

may be confused with the "semi-arc system" upon which the ordinary Tables of Houses are based; but a little thought will show the difference. Here the degree on the Ascendant is determined in the usual way; the Sidereal Time at which this degree reaches the cusp of the tenth house is next determined, and the difference between it and the S.T. at birth is divided into *three equal parts*, which are successively added to the S.T. at birth, and the respective degrees then found culminating are the cusps of houses XI., XII., I.: a precisely similar process followed with regard to the cusp of the fourth house gives us the cusps of III., II., I., subtraction being here used in place of addition.

The principle of this system is the Trisection of the Semi-Arcs, diurnal and nocturnal, of the Ascendant.

4. METHOD OF CAMPANUS. This will be more fully described further on.

The principle of this system is the Trisection of a Quadrant of the Prime Vertical, (which is a great circle passing through the zenith point, and at right angles to the meridian), by great circles mutually intersecting at the N. and S. points of the horizon; the cusps of the houses being the degrees of the Ecliptic cut by these circles.

5. RATIONAL METHOD ASCRIBED TO REGIOMONTANUS (*modus rationalis*). This also will be more fully described further on.

The principle of this system is the Trisection of a Quadrant of the Equator, comprised between the horizon and meridian, by great circles mutually intersecting at the North and South Points of the Horizon; the cusps of the houses being the degrees of the Ecliptic cut by these circles.

6. RATIONAL AND UNIVERSAL METHOD, PROPOSED BY MORINUS. Practically abandoned.

The principle of this system is the Trisection of said Quadrant of the Equator by great circles passing through the Poles of the Ecliptic.

7. METHOD OF PLACIDUS, COMMONLY KNOWN AS THE "SEMI-ARC SYSTEM." This is the method in common use.

The principle of this system is the Trisection of the Semi-Arc of each degree of the Ecliptic. By successively adding $\frac{1}{3}$ S.A. (diurnal) of any degree, to the Sid. Time of its Ascension, said degree is found upon cusp of XII., XI., X., respectively; similarly, by adding $\frac{1}{3}$ S.A. (nocturnal) to Sid. Time of its Descension, said degree is found upon cusp of VI., V., IV. In this way a Table of Houses can be constructed, as shown in Chapter IV.

8. EQUAL DIVISION METHOD, PROPOSED BY ZARIEL, AN AUSTRALIAN ASTROLOGER. In this method the Equator is divided into twelve equal segments, starting from the meridian, by great circles passing through the poles of the earth.

In principle, it is tantamount to regarding a child as born under the meridian of the birthplace, but at the Equator, instead of at the place of birth.

This last method has been strongly advocated by the astrologer named, but its justification from a philosophical point of view has not been made clear.

Before passing on to criticism it will be instructive to tabulate the result of erecting a figure according to each of the systems given above. We select for convenience that moment of the sidereal day when $\uparrow 0^\circ$ is culminating, i.e., Sidereal Time 15h. 51m. 15s. or Right Ascension of the Mid-heaven $237^\circ 49'$; for the place, we choose London, Lat. $51^\circ 32' N.$,

since the customary (Placidian) Table of Houses for that place will be familiar to the majority of students.¹

LONDON. Sidereal Time 15h. 51m. 15s., R.A.M.C. 237°49'.						
	X.	XI.	XII.	I.	II.	III.
No. 1.	♌ 27.15	♍ 27.15	♎ 27.15	♏ 27.21	♐ 27.15	♑ 27.15
No. 2.	♌ 0. 0	♍ 19. 5	♎ 8.10	♏ 27.21	♐ 8.10	♑ 19. 5
No. 3.	♌ 0. 0	♍ 19.12	♎ 8. 2	♏ 27.21	♐ 7. 8	♑ 19.10
No. 4.	♌ 0. 0	♍ 9.25	♎ 22.18	♏ 27.21	♐ 19. 8	♑ 18. 7
No. 5.	♌ 0. 0	♍ 14. 4	♎ 29.39	♏ 27.21	♐ 25.29	♑ 9.45
No. 6.	♍ 25.33	♎ 27.37	♏ 29.54	♐ 0. 0	♑ 28. 0	♒ 25.50
No. 7.	♌ 0. 0	♍ 18.19	♎ 5.57	♏ 27.21	♐ 26.14	♑ 6.10
No. 8.	♌ 0. 0	♍ 27.59	♎ 25.50	♏ 25.32	♐ 27.37	♑ 29.56

The wide discrepancy here to be noted is likely to be rather startling to those who investigate the subject for the first time. While referring the critical reader to Mons. Selva's paper already mentioned, it may be remarked in passing that: (i) methods 1, 2, 3 and 8 appear to be rough-and-ready methods proposed in times before logarithmic tables were as common as now, and the calculation of a nativity was a matter sufficiently tedious even with the adoption of such makeshifts; (ii) method 6 seems more fanciful than practical, and does not seem ever to have been employed to any considerable extent; (iii) method 7 is that in common use; (iv) and lastly, it will be noted that all those most deserving of serious consideration, *viz.*, 7, 5, 4, 3 and 2 agree as regards the *angles* of the figure, which are admittedly the points of greatest practical significance in any horoscope. On this account, therefore, we seem justified in ignoring methods 1 and 6. It may be pointed out that No. 1 would give the same houses for all horoscopes having a particular degree on the ascendant, whatever the latitude of the birthplace, and this would seem to put it out of court at once, since it would make the place of birth practically a negligible factor. The same remark applies, *mutatis mutandis*, as regards Nos. 6 and 8 in which for a given P.A.M.C. all horoscopes would have the same houses. Against Nos. 2 and 3 it is true this objection cannot be urged, but they neither of them appear to be founded upon any definite mathematical basis.

The problem then resolves itself into a consideration of the remain-

¹ The Ascendant is given as ♏ 27.15 in the ordinary Table of Houses for London in general circulation. If it be carefully worked out by proportion from the Table of Ascendants the result comes out at ♏ 27.22, against ♏ 27.21 as determined by the trigonometrical method described in Chapter X., showing that results obtained by proportion from the Table may be depended on for accuracy.

ing houses, namely, the succedent and cadent, with a view to deciding which method of computation is most conformable to the processes of nature. We shall consider Nos. 7, 4 and 5.

It is to be remarked that for a child born at any place *on the Equator*, the cusps of the houses by ALL these methods would be practically identical, only methods 1, 2 and 6 showing any difference at all, and that of a trifling character.

AN ILLUSTRATION.

Let us suppose a potential birthplace to be gradually shifted along a terrestrial meridian, from the Equator northwards. At the Equator the duodenary division of the Equator results in a duodenary division of the Ecliptic by equal spaces of 30° in Right Ascension; in other words each house cusp will arrive at the meridian, and its House Circle¹ will take the place of the meridian, after successive lapses of two hours of Sidereal Time (30° R.A.). Let us form a mental picture of these twelve circles, passing through the N. and S. poles, which here occupy the N. and S. points of the horizon. As the birthplace is gradually shifted north of the Equator (along the same meridian) the zenith declines away from the Equator, and the N. pole rises above the horizon, its elevation above the horizon being measured by the geographical latitude of the place, which we will now suppose to be London, $51^\circ 32' N$.

Let us make our mental picture quite definite and concrete, by supposing the House Circles at the equator to be formed by twelve, or rather six, circles of wire, passing through *fixed rings* at the equator, and united into a common focus at the N. and S. poles; and let us suppose this sphere of wire circles—which in appearance would resemble a magnified wire gas-globe, such as one commonly sees in warehouses and offices—to be movable by raising or depressing its northern focus. In this way we can suppose the wire sphere moved up or down at will. As our birth-place shifts northward the horizon becomes depressed below the N. pole and, since by hypothesis our north focus always

¹ "House Circle" has been proposed as a convenient term for that great circle of the Heavens which marks the boundary between the area of influence of one house and the next; the word "cusp" is often used in this sense, but this word (from Lat. *cusps*, a point) properly applies only to the point of the ecliptic or zodiac through which such circle passes and it is best to employ the word only in that sense.

Thus, the "House Circle" of the tenth and fourth houses is the meridian, and the "House Circle" of the first and seventh is the horizon.

occupies the N. point of the horizon, the north focus will sink with it; the south focus of course rising proportionately so as to remain always upon the south point of the horizon.

The result of this motion will easily be seen to have the effect of forcing some of the circles farther apart (those above the horizon), and others closer together. In short the wire sphere may be viewed as exhibiting a *strain*, resulting from a *stress*, to borrow two terms from the technicology of mechanics. In more homely language we should say that the wire meridians were twisted "out of truth." And it is quite clear that under these circumstances each wire would cut quite a different point of the ecliptic when its north focus was upon the horizon of London than when the sphere was in its normal position, with its north focus at the N. Pole. It is also clear that the circle passing through the 'rings' 90° E. and W. of the meridian would, as the sphere was shifted, always lie on the horizon of the birth-place.¹ This description will be better understood later on when we come to give a diagram, in which is shown the circle of position of the twelfth house at London according to this system, which is that of Regiomontanus.

Now it seems quite possible that the actual relation of any birth-place to the Equator may in fact tend to produce just such a "strain" in the magnetic atmosphere surrounding the earth; so that as a consequence the lines of force would not all be equally disposed along the Prime Vertical, but at varying distances along it,—some closer together, some farther apart.

The Semi-Arc method seems unsound in theory to begin with, since (a) the poles by which these houses can be determined are not fixed functions of the geographic latitude,² and (b) it seems unsound to argue that any given zodiacal degree after crossing the ascendant must necessarily arrive at the cusp of houses XII., XI., after a lapse of time represented by one-third and two-thirds of its semi-diurnal arc respectively. This for the following reason: One semi-rotation of the Earth, 180° , carries the degree from I.C. to M.C.; this semi-circle is at the horizon unequally divided into two parts, namely, the semi-nocturnal and

¹ Refer here to definition of "horizon" in Chapter V.

² This is demonstrated geometrically in Mons. Selva's paper previously alluded to. In our present criticism the birthplace is assumed to be a place having considerable latitude—e.g., London or New York. The meaning of the word "pole" in this connection will be explained further on.

semi-diurnal arcs of the said degree. And therefore it seems illogical to divide each of these respectively into three equal parts,—if the whole equatorial arc of 180° be divided unequally, why should each unequal portion be then straightway divided *equally*? No satisfactory answer to this objection has as yet been forthcoming, and therefore some critics are disposed to rank the Placidian method with other approximate methods as a “makeshift.” It may be remarked that the earlier astrologers concerned themselves little if at all with places in the higher latitudes such as many of our modern great towns, seldom if ever going more than a few degrees north of the tropics, and therefore in actual practice they were the less likely to observe any notable discrepancies between calculation and experience in these matters.

THE METHODS OF REGIOMONTANUS AND CAMPANUS.

We turn, then, naturally to the “Rational Method” associated with REGIOMONTANUS, against which neither of the foregoing objections can be urged. For first the “poles” of the houses are fixed functions of the geographic latitude, and are the same for all sidereal times, which is not the case in the former system, although it is true that approximate poles can be calculated easily enough. Secondly, the semi-arcs diurnal and nocturnal are not equally but proportionately divided, which seems much more in accordance with the fitness of things; this proportion is not a simple proportion of their lengths, but is a compound function of the length of the semi-arc and the distance or nearness of the House Circle from the meridian. These two points are merely referred to, not discussed, for it would lead us too far from our present purpose to enter into a geometrical demonstration.

This constitutes the claim of the system of Regiomontanus to consideration.

On the other hand it has been urged that the Zodiac derives its astrological significance from the fact that the Celestial Sphere is thereby divided into twelve equal segments, each thirty ecliptic degrees in extent, and it is therefore argued that the horoscope should shew a similar symmetrical division of the Mundane Sphere, it being inferred that the points of the Ecliptic cut by the boundary circles of such equal segments would constitute the effective “cusps” of the twelve houses.

This brings us to the method of CAMPANUS, in which such a sym-

metrical division of the mundane sphere is effected, the basis of division being the Prime Vertical, which as before stated is a great circle passing through the zenith and the east and west points of the horizon.

It may be said at once that the systems of Regiomontanus and Campanus are the only formidable antagonists to the present Semi-arc system now almost universally employed. Experience only can be decisive of the question, and students are invited to take advantage of the simple methods of calculation presently to be explained, and to experiment practically with both of these systems, more especially in their own nativities, in regard to which they may naturally be expected to have more opportunities for observation and inference than in those of other people.

The method of Regiomontanus has this to recommend it, from the standpoint of students of Directing, that by the 'poles' so obtained all planetary semi-arcs are trisected¹ since the method is primarily related to the rotating or kinetic sphere; whereas the method of Campanus is based upon the fixed or *static* sphere. But it is urged by those who contend for the latter system that the Doctrine of Correspondences invoked on behalf of the semi-arc system, in which the diurnal semi-arc is held to "correspond" to the ecliptic quadrant ♍-♏, affords equal support to the Campanus system, since in this the twelve houses at the instant of birth correspond to, or are a reflection of, the celestial sphere which the ecliptic zodiac divides into twelve similar segments.

This contention is undeniably just, and the rational basis of the system may therefore be presumed to be admitted.

The moment this position is granted, however, another consideration immediately presents itself. In the division proposed by Campanus, the axis of the sphere which forms the basis of the division is the north-south diameter of the horizon. But every sphere has three symmetrical axes, namely any three diameters which are mutually perpendicular. Hence the question arises, why should *one* of these, rather than either of the others, be made the basis of the division?

If a division based upon one of these "corresponds" to the zodiac, then surely each of the other two similar duodenary divisions should also

¹ See *Modern Astrology*, Old Series, Vol. IX., pp. 31, 32. The word "trisect" is here evidently intended to mean *divide*, not necessarily to *divide equally*. See remarks of "Chandra" quoted in the Appendix.

so "correspond," though its field of activity need not necessarily be identical with that of the first named?

The problems that present themselves are here only stated, and those points raised to which it seems desirable to draw attention; it is not intended to discuss them: for our purpose in this chapter is to stimulate investigation rather than to form opinions. But an attempt will be made to make the relations of the two systems clear by means of a diagram.

EXPLANATION OF THE DIAGRAM.

The accompanying diagram (p. vi) will no doubt at first sight appear very complicated, but with a little study it should become clear enough. It represents a projection of the celestial sphere on the plane of the meridian and is calculated for the latitude of London at *15h. 51m. 15s.* of Sidereal Time, or in other words, when the Right Ascension of the meridian is $237^{\circ}49'$. Letters have been very sparingly used in order to avoid overcrowding the figure, but *S.*, *E.* and *N.* show the south, east and north points of the sphere, and *SEN* the horizon circle—here of course represented as a straight line with the letter *E* in the middle.

The vertical line from Zenith to Nadir represents the Prime Vertical, which is the basis of division used in the Campanus system, and the series of circles (shown as curves) meeting at *S* and *N* are the House Circles of Campanus.

The curved dotted band represents the Ecliptic, and the straight dotted band the Equator. The straight double line shows the Earth's axis.

The dotted curves meeting at *N. Pole* and *S. Pole* show the circles which form the basis of the Regiomontanus system, cutting the equator in twelve points at regular intervals of 30° . The degrees of the ecliptic which these circles cut are not the cusps of the Regiomontanus houses. But if a series of great circles be drawn through the points of the equator just referred to, passing also through *S* and *N* in a similar way to those already shown, then the points of the ecliptic cut by this second series of circles would be the cusps of the houses. In order to shew clearly what is meant, one such House Circle, namely that of the twelfth house, is shown as a lightly dotted line (*S 12r N*): but the others are omitted to avoid a multitude of lines.

In order to grasp these two systems clearly, the reader might at this point make a separate copy of the diagram for each, inserting only that portion of the diagram necessary. The use of tracing paper will render this an easy task.

The Campanus house-circles are shown by 11c, 12c, 2c, 3c; the Tenth House being of course the meridian, *S Zenith N*, and the First House the horizon *SEN*, both for the Campanus and for the Regiomontanus systems.

The difference between the cusps of the twelfth house Regiomontanus and twelfth house Campanus will at once be apparent on looking at the figure. The *cusps* of a house, as already explained, is not a circle, but a point; it is the point of the ecliptic through which the House Circle passes.

The figure is drawn for the same moment of Sidereal Time for which the cusps of the houses were given on p. 112; Sagittarius 0° is culminating. The direction of the Earth's rotation is shown by the arrow: if we regard the earth as stationary, then the Ecliptic will move in the contrary direction, Υ passing across the point marked *E* up to the point marked $237^{\circ}49'$, and so on.

Let us now for a moment dismiss all thought of house-cusps, etc., and look upon our figure simply as the projection of a sphere. It has three symmetrical axes, *SN*; *Zenith-Nadir*; and a third, perpendicular to the surface of the paper and passing through the centre, *E*.

As we have seen, *SN* forms the basic axis of the Campanus duodenary division. But it seems equally logical to take *Zenith-Nadir*, or the third axis passing through *E*, as the basic axis. For the sake of completeness, this has been done, and the systems based upon them have been provisionally termed the "Zenith System" and the "East-Point" system respectively.

(1) The House Circles of the Zenith System are shown by the curved lines meeting at *Zenith* and *Nadir*; (11z, 12z, *Nadir-E-Zenith*, 2z, 3z).

(2) The House Circles of the East-Point System are shown by straight lines passing through *E*; (1e, 2e, 3e, 4e, 5e, 6e, 7e).

It should be clearly understood that these three series of circles are all alike in this, that each series divides the mundane sphere into twelve equal segments.

It is difficult to determine what should be styled the "first house" of the East-Point system. Since its focus is at *E* (which thus corresponds to *S* in the Campanus method) it would seem fitting to take *E N* as the circle of position of the first house. But as this would be confusing, it seems better to call *E S* the first house and so this procedure has been adopted. The most important point is to ascertain the cusps; the nomenclature of the houses can then be altered if desirable.

No mathematical treatment of the question is here proposed. Those competent can easily undertake it for themselves, should they wish. Only a brief and somewhat hasty survey has been made, but it is hoped the main ideas have been sufficiently expounded.

METHOD OF CALCULATING THE HOUSES ACCORDING TO THE
SYSTEMS OF REGIOMONTANUS AND CAMPANUS, BY MEANS OF THE
TABLE OF ASCENDANTS.

Before giving the method of finding the house-cusps, it is necessary to explain one or two terms.

First the reader is referred to the definition of Polar Elevation on p. 34, and if he will turn to our diagram on p. vi he will at once understand that the Polar Elevation of the Ascendant is represented by the arc *N. Pole N.*, which is clearly $51^{\circ}32'$, as the diagram is drawn for London: we will call this the POLAR ARC of the Ascendant, often abbreviated into "pole."

The Polar Arc of any other house would be an arc perpendicular to the House Circle, Regiomontanus or Campanus as the case might be. In the diagram these Polar Arcs are not drawn, to prevent over-crowding the figure, but if we suppose the arc *N. Pole M* to make an angle of 90° with the circle *S 11c N*, then it will represent the Polar Arc of the eleventh house (Campanus).

Let us now suppose the sphere to be rotated, so that *M* passes along the curved dotted line *MM'* to *M'*; in other words, we bring the "pole of the eleventh" to the lower meridian. In this new position of the sphere, the House Circle of the eleventh house would take up a new position and would be represented by a straight line (this because the angle at *M* is a *right angle*), in the same way that the horizon is represented by the straight line *SEN*. This line would lie in the direction *M'E*, and if we suppose this to be drawn, the figure would then do for a diagram showing

the Ascendant at a place due north of London, and in latitude—well, whatever the Polar Elevation of the eleventh house for London may turn out to be. Of course the rest of the figure would have to be proportionately altered to make this remark literally true, because 40° would then be no longer on the meridian. But in order to move M to M' we must have turned the sphere through an angle represented by $M N.Pole M'$.

This angle is termed the MERIDIAN DISTANCE OF THE POLAR ARC, and in the case of the Regiomontanus System, as also in the Placidian or semi-arc system on which the ordinary Tables of Houses are constructed, it is *always* 30° for XII., II., and 60° for XI., III. In the case of the Campanus System, on the other hand, it is not a fixed quantity but varies with the latitude of the birthplace. For instance, the M.D. of Polar Arc of the eleventh house for *London*, instead of being 60° as with Regiomontanus and Placidus, is with Campanus $70^\circ 15'$.

The Polar Arcs also vary with the latitude of the birthplace, and moreover those for Campanus differ from those for Regiomontanus. Formulæ have been given for the satisfaction of those who like to do exact work, but on pp. 122 and 123 is given a list of the P.A. and M.D.P.A. for each degree of geographical latitude from 0° to 70° , both for the Regiomontanus and Campanus systems.

TO USE THE TABLE OF ASCENDANTS.

Turn to page 46, and proceed as there directed, with the following modifications:—

FOR REGIO- MONTANUS SYSTEM	(1, 2, 3) Proceed exactly as directed.				
	(4) Instead of the Polar Elevations (Polar Arcs) given in Table of Ascendants use those given in Table on p. 122.				
	(5, 6) Proceed as directed.				
FOR CAMPANUS SYSTEM	(1) Proceed exactly as directed.				
	(2) (Omit this step).				
	(3) From or to the R.A.M.C. as found in (1),				
	for the 10th House subtract 90° and call result R.A.M.C. (a)				
	"	"	11th	"	" M.D.P.A. xi. " " " (b)
	"	"	12th	"	" M.D.P.A. xii. " " " (c)
	"	"	1st	"	" " " " (d)
	"	"	2nd	"	add M.D.P.A. ii. " " " (e)
	"	"	3rd	"	" M.D.P.A. iii. " " " (f)
	(4) Instead of the Polar Elevations (Polar Arcs) given in Table of Ascendants, use those in Table on p. 123.				
	(5, 6) Proceed as directed.				

(see p. 123)

With the exception of these modifications the instructions given in Chapter VII should be followed in just the same way as usual. It will hardly be necessary to give an example, since the procedure is in essentials precisely the same, and space is rather limited. By way of an exercise the data given in the table (Nos. 4 and 5) on p. 112 should be verified.¹

TO USE THE TRIGONOMETRICAL METHOD.

Should the student desire to calculate the cusps by the Trigonometrical Method explained in Chapter X., Formula VII., a certain modification of the procedure there given is necessary:—To find the O.A. of any house, first find that of the Ascendant, by adding 90° to the R.A.M.C.; and *from this quantity* subtract the M.D.P.A. (for houses XI. or XII.), or add to it the M.D.P.A. (for houses II. and III.), in order to find the O.A. of the house-cusp: otherwise, confusion will result. The reason of this may not be apparent, but it is true for all that, as a practical experiment will show. The following formulæ will be needed.

REGIOMONTANUS SYSTEM.

Polar Arc, Polar Elevation of House Circle, or "Pole."

XI. or III. $\text{Log. tan. Latitude of Place} + \text{log. cosine } 60^\circ = \text{Log. tan. Polar Arc.}$
 XII. or II. $\text{Log. tan. Latitude of Place} + \text{log. cosine } 30^\circ = \text{Log. tan. Polar Arc.}$

Meridian Distance of Polar Arc.

XI. or III. (For all Latitudes) 60° .
 XII. or II. " " 30° .

CAMPANUS SYSTEM.

Polar Arc, Polar Elevation of House Circle, or "Pole."

XI. or III. $\text{Log. sine Latitude of Place} + \text{log. sine } 30^\circ = \text{Log. sine Polar Arc.}$
 XII. or II. $\text{Log. sine Latitude of Place} + \text{log. sine } 60^\circ = \text{Log. sine Polar Arc.}$

Meridian Distance of Polar Arc.

