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TABLES FOR CALCULATING HINDU DATES IN TRUE LOCAL TIME.

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In my paper on the computation of Hindu dates, etc. (vol. I, page 403 ff.), I have given rules for calculating, according to the curiously inaccurate Hindu method, the corrections which must be applied to a date, computed for mean sunrise, in order to obtain the same for true sunrise at any given place in India. As this calculation is rather tiresome, I have computed the following tables, which will make the process easy without detracting from the accuracy of the results. As the problem, to solve which these tables serve, is somewhat complicated, a few remarks on the theory of true and mean time may not be amiss.

1. Suppose the sun to move with an equal motion on the equator (instead of on the ecliptic); then this equatorial sun will exactly regulate mean time. His rising will occur at 6 o'clock for every place on the earth the whole year round, marking the mean beginning of day. The interval between his risings at two distant places will be the time-difference between these places (*see* vol. I, Table XXV).

2. Now assume a second sun to move with the same equable motion on the ecliptic. This supposed sun is meant when the "mean sun" is spoken of. It is obvious that this mean sun and the first will not rise at the same time, except when they coincide at the two points of intersection of the equinoctial and the ecliptic. At every other time the second will, in places in north latitude, rise earlier than the first, when he is in the northern half of the ecliptic; and later, when he is in the southern half. Table XXVII, A-F, gives the interval in *ghaṭikás* and *vinádís* between the risings of both supposed suns,[1] for every degree of the ecliptic as entered in the vertical index to the left and right of each table, and for all degrees of north latitude from 10°—35° as entered in the horizontal index at the top of each table. At the intersection of the horizontal and vertical columns is given the interval of rising for the tropical longitude of the mean sun and for the terrestrial latitude in question; *e.g.*, in Table XXVII-B, we find that for 44° trop. Long. ☉ and 20° terr. Lat. the difference in rising is 1*gh.* 22*v.* If the trop. Long. ☉ is entered in the index to the *left*, the ecliptical mean sun rises before the mean beginning of the day; if on the index to the *right*, it rises after the mean beginning of the day.

3. We thus find the time of rising of the *mean* sun (moving on the ecliptic), but what is really wanted is the time of rising of the *true* sun. The true sun only twice in the year coincides with the mean sun; at every other time he either precedes or lags behind the mean sun. Their difference in longitude is the equation of the sun's centre, the amount of which in degrees, minutes, and seconds is furnished by Table XXIV-B. If the equation has the sign −, the true longitude of the sun is greater than his mean one, and consequently the true sun rises *later* than the mean one; if the equation in Table XXIV has the sign +, the true sun rises *before* the mean one; always by the time corresponding to the sun's equation of the centre. In order to compute the equivalent in time for the sun's equation of the centre, we must know how much time is occupied in rising by one degree of the ecliptic at the place where the sun is at the moment in question in a given latitude. The amount in *vinádís* is furnished by the entries immediately below the degrees of terrestrial latitude in Table XXVII. Though continually changing, it is considered by Hindu astronomers to be constant throughout each single

[1] Or between the risings of a point on the equator and one on the ecliptic, which have the same distances from the equinox.

sign, and equal to the mean.[2] As the different parts of Table XXVII represent the tropical signs, one entry serves for the whole part. Thus we find in Part B that on the 20th parallel one degree of the ecliptic (between 30° and 60° trop. Long.) takes up 8·79 *vinâḍîs* in rising. Knowing the time taken up in rising by one degree, we can easily calculate the time corresponding to any given value of the equation of the sun's centre.

4. Table XXVII refers to tropical longitude, while the other tables yield sidereal longitude. The former is found by adding to the latter the *ayanâṁśas* (or amount of the precession of the equinox) for the year in question.

The rule for calculating the *ayanâṁśas* is given in section 39 of the former paper (page 421); to find them without calculation is the object of Tables XXVIII and XXIX, *e.g.*, we find by Table XXVIII that in K. Y. 4683 the *ayanâṁśas* were—

16° 14′ 42″, *viz.* K.Y. 4600 =	15°	0′	0″
80 years =	1°	12′	0″
3 „ =	0°	2′	42″
Ayanâṁśa =	16°	14′	42″

Table XXIX serves for the *Brahma Siddhânta* and *Siddhânta Śiromaṇi*, Table XXVIII, for the other *Siddhântas*.

5. I shall now illustrate by examples the working of these tables in connection with the Special Tables; for when such accuracy is wanted, that the difference between mean and true time comes into consideration, the calculation must be made by means of the Special Tables.[3]

1st Example.—Let it be proposed to calculate the true *Tithi* for true sunrise on the 7th (solar) Jyaishtha K.Y. 4128 at Aligarh, whose latitude is 27° 53′ (or roundly 28°) and time difference + 14 vin. We use for this and the following examples the tables for the *Sûrya Siddhânta*:—

(*a*) We calculate the elements: Distance ☾ − ☉ etc., for the year and day in question, *viz.*—

	Dist. ☾ − ☉	☾'s An.	☉'s An.	Corr.
4100 years . .	69° 45′ 0″	217° 8′ 30″	282° 44′ 16″	+ 20*gh.* 54*v.*
28 „ . .	117° 47′ 3″	58° 38′ 37″	... ...	− 14*gh.* 43*v.*
7th Jyai. . .	66° 40′ 34″	97° 16′ 26″	34° 29′ 46″	
	254° 15′ 37″	13° 3′ 33″	317° 13′ 52″	+ 6*gh.* 11*v.*

(*b*) Add the time difference, with the sign changed, for the place in question, to the Corr. (+ 6*gh.* 11*v.* − 14*v.* = + 5*gh.* 57*v.*) and find by Table XXII the corresponding increase of the elements, distance, etc.—

5*gh.* =	1° 0′ 57″	1° 5′ 19″	4′ 56″
57*v.* =	11′ 35″	12′ 25″	56″
5*gh.* 57*v.* =	+ 1° 12′ 32″	+ 1° 17′ 44″	+ 5′ 52″

(*c*) Add (*or* subtract, according to the sign) the increase from the first result.—

254° 15′ 37″	13° 3′ 33″	317° 13′ 52″	
+ 1° 12′ 32″	1° 17′ 44″	5′ 52″	
255° 28′ 9″	14° 21′ 17″	317° 19′ 44″	

(*d*) Find the equations for the anomalies of the moon and sun by Table XXIV—

An. ☾	14°	21′	..	Eq. ☾ =	− 1°	15′	32″
An. ☉	317°	20′	..	Eq. ☉ =	− 1°	29′	12″
		Sum of eq'.s		=	− 2°	44′	44″

[2] The same inaccuracy pervades all Hindu calculations of true sunrise, and makes all figures in Table XXVI wrong when compared with the true values. However, we do not require the latter, but those which the Hindus assume in their calculations.

[3] I shall indicate below §7, how these tables may be used in connection with the general tables for an estimate of the difference between mean and true local time.

(*e*) Add the sum of equations to the distance; the result is the true distance at mean sunrise for the place in question, *viz.* 255° 28′ 9″ — 2° 44′ 44″ = 252° 43′ 25″.

(*f*) Find the sidereal longitude of the sun by subtracting from the above the ☉'s an., the same for beginning of the century. (Table XIII.)

	317°	19′	44″
—	282°	44′	16″
Sid. Long. ☉ =	34°	35′	28″

(*g*) Find the *ayanámśas* for the year in question, by Table XXVIII—

K.Y. 4100 =	7°	30′	0″
28 years =		25′	12″
K.Y. 4128 =	7°	55′	12

(*h*) Add the *ayanámśas* thus found to the sidereal longitude of the sun, the result is the tropical longitude of the sun.—

	34°	35′	28″
	7°	55′	12″
Trop. Long. ☉ =	42°	30′	40″

(*i*) Look out in Table XXVII the "interval of rising" of the degree of trop. Long. ☉ now found for the latitude of the given place.

If the left-hand index (0 — 180) is used, the amount is subtractive; if the index to the right (180° — 360°) the amount is additive.

In this case we get, for trop. Long. 42° on the 28th parallel, — 1*gh.* 46*v.*

(*k*) Take, from the same part of the Table just used, the time required by one degree in rising, as given there immediately below the degree of latitude in question, and calculate the equivalent in time for the sun's equation. If the equation has the sign +, the amount is subtractive; if —, it is additive.

In the present case: 1° takes up 8·24 *vináḍís*, consequently 1° 29′ will take up 12*v.* The equation being negative, the amount is additive. We put it down as + 12*v.*

(*l*) Add (*or* subtract according to the sign) the *vináḍís* in (*k*) to the result in (*i*); find the increase of Dist. ☾ — ☉ for the sum, in Table XXII; add the increase (or subtract according to the sign of the sum) to the true Dist. ☾ — ☉ (found in *e*). The result is the true Dist. ☾ — ☉ for true sunrise at the place in question. Here — 1*gh.* 46*v.* + 12*v.* = — 1*gh.* 34*v.*

1*gh.* =		12′	11″	
34*v.* =		6′	54″	
— 1*gh.* 34*v.* =		—19′	5″	This, added to the result in (*e*), *viz.*, 252° 43′ 25″, makes 252° 24′ 20″.

