TABLES

OF

(15) EUNOMIA.

Schubert

TABLES

OF

(15) EUNOMIA,

BY

E. SCHUBERT

COMPUTED FOR THE

AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

BUREAU OF NAVIGATION,
WASHINGTON.
1866.

INTRODUCTION.

THE general perturbations of Eunomia having been computed exactly in the same manner as those of Melpomene, it is only necessary to refer here to the Melpomene-Tables for details, and to give the data which have been used in the computation with the final results thereof.

Elements.

EUNOMIA.

1854, Jan. 0, Washington Mean Time; (oseulating).

$M = 122^\circ\ 10'\ 34''.2$
$\pi = 27\ 47\ 12.1$ } M. Eq. Ep.
$\Omega = 293\ 55\ 42.0$ }
$i = 11\ 44\ 5.2$
$\varphi = 10\ 50\ 11.9$
$\mu = 825''.79753$
$\log a = 0.4220887$

JUPITER (from BOUVARD's Tables).

1854, Jan. 0, Washington Mean Time.

$M = 269^\circ\ 43'\ 39''.1$
$\pi = 11\ 58\ 43.2$ } M. Eq. Ep.
$\Omega = 98\ 56\ 38.7$ }
$i = 1\ 18\ 39.5$
$\varphi = 2\ 45\ 55.1$
$\mu = 299''.12861$
$\log a = 0.7162370$

Perturbations of the Radius Vector in units of the Sixth Decimal Place.

$r^\circ\ \delta r$

i, i'	cos	sin	i, i'	cos	sin	i, i'	cos	sin	i, i'	cos	sin
0 0	− 7.74t		−4 −2	− 0.2	0.0	1 −4	+ 28.6	+ 49.1	−1 −7	− 0.3	− 0.2
1 0	+ 27.09t	− 444.62t	−3 −2	+ 3.0	− 2.5	2 −4	− 104.4	− 56.1	0 −7	+ 1.1	− 0.7
2 0	+ 2.52t	− 41.49t	−2 −2	+ 19.2	− 13.0	3 −4	+ 86.7	− 446.1	1 −7	+ 8.5	+ 3.3
3 0	+ 0.35t	− 5.80t	−1 −2	+ 136.2	− 93.5	4 −4	− 60.4	+ 95.8	2 −7	+ 15.8	+ 11.6
4 0	+ 0.06t	− 0.96t	0 −2	+1869.2	−1287.5	5 −4	− 11.7	+ 19.9	3 −7	+ 23.8	− 21.6
5 0	+ 0.01t	− 0.18t	1 −2	−1693.1	+1184.4	6 −4	− 1.9	+ 2.1	4 −7	− 11.9	− 12.2
6 0		− 0.03t	2 −2	−6071.2	+3841.8	7 −4	− 0.2	− 0.1	5 −7	+ 10.2	+ 3.2
			3 −2	− 565.8	+ 360.1				6 −7	− 4.1	− 7.0
0 0	+ 549.2		4 −2	− 74.7	+ 45.5	−2 −5	+ 0.4	− 0.5	7 −7	− 0.2	+ 2.5
1 0	− 157.8	− 8.5	5 −2	− 12.2	+ 7.0	−1 −5	+ 1.2	+ 2.0	8 −7	+ 0.4	+ 1.7
2 0	+ 23.2	− 12.3	6 −2	− 1.4	+ 1.0	0 −5	− 3.1	+ 12.9	9 −7	+ 0.3	+ 0.4
3 0	+ 1.1	− 2.4	7 −2	0.0	+ 0.1	1 −5	− 45.6	+ 65.4			
4 0	+ 0.4	− 0.1				2 −5	+ 41.5	− 71.6	−1 −8	+ 0.1	0.0
5 0	0.0	+ 0.3	−4 −3	+ 0.3	0.0	3 −5	+ 226.2	+ 142.2	0 −8	+ 0.8	− 0.2
6 0	− 0.2	0.0	−3 −3	+ 2.0	+ 0.3	4 −5	+ 18.1	− 81.1	1 −8	+ 3.3	+ 0.1
7 0	0.0	− 0.2	−2 −3	+ 8.1	+ 1.1	5 −5	− 7.5	+ 34.0	2 −8	+ 31.5	− 14.9
			−1 −3	+ 57.7	− 2.6	6 −5	− 2.1	+ 9.0	3 −8	− 17.4	+ 11.1
−5 −1	+ 0.4	+ 0.1	0 −3	+ 621.4	− 4.3	7 −5	+ 0.1	+ 1.2	4 −8	+ 2.7	− 6.7
−4 −1	− 0.2	+ 0.6	1 −3	+1215.8	−1375.0	8 −5	0.0	+ 0.4	5 −8	− 2.7	+ 1.7
−3 −1	− 1.5	+ 0.2	2 −3	−3385.9	+4687.3				6 −8	+ 3.8	+ 1.4
−2 −1	− 0.1	+ 2.7	3 −3	− 781.8	+ 958.8	−2 −6	+ 0.3	0.0	7 −8	− 2.6	− 3.3
−1 −1	+ 58.7	+ 41.6	4 −3	− 102.2	+ 123.3	−1 −6	− 0.3	+ 0.5	8 −8	+ 0.5	+ 0.8
0 −1	− 731.7	+ 245.2	5 −3	− 12.9	+ 16.5	0 −6	− 3.5	− 0.9	9 −8	0.0	+ 0.6
1 −1	+1802.6	− 579.8	6 −3	− 2.2	+ 3.1	1 −6	− 16.9	− 15.1			
2 −1	+ 343.0	− 110.5	7 −3	− 0.5	+ 0.2	2 −6	− 26.1	+ 26.3			
3 −1	+ 59.4	− 21.4	8 −3	− 0.1	− 0.2	3 −6	+ 51.2	− 64.0			
4 −1	+ 8.5	− 2.1				4 −6	+ 24.5	+ 15.1			
5 −1	+ 0.7	− 0.3	−2 −4	− 0.4	0.0	5 −6	− 6.1	− 28.8			
6 −1	0.0	− 0.4	−1 −4	+ 0.5	− 1.6	6 −6	+ 0.4	+ 9.8			
7 −1	+ 0.2	− 0.1	0 −4	+ 7.8	− 2.8	7 −6	0.0	+ 4.1			
						8 −6	0.0	+ 0.9			

Denoting now the Arguments in the following manner: —

I = $-M'$	XVIII = $2M-5M'$	XXXV = $7M-3M'$
II = $M-M'$	XIX = $M-5M'$	XXXVI = $5M-6M'$
III = $M-2M'$	XX = $3M-5M'$	XXXVII = $-M-5M'$
IV = $M-3M'$	XXI = $5M-3M'$	XXXVIII = $-3M-M'$
V = $3M-2M'$	XXII = $5M-2M'$	XXXIX = $7M-2M'$
VI = $2M-3M'$	XXIII = $-2M-3M'$	XL = $5M-7M'$
VII = $2M-M'$	XXIV = $4M-5M'$	XLI = $5M-8M'$
VIII = $-M-M'$	XXV = $M-6M'$	XLII = $6M-M'$
IX = M	XXVI = $2M-7M'$	XLIII = $-4M-3M'$
X = $3M-M'$	XXVII = $-3M-2M'$	XLIV = $6M-5M'$
XI = $M-4M'$	XXVIII = $3M-7M'$	XLV = $-M-4M'$
XII = $3M-4M'$	XXIX = $3M-8M'$	XLVI = $6M-7M'$
XIII = $-2M-M'$	XXX = $4M-7M'$	XLVII = $8M-3M'$
XIV = $4M-M'$	XXXI = $5M-M'$	XLVIII = $-2M-5M'$
XV = $-M-2M'$	XXXII = $M-8M'$	XLIX = $-M-6M'$
XVI = $4M-3M'$	XXXIII = $5M-4M'$	
XVII = $-M-3M'$	XXXIV = $M-7M'$	

The perturbations of the rectangular coördinates (the plane of the orbit of Eunomia being fundamental-plane) in units of the Sixth Decimal, are: —

	ξ_1		η_1		ζ_1	
	cos	sin	cos	sin	cos	sin
0 M	+ 15.58t		− 88.02t		+ 3.08t	
1 M	+ 1.42t	+581.71t	−570.90t	+ 2.41t	− 10.77t	−154.18t
2 M	− 4.83t	+136.55t	−135.37t	− 4.61t	− 1.00t	− 14.39t
3 M	− 1.37t	+ 30.59t	− 30.40t	− 1.32t	− 0.14t	− 2.01t
4 M	− 0.34t	+ 6.97t	− 6.92t	− 0.33t	0.00	− 0.33t
5 M	− 0.09t	+ 1.61t	− 1.60t	− 0.08t	0.00	− 0.08t
6 M	0.00	+ 0.38t	− 0.36t	0.00	0.00	0.00
7 M	0.00	+ 0.07t	− 0.07t	0.00	0.00	0.00
I	+1370.2	− 403.1	− 407.0	−1232.5	− 181.1	+ 44.9
2 I	−4033.9	+2671.0	+2648.5	+4008.6	+ 190.7	− 114.2
3 I	−1277.4	+ 153.2	+ 157.7	+1263.9	+ 6.7	− 56.1
4 I	− 9.3	− 7.1	− 6.2	+ 8.8	+ 1.0	+ 0.9
5 I	+ 18.2	− 16.2	− 16.4	− 16.9		
6 I	+ 6.0	− 2.4	0.0	− 6.0		
7 I	− 2.2	− 1.0	− 0.9	+ 1.8		
8 I	− 2.0	+ 0.9	+ 1.1	+ 2.0		
II	− 79.4	+ 59.7	− 54.5	− 53.4	+ 172.9	− 53.9
2 II	+2665.1	−1775.8	+1690.3	+2529.3	− 123.7	+ 84.1
3 II	+ 807.8	− 982.8	+ 973.8	+ 806.0	− 54.6	+ 59.5
4 II	− 3.2	+ 58.1	− 46.8	+ 2.1	+ 1.7	− 1.7
5 II	− 13.1	+ 3.0	+ 2.2	− 11.7		
6 II	− 0.7	+ 2.9	0.0	− 0.9		
7 II	0.0	+ 1.2	0.0	0.0		

	ξ_1		η_1		ζ_1	
	cos	sin	cos	sin	cos	sin
III	−2487.1	+1518.2	+1488.7	+2339.3	− 193.2	+ 101.9
2 III	+ 40.9	− 197.9	− 158.9	− 41.4	0.0	− 27.0
3 III	+ 9.6	+ 14.4	+ 1.8	− 37.0	+ 7.9	+ 2.1
4 III	+ 21.3	− 17.0	+ 19.1	+ 23.0	− 0.6	0.0
IV	−1695.2	+2903.8	+2902.8	+1721.5	+ 162.9	− 164.6
2 IV	+ 13.2	− 32.5	− 25.2	− 26.9	− 2.6	− 0.6
V	+1202.5	− 774.7	+ 760.0	+1181.9	− 1.5	0.0
2 V	+ 1.0	+ 1.4	− 1.6	+ 1.0		
VI	+1055.0	+ 366.0	− 117.0	+1341.5	− 507.5	+ 518.5
2 VI	− 14.0	+ 5.0	− 26.2	− 10.4	+ 2.6	+ 5.8
VII	− 634.8	+ 200.6	− 204.2	− 640.0	+ 79.9	− 29.1
2 VII	+ 319.8	− 204.8	+ 202.7	+ 317.1		
3 VII	+ 15.4	− 19.8	+ 19.5	+ 15.4		
VIII	+ 235.1	− 96.1	− 94.2	− 238.4	− 63.1	+ 20.9
2 VIII	− 116.2	+ 80.4	+ 80.5	+ 115.8	+ 2.5	− 1.7
3 VIII	− 11.7	+ 0.8	+ 1.2	+ 15.9		
0 IX	− 69.2		− 14.1		+ 72.3	
1 IX	+ 193.5	+ 1.1	+ 2.2	+ 172.2	− 51.2	+ 4.3
2 IX	+ 51.6	+ 8.1	− 7.7	+ 53.6	− 12.1	
3 IX	+ 6.6	+ 2.4	− 1.9	+ 6.8	− 2.0	
4 IX	+ 0.7	+ 0.6		+ 0.8		
X	− 158.3	+ 50.7	− 49.8	− 157.6	+ 7.9	− 3.1
2 X	+ 20.2	− 12.9	+ 11.8	+ 18.4		
XI	− 60.4	− 139.4	− 137.9	+ 64.1	+ 0.5	+ 16.4
2 XI	− 23.3	+ 19.7	+ 17.8	+ 22.4		
XII	+ 5.5	+ 117.3	+ 6.2	+ 64.6	+ 22.8	− 45.4
2 XII	− 0.7	− 1.4	− 1.2	+ 1.8		
XIII	+ 29.3	− 19.6	− 19.3	− 30.6	− 7.6	+ 2.0
2 XIII	− 6.0	+ 4.1	+ 4.2	+ 6.3		
XIV	− 38.0	+ 12.4	− 12.2	− 37.4	+ 0.9	0.0
2 XIV	+ 1.2	− 0.7	+ 0.7	+ 1.2		
XV	− 600.9	+ 415.0	+ 412.6	+ 599.3	+ 17.2	− 12.3
XVI	+ 238.8	− 305.9	+ 301.0	+ 235.3	− 5.0	+ 4.9
XVII	− 251.6	+ 19.8	+ 18.9	+ 250.1	+ 1.3	− 5.7
XVIII	+ 109.7	+ 101.8	+ 36.0	− 57.1	+ 2.6	− 10.6
XIX	+ 172.1	− 21.8	− 24.5	− 174.9	− 3.9	0.0
XX	− 128.8	− 9.1	− 64.9	− 118.7	+ 4.1	+ 46.0
XXI	+ 61.7	− 79.5	+ 79.1	+ 61.1	− 0.8	+ 0.7
XXII	+ 78.9	− 50.3	+ 50.3	+ 78.8		
XXIII	− 53.3	+ 3.8	+ 3.7	+ 53.9	0.0	− 0.8
XXIV	− 53.1	+ 2.8	+ 32.0	− 44.0	+ 2.3	− 5.1
XXV	+ 26.9	− 53.6	− 11.2	− 28.2		

	ξ_1		η_1		ζ_1	
	cos	sin	cos	sin	cos	sin
XXVI	+ 28.9	− 17.8	− 20.7	− 26.4		
XXVII	− 24.7	+ 17.1	+ 17.1	+ 24.8		
XXVIII	+ 14.1	− 2.3	− 2.9	+ 31.7		
XXIX	+ 18.9	− 11.1	− 5.3	+ 5.2		
XXX	− 9.5	+ 11.5	− 8.9	− 18.0		
XXXI	− 9.1	+ 2.9	− 3.2	− 9.4		
XXXII	− 8.4	+ 4.4	+ 4.5	+ 8.6		
XXXIII	+ 1.9	+ 9.9	− 9.8	+ 2.2	. . .	− 1.4
XXXIV	− 7.0	− 2.4	− 1.3	+ 7.1		
XXXV	+ 3.6	− 4.9	+ 4.6	+ 3.5		
XXXVI	− 4.1	+ 7.6	+ 2.9	− 5.2	. . .	− 2.0
XXXVII	+ 3.1	− 4.6	− 3.9	− 3.1		
XXXVIII	+ 4.2	− 4.0	− 4.5	− 4.4	− 1.0	
XXXIX	+ 4.4	− 2.8	+ 2.7	+ 4.3		
XL	− 3.1	0.0	− 5.7	+ 1.1	+ 0.6	+ 1.3
XLI	+ 3.9	− 0.8	+ 1.2	+ 0.9		
XLII	− 2.2	+ 0.7	− 0.7	− 4.3		
XLIII	− 2.6	0.0	0.0	+ 2.4		
XLIV	− 2.8	− 0.6	+ 0.9	− 2.9		
XLV	− 2.1	− 0.7	− 0.8	+ 1.7		
XLVI	− 0.5	+ 2.1	+ 1.2	− 0.9		
XLVII	+ 0.8	− 1.0	+ 1.0	+ 0.7		
XLVIII	+ 0.5	− 1.3	− 1.1	− 1.0		
XLIX	+ 1.5	0.0	0.0	− 1.2		

Normal Places referred to the Mean Equinox 1854.0.

Berlin M. T.	α	δ	Berlin M. T.	α	δ
1851 August 20.5	271° 57′ 19″.76	− 24° 27′ 41″.28	1856 October 15.5	10° 36′ 41″.36	+ 28° 2′ 54″.83
1852 January 3.5	313 46 58.27	− 12 41 35.93	1858 February 25.5	152 28 4.57	− 1 26 19.94
1852 July 19.5	49 6 27.33	+ 28 59 10.56	1859 May 24.5	219 25 28.73	− 31 21 19.01
1853 January 8.5	66 35 15.96	+ 30 46 35.07	1860 August 24.5	325 45 51.73	− 0 49 25.31
1854 March 13.5	174 6 44.57	− 14 27 46.74			

By means of which and the above perturbations were obtained for a first approximation:—

$\delta M = -1'\ 31''.2$ $\quad \delta\varphi = -2'\ 39''.3$ $\quad \delta\pi = +4'\ 44''.9$ $\quad \delta\Omega = -3'\ 34''.4$

$\delta i = +11''.9$ $\quad \delta\mu = -0''.34332$

and by adding these corrections to the elements from which we have started we get the corrected elliptical elements:—

1854.0, Washington Mean Time.

M 122° 9′ 3″.0

π 27 51 57.0 } M. Eq. Eps.

Ω 293 52 7.6 }

i 11 44 17.1

φ 10 47 32.6

μ 825″.45421

$\log a$ 0.4222090

In order to neglect nothing these elements were corrected once more. The equations of condition from the second computation of the normals and the differential-coefficients are:—

+1.1841	−2.4611	+1.2622	+0.0378	+0.0167	−10.9529	− 8.81
+0.7803	−1.2954	+0.6485	+0.0456	−0.1779	− 5.9148	− 1.35
+1.1872	+0.4821	+0.7994	−0.0185	−0.1462	− 5.6645	+ 2.34
+2.0201	+2.4619	+1.5174	−0.0391	−0.0107	− 7.9145	− 1.79
+0.9476	+1.1690	+1.2832	+0.0326	−0.6368	+ 0.6934	+ 8.55
+2.4555	−0.5757	+1.6567	−0.0534	−0.7658	+24.7850	+16.76
+1.0839	+1.9946	+1.3062	+0.0871	−0.5068	+16.3537	−14.56
+1.0058	−0.9330	+1.4029	−0.0617	−0.3101	+19.5445	+ 9.64
+1.9221	−2.8205	+1.5224	+0.1120	−0.5060	+46.5036	−10.68
δM	$\delta \varphi$	$\delta \pi$	$\delta \Omega$	δi	$100\,\delta \mu$	
+0.2872	−0.5734	+0.2883	−0.2788	−0.0807	− 2.5003	+ 4.20
+0.4088	−0.6695	+0.3380	−0.1258	+0.3468	− 3.0799	+ 0.15
+0.1957	+0.0852	+0.1318	+0.0118	+0.8800	− 0.9257	+ 0.39
+0.0327	+0.0568	+0.0273	+0.2793	+0.7637	− 0.0953	+ 1.68
−0.5059	−0.5362	−0.7003	+0.1250	−1.1525	− 0.6020	− 7.66
+1.1626	+0.1397	+0.7786	−0.0262	+1.6109	+12.3054	+ 5.37
−0.6061	−1.0770	−0.7511	+0.2079	−0.8779	− 9.3529	+ 6.84
−0.2668	+0.3282	−0.3615	−0.1265	−1.2442	− 5.3754	− 1.14
+1.1118	−1.4654	+0.8526	−0.2561	+0.8961	+27.2230	− 7.34

$= 0$

Final Equations.

+ 23.8806	− 3.9333	+ 20.0588	−0.4640	− 0.0002	+ 197.8080	+ 9.833
− 3.9333	+ 33.0398	− 2.7307	+0.0269	+ 0.4937	− 143.9647	+ 18.077
+ 20.0588	− 2.7307	+ 18.0722	−0.3962	− 0.0153	+ 167.6261	+ 4.063
− 0.4640	+ 0.0269	− 0.3962	+0.3461	− 0.3040	− 3.7281	− 2.412
− 0.0002	+ 0.4937	− 0.0153	−0.3040	+10.1839	+ 2.5371	− 1.062
+197.8080	−143.9647	+167.6261	−3.7281	+ 2.5371	+4702.3730	−218.109
δM	$\delta \varphi$	$\delta \pi$	$\delta \Omega$	δi	$100\,\delta \mu$	

$= 0$

from which,

$\delta M = -4''.00$ $\quad \delta \varphi = -0''.38$ $\quad \delta \pi = +3''.55$ $\quad \delta \Omega = +6''.85$

$\delta i = +0''.31$ $\quad \delta \mu = +0''.00082$

so that we finally have the corrected elements for the construction of the Tables:—

1854.0, Washington Mean Time.

M	122° 8′ 58″.91	
π	27 52 0.51	M. Eq. Ep.
Ω	293 52 14.49	M. Eq. Ep.
i	11 44 17.36	
φ	10 47 32.18	
μ	825″.45503	
$\log a$	0.4222087	

By these elements the normals are represented thus:—

	$\Delta\alpha \cos\delta$	$\Delta\delta$		$\Delta\alpha \cos\delta$	$\Delta\delta$
51	−8″.7	+2″.2	56	+14″.5	+4′.8
52	−1.9	−1.0	58	−13.3	+7.4
53	−0.4	+0.3	59	+12.0	−3.2
53	−6.3	+3.8	60	− 7.5	−7.5
54	+9.0	−7.5			

The greater residuals are evidently the effect of the neglected perturbations by Saturn, so that the whole speaks well for the perturbations by Jupiter.

Example for computing a Place from the Tables.

1863, April $18^d.5$, Berlin M. T. = April $18^d\ 5^h\ 58^m\ 15^s$ Washington M. T.

$\log e$	$\log \frac{1-e}{1+e}$	$\log p$
9.272419	9.835416	0.406708

We will refer the place to the apparent equinox. Precession from the beginning of the year up to April $18^d.5 = +\ 14''.93$; Notation $= +\ 15''.28$; therefore Variation of $\Omega = +\ 30''.2$; Apparent Obliquity minus Mean Obliquity at the beginning of the year $= -\ 3''.1$.

		$\cos(x_1 x)$	$\cos(y_1 x)$	$\cos(z_1 x)$	$\cos(x_1 y)$	$\cos(y_1 y)$
Table V.,	1863,	9.936487	9.670264n	9.269220n	9.534017	9.911812
Table VI.	$+\ 30''.2$	-31.1	$+120.8$	-29.3	$+148.9$	-32.3
	$-\ 3''.1$				$+6.2$	$-\ 4.0$
		9.936456	9.670385n	9.269191n	9.534172	9.911784

		$\cos(z_1 y)$	$\cos(x_1 z)$	$\cos(y_1 z)$	$\cos(z_1 z)$
Table V.,	1863,	9.668033n	9.567775	9.529821	9.937137
Table VI.	$+\ 30''.2$	$+23.2$	$+59.5$	-30.5	-5.1
	$-\ 3''.1$	-11.8	-6.2	-15.5	$+3.1$
		9.668044n	9.567828	9.529775	9.937135

		A'	B'	C'	$\log \sin a$	$\log \sin b$	$\log \sin c$
Table VII.,	1863,	$118^\circ\ 26'\ 43''.1$	$22^\circ\ 43'\ 59''.7$	$47^\circ\ 30'\ 1''.2$	9.992366	9.946935	9.700141
Table VIII.	$+30''.2$	$+30.29$	$+30.41$	$+22.14$	$+0.9$	-6.0	$+15.9$
	$-\ 3''.1$		$+\ 0.65$	$+\ 2.26$		$+3.1$	$-\ 9.3$
		118 27 13.4	22 44 30.8	47 30 25.6	9.992367	9.946932	9.700148

	M	t
Table I., 1863	$155^\circ\ 50'\ 9''.59$	$+8.99932$
April	20 38 10.95	0.24642
18 days	4 7 38.19	0.04928
5 hours	2 51.97	0.00057
58 minutes	33.25	
15 seconds	0.14	
	180 39 24.09	$+9.29559$

M = mean anomaly, and t = time since 1854.0.

$\cot \frac{1}{2} M$	$90^\circ\ 19'\ 42''.1$	7.758234n
$\frac{1-e}{1+e} \cot \frac{1}{2} M = \cot \frac{1}{2} v'$	90 13 29.2	7.593650n
v'	180 26 58.4	
From Table II. $c +$	29.3	
v	180 27 27.7	
$\cos v$		9.999986n
$e \cos v$	-0.187243	9.272405n
$1 + e \cos v$	$+0.812757$	9.909961
r		0.496747

Formation of the Arguments from Table III.*

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
1863,	177.178	333.014	150.192	327.370	101.86	123.21	128.85	21.34	155.84	284.69
April,	352.523	13.158	5.680	358.200	46.94	18.83	33.79	331.89	20.64	54.43
18 days	358.504	2.632	1.136	359.640	9.39	3.76	6.76	354.38	4.12	10.89
6 hours	359.979	0.037	0.016	359.995	0.13	0.05	0.10	359.92	0.05	0.15
	168.184	348.841	157.024	325.205	158.32	145.85	169.50	347.53	180.65	350.16

	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.
1863,	144.55	96.22	225.51	80.5	198.5	74.9	15.7	117.6	321.7	273.4
April,	350.73	31.99	311.24	75.1	324.4	60.1	316.9	3.9	343.3	24.5
18 days	358.15	6.40	350.24	15.0	352.8	12.0	351.4	0.7	356.6	4.9
6 hours	359.98	0.09	359.86	0.2	359.9	0.2	359.9	0.0	359.9	0.1
	133.41	134.70	166.85	170.8	155.6	147.2	323.9	122.2	301.5	302.9

	XXI.	XXII.	XXIII.	XXIV.	XXV.	XXVI.	XXVII.	XXVIII.	XXIX.	XXX.
1863,	230.7	53.5	219.9	69.2	138.9	111.9	246.8	267.8	84.9	63.6
April,	80.7	88.2	296.3	45.2	335.8	348.9	283.2	9.6	2.1	30.2
18 days	16.2	17.6	347.2	9.0	355.2	357.8	344.7	2.0	0.4	6.1
6 hours	0.2	0.3	359.8	0.1	359.9	0.0	359.8	0.0	0.0	0.0
	327.8	159.6	143.2	123.5	109.8	98.6	154.5	279.4	87.4	99.9

	XXXI.	XXXII.	XXXIII.	XXXIV.	XXXV.	XXXVI.	XXXVII.	XXXVIII.	XXXIX.	XL.
1863,	236	133	48	316	182	42	10	70	5	219
April,	96	321	73	328	122	58	302	291	130	51
18 days	19	353	15	353	25	11	349	346	26	10
	351	87	136	277	329	111	301	347	161	280

	XLI.	XLII.	XLIII.	XLIV.	XLV.	XLVI.	XLVII.	XLVIII.	XLIX.
1863,	37	32	268	21	193	15	338	214	187
April,	43	116	255	87	310	71	143	281	294
18 days	9	23	339	18	350	14	29	345	347
	89	171	142	126	133	100	150	119	108

* The Arguments being expressed in degrees and decimals, 360.0, 720.0, or 1080.0, must be subtracted when one of the sums is greater than one of those numbers.

From Table IV.

	ξ'		η'		ζ'				
	+	−	+	−	+	−			
ι	56.8		3460.1		134.8		$\cos(x_1 x)$ ξ'	− 1558.3	
I		5081.9	1559.0		368.8		$\cos(y_1 x)$ η'	− 3380.7	
II	4208.1		904.8			42.3	$\cos(z_1 x)$ ζ'	− 280.3	
III	3079.5			596.9	236.2		ξ	− 5219.3	
IV		3014.0	1418.0		227.6				
V		1403.9		271.7	1.4		$\cos(x_1 y)$ ξ'	− 617.1	
VI		677.8	849.5		706.6		$\cos(y_1 y)$ η'	+ 5894.0	
VII	1009.3		151.2			83.9	$\cos(z_1 y)$ ζ'	− 702.1	
VIII	101.6			25.2		63.1	η	+ 4574.8	
IX		216.9		23.0	113.4				
X		141.3		17.1	8.3		$\cos(x_1 z)$ ξ'	− 666.8	
XI		78.2	117.9		11.6		$\cos(y_1 z)$ η'	+ 2445.6	
XII	81.1		39.7			48.3	$\cos(z_1 z)$ ζ'	+ 1304.7	
XIII		40.1	12.9		7.8		ζ	+ 3083.5	
XIV	40.8		6.4			0.9		° ′ ″	
XV	718.5			130.8		20.6	$\sin(A' + v)$	298 54 41.1	9.942191_n
XVI		366.4		125.6	6.8		$r \sin a$		0.489114
XVII		214.8		132.1	4.5		x		0.431305_n
XVIII	27.7			67.4		10.4	$\sin(B' + v)$	203 11 58.5	9.595425_n
XIX	108.6		136.1			2.1	$r \sin b$		0.443679
XX		61.3	63.4			36.2	y		0.039104_n
XXI	94.6		34.3			1.0	$\sin(C' + v)$	227 57 52.3	9.870833_n
XXII		91.3		19.8			$r \sin c$		0.196895
XXIII	44.7		29.3			0.5	z		0.067728_n
XXIV	31.6			54.3		5.5			
XXV		59.6		22.7			y	−1.094218	
XXVI		21.9		23.0			η	+ 4575	
XXVII	29.7			4.7			Y	+0.438486	
XXVIII	4.7			31.7			$\Delta \cos\delta \sin\alpha$	−0.651157	9.813686_n
XXIX		10.2	5.0				x	−2.699635	
XXX	12.9			16.2		0.2	ξ	− 5219	
XXXI		9.3		1.5			X	+0.883932	
XXXII	3.8		8.8				$\Delta \cos\delta \cos\alpha$	−1.820922	0.260291_n
XXXIII	5.5		8.5			1.0	$\cos\alpha$	° ′ ″	9.973869_n
XXXIV	1.5			7.2			$\tan\alpha$	199 40 37.0	9.553395
XXXV	5.5		2.2						
XXXVI	8.5			5.8		1.8			
XXXVII	5.6		0.7				z	−1.168768	
XXXVIII	5.0			3.2		0.9	ζ	+ 3084	
XXXIX		5.0		1.0			Z	+0.190261	
XL		0.5		2.1		1.2	$\Delta \sin\delta$	−0.975423	9.989193_n
XLI		0.8		0.9			$\Delta \cos\delta$		0.286422
XLII	2.2		0.3				$\cos\delta$	° ′ ″	9.950780
XLIII	2.0		1.4				$\tan\delta$	−26 45 58.1	9.702771_n
XLIV	1.1			2.9					
XLV	1.1		1.8				Δ		0.335642
XLVI	2.2			1.1					
XLVII		1.1		0.5					
XLVIII		1.4		0.3					
XLIX		0.3		1.1					
	9694.2	11498.0	8811.3	1589.9	1827.9	319.9			
ξ', η', ζ'	−1803.8		+7221.5		+1507.9				

For the computation of an opposition ephemeris, only the secular perturbations and the first thirty terms will be necessary, since the remaining nineteen terms have no notable effect upon the geocentric place, the sum of them being always near zero. The ephemeris for 1863 from the manuscript Tables had been computed with those terms; from the above complete computation follows the correction of the ephemeris for April 18.5 in α $-0^s.01$ and in δ $+0''.8$. The comparison of a Berlin meridional observation on the 17th with the ephemeris gave comp. obs. in α $+0^s.53$ and in δ $-5''.7$, or, with the corrected ephemeris, $+0^s.52$ and $4''.9$. Since the perturbations by Saturn have been neglected, and this compared observation is four years after the last of the Normals used for the determination of the elements, the Tables can be considered satisfactory.

TABLE I.

FOR THE MEAN ANOMALY.

The times are referred to the meridian of Washington.

Years.	M	t	Years.	M	t
	° ′ ″			° ′ ″	
1851	230 50 40.20	− 3.00068	1876B	164 44 55.54	+22.00137
1852B	314 45 56.74	1.99863	1877	248 26 26.63	23.00068
1853	38 27 27.82	− 0.99932	1878	332 7 57.71	24.00000
1854	122 8 58.91	0.00000	1879	55 49 28.80	24.99932
1855	205 50 30.00	+ 0.99932	1880B	139 44 45.34	26.00137
1856B	289 45 46.54	2.00137	1881	223 26 16.43	27.00068
1857	13 27 17.62	3.00068	1882	307 7 47.51	28.00000
1858	97 8 48.71	4.00000	1883	30 49 18.60	28.99932
1859	180 50 19.80	4.99932	1884B	114 44 35.14	30.00137
1860B	264 45 36.34	6.00137	1885	198 26 6.23	31.00068
1861	348 27 7.42	7.00068	1886	282 7 37.31	32.00000
1862	72 8 38.51	8.00000	1887	5 49 8.40	32.99932
1863	155 50 9.59	8.99932	1888B	89 44 24.94	34.00137
1864B	239 45 26.14	10.00137	1889	173 25 56.03	35.00068
1865	323 26 57.22	11.00068	1890	257 7 27.11	36.00000
1866	47 8 28.32	12.00000	1891	340 48 58.20	36.99932
1867	130 49 59.40	12.99932	1892B	64 44 14.74	38.00137
1868B	214 45 15.94	14.00137	1893	148 25 45.82	39.00068
1869	298 26 47.03	15.00068	1894	232 7 16.91	40.00000
1870	22 8 18.12	16.00000	1895	315 48 48.00	40.99932
1871	105 49 49.20	16.99932	1896B	39 44 4.54	42.00137
1872B	189 45 5.74	18.00137	1897	123 25 35.62	43.00068
1873	273 26 36.83	19.00068	1898	207 7 6.71	44.00000
1874	357 8 7.92	20.00000	1899	290 48 37.80	44.99932
1875	80 49 39.00	+20.99932	1900B	14 43 54.34	+46.00137

Months.	M	t	Days.	M	t
	° ′ ″			° ′ ″	
January	0 0 0.00	+ 0.00000	1	0 13 45.46	+ 0.00274
February	7 6 29.11	0.08488	2	0 27 30.91	0.00548
March	13 31 41.85	0.16154	3	0 41 16.37	0.00821
April	20 38 10.95	0.24642	4	0 55 1.82	0.01095
May	27 30 54.60	0.32856	5	1 8 47.28	0.01369
June	34 37 23.71	0.41344	6	1 22 32.73	0.01643
July	41 30 7.36	0.49558	7	1 36 18.19	0.01917
August	48 36 36.47	0.58046	8	1 50 3.64	0.02190
September	55 43 5.57	0.66534	9	2 3 49.10	0.02464
October	62 35 49.22	0.74748	10	2 17 34.55	0.02738
November	69 42 18.33	0.83236	20	4 35 9.10	0.05476
December	76 35 1.98	+ 0.91450	30	6 52 43.65	+ 0.08214

In Bissextile Years one day must be subtracted from the date in the first two months.

TABLE I. — *Concluded.*

FOR THE MEAN ANOMALY.

The times are referred to the meridian of Washington.

Hours.	M	t	Hours.	M	t
	′ ″			′ ″	
1	0 34.39	+0.00011	13	7 27.12	+0.00149
2	1 8.79	0.00023	14	8 1.52	0.00160
3	1 43.18	0.00034	15	8 35.91	0.00172
4	2 17.58	0.00046	16	9 10.30	0.00183
5	2 51.97	0.00057	17	9 44.70	0.00195
6	3 26.36	0.00069	18	10 19.09	0.00206
7	4 0.76	0.00080	19	10 53.49	0.00218
8	4 35.15	0.00092	20	11 27.88	0.00229
9	5 9.55	0.00103	21	12 2.27	0.00241
10	5 43.94	0.00114	22	12 36.67	0.00252
11	6 18.33	0.00126	23	13 11.06	0.00264
12	6 52.73	+0.00137	24	13 45.46	+0.00275

	M			M	
	For Minutes.	For Seconds.		For Minutes.	For Seconds.
	″	″		″	″
1	0.57	0.01	31	17.77	0.29
2	1.15	0.02	32	18.34	0.30
3	1.72	0.03	33	18.92	0.31
4	2.29	0.04	34	19.49	0.32
5	2.87	0.05	35	20.06	0.33
6	3.44	0.06	36	20.64	0.34
7	4.01	0.07	37	21.21	0.35
8	4.59	0.08	38	21.78	0.36
9	5.16	0.09	39	22.35	0.37
10	5.73	0.10	40	22.93	0.38
11	6.31	0.10	41	23.50	0.39
12	6.88	0.11	42	24.07	0.40
13	7.45	0.12	43	24.65	0.41
14	8.02	0.13	44	25.22	0.42
15	8.60	0.14	45	25.79	0.43
16	9.17	0.15	46	26.37	0.44
17	9.74	0.16	47	26.94	0.45
18	10.32	0.17	48	27.51	0.46
19	10.89	0.18	49	28.09	0.47
20	11.46	0.19	50	28.66	0.48
21	12.04	0.20	51	29.23	0.48
22	12.61	0.21	52	29.81	0.49
23	13.18	0.22	53	30.38	0.50
24	13.76	0.23	54	30.95	0.51
25	14.33	0.24	55	31.53	0.52
26	14.90	0.25	56	32.10	0.53
27	15.48	0.26	57	32.67	0.54
28	16.05	0.27	58	33.25	0.55
29	16.62	0.28	59	33.82	0.56
30	17.20	0.29	60	34.39	0.57

TABLE II.

FOR THE CORRECTION c TO BE ADDED TO THE AUXILIARY ANOMALY v'.

Argument = M. For $M > 180°$ the Argument is $360° - M$, and the sign of c to be reversed.

Arg.	c	Diff.	Arg.	c	Diff.	Arg.	c	Diff.	Arg.	c	Diff.
°	′ ″	″	°	′ ″	″	°	′ ″	″	°	′ ″	″
0.0	0 0.00	+47·32	22.5	+28 54.12	+22·08	45.0	+29 59.12	−17·97	67.5	+ 8 59.88	−33·35
.5	+ 0 47.32	47·28	23.0	29 16.20	21·14	.5	29 41.15	18·64	68.0	8 26.53	33·37
1.0	1 34.60	47·23	.5	29 37.34	20·18	46.0	29 22.51	19·30	.5	7 53.16	33·38
.5	2 21.83	47·16	24.0	29 57.52	19·22	.5	29 3.21	19·94	69.0	7 19.78	33·37
2.0	3 8.99	47·05	.5	30 16.74	18·26	47.0	28 43.27	20·57	.5	6 46.41	33·36
.5	3 56.04	46·90	25.0	30 35.00	17·29	.5	28 22.70	21·18	70.0	6 13.05	33·34
3.0	4 42.94	46·75	.5	30 52.29	16·33	48.0	28 1.52	21·78	.5	5 39.71	33·29
.5	5 29.68	46·55	26.0	31 8.62	15·37	.5	27 39.74	22·35	71.0	5 6.42	33·24
4.0	6 16.23	46·32	.5	31 23.99	14·39	49.0	27 17.39	22·92	.5	4 33.18	33·18
.5	7 2.55	46·07	27.0	31 38.38	13·43	.5	26 54.47	23·48	72.0	4 0.00	33·11
5.0	7 48.62	45·79	.5	31 51.81	12·45	50.0	26 30.99	24·01	.5	3 26.89	33·02
.5	8 34.41	45·46	28.0	32 4.26	11·48	.5	26 6.98	24·53	73.0	2 53.87	32·93
6.0	9 19.87	45·10	.5	32 15.74	10·50	51.0	25 42.45	25·04	.5	2 20.94	32·82
.5	10 4.97	44·74	29.0	32 26.24	9·53	.5	25 17.41	25·53	74.0	1 48.12	32·71
7.0	10 49.71	44·36	.5	32 35.77	8·55	52.0	24 51.88	26·01	.5	1 15.41	32·60
.5	11 34.07	43·95	30.0	32 44.32	7·58	.5	24 25.87	26·47	75.0	0 42.81	32·47
8.0	12 18.02	43·52	.5	32 51.90	6·62	53.0	23 59.40	26·91	.5	+ 0 10.34	32·31
.5	13 1.54	43·06	31.0	32 58.52	5·65	.5	23 32.49	27·34	76.0	− 0 21.97	32·17
9.0	13 44.60	42·58	.5	33 4.17	4·69	54.0	23 5.15	27·76	.5	0 54.14	32·01
.5	14 27.18	42·06	32.0	33 8.86	3·74	.5	22 37.39	28·15	77.0	1 26.15	31·84
10.0	15 9.24	41·54	.5	33 12.60	2·79	55.0	22 9.24	28·53	.5	1 57.99	31·67
.5	15 50.78	40·97	33.0	33 15.39	1·85	.5	21 40.71	28·89	78.0	2 29.66	31·48
11.0	16 31.75	40·39	.5	33 17.24	+ 0·91	56.0	21 11.82	29·23	.5	3 1.14	31·28
.5	17 12.14	39·77	34.0	33 18.15	− 0·02	.5	20 42.59	29·58	79.0	3 32.42	31·08
12.0	17 51.91	39·12	.5	33 18.13	0·94	57.0	20 13.01	29·90	.5	4 3.50	30·87
.5	18 31.03	38·47	35.0	33 17.19	1·86	.5	19 43.11	30·21	80.0	4 34.37	30·66
13.0	19 9.50	37·80	.5	33 15.33	2·76	58.0	19 12.90	30·50	.5	5 5.03	30·43
.5	19 47.30	37·12	36.0	33 12.57	3·66	.5	18 42.40	30·78	81.0	5 35.46	30·20
14.0	20 24.42	36·43	.5	33 8.91	4·55	59.0	18 11.62	31·05	.5	6 5.66	29·96
.5	21 0.85	35·70	37.0	33 4.36	5·44	.5	17 40.57	31·31	82.0	6 35.62	29·72
15.0	21 36.55	34·96	.5	32 58.92	6·31	60.0	17 9.26	31·52	.5	7 5.34	29·46
.5	22 11.51	34·20	38.0	32 52.61	7·18	.5	16 37.74	31·73	83.0	7 34.80	29·20
16.0	22 45.71	33·43	.5	32 45.43	8·02	61.0	16 6.01	31·94	.5	8 4.00	28·93
.5	23 19.14	32·63	39.0	32 37.41	8·86	.5	15 34.07	32·13	84.0	8 32.93	28·66
17.0	23 51.77	31·82	.5	32 28.55	9·69	62.0	15 1.94	32·31	.5	9 1.59	28·38
.5	24 23.59	30·98	40.0	32 18.86	10·51	.5	14 29.63	32·47	85.0	9 29.97	27·10
18.0	24 54.57	30·12	.5	32 8.35	11·31	63.0	13 57.16	32·62	.5	9 58.07	27·81
.5	25 24.69	29·27	41.0	31 57.04	12·10	.5	13 24.54	32·75	86.0	10 25.88	27·52
19.0	25 53.96	28·41	.5	31 44.94	12·88	64.0	12 51.79	32·88	.5	10 53.40	27·21
.5	26 22.37	27·54	42.0	31 32.06	13·65	.5	12 18.91	32·98	87.0	11 20.61	26·91
20.0	26 49.91	26·65	.5	31 18.41	14·40	65.0	11 45.93	33·08	.5	11 47.52	26·60
.5	27 16.56	25·76	43.0	31 4.01	15·14	.5	11 12.85	33·15	88.0	12 14.12	26·28
21.0	27 42.32	24·85	.5	30 48.87	15·87	66.0	10 39.70	33·22	.5	12 40.40	25·96
.5	28 7.17	23·94	44.0	30 33.00	16·59	.5	10 6.48	33·28	89.0	13 6.36	25·64
22.0	28 31.11	+23·01	.5	30 16.41	−17·29	67.0	9 33.20	−33·32	.5	13 32.00	−25·30
.5	+28 54.12		45.0	+29 59.12		.5	+ 8 59.88		90.0	−13 57.30	

$\cot \frac{1}{2} v' = \frac{1-e}{1+e} \cot \frac{1}{2} M$ True Anomaly $v = v' + c$ $\log \frac{1-e}{1+e} = 9.8354158$

$r = \frac{p}{1 + e \cos v}$ $\log p = 0.4067081$ $\log e = 9.2724191$

TABLE II.— *Concluded.*

FOR THE CORRECTION c TO BE ADDED TO THE AUXILIARY ANOMALY v'.

Argument = M. For $M > 180°$ the Argument is $360° - M$, and the sign of c to be reversed.

Arg.	c	Diff.	Arg.	c	Diff.	Arg.	c	Diff.	Arg.	c	Diff.
°	′ ″	″	°	′ ″	″	°	′ ″	″	°	′ ″	″
90.0	−13 57.30	−24.98	112.5	−26 30.64	− 7.73	135.0	−26 10.44	+ 8.27	157.5	−15 44.57	+18.68
.5	14 22.28	24.64	113.0	26 38.37	7.33	.5	26 2.17	8.57	158.0	15 25.89	18.84
91.0	14 46.92	24.29	.5	26 45.70	6.98	136.0	25 53.60	8.87	.5	15 7.05	18.98
.5	15 11.21	23.94	114.0	26 52.63	6.54	.5	25 44.73	9.16	159.0	14 48.07	19.14
92.0	15 35.15	23.60	.5	26 59.17	6.15	137.0	25 35.57	9.46	.5	14 28.93	19.28
.5	15 58.75	23.24	115.0	27 5.32	5.76	.5	25 26.11	9.74	160.0	14 9.65	19.40
93.0	16 21.99	22.89	.5	27 11.08	5.37	138.0	25 16.37	10.03	.5	13 50.25	19.55
.5	16 44.88	22.53	116.0	27 16.45	4.98	.5	25 6.34	10.32	161.0	13 30.70	19.69
94.0	17 7.41	22.17	.5	27 21.43	4.60	139.0	24 56.02	10.59	.5	13 11.01	19.82
.5	17 29.58	21.80	117.0	27 26.03	4.22	.5	24 45.43	10.87	162.0	12 51.19	19.95
95.0	17 51.38	21.43	.5	27 30.25	3.93	140.0	24 34.56	11.15	.5	12 31.24	20.08
.5	18 12.81	21.06	118.0	27 34.18	3.35	.5	24 23.41	11.41	163.0	12 11.16	20.19
96.0	18 33.87	20.68	.5	27 37.53	3.08	141.0	24 12.00	11.68	.5	11 50.97	20.32
.5	18 54.55	20.32	119.0	27 40.61	2.69	.5	24 0.32	11.95	164.0	11 30.65	20.42
97.0	19 14.87	19.93	.5	27 43.30	2.32	142.0	23 48.37	12.20	.5	11 10.23	20.54
.5	19 34.80	19.55	120.0	27 45.62	1.95	.5	23 36.17	12.47	165.0	10 49.69	20.64
98.0	19 54.35	19.17	.5	27 47.57	1.57	143.0	23 23.70	12.72	.5	10 29.05	20.75
.5	20 13.52	18.79	121.0	27 49.14	1.20	.5	23 10.98	12.97	166.0	10 8.30	20.64
99.0	20 32.31	18.41	.5	27 50.34	0.83	144.0	22 58.01	13.22	.5	9 47.46	20.94
.5	20 50.72	18.01	122.0	27 51.17	0.47	.5	22 44.79	13.46	167.0	9 26.52	21.03
100.0	21 8.73	17.63	.5	27 51.61	− 0.10	145.0	22 31.33	13.71	.5	9 5.49	21.12
.5	21 26.36	17.24	123.0	27 51.74	+ 0.26	.5	22 17.62	13.95	168.0	8 44.37	21.21
101.0	21 43.60	16.85	.5	27 51.48	0.63	146.0	22 3.67	14.18	.5	8 23.16	21.29
.5	22 0.45	16.45	124.0	27 50.85	0.99	.5	21 49.49	14.41	169.0	8 1.87	21.37
102.0	22 16.90	16.06	.5	27 49.86	1.34	147.0	21 35.08	14.65	.5	7 40.50	21.44
.5	22 32.96	15.66	125.0	27 48.52	1.69	.5	21 20.43	14.87	170.0	7 19.06	21.51
103.0	22 48.62	15.27	.5	27 46.83	2.05	148.0	21 5.56	15.09	.5	6 57.55	21.58
.5	23 3.89	14.87	126.0	27 44.78	2.39	.5	20 50.47	15.31	171.0	6 35.97	21.64
104.0	23 18.76	14.48	.5	27 42.39	2.75	149.0	20 35.16	15.53	.5	6 14.33	21.71
.5	23 33.24	14.07	127.0	27 39.61	3.09	.5	20 19.63	15.73	172.0	5 52.62	21.77
105.0	23 47.31	13.68	.5	27 36.55	3.44	150.0	20 3.90	15.95	.5	5 30.85	21.61
.5	24 0.99	13.28	128.0	27 33.11	3.77	.5	19 47.95	16.15	173.0	5 9.04	21.86
106.0	24 14.27	12.88	.5	27 29.34	4.12	151.0	19 31.80	16.36	.5	4 47.18	21.91
.5	24 27.15	12.49	129.0	27 25.22	4.44	.5	19 15.44	16.56	174.0	4 25.27	21.96
107.0	24 39.64	12.09	.5	27 20.78	4.79	152.0	18 58.88	16.75	.5	4 3.31	21.99
.5	24 51.73	11.68	130.0	27 15.99	5.11	.5	18 42.13	16.94	175.0	3 41.32	22.04
108.0	25 3.41	11.27	.5	27 10.88	5.44	153.0	18 25.19	17.13	.5	3 19.28	22.06
.5	25 14.68	10.88	131.0	27 5.44	5.76	.5	18 8.06	17.32	176.0	2 57.22	22.09
109.0	25 25.56	10.49	.5	26 59.68	6.09	154.0	17 50.74	17.51	.5	2 35.13	22.12
.5	25 36.05	10.08	132.0	26 53.59	6.40	.5	17 33.23	17.68	177.0	2 13.01	22.14
110.0	25 46.13	9.70	.5	26 47.19	6.73	155.0	17 15.55	17.85	.5	1 50.87	22.15
.5	25 55.83	9.29	133.0	26 40.46	7.04	.5	16 57.70	18.02	178.0	1 28.72	22.17
111.0	26 5.12	8.90	.5	26 33.42	7.35	156.0	16 39.68	18.20	.5	1 6.55	22.18
.5	26 14.02	8.51	134.0	26 26.07	7.66	.5	16 21.48	18.38	179.0	0 44.37	22.19
112.0	26 22.53	− 8.11	.5	26 18.41	+ 7.97	157.0	16 3.10	+18.53	.5	− 0 22.18	+22.18
.5	−26 30.64		135.0	−26 10.44		.5	−15 44.57		180.0	0 0.00	

$$\cot \tfrac{1}{2} v' = \frac{1-e}{1+e} \cot \tfrac{1}{2} M$$

$$r = \frac{p}{1 + e \cos v}$$

True Anomaly $v = v' + c$

$\log p = 0.4067081$

$$\log \frac{1-e}{1+e} = 9.8354158$$

$\log e = 9.2724191$

TABLE III.

FOR THE ARGUMENTS.

A. For the different Years. The times are referred to the meridian of Washington.

Years.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
	°	°	°	°	°	°	°	°	°	°
1851	181.332	52.177	233.509	54.841	335.20	285.69	283.02	310.49	230.84	153.87
1852*B*	150.924	105.688	256.613	47.536	166.14	2.30	60.45	196.16	314.77	15.22
1853	120.598	159.056	279.654	40.252	356.57	78.71	197.51	82.14	38.46	235.97
1854	90.273	212.422	302.695	32.968	186.99	155.12	334.57	328.12	122.15	96.72
1855	59.947	265.789	325.736	25.683	17.41	231.52	111.63	214.11	205.84	317.47
1856*B*	29.539	319.301	348.840	18.378	208.37	308.14	249.06	99.78	289.76	178.83
1857	359.213	12.668	11.881	11.094	38.79	24.55	26.12	345.76	13.45	39.58
1858	328.888	66.035	34.922	3.810	229.22	100.96	163.18	231.74	97.15	260.33
1859	298.562	119.401	57.964	356.526	59.64	177.36	300.24	117.72	180.84	121.08
1860*B*	268.154	192.914	81.068	349.222	250.59	253.98	77.67	3.39	264.76	342.43
1861	237.828	226.281	104.109	341.937	81.01	330.39	214.73	249.38	348.45	203.18
1862	207.503	279.647	127.150	334.653	271.44	46.80	351.79	135.36	72.14	63.94
1863	177.178	333.014	150.192	327.370	101.86	123.21	128.85	21.34	155.84	284.69
1864*B*	146.769	26.527	173.296	320.065	292.81	199.82	266.28	267.01	239.76	146.04
1865	116.444	79.893	196.337	312.781	123.23	276.23	43.34	152.99	323.45	6.79
1866	86.119	133.260	219.379	305.497	313.66	352.64	180.40	38.98	47.14	227.54
1867	55.793	186.627	242.420	298.213	144.09	69.05	317.46	284.96	130.83	88.29
1868*B*	25.385	240.139	265.524	290.909	335.03	145.66	94.89	170.63	214.75	309.65
1869	355.060	293.506	288.566	283.626	165.46	222.07	231.95	56.61	298.45	170.40
1870	324.734	346.873	311.607	276.342	355.88	298.48	9.01	302.60	22.14	31.15
1871	294.409	40.240	334.649	269.058	186.31	14.89	146.07	188.58	105.83	251.90
1872*B*	264.001	93.753	357.753	261.754	17.26	91.51	283.50	74.25	189.75	113.26
1873	233.676	147.119	20.795	254.471	207.68	167.91	60.56	320.23	273.44	334.01
1874	203.350	200.486	43.836	247.187	38.11	244.32	197.62	206.21	357.14	194.76
1875	173.025	253.853	66.878	239.904	228.53	320.73	334.68	92.20	80.83	55.51
1876*B*	142.617	307.366	89.983	232.600	59.48	37.35	112.11	337.87	164.75	276.86
1877	112.292	0.733	113.025	225.316	249.91	113.76	249.17	223.85	248.44	137.61
1878	81.967	54.100	136.067	218.033	80.33	190.17	26.23	109.83	332.13	358.36
1879	51.642	107.467	159.108	210.750	270.76	266.57	163.29	355.82	55.82	219.12
1880*B*	21.234	160.980	182.213	203.447	101.70	343.19	300.73	241.49	139.75	80.47
1881	350.908	214.346	205.255	196.163	292.13	59.60	77.78	127.47	223.44	301.22
1882	320.583	267.713	228.296	188.879	122.55	136.01	214.84	13.45	307.13	161.97
1883	290.258	321.080	251.337	181.595	312.98	212.42	351.90	259.44	30.82	22.72
1884*B*	259.849	14.592	274.441	174.290	143.93	289.03	129.34	145.11	114.74	244.08
1885	229.524	67.959	297.483	167.007	334.35	5.44	266.39	31.09	198.44	104.83
1886	199.198	121.326	320.524	159.723	164.78	81.85	43.45	277.07	282.13	325.58
1887	168.873	174.692	343.566	152.439	355.20	158.26	180.51	163.05	5.82	186.33
1888*B*	138.465	228.205	6.670	145.134	186.15	234.87	317.94	48.72	89.74	47.69
1889	108.139	281.572	29.711	137.851	16.58	311.28	95.00	294.71	173.43	268.44
1890	77.814	334.939	52.753	130.567	207.00	27.69	232.06	180.69	257.12	129.19
1891	47.489	28.305	75.794	123.283	37.43	104.10	9.12	66.67	340.82	349.94
1892*B*	17.080	81.818	98.898	115.978	228.37	180.72	146.56	312.34	64.74	211.29
1893	346.755	135.185	121.940	108.695	58.80	257.12	283.61	198.33	148.43	72.04
1894	316.430	188.551	144.981	101.410	249.22	333.53	60.67	84.31	232.12	292.79
1895	286.104	241.918	168.022	94.127	79.65	49.94	197.73	330.29	315.81	153.55
1896*B*	255.696	295.430	191.126	86.822	270.60	126.56	335.16	215.96	39.73	14.90
1897	225.371	348.797	214.168	79.538	101.02	202.96	112.22	101.94	123.43	235.65
1898	195.045	42.164	237.209	72.254	291.45	279.37	249.28	347.93	207.12	96.40
1899	164.720	95.530	260.250	64.970	121.87	355.78	26.34	233.91	290.81	317.15
1900*B*	134.311	149.043	283.355	57.666	312.82	72.40	163.78	119.58	14.73	178.51

TABLE III. — *Continued.*

FOR THE ARGUMENTS.

A. For the different Years. The times are referred to the meridian of Washington.

Years.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.
	°	°	°	°	°	°	°	°	°	°
1851	236.17	337.86	79.64	24.7	131.8	27.4	313.2	288.3	57.5	159.2
1852*B*	198.46	107.99	241.39	330.0	347.1	271.8	138.0	304.1	349.4	258.9
1853	160.85	237.77	43.68	274.4	202.7	155.6	323.3	319.9	281.4	358.4
1854	123.24	7.54	205.97	218.9	58.4	39.4	148.7	335.7	213.5	97.8
1855	85.63	137.31	8.26	163.3	274.1	283.2	334.0	351.4	145.6	197.3
1856*B*	47.92	267.44	170.01	108.6	129.3	167.7	158.9	7.2	77.5	297.0
1857	10.31	37.22	332.30	53.0	345.0	51.5	344.2	23.0	9.5	36.4
1858	332.70	166.99	134.59	357.5	200.6	295.2	169.5	38.7	301.6	135.9
1859	295.09	296.77	296.88	301.9	56.3	179.0	354.8	54.5	233.6	235.3
1860*B*	257.38	66.90	98.63	247.2	271.5	63.5	179.7	70.3	165.5	335.0
1861	219.77	196.67	260.92	191.6	127.2	307.3	5.0	86.0	97.6	74.5
1862	182.15	326.44	63.21	136.1	342.9	191.1	190.4	101.8	29.7	173.9
1863	144.55	96.22	225.51	80.5	198.5	74.9	15.7	117.6	321.7	273.4
1864*B*	106.83	226.35	27.26	25.8	53.8	319.3	200.6	133.4	253.6	13.1
1865	69.22	356.12	189.55	330.2	269.4	203.1	25.9	149.1	185.7	112.6
1866	31.62	125.90	351.84	274.7	125.1	86.9	211.2	164.9	117.7	212.0
1867	354.01	255.67	154.13	219.1	340.8	330.7	36.5	180.6	49.8	311.5
1868*B*	316.29	25.80	315.88	164.4	196.0	215.2	221.4	196.4	341.7	51.2
1869	278.68	155.58	118.17	108.8	51.7	99.0	46.7	212.2	273.7	151.6
1870	241.08	285.35	280.46	53.3	267.3	342.8	232.1	227.9	205.8	250.1
1871	203.47	55.13	82.75	357.7	123.0	226.5	57.4	243.7	137.9	349.5
1872*B*	165.75	185.26	244.50	303.0	338.2	111.0	242.3	259.5	69.8	89.3
1873	128.15	315.03	46.79	247.4	193.9	354.8	67.6	275.3	1.8	188.7
1874	90.54	84.81	209.08	191.9	49.6	238.6	252.9	291.0	293.9	288.2
1875	52.93	214.58	11.37	136.3	265.2	122.4	78.2	306.8	226.0	27.6
1876*B*	15.22	344.71	173.12	81.6	120.5	6.8	263.1	322.6	157.8	127.3
1877	337.61	114.49	335.41	26.1	336.1	250.6	88.4	338.3	89.9	226.8
1878	300.00	244.27	137.70	330.5	191.8	134.4	273.8	354.1	22.0	326.2
1879	262.39	14.04	299.99	274.9	47.5	18.2	99.1	9.9	314.0	65.7
1880*B*	224.68	144.17	101.74	220.2	262.7	262.7	284.0	25.7	245.9	165.4
1881	187.07	273.95	264.03	164.7	118.4	146.5	109.3	41.4	178.0	264.9
1882	149.46	43.72	66.32	109.1	334.0	30.3	294.6	57.2	110.0	4.3
1883	111.85	173.50	228.61	53.5	189.7	274.1	120.0	72.9	42.1	103.7
1884*B*	74.14	303.63	30.36	358.8	45.0	158.5	304.8	88.7	334.0	203.5
1885	36.53	73.40	192.65	303.3	260.6	42.3	130.1	104.5	266.1	302.9
1886	358.92	203.18	354.94	247.7	116.3	286.1	315.5	120.2	198.1	42.4
1887	321.31	332.95	157.23	192.2	331.9	169.9	140.8	136.0	130.2	141.8
1888*B*	283.60	103.08	318.98	137.6	187.2	54.4	325.7	151.8	62.1	241.5
1889	245.99	232.85	121.27	81.9	42.8	298.1	151.0	167.6	354.1	341.0
1890	208.38	2.63	283.57	26.3	258.6	181.9	336.3	183.3	286.2	80.4
1891	170.77	132.40	85.86	330.7	114.2	65.7	161.6	199.1	218.3	179.9
1892*B*	133.06	262.53	247.60	276.0	329.4	310.2	346.5	214.9	150.1	279.6
1893	95.45	32.31	49.90	220.5	185.1	194.0	171.8	230.6	82.2	19.1
1894	57.84	162.08	212.19	164.9	40.7	77.8	357.2	246.4	14.3	118.5
1895	20.23	291.86	14.48	109.4	256.4	321.6	182.5	262.1	206.3	218.0
1896*B*	342.52	61.99	176.23	54.6	111.7	206.0	7.4	277.9	238.2	317.7
1897	304.91	191.76	338.52	359.1	327.3	89.8	192.7	293.7	170.3	57.1
1898	267.30	321.54	140.81	303.5	182.9	333.6	18.0	309.5	102.3	156.6
1899	229.69	91.31	303.10	248.0	38.6	217.4	203.3	325.2	34.4	256.0
1900*B*	191.98	222.44	104.85	193.2	253.9	101.9	18.2	341.0	326.3	355.7

TABLE III. — *Continued.*

FOR THE ARGUMENTS.

A. For the different Years. The times are referred to the meridian of Washington.

Years.	XXI.	XXII.	XXIII.	XXIV.	XXV.	XXVI.	XXVII.	XXVIII.	XXIX.	XXX.
	°	°	°	°	°	°	°	°	°	°
1851	258.2	76.9	82.2	30.0	238.8	291.0	30.1	161.9	343.2	32.7
1852*B*	226.6	75.7	183.2	213.7	140.3	246.0	77.5	200.8	351.7	155.5
1853	194.1	73.5	284.9	36.8	42.0	201.1	125.8	239.6	0.2	278.0
1854	161.6	71.3	26.5	220.0	303.8	156.2	174.1	278.4	8.6	40.5
1855	129.0	69.1	128.2	43.1	205.5	111.3	222.4	317.2	17.1	163.0
1856*B*	97.4	67.9	229.1	226.7	107.0	66.3	269.8	356.1	25.6	285.8
1857	64.9	65.7	330.7	49.9	8.7	21.4	318.1	34.9	34.1	48.3
1858	32.4	63.5	72.4	233.0	270.5	336.5	6.3	73.7	42.5	170.8
1859	359.9	61.3	174.0	56.2	172.2	291.6	54.6	112.5	51.0	293.3
1860*B*	328.3	60.1	274.9	239.8	73.7	246.6	102.0	151.4	59.5	56.1
1861	295.7	57.9	16.6	63.0	335.4	201.7	150.3	190.2	68.0	178.6
1862	263.2	55.7	118.2	246.1	237.2	156.8	198.6	229.0	76.5	301.1
1863	230.7	53.5	219.9	69.2	138.9	111.9	246.8	267.8	84.9	63.6
1864*B*	199.1	55.3	320.8	252.9	40.4	66.9	294.3	306.7	93.4	186.4
1865	166.6	50.1	62.4	76.0	302.1	22.0	342.5	345.5	101.9	308.9
1866	134.1	47.9	161.1	259.1	203.9	337.1	30.8	24.3	110.4	71.4
1867	101.5	45.8	265.7	82.3	105.6	292.2	79.1	63.1	118.8	193.9
1868*B*	69.9	44.5	6.6	265.9	7.1	247.2	126.5	102.0	127.3	316.7
1869	37.4	42.4	108.3	89.1	268.8	202.3	174.8	140.8	135.8	79.2
1870	4.9	40.1	209.9	272.2	170.5	157.4	223.1	179.6	144.3	201.7
1871	332.4	38.0	311.6	95.4	72.3	112.5	271.3	218.4	152.8	324.2
1872*B*	300.8	36.8	52.5	279.0	333.8	67.6	318.7	257.3	161.3	87.0
1873	268.2	34.6	154.1	102.2	235.5	22.6	7.0	296.1	169.7	209.5
1874	235.7	32.4	255.8	285.3	137.2	337.7	55.3	334.9	178.2	332.0
1875	203.2	30.2	357.4	108.4	39.0	292.8	103.6	13.7	186.7	94.5
1876*B*	171.6	29.0	98.4	292.1	300.5	247.8	151.0	52.6	195.2	217.3
1877	139.1	26.8	200.0	115.2	202.2	202.9	199.3	91.4	203.7	339.8
1878	106.6	24.6	301.6	298.4	103.9	158.0	247.6	130.2	212.1	102.3
1879	74.0	22.4	43.3	121.5	5.7	113.1	295.8	169.0	220.6	224.8
1880*B*	42.4	21.2	144.2	305.2	267.1	68.1	343.2	207.9	229.1	347.6
1881	9.9	19.0	245.8	128.3	168.9	23.2	31.5	246.7	237.6	110.1
1882	337.9	16.8	347.5	311.4	70.6	338.3	79.8	285.5	246.1	232.6
1883	304.9	14.6	89.1	134.6	332.4	293.4	128.0	324.3	254.5	355.1
1884*B*	273.3	13.4	190.1	318.2	233.8	248.4	175.5	3.2	263.0	117.9
1885	240.7	11.2	291.7	141.4	135.6	203.5	223.7	42.0	271.5	240.4
1886	208.2	9.0	33.3	324.5	37.3	158.6	272.0	80.8	280.0	2.9
1887	175.7	6.8	135.0	147.6	299.1	113.7	320.3	119.6	288.4	125.4
1888*B*	144.1	5.6	235.9	331.3	200.5	68.7	7.7	158.5	296.9	248.2
1889	111.6	3.4	337.6	154.4	102.3	23.8	56.0	197.3	305.4	10.7
1890	79.1	1.3	79.2	337.6	4.0	338.9	104.3	236.1	313.9	133.2
1891	46.5	359.0	180.8	160.7	265.7	294.0	152.5	274.9	322.4	255.7
1892*B*	14.9	357.8	281.8	344.4	167.2	249.0	199.9	313.8	330.9	18.5
1893	342.4	355.7	23.4	167.5	69.0	204.1	248.2	352.6	339.3	141.0
1894	309.9	353.5	125.0	350.6	330.7	159.2	296.5	31.4	347.8	263.5
1895	277.4	351.3	226.7	173.8	232.4	114.3	344.8	70.2	356.3	26.0
1896*B*	245.8	350.1	327.6	357.4	133.9	69.3	32.2	109.1	4.8	148.8
1897	213.2	347.9	69.3	180.6	35.6	24.4	80.5	147.9	13.2	271.3
1898	180.7	345.7	170.9	3.7	297.4	339.5	128.7	186.7	21.7	33.8
1899	148.2	343.5	272.5	186.8	199.1	294.6	177.0	225.5	30.2	156.3
1900*B*	116.6	342.5	13.5	10.5	100.6	249.6	224.4	264.4	38.7	279.1

TABLE III. — *Continued.*

FOR THE ARGUMENTS.

A. For the different Years. The times are referred to the meridian of Washington.

Years.	XXXI.	XXXII.	XXXIII.	XXXIV.	XXXV.	XXXVI.	XXXVII.	XXXVIII	XXXIX.	XL.
	°	°	°	°	°	°	°	°	°	°
1851	256	242	80	60	0	82	316	209	179	264
1852*B*	285	82	18	201	136	319	80	287	345	110
1853	313	283	315	163	271	196	205	5	150	316
1854	341	124	252	34	46	72	329	84	316	163
1855	9	325	189	266	181	309	94	162	121	9
1856*B*	38	166	127	137	317	186	218	240	287	216
1857	67	7	64	8	92	63	343	319	93	62
1858	95	208	1	239	227	299	107	37	258	268
1859	123	49	298	111	2	176	232	116	63	114
1860*B*	152	250	236	342	138	53	356	194	230	321
1861	180	91	174	213	273	289	121	273	35	167
1862	208	292	111	85	48	166	245	351	200	13
1863	236	133	48	316	182	42	10	70	5	219
1864*B*	266	334	346	187	319	279	134	148	172	66
1865	294	175	283	59	94	156	259	226	337	272
1866	322	16	220	290	228	32	24	305	142	119
1867	350	217	157	161	3	269	148	23	307	325
1868*B*	19	58	95	32	139	146	272	101	114	171
1869	47	259	33	264	274	23	37	180	279	18
1870	75	100	330	135	49	259	162	258	84	224
1871	104	301	267	7	184	136	286	337	250	70
1872*B*	133	142	205	238	320	13	50	55	56	277
1873	161	343	142	109	95	249	175	133	222	123
1874	189	184	79	341	230	126	300	212	27	329
1875	217	25	16	212	5	2	64	291	192	175
1876*B*	246	226	314	83	141	239	188	8	359	22
1877	275	67	251	315	276	116	313	87	164	228
1878	303	268	189	186	51	353	78	166	329	74
1879	331	109	126	57	186	229	202	244	134	281
1880*B*	0	310	64	288	322	106	326	322	301	127
1881	28	141	1	160	97	343	91	41	106	334
1882	56	352	298	31	232	219	216	119	271	180
1883	84	193	235	263	7	96	341	198	76	26
1884*B*	114	34	173	134	143	333	105	276	243	233
1885	142	235	110	5	278	209	229	354	48	79
1886	170	176	47	237	53	86	354	73	213	285
1887	198	277	345	108	187	322	119	151	19	131
1888*B*	227	118	283	339	324	200	243	229	185	338
1889	255	319	220	210	98	76	7	308	350	184
1890	283	160	157	82	233	313	132	26	156	30
1891	312	1	94	313	8	189	257	105	321	237
1892*B*	341	201	32	184	144	66	21	183	127	83
1893	9	43	329	56	279	303	145	262	293	289
1894	37	244	266	287	54	179	270	340	98	136
1895	65	85	204	159	189	56	35	59	263	342
1896*B*	94	285	142	30	325	293	159	137	70	189
1897	123	126	79	261	100	169	283	215	235	85
1898	151	328	16	132	235	46	48	293	40	241
1899	179	169	313	4	10	282	173	12	205	87
1900*B*	208	9	251	235	146	160	297	90	12	294

TABLE III.— *Continued.*

FOR THE ARGUMENTS.

A. For the different Years. The times are referred to the meridian of Washington.

Years.	XLI.	XLII.	XLIII.	XLIV.	XLV.	XLVI.	XLVII.	XLVIII.	XLIX.
	°	°	°	°	°	°	°	°	°
1851	85	126	341	132	134	134	231	85	137
1852*B*	261	240	274	123	289	65	91	125	231
1853	77	351	208	114	84	355	309	166	325
1854	253	103	142	104	239	285	168	207	59
1855	69	215	76	95	34	215	27	248	154
1856*B*	245	328	10	86	188	145	247	288	247
1857	61	80	304	77	343	75	105	329	342
1858	237	192	238	67	138	5	324	10	76
1859	53	304	172	58	293	295	181	51	171
1860*B*	229	57	105	49	88	226	43	91	264
1861	45	169	40	40	243	155	261	132	359
1862	221	280	334	30	38	85	120	173	93
1863	37	32	268	21	193	15	338	214	187
1864*B*	213	145	201	12	347	306	198	254	281
1865	29	257	136	3	142	236	57	295	15
1866	205	9	70	353	297	166	275	336	110
1867	21	121	4	344	92	96	134	17	204
1868*B*	197	234	297	335	247	26	354	57	298
1869	13	346	231	326	42	316	213	98	32
1870	189	98	166	317	197	246	71	139	126
1871	4	209	100	307	352	176	290	180	221
1872*B*	181	323	33	299	146	107	150	221	314
1873	357	74	327	289	301	36	9	261	49
1874	172	186	262	280	96	326	227	302	143
1875	348	298	196	270	251	256	86	343	237
1876*B*	165	51	129	262	46	187	306	24	331
1877	341	163	63	252	201	117	164	65	65
1878	156	275	357	243	356	47	23	106	160
1879	332	27	292	233	151	336	242	147	254
1880*B*	149	140	225	225	305	267	102	187	348
1881	324	252	159	215	100	197	320	228	82
1882	140	3	93	206	255	127	179	269	176
1883	316	115	27	196	50	57	37	310	271
1884*B*	133	228	321	188	205	347	257	350	4
1885	308	340	255	178	0	277	116	31	99
1886	124	92	189	169	155	207	335	72	193
1887	300	204	123	159	310	137	193	113	288
1888*B*	116	317	56	151	104	68	53	153	21
1889	292	69	351	141	259	358	272	194	115
1890	108	181	285	132	54	287	130	235	210
1891	284	292	219	122	209	217	349	276	304
1892*B*	100	46	152	114	4	147	209	316	38
1893	276	157	87	104	159	78	68	357	132
1894	92	269	21	95	314	8	286	38	226
1895	268	21	315	85	109	298	145	79	321
1896*B*	86	134	248	77	263	228	5	119	54
1897	260	246	182	67	58	158	224	160	149
1898	76	358	117	58	213	88	82	201	243
1899	252	110	51	48	8	18	301	242	338
1900*B*	68	223	344	40	163	308	161	284	71

TABLE III. — *Continued.*

FOR THE ARGUMENTS.

B. Variations of the Arguments for the different Months. The times are referred to the meridian of Washington.

Months.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
	°	°	°	°	°	°	°	°	°	°
January	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00
February	357.425	4.532	1.956	359.380	16.17	6.49	11.64	350.32	7.11	18.75
March	355.098	8.626	3.724	358.820	30.77	12.34	22.15	341.57	13.53	35.69
April	352.523	13.158	5.680	358.200	46.94	18.83	33.79	331.89	20.64	54.43
May	350.031	17.544	7.573	357.600	62.59	25.11	45.06	322.51	27.51	72.58
June	347.456	22.076	9.530	356.980	78.76	31.60	56.70	312.83	34.62	91.33
July	344.964	26.462	11.423	356.380	94.41	37.88	67.96	303.46	41.50	109.47
August	342.389	30.994	13.379	355.760	110.58	44.37	79.60	293.77	48.61	128.22
September	339.814	35.526	15.336	355.140	126.75	50.86	91.24	284.09	55.72	146.97
October	337.322	39.912	17.229	354.540	142.40	57.14	102.51	274.72	62.60	165.11
November	334.747	44.444	19.185	353.920	158.57	63.63	114.15	265.03	69.71	183.86
December	332.255	48.830	21.079	353.320	174.22	69.91	125.41	255.66	76.58	202.01

Months.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.
	°	°	°	°	°	°	°	°	°	°
January	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	356.80	11.02	343.21	25.9	347.7	20.7	345.2	1.3	354.2	8.4
March	353.92	20.97	328.03	49.2	336.7	39.4	331.8	2.5	349.0	16.1
April	350.73	31.99	311.24	75.1	324.4	60.1	316.9	3.9	343.3	24.5
May	347.63	42.66	294.99	100.1	312.5	80.2	302.6	5.2	337.7	32.7
June	344.44	53.68	278.20	125.9	300.3	100.9	287.7	6.5	331.9	41.1
July	341.34	64.34	261.95	150.9	288.4	120.9	273.4	7.8	326.3	49.3
August	338.15	75.36	245.15	176.8	276.1	141.6	258.5	9.1	320.6	57.7
September	334.95	86.38	228.36	202.6	263.9	162.3	243.7	10.4	314.8	66.2
October	331.86	97.05	212.11	227.7	252.0	182.4	229.3	11.7	309.2	74.3
November	328.66	108.07	195.32	253.5	239.8	203.1	214.5	13.1	303.4	82.8
December	325.57	118.73	179.06	278.5	227.9	223.1	200.1	14.3	297.9	91.0

Months.	XXI.	XXII.	XXIII.	XXIV.	XXV.	XXVI.	XXVII.	XXVIII.	XXIX.	XXX.
	°	°	°	°	°	°	°	°	°	°
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	27.8	30.4	338.1	15.6	351.7	356.2	333.5	3.3	0.7	10.4
March	52.9	57.8	318.2	29.6	344.1	352.8	309.6	6.3	1.4	19.8
April	80.7	88.2	296.3	45.2	335.8	348.9	283.2	9.6	2.1	30.2
May	107.7	117.6	275.0	60.2	327.7	345.3	257.5	12.7	2.8	40.3
June	135.5	148.0	253.1	75.8	319.4	341.4	231.1	16.0	3.5	50.7
July	162.4	177.4	231.9	90.9	311.3	337.8	205.4	19.2	4.2	60.7
August	190.2	207.8	209.9	106.4	303.0	333.9	179.0	22.5	4.9	71.1
September	218.0	238.1	188.0	122.0	294.6	330.1	152.5	25.8	5.6	81.5
October	244.9	267.5	166.7	137.0	286.6	326.4	126.9	29.0	6.3	91.6
November	272.7	297.9	144.8	152.6	278.2	322.6	100.4	32.3	7.0	102.0
December	299.6	327.3	123.5	167.7	270.2	318.9	74.8	35.4	7.7	112.1

In Bissextile Years subtract one day from the date in the first two months.

TABLE III. — *Continued.*

FOR THE ARGUMENTS.

B. Variations of the Arguments for the different Months. The times are referred to the meridian of Washington.

Months.	XXXI.	XXXII.	XXXIII.	XXXIV.	XXXV.	XXXVI.	XXXVII.	XXXVIII	XXXIX.	XL.
	°	°	°	°	°	°	°	°	°	°
January	0	0	0	0	0	0	0	0	0	0
February	33	347	25	349	42	20	340	336	45	18
March	63	334	48	339	80	38	322	315	85	33
April	96	321	73	328	122	58	302	291	130	51
May	128	308	98	318	163	78	283	267	173	68
June	161	294	123	307	205	98	263	244	217	85
July	192	281	147	296	245	117	243	220	260	102
August	225	268	173	285	287	137	223	197	305	120
September	258	254	198	274	330	157	203	173	350	137
October	290	241	222	264	10	177	184	150	33	154
November	323	228	247	253	52	197	164	126	77	172
December	355	215	272	242	93	216	145	102	121	189

Months.	XLI.	XLII.	XLIII.	XLIV.	XLV.	XLVI.	XLVII.	XLVIII.	XLIX.	
	°	°	°	°	°	°	°	°	°	
January	0	0	0	0	0	0	0	0	0	
February	15	40	324	30	343	25	49	333	337	
March	28	76	291	57	327	47	94	308	317	
April	43	116	255	87	310	71	143	281	294	
May	58	155	220	115	293	95	190	255	273	
June	73	195	184	145	275	120	239	228	250	
July	87	234	149	174	258	144	287	202	228	
August	102	274	113	204	241	168	336	175	206	
September	117	314	77	234	224	193	25	148	183	
October	131	353	42	262	207	217	73	121	161	
November	146	33	6	292	189	241	122	94	139	
December	161	72	331	321	172	265	169	68	117	

In Bissextile Years subtract one day from the date in the first two months.

TABLE III. — *Continued.*

FOR THE ARGUMENTS.

C. Variations of the Arguments for the different Days. The times are referred to the meridian of Washington.

Days.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
	°	°	°	°	°	°	°	°	°	°
1	359.917	0.146	0.063	359.980	0.52	0.21	0.38	359.69	0.23	0.60
2	359.834	0.292	0.126	359.960	1.04	0.42	0.75	359.37	0.46	1.21
3	359.751	0.439	0.189	359.940	1.57	0.63	1.13	359.06	0.69	1.81
4	359.667	0.585	0.252	359.920	2.09	0.84	1.50	358.75	0.92	2.42
5	359.584	0.731	0.316	359.900	2.61	1.05	1.88	358.44	1.15	3.02
6	359.501	0.877	0.379	359.880	3.13	1.26	2.25	358.12	1.38	3.63
7	359.418	1.023	0.442	359.860	3.65	1.47	2.63	357.81	1.61	4.23
8	359.335	1.170	0.505	359.840	4.17	1.67	3.00	357.50	1.83	4.84
9	359.252	1.316	0.568	359.820	4.70	1.88	3.38	357.19	2.06	5.44
10	359.169	1.462	0.631	359.800	5.22	2.09	3.76	356.88	2.29	6.05
20	358.338	2.924	1.262	359.600	10.43	4.19	7.51	353.75	4.59	12.10
30	357.508	4.386	1.893	359.400	15.65	6.28	11.27	350.63	6.88	18.14

Days.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.
	°	°	°	°	°	°	°	°	°	
1	359.90	0.36	359.46	0.8	359.6	0.7	359.5	0.0	359.8	0.3
2	359.79	0.71	358.92	1.7	359.2	1.3	359.0	0.1	359.6	0.5
3	359.69	1.07	358.37	2.5	358.8	2.0	358.6	0.1	359.4	0.8
4	359.59	1.42	357.83	3.3	358.4	2.7	358.1	0.2	359.3	1.1
5	359.49	1.78	357.29	4.2	358.0	3.3	357.6	0.2	359.1	1.4
6	359.38	2.13	356.75	5.0	357.6	4.0	357.1	0.3	358.9	1.6
7	359.28	2.49	356.21	5.8	357.2	4.7	356.7	0.3	358.7	1.9
8	359.18	2.84	355.66	6.7	356.8	5.3	356.2	0.3	358.5	2.2
9	359.07	3.20	355.12	7.5	356.4	6.0	355.7	0.4	358.3	2.5
10	358.97	3.56	354.58	8.3	356.0	6.7	355.2	0.4	358.1	2.7
20	357.94	7.11	349.17	16.7	352.1	13.4	350.4	0.9	356.3	5.4
30	356.91	10.67	343.75	25.0	348.1	12.0	345.6	1.3	354.2	8.2

Days.	XXI.	XXII.	XXIII.	XXIV.	XXV.	XXVI.	XXVII.	XXVIII.	XXIX.	XXX.
	°	°	°	°	°	°	°	°	°	°
1	0.9	1.0	359.3	0.5	359.7	359.9	359.1	0.1	0.0	0.3
2	1.8	2.0	358.6	1.0	359.5	359.8	358.3	0.2	0.1	0.7
3	2.7	2.9	357.9	1.5	359.2	359.6	357.4	0.3	0.1	1.0
4	3.6	3.9	357.2	2.0	358.9	359.5	356.6	0.4	0.1	1.3
5	4.5	4.9	356.5	2.5	358.7	359.4	355.7	0.5	0.1	1.7
6	5.4	5.9	355.8	3.0	358.4	359.3	354.9	0.6	0.1	2.0
7	6.3	6.9	355.0	3.5	358.1	359.1	354.0	0.7	0.2	2.4
8	7.2	7.8	354.3	4.0	357.9	359.0	353.2	0.9	0.2	2.7
9	8.2	8.8	353.6	4.5	357.6	358.9	352.3	1.0	0.2	3.0
10	9.0	9.8	352.9	5.0	357.3	358.8	351.5	1.1	0.2	3.4
20	17.9	19.6	345.8	10.0	354.6	357.5	342.9	2.1	0.5	6.7
30	26.9	29.4	338.8	15.1	351.9	356.3	334.4	3.2	0.7	10.1

TABLE III. — *Continued.*

FOR THE ARGUMENTS.

C. Variations of the Arguments for the different Days. The times are referred to the meridian of Washington.

Days.	XXXI.	XXXII.	XXXIII.	XXXIV.	XXXV.	XXXVI.	XXXVII.	XXXVIII	XXXIX.	XL.
	○	○	○	○	○	○	○	○	○	○
1	1	0	1	0	1	1	359	359	1	1
2	2	359	2	359	3	1	359	358	3	1
3	3	359	2	359	4	2	358	358	4	2
4	4	358	3	359	5	3	357	357	6	2
5	5	358	4	358	7	3	357	356	7	3
6	6	357	5	358	8	4	356	355	9	3
7.	7	357	6	358	9	5	355	355	10	4
8	8	357	7	357	11	5	355	354	12	4
9	9	356	7	357	12	6	354	353	13	5
10	11	356	8	356	14	6	354	352	14	6
20	21	351	16	353	27	13	347	345	29	11
30	32	347	24	349	41	19	341	337	43	17

Days.	XLI.	XLII.	XLIII.	XLIV.	XLV.	XLVI.	XLVII.	XLVIII.	XLIX.	
	○	○	○	○	○	○	○	○	○	
1	0	1	359	1	359	1	2	359	359	
2	1	3	358	2	359	2	3	358	359	
3	1	4	357	3	358	2	5	357	358	
4	2	5	355	4	358	3	6	357	357	
5	2	7	354	5	357	4	8	356	356	
6	3	8	353	6	357	5	10	355	356	
7	3	9	352	7	356	6	11	354	355	
8	4	10	351	8	356	6	13	353	354	
9	4	12	350	9	355	7	14	352	353	
10	5	13	348	10	354	8	16	351	353	
20	10	26	337	19	349	16	32	343	345	
30	14	39	325	29	343	24	48	334	338	

TABLE III. — *Concluded.*

FOR THE ARGUMENTS.

D. Variations of the Arguments for the different Hours. The times are referred to the meridian of Washington.

Hours.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
	°	°	°	°	°	°	°	°	°	°
1	359.997	0.006	0.003	359.999	0.02	0.01	0.02	359.99	0.01	0.03
2	359.993	0.012	0.005	359.998	0.04	0.02	0.03	359.97	0.02	0.05
3	359.990	0.018	0.008	359.998	0.07	0.03	0.05	359.96	0.03	0.07
4	359.986	0.024	0.010	359.997	0.09	0.04	0.06	359.95	0.04	0.10
5	359.983	0.031	0.013	359.996	0.11	0.04	0.08	359.94	0.04	0.12
6	359.979	0.037	0.016	359.995	0.13	0.05	0.10	359.92	0.05	0.15
7	359.976	0.043	0.018	359.994	0.15	0.06	0.11	359.91	0.06	0.17
8	359.972	0.049	0.021	359.994	0.18	0.07	0.13	359.90	0.07	0.20
9	359.969	0.055	0.023	359.993	0.20	0.08	0.14	359.88	0.08	0.22
10	359.965	0.061	0.026	359.992	0.22	0.09	0.16	359.87	0.09	0.25
20	359.930	0.122	0.052	359.984	0.44	0.18	0.32	359.74	0.18	0.50

Hours.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.
	°	°	°	°	°	°	°	°	°	°
1	0.00	0.02	359.98	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	359.99	0.03	359.95	0.1	0.0	0.1	0.0	0.0	0.0	0.0
3	359.99	0.04	359.93	0.1	359.9	0.1	359.9	0.0	0.0	0.0
4	359.98	0.06	359.91	0.1	359.9	0.1	359.9	0.0	0.0	0.0
5	359.98	0.07	359.88	0.2	359.9	0.1	359.9	0.0	0.0	0.1
6	359.98	0.09	359.86	0.2	359.9	0.2	359.9	0.0	359.9	0.1
7	359.97	0.10	359.84	0.2	359.9	0.2	359.9	0.0	359.9	0.1
8	359.97	0.12	359.82	0.3	359.9	0.2	359.8	0.0	359.9	0.1
9	359.96	0.13	359.79	0.3	359.8	0.3	359.8	0.0	359.9	0.1
10	359.96	0.15	359.77	0.4	359.8	0.3	359.8	0.0	359.9	0.1
20	359.92	0.30	359.54	0.7	359.7	0.6	359.6	0.0	359.8	0.2

Hours.	XXI.	XXII.	XXIII.	XXIV.	XXV.	XXVI.	XXVII.	XXVIII.	XXIX.	XXX.
	°	°	°	°	°	°	°	°	°	°
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.1	0.1	359.9	0.0	0.0	0.0	359.9	0.0	0.0	0.0
3	0.1	0.1	359.9	0.1	0.0	0.0	359.9	0.0	0.0	0.0
4	0.1	0.2	359.9	0.1	0.0	0.0	359.9	0.0	0.0	0.0
5	0.2	0.2	359.8	0.1	359.9	0.0	359.8	0.0	0.0	0.0
6	0.2	0.3	359.8	0.1	359.9	0.0	359.8	0.0	0.0	0.0
7	0.3	0.3	359.8	0.2	359.9	0.0	359.7	0.0	0.0	0.0
8	0.3	0.3	359.8	0.2	359.9	0.0	359.7	0.0	0.0	0.0
9	0.3	0.4	359.7	0.2	359.9	359.9	359.7	0.0	0.0	0.0
10	0.4	0.4	359.7	0.2	359.9	359.9	359.6	0.0	0.0	0.0
20	0.7	0.8	359.4	0.4	359.8	359.9	359.3	0.1	0.0	0.3

TABLE IV.

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

Terms multiplied with t. Argument $= M$.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	+ 10.37		−833.64		− 8.83		45	+585.90		−465.98		−129.21	
		+17·20		+ 0·02		−3·32			+5·49		+12·88		−1·60
1	27.57		833.62		12.15		46	591.39		453.10		130.81	
		17·19		0·49		3·32			5·15		12·89		1·54
2	44.76		833.13		15.47		47	596.54		440.21		132.35	
		17·17		0·97		3·31			4·81		12·90		1·49
3	61.93		832.16		18.78		48	601.35		427.31		133.84	
		17·14		1·44		3·30			4·49		12·90		1·43
4	79.07		830.72		22.08		49	605.84		414.41		135.27	
		17·07		1·90		3·29			4·16		12·89		1·37
5	96.14		828.82		25.37		50	610.00		401.52		136.64	
		17·00		2·37		3·27			3·84		12·88		1·32
6	113.14		826.45		28.64		51	613.84		388.64		137.96	
		16·91		2·83		3·26			3·53		12·85		1·26
7	130.05		823.62		31.90		52	617.37		375.79		139.22	
		16·80		3·29		3·24			3·22		12·82		1·21
8	146.85		820.33		35.14		53	620.59		362.97		140.43	
		16·67		3·74		3·22			2·91		12·79		1·15
9	163.52		816.59		38.36		54	623.50		350.18		141.58	
		16·54		4·19		3·20			2·61		12·75		1·09
10	+180.06		−812.40		− 41.56		55	+626.11		−337.43		−142.67	
		+16·38		+ 4·62		−3·17			+2·31		+12·69		−1·04
11	196.44		807.78		44.73		56	628.42		324.74		143.71	
		16·20		5·06		3·15			2·03		12·63		0·98
12	212.64		802.72		47.88		57	630.45		312.11		144.69	
		16·02		5·48		3·12			1·74		12·56		0·92
13	228.66		797.24		51.00		58	632.19		299.55		145.61	
		15·82		5·90		3·09			1·47		12·49		0·87
14	244.48		791.34		54.09		59	633.66		287.06		146.48	
		15·62		6·30		3·07			1·20		12·41		0·81
15	260.10		785.04		57.16		60	634.86		274.65		147.29	
		15·39		6·70		3·04			0·93		12·32		0·76
16	265.49		778.34		60.20		61	635.79		262.33		148.05	
		15·14		7·09		3·00			0·67		12·23		0·71
17	290.63		771.25		63.20		62	636.46		250.10		148.76	
		14·90		7·46		2·97			0·41		12·14		0·65
18	305.53		763.79		66.17		63	636.87		237.96		149.41	
		14·63		7·83		2·93			+0·16		12·04		0·60
19	320.16		755.96		60.10		64	637.03		225.92		150.01	
		14·36		8·18		2·89			−0·07		11·94		0·55
20	+334.52		−747.78		− 71.99		65	+636.96		−213.98		−150.56	
		+14·08		+ 8·52		−2·86			0·32		+11·84		−0·49
21	348.60		739.26		74.85		66	636.64		202.14		151.05	
		13·79		8·85		2·82			0·54		11·74		0·44
22	362.39		730.41		77.67		67	636.10		190.40		151.49	
		13·48		9·17		2·77			0·77		11·62		0·39
23	375.87		721.24		80.44		68	635.33		178.78		151.88	
		13·17		9·47		2·74			0·98		11·52		0·34
24	389.04		711.77		83.18		69	634.35		167.26		152.22	
		12·85		9·77		2·69			1·20		11·40		0·29
25	401.89		702.00		85.87		70	633.15		155.86		152.51	
		12·53		10·04		2·65			1·40		11·27		0·23
26	414.42		691.96		88.52		71	631.75		144.59		152.74	
		12·20		10·31		2·60			1·61		11·15		0·19
27	426.62		681.65		91.12		72	630.14		133.44		152.93	
		11·86		10·56		2·65			1·80		11·02		0·13
28	438.48		671.09		93.67		73	628.34		122.42		153.06	
		11·52		10·79		2·51			2·00		10·90		0·09
29	450.00		660.30		96.18		74	626.34		111.52		153.15	
		11·17		11·02		2·46			2·16		10·76		−0·03
30	+461.17		−649.28		− 98.64		75	+624.16		−100.76		−153.18	
		+10·82		+11·23		−2·41			−2·36		+10·63		+0·02
31	471.99		638.05		101.05		76	621.80		90.13		153.16	
		10·46		11·42		2·35			2·53		10·50		0·06
32	482.45		626.63		103.40		77	619.27		79.63		153.10	
		10·10		11·60		2·31			2·71		10·36		0·11
33	492.55		615.03		105.71		78	616.56		69.27		152.99	
		9·74		11·78		2·25			2·87		10·23		0·15
34	502.29		603.25		107.96		79	613.69		59.04		152.84	
		9·39		11·93		2·20			3·02		10·10		0·20
35	511.68		591.32		110.16		80	610.67		48.94		152.64	
		9·03		12·08		2·15			3·18		9·97		0·25
36	520.71		579.24		112.31		81	607.49		38.97		152.39	
		8·67		12·22		2·09			3·33		9·83		0·29
37	529.38		567.02		114.40		82	604.16		29.14		152.10	
		8·31		12·33		2·04			3·48		9·68		0·34
38	537.69		554.69		116.44		83	600.68		19.46		151.76	
		7·96		12·44		1·99			3·61		9·55		0·38
39	545.65		542.25		118.43		84	597.07		9.91		151.38	
		7·60		12·54		1·93			3·75		9·41		0·43
40	+553.25		−529.71		−120.36		85	+593.32		− 0.50		−150.95	
		+ 7·24		+12·62		−1·88			−3·87		+ 9·26		+0·47
41	560.49		517.09		122.24		86	589.45		+ 8.76		150.48	
		6·68		12·70		1·83			4·00		9·13		0·51
42	567.37		504.39		124.07		87	585.45		17.89		149.97	
		6·52		12·76		1·77			4·13		8·97		0·56
43	573.89		491.63		125.84		88	581.32		26.86		149.41	
		6·18		12·80		1·71			4·24		8·87		0·60
44	580.07		478.83		127.55		89	577.08		35.73		148.81	
		+ 5·83		+12·85		−1·66			−4·35		+ 8·71		+0·64
45	+585.90		−465.98		−129.21		90	+572.73		+ 44.44		−148.17	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

Terms multiplied with t. Argument = M.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
90	+572.73		+ 44.44		−148.17		135	+309.51		+305.43		−85.39	
		−4·46		+8·57		−0·69			−6·59		+3·27		+1·96
91	568.27		53.01		147.48		136	302.92		308.70		83.43	
		4·56		8·44		0·72			6·60		3·18		1·97
92	563.71		61.45		146.76		137	296.32		311.88		81.46	
		4·67		8·29		0·76			6·61		3·09		1·99
93	559.04		69.74		146.00		138	289.71		314.97		79.47	
		4·76		8·16		0·80			6·62		3·00		2·00
94	554.28		77.90		145.20		139	283.09		317.97		77.47	
		4·86		8·02		0·84			6·63		2·91		2·02
95	549.42		85.92		144.36		140	276.46		320.88		75.45	
		4·94		7·89		0·88			6·63		2·82		2·04
96	544.48		93.81		143.48		141	269.83		323.70		73.41	
		5·04		7·75		0·91			6·64		2·73		2·05
97	539.44		101.56		142.57		142	263.19		326.43		71.36	
		5·12		7·62		0·95			6·65		2·65		2·07
98	534.32		109.18		141.62		143	256.54		329.08		69.29	
		5·20		7·48		0·98			6·65		2·56		2·08
99	529.12		116.66		140.64		144	249.89		331.64		67.21	
		5·28		7·85		1·02			6·65		2·47		2·09
100	+523.84		+124.01		−139.62		145	+243.24		+334.11		−65.12	
		−5·36		+7·22		−1·06			−6·65		+2·38		+2·10
101	518.48		131.23		138.56		146	236.59		336.49		63.02	
		5·42		7·08		1·09			6·65		2·30		2·12
102	513.06		138.31		137.47		147	229.94		338.79		60.90	
		5·48		6·95		1·13			6·66		2·22		2·13
103	507.58		145.26		136.34		148	223.28		341.01		58.77	
		5·55		6·82		1·16			6·66		2·13		2·14
104	502.03		152.08		135.18		149	216.62		343.14		56.63	
		5·61		6·69		1·20			6·66		2·06		2·15
105	496.42		158.77		133.98		150	209.96		345.20		54.48	
		5·67		6·56		1·23			6·67		1·98		2·16
106	490.75		165.33		132.75		151	203.29		347.18		52.32	
		5·73		6·44		1·27			6·67		1·90		2·17
107	485.02		171.77		131.48		152	196.62		349.08		50.15	
		5·78		6·31		1·29			6·67		1·82		2·18
108	479.24		178.08		130.19		153	189.95		350.90		47.97	
		5·83		6·19		1·32			6·67		1·74		2·19
109	473.41		184.27		128.87		154	183.28		352.64		45.78	
		5·89		6·07		1·35			6·67		1·66		2·19
110	+467.52		+190.34		−127.52		155	+176.61		+354.30		−43.59	
		−5·93		+5·95		−1·38			−6·67		+1·59		+2·21
111	461.59		196.29		126.14		156	169.94		355.89		41.38	
		5·98		5·83		1·41			6·67		1·51		2·22
112	455.61		202.12		124.73		157	163.27		357.40		39.16	
		6·02		5·71		1·43			6·66		1·44		2·22
113	449.59		207.83		123.30		158	156.61		358.84		36.94	
		6·07		5·59		1·47			6·67		1·36		2·23
114	443.52		213.42		121.83		159	149.94		360.20		34.71	
		6·10		5·47		1·50			6·66		1·28		2·24
115	437.42		218.89		120.33		160	143.28		361.48		32.47	
		6·14		5·35		1·52			6·67		1·21		2·24
116	431.28		224.24		118.81		161	136.61		362.69		30.23	
		6·18		5·24		1·55			6·66		1·14		2·25
117	425.10		229.48		117.26		162	129.95		363.83		27.98	
		6·21		5·12		1·58			6·66		1·07		2·25
118	418.89		234.60		115.68		163	123.29		364.90		25.73	
		6·25		5·01		1·60			6·67		1·00		2·26
119	412.64		239.61		114.08		164	116.62		365.90		23.47	
		6·28		4·90		1·63			6·66		0·92		2·26
120	+406.36		+244.51		−112.45		165	+109.96		+366.82		−21.21	
		−6·31		+4·77		−1·65			−6·66		+0·85		+2·27
121	400.05		249.28		110.80		166	103.30		367.67		18.94	
		6·33		4·71		1·68			6·65		0·78		2·27
122	393.72		253.99		109.12		167	96.65		368.45		16.67	
		6·36		4·58		1·70			6·65		0·71		2·27
123	387.36		258.57		107.42		168	90.00		369.16		14.40	
		6·38		4·47		1·73			6·64		0·64		2·27
124	380.98		263.04		105.69		169	83.36		369.80		12.13	
		6·41		4·36		1·74			6·64		0·58		2·28
125	374.57		267.40		103.95		170	76.72		370.38		9.85	
		6·43		4·26		1·77			6·64		0·50		2·26
126	368.14		271.66		102.18		171	70.08		370.88		7.57	
		6·45		4·15		1·79			6·63		0·43		2·28
127	361.69		275.81		100.39		172	63.45		371.31		5.29	
		6·46		4·05		1·80			6·62		0·37		2·29
128	355.23		279.86		98.59		173	56.83		371.68		3.00	
		6·48		3·95		1·83			6·63		0·29		2·28
129	348.75		283.81		96.76		174	50.20		371.97		− 0.72	
		6·50		3·84		1·85			6·63		0·22		2·29
130	+342.25		+287.65		− 94.91		175	+ 43.57		+372.19		+ 1.57	
		−6·52		+3·75		−1·86			−6·63		+0·16		+2·28
131	335.73		291.40		93.05		176	36.94		372.35		3.85	
		6·53		3·65		1·89			6·63		0·09		2·29
132	329.20		295.05		91.16		177	30.31		372.44		6.14	
		6·55		3·55		1·91			6·62		+0·02		2·29
133	322.65		298.60		89.25		178	23.69		372.46		8.43	
		6·56		3·46		1·92			6·62		−0·05		2·28
134	316.09		302.06		87.33		179	17.07		372.41		10.71	
		−6·58		+3·37		−1·94			−6·62		−0·11		+2·28
135	+309.51		+305.43		− 85.39		180	+ 10.45		+372.30		+12.99	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

Terms multiplied with t. Argument = M.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
180	+ 10.45		+372.30		+ 12.99		225	−281.71		+294.58		+106.59	
		−6·61		−0·18		+2·28			−6·28		−3·48		+1·73
181	+ 3.84		372.12		15.27		226	287.99		291.10		108.32	
		6·61		0·25		2·27			6·27		3·57		1·71
182	− 2.77		371.87		17.54		227	294.26		287.53		110.03	
		6·60		0·32		2·27			6·26		3·66		1·69
183	9.37		371.55		19.81		228	300.52		283.87		111.72	
		6·60		0·39		2·27			6·25		3·74		1·67
184	15.97		371.16		22.08		229	306.77		280.13		113.39	
		6·60		0·45		2·26			6·23		3·84		1·64
185	22.57		370.71		24.34		230	313.00		276.29		115.03	
		6·59		0·52		2·26			6·21		3·92		1·62
186	29.16		370.19		26.60		231	319.21		272.37		116.65	
		6·58		0·59		2·25			6·19		4·01		1·59
187	35.74		369.60		28.85		232	325.40		268.36		118.24	
		6·58		0·66		2·25			6·17		4·11		1·57
188	42.32		368.94		31.10		233	331.57		264.25		119.81	
		6·58		0·72		2·24			6·15		4·21		1·55
189	48.90		368.21		33.34		234	337.72		260.04		121.36	
		6·57		0·80		2·23			6·13		4·30		1·53
190	− 55.47		+367.41		+ 35.57		235	−343.85		+255.74		+122.89	
		−6·57		−0·86		+2·23			−6·10		−4·39		+1·50
191	62.04		366.55		37.80		236	349.95		251.35		124.39	
		6·56		0·93		2·22			6·08		4·49		1·47
192	68.60		365.62		40.02		237	356.03		246.86		125.86	
		6·57		0·99		2·21			6·05		4·59		1·44
193	75.17		364.63		42.23		238	362.08		242.27		127.30	
		6·56		1·07		2·21			6·02		4·69		1·42
194	81.73		363.56		44.44		239	368.10		237.58		128.72	
		6·55		1·13		2·20			6·00		4·79		1·39
195	88.28		362.43		46.64		240	374.10		232.79		130.11	
		6·55		1·20		2·19			5·97		4·89		1·36
196	94.83		361.23		48.83		241	380.07		227.90		131.47	
		6·54		1·28		2·18			5·94		4·99		1·34
197	101.37		359.95		51.01		242	386.01		222.91		132.81	
		6·54		1·34		2·17			5·90		6·09		1·30
198	107.91		358.61		53.18		243	391.91		217.82		134.11	
		6·53		1·41		2·16			5·87		5·19		1·27
199	114.44		357.20		55.34		244	397.78		212.63		135.38	
		6·52		1·49		2·14			5·84		5·30		1·24
200	−120.96		+355.71		+ 57.48		245	−403.62		+207.33		+136.62	
		−6·52		−1·55		+2·14			−5·80		−5·41		+1·21
201	127.48		354.16		59.62		246	409.42		201.92		137.83	
		6·51		1·63		2·13			5·77		6·52		1·18
202	133.99		352.53		61.75		247	415.19		196.40		139.01	
		6·51		1·69		2·11			5·72		5·63		1·14
203	140.59		350.84		63.86		248	420.91		190.77		140.15	
		6·50		1·77		2·10			5·69		5·74		1·12
204	147.00		349.07		65.96		249	426.60		185.03		141.27	
		6·50		1·84		2·09			5·65		5·85		1·08
205	153.50		347.23		68.05		250	432.25		179.18		142.35	
		6·50		1·91		2·08			5·60		5·96		1·05
206	160.00		345.32		70.13		251	437.85		173.22		143.40	
		6·49		1·99		2·06			5·55		6·08		1·01
207	166.49		343.33		72.19		252	443.40		167.14		144.41	
		6·48		2·06		2·05			5·50		6·19		0·98
208	172.97		341.27		74.24		253	448.90		160.95		145.39	
		6·48		2·13		2·04			5·45		6·30		0·95
209	179.45		339.14		76.28		254	454.35		154.65		146.34	
		6·47		2·20		2·02			5·40		6·42		0·91
210	−185.92		+336.94		+ 78.30		255	−459.75		+148.23		+147.25	
		−6·45		−2·27		+2·01			−5·34		−6·54		+0·88
211	192.37		334.67		80.31		256	465.09		141.69		148.13	
		6·45		2·34		1·99			5·29		6·66		0·84
212	198.82		332.33		82.30		257	470.38		135.03		148.97	
		6·43		2·42		1·97			5·22		6·78		0·80
213	205.25		329.91		84.27		258	475.60		128.25		149.77	
		6·42		2·50		1·96			5·16		6·91		0·76
214	211.67		327.41		86.23		259	480.76		121.34		150.53	
		6·41		2·58		1·94			5·09		7·03		0·73
215	218.08		324.83		88.17		260	485.85		114.31		151.26	
		6·41		2·65		1·92			5·03		7·15		0·69
216	224.49		322.18		90.09		261	490.88		107.16		151.95	
		6·40		2·74		1·91			4·95		7·28		0·65
217	230.89		319.44		92.00		262	495.83		99.88		152.60	
		6·40		2·83		1·89			4·88		7·40		0·61
218	237.29		316.61		93.89		263	500.71		92.48		153.21	
		6·39		2·90		1·87			4·81		7·53		0·57
219	243.68		313.71		95.76		264	505.52		84.95		153.78	
		6·38		2·99		1·86			4·73		7·65		0·53
220	−250.06		+310.72		+ 97.62		265	−510.25		+ 77.30		+154.31	
		−6·36		−3·06		+1·83			−4·65		−7·78		+0·48
221	256.42		307.66		99.45		266	514.90		69.52		154.79	
		6·35		3·15		1·82			4·56		7·90		0·45
222	262.77		304.51		101.27		267	519.46		61.62		155.24	
		6·33		3·23		1·79			4·47		8·03		0·41
223	269.10		301.28		103.06		268	523.93		53.59		155.65	
		6·31		3·31		1·78			4·38		8·16		0·36
224	275.41		297.97		104.84		269	528.31		45.43		156.01	
		−6·30		−3·39		+1·75			−4·28		−8·29		+0·32
225	−281.71		+294.58		+106.59		270	−532.59		+ 37.14		+156.33	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

Terms multiplied with t. Argument = M.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
270	−532.59		+ 37.14		+156.33		315	−549.99		−458.42		+120.33	
		−4.19		− 8.43		+0.28			+ 5.44		−12.64		−1.99
271	536.78		28.71		156.61		316	544.55		471.06		118.34	
		4.08		8.57		0.23			5.67		12.61		2.05
272	540.86		20.14		156.84		317	538.78		483.67		116.29	
		3.97		8.69		0.19			6.11		12.58		2.10
273	544.83		11.45		157.03		318	532.67		496.25		114.19	
		3.86		8.83		0.14			6.46		12.54		2.16
274	548.69		+ 2.62		157.17		319	526.21		508.79		112.03	
		3.74		8.96		0.10			6.81		12.48		2.20
275	552.43		− 6.34		157.27		320	519.40		521.27		109.83	
		3.62		9.09		0.05			7.15		12.42		2.26
276	556.05		15.43		157.32		321	512.25		533.69		107.57	
		3.50		9.23		+0.01			7.51		12.34		2.31
277	559.55		24.66		157.33		322	504.74		546.03		105.26	
		3.36		9.36		−0.04			7.86		12.24		2.35
278	562.91		34.02		157.29		323	496.88		558.27		102.91	
		3.23		9.49		0.09			8.21		12.15		2.40
279	566.14		43.51		157.20		324	488.67		570.42		100.51	
		3.09		9.62		0.14			8.57		12.03		2.45
280	−569.23		− 53.13		+157.06		325	−480.10		−582.45		+ 98.06	
		−2.95		− 9.76		−0.18			+ 8.93		−11.90		−2.49
281	572.18		62.89		156.88		326	471.17		594.35		95.57	
		2.80		9.88		0.23			9.29		11.76		2.54
282	574.98		72.77		156.65		327	461.88		606.11		93.03	
		2.65		10.01		0.28			9.65		11.61		2.59
283	577.63		82.78		156.37		328	452.23		617.72		90.44	
		2.50		10.15		0.32			10.00		11.43		2.63
284	580.13		92.93		156.05		329	442.23		629.15		87.81	
		2.34		10.27		0.37			10.36		11.27		2.67
285	582.47		103.20		155.68		330	431.87		640.42		85.14	
		2.17		10.40		0.42			10.72		11.08		2.72
286	584.64		113.60		155.26		331	421.15		651.50		82.42	
		2.00		10.53		0.47			11.06		10.87		2.75
287	586.64		124.13		154.79		332	410.09		662.37		79.67	
		1.82		10.65		0.52			11.41		10.66		2.80
288	588.46		134.78		154.27		333	398.68		673.03		76.87	
		1.64		10.78		0.58			11.75		10.42		2.84
289	590.10		145.56		153.69		334	386.93		683.45		74.03	
		1.45		10.91		0.62			12.09		10.18		2.88
290	−591.55		−156.47		+153.07		335	−374.84		−693.63		+ 71.15	
		−1.25		−11.02		−0.68			+12.42		− 9.92		−2.91
291	592.80		167.49		152.39		336	362.42		703.55		68.24	
		1.05		11.14		0.73			12.74		9.68		2.95
292	593.85		178.63		151.66		337	349.68		713.20		65.29	
		0.85		11.25		0.78			13.06		9.36		2.98
293	594.70		189.88		150.88		338	336.62		722.56		62.31	
		0.64		11.36		0.83			13.37		9.07		3.02
294	595.34		201.24		150.05		339	323.25		731.63		59.29	
		0.43		11.47		0.88			13.68		8.76		3.05
295	595.77		212.71		149.17		340	309.57		740.39		56.24	
		−0.21		11.57		0.94			13.97		8.44		3.07
296	595.98		224.28		148.23		341	295.60		748.83		53.17	
		+0.02		11.68		0.99			14.27		8.10		3.10
297	595.96		235.96		147.24		342	281.33		756.93		50.07	
		0.25		11.78		1.04			14.55		7.75		3.13
298	595.71		247.74		146.20		343	266.78		764.68		46.94	
		0.49		11.67		1.10			14.81		7.38		3.15
299	595.22		259.61		145.10		344	251.97		772.06		43.79	
		0.74		11.96		1.15			15.07		7.01		3.18
300	−594.48		−271.57		+143.95		345	−236.90		−779.07		+ 40.61	
		+0.99		−12.08		−1.20			+15.32		− 6.60		−3.20
301	593.49		283.63		142.75		346	221.58		785.67		37.41	
		1.25		12.15		1.25			15.54		6.27		3.23
302	592.24		295.78		141.50		347	206.04		791.94		34.18	
		1.51		12.22		1.30			15.76		5.84		3.24
303	590.73		308.00		140.20		348	190.28		797.78		30.94	
		1.78		12.28		1.36			15.96		5.43		3.27
304	588.95		320.28		138.84		349	174.32		803.21		27.67	
		2.06		12.37		1.41			16.15		5.01		3.28
305	586.89		332.63		137.43		350	158.17		808.22		24.39	
		2.33		12.41		1.47			16.32		4.58		3.29
306	584.56		345.04		135.96		351	141.85		812.80		21.10	
		2.63		12.47		1.53			16.49		4.14		3.30
307	581.93		357.51		134.43		352	125.36		816.94		18.80	
		2.92		12.62		1.58			16.62		3.69		3.32
308	579.01		370.03		132.85		353	108.74		820.63		14.48	
		3.21		12.56		1.63			16.76		3.24		3.32
309	575.80		382.59		131.22		354	91.98		823.87		11.16	
		3.51		12.60		1.68			16.87		2.78		3.33
310	−572.29		−395.19		+129.53		355	− 75.11		−826.65		+ 7.83	
		+3.83		−12.62		−1.74			+16.97		− 2.35		−3.33
311	568.46		407.81		127.79		356	58.14		829.00		4.50	
		4.13		12.64		1.79			17.05		1.86		3.34
312	564.33		420.45		126.00		357	41.09		830.86		+ 1.16	
		4.45		12.66		1.84			17.11		1.39		3.34
313	559.88		433.11		124.16		358	23.98		832.25		− 2.17	
		4.78		12.65		1.89			17.15		0.93		3.33
314	555.10		445.76		122.27		359	− 6.83		833.18		5.50	
		+5.11		−12.66		−1.94			+17.20		− 0.46		−3.33
315	−549.99		−458.42		+120.33		360	+ 10.37		−833.64		− 8.83	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT I.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	−3930		+2377		+ 17		45	+4374		+3666		−256	
		+ 96		+182		−6			+160		−159		−2
1	3834		2559		11		46	4534		3507		258	
		103		178		6			154		165		2
2	3731		2737		+ 5		47	4688		3342		260	
		112		174		7			148		172		1
3	3619		2911		− 2		48	4836		3170		261	
		119		170		7			140		178		1
4	3500		3081		9		49	4976		2992		262	
		126		165		6			132		184		−1
5	3374		3246		15		50	5108		2808		263	
		133		160		7			125		189		0
6	3241		3406		22		51	5233		2619		263	
		141		154		8			117		195		0
7	3100		3560		30		52	5350		2424		263	
		147		149		7			110		199		0
8	2953		3709		37		53	5460		2225		263	
		153		143		7			100		204		0
9	2800		3852		44		54	5560		2021		263	
		160		137		7			93		209		+1
10	−2640		+3989		− 51		55	+5653		+1812		−262	
		+166		+131		−8			+ 84		−211		+1
11	2474		4120		59		56	5737		1601		261	
		171		124		7			75		216		1
12	2303		4244		66		57	5812		1385		260	
		177		116		8			66		219		2
13	2126		4360		74		58	5878		1167		258	
		182		110		7			57		221		2
14	1944		4470		81		59	5935		946		256	
		187		102		8			48		223		2
15	1757		4572		89		60	5983		723		254	
		192		95		7			39		225		2
16	1565		4667		96		61	6022		498		252	
		196		87		8			30		226		3
17	1369		4754		104		62	6052		272		249	
		200		78		7			20		228		3
18	1169		4832		111		63	6072		+ 44		246	
		203		71		8			12		228		3
19	966		4903		119		64	6084		− 184		243	
		206		62		7			+ 2		229		4
20	− 760		+4965		−126		65	+6086		− 413		−239	
		+210		+ 54		−8			− 8		−228		+4
21	550		5019		134		66	6078		641		235	
		212		45		7			17		228		4
22	338		5064		141		67	6061		869		231	
		214		37		7			26		227		4
23	− 124		5101		148		68	6035		1096		227	
		217		27		7			35		226		4
24	+ 93		5128		155		69	6000		1322		223	
		217		19		7			44		224		5
25	310		5147		162		70	5956		1546		218	
		219		+ 10		6			53		222		5
26	529		5157		168		71	5903		1768		213	
		219		0		7			62		220		5
27	748		5157		175		72	5841		1988		208	
		219		− 8		6			71		217		6
28	967		5149		181		73	5770		2205		202	
		220		18		7			79		213		5
29	1187		5131		188		74	5691		2418		197	
		219		26		6			87		210		6
30	+1406		+5105		−194		75	+5604		−2628		−191	
		+218		− 36		−6			− 96		−207		+6
31	1624		5069		200		76	5508		2835		185	
		217		44		5			103		202		6
32	1841		5025		205		77	5405		3037		179	
		215		54		6			112		198		6
33	2056		4971		211		78	5293		3235		173	
		213		62		5			119		193		6
34	2269		4909		216		79	5174		3428		167	
		211		71		5			126		188		7
35	2480		4838		221		80	5048		3616		160	
		208		80		5			133		183		7
36	2688		4758		226		81	4915		3799		153	
		201		89		4			140		177		6
37	2892		4669		230		82	4775		3976		147	
		201		97		4			146		172		7
38	3093		4572		234		83	4629		4148		140	
		198		106		4			153		165		7
39	3291		4466		238		84	4476		4313		133	
		193		114		4			159		160		7
40	+3484		+4352		−242		85	+4317		−4473		−126	
		+188		−122		−3			−164		−152		+8
41	3672		4230		245		86	4153		4625		118	
		184		129		3			170		147		8
42	3856		4101		248		87	3983		4772		110	
		178		138		3			175		139		7
43	4034		3963		251		88	3808		4911		103	
		173		145		3			179		132		7
44	4207		3818		254		89	3629		5043		96	
		+167		−152		−2			−184		−126		+7
45	+4374		+3666		−256		90	+3445		−5169		− 89	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT I.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
90	+3445		−5169		− 89		135	−4688		−3586		+238	
		−188		−118		+8			−97		+152		+6
91	3257		5287		81		136	4785		3434		244	
		192		111		8			91		154		6
92	3065		5398		73		137	4876		3280		250	
		195		103		7			86		156		5
93	2870		5501		66		138	4962		3124		255	
		199		96		8			80		158		6
94	2671		5597		58		139	5042		2966		261	
		201		88		8			74		160		6
95	2470		5685		50		140	5116		2806		267	
		203		80		8			69		160		5
96	2267		5765		42		141	5185		2646		272	
		206		73		7			63		162		5
97	2061		5838		35		142	5248		2484		277	
		208		65		8			57		162		6
98	1853		5903		27		143	5305		2322		283	
		210		58		8			52		164		5
99	1643		5961		19		144	5357		2158		288	
		210		49		8			46		163		5
100	+1433		−6010		− 11		145	−5403		−1995		+293	
		−211		− 42		+8			−41		+164		+5
101	1221		6052		− 3		146	5444		1831		298	
		212		34		8			35		164		5
102	1009		6086		+ 5		147	5479		1667		303	
		213		27		7			30		164		4
103	796		6113		12		148	5509		1503		307	
		212		18		8			24		164		5
104	584		6131		20		149	5533		1339		312	
		212		11		8			19		164		4
105	372		6142		28		150	5552		1175		316	
		212		− 4		8			14		163		5
106	+ 160		6146		36		151	5566		1012		321	
		211		+ 4		7			9		162		4
107	− 51		6142		43		152	5575		850		325	
		210		11		8			− 4		161		4
108	261		6131		51		153	5579		689		329	
		208		18		8			+ 2		161		3
109	469		6113		59		154	5577		528		332	
		207		26		7			6		159		4
110	− 676		−6087		+ 66		155	−5571		− 369		+336	
		−205		+ 32		+8			11		+157		+4
111	881		6055		74		156	5560		212		340	
		202		39		8			16		156		3
112	1083		6016		82		157	5544		− 56		343	
		200		46		7			20		155		3
113	1283		5970		89		158	5524		+ 99		346	
		198		53		8			25		153		3
114	1481		5917		97		159	5499		252		349	
		194		60		7			29		152		3
115	1675		5857		104		160	5470		404		352	
		192		65		7			33		149		3
116	1867		5792		111		161	5437		553		355	
		188		72		8			38		147		3
117	2055		5720		119		162	5399		700		358	
		185		78		7			41		145		2
118	2240		5642		126		163	5358		845		360	
		181		84		7			46		143		2
119	2421		5558		133		164	5312		988		362	
		177		89		7			49		140		2
120	−2598		−5469		+140		165	−5263		+1128		+364	
		−173		+ 95		+7			+53		+138		+2
121	2771		5374		147		166	5210		1266		366	
		169		100		7			57		136		1
122	2940		5274		154		167	5153		1402		367	
		164		105		7			60		133		2
123	3104		5169		161		168	5093		1535		369	
		160		110		7			63		130		1
124	3264		5059		168		169	5030		1665		370	
		155		115		7			66		128		1
125	3419		4944		175		170	4964		1793		371	
		151		119		6			70		124		0
126	3570		4825		181		171	4894		1917		371	
		145		124		7			73		122		+1
127	3715		4701		188		172	4821		2039		372	
		140		127		6			75		119		0
128	3855		4574		194		173	4746		2158		372	
		135		132		7			78		117		0
129	3990		4442		201		174	4668		2275		372	
		130		135		6			81		113		0
130	−4120		−4307		+207		175	−4587		+2388		+372	
		−125		+138		+7			+83		+110		−1
131	4245		4169		214		176	4504		2498		371	
		119		141		6			86		108		1
132	4364		4028		220		177	4418		2606		370	
		114		145		6			88		101		1
133	4478		3883		226		178	4330		2710		369	
		108		147		6			90		102		1
134	4586		3736		232		179	4240		2812		368	
		−102		+150		+6			+92		+ 98		−2
135	−4688		−3586		+238		180	−4148		+2910		+366	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT I.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
180	−4148		+2910		+366		225	+ 988		+4377		+ 26	
		+ 94		+ 95		− 2			+120		− 31		−12
181	4054		3005		364		226	1108		4346		14	
		96		92		2			120		35		11
182	3958		3097		362		227	1228		4311		+ 3	
		98		90		2			119		38		12
183	3860		3187		360		228	1347		4273		− 9	
		99		86		3			119		41		11
184	3761		3273		357		229	1466		4232		20	
		101		83		3			119		44		11
185	3669		3356		354		230	1585		4188		31	
		103		80		4			117		47		11
186	3557		3436		350		231	1702		4141		42	
		104		77		3			117		61		11
187	3453		3513		347		232	1819		4090		53	
		105		74		4			116		54		11
188	3348		3587		343		233	1935		4036		64	
		106		71		4			115		67		11
189	3242		3658		339		234	2050		3979		75	
		107		68		5			114		61		11
190	−3135		+3726		+334		235	+2164		+3918		− 86	
		+109		+ 65		− 4			+113		− 64		−10
191	3026		3791		330		236	2277		3854		96	
		109		62		5			111		67		11
192	2917		3853		325		237	2388		3787		107	
		111		60		6			110		71		10
193	2806		3913		319		238	2498		3716		117	
		111		56		5			109		74		10
194	2695		3969		314		239	2607		3642		127	
		113		54		6			107		77		10
195	2582		4023		308		240	2714		3565		137	
		113		51		6			106		81		10
196	2469		4074		302		241	2820		3484		147	
		113		48		7			103		84		9
197	2356		4122		295		242	2923		3400		156	
		115		46		7			102		87		10
198	2241		4168		288		243	3025		3313		166	
		115		42		7			100		91		9
199	2126		4210		281		244	3125		3222		175	
		115		40		7			98		94		8
200	−2011		+4250		+274		245	+3223		+3128		−183	
		+117		+ 37		− 8			+ 95		− 98		− 9
201	1894		4287		266		246	3318		3030		192	
		116		35		8			93		101		8
202	1778		4322		258		247	3411		2929		200	
		118		32		8			90		104		8
203	1660		4354		250		248	3501		2825		208	
		117		29		8			88		107		7
204	1543		4383		242		249	3589		2718		215	
		119		27		9			85		110		8
205	1424		4410		233		250	3674		2608		223	
		118		24		8			82		113		7
206	1306		4434		225		251	3756		2495		230	
		119		21		9			79		116		6
207	1187		4455		216		252	3835		2379		236	
		119		19		10			76		120		7
208	1068		4474		206		253	3911		2259		243	
		120		16		9			73		122		5
209	948		4490		197		254	3984		2137		248	
		120		14		10			69		125		6
210	− 828		+4504		+187		255	+4053		+2012		−254	
		+120		+ 11		−10			+ 66		−126		− 5
211	708		4515		177		256	4119		1884		259	
		121		8		10			61		131		5
212	587		4523		167		257	4180		1753		264	
		120		5		10			58		133		4
213	467		4528		157		258	4238		1620		268	
		121		+ 3		10			54		136		4
214	346		4531		147		259	4292		1484		272	
		121		0		11			50		136		4
215	225		4531		136		260	4342		1346		276	
		122		− 3		10			46		140		3
216	− 103		4528		126		261	4388		1206		279	
		121		5		11			42		143		− 3
217	+ 18		4523		115		262	4430		1063		282	
		122		8		11			37		145		3
218	140		4515		104		263	4467		918		285	
		121		11		11			32		146		2
219	261		4504		93		264	4499		772		287	
		121		14		11			27		148		1
220	+ 382		+4490		+ 82		265	+4526		+ 621		−288	
		+122		− 16		−11			+ 23		−150		− 1
221	504		4474		71		266	4549		474		290	
		121		20		12			17		152		− 1
222	625		4454		59		267	4566		322		291	
		121		23		11			13		152		0
223	746		4431		48		268	4579		170		291	
		121		25		11			7		154		0
224	867		4406		37		269	4586		+ 16		291	
		+121		− 29		−11			+ 2		− 139		0
225	+ 988		+4377		+ 26		270	+4588			−155	−291	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT I.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
270	+4588		− 139		−291		315	− 644		−4428		−12	
		− 3		−155		+1			−161		+ 36		+7
271	4585		294		290		316	825		4392		− 5	
		9		156		1			180		45		8
272	4576		450		289		317	1005		4347		+ 3	
		15		156		2			179		51		6
273	4561		606		287		316	1184		4296		9	
		20		157		2			177		60		7
274	4541		763		285		319	1361		4236		16	
		26		156		2			174		66		6
275	4515		919		283		320	1535		4170		22	
		32		157		2			172		74		6
276	4483		1076		281		321	1707		4096		28	
		37		155		3			169		81		6
277	4446		1231		278		322	1876		4015		34	
		44		155		4			166		87		5
278	4402		1386		274		323	2042		3928		39	
		49		154		4			163		95		6
279	4353		1540		270		324	2205		3833		45	
		56		153		4			159		102		5
280	+4297		−1693		−266		325	−2364		−3731		+50	
		− 61		−151		+4			−155		+108		+4
281	4236		1844		262		326	2519		3623		54	
		67		149		5			151		115		5
282	4169		1993		257		327	2670		3508		59	
		74		148		5			147		121		4
283	4095		2141		252		328	2817		3387		63	
		79		146		6			141		127		3
284	4016		2287		247		329	2958		3260		66	
		85		143		6			137		133		4
285	3931		2430		241		330	3095		3127		70	
		91		140		5			131		140		3
286	3840		2570		236		331	3226		3087		73	
		96		137		7			126		144		3
287	3744		2707		229		332	3352		2843		76	
		103		135		6			120		150		2
288	3641		2842		223		333	3472		2693		78	
		108		130		7			114		155		2
289	3533		2972		216		334	3586		2538		80	
		113		127		6			107		160		2
290	+3420		−3099		−210		335	−3693		−2378		+82	
		−119		−123		+7			−102		+165		+1
291	3301		3222		203		336	3795		2213		83	
		124		118		8			95		169		1
292	3177		3340		195		337	3890		2044		84	
		130		114		7			87		174		+1
293	3047		3454		188		338	3977		1870		85	
		134		109		8			81		177		0
294	2913		3563		180		339	4058		1693		85	
		139		104		7			74		181		0
295	2774		3667		173		340	4132		1512		85	
		143		99		8			66		184		0
296	2631		3766		165		341	4198		1328		85	
		148		94		8			69		188		−1
297	2483		3860		157		342	4257		1140		84	
		152		88		8			51		190		1
298	2331		3968		149		343	4308		950		83	
		156		82		8			43		192		1
299	2175		4030		141		344	2351		758		82	
		160		76		9			36		195		2
300	+2015		−4106		−132		345	−4387		− 563		+80	
		−163		− 70		+8			− 27		+196		−2
301	1852		4176		124		346	4414		367		78	
		166		63		8			20		197		3
302	1686		4239		116		347	4434		− 170		75	
		170		58		9			11		199		2
303	1516		4297		107		348	4445		+ 29		73	
		172		50		8			− 3		200		3
304	1344		4347		99		349	4448		229		70	
		175		43		8			+ 6		200		4
305	1169		4390		91		350	4442		429		66	
		177		37		9			14		200		4
306	992		4427		82		351	4428		629		63	
		178		29		8			22		200		4
307	814		4456		74		352	4406		829		59	
		180		23		8			30		199		5
308	634		4479		66		353	4376		1028		54	
		181		15		8			39		198		4
309	453		4494		58		354	4337		1226		50	
		182		7		8			47		197		5
310	+ 271		−4501		− 50		355	−4290		+1423		+45	
		−163		− 1		+8			+ 50		+196		−5
311	+ 88		4502		42		356	4234		1619		40	
		183		+ 8		8			64		193		5
312	− 95		4494		34		357	4170		1812		35	
		183		14		8			72		191		6
313	278		4480		26		358	4098		2003		29	
		183		22		7			80		188		6
314	461		4458		19		359	4018		2191		23	
		−183		+ 30		+7			+ 88		+186		−6
315	− 644		−4428		− 12		360	−3930		+2377		+17	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT II.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	+3377		+2565		− 4		45	−3049		+2389		+247	
		−111		+126		+5			− 87		−126		+1
1	3266		2691		+ 1		46	3136		2263		248	
		115		122		6			82		128		1
2	3151		2813		7		47	3218		2135		249	
		120		117		5			76		131		+1
3	3031		2930		12		48	3293		2004		250	
		125		112		6			70		133		0
4	2906		3042		18		49	3363		1871		250	
		130		106		6			63		136		0
5	2776		3148		24		50	3426		1735		250	
		134		100		6			58		137		0
6	2642		3248		30		51	3484		1598		250	
		137		95		7			51		138		−1
7	2505		3343		37		52	3535		1460		249	
		142		90		6			45		140		1
8	2363		3433		43		53	3580		1320		248	
		145		84		6			39		140		2
9	2218		3517		49		54	3619		1180		246	
		147		77		7			33		142		2
10	+2069		+3594		+ 56		55	−3652		+1038		+244	
		−151		+ 71		+7			− 27		−141		−2
11	1918		3665		63		56	3679		897		242	
		154		65		7			20		142		3
12	1764		3730		70		57	3699		755		239	
		157		59		7			15		142		3
13	1607		3789		77		58	3714		613		236	
		159		53		7			8		141		3
14	1448		3842		84		59	3722		472		233	
		161		46		7			− 2		141		3
15	1287		3888		91		60	3724		331		230	
		162		39		7			+ 4		140		4
16	1125		3927		98		61	3720		191		226	
		164		32		7			10		139		4
17	961		3959		105		62	3710		+ 52		222	
		165		26		7			16		137		5
18	796		3985		112		63	3694		− 85		217	
		166		19		7			21		136		5
19	630		4004		119		64	3673		221		212	
		166		13		7			27		135		5
20	+ 464		+4017		+126		65	−3646		− 356		+207	
		−166		+ 7		+7			+ 33		−132		−6
21	298		4021		133		66	3613		488		201	
		167		− 1		7			38		130		5
22	+ 131		4023		140		67	3575		618		196	
		166		7		7			43		127		6
23	− 35		4016		147		68	3532		745		190	
		165		14		7			48		124		7
24	200		4002		154		69	3484		869		183	
		164		20		6			54		122		6
25	364		3982		160		70	3430		991		177	
		163		27		7			58		119		7
26	527		3955		167		71	3372		1110		170	
		162		33		6			63		115		7
27	689		3922		173		72	3309		1225		163	
		160		40		6			67		112		7
28	849		3882		179		73	3242		1337		156	
		158		45		6			71		109		8
29	1007		3837		185		74	3171		1446		148	
		155		52		6			76		105		7
30	−1162		+3785		+191		75	−3095		−1551		+141	
		−153		− 58		+5			+ 79		−101		−6
31	1315		3727		196		76	3016		1652		133	
		150		63		6			83		96		8
32	1465		3664		202		77	2933		1748		125	
		147		69		5			86		93		8
33	1612		3595		207		78	2847		1841		117	
		143		75		5			90		89		8
34	1755		3520		212		79	2757		1930		109	
		140		80		5			92		84		9
35	1895		3440		217		80	2665		2014		100	
		136		85		4			95		80		8
36	2031		3355		221		81	2570		2094		92	
		132		90		4			98		76		9
37	2163		3265		225		82	2472		2170		83	
		128		95		4			101		71		9
38	2291		3170		229		83	2371		2241		74	
		123		99		4			102		66		8
39	2414		3071		233		84	2269		2307		66	
		119		104		8			104		62		9
40	−2533		+2967		+236		85	−2165		−2369		+ 57	
		−113		−108		+3			+106		− 57		−9
41	2646		2859		239		86	2059		2426		48	
		109		112		2			107		53		9
42	2755		2747		241		87	1952		2479		39	
		104		116		3			109		47		9
43	2859		2631		244		88	1843		2526		30	
		98		119		2			109		44		9
44	2957		2512		246		89	1734		2570		21	
		− 92		−123		+1			+111		− 38		−9
45	−3049		+2389		+247		90	−1623		−2608		+ 12	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT II.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
90	−1623		−2608		+ 12		135	+1744		−1214		−243	
		+110		−34		−9			+21		+53		−1
91	1513	111	2642	30	+ 3	9	136	1765	20	1161	52	244	1
92	1402	112	2672	25	− 6	9	137	1785	18	1109	52	245	2
93	1290	111	2697	20	15	9	138	1803	17	1057	51	247	1
94	1179	111	2717	16	24	8	139	1820	15	1006	49	248	0
95	1068	110	2733	12	32	9	140	1835	14	957	50	248	1
96	958	110	2745	8	41	8	141	1849	12	907	48	249	1
97	848	109	2753	− 3	49	9	142	1861	12	859	47	250	0
98	739	107	2756	+ 1	58	8	143	1873	10	812	47	250	−1
99	632		2755		66		144	1883		765		251	
		107		4		8			10		46		0
100	− 525		−2751		+ 74		145	+1893		− 719		−251	
		+105		+ 9		−8			+ 8		+45		0
101	420	104	2742	12	82	8	146	1901	8	674	44	251	0
102	316	102	2730	15	90	8	147	1909	7	630	44	251	0
103	214	100	2715	19	98	8	148	1916	6	586	42	251	0
104	114	93	2696	23	106	7	149	1922	6	544	43	251	0
105	− 16	96	2673	25	113	7	150	1928	5	501	41	251	0
106	+ 80	94	2648	29	120	7	151	1933	5	460	41	251	0
107	174	92	2619	31	127	7	152	1938	4	419	40	251	0
108	266	89	2588	34	134	7	153	1942	4	379	40	251	0
109	355		2554		141		154	1946		339		251	
		86		37		6			4		40		0
110	+ 441		−2517		+147		155	+1950		− 299		−251	
		+ 84		+39		−7			+ 3		+39		+1
111	525	82	2478	41	154	6	156	1953	3	260	38	250	0
112	607	79	2437	43	160	6	157	1956	3	222	38	250	0
113	686	76	2394	45	166	5	158	1959	3	184	39	250	1
114	762	73	2349	47	171	6	159	1962	2	145	38	249	0
115	835	71	2302	49	177	5	160	1964	3	107	37	249	0
116	906	67	2253	50	182	5	161	1967	2	70	38	249	1
117	973	65	2203	51	187	5	162	1969	2	− 32	39	248	0
118	1038	62	2152	52	192	5	163	1971	2	+ 7	38	248	0
119	1100		2100		197		164	1973		45		248	
		60		54		4			2		38		1
120	+1160		−2046		+201		165	+1975		+ 83		−247	
		+ 56		+54		−4			+ 1		+39		+0
121	1216	54	1992	56	205	4	166	1976	1	122	39	247	1
122	1270	52	1938	56	209	4	167	1977	1	161	40	246	0
123	1322	48	1882	56	213	3	168	1978	+ 1	201	39	246	0
124	1370	46	1826	56	216	4	169	1979	0	240	41	246	1
125	1416	44	1770	56	220	3	170	1979	− 1	281	41	245	0
126	1460	41	1714	57	223	3	171	1978	0	322	41	245	1
127	1501	38	1657	56	226	3	172	1978	2	363	42	244	0
128	1539	36	1601	56	229	2	173	1976	2	405	43	244	1
129	1575		1545		231		174	1974		448		243	
		34		57		3			2		44		0
130	+1609		−1488		+234		175	+1972		+ 492		−243	
		+ 31		+55		−2			− 4		+44		+0
131	1640	29	1433	56	236	2	176	1968	4	536	45	243	1
132	1669	27	1377	55	238	2	177	1964	5	581	46	242	0
133	1696	25	1322	54	240	1	178	1959	6	627	47	242	1
134	1721	+ 23	1268	+54	241	−2	179	1953	− 7	674	+48	241	+1
135	+1744		−1214		+243		180	+1946		+ 722		−240	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT II.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
180	+1946		+ 722		−240		225	− 502		+2765		− 83	
		− 8		+ 49		0			−105		+ 4		+8
181	1938		771		240		226	607		2769		75	
		9		49		+1			107		+ 1		8
182	1929		820		239		227	714		2770		67	
		11		50		1			107		− 4		7
183	1918		870		238		228	721		2766		60	
		13		51		1			108		7		8
184	1905		921		237		229	929		2759		52	
		13		52		1			108		11		8
185	1892		973		236		230	1037		2748		44	
		15		52		1			109		16		8
186	1877		1025		235		231	1146		2732		36	
		17		54		1			109		19		9
187	1860		1079		234		232	1255		2713		27	
		19		54		1			109		24		8
188	1841		1133		233		233	1364		2689		19	
		20		54		1			109		28		8
189	1821		1187		232		234	1473		2661		11	
		22		55		1			109		32		9
190	+1799		+1242		−231		235	−1582		+2629		− 2	
		− 24		+ 56		+2			−108		− 36		+9
191	1775		1298		229		236	1690		2593		+ 7	
		26		56		1			108		41		8
192	1748		1354		228		237	1798		2552		15	
		29		57		2			107		45		9
193	1720		1411		226		238	1905		2507		24	
		31		57		2			105		50		8
194	1689		1468		224		239	2010		2457		32	
		33		57		2			105		54		9
195	1656		1525		222		240	2115		2403		41	
		35		57		2			103		58		9
196	1621		1582		220		241	2218		2345		50	
		38		57		2			102		63		8
197	1583		1639		218		242	2320		2282		58	
		40		57		2			100		67		9
198	1543		1696		216		243	2420		2215		67	
		43		57		3			98		71		8
199	1500		1753		213		244	2518		2144		75	
		45		57		3			95		75		9
200	+1455		+1810		−210		245	−2613		+2069		+ 84	
		− 48		+ 57		+2			− 93		− 80		+8
201	1407		1867		208		246	2706		1989		92	
		50		56		3			90		83		9
202	1357		1923		205		247	2796		1906		101	
		53		55		4			87		88		8
203	1304		1978		201		248	2883		1818		109	
		56		54		3			84		92		8
204	1248		2032		198		249	2967		1726		117	
		58		54		4			80		95		8
205	1190		2086		194		250	3047		1631		125	
		61		53		3			77		99		8
206	1129		2139		191		251	3124		1532		133	
		64		51		4			74		103		7
207	1065		2190		187		252	3198		1429		140	
		67		50		4			69		107		8
208	998		2240		183		253	3267		1322		148	
		69		49		5			66		109		7
209	929		2289		178		254	3333		1213		155	
		72		47		4			61		113		7
210	+ 857		+2336		−174		255	−3394		+1100		+162	
		− 75		+ 46		+5			− 58		−118		+7
211	782		2382		169		256	3452		984		169	
		77		44		5			52		119		7
212	705		2426		164		257	3504		865		176	
		79		42		5			48		122		7
213	626		2468		159		258	3552		743		183	
		82		39		5			43		125		6
214	544		2507		154		259	3595		618		189	
		85		38		6			38		127		6
215	459		2545		148		260	3633		491		195	
		87		35		6			32		129		5
216	372		2580		142		261	3665		362		200	
		89		32		6			28		131		6
217	283		2612		136		262	3693		231		206	
		92		30		6			22		133		5
218	191		2642		130		263	3715		+ 98		211	
		93		27		6			17		− 37		5
219	98		2669		124		264	3732		135		216	
		96		24		7			11		136		5
220	+ 2		+2693		−117		265	−3743		− 173		+221	
		− 97		+ 21		+6			− 5		−137		+4
221	− 95		2714		111		266	3748		310		225	
		100		18		7			0		138		4
222	195		2732		104		267	3748		448		229	
		101		14		7			+ 6		139		4
223	296		2746		97		268	3742		587		233	
		102		11		7			12		139		3
224	398		2757		90		269	3730		726		236	
		−104		+ 8		+7			+ 18		−140		+3
225	− 502		−2765		− 83		270	−3712		− 866		+239	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT II.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
270	−3712		− 866		+239		315	+1820		−3753		+71	
		+ 24		−140		+3			+154		+ 68		−7
271	3688		1006		242		316	1974		3685		64	
		30		139		2			152		74		7
272	3658		1145		244		317	2126		3611		57	
		36		139		2			148		80		6
273	3622		1284		246		318	2274		3531		51	
		42		139		1			146		86		7
274	3580		1423		247		319	2419		3445		44	
		48		137		2			141		92		6
275	3532		1560		249		320	2560		3353		38	
		54		136		+1			137		97		7
276	3478		1696		250		321	2697		3256		31	
		59		135		0			133		104		6
277	3419		1831		250		322	2830		3152		25	
		66		133		0			129		109		6
278	3353		1964		250		323	2959		3043		19	
		72		131		0			124		114		6
279	3281		2095		250		324	3083		2929		13	
		77		129		0			119		119		5
280	−3204		−2224		+250		325	+3202		−2810		+ 8	
		+ 83		−126		−1			+114		+124		−6
281	3121		2350		249		326	3316		2686		+ 2	
		89		123		2			109		128		5
282	3032		2473		247		327	3425		2558		− 3	
		95		121		1			103		133		5
283	2937		2594		246		328	3528		2425		8	
		99		117		2			97		137		5
284	2838		2711		244		329	3625		2288		13	
		105		114		2			92		142		4
285	2733		2825		242		330	3717		2146		17	
		111		110		3			86		145		4
286	2622		2935		239		331	3803		2001		21	
		115		107		2			79		148		4
287	2507		3042		237		332	3882		1853		25	
		120		102		3			73		152		4
288	2387		3144		234		333	3955		1701		29	
		124		97		4			67		154		3
289	2263		3241		230		334	4022		1547		32	
		129		93		4			60		157		3
290	−2134		−3334		+226		335	+4082		−1390		−35	
		+133		− 89		−4			+ 54		+160		−2
291	2001		3423		222		336	4136		1230		37	
		138		84		4			47		162		3
292	1863		3507		218		337	4183		1068		40	
		141		78		5			40		163		2
293	1722		3585		213		338	4223		905		42	
		144		73		5			33		165		1
294	1578		3658		208		339	4256		740		43	
		148		67		5			26		167		2
295	1430		3725		203		340	4282		573		45	
		152		62		5			19		167		1
296	1278		3787		198		341	4301		406		46	
		154		56		6			12		168		−1
297	1124		3843		192		342	4313		238		47	
		156		50		5			+ 5		168		0
298	968		3893		187		343	4318		− 70		47	
		159		43		6			− 2		168		0
299	809		3936		181		344	4316		+ 98		47	
		161		38		6			8		169		0
300	− 648		−3974		+175		345	+4308		+ 267		−47	
		+163		− 31		−7			− 16		+167		+1
301	485		4005		168		346	4292		434		46	
		164		25		6			23		167		1
302	321		4030		162		347	4269		601		45	
		166		19		7			30		166		1
303	− 155		4049		155		348	4239		767		44	
		167		12		7			36		164		2
304	+ 12		4061		148		349	4203		931		42	
		167		− 5		7			43		162		2
305	179		4066		141		350	4160		1093		40	
		167		+ 1		6			50		161		2
306	346		4065		135		351	4110		1254		38	
		168		8		7			57		158		3
307	514		4057		128		352	4053		1412		35	
		167		15		7			63		156		3
308	681		4042		121		353	3990		1568		32	
		167		21		7			69		153		3
309	848		4021		114		354	3921		1721		29	
		166		28		8			76		150		4
310	+1014		−3993		+106		355	+3845		+1871		−25	
		+165		+ 35		−7			− 82		+146		+3
311	1179		3958		99		356	3763		2017		22	
		163		42		7			88		143		4
312	1342		3916		92		357	3675		2160		18	
		161		48		7			94		139		5
313	1503		3868		85		358	3581		2299		13	
		159		54		7			99		135		4
314	1662		3814		78		359	3482		2434		9	
		+158		+ 61		−7			−105		+131		+5
315	+1820		−3753		+ 71		360	+3377		+2565		− 4	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT III.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	−2415		+1351		−186		45	− 901		+2619		−95	
		+19		+39					+49		+15		
1	2396		1390			+ 3	46	852		2634			+10
		20		38					49		15		
2	2376		1428				47	803		2649			
		21		38	183				49		14	85	
3	2355		1466				48	754		2663			
		21		38					50		14		
4	2334		1504			4	49	704		2677			10
		22		37					51		13		
5	2312		1541				50	653		2690			
		22		37	179				51		12	75	
6	2290		1578				51	602		2702			
		23		37					52		12		
7	2267		1615			3	52	550		2714			12
		24		36					52		11		
8	2243		1651				53	498		2725			
		24		35	176				52		10	63	
9	2219		1686				54	446		2735			
		25		35					52		10		
10	−2194		+1721			4	55	− 394		+2745			12
		+26		+35					+53		+ 9		
11	2168		1756				56	341		2754			
		26		34	172				53		8	51	
12	2142		1790				57	288		2762			
		27		34					54		8		
13	2115		1824			5	58	234		2770			12
		27		33					54		7		
14	2088		1857				59	180		2777			
		28		33	167				54		6	39	
15	2060		1890				60	126		2783			
		29		32					54		5		
16	2031		1922			5	61	72		2788			12
		29		32					54		5		
17	2002		1954				62	− 18		2793			
		30		31	162				55		3	27	
18	1972		1985				63	+ 37		2796			
		31		31					55		3		
19	1941		2016				64	92		2799			
		31		30		5			55		3		13
20	−1910		+2046				65	+ 147		+2802			
		+32		+29					+55		+ 1		
21	1878		2075		157		66	202		2803		−14	
		33		29					55		0		
22	1845		2104				67	257		2803			
		34		29		6	68	312		2803			14
23	1811		2133						55		0		
		34		28	151		69	367		2802	− 1	0	
24	1777		2161						55				
		35		27			70	422		2800	2		
25	1742		2188			7			55				14
		36		27			71	477		2797	3		
26	1706		2215						55				
		36		26	144		72	532		2793	4	+14	
27	1670		2241						55				
		37		26			73	587		2789	4		
28	1633		2267						55				
		38		25		7	74	642		2783	5		14
29	1595		2292						55		7		
		38		25			75	+ 697		+2776		28	
30	−1557		+2317		137				+54		− 7		
		+39		+24			76	751		2769			
31	1518		2341			7	77	806	55	2760	9		14
		40		23					54		9		
32	1478		2364				78	860		2751		42	
		41		23	130				54		11		
33	1437		2387				79	914		2740			
		41		23		8			53		12		14
34	1396		2410				80	967		2728			
		42		22					53		12		
35	1354		2432				81	1020		2716		56	
		42		21	122				53		14		
36	1312		2453				82	1073		2702			
		43		21		8			53		15		15
37	1269		2474				83	1126		2687			
		44		20					53		15		
38	1225		2494				84	1179		2672		71	
		45		20	114				52		17		
39	1180		2514										
		45		19			85	+1231		+2655			14
40	−1135		+2533			9			+51		−18		
		+46		+18			86	1282		2637			
41	1089		2551						51		19	85	
		46		18	105		87	1333		2618			
42	1043		2569						51		20		
		47		17			88	1384		2598			
43	996		2586			+16			50		21		+14
		47		17			89	1434		2577			
44	949		2603						+50		−23		
		+48		+16			90	+1484		+2554		+99	
45	− 901		+2619		− 95								

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT III.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
90	+1484		+2554		+ 99		135	+3026		+ 599		+243	
		+50		−23					+14		−56		
91	1534		2531			+14	136	3040		543			+2
		49		25					13		56		
92	1583		2506				137	3053		487			
		48		25	113				12		56	245	
93	1631		2481				138	3065		431			
		48		27					11		56		
94	1679		2454			14	139	3076		375			+2
		47		28					10		55		
95	1726		2426				140	3086		320			
		47		28	127				9		56	247	
96	1773		2398				141	3095		264			
		46		30					8		56		
97	1819		2368			13	142	3103		208			
		46		32					6		55		0
98	1865		2336				143	3109		153			
		45		32	140				6		56	247	
99	1910		2304				144	3115		97			
		44		33					4		55		
100	+1954		+2271			13	145	+3119		+ 42			−1
		+44		−34					+ 3		−55		
101	1998		2237				146	3122		− 13			
		43		35	153				2		54	246	
102	2041		2202				147	3124		67			
		42		37					+ 1		55		
103	2083		2165			13	148	3125		122			
		42		37					0		54		2
104	2125		2128				149	3125		176			
		41		38	166				− 2		54	244	
105	2166		2090				150	3123		230			
		41		40					2		53		
106	2207		2050			12	151	3121		283			
		39		40					4		53		3
107	2246		2010				152	3117		336			
		39		41	178				5		53	241	
108	2285		1969				153	3112		389			
		39		42					6		52		
109	2324		1927				154	3106		441			
		37		43		11			8		52		3
110	+2361		+1884				155	+3098		− 493			
		+37		−44					− 8		−52		
111	2398		1840		189		156	3090		545		238	
		36		45					10		51		
112	2434		1795				157	3080		596			
		35		46		10	158	3069		646			6
113	2469		1749						11		50		
		35		46					13		50		
114	2504		1703		199		159	3056		696		233	
		34		47					13		50		
115	2538		1656				160	3043		746			
		32		48		9	161	3028		795			5
116	2570		1608						15		49		
		32		49					15		49		
117	2602		1559		208		162	3013		844		228	
		32		49					17		48		
118	2634		1510				163	2996		892			
		30		50		8	164	2978		940			6
119	2664		1460						19		47		
		30		51									
120	+2694		+1409		216		165	+2959		− 987		222	
		+28		−51					−21		−47		
121	2722		1358			8	166	2938		1034			6
		28		52					21		46		
122	2750		1306				167	2917		1080			
		27		52	224				23		46	216	
123	2777		1254				168	2894		1126			
		26		53					24		45		
124	2803		1201			8	169	2870		1171			
		25		53					25		44		7
125	2828		1148				170	2845		1215			
		24		54	230				26		44		
126	2852		1094				171	2819		1259		209	
		23		54					27		44		
127	2875		1040			6	172	2792		1303			
		23		54					28		43		8
128	2898		986				173	2764		1346			
		21		55	236				29		42	201	
129	2919		931				174	2735		1388			
		20		55					30		41		
130	+2939		+ 876			4	175	+2705		−1429			8
		+20		−55					−31		−42		
131	2959		821				176	2674		1471			
		18		55	240				32		41	193	
132	2977		766				177	2642		1512			
		17		55					33		40		
133	2994		711			+ 3	178	2609		1552			−8
		17		56					34		39		
134	3011		655				179	2575		1591			
		+15		−56					−35		−39		
135	+3026		+ 599		+243		180	+2540		−1630		+185	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT III.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
180	+2540		−1630		+185		225	+ 463		−2740		+ 42	
		−36		−39					−49		− 7		
181	2504		1669			− 9	226	414		2747			− 9
		37		38					49		7		
182	2467		1707				227	365		2754			
		37		37	176				48		5	33	
183	2430		1744				228	317		2759			
		38		37					48		5		
184	2392		1781				229	269		2764			
		39		36		9			48		4		10
185	2353		1817				230	221		2768			
		40		36	167				48		3	23	
186	2313		1853				231	173		2771			
		41		35					48		2		
187	2272		1888				232	125		2773			
		41		34		9			47		− 1		19
188	2231		1922				233	78		2774			
		42		34	158				48		0	13	
189	2189		1956				234	+ 30		2774			
		43		33					47		+ 1		
190	+2146		−1989			9	235	− 17		−2773			19
		−43		−33					−47		+ 2		
191	2103		2022				236	64		2771			
		44		32	149				47		3		
192	2059		2054				237	111		2768		+ 3	
		44		32					46		3		
193	2015		2086				238	157		2765			
		45		31		10			46		5		10
194	1970		2117				239	203		2760			
		45		30	139				46		6		
195	1925		2147				240	249		2754		− 7	
		46		30					46		6		
196	1879		2177				241	295		2748			
		46		29		9			46		8		19
197	1833		2206				242	341		2740			
		47		29	130				46		8		
198	1786		2235				243	387		2732		17	
		47		28					45		9		
199	1739		2263				244	432		2723			
		47		27		10			45		10		10
200	+1692		−2290				245	− 477		−2713			
		−48		−27					−45		+11		
201	1644		2317		120		246	522		2702		27	
		48		26					44		12		
202	1596		2343				247	566		2690			
		48		26		9			45		13		9
203	1548		2369				248	611		2677			
		49		24	111				44		14		
204	1499		2393				249	655		2663		36	
		49		24					44		14		
205	1450		2417				250	699		2649			
		49		24		10			43		15		19
206	1401		2441				251	742		2634			
		49		22	101				44		17		
207	1352		2463				252	786		2617		46	
		49		22					43		17		
208	1303		2485				253	829		2600			
		49		21		10			43		18		
209	1254		2506				254	872		2582			9
		50		21					43		19		
210	+1204		−2527		91		255	− 915		−2563		55	
		−49		−20					−42		+19		
211	1175		2547				256	957		2544			
		51		19		10			43		21		19
212	1105		2566				257	1000		2523			
		50		18	81				42		21	65	
213	1055		2584				258	1042		2502			
		49		18					41		21		
214	1006		2602				259	1083		2481			
		50		16		9			42		23		9
215	956		2618				260	1125		2458			
		50		16	72				41		23	74	
216	906		2634				261	1166		2435			
		49		15					41		24		
217	857		2649				262	1207		2411			
		50		14		10			41		24		9
218	807		2663				263	1248		2387			
		49		14	62				40		25	83	
219	758		2677				264	1288		2362			
		50		13					40		26		
220	+ 708		−2690			10	265	−1328		−2336			9
		−49		−11					−40		+26		
221	659		2701				266	1368		2310			
		49		11	52				39		27	92	
222	610		2712				267	1407		2283			
		49		10					39		28		
223	561		2722				268	1446		2255			
		49		10		−10			39		28		− 8
224	512		2732				269	1485		2227			
		−49		− 8					−38		+29		
225	+ 463		−2740		+ 42		270	−1523		−2198		−100	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT III.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
270	−1523		−2198		−100		315	−2673		− 554		−188	
		−38		+29					− 9		+41		
271	1561		2169			−9	316	2682		513			−3
		38		30					8		42		
272	1599		2139				317	2690		471			
		37		30	109				8		42	191	
273	1636		2109				318	2698		429			
		37		30					7		42		
274	1673		2079				319	2705		387			
		37		31		8			6		42		2
275	1710		2048				320	2711		345			
		36		32	117				5		42	193	
276	1746		2016				321	2716		303			
		35		32					4		43		
277	1781		1984				322	2720		260			
		35		33		8			4		43		1
278	1816		1951				323	2724		217			
		35		33	125				4		42	194	
279	1851		1918				324	2728		175			
		34		33					2		43		
280	−1885		−1885			7	325	−2730		− 132			2
		−33		+33					− 2		+43		
281	1918		1852				326	2732		89			
		33		34	132				− 1		43	196	
282	1951		1818				327	2733		46			
		33		34					0		43		
283	1984		1784				328	2733		− 3			
		32		35		7			0		43		−1
284	2016		1749				329	2733		+ 40			
		31		35	139				+ 1		44	197	
285	2047		1714				330	2732		84			
		31		35					2		43		
286	2078		1679				331	2730		127			
		31		36		7			3		43		0
287	2109		1643				332	2727		170			
		29		36	146				3		44	197	
288	2138		1607				333	2724		214			
		29		36					4		43		
289	2167		1571				334	2720		257			
		29		36		6			4		43		0
290	−2196		−1535				335	−2716		+ 300			
		−27		+37	152				+ 5		+44	197	
291	2223		1498				336	2711		344			
		27		37					6		43		
292	2250		1461			6	337	2705		387			
		27		37					0		44		0
293	2277		1424				338	2699		431			
		26		37	158				7		43	197	
294	2303		1387				339	2692		474			
		25		38					7		43		
295	2328		1349				340	2685		517			
		24		38		6			8		44		0
296	2352		1311				341	2677		561			
		24		38	164				9		43	197	
297	2376		1273				342	2668		604			
		23		38					9		43		
298	2399		1235				343	2659		647			
		22		39		5	344	2649	10	690	43		+1
299	2421		1196										
		22		38					10		43		
300	−2443		−1158		169		345	−2639		+ 733		196	
		−20		+39					+11		+42		
301	2463		1119				346	2628		775			
		20		39		5	347	2616	12	818	43		2
302	2483		1080										
		19		40	174		348	2604	12	860	42	194	
303	2502		1040										
		19		39			349	2592	12	902	42		
304	2521		1001			4							
		17		40			350	2579	13	944	42		1
305	2538		961										
		17		40	178		351	2565	14	986	42	193	
306	2555		921										
		16		40			352	2550	15	1028	42		
307	2571		881			4							
		16		40			353	2535	15	1069	41		2
308	2587		841										
		15		40	182		354	2520	15	1110	41	191	
309	2602		801										
		14		41					16		41		
310	−2616		− 760			3	355	−2504		+1151			2
		−13		+41					+17		+41		
311	2629		719				356	2487		1192			
		12		41	185				17		40	189	
312	2641		678				357	2470		1232			
		11		41					18		40		
313	2652		637			−3	358	2452		1272			
		11		41					18		39		+3
314	2663		596				359	2434		1311			
		−10		+42					+19		+40		
315	−2673		− 554		−188		360	−2415		+1351		−186	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT IV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	−1682		+2878		+160		45	+ 822		+3243		− 2	
		+50		+28					+55		−14		
1	1632		2906			− 9	46	878		3229			−12
		50		28					56		15		
2	1582		2934		151		47	934		3214		14	
		51		27					56		16		
3	1531		2961			9	48	990		3198			11
		51		26					55		18		
4	1480		2987				49	1045		3180			
		52		25					55		18		
5	1428		3012		142		50	1100		3162		25	
		52		25					55		19		
6	1376		3037			9	51	1155		3144			12
		52		23					55		20		
7	1324		3060				52	1210		3124			
		53		22					54		21		
8	1271		3082		133		53	1264		3103		37	
		53		22					54		22		
9	1218		3104				54	1318		3081			
		54		21					53		23		
10	−1164		+3125			10	55	+1371		+3058			12
		+54		+19					+53		−23		
11	1110		3144				56	1424		3035			
		54		19	123				53		25	49	
12	1056		3163				57	1477		3010			
		55		18					52		25		
13	1001		3181			11	58	1529		2985			11
		55		17					52		26		
14	946		3198				59	1581		2959			
		55		16	112				52		27	60	
15	891		3214				60	1633		2932			
		56		15					51		28		
16	835		3229			10	61	1684		2904			12
		55		14					50		29		
17	779		3243				62	1734		2875			
		56		14	102				50		30	72	
18	723		3257				63	1784		2845			
		56		12					49		31		
19	667		3269				64	1833		2814			
		55		11		11			49		31		11
20	− 611		+3280				65	+1882		+2783			
		+57		+10	91				+48		−33	83	
21	554		3290				66	1930		2750			
		57		10					48		33		
22	497		3300			11	67	1978		2717			11
		57		8					47		34		
23	440		3308				68	2025		2683			
		57		7	80				47		35	94	
24	383		3315				69	2072		2648			
		57		7					46		35		
25	326		3322			11	70	2118		2613			
		58		5					45		37		11
26	268		3327				71	2163		2576			
		57		4	69				45		37	105	
27	211		3331				72	2208		2539			
		58		4					44		38		
28	153		3335			12	73	2252		2501			
		58		2					44		39		10
29	95		3337				74	2296		2462			
		57		+ 2					42		39		
30	− 38		+3339		57		75	+2338		+2423		115	
		+58		0					+42		−41		
31	+ 20		3339			12	76	2380		2382			10
		56		0					42		41		
32	78		3339				77	2422		2341			
		58		− 2	45				41		42	125	
33	136		3337				78	2463		2299			
		57		2					40		42		
34	193		3335			11	79	2503		2257			10
		58		4					39		43		
35	251		3331				80	2542		2214			
		58		4	34				38		44	135	
36	309		3327				81	2580		2170			
		57		5					38		45		
37	366		3322			12	82	2618		2125			
		58		7					37		45		9
38	424		3315				83	2655		2080			
		57		7	22				36		46	144	
39	481		3308				84	2691		2034			
		57		9					35		46		
40	+ 538		+3299			12	85	+2726		+1988			9
		+57		− 9					+35		−47		
41	595		3290				86	2761		1941			
		57		10	+ 10				34		48	153	
42	652		3280				87	2795		1893			
		57		12					33		48		
43	709		3268			−12	88	2828		1845			− 9
		57		12					32		49		
44	766		3256				89	2860		1796			
		+56		−13					+31		−49		
45	+ 822		+3243		− 2		90	+2891		+1747		−162	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT IV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
90	+2891		+1747		−162		135	+3285		− 808		−231	
		+30		−50					−15		−68		
91	2921		1697			−8	136	3270		866			0
		29		51					16		58		
92	2950		1646				137	3254		924			
		29		51	170				17		57	231	
93	2979		1595				138	3237		981			
		27		51					19		57		
94	3006		1544			8	139	3218		1038			+1
		27		52					19		57		
95	3033		1492				140	3199		1095			
		26		53	178				20		56	230	
96	3059		1439				141	3179		1151			
		25		53					21		56		
97	3084		1386			7	142	3158		1207			1
		24		54					22		56		
98	3108		1332				143	3136		1263			
		23		54	185				23		56	229	
99	3131		1278				144	3113		1319			
		22		54					24		55		
100	+3153		+1224			7	145	+3089		−1374			2
		+21		−55					−25		−54		
101	3174		1169				146	3064		1428			
		20		55	192				20		55	227	
102	3194		1114				147	3038		1483			
		19		55					27		53		
103	3213		1059			6	148	3011		1536			3
		18		56					27		54		
104	3231		1003				149	2984		1590			
		17		56	198				29		53	224	
105	3248		947				150	2955		1643			
		17		57					30		52		
106	3265		890			6	151	2925		1695			3
		15		57					31		52		
107	3280		833				152	2894		1747			
		14		57	204				31		51	221	
108	3294		776				153	2863		1798			
		13		57					33		51		
109	3307		719				154	2830		1849			
		12		58		6			33		50		4
110	+3319		+ 661				155	+2797		−1899			
		+12		−57					−34		−50		
111	3331		604		210		156	2763		1949		217	
		10		58					35		49		
112	3341		546				157	2728		1998			
		9		59		5	158	2692		2046			4
113	3350		487						36		48		
		8		58	215		159	2655		2094		213	
114	3358		429						37		46		
		7		59			160	2617		2141			
115	3365		370			4			36		47		5
		6		58			161	2579		2188			
116	3371		312						38		47		
		5		59	219		162	2539		2234		208	
117	3376		253						40		46		
		3		59			163	2499		2279			
118	3379		194						40		45		
		3		59		3	164	2458		2323			
119	3382		135						41		44		6
		2		60					41		44		
120	+3384		+ 75		222		165	+2417		−2367		202	
		+ 1		−59					−43		−43		
121	3385		+ 16				166	2374		2410			
		− 1		59		3			43		42		6
122	3384		− 43				167	2331		2452			
		1		59	225				44		42	196	
123	3383		102				168	2287		2494			
		2		60					44		40		
124	3381		162				169	2243		2534			
		4		59		3			46		40		7
125	3377		221				170	2197		2574			
		4		59	228				46		39	189	
126	3373		280				171	2151		2613			
		6		59					46		39		
127	3367		339				172	2105		2652			
		7		59		1			48		37		7
128	3360		398				173	2057		2689			
		7		59	229				46		37	182	
129	3353		457				174	2009		2726			
		9		59					48		36		
130	+3344		− 516			1	175	+1961		−2762			8
		−10		−59					−50		−35		
131	3334		575				176	1911		2797			
		11		59	230				50		34	174	
132	3323		634				177	1861		2831			
		12		58					50		33		
133	3311		692			−1	178	1811		2864			
		13		58					51		33		+6
134	3298		750				179	1760		2897			
		−13		−58					−52		−31		
135	+3285		− 808		−231		180	+1708		−2928		−166	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT IV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
180	+1708		−2928		−166		225	− 887		−3297		+ 1	
		−52		−30					−57		+16		
181	1656		2958			+ 9	226	944		3281			+ 2
		52		30					57		17		
182	1604		2988				227	1001		3264			
		53		29	157				56		18	13	
183	1551		3017				228	1057		3246			
		54		27					56		19		
184	1497		3044			10	229	1113		3227			12
		54		27					56		20		
185	1443		3071				230	1169		3207			
		54		26	147				55		21	25	
186	1389		3097				231	1224		3186			
		55		25					55		22		
187	1334		3122			9	232	1279		3164			
		56		24					55		23		13
188	1278		3146				233	1334		3141			
		55		23	138				54		24	38	
189	1223		3169				234	1388		3117			
		56		21					54		25		
190	+1167		−3190			10	235	−1442		−3092			12
		−57		−21					−53		+26		
191	1110		3211				236	1495		3066			
		57		20	128				52		27	50	
192	1053		3231				237	1547		3039			
		57		19					52		28		
193	996		3250			11	238	1599		3011			
		57		18					52		28		12
194	939		3268				239	1651		2983			
		58		17	117				51		30	62	
195	881		3285				240	1702		2953			
		58		16					50		31		
196	823		3301				241	1752		2922			
		58		14					50		31		12
197	765		3315				242	1802		2891			
		58		14	106				50		32	74	
198	707		3329				243	1852		2859			
		59		13					49		33		
199	648		3342				244	1901		2826			
		59		11		11			48		34		11
200	+ 589		−3353				245	−1949		−2792			
		−59		−11					−47		+35		
201	530		3364		95	.	246	1996		2757		85	
		59		9					47		36		
202	471		3373				247	2043		2721			
		59		9		11			47		37		12
203	412		3382				248	2090		2684			
		60		7	84				45		37	97	
204	352		3389				249	2135		2647			
		59		6					45		38		
205	293		3395			12	250	2180		2609			
		60		6					44		39		11
206	233		3401				251	2224		2570			
		59		4	72				44		40	108	
207	174		3405				252	2268		2530			
		60		3					43		41		
208	114		3408				253	2311		2489			
		60		2		11	254	2353		2448			
209	+ 54		3410						42		41		11
		59		− 1					41		42		
210	− 5		−3411		61		255	−2394		−2406		119	
		−60		+ 1					−40		+43		
211	65		3410			12	256	2434		2363			
		60		1					40		44		10
212	125		3409				257	2474		2319			
		59		2	49				39		44	129	
213	184		3407				258	2513		2275			
		60		3					38		45		
214	244		3404			13	259	2551		2230			
		59		6					38		45		10
215	303		3399				260	2589		2185			
		59		5	36				37		46	139	
216	362		3394				261	2626		2139			
		59		7					35		47		
217	421		3387			12	262	2661		2092			
		59		7					35		48		10
218	480		3380				263	2696		2044			
		59		9	24				34		48	149	
219	539		3371				264	2730		1996			
		59		10					34		49		
220	− 598		−3361			12	265	−2764		−1948			9
		−58		+11					−32		+49		
221	656		3350				266	2796		1899			
		58		11	− 12				32		50	158	
222	714		3339				267	2828		1849			
		58		13					30		50		
223	772		3326			+13	268	2858		1799			
		58		14					30		51		+ 9
224	830		3312				269	2888		1748			
		−57		+15					−29		+52		
225	− 887		−3297		+ 1		270	−2917		−1696		+167	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT IV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
270	−2917		−1696		+167		315	−3220		+ 862		+232	
		−28		+52					+16		+56		
271	2945		1644			+ 8	316	3204		918			0
		27		52					17		56		
272	2972		1592				317	3187		974			
		26		53	175				18		56	232	
273	2998		1539				318	3169		1030			
		26		53					19		55		
274	3024		1486			8	319	3150		1085			
		24		53					19		54		− 2
275	3048		1433				320	3131		1139			
		23		54	183				21		55	230	
276	3071		1379				321	3110		1194			
		23		55					21		54		
277	3094		1324				322	3089		1248			
		21		55		8	323	3066	23	1301	53		2
278	3115		1269										
		21		55			324	3043	23	1354	53	228	
279	3136		1214		191								
		19		56					24		53		
280	−3155		−1158			7	325	−3019		+1407			2
		−19		+56					+25		+52		
281	3174		1102				326	2994		1459			
		18		56					26		52		
282	3192		1046		198		327	2968		1511		226	
		16		56					27		52		
283	3208		990				328	2941		1563			
		16		57		6	329	2914	27	1614	51		3
284	3224		933										
		15		57			330	2885	29	1664	50	223	
285	3239		876		204								
		14		57			331	2856	29	1714	50		
286	3253		819										
		12		57		5	332	2826	30	1763	49		4
287	3265		762										
		12		58			333	2795	31	1812	49	219	
288	3277		704		209								
		11		58			334	2763	32	1860	48		
289	3288		646										
		10		58		5			33		48		5
290	−3298		− 588				335	−2730		+1908			
		− 9		+58					+33		+47		
291	3307		530		214		336	2697		1955		214	
		7		58					34		46		
292	3314		472				337	2663		2001			
		7		58		5	338	2628	35	2047	46		5
293	3321		414										
		6		59			339	2592	36	2092	45	209	
294	3327		355		219								
		5		58			340	2555	37	2137	45		
295	3332		297										
		4		59		4	341	2518	37	2181	44		5
296	3336		238										
		2		59			342	2480	38	2224	43	204	
297	3338		179		223								
		2		58			343	2441	39	2267	43		
298	3340		121										
		− 1		59		3	344	2402	39	2309	42		6
299	3341		62										
		0		58					41		41		
300	−3341		− 4		226		345	−2361		+2350		198	
		+ 1		+59					+41		+40		
301	3340		+ 55				346	2320		2390			
		2		59		2	347	2279	41	2430	40		7
302	3338		114										
		4		58			348	2237	42	2469	39	191	
303	3334		172		228								
		4		59			349	2194	43	2508	39		
304	3330		231										
		5		58		2	350	2150	44	2545	37		7
305	3325		289										
		6		58			351	2106	44	2582	37	184	
306	3319		347		230								
		7		58			352	2061	45	2618	36		
307	3312		405			+ 2							
		8		58			353	2016	45	2654	36		7
308	3304		463										
		9		58	232		354	1970	46	2688	34	177	
309	3295		521										
		11		57					47		34		
310	−3284		+ 578			0	355	−1923		+2722			8
		+11		+57					+47		+33		
311	3273		635				356	1876		2755			
		12		57	232				48		32	169	
312	3261		692				357	1828		2787			
		13		57					48		31		
313	3248		749			0	358	1780		2818			
		14		57					49		30		− 9
314	3234		806				359	1731		2848			
		+14		+56					+49		+30		
315	−3220		+ 862		+232		360	−1682		+2878		+160	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT V.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	+1204		+ 758		−2		45	+304		+1374		−1	
		−14		+21					−25		+ 5		
1	1190		779				46	279		1379			
		14		20					24		5		
2	1176		799				47	255		1384			
		15		20	2				25		4	1	
3	1161		819				48	230		1388			
		14		20					24		4		
4	1147		839				49	206		1392			
		15		20					25		3		
5	1132		859				50	181		1395			
		16		19	2				25		3	1	
6	1116		878				51	156		1398			
		16		19					25		3		
7	1100		897				52	131		1401			
		16		19					25		2		
8	1084		916				53	106		1403			
		16		18	2				25		1	1	
9	1068		934				54	81		1404			
		17		18					25		1		
10	+1051		+ 952				55	+ 56		+1405			
		−17		+18					−25		+ 1		
11	1034		970				56	31		1406			
		17		18	2				25		+ 1	1	
12	1017		988				57	+ 6		1407			
		18		17					25		0		
13	999		1005				58	− 19		1407			
		18		17					25		− 1		
14	981		1022				59	44		1406			
		18		17	2				25		1	1	
15	963		1039				60	69		1405			
		19		17					25		1		
16	944		1056				61	94		1404			
		19		16					26		2		
17	925		1072				62	119		1402			
		19		15	1				25		2	1	
18	906		1087				63	144		1400			
		20		16					25		3		
19	886		1103				64	169		1397			
		19		15					25		3		
20	+ 867		+1118				65	−194		+1394			
		−20		+15	1				−24		− 3		
21	847		1133				66	218		1391		1	
		21		14					25		4		
22	826		1147				67	243		1387			
		20		14					25		5		
23	806		1161				68	268		1382			
		21		14	1				24		5		
24	785		1175				69	292		1377		−1	
		21		13					25		5		
25	764		1188				70	317		1372			
		21		13					24		5		
26	743		1201				71	341		1367			
		22		13	1				24		6		
27	721		1214				72	365		1361		0	
		21		12					24		7		
28	700		1226				73	389		1354			
		22		12					24		7		
29	678		1238				74	413		1347			
		22		11					24		7		
30	+ 656		+1249		1		75	−437		+1340		0	
		−22		+11					−24		− 7		
31	634		1260				76	461		1333			
		23		11					24		8		
32	611		1271				77	485		1325			
		23		10	1				23		9	0	
33	588		1281				78	508		1316			
		23		10					23		9		
34	565		1291				79	531		1307			
		23		10					24		9		
35	542		1301				80	555		1298			
		23		9	1				23		10	0	
36	519		1310				81	578		1288			
		23		9					22		10		
37	496		1319				82	600		1278			
		24		8					23		10		
38	472		1327				83	623		1268			
		24		8	1				22		11	0	
39	448		1335				84	645		1257			
		23		8					23		12		
40	+ 425		+1343				85	−668		+1245			
		−24		+ 7					−22		−12		
41	401		1350				86	690		1233			
		24		6	1				22		12	0	
42	377		1356				87	712		1221			
		24		7					21		12		
43	353		1363				88	733		1209			
		25		6					22		12		
44	328		1369				89	755		1197			
		−24		+ 5					−21		−13		
45	+ 304		+1374		−1		90	−776		+1184		0	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT V.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
90	− 776		+1184		0		135	−1399		+207		+1	
		−21		−14					− 5		−24		
91	797		1170				136	1404		273			
		20		14					5		24		
92	817		1156				137	1409		249			
		21		14	0				4		24		
93	838		1142				138	1413		225		1	
		20		14					4		24		
94	858		1128				139	1417		201			
		20		15					3		25		
95	878		1113				140	1420		176			
		19		18	0				3		24		
96	897		1097				141	1423		152		1	
		20		15					3		25		
97	917		1082				142	1426		127			
		19		16					2		24		
98	936		1066				143	1428		103			
		19		16	0				1		25		
99	955		1050				144	1429		78		1	
		18		17					1		24		
100	− 973		+1033				145	−1430		+ 54			
		−18		−17					− 1		−25		
101	991		1016				146	1431		29			
		18		17	0				0		24		
102	1009		999				147	1431		+ 5		1	
		18		17					0		25		
103	1027		982				148	1431		− 20			
		17		18					+ 1		24		
104	1044		964				149	1430		44			
		17		18	0				1		25		
105	1061		946				150	1429		69		1	
		17		18					1		24		
106	1078		928				151	1428		93			
		16		19					2		25		
107	1094		909				152	1426		118			
		16		19	0				2		24		
108	1110		890				153	1424		142		1	
		16		19					3		25		
109	1126		871				154	1421		167			
		15		20					3		24		
110	−1141		+ 851				155	−1418		−191			
		−15		−19	+1				+ 4		−24		
111	1156		832				156	1414		215		1	
		14		20					4		25		
112	1170		812				157	1410		240			
		15		21					5		24		
113	1185		791				158	1405		264			
		14		20	1				5		24		
114	1199		771				159	1400		288		1	
		13		21					5		24		
115	1212		750				160	1395		312			
		13		21					8		24		
116	1225		729				161	1389		336			
		13		21	1				6		24		
117	1238		708				162	1383		360		1	
		12		21					7		23		
118	1250		687				163	1376		383			
		12		22					7		24		
119	1262		665				164	1369		407			
		12		21					7		23		
120	−1274		+ 644		1		165	−1362		−430		1	
		−11		−22					+ 8		−23		
121	1285		622				166	1354		453			
		11		23					8		24		
122	1296		599				167	1346		477			
		10		22	1				9		23		
123	1306		577				168	1337		500		2	
		10		22					9		22		
124	1316		555				169	1328		522			
		10		23					10		23		
125	1326		532				170	1318		545			
		9		23	1				10		23		
126	1335		509				171	1308		568		2	
		9		23					10		22		
127	1344		486				172	1298		590			
		8		23					11		22		
128	1352		463				173	1287		612			
		8		23	1				11		22		
129	1360		440				174	1276		634		2	
		8		24					11		22		
130	−1368		+ 416				175	−1265		−656			
		− 7		−23					+12		−21		
131	1375		393				176	1253		677			
		7		24	1				12		22		
132	1382		369				177	1241		699		2	
		6		24					13		21		
133	1388		345				178	1228		720			
		6		24					13		21		
134	1394		321				179	1215		741			
		− 5		−24					+13		−21		
135	−1399		+ 297		+1		180	−1202		−762		+2	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT V.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
180	−1202		− 762		+2		225	−301		−1372		+1	
		+14		−20					+24		− 5		
181	1188	14	782	20			226	277	25	1377	5		
182	1174	15	802	20	2		227	252	24	1382	4	1	
183	1159	15	822	20			228	228	25	1386	3		
184	1144	15	842	20			229	203	25	1389	3		
185	1129	15	862	19	2		230	178	24	1392	3	1	
186	1114	16	881	19			231	154	25	1395	3		
187	1098	16	900	18			232	129	25	1398	2		
188	1082	17	918	19	2		233	104	25	1400	2	1	
189	1065	17	937	18			234	79	25	1402	1		
190	−1048		− 955				235	− 54		−1403			
		+17		−18					+25		0		
191	1031	17	973	17			236	29	25	1403	− 1		
192	1014	18	990	17	2		237	− 4	25	1404	0	1	
193	996	18	1007	17			238	+ 21	25	1404	+ 1		
194	978	19	1024	17			239	46	24	1403	1		
195	959	18	1041	16	2		240	70	25	1402	1	1	
196	941	19	1057	16			241	95	25	1401	2		
197	922	19	1073	16			242	120	25	1399	3		
198	903	20	1089	15	1		243	145	25	1396	2	1	
199	883	20	1104	15			244	170	24	1394	3		
200	− 863		−1119				245	+194		−1391			
		+20		−15					+25		+ 4		
201	843	20	1134	14	1		246	219	25	1387	4	1	
202	823	20	1148	14			247	244	24	1383	4		
203	803	21	1162	13			248	268	24	1379	5		
204	782	21	1175	13	1		249	292	25	1374	5	1	
205	761	21	1188	13			250	317	24	1369	6		
206	740	22	1201	13			251	341	24	1363	6		
207	718	22	1214	12	1		252	365	24	1357	6	+1	
208	696	22	1226	12			253	389	24	1351	7		
209	674	22	1238	11			254	413	24	1344	8		
210	− 652		−1249		1		255	+437		−1336		0	
		+22		−11					+24		+ 7		
211	630	22	1260	11			256	461	23	1329	8		
212	608	23	1271	10			257	484	24	1321	9		
213	585	23	1281	10	1		258	508	23	1312	9	0	
214	562	23	1291	9			259	531	23	1303	9		
215	539	23	1300	9			260	554	23	1294	10		
216	516	24	1309	9	1		261	577	22	1284	10	0	
217	492	23	1318	8			262	599	23	1274	10		
218	469	24	1326	8			263	622	22	1264	11		
219	445	23	1334	7	1		264	644	22	1253	11	0	
220	− 422		−1341				265	+666		−1242			
		+24		− 7					+22		+12		
221	398	24	1348	7	1		266	688	22	1230	12		
222	374	24	1355	6			267	710	21	1218	12	0	
223	350	25	1361	6			268	731	22	1206	13		
224	325	+24	1367	− 5	+1		269	753	+21	1193	+13		
225	− 301		−1372				270	+774		−1180		0	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT V.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
270	+ 774		−1180		0		315	+1397		−299		−1	
		+21		+13					+ 5		+24		
271	795		1167				316	1402		275			
		20		14					6		24		
272	815		1153				317	1406		251			
		20		14	0				5		24	1	
273	835		1139				318	1411		227			
		20		14					4		24		
274	855		1125				319	1415		203			
		20		15					3		24		
275	875		1110				320	1418		179			
		20		15	0				3		25	1	
276	895		1095				321	1421		154			
		19		16					2		24		
277	914		1079				322	1423		130			
		19		16					2		24		
278	933		1063				323	1425		106			
		19		16	0				2		25	1	
279	952		1047				324	1427		81			
		18		16					1		24		
280	+ 970		−1031				325	+1428		− 57			
		+18		+17					+ 1		+25		
281	988		1014				326	1429		32			
		18		17	0				+ 1		24	1	
282	1006		997				327	1430		− 8			
		18		17					0		25		
283	1024		980				328	1430		+ 17			
		17		18					− 1		24		
284	1041		962				329	1429		41			
		17		18	0				1		25	1	
285	1058		944				330	1428		66			
		17		18					1		24		
286	1075		926				331	1427		90			
		16		19					2		24		
287	1091		907				332	1425		114			
		16		18	−1				2		25	1	
288	1107		889				333	1423		139			
		15		19					3		24		
289	1122		870				334	1420		163			
		16		20					3		25		
290	+1138		− 850				335	+1417		+188			
		+15		+19	1				− 4		+24	1	
291	1153		831				336	1413		212			
		14		20					4		24		
292	1167		811				337	1409		236			
		14		20					4		24		
293	1181		791				338	1405		260			
		14		21	1				5		24	1	
294	1195		770				339	1400		284			
		14		20					5		24		
295	1209		750				340	1395		308			
		13		21					6		24		
296	1222		729				341	1389		332			
		12		21	1				6		24	1	
297	1234		708				342	1383		356			
		13		21					6		23		
298	1247		687				343	1377		379			
		12		22					7		24		
299	1259		665				344	1370		403			
		11		21					8		23		
300	+1270		− 644		1		345	+1362		+426		1	
		+12		+22					− 8		+24		
301	1282		622				346	1354		450			
		11		22					8		23		
302	1293		690				347	1346		473			
		10		22	1				8		23	2	
303	1303		578				348	1338		496			
		10		23					9		23		
304	1313		555				349	1329		519			
		10		22					10		22		
305	1323		533				350	1319		541			
		9		23	1				10		23	2	
306	1332		510				351	1309		564			
		9		23					10		22		
307	1341		487				352	1299		586			
		8		23					10		23		
308	1349		464				353	1289		609			
		8		23	1				11		22	2	
309	1357		441				354	1278		631			
		8		23					12		21		
310	+1365		− 418				355	+1266		+652			
		+ 7		+24					−12		+22		
311	1372		394				356	1254		674			
		7		23	1				12		21	2	
312	1379		371				357	1242		695			
		6		24					12		22		
313	1385		347				358	1230		717			
		6		24					13		21		
314	1391		323				359	1217		738			
		+ 6		+24	−1				−13		+20	−2	
315	+1397		−299				360	+1204		+758			

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT VI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	+1041		−143		−505		45	+1010		+ 856		+ 14	
		+ 6		+23		+ 9			− 8		+18		+12
1	1047		120		496		46	1002		874		26	
		6		23		10			9		19		13
2	1053		97		486		47	993		893		39	
		6		23		9			9		18		12
3	1059		74		477		48	984		911		51	
		6		23		10			9		18		13
4	1065		51		467		49	975		929		64	
		5		24		10			9		18		12
5	1070		27		457		50	966		947		76	
		5		23		10			10		17		13
6	1075		− 4		447		51	956		964		89	
		4		23		10			10		17		12
7	1079		+ 19		437		52	946		981		101	
		4		24		11			10		17		13
8	1083		43		426		53	936		998		114	
		4		23		10			11		17		12
9	1087		66		416		54	925		1015		126	
		4		24		11			11		16		12
10	+1091		+ 90		−405		55	+ 914		+1031		+138	
		+ 3		+23		+10			−11		+16		+12
11	1094		113		395		56	903		1047		150	
		3		23		11			11		16		13
12	1097		136		384		57	892		1063		163	
		3		24		11			12		15		12
13	1100		160		373		58	880		1078		175	
		2		23		11			12		15		12
14	1102		183		362		59	868		1093		187	
		2		23		11			12		14		12
15	1104		206		351		60	856		1107		199	
		2		24		11			13		15		12
16	1106		230		340		61	843		1122		211	
		1		23		12			13		14		12
17	1107		253		328		62	830		1136		223	
		1		23		11			13		13		12
18	1108		276		317		63	817		1149		235	
		+ 1		23		11			13		13		12
19	1109		299		306		64	804		1162		247	
		0		23		12			13		13		11
20	+1109		+322		−294		65	+ 791		+1175		+258	
		0		+23		+12			−14		+13		+12
21	1109		345		282		66	777		1188		270	
		0		23		12			14		12		11
22	1109		368		270		67	763		1200		281	
		− 1		23		11			15		12		12
23	1108		391		259		68	748		1212		293	
		1		23		12			14		11		11
24	1107		414		247		69	734		1223		304	
		1		22		12			15		11		11
25	1106		436		235		70	719		1234		315	
		2		23		12			15		11		12
26	1104		459		223		71	704		1245		327	
		2		22		12			16		10		11
27	1102		481		211		72	688		1255		338	
		2		22		13			15		10		11
28	1100		503		198		73	673		1265		349	
		3		22		12			16		9		10
29	1097		525		186		74	657		1274		359	
		3		22		12			16		9		11
30	+1094		+547		−174		75	+ 641		+1283		+370	
		− 3		+22		+12			−16		+ 9		+11
31	1091		569		162		76	625		1292		381	
		4		22		13			16		8		10
32	1087		591		149		77	609		1300		391	
		4		21		12			17		8		11
33	1083		612		137		78	592		1308		402	
		4		22		12			17		7		10
34	1079		634		125		79	575		1315		412	
		5		21		13			17		7		10
35	1074		655		112		80	558		1322		422	
		5		21		12			17		6		10
36	1069		676		100		81	541		1328		432	
		5		21		13			17		6		10
37	1064		697		87		82	524		1334		442	
		6		20		13			17		6		10
38	1058		717		74		83	507		1340		452	
		6		21		12			18		5		9
39	1052		738		62		84	489		1345		461	
		6		20		13			18		5		10
40	+1046		+758		− 49		85	+ 471		+1350		+471	
		− 7		+20		+12			−18		+ 5		+ 9
41	1039		778		37		86	453		1355		480	
		7		20		13			18		4		9
42	1032		798		24		87	435		1359		489	
		7		19		12			18		3		9
43	1025		817		− 12		88	417		1362		498	
		7		20		13			18		3		9
44	1018		837		+ 1		89	399		1365		507	
		− 8		+19		+13			−19		+ 3		+ 9
45	+1010		+856		+ 14		90	+ 380		+1368		+516	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT VI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
90	+380		+1368		+516		135	− 492		+1042		+720	
		−19		+ 2		+ 9			−18		−17		− 1
91	361		1370		525		136	510		1025		719	
		18		2		8			19		16		0
92	343		1372		533		137	528		1009		719	
		19		1		8			18		17		1
93	324		1373		541		138	546		992		718	
		19		+ 1		8			17		17		0
94	305		1374		549		139	563		975		718	
		19		0		8			17		17		1
95	286		1374		557		140	580		958		717	
		20		0		8			17		18		1
96	266		1374		565		141	597		940		716	
		19		0		8			17		18		2
97	247		1374		573		142	614		922		714	
		19		− 1		7			17		18		1
98	228		1373		580		143	631		904		713	
		20		2		7			17		19		2
99	208		1371		587		144	648		885		711	
		19		2		7			16		19		2
100	+189		+1369		+594		145	− 664		+ 866		+709	
		−20		− 2		+ 7			−16		−19		− 3
101	169		1367		601		146	680		847		706	
		19		2		7			16		19		2
102	150		1365		608		147	696		828		704	
		20		3		7			15		20		3
103	130		1362		615		148	711		808		701	
		20		4		6			16		20		3
104	110		1358		621		149	727		788		698	
		20		4		6			15		20		3
105	90		1354		627		150	742		768		695	
		20		4		6			15		20		3
106	70		1350		633		151	757		748		692	
		20		5		6			15		21		4
107	50		1345		639		152	772		727		688	
		19		6		5			14		21		4
108	31		1339		644		153	786		706		684	
		20		6		6			14		21		4
109	+ 11		1333		650		154	800		685		680	
		20		6		5			14		21		4
110	− 9		+1327		+655		155	− 814		+ 664		+676	
		−20		− 6		+ 5			−14		−21		− 4
111	29		1321		660		156	828		643		672	
		20		7		5			13		22		6
112	49		1314		665		157	841		621		667	
		20		8		5			14		22		4
113	69		1306		670		158	855		599		663	
		20		8		4			13		22		5
114	89		1298		674		159	868		577		658	
		20		8		4			12		22		5
115	109		1290		678		160	880		555		653	
		20		9		4			12		22		6
116	129		1281		682		161	892		533		647	
		20		9		4			12		22		5
117	149		1272		686		162	904		511		642	
		19		9		4			12		23		6
118	168		1263		690		163	916		488		636	
		20		10		3			12		22		6
119	188		1253		693		164	928		466		630	
		20		11		4			11		23		6
120	−208		+1242		+697		165	− 939		+ 443		+624	
		−19		−10		+ 3			−11		−23		− 7
121	227		1232		700		166	950		420		617	
		20		11		2			10		23		6
122	247		1221		702		167	960		397		611	
		20		12		3			11		23		7
123	267		1209		705		168	971		374		604	
		19		12		2			10		24		7
124	286		1197		707		169	981		350		597	
		19		12		3			9		23		7
125	305		1185		710		170	990		327		590	
		20		13		2			10		23		7
126	325		1172		712		171	1000		304		583	
		19		13		1			9		24		7
127	344		1159		713		172	1009		280		576	
		19		13		2			9		23		8
128	363		1146		715		173	1018		257		568	
		18		14		1			8		24		8
129	381		1132		716		174	1026		233		560	
		19		14		1			8		23		8
130	−400		+1118		+717		175	−1034		+ 210		+552	
		−19		−15		+ 1			− 8		−24		− 8
131	419		1103		718		176	1042		186		544	
		18		15		1			7		24		8
132	437		1088		719		177	1049		162		536	
		19		15		0			7		24		8
133	456		1073		719		178	1056		138		528	
		18		15		+ 1			7		23		9
134	474		1058		720		179	1063		115		519	
		−18		−16		0			− 6		−24		− 9
135	−492		+1042		+720		180	−1069		+ 91		+510	

TABLE IV.— *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT VI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
180	−1069		+ 91		+510		225	−1000		−876		− 2	
		− 6		−24		− 9			+ 9		−17		−13
181	1075		67		501		226	991		893		15	
		6		24		9			10		17		13
182	1081		43		492		227	981		910		28	
		5		23		9			10		16		12
183	1086		+ 20		483		228	971		926		40	
		5		24		10			10		16		13
184	1091		− 4		473		229	961		942		53	
		5		24		9			10		16		13
185	1096		28		464		230	951		958		66	
		4		24		10			10		16		12
186	1100		52		454		231	941		974		78	
		4		23		10			11		15		13
187	1104		75		444		232	930		989		91	
		4		24		10			12		15		13
188	1108		99		434		233	918		1004		104	
		3		23		10			11		14		13
189	1111		122		424		234	907		1018		117	
		3		24		10			12		15		12
190	−1114		−146		+414		235	−895		−1033		−129	
		− 3		−23		−10			+12		−14		−13
191	1117		169		404		236	883		1047		142	
		2		24		11			12		13		12
192	1119		193		393		237	871		1060		154	
		2		23		10			12		14		13
193	1121		216		383		238	859		1074		167	
		1		23		11			13		13		12
194	1122		239		372		239	846		1087		179	
		1		23		11			13		12		13
195	1123		262		361		240	833		1099		192	
		1		23		11			13		12		12
196	1124		285		350		241	820		1111		204	
		− 1		23		11			13		12		12
197	1125		308		339		242	807		1123		216	
		0		23		11			14		12		12
198	1125		331		328		243	793		1135		228	
		0		22		11			14		11		13
199	1125		353		317		244	779		1146		241	
		+ 1		23		12			14		11		12
200	−1124		−376		+305		245	−765		−1157		−253	
		+ 1		−22		−11			+15		−11		−12
201	1123		398		294		246	750		1168		265	
		1		22		12			14		10		12
202	1122		420		282		247	736		1178		277	
		2		22		11			15		10		11
203	1120		442		271		248	721		1188		288	
		2		22		12			15		10		12
204	1118		464		259		249	706		1198		300	
		2		22		12			15		9		12
205	1116		486		247		250	691		1207		312	
		3		21		12			15		9		12
206	1113		507		235		251	676		1216		324	
		3		22		12			16		9		11
207	1110		529		223		252	660		1225		335	
		3		21		12			16		8		11
208	1107		550		211		253	644		1233		346	
		4		21		12			16		8		12
209	1103		571		199		254	628		1241		358	
		4		21		12			16		7		11
210	−1099		−592		+187		255	−612		−1248		−369	
		+ 4		−20		−13			+16		− 7		−11
211	1095		612		174		256	596		1255		380	
		5		21		12			17		7		11
212	1090		633		162		257	579		1262		391	
		5		20		12			16		6		11
213	1085		653		150		258	563		1268		402	
		5		20		13			17		6		10
214	1080		673		137		259	546		1274		412	
		6		19		12			17		6		11
215	1074		692		125		260	529		1280		423	
		6		20		13			17		5		10
216	1068		712		112		261	512		1285		433	
		6		19		12			17		5		11
217	1062		731		100		262	495		1290		444	
		7		19		13			18		4		10
218	1055		750		87		263	477		1294		454	
		7		19		13			17		4		10
219	1048		769		74		264	460		1298		464	
		7		18		12			18		4		10
220	−1041		−787		+ 62		265	−442		−1302		−474	
		+ 8		−19		−13			+18		− 4		−10
221	1033		806		49		266	424		1306		484	
		8		18		13			18		3		9
222	1025		824		36		267	406		1309		493	
		8		18		12			18		2		10
223	1017		842		24		268	388		1311		503	
		8		17		13			18		2		9
224	1009		859		+ 11		269	370		1313		512	
		+ 9		−17		−13			+18		− 2		− 9
225	−1000		−876		− 2		270	−352		−1315		−521	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT VI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
270°	−352		−1315		−521		315°	+482		−1021		−731	
		+18		− 2		− 9			+17		+ 4		+ 0
271	334		1317		530		316	499		1007		731	
		19		1		9			17		5		1
272	315		1318		539		317	516		992		730	
		18		− 1		9			17		5		0
273	297		1319		548		318	533		977		730	
		19		0		8			16		5		1
274	278		1319		556		319	549		962		729	
		18		0		8			17		6		2
275	260		1319		564		320	566		946		727	
		19		0		8			16		8		1
276	241		1319		572		321	582		930		726	
		19		+ 1		8			16		6		2
277	222		1318		580		322	598		914		724	
		18		1		8			16		6		2
278	204		1317		588		323	614		898		722	
		19		2		8			15		7		2
279	185		1315		596		324	629		881		720	
		19		2		7			16		7		2
280	−166		−1313		−603		325	+645		−864		−718	
		+19		+ 2		− 8			+15		+ 7		+ 3
281	147		1311		611		326	660		847		715	
		19		3		7			15		7		3
282	128		1308		618		327	675		830		712	
		19		3		6			15		8		3
283	109		1305		624		328	690		812		709	
		19		3		7			15		8		3
284	90		1302		631		329	705		794		706	
		19		4		8			14		8		3
285	71		1298		637		330	719		776		703	
		19		4		7			15		8		4
286	52		1294		644		331	734		758		699	
		19		4		6			14		9		4
287	33		1290		650		332	748		739		695	
		19		5		5			14		9		4
288	− 14		1285		655		333	762		720		691	
		19		5		6			13		9		5
289	+ 5		1280		661		334	775		701		686	
		19		6		6			14		9		4
290	+ 24		−1274		−667		335	+789		−682		−682	
		+19		+ 6		− 5			+13		+10		+ 5
291	43		1268		672		336	802		662		677	
		19		6		5			13		9		5
292	62		1262		677		337	815		643		672	
		19		7		5			13		10		5
293	81		1255		682		338	828		623		667	
		19		7		4			12		10		5
294	100		1248		686		339	840		603		662	
		19		7		5			12		11		6
295	119		1241		691		340	852		582		656	
		19		8		4			12		10		6
296	138		1233		695		341	864		562		650	
		19		8		4			12		11		6
297	157		1225		699		342	876		541		644	
		19		9		3			12		11		6
298	176		1216		702		343	888		520		638	
		19		9		4			11		11		6
299	195		1207		706		344	899		499		632	
		18		9		3			11		11		7
300	+213		−1198		−709		345	+910		−478		−625	
		+19		+ 9		− 3			+10		−12		+ 7
301	232		1189		712		346	920		456		618	
		18		10		3			11		11		7
302	250		1179		715		347	931		435		611	
		19		10		3			10		12		7
303	269		1169		718		348	941		413		604	
		18		11		2			10		12		7
304	287		1158		720		349	951		391		597	
		18		11		2			10		12		6
305	305		1147		722		350	961		369		589	
		19		11		2			9		12		7
306	324		1136		724		351	970		347		582	
		18		11		2			9		12		8
307	342		1125		726		352	979		325		574	
		18		12		1			9		12		8
308	360		1113		727		353	988		303		566	
		18		12		2			8		13		8
309	378		1101		729		354	996		280		558	
		17		13		1			8		13		9
310	+395		−1088		−730		355	+1004		−257		−549	
		+18		+13		0			+ 8		+12		+ 8
311	413		1075		730		356	1012		235		541	
		18		13		− 1			8		13		9
312	431		1062		731		357	1020		212		532	
		17		13		0			7		13		9
313	448		1049		731		358	1027		189		523	
		17		14		0			7		13		9
314	465		1035		731		359	1034		166		514	
		+17		+14		− 0			+ 7		+13		+ 9
315	+482		− 1021		−731		360	+1041		−143		−505	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT VII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	− 300		+ 18		+80		180	+939		+387		−80	
		− 26		0		−3			− 54		+104		+3
5	326		18		77		185	885		491		77	
		31		− 7		3			67		96		3
10	357		+ 11		74		190	818		587		74	
		33		15		4			79		85		4
15	390		− 4		70		195	739		672		70	
		34		25		5			88		75		5
20	424		29		65		200	651		747		65	
		33		34		5			97		62		5
25	457		63		60		205	554		809		60	
		30		43		5			102		48		5
30	487		106		55		210	452		857		55	
		24		51		6			107		35		6
35	511		157		49		215	345		892		49	
		17		60		6			109		20		6
40	528		217		43		220	236		912		43	
		− 9		66		7			109		+ 5		7
45	537		283		36		225	127		917		36	
		+ 2		71		7			107		− 9		7
50	− 535		−354		+29		230	+ 20		+908		−29	
		+ 13		− 74		−7			−102		− 23		+7
55	522		428		22		235	− 82		885		22	
		26		75		7			96		36		7
60	496		503		15		240	178		849		15	
		37		74		8			88		47		8
65	459		577		+ 7		245	266		802		− 7	
		50		70		7			79		58		7
70	409		647		0		250	345		744		0	
		62		65		7			67		65		7
75	347		712		− 7		255	412		679		+ 7	
		73		58		8			55		72		8
80	274		770		15		260	467		607		15	
		83		49		7			43		76		7
85	191		819		22		265	510		531		22	
		92		39		7			30		78		7
90	99		858		29		270	540		453		29	
		98		26		7			16		78		7
95	− 1		884		36		275	558		375		36	
		103		− 13		7			− 5		75		7
100	+ 102		−897		−43		280	−563		+300		+43	
		+105		+ 1		−6			+ 5		− 71		+6
105	208		896		49		285	558		229		49	
		107		15		6			16		66		6
110	315		881		55		290	542		163		55	
		106		29		5			23		57		5
115	421		852		60		295	519		106		60	
		103		43		5			30		49		5
120	524		809		65		300	489		57		65	
		97		57		5			34		40		5
125	621		752		70		305	455		+ 17		70	
		90		70		4			36		30		4
130	711		682		74		310	419		− 13		74	
		81		81		3			36		21		3
135	792		601		77		315	383		34		77	
		71		92		3			34		11		3
140	863		509		80		320	349		45		80	
		59		101		2			31		− 4		2
145	922		408		82		325	318		49		82	
		46		107		2			25		+ 3		2
150	+ 968		−301		−84		330	−293		− 46		+84	
		+ 32		+113		−1			+ 16		+ 9		+1
155	1000		188		85		335	275		37		85	
		17		116		0			11		12		0
160	1017		− 72		85		340	264		25		85	
		+ 3		116		0			+ 3		13		0
165	1020		+ 46		85		345	261		− 12		85	
		− 13		117		+1			− 5		13		−1
170	1007		163		84		350	266		+ 1		84	
		27		114		2			13		11		2
175	980		277		82		355	279		12		82	
		− 41		+110		+2			− 21		+ 6		−2
180	+ 939		+387		−80		360	−300		+ 18		+80	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT VIII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	+ 107		− 13		−61		180	−340		+174		+66	
		+ 7		+ 3		+2			+25		+35		−3
5	114		10		59		185	315		209		63	
		9		6		2			28		31		3
10	123		10	− 3	57		190	287		240		60	
		11				3			32		28		3
15	134		13	7	54		195	255		268		57	
		11				3			35		24		4
20	145		20	10	51		200	220		292		53	
		12				3			37		19		4
25	157		30	14	48		205	183		311		49	
		11				4			38		15		5
30	168		44	19	44		210	145		326		44	
		9				4			40		9		5
35	177		63	21	40		215	105		335		39	
		7				4			39		+ 5		5
40	184		84	25	36		220	66		340		34	
		+ 3				4			39		0		6
45	187		109		32		225	− 27		340		28	
		0		27		5			38		− 4		5
50	+ 187		−136		−27		230	+ 11		+336		+23	
		− 4		− 29		+5			+37		− 8		−6
55	183		165		22		235	48		328		17	
		9		30		6			34		13		6
60	174		195	29	16		240	82		315		11	
		14				5			31		17		6
65	160		224	29	11		245	113		298		+ 5	
		19				6			29		20		6
70	141		253	26	− 5		250	141		278		− 1	
		24				6			24		23		6
75	117		279	23	+ 1		255	165		255		7	
		29				6			20		25		6
80	88		302	19	7		260	185		230		13	
		33				6			16		28		6
85	55		321	14	13		265	201		202		18	
		36				6			12		28		5
90	+ 19		335	9	18		270	213		174		23	
		39				6			7		29		5
95	− 20		344	− 3	24		275	220		145		28	
		40				6			+ 4		29		5
100	− 60		−347		+30		280	+224		+116		−33	
		−42		+ 3		+5			− 1		−27		−5
105	102		344		35		285	223		89		38	
		42		9		5			4		26		4
110	144		335	15	40		290	219		63		42	
		41				5			8		24		4
115	185		320	21	45		295	211		39		46	
		39				5			10		21		4
120	224		299	27	50		300	201		+ 18		50	
		36				4			12		18		3
125	260		272	31	54		305	189		0		53	
		33				4			14		15		2
130	293		241	35	58		310	175		− 15		55	
		29				3			13		11		3
135	322		206	39	61		315	162		26		58	
		24				3			14		7		2
140	346		167	42	64		320	148		33		60	
		19				2			13		4		1
145	365		125	43	66		325	135		37		61	
		14				2			12		− 1		1
150	− 379		− 82		+68		330	+123		− 38		−62	
		− 7		+ 45		+1			− 9		+ 1		−1
155	386		− 37		69		335	114		37		63	
		− 2		45		0			7		4		0
160	388		+ 8		69		340	107		33		63	
		+ 4		44		0			6		5		0
165	384		52		69		345	102		28		63	
		10		42		0			− 1		6		0
170	374		94		69		350	101		22		63	
		15		41		−1			+ 2		5		+1
175	359		135		68		355	103		17		62	
		+19		+ 39		−2			+ 4		+ 4		+1
180	− 340		+174		+66		360	+107		− 13		−61	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT IX.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	+183		− 22		+ 7		180	−217		− 22		+113	
		+ 1		+27		+2			+ 1		− 7		0
5	184		+ 5		9		185	216		29		113	
		− 3		26		1			1		7		−1
10	181		31		10		190	215		36		112	
		7		26		2			2		8		0
15	174		57		12		195	213		44		112	
		10		24		3			2		7		1
20	164		81		15		200	211		51		111	
		14		23		4			2		7		1
25	150		104		19		205	209		58		110	
		16		20		5			2		8		2
30	134		124		24		210	207		66		108	
		18		18		5			3		8		1
35	116		142		29		215	204		74		107	
		21		15		6			4		8		1
40	95		157		35		220	200		82		106	
		22		12		8			4		8		2
45	73		169		41		225	196		90		104	
		23		9		6			4		9		2
50	+ 50		+178		+ 47		230	−192		− 99		+102	
		−24		+ 6		+8			+ 8		− 9		−2
55	26		184		53		235	186		108		100	
		24		+ 4		6			6		9		2
60	+ 2		188		59		240	180		117		98	
		23		0		5			7		9		2
65	− 21		188		64		245	173		126		96	
		23		− 2		6			9		9		3
70	44		186		70		250	164		135		93	
		21		4		5			9		10		3
75	65		182		75		255	155		145		90	
		20		6		5			11		9		3
80	85		176		80		260	144		154		87	
		19		8		5			12		9		3
85	104		168		85		265	132		163		84	
		17		9		4			13		9		4
90	121		159		89		270	119		172		80	
		16		10		3			15		8		4
95	137		149		92		275	104		180		76	
		14		11		4			18		7		5
100	−151		+138		+ 96		280	− 88		−187		+ 71	
		−12		−12		+3			+17		− 6		−4
105	163		126		99		285	71		193		67	
		11		12		2			18		5		5
110	174		114		101		290	53		198		62	
		9		12		3			20		3		5
115	183		102		104		295	33		201		57	
		8		12		2			20		− 1		6
120	191		90		106		300	− 13		202		51	
		7		12		1			21		+ 1		5
125	198		78		107		305	+ 8		201		46	
		5		11		2			22		3		6
130	203		67		109		310	30		198		40	
		5		11		1			22		6		6
135	208		56		110		315	52		192		34	
		3		10		1			21		9		5
140	211		46		111		320	73		183		29	
		3		10		1			21		12		5
145	214		36		112		325	94		171		24	
		2		10		1			19		15		4
150	−216		+ 26		+113		330	+113		−156		+ 20	
		− 1		− 9		0			+18		+17		−4
155	217		17		113		335	131		139		16	
		− 1		9		+1			16		20		4
160	218		+ 8		114		340	147		119		12	
		0		8		0			14		22		2
165	218		0		114		345	161		97		10	
		0		7		0			11		24		2
170	218		− 7		114		350	172		73		8	
		0		8		0			7		25		−1
175	218		15		114		355	179		48		7	
		+ 1		− 7		−1			+ 4		+26		0
180	−217		− 22		+113		360	+183		− 22		+ 7	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT X.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	−138		− 38		+8		180	+178		+ 62		−8	
		+ 2		−10		−1			− 7		+16		+1
5	136		48				185	171		78			
		3		11	7				9		16	7	
10	133		59			1	190	162		94			1
		4		10					11		14		
15	129		69		6		195	151		108		6	
		5		11		1			12		13		1
20	124		80				200	139		121			
		5		10					14		12		
25	119		90		5		205	125		133		5	
		6		10		1			14		11		1
30	113		100				210	111		144			
		7		10					16		8		
35	106		110		4		215	95		152		4	
		6		9		1			16		7		1
40	98		119				220	79		159			
		9		9					16		6		
45	89		128		3		225	63		165		−3	
		10		9					16		4		
50	− 79		−137		+3		230	+ 47		+169			
		+11		− 7		−2			−17		+ 2		+2
55	68		144				235	30		171		−1	
		12		7	+1				16		0		
60	57		151			1	240	+ 14		171			1
		13		6					16		− 1		
65	44		157		0		245	− 2		170		0	
		14		5		2			16		2		
70	30		162				250	17		168			2
		14		4					15		4		
75	16		166		−2		255	32		164		+2	
		15		3		1			14		5		1
80	− 1		169				260	46		159			
		16		− 1					13		6		
85	+ 15		170		3		265	59		153		3	
		16		+ 1		2			12		7		2
90	31		169				270	71		146			
		16		2					11		8		
95	47		167		−5		275	82		138		+5	
		16		3					10		9		
100	+ 63		−164				280	− 92		+129			
		+16		+ 5		−1			− 9		− 9		+1
105	79		159				285	101		120			
		16		7	6				6		10	6	
110	95		152			1	290	109		110			1
		15		9					7		10		
115	110		143		7		295	116		100		7	
		14		10		1			6		10		1
120	124		133				300	122		90			
		14		11					5		11		
125	138		122		8		305	127		79		8	
		12		13		0			4		10		0
130	150		109				310	131		69			
		11		14					4		11		
135	161		95		8		315	135		58		8	
		9		16		0			3		11		0
140	170		79				320	138		47			
		8		16					2		11		
145	178		63		0		325	140		36		0	
		6		17					1		10		
150	+184		− 46		−8		330	−141		+ 26		+8	
		+ 4		+18		−1			− 1		−11		+1
155	188		28				335	142		15			
		+ 2		16	9				0		11	9	
160	190		− 10				340	142		+ 4			
		0		16		+1			0		10		−1
165	190		+ 8				345	142		− 6			
		− 2		18	8				+ 1		11	8	
170	188		26				350	141		17			
		4		18		0			1		10		0
175	184		44				355	140		27			
		− 6		+18	−8				+ 2		−11		
180	+178		+ 62				360	−138		− 38		+8	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	− 84		−120		+ 1		180	+ 37		+156		− 1	
		− 8		+ 10		+2			+16		− 3		−2
5	92		110				185	53		153			
		7		10					15		4		
10	99		100		3		190	68		149		3	
		6		10		3			16		6		3
15	105		90				195	84		143			
		5		10					15		8		
20	110		80		6		200	99		135		6	
		4		11		3			15		9		3
25	114		69				205	114		126			
		3		10					13		11		
30	117		59		9		210	127		115		9	
		2		10		2			13		12		2
35	119		49				215	140		103			
		2		10					11		13		
40	121		39		11		220	151		90		11	
		− 1		9					10		15		
45	122		30			2	225	161		75			2
		0		9					8		16		
50	−122		− 21		+13		230	+169		+ 59		−13	
		0		+ 9		+1			+ 6		−17		−1
55	122		12				235	175		42			
		0		9					5		18		
60	122		− 3		14		240	180		24		14	
		0		9		+2			+ 2		18		−2
65	122		+ 6				245	182		+ 6			
		+ 1		8					0		18		
70	121		14		16		250	182		− 12		16	
		1		8		0			− 2		18		
75	120		22				255	180		30			0
		1		8					4		18		
80	119		30		16		260	176		48		16	
		1		8		0			6		18		
85	118		38				265	170		66			0
		2		8					7		16		
90	116		46		16		270	163		82		16	
		2		8					10		15		
95	114		54			0	275	153		97			0
		2		9					11		14		
100	−112		+ 63		+16		280	+142		−111		−16	
		+ 3		+ 8		−1			−13		−13		+1
105	109		71				285	129		124			
		4		8					14		11		
110	105		79		15		290	115		135		15	
		4		9		1			14		10		1
115	101		88				295	101		145			
		5		8					16		8		
120	96		96		14		300	85		153		14	
		6		8		2			16		6		2
125	90		104				305	69		159			
		7		8					16		4		
130	83		112		12		310	53		163		12	
		7		8		2			17		2		2
135	76		120				315	36		165			
		9		8					16		− 1		
140	67		128		10		320	20		166		10	
		10		7		2			16		+ 1		
145	57		135				325	+ 4		−165			2
		11		6					15		3		
150	− 46		+141		+ 8		330	− 11		−162		− 8	
		+12		+ 5		−3			−15		+ 4		+3
155	34		146				335	26		158			
		13		5					14		6		
160	21		151		5		340	40		152		5	
		13		3		3			12		6		3
165	− 8		154				345	52		146			
		15		+ 2					12		8		
170	+ 7		156		+ 2		350	64		138		− 2	
		15		0		−3			10		9		+3
175	22		156				355	74		129			
		+15		0					−10		+ 9		
180	+ 37		+156		− 1		360	− 84		−120		+ 1	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XII.							ARGUMENT XIII.						
Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.	Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°							°						
0	+ 5		+ 5		+23		0	+23		−15		−8	
		+20		+12		−8			−2		−3		
10	25		17		15		10	21		18		7	
		19		11		9			2		3		
20	44		28		+ 6		20	19		21		6	
		18		11		9			3		3		
30	62		39		− 3		30	16		24		6	
		16		9		9			3		3		
40	78		48		12		40	13		27		5	
		14		8		8			4		3		
50	92		56		20		50	9		30		3	
		12		5		8			5		3		
60	104		61		28		60	+ 4		33		2	
		8		4		7			5		−2		
70	112		65		35		70	− 1		35		−1	
		5		+ 1		6			6		6		
80	117		66		41		80	7		35		+1	
		+ 1		0		4			7		0		
90	118		66		45		90	14		35		2	
		− 2		− 3		4			6		+2		
100	+116		+63		−49		100	−20		−33		+3	
		− 6		− 5		−2			−6		+4		
110	110		58		51		110	26		29		5	
		10		6		0			8		5		
120	100		52		51		120	32		24		6	
		12		8		+1			5		6		
130	88		44		50		130	37		18		6	
		15		9		3			3		8		
140	73		35		47		140	40		10		7	
		18		16		5			−2		8		
150	55		25		42		150	42		− 2		8	
		20		11		5			+1		9		
160	35		14		37		160	41		+ 7		8	
		26		11		7			2		9		
170	+ 15		+ 3		30		170	39		16		8	
		21		10		7			4		8		
180	− 6		− 7		23		180	35		24		8	
		21		11		8			5		7		
190	27		18		15		190	30		31		7	
		26		10		9			7		5		
200	− 47		−28		− 6		200	−23		+36		+6	
		−19		− 9		+9			+8		+4		
210	65		37		+ 3		210	15		40		6	
		16		8		9			8		+1		
220	81		45		12		220	− 7		41		5	
		14		7		8			8		6		
230	95		52		20		230	+ 1		41		3	
		16		5		8			8		−1		
240	105		57		28		240	9		40		2	
		8		4		7			7		3		
250	113		61		35		250	16		37		+1	
		3		− 2		6			5		5		
260	116		63		41		260	21		32		−1	
		− 1		0		4			5		6		
270	117		63		45		270	26		26		2	
		+ 3		+ 1		4			3		5		
280	114		62		49		280	29		21		3	
		7		3		+2			1		6		
290	107		59		51		290	+30		15		5	
		10		5		0			+1		6		
300	− 97		−54		+51		300	+31		+ 9		−6	
		+12		+ 7		−1			0		−5		
310	85		47		50		310	31		+ 4		6	
		15		8		3			−1		5		
320	70		39		47		320	30		− 1		7	
		17		16		5			1		4		
330	53		29		42		330	29		5		8	
		18		11		5			2		3		
340	35		18		37		340	27		8		8	
		20		11		7			2		4		
350	− 15		− 7		30		350	25		12		8	
		+20		+12		−7			−2		−3		
360	+ 5		+ 5		+23		360	+23		−15		−8	

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XIV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	−37		−12		+1	
		+3		−5		
10	34		17		1	
		3		6		
20	31		23		1	
		4		6		
30	27		28		1	
		5		4		
40	22		32		1	
		6		3		
50	16		35		+1	
		6		3		
60	10		38		0	
		7		−1		
70	− 3		39		0	
		7		0		
80	+ 4		39		0	
		7		+1		
90	11		38		0	
		7		2		
100	+18		−36		0	
		+6		+4		
110	24		32		0	
		6		4		
120	30		28		0	
		4		6		
130	34		22		−1	
		4		6		
140	38		16		1	
		2		7		
150	40		9		1	
		+1		7		
160	41		− 2		1	
		0		8		
170	41		+ 6		1	
		−2		7		
180	39		13		1	
		3		7		
190	36		20		1	
		4		6		
200	+32		+26		−1	
		−5		+5		
210	27		31		1	
		8		4		
220	21		35		1	
		7		3		
230	14		38		−1	
		7		1		
240	+ 7		39		0	
		7		+1		
250	0		40		0	
		7		−1		
260	− 7		39		0	
		7		2		
270	14		37		0	
		6		3		
280	20		34		0	
		5		4		
290	25		30		0	
		5		5		
300	−30		+25		0	
		−3		−5		
310	33		20		+1	
		3		6		
320	36		14		1	
		2		7		
330	38		7		1	
		−1		6		
340	39		+ 1		1	
		+1		6		
350	38		− 5		1	
		+1		−7		
360	−37		−12		+1	

ARGUMENT XV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	−601		+413		+17	
		+ 81		+ 97		−2
10	520		510		15	
		97		83		3
20	423		593		12	
		111		64		3
30	312		657		9	
		119		44		4
40	193		701		5	
		125		23		3
50	− 68		724		+ 2	
		127		+ 1		4
60	+ 59		725		− 2	
		125		− 21		4
70	184		704		6	
		120		42		3
80	304		662		9	
		111		63		3
90	415		599		12	
		98		80		3
100	+513		+519		−15	
		+ 82		− 97		−2
110	595		422		17	
		65		109		2
120	660		313		19	
		44		119		1
130	704		194		20	
		23		125		−1
140	727		+ 69		21	
		+ 1		127		0
150	728		− 58		21	
		− 21		125		+1
160	707		183		20	
		43		119		1
170	664		302		19	
		− 63		−111		+2
180	+601		−413		−17	

ARGUMENT XVI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+239		+301		−5	
		−57		+36		
10	182		337		4	
		62		26		
20	120		363		3	
		66		15		
30	+ 54		378		2	
		68		+ 4		
40	− 14		382		−1	
		67		− 8		
50	81		374		+1	
		65		20		
60	146		354		2	
		60		30		
70	206		324		3	
		54		40		
80	260		284		4	
		46		49		
90	306		235		5	
		37		56		
100	−343		+179		+6	
		−26		−61		
110	369		118		6	
		15		65		
120	384		+ 53		7	
		− 4		68		
130	388		− 13		7	
		+ 8		66		
140	380		79		7	
		20		64		
150	360		143		7	
		31		59		
160	329		202		6	
		41		53		
170	288		255		6	
		+49		−46		
180	−239		−301		+5	

From the Arguments >180° subtract 180°, and reverse the sign of ξ', η', and ζ'.

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XVII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	−252		+ 19		+1	
		+ 8		+43		
10	244		62		0	
		14		41		
20	230		103		−1	
		22		38		
30	208		141		2	
		28		34		
40	180		175		3	
		33		29		
50	147		204		4	
		38		22		
60	109		226		4	
		41		16		
70	68		242		5	
		44		+ 8		
80	− 24		250		5	
		44		0		
90	+ 20		250		6	
		43		− 7		
100	+ 63		+243		−6	
		+42		−15		
110	105		228		6	
		38		21		
120	143		207		6	
		34		28		
130	177		179		5	
		28		33		
140	205		146		5	
		23		37		
150	228		109		4	
		15		41		
160	243		68		3	
		8		43		
170	251		+ 25		2	
		+ 1		−44		
180	+252		− 19		−1	

ARGUMENT XIX.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+172		− 25		−4	
		− 6		−30		
10	166		55		4	
		12		28		
20	154		83		4	
		16		26		
30	138		109		3	
		20		22		
40	118		131		3	
		24		19		
50	94		150		2	
		27		14		
60	67		164		2	
		29		9		
70	38		173		1	
		30		− 4		
80	+ 8		177		−1	
		30		+ 2		
90	− 22		175		+0	
		29		7		
100	− 51		−168		+1	
		−28		+12		
110	79		156		1	
		26		17		
120	105		139		2	
		22		21		
130	127		118		2	
		19		24		
140	146		94		3	
		14		28		
150	160		66		3	
		9		29		
160	169		37		4	
		− 4		31		
170	173		− 6		4	
		+ 1		+31		
180	−172		+ 25		+4	

ARGUMENT XVIII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+110		+36		+ 3	
		+16		−10		
10	126		26		+ 1	
		12		12		
20	138		14		− 1	
		8		11		
30	146		+ 3		3	
		+ 3		12		
40	149		− 9		5	
		− 1		12		
50	148		21		6	
		5		10		
60	143		31		8	
		10		10		
70	133		41		9	
		14		9		
80	119		50		10	
		17		7		
90	102		57		11	
		21		5		
100	+ 81		−62		−11	
		−23		− 4		
110	58		66		11	
		25		− 2		
120	33		68		10	
		26		+ 1		
130	+ 7		67		10	
		26		3		
140	− 19		64		9	
		25		4		
150	44		60		7	
		24		7		
160	68		53		6	
		22		8		
170	90		45		4	
		−20		+ 9		
180	−110		−36		− 3	

ARGUMENT XX.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	−129		− 65		+ 4	
		+ 1		−20		+8
10	128		85		12	
		4		17		8
20	124		102		20	
		8		14		7
30	116		116		27	
		12		10		6
40	104		126		33	
		14		7		5
50	90		133		38	
		18		− 2		4
60	72		135		42	
		19		+ 1		3
70	53		134		45	
		22		6		+1
80	31		128		46	
		22		9		0
90	− 9		119		46	
		22		13		−1
100	+ 13		−106		+45	
		+22		+17		−3
110	35		89		42	
		22		19		4
120	57		70		38	
		19		21		5
130	76		49		33	
		17		22		7
140	93		27		26	
		14		24		7
150	107		− 3		19	
		11		23		7
160	118		+ 20		12	
		7		23		8
170	125		43		+ 4	
		+ 4		+22		−8
180	+129		+ 65		− 4	

From the Arguments >180° subtract 180°, and reverse the sign of ξ', η', and ζ'.

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XXI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+ 62		+ 79		−1	
		−15		+ 9		
10	47		88		−1	
		16		7		
20	31		95		0	
		17		4		
30	+ 14		99		0	
		18		+ 1		
40	− 4		100		0	
		17		− 2		
50	21		98		0	
		17		5		
60	38		93		0	
		16		8		
70	54		85		0	
		14		11		
80	68		74		+1	
		12		13		
90	80		61		1	
		9		15		
100	− 89		+ 46		+1	
		− 7		−16		
110	96		30		1	
		4		17		
120	100		+ 13		1	
		− 1		17		
130	101		− 4		1	
		+ 3		17		
140	98		21		1	
		5		17		
150	93		38		1	
		8		15		
160	85		53		1	
		10		14		
170	75		67		1	
		+13		−12		
180	− 62		− 79		+1	

ARGUMENT XXII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+79		+50		0	
		−10		+13		
10	69		63		0	
		12		11		
20	57		74		0	
		14		9		
30	43		83		0	
		15		6		
40	28		89		0	
		16		+ 4		
50	+12		93		0	
		16		0		
60	− 4		93		0	
		16		− 2		
70	20		91		0	
		16		5		
80	36		86		0	
		14		7		
90	50		79		0	
		13		10		
100	−63		+69		0	
		−11		−12		
110	74		57		0	
		9		14		
120	83		43		0	
		6		15		
130	89		28		0	
		4		16		
140	93		+12		0	
		− 1		16		
150	94		− 4		0	
		+ 3		16		
160	91		20		0	
		5		16		
170	86		36		0	
		+ 7		−14		
180	−79		−50		0	

ARGUMENT XXIII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	−53		+ 4		0	
		+ 1		+ 9		
10	52		13		0	
		3		9		
20	49		22		0	
		5		8		
30	44		30		0	
		6		7		
40	38		37		0	
		7		7		
50	31		44		−1	
		8		5		
60	23		49		1	
		8		3		
70	15		52		1	
		9		+ 2		
80	− 6		54		1	
		10		0		
90	+ 4		54		1	
		9		− 2		
100	+13		+52		−1	
		+ 9		− 3		
110	22		49		1	
		8		4		
120	30		45		1	
		7		6		
130	37		39		−1	
		8		7		
140	43		32		0	
		5		8		
150	48		24		0	
		3		9		
160	51		15		0	
		+ 2		9		
170	53		+ 6		0	
		0		−10		
180	+53		− 4		0	

ARGUMENT XXIV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	−53		+32		+2	
		+ 1		− 8		
10	52		24		+1	
		3		9		
20	49		15		0	
		4		9		
30	45		+ 6		−1	
		8		10		
40	39		− 4		1	
		7		9		
50	32		13		2	
		8		9		
60	24		22		3	
		8		8		
70	16		30		4	
		10		8		
80	− 6		38		5	
		9		6		
90	+ 3		44		5	
		9		5		
100	+12		−49		−5	
		+ 9		− 3		
110	21		52		6	
		8		− 2		
120	29		54		6	
		7		0		
130	36		54		5	
		6		+ 1		
140	42		53		5	
		5		3		
150	47		50		5	
		4		5		
160	51		45		4	
		+ 2		6		
170	53		39		3	
		0		+ 7		
180	+53		−32		−2	

From the Arguments >180° subtract 180°, and reverse the sign of ξ', η', and ζ'.

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XXV.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+27		−11		0	
		−10		−5		
10	17		16		0	
		10		4		
20	+ 7		20		0	
		10		4		
30	− 3		24		0	
		11		3		
40	14		27		0	
		10		2		
50	24		29		0	
		9		−1		
60	33		30		0	
		8		0		
70	41		03		0	
		7		0		
80	48		30		0	
		6		+2		
90	54		28		0	
		4		2		
100	−58		−26		0	
		− 2		+3		
110	60		23		0	
		0		4		
120	60		19		0	
		+ 2		5		
130	58		14		0	
		3		5		
140	55		9		0	
		5		5		
150	50		− 4		0	
		6		5		
160	44		+ 1		0	
		6		5		
170	36		6		0	
		+ 0		+5		
180	−27		+11		0	

ARGUMENT XXVI.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+29		−21		0	
		−4		−4		
10	25		25		0	
		4		3		
20	21		28		0	
		5		3		
30	16		31		0	
		5		2		
40	11		33		0	
		6		−1		
50	+ 5		34		0	
		6		+1		
60	− 1		33		0	
		6		1		
70	7		32		0	
		6		2		
80	13		30		0	
		5		4		
90	18		26		0	
		5		4		
100	−23		−22		0	
		−4		+4		
110	27		18		0	
		3		5		
120	30		13		0	
		2		6		
130	32		7		0	
		1		6		
140	33		− 1		0	
		−1		6		
150	34		+ 5		0	
		+1		6		
160	33		11		0	
		1		5		
170	32		16		0	
		+3		+5		
180	−29		+21		0	

ARGUMENT XXVII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	−25		+17		0	
		+4		+4		
10	21		21		0	
		4		4		
20	17		25		0	
		4		2		
30	13		27		0	
		5		2		
40	8		29		0	
		5		+1		
50	− 3		30		0	
		5		0		
60	+ 2		30		0	
		5		−1		
70	7		29		0	
		5		2		
80	12		27		0	
		5		2		
90	17		25		0	
		4		4		
100	+21		+21		0	
		+3		−4		
110	24		17		0	
		3		4		
120	27		13		0	
		2		5		
130	29		8		0	
		+1		5		
140	30		+ 3		0	
		0		5		
150	30		− 2		0	
		−1		5		
160	29		7		0	
		2		5		
170	27		12		0	
		−2		−5		
180	+25		−17		0	

ARGUMENT XXVIII.

Arg.	ξ'	Diff.	η'	Diff.	ζ'	Diff.
°						
0	+14		− 3		0	
		−1		+6		
10	13		+ 3		0	
		1		5		
20	12		8		0	
		1		5		
30	11		13		0	
		2		5		
40	9		18		0	
		2		4		
50	7		22		0	
		2		4		
60	5		26		0	
		2		3		
70	+ 3		29		0	
		3		2		
80	0		31		0	
		2		+1		
90	− 2		32		0	
		3		0		
100	− 5		+32		0	
		−2		−1		
110	7		31		0	
		2		2		
120	9		29		0	
		2		3		
130	11		26		0	
		1		3		
140	12		23		0	
		1		5		
150	13		18		0	
		−1		5		
160	14		13		0	
		0		5		
170	14		8		0	
		0		−5		
180	−14		+ 3		0	

From the Arguments >180° subtract 180°, and reverse the sign of ξ', η', and ζ'.

TABLE IV. — *Continued.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XXIX.

Arg.	ξ'	Diff.	η'	Diff.	ζ'
°					
0	+19		−5		0
10	17	−2	4		0
20	14	3	3		0
30	11	3	2		0
40	7	4	−1		0
50	+ 4	3	+1		0
60	0	4	2		0
70	− 4	4	3		0
80	8	4	4		0
90	11	3	5		0
		3			
100	−14		+6		0
110	17	−3	7		0
120	19	2	7		0
130	21	2	7		0
140	22	−1	7		0
150	22	0	7		0
160	22	0	7		0
170	21	+1	6		0
180	−19	+2	+5		0

ARGUMENT XXX.

Arg.	ξ'	Diff.	η'	Diff.	ζ'
°					
0	− 9		− 9		−2
10	7		12		3
20	5		15		3
30	− 2		17		2
40	0		18		2
50	+ 3		19		2
60	5		20		2
70	8		20		1
80	10		19		1
90	12		18		−1
100	+13		−16		0
110	14		14		+1
120	15		11		1
130	15		8		1
140	15		5		2
150	14		− 1		2
160	13		+ 2		2
170	11		6		2
180	+ 9		+ 9		+2

ARGUMENT XXXI.

Arg.	ξ'	η'	ζ'
°			
0	− 9	− 3	0
20	8	6	0
40	5	8	0
60	− 2	10	0
80	+ 1	10	0
100	4	9	0
120	7	6	0
140	9	− 3	0
160	10	0	0
180	+ 9	+ 3	0

ARGUMENT XXXII.

0	−8	+ 4	0
20	6	7	0
40	−4	9	0
60	0	10	0
80	+3	9	0
100	6	8	0
120	8	5	0
140	9	+ 2	0
160	9	− 1	0
180	+8	− 4	0

ARGUMENT XXXIII.

0	+ 2	−10	0
20	5	8	0
40	8	6	−1
60	9	− 3	1
80	10	0	1
100	9	+ 4	1
120	8	7	1
140	5	9	−1
160	+ 2	10	0
180	− 2	+10	0

ARGUMENT XXXIV.

0	−7	−1	0
20	7	+1	0
40	7	4	0
60	6	5	0
80	4	7	0
100	−1	7	0
120	+1	7	0
140	4	6	0
160	6	4	0
180	−7	+1	0

ARGUMENT XXXV.

Arg.	ξ'	η'	ζ'
°			
0	+4	+5	0
20	+2	5	0
40	0	6	0
60	−2	5	0
80	4	4	0
100	5	3	0
120	6	+1	0
140	6	−1	0
160	5	3	0
180	−4	−5	0

ARGUMENT XXXVI.

0	−4	+3	0
20	−1	+1	−1
40	+2	−1	1
60	4	3	2
80	7	5	2
100	8	6	2
120	9	6	2
140	8	5	1
160	6	4	−1
180	+4	−3	0

ARGUMENT XXXVII.

0	+3	−4	0
20	+1	5	0
40	−1	5	0
60	2	5	0
80	4	4	0
100	5	2	0
120	6	−1	0
140	5	+1	0
160	4	3	0
180	−3	+4	0

ARGUMENT XXXVIII.

0	+4	−5	−1
20	2	6	1
40	+1	6	−1
60	−1	6	0
80	3	5	0
100	5	4	0
120	6	−2	0
140	6	+1	+1
160	5	3	1
180	−4	+5	+1

From the Arguments >180° subtract 180°, and reverse the sign of ξ', η', and ζ'.

TABLE IV. — *Concluded.*

PERTURBATIONS OF THE CO-ORDINATES IN UNITS OF THE SIXTH DECIMAL.

ARGUMENT XXXIX.				ARGUMENT XLIII.				ARGUMENT XLVII.			
Arg.	ξ'	η'	ζ'	Arg.	ξ'	η'	ζ'	Arg.	ξ'	η'	ζ'
°				°				°			
0	+4	+3	0	0	−3	0	0	0	+1	+1	0
20	3	4	0	20	2	+1	0	20	0	1	0
40	+2	5	0	40	2	1	0	40	0	1	0
60	0	5	0	60	1	2	0	60	0	1	0
80	−2	5	0	80	−1	2	0	80	−1	+1	0
100	3	4	0	100	+1	2	0	100	1	0	0
120	5	2	0	120	1	2	0	120	1	0	0
140	5	+1	0	140	2	1	0	140	1	0	0
160	5	−1	0	160	2	+1	0	160	1	−1	0
180	−4	−3	0	180	+3	0	0	180	−1	−1	0
ARGUMENT XL.				ARGUMENT XLIV.				ARGUMENT XLVIII.			
0	−3	−6	+1	0	−3	+1	0	0	0	−1	0
20	3	5	1	20	3	0	0	20	0	1	0
40	2	4	1	40	2	−1	0	40	0	1	0
60	2	−2	1	60	2	2	0	60	−1	1	0
80	−1	0	1	80	−1	3	0	80	1	1	0
100	+1	+2	1	100	0	3	0	100	1	−1	0
120	2	4	+1	120	+1	3	0	120	1	0	0
140	2	5	0	140	2	3	0	140	1	0	0
160	3	6	0	160	2	2	0	160	−1	+1	0
180	+3	+6	−1	180	+3	−1	0	180	0	+1	0
ARGUMENT XLI.				ARGUMENT XLV.				ARGUMENT XLIX.			
0	+4	+1	0	0	−2	−1	0	0	+1	0	0
20	3	1	0	20	2	0	0	20	1	0	0
40	2	1	0	40	2	0	0	40	1	−1	0
60	+1	1	0	60	2	+1	0	60	+1	1	0
80	0	1	0	80	1	1	0	80	0	1	0
100	−1	+1	0	100	−1	2	0	100	0	1	0
120	3	0	0	120	0	2	0	120	−1	1	0
140	3	0	0	140	+1	2	0	140	1	−1	0
160	4	−1	0	160	2	1	0	160	1	0	0
180	−4	−1	0	180	+2	+1	0	180	−1	0	0
ARGUMENT XLII.				ARGUMENT XLVI.							
0	−2	−1	0	0	0	+1	0				
20	2	1	0	20	0	+1	0				
40	−1	2	0	40	+1	0	0				
60	0	2	0	60	1	0	0				
80	0	2	0	80	2	−1	0				
100	+1	2	0	100	2	1	0				
120	2	2	0	120	2	1	0				
140	2	−1	0	140	2	1	0				
160	2	0	0	160	+1	1	0				
180	+2	+1	0	180	0	−1	0				

From the Arguments >180° subtract 180°, and reverse the sign of ξ', η', and ζ'.

TABLE V.

LOGARITHMS FOR REFERRING THE PERTURBATIONS TO THE EQUATOR.

Mean Equinox of the beginning of the Year.

Years.	cos (x_1 x)	cos (y_1 x)	cos (z_1 x)	cos (x_1 y)	cos (y_1 y)	cos (z_1 y)	cos (x_1 z)	cos (y_1 z)	cos (z_1 z)
1851	9.937163	9.667863*n*	9.269727*n*	9.531058	9.912469	9.667602*n*	9.566586	9.530572	9.937239
1852*B*	9.937107	9.668063*n*	9.269685*n*	9.531305	9.912414	9.667638*n*	9.566685	9.530509	9.937231
1853	9.937051	9.668264*n*	9.269643*n*	9.531552	9.912360	9.667674*n*	9.566785	9.530447	9.937222
1854	9.936995	9.668464*n*	9.269601*n*	9.531799	9.912305	9.667710*n*	9.566884	9.530384	9.937214
1855	9.936939	9.668665*n*	9.269559*n*	9.532046	9.912250	9.667746*n*	9.566983	9.530322	9.937205
1856*B*	9.936882	9.668865*n*	9.269516*n*	9.532293	9.912195	9.667782*n*	9.567082	9.530259	9.937197
1857	9.936826	9.669065*n*	9.269474*n*	9.532540	9.912141	9.667818*n*	9.567181	9.530197	9.937188
1858	9.936769	9.669265*n*	9.269432*n*	9.532786	9.912086	9.667854*n*	9.567280	9.530134	9.937180
1859	9.936713	9.669465*n*	9.269390*n*	9.533033	9.912031	9.667890*n*	9.567379	9.530072	9.937171
1860*B*	9.936656	9.669665*n*	9.269347*n*	9.533279	9.911976	9.667925*n*	9.567478	9.530009	9.937163
1861	9.936600	9.669865*n*	9.269305*n*	9.533525	9.911922	9.667961*n*	9.567577	9.529947	9.937154
1862	9.936543	9.670064*n*	9.269262*n*	9.533771	9.911867	9.667997*n*	9.567676	9.529884	9.937146
1863	9.936487	9.670264*n*	9.269220*n*	9.534017	9.911812	9.668033*n*	9.567775	9.529821	9.937137
1864*B*	9.936430	9.670463*n*	9.269177*n*	9.534263	9.911757	9.668069*n*	9.567873	9.529758	9.937129
1865	9.936374	9.670663*n*	9.269135*n*	9.534509	9.911703	9.668105*n*	9.567973	9.529796	9.937120
1866	9.936317	9.670862*n*	9.269092*n*	9.534754	9.911648	9.668141*n*	9.568072	9.529633	9.937112
1867	9.936261	9.671061*n*	9.269049*n*	9.534999	9.911593	9.668177*n*	9.568170	9.529570	9.937104
1868*B*	9.936204	9.671260*n*	9.269006*n*	9.535244	9.911538	9.668212*n*	9.568268	9.529507	9.937096
1869	9.936148	9.671459*n*	9.268964*n*	9.535489	9.911484	9.668248*n*	9.568367	9.529444	9.937087
1870	9.936091	9.671657*n*	9.268921*n*	9.535734	9.911429	9.668284*n*	9.568465	9.529381	9.937079
1871	9.936034	9.671856*n*	9.268878*n*	9.535979	9.911374	9.668320*n*	9.568564	9.529318	9.937070
1872*B*	9.935977	9.672054*n*	9.268835*n*	9.536223	9.911319	9.668355*n*	9.568662	9.529255	9.937062
1873	9.935921	9.672253*n*	9.268792*n*	9.536467	9.911264	9.668391*n*	9.568761	9.529192	9.937053
1874	9.935864	9.672451*n*	9.268749*n*	9.536711	9.911209	9.668426*n*	9.568859	9.529129	9.937045
1875	9.935807	9.672649*n*	9.268706*n*	9.536955	9.911154	9.668462*n*	9.568957	9.529066	9.937037
1876*B*	9.935750	9.672847*n*	9.268663*n*	9.537199	9.911099	9.668497*n*	9.569055	9.529002	9.937029
1877	9.935694	9.673045*n*	9.268620*n*	9.537473	9.911044	9.668533*n*	9.569153	9.528939	9.937020
1878	9.935637	9.673243*n*	9.268577*n*	9.537686	9.910989	9.668569*n*	9.569251	9.528875	9.937012
1879	9.935580	9.673441*n*	9.268534*n*	9.537929	9.910934	9.668605*n*	9.569349	9.528812	9.937004
1880*B*	9.935523	9.673638*n*	9.268491*n*	9.538172	9.910879	9.668640*n*	9.569447	9.528748	9.936996
1881	9.935466	9.673836*n*	9.268448*n*	9.538415	9.910824	9.668676*n*	9.569545	9.528685	9.936987
1882	9.935409	9.674033*n*	9.268405*n*	9.538658	9.910769	9.668711*n*	9.569643	9.528621	9.936979
1883	9.935352	9.674230*n*	9.268362*n*	9.538901	9.910714	9.668747*n*	9.569741	9.528558	9.936971
1884*B*	9.935295	9.674427*n*	9.268318*n*	9.539143	9.910658	9.668782*n*	9.569839	9.528494	9.936963
1885	9.935228	9.674624*n*	9.268275*n*	9.539385	9.910603	9.668818*n*	9.569937	9.528431	9.936954
1886	9.935161	9.674821*n*	9.268232*n*	9.539627	9.910547	9.668854*n*	9.570035	9.528367	9.936946
1887	9.935114	9.675018*n*	9.268189*n*	9.539869	9.910492	9.668890*n*	9.570133	9.528303	9.936937
1888*B*	9.935066	9.675214*n*	9.268145*n*	9.540110	9.910436	9.668925*n*	9.570230	9.528239	9.936929
1889	9.935009	9.675411*n*	9.268102*n*	9.540352	9.910381	9.668961*n*	9.570328	9.528176	9.936920
1890	9.934951	9.675607*n*	9.268059*n*	9.540593	9.910325	9.668996*n*	9.570426	9.528112	9.936912
1891	9.934894	9.675803*n*	9.268016*n*	9.540834	9.910270	9.669032*n*	9.570524	9.528048	9.936904
1892*B*	9.934836	9.675999*n*	9.267972*n*	9.541075	9.910214	9.669067*n*	9.570621	9.527984	9.936896
1893	9.934779	9.676195*n*	9.267929*n*	9.541316	9.910159	9.669103*n*	9.570719	9.527921	9.936887
1894	9.934721	9.676391*n*	9.267885*n*	9.541556	9.910103	9.669138*n*	9.570817	9.527857	9.936879
1895	9.934663	9.676587*n*	9.267842*n*	9.541796	9.910047	9.669174*n*	9.570915	9.527793	9.936871
1896*B*	9.934605	9.676782*n*	9.267798*n*	9.542036	9.909991	9.669209*n*	9.571012	9.527729	9.936863
1897	9.934548	9.676978*n*	9.267755*n*	9.542276	9.909936	9.669245*n*	9.571110	9.527665	9.936854
1898	9.934490	9.677173*n*	9.267711*n*	9.542516	9.909880	9.669280*n*	9.571207	9.527601	9.936846
1899	9.934432	9.677369*n*	9.267667*n*	9.542756	9.909824	9.669316*n*	9.571305	9.527537	9.936838
1900*B*	9.934374	9.677564*n*	9.267623*n*	9.542995	9.909768	9.669351*n*	9.571402	9.527473	9.936830

TABLE VI.

VARIATIONS OF THE LOGARITHMS IN UNITS OF THE SIXTH DECIMAL BY VARYING Ω AND ϵ.

$\Delta\Omega$	$\Delta\cos(x_1 x)$	$\Delta\cos(y_1 x)$	$\Delta\cos(z_1 x)$	$\Delta\cos(x_1 y)$	$\Delta\cos(y_1 y)$	$\Delta\cos(z_1 y)$	$\Delta\cos(x_1 z)$	$\Delta\cos(y_1 z)$	$\Delta\cos(z_1 z)$
$''$									
1	− 1.0	+ 4.0	−1.0	+ 4.9	− 1.1	+0.8	+ 2.0	− 1.1	−0.2
2	2.1	8.0	1.9	9.9	2.1	1.5	3.9	2.2	0.3
3	3.1	12.0	2.9	14.8	3.2	2.3	5.9	3.3	0.5
4	4.1	16.0	3.9	19.7	4.3	3.1	7.9	4.4	0.7
5	5.1	20.0	4.8	24.6	5.3	3.8	9.8	5.5	0.8
6	6.2	24.0	5.8	29.6	6.4	4.6	11.8	6.6	1.0
7	7.2	28.0	6.8	34.5	7.5	5.4	13.8	7.7	1.2
8	8.2	32.0	7.8	39.4	8.6	6.2	15.8	8.8	1.4
9	9.3	36.0	8.7	44.4	9.6	6.9	17.7	9.9	1.5
10	−10.3	+40.0	−9.7	+49.3	−10.7	+7.7	+19.7	−10.1	−1.7

$\Delta\epsilon$	$\Delta\cos(x_1 x)$	$\Delta\cos(y_1 x)$	$\Delta\cos(z_1 x)$	$\Delta\cos(x_1 y)$	$\Delta\cos(y_1 y)$	$\Delta\cos(z_1 y)$	$\Delta\cos(x_1 z)$	$\Delta\cos(y_1 z)$	$\Delta\cos(z_1 z)$
$''$									
1				− 2.0	− 1.3	+ 3.8	+ 2.0	+ 5.0	− 1.0
2				4.0	2.6	7.6	4.0	10.0	2.0
3				6.0	3.9	11.4	6.0	15.0	3.0
4				8.0	5.2	15.2	8.0	20.0	4.0
5				10.0	6.5	19.0	10.0	25.0	5.0
6				12.0	7.8	22.8	12.0	30.0	6.0
7				14.0	9.1	26.6	14.0	35.0	7.0
8				16.0	10.4	30.4	16.0	40.0	8.0
9				18.0	11.7	34.2	18.0	45.0	9.0
10				−20.0	−13.0	+38.0	+20.0	+50.0	−10.0

TABLE VII.

CONSTANTS FOR THE EQUATOR.

Equator and mean Equinox at the beginning of the Year.

Years.	A′	B′	C′	log sin *a*.	log sin *b*.	log sin *c*.
	° ′ ″	° ′ ″	° ′ ″			
1851	118 16 32.4	22 33 50.1	47 22 22.8	9.992347	9.947054	9.699841
1852*B*	118 17 23.5	22 34 41.1	47 23 1.2	9.992348	9.940044	9.699866
1853	118 18 14.3	22 35 31.8	47 23 39.3	9.992350	9.940034	9.699891
1854	118 19 5.1	22 36 22.5	47 24 17.5	9.992351	9.940024	9.699916
1855	118 19 56.0	22 37 13.3	47 24 55.6	9.992353	9.940014	9.699941
1856*B*	118 20 47.1	22 38 4.3	47 25 34.0	9.992354	9.947004	9.699966
1857	118 21 37.9	22 38 55.0	47 26 12.1	9.992356	9.946994	9.699991
1858	118 22 28.7	22 39 45.7	47 26 50.3	9.992357	9.946984	9.700016
1859	118 23 19.6	22 40 36.5	47 27 28.4	9.992359	9.946974	9.700041
1860*B*	118 24 10.7	22 41 27.5	47 28 6.8	9.992360	9.946965	9.700066
1861	118 25 1.5	22 42 19.2	47 28 44.9	9.992362	9.946955	9.700091
1862	118 25 52.3	22 43 8.9	47 29 23.1	9.992364	9.946945	9.700116
1863	118 26 43.1	22 43 59.7	47 30 1.2	9.992366	9.946935	9.700141
1864*B*	118 27 34.2	22 44 50.8	47 30 39.6	9.992367	9.946926	9.700166
1865	118 28 25.1	22 45 41.5	47 31 17.7	9.992369	9.946916	9.700191
1866	118 29 15.9	22 46 32.3	47 31 55.9	9.992370	9.946906	9.700216
1867	118 30 6.8	22 47 23.1	47 32 34.0	9.992372	9.946896	9.700241
1868*B*	118 30 57.9	22 48 14.2	47 33 12.3	9.992373	9.946887	9.700266
1869	118 31 48.7	22 49 4.9	47 33 50.4	9.992375	9.946877	9.700291
1870	118 32 39.5	22 49 55.7	47 34 28.6	9.992377	9.946867	9.700316
1871	118 33 30.4	22 50 46.6	47 35 6.7	9.992379	9.946857	9.700341
1872*B*	118 34 21.6	22 51 37.7	47 35 45.0	9.992380	9.946847	9.700366
1873	118 35 12.4	22 52 48.4	47 36 23.1	9.992382	9.946837	9.700391
1874	118 36 3.2	22 53 19.2	47 37 1.3	9.992383	9.946827	9.700416
1875	118 36 54.1	22 54 10.1	47 37 39.4	9.992385	9.946817	9.700441
1876*B*	118 37 45.3	22 55 1.2	47 38 17.7	9.992386	9.946807	9.700465
1877	118 38 36.1	22 55 51.9	47 38 55.8	9.992388	9.946797	9.700490
1878	118 39 26.9	22 56 42.7	47 39 34.0	9.992389	9.946787	9.700515
1879	118 40 17.8	22 57 33.6	47 40 12.1	9.992391	9.946777	9.700540
1880*B*	118 41 8.9	22 58 24.7	47 40 50.5	9.992392	9.946767	9.700565
1881	118 41 59.7	22 59 15.4	47 41 28.6	9.992394	9.946757	9.700590
1882	118 42 50.5	23 0 6.2	47 42 6.8	9.992395	9.946747	9.700615
1883	118 43 41.4	23 0 57.1	47 42 44.9	9.992397	9.946737	9.700640
1884*B*	118 44 32.6	23 1 48.2	47 43 23.3	9.992398	9.946727	9.700664
1885	118 45 23.4	23 2 38.9	47 44 1.4	9.992400	9.946717	9.700689
1886	118 46 14.2	23 3 29.7	47 44 39.6	9.992401	9.946707	9.700714
1887	118 47 5.1	23 4 20.6	47 45 17.7	9.992403	9.946697	9.700739
1888*B*	118 47 56.2	23 5 11.7	47 45 56.0	9.992404	9.946687	9.700763
1889	118 48 47.0	23 6 2.4	47 46 34.1	9.992406	9.946677	9.700788
1890	118 49 37.8	23 6 53.2	47 47 12.2	9.992407	9.946667	9.700813
1891	118 50 28.7	23 7 44.1	47 47 50.3	9.992409	9.946657	9.700838
1892*B*	118 51 19.9	23 8 35.2	47 48 28.7	9.992410	9.946648	9.700862
1893	118 52 10.7	23 9 26.0	47 49 6.7	9.992412	9.946638	9.700887
1894	118 53 1.5	23 10 16.8	47 49 44.9	9.992413	9.946628	9.700912
1895	118 53 52.4	23 11 7.7	47 50 23.0	9.992415	9.946618	9.700937
1896*B*	118 54 43.6	23 11 58.8	47 51 1.4	9.992416	9.946608	9.700962
1897	118 55 34.4	23 12 49.6	47 51 39.5	9.992418	9.946598	9.700987
1898	118 56 25.2	23 13 40.4	47 52 17.7	9.992419	9.946588	9.701012
1899	118 57 16.1	23 14 31.3	47 52 55.8	9.992421	9.946578	9.701037
1900*B*	118 58 7.3	23 15 22.4	47 53 34.1	9.992422	9.946569	9.701061

TABLE VIII.

VARIATIONS OF THE CONSTANTS BY VARYING ☊ AND ε.

Δ ☊.	Δ A′	Δ B′	Δ C′	Δ log sin *a*.	Δ log sin *b*.	Δ log sin *c*.
″	″	″	″			
1	+ 1.0	+ 1.0	+0.7	+0.0	−0.2	+0.5
2	2.0	2.0	1.5	0.1	0.4	1.1
3	3.0	3.0	2.2	0.1	0.6	1.6
4	4.0	4.0	2.9	0.1	0.8	2.1
5	5.0	5.0	3.7	0.1	1.0	2.6
6	6.0	6.0	4.4	0.2	1.2	3.2
7	7.0	7.0	5.1	0.2	1.4	3.7
8	8.0	8.1	5.9	0.2	1.6	4.2
9	9.0	9.1	6.6	0.3	1.8	4.8
10	+10.0	+10.1	+7.3	+0.3	−2.0	+5.3
Δ ε.	Δ A′	Δ B′	Δ C′	Δ log sin *a*.	Δ log sin *b*.	Δ log sin *c*.
″		″	″			
1		−0.2	−0.7		− 1.0	+ 3.0
2		0.4	1.5		2.0	6.0
3		0.6	2.2		3.0	9.0
4		0.8	2.9		4.0	12.0
5		1.0	3.6		5.0	15.0
6		1.3	4.4		6.0	18.0
7		1.5	5.1		7.0	21.0
8		1.7	5.8		8.0	24.0
9		1.9	6.6		9.0	27.0
10		−2.1	−7.3		−10.0	+30.0