XI. or III. $\text{Log. cos. Latitude of Place} + \text{log. tan. } 30^\circ = \text{Log. cot. M.D.P.A.}$
 XII. or II. $\text{Log. cos. Latitude of Place} + \text{log. tan. } 60^\circ = \text{Log. cot. M.D.P.A.}$

¹ The house cusps here referred to have been calculated by trigonometry for $51^\circ 32'$ North Latitude. If worked out by proportion from the table of Ascendants, it will be found that all agree except xiv. and xivc., which become $\neq 14.6$ and $\neq 22.23$ instead of $\neq 14.4$ and $\neq 22.18$ respectively. Needless to say the trigonometrical results are correct. The discrepancy is interesting as showing that the method of proportion when applied to the Table of Ascendants diverges, as might be expected, most from strict accuracy in the neighbourhood of $\neq -110^\circ$ to 30° , i.e. declination 22° to $23^\circ 27'$. Even so, the error is not large enough to matter much as a rule.

TABLE FOR CALCULATING THE HOUSES ACCORDING TO THE METHOD OF
REGIOMONTANUS.

LAT. OF BIRTH- PLACE	XII—II		XI—III		LAT. OF BIRTH- PLACE	XII—II		XI—III	
	M.D. of Polar Arc	P.E. of House Circle	M.D. of Polar Arc	P.E. of House Circle		M.D. of Polar Arc	P.E. of House Circle	M.D. of Polar Arc	P.E. of House Circle
0	0 0	0 0	60 0	0 0	35	30 0	31 14	60 0	19 18
1	30 0	0 52	60 0	0 30	36	30 0	32 10	60 0	19 57
2	30 0	1 44	60 0	1 0	37	30 0	33 7	60 0	20 38
3	30 0	2 36	60 0	1 30	38	30 0	34 4	60 0	21 20
4	30 0	3 28	60 0	2 0	39	30 0	35 2	60 0	22 3
5	30 0	4 21	60 0	2 30	40	30 0	36 0	60 0	22 46
6	30 0	5 13	60 0	3 0	41	30 0	36 58	60 0	23 29
7	30 0	6 5	60 0	3 30	42	30 0	37 56	60 0	24 13
8	30 0	6 57	60 0	4 1	43	30 0	38 54	60 0	24 59
9	30 0	7 49	60 0	4 31	44	30 0	39 53	60 0	25 46
10	30 0	8 41	60 0	5 2	45	30 0	40 54	60 0	26 34
11	30 0	9 34	60 0	5 33	46	30 0	41 53	60 0	27 21
12	30 0	10 26	60 0	6 4	47	30 0	42 53	60 0	28 12
13	30 0	11 19	60 0	6 35	48	30 0	43 53	60 0	29 3
14	30 0	12 11	60 0	7 6	49	30 0	44 53	60 0	29 53
15	30 0	13 4	60 0	7 38	50	30 0	45 54	60 0	30 47
16	30 0	13 57	60 0	8 9	51	30 0	46 55	60 0	31 42
17	30 0	14 50	60 0	8 41	52	30 0	47 56	60 0	32 37
18	30 0	15 44	60 0	9 14	53	30 0	48 58	60 0	33 34
19	30 0	16 37	60 0	9 46	54	30 0	50 0	60 0	34 31
20	30 0	17 30	60 0	10 19	55	30 0	51 3	60 0	35 32
21	30 0	18 23	60 0	10 52	56	30 0	52 5	60 0	36 33
22	30 0	19 17	60 0	11 25	57	30 0	53 8	60 0	37 36
23	30 0	20 11	60 0	11 58	58	30 0	54 11	60 0	38 40
24	30 0	21 5	60 0	12 32	59	30 0	55 14	60 0	39 45
25	30 0	21 59	60 0	13 7	60	30 0	56 18	60 0	40 54
26	30 0	22 53	60 0	13 41	61	30 0	57 22	60 0	42 3
27	30 0	23 48	60 0	14 16	62	30 0	58 26	60 0	43 14
28	30 0	24 43	60 0	14 52	63	30 0	59 31	60 0	44 28
29	30 0	25 38	60 0	15 29	64	30 0	60 36	60 0	45 43
30	30 0	26 34	60 0	16 6	65	30 0	61 42	60 0	47 0
31	30 0	27 29	60 0	16 43	66	30 0	62 47	60 0	48 19
32	30 0	28 25	60 0	17 20	67	30 0	63 53	60 0	49 40
33	30 0	29 21	60 0	17 59	68	30 0	64 59	60 0	51 4
34	30 0	30 17	60 0	18 38	69	30 0	66 5	60 0	52 29
35	30 0	31 14	60 0	19 18	70	30 0	67 12	60 0	53 57

TABLE FOR CALCULATING THE HOUSES ACCORDING TO THE METHOD OF
CAMPANUS.

LAT. OF BIRTH- PLACE	XII—II				XI—III				LAT. OF BIRTH- PLACE	XII—II				XI—III			
	M.D. of Polar Arc		P.E. of House Circle		M.D. of Polar Arc		P.E. of House Circle			M.D. of Polar Arc		P.E. of House Circle		M.D. of Polar Arc		P.E. of House Circle	
0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	0	1
0	30	0	0	0	60	0	0	0	35	35	11	29	47	64	41	16	40
1	30	0	0	52	60	0	0	30	36	35	31	30	37	64	58	17	6
2	30	1	1	44	60	1	1	0	37	35	52	31	26	65	15	17	32
3	30	2	2	36	60	2	1	30	38	36	14	32	14	65	32	17	57
4	30	4	3	28	60	4	2	0	39	36	37	33	2	65	50	18	21
5	30	6	4	20	60	6	2	30	40	37	0	33	50	66	8	18	45
6	30	8	5	12	60	8	3	0	41	37	25	34	38	66	27	19	9
7	30	11	6	4	60	11	3	30	42	37	51	35	26	66	47	19	33
8	30	15	6	56	60	15	4	0	43	38	17	36	13	67	7	19	57
9	30	18	7	47	60	18	4	29	44	38	45	37	0	67	27	20	20
10	30	23	8	39	60	23	4	59	45	39	14	37	46	67	48	20	42
11	30	28	9	31	60	27	5	29	46	39	44	38	33	68	9	21	5
12	30	33	10	22	60	33	5	58	47	40	15	39	19	68	30	21	27
13	30	39	11	14	60	38	6	28	48	40	47	40	5	68	53	21	49
14	30	45	12	6	60	45	6	57	49	41	21	40	50	69	15	22	10
15	30	52	12	57	60	51	7	26	50	41	56	41	34	69	38	22	31
16	30	59	13	49	60	58	7	56	51	42	32	42	19	70	2	22	52
17	31	7	14	40	61	6	8	25	52	43	10	43	3	70	26	23	13
18	31	16	15	32	61	14	8	54	53	43	49	43	45	70	50	23	33
19	31	25	16	23	61	22	9	23	54	44	29	44	29	71	15	23	52
20	31	34	17	14	61	31	9	51	55	45	11	45	11	71	41	24	11
21	31	44	18	5	61	40	10	20	56	45	55	45	54	72	6	24	30
22	31	55	18	56	61	50	10	48	57	46	40	46	36	72	33	24	49
23	32	6	19	47	62	1	11	16	58	47	27	47	17	72	59	25	7
24	32	18	20	37	62	11	11	44	59	48	16	47	56	73	26	25	24
25	32	30	21	28	63	23	12	12	60	49	6	48	35	73	54	25	40
26	32	43	22	19	62	34	12	40	61	49	59	49	14	74	22	25	57
27	32	57	23	10	62	47	13	8	62	50	53	49	53	74	50	26	13
28	33	11	24	0	62	59	13	35	63	51	49	50	30	75	19	26	29
29	33	26	24	50	63	12	14	2	64	52	47	51	8	75	48	26	43
30	33	41	25	40	63	26	14	29	65	53	48	51	43	76	17	26	57
31	33	58	26	30	63	40	14	56	66	54	50	52	18	76	47	27	12
32	34	15	27	20	63	55	15	23	67	55	55	52	52	77	17	27	26
33	34	33	28	9	64	10	15	49	68	57	1	53	25	77	48	27	39
34	34	51	28	58	64	25	16	15	69	58	10	53	57	78	19	27	51
35	35	11	29	47	64	41	16	40	70	59	21	54	28	78	50	28	2

It is hoped that all students will make themselves familiar with these methods and study them. This is the first time that Tables of Houses for both these systems have been published. The exact "house position" of any planet or zodiacal point can be ascertained, if desired, by the method described in the Appendix, where also the curious will find a method of obtaining the house-cusps according to the Zenith and East-Point Systems, concerning which it may be remarked that so far as at present known they have only a speculative value.

It is proper here to acknowledge our indebtedness to a student who veils his identity under the pseudonym of "Chandra." This gentleman not only drew attention to the Campanus system of house division in a very able paper in *Modern Astrology* (Old Series, Vol. XII.), but he has also, and in the kindest way, rendered the greatest assistance in the production of this present summary. Indeed, but for his help it could never have been written, and we wish to express our hearty gratitude for the time and labour he has so generously devoted to the work.

Further observations will be found in the Appendix.

CHAPTER XIII.

THE REAL ZODIAC: ITS BEARING ON THE PHENOMENON OF RETROGRADATION.

IT is advisable at the outset to clear the ground of two possible misapprehensions. The first is that this "real" zodiac is some transcendental zodiac that does not really concern us very much in a practical sense. That is not the case: the zodiac referred to is the zodiac of the ordinary Ephemeris.

The second of these possible misapprehensions is, that what is to be set forth is some new theory to be approached with reserve and possibly suspicion, and in any case hardly a matter which the average student need trouble about. That also is not the case. The idea itself can be found in a modified form in *Solar Biology*, a book published many years ago, and some time ago it was again brought forward, (rather by implication than direct statement) in *Modern Astrology*¹. It is not a new idea, it is simply an old idea that has been too long overlooked. It therefore needs to be carefully examined, and unless found wanting properly reinstated in its due place.

THE USUAL VIEW.

The zodiac, as usually conceived, may very well be represented by a clock-face, in which the centre represents the Sun and the numerals the twelve signs. The various planets are then thought of as moving round in a similar way to the extremities of the two hands, at different speeds and distances from the centre, but nevertheless moving through each sign with unvarying uniformity. In fact the tips of the hour and minute hands might be taken to represent Jupiter and the earth respectively, since the period of Jupiter is about twelve times that of the

¹ New Series, Vol. V., pp. 215, 216.

earth. Hence Jupiter will pass through one sign while the earth passes through the whole circle of twelve signs, just as the minute hand passes once round the clock from XII. to XII. while the hour hand passes from V. to VI. The Ephemeris corroborates this, showing Jupiter in Leo 12° on January 1st, 1908, and in Virgo $14\frac{1}{2}^{\circ}$ on January 1st, 1909.

From this point of view, then, the Sun does not really pass through the signs, but only *appears* to pass through that sign which is opposite to the one in which the earth is at the time. Attention is often drawn to this in elementary astrological manuals,¹ and probably in most cases no real harm is done thereby.

WHERE THE ANALOGY BREAKS DOWN.

For when we come to examine this analogy closely we find that it breaks down. Thus, to return to our illustration of Jupiter and the earth, we find from the Ephemeris that on January 1st, 1908, Jupiter is retrograde, *i.e.*, moving backwards in the zodiac. But the clock-hand never moves backwards. What, then, is the meaning of this discrepancy between fact and illustration?

The discrepancy is generally explained as due to the circumstance that the zodiacal positions are calculated from the place of the planet as seen from the earth, and not as seen from the Sun or from a point outside the plane of the solar system such as the pole star. This explanation is quite legitimate and is true so far as it goes. If anyone will experiment with a watch, turning the minute-hand slowly round and considering how the movement of the tip of the hour-hand would appear to a tiny insect stationed on the minute-hand at a *little distance* from the centre he will see that this is so. In fact from the insect's point of view, in certain positions of the minute-hand the tip of the hour-hand would appear to be moving in the contrary direction from that apparently taken by the centre of the watch (representing the Sun), the motion of which latter would always appear as direct and never retrograde. The insect, of course, is supposed to be incapable of realising its own motion, just as we are incapable of realising the motion of the earth since we partake of it.

The reader is strongly urged to take out his watch and try this for himself; he will find the experiment both interesting and instructive.

¹ See for instance *What do we Mean by Astrology?* p. 55; also p. 152 of this book.

First he should ink round a small circle about a quarter of an inch in diameter in the centre of the watch-glass, to mark the insect's orbit, and then set the hands to twelve o'clock. This position will (from the insect's point of view) represent *Sun in Virgo 0° opposition Jupiter in Pisces 0°*. Now let him turn the hands slowly forward, and imagine a line traced through the insect and the extremity of the hour-hand. A needle may be used to represent the line. This line will, at the start, run through the XII., but as the hands move onward its extremity will pass slowly backward towards XI., until the minute-hand reaches to about III., when the line's extremity will come to a standstill and commence to move slowly forward, passing XII. once more and reaching $2\frac{1}{2}$ minutes past XII. when the minute-hand is at $32\frac{1}{2}$ minutes past. This position will represent *Sun conjunction Jupiter in Pisces 15°*. The end of the line or needle will then continue to move forward till the minute-hand reaches IX., then back again for a short distance, till when both hands have reached I. the same series of relative movements will begin to repeat themselves.

This is a homely illustration, but it is sufficient to make plain what is meant, and if a clock with a good large dial is available so much the better. The larger the dial, the more clearly can the retrogradation be seen and its cause understood. The line or needle represents the ray of light from planet to earth.

WHERE THIS ANALOGY BREAKS DOWN TOO.

When further examined, however, this analogy too will be found to fail us. For although Jupiter is thus seen to *appear* to pass into Aquarius, it is quite clear that in reality it has done no such thing, but has been moving uniformly through Pisces the whole time. And this fact proves a great weapon in the hands of astronomers, who say, naturally enough, "While the planet is actually in one sign you are attributing to it effects supposed only to be due to another sign—and yet you call Astrology a science!"

This criticism the student is usually unable to meet, in spite of the fact that he may know quite well, from his own personal experience, that Jupiter retrograde in the end of Aquarius behaves altogether differently from Jupiter in the first degrees of Pisces. It is to help him to give a logical and coherent reply that this chapter has been written. For

convenience the argumentative method will now be abandoned and the didactic assumed, without however desiring that anyone shall take as an 'authoritative' pronouncement that which does not appeal to his reason or intuition as truth.

THE EXPLANATION.

The zodiac that we use is really the EARTH'S AURA.¹ It is a sphere or ovoid, the poles of which coincide with the poles of the Ecliptic, and its middle or equatorial plane is the Ecliptic: it would appear to be identical with the "crystal sphere" alluded to in the passage in *Modern Astrology* already referred to. For some reason at present unexplained, this sphere is polarised in one direction; that is to say, it remains always in one position whatever the place of the earth in its orbit, in this respect being comparable to the ordinary mariner's compass, the circular card of which always floats with its N. pole pointing in one direction. This sphere is divided into twelve parts like the sections of an orange, and it is these sections which constitute the "signs" of the zodiac. We are, however, chiefly concerned with its equatorial plane, for it is this which we measure in signs or degrees, and which determines the zodiacal position of a planet.

Now it is clear that since this sphere of aura remains constantly 'floating' in one position while the earth journeys round the Sun, the Sun's ray will successively pass through each one of the signs. If you place a lamp in the middle of a table, and walk once round the table, always facing one particular corner of the room, the rays of the light will have shone upon each part of the head in turn—the nose, left cheek, back of the head, right cheek, and so on. This is so simple that it seems unnecessary to enlarge on it, and we will therefore turn to our diagrams.

THE SUPPOSED ZODIAC.

The diagram (p. x) shows the position of the earth in its orbit at the four quarters of the year, March 21st, June 21st, September 22nd, and

¹ The word aura is hardly perhaps quite correct, and it would be more accurate to say 'astral light.' In the *Sec. Doc.*, Vol. iii., p. 539 we read "the Auric Egg is to the Man as the Astral Light to the Earth, as the Ether to the Astral Light, as the Akasha to the Ether," and this seems to leave no doubt that Astral Light is the correct expression here. But the word aura is so much more familiar and seems so much better to express the idea of an aureole or nimbus or halo or similar enveloping sphere of subtler matter, that it has been allowed to stand.

December 21st. The Sun is in the centre of the figure, and the twelve radii shew the lines which determine the *supposed* zodiac which has been usually explained in the manuals as the zodiac employed by astrologers. Whether there does really exist such a "solar" zodiac we do not know; probably there does, but in any case it is *not* the one used by astrologers, nor do we at present know anything of its influence.

THE REAL ZODIAC.

The zodiac we use consists of the smaller circle depicted round the earth; of this four positions are shown, corresponding to the dates mentioned. The Sun's ray, as will be seen, shines through those parts of the zodiac which we know as the first points of Aries, Cancer, Libra, Capricorn, respectively, and it is the vivification of such portion of the aura by the power of the Sun that produces those characteristics which we classify as "Sun in Aries," "Sun in Cancer," etc. The positions of the earth when the Sun is in the remaining signs are not shown, to avoid overcrowding the figure. A little thought given to this diagram will soon make the whole matter clear. For simplicity the orbit of the earth is shown as a circle instead of an ellipse, as it properly should be, and the arrow shows the direction of the earth's movement in its orbit.

It should be explained that the plane of the figure represents the plane of the earth's orbit. The pole of the earth is shown as a large dot a little away from the centre of the tiny circle representing the earth. Through an error of the artist it has been put on the wrong side of the centre; it should be at an equal distance on the opposite side.

It need hardly be mentioned that this "aura" does not turn round each day with the rotation of the earth on its axis, but that the earth spins round *within* it, like the wheel in a gyroscope.

What it is that keeps the zodiacal sphere constantly polarised in one direction, we do not know. It is known that the Sun, with all its attendant planets, is moving in a direction which may be indicated by placing a pencil in the centre of the diagram, nearly at right angles to the plane of the paper, but inclining slightly in the direction of the sign Capricorn. It is possible that the streams of force which cause this motion may have some affinity with that part of the aura constituting the cusps of the signs Cancer and Capricorn, thus tending to keep them always parallel to the same plane; just as from similar causes the

compass needle always points to the north. This is only offered as a suggestion.

THE PHENOMENA OF RETROGRADATION.

Our second diagram (p. xi) is intended to show how the *retrogradation* of a planet occurs. It is drawn approximately to scale. The Sun is shown in the centre, and four positions of the Earth are given as in the previous diagram. The arrows show the direction of orbital movement. The outer arc shows a portion of the orbit of Jupiter and five positions of Jupiter, at intervals of three months, starting with such a position as would show Jupiter in Pisces 18° on March 21st. The zodiacal position of Jupiter is shown by the lines drawn from it to the centre of the earth. Thus, after the first three months we find Jupiter stationary in Aries 5° , while after six months it has retrogressed to Aries 0° . Three months later we find it has retrogressed to Pisces 25° and is about to turn direct once more. At the conclusion of the year the fifth line shows it just about Aries 18° , as we should have expected from our knowledge of its mean motion, which is one sign in a year. From a study of this diagram both the cause of the apparent retrogradation of the planet, and also the effect upon its zodiacal position, can be easily understood. And in a similar way the retrogradation of any distant planet could be shown.

The dotted circle shows the orbit of Venus, also to scale, with Venus at a particular portion of the orbit; a position which, owing to the difference between the rate of Venus and the rate of the earth, might sometimes occur during one quarter of the year, and sometimes during another. The straight dotted lines show its zodiacal position, according to the particular quadrant the earth happens to be in at the time.

From this we see that when Venus is in one and the same spot, actually, (or in other words when it has a given heliocentric longitude), its zodiacal position may vary from about Taurus 8° to Cancer 16° , Virgo 13° or Scorpio 24° , the variation being due to the different position of the earth in its orbit; from which it will be seen that the zodiacal position of Venus is only partially due to its position in its own orbit. Similarly, of course, in the case of Mercury.

Although we do not know the size of the earth's aura, which may extend beyond the Moon's orbit or may not extend so far, our ignorance

of its extent is quite immaterial from a practical point of view, since we only need to know which portion of it any particular star or planet is shining through.

SOME SUGGESTIONS REGARDING OTHER ZODIACS.

It seems not unreasonable to infer that this aura, the zodiac, is the earth's Astral Body,¹ and it may be that the earth's Mental Body, a similar but larger sphere, is polarised in some quite different direction, and is perhaps identical with the Fixed Zodiac of the Hindu astrologers, the first point of which is now situated in about the twentieth degree of our Aries.

In the same way it is possible that within the astral zodiac there is an Etheric Aura, rotating once a day but polarised towards the Sun, and thus making only 365 complete rotations in the year, whereas the earth itself makes 366.² On this hypothesis, the general efficacy of "sunrise" horoscopes even where the time of birth is not known, might be accounted for. It would also explain the strength of any horoscope in which the Sun is found in the first house.

Occultists tell us that there are no less than four distinct kinds of ether, or rather *etheric conditions of physical matter*, each differing as widely from the others as do the solid, liquid, and gaseous states. These, though interpenetrating, may individually extend to different distances from the Earth's centre; just as the waters cover the Earth, the atmosphere reaches farther still, and the ether of science extends beyond that. It may be that the circle or sphere of the houses, polarised towards the east, is related to one of these etheric spheres; another such sphere may be polarised towards the Sun, as just suggested; a third to the Moon; and a fourth, perhaps, to the "Part of Fortune"—which might explain the importance accorded to this symbol by the old writers. For at sunrise the Part of Fortune is always in conjunction with the Moon, and on this hypothesis the two spheres of different etheric aura

¹ In *The Inner Life*, by Mr. Leadbeater, Vol. I., p. 353, we read that the astral sphere of the earth extends nearly to the mean distance of the Moon's orbit, "so that the astral planes of the two worlds touch one another when the Moon is in perigee, but do not so touch when the Moon is in apogee."

² For during any day the earth turns through about 361 degrees, or 1 and 1/365 complete rotations, and hence makes 366 rotations in the year.

would coincide at that moment, while the "sun" sphere and "house" sphere would likewise coincide.

These are suggestions though only suggestions which it is hoped may provoke thought and stimulate further research. They have no direct bearing upon what has gone before, and their truth or otherwise does not affect the substantial reality of the zodiac above described, which is rather a question of fact than of opinion, since it is the one actually used in our everyday investigations. What is meant by the words "fact and not opinion" in this connection, is that the zodiacal positions given in the ordinary ephemeris and used in our everyday calculations, are identical with the positions which would be obtained by the use of such a zodiac as has been described, and which might indeed be determined with any required degree of accuracy by constructing a sufficiently large working model of our first diagram. Using the true elliptical orbits of the earth and planets, and placing each planet in that portion of its orbit denoted by its heliocentric longitude, we might, by drawing straight lines to the earth's centre measure off the geocentric longitude upon the "real zodiac" in a similar manner to that shown (for Venus and Jupiter) in our second diagram.

It is this that justifies the use of the words "fact and not opinion" in the preceding paragraph. For as most students know, the geocentric longitude is calculated from the actual angle it makes with the Sun as viewed from the standpoint of the earth. Thus for example if the angle $\odot \oplus \text{♀}$ is 40° and \odot is in $\text{♊} 0^\circ$, then the geocentric longitude of Venus must be 810° or $\approx 20^\circ$ according as Venus is an evening or a morning star at the time.

In attempting to get a *meaning* for this fact, and for the further fact that such measurements have for us a value (which we term zodiacal influence), we have concluded that the ring round the Earth, on which these measurements are taken, and which we have called the "real" zodiac, must be the equatorial belt of a sphere of aura, presumably astral aura.

Further observations will be found in the Appendix.

(END OF SECTION A.)

Casting the Horoscope.

Section B.

CHAPTER I.

HOW TO USE THE CONDENSED EPHEMERIS FOR PRACTICAL WORK WHERE GREAT PRECISION IS NOT REQUIRED.

FOR the practical work of judging a horoscope it is not essential that the planetary positions should be known quite exactly. The nearest degree is more than sufficient, and while in this chapter it will be necessary to explain in full detail how to calculate the horoscope lest the method of working should be misunderstood, it is by no means necessary to go to so much trouble where all that is needed is a "rough and ready" map.

For practical purposes the planetary positions can be written down at sight correct to the nearest degree. And the Moon's place can be found at once, not quite accurately but near enough for most purposes, by taking 1° for each two hours of time.