(*m*) This result is not quite correct, because we have made use of the mean increase (or decrease) of Dist. ☾ — ☉ instead of the true, as the Hindus do. However, we may rest satisfied with this approximation when the true distance comes out larger or smaller, by 4 minutes or more, than an entire number of degrees marking the end of a *Tithi*. This is the case in the present example: 252° mark the end of the 21st tithi or the 6th tithi of the dark fortnight; but as we found the true distance to be 252° 24′ 20″, which is more than 4′ above the end of the *Tithi*, *viz.* 252°, the final result is not affected by the slightly incorrect calculation.

In rare cases where the strictest accuracy is required, proceed as follows:—

Add the increase (or decrease) of the distance, etc., for the sum found in (*l*) to the

result in (*e*); again, find the equations of ☾ and ☉, as in (*d*), and add their sum to the distance, as in (*e*). The result is the true distance. In this case — 1*gh.* 34*v.*:—

	Dist. ☾ — ☉	☾'s An.	☉'s An.
1 gh.	0° 12′ 11″	0° 13′ 4″	0′ 59″
34 v.	6 54	7 24	34
— 1 gh. 34 v. . . . . —	19 5	20 28	+ 1 33
subtracted from . . .	255 28 9	14 21 17	317 19 44
makes	255 9′ 4″	14 0′ 49″	317 18′ 11″

An. ☾ 14° 1′ eq. = — 1° 13′ 49″
An. ☉ 317° 18′ eq. = — 1 30 8
Sum of eq's. = — 2 43 57
Dist. ☽ — ☉ + 255 9 4
True dist. 252° 25′ 7″

This then is the strictly accurate *true* distance ☾ — ☉. The error in the preceding method was — 47″.

It may be borne in mind, however, that it is a waste of time to attempt this degree of accuracy, unless we know the *Hindu* value of the latitude and longitude of the place for which the date is to be calculated. This uncertainty is enhanced when we have to deal with dates in inscriptions; for we never know for what place the almanac was calculated, from which the date recorded in the inscription was taken, though in most cases we shall probably be right in assuming that the almanac referred to the capital of the kingdom.

The following examples will be understood without further comment. I use the same letters as in the first example to indicate the operations to be gone through :—

Ex. 2.—K. Y. 4128, 4th Bhâdrapada; place: Ratnagiri, 17° Lat. and time difference —34 vin.

	☽ — ☉	☽'s An.	☉'s An.	Cor.	An.
(*a*) 4100 years .	69° 48′ 0″	217° 8′ 80′	282° 44′ 16″	+ 20 *gh.*	54 *v.*
28 „	117 47 3	58 38 37	...	— 14	43
4th Bhâdra .	96 2 4	216 11 10	124 11 9	+ 6	11
	283 37 7	131 58 17	46 55 25	(*b*) +	34
				+ 6	45
(*c*) + 6 *gh.* .	1 13 9	1 18 23	5 55		
45 *v.* .	9 9	9 48	44	(*d*) eq. ☾	= — 3° 43′ 44″
	284 59 25	133 26 28	47 2 4	eq. ☉	= + 1 36 5
(*e*) . .	— 2 7 39			Sum	= — 2 7 39
	282 51 46				

(*f*) 407° 2′ 4″ (an. ☉ + 360°). (*g*) 4128 K. Y., *ayanâṁśa* as above 7° 55′ 12″
— 282 44 16

124 17 48 (sid. Long. ☉)
(*h*) + 7 55 12

132 13 . (trop. Long. ☉)
(*i*) trop. Long. ☉ = 132°, on 17° Lat., Interval . = — 32 vin.
(*k*) Eq. ☉ = + 1° 36′ (1° = 10·97 vin.), time of rising . = — 18 vin.
(*l*) 282° 51′ 46″ Sum = — 50 vin. = — 16′ 9″.....(*l*)
— 10 9

282 41 37 . Result.

Ex. 3.—K. Y. 4325, 4th Mârgaśira. Śrinagar, Lat. 34° 6′, time difference — 8 vin.

(*a*) 4300 years .	345°	24′	0″	276°	1′	30″	282°	43′	55″	—24 gh.	10v.
25 „ . .	79	27	0	142	21	38		...		—28	8
4th Mârg. . .	137	35	2	338	9	48	214	51	41		
	202	26	2	296	32	56	137	35	34	—52	18
										(*b*) +	8
										—52	10

(c) 52 gh. . =	10°	33′	55″	11°	19′	23″	0°	51′	15″			
10 v. . =		2	2		2	11			10			
52 gh. 10 v. =	−10	35	57	−11	21	34		−51	25	(d) eq. ☾	= +	4° 55′ 16″
	202	26	2	296	32	56	137	35	34	eq. ☉	= +	1 31 7
makes .	191	50	5	285	11	22	136	44	9	Sum	= +	6° 26′ 23″
Sum of eq. . +	6	26	23									
(e)	198	16	28									

(f) 496° 44′ 9″ (an. ☉ + 360°)
− 282 43 53
214 0 16 (sid. Long. ☉)
(h) + 10 52 30
224 52 46 (trop. Long. ☉)

(g) 4300 *ayanámśa* . . = 10° 30′ 0″
25 years . = 22 30
4325 K. Y. *ayanámśa* . = 10° 52′ 30″

(i) trop. Long. ☉ = 225° on 34° Lat. Interval . . = + 1 gh. 32 v.
(k) Eq. „ ☉ = + 1° 31′ (1° = 12. 18), time of rising = — 18
Sum = + 1 gh. 14 v.

(l) 1 gh. . . .	=		12′	11″	
14 v. . . .	=		2	51	
+ 1 gh. 14 v. . . .	=		15	2	(added to *e*)
		198	16	28	
makes . . .		198°	31′	30″	Result.

6. In §62 of my former paper I have said: "In the *Siddhánta Śiromani Goládhyáya*" IV, 20, Bhâskara states that the ancient astronomers [4] assumed that at Lankâ (or on the Equator) the zodiacal signs rise in the same time with 30 degrees of the equinoctial, while in fact they do not. The tables give the interval according to Bhâskara's theory. If the value without Bhâskara's correction is wanted, it may be elicited from the tables. For that purpose the column 0° has been added; in it are given what Bhâskara calls the *udayántara*. They must be added to, or subtracted from (according to the sign), the value in the table. Under this supposition, we shall get in (*i*) of the first example above 1*gh*. 24*v*. instead of 1*gh*. 46*v*., and in (*k*.) we find 8·27 *vin*. instead of 8·23 as the time taken up in rising 1 degree; the latter correction does not, in this case, sensibly affect the final result, while the former will.

In calculating dates anterior to Bhâskara (K. Y. 4251) the value of the "interval" given in the table should be corrected in the way just explained.

7. The present tables may be used roughly to estimate the difference between mean Indian and true local time, as in the following example.

In §24 of my first paper we found that in K. Y. 4682 the 11th tithi of the bright fortnight of Vaiśâkha ended 46 ghaṭikas after mean sunrise in Lańkâ on the 18th Vaiśâkha of the Tables. What is the corresponding local time at Purniya (26° N. Lat. and + 1*gh*. 58 *vin*. time difference)?

First add the time difference to the given Lańkâ time: 46*gh*. + 1*gh*. 58*v*. = 47*gh*. 58 *vin*. Then look out in Table VIII the sidereal Long. ☉ on the 18th Vaiśâkha: 16° 40′; add the *ayanámśa* for K.Y. 4682, *viz*. 16° 15′; the sum is the trop. Long. ☉, 16° 40′ + 16° 15′ = 32° 55′ (or nearly 33°). Now look out in Table XXVII, Part B, the interval between the mean beginning of the day and sunrise on the 26th parallel and for trop. Long. ☉ = 33′; *viz*. 1*gh*. 25*v*. The left hand index being used, the true sun rises before the mean beginning of the day; accordingly we must add the interval to mean time. 47*gh*. 58*v*. + 1*gh*. 25*v*. = 49 *gh*. 23 *v*. This is the required true local time for the end of the 11th tithi in Purniya.

[4] Our text of the *Sûrya Siddhânta* III, 43, 44, is in accordance with Bhâskara's theory, and must therefore be later. From the error in the position of the Moon's node relative to that of the Sun, I am persuaded that the present text of the *Sûrya Siddhânta* was fixed not before the 13th century A.D. The *bija* is a still later addition

TABLE XXVII. (PART A.—*Trop. Long.* ☉ = 0°—29°, 360°—331°.)

