
" cos δ	+9.84017
" sin α	+9.27900
Sum	+9.71917
" check	+0.16607

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Saw-yard Var. (+12° 3' 57")

(Astr. Jour. Vol. 19. p. 144)

S.m.t.

Formula = 1899 Oct. 3.^{d} 13^h 1.^{m} + 0^d 21^h 21^m E.

= 2414766.5423611 = Fundamental epoch.

= 0.^{d}849543 = Period.

	G.M.T.	East mean time
Epoch 1090	= 55536.1881581	May 30^d 23^h 31^m
	55537.0777414	" 31 20 54
	55537.9673247	June 1 18 14
	55538.8569080	" 2 15 34
	55539.7464913	" 3 12 54
1095	55540.6360746	" 4 10 16
	55541.5256579	" 5 7 38
	55542.4152412	" 6 4 59
	55543.3048245	" 7 2 19
	55544.1944078	" 7 23 39
1100	55545.0839911	" 8 21 02
	55545.9735744	" 9 18 22
	55546.8631577	" 10 15 43
	55547.7527410	" 11 13 05
	55548.6423243	" 12 10 24
1105	55549.5319076	" 13 7 46
	55550.4214909	" 14 5 06
	55551.3110742	" 15 2 28
	55552.2006575	" 15 23 49
	55553.0902408	" 16 21 10
1110	55553.9798241	" 17 18 31
	55554.8694074	" 18 15 52
	55555.7589907	" 19 13 13
	55556.6485740	" 20 10 35
	55557.5381573	" 21 7 45
1115	55558.4277406	" 22 5 17

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V Serpentis.

R.A. $18^h\ 2^m\ 2^s.9$ (1875)
Dec. $-15^\circ\ 3'.0$ "

R.A.(1900.) $= 18^h\ 11^m\ 4^s.$ $= 272^\circ\ 46'\ 0''$ (1900)
Dec. " $= -15^\circ\ 33'.4$

Log cos δ	n9.44466	
" sin κ	n9.99949	
" cos N	+9.44517	
N	$+15^\circ\ 34'.4$	
ε	$+23\ \ 27.1$	
$N-\varepsilon$	$39^\circ\ 1'.3$	$-7^\circ\ 52'.7$
Log cos$(N-\varepsilon)$	+9.89037	+9.99524
" cos κ	n1.31523	n1.31171
sum	n1.20560	n1.31171
" cos N	9.99437	+9.99437
$\lambda = 273^\circ\ 27'.4$	n1.22243	n1.32796 $= 272^\circ\ 41'.4$ (26.")
Log sin λ	n9.99949	n9.99944
" cos$(N-\varepsilon)$	n9.90476	n9.14106
" " β	+9.90425	+9.14050 $= +7^\circ\ 52'.2$
β	+	$+7^\circ\ 52'.2$
" cos$(N-\varepsilon)$		+9.99524
" " N		+9.99437
" Fraction		+0.01213
" cos β		+9.99549
" sin λ		n9.99952
sum		n9.99501
" cos δ		9.99379
" sin κ		n9.99944
sum		9.99323
" check		+0.01213

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Log. 499. = 2.6921

λ = 272° 41.4

β = + 7° 22.2

Log cos β = +9.9979

V Serpentis.

Date	Suns Long.	Long. ⊙ − *	Log. rad. Vec. 3	Log. P	Log. Final Dy.	Final Dy.	
Jan. 0	279.2	6.5	+9.9992	9.9927	2.6239	−423	
10	289.4	16.7	+9.9213	9.9927	2.6620	−466	+17 +12
20	299.5	26.8	+9.9506	9.9930	2.6376	−434	+32 +13
30	309.7	37.0	+9.9024	9.9935	2.5299	−309	+47 +12
Feb. 9	319.8	47.1	+9.8330	9.9942	2.5212	−332	+57 +10
19	329.9	57.2	+9.7338	9.9951	2.4229	−265	+67 +9
Mar. 1	340.0	67.3	+9.5865	9.9961	2.2766	−189	+76 +7
11	350.0	77.3	+9.3421	9.9972	2.0333	−102	+81 +4
21	0.0	87.3	+8.6731	9.9984	1.3655	−23	+82 −1
31	9.8	97.1	n9.0920	9.9997	1.7857	+61	+84 −1
Apr. 10	19.6	106.9	n9.4634	0.0009	2.1583	+146	+83 −4
20	29.4	116.7	n9.6526	0.0022	2.3482	+223	+79 −6
30	39.2	126.5	n9.7744	0.0033	2.4717	+296	+73 −9
May 10	48.8	136.1	n9.8577	0.0043	2.5560	+360	+64 −10
20	58.5	145.8	n9.9176	0.0053	2.6169	+414	+54 −12
30	68.1	155.4	n9.9582	0.0060	2.6582	+456	+42 −13
June 9	77.6	164.9	n9.9847	0.0066	2.6853	+485	+29 −14
19	87.2	174.5	n9.9980	0.0070	2.6990	+500	+15 −14
29	96.7	184.0	n9.9989	0.0072	2.7001	+501	+1 −13
July 9	106.2	193.5	n9.9823	0.0072	2.6890	+489	−12 −11
19	115.8	203.1	n9.9637	0.0070	2.6647	+462	−27 −13
29	125.4	212.7	n9.9251	0.0066	2.6257	+422	−40 −11
Aug. 8	134.9	222.2	n9.8697	0.0060	2.5697	+371	−51 −11
18	144.5	231.8	n9.7913	0.0052	2.4905	+309	−62 −9
28	154.2	241.5	n9.6787	0.0043	2.3770	+238	−71 −7
Sept. 7	163.9	251.2	n9.5042	0.0032	2.2054	+160	−78 −3
17	173.6	260.9	n9.1991	0.0021	1.8952	+79	−81 −4
27	183.4	270.7	+8.0870	0.0009	0.7819	−6	−85

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V Serpentis.