This is no plea for slipshod work. It is merely a recognition of the fact that many students have not the necessary time to calculate maps with great exactitude, and of the further fact that although there is a certain satisfaction in calculating the minute as well as the degree position of a planet, for *practical* purposes, that is to say so far as the ordinary judgment of the horoscope is concerned, it is not essential. Unless, of course, the planet or luminary is close to the end or beginning of a sign, in which case its exact position becomes of material importance.

What is necessary, and always necessary, is to have a thorough understanding of the method one is using.

ROUGH AND READY YET RELIABLE.

Our purpose then is to show as simply as possible how to set up a figure for *any time*, and for *any place*, provided a Table of Houses for that place is available.¹ Those who are prepared to spend time and pains will find a method given in Chapter VII of SECTION A, whereby it is possible to calculate a foreign horoscope without Tables of Houses at all, while the student who wishes to be really *au fait* will of course master the trigonometrical method given in Chapter X.

The heading of this chapter must not be taken to imply that the Condensed Ephemeris is not suited for accurate work. It is generally possible, even in the case of Venus and Mercury, to obtain the planetary longitudes to within $\frac{1}{4}^{\circ}$ or less of their true position; and this is quite exact enough for all work except "directions," consideration of which must be deferred to a later volume.

"ACCURACY" AND "PRECISION."

A word here will not be out of place regarding the expressions accuracy and precision. Unless the birthtime is known to within less than one minute, it is impossible to calculate the figure correctly to within less than about $15'$ on the cusps of the houses; and to calculate a figure correctly to $5''$ one would need to have the time known, exactly, to within less than one-third of a second! Therefore, while it is quite possible to calculate a figure with great precision for any instant of time, unless that instant is known to be the correct birthtime, the labour spent in obtaining such precision is—except as mental training—merely thrown away. It should be clearly realised that because a figure is only computed to the nearest degree it is not on that account less *accurate* (provided no actual mistakes have been made) than one calculated to '

¹ Tables of Houses for London and also for New York are included in this book. For other places the reader is referred to Mr. J. G. Dalton's *Spherical Basis of Astrology*, published in Boston, U.S.A., in which tables are given for latitudes 22° to 56° (price 12/6).

A useful shilling book gives tables for Glasgow, $55^{\circ}53' N.$; Liverpool, $53^{\circ}25' N.$; Birmingham, $52^{\circ}28' N.$; London, $51^{\circ}32' N.$; all places in $45^{\circ}0' N.$; New York, $40^{\circ}43' N.$; all places in $37^{\circ}0' N.$; Calcutta, $22^{\circ}33' N.$; and Madras, $13^{\circ}4' N.$ These tables will serve for all places in or near those latitudes, whether North or South of the Equator, and they will be used as the basis of foreign horoscopes here treated of. But where great variety of latitude is concerned, or quick reference is necessary, Dalton's tables are indispensable.

The above can all be procured from the publishers of this book.

and " : it is only *less precise*. And in any case astrological judgments are seldom or never based on any fraction of the zodiac less than the degree. But it is important that the student should have a clear conception of the 'limits of precision' that he is dealing with: let him understand and know with certainty whether his figure is correct to within a degree, to within half a degree, or to within a degree and a half. For confusion and dissatisfaction are far more likely to arise from indefiniteness and vagueness of thought in this respect, than from want of precision in working, or through absence of all the needed "corrections," etc., etc., in his calculations.

For these reasons, then, in the following illustrative examples the correction from mean to sidereal time will be ignored, except when it nearly approaches one minute, or two minutes.

There are many who desire to set up a map for an approximate time, correct say within a quarter of an hour, who have neither time nor aptitude for the rather tiresome minutiae sometimes introduced. And it is for these that the present Section is mainly intended.

Probably we shall find that two or three examples will be more instructive than a series of rules, and therefore, after enunciating the "golden rule," we shall at once proceed to calculate sundry horoscopes by way of showing the way of going to work.

Definitions of terms where these are not sufficiently explained by the context will be found in Chapter V of SECTION A.

GOLDEN RULE.

(N.B.—This rule admits of no exception.)

- (1) Convert the given Standard Time into Local Mean Time.
- (2) The Houses of the Horoscope are to be calculated for LOCAL MEAN TIME, the equivalent Sidereal Time being found.
- (3) The Planetary Positions are to be calculated for GREENWICH MEAN TIME, abbreviated G.M.T.

THE SIDEREAL TIME AT NOON¹ AT ANY PLACE is approximately as follows on the given dates, whatever the year:—

Mar. 22; 0h. om.	July 22; 8h. om.	Nov. 21; 16h. om.
Apr. 22; 2h. om.	Aug. 22; 10h. om.	Dec. 21; 18h. om.
May 22; 4h. om.	Sep. 21; 12h. om.	Jan. 21; 20h. om.
June 21; 6h. om.	Oct. 21; 14h. om.	Feb. 20; 22h. om.

¹ The "SIDEREAL TIME at noon" increases *about* 4 min. per day. The S.T. on any given day varies slightly from year to year, and therefore where precision is required the table given at end of book must be consulted.

Reference has elsewhere been made to the horoscope of King George V., and it will therefore be of interest to make this our first example. The work will be divided into two parts.

PART I.—THE HOUSES.

EXAMPLE 1. *Male: born 3/6/'65; 1.18 a.m., London.*¹

Here the standard and the local mean time are identical, of course. In the table of Sidereal Time just given we find that

					<i>h. m.</i>
the Sidereal Time at noon on June 21st is	-	-	-	-	6 0
then for 18 days <i>subtract</i> (18 × 4m.)	-	-	-	-	1 12
Which gives us	-	-	-	-	<u>4 48</u>
which is Sidereal Time at noon 3/6/'65.					
to this add 24 hours (since we have to subtract <i>more</i> than 4h. 48m.)	-	-	-	-	24 0
Result	-	-	-	-	28 48
Subtract	-	-	-	-	10 42
which is the difference between 1.18 a.m., the time of birth, and noon					
Result	-	-	-	-	<u>18 6</u>
which, less 2m. "Correction" ²	-	-	-	-	2
gives SIDEREAL TIME AT BIRTH	-	-	-	-	<u>18 4</u>

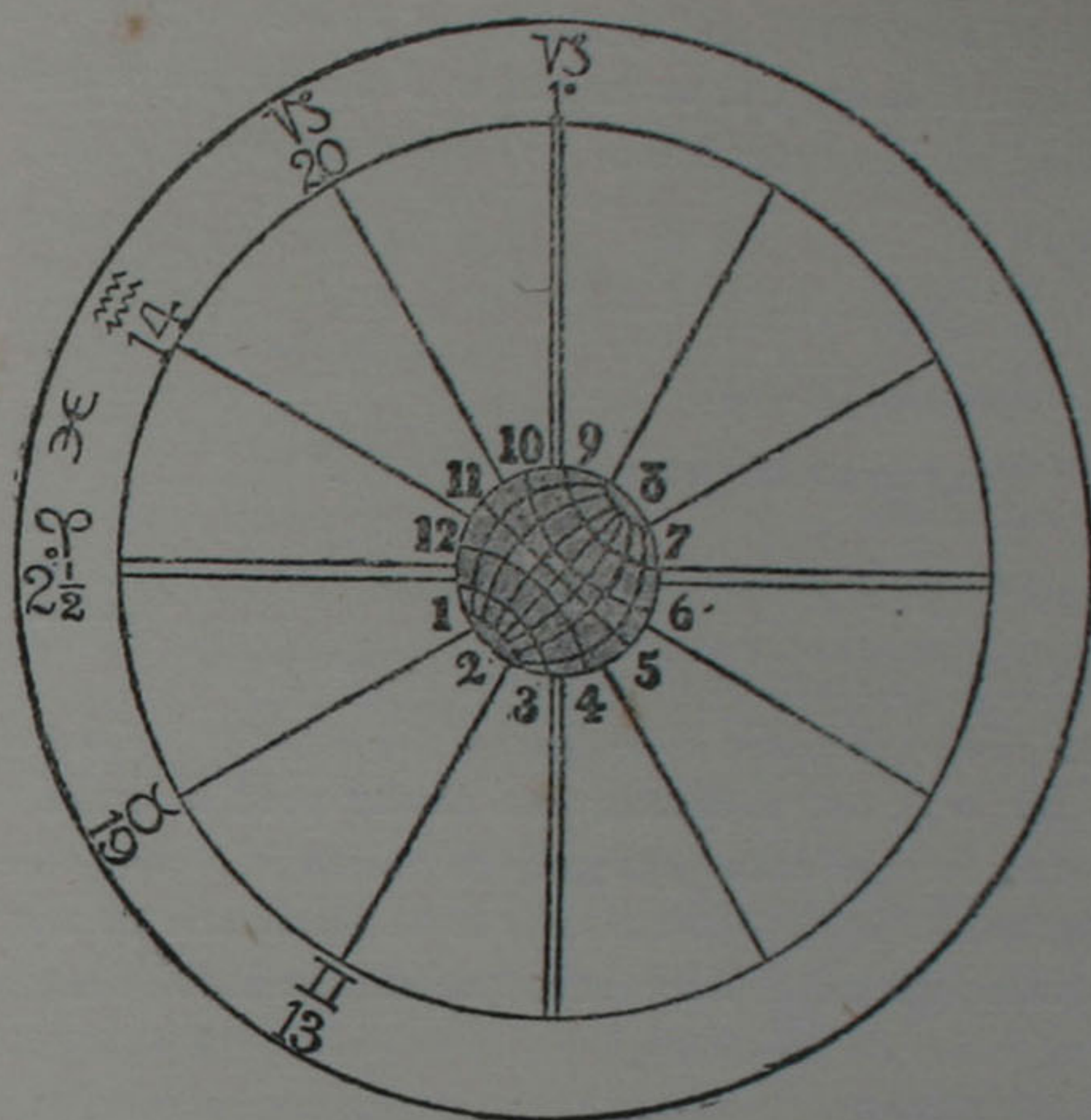
We then turn to the Table of Houses for London, and seek this sidereal time in the left-hand column, and near the top of the fourth page of the table, we find the following:—

Sidereal Time	10	11	12	Ascend.	2	3
<i>h. m. s.</i>	10	11	12	♈	8	11
18 4 22	1°	20°	14°	2°39'	19°	13°

The Arabic numerals refer to the houses, tenth house, eleventh house, twelfth house, ascendant, second house, third house. We therefore make up our Horoscope in this way:—

¹ This is the most succinct way of stating the *data* of any birth.

² Since, as before stated, the Sidereal Time at noon is 4m. later each day, the proportional 2m. must here be subtracted, as birth occurred shortly after midnight.



It is to be particularly noted that the ascendant is here marked $\Upsilon 2\frac{1}{2}^\circ$ and not $\Upsilon 2^\circ 30'$, for the latter would lead the reader to suppose that the figure had been calculated to the point of precision represented by $1'$, and this we know has not been done,—we have only aimed at getting the *degrees* accurate, not the *minutes*. Therefore to write $2^\circ 39'$ or $2^\circ 30'$ would be misleading.

The student will hardly need to be told that on the “cusps” of the remaining houses the opposite points are to be entered; thus, $\ominus 1^\circ$ on the fourth house, $\ominus 20^\circ$ on the fifth, and so on.

PART II.—THE PLANETS.

We may now regard the framework of our map as correct, and it only remains to insert the planets' places. We will take them in the order in which they come. Turn to the Ephemeris; year 1865. Remember that the positions are calculated for NOON, G.M.T.

The first is ♁ , or the Dragon's Head,¹ which we find was on the

¹ This point of the horoscope is disregarded by many astrologers: but the student will be wise to insert it in his map, nevertheless.

28th of May in $\approx 28^{\circ}16'$, and on the 4th of June in $\approx 27^{\circ}53'$, a difference of $23'$ for the seven days, or at the rate of $3'$ per day, moving *backwards* in the zodiac (as \odot always does). We therefore say,

					\circ	$'$
\odot 28/5/65	-	-	-	-	\approx	28 16
\odot 4/6/65	-	-	-	-	\approx	27 53
Difference per week	-	-	-	-	7)	0 23
Difference per day (to be added) ¹	-	-	-	-		0 3
\odot 4/6/65	-	-	-	-		27 53
Result:— \odot 3/6/65 at noon	-	-	-	-		27 56

which at 1.18 a.m. would be $1'$ more, i.e., $\approx 27^{\circ}57'$.

Write down this result on a separate slip of paper. *Do not put it as yet into the map*, lest something else should need to come between it and the cusp of the house alongside of which it would otherwise go. Remember this rule; it is just as easy to be systematic as not, and it is much more satisfactory. Now let us similarly calculate the place of ψ .

					\circ	$'$
ψ 28/5/65	-	-	-	-	γ	10 1
ψ 4/6/65	-	-	-	-	γ	10 11
Difference per week	-	-	-	-	7)	0 10
Difference per day (to be subtracted) ¹	-	-	-	-		0 1
ψ 4/6/65 (at noon)	-	-	-	-	γ	10 11
Result:— ψ 3/6/65 (at noon)	-	-	-	-	γ	10 10

This will also be its position at 1.18 a.m., since it moves only $1'$ per day; but $10^{\circ}9'$, as in the map on p. viii., is near enough. Write this down on the slip of paper beneath \odot .

In the same way the position of ♄ may be found, but as it moves $3\frac{1}{2}'$ per day, $2'$ must be subtracted from the result. For the above process gives the (approximate) position for *noon* of the third, whereas birth actually occurred 1.18 a.m., nearly half a day earlier. As ♄ moves so slowly, this step was omitted in its case.

Now let us take Saturn, who is here ♄ , i.e., retrograde, or passing backwards (just as was the case with \odot).

¹ If the day had been June 2nd instead of 3rd, we should of course have had to add or subtract *twice* this amount: three times for June 1st, and so on.

h_2 28/5/'65 R	-	-	-	\simeq 24	20
h_2 4/6/'65 R	-	-	-	\simeq 24	2
Difference per week	-	-	-	7)	0 18
Difference per day (<i>to be added</i>)					3 (nearly)
h_2 4/6/'65	-	-	-	\simeq 24	2
Result :— h_2 3/6/'65 (at noon)	-	-	-	\simeq 24	5
or to be more accurate (adding 1'),					
h_2 3/6/'65 (1.18 a.m.)				\simeq 24	6

This all looks very formidable on paper, but in practice it is very simple, for as one gets used to dealing with these quantities, most of the subtractions can be done *mentally*, even by those who are not usually good at mental arithmetic.

It is unnecessary to proceed with the calculations for u (which, like h_2 , is also R), δ , \odot and p ; they are worked in exactly the same way.

In the case of p , however, its motion being more rapid and irregular, the positions are separately given in two columns at the right-hand side of the page, for every seventh day, the second series *starting from the 4th* of January. Hence the positions are given for days alternately three or four days apart: January 1st, 4th, 8th, 11th, etc. Thus we say :

p 31/5/'65	-	-	-	-	8 15 44
p 4/6/'65	-	-	-	-	8 20 11
Difference per 4 days	-	-	-	4)	4 27
Difference per day (<i>to be subtracted</i>)	-	-	-		1 7
p 4/6/'65	-	-	-		20 11
p 3/6/'65 (at noon)	-	-	-		19 4
or .. (at 1.18 a.m.)	-	-	-		18 33 ¹

(11-24ths of 1°7' or 31' being subtracted, of course.)

From this it will be seen that it is only a matter of a little patience to obtain all the planetary positions, which for the time given are :—

Ω	Ψ	HI	h_2	u	δ	\odot	p	p
$\simeq 27.57$	$\text{r} 10.9$	$\text{II} 28.37$	$\simeq 24.6\text{R}$	$\text{r} 25.40\text{R}$	$\text{R} 5.35$	$\text{II} 12.26$	$\text{r} 9.38$	$\text{r} 18.33$

¹ The daily motion of the planet having been ascertained (by dividing its motion in 7 or 4 days by 7 or 4) its motion during any part of a day may, if desired, be found by "proportional logarithms," as in the case of the Moon on the next page.

TO FIND THE MOON'S POSITION.

We now need to find the place of the ☾. We turn to the Tables of the Moon's Place, and on the page for the years 1864-1865 we find:—

					0	1
☾ 3/6/'65	-	-	-	-	≈	6 19
2/6/'65	-	-	-	-	≈	24 30
Daily motion	-	-	-	-		<u>11 49</u>

Turn to the table of Proportional Logarithms. Then we say:—

Prop. Log. ☾'s daily motion	11° 49'	-	3077
" " time from noon	10h. 42m.	-	3508
" " of ☾'s motion in	10h. 42m.		<u>6585</u>

This, we find, is equivalent to 5°16', which is then subtracted from the noon position on day of birth, thus:—

				0	1
☾ at noon 3/6/'65	-	-	-	≈	6 19
motion in 10h. 42m.	-	-	-		<u>5 16</u>
☾'s place at 1.18 a.m. 3/6/'65	-	-	-	≈	<u>1 3</u>

The various positions may now be inserted (*see illustration, p. viii.*).

THE RIGHT WAY THE BEST WAY.

In all things there is a right and a wrong way, and in most cases the right way is just as easy as the wrong. Hence it is well at the start to write in the planets *correctly* and *clearly*. Each planet should be written close up to the cusp of the house in which it is placed, where possible, (see ☿, ☉, ☿, ☊, ☋, ☌, ☍, ☎, ☏, ☐, ☑, ☒, ☓). Where there is more than one planet in a sign, the one furthest on in the sign should be written up against the cusp (as in the case of ☋ here) or, on the other hand, the one nearest the beginning of the sign (as in the case of ☌ here). The reasons for this are apparent. In placing the planets in the map, commence at the tenth house and work gradually downwards on either side, in the manner shown above. Should there be any planets in an "intercepted" sign, such as ♄ or ♀ in this map, they should be written up against, and parallel to, the rim of the wheel. If there is more than one, that which is *highest* in the heavens if ascending, or that which is *lowest* if descending, should be placed nearest to the rim.

It is necessary, at first, to be extremely careful to get the planets rightly placed on the proper side of the cusp. This is only due, however, to the fact that the subject is unfamiliar; and if the novice will only take pains and use intelligence—some beginners are apt to be far too much in a hurry—he will very soon find it difficult to make any mistake in entering the planets in the map, or even in the calculations.

The most important thing is *to use one's brains*; for the most carefully compiled rules will be useless to those who do not exercise their own powers of thought.

N.B.—If the student is wise he will now endeavour, instead of attempting some other horoscope, to work the example QUITE BY HIMSELF WITHOUT ANY ASSISTANCE from these instructions; and he will then compare his own finished product with the horoscope as given. By so doing he will save himself many mistakes, for he will be enabled to check his first erroneous impression at the outset.

THE PART OF FORTUNE.

There remains just one thing more to calculate, and that is the Part of Fortune, \oplus^1 . This is found as follows:—*To the longitude of ascendant add longitude of \mathcal{D} and subtract longitude of \odot : express in signs (s.), degrees ($^\circ$), and minutes ($'$). Thus:—*

			s.	$^\circ$	$'$
Longitude of ascendant	-	-	0	2	30 (say)
Longitude of \mathcal{D}	-	-	6	1	3
			<hr/>		
Total	-	-	6	3	33
Subtract longitude of \odot	-	-	2	12	26
			<hr/>		
Result: longitude of \oplus	-	-	3	21	7
			<hr/>		

That is, 3 signs, 21 degrees, 7 minutes; or $\odot 21^\circ 7'$.

ASPECTS.

These should be reckoned out and added at the foot of the horoscope, commencing with the \odot and \mathcal{D} , then ♄ ♅ ♆ ♁ ♂ ♂ ♂ . Take each planet separately and note its aspect (if any) to each of the others in turn. This is not the place to enter into any description of their value, but it may not be out of place to add a word or two on how to calculate

¹ Both \mathcal{Q} and \oplus can be omitted, at first, in order to simplify matters.

Except that the ☉ is placed first, being the most important, the order of rapidity ♃ ♄ ♀ ☉ ♂ ♅ ♄ ♃ ♄ ♃ is that adopted.

The student will do well to verify the ☉'s declination, and also to compare the declinations of the planets with that of the zodiacal degrees they occupy. The difference is due to the planets' *latitude*.

NOTE ON THE STATIONARY POSITIONS OF THE PLANETS.

While the motions of the planets round the Sun are quite uniform in themselves, yet the fact that we on the earth are also moving at the same time, and at a different speed, causes the *apparent* motion of these bodies to vary, being sometimes more than twice as much as at others, and often causing them to appear to move backwards in the Zodiac; this being called retrograde motion, indicated in the Ephemeris by the sign ♄. It is evident that in changing their apparent motions from direct to retrograde and *vice versa*, there will be a point at which the planet is stationary.

In the case of the swifter planets, ♂, ♀, and ♃, this has been shown in the Ephemeris, the date on which the planet's motion changes from direct to retrograde and the zodiacal position it occupies when stationary being given at the foot of the page.

Since the apparent motion varies very greatly at these periods, when a birth occurs within a few days thereof, these dates should always be made the basis of calculation, rather than the dates given in the column above, for the sake of greater *accuracy*. For instance, the position of

♃ was at noon on November 14th, 1860	-	♄ 13 37
and at noon on November 21st, 1860	-	♄ 13 19 (♄)

but this does not mean that it only moved 18' in a retrograde direction during the seven days elapsed. For the *stationary position* given at the foot of the page shows that it reached ♄ 14°25' on the 17th. Therefore, if we wished to calculate the noon position of ♃ on, say, the 19th, we should work thus:—

November 17th, noon, ♃ stationary in	-	♄ 14 25
.. 21st, .. ♃ retrograde in	-	♄ 13 19
Motion in 4 days (retrograde)	-	1 6
.. .. 2 ..	-	0 33
which subtracted from its position at noon on the 17th (since the motion is retrograde)	-	14 25
gives its position at noon, November 19th	-	13 52

Even this result is not quite accurate, owing to the irregularity of movement when near 'stationary' points, but it is not far enough out to signify.

A similar procedure should be followed in the case of ♂ and ♀. The remaining planets are so slow in their motions that for practical purposes they may be regarded as being stationary in the degree occupied on the date immediately *before* that on which the sign R (retrograde) or D (direct) occurs. A little careful study of the varying motion of the planets, as indicated in the Ephemeris, will very well repay the student in helping him to establish his knowledge on a sound basis.

OTHER EXAMPLES.

EXAMPLE 2. *Let us now consider a horoscope calculated for Liverpool. We will suppose a birth occurred at noon by the clock, at Liverpool, January 1st, 1904.*

The first thing to be noted is that this is noon by Standard Time, *i.e.*, Greenwich mean time. In other words at the moment of birth it was noon *at Greenwich*, the time for which the planets' places are calculated. Hence, these can be simply copied out of the Ephemeris as there given, and may be written down on a spare piece of paper at once.

But we must beware of taking the Sidereal Time at noon on that day, and erecting our figure therefrom by a reference to a Liverpool Table of Houses. For, as was said on p. 135, the houses must always be calculated for LOCAL MEAN TIME. Now the geographical longitude of Liverpool is 3°5' W., which at the rate of 4m. a degree is 12m. 20secs. Since the longitude is West, and the Sun travels round the earth from east to west, we can see at once that the Sun will arrive at the meridian at London (Greenwich) *before* it does at Liverpool; and therefore the local time at Liverpool must be slow of Greenwich by the above amount, 12m. 20s. In other words, when it is 12.0.0. noon at Greenwich it is only 11.47.40 a.m. at Liverpool. Hence it is this latter time that we must use to determine the houses of the horoscope. We say:—

	<i>h.</i>	<i>m.</i>
Sidereal Time, noon, Jan. 21st	20	0
less number of days between Jan. 1st and Jan. 21st		
multiplied by 4m. ; <i>i.e.</i> , 80m.	1	20
gives Sidereal Time, noon, Jan. 1st	18	40
less diff. of local time, London and Liverpool (<i>or</i> , as it may be otherwise put, diff. of longitude)	0	12
gives Sidereal Time at time of birth, Liverpool	18	28

We therefore find this Sidereal Time in a Table of Houses for Liverpool, and erect our figure accordingly, putting in the planets as before explained.