Lat.	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	
Vin.	8·58	8·51	8·43	8·37	8·29	8·21	8·15	8·07	7·99	7·92	7·84	7·76	7·68	7·60	
Long.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	Long.
0°	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	360°
1	0 1	0 1	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2	359
2	0 3	0 3	0 3	0 3	0 3	0 4	0 4	0 4	0 4	0 4	0 4	0 4	0 5	0 5	358
3	0 4	0 4	0 5	0 5	0 5	0 5	0 6	0 6	0 6	0 6	0 7	0 7	0 7	0 7	357
4	0 6	0 6	0 6	0 7	0 7	0 7	0 7	0 8	0 8	0 8	0 9	0 9	0 9	0 10	356
5	0 7	0 7	0 8	0 8	0 9	0 9	0 9	0 10	0 10	0 10	0 11	0 11	0 12	0 12	355
6	0 9	0 9	0 9	0 10	0 10	0 11	0 11	0 12	0 12	0 12	0 13	0 13	0 14	0 14	354
7	0 10	0 10	0 11	0 11	0 12	0 13	0 13	0 14	0 14	0 14	0 15	0 16	0 16	0 17	353
8	0 11	0 12	0 13	0 13	0 14	0 14	0 15	0 15	0 16	0 17	0 17	0 18	0 19	0 19	352
9	0 13	0 13	0 14	0 15	0 15	0 16	0 17	0 17	0 18	0 19	0 19	0 20	0 21	0 22	351
10	0 14	0 15	0 16	0 16	0 17	0 18	0 19	0 19	0 20	0 21	0 21	0 22	0 23	0 24	350
11	0 16	0 16	0 17	0 18	0 19	0 20	0 20	0 21	0 22	0 23	0 24	0 25	0 26	0 26	349
12	0 17	0 18	0 19	0 20	0 21	0 21	0 22	0 23	0 24	0 25	0 26	0 27	0 28	0 29	348
13	0 18	0 19	0 20	0 21	0 22	0 23	0 24	0 25	0 26	0 27	0 28	0 29	0 20	0 31	347
14	0 20	0 21	0 22	0 23	0 24	0 25	0 26	0 27	0 28	0 29	0 30	0 31	0 32	0 34	346
15	0 21	0 22	0 24	0 24	0 26	0 27	0 29	0 29	0 30	0 31	0 32	0 34	0 35	0 36	345
16	0 23	0 24	0 25	0 26	0 27	0 29	0 30	0 31	0 32	0 33	0 35	0 36	0 37	0 38	344
17	0 24	0 25	0 27	0 28	0 29	0 30	0 31	0 33	0 34	0 35	0 37	0 38	0 39	0 41	343
18	0 26	0 27	0 28	0 29	0 31	0 32	0 33	0 35	0 36	0 37	0 39	0 40	0 42	0 43	342
19	0 27	0 28	0 30	0 31	0 32	0 34	0 35	0 37	0 38	0 39	0 41	0 43	0 44	0 46	341
20	0 28	0 30	0 31	0 33	0 34	0 36	0 37	0 39	0 40	0 41	0 43	0 45	0 46	0 48	340
21	0 30	0 31	0 33	0 34	0 36	0 38	0 39	0 41	0 42	0 43	0 45	0 47	0 49	0 50	339
22	0 31	0 33	0 35	0 36	0 38	0 39	0 41	0 42	0 44	0 46	0 48	0 49	0 51	0 53	338
23	0 33	0 34	0 36	0 37	0 39	0 41	0 43	0 44	0 46	0 48	0 50	0 52	0 53	0 55	337
24	0 34	0 36	0 38	0 39	0 41	0 43	0 44	0 46	0 48	0 50	0 52	0 54	0 56	0 58	336
25	0 35	0 37	0 39	0 41	0 43	0 45	0 46	0 48	0 50	0 52	0 54	0 56	0 58	1 0	335
26	0 37	0 39	0 41	0 42	0 44	0 47	0 48	0 50	0 52	0 54	0 56	0 58	1 0	1 2	334
27	0 38	0 40	0 42	0 44	0 46	0 48	0 50	0 52	0 54	0 56	0 58	1 0	1 3	1 5	333
28	0 40	0 42	0 44	0 46	0 48	0 50	0 52	0 54	0 56	0 58	1 0	1 3	1 5	1 7	332
29	0 41	0 43	0 46	0 47	0 50	0 52	0 54	0 56	0 58	1 0	1 3	1 5	1 7	1 10	331

PART A,—*continued.*

Lat.	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	0	
Vin.	7·52	7·43	7·34	7·26	7·17	7·08	6·98	6·89	6·80	6·69	6·59	6·49	+0·72	
Long.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. u.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	Long.
0°	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	—0 0	360°
1	0 2	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 3	0 4	0 1	359
2	0 5	0 5	0 5	0 5	0 6	0 6	0 6	0 6	0 6	0 7	0 7	0 7	0 1	358
3	0 7	0 8	0 8	0 8	0 8	0 9	0 9	0 9	0 10	0 10	0 10	0 11	0 2	357
4	0 10	0 10	0 11	0 11	0 11	0 12	0 12	0 12	0 13	0 13	0 14	0 14	0 3	356
5	0 12	0 13	0 13	0 14	0 14	0 15	0 15	0 16	0 16	0 17	0 17	0 18	—0 4	355
6	0 15	0 15	0 16	0 16	0 17	0 18	0 18	0 19	0 19	0 20	0 20	0 21	0 4	354
7	0 17	0 18	0 19	0 19	0 20	0 20	0 21	0 22	0 22	0 23	0 24	0 25	0 5	353
8	0 20	0 21	0 21	0 22	0 23	0 23	0 24	0 25	0 26	0 26	0 27	0 28	0 6	352
9	0 22	0 23	0 24	0 25	0 25	0 26	0 27	0 28	0 29	0 30	0 31	0 32	0 7	351
10	0 25	0 26	0 27	0 27	0 28	0 29	0 30	0 31	0 32	0 33	0 34	0 35	—0 7	350
11	0 27	0 28	0 29	0 30	0 31	0 32	0 33	0 34	0 35	0 36	0 38	0 39	0 8	349
12	0 30	0 31	0 33	0 33	0 34	0 35	0 36	0 37	0 38	0 40	0 41	0 42	0 9	348
13	0 32	0 33	0 35	0 36	0 37	0 38	0 39	0 40	0 42	0 43	0 44	0 46	0 10	347
14	0 35	0 36	0 37	0 38	0 40	0 41	0 42	0 44	0 45	0 46	0 48	0 49	0 10	346
15	0 37	0 39	0 40	0 41	0 42	0 44	0 45	0 47	0 48	0 50	0 51	0 53	—0 11	345
16	0 40	0 41	0 43	0 44	0 45	0 47	0 48	0 50	0 51	0 53	0 55	0 56	0 12	344
17	0 42	0 44	0 45	0 47	0 48	0 50	0 51	0 53	0 54	0 56	0 58	1 0	0 13	343
18	0 45	0 46	0 49	0 49	0 51	0 53	0 54	0 56	0 58	1 0	1 1	1 3	0 13	342
19	0 47	0 49	0 51	0 52	0 54	0 55	0 57	0 59	1 1	1 3	1 5	1 7	0 14	341
20	0 50	0 51	0 53	0 55	0 57	0 58	1 0	1 2	1 4	1 7	1 8	1 10	—0 15	340
21	0 52	0 54	0 56	0 58	0 59	1 1	1 3	1 5	1 7	1 10	1 12	1 14	0 16	339
22	0 55	0 57	0 59	1 0	1 2	1 4	1 6	1 8	1 10	1 13	1 15	1 17	0 16	338
23	0 57	0 59	1 1	1 3	1 5	1 7	1 9	1 12	1 14	1 16	1 18	1 21	0 17	337
24	1 0	1 2	1 4	1 6	1 8	1 10	1 12	1 15	1 17	1 19	1 22	1 24	0 18	336
25	1 2	1 4	1 7	1 8	1 11	1 13	1 15	1 18	1 20	1 23	1 25	1 28	—0 18	335
26	1 4	1 7	1 9	1 11	1 14	1 16	1 18	1 21	1 23	1 26	1 29	1 31	0 19	334
27	1 7	1 9	1 12	1 14	1 16	1 19	1 21	1 24	1 26	1 29	1 32	1 35	0 20	333
28	1 9	1 12	1 14	1 17	1 19	1 22	1 24	1 27	1 30	1 33	1 35	1 38	0 21	332
29	1 12	1 15	1 17	1 19	1 22	1 25	1 27	1 30	1 33	1 36	1 39	42	0 21	331

TABLE XXVII. (PART B.—*Trop. Long.* ☉ = 30°— 59°, 330°— 301°.)