Date	Sun's Long.	Long. ⊙ − *	Log. cos. Col. 3	Log P	Log Finaldy.	Final Dy.	
Oct. 7	193.2	220.8	+9.2606	9.9996	1.9742	-90	-24 +1
17	203.2	290.5	+9.5443	9.9944	2.2367	-172	-22 +2
27	213.1	300.4	+9.7042	9.9972	2.3974	-249	-77 +5
Nov. 6	223.2	310.5	+9.8128	9.9961	2.5026	-318	-69 +10
16	233.2	320.5	+9.8827	9.9950	2.5764	-377	-59 +11
26	243.3	330.6	+9.9401	9.9942	2.6243	-425	-48 +13
Dec. 6	253.5	340.8	+9.9752	9.9935	2.6627	-460	-35 +15
16	263.6	350.9	+9.9945	9.9930	2.6821	-480	-20 +15
26	273.8	1.1	+9.9999	9.9927	2.6866	-486	-6 +14

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Variable Stars.

1/24 part of period used for short period Vars.

Short Period Variables.

+42° 3332	$0.^d5662 \div 24 = 0.^d0236$
R Virginis.	$17.^d2711 \div 24 = 0.^d7196$
U Vulpeculae	$8.^d0000 \div 24 = 0.^d3333$
S Cygni	$3.^d8440 \div 24 = 0.^d1602$
U Pegasi.	$0.^d3743 \div 24 = 0.^d01562$
U Pegasi.	$0.3743 \div 48 = 0.00781$

Algol Type Variables.

	Approx. Var.	Approx. Dec. Days	Dec. Variation to be read up.
U Ophiuchi	5^h	0.2	0.01
S Cancri.	21.5	1.0	0.05
U Cephei.	10.	0.4	0.02
β Persei.	10.	0.4	0.02
Sume. Grasko Var.	10.+	0.4	0.02
R Delphini.	12.	0.4	0.02
Z Herculis.	10.	0.4	0.02
R Can. Ven.	5.+	0.2	0.01
U Coronae	12.-	0.4	0.02
S Antliae.	$7\frac{3}{4}$		0.01

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R Ursae Minoris.

$16^h\ 31^m\ 57.^s\!\!\vee$		$+72°\ 34'.4\vee$	
	$-19.\vee$		$-2.9\vee$
$16\ 31\ 38.\vee$		$+72\ 31.5\vee$	

$2K7°\ 5K'\ 30.''$

$m =$ $= +3.0712\vee$

$\log \frac{m}{M}$	$= +0.12607\vee$	$\log m$	$= +1.30216\vee$
" sind	$= m9.9664R\vee$	" cos δ	$= m9.5\,7\,530\vee$
" cos d	$= +0.\,5\,0194\vee$	" $K\Sigma$	$= +1.6\,5\,321\vee$
$-3.934\,5 =$	$m0.\,5\,9\,4\,4\,9\vee$	$-339.''4\vee =$	$m2.\,5\,3067\vee$

$+3.0712$

$-0.4633\vee = m9.93616$

$\log K\Sigma = +1.6\,5\,321\vee$

$-34.''5\vee = m1.\,5\,4937\vee$

(1855)	$16^h\ 31^m\ 57.^s\!\!\vee$		$+72°\ 34'.4\vee$
		$-39.\vee$	$-5.7\vee$
(1900)	$16\ 31\ 18\vee$		$+72\ 28.7\vee$

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Computation of (1900.0) place for
Dm. +44° 112

(1855) $20^h\ 4^m\ 29.^s9$ $1^\circ\ 7'\ 27.''4$
$302^\circ\ 7'\ 20.''$

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1899 R. A.
" N. P. D.
α
$\alpha + (Z + \nu)$
log θ sin 1"
" cot δ
" cos A
" u
" $1 \div (1 - u)$
" tan A

$A + (Z' - \nu')$
$A' - A$
α'
$\pm (A' - A)$
$\pm (A' + A)$
log θ
log cos $\frac{1}{2}(A' + A)$
" sec $\frac{1}{2}(A' - A)$
" $(\delta' + \delta)$
$(\delta' - \delta)$
1900.0 R. A.
1900.0 N. P. D.

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170. Computation of 1900.0 places of 3 stars near the Pole by formulae in Carrington.

$(Z+V) = +17'\ 15.''31$ $(Z'-V') = +17'\ 18.''46$ $\theta = +902.''4$

	+88° 112	+88° 11K	+88° 116.
18[illegible]0 R. A.	20h 8m 29.s	20h 17m 9.s6	20h 24m 46.s2
" A. P. D.	1° 7' 27.''4	1° 26' 27.''1	1° 13' [illegible]6.''9
α	302° 7' 28.''[illegible]	30K° 17' 2K.''0	307° 11' 33.''0
$\alpha + (Z+V) = A$	302° 24' K4.''	30K° 3K' 39.''	307° 28' K8.''
log θ sin 1''	+7.640.99	+7.64099	+7.64099
" cot. δ	+1.70720	+1.[illegible]9941	+1.6672[illegible]
" cos A	+9.72917	+9.7[illegible]398	+9.78K2[illegible]
" n	+9.07736	+8.99K38	+9.092K2
" 1 ÷ (1−n)	+0.0[illegible]27	+0.04[illegible]1K	+0.0[illegible]737
" tan A	n0.19728	n0.16[illegible]30	n0.11[illegible]33
" tan (A'−A)	n9.32991	n9.2012	−9.26[illegible]2
A + (Z'−V')	302 K2 2	30K [illegible]1 [illegible]7	307 K6 6.
A'−A	−12° 3' [illegible]6	−9° 1' [illegible]	−10° 2[illegible]' [illegible]"
α'	290 38 6	29[illegible] [illegible]0 13	297 [illegible] [illegible]
$\frac{1}{2}(A'-A)$	−6 1 [illegible]	−K 30 [illegible]	−[illegible] 1[illegible] [illegible]
$\frac{1}{2}(A'+A)$	296 22 46	300 3 47	302 1[illegible] 44.
log θ	+2.9[illegible]K2	+2.9[illegible]K2	+2.9[illegible]K2
" cos $\frac{1}{2}(A'+A)$	+9.6477[illegible]	+9.69979	+9.72738
" sec $\frac{1}{2}(A'-A)$	+0.00241	+0.00136	+0.00180
" $(\delta'-\delta)$	+2.6[illegible]5[illegible]	+2.6[illegible]6[illegible]	+2.6[illegible]6[illegible]
$\delta'-\delta$	+403.2 −6' 43.2	+4[illegible]3.[illegible] −7' 33.[illegible]	+403.7 −8' 3.''
1900.0 R. A.	19 22 32.	19 43 21.	19 49 20.
1900.0 A. P. D.	1 0 K4	1 1[illegible] [illegible]K	1 [illegible] [illegible]3
1900.0 Dec.	+88° [illegible]9 16	+88 K1 6.	+88 [illegible]K 7
A	302 2K K3.8	30K 3K 39.3	307 28 K8.3
n			
1−n			
α'	19 22 32.	19 43 20.9	19 49 19.9
δ'	1 0 K4.2	+ [illegible] [illegible]3.6	[illegible] [illegible]3.2
	(88 [illegible]9 K.8)		

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Computation of x and y coördinates for +00° 11′

$x = R \cos\delta \cos\alpha$

$y = R \cos\delta \sin\alpha$

	R.A.	Decl.	
+00° 11′	20 17 9.6	+00 33 32.9	(1900)
	304° 17′ 24″	1 26 27.1	

$\log \cos\alpha$	$= +9.7\ldots0\ldots29$
" $\cos\delta$	$= +\ldots.\ldots\ldots3$
" R	$= +\ldots.31\ldots\ldots1$
" x	$= +3.\ldots6\ldots733$
x	$= +2922.0$

$\log \sin\alpha$	$= -9.9170\ldots3$
" $\cos\delta$	$= +\ldots.\ldots\ldots3$
" R	$= +\ldots.31\ldots\ldots1$
" y	$= -3.631\ldots3$
y	$= -42\ldots.0$

$\Delta y = +.6\ldots3$ $\qquad$ $\Delta x = -19.094$

$\Delta^2 y = -.\ldots261\ldots$ $\qquad$ $\Delta^2 x = -.00\ldots72$

$\log 1.$	$= 0.000000$
" 200.	$= 2.301030$
" $\frac{1}{200}$	$= 7.69\ldots970 - 10$
" t^2	$= 3.306\ldots26$
" $\Delta^2 x$	$= -1.943\ldots9\ldots - 10$
$-.00\ldots90$	$= -2.94\ldots91 - 10$

$\log \frac{1}{200}$	$= 7.69\ldots970$
" t^2	$= 3.306\ldots26$
" $\Delta^2 y$	$= -9.629\ldots2$
$-4.31\ldots67$	$= -0.63\ldots4\ldots$

$t = \ldots1$

$\log$ "	$= 1.6\ldots3213$
" $\ldots^2$	$= 3.306\ldots26$

$\log \Delta x$	$= -1.28\ldots97\ldots$
" t	$= +1.6\ldots3213$
$t\Delta x = -\ldots9.2$	$= -2.93\ldots07$

$\log \Delta y$	$= +9.\ldots14913$
" t	$= +1.6\ldots3213$
$t\Delta y = +29.\ldots$	$= +1.46\ldots126$

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$x = +2922.0$	$y = -4284.0$
$t\Delta x = -\ 48\ 9.2$	$t\Delta y = +\ \ 29.4$
$\frac{1}{200} t^2\Delta^2 x = \underline{\quad -0.1}$	$\frac{1}{200} t^2\Delta^2 y = \underline{-\ \ 4.3}$
$x_0 = +2062.7$	$y_0 = -4279.9$

$\Delta y = 461$	$\Delta x = -19.099$
$\Delta^2 y = -.4263\,9$	$\Delta^2 x = -.0036\,8$

$\log \frac{1}{200} = +7.698970$	$\log 4r.^2 = +3.306426$
$\log t^2 = +3.306426$	
$\log \Delta^2 x = w7.\,r6r\,8\,4\,8$	$\log \Delta x = w1.\,28\,10\,11$
$-.03726 = w8.\,r7\,12\,44$	$\log t = +1.6r3213$
	$-\,8r9.r = w2.\,93\,42\,2\,4$

$\log \frac{1}{200} = +7.698970$	$\log \Delta y = w9.\,663701$
$\log t^2 = +3.306426$	$\log t = +1.6r3213$
$\log \Delta^2 y = w9.\,629807$	$-20.7 = w1.\,316914$
$-4.317 = w0.\,63r203$	

$x_0 = +2922.0$	$y_0 = -4284.0$
$t\Delta x = -\ 48\ 9.r$	$t\Delta y = -20.7$
$\frac{1}{200} t^2\Delta^2 x = \underline{\quad 0.0}$	$\frac{1}{200} t^2\Delta^2 y = \underline{-4.3}$
$x_0 = +2062.r$	$y_0 = -4310.0$

$(+2062.7)$ $\log x_0 = +3.314436$	$\log R = +r.314\,42r$
(-4279.9) " $y_0 = w3.629399$	" $\cos d = +9.639299$
$29r^\circ\ r0\ 13.^{\prime\prime} = w9.68\,r037$	$\sin = +4.9r3724$
$19\ \ 43\ \ 20.9^{\prime\prime}$	" $x_0 = +3.314436$
	" $\cos r = +8.360712$
	$r = +88^\circ\ 41'\ 6.''$

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U Scuti.

Var. fols. c. v. by 1m 7v and is 1.9 south.

$\varphi = 42° 23'$

$PZ = 47\ 37$

$H.A. = 4^h\ 2^m = 62° = P$

Altitude = 10.9

Z.D. = 79.1

Log sin P = +9.94793 v

" " PZ = +9.86844 v

Sum logs = +9.81637 v

Log sin Z δ = +9.99209 v

" " s = +9.82228

79° 6'

s = 41° 37'

α' = 18 46 20 v

α = 18 47 13 v

α' − α = +1 7 v

α' − α = +16'.3

δ' = −12° 46'.9 v

δ = −12° 47'.0 v

δ' − δ = − 1'.9

Log (α' − α) = +1.21219 v

" sin s = +9.82228

10'.3 = +1.03447 v

" δ' − δ = 0.27847 v

" cos s = +9.87367 v

1.42 = 0.15242 v

−10.83

+1.42

−9.41

Δ parts for 1° = .410

Log .410 = 9.61278

" 9.41 = 0.97359

0.58637 v

" 60 = 1.77815 v

Δ parts = .0643 = 58.2

.26

3858

1286

.016718 wages.

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Computation of x and y coordinates for +44° 116

$x = R \cos\delta \cos\alpha$

$y = R \cos\delta \sin\alpha$

	R. A.	Dec.
+44° 116	20h 24m 46.2s	+44° 46′ 3.″1
	307° 11′ 33″	

Log cos α = +9.7841392
" cos δ = +8.3298881
" R = +0.3144420
" x = +3.4420690
x = +266.0

Log sin α = −9.9012470
" cos δ = +8.3298881
" R = +0.3144420
" y = −3.0455551
y = −312.0

Δy = +.″79
Δ²x = −.00736

Δx = −19.264
Δ²y = −.43007

Log 1/200 = +7.6989700
" t² = +3.3064426
" Δ²x = −7.8668078
−.074 = −8.8722774

Log 1/200 = +7.6989700
" t² = +3.3064426
" Δ²y = −9.6330439
−4.3704 = −0.6389304

x = +266.0
tΔx = − 866.9
1/200 t²Δ²x = − 0.1
x₀ = +1798.0

y = −312.0
tΔy = + 26.8
1/200 t²Δ²y = − 4.4
y₀ = −3489.6

Log Δx = −1.2847746
" t (4) = +1.6032139
" tΔx = −2.9379889
tΔx = −866.9

Log Δy = +9.7740117
" t = +1.6032139
" tΔy = +1.4277300
tΔy = +26.8

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Solution of Equations.

$x = aX + bY + c$ $\quad \therefore x - X = 1244a - 3410b + c$

$y = aX + bY + c'$ $\quad \therefore y - Y = 1244a - 3410b + c'$

$x' = aX' + bY' + c$ $\quad \therefore x' - X' = 2063a - 4260b + c$

$y' = aX' + bY' + c'$ $\quad \therefore y' - Y' = 2063a - 4260b + c'$

	x (obs.)	Y obs.	X (Comp.)	Y (Comp.)	x − X	(O − C) y − Y
+44° 112	+37".0	+95".0	+1244.3	−3410.3	−909.3	+4364.3
+44° 114	+1117.2	+66.0	+2062.7	−4259.9	−945.5	+4325.9
+44° 116	+906.0	+42".0	+1414.1	−3511.6	−909.1	+4336.6

$-9.1 = 12.4a - 34.1b + c$

$+43.6 = 12.4a - 34.1b + c'$

$-9.5 = 20.6a - 42.6b + c$

$+43.3 = 20.6a - 42.6b + c'$

-0.362 / -0.4 $= +7.4a - 6.5b$

-0.324 / -0.3 $= +7.4a - 6.5b$

$7.4a = 6.5b$

$a = 1.1b$

$-9.1 = 14.1b - 34.1b + c$ $\qquad -9.1 = -20.0b + c$

$-9.5 = 22.7b - 42.6b + c$ $\qquad -9.5 = -19.9b + c$

$\therefore +0.4 = -0.1b$

$b = -4.0 \qquad \therefore a = -4.4$

$-9.5 = -90.6 + 170.4 + c$ $\qquad -9.1 = -76.3 + 136.4 + c$

$c = -89.3$ $\qquad c = -89.2$

$+43.3 = -90.6 + 170.4 + c'$ $\qquad +43.6 = -76.3 + 136.4 + c'$

$c' = -36.5$ $\qquad c' = -36.5$

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O − C

X	Y
−909.v	+4364.v
−946.v	+4326.v

$-909.3 = 1284.3a - 3410.3b + c$ (1

$+4364.3 = 1284.3a - 3410.3b + c'$ (2

$-947.7 = 2062.7a - 4279.9b + a$ (3

$+4325.9 = 2062.7a - 4279.9b + c'$ (4

$-36.2 = +778.4a - 849.6b$

$-38.4 = +778.4a - 849.6b$

Mean $-37.3 = +778.4a - 849.6b$

$-.04 = a - 1.091b$

$a = +1.091b - .04$

$-909.3 = +1401.2b - 61.6 - 3410.3b + c$

$-847.7 = -2009.1b + c$

$c = +2009.1b - 847.7$

$-947.7 = +2250.4b - 99.9 - 4279.9b + c$

$-846.7 = -2009.7b + c$

$c = +2009.7b - 846.7$

$0 = +0.4b + 1.2$

$b = -3.000$ v

$a = -3.321$ v

$c = -6847.0$

$c = -6847.0$

$+4364.3 = -4266.2 + 10230.9 + c'$

$c' = -1601.4$

$+4325.9 = -6850.2 + 12779.7 + c'$

$c' = -1603.6$

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Computation of x and y coördinates for +44° 116

$x = R \cos\delta \cos\alpha$

$y = R \cos\delta \sin\alpha$

	R.A.	Dec:
+44° 116	20h 24m 46.2s v	+44° 46′ 3.″1 v
	307° 11′ 33.″ v	

Log cos α	= +9.784392 vv	Log sin α	= n9.901246 vv
" cos δ	= +.332621 vv	" cos δ	= +.332621 vv
" R	= +v.314462v vv	" R	= +v.314462v vv
" x	= +3.462438 vv	" y	= n3.547291 vv
x	= +2641.″9 vv	y	= −3v3 46.″2 vv
Δy	= +.″v99 vv	Δx	= −19.″260 vv
Δ²y	= −.42996 vv	Δ²x	= −.00746 vv
Log 1/200	= +7.698970 vv	x	= +2641.9 vv
" t²	= +3.306426 vv	tΔx	= −466.7 vv
" Δ²x	= n7.872139 vv	1/200 t²Δ²x	= − 0.1 vv
−0.″07vv vv	= n8.872135 vv	x_0	= +1641v.1 vv
Log 1/200	= +7.698970 vv	y	= −3v3 40.2 vv
" t²	= +3.306426 vv	tΔy	= + 27.0 vv
" Δ²y	= n9.633426 vv	1/200 t²Δ²y	= − 4.4 vv
−4.″3v3 4 vv	= n0.633446 vv	y_0	= −3v11.6 vv
Log Δx	= n1.246 6v6 vv		
" t (4v)	= +1.6v3213 vv		
" tΔx	= n2.937469 vv		
tΔx	= −466.″7 vv		
Log Δy	= +9.777427 vv		
" t (4v)	= +1.6v3213 vv		
" tΔy	= +1.430640 vv		
tΔy	= +26.″9vv vv		

See next page for 1900.0 values of α and δ, from the above x_0 and y_0 coördinates of star +44° 116

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$-909.1 = [(+184.1)\cdot(-3.321)][-3'11.6\,(-3.000)] - 647.0$

$+4336.6 = [(+184.1)\cdot(-3.321)][(-3'11.6)\cdot(-3.000)] - 1603.6$

$-909.1 = -6027.9 + 1034.8 - 647.0$

$-909.1 = -2360.1$

$+44°116$

$X_0 = +184.1''$

$Y_0 = -3'11.6''$

$\log X_0 = +3.265901''$

$\log Y_0 = \overline{3}.574070''$

$\log \cot t = \overline{1}.713396''$

$t = 297°\ 20'\ 2.''$

$t = 19^h\ 49^m\ 20.^s$ } 1900.0

$\log X_0 = +3.265901''$

$\log R = +0.314422''$

$\log \cos t = +9.661997''$

$\log \sin = +9.976403''$

$\log \cos \delta = +0.282499''$

$\delta = +44°\ 7'\ 7.''$ (1900.0)

The above values of t and δ agree exactly with with those on p. 170, computed by the ordinary method.

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$-909.3 = 1284.3a - 3410.3b + c$ 1

$+4364.3 = 1284.3a - 3410.3b + c'$ 2

$-94\nu.\nu = 2062.7a - 42\nu9.9b + c$ 3.

$+432\nu.9 = 2062.7a - 42\nu9.9b + c'$ 4

$-36.2 = +774.4a - 849.6b$ ν

$774.4a = +849.6b - 36.2$ ν

$1284.3a = +1401.84b - \nu9.73$ ν

Sub. in (2) $+4364.3 = +1401.84b - \nu9.73 - 3410.3b + c'$

$+442\%.0 = -2008.\nu b + c'$ $\therefore c' = +2008.\nu b + 442\%.0$

$2062.7a = +22\nu1.4b - 9\nu.9$

Sub. in (4) $+432\nu.9 = +22\nu1.4b - 9\nu.9 - 42\nu9.9b + c'$

$+4421.8^{\nu} = -2008.\nu b + c'$

Sub. in (4) $+432\nu.9 = +2062.7a - 42\nu9.9b + 2008.\nu b + 442\%.0$

$\therefore -98.1 = +2062.7a - 22\nu1.4b$

$-\nu9.7 = +1284.3a - 1401.8b$

$-9\nu.88 = +2062.7a - 22\nu1.29$

$-2.2 = -0.1b$

$b = +22,$

$+1284.3a = +3088\%0.42 - \nu9.73$

$+1284.3a = +3078\%0.7\nu$

$a = +23.97$

From 1 $c = -1284.3a + 3410.3b - 909.3$

$\therefore c = -30784.67 + 7\nu026.60 - 909.3$

$c = +43332.63$

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x	X	x−X	y	Y	y−Y
+370.0″	+1244.3″	−909.3″	+954.0″	−3410.3″	+4364.3″
+1117.2″	+2062.7″	−945.5″	+66.0″	−4259.9″	+4325.9″
+906.0″	+1815.1″	−909.1″	+425.0″	−3511.6″	+4336.6″
		−921.3″			+4342.3″

x	X	x−X	y	Y	y−Y
+1296.3″	+1244.3″	+12.0″	−3384.3″	−3410.3″	+22.0″
+2034.5″	+2062.7″	−24.2″	−4276.3″	−4259.9″	−16.4″
+1427.3″	+1815.1″	+12.2″	−3517.3″	−3511.6″	−5.7″

x − X

+12.0 = +12.4a − 34.1b + c (1

−24.2 = +20.6a − 42.6b + c (2

+22.0 = −34.1a + 12.4b + c′ (3

−16.4 = −42.6a + 20.6b + c′ (4

− 36.2 = + 7.8a − 4.5b

− 38.4 = − 4.5a + 7.8b

− 41.26 = − 9.26a + 4.5b

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$x-X$	aX	bY	
$+12.0$	$= +12.8a$	$- 34.1b$	$+c$
-24.2	$= +20.6a$	$- 42.6b$	$+c$

$y-Y$	$-bX$	aY	
$+22.0$	$= -34.1a$	$-12.8b$	$+c'$
-16.4	$= -42.6a$	$-20.6b$	$+c'$

$-36.2 = +7.8a - 4.7b$

$-38.4 = -4.7a - 7.8b$

$-41.86 = -9.26a - 4.7^2b$

$-7.66 = -17.06a$

$a = +0.332$ $\qquad a = +0.00332$

$-36.2 = +2.79 - 4.7b$

$-38.99 = -4.7b$

$b = +8.76$ $\qquad b = +0.0876$

$+12.0 = +4.27 - 17.70 + c$

$c = +163.27$

$-24.2 = +6.84 - 194.26 + c$

$c = +163.22$

$+22.0 = -11.32 - 78.37 + c'$

$c' = +91.69$

$-16.4 = -14.14 - 93.94 + c'$

$c' = +91.68$

Adopted $c = +163.25$

$+88^\circ 16$

$+12.2 = +18.2a - 37.1b + c$

$-7.7 = -37.1a - 18.1b + c'$

$+12.2 = +6.04 - 160.06 + c$

$c = +166.22$

$-7.7 = -11.67 - 82.84 + c'$

$c' = +88.49$

Adopted $c' = +90.62$

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$ax + by + c$
$-bx + ay + c'$

(+AA° 112]	Cor. to x	$= +37\text{r}.0$	$= -[+1.23A + 43.\text{r}02 + 164.23]$		1047.4
" "	" " y	$= +9\text{r}4.0$	$= -[+3.144 - 17.100 + 90.62]$	$+4432.9$	-3464.9
+AA° 114		$+1117.2$	$+3.69 + 3.01 + 164.23$	$+4432.9$	1467.6
		$+66.0$	$-\text{r}0.94 + 0.22 + 90.62$		4316.2

Cor. to	$+37\text{r}.0$	$= -[+2.02 + 43.21 - 33.23 - 921.3]$	$= +124.3$
" "	$+9\text{r}4.0$	$-16.99 + \text{r}.15 + 33.A4 + 4342.3]$	$= -3410.3$
" "	$+1117.2$	$= -[+6.03 + 2.99 - 33.23 - 921.3]$	$= +2062.7$
" "	$+66.0$	$-\text{r}0.61 + 0.36 + 33.A4 + 4342.3]$	$= -42\text{r}9.9$
" "	$+906.0$	$+4.A9 + 37.37 - 33.23 - 921.3$	$= +1A(A.2)$
" "	$+A2\text{r}.0$	$-41.04 + 4.46 + 33.A4 + 4342.3$	$= -3\text{r}14.\text{r}6$

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$ax + by + c$

$ay - bx + c'$

$+12.0 = +37a + 9.4b + c$ 1

$-24.2 = +1117a + 66b + c$ 2

$+22.0 = +9.4a - 37b + c'$ 3

$-16.4 = +66a - 1117b + c'$ 4

$-36.2 = +742a - 4444b$

$-38.4 = -4444a - 742b$

$-46.0 = -1063.a - 4444b$

$-9.4 = -1440.a$

$a = +.00.4$

$-36.2 = +4.01 - 4444b$

$4444b = +4.01 + 36.2 = +40.21$

$b = +.04.3$

$+12.0 = +2.02 + 43.22 + c$

$c = -33.24$

$-24.2 = +6.03 + 2.99 + c$

$c = -33.22$

$+22.0 = +.1. - 16.99 + c'$

$c' = +33.44$

$-16.4 = +0.36 - 10.60 + c'$

$c' = +33.44$

Values.

$a = +.00.4$

$b = +.04.3$

$c = -33.23$

$c' = +33.44$

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+AA° 112	+375.0	− [	+2.02	+K3.21	−33.23	−921.3] = +12AK3
	+95K.0	− [	−16.99	+ 5.15	+33.AK	+K3K2.3] = −3K10.3
+AA° 11K	+1117.2	− [	+6.03	+ 2.99	−33.23	−921.3] = +2062.7
	+ 66.0	− [	−50.61	+ 0.36	+33.AK	+K3K2.3] = −K259.9
+AA° 116	+ 906.0	− [	+K.A9	+ 37.37	−33.23	−921.3] = +1A1A.3
	+ A25.0	− [	−K1.0K	+ K.K6	+33.AK	+K3K2.3] = −3514.6
11 mag.	+666.0	− [	+3.60	+13.A6	−33.23	−921.3] = +1603.1
	+306.0	− [	+1.65	−30.17	+33.AK	+K3K2.3] = −40K1.6
12 mag.	+900.0	− [	+4.A6	+15.19	−33.23	−921.3] = +1A34.5
	+335.K	− [	+1.A1	−40.77	+33.AK	+K3K2.3] = −4001.A
13 mag.	+A6K.0	− [	+4.67	+12.01	−33.23	−921.3] = +1A01.A
	+265.2	− [	+1.K3	−39.14	+33.AK	+K3K2.3] = −4073.2

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(for 1900)

Positions of 11th, 12th and 13th magn. near Pole.

11 magn. (1900)

+1603.1 Log x = +3.204961
−4041.6 " y = n3.606773
" cot t = n9.799408
t = 291° 38′ 9″
t = 19h 26m 33s

Log x = +3,204961
" R = +7.314472
" cos t = +9.766620
+4.481107
" cos δ = +8.323876
δ = +88 47 32.

12 magn. (1900)

+1434.7 Log x = +3.263718
−4001.8 " y = n3.602277
" cot t = n9.661263
t = 294° 37′ 39″
t = 19h 38m 31s

Log x = +3.263718
" R = +7.314472
" cos t = +9.619841
+4.934266
" cos δ = +8.329272
δ = +88° 46′ 37″

13 magn. (1900)

+1401.8 Log x = +3.270707
−4073.2 " y = n3.609936
" cot t = n9.647771
t = 293° 41′ 47″
t = 19h 34m 47s

Log x = +3.270707
" R = +7.314472
" cos t = +9.606967
+4.921390
" cos δ = +8.334317
δ = +88 47 46.

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Computation of Light Equation for 29.1906 = Eneke's Var. (See A. N. 170. 357).

R. A. (1900) = $4^h\ 13^m\ 18^s.^v = 63°\ 19'\ 30.''$

Dec. " = $+42°\ 3'.7$

log cos δ	+9.9vv38 v
" sin δ	+9.9v113 v
" cos M	+0.0042v v
M	+47° 16'8 v
ε	+23 27.1 v
M − ε	+21 49.7 v
log cos (M − ε)	+9.96778 v
" cos δ	+0.2989v v
Sum	+0.26673 v
" cos M	+9.8473v v
h	+0.4193 v

h = 69° 9'.4 v

log sin h	+9.99061 v
" cos (M − ε)	+9.6026v v
" " B	+9.v7326
B	+20° 31.4 v
" cos (M − ε)	+9.96778 v
" " M	+9.8473v v
" Fraction	+0.12043 v
" cos B	+9.971v2 v
" sin M	+9.99061 v
Sum	+9.9v213 v
" cos δ	+9.8706v v
" sin δ	+9.9v113 v
Sum	+9.8217v v
" Check	+0.1203v v

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190 Log. 499. = 2.6981 Comps. of Eq. Equation (Encke's Var.) = 29.1906.

λ = 69° 9.4

β = +20 31.4

log cos β = 9.9715

See also p. 184.

This star is R Persei.

Date.	Sun's Long.	Long. ⊙ − ☆	Log. cos Col. 3	Log R	Log Final 2y.	Final 2y.	
Jan. 0	279.2	210.0	n9.937	9.9927	+2.599	+ 398	
10	289.4	220.2	n9.8830	9.9927	+2.5473	+ 351	− 47 − 12
20	299.5	230.3	n9.8053	9.9930	+2.4679	+ 294	− 57 − 10
30	309.7	240.5	n9.6923	9.9935	+2.3554	+ 227	− 67 − 7
Feb. 9	319.8	250.6	n9.5214	9.9942	+2.1853	+ 153	− 74 − 4
19	329.9	260.7	n9.2048	9.9951	+1.8731	+ 75	− 78 − 3
Mar. 1	340.0	270.8	+8.1450	9.9961	n0.8107	− 6	− 81 0
11	350.0	280.8	+9.2729	9.9972	n1.9395	− 87	− 81 + 3
21	0.0	290.8	+9.5504	9.9984	n2.2184	− 165	− 78 + 5
31	9.8	300.6	+9.7068	9.9993	n2.3761	− 238	− 73 + 7
Apr. 10	19.6	310.4	+9.8117	0.0009	n2.4822	− 304	− 66 + 9
20	29.4	320.2	+9.8855	0.0022	n2.5573	− 361	− 57 + 10
30	39.2	330.0	+9.9375	0.0033	n2.6104	− 408	− 47 + 13
May 10	48.8	339.6	+9.9719	0.0043	n2.6452	− 443	− 35 + 11
20	58.5	349.3	+9.9924	0.0053	n2.6673	− 466	− 23 + 14
30	68.1	358.9	+9.9999	0.0060	n2.6755	− 474	− 09 + 14
June 9	77.6	8.4	+9.9953	0.0066	n2.6715	− 469	+ 05 + 12
19	87.2	18.0	+9.9782	0.0070	n2.6548	− 452	+ 17 + 14
29	96.7	27.5	+9.9479	0.0072	n2.6247	− 421	+ 31 + 11
July 9	106.2	37.0	+9.9025	0.0072	n2.5792	− 379	+ 42 + 11
19	115.8	46.6	+9.8370	0.0070	n2.5130	− 326	+ 53 + 9
29	125.4	56.2	+9.7453	0.0066	n2.4210	− 264	+ 62 + 7
Aug. 8	134.9	65.7	+9.6144	0.0060	n2.2900	− 195	+ 69 + 6
18	144.5	75.3	+9.4044	0.0052	n2.0792	− 120	+ 75 + 4
28	154.2	85.0	+9.0403	0.0043	n1.6142	− 41	+ 79 + 1
Sept. 7	163.9	94.7	n8.9135	0.0032	+1.5863	+ 39	+ 80 − 2
17	173.6	104.4	n9.3977	0.0021	+2.0674	+ 117	+ 78 − 3
27	183.4	114.2	n9.6127	0.0009	+2.2832	+ 192	+ 75 − 6

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Date.	Sun's Long.	Long. ☉ − ☆	Log. cos Col. 3.	Log R	Log. Finish Eq.	Finish Eq.	
Oct. 7	193.2	124.0	n9.7476	9.9996	+2.4168	+261	+69 −7
17	203.2	134.0	n9.8418	9.9984	+2.5094	+323	+62 −10
27	213.1	143.9	n9.9074	9.9972	+2.5742	+375	+52 −11
Nov. 6	223.2	154.0	n9.9537	9.9961	+2.6194	+416	+41 −13
16	233.2	164.0	n9.9828	9.9950	+2.6474	+444	+28 −13
26	243.3	174.1	n9.9977	9.9942	+2.6619	+459	+15 −15
Dec. 6	253.5	184.3	n9.9988	9.9935	+2.6619	+459	0 −14
16	263.6	194.4	n9.9861	9.9930	+2.6487	+445	−14 −13
26	273.8	204.6	n9.9587	9.9927	+2.6210	+418	−27

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R.X. Hercules.

R.A. 1900.	= $18^h\ 26^m\ 1^s$	= 276° 30′ 15″
Dec. "	= +12° 32′ 3	
Log tan f	= +9.34713	
" sin t	= n 9.99720	
" tan N	= n 9.34993	
N	= −12° 37′.0	
E	= +23 27.1	
t − E	= −36 4.1	
Log cos (t − E)	= +9.907	
" tan d	= n 0.94306	
Sum	= n 0.85064	
" cos N	= +9.99893	
d 277° 50′.2	= n 0.86126	
Log sin t	n 9.99793	
" tan (N − E)	n 9.8623	
" " β	+9.85828	
β	+35° 44′.8	
" cos (t − E)	+9.907	
" " N	+9.99893	
" Fraction	+9.91820	
" cos β	+9.90899	
" sin t	n 9.99793	
Sum	n 9.90691	
" cos δ	+9.99972	
" sin d	n 9.99720	
Sum	n 9.99672	
" Check.	+9.91819	

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Eros.

(July 6 19h 30m G. m. T. = Time obs.)

(Time obs. = July 6. 20h 24m Ber. m. T.)

1900.

Ber. m. T.	R. A.	Dec.
July 6.	0h 44m 47.22s	+14° 31' 46.6"
7.	44 27.08	+14 0 33.
8.	43 43.11	+13 29 13.1

+1m 40s.3 = 100s.3

.3
026
301
30.18

1A 36.9
60
1080
37
1117.
.3
33 41
3909

20h 24m
12 0
8 24

8h = .3333
24m = .0167
.3500

0h 44m 47s.22 +14° 31' 46".6
+30.19 +6 31.

Pos. Eros. obs. 1900 = 0 46 22.41 +14 38 17.

-2 22.0 -14 30.

cos Eros (obs.)/1A = 0 45 0.4 +14 23 47.

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Nova Aurigæ.

19^h	12^m	$57^s.6$	$-0°$	$23'.9$	(1892)
	$+2$	14.6		$+4.7$	
19	15	16.2	−0	19.2	(1900)

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T Cassiop	222.
S "	305
R Aurigæ	230
R Lyncis	190
R Ursæ Maj.	151
T " "	129.
S " "	113
S Bootis	135
R Camelop.	135
R Draconis	123
S Cygni	161.
T Cephei	194.
S "	252
R Cassiop.	215.

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Remarks to be added in connection with Table of Observations (Vol. 37 - 2)

R Virginis. '94, 6, 3. Estimate recorded as 1t, u 2 but t 1, 2 u was probably intended and has been assumed.

R Scuti. 00, 10, 17. 5308 (13h2) C. obs. (1st obs. on date) Insert remark, Troubled by fog. Region low.

R Scuti. 00, 10, 14 | 5311 | .. | 1c, d1 | v.or | 21, 21 | So.
" " 00, 10, 19 | 5312 | .. | 1c, d1 | v.or | 21, 21 | So.

On both the above dates (c1, 1d) has been assumed and this should go in remarks.

X Cygni. 92, 3, 5 | 2163 | 21.6 | 1β, δ3 | 11.16 | K7, K7 | R

(β1, 3δ) 10.96 | 07, 07 | has been assumed and a remark should go in.

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2.٧٩٤٦	٣٩٣.	2.٣٦٨٢	٢٣٤.	
2.٧٢٦٦	٣٨٦.	2.١٩٧٢	١٧٦.	
2.٤٣٠٦	٢٦٠.	1.٨٦٤٩	٦٧.	
2.٢٨٦١	١٩٤.	0.٩٨٢٣	١٠.	
2.٠٧٠٦	١١٢.	1.٩٦٠٨	٩٣.	
1.٤٣٦٨	٢٦.	2.٢٤١٨	١٦٤.	
1.٦٦٠٦	٧٩.	2.٣٩٨٦	٢٧٠.	
2.١٧٧٤	١٤٣.	2.٧٠٣٤	٣١٩.	
2.٣٤٨٤	٢٢٣.	2.٧٦٤٨	٣٦٨.	
2.٤٦٠٤	٢٩٦.	2.٦٢٩٤	٤٢٦.	
2.٧٧٦٤	٣٦٠.	2.٦٦٤٤	٤٦١.	(٤٦١)
2.٦١٩٤	٤١٤.	2.٦٨٣٤	٤٨٢.	
2.٦٧٩٤	٤٧٦.	2.٦٨٩٨	٤٨٨. +	(٤٨٩)
2.٦٨٧٤	٤٨٤. – (٤٨٧)	2.٦٨٤٤	٤٨٠.	
2.٦٩٨٤	٤٩٩. + (٥٧ ٧٠٠)	2.٦٧٩٤	٤٧٦.	
2.٦٩٩٤	٧٠٠.	2.٦٢١٩	٤١٩.	
2.٦٨٦٤	٤٨٦.			
2.٦٦٢٤	٤٧٩.			
2.٦٢٢٤	٤١٩.			
2.٧٦٧٤	٣٦٦.			
2.٤٨٤٤	٣٠٧.			

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Z Persei.

2	30	50.		+41°	35,3	
	+2	51,0			+11.7	
2	33	41.		+41	46,0	= Pos. 1900,0

+3.20				+0'.26		
	Sec.				Sec.	
	19	00			13	0
	15	20			10	4
	19	1.00			+11	1.30

R Persei.

3	13	39.		+46	2,3	1855.	
	+3	6.			+9.9		
3	16	45.		+46	12,2		(1900)

+4.13				+0.22		
	Sec.				Sec.	
	20	6			11	0
	16	5	2		22	
	14	5.	45		9.9	0

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To carry a star near the Pole forward, by Fabritius' method, to any given epoch.

1st Reduce the R.A. and Dec. of the star, as given in the catalogue, to rectangular coordinates, by the formulas

$x = R \cos d \cos \alpha$ and $y = R \cos d \sin \alpha$ (See Vol. XVIII, No. IX, bottom of page. Then

2d Carry these x and y coordinates forward to the required epoch by the first two formulas given in same paper, near top of p. 270. Then

3d Reduce these latter x's and y's to R.A. and Dec. by the formulas at bottom of p. 282 (same paper)

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No.	X Mean ~~x~~	Y Mean ~~y~~	
11	11.10	5.10	+666.0″ +306.0″
12	15.00	5.59	+900.0″ +335.4″
13	14.40	4.42	+864.0″ +265.2″
+88 112	6.25	15.90	+375.0″ +954.0″
116	15.10	13.75	+906.0″ +825.0″
117	19.75	10.92	
114	18.62	1.10	+1117.2″ +66.0″
115	24.95	−3.50	

18 ~ x

9

114

~~$X = ax + by + c$~~

~~$Y = a'x + b'y + c'$~~

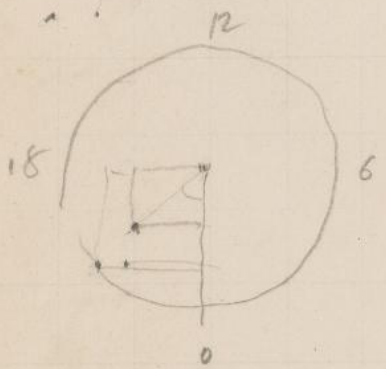
$(x - X)$

$x = aX + bY + c$

$y = a'X + b'Y + c'$

$x' = aX' + bY' + c''$

$y' = aX' + bY' + c'$



$y = ax + b$

$ax + by + c = 0$

$x = x' + x$

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