Now, in this instance the difference due to local time is not very great, amounting to only about 3° on the M.C. or 5° on the Ascendant. But the principle is identical in all cases, and this matter should be invariably paid attention to; for though in this particular instance the error would not be so very great if the figure had been erected for 18h. 40m. Sidereal Time instead of the correct Sidereal Time, 18h. 28m., yet in some cases the difference might be considerable.

EXAMPLE 3. *Calculate a horoscope for midnight, January 1st, 1904, New York, 40.45 N., 73.58 W.*

Now the difference of time between London and New York is 4h. 56m., this being the time p.m. at London when noon at New York, and the time a.m. at London when midnight at New York. Hence the planets must be calculated for 4.56 a.m. on the 2nd of January, 1904. For the Sidereal Time, say:—

Sidereal Time noon, January 21st	-	-	h.	m.
less (days from January 1st, \times 4m.)	-	-	20	0
			1	20
Sidereal Time noon, January 1st, 1904 (approx.)	-	-	18	40
add time to midnight	-	-	12	2
(24h. mean time = 24h. 4m. sidereal time)				
			30	42
subtract circle of 24h.	-	-	24	0
Sidereal Time, midnight, January 1st, 1904			6	42

Look in the Tables of Houses for New York for this Sidereal Time and set up the figure accordingly.

N.B.—It should be noted that “midnight, January 1st,” implies “0.0 a.m., January 2nd”: the latter expression is to be recommended as being less ambiguous.

STANDARD TIME.

It will be of interest perhaps to work this problem out in full, by way of showing how it should be done where absolute precision is required.

First it should be explained that although New York is distant from

Greenwich $73^{\circ}58'$, or in time $4h. 55m. 52s.$, for convenience New York uses a standard time exactly five hours later than Greenwich. Consequently our figure must be cast for a time that is really four minutes after true midnight at New York.

In all problems involving Standard Time based on G.M.T. and now so largely in use all over the world, it is best and quickest (a) to convert it into G.M.T., (b) to find the S.T. at Greenwich, for the given moment; and (c) to add or subtract the difference in longitude, thus giving the true S.T. at birthplace. The Ephemeris informs us that

	<i>h.</i>	<i>m.</i>	<i>s.</i>
Sidereal Time at noon, Greenwich, 1/1/04 was	18	38	53.3
Mean Time elapsed at 5 a.m. Greenwich, 2/1/04 (which is the equivalent of 12 p.m., 1/1/04 New York)	17	0	0
correction from mean to sidereal time (17h.)		2	47.56
	35	41	40.86
less circle of 24h.	24	0	0
	11	41	40.86
gives S.T. at Greenwich, at the moment when it is midnight, standard time at New York	4	55	52
less long. $73^{\circ}58'$ W. =			
gives Sid. Time at midnight, Standard Time, New York	6	45	48.86

For some places in America and in certain European countries where Standard Time is in use, it may differ very nearly half an hour from the true local time of the place. Standard Time is fully explained in Chapter VI of SECTION A., where an alternative method of working these and similar calculations is explained.

HOROSCOPES FOR PLACES IN SOUTH LATITUDES.

EXAMPLE 4.—*Erect a figure of the heavens for 10.15 a.m. (local time), January 1st, 1904, for any place in latitude $51^{\circ}32'$ S.*

We first say:—

	<i>h.</i>	<i>m.</i>
Sidereal Time noon, January 1st, 1904	18	40
less time before noon	1	45
gives Sidereal Time at birth	16	55

We first calculate the planet's places for the equivalent Greenwich time whatever that may be, which of course depends entirely on the *longitude* and not at all on the *latitude* of the place in question. We then apply the following rule.

RULE.—(1.) Add to the Sidereal Time at birth 12h. 0m. (*not* 12h. 2m. *remember*). Call this the new Sidereal Time and set up the map in the ordinary way, using the Table of Houses for the given latitude North. This gives us 28h. 55m. = 4h. 55m. for our new S.T., and we find on the cusps of the houses, using the London Table,

(10)	(11)	(12)	(Asc.)	(2)	(3)
♏	♏	♏	♏	♏	♏
15°	22°	23°	18°30'	11°	10°

—————(2.) Having found the signs on the cusps, as given in the Table of Houses for the new Sidereal Time, write in the *same* degrees but the *opposite* signs. From this we find the true house cusps to be:—

(10)	(11)	(12)	(Asc.)	(2)	(3)
♏	♏	♏	♏	♏	♏
15°	22°	23°	18°30'	11°	10°

CONCERNING FOREIGN HOROSCOPES.

In connection with some Foreign Horoscopes it should be borne in mind that, while latitude is invariably measured N. or S. from the equator, longitude may be measured from any point. England and most countries now adopt *Greenwich*, but the French take *Paris*. It is well to remember this in dealing with French horoscopes.

In calculating *Russian* horoscopes, it must first be definitely ascertained if the date is given according to the Russian calendar or no: if it is, *add twelve days* in order to bring it to the English calendar: thus, 21st October (Russ.) is 2nd November (Eng.). After 1900, *thirteen* days should be added instead of twelve. But Russian dates are now generally given thus, Jan. 1/14, 1904.

FOR RAPID WORK.

A QUICK WAY OF USING THE CONDENSED EPHEMERIS.

The method already given may after a little practice be considerably shortened in the following way. We will take our former example, 1.18 a.m., 3/6/'65, London.

First, copy down the planets' noon positions (except ☿) for June 4th and May 28th, 1865 and subtract; the "downward" subtraction soon becomes quite easy. From this we find the motion of each planet in 7 days. Dividing this by 7 gives us the motion of each planet in *one* day.

Now what we really want is to find the planets' places for 13 hours 18 minutes *after* NOON JUNE 2ND. But June 2nd is just five days after May 28th, and we therefore multiply each item by 5, which gives us the motions in 5 days. Next we add $\frac{1}{2}$ the motion in *one* day, and we have the motions in $5\frac{1}{2}$ days. We now add $\frac{1}{12}$ of these last quantities, which gives the motion in the remaining hour. It is not necessary to concern ourselves with the odd 18 minutes, for only ☿, ♀ and ☉ ever move as much as 1' in this time, and never more than that. It only remains to write underneath the positions at noon on May 28th and add up each column, and we have the position of each planet at the time of birth. Our working will be made thus:—

	♈ ♌	♊ ♎	♍ ♏	♈ ♌	♊ ♎	♍ ♏	☉ ♏	☿ ♏
MAY 28TH	28 16	10 1	28 18	24 20	26 19	2 20	7 7	9 16
JUNE 4TH	27 53	10 11	28 42	24 2	25 29	6 26	13 49	9 55
<i>motion in 7 days</i>	- 0 23	+ 0 10	+ 0 24	- 0 18	- 0 50	+ 4 6	+ 6 42	+ 0 39
<i>in one day</i>	- 0 3'3	+ 0 1'4	+ 0 3'4	- 0 2'6	- 0 7'1	+ 0 35'1	+ 0 57'4	+ 0 5'5 × 5
<i>in 5 days</i>	- 0 16'5	+ 0 7'0	+ 0 17'0	- 0 13'0	- 0 35'5	+ 2 55'5	+ 4 47'0	+ 0 27'5
<i>in $\frac{1}{2}$ day</i>	- 0 1'7	+ 0 0'7	+ 0 1'7	- 0 1'3	- 0 3'6	+ 0 17'6	+ 0 28'7	+ 0 2'8
<i>in one hour</i>	- 0 0'1	+ 0 0'0	+ 0 0'1	- 0 0'1	- 0 0'3	+ 0 1'4	+ 0 2'4	+ 0 0'2
<i>in 5d. 13h.</i>	- 0 18'3	+ 0 7'7	+ 0 18'8	- 0 14'4	- 0 39'4	+ 3 14'5	+ 5 18'1	+ 0 30'5
MAY 28TH noon	28 16	10 1	28 18	24 20	26 19	2 20	7 7	9 16
3/6/65: 1 a.m.	27 57'7	10 8'7	28 36'8	24 5'6	25 39'6	5 34'5	12 25'1	9 46'5

This method tends to prevent errors in transcribing the planets' places, by avoiding much turning over of the pages, and saves time, because eight positions are worked out simultaneously. It looks somewhat complicated on paper, but it is easy enough in practice.

The advantage of the method is that everything is put in such a form that the columns have only to be *added*, and no subtraction occurs at all except in the case of ♈ and retrograde planets. These are marked -, and the remainder + to save any error through possible oversight.

The position of ♀ calls for comment, as it differs from that already given. This is due to the fact that its motion happens to be far less regular than usual, owing to its stationary position on May 28th; the 89°38' on p. 139 was in fact calculated from the noon positions given in *Raphael's Ephemeris* for June 2nd and 3rd, 1865. It forms a useful illustration of the unavoidable limitations of a Condensed Ephemeris of

this character. The discrepancy is not important from a practical point of view.

Mercury's position must of course be found separately, in the manner described on p. 139.

With regard to the Moon, as there are some readers who find themselves puzzled by the Proportional Logarithms recommended, the following alternative method may be useful.

If the Moon moved exactly $12^{\circ}0'$ in the twenty-four hours, it is obvious that its motion in any given time would be *half the number of hours and minutes expressed as degrees and minutes*. This fact can be utilised to find the Moon's place very easily, the odd amount above or below the 12° being proportioned to the period concerned, in the following manner.

The Moon's daily motion on the given date was $11^{\circ}49'$; this is $11'$ less than $12^{\circ}0'$. To find its motion in $13\text{h. }18\text{m.}$, we therefore say which

			<i>h.</i>	<i>m.</i>
Time after noon 2/6/65	-	-	13	18
Half the above	-	-	6°	39'
Less $\frac{1}{24}$ of 11'	-	-		6
			6	33
Add to \mathcal{D} 's place at noon 2/6/65	-	-	$\overline{19}24$	$\overline{30}$
			<u>1</u>	<u>3</u>

gives us the correct place of the \mathcal{D} at $1.18\text{ a.m., }3/6/65$.

As another instance, take the following; $2.8\text{ p.m., }1/1/04$, New York. New York Standard time being 5 hours slow of Greenwich, this is equal to $7.8\text{ p.m., }1/1/04$, Greenwich Mean Time (G.M.T.) The Moon's daily motion is $14^{\circ}22'$ less $15^{\circ}42'$, i.e., $14^{\circ}40'$. We then say

			<i>h.</i>	<i>m.</i>
	Time elapsed since noon, G.M.T.	-	7	8
\mathcal{D} 's daily motion $14^{\circ}40'$	motion at 12° per day ($= \frac{1}{2}$)	-	3°	34'
	" " 2° " ($= \frac{1}{6}$ of 12°)	-		36'
	" " $40'$ " ($= \frac{1}{3}$ of 2°)	-		12'
	\mathcal{D} 's position noon G.M.T. 1/1/04	-	$\overline{11}15$	$\overline{42}$
Moon's position at $7.8\text{ p.m., G.M.T. }1/1/04$			$\overline{11}20^{\circ}$	$\overline{4'}$
= $2.8\text{ p.m. }1/1/04$ at New York				

Many students prefer this method as quicker in practice even than Proportional Logarithms.

CONCLUDING REMARKS.

IN taking leave of those of our readers for whom this chapter is specially intended, we would offer a word of warning against following these rules, or any others, *blindly*. We have spared no pains to make all points as clear as possible, in order to prevent any possible confusion of thought. But all our labour will have been thrown away if the student imagines that by a mere mechanical copying of these methods, without thought, he can expect to succeed. For THOROUGHNESS and CARE are indispensable factors in good-work of any kind; and while the calculation of a horoscope, as herein described, is not half so difficult as an ordinary fifth-standard Board School sum, one can no more expect a correct answer without pains and attention in the former case than in the latter. Experience shows that when beginners make mistakes it is in most cases not from ignorance or want of adequate explanation but from a lack of due attention to the details given, or of really intelligent interest in the explanation afforded. To put it in plain language, they will not take pains; and they therefore do not deserve to succeed.

It should hardly be necessary to point out that no correct judgment can be formed from an inaccurately calculated horoscope, although this does not mean that a great amount of calculation is needful.¹ For if the Moon's place be found for the time of birth, the planets may even be inserted at their *noon* positions, and the horoscope will still be substantially correct, if the Sidereal Time has been accurately computed, so that the "houses" are right; but—and this is important—the horoscope, if so made for simplicity or quickness' sake, should be endorsed P.A.N. or "planets at noon," otherwise it will be misleading and cause mistakes.

See the remarks on "accuracy and precision" at the beginning of this chapter

CHAPTER II.

A FEW LESSONS IN ELEMENTARY ASTRONOMY.

I.—WHAT DO WE MEAN WHEN WE SPEAK OF THE ZODIAC?

ONE often hears an enquirer say: "But, after all, what *is* the Zodiac we hear so much about?" And the beginner to whom the question is put is often unable to answer.

Thereupon one of the multitudinous encyclopædias that the past century gave birth to is brought into requisition, and the learner is informed that the Zodiac is "a series of constellations of irregular extent lying in or about the plane of the Ecliptic"—whatever that may be—"to which various fanciful names were given by the ancients, from their supposed resemblance to certain animals, whence the term Zodiac . . . " or some similar pronouncement to that effect.

All of which leaves the enquirer as wise as before, or if anything rather more confused. For he has already learned that the signs are equal in extent, the whole twelve of thirty degrees each making the circle of 360° . And now he is told that they are "of irregular extent"!

It will be well, therefore, before going further to examine ourselves and come to a definite understanding as to what we mean by the "Zodiac," in the sense that the term is employed by modern astrologers. Whether it is true that the constellations were given fanciful names by the ancients on account of supposed resemblances to certain animals, we need not stop now to discuss; partly because we are not at present concerned with the Zodiac of the Constellations at all, and partly because before we have proceeded very far with the study of Astrology we shall find that these "resemblances" are by no means either fanciful or supposititious; that is to say at least so far as the *nature* is concerned, of the various zodiacal Signs with which they are associated.

We will therefore turn our attention to the Zodiac that we have to deal with in casting an ordinary horoscope; and here and elsewhere when

the word Zodiac is used without qualification it must be taken in this sense.

WHAT IS THE ZODIAC?

What then is the Zodiac?

In a word, the Zodiac is—*the Earth's orbit round the Sun.*

This statement requires a little thought to make its meaning clear, for the Sun is often spoken of as moving through the Zodiac at the rate of one sign a month, or one degree a day. The distinction implied is more apparent than real, for since the Earth makes one complete revolution about the Sun in a year, the Sun, as viewed from the standpoint of the Earth, will *appear to move* in a contrary direction—just as objects viewed from a moving train appear to move in the reverse direction—at the same rate, the whole circle in $365\frac{1}{4}$ days, or roughly a degree a day. Thus we see it really comes to the same thing, so far as our measurement of the movement is concerned (which is all we really have to do with), whether we call it the Sun going through the Zodiac, or the Earth moving round the Sun.¹

Let us suppose it is Christmas time, when the Sun enters the sign Capricorn on the 21st of December. This means really, that the Earth has then arrived at that part of its orbit when the Sun appears to be in the sign Capricorn. Looking at the question from the standpoint of the Sun, we might say that the earth had entered the opposite sign Cancer. But it comes to the same thing, whatever we call it; the Earth has reached a certain point of its orbit, the point where the Sun has its greatest southern declination, and therefore it has then that particular relation to the Sun that has from time immemorial—long before the present theories of astronomy were currently accepted—been called the “Sun's entry into Capricorn.” Whether we call it the Sun entering Capricorn, or the Earth entering Cancer, makes no real difference. The actual question at issue is, the mutual relation of the Sun and the Earth.

Since similar considerations to the above apply to the other signs, it will be seen that this is what the whole meaning of the Zodiacal Signs and their various influences is based upon—the presence of the earth at various points of its orbit. The starting point is the first point of *Aries*; half way round the circle is the first point of *Libra*; and points of the

¹ See second footnote on p. 160.

circle intermediate between these represent in a similar way the first points of *Cancer* and *Capricorn* respectively, the other signs taking up their positions in due order between these cardinal points.

That is all. It is really so simple that it seems hardly necessary to talk of an 'explanation.' Yet many even well-informed people are quite unable, if anybody asks them, to give a clear explanation of what an astrologer means by the Zodiac.

WHY ARE THE CONSTELLATIONS OF IRREGULAR EXTENT?

A word or two may be added as to the "irregularity of extent" of the constellations spoken of at the commencement, which may perhaps have somewhat puzzled the reader. The cause of this irregularity may be conceived of as due either to our ignorance of the true limits of each constellation—points on which astronomers are by no means agreed—or else to the circle of this Great Zodiac being to some extent *oblique* to the plane of the solar system, and to the latter being at the present time by no means in the centre thereof, whereby the stars limiting each constellation appear "foreshortened," nearer each other in some cases and farther away in others.

However this may be, what we are really concerned with now is the fact that the Zodiac of the Signs with which our study deals, in spite of its sympathetic relation to this uneven Zodiac of the Constellations, is itself quite evenly divided into twelve uniform spaces or "signs" of thirty degrees each, familiar to us under the same names and possessing in themselves the same nature as the Twelve Constellations.

As regards the constellations, it may be said briefly that the Zodiac of the Constellations would seem to be concerned with macrocosmic evolution, or the life of the Solar System as a whole, as distinguished from microcosmic or human evolution, which is demonstrably related to the Zodiac of the Signs; and that every point in each circle corresponds with the equivalent point in the other.—*Corresponds*, it is to be noted, for the two Zodiacs do not coincide in position, and therefore the "Signs" in one Zodiac overlap, so to speak, the "Signs" in the other.¹

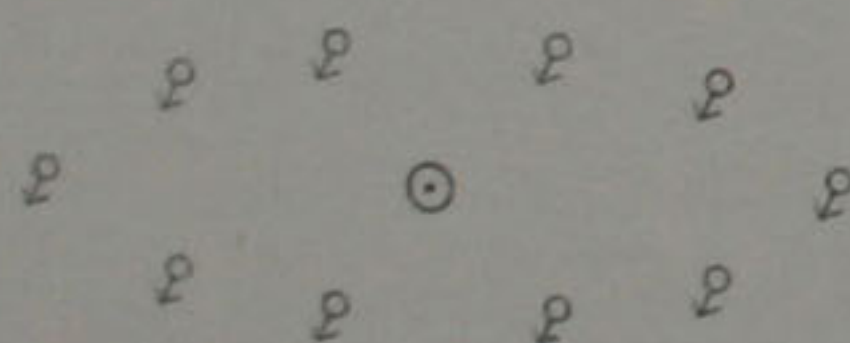
¹ In fact, the first degree of the Zodiac of the Constellations is located in about the nineteenth degree of the Zodiac of the Signs, the discrepancy being due to the "precession of the equinoxes," into a consideration of which it is unnecessary to enter at our present stage. The two Zodiacs did coincide, however, in about the year 480 A.D.

With these considerations we may dismiss all thought of the Constellations, with which we have now nothing further to do, from our minds.¹

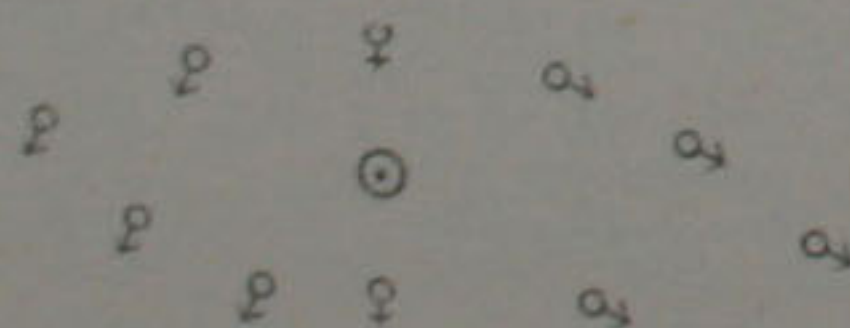
II.—WHERE DOES THE ZODIAC START? WHAT IS THE MEANING OF DECLINATION?

We have learned that the Zodiac is, practically, the orbit of the earth. We have now to enquire how the point $\gamma 0^\circ$, which we have often been told is the commencement of the Zodiac, is determined, and also why that particular point should be chosen rather than any other. To do this, it will be necessary to consider the question rather more in detail than in our previous paper. There are two ways of looking at the matter, and it is best to take first one and then the other, and afterwards fit them together.

(1) As everybody knows, the earth is constantly rotating on its axis, like a top, and at such a rate that it performs just one complete rotation in a day. Those who remember their top-spinning days will recollect that when a top is thrown down straight and spins vertically, like this (♀), it *stays where it is*, and does not move. Whereas, on the other hand, if it is thrown down obliquely, so that it spins slantwise, like this (♂), it circles round in a more or less elliptical orbit, which we may indicate in this way,



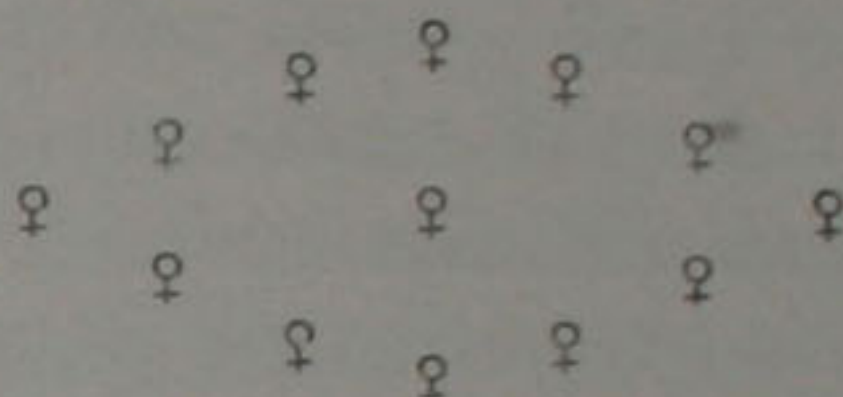
and a point to be especially noted in this connection is, that the top always remains parallel to its first position, not leaning first to one side and then to another, as a bicyclist riding on a circular track would do, like this, for instance:



Now the motion of the earth in its orbit is exactly like that of the top, the axis of the earth corresponding to the peg of the top and remaining

¹ This question is fully discussed in chapter ii. of *The "Reason Why" in Astrology*.

constantly parallel to itself. Consequently, if we imagine a ring round the middle of the body of the top, which we may indicate by nicking two little dents in the circle of our symbol, thus \mathcal{E} , we shall see that the centre of the orbit, which we have marked with a \odot , will not always be in a line with this ring. To put it in technical language, the plane of the orbit and the plane of the ring (equator) will not coincide, but will be inclined to one another at an angle depending upon the "slant" of the peg. To grasp this more easily, let us imagine a top spinning round *upright* and performing a revolution round a stationary top, thus,



in considering which we must of course remember that the pegs of the tops are supposed to be upon a level surface. Here we see that the ring of the moving top will always be in the same plane whatever the position of the top, and that the ring of the stationary top will be in that plane also. But when we consider the top spinning slantwise, we see that in that case the two planes would *never* coincide, but that there would be two and only two positions of the top in which a plane through the ring of the moving top would pass through the centre of the stationary upright top, for in all other positions the centre of the stationary top would be either above or below the plane passing through the ring.

It is perhaps hardly necessary to say that a "plane" is a perfectly flat surface of unlimited extent.¹ It may assist the imagination to picture a plane as a postcard or visiting-card of enormous size but no thickness to speak of. It is very important that the facts explained in the preceding paragraph should be properly understood, and therefore the little experiment now to be described is well worth the trouble of carrying out.