Lat.	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	
n.	9·4	9·34	9·29	9·22	9·17	9·11	9·04	8·98	8·92	8·85	8·79	8·72	8·66	8·59	
Long.	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	Long.
30°	0 43	0 45	0 47	0 49	0 51	0 54	0 56	0 58	1 0	1 2	1 5	1 7	1 10	1 12	330°
31	0 43	0 45	0 48	0 50	0 52	0 55	0 57	0 59	1 1	1 4	1 6	1 9	1 11	1 13	329
32	0 44	0 46	0 48	0 51	0 53	0 55	0 58	1 0	1 2	1 5	1 7	1 10	1 12	1 14	328
33	0 44	0 47	0 49	0 51	0 54	0 56	0 59	1 1	1 3	1 6	1 8	1 11	1 14	1 16	327
34	0 45	0 47	0 50	0 52	0 55	0 57	1 0	1 2	1 4	1 7	1 10	1 12	1 15	1 17	326
35	0 46	0 48	0 51	0 53	0 55	0 58	1 0	1 3	1 6	1 8	1 11	1 14	1 16	1 19	325
36	0 46	0 49	0 51	0 54	0 56	0 59	1 1	1 4	1 7	1 9	1 12	1 15	1 18	1 20	324
37	0 47	0 49	0 52	0 54	0 57	1 0	1 2	1 5	1 8	1 10	1 13	1 16	1 19	1 22	323
38	0 47	0 50	0 53	0 55	0 58	1 1	1 3	1 6	1 9	1 12	1 14	1 17	1 20	1 23	322
39	0 48	0 51	0 53	0 56	0 59	1 2	1 4	1 7	1 10	1 13	1 16	1 19	1 22	1 25	321
40	0 49	0 51	0 54	0 57	1 0	1 3	1 5	1 8	1 11	1 14	1 17	1 20	1 23	1 26	320
41	0 49	0 52	0 55	0 58	1 0	1 3	1 6	1 9	1 12	1 15	1 18	1 21	1 24	1 27	319
42	0 50	0 52	0 56	0 59	1 1	1 4	1 7	1 10	1 13	1 16	1 19	1 23	1 26	1 29	318
43	0 50	0 53	0 56	0 59	1 2	1 5	1 8	1 11	1 14	1 17	1 20	1 24	1 27	1 30	317
44	0 51	0 54	0 57	1 0	1 3	1 6	1 9	1 12	1 15	1 19	1 22	1 25	1 28	1 32	316
45	0 52	0 54	0 58	1 1	1 4	1 7	1 10	1 13	1 16	1 20	1 23	1 26	1 30	1 33	315
46	0 52	0 55	0 58	1 1	1 5	1 8	1 11	1 14	1 17	1 21	1 24	1 27	1 31	1 35	314
47	0 53	0 56	0 59	1 2	1 5	1 9	1 12	1 15	1 19	1 22	1 25	1 29	1 32	1 36	313
48	0 53	0 56	1 0	1 3	1 6	1 10	1 13	1 16	1 20	1 23	1 27	1 30	1 34	1 37	312
49	0 54	0 57	1 0	1 4	1 7	1 11	1 14	1 17	1 21	1 24	1 28	1 32	1 35	1 39	311
50	0 54	0 58	1 1	1 5	1 8	1 11	1 15	1 18	1 22	1 25	1 29	1 33	1 36	1 40	310
51	0 55	0 58	1 2	1 5	1 9	1 12	1 16	1 19	1 23	1 27	1 30	1 34	1 38	1 42	309
52	0 56	0 59	1 3	1 6	1 9	1 13	1 17	1 20	1 24	1 28	1 31	1 35	1 39	1 43	308
53	0 56	1 0	1 3	1 7	1 10	1 14	1 18	1 21	1 25	1 29	1 33	1 37	1 40	1 44	307
54	0 57	1 0	1 4	1 8	1 11	1 15	1 19	1 22	1 26	1 30	1 34	1 38	1 42	1 46	306
55	0 58	1 1	1 5	1 8	1 12	1 16	1 20	1 23	1 27	1 31	1 35	1 39	1 43	1 47	305
56	0 58	1 1	1 5	1 9	1 13	1 17	1 21	1 24	1 28	1 32	1 36	1 41	1 44	1 49	304
57	0 59	1 2	1 6	1 10	1 14	1 18	1 22	1 26	1 29	1 33	1 37	1 42	1 46	1 50	303
58	0 59	1 3	1 7	1 11	1 14	1 19	1 23	1 27	1 30	1 35	1 39	1 43	1 47	1 51	302
59	1 0	1 3	1 8	1 12	1 15	1 20	1 23	1 28	1 32	1 36	1 40	1 44	1 48	1 53	301

PART B,—*continued.*

Lat.	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	0°	
Vin.	8·52	8·45	8·38	8·31	284	8·16	8·08	8·00	7·91	7·84	7·76	7·67	+0·03	
Long.	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	Long.
30°	1 14	1 17	1 20	1 22	1 25	1 28	1 30	1 33	1 36	1 39	1 42	1 45	—0 22	330°
31	1 16	1 19	1 21	1 24	1 27	1 29	1 32	1 35	1 38	1 41	1 45	1 48	0 22	329
32	1 17	1 20	1 23	1 26	1 29	1 31	1 34	1 37	1 40	1 44	1 47	1 50	0 22	328
33	1 19	1 22	1 25	1 27	1 30	1 33	1 36	1 39	1 42	1 46	1 49	1 52	0 22	327
34	1 20	1 23	1 26	1 29	1 32	1 35	1 38	1 41	1 44	1 48	1 51	1 55	0 22	326
35	1 22	1 25	1 28	1 31	1 34	1 37	1 40	1 43	1 46	1 50	1 54	1 57	—0 22	325
36	1 23	1 26	1 29	1 32	1 36	1 39	1 42	1 45	1 49	1 52	1 56	1 59	0 22	324
37	1 25	1 28	1 31	1 34	1 37	1 41	1 44	1 47	1 51	1 55	1 58	2 2	0 22	323
38	1 26	1 30	1 33	1 36	1 39	1 42	1 46	1 49	1 53	1 57	2 0	2 4	0 22	322
39	1 28	1 31	1 34	1 37	1 41	1 44	1 48	1 51	1 55	1 59	2 2	2 6	0 22	321
40	1 29	1 33	1 36	1 39	1 43	1 46	1 50	1 53	1 57	2 1	2 5	2 9	—0 22	320
41	1 31	1 34	1 37	1 41	1 44	1 48	1 52	1 55	1 59	2 3	2 7	2 11	0 22	319
42	1 32	1 36	1 39	1 43	1 46	1 50	1 54	1 57	2 1	2 5	2 9	2 13	0 22	318
43	1 34	1 37	1 41	1 44	1 48	1 52	1 55	1 59	2 3	2 7	2 11	2 16	0 22	317
44	1 35	1 39	1 42	1 46	1 50	1 53	1 57	2 1	2 5	2 10	2 14	2 18	0 22	316
45	1 37	1 40	1 44	1 48	1 51	1 55	1 59	2 3	2 7	2 12	2 16	2 20	—0 22	315
46	1 38	1 42	1 46	1 49	1 53	1 57	2 1	2 5	2 9	2 14	2 18	2 23	0 22	314
47	1 40	1 43	1 47	1 51	1 55	1 59	2 3	2 7	2 12	2 16	2 20	2 25	0 22	313
48	1 41	1 45	1 49	1 53	1 57	2 1	2 5	2 9	2 14	2 18	2 23	2 27	0 22	312
49	1 42	1 47	1 51	1 54	1 58	2 3	2 7	2 11	2 16	2 20	2 25	2 30	0 22	311
50	1 44	1 48	1 52	1 56	2 0	2 4	2 8	2 13	2 18	2 23	2 27	2 32	—0 22	310
51	1 46	1 50	1 54	1 58	2 2	2 6	2 11	2 15	2 20	2 25	2 29	2 34	0 22	309
52	1 47	1 51	1 55	1 59	2 4	2 8	2 13	2 17	2 22	2 27	2 32	2 37	0 22	308
53	1 48	1 53	1 57	2 1	2 6	2 10	2 15	2 19	2 24	2 29	2 34	2 39	0 22	307
54	1 50	1 54	1 59	2 3	2 7	2 12	2 17	2 21	2 26	2 31	2 36	2 41	0 22	306
55	1 51	1 56	2 0	2 4	2 9	2 14	2 18	2 23	2 28	2 33	2 38	2 44	—0 22	305
56	1 53	1 57	2 2	2 6	2 11	2 15	2 20	2 25	2 30	2 35	2 41	2 46	0 22	304
57	1 54	1 59	2 3	2 8	2 12	2 17	2 22	2 27	2 32	2 38	2 43	2 48	0 22	303
58	1 56	2 1	2 5	2 10	2 14	2 19	2 24	2 29	2 35	2 40	2 45	2 51	0 22	302
59	1 57	2 2	2 7	2 11	2 16	2 21	2 26	2 31	2 37	2 42	2 47	2 53	0 22	301

TABLE XXVII. (PART C.—*Trop. Long.* ☉ = 60°—89°, 300°—127°.)

Lat.	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	
Vin.	10·52	10·50	10·47	10·45	10·42	10·40	10·37	10·35	10·32	10·29	10·27	10·24	10·22	10·18	
Long.	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	
60°	1 1	1 4	1 8	1 13	1 16	1 20	1 24	1 29	1 33	1 37	1 41	1 46	1 49	1 54	300°
61	1 0	1 3	1 8	1 13	1 16	1 20	1 24	1 28	1 32	1 37	1 41	1 45	1 49	1 54	299
62	0 59	1 3	1 8	1 13	1 15	1 20	1 24	1 28	1 32	1 37	1 41	1 45	1 49	1 54	298
63	0 59	1 2	1 7	1 12	1 15	1 19	1 23	1 28	1 32	1 36	1 40	1 45	1 48	1 54	297
64	0 58	1 2	1 7	1 12	1 14	1 19	1 23	1 27	1 32	1 36	1 40	1 45	1 48	1 54	296
65	0 58	1 1	1 6	1 11	1 14	1 18	1 23	1 27	1 31	1 36	1 40	1 44	1 48	1 53	295
66	0 57	1 1	1 6	1 11	1 14	1 18	1 22	1 27	1 31	1 35	1 39	1 44	1 48	1 53	294
67	0 57	1 0	1 5	1 11	1 13	1 18	1 22	1 27	1 31	1 35	1 39	1 44	1 47	1 53	293
68	0 56	1 0	1 5	1 10	1 13	1 17	1 21	1 26	1 30	1 35	1 39	1 44	1 47	1 53	292
69	0 56	0 59	1 4	1 10	1 12	1 17	1 21	1 26	1 30	1 34	1 38	1 43	1 47	1 53	291
70	0 55	0 59	1 4	1 9	1 12	1 16	1 21	1 25	1 30	1 34	1 38	1 43	1 47	1 53	290
71	0 55	0 58	1 3	1 9	1 12	1 16	1 20	1 25	1 29	1 34	1 38	1 43	1 47	1 52	289
72	0 54	0 58	1 3	1 8	1 11	1 16	1 20	1 25	1 29	1 34	1 38	1 43	1 46	1 52	288
73	0 54	0 57	1 2	1 8	1 11	1 15	1 20	1 24	1 29	1 33	1 38	1 43	1 46	1 52	287
74	0 53	0 57	1 2	1 8	1 10	1 15	1 19	1 24	1 28	1 33	1 37	1 42	1 46	1 52	286
75	0 53	0 56	1 1	1 7	1 10	1 14	1 19	1 23	1 28	1 33	1 37	1 42	1 46	1 52	285
76	0 52	0 56	1 1	1 7	1 10	1 14	1 19	1 23	1 28	1 32	1 37	1 42	1 45	1 51	284
77	0 52	0 55	1 0	1 6	1 9	1 14	1 18	1 23	1 27	1 32	1 36	1 42	1 45	1 51	283
78	0 51	0 55	1 0	1 6	1 9	1 13	1 18	1 22	1 27	1 32	1 36	1 41	1 45	1 51	282
79	0 51	0 54	1 0	1 5	1 8	1 13	1 18	1 22	1 27	1 31	1 36	1 41	1 45	1 51	281
80	0 50	0 54	0 59	1 5	1 8	1 12	1 17	1 22	1 26	1 31	1 36	1 41	1 45	1 51	280
81	0 50	0 53	0 58	1 4	1 7	1 12	1 17	1 21	1 26	1 31	1 35	1 41	1 44	1 50	279
82	0 49	0 53	0 58	1 4	1 7	1 12	1 16	1 21	1 26	1 31	1 35	1 40	1 44	1 50	278
83	0 49	0 52	0 57	1 3	1 7	1 11	1 16	1 21	1 25	1 30	1 35	1 40	1 44	1 50	277
84	0 48	0 52	0 57	1 3	1 6	1 11	1 16	1 20	1 25	1 30	1 35	1 40	1 44	1 50	276
85	0 48	0 51	0 57	1 2	1 6	1 10	1 15	1 20	1 25	1 30	1 34	1 40	1 43	1 50	275
86	0 47	0 51	0 56	1 2	1 5	1 10	1 15	1 20	1 24	1 29	1 34	1 39	1 43	1 50	274
87	0 47	0 50	0 56	1 2	1 5	1 10	1 15	1 19	1 24	1 29	1 34	1 39	1 43	1 49	273
88	0 46	0 50	0 55	1 1	1 4	1 9	1 14	1 19	1 24	1 29	1 34	1 39	1 43	1 49	272
89	0 46	0 49	0 55	1 1	1 4	1 9	1 14	1 19	1 23	1 28	1 33	1 39	1 43	1 49	271

PART C.—*continued.*

Lat.	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	0°	
Vin.	10·16	10·13	10·10	10·07	10·04	10·00	9·97	9·94	9·91	9·87	9·83	9·79	—0·75	
Long.	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	Long.
60°	1 59	2 4	2 8	2 13	2 18	2 23	2 28	2 33	2 39	2 44	2 49	2 55	—0 22	300°
61	1 59	2 3	2 8	2 13	2 18	2 23	2 28	2 33	2 39	2 44	2 50	2 55	0 22	299
62	1 59	2 3	2 8	2 13	2 18	2 23	2 28	2 33	2 39	2 44	2 50	2 56	0 21	298
63	1 59	2 3	2 8	2 13	2 18	2 23	2 28	2 34	2 39	2 45	2 50	2 56	0 20	297
64	1 58	2 3	2 8	2 13	2 18	2 23	2 28	2 34	2 39	2 45	2 50	2 56	0 19	296
65	1 58	2 3	2 8	2 13	2 18	2 23	2 28	2 34	2 39	2 45	2 50	2 56	—0 19	295
66	1 58	2 3	2 8	2 13	2 18	2 23	2 28	2 34	2 39	2 45	2 50	2 56	0 18	294
67	1 58	2 3	2 8	2 13	2 18	2 23	2 28	2 34	2 39	2 45	2 50	2 57	0 17	293
68	1 58	2 3	2 8	2 12	2 17	2 23	2 28	2 34	2 39	2 45	2 50	2 57	0 16	292
69	1 58	2 3	2 8	2 12	2 17	2 23	2 28	2 34	2 39	2 45	2 51	2 57	0 16	291
70	1 57	2 2	2 7	2 12	2 17	2 23	2 28	2 34	2 40	2 45	2 51	2 57	—0 15	290
71	1 57	2 2	2 7	2 12	2 17	2 23	2 28	2 34	2 40	2 46	2 51	2 57	0 14	289
72	1 57	2 2	2 7	2 12	2 17	2 23	2 28	2 34	2 40	2 46	2 51	2 58	0 13	288
73	1 57	2 2	2 7	2 12	2 17	2 23	2 28	2 34	2 40	2 46	2 51	2 58	0 13	287
74	1 57	2 2	2 7	2 12	2 17	2 23	2 28	2 34	2 40	2 46	2 51	2 58	0 12	286
75	1 57	2 2	2 7	2 12	2 17	2 23	2 28	2 34	2 40	2 46	2 52	2 58	—0 11	285
76	1 56	2 2	2 7	2 12	2 17	2 23	2 29	2 34	2 40	2 46	2 52	2 59	0 10	284
77	1 56	2 1	2 7	2 12	2 17	2 23	2 29	2 34	2 40	2 46	2 52	2 59	0 10	283
78	1 56	2 1	2 7	2 12	2 17	2 23	2 29	2 34	2 40	2 47	2 52	2 59	0 9	282
79	1 56	2 1	2 7	2 12	2 17	2 23	2 29	2 34	2 40	2 47	2 52	2 59	0 8	281
80	1 56	2 1	2 6	2 12	2 17	2 23	2 29	2 34	2 40	2 47	2 52	2 59	—0 7	280
81	1 56	2 1	2 6	2 12	2 17	2 23	2 29	2 35	2 41	2 47	2 53	3 0	0 7	279
82	1 55	2 1	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 47	2 53	3 0	0 6	278
83	1 55	2 1	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 47	2 53	3 0	0 5	277
84	1 55	2 1	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 47	2 53	3 0	0 4	276
85	1 55	2 0	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 47	2 53	3 0	—0 4	275
86	1 55	2 0	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 48	2 53	3 1	0 3	274
87	1 55	2 0	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 48	2 54	3 1	0 2	273
88	1 55	2 0	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 48	2 54	3 1	0 1	272
89	1 54	2 0	2 6	2 11	2 17	2 23	2 29	2 35	2 41	2 48	2 54	3 1	0 1	271

TABLE XXVII. (PART D.—*Trop. Long.* ☉ = 90° — 119°, 270° — 241°.)

Lat.	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	
Vin.	10·98	11·01	11·03	11·05	11·08	11·10	11·13	11·15	11·18	11·21	11·23	11·26	11·28	11·32	
Long.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	Long.
90°	0 45	0 49	0 54	1 0	1 3	1 8	1 13	1 18	1 23	1 28	1 33	1 38	1 42	1 49	270°
91	0 44	0 48	0 53	0 59	1 2	1 7	1 12	1 17	1 22	1 27	1 32	1 37	1 41	1 48	269
92	0 43	0 47	0 52	0 58	1 1	1 6	1 11	1 16	1 21	1 26	1 31	1 36	1 40	1 47	268
93	0 42	0 46	0 51	0 57	1 0	1 5	1 10	1 15	1 20	1 25	1 30	1 35	1 39	1 45	267
94	0 41	0 45	0 50	0 56	0 59	1 4	1 8	1 14	1 19	1 24	1 28	1 34	1 38	1 43	266
95	0 40	0 44	0 49	0 55	0 58	1 3	1 7	1 13	1 18	1 22	1 27	1 32	1 36	1 42	265
96	0 39	0 43	0 48	0 54	0 57	1 2	1 6	1 12	1 16	1 21	1 26	1 31	1 35	1 41	264
97	0 38	0 42	0 47	0 53	0 56	1 1	1 5	1 10	1 15	1 20	1 25	1 30	1 34	1 39	263
98	0 37	0 41	0 46	0 52	0 55	1 0	1 3	1 9	1 14	1 19	1 23	1 28	1 33	1 38	262
99	0 36	0 40	0 45	0 51	0 54	0 58	1 2	1 8	1 13	1 18	1 22	1 27	1 31	1 37	261
100	0 35	0 39	0 44	0 50	0 53	0 57	1 1	1 7	1 12	1 16	1 21	1 26	1 30	1 35	260
101	0 34	0 38	0 43	0 49	0 52	0 56	1 0	1 6	1 11	1 15	1 20	1 25	1 28	1 34	259
102	0 33	0 37	0 42	0 48	0 51	0 55	0 59	1 5	1 9	1 14	1 19	1 23	1 27	1 33	258
103	0 32	0 36	0 41	0 47	0 50	0 54	0 58	1 3	1 8	1 13	1 17	1 22	1 26	1 31	257
104	0 31	0 35	0 40	0 46	0 48	0 53	0 57	1 2	1 7	1 12	1 16	1 21	1 25	1 30	256
105	0 30	0 34	0 39	0 44	0 47	0 52	0 56	1 1	1 6	1 10	1 15	1 20	1 24	1 29	255
106	0 29	0 33	0 38	0 43	0 46	0 51	0 54	1 0	1 5	1 9	1 14	1 18	1 22	1 27	254
107	0 28	0 32	0 37	0 42	0 45	0 49	0 53	0 59	1 4	1 8	1 12	1 17	1 21	1 26	253
108	0 27	0 31	0 36	0 41	0 44	0 48	0 52	0 58	1 2	1 7	1 11	1 16	1 20	1 25	252
109	0 26	0 30	0 35	0 40	0 43	0 47	0 51	0 57	1 1	1 5	1 10	1 15	1 18	1 24	251
110	0 25	0 29	0 34	0 39	0 42	0 46	0 50	0 55	1 0	1 4	1 9	1 13	1 17	1 22	250
111	0 24	0 28	0 32	0 38	0 41	0 45	0 49	0 54	0 59	1 3	1 7	1 12	1 16	1 21	249
112	0 23	0 27	0 31	0 37	0 40	0 44	0 48	0 53	0 58	1 2	1 6	1 11	1 15	1 20	248
113	0 22	0 26	0 30	0 36	0 39	0 43	0 47	0 52	0 56	1 1	1 5	1 10	1 13	1 18	247
114	0 21	0 25	0 29	0 35	0 38	0 42	0 45	0 51	0 55	0 59	1 4	1 9	1 12	1 17	246
115	0 20	0 24	0 28	0 34	0 37	0 41	0 44	0 50	0 54	0 58	1 3	1 7	1 11	1 16	245
116	0 19	0 23	0 27	0 33	0 36	0 39	0 43	0 49	0 53	0 57	1 1	1 6	1 10	1 14	244
117	0 18	0 22	0 26	0 32	0 35	0 38	0 42	0 47	0 52	0 56	1 0	1 5	1 8	1 13	243
118	0 17	0 21	0 25	0 31	0 34	0 37	0 41	0 46	0 51	0 55	0 59	1 3	1 7	1 12	242
119	0 16	0 20	0 24	0 29	0 33	0 36	0 40	0 45	0 49	0 53	0 58	1 2	1 6	1 10	241

PART D,—*continued.*

Lat.	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	0°	
Vin.	11·34	11·37	11·40	11·43	11·46	11·50	11·53	11·56	11·60	11·63	11·67	11·71	−0·75	
Long.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	gh. v.	Long.
90°	1 54	2 0	2 5	2 11	2 16	2 23	2 29	2 35	2 41	2 48	2 54	3 1	+0 0	270°
91	1 53	1 59	2 4	2 10	2 15	2 21	2 27	2 34	2 40	2 46	2 53	3 0	0 1	269
92	1 52	1 57	2 2	2 8	2 14	2 20	2 26	2 32	2 38	2 45	2 53	2 58	0 1	268
93	1 51	1 56	2 1	2 7	2 12	2 18	2 24	2 30	2 37	2 43	2 51	2 56	0 2	267
94	1 50	1 54	2 0	2 5	2 11	2 17	2 23	2 29	2 35	2 42	2 50	2 55	0 3	266
95	1 48	1 53	1 58	2 4	2 9	2 15	2 21	2 27	2 33	2 40	2 48	2 53	+0 4	265
96	1 47	1 52	1 57	2 2	2 8	2 14	2 20	2 26	2 32	2 38	2 46	2 51	0 4	264
97	1 46	1 50	1 55	2 0	2 6	2 12	2 18	2 24	2 30	2 37	2 45	2 49	0 5	263
98	1 44	1 49	1 54	1 59	2 5	2 11	2 17	2 23	2 29	2 35	2 43	2 48	0 6	262
99	1 43	1 48	1 53	1 58	2 3	2 9	2 15	2 21	2 27	2 33	2 41	2 46	0 7	261
100	1 42	1 46	1 51	1 57	2 2	2 8	2 13	2 19	2 26	2 32	2 40	2 44	+0 7	260
101	1 40	1 45	1 50	1 55	2 0	2 6	2 12	2 18	2 24	2 30	2 38	2 43	0 8	259
102	1 39	1 43	1 48	1 54	1 59	2 5	2 10	2 16	2 22	2 29	2 37	2 41	0 9	258
103	1 38	1 42	1 47	1 52	1 57	2 3	2 9	2 15	2 21	2 27	2 35	2 39	0 10	257
104	1 36	1 41	1 46	1 51	1 56	2 2	2 7	2 13	2 19	2 25	2 33	2 38	0 10	256
105	1 35	1 39	1 44	1 49	1 55	2 0	2 6	2 12	2 18	2 24	2 31	2 36	+0 11	255
106	1 34	1 38	1 43	1 48	1 53	1 59	2 4	2 10	2 16	2 22	2 28	2 34	0 12	254
107	1 32	1 37	1 41	1 47	1 52	1 57	2 3	2 9	2 14	2 20	2 26	2 32	0 13	253
108	1 31	1 35	1 40	1 45	1 50	1 56	2 1	2 7	2 13	2 19	2 25	2 31	0 13	252
109	1 30	1 34	1 39	1 44	1 49	1 54	2 0	2 5	2 11	2 17	2 23	2 29	0 14	251
110	1 28	1 33	1 37	1 42	1 47	1 53	1 58	2 4	2 10	2 15	2 21	2 27	+0 15	250
111	1 27	1 31	1 36	1 41	1 46	1 51	1 57	2 2	2 8	2 14	2 20	2 26	0 16	249
112	1 26	1 30	1 34	1 39	1 44	1 50	1 55	2 1	2 6	2 12	2 18	2 24	0 16	248
113	1 24	1 28	1 33	1 38	1 43	1 48	1 54	1 59	2 5	2 11	2 16	2 22	0 17	247
114	1 22	1 27	1 32	1 37	1 41	1 47	1 52	1 58	2 3	2 9	2 15	2 20	0 18	246
115	1 21	1 26	1 30	1 35	1 40	1 45	1 51	1 56	2 1	2 7	2 13	2 18	+0 19	245
116	1 19	1 24	1 29	1 34	1 38	1 44	1 49	1 55	2 0	2 6	2 11	2 17	0 19	244
117	1 18	1 23	1 27	1 32	1 37	1 42	1 48	1 53	1 58	2 4	2 10	2 15	0 20	243
118	1 17	1 21	1 26	1 31	1 36	1 41	1 46	1 51	1 57	2 2	2 8	2 14	0 21	242
119	1 15	1 20	1 25	1 29	1 34	1 39	1 45	1 50	1 55	2 1	2 6	2 12	0 22	241

TABLE XXVII. (PART E.—*Trop. Long.* ☉ = 120° — 149° ; 240° — 211°.)

Lat.	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	
Vin.	10·54	10·60	10·66	10·71	10·78	10·84	10·91	10·97	11·03	11·09	11·16	11·22	11·29	11·36	
Long.	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	Long.
120°	0 15	0 19	0 23	0 29	0 31	0 35	0 39	0 44	0 48	0 52	0 56	1 1	1 4	1 9	240°
121	0 15	0 18	0 22	0 28	0 30	0 35	0 39	0 43	0 47	0 51	0 55	0 59	1 3	1 8	239
122	0 15	0 17	0 22	0 27	0 29	0 34	0 38	0 42	0 46	0 50	0 54	0 58	1 1	1 7	238
123	0 14	0 17	0 21	0 27	0 28	0 33	0 37	0 41	0 45	0 49	0 53	0 57	1 0	1 5	237
124	0 13	0 16	0 20	0 26	0 28	0 32	0 36	0 40	0 44	0 48	0 52	0 56	0 59	1 4	236
125	0 13	0 15	0 20	0 25	0 27	0 31	0 35	0 39	0 43	0 46	0 50	0 54	0 58	1 3	235
126	0 12	0 15	0 19	0 24	0 27	0 30	0 34	0 38	0 42	0 45	0 49	0 53	0 56	1 1	234
127	0 12	0 14	0 19	0 24	0 26	0 30	0 33	0 37	0 41	0 44	0 48	0 52	0 55	1 0	233
128	0 11	0 14	0 18	0 23	0 25	0 29	0 32	0 36	0 40	0 43	0 47	0 51	0 54	0 59	232
129	0 11	0 13	0 17	0 22	0 24	0 28	0 31	0 35	0 39	0 42	0 46	0 50	0 52	0 57	231
130	0 10	0 12	0 17	0 21	0 23	0 27	0 30	0 34	0 38	0 41	0 45	0 48	0 51	0 56	230
131	0 9	0 12	0 16	0 20	0 23	0 26	0 30	0 33	0 37	0 40	0 43	0 47	0 50	0 54	229
132	0 9	0 11	0 15	0 20	0 22	0 25	0 29	0 32	0 36	0 39	0 42	0 46	0 48	0 53	228
133	0 8	0 11	0 15	0 19	0 21	0 24	0 28	0 31	0 35	0 38	0 41	0 45	0 47	0 52	227
134	0 8	0 10	0 14	0 19	0 20	0 24	0 27	0 30	0 33	0 37	0 40	0 43	0 46	0 50	226
135	0 7	0 9	0 13	0 18	0 20	0 23	0 26	0 29	0 32	0 36	0 39	0 42	0 45	0 49	225
136	0 7	0 9	0 13	0 17	0 19	0 22	0 25	0 28	0 31	0 34	0 38	0 41	0 43	0 48	224
137	0 6	0 8	0 12	0 17	0 18	0 21	0 24	0 27	0 30	0 33	0 36	0 40	0 42	0 46	223
138	0 6	0 8	0 12	0 16	0 17	0 20	0 23	0 26	0 29	0 32	0 35	0 39	0 41	0 45	222
139	0 5	0 7	0 11	0 15	0 16	0 20	0 22	0 25	0 28	0 31	0 34	0 37	0 40	0 44	221
140	0 5	0 6	0 10	0 14	0 15	0 19	0 21	0 24	0 27	0 30	0 33	0 36	0 38	0 42	220
141	0 4	0 6	0 10	0 14	0 15	0 18	0 20	0 23	0 26	0 29	0 32	0 35	0 37	0 41	219
142	0 4	0 5	0 9	0 13	0 14	0 17	0 20	0 23	0 25	0 28	0 31	0 34	0 36	0 40	218
143	0 3	0 5	0 8	0 12	0 14	0 16	0 19	0 22	0 24	0 27	0 29	0 32	0 34	0 38	217
144	0 2	0 4	0 8	0 12	0 13	0 15	0 18	0 21	0 23	0 26	0 28	0 31	0 33	0 37	216
145	0 2	0 3	0 7	0 11	0 12	0 14	0 17	0 20	0 22	0 25	0 27	0 30	0 31	0 35	215
146	0 1	0 3	0 6	0 10	0 11	0 14	0 16	0 19	0 21	0 24	0 26	0 29	0 30	0 34	214
147	0 1	0 2	0 6	0 10	0 10	0 13	0 15	0 18	0 20	0 22	0 24	0 28	0 29	0 33	213
148	0 0	0 2	0 5	0 9	0 9	0 12	0 14	0 17	0 19	0 21	0 23	0 26	0 28	0 31	212
149	0 0	0 1	0 4	0 8	0 9	0 11	0 13	0 16	0 18	0 20	0 22	0 25	0 27	0 30	211

PART E,—*continued.*

Lat.	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	0°	
Vin.	11·43	11·50	11·57	11·63	11·71	11·78	11·86	11·95	12·03	12·11	12·18	12·27	+0·03	
Long.	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	*gh. v.*	Long.
120°	1 14	1 19	1 23	1 28	1 33	1 37	1 43	1 48	1 54	1 59	2 4	2 10	+0 22	240°
121	1 13	1 17	1 22	1 26	1 31	1 36	1 41	1 47	1 52	1 57	2 2	2 8	0 22	239
122	1 12	1 16	1 20	1 25	1 29	1 34	1 39	1 45	1 50	1 55	2 0	2 6	0 22	238
123	1 10	1 15	1 19	1 23	1 28	1 32	1 37	1 43	1 48	1 53	1 58	2 3	0 22	237
124	1 9	1 13	1 17	1 21	1 26	1 31	1 36	1 41	1 45	1 51	1 56	2 1	0 22	236
125	1 7	1 12	1 15	1 20	1 24	1 29	1 34	1 39	1 43	1 49	1 54	1 59	+0 22	235
126	1 6	1 10	1 14	1 18	1 22	1 27	1 32	1 37	1 41	1 47	1 51	1 56	0 22	234
127	1 5	1 9	1 12	1 16	1 21	1 25	1 30	1 35	1 39	1 45	1 49	1 54	0 22	233
128	1 3	1 7	1 11	1 15	1 19	1 24	1 28	1 33	1 37	1 42	1 47	1 52	0 22	232
129	1 2	1 6	1 9	1 13	1 17	1 22	1 26	1 31	1 35	1 40	1 45	1 50	0 22	231
130	1 0	1 4	1 8	1 12	1 16	1 20	1 24	1 29	1 33	1 38	1 43	1 47	+0 22	230
131	0 59	1 3	1 6	1 10	1 14	1 18	1 23	1 27	1 31	1 36	1 40	1 45	0 22	229
132	0 57	1 1	1 4	1 8	1 12	1 16	1 21	1 25	1 29	1 34	1 38	1 43	0 22	228
133	0 56	1 0	1 3	1 7	1 11	1 15	1 19	1 23	1 27	1 32	1 36	1 41	0 22	227
134	0 55	0 58	1 1	1 5	1 9	1 13	1 17	1 22	1 25	1 30	1 34	1 38	0 22	226
135	0 53	0 57	1 0	1 3	1 7	1 11	1 15	1 20	1 23	1 28	1 32	1 36	+0 22	225
136	0 52	0 55	0 58	1 2	1 5	1 9	1 13	1 18	1 21	1 26	1 30	1 34	0 22	224
137	0 50	0 54	0 57	1 0	1 4	1 8	1 11	1 15	1 19	1 28	1 27	1 32	0 22	223
138	0 49	0 52	0 55	0 59	1 2	1 6	1 9	1 14	1 17	1 21	1 25	1 29	0 22	222
139	0 47	0 51	0 53	0 57	1 0	1 4	1 8	1 12	1 15	1 19	1 23	1 27	0 22	221
140	0 46	0 49	0 52	0 55	0 59	1 2	1 6	1 10	1 13	1 17	1 21	1 25	+0 22	220
141	0 45	0 48	0 50	0 54	0 57	1 0	1 4	1 8	1 11	1 15	1 19	1 22	0 22	219
142	0 43	0 46	0 49	0 52	0 55	0 59	1 2	1 6	1 9	1 13	1 16	1 20	0 22	218
143	0 42	0 45	0 47	0 50	0 53	0 57	1 0	1 4	1 7	1 11	1 14	1 18	0 22	217
144	0 40	0 43	0 46	0 49	0 52	0 55	0 58	1 2	1 5	1 9	1 12	1 16	0 22	216
145	0 39	0 42	0 44	0 47	0 50	0 53	0 56	1 0	1 3	1 7	1 10	1 13	+0 22	215
146	0 37	0 40	0 42	0 46	0 48	0 51	0 55	0 58	1 1	1 4	1 8	1 11	0 22	214
147	0 36	0 39	0 41	0 44	0 47	0 49	0 53	0 56	0 59	1 2	1 6	1 9	0 22	213
148	0 34	0 37	0 39	0 42	0 45	0 48	0 50	0 54	0 57	1 0	1 3	1 7	0 22	212
149	0 33	0 36	0 38	0 41	0 43	0 46	0 49	0 52	0 55	0 58	1 1	1 4	0 22	211

TABLE XXVII. (PART F.—*Trop. Long.* ☉ = *150° — 180°, 210° — 180°.*)

Lat.	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	
Vin.	10·00	10·05	10·12	10·19	10·27	10·34	10·41	10·49	10·57	10·64	10·72	10·80	10·88	10·96	
Long.	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	Long
150°	0 0	0 0	0 3	0 6	0 8	0 10	0 12	0 15	0 17	0 19	0 21	0 24	0 26	0 29	210°
151	0 0	0 0	0 3	0 6	0 8	0 10	0 12	0 14	0 17	0 19	0 21	0 23	0 26	0 28	209
152	0 0	0 0	0 3	0 5	0 8	0 10	0 11	0 13	0 16	0 18	0 20	0 22	0 25	0 27	208
153	0 0	0 0	0 3	0 5	0 7	0 9	0 11	0 13	0 16	0 17	0 19	0 22	0 24	0 26	207
154	0 0	0 0	0 3	0 5	0 7	0 9	0 11	0 12	0 15	0 17	0 19	0 21	0 23	0 25	206
155	0 0	0 0	0 3	0 5	0 7	0 8	0 10	0 12	0 14	0 16	0 18	0 20	0 22	0 24	205
156	0 0	0 0	0 3	0 5	0 6	0 8	0 10	0 12	0 14	0 15	0 17	0 19	0 21	0 23	204
157	0 0	0 0	0 3	0 4	0 6	0 8	0 9	0 11	0 13	0 15	0 17	0 18	0 20	0 22	203
158	0 0	0 0	0 3	0 4	0 6	0 7	0 9	0 11	0 13	0 14	0 16	0 18	0 19	0 21	202
159	0 0	0 0	0 3	0 4	0 6	0 7	0 9	0 10	0 12	0 13	0 15	0 17	0 18	0 20	201
160	0 0	0 0	0 2	0 4	0 5	0 7	0 8	0 10	0 11	0 13	0 14	0 16	0 18	0 19	200
161	0 0	0 0	0 2	0 4	0 5	0 6	0 8	0 9	0 11	0 12	0 14	0 15	0 17	0 18	199
162	0 0	0 0	0 2	0 3	0 5	0 6	0 7	0 9	0 10	0 12	0 13	0 14	0 16	0 17	198
163	0 0	0 0	0 2	0 3	0 5	0 6	0 7	0 8	0 10	0 11	0 12	0 14	0 15	0 16	197
164	0 0	0 0	0 2	0 3	0 4	0 5	0 7	0 8	0 9	0 10	0 12	0 13	0 14	0 15	196
165	0 0	0 0	0 2	0 3	0 4	0 5	0 6	0 7	0 9	0 10	0 11	0 12	0 13	0 14	195
166	0 0	0 0	0 2	0 3	0 4	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	0 13	194
167	0 0	0 0	0 1	0 2	0 4	0 4	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	193
168	0 0	0 0	0 1	0 2	0 3	0 4	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	192
169	0 0	0 0	0 1	0 2	0 3	0 4	0 5	0 5	0 6	0 7	0 8	0 9	0 10	0 11	191
170	0 0	0 0	0 1	0 2	0 3	0 3	0 4	0 5	0 6	0 6	0 7	0 8	0 9	0 10	190
171	0 0	0 0	0 1	0 2	0 2	0 3	0 4	0 4	0 5	0 6	0 6	0 7	0 8	0 9	189
172	0 0	0 0	0 1	0 2	0 2	0 3	0 3	0 4	0 5	0 5	0 6	0 6	0 7	0 8	188
173	0 0	0 0	0 1	0 1	0 2	0 2	0 3	0 3	0 4	0 4	0 5	0 6	0 6	0 7	187
174	0 0	0 0	0 1	0 1	0 2	0 2	0 2	0 3	0 3	0 4	0 4	0 5	0 5	0 6	186
175	0 0	0 0	0 1	0 1	0 1	0 1	0 2	0 2	0 3	0 3	0 4	0 4	0 4	0 5	185
176	0 0	0 0	0 1	0 1	0 1	0 1	0 2	0 2	0 2	0 3	0 3	0 3	0 4	0 4	184
177	0 0	0 0	0 0	0 1	0 1	0 1	0 1	0 1	0 2	0 2	0 2	0 2	0 3	0 3	183
178	0 0	0 0	0 0	0 0	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 2	0 2	0 2	182
179	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 1	0 1	0 1	0 1	0 1	181
180	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	180

PART F.—*continued.*

Lat.	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	0°	
Vin.	11·04	11·13	11·21	11·30	11·39	11·48	11·57	11·66	11·76	11·87	11·97	12·07	+0·73	
Long.	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	*gh.* *v.*	Long
150°	0 31	0 34	0 36	0 39	0 41	0 44	0 47	0 50	0 53	0 56	0 59	1 2	+0 22	210°
151	0 30	0 33	0 35	0 38	0 40	0 42	0 46	0 48	0 51	0 54	0 57	1 0	0 21	209
152	0 29	0 32	0 34	0 36	0 39	0 41	0 44	0 46	0 49	0 52	0 55	0 58	0 21	208
153	0 28	0 31	0 33	0 35	0 38	0 40	0 42	0 45	0 48	0 50	0 53	0 56	0 20	207
154	0 27	0 29	0 31	0 34	0 36	0 38	0 41	0 43	0 46	0 49	0 51	0 54	0 19	206
155	0 26	0 28	0 30	0 32	0 35	0 37	0 39	0 41	0 44	0 47	0 49	0 52	+0 18	205
156	0 25	0 27	0 29	0 31	0 33	0 36	0 38	0 40	0 42	0 45	0 47	0 50	0 18	204
157	0 24	0 26	0 28	0 30	0 32	0 34	0 36	0 38	0 40	0 43	0 45	0 48	0 17	203
158	0 23	0 25	0 27	0 29	0 31	0 33	0 35	0 37	0 39	0 41	0 43	0 46	0 16	202
159	0 22	0 24	0 25	0 27	0 29	0 31	0 33	0 35	0 37	0 39	0 41	0 43	0 16	201
160	0 21	0 23	0 24	0 26	0 28	0 30	0 31	0 33	0 35	0 37	0 39	0 41	+0 15	200
161	0 19	0 21	0 23	0 25	0 26	0 28	0 30	0 32	0 33	0 36	0 37	0 39	0 14	199
162	0 18	0 20	0 22	0 23	0 25	0 27	0 28	0 30	0 32	0 34	0 35	0 37	0 13	198
163	0 17	0 19	0 21	0 22	0 24	0 25	0 27	0 28	0 30	0 32	0 33	0 35	0 13	197
164	0 16	0 18	0 19	0 21	0 22	0 24	0 25	0 27	0 28	0 30	0 32	0 33	0 12	196
165	0 15	0 17	0 18	0 19	0 21	0 22	0 24	0 25	0 26	0 28	0 30	0 31	+0 11	195
166	0 14	0 16	0 17	0 18	0 19	0 21	0 22	0 23	0 25	0 26	0 28	0 29	0 10	194
167	0 13	0 15	0 16	0 17	0 18	0 19	0 20	0 22	0 23	0 24	0 26	0 27	0 10	193
168	0 12	0 14	0 15	0 16	0 17	0 18	0 19	0 20	0 21	0 22	0 24	0 25	0 9	192
169	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19	0 21	0 22	0 23	0 8	191
170	0 10	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19	0 20	0 21	+0 7	190
171	0 9	0 10	0 11	0 12	0 13	0 13	0 14	0 15	0 16	0 17	0 28	0 19	0 7	189
172	0 8	0 9	0 10	0 10	0 11	0 12	0 13	0 13	0 14	0 15	0 26	0 17	0 6	188
173	0 7	0 8	0 8	0 9	0 10	0 10	0 11	0 12	0 12	0 13	0 24	0 14	0 5	187
174	0 6	0 7	0 7	0 8	0 8	0 9	0 9	0 10	0 11	0 11	0 22	0 12	0 4	186
175	0 5	0 6	0 6	0 6	0 7	0 7	0 8	0 8	0 9	0 9	0 10	0 10	+0 4	185
176	0 4	0 5	0 5	0 5	0 6	0 6	0 6	0 7	0 7	0 7	0 8	0 8	0 3	184
177	0 3	0 3	0 4	0 4	0 4	0 4	0 5	0 5	0 5	0 6	0 6	0 6	0 2	183
178	0 2	0 2	0 2	0 3	0 3	0 3	0 3	0 3	0 4	0 4	0 4	0 4	0 1	182
179	0 1	0 1	0 1	0 1	0 1	0 1	0 2	0 2	0 2	0 2	0 2	0 2	0 1	181
180	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	180

TABLE XXVIII.—*The Ayanâṁśa for centuries of the Kali Yuga and for odd years.**

K.Y.	Ayanâṁśa.		Years.	Ayanâṁśa.		
3600	0°	0′	1	0°	0′	54″
3700	1	30	2	0	1	48
3800	3	0	3	0	2	42
3900	4	30	4	0	3	36
			5	0	4	30
4000	6	0	6	0	5	24
4100	7	30	7	0	6	18
4200	9	0	8	0	7	12
4300	10	30	9	0	8	6
4400	12	0	10	0	9	0
4500	13	30	20	0	18	0
4600	15	0	30	0	27	0
4700	16	30	40	0	36	0
4800	18	0	50	0	45	0
4900	19	30	60	0	54	0
			70	1	3	0
5000	21	0	80	1	12	0
...	...		90	1	21	0

TABLE XXIX.—*The Ayanâṁśa according to the Siddhânta Śiromaṇi.*

K.Y.	Ayanâṁśa.			Years.	Ayanâṁśa.		
3628	0°	0′	0″	1	0°	1′	0″
3700	1	11	32	2	0	2	0
3800	2	51	22	3	0	3	0
3900	4	31	12	4	0	4	0
				5	0	5	0
4000	6	11	2	6	0	5	59
4100	7	50	52	7	0	6	59
4200	9	30	42	8	0	7	59
4300	11	10	32	9	0	8	59
4400	12	50	22	10	0	9	59
4500	14	30	12	20	0	19	58
4600	16	10	2	30	0	29	57
4700	17	49	52	40	0	39	56
4800	19	29	42	50	0	49	55
4900	21	9	32	60	0	59	54
				70	1	9	53
5000	22	49	22	80	1	19	52
...	...			90	1	29	51

* Before K.Y. 3600 the Ayanâṁśa are negative; but they were probably not yet known at that time.