No. 14.—THE PLANETARY TABLES.

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My Planetary Tables[4], which are based on the Sūrya Siddhānta without *bīja*, serve to calculate the position of planets for any date between 300 and 2000 A. D. in order to verify the constellation of the planets, or a horoscope, given in an inscription or any other document. For this purpose we must calculate the true Longitude of the planets according to the elements of Hindu Astronomy. Our calculation yields the Longitude in degrees; from this we find in what sign the planet was, by dividing the Longitude by 30. The quotient gives the number of completed signs; the remainder, the place in the running sign, *e.g.* 315° 23′ Longitude of Jupiter is equal to 10 signs 15° 23′, or: Jupiter was in the 11th sign, Kumbha, and had reached 15° 23′ in it.

The tables yield the required quantities for dates of the Christian Calendar, in old style from 300—1699, and in new style from 1700—2000. There are five tables.

Tables I—III together yield the mean Longitude of the five planets and the sun; tables IV and V furnish the equations which must be joined to the mean Longitude of a planet to convert it into true Longitude.[5]

Table I gives the mean Longitude of the five planets and the Sun for the beginning of the corresponding year of the twentieth century A.D., *i.e.* for the year in the twentieth century A.D. which is separated from the given year by one up to sixteen complete centuries; *e. g.* 1917 is the corresponding year of 317, 417, 517, 617, etc.; 1956, of 356, etc. (The letter L. after 1956 indicates that the year was a leap year.) — Table II gives the increase in Longitude for the centuries intervening between the given year and the corresponding year; *e.g.* for 1517 A.D. we use the Index 400 and add the items entered against this Index to those found in table I for 1917, A.D. — Table III gives the increase of Longitude for days the whole Christian year

[4] These Tables were prepared by me many years ago and have been used occasionally for chronological purposes. They are arranged on the scheme of M. Largeteau's tables of the moon, which will be found convenient to scholars of the West.

[5] These tables have been calculated from those in Warren's Kalasankalita.

round. In selecting the day attention should be paid to the character of the year, whether it is a common or a leap year.

The items taken from the tables I-III should be added together; the several sums are the mean Longitudes of the planets for the beginning of the day (mean sunrise at Laṅkā); *e.g.* for the 12th April 1168 A.D. our calculation stands as follows :—

	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.
1968 A.D. .	281° 50′	159° 49′	324° 54′	123° 51′	349° 15′	256° 8′
800 Years. .	197 52	233 39	248 21	200 20	309 28	19 43
12 April (L) .	57 25	163 25	53 27	8 29	3 25	100 32
Sum = .	537° 57	556° 53′	626° 42′	332° 40′	662° 8′	376° 23′
or[1] .	177° 7′	196° 53′	266 42	...	302 8	16 32

Having thus found the mean Longitudes of the 5 planets, we must convert them into true Longitudes. This is rather a wearisome process which requires four calculations for each planet; the process is not the same for all planets, but Mercury and Venus are differently treated from Mars, Jupiter, and Saturn. In these calculations Tables IV & V, called Commutation and Anomalistic Tables, are to be used as will be explained in the Rules to be given presently. Particular care should, however, be given to the sign of the equations: if the argument is found in the first column (on the left side), the equation is positive; if it is in the last column (on the right sight), it is negative.

Rules for converting mean Longitude into true Longitude.

I.—Mercury and Venus.

1. Subtract mean Sun from mean Mercury (or Venus); take out the corresponding equation from the Commutation Table; apply half of it to mean Sun, Result: Mercury (or Venus) once corrected.

2. Subtract Mercury once corrected from Mercury's Apsis (see bottom of table II); take out the corresponding equation from the Anomalistic Table; apply half of it to Mercury once corrected. Result: Mercury twice corrected.

3. Subtract Mercury twice corrected from Mercury's Apsis; take out the corresponding equation from the Anomalistic Table; apply it (*whole*) to *mean* Sun. Result: Mercury thrice corrected.

4. Subtract Mercury thrice corrected from *mean* Mercury; take out corresponding equation from the Commutation Table; apply it (*whole*) to Mercury thrice corrected. Result: *true Mercury*.

II.—Mars, Jupiter, Saturn.

1. Subtract mean Mars[2] from *mean* Sun; take out the corresponding equation from the Commutation Table; apply half of it to mean Mars. Result: Mars once corrected.

2. Subtract Mars once corrected from Mars' Apsis (see bottom of Table II); take out the corresponding equation from the Anomalistic Table; apply half of it to Mars once corrected. Result: Mars twice corrected.

3. Subtract Mars twice corrected from Mars' Apsis; take out the corresponding equation from the Anomalistic Table; apply it (*whole*) to *mean* Mars. Result: Mars thrice corrected.

4. Subtract Mars thrice corrected from *mean* Sun; take out corresponding equation from the Commutation Table; apply it (*whole*) to Mars thrice corrected. Result: *true Mars*.

[1] Subtracting 360° where the Longitude exceeds 360°.

[2] Or Jupiter or Saturn; and so in the sequel.

III.—True Longitude of the Sun.

Subtract mean Sun from Sun's Apsis, *viz.*:—

77° 16′, or in case the Longitude is greater, from 437° 16′; the remainder is the Sun's anomaly. Take out the corresponding equation from the Anomalistic Table and add it to the mean Longitude. *Result*: true Longitude of the Sun. *E.g.* for mean Long. of the Sun 20° 11′, we find Anomaly 77° 16′—20° 11′= 57° 5′, equation for the latter from Anomalistic Table + 1° 50′; 20° 11′ + 1° 50′ = 22° 1′: true Sun; 2nd example:— mean Long. 115° 6′; Anomaly 437° 16′—115° 6′= 322° 10′; equation —1° 21′; true Long. of the Sun: 115° 6′ — 1° 21′ = 113° 45′.

I now give examples for the Rules I and II. We have calculated the mean Longitudes of the planets for 12th April 1168 A.D., and shall now calculate from them the true Longitudes of Venus (Rule I) and Saturn (Rule II).

First example.—Mean Venus = 196° 53′; Mean Sun 16° 23′; Apsis of Venus 79° 51′ (bottom of Table II).

1st step.—mean Venus 196° 53′; subtract
mean Sun 16° 23′

result: Commutation=180° 30′., corresponding equation from Commutation Table: —1° 19′; half of equation — 0° 40′; applied to mean Sun 16° 23′ — 0° 40′ = 15° 43′. This is Venus once corrected.

2nd step.—From Venus Apsis 79° 51′ subtract
Venus once corrected 15° 43′; result:
Venus' Anomaly: 64° 8′; corresponding equation from Anomalistic Table: +1° 36′, half of it: +0°48′; added to Venus once corrected: 15°43′+0°48′ = 16° 31′.

Result: Venus twice corrected.

3rd step.—From Venus' Apsis 79° 51′ subtract
Venus twice corrected 16° 31′; result:
corrected Anomaly: 63° 20′; corresponding equation from Anomalistic Table: +1° 35′; add whole of it to mean Sun: 16° 23′+1° 35 = 17° 58′; Result: Venus thrice corrected.

4th step.—From mean Venus 196° 53′ subtract
Venus thrice corrected 17° 58′; result:
corrected Commutation: 178° 55′; corresponding equation from Commutation Table: +2° 51′; add whole of it to Venus thrice corrected: 17 58′+2° 51′=20° 49, Final Result: true Venus. (Mēsha 20°49′).

Second example.—Mean Saturn: 302° 8′; mean Sun: 16° 23′ or (adding 360°) 376° 23′; Saturn's Apsis 236° 27′ (bottom of Table II) or 596° 27′.

1st step.—From mean Sun: 376° 23′; subtract
mean Saturn: 302° 8′; result:
Saturn's Commutation: 74° 15′; corresponding equation from Commutation Table: +5° 55′; half of it: +2° 57′ added to mean Saturn: 302° 8′ + 2° 57′ =305° 5′. Result: Saturn once corrected.

2nd step.—From Saturn's Apsis: 596° 27′; subtract
Saturn once corrected: 305° 5′; result:
Saturn's Anomaly: 291° 22′; corresponding equation from Anomalistic Table — 7° 9′ half of it —3° 34′ added to Saturn once corrected: 305° 5′—3° 34′=301° 31′. Result: Saturn twice corrected.

3rd step.—From Saturn's Apsis : 596° 27′; subtract
Saturn twice corrected : 301° 31′ ; result
corrected Anomaly : 294° 56′ ; corresponding equation from Anomalistic Table—6° 57′ ; add whole of it to mean Saturn : 302° 8′—6° 57′=295° 11′ ; Result : Saturn thrice corrected.

4th step.—From mean Sun : 376° 23′ ; subtract
Saturn thrice corrected : 295° 11′ ; result
corrected Commutation : 81° 12′ ; corresponding equation from Commutation Table +6° 9′ ; add whole of it to Saturn thrice corrected 295° 11′+6° 9′= 301° 20′. Result : true Saturn (Kumbha 1° 20′).

Hints for Calculation.

1. If the year in which a given constellation occurred is known, but the exact date is not stated the best way to proceed for finding approximately the date of the given constellation is the following. The sign in which the Sun stands directly gives the solar month, *e.g.* Sun in Mēsha indicates solar Vaiśākha. First calculate new moon in the solar month thus found. My general Tables furnish the solar date of new moon; *e.g.* in 1168 A.D. it occurred on the 16th solar Vaiśākha. The place of the moon at new moon is the same as that of the Sun in the sign assigned to the latter, and approximately the degree which both luminaries are stationed at has the same number as the solar date ; in our example Mēsha 16°. Now it is easy to find approximately the place in which the moon is after a given number of days. For the moon by her mean motion travels 13° 10′ each day. For easier calculation I have drawn up the following small table which shows the motion of the moon in 28 successive days or the period of her sidereal revolution.

days.	☽	d.	☽	d.	☽	d.	☽
1	... 13	8	... 105	15	... 198	22	... 290
2	... 26	9	... 119	16	... 211	23	... 303
3	... 40	10	... 132	17	... 224	24	... 316
4	... 53	11	... 145	18	... 237	25	... 329
5	... 66	12	... 158	19	... 250	26	... 342
6	... 79	13	... 171	20	... 263	27	... 356
7	... 92	14	... 184	21	... 277	28	... 369

In our last example new moon occurred on the 16th solar Vaiśākha ; when did the moon enter Vṛisha and how long did she remain in that sign ? As Vṛisha covers the part of the Ecliptic from 30° to 60,′ it will be seen that she entered Vṛisha on the next day. For new moon occurred in Mēsha 16° and there are 14° of Mēsha left;[1] she will be in Vṛisha for two days more. To give another example, let us suppose that the sun stood in Mithuna, the moon in Dhanus, and new moon occurred on the 20th solar Āshāḍha ; the problem is how many days before or after the 20th Āshāḍha occurred the above constellation of Sun and Moon. New moon on 20th Āshāḍha is in space : Mithuna 20°, or 80° Longitude ; Dhanus is from 240° to 270° Longitude. To

[1] For convenience of calculation we assume solar months of 30 days each ; in a first approximation the difference between mean and true solar time may be neglected.

reach the beginning of Dhanus the moon has to travel 240°—80°=160°, which takes her between 12 and 13 days as shown by the above table. She is, therefore, in Dhanus about 12 days after the 20th Āshāḍha, or about the 2nd solar Śrāvaṇa (Karkaṭa). But by this time the Sun has entered Karkaṭa, since her daily motion is about one degree. Accordingly the constellation is no more the one proposed ; we must select that time *before* the new moon on 20th Āshāḍha when the moon had been in Dhanus, or 28 days before the 2nd Śrāvaṇa, *viz.* the 4th solar Āshāḍha. The day indicated by the given constellation of Sun and Moon is, therefore, the 4th solar Āṣāḍha or one of the two next. For calculation it would be best to select the 5th solar Āṣāḍha, calculate the true Longitude of the moon, as explained in the General Tables, and select the definitive day accordingly.

2. If the year in which a given constellation occurred is not known, we can find it approximately from the signs in which Jupiter and Saturn are stated to have been. For as a revolution of Jupiter requires 12 years and one of Saturn 28 years, the same constellation of both planets will recur in about 12 × 28 = 336 years. This would be our chance if the degrees of the Jupiter's and Saturn's places in their respective signs were stated. But usually only the signs are given, and in that case we may expect a recurrence of the same constellation in about 59 or 60 years. In order to find the periods in which Jupiter and Saturn stood in any given signs, I have constructed Tables vi—viii. They are based on the Kaliyuga era and mean solar years. The places of both planets, their mean Longitudes, are expressed in figures, of which the integers denote complete signs, and the decimals the fraction of the running sign. Thus 4·65 denotes that the planet stood in the fifth sign (counting from Mēsha), *viz.* Siṃha, and had gone through 0·65 of it.—The working of the tables will be best understood by an example.

Example.—Given Jupiter in Siṃha (5th sign), Saturn in Dhanus (9th sign). Required the corresponding year of 44th century K. Y.

Answer.—The mean Longitude (according to the notation in these tables) was ♃ : 4·00... 5·00 ; ♄ 8·00...9·00.

Rule.—From the given Longitudes subtract the corresponding ones for the Century under consideration, in table VI, if the given Longitude is smaller than the tabular value, add 12·00 to the former, and then subtract tabular value.

viz. ♃. 4·00 — 4·31 or 16·00 — 4·31 = 11·69

♄. 8·00 — 10·67 or 20·00 — 10·67 = 9·33

These values mark the beginning of Siṃha for ♃, and Dhanus for ♄ ; the end of these signs are accordingly marked by (12·69 *i.e.*) 0·69 and 10·33 respectively. Now look out in table VII in the column ♄, 9·33 or the next higher cipher up to 10·33, and see whether the corresponding value of ♃ lies between 11·69 and 0·69. This is the case only in the year 23. The Longitude of Jupiter at the beginning of 4323 is 11·27, after an increase of 0·42 it will have the required minimum value 11·69. Table VIII shows that 0·42 is the increase of 5 complete months. Accordingly the given constellation occurred between K. Y. 4323 VI (mean solar Āśvina) and K. Y., 4324 VI. These limits hold good for the mean places only ; for the true places they may shift somewhat in either direction.

If we calculate in the same way the preceding and following Centuries we find that the same constellation did not occur in 4000—4324, but it occurred in 4440 near the end of that year, and in 4558 in Mārgaśira ; (however both cases may prove wrong when true places are calculated ; for the time of the constellation in the first case is but 3 months, and in the second about one month). In 46th century the same constellation occurred twice 4619 XII — 4620 V and 4679 IV — VII.

TABLE I.

Corresponding year of the Twentieth Century A.D.

Year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.
1901	218 43	193 71	101 37	250 23	250 56	257 27
1902	272 25	58 28	292 53	280 43	263 9	257 12
1903	326 7	283 15	124 9	311 3	275 22	256 56
1904L	14 49	148 2	315 25	341 23	287 34	256 41
1905	77 36	14 26	147 12	11 48	299 48	257 25
1906	131 18	239 13	338 28	42 7	312 1	257 10
1907	184 59	104 0	169 44	72 27	324 13	256 54
1908L	238 41	328 47	1 0	102 47	336 25	256 39
1909	296 28	195 10	192 48	133 12	348 40	257 23
1910	350 10	59 57	24 4	163 32	0 52	257 7
1911	43 52	284 44	215 20	193 51	13 4	256 52
1912L	97 34	149 31	46 36	224 11	25 16	256 37
1913	155 21	15 54	238 23	254 36	37 31	257 21
1914	209 3	240 41	69 40	284 56	49 43	257 5
1915	262 45	105 28	260 56	315 16	61 55	256 50
1916L	316 26	330 15	92 2	345 36	74 8	256 35
1917	14 14	196 38	283 59	16 0	86 22	257 19
1918	67 55	61 25	115 15	46 20	98 34	257 3
1919	121 37	286 12	306 31	76 40	110 47	256 48
1920L	175 19	150 59	137 47	107 0	122 59	256 33
1921	233 6	17 22	329 35	137 25	135 13	257 17
1922	286 48	242 9	160 51	167 44	147 26	257 1
1923	340 30	106 56	352 7	198 4	159 38	256 46
1924L	34 12	331 43	183 23	228 24	171 50	256 31
1925	91 59	198 6	15 10	258 49	184 5	257 14

TABLE I—*contd.*

CORRESPONDING YEAR OF THE TWENTIETH CENTURY A.D.—*contd.*

Year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.
1926	145 41	62 53	206 26	289 9	196 17	256 59
1927	239 22	287 40	37 42	319 28	208 29	256 44
1928L	293 4	152 27	228 58	349 48	220 42	256 29
1929	310 51	18 50	60 46	20 13	232 56	257 12
1930	4 33	243 37	252 2	50 33	245 8	256 57
1931	58 25	108 24	83 18	80 53	257 21	256 42
1932L	112 7	333 11	174 34	121 12	269 33	256 26
1933	169 44	199 35	106 21	141 37	281 49	257 10
1934	223 26	64 22	297 37	171 57	294 0	256 55
1935	277 8	289 9	128 53	202 17	306 12	256 40
1936L	330 49	153 56	320 9	232 37	318 24	256 24
1937	28 37	20 19	151 57	263 1	330 39	257 8
1938	82 18	245 6	343 13	293 21	342 51	256 53
1939	136 0	109 53	174 29	323 41	355 3	256 38
1940L	189 42	334 40	5 45	354 1	7 16	256 22
1941	247 29	201 3	197 32	24 26	19 30	257 6
1942	301 11	65 50	28 48	54 45	31 42	256 51
1943	354 53	290 37	220 4	85 5	43 54	256 36
1944L	48 35	155 24	51 20	115 25	56 7	256 20
1945	106 22	21 47	243 8	145 50	68 21	257 4
1946	160 4	246 34	74 24	176 10	80 33	256 49
1947	213 45	111 21	265 40	206 30	92 46	256 33
1948L	267 27	336 8	96 56	236 49	104 58	256 18
1949	325 14	202 31	288 43	267 14	117 12	257 2
1950	18 56	67 18	119 59	297 34	129 25	256 47

TABLE I—*contd.*

CORRESPONDING YEAR OF THE TWENTIETH CENTURY A.D.

Year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.
1951	72 38	292 5	311 15	327 54	141 37	256 31
1952 L	126 20	156 52	142 31	358 14	153 49	256 16
1953	184 7	23 15	334 19	28 38	166 4	257 0
1954	237 49	248 2	165 35	58 58	178 16	256 45
1955	299 31	112 49	356 51	89 18	190 28	256 29
1956 L	345 12	337 36	188 7	119 38	202 41	256 14
1957	43 0	204 0	19 54	150 3	214 55	256 58
1958	96 41	68 47	211 10	180 22	227 7	256 43
1959	150 23	293 34	42 26	210 42	239 20	256 27
1960 L	204 5	158 21	233 42	241 2	251 32	256 12
1961	261 52	24 44	65 30	271 27	263 46	256 56
1962	315 34	249 31	256 46	301 47	275 59	256 41
1963	9 16	114 18	88 2	332 6	288 11	256 26
1964 L	62 58	339 5	279 18	2 26	300 23	256 10
1965	120 45	205 28	111 5	32 51	312 38	256 54
1966	194 27	70 15	302 22	63 11	324 50	256 38
1967	228 8	295 2	133 38	93 31	337 2	256 23
1968 L	281 50	159 49	324 54	123 51	349 15	256 8
1969	339 37	26 12	156 41	154 15	1 29	256 52
1970	33 19	250 59	347 57	184 35	13 41	256 36
1971	87 1	115 46	179 13	214 55	25 54	256 21
1972 L	140 43	340 33	10 29	245 15	38 6	256 6
1973	198 30	206 56	202 17	275 39	50 20	256 50
1974	252 12	71 43	33 33	305 59	62 32	256 34
1975	304 54	296 30	224 49	336 19	74 45	256 19

TABLE I—*contd.*

CORRESPONDING YEAR OF THE TWENTIETH CENTURY A.D.

Year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.
1976 L	359 35	161 17	56 5	9 39	86 57	256 4
1977	57 23	27 40	247 52	37 4	99 11	256 48
1978	111 4	252 27	79 8	67 24	111 24	256 32
1979	164 46	117 14	270 24	97 43	132 36	256 17
1980 L	218 28	342 1	101 40	128 3	135 48	256 2
1981	276 15	208 24	293 27	158 23	148 3	256 45
1982	329 57	73 11	124 43	188 48	160 25	256 30
1983	23 39	297 58	315 59	219 8	172 37	256 15
1984 L	77 21	162 45	147 15	249 27	184 50	256 0
1985	135 8	29 9	339 2	279 52	196 54	256 43
1986	188 50	253 56	170 18	310 12	209 6	256 28
1987	242 31	118 43	1 34	340 32	221 19	256 13
1988 L	296 13	343 30	192 50	10 52	233 31	255 57
1989	354 0	209 53	24 38	41 16	245 45	256 41
1990	47 42	74 40	215 54	71 36	257 58	256 26
1991	101 24	299 27	47 10	101 56	270 10	256 11
1992 L	155 6	164 14	238 26	132 16	282 22	255 55
1993	212 53	30 37	70 13	162 41	294 37	256 39
1994	266 35	255 24	261 29	193 0	306 49	256 24
1995	320 17	120 11	92 45	223 20	319 1	256 9
1996 L	13 58	344 58	284 1	253 40	331 14	255 53
1997	71 46	211 21	115 49	284 5	343 28	256 35
1998	125 27	76 8	307 5	314 25	355 40	256 20
1999	179 9	300 55	138 21	344 44	7 52	256 5
2000L(c)	233 51	165 42	329 37	15 4	20 5	255 49

TABLE II.

CENTURIES INTERVENING BETWEEN THE GIVEN YEAR AND THE CORRESPONDING YEAR OF THE 20TH CENTURY.

Years elapsed.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.
	° ′	° ′	° ′	° ′	° ′	° ′
1600	342 32	86 29	129 53	39 35	258 30	26 36
1500	54 27	284 53	189 42	194 41	39 52	25 45
1400	126 22	123 17	249 30	349 46	181 15	24 53
1300	198 17	321 40	309 19	144 52	322 37	24 1
1200	270 12	160 4	9 7	299 57	103 59	23 9
1100	342 7	358 28	68 56	95 3	245 21	22 18
1000	54 2	196 52	128 44	250 9	26 44	21 27
900	125 57	35 16	188 33	45 14	168 6	20 35
800	197 52	233 39	248 21	200 20	309 28	19 43
700	269 47	72 3	308 9	355 25	90 50	18 51
600	341 42	270 27	7 58	150 31	232 13	18 0
500	53 37	108 51	67 46	305 37	13 35	17 8
400	125 32	307 14	127 35	100 42	154 57	16 16
J. 300	197 27	145 38	187 23	255 48	296 19	15 24
G 200	224 21	326 25	241 26	49 59	77 20	3 42
G 100	292 11	163 12	300 43	204 59	218 40	1 51
Apsis.	° ′	° ′	° ′	° ′	° ′	° ′
1300A.D.	220 27	79 51	130 2	171 20	236 37	77 16
moves 1′ in	544 years.	374 years.	980 years.	222 years.	5,128 years.	517 years.

TABLE III.

FOR THE DAYS OF A WHOLE YEAR.

January.

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
		° ′	° ′	° ′	° ′	° ′	° ′	
1	1	0 0	0 0	0 0	0 0	0 0	0 0	0
2	2	4 6	1 36	0 31	0 5	0 2	0 59	1
3	3	8 11	3 12	1 3	0 10	0 4	1 58	2
4	4	12 17	4 48	1 34	0 15	0 6	2 57	3
5	5	16 22	6 25	2 6	0 20	0 8	3 57	4
6	6	20 28	8 1	2 37	0 25	0 10	4 56	5
7	7	24 33	9 37	3 9	0 30	0 12	5 55	6
8	8	28 39	11 13	3 40	0 35	0 14	6 54	7
9	9	32 44	12 49	4 12	0 40	0 16	7 53	8
10	10	36 50	14 25	4 43	0 45	0 18	8 52	9
11	11	40 55	16 1	5 14	0 50	0 20	9 51	10
12	12	45 1	17 37	5 46	0 55	0 22	10 50	11
13	13	49 6	19 14	6 17	1 0	0 24	11 50	12
14	14	53 12	20 50	6 49	1 5	0 26	12 49	13
15	15	57 18	22 26	7 20	1 10	0 28	13 48	14
16	16	61 23	24 2	7 52	1 15	0 30	14 47	15
17	17	65 29	25 38	8 23	1 20	0 32	15 46	16
18	18	69 34	27 14	8 54	1 25	0 34	16 45	17
19	19	73 40	28 50	9 26	1 30	0 36	17 44	18
20	20	77 45	30 26	9 57	1 35	0 38	18 44	19
21	21	81 51	32 3	10 29	1 40	0 40	19 43	20

TABLE III—*contd.*

For the days of a whole year.

January—*concld.*

Common.	Leap year.	Mercury.		Venus.		Mars.		Jupiter.		Saturn.		Sun.		Elapsed days.
		°	′	°	′	°	′	°	′	°	′	°	′	
22	22	85	56	33	39	11	0	1	45	0	42	20	42	21
23	23	90	2	35	15	11	32	1	50	0	44	21	41	22
24	24	94	7	36	51	12	3	1	55	0	46	22	40	23
25	25	98	13	38	27	12	35	2	0	0	48	23	39	24
26	26	102	18	40	3	13	6	2	5	0	50	24	38	25
27	27	106	24	41	39	13	37	2	10	0	52	25	38	26
28	28	110	30	43	15	14	9	2	15	0	54	26	37	27
29	29	114	35	44	52	14	40	2	20	0	56	27	36	28
30	30	118	41	46	28	15	12	2	25	0	58	28	35	29
31	31	122	46	48	4	15	43	2	30	1	0	29	34	30

February.

1	1	126	52	49	40	16	15	2	35	1	2	30	33	31
2	2	130	57	51	16	16	46	2	40	1	4	31	32	32
3	3	135	3	52	52	17	18	2	45	1	6	32	32	33
4	4	139	8	54	28	17	49	2	50	1	8	33	31	34
5	5	143	14	56	5	18	20	2	55	1	10	34	30	35
6	6	147	19	57	41	18	52	2	59	1	12	35	29	36
7	7	151	25	59	17	19	23	3	4	1	14	36	28	37
8	8	155	31	60	53	19	55	3	9	1	16	37	27	38

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

February—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
9	9	159 36	62 29	20 26	3 14	1 18	38 26	39
10	10	163 42	64 5	20 58	3 19	1 20	39 25	40
11	11	167 47	65 41	21 29	3 24	1 22	40 25	41
12	12	171 53	67 17	22 1	3 29	1 24	41 24	42
13	13	175 58	68 54	22 32	3 34	1 26	42 23	43
14	14	180 4	70 30	23 3	3 39	1 28	43 22	44
15	15	184 9	72 6	23 35	3 44	1 30	44 21	45
16	16	188 15	73 42	24 6	3 49	1 32	45 20	46
17	17	192 20	75 18	24 38	3 54	1 34	46 19	47
18	18	196 26	76 54	25 9	3 59	1 36	47 19	48
19	19	200 31	78 30	25 41	4 4	1 38	48 18	49
20	20	204 37	80 6	26 12	4 9	1 40	49 17	50
21	21	208 42	81 43	26 44	4 14	1 42	50 16	51
22	22	212 48	83 19	27 15	4 19	1 44	51 15	52
23	23	216 55	84 55	27 46	4 24	1 46	52 14	53
24	24	220 59	86 31	28 18	4 29	1 48	53 13	54
25	25	225 5	88 7	28 49	4 34	1 50	54 12	55
26	26	229 10	89 43	29 21	4 39	1 52	55 12	56
27	27	233 16	91 19	29 52	4 44	1 54	56 11	57
28	28	237 21	92 55	30 24	4 49	1 56	57 10	58
—	29	241 27	94 32	30 55	4 54	1 58	58 9	59

TABLE III—*contd.*

For the days of a whole year.

March.

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
1	—	241 27	94 32	30 55	4 54	1 58	58 9	59
2	1	245 32	96 8	31 26	4 59	2 0	59 8	60
3	2	249 38	97 44	31 58	5 4	2 2	60 7	61
4	3	253 43	99 20	32 29	5 9	2 4	61 6	62
5	4	257 49	100 56	33 1	5 14	2 6	62 6	63
6	5	261 54	102 32	33 32	5 19	2 8	63 5	64
7	6	266 0	104 8	34 4	5 24	2 10	64 4	65
8	7	270 6	105 45	34 35	5 29	2 12	65 3	66
9	8	274 11	107 21	35 7	5 34	2 14	66 2	67
10	9	278 17	108 57	35 38	5 39	2 16	67 1	68
11	10	282 22	110 33	36 9	5 44	2 18	68 1	69
12	11	286 28	112 9	36 41	5 49	2 20	69 0	70
13	12	290 33	113 45	37 12	5 54	2 22	69 59	71
14	13	294 39	115 21	37 44	5 59	2 24	70 58	72
15	14	298 44	116 57	38 15	6 4	2 26	71 57	73
16	15	302 50	118 34	38 47	6 9	2 28	72 56	74
17	16	306 55	120 10	39 18	6 14	2 30	73 55	75
18	17	311 1	121 46	39 50	6 19	2 32	74 54	76
19	18	315 7	123 22	40 21	6 24	2 34	75 53	77
20	19	319 12	124 58	40 52	6 29	2 36	76 53	78
21	20	323 18	126 34	41 24	6 34	2 38	77 52	79

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

March—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
22	21	327 23	128 10	41 55	6 39	2 41	78 51	80
23	22	331 29	129 46	42 27	6 44	2 43	79 50	81
24	23	335 34	131 22	42 58	6 49	2 45	80 49	82
25	24	339 40	132 59	43 30	6 54	2 47	81 48	83
26	25	343 45	134 35	44 1	6 59	2 49	82 47	84
27	26	347 51	136 11	44 32	7 4	2 51	83 47	85
28	27	351 56	137 47	45 4	7 9	2 53	84 46	86
29	28	356 2	139 23	45 35	7 14	2 55	85 45	87
30	29	0 7	140 59	46 7	7 19	2 57	86 44	88
31	30	4 13	142 35	46 38	7 24	2 59	87 43	89
—	31	8 19	144 12	47 10	7 29	3 1	88 42	90

April.

1	—	8 19	144 12	47 10	7 29	3 1	88 42	90
2	1	12 24	145 48	47 41	7 34	3 3	89 41	91
3	2	16 30	147 24	48 13	7 39	3 5	90 41	92
4	3	20 35	149 0	48 44	7 44	3 7	91 40	93
5	4	24 41	150 36	49 16	7 49	3 9	92 39	94
6	5	28 46	152 12	49 47	7 54	3 11	93 38	95
7	6	32 52	153 48	50 18	7 59	3 13	94 37	96
8	7	36 57	155 24	50 50	8 4	3 15	95 36	97
9	8	41 3	157 1	51 21	8 9	3 17	96 35	98

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

April—*concld.*

Common.	Leap year.	Mercury.		Venus.		Mars.		Jupiter.		Saturn.		Sun.		Elapsed days.
10	9	45	8	158	37	51	53	8	14	3	19	97	34	99
11	10	49	14	160	13	52	24	8	19	3	21	98	34	100
12	11	53	19	161	49	52	56	8	24	3	23	99	33	101
13	12	57	25	163	25	53	27	8	29	3	25	100	32	102
14	13	61	31	165	1	53	58	8	34	3	27	101	31	103
15	14	65	36	166	37	54	30	8	39	3	29	102	30	104
16	15	69	42	168	14	55	1	8	44	3	31	103	29	105
17	16	73	47	169	50	55	33	8	48	3	33	104	28	106
18	17	77	53	171	26	56	4	8	53	3	35	105	28	107
19	18	81	58	173	3	56	36	8	58	3	37	106	27	108
20	19	86	4	174	38	57	7	9	3	3	39	107	26	109
21	20	90	9	176	14	57	39	9	8	3	41	108	25	110
22	21	94	15	177	50	58	10	9	13	3	43	109	24	111
23	22	98	20	179	26	58	41	9	18	3	45	110	23	112
24	23	102	26	181	3	59	13	9	23	3	47	111	22	113
25	24	106	31	182	39	59	44	9	28	3	49	112	22	114
26	25	110	37	184	15	60	16	9	33	3	51	113	21	115
27	26	114	43	185	51	60	47	9	38	3	53	114	20	116
28	27	118	48	187	27	61	19	9	43	3	55	215	19	117
29	28	122	54	189	3	61	50	9	48	3	57	116	18	118
30	29	126	59	190	39	62	21	9	53	3	59	117	17	119
—	30	131	5	192	15	62	53	9	58	4	1	118	16	120

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

May.

Common.	Leap year.	Mercury.		Venus.		Mars.		Jupiter.		Saturn.		Sun.		Elapsed days.
1	—	131	5	192	15	62	53	9	58	4	1	118	16	120
2	1	135	10	193	52	63	24	10	3	4	3	119	15	121
3	2	139	16	195	28	63	55	10	8	4	5	120	15	122
4	3	143	21	197	4	64	27	10	13	4	7	121	14	123
5	4	147	27	198	40	64	59	10	18	4	9	122	13	124
6	5	151	32	200	16	65	30	10	23	4	11	123	12	125
7	6	155	38	201	52	66	2	10	28	4	13	124	11	126
8	7	159	43	203	28	66	33	10	33	4	15	125	10	127
9	8	163	49	205	4	67	4	10	38	4	17	126	9	128
10	9	167	55	206	41	67	36	10	43	4	19	127	9	129
11	10	172	0	208	17	68	7	10	48	4	21	128	8	130
12	1	176	6	209	53	68	39	10	53	4	23	129	7	131
13	2	180	11	211	29	69	10	10	58	4	25	130	6	132
14	3	184	17	213	5	69	42	11	3	4	27	131	5	133
15	4	188	22	214	41	70	13	11	8	4	29	132	4	134
16	5	192	28	216	17	70	45	11	13	4	31	133	3	135
17	6	196	33	217	54	71	16	11	18	4	33	134	3	136
18	7	200	39	219	30	71	47	11	23	4	35	135	2	137
19	8	204	44	221	6	72	19	11	28	4	37	136	1	138
20	9	208	50	222	42	72	50	11	33	4	39	137	0	139
21	20	212	55	224	18	73	22	11	38	4	41	137	59	140
22	21	217	1	225	54	73	53	11	43	4	43	138	58	141

TABLE III—*contd.*

For the days of a whole year.

May—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
23	22	221 7	227 30	74 25	11 48	4 45	139 57	142
24	23	225 12	229 6	74 56	11 53	4 47	140 56	143
25	24	229 18	230 43	75 28	11 58	4 49	141 56	144
26	25	433 23	232 19	75 59	12 3	4 51	142 55	145
27	26	237 29	233 55	76 30	12 8	4 53	143 54	146
28	27	241 34	235 31	77 2	12 13	4 55	144 53	147
29	28	245 40	237 7	77 33	12 18	4 57	145 52	148
30	29	249 45	238 43	78 5	12 23	4 59	146 51	149
31	30	253 51	240 19	78 36	12 28	5 1	147 50	150
—	31	257 56	241 55	79 8	12 33	5 3	148 50	151

June.

1	—	257 56	241 55	79 8	12 33	5 3	148 50	151
2	1	262 2	243 32	79 39	12 35	5 5	149 49	152
3	2	266 7	245 8	80 10	12 43	5 7	150 48	153
4	3	270 13	246 44	80 42	12 48	5 9	151 47	154
5	4	274 19	248 20	81 13	12 53	5 11	152 46	155
6	5	278 24	249 56	81 45	12 58	5 13	153 45	156
7	6	282 30	251 32	82 16	13 3	5 15	154 45	157
8	7	286 35	253 8	82 48	13 8	5 17	155 44	158
9	8	290 41	254 44	83 19	13 13	5 19	156 43	159
10	9	294 46	256 21	83 51	13 18	5 21	157 42	160

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

June—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
11	10	298 52	257 57	84 22	13 23	5 23	158 41	161
12	11	302 57	259 33	84 53	13 28	5 25	159 40	162
13	12	307 3	261 9	85 25	13 33	5 27	160 39	163
14	13	311 8	262 45	85 56	13 38	5 29	161 38	164
15	14	315 14	264 21	86 28	13 43	5 31	162 37	165
16	15	319 19	265 57	86 59	13 48	5 33	163 37	166
17	16	323 25	267 34	87 31	13 53	5 35	164 26	167
18	17	327 31	269 10	88 2	13 58	5 37	165 35	168
19	18	331 36	270 46	88 34	14 3	5 39	166 34	169
20	19	335 42	272 22	89 5	14 8	5 41	167 33	170
21	20	339 47	273 58	89 36	14 13	5 43	168 32	171
22	21	343 53	275 34	90 8	14 18	5 45	169 31	172
23	22	347 58	277 10	90 39	14 23	5 47	170 30	173
24	23	352 4	278 46	91 11	14 28	5 49	171 30	174
25	24	356 9	280 23	91 42	14 33	5 51	172 29	175
26	25	0 15	281 59	92 14	14 38	5 53	173 28	176
27	26	4 20	283 35	92 45	14 43	5 55	174 27	177
28	27	8 26	285 11	93 17	14 47	5 57	175 26	178
29	28	12 31	286 47	93 48	14 52	5 59	176 25	179
30	29	16 37	288 23	94 19	14 57	6 1	177 25	180
—	30	20 43	289 59	94 51	15 2	6 3	178 24	181

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

July.

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
1	—	20 43	289 59	94 51	15 2	6 3	178 24	181
2	1	24 48	291 35	95 22	15 7	6 5	179 23	182
3	2	28 54	293 12	95 54	15 12	6 7	180 22	183
4	3	32 59	294 48	96 25	15 17	6 9	181 21	184
5	4	37 5	296 24	96 57	15 22	6 11	182 20	185
6	5	41 10	298 0	97 28	15 27	6 13	183 19	186
7	6	45 16	299 36	97 59	15 32	6 15	184 18	187
8	7	49 21	301 12	98 31	15 37	6 17	185 18	188
9	8	53 27	302 48	99 2	15 42	6 19	186 17	189
10	9	57 32	304 24	99 35	15 47	6 21	187 16	190
11	10	61 38	306 1	100 5	15 52	6 23	188 15	191
12	11	65 43	307 37	100 36	15 57	6 25	189 14	192
13	12	69 49	309 13	101 8	16 2	6 27	190 13	193
14	13	73 55	310 49	101 39	16 7	6 29	191 12	194
15	14	78 0	312 25	102 11	16 12	6 31	192 12	195
16	15	82 6	314 1	102 42	16 17	6 33	193 11	196
17	16	86 11	315 37	103 14	16 22	6 35	194 10	197
18	17	90 17	317 13	103 45	16 27	6 37	195 9	198
19	18	94 22	318 50	104 16	16 32	6 39	196 8	199
20	19	98 28	320 26	104 48	16 37	6 41	197 7	200
21	20	102 33	322 2	105 20	16 42	6 43	198 6	201
22	21	106 39	323 38	105 51	16 47	6 45	199 6	202

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

July—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
23	22	110 44	325 14	106 23	16 52	6 47	200 5	203
24	23	114 50	326 50	106 54	16 57	6 49	201 4	204
25	24	118 55	328 26	107 25	17 2	6 51	202 3	205
26	25	123 1	330 3	107 57	17 7	6 53	203 2	206
27	26	127 7	331 39	108 28	17 12	6 55	204 1	207
28	27	131 12	333 15	109 0	17 17	6 57	205 0	208
29	28	135 18	334 51	109 31	17 22	6 59	205 59	209
30	29	139 23	336 27	110 3	17 27	7 1	206 59	210
31	30	143 29	338 3	110 34	17 32	7 3	207 58	211
—	31	147 34	339 39	111 5	17 37	7 5	208 57	212

August.

1	—	147 34	339 39	111 5	17 37	7 5	208 57	212
2	1	151 40	341 15	111 37	17 42	7 7	209 56	213
3	2	155 45	342 52	112 8	17 47	7 9	210 55	214
4	3	159 51	344 28	112 39	17 52	7 11	211 54	215
5	4	163 56	346 4	113 11	17 57	7 13	212 53	216
6	5	168 3	347 41	113 42	18 2	7 15	213 53	217
7	6	172 7	349 16	114 14	18 7	7 17	214 52	218
8	7	176 13	350 52	114 45	18 12	7 19	215 51	219
9	8	180 19	352 28	115 17	18 17	7 21	216 50	220
10	9	184 24	354 4	115 48	18 22	7 23	217 49	221

TABLE III—*contd.*

For the days of a whole year.

August—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
11	10	188 30	355 41	116 20	18 27	7 25	218 48	222
12	11	192 35	357 17	116 51	18 32	7 27	219 47	223
13	12	196 41	358 53	117 23	18 37	7 29	220 46	224
14	13	200 46	0 29	117 54	18 42	7 31	221 46	225
15	14	204 52	2 5	118 26	18 47	7 33	222 45	226
16	15	208 57	3 41	118 57	18 52	7 35	223 44	227
17	16	213 3	5 17	119 29	18 57	7 37	224 43	228
18	17	217 8	6 53	120 0	19 2	7 39	225 42	229
19	18	221 14	8 30	120 31	19 7	7 41	226 41	230
20	19	225 20	10 6	121 3	19 12	7 43	227 40	231
21	20	229 25	11 42	121 34	19 17	7 45	228 40	232
22	21	233 31	13 18	122 6	19 22	7 47	229 39	233
23	22	237 36	14 54	122 37	19 27	7 49	230 38	234
24	23	241 42	16 30	123 9	19 32	7 51	231 37	235
25	24	245 47	18 6	123 40	19 37	7 54	232 36	236
26	25	249 53	19 43	124 12	19 42	7 56	233 35	237
27	26	253 58	21 19	124 43	19 47	7 58	234 34	238
28	27	258 4	22 55	125 14	19 52	8 0	235 34	239
29	28	262 9	24 31	125 46	19 57	8 2	236 33	240
30	29	266 15	26 7	126 18	20 2	8 4	237 32	241
31	30	270 21	27 43	126 50	20 7	8 6	238 31	242
—	31	274 26	29 19	127 21	20 12	8 8	239 30	243

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

September.

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
1	—	274 26	29 19	127 21	20 12	8 8	239 30	243
2	1	278 32	30 55	127 52	20 17	8 10	240 29	244
3	2	282 37	32 32	128 23	20 22	8 12	241 28	245
4	3	286 43	34 8	128 55	20 26	8 14	242 27	246
5	4	290 48	35 44	129 26	20 31	8 16	243 27	247
6	5	294 53	37 20	129 57	20 36	8 18	244 26	248
7	6	298 59	38 56	130 29	20 41	8 20	245 25	249
8	7	303 5	40 32	131 0	20 46	8 22	246 24	250
9	8	307 10	42 8	131 32	20 51	8 24	247 23	251
10	9	311 16	43 44	132 3	20 56	8 26	248 22	252
11	10	315 21	45 21	132 35	21 1	8 28	249 21	253
12	11	319 27	46 57	133 6	21 6	8 30	250 21	254
13	12	323 32	48 33	133 37	21 11	8 32	251 20	255
14	13	327 38	50 9	134 9	21 16	8 34	252 19	256
15	14	331 44	51 45	134 40	21 21	8 36	253 18	257
16	15	335 49	53 21	135 12	21 26	8 38	254 17	258
17	16	339 55	54 57	135 43	21 31	8 40	255 16	259
18	17	344 0	56 33	136 15	21 36	8 42	256 15	260
19	18	348 6	58 10	136 46	21 41	8 44	257 15	261
20	19	352 11	59 46	137 18	21 46	8 46	258 14	262
21	20	356 17	61 22	137 49	21 51	8 48	259 13	263
22	21	0 22	62 58	138 20	21 56	8 50	260 12	264

TABLE III—*contd.*

For the days of a whole year.

September—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
23	22	4 28	64 34	138 52	22 1	8 52	261 11	265
24	23	8 33	66 10	139 23	22 6	8 54	262 10	266
25	24	12 39	67 46	139 55	22 11	8 56	263 9	267
26	25	16 44	69 23	140 26	22 16	8 58	264 8	268
27	26	20 50	70 59	140 58	22 21	9 0	265 8	269
28	27	24 56	72 35	141 29	22 26	9 2	266 7	270
29	28	29 1	74 11	142 1	22 31	9 4	267 6	271
30	29	33 7	75 47	142 32	22 36	9 6	268 5	272
—	30	37 12	77 23	143 3	22 41	9 8	269 4	273

October.

1	—	37 12	77 23	143 3	22 41	9 8	269 4	273
2	1	41 18	78 59	143 35	22 46	9 10	270 3	274
3	2	45 23	80 35	144 6	22 51	9 12	271 2	275
4	3	49 29	82 12	144 38	22 56	9 14	272 2	276
5	4	53 34	83 48	145 9	23 1	9 16	273 1	277
6	5	57 40	85 24	145 41	23 6	9 18	274 0	278
7	6	61 45	87 0	146 12	23 11	9 20	274 59	279
8	7	65 51	88 36	146 44	23 16	9 22	275 58	280
9	8	69 56	90 12	147 15	23 21	9 24	276 57	281
10	9	74 2	91 48	147 46	23 26	9 26	277 56	282
11	10	78 8	93 24	148 18	23 31	9 28	278 56	283
12	11	82 13	95 1	148 49	23 36	9 30	279 55	284

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

October—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
13	12	86 19	96 37	149 21	23 41	9 32	280 54	285
14	13	90 24	98 13	149 52	23 46	9 34	281 53	286
15	14	94 30	99 49	150 24	23 51	9 36	282 52	287
16	15	98 35	101 25	150 55	23 56	9 38	283 51	288
17	16	102 41	103 1	151 26	24 1	9 40	284 50	289
18	17	106 46	104 37	151 58	24 6	9 42	285 49	290
19	18	110 52	106 13	152 29	24 11	9 44	286 49	291
20	19	114 57	107 50	153 1	24 16	9 46	287 48	292
21	20	129 3	109 26	153 32	24 21	9 48	288 47	293
22	21	123 8	111 2	154 4	24 26	9 50	289 46	294
23	22	127 14	112 38	154 35	24 31	9 52	290 45	295
24	23	131 20	114 14	155 7	24 36	9 54	291 44	296
25	24	135 25	115 50	155 38	24 41	9 56	292 43	297
26	25	139 31	117 26	156 9	24 46	9 58	293 43	298
27	26	143 36	119 3	156 41	24 51	10 0	294 42	299
28	27	147 42	120 39	157 12	24 56	10 2	295 41	300
29	28	151 47	122 15	157 43	25 1	10 4	296 40	301
30	29	155 53	123 51	158 15	25 6	10 6	297 39	302
31	30	159 58	125 27	158 47	25 11	10 8	298 38	303
—	31	164 4	127 3	159 18	25 16	10 10	299 37	304

TABLE III—*contd.*

For the days of a whole year.

November.

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
1	—	164 4	127 3	159 18	25 16	10 10	299 37	304
2	1	168 9	128 39	159 50	25 21	10 12	300 37	305
3	2	172 15	130 15	160 21	25 26	10 14	301 36	306
4	3	176 20	131 52	160 52	25 31	10 16	302 35	307
5	4	180 26	133 28	161 24	25 36	10 18	303 34	308
6	5	184 32	135 4	161 55	25 41	10 20	304 33	309
7	6	188 37	136 40	162 27	25 46	10 22	305 32	310
8	7	192 43	138 16	162 58	25 51	10 24	306 31	311
9	8	196 48	139 52	163 30	25 56	10 26	307 30	312
10	9	200 54	141 28	164 1	26 1	10 28	308 30	313
11	10	204 59	143 4	164 33	26 6	10 30	309 29	314
12	11	209 5	144 41	165 4	26 11	10 32	310 28	315
13	12	213 10	146 17	165 35	26 16	10 34	311 27	316
14	13	217 16	147 53	166 7	26 20	10 36	312 26	317
15	14	221 21	149 29	166 38	26 25	10 38	313 25	318
16	15	225 27	151 5	167 10	26 30	10 40	314 24	319
17	16	229 33	152 41	167 41	26 35	10 42	315 24	320
18	17	233 38	154 17	168 13	26 40	10 44	316 23	321
19	18	237 44	155 53	168 44	26 45	10 46	317 22	322
20	19	241 49	157 30	169 16	26 50	10 48	318 21	323
21	20	245 55	159 6	169 47	26 55	10 50	319 20	324
22	21	250 0	160 42	170 18	27 0	10 52	320 19	325

TABLE III—*contd.*

FOR THE DAYS OF A WHOLE YEAR.

November—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
23	22	254 6	162 18	170 50	27 5	10 54	321 18	326
24	23	258 11	163 54	171 21	27 10	10 56	322 18	327
25	24	262 17	165 30	171 53	27 15	10 58	323 17	328
26	25	266 22	167 6	172 24	27 20	11 0	324 16	329
27	26	270 28	168 43	172 56	27 25	11 2	325 15	330
28	27	274 33	170 19	173 27	27 30	11 4	326 14	331
29	28	278 39	171 55	173 58	27 35	11 6	327 13	332
30	29	282 45	173 31	174 30	27 40	11 8	328 12	333
—	30	286 50	175 7	175 1	27 45	11 10	329 11	334

December.

1	—	286 50	175 7	175 1	27 45	11 10	329 11	334
2	1	290 56	176 43	175 33	27 50	11 12	330 11	335
3	2	295 1	178 19	176 4	27 55	11 14	331 10	336
4	3	299 7	179 55	176 36	28 0	11 16	332 9	337
5	4	303 12	181 32	177 7	28 5	11 18	333 8	338
6	5	307 17	183 8	177 39	28 10	11 20	334 7	339
7	6	311 23	184 44	178 10	28 15	11 22	335 6	340
8	7	315 29	186 20	178 41	28 20	11 24	336 5	341
9	8	319 34	187 56	179 13	28 25	11 26	337 5	342
10	9	323 40	189 32	179 44	28 30	11 28	338 4	343
11	10	327 45	191 8	180 16	28 35	11 30	339 3	344

TABLE III—*concld.*

For the days of a whole year.

December—*concld.*

Common.	Leap year.	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Elapsed days.
12	11	331 51	192 44	180 47	28 40	11 32	340 2	345
13	12	335 57	194 21	181 19	28 45	11 34	341 1	346
14	13	340 2	195 57	181 50	28 50	11 36	342 0	347
15	14	344 8	197 33	182 22	28 55	11 38	342 59	348
16	15	348 13	199 9	182 53	29 0	11 40	343 59	349
17	16	352 19	200 45	183 24	29 5	11 42	344 58	350
18	17	356 24	202 21	183 56	29 10	11 44	345 57	351
19	18	0 30	203 57	184 27	29 15	11 46	346 56	352
20	19	4 35	205 33	184 59	29 20	11 48	347 55	353
21	20	8 41	207 10	185 30	29 25	11 50	348 54	354
22	21	12 46	208 46	186 2	29 30	11 52	349 53	355
23	22	16 52	210 22	186 33	29 35	11 54	350 52	356
24	23	20 57	211 58	187 5	29 40	11 56	351 52	357
25	24	25 3	213 34	187 36	29 45	11 58	352 51	358
26	25	29 9	215 10	188 7	29 50	12 0	353 50	359
27	26	33 14	216 46	188 39	29 55	12 2	354 49	360
28	27	37 20	218 22	189 10	30 0	12 4	355 48	361
29	28	41 26	219 59	189 42	30 5	12 6	356 47	362
30	29	45 31	221 35	190 13	30 10	12 8	357 46	363
31	30	49 37	223 11	190 45	30 15	12 10	358 46	364
—	31	53 42	224 47	191 16	30 20	12 12	359 45	365

TABLE IV.

COMMUTATION TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Equation −
argument.	° ′	° ′	° ′	° ′	° ′	argument.
0	0 0	0 0	0 0	0 0	0 0	360
1	0 16	0 25	0 24	0 10	0 6	359
2	0 32	0 51	0 47	0 20	0 12	358
3	0 49	1 16	1 11	0 29	0 18	357
4	1 5	1 41	1 35	0 39	0 23	356
5	1 21	2 6	1 58	0 49	0 29	355
6	1 37	2 31	2 22	0 59	0 35	354
7	1 53	2 57	2 45	1 8	0 41	353
8	2 9	3 22	3 9	1 18	0 47	352
9	2 25	3 47	3 33	1 28	0 53	351
10	2 41	4 12	3 56	1 38	0 59	350
11	2 57	4 38	4 20	1 47	1 4	349
12	3 14	5 3	4 44	1 57	1 10	348
13	3 30	5 28	5 7	2 7	1 16	347
14	3 46	5 53	5 31	2 17	1 22	346
15	4 1	6 18	5 54	2 26	1 28	345
16	4 17	6 43	6 18	2 36	1 34	344
17	4 33	7 8	6 41	2 46	1 39	343
18	4 49	7 33	7 4	2 56	1 45	342
19	5 5	7 58	7 28	3 5	1 51	341
20	5 21	8 23	7 51	3 15	1 56	340
21	5 36	8 48	8 14	3 24	2 2	339
22	5 52	9 13	8 38	3 34	2 8	338

TABLE IV—*contd.*

COMMUTATION TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Equation −
argument.	° ′	° ′	° ′	° ′	° ′	argument.
23	6 8	9 38	9 1	3 43	2 13	337
24	6 23	10 3	9 24	3 53	2 19	336
25	6 39	10 28	9 48	4 2	2 24	335
26	6 55	10 53	10 11	4 11	2 30	334
27	7 10	11 18	10 34	4 21	2 36	333
28	7 26	11 43	10 57	4 30	2 41	332
29	7 41	12 8	11 21	4 39	2 47	331
30	7 56	12 33	11 44	4 49	2 52	330
31	8 12	12 58	12 7	4 58	2 57	329
32	8 27	13 23	12 30	5 7	3 3	328
33	8 42	13 48	12 53	5 16	3 8	327
34	8 58	14 12	13 16	5 25	3 13	326
35	9 12	14 37	13 39	5 34	3 18	325
36	9 27	15 2	14 2	5 43	3 24	324
37	9 42	15 26	14 24	5 52	3 29	323
38	9 57	15 51	14 47	6 1	3 34	322
39	10 12	16 16	15 10	6 10	3 39	321
40	10 27	16 40	15 33	6 18	3 44	320
41	10 41	17 5	15 56	6 27	3 48	319
42	10 56	17 29	16 18	6 35	3 54	318
43	11 10	17 54	16 41	6 44	3 59	317
44	11 25	18 18	17 3	6 52	4 3	316
45	11 39	18 42	17 26	7 1	4 8	315

TABLE IV—*contd.*

COMMUTATION TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Equation −
argument.	° ′	° ′	° ′	° ′	° ′	argument.
46	11 53	19 7	17 48	7 9	4 13	314
47	12 7	19 31	18 0	7 17	4 17	313
48	12 22	19 56	18 23	7 25	4 22	312
49	12 36	20 20	18 55	7 33	4 27	311
50	12 49	20 44	19 17	7 41	4 31	310
51	13 3	21 9	19 39	7 49	4 35	309
52	13 17	21 33	20 1	7 57	4 40	308
53	13 31	21 57	20 23	8 4	4 44	307
54	13 44	22 21	20 45	8 12	4 48	306
55	13 57	22 44	21 7	8 19	4 52	305
56	14 10	23 8	21 29	8 27	4 56	304
57	14 23	23 32	21 51	8 34	5 0	303
58	14 36	23 56	22 13	8 41	5 4	302
59	14 49	24 20	22 34	8 48	5 8	301
60	15 2	24 44	22 56	8 55	5 12	300
61	15 15	25 7	23 17	9 2	5 15	299
62	15 27	25 31	23 39	9 9	5 19	298
63	15 40	25 54	24 0	9 15	5 22	297
64	15 52	26 17	24 21	9 22	5 25	296
65	16 4	26 40	24 42	9 28	5 29	295
66	16 16	27 4	25 3	9 34	5 32	294
67	16 28	27 28	25 24	9 40	5 35	293
68	16 40	27 50	25 45	9 46	5 38	292

TABLE IV—*contd.*

Commutation Table.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Equation −
argument.	° ′	° ′	° ′	° ′	° ′	argument.
69	16 51	28 12	26 5	9 52	5 41	291
70	17 2	28 35	26 26	9 58	5 44	290
71	17 13	28 58	26 46	10 3	5 47	289
72	17 24	29 20	27 6	10 9	5 49	288
73	17 35	29 43	27 27	10 14	5 52	287
74	17 46	30 5	27 47	10 19	5 55	286
75	17 56	30 28	28 7	10 24	5 57	285
76	18 6	30 50	28 26	10 28	5 59	284
77	18 16	31 12	28 46	10 33	6 1	283
78	18 26	31 35	29 5	10 38	6 3	282
79	18 36	31 57	29 25	10 42	6 6	281
80	18 45	32 19	29 44	10 46	6 7	280
81	18 54	32 40	30 3	10 50	6 9	279
82	19 4	33 2	30 22	10 54	6 11	278
83	19 13	33 23	30 41	10 58	6 12	277
84	19 21	33 45	31 0	11 1	6 14	276
85	19 30	34 6	31 18	11 4	6 15	275
86	19 39	34 28	31 37	11 8	6 16	274
87	19 46	34 49	31 55	11 10	6 18	273
88	19 54	35 10	32 13	11 13	6 18	272
89	20 2	35 31	32 31	11 16	6 19	271
90	20 9	35 52	32 48	11 18	6 20	270

TABLE IV—*contd.*

COMMUTATION TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Equation −
argument.	° ′	° ′	° ′	° ′	° ′	argument.
91	20 16	36 12	33 5	11 20	6 21	269
92	20 23	36 32	33 22	11 22	6 21	268
93	20 29	36 52	33 39	11 24	6 22	267
94	20 36	37 12	33 56	11 26	6 22	266
95	20 41	37 32	34 12	11 27	6 22	265
96	20 47	37 51	34 28	11 28	6 23	264
97	20 52	38 11	34 44	11 29	6 23	263
98	20 57	38 31	35 2	11 30	6 22	262
99	21 2	38 49	35 18	11 31	6 22	261
100	21 6	39 8	35 34	11 31	6 22	260
101	21 11	39 27	35 50	11 31	6 21	259
102	21 14	39 47	36 4	11 31	6 21	258
103	21 17	40 4	36 19	11 31	6 19	257
104	21 21	40 22	36 33	11 31	6 18	256
105	21 24	40 39	36 48	11 30	6 18	255
106	21 26	40 56	37 1	11 29	6 17	254
107	21 28	41 13	37 14	11 28	6 15	253
108	21 30	41 30	37 27	11 26	6 14	252
109	21 31	41 47	37 40	11 25	6 13	251
110	21 31	42 3	37 52	11 23	6 11	250
111	21 32	42 19	38 4	11 21	6 9	249
112	21 32	42 36	38 16	11 18	6 7	248
113	21 32	42 51	38 28	11 16	6 5	247

TABLE IV—*contd.*

Commutation Table.

Equation +	Mercury.		Venus.		Mars.		Jupiter.		Saturn.		Equation −
argument.	°	′	°	′	°	′	°	′	°	′	argument.
114	21	31	43	6	38	38	11	13	6	3	246
115	21	30	43	20	38	49	11	10	6	1	245
116	21	28	43	35	38	59	11	7	5	59	244
117	21	26	43	48	39	8	11	3	5	56	243
118	21	23	44	1	39	17	10	58	5	53	242
119	21	20	44	14	39	25	10	55	5	51	241
120	21	19	44	27	39	34	10	51	5	48	240
121	21	13	44	39	39	41	10	46	5	45	239
122	21	8	44	50	39	47	10	41	5	42	238
123	21	4	45	1	39	53	10	36	5	38	237
124	20	58	45	12	39	59	10	31	5	35	236
125	20	52	45	21	40	3	10	25	5	31	235
126	20	45	45	30	40	7	10	19	5	28	234
127	20	39	45	40	40	11	10	13	5	24	233
128	20	31	45	48	40	14	10	7	5	20	232
129	20	22	45	55	40	15	10	0	5	16	231
130	20	14	46	2	40	16	9	54	5	12	230
131	20	5	46	8	40	17	9	47	5	8	229
132	19	55	46	13	40	16	9	39	5	4	228
133	19	44	46	16	40	14	9	31	4	59	227
134	19	32	46	20	40	11	9	23	4	55	226
135	19	21	46	23	40	9	9	16	4	50	225
136	19	8	46	23	40	3	9	7	4	45	224

TABLE IV—*contd.*

COMMUTATION TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Equation −
argument.	° ′	° ′	° ′	° ′	° ′	argument.
137	18 55	46 23	39 57	8 59	4 40	223
138	18 41	46 23	39 50	8 50	4 35	222
139	18 28	46 22	39 43	8 41	4 30	221
140	18 12	46 16	39 32	8 32	4 25	220
141	17 56	46 11	39 21	8 22	4 20	219
142	17 41	46 6	39 10	8 13	4 14	218
143	17 24	45 58	38 56	8 3	4 9	217
144	17 6	45 48	38 39	7 52	4 3	216
145	16 48	45 37	38 21	7 42	3 58	215
146	16 30	45 26	38 4	7 31	3 52	214
147	16 9	45 10	37 42	7 20	3 46	213
148	15 49	44 52	37 18	7 9	3 40	212
149	15 28	44 34	36 55	6 58	3 34	211
150	15 7	44 17	36 31	6 47	3 28	210
151	14 44	43 49	35 59	6 35	3 21	209
152	14 20	43 22	35 27	6 23	3 15	208
153	13 57	42 55	34 54	6 11	3 9	207
154	13 33	42 25	34 20	5 59	3 3	206
155	13 8	41 45	33 38	5 46	2 56	205
156	12 42	41 6	32 56	5 34	2 50	204
157	12 16	40 27	32 14	5 21	2 43	203
158	11 50	39 41	31 26	5 8	2 36	202
159	11 22	38 47	30 33	4 55	2 30	201

TABLE IV—*concld.*

COMMUTATION TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Equation −
argument.	° ′	° ′	° ′	° ′	° ′	argument.
160	10 54	37 43	29 40	4 42	2 23	200
161	10 26	36 49	28 47	4 29	2 16	199
162	9 56	35 52	27 43	4 15	2 9	198
163	9 26	34 39	26 37	4 2	2 2	197
164	8 56	33 27	25 31	3 48	1 55	196
165	8 26	32 14	24 25	3 35	1 48	195
166	7 54	30 39	23 4	3 21	1 41	194
167	7 22	29 5	21 44	3 7	1 34	193
168	6 50	27 29	20 23	2 53	1 27	192
169	6 18	25 47	19 0	2 39	1 20	191
170	5 44	23 47	17 25	2 24	1 13	190
171	5 11	21 47	15 51	2 10	1 6	189
172	4 38	19 47	14 17	1 56	0 58	188
173	4 4	17 36	12 28	1 41	0 51	187
174	3 29	15 13	10 34	1 27	0 44	186
175	2 55	12 50	8 49	1 12	0 37	185
176	2 20	10 27	7 4	0 58	0 29	184
177	1 45	7 53	5 35	0 43	0 22	183
178	1 10	5 15	3 43	0 29	0 15	182
179	0 35	2 38	1 51	0 14	0 7	181
180	0 0	0 0	0 0	0 0	0 0	180

TABLE V.

Anomalistic Table.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Equation −
° °	° ′	° ′	° ′	° ′	° ′	° ′	° °
0 or 180	0 0	0 0	0 0	0 0	0 0	0 0	180 or 360
1 „ 179	0 5	0 2	0 13	0 6	0 8	0 2	181 „ 359
2 „ 178	0 10	0 4	0 25	0 11	0 16	0 5	182 „ 358
3 „ 177	0 15	0 6	0 37	0 16	0 24	0 7	183 „ 357
4 „ 176	0 20	0 8	0 50	0 22	0 33	0 9	184 „ 356
5 „ 175	0 25	0 10	1 2	0 27	0 41	0 12	185 „ 355
6 „ 174	0 30	0 12	1 15	0 33	0 49	0 14	186 „ 354
7 „ 173	0 34	0 14	1 27	0 38	0 57	0 16	187 „ 353
8 „ 172	0 40	0 16	1 39	0 44	1 5	0 19	188 „ 352
9 „ 171	0 44	0 18	1 51	0 49	1 13	0 21	189 „ 351
10 „ 170	0 49	0 20	2 4	0 54	1 21	0 23	190 „ 350
11 „ 169	0 54	0 22	2 16	1 0	1 29	0 25	191 „ 349
12 „ 168	0 59	0 23	2 28	1 5	1 37	0 28	192 „ 348
13 „ 167	1 3	0 25	2 40	1 10	1 45	0 30	193 „ 347
14 „ 166	1 8	0 27	2 52	1 15	1 53	0 32	194 „ 346
15 „ 165	1 13	0 29	3 4	1 21	2 1	0 34	195 „ 345
16 „ 164	1 17	0 31	3 15	1 26	2 8	0 37	196 „ 344
17 „ 163	1 22	0 33	3 27	1 31	2 16	0 39	197 „ 343
18 „ 162	1 27	0 35	3 39	1 36	2 24	0 41	198 „ 342
19 „ 161	1 31	0 36	3 50	1 42	2 31	0 43	199 „ 341
20 „ 160	1 36	0 38	4 1	1 47	2 39	0 45	200 „ 340
21 „ 159	1 40	0 40	4 13	1 52	2 46	0 48	201 „ 339

TABLE V—*contd.*

Anomalistic Table.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Equation −
° °	° ′	° ′	° ′	° ′	° ′	° ′	° °
22 or 158	1 45	0 42	4 24	1 57	2 53	0 50	202 or 338
23 „ 157	1 49	0 43	4 35	2 2	3 1	0 52	203 „ 337
24 „ 156	1 53	0 45	4 46	2 7	3 9	0 54	204 „ 336
25 „ 155	1 58	0 47	4 58	2 11	3 16	0 50	205 „ 335
26 „ 154	2 2	0 48	5 9	2 16	3 23	0 58	206 „ 334
27 „ 153	2 6	0 49	5 19	2 21	3 30	1 0	207 „ 333
28 „ 152	2 10	0 51	5 30	2 26	3 37	1 2	208 „ 332
29 „ 151	2 14	0 52	5 41	2 30	3 45	1 4	209 „ 331
30 „ 150	2 18	0 55	5 52	2 35	3 52	1 6	210 „ 330
31 „ 149	2 22	0 56	6 2	2 40	3 58	1 8	211 „ 329
32 „ 148	2 26	0 58	6 12	2 44	4 5	1 10	212 „ 328
33 „ 147	2 30	1 0	6 22	2 49	4 12	1 12	213 „ 327
34 „ 146	2 34	1 1	6 32	2 53	4 19	1 14	214 „ 326
35 „ 145	2 38	1 2	6 42	2 58	4 25	1 16	215 „ 325
36 „ 144	2 42	1 4	6 52	3 2	4 32	1 18	216 „ 324
37 „ 143	2 46	1 5	7 1	3 6	4 38	1 19	217 „ 323
38 „ 142	2 49	1 7	7 11	3 10	4 45	1 21	218 „ 322
39 „ 141	2 53	1 8	7 20	3 14	4 51	1 23	219 „ 321
40 „ 140	2 56	1 10	7 29	3 19	4 57	1 25	220 „ 320
41 „ 139	3 0	1 11	7 39	3 23	5 3	1 26	221 „ 319
42 „ 138	3 3	1 12	7 48	3 27	5 9	1 28	222 „ 318
43 „ 137	3 6	1 14	7 56	3 30	5 15	1 30	223 „ 317

TABLE V—*contd.*

ANOMALISTIC TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Equation −
° °	° ′	° ′	° ′	° ′	° ′	° ′	° °
44 or 136	3 10	1 15	8 5	3 34	5 21	1 31	224 or 316
45 „ 135	3 13	1 16	8 14	3 38	5 27	1 33	225 „ 315
46 „ 134	3 16	1 17	8 22	3 42	5 32	1 35	226 „ 314
47 „ 133	3 19	1 19	8 30	3 45	5 37	1 36	227 „ 313
48 „ 132	3 22	1 20	8 38	3 49	5 43	1 38	228 „ 312
49 „ 131	3 25	1 21	8 46	3 52	5 48	1 39	229 „ 311
50 „ 130	3 28	1 22	8 54	3 56	5 52	1 41	230 „ 310
51 „ 129	3 31	1 23	9 1	3 59	5 57	1 42	231 „ 309
52 „ 128	3 34	1 24	9 9	4 2	6 2	1 43	232 „ 308
53 „ 127	3 37	1 25	9 16	4 6	6 8	1 45	233 „ 307
54 „ 126	3 39	1 26	9 23	4 9	6 13	1 46	234 „ 306
55 „ 125	3 42	1 27	9 30	4 12	6 17	1 47	235 „ 305
56 „ 124	3 44	1 28	9 37	4 15	6 22	1 49	236 „ 304
57 „ 123	3 47	1 29	9 43	4 18	6 26	1 50	237 „ 303
58 „ 122	3 49	1 30	9 49	4 20	6 31	1 51	238 „ 302
59 „ 121	3 51	1 31	9 56	4 23	6 35	1 52	239 „ 301
60 „ 120	3 54	1 32	10 2	4 26	6 39	1 53	240 „ 300
61 „ 119	3 56	1 33	10 8	4 28	6 43	1 55	241 „ 299
62 „ 118	3 58	1 34	10 13	4 31	6 46	1 56	242 298
63 „ 117	4 0	1 35	10 19	4 33	6 50	1 57	243 „ 297
64 „ 116	4 2	1 36	10 24	4 36	6 54	1 58	244 „ 296
65 „ 115	4 4	1 36	10 29	4 38	6 57	1 59	245 „ 295

TABLE V—*contd.*

Anomalistic Table.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Equation −
° °	° ′	° ′	° ′	° ′	° ′	° ′	° °
66 or 114	4 6	1 37	10 33	4 40	7 0	2 0	246 or 294
67 „ 113	4 7	1 37	10 38	4 42	7 4	2 0	247 „ 293
68 „ 112	4 9	1 38	10 43	4 44	7 7	2 1	248 „ 292
69 „ 111	4 11	1 39	10 47	4 46	7 9	2 2	249 „ 291
70 „ 110	4 12	1 39	10 51	4 48	7 12	2 3	250 „ 290
71 „ 109	4 14	1 40	10 55	4 50	7 15	2 4	251 „ 289
72 „ 108	4 15	1 40	10 59	4 51	7 17	2 4	252 „ 288
73 „ 107	4 17	1 41	11 2	4 53	7 19	2 5	253 „ 287
74 „ 106	4 18	1 41	11 6	4 54	7 22	2 6	254 „ 286
75 „ 105	4 19	1 42	11 9	4 56	7 24	2 6	255 „ 285
76 „ 104	4 20	1 42	11 12	4 57	7 26	2 7	256 „ 284
77 „ 103	4 21	1 43	11 14	4 58	7 28	2 7	257 „ 283
78 „ 102	4 22	1 43	11 17	5 0	7 29	2 8	258 „ 282
79 „ 101	4 23	1 43	11 20	5 0	7 31	2 8	259 „ 281
80 „ 100	4 24	1 44	11 21	5 1	7 32	2 9	260 „ 280
81 „ 99	4 24	1 44	11 23	5 2	7 34	2 9	261 „ 279
82 „ 98	4 25	1 44	11 25	5 3	7 35	2 9	262 „ 278
83 „ 97	4 26	1 44	11 27	5 4	7 36	2 10	263 „ 277
84 „ 96	4 26	1 44	11 28	5 4	7 37	2 10	264 „ 276
85 „ 95	4 27	1 45	11 29	5 5	7 38	2 10	265 „ 275
86 „ 94	4 27	1 45	11 30	5 5	7 38	2 10	226 „ 274
87 „ 93	4 27	1 45	11 31	5 5	7 39	2 10	227 „ 273

TABLE V—*concld.*

ANOMALISTIC TABLE.

Equation +	Mercury.	Venus.	Mars.	Jupiter.	Saturn.	Sun.	Equation −
° °	° ′	° ′	° ′	° ′	° ′	° ′	° °
88 or 92	4 27	1 45	11 31	5 6	7 39	2 10	268 or 272
89 „ 91	4 27	1 45	11 32	5 6	7 39	2 11	269 „ 271
90 „ 90	4 28	1 45	11 32	5 6	7 40	2 11	270 „ 270

TABLE VI.

INCREASE OF LONGITUDE FOR COMPLETE CENTURIES.

Centuries of Kali-Yuga.	Mean. ☽	Long. ☿
	Signs.	
3000	11·10	9·40
3100	4·27	2·11
3200	9·44	6·83
3300	2·61	11·54
3400	7·78	4·25
3500	0·95	8·96
3600	6·12	1·68
3700	11·29	6·39
3800	4·46	11·11
3900	9·63	3·82
4000	2·80	8·53
4100	7·97	1·24
4200	1·14	5·96
4300	4·31	10·67
4400	11·48	3·38
4500	4·65	8·10
4600	7·82	0·71
4700	2·99	5·52
4800	8·16	10·24
4900	1·33	2·95
5000	6·50	7·67

TABLE VII.

INCREASE OF LONGITUDE FOR THE YEARS OF A CENTURY.

Years.	0 ☽	0 ♄	10 ☽	10 ♄	20 ☽	20 ♄	30 ☽	30 ♄	40 ☽	40 ♄
0	0·0	0·0	10·12	4·07	8·23	8·14	6·35	0·21	4·47	4·29
1	1·01	0·41	11·13	4·48	9·25	8·55	7·36	0·32	5·48	4·39
2	2·02	0·81	0·14	4·89	10·26	8·96	8·37	1·03	6·49	5·10
3	3·04	1·22	1·15	5·29	11·27	9·36	9·39	1·43	7·50	5·51
4	4·05	1·63	2·16	5·70	0·28	9·77	10·40	1·84	8·51	5·91
5	5·06	2·04	3·18	6·11	1·29	10·18	11·41	2·25	9·53	6·32
6	6·07	2·44	4·19	6·51	2·30	10·58	0·42	2·66	10·54	6·73
7	7·08	2·85	5·20	6·92	3·32	10·99	1·43	3·06	11·55	7·13
8	8·09	3·26	6·21	7·33	4·33	11·40	2·44	3·47	0·56	7·54
9	9·11	3·66	7·22	7·73	5·34	11·81	3·46	3·88	1·57	7·95

Years.	50 ☽	50 ♄	60 ☽	60 ♄	70 ☽	70 ♄	80 ☽	80 ♄	90 ☽	90 ♄
0	2·58	8·36	0·70	0·43	10·82	4·50	8·94	8·57	7·05	0·64
1	3·60	8·76	1·71	0·84	11·83	4·91	9·95	8·98	8·06	1·05
2	4·61	9·17	2·73	1·24	0·84	5·31	10·96	9·39	9·08	1·46
3	5·62	9·58	3·74	1·65	1·85	5·72	11·97	9·79	10·09	1·86
4	6·63	9·98	4·75	2·06	2·87	6·13	0·98	10·20	11·10	2·27
5	7·64	10·39	5·76	2·46	3·88	6·54	1·99	10·66	0·11	2·68
6	8·66	10·80	6·77	2·87	4·89	6·94	3·01	11·01	1·12	3·09
7	9·67	11·21	7·78	3·28	5·90	7·35	4·02	11·42	2·13	3·49
8	10·68	11·61	8·80	3·68	6·91	7·76	5·03	11·83	3·15	3·90
9	11·69	0·02	9·81	4·09	7·92	8·16	6·04	0·24	4·16	4·31

TABLE VIII.

INCREASE OF LONGITUDE FOR COMPLETE MONTHS.

End of mean solar months.	Mean. ☽	Long. ☿
1st . .	0·08	0·03
2nd . .	0·17	0·07
3rd . .	0·25	0·10
4th . .	0·34	0·14
5th . .	0·42	0·17
6th . .	0·51	0·20
7th . .	0·59	0·24
8th . .	0·67	0·27
9th . .	0·76	0·31
10th . .	0·84	0·34
11th . .	0·93	0·37
12th . .	1·01	0·41