Get a small round or oval table, and stand it by the fireplace. Stick a black hat-pin into a cork or a little cardboard box, or anything that will keep it firmly fixed in an upright position, and place it in the centre of the table. This will then represent the *centre* of our stationary top, while the edge of the table will represent the course traced out by the peg of

¹ The word has been rendered somewhat vague of late years by its constant employment in such phrases as "the physical plane," "the astral plane," in which it is of course used in a totally different sense.

the moving top. Now take an apple (or a round potato will do) and run a knitting needle through the core: next cut the apple right through the middle, so that you have two half-apples, really, threaded on the needle. Now remove one half-apple for a moment, run the needle through the middle of a large card, and replace the half-apple, so that the card appears as though by some magic it had been run right through the whole apple. Fix the lower end of the needle *slant-wise* into a large piece of bread, so as to hold it firmly, and our "apparatus," is complete. The apple now represents the body of our moving top, while the card shows the plane of the ring.

Now place the mounted apple close to the edge of the table, as near as possible to the fireplace, and turn the bread round till the knitting needle is parallel to the fireplace. In this position it is clear that if the card were large enough the knob of the hat-pin would be touched by it; in other words, they must be "in the same plane." Now move the mounted apple slowly round the table, being careful to keep the knitting needle constantly parallel to the fireplace, or, in plain speech, always pointing the same way. It will then be seen that the knob and the card will not be in the same plane when the apple is at any other part of its course, except only when at that point which is opposite to the one from which we started, *i.e.*, on the side of the table farthest away from the fireplace.

This may seem a childish experiment, but it helps to fix the idea clearly in the mind.

If we have once grasped the significance of these illustrations, all the rest is easy enough. For the Earth corresponds to the slanting top, and the Sun to the upright one, around which the slanting top revolves. The "ring" is the Earth's Equator, and the circle or ellipse that the top moves in, namely the line traced out by the peg of the top, is the Earth's Orbit, which is what in the ordinary sense we call the Zodiac. We can tabulate this, for the sake of better getting hold of the idea, thus:

Upright top				
Slanting top		corresponds to the	Sun	☉
" " (peg)	" "	" "	Earth	⊕
" " (ring)	" "	" "	Earth's Axis	{ N. Pole
" " (course traced out)	" "	" "	Equator	{ S. Pole
Points in course where centre of upright top is in line with ring on slanting top	" "	" "	Orbit	0° Lat.
	" "	" "	Equinoxes	Zodiac
				{ 0° ♈
				{ 0° ♎

(2) Having thoroughly grasped this state of things, which we must remember is viewing the whole affair from the standpoint of some distant spot outside the solar system, let us leave it for a moment and look at the whole question from the standpoint of a dweller on the Earth.

Let us suppose an astronomer at a certain place on the Equator takes an observation of the Sun, at noon on the 21st of March (Vernal Equinox). He will find it immediately overhead; so that if he arranges a plummet line and looks along it he will see the Sun in a line with the weight and the string. Let us suppose he desires to make a precisely similar observation twenty-four *sidereal* hours later: well, he will have to travel about seventy miles to the E., and slightly ($0^{\circ}24'$) N. at the same time. Similarly, if he desires to follow the Sun in its course so that he may be *exactly* beneath the vertical ray at intervals of twenty-four sidereal hours, he will have to travel about the same distance every day and in about the same direction till the 21st of June, when for three days he will have to travel due east; that is, parallel to the Equator: then he will have to turn southwards and follow a similar route east-and-by-south till on September 22nd (Autumnal Equinox) he reaches the Equator, which he will then have to cross. [Note the words *sidereal* and *exactly* in this paragraph, as they are important.]

In short, if he follows the vertical beam of the noonday Sun consistently throughout the year he will travel over the route marked out in the diagram facing title-page, which shows the position of the Sun at noon, relative to the Earth's Equator, during the whole year. The world is shown in two hemispheres, as in the ordinary geographical map, for the sake of clearness.

The straight horizontal line is the Earth's Equator and the curved band shows the track of the Sun's vertical ray at noon throughout the year: the dotted lines indicate the axis of the Earth. The point marked \odot is $23^{\circ}27'$ north, and the point marked \odot the same distance south of the Equator, and on June 21st and December 21st the noon Sun will consequently be vertical at all places situated in the respective parallels of latitude.

A word of caution may be useful here. It should be obvious from what has gone before that if the astronomer were content to make his observations after a lapse of 24 hours of *true solar* time,¹ he need only

¹ For a definition of true solar time, see p. 10.

travel due N. and S. (along the line $\infty \infty$) and not round the world at all. The actual path traced out, from moment to moment during the year, by the Sun's vertical ray is similar to the track of a thread of cotton being wound on a bobbin, beginning in the centre and gradually diverging away on one side, returning and crossing to the other: it could be fairly well represented on a geographical map by drawing 365 parallel lines between the Tropic of Cancer and the Tropic of Capricorn.

THE MEANING OF DECLINATION.

We are now prepared to understand the meaning of declination. As the year advances, from March 21st its astronomical commencement, the Sun at noon "declines" away from the Celestial Equator¹ more and more each day till it reaches its *maximum north declination* ($23^{\circ}27'$) about June 21st, the Summer Solstice, when for three days it appears stationary, and then declines less and less each day till the Autumnal Equinox is reached on September 22nd. After that a similar process is gone through on the other side of the Equator, the *maximum south declination* being reached at the Winter Solstice, December 21st. The return to 0° declination on the succeeding 21st of March marks the conclusion of one year and the commencement of the next. The diagram facing p. 1 very clearly shows how the seasons are caused, and also why it is that at the antipodes the seasons are the reverse of ours. It also shows why the Equinox should be the starting of the Zodiac and the commencement of the year, astronomical year, that is; for at that time day and night are equal all over the globe. For clearly, if the Sun is vertical at the Equator at noon, by the motion of the Earth he will appear to pass over the whole extent of the Equator during the twenty-four hours, and hence both eastern and western hemispheres will receive a full day and a full night of twelve hours each.

Why the one equinox should be chosen rather than the other it is difficult to say, for the autumnal equinox is really the *vernal* equinox for dwellers in the southern hemisphere. It is possibly because, most of the civilised nations occupying the northern hemisphere, astronomers consulted their own convenience in making the year commence in their own spring season. But it is probable that there is a deeper reason, which we moderns have not yet re-discovered.

¹ An imaginary circle in the heavens, in the same plane as the Earth's Equator.

It now only remains to fit together the two points of view presented in (1) and (2). This can be done most readily by the reader himself with the aid of our apple and knitting needle; a little practical experimentation in this way will teach far more than pages of description. The apple, or what answers better still, an orange, will represent the Earth, and the knitting needle, which should be stuck through the centre, its axis. A black line, to indicate the Equator, should be drawn round the orange, and it should never be forgotten when moving it round a table lamp or any object taken to represent the Sun, that the knitting needle axis should always be kept *slanting in the same direction*. If a shorter knitting needle is inserted at right angles to the first and through the "equator," it may be taken as indicating the "equinoxes" when the orange has arrived at such a position in its orbit that the table lamp and the shorter needle are in line with each other. Excellent descriptive diagrams may be found in many modern geography books, but the above experiment is really more instructive.

III.—SIDEREAL TIME. RIGHT ASCENSION. CELESTIAL LONGITUDE AND LATITUDE.

In all astronomical observatories there will be found what is called a Sidereal Clock. This is a very carefully regulated time-piece so adjusted as to indicate exactly twenty-four hours during one complete revolution of the earth. In other words, if at Greenwich an observation of any fixed star, say Sirius, shows it to be exactly on the meridian or culminating or "southing"—all different terms for the same thing—at a certain time by this clock (which in this case would be *6h. 40m. 58s.*) on the 21st of March, 1905: then on the next day or any number of days later, whenever the same observation was made, this clock would be found always to indicate the same time, namely, *6h. 40m. 58s.* This time is termed the *Sidereal Time of the culmination of Sirius*, or, using the more common expression, the *Right Ascension of Sirius expressed in time*.

If we consider the whole revolution, twenty-four hours, as $360^{\circ}0'0''$, we can easily see that *6h. 40m. 58s.* would be equivalent to $90^{\circ}+10^{\circ}+14'5''$, or $100^{\circ}14'30''$, which would then be called the Right Ascension *in arc*, or

more briefly *Right Ascension* or R.A. of Sirius. We shall have to allude to this expression later.

When however we come to the Sun, and compare its Right Ascension on the same date at noon,¹ which we find from the *Nautical Almanac* to be 0h. 0m. 47'02s., with its R.A. next day, we find a singular discrepancy; for on March 22nd its R.A. is given as 0h. 4m. 25'33s., and on March 23rd, 0h. 8m. 3'55s. What is the meaning of this difference in behaviour? Why does the Sidereal Clock indicate always the same time for the culmination of any fixed star, such as Sirius, and yet give a time about four minutes later each day when the Sun is in question?

The reason is not so very far to seek. In the last lesson we saw that the earth, in turning round like a slanting top on its peg, also resembled the slanting top in performing a slow circular dance, as it were, this dance being performed about the Sun as a centre. Now it will be clear that at each revolution on its axis the earth will have moved *a little further on* in its path round the Sun, and when we remember that it completes the whole circle in a year of 365 days we can see that its daily advance is almost exactly one degree; and by turning back to the diagram facing p. 1, we shall have no difficulty in seeing that the effect of this, to an observer on the earth, is to make the Sun appear to move at precisely the same rate in the opposite direction.² Hence when the earth has made one complete axial revolution from west to east, it will still not have completely "caught up" the Sun, who has meanwhile apparently moved one degree—equivalent to about 4m. in time—in the same direction. Consequently at true noon the Sidereal Clock will indicate time that is about 4m. later each day. In other words, it will gain that much per day and will therefore at the end of a year be a whole day in advance, having registered 366 days (sidereal) as against the 365 days (mean solar) of the ordinary civil reckoning. A "sidereal"

¹ We are here referring to *apparent noon* or the Sun's culmination, or what astrologers would call ☉ & M.C.

² A student has drawn attention to a possible misconception that may be placed upon the expression "in a contrary direction," on p. 152. This is not of course intended to imply that the apparent motion of the Sun is in a direction from E. to W. among the stars, but that as the Earth actually moves what we will call "forward," so the Sun appears to move "backward"—like the two toy figures in the old-fashioned weather glass. In short, while the direction considered as linear is properly called "contrary," it is not so when thought of as taking place about a centre.

day is thus 4m. short of a "mean solar" day, which is the $\frac{1}{365.25}$ th part of a year.¹

To put the matter in a nutshell, a sidereal day is 360 and a solar day is 361 degrees of the earth's rotation.

From this we see that the R.A. of the meridian at any place will also advance 1° per day if observations be made at the same moment of mean or ordinary clock time on two successive days. And it thus becomes clear why the column "Sidereal Time at Noon" in the Ephemeris increases by about four minutes each day, a circumstance that greatly puzzles the beginner.

RIGHT ASCENSION AND DECLINATION.

From what has been said it will be seen that a very easy way to determine the position of a star or planet would be to wait till it came to the meridian, and then to note what time it was according to the Sidereal Clock. And this, stripped of all the various refinements rendered necessary for exactness of observation, is just what astronomers do in determining the position of any celestial object. Having noted the time, they say "sidereal time of culmination, so-and-so," or more usually "R.A. so-and-so," the latter being nowadays most frequently given in *h.m.s.* rather than in $^\circ$. It is in this way that the Right Ascensions of the Sun, Moon and planets are determined, either by observation or by calculation, and it must be borne in mind that R.A. indicates *position* in the celestial sphere just as much as *time* by the Sidereal Clock.

In order to definitely fix any point, however, it is not enough to give its R.A.; for a little reflection will show that two or three stars or planets might culminate at the same moment, and yet not be in the same place. Therefore the *Declination* of a planet or star is always recorded as well as the R.A. Declination is the angular distance N. or S. of the celestial equator which as before explained is practically equivalent to the earth's equator, being the track traced out in the celestial sphere by the zenith point of any place on the earth's equator.

¹ The Mean Solar Day (ordinary civil day or clock day) is the *mean* lapse of time between one true or apparent noon, \odot & M.C., and the next. This latter interval varies somewhat, and hence the use of the word "mean," as the various discrepancies are all lumped together and then evenly apportioned over the whole year for convenience of reckoning.

Right Ascension and Declination are in fact equivalent to geographical Longitude and Latitude. For instance the star *Gamma Draconis* has R.A. 17h. 54m. 24s., and Dec. $51^{\circ}30'N.$, and would consequently be exactly vertical at London, which has $51^{\circ}30'N.$ Latitude, at the very moment when $\gamma 0^{\circ}0'$ was culminating at all places having 17h. 54m. 24s. W., i.e., 6h. 5m. 36s. or $91^{\circ}24'0''$ E. Longitude—at Lhasa, in Thibet, for example.

And in a similar way any point in the celestial sphere can be at once located if its R.A. and Dec. are known, just as we can at once find a place in the map if we know its geographical longitude and latitude.

CELESTIAL LONGITUDE AND LATITUDE.

If we revert for a moment to our knitting needle and orange experiment, with its two circles of Equator and Ecliptic, and if we stick a pin in the orange at any point to signify a star whose position we wish to determine,—considering the orange to represent the celestial sphere, and not the earth, for the moment,—we shall readily see that the position of the pin can refer to *two* oranges, so to speak, one having the *Equator* circle passing round its middle, and the other having the *Ecliptic* circle passing round its middle; thus, the pin might be $1\frac{1}{2}$ in. from the “Equator” but only $\frac{1}{2}$ in. from the “Ecliptic.” In the same way, a star or planet may be referred either to (1) the Equator or (2) the Ecliptic in order to determine its position. If referred to the

<i>Celestial Equator</i>	the terms used are	R.A. and Dec.
but if referred to the		

<i>Ecliptic</i>	„	„	„	(<i>celest.</i>) Long.	„	Lat.
-----------------	---	---	---	--------------------------	---	------

These pairs of terms are thus equivalent to each other, perpendicular distance north or south of the Ecliptic being styled (celestial) LATITUDE, just as perp. dist. N. or S. of the celestial Equator is styled DECLINATION. But we must beware of thinking them *the same*; for that can never be, except when the point in question is in either 0° or 180° longitude or R.A., with 0° latitude or declination.

The conversion of positions calculated according to one “pair of co-ordinates,” as they are termed, to their equivalent positions according to the other, is a very tedious process. Fortunately the ephemeris makers save us the trouble of having to find our longitudes (or zodiacal degrees) from the *Nautical Almanac* for ourselves. It may be remarked

that while the "celestial longitude" and the zodiacal degree occupied by a planet or star are one and the same thing, astronomers do not make use of the zodiacal signs, except only γ and ♈ , which are used to indicate $0^{\circ}0'0''$ and $180^{\circ}0'0''$ of longitude or R.A. For example, 15°♈ would be known as 255° of longitude or, more rarely, *8 signs 15 degrees*.

To summarise briefly: Sidereal Time (*h.m.s.*), or Right Ascension (*h.m.s.* or $^{\circ}'''$), and Celestial Longitude ($^{\circ}'''$), are both reckoned from the equinoctial point $\gamma 0^{\circ}$; the former along the (celestial) Equator, and the latter along the Ecliptic. Celestial Longitude is identical with zodiacal position. Declination is perpendicular distance N. or S. of the (celestial) Equator, and *corresponds* to terrestrial latitude. Celestial Latitude is similarly measured by perpendicular distance N. or S. of the Ecliptic, but has no correspondence with any terrestrial measurement.

IV.—TABLES OF HOUSES. SEMI-ARCS. INTERCEPTED SIGNS.

Perhaps nothing puzzles the beginner so much, once he has become familiar with Sidereal Time, as Tables of Houses. These he is perforce obliged to take on trust, so to speak, the only information supplied being that they are calculated for a certain latitude. There is no intention in this lesson of entering into the mathematics of the subject, but the principle underlying the construction of a Table of Houses for any place will be set forth in a simple manner, and the reason of 'intercepted' signs made clear, together with an explanation of the mysterious term "semi-arc."

We will first take the simplest possible case, a map of the heavens erected for some place on the equator; all other cases are merely modifications thereof. Let us turn to our old friend the diagram facing p. 1, and let us suppose a birth took place at a spot in the position of the letter *a* in "Equator" in the left-hand hemisphere, and at a time when the R.A.M.C. was 90° or *6h. 0m. 0s.* S.T. As we can see at a glance, 0°♈ is on the mid-heaven or upper meridian, while 0°♈ is just rising in the East (right-hand side), and since the disc shown represents the whole of the heavens above the horizon, it is clear that it must be divided into six houses. To do this we divide the Equator into six equal parts, and draw great

circles¹ (which in such a diagram as this would be represented by curves) through the N. and S. poles and passing through the six equidistant points on the Equator. These circles will cut through the Zodiac or ecliptic very nearly at the points indicated as $\alpha 0^\circ$, $\mu 0^\circ$, $\Omega 0^\circ$, $\varpi 0^\circ$, $\Pi 0^\circ$, $\gamma 0^\circ$, though not *exactly* through these points, of course, because the ecliptic is not parallel to the Equator. These six zodiacal points are consequently the cusps of the six houses, I., XII., XI., X., IX., and VIII.

Since the half of the Equator shown corresponds to 180° of R.A. it is quite clear that in order to obtain the degrees occupying the cusps of houses XI., XII., and IX., VIII., one has only to *add* or *subtract* respectively 30° and 60° of R.A. to or from the R.A.M.C. at birth, and then to find the zodiacal degree corresponding to the R.A. thus ascertained.² It must be borne in mind that what has just been said applies to PLACES ON OR CLOSE TO THE EQUATOR ONLY. When the place for which it is desired to erect a horoscope is situated in the temperate latitudes—suppose it is London, Liverpool or New York for example—the matter is by no means so simple. In fact it is too complicated and puzzling a matter to erect a horoscope for any given place without the assistance of a Table of Houses, for the beginner to think of attempting it.

HOW A TABLE OF HOUSES IS MADE.

The construction of a Table of Houses is rather a matter of patience than of special knowledge or skill. Indeed, with a little resource an approximate Table of Houses for this country, quite accurate enough for many purposes, could be contrived by the aid of any ordinary almanac giving the times of sunrise, if nothing better were available. We will suppose we have such a task in hand.

Let us think a minute. At the Equinoxes, March 21st and September 22nd, as everybody knows, day and night are equal all over

¹ "Great" circles of a sphere are those whose diameters are diameters of the sphere.

² Since the R.A. of any zodiacal degree is the same thing as the sidereal time of its culmination, this may easily be found from the "10th house" column in any ordinary Table of Houses. See the Tables of Houses for New York on pp. 324-327, where the R.A. of each degree of the Zodiac is given in addition to the Sidereal Time. In the case of our present illustration the actual points are $\alpha 0^\circ 0'$, $\Omega 27^\circ 49'$, $\varpi 27^\circ 54'$, $\mu 0^\circ 0'$, $\Pi 2^\circ 6'$, $\gamma 2^\circ 11'$.

the world. Hence the Sun will rise at 6 a.m., culminate at noon, and set at 6 p.m., at any place whatsoever. As the Sun is then in $0^\circ \Upsilon$ or $0^\circ \simeq$ it follows that these degrees do the same. As we already know, the R.A. of $\Upsilon 0^\circ$ is $0h.$ or $24h.$ and of $\simeq 0^\circ$ $12h.$

Not only that, but since the Sun, which was on the cusp of the I. house at 6 a.m. ($24h. - 6h. = 18h.$ s.t.) is on the cusp of the X. at noon, it has clearly passed through houses XII., XI. and X. in six hours: that is, it has taken two hours to pass through each, and consequently at 8 a.m. ($20h.$ s.t.) must be on cusp of XII., at 10 a.m. ($22h.$) on cusp of XI.; and so on.

Hence in the vacant lines of our Table of Houses we can fill in, in their proper places, certain items already, as in the following scheme in which Υ stands for Υ° , \simeq for \simeq° :—

Sidereal Time			X.	XI.	XII.	I.	II.	III.
H.	M.	S.						
0	0	0	Υ					\simeq
2	0	0					\simeq	
4	0	0				\simeq		
6	0	0			\simeq			
8	0	0						
10	0	0		\simeq				
12	0	0	\simeq					
14	0	0						Υ
16	0	0					Υ	
18	0	0				Υ		
20	0	0			Υ			
22	0	0		Υ				
24	0	0	Υ					

Now all that has to be done, virtually, in constructing a table of houses for any place is to apply this principle to the rest of the year, ascertaining the Sun's Semi-Arc diurnal or in other words half the length of the day or time from dawn to true noon, at that place, be it London, Constantinople or Valparaiso. By dividing this "semi-arc" by 3, and adding successively the amounts thus obtained to the Sidereal Time at sunrise we obtain the Sidereal Time at which the zodiacal degree in question is on the cusps of the XII., XI., X., IX., VIII. In this way the table is gradually completed. Of course, in practical work, the calculations are based on the actual declination of each degree, as ascertained mathematically, instead of the approximate information as given in almanacs. But the principle is the same.

INTERCEPTED SIGNS.

The reason why signs are occasionally "intercepted" is now not far to seek. For example, in England the midsummer Sun in $\varnothing 0^\circ$ rises on London at 3.48 a.m. That is to say its semi-arc on that day is 8h. 12m., and its "house space" is consequently 2h. 44m.; so that since it rises at S.T. 21h. 48m. it will arrive at the cusp of XII at S.T. 0.32, when $\gamma 9^\circ$ is culminating. And consequently the twenty-one remaining degrees of γ , with thirty of δ and thirty of π , have *all to be crowded into the space of two houses*; so that in fact we find $\delta 18^\circ$ on the cusp of XI, with π intercepted therein. Similarly when at S.T. 3.20 the degree $\varnothing 0^\circ$ arrives at the cusp of XI we find $\delta 22^\circ$ culminating and the whole of π intercepted in X.

This illustration will, it is hoped, help to clear away some of the confusion surrounding the matter.

But for those who want to feel that they have mastered the subject, there is only one way—they must wrestle with the mathematical method. And they are therefore invited to turn to SECTION A and steadily work through each chapter.

(END OF SECTION B.)

Appendix.

FOREWORD

THE difficulty encountered in compiling a work of this kind, which will be consulted by students of widely different attainments, has already been referred to (p. 5 footnote).

A further difficulty is that there exists a decided difference of opinion as to the functions of a Text Book. Some maintain very reasonably that only generally accepted rules and methods should find currency in a text book, speculative or controversial matters being left to technical journals. Others urge that users of text books include some who have the pioneering spirit and who are capable of assisting the progress of science by their efforts, and that suggestive theories or promising speculations upon which they may exercise their powers may fairly be laid before them. Against this it is asserted that the publication side by side of accepted methods and untried theories, is likely to provide rather a shifting foundation for the beginner or average student.

An attempt has been made in this book to satisfy both these claims without dealing unfairly by either, and this has been done by including in SECTIONS A and B all that is "necessary" for the student or beginner. Any purely suggestive or speculative matter, critical comments, new theories, etc., etc., has been collected in this Appendix, and being printed in smaller type is thus sufficiently differentiated from the rest of the work.

Certain mathematical formulæ have also been transferred to this part of the book, also particulars regarding the use of Standard Time.

I.—SECONDARY AND OTHER DIRECTIONS, AND THEIR RELATION TO PRIMARY DIRECTIONS FOR PURPOSES OF RECTIFICATION.

(May be read in connection with Chapter XI of SECTION A.)

It seems advisable to attempt some system, however tentative or incomplete it may be, of distinguishing and classifying the various modes of directing, in relation to the nature of the events signified, as regarded from the standpoint of their effect on consciousness—whether purely or chiefly *physical, emotional, mental or moral* (spiritual). The writer feels some diffidence in bringing forward a suggestion which though it seems to him very illuminating and helpful, yet, since he has no evidence to support it, he can only offer as an 'admissible hypothesis.' He is emboldened to offer it, partly, it is true, owing to the favourable reception of the idea by a fellow student, but chiefly because in his opinion any system is better than none, and so far as he is aware no co-ordinated method of correlating primary, secondary and other directions, synodical lunations and solar revolutions, etc., etc., has hitherto been suggested.

This principle, or hypothesis, which is based upon the septenary nature of consciousness as explained in theosophical text-books and various other manuals, briefly stated is as follows:

The consciousness of man may be considered as existing simultaneously upon all planes—physical, astral, mental, buddhic, atmic, etc.—though these several aspects of consciousness are not co-ordinated in the ordinary man, and are therefore quite distinct and to all intents and purposes separate beings. Nevertheless, there is a relation between them, and this relation is manifested in a harmony, *i.e.* ratio, subsisting between the respective simultaneous careers of the physical, astral, mental and buddhic man. The rate of vibration of the matter in these various "worlds" is stated to increase enormously as we ascend from the physical upwards to the buddhic; consequently a very short period of time would suffice for a long cycle of changes in one of these higher worlds, and would therefore correspond, and in an effective sense be equal, to a very long period down here on this everyday world of ours.¹

Let us suppose that we know the ratio of these vibrations, and that the corresponding time equivalents may be stated in some such table as this:

(a) ONE 'YEAR' on Buddhic Plane (intuitional world)	= 4 minutes or 1 DEGREE
(b) ONE 'YEAR' .. Devachanic .. (mental world)	= 24 hours or 1 DAY
(c) ONE 'YEAR' .. Astral .. (emotional world)	= 30 days or 1 MONTH
(d) ONE 'YEAR' .. Physical .. (work-a-day world)	= 12 months or 1 YEAR

which would mean that a cycle of experiences equivalent to a whole earth life would take place in the intuitional world within *six hours* after birth. These experiences or events, so to say, would come to fruition in the mental world in *three months*; in the astral or emotional world in about *seven years*;² and in the physical or sublunary world in, of course, the ordinary period of *ninety years* or so.

It will be seen, then, that (a) (b) (c) and (d), given above, respectively relate

¹ It should be clearly understood that what is here said is intended as *suggestion* rather than as strict reasoning, and that these time-correspondences are not to be looked upon as scientific statements. Indeed in a conversation with a well-known occultist some time ago the Editor was given to understand that nothing that we could conceive of as "time" exists upon the buddhic plane at all.

² Not until the conclusion of which period, according to occult teachings, does the Ego come into full control of the physical vehicle and attain complete responsibility.

themselves to Primary Directions, Secondary Directions, Synodical Lunations and Solar Revolutions, the methods of calculating which are so clearly described and illustrated in Mr. Green's Manual on *Directions and Directing* that no more than a passing reference is necessary.

<i>Time Measure.</i>	<i>Name of Direction.</i>	<i>Plane of noumenon.</i>
(a) One degree (4m. sidereal time)	Primary Direction	BUDDHIC PLANE (intuitional world)
(b) One day (mean solar day)	Secondary Direction ("Progressed Horoscope")	DEVACHANIC PLANE (mental world)
(c) One month (29.53 days)	Synodical Lutation	ASTRAL PLANE (emotional world)
(d) One year (365.26 days)	Solar Revolution	PHYSICAL PLANE (the natural world)

This table may be interpreted in the following way. Let us suppose:—
(a) that two hours after birth Saturn arrives at the position occupied by the Sun at birth, which represents a certain cause in operation in the intuitional world (*primary direction*, $\text{♄ } \odot$); (b) that thirty days or more after birth Saturn is found in conjunction with the Sun, which indicates the corresponding event or effect in the mental world (*progressed horoscope*, $\odot \text{ p. } \odot \text{ ♄ p.}$); (c) that about two and a half years after birth the Sun is in conjunction with Saturn at the same time that the Moon is the same distance past the Sun as at birth; this shows the analogous event in the emotional or "astral" world (*synodical lutation*, $\odot \odot \text{ ♄}$); and lastly (d) that during the thirtieth year of life we find $\odot \odot \text{ ♄}$ shown by the ephemeris on the birthday anniversary (*solar revolution*, $\odot \odot \text{ ♄}$); this corresponds to the final precipitation of the event which we have thus traced through the three preceding worlds, into the physical matter-of-fact world that we know or think we know so well.

The illustration has been given this form for simplicity. It does not follow that these various directions will in all cases necessarily measure to the same part of the year, or even to the same year, of life. On the contrary, it is highly improbable; and not only so, but the (b) (c) and (d) directions measuring to the same period as (a) may conflict with (a), and perhaps with one another, by being of a quite different nature—one martial another saturnine and so on. It is here, then, that the value of the suggested classification should be apparent if there is any truth in it, for each event may be related to its own sphere of causation, buddhic or 'causal,' mental or definitive, astral or emotional, physical or environmental.

It must not be forgotten that all four cases of directions (a), (b), (c), (d), alike may measure to physical events, but events of varying degrees of significance. The following suggestive interpretations are offered: (a) $\odot \odot \text{ ♄}$, complete collapse of fortunes and social ostracism; (b) $\odot \odot \text{ ♄}$, profound gloom and depression of mind, coupled, however, with deep reflection and meditation; (c) $\odot \odot \text{ ♄}$, melancholy, brooding fancies and morbid dreams; (d) $\odot \odot \text{ ♄}$, practical acquaintance with unpleasant and sordid surroundings. Thus (c) 'bites deeper,' as it were, than (d), (b) than (c), and (a) than (b), springing from an increasingly higher, and hence more influential centre of consciousness.

This brings us to the conclusion that the mental, emotional and physical conditions at any given time may have a considerably modifying effect upon the primary, or shall we say 'karmic,' directions then in operation, lessening or increasing the strain as the case may be, and in this way providing us with the specific weapons whereby we may overcome what is called fate. For instance, a good aspect between Jupiter and the Sun in the progressed horoscope at the same time as a severe solar affliction from Saturn by "primary" direction would seem to indicate the well-balanced and hopeful attitude of mind which is

best suited to cope with the slings and arrows of outrageous fortune. The synodical lunation measuring to the same period might, perhaps, be decidedly adverse, and we should then have the problem of a man courageously and intelligently facing reverses while yet harassed by distressing emotions.

These are, of course, only suggestions thrown out for the benefit of those who need some indication of a definite line of thought in distinguishing between the various and apparently conflicting methods of directing, and hence also rectifying, which are so apt to perplex students at the start.

SOME FURTHER SUGGESTIONS.

One or two more suggestions may perhaps be helpful, though it must ever be borne in mind that they are only suggestions and nothing more.

Primary Directions (4 min. = 1 year) may be regarded as indicating unescapable karma, the effect of repeated thoughts and desires, and perhaps actions too, in past lives. Events signified thereby are such as cannot be foreseen or prevented; they are as it were payments due to, or from, Nature and all we can do in respect of them is to accept the situation and try to learn the lesson that has been given us. The Horoscope of Birth, to which we are compelled to respond more or less during our whole life, may perhaps be regarded as the supreme debt in this sense, and in this, as in the previous case, the mental attitude (which is not to be confused with the *moral* attitude, by the way) will have much to do with the particular effect on the consciousness. Of this nature are such events as death of parents, national calamities by which the native suffers, bodily injuries caused by accident, etc., etc., and they may be compared to the influence of URANUS—the unforeseen.

Secondary Directions (1 day = 1 year), on the other hand, may be considered as representing the changing mental phases through which we all pass, more or less affecting us according to our readiness to take advantage of opportunities (positive natures) or our supine receptivity to external influences and the habitual thought of those in our environment (negative natures). A typical instance would be the opportunity of a "marriage of convenience" where there was no true affinity, and which would be either refused, dallied with, or accepted, according to the type of character concerned.

Probably the most important direction of this nature, in most cases at any rate, is $\text{♄} \text{♅} \text{♄}$, which, recurring as it does every thirty years, indicates those epochal changes which, though they often pass unnoticed at their inception, serve to mark out the life as a whole into the three grand periods of youth, maturity, and age. The ♄ and ♅ will doubtless represent 'phases' of these epochs. The method of calculation is given on p. 78 (Example 2) and need not be repeated here.

This secondary direction may be viewed, therefore, as corresponding to the planet SATURN.

Synodical Lunations may be taken to represent those emotional phases to which we are all more or less subject, but which are always comparatively transient and likely to result in little permanent effect for the majority of thinking people, as astrologers ought to be. Or rather, it should be said, they are the less likely to determine *actions*, though they may have a considerable incidental effect upon the consciousness. Of such nature might be considered agreeable visits, social enjoyments, pleasurable excursions, etc., or disappointments or disagreeablenesses in connection therewith, and they may be likened to the planet JUPITER.

Lastly, the *Solar Revolution* may be dismissed as having very little effect except in a purely environmental sense. It may be compared to the planet MARS, ruler of the animal nature, ever influenced by external causes and ephemeral desires, and having no definite self-conscious centre.

GENERAL REMARKS ON RECTIFICATION.

To sum up, it may be said that the first two of these alone are of any practical service for the purposes of rectification, and of these the former is decidedly preferable when appropriate events are available. In the progressed horoscope, aspects formed can hardly be relied upon to result in physical events so precisely as to time, except in the case of $\text{D } \odot$, which is more dependable (also, to a less extent, \square and J), but here the difficulty is usually inability to determine the precise event to be selected as indicating the actual inception of the new epoch or phase of thought. That both primary and secondary directions do actually work out in everyday life is incontestably shown by the many adherents they severally command, and it is only to be regretted that each class of workers cannot be induced to study the two methods simultaneously; for some certain method of co-ordination would then surely be found.

THE SYNODICAL LUNATION.

Since this chapter was originally published the writer has given further study to the effects of the Synodical Lunation, and the results seem to justify him in thinking that his suggestion possesses value. The directions appear to act very sharply as to time, and on that account the synodical lunation may perhaps prove useful in rectification. The method of calculation will be gathered from the example given in the chapter on Logarithms, p. 78.

One example will suffice. King Edward VII. was born on November 9th, 1841, at 10.44½ a.m., and at 6.4½ a.m. on the 13th of the same month a New Moon took place. The time intervening is 3d. 19h. 20m., and at the rate of 29.53 days to a year measures to the 26th of December, 1841. That lunation will consequently cover the period of life from 26/12/'41 to 26/12/'42, the Full Moon measuring of course to 26/6/'42. Similarly with successive lunations, till we come to the one having rule over 1902, the year of King Edward's Coronation; this lunation dates from 20th September to 20th October, 1846, and measures from 26/12/'01 to 26/12/'02. At the time arranged for the coronation, we find the following train of aspects in operation:

$\text{D } \text{J } \text{J}$	measuring to	19/6/1902
$\text{D } \text{J } \text{J}$	" "	21-22/6/1902
$\text{D } \text{J } \odot$	" "	26/6/1902
$\text{D } \text{J } \text{H}$	" "	27/6/1902

As the $\text{D } \text{J } \odot$ measures exactly to the very day when the coronation should have taken place, the direction would almost seem effective for rectification.

Of course, such a direction could only determine the time of birth within a few minutes, and therefore this method is only likely to be serviceable where the birthtime is either uncertain or unknown. In the latter case directions taken from the synodical lunation are useful, more especially if the native is a person of emotional temperament, as a number of progressed aspects can be found within a small compass of time. But considerable discretion is needed in the employment of this method.

II.—METHODS OF HOUSE-DIVISION.

REGIOMONTANUS *versus* CAMPANUS.

In Chapter XII on "Various Methods of House-Division" allusion is made to a student who prefers to be known as "Chandra." The whole of the chapter up to p. 120 was submitted to him in manuscript, and his criticism throws so much light upon the relationship between the systems of Regiomontanus and Campanus that permission was obtained to print it in full.

His remarks upon the relation of both systems to the kinetic sphere are important and should be carefully studied in connection with the diagrams, which make the inter-relationship of the two systems very clear.

In regard to the sentence quoted, relating to the static and kinetic sphere, as the sentence itself does not perhaps adequately represent the thought which gave rise to it, it may be re-cast in this form :

In the Regiomontanus system the relation of the House Circles to the kinetic or rotating sphere is essential, and to the static or fixed sphere incidental; for the reason that the Equator is made the basis of the duodenary division.

In the Campanus system, on the other hand, the relation of the House Circles to the Equator (and hence to the kinetic or rotating sphere) is incidental, whereas to the static or fixed sphere it is *essential*; forasmuch as the Prime Vertical is made the basis of duodenary division.

"Chandra's" letter now follows, and cannot fail to assist the reader to a comprehension of the points that have been raised:—

I have been much interested to see your paper, which is in the main very good, I think. I will, however, criticise one or two points about it as you invite me to do.

I hope you will understand that any remarks about the Regiomontanus system I may make, are not intended as an attack upon its astrological value, but have as their object to make clear certain geometrical facts about it. I have at different times in my life devoted a good deal of time to the study of geometry quite apart from either astrology or astronomy, and it is possible that some geometrical facts may strike me more forcibly than they do others, who, without being in any way less intelligent than myself, may not have devoted so much time to geometry. Every point on any sphere must have a geometrical relation to other points on the sphere, and relations between great circles, etc., though they may not be symmetrical, still are necessarily expressible in geometrical language.

I may even say that so far from attacking the Regiomontanus method, I am inclined to think from the few observations of it which I have hitherto had time to make, that it is valuable, and I mean to take to setting figures showing both Campanus and Regiomontanus cusps. This course I formerly followed for some time with the Campanus and the Semi-arc (Placidian) cusps, until at last I came to the conclusion that the Semi-arc cusps had been weighed in the balances and found wanting, or at any rate were not worth using practically. I used to think that the Regiomontanus cusps differed so slightly from the Semi-arc ones as hardly to require a separate investigation, but I see now that they often differ by six degrees or more.

The most important criticism I want to make of your paper has to do with your remark on page 116: 'The method of Regiomontanus has this to recommend it . . . down to . . . the method is primarily related to the rotating or kinetic sphere; whereas the method of Campanus is based upon the fixed or static sphere.'

As to this I have to say :

(1) That I cannot agree with this view because the methods of Campanus and Regiomontanus, though neither of them very clearly related to the rotating sphere, are equally related to it as far as they are so related at all.

(2) I cannot understand the remark that the Regiomontanus 'poles' trisect all the planetary semi-arcs, unless it simply means that the polar-arcs trisect the quadrants of the *equator* (or semi-arcs of the equator), for all latitudes and all sidereal times. If it means this I understand and agree with the proposition, though I think the expression 'trisect all planetary semi-arcs' is misleading. In mathematics the word 'trisect' is generally used to mean divide into three *equal* parts, and it seems to me from what is said in the passage you refer to on p. 31 of *Modern Astrology*, Vol. IX. Old Series (lines 9 and 10 from bottom), and also from p. 32 (lines 14 to 11 from bottom) that the writer merely means that :

(a) the Regiomontanus poles are fixed poles for any given latitude, that is to say that so long as one remains at that latitude they are the same for all sidereal times¹;

(b) that they divide the semi-arcs in such a way that the ratio of the A.D. of a point under Pole of XI. to its A.D. under Pole XII. is constant for all points of the zodiac.

He gives as an illustration the A.D.'s of 80° and 20° under Regiomontanus poles of XI, XII for London, and I find that at any rate to one place of decimals this is true.

$$i.e. \left\{ \frac{\text{A.D. of } 80^\circ \text{ under Regs. Pole XI.}}{\text{A.D. of } 80^\circ \text{ under Regs. Pole XII.}} \right\} = .5 \dots = \left\{ \frac{\text{A.D. of } 20^\circ \text{ under Pole XI.}}{\text{A.D. of } 20^\circ \text{ under Pole XII.}} \right\}$$

The same, however, is true of Campanus, *i.e.* :

(a) The Campanus poles are fixed poles for all times in any given latitude.

(b) The Campanus poles are such that the ratio of the A.D. is constant.

e.g., for latitude of London :

$$\text{A.D. of } 80^\circ \text{ under Campanus Pole XI.} = 4^\circ 56' 50''$$

$$\text{A.D. of } 80^\circ \text{ " " " XII.} = 10^\circ 46' 55''$$

$$\text{Now } \frac{4^\circ 56' 50''}{10^\circ 46' 55''} = .4 \text{ (to one place of decimals).}$$

Next

$$\text{A.D. of } 20^\circ \text{ under Campanus Pole XI.} = 10^\circ 37' 20''$$

$$\text{A.D. of } 20^\circ \text{ " " " XII.} = 23^\circ 34' 50''$$

$$\text{Now } \frac{10^\circ 37' 20''}{23^\circ 34' 50''} = .4 \text{ (to one place of decimals).}$$

The diagrams on pages iv and v will explain my idea.

It is important to remember that the arcs which we call the 'Poles,' *i.e.*, the arcs of polar elevation above the House Circles, are *arcs of Great Circles*; they are perpendicular to their House Circles, and they *pass through the Celestial Pole of the Equator*. It follows at once from this that they must be Circles of Declination, or Meridians as they are sometimes called. It is of course on this latter fact that the whole principle of finding cusps from 'poles' and Tables of Ascendants is based.

It can be seen from the above that there is a great deal of reciprocity between the two systems, only the measurements which in one occur on the Equator in the other occur on the Prime Vertical.

I hope I have made it evident by the diagrams and remarks I have just given, that the Regiomontanus and Campanus systems really stand in a very similar relation to the rotating sphere. Perhaps the Regiomontanus is a little more symmetrical, but that does not prove that it has more astrological value.

¹ This undoubtedly was the meaning, as appears from the context. The word trisect is used in line 10, p. 31.—Ed.

The point I wish particularly to emphasise is, that BOTH systems are primarily based on the *Horizon* and *Meridian* planes. The only system of House Division which would be directly related to the rotating sphere, would be a system of division by circles of declination, *i.e.*, by the pole and the equator only.

I do not think that all astrologers realise clearly enough the fact that the horizontal plane does NOT make a simple rotation, except for places on the equator. For any other place (say London) the horizon plane as the earth rotates, makes a peculiar skew motion describing a *cone*: [we may disregard here the slight distortion produced by the earth's proper motion along its orbit]. It follows that the mere fact of the Regiomontanus House Circles dividing the equator equally does not bring them into any simple relation to the rotating sphere, because they still have their axis in the plane of the horizon, *i.e.*, the axis of the houses is the North and South line in the horizon plane, just as for Campanus. I fail entirely to see that the Regiomontanus House Circles, which are based on the North and South Horizon points and cut the Equator 30° and 60° of Oblique Ascension from the horizon (for all places and times), are any more directly related to the rotating sphere than the Campanus circles, which are also based on the North and South points of the Horizon, and which cut the equator $70^\circ 15'$ and $42^\circ 51' 53''$ of Oblique Ascension from the horizon for all times in the latitude of London.

In short, in the former system the Division of the Equator is fixed and invariable, for all places and times: in the latter it is variable for different places, but is nevertheless fixed for all times. In both systems the Polar Elevation of the House Circle is variable for different places, but is nevertheless a fixed function of the latitude of place.

Either system gives us fixed 'poles' and M.D.'s (of poles) for any given latitude, and by means of these and other devices we can relate our circles to the rotating sphere. For instance, the circle of twelfth house at London actually coincides at any moment with the horizon circle at a place in the West Indies which has the same latitude as the 'Pole' of twelfth house for London and differs, as regards sidereal time, from London by an amount equal to the M.D. of Polar arc.¹ Thus suppose ☉ be in twelfth house and we want to estimate his distance from the cusp in terms of Right Ascension. All we have to do is consider ourselves in the West Indies (under London's Pole twelfth house) and consider the sidereal time to be less than that in London by the amount of the M.D. Then find the Sun's ordinary Horizontal Arc for that time and place. This is equally easy for either Campanus or Regiomontanus, and for any house.

You will understand from what I have said, that I am not at one with you when you say on page 116, 'the moment this position is granted,' etc. It shows how differently things appear to different minds. I cannot see why a 'Zenith system' is suggested by the Campanus method any more than by the Regiomontanus. We might quite easily have a set of vertical circles dividing the Equator equally *à la* Regiomontanus, and of course these would cut the ecliptic at different points to either the 'Zenith system' circles or the ordinary Regiomontanus circles.

Would anyone argue that because we regard the duodenary division of the zodiac into the twelve signs as important, therefore a similar division of the equinoctial and solstitial colures is probably equally important? By equinoctial colure I mean, of course, the great circle in the celestial sphere which passes through the poles of the ecliptic and the equinoctial points 90° and 270° , and by the solstitial colure the great circle at right angles to this passing through the poles of the ecliptic and the points 0° , 180° .

¹ This term, "M.D. of Polar Arc, or M.D. of pole," is explained on p. 120.

It seems to me that to suggest these methods, i.e., Zenith and East Point is to re-open a far more fundamental question than that involved by the question of Regiomontanus *versus* Campanus. In the latter case the question may be summed up as follows: *At places on the Equator, the Prime Vertical and Celestial Equator are identical; now when we leave the equator which of these two circles are we to divide equally?* THIS IS REALLY THE CRUX OF THE MATTER.

But the Zenith system re-opens the question as to whether the horizon plane is important, and the East-Point system does not commend itself to me, as it seems scarcely possible that the mere fact of a planet having North Declination instead of South can change it from first house to seventh; besides, this system disregards the meridian.

I own I am inclined to regard the introduction of these methods as a sort of red herring drawn across the trail of investigation, but do not let me dissuade you from mentioning them if you think it worth while. At any rate, I should make it clear that neither of these methods has ever, so far as we know, been experimented with astrologically.

I quite agree with your remark on p. 116, that the Regiomontanus and Campanus methods are the only formidable antagonists of the Semi-Arc method, only I emphasise this view even more than you do.

ZENITH AND EAST-POINT SYSTEMS.

For the benefit of the curious we append instructions for finding the cusps of the houses according to the Zenith and East-Point systems alluded to in Chapter XII. It is quite possible that there is something to be learned by studying them.

The methods here given, as well as those on pp. 120, 121, we owe to the labours of "Chandra" and it is only fitting that they should be given in his own words :

ZENITH SYSTEM.

- | | | | | | | |
|-----|---------------------|------------|---|---------------|---|--------------------|
| (a) | Log. Sine Polar Arc | VI. or II. | = | log. cos. 30° | + | log. cos. Latitude |
| | | V. or III. | = | log. cos. 60° | + | log. cos. Latitude |
| (b) | Log. Cot. M.D. P.A. | VI. or II. | = | log. cot. 30° | + | log. sine Latitude |
| | | V. or III. | = | log. cot. 60° | + | log. sine Latitude |

Concerning these I must add one caution: when adding or subtracting M.D.P.A. it is the angular distance of the short polar arc from the *Northern* Angle (i.e., R.A.I.C.) which we must add or subtract to or from the R.A.M.C. Thus in finding the cusp of the VIII. in the example given for London it would *not* be allowable to *add* $36^{\circ}24'$ and take the point obtained as the cusp of II., instead of subtracting $143^{\circ}36'$ and proceeding as stated.

I may say that so far as I can see at present this Zenith system does not seem to me likely to give valuable astrological results, but perhaps it is premature to judge.

EXAMPLE FOR *London*.—To find cusp of VIII. in $51^{\circ}32'$ N. Lat. *subtract* $143^{\circ}36'$ from R.A.M.C.¹ and find the degree of zodiac rising in $32^{\circ}36'$ N. Lat. For VI. *add* $143^{\circ}36'$ instead of subtracting, and proceed in same way.

To find cusp of VII., add 180° to R.A.M.C. and then find the degree of the zodiac rising in the *co-latitude*, ($90^\circ - \text{lat.}$); thus for London take $90^\circ - 51^\circ 32'$, *i.e.*, $38^\circ 28' \text{N.}$

To find cusp. of IX. *subtract* $114^{\circ}20'$ from R.A.M.C.,¹ and find what degree rises in $18^{\circ}7'$ N. Lat. For V. *add* $114^{\circ}20'$ instead of subtracting, and proceed in same way.

¹ Adding 360° to R.A.M.C. if necessary.

This example is given for *London, 51°32' N. Latitude*, but the same method clearly can be employed for other places, merely using the P.A. and M.D.P.A. as determined by formulæ given above.

With regard to the Zenith System in general, it is evident that the Zenith House Circles for any place at any Sidereal Time coincide geometrically with the Campanus House Circles for whatever place in the co-latitude is 180° of terrestrial longitude from the first. For instance, the Zenith System House Circles for London 51°32' N. Lat. at say *oh. om. os.* Sidereal Time coincide in position with the Campanus House Circles for a place having 38°28' N. Lat. and 180° W. Longitude; the sidereal time at the latter place would of course be 12 hours, and $\pm 0^\circ$ would there be on the Meridian.

In my opinion it would be with regard to the latter place only that the Zenith System House Circles calculated for London would have any genuine astrological significance. But clearly the above fact enables us to calculate the houses by the method given on p. 120, merely adding 180° to the R.A.M.C. and using the co-latitude instead of the latitude.

EAST-POINT SYSTEM.

In the rules below the houses are numbered as in the diagram on p. iv. This does not in any way imply that the division of the celestial sphere I have numbered "12." is really the division to be regarded as the first house—of that I have no means of deciding—but it is obvious that I must have some way of describing which cusp I mean in each case.

It is obvious from the diagram, that if we had taken a different sidereal time, with a Northern degree, say 110° rising, the ordinary Ascendant [110°] would have been in the division called in the diagram VII. house.

Rule: To find cusp of I. or VII. use the tables in the ordinary way, but if the degree rising have declination of the same name as the latitude of the place for which the figure is set [*i.e.*, for a place in the Northern hemisphere, if the degree rising have North declination, or if in Southern, South] call the degree found in the tables the cusp of VII. and its opposite the cusp of I.; if the degree rising and the latitude of the place have opposite names [*i.e.*, if in Northern latitude and a southern degree be rising], call the degree found in the ordinary way from the tables the cusp of I.

Now with regard to the "poles" and their M.D.'s, it is obvious to start with that the "pole" of each and every house lies along the meridian circle, in other words its M.D. is zero, or if reckoned always from the Northern angle it may be called in certain cases 180°. This for *all* houses, *all* latitudes, and *all* times.

The length of each polar arc equals the latitude or the co-latitude, as the case may be, plus or minus the appropriate number of times 30°. The amount can be seen from figure.

To find cusp of VIII., II. For instance, in the figure on p. iv in 51°32' North latitude the "pole" of VIII., II. is ($51^\circ 32' - 30^\circ$) or $21^\circ 32'$, and its M.D. is zero, consequently to find the degree on cusp of II. add *zero* to the R.A.M.C. and find the degree rising in $21^\circ 32'$ N. Lat. [that is about $\approx 19^\circ$, which agrees with trigonometrical result], but if the degree so found had a declination of the same name as the latitude of the place [*i.e.*, for London if it were a northern degree], we should have to call it the cusp of VIII. and its opposite the cusp of II.

To find Pole of IX., III.: Deduct 30° from the co-latitude, $38^\circ 28' - 30^\circ = 8^\circ 28'$. Call the M.D. 180°. Add or subtract 180° to or from the R.A.M.C. and find the degree rising in $8^\circ 28'$ N. Lat., if its declination have the *same name* as the latitude of the place call it cusp of IX.; if opposite name, call it cusp of III. In this particular case it is $\approx 27^\circ$ about, and therefore as its declination has same name as latitude of London $\approx 27^\circ$ is cusp of IX. and $\approx 27^\circ$ of III.

To find "pole" of XI., V.: Pole = co-latitude + $30^\circ = 68^\circ 28'$. M.D. =

180°. To find cusp of V.: Add or subtract 180 to or from the R.A.M.C. and find the degree rising in 68°28' N. Lat. As before if its declination have the same name as the latitude of place call it cusp of XI., if opposite name V.

To find "pole" of XII., VI.: Pole = latitude + 30° = 81°32'. M.D. is *zero*. To find cusp of VI., XII.: Add or subtract *zero* to or from the R.A.M.C. and find the degree rising in 81°32' N. Lat. If its declination be north call it cusp of VI., if south XII.

The East-Point House Circles of X. and IV. Houses obviously lie on the Prime Vertical, and to find the cusps of X. and IV. we may proceed in a similar manner to that in which we found the Zenith-System cusps of I. and VII., namely: Add 180° to the R.A.M.C. and find the degree rising in the co-latitude. If the degree so found have the same name as the latitude of place call it cusp of X., if opposite name, IV.

It is evident that in the particular case of 6 hours Sid. Time (90° R.A.M.C.), the whole of the northern half of the zodiac would be intercepted in the X. or XI. according to latitude (or it might actually coincide with the circle of position of XI. [in 36°33' N. Lat]). Thus the only cusps would be the equinoctial points, and they would each be on the cusp of every house. Similarly with 18 hours Sid. Time.

III.—EXACT DETERMINATION OF PLANETS' MUNDANE POSITIONS.

It is often desired to know, when a planet is part-way through a house, exactly how far past the cusp it is. Suppose for instance a planet is about half-way through the first house, one would like to know accurately whether it is in a position corresponding to the 13th, 14th, 15th, or 16th degree of Aries.

A method whereby this may be done with great precision was described by a writer in *Modern Astrology*, Vol. II., New Series, p. 477, and as his letter is interesting in view of the other points raised, we quote it almost entire.

EVOLUTION *versus* INVOLUTION.

The writer heads his letter "Solar and Terrestrial Astrology, or Evolution *versus* Involution" and says:—

In the issue of *Mind* for June, 1905, is a deeply interesting paper by F. Landon, in which under the title 'Centres of Force' he discusses the problem of Character *versus* Environment, in relation to Astrology, in quite a new way.

The paper is of some length and deserves reading throughout in order properly to follow the line of thought advanced, but the main contention is that Astrology deals with the focalisation upon the Earth as a centre, of certain life-rays distributed by the planets, to which the matter of this physical globe, and in man, responds, according to the nature of these rays, the angles of incidence, mutual combination, etc., etc.¹ This study, he states, demonstrates the value of Astrology in tracing the course of the *involutionary* life; that is, the descent of spirit into, and its subjugation by, matter. But, he maintains, once that stage is passed and the spirit in man strives to return upwards towards its source, Astrology is virtually powerless to indicate the character, limitations or line of progress, since he insists that Mind, vehicle of the spirit in relation to matter, is essentially *solar*, and hence is not determined by planetary conditions but on the contrary determines them.

In other words, although it is not specifically so stated, Mr. Landon suggests that while a geocentric horoscope will form a chart of life for the ordinary average man, it will be useless for someone who has, only partially even, realised the dominance of mind over matter and who is living from himself as centre instead of responding to impacts from without—in other words, who is living *centrically* instead of *circumferentially*. And hence it is implied that a heliocentric horoscope of some kind can consequently be the only true indication of character, *i.e.*, of the internal Man who is only hampered by, but is not in any sense a product of, the physical and other vestments indicated in the ordinary geocentric Horoscope of Birth.

Now Sir, my object in writing is not only to draw your attention to this thoughtful article, the main points of which I have attempted thus to indicate, but also to throw out a suggestion as to a line of research in the direction of this 'Evolutionary Horoscope,' if I may so term it. At first sight it would seem that a heliocentric presentation of the planets on the day of birth is what is required. But the question immediately arises: From what point are we to commence our heliocentric Zodiac? Surely not our present equinox, which is merely the Sun's ascending node on the *earth's* equator! Mr. Sutcliffe's suggestion in his pamphlet *The Hindu Zodiac* might perhaps be of some service in this connection, but the difficulties in the way of any such attempt as that alluded to only become the more numerous and formidable the further one

¹ By "matter" I mean matter in every sense—the *form-side* of life.

considers the subject. And therefore what I have to propose is a modification of the customary map, but still based upon a purely *geocentric* system of computation. That the geocentric presentment of Astrology handed down from antiquity has its basis in no more profound knowledge than a fixed idea that the earth is the most important astronomical body in space (as our astronomers are pleased to surmise), I for one steadfastly refuse to believe. For, with Mr. Sutcliffe, I am convinced that the ancients knew not *less* but *more* of astronomy than we do now.

In the first place, I see no reason to alter the general form of the horoscopolical figure.

Granted that we ordinarily view it in what I have called a circumferential sense, saying for instance that the ray of Venus passing through the sign Capricorn and striking the earth at such and such an angle, *inclines* the ego to respond to the impacts of certain vibrations upon his vehicles. Well and good, that is the involutionary view. On the other hand, as it seems to me, we have the Ego represented by the centre of the horoscope, upon which all these various rays and influences fall, (without producing any torsional strain, by the way, since this centre is a *point*).¹ And this Ego is polarised, as it were, with the Aries portion of his nature—his egoic 'head,' so to speak—in the Ascendant; his (egoic) heart in the Fifth House; and his (egoic) hams in the Ninth House.

IT IS QUITE TRUE THAT THESE HOUSES REPRESENT THE PHYSICAL BODY, IN A KARMIC SENSE *i.e.*, AS A MATRIX FOR THE EFFECTS OF PREVIOUS CAUSES BROUGHT ABOUT BY THE EGO: BUT THAT IS ONLY AS VIEWED IN ITS NEGATIVE OR RECEPTIVE SENSE. WHY SHOULD IT NOT ALSO TYPIFY THE EGO HIMSELF, WHEN INTERPRETED POSITIVELY, *i.e.*, AS INDICATING THE DELIBERATE OUTGOING ENERGIES OF THE INTERNAL FREE MAN?

Suppose, for example, that in the illustration given in the last paragraph but one, Venus is in the Seventh House in such a position that by the method of Regiomontanus it has precisely the same *mundane* relationship towards the angles of the figure that $\approx 23^{\circ}6'$ has *zodiacally* towards the cardinal points $\Upsilon \odot \approx \varphi$.

Then, on the basis of the suggestions I am making, we should say that those qualities of the real inner Free Man represented by the planet Venus have been so developed by the Ego as to function naturally in precisely the same manner as do those of the Celestial Man when we observe the planet Venus in that zodiacal position which we denominate $\approx 23^{\circ}6'$.

Now if there is any truth in the suggestion I have advanced it ought to be capable of individual demonstration, to some extent at least. And in order that this may be done by those who consider the investigation worthy of attempt, I append the necessary formulæ.

First, however, I will give an instance of what might constitute at least inferential proof.

To take the illustration of Venus above. Here we have a positive out-going energy of the nature of Venus the Unifier in the house of union, in a position corresponding to Libra $23^{\circ}6'$. Suppose this outgoing ray to fall on a horoscope in which the zodiacal Libra $23^{\circ}6'$ is tenanted by the planet Mars, which would indicate according to Mr. Landon's argument a great receptivity to vibrations of $\approx 23^{\circ}6'$, particularly Venus vibrations, since Venus and Mars are polar opposites. Suppose moreover that the horoscopes indicated are those of opposite sexes, and we have all the elements of a love-romance calculated to

¹ [In *The Inner Life*, Vol. I., by C. W. Leadbeater, on p. 357 we read that there is a direct connection between the centre of the Earth and the heart of the Sun. This suggests a possible correlation of the two points of view here put forward, namely (i) that the Ego is *solar* and (ii.) that the Ego may be taken as represented by the centre of the horoscope, *i.e.*, *centre of the Earth*.]

stir the nature very deeply.¹ Now since the love interest is that which most actively manifests in the lives of most people, it might be best, perhaps, in attempting to investigate this point, to take the mundane position of VENUS and compare it with the zodiacal position of MARS, and *vice versa*, in the horoscopes of those by whom we have been attracted. It is of course clear that this can only be done where one at least of the horoscopes is known accurately, or has been adequately rectified.

Doubtless the Sun will here also stand as the synthesiser of the positive and the Moon of the negative or receptive attributes, just as in the method of delineation adopted in *How to Judge a Nativity*; and the points of the zodiac in which respectively the Sun and Moon are symbolically situated will doubtless furnish the main key to the inner character.

I trust that the more earnest among your readers will make this investigation and communicate their views. For I take it that all true students of Astrology are anxious to find their relatively *real*, and not their apparent selves; since while it is true that all are indeed in essence the same, that statement does not enable us as individuals to find the spiritual 'line of least resistance,' whereby we may severally most rapidly and harmoniously unfold the True Self. [End of quotation.]

HOW TO FIND THE MUNDANE POSITIONS.²

In the ordinary method of computing houses as described in Chapters IV and X it is not a very difficult task to calculate these "house positions."

One only needs to ascertain the planet's Semi-Arc and its Meridian Distance and then say: As S.A. is to M.D. so is 90° to *The Answer*. The Answer gives the proportionate distance from the Meridian concerned. Thus suppose the Semi-Arc is 45° and the M.D. 1°30' the answer will be 3° and the mundane position will consequently correspond to $\Pi 27^\circ$, $\Im 3^\circ$, $\Upsilon 3^\circ$ or $\text{♄} 27^\circ$, according to which side of the Meridian the planet is, east or west, and whether the Meridian in question is the cusp of the Fourth House or the cusp of the Tenth.

But it will be noted that the writer of the above letter refers to the method of Regiomontanus, which with that of Campanus is described in Chapter XII. In order to find the "house positions" by these methods the following formulæ have been devised, the first giving the position according to Campanus from which that of Regiomontanus can be obtained by the use of the second formula. A figure is shown to make the matter clear, and a rough diagram of a like nature should always be drawn in order to assist the mind in getting a firm grasp of the problem as otherwise mistakes might be made (*see p. iv.*).

In the diagram $H A Z A'$ is the meridian, $H O A'$ is the horizon, O the centre, Z the zenith, $O E q$ the equator, and A the North Pole. The position of the star is represented by a large dot, and is shown in two positions B and B' with respectively S. and N. declination. $A B' B$ is a declination circle drawn from the N. Pole through the star. The figure is drawn for a place in the northern hemisphere, and shows the star in a position between the cusps of the seventh and tenth houses. By suitable modification the figure can be adapted to a place in the southern hemisphere, or for a star in some other quadrant.

¹ Such a case as described is known to the writer, in which other points of sympathy in the horoscope seem insufficient to account for the degree of attraction manifested. An interesting fact is that the passion appears to have been all on the side of the man, who had Venus, symbolically in $\approx 23^\circ 6'$ as described: this is just what one would be led to expect, on the hypothesis put forward.

² Any reader interested in this question who feels himself unable to make the calculations described, can have the positions calculated for a fee of 10s. 6d., on forwarding horoscope or birth data to the *Office of MODERN ASTROLOGY*.

Two House Position Circles are shown $A' B D E H$ and $A' D' B' E' H$, such as the star would have with a given declination, either S. or N. The arcs $B C$, $B' C'$, are arcs of *great* circles, and are therefore NOT parallel to the equator; but they are drawn such that the angles at C , C' , are RIGHT angles, a fact which it is important to bear in mind; but $A B' C'$, $A B C$ are NOT right angles.

(i) The CAMPANUS house-position will be shown by the arc $Z E$ or $Z E'$ ¹ which shows the distance of the House Position Circle from the Zenith measured along the Prime Vertical $Z E' E O$.

(ii) The REGIOMONTANUS house-position will be shown by the arc $Eq D$ or $Eq D'$ ² which shows the distance of the House Position Circle from the meridian measured along the Equator $O D D' Eq$. The angle $B A C$ or $B' A C'$ shows the M.D. of the star.

It is especially to be noticed that the actual House Position Circle is but *one*, for the two systems: it is merely the circle of reference which differs, in one case the Prime Vertical, in the other the Equator.

It may be pointed out here that either the actual position of the planet itself may be taken, or the point of the zodiac it occupies: these will not be identical unless the latitude of the planet is *nil*, and consequently where the latitude is considerable there may be a notable discrepancy in the two results. Perhaps for general purposes it will be best to confine investigation entirely to the zodiacal points concerned, the declinations and right ascensions of which may be easily obtained from the long. and lat. by the formulæ given in Chapter X.

The diagram is drawn to show the upper hemisphere of the heavens as seen from a place in N. Latitude or the lower hemisphere as seen from a place in S. latitude, B and B' being considered as either west or east of the meridian at pleasure. But the same diagram will serve equally well for the lower hemisphere in N. latitude or the upper in S. latitude, if in these latter cases the *opposite point of the sphere* to that occupied by the star, planet, or zodiacal point under consideration be worked with. This opposite point is of course found by adding 180° to the R.A. and reversing the Dec., calling S North and vice versa. The M.D. remains the same, being always measured from the *nearest* meridian.

In the formulæ which follow, in accordance with customary usage a and a' and b represent those sides of any spherical triangle which are opposite the angles A and A' and B respectively.

The angles $B A' C$, $B' A' C'$ may be obtained by the use of the following formula, bearing in mind very carefully the "Important Note" which follows.

In the Spherical Triangles $A B C$ (or $A B' C'$) and $A' B C$ (or $A' B' C'$) respectively:

$$\begin{array}{llll} \sin. a & = & \cos. \text{dec.} \times \sin. \text{M.D.} & (1) \\ \tan. b \text{ or } b' & = & \cot. \text{dec.} \times \cos. \text{M.D.} & (2) \\ \tan. X & = & \tan. a \times \text{cosec. (latitude of place} + b \text{ or } b') & (3) \end{array}$$

the angle X being either the angle $B A' C$ or the angle $B' A' C'$; which of these, depends upon whether b or b' has been taken in equation (3): b is the arc AC and b' the arc AC' .

IMPORTANT NOTE.

Here occurs a very important point. A little thought will show that b' is the supplement of b , i.e., that $b' = (180 - b)$. Now the trigonometrical functions of an angle are numerically the same as those of its supplement, and hence $\log. b = \log. b'$. It is clear therefore that if we use this formula blindly, we

¹ Otherwise, angle $B A' C$ or $B' A' C'$.

² Otherwise, angle $Z A D$ or $Z A D'$; in the diagram neither of these angles is drawn, to save overcrowding.

shall obtain identical values for b and b' and consequently identical values also for the angles $B A' C$ and $B' A' C'$: in other words, the house position of a planet would appear the same whether its declination were north or south, which is absurd. This anomaly can be avoided if we remember that in the above diagram the magnitude of b' must always lie between 0° and 90° , while on the other hand that of b must always lie between 90° and 180° .

By remembering this fact, that where latitude of place and declination of star are both north or both south we must use b' , which is less than 90° and that when one is north and the other south we must use b , which lies between 90° and 180° , and by taking the appropriate value of b or b' in equation (3), all possibility of error will be avoided.

The above formula gives in the angle X the house-position of the star according to the method of CAMPANUS.

There is one possible case where the student is likely to find some difficulty, and that is where the planet though above the horizon has an M.D. which exceeds 90° . It does not often occur, but as it might be a cause of embarrassment it had better be explained. For an example we will take the following:—Latitude of place $51.22N.$, R.A.M.C. 137.23 , $\odot 89.27$, Asc. $m 2.35$; R.A. of $\odot 36.43$, dec. of $\odot 14.39N.$ Here the \odot is clearly in the 7th house, but its distance from meridian is 100.40 , and it is this which is likely to give the student trouble.

We shall best understand the matter by considering the movement of the point C' in the diagram, according as the M.D. varies from 0° to 90° . Thus when M.D. is 0° , B' coincides with C' and lies on the meridian $A Z Eq A'$. As the M.D. increases from 0° towards 90° , C' moves away from Eq towards Z , which it passes, and finally as M.D. reaches 90° , C' coincides with A , b' becomes 0° and right-hand side of equation (3) becomes $\tan. a \times \operatorname{cosec} (\text{lat.} + 0)$. When, however, the M.D. exceeds 90° , as in the example, then C' moves on towards H and b' becomes negative, which can best be rendered by modifying formula (3) into $\tan X = \tan a \times \operatorname{cosec} (180 - \text{lat.} + b')$. This gives correct results, as can be found in the example given above, which shows \odot 's house-position to be VII $5^\circ 9'$ (Campanus) or VII $8^\circ 13'$ (Regiomontanus).

Similarly if the declination be south instead of north, the point C moves with increase of M.D. away from Eq and towards A' which in due course it passes till at M.D. 90° it reaches the opposite point to A (not shown in the figure), and thence onward proceeds towards H . The above modification of formula (3) will also apply here, using the opposite point of the sphere so as to bring the problem within the limits of the diagram, in which case C becomes C' .

The house-position according to the Regiomontanus method of House Division is found by another equation:—In the triangle $A' D Eq$ or $A' D' Eq$.

$$\tan. a' = \cos. \text{latitude of place} \times \tan. A' \quad (4)$$

Here A' is the angle X obtained in equation (3), while a' is the side of the spherical triangle opposite to A' , namely $D Eq$ or $D' Eq$ as the case may be. The value of a' is therefore the equatorial distance of the House-Position Circle from the meridian, or in other words the REGIOMONTANUS house-position of the star.

AN EXAMPLE.

By way of an example we will take very briefly the following case: latitude $51^\circ 32'N.$; M.D. 35° east or west of meridian; Dec. 16° , N. or S.

Here we find $a = 33^\circ 28'$ and $b = 70^\circ 42'$, whence $180^\circ - 70^\circ 42'$ gives us $b' = 109^\circ 18'$.

First let us suppose the declination to be N. There are four possible positions, namely, east and west of upper and lower meridian respectively; in the former case we use b , and for X obtain the value $38^{\circ}2'$; this gives us the position XI $8^{\circ}2'$ or VIII $21^{\circ}58'$ according as star is east or west of meridian. The opposite points V $8^{\circ}2'$ and II $21^{\circ}58'$ would show the position of a star with same meridian distance but with 16° south declination, when in the lower hemisphere.

Now let us suppose the declination S. Here again there are four possible positions, two of which have been given in the preceding paragraph. For the upper hemisphere we here need to use b' in equation (3) and from this we obtain for X the value $63^{\circ}35'$; this gives us the position XII $3^{\circ}35'$ or VII $26^{\circ}25'$, according as the star is east or west of meridian. The opposite points VI $3^{\circ}35'$ and I $26^{\circ}25'$ would show the position of a star with same meridian distance but with 16° north declination, when in the lower hemisphere.

We have thus ascertained the eight possible Campanus house-positions for a star with the given M.D. 35° and dec. 16° N. or S. It will be useful to tabulate these alongside of the equivalent Regiomontanus and Semi-Arc (ordinary) house-positions:

*House-positions of a star with 16° declination N. or S., when its M.D. is 35°
east or west of meridian.*

	<i>Declination 16° north.</i>	<i>Declination 16° south.</i>
CAMPANUS	V-XI $8^{\circ}2'$ or II-VIII $21^{\circ}58'$	VI-XII $3^{\circ}35'$ or I-VII $26^{\circ}25'$
REGIOMONTANUS	IV-X $25^{\circ}57'$ or III-IX $4^{\circ}3'$	V-XI $21^{\circ}23'$ or II-VIII $18^{\circ}37'$
SEMI-ARC	IV-X $26^{\circ}26'$ or III-IX $3^{\circ}34'$	V-XI $15^{\circ}45'$ or II-VIII $14^{\circ}15'$

from which it will be seen that the difference between the house-positions of planets by these methods may be very considerable. The verification of the above data will form a useful exercise in the manipulation of the formulæ concerned. The ordinary or Semi-Arc house-positions are calculated from the formula given in the first paragraph of this article (p. 180).

The working out of these formulæ is not nearly so difficult nor so tedious as it looks, and the interest of the results obtained should more than compensate for the labour involved. The accuracy of the formulæ may be tested by verifying the results obtained by the formulæ for the solution of spherical triangles given elsewhere

IV.—THE REAL ZODIAC (Chapter XIII, SECTION A).

Regarding this chapter our correspondent "Chandra," whose help in preparing Chapter XII has elsewhere been gratefully acknowledged, makes the following criticism, which may help to bring out certain points perhaps insufficiently emphasised by the original writer:—

I regard this chapter as presenting a most ingenious hypothesis, which may have a good deal underlying it; but if I had been trying to present the idea I should have stated the case rather differently—each person has his own favourite way of looking at things and of expressing himself. I should have begun by saying that we have found by experiment (this I am satisfied about) that it is the apparent positions of the heavenly bodies *with regard to the place where the figure is set, or where the events enquired about are*, that should be regarded in astrology. Now all the events we are concerned with in practice take place on earth—on this planet—therefore we are always concerned with the positions of the heavenly bodies with regard to the earth. Another vital fact, also established by experience (though we do not know how it was originally discovered), is that the first point of Aries is the point for us on earth to measure from—it gives us our orientation.

I should have proceeded to emphasise with the help of your diagrams that it is *the positions with regard to the earth* that are important in our figures: for instance, in the second diagram, if we regard the earth as in its March position, with Sun in Aries, Venus would then be seen from earth as being near the middle of Taurus, and would be rightly shown so in our horoscopes. But at the same moment of absolute time an observer on the planet Jupiter would, of course, see Venus in a direction parallel to what the earth-man would call Virgo (approximately), and though he would of course give this direction quite a different name, since not only would his zodiac have quite a different starting point to ours, but also—for all we know—it might be divided into a different number of signs; still, his place for Venus would make sense in his figures, while ours does in ours. This much to illustrate that *our* zodiac is relative to our own earthly point of view, whether we call that zodiac a small circle like a ring or aura round the earth, or whether we call it an infinitely large circle.

If anyone doubts this let him experiment with *heliocentric* longitudes (they are given in the nautical almanac and differ widely, so far as Mercury, Venus and Mars are concerned, from the geocentric), and I think he will find that experience shows that these are not the positions for us to regard.

Well, now, if we admit (as I think we must) that what we mean in practice by the 'zodiac' is something relative to an earth-centred point of view, clearly this hypothesis of the zodiac as a kind of aura becomes a legitimate one, which many people may find helpful, though we should beware of thinking of an aura too materialistically—we English all suffer from an ingrained tendency to crass materialism hereditarily implanted in our physical brains.

But in fact the term 'aura,' and also the final speculations are, as the writer himself points out, quite unessential to the main idea, which has to do with stimulating clear thinking about what our actual practice in computing the positions of the heavenly bodies really amounts to. On this subject it offers some valuable suggestions.

V.—THE RELATION OF EPOCH TO BIRTH.

The following suggestion of a writer in *Modern Astrology* for April, 1904, is given for the sake of those who take pleasure in research. If this so-called law can be established its value is obvious, (a) For ascertaining the unknown birth-times of parents when the true time of birth of a child is known: (b) For determining the true epoch (and hence the ascendant) when the birth-time of one of the parents is known accurately. We give the "law" in the writer's own words:

"The degree of the zodiac occupying the descendant of the diurnal horoscope¹ of a mother on the day of epoch of her child, becomes the culminating point (M.C.) of her diurnal horoscope on the day of that child's birth; and similarly,

"The culminating degree (M.C.) in the diurnal horoscope of a father on the day of epoch of his child, becomes the ascendant of his diurnal horoscope on the day of that child's birth."

In other words the horizon (—) becomes the meridian (|), and the meridian (|) the horizon (—), respectively. As in the case of the epoch itself, which is explained in Chapter VIII of SECTION A, it is quite possible that there may be other modifying factors to be discovered; and it is rather in the hope of stimulating research than for any other reason that this suggestion is published. It is possible, for instance, that under some circumstances the terms require to be reversed, the conditions here stated to apply to the father becoming true of the mother instead, and *vice versa*.

This "law" if valid would supply an explanation of the irregularity of the gestation period prevailing in high latitudes, as compared with the closer approach to the normal common in countries lying near the equator.

EXAMPLE. Data as follows: Male, born 30/9/1890, 4.43 p.m., London. Asc. $\kappa 5^{\circ}$; $\text{D } 86^{\circ}15'$. Epoch (irreg.) 10/1/1890, noon, London. Asc. $86^{\circ}15'$; $\text{D } \gamma 6^{\circ}43'$. Birth-time of mother given as 0.46 a.m., London.

CALCULATION (values approximate).

	h.	m.
Sidereal time at noon on day of birth	12	37
Less time of mother's birth before noon	11	14
Gives sidereal time of mother's Diurnal Horoscope on day of child's birth	1	23
Degree of Zodiac then culminating	$\gamma 22\frac{1}{2}^{\circ}$	
Sidereal time of $\gamma 22\frac{1}{2}^{\circ}$ setting (i.e., sidereal time of mother's Diurnal Horoscope on day of epoch)	8	8
Add time of mother's birth from noon	11	14
Gives sidereal time at noon on day of Epoch	19	22
Compare with sidereal time at noon on Jan. 10th, 1890 (day of epoch as calculated)	19	20
Discrepancy	0	2

¹ The "Diurnal Horoscope" is a daily horoscope erected for the place of birth at the exact time of day, a.m. or p.m. as the case may be, at which birth occurred.—See *Directions and Directing*, p. 58.

In a similar way the time of the father's birth, 6.3 p.m.,¹ might be utilised, the 'diurnal ascendant' on day of child's birth being the 'diurnal M.C.' on day of epoch: thus,

			<i>h.</i>	<i>m.</i>
S.T. noon, day of birth	-	-	12	37
Add time of father's birth	-	-	6	3
($\gamma 22\frac{1}{2}^\circ$ ascend.)	-	-	18	40
$\gamma 22\frac{1}{2}^\circ$ culminates at S.T.	-	-	1	23
Less time of father's birth	-	-	6	3
Gives S.T. noon, day of epoch	-	-	19	20

For the CONVERSE OPERATION, if (say) the mother's birth-time is unknown, proceed as follows:

			<i>h.</i>	<i>m.</i>
S.T. noon, day of child's birth (adding if necessary 24h.)	-	-	36	37
Less S.T. noon, day of epoch	-	-	19	20
Gives acceleration of meridian during period from epoch to birth	-	-	17	17

The difference between this amount and 24h. gives the diurnal semi-arc of the degree required, namely in this case 6h. 43m. Calculation, or an inspection of a table of houses for birth-place (London) shows the degree having this diurnal semi-arc to be $\gamma 22\frac{1}{2}^\circ$, which is therefore the culminating degree in the mother's diurnal horoscope on day of the child's birth: thus

			<i>h.</i>	<i>m.</i>
S.T. $\gamma 22\frac{1}{2}^\circ$ culm.	-	-	1	23
S.T. noon, day of birth	-	-	12	37
Difference	-	-	11	14

i.e., mother was born at 11h. 14m. before noon, or 0.46 a.m. Where the birth-time of father is required, proceed in exactly the same way, but note that the degree found culminates in the father's diurnal horoscope on day of child's epoch: thus

			<i>h.</i>	<i>m.</i>
S.T. $\gamma 22\frac{1}{2}^\circ$ culm. (adding 24h.)	-	-	25	23
S.T. noon, day of epoch	-	-	19	20
Difference	-	-	6	3

showing father's birth to be 6.3 p.m.

The above case is given only as an illustration of the method to be pursued, and is in no sense a test of the suggested law: it was chosen because the *locale* was in all cases London, and therefore furnished the simplest possible case, and because the birth-time of one parent was known fairly accurately.

It is clear that when the respective birth-places of parents or parent and children are widely separated, complications are introduced, but probably in most cases the pre-natal epoch of the parents would correct any error due to that cause.

It should be borne in mind that there are always *two* different points of the

¹ It is but right to say that this time is founded upon the assumption that the "law" is correct, and is only given for the sake of illustrating the method to be used.

zodiac which have the same semi-arc (e.g., $9\frac{1}{2}^\circ \times$ has same semi-arc as $\gamma 22\frac{1}{2}$). If, therefore, the time of *neither* parent is known, the time derived from each one of these points must be worked out: this will give a pair of times (somewhere about six hours apart) for each point, and it is hardly likely that there will be any great difficulty in deciding which is the correct pair.

It is to be hoped that students experimenting with this suggestion will let us know their conclusions. In order definitely to prove or disprove its truth, it is necessary to know times of birth of both parents with reasonable accuracy, and the *exact* birth-time of a child. Then, if all three have the same birth place, the law can easily be established. Unfortunately it is rare to come across a case where all these *desiderata* are to be met with in combination.

VI.—HOW TO FIND AN UNKNOWN ASCENDANT.

THE "NOON-POINT" METHOD: A SUGGESTION AND A THEORY, WITH AN EXAMPLE.

The following method was proposed by a writer in *Modern Astrology* for 1911. It did not, he says, originate in theory at all but was the result of a chance observation, subsequently confirmed too frequently, as it seemed, for mere coincidence. The method has at least the recommendation of simplicity, and we give it in the writer's own words:—

Some time ago I was working out a number of horoscopes, using for the purpose the ordinary Map Forms supplied by your office, on which as your readers will probably know there is a space marked "*progress for 1910 as at*," the space being left vacant for the insertion of that Date of the Year to which the Noon-Position of planets, as given in the Ephemeris, will measure. Thus, suppose a man born in London on January 1st, 0.0. a.m.: his progressed horoscope will be calculated for 0.0. a.m. of successive days, and will measure from Jan. 1st to Dec. 31st. Hence the noon-position of planets will measure to July 1st: and similarly with other dates and places and times, making due reduction to Greenwich Time.

This is all quite fully explained on pp. 34 to 36 of *The Progressed Horoscope* where this "NOON-DATE," as I will call it, is given for the Editor's nativity as November 9th.¹ It will be quite clear, I think, without going into any further detail, that this "Noon-Date" depends upon the date and G.M.T. of birth only, local time not being a factor in the result, so that in a batch of horoscopes it might chance that several of them would measure to the same Noon-Date, although cast for altogether different dates and times.

I found in a number of instances that the "Noon-Date" was the very day I was at work upon the horoscope. At first I took no more notice of this than to regard it as a singular coincidence, but when I found it happened repeatedly that the Noon-Date was very near the day I was at work upon some horoscope as to the time of which I could not be quite certain, I began to ask myself if there might not be some definite law concerned. The hypothesis I formed may first be stated, and then I will proceed to give an example of the practical application of the idea.

THE THEORY.

That London is the chief centre of civilised human life no one will deny. It can hardly be for nothing, too, seeing the importance of Time, that Greenwich should set the clock of the world. Then, I argued, might it not be that at certain set periods a "wave" of occult force is loosed upon the earth, flowing forth as a stream of influence somewhat like the flood of Prana launched at sunrise? The entry of the Sun into Aries marks the commencement of the Astrological Year, for the whole world. Might not the culmination of the Sun at Greenwich Noon similarly mark the commencement, for the whole world, of the Astrological Day?

Granting this then, it would follow that the Noon-Date, which as has been shewn depends upon this moment of noon, should in some way show a spurt of fresh life of some kind; perhaps a spurt of occult life. If so, might not this

¹ BIRTH DATA: 5.49 a.m., 7/8/'60, London.

little breath of "super-life," this Uranian ray, bring it about that the native should have his horoscope cast, or his ascendant decided (a weighty matter when you come to think of it) at that time? It seemed to me that it might.¹

AN EXAMPLE.

The Example I have to give is the nativity of Mr. W. W. Jacobs, concerning whose horoscope I have been considerably puzzled. An early portrait given in the *Strand Magazine* is quite remarkably like a man I have known from boyhood who is born under SAGITTARIUS, his ruler Jupiter being in Libra. Now Mr. Jacobs was born 8/9/'63 and the planets at noon on that date were:

☉	♃	♅	♄	♁	♂	♂	♁	♃
♏ 15	♏ 23	♏ 11	♏ 13 St.	♏ 23	♏ 27	♏ 6	♏ 25	♏ 5 R.

from which it will be seen that here also Jupiter is in Libra. Upon this, therefore, I founded a presumption of Sagittarius as ascendant. One day—it was August 4th—I was particularly exercised in my mind about the matter, and it suddenly occurred to me to use this method, which for convenience I will refer to as the "NOON-POINT METHOD." Let me give the whole calculation:

	y.	m.	d.
The moment of birth measures to	(1863) 9 8
Noon, G.M.T. (by hypothesis) measures to	(1910) 8 4
DIFFERENCE			1 4

Now 1m. 4d. at the rate of a year for a day=2h. 16m., and hence if August 4th corresponds to noon G.M.T., and September 8th to the actual moment of birth, this latter must be 2.16 p.m. G.M.T.

Mr. Jacobs was born in London, and therefore the Greenwich time in his case is also the local time, so that 2.16 p.m. is the local time of birth. Consequently, S.T. noon 8/9/'63 being 11.8.13 we have for the S.T. at birth 13.24.36, which makes the ascendant ♏ 19.40.

Assuming this to be the correct birthtime, let us test it by the Prenatal Epoch. The regular Prenatal Epoch would fall on 6/12/'62, on which date the Moon is in Gemini and the ascendant according to rule should be ♏ 24, giving for epoch-Moon birth-Ascendant ♏ 17—which does *not* corroborate our hypothetical ascendant. But it is a curious thing that if we assume the Epoch to be *irregular*, to the extent of making ♏ 24 ascend instead of ♏ 24, we arrive at a birth ascendant of ♏ 19.30. This may be only a coincidence but if so is certainly a startling one.

In two instances I can call to mind, the birthtime as thus deduced is confirmed by a perfectly regular epoch, and as the two persons are *twins* the case seems remarkably significant.

EPITOME OF THEORY.

1. The moment of Greenwich Noon is associated with a wave of spiritual energy which seems in some way associated with Uranus or at least with Astrology.

2. When during the steady ticking round of any person's Progressed Horoscope, year by year, this instant is reached, at that time a thrill of astro-

¹ "But why use *mean* noon, instead of true noon?" asks a friend. I do not know. I have used M.T. in my experiments, but it may be that T.T. should be used. I do not think the point can be decided off-hand. In any event the difference is never more than about 16 minutes, i.e., 4°.

logical interest is manifested as regards that person ; either by himself, or by some student interested in his nativity.

3. There will therefore be in each year of every life one particular date of "maximum astrological intensity." This date I have termed the "Noon-Date."¹

4. If at any time a student finds himself for no very obvious reason intensely interested in any person's horoscope, that occasion is most probably the "Noon-Date" of the said person, and from this starting point the G.M.T. of his birth may be presumed ; from which, knowing his birth-place, the horoscope is a mere matter of computation.

A POSSIBLE EXTENSION OF THE HYPOTHESIS.

The year has four cardinal signs, and the day four quarters. It may be that 6 a.m., 6 p.m. and midnight should be included in the theory along with noon. If so, it will have the effect of making *four* "Noon-Dates" in the year, three months apart. From this it would follow that as a given Noon-Date might be any one of these four, the birth-time based on it should have added to it respectively 6, 12 and 18 hours, and examination made of all four resulting horoscopes to see which most nearly fits the native.

¹ It might be interesting for each student to calculate it in his own case and see if this "Noon-Date" is associated with any significant incidents in his life. In the Editor's case the date of his first leaving England for India was November 11th (*Modern Astrology*, February, 1910, p. 45) and this is near enough to November 9th, the Noon-Date, to suggest some significance.

VII.—HOW TO CALCULATE THE MOON'S PLACE FOR ANY PAST OR FUTURE DATE.

THE following method is taken from *Le Determinisme Astral*, to which it was contributed by an English astrologer who writes under the pseudonym of "Kymry." It is stated that the error rarely amounts to more than 30'. We quote the example given: *To find the Moon's longitude on the 30th April, 1912, noon, Paris.* METHOD:—(1) subtract 12 years; (2) add 57 days; ¹(3) add 121° 10' to the Moon's longitude at noon on that day. This will give the longitude at noon on the day required—similarly, of course, for any time of day other than noon.

This may be turned into a formula as follows:— $\text{D's long. "D" = D's long. ("D" - 4326 days) + 121^{\circ}10'}$; "D" being the date of the day on which the D's long. is sought. By interchanging the signs + and - in this formula it will give the D's long. for a *past* date as readily as for a *future* one. To return to the example:—

Given date = April 30	1912
Subtract years	12
	<hr/>
	= April 30 1900
Add days	57
	<hr/>
	= June 26 1900
	<hr/>
Long. of D at noon (Paris) 26/6/1900	Π 27°33'
Add	121°10'
	<hr/>
TOTAL: D's long. at noon (Paris) 30/4/1912 =	$\simeq 28^{\circ}43'$

Thus the required longitude is obtained. This method is of course only applicable to THE MOON.

The process may be repeated indefinitely, and thus the Moon's approximate place may be found on any past or future date. Though it must of course be remembered that the closeness of approximation will be diminished as the period of time becomes greater: so that it would hardly be wise to use this method for periods of over a century.

¹ If the year 1900 (or any other century year which is not a leap year) is contained during the period of years subtracted, add 56 days instead of 57.

VIII.—HOW TO FIND THE POSITIONS OF URANUS AND NEPTUNE FOR ANY DATE PRIOR TO 1800.

It occasionally happens that one wishes to set up a figure for some date prior to the nineteenth century, the ephemerides of which period did not, of course, include the positions of the two outermost planets of our system, since they were not then known. It is useful to know how to calculate their positions for any remote date, this more especially since these planets are almost always significant elements in men of genius whose horoscopes are likely to form the subject of research. In such a case one is not concerned with any very precise details, and therefore the following method (in which precession has been allowed for) will be quite accurate enough.

In the table given below will be found in one column a series of years, at irregular intervals, from A.D. 1000 to 1820. In the next column, in line with each of these years will be found in *italic figures* another year, followed by "Corr. — 10° 11'" or other amount. Sometimes the sign 8 occurs, and where this happens the year in italics always ends in $\frac{1}{2}$.

The italic date in the right-hand column represents the completion of an integral number of the planet's periods, from the date in the left-hand column; or, in the case of Neptune, half-periods. The degrees and minutes are the "correction" to be subtracted.

Thus suppose we want to find the positions of Uranus and Neptune for January 1st, A.D. 1000 we look for their positions on January 1st, 1823 and 1840, and subtract respectively 10° 11' and 11° 40' from the positions there found, giving us for Neptune $25^{\circ} 8' - 10^{\circ} 11' = 14^{\circ} 57'$ and for Uranus $33^{\circ} 11' - 11^{\circ} 40' = 21^{\circ} 31'$.

Where "8" occurs and the italic year ends in $\frac{1}{2}$, six months must be added to the date, July being used for January, August for February, etc., and the *opposite point* of the zodiac used. The example given below will show how the table is used.

NEPTUNE.				URANUS.			
For	A.D.		Corr.	For	A.D.		Corr.
1000 use	1823	with —	10° 11'	1000 use	1840	with —	11° 40'
1090 "	8 1831½	" —	9° 55'	1070 "	1826	" —	10° 30'
1170 "	1828	" —	6° 38'	1150 "	1822	" —	9° 20'
1250 "	8 1826½	" —	8° 0'	1240 "	1828	" —	8° 10'
1330 "	1824	" —	6° 33'	1320 "	1824	" —	7° 0'
1410 "	8 1821½	" —	2° 53'	1400 "	1820	" —	5° 50'
1500 "	1829	" —	3° 38'	1490 "	1826	" —	4° 40'
1580 "	8 1827½	" —	3° 22'	1570 "	1822	" —	3° 30'
1660 "	1825	" —	0° 5'	1660 "	1828	" —	2° 20'
1740 "	8 1822½	" —	1° 27'	1740 "	1824	" —	1° 10'
1820 "	8 1902½	" —	1° 27'	1820 "	1904	" —	1° 10'

EXAMPLE. Franz Schubert, the composer, was born on the 31st of January, 1797. What were the positions of Neptune and Uranus on that date?

First Neptune. Looking in the table we find 1740 8 1822½. The year we want, 1797, is fifty-seven years later, and therefore we take $1822\frac{1}{2} + 57 = 1879\frac{1}{2}$. This means we must find the position of Neptune not for January 31st but for July 31st, in 1879. This is 8 12.0, stationary; and from this we subtract the

correction $1^{\circ}27'$ giving us $\gamma 10.33$. But this is the opposite point, it must be remembered, to what we want and we therefore write down: $\psi 31/1/1797$, $\mu 10.33$, stat.¹

Next Uranus. Here again we find in the Table 1740, although it is worth remarking that the two left-hand columns do not always coincide in this way. Against 1740 we find 1824, and adding 57 we obtain $1797 = 1881$. Here as there is no " γ " we turn to January 31st, 1881, where we find for Uranus $\mu 12.57 R$, from which taking the correction $1^{\circ}10'$ we may write down: $\psi 31/1/1797$, $\mu 11.47$.²

Any other example could be worked the same way. In the one chosen, the italic dates 1879, 1881 fall within the compass of the Condensed Ephemeris. When they fall between 1820 and 1830, a new date can be found from the last line in the Table, and the positions found in that way, e.g., $\psi 1/1/1250$. Here we say $1250 = \gamma 1826\frac{1}{2} - 8^{\circ}0' = \gamma 1/7/1826 - 8^{\circ}0' = \gamma \gamma 1/7/1902\frac{1}{2} + 6 - 1^{\circ}27' = \gamma 1/1/1909 - 9^{\circ}27' = \gamma 6.25$. Here the $\gamma \gamma$ is equivalent to γ and therefore we do *not* take the opposite point.

If the italic years fall between 1840 and 1850 an ephemeris for the year must be referred to.

¹ In the First Edition of this book the position for this date is given as $\mu 7^{\circ}$ or 8° , this result being vitiated by annual parallax, owing to the use of the *half*-period of Neptune. In the table given above, the annual parallax has been eliminated, and $\mu 10.33$ may therefore be regarded as correct to within a few minutes of longitude.

² This is probably more correct, if anything, than the position given in *White's Ephemeris* for $31/1/1797 - \mu 12.5$ —as at that date the motion of Uranus was not so well understood as it has since become.

IX.—HOW TO CALCULATE THE PLANETS' PLACES FOR ANY PAST OR FUTURE DATE.

To reduce heliocentric latitudes and longitudes, as calculated from the Elements of the planets given in astronomical works,¹ to geocentric latitudes and longitudes. May be used for calculating a planet's position for any number of years, past or to come.

To convert Heliocentric LONGITUDE into Geocentric.

- (1) From the Heliocentric longitude of the planet ($+360^\circ$ if necessary) subtract the Helioc. long. of the earth (=Geoc. long. $\odot - 180^\circ$). If this exceeds 180° , subtract it from 360° . Call the result A .
- (2) Half of the supplement of A gives B [i.e., $B = (180 - A) \div 2$].
- (3) Log. of planet's distance from $\odot + \log.$ cosine Helioc. latitude of planet = log. C . If latitude is unknown, use log. distance only.
- (4) Log. $C - \log.$ radius vector of earth (or *vice versa* if an inferior planet) = log. tan. D . For log. radius vector see *Nautical Almanac*.
- (5) Log. tan. $(D - 45^\circ) + \log.$ tan. $B = \log.$ tan. E .
- (6) The Angle of Elongation is either the sum or difference of B and E .
- (7) The Geoc. long. of \odot plus or minus the Angle of Elongation = Geoc. long. of planet. Which of these operations is to be done is best decided by drawing a rough diagram, and seeing from it whether Helioc. long. is more or less than Geoc.

To convert Heliocentric LATITUDE into Geocentric.

Say: "As the sine of A is to the sine of the *angle of elongation*, so is the tangent of the *heliocentric latitude* to the tangent of the *geocentric latitude*."

This formula has been condensed and simplified from the rules given in Vince's *Astronomy*. The heliocentric position of any major planet (except Jupiter) can be calculated accurately enough for most purposes by assuming its orbit circular and its motion uniform, and neglecting the movement of the apsis and node.

The above calculations will of course only become necessary where no Ephemeris or *Nautical Almanac* is available, since the calculation from right ascension and declination is much simpler.

¹ These are given in the *Encl. Brit.* There is also a very compendious series in Ball's *Elements of Astronomy*.

X.—SOLUTION OF SPHERICAL TRIANGLES.

For many problems of exact work, it is necessary to know how to solve *spherical triangles*. A spherical triangle is formed where any three great circles of the sphere intersect each other.¹ Thus, for example, any two meridians and the equator form two spherical triangles, one apex being at either pole.

Any three sides or angles of a spherical triangle being known it is generally possible to determine the other side or sides and angles or angle, by the formulæ here given.² This is, in effect, the procedure given in Chapter X., where sufficient explanation of the matter is given for most purposes.

The 'sides' and 'angles' of spherical triangles are all measured in *degrees*; the 'sides' being arcs of great circles, their measure is the angle they subtend at the centre of the sphere; the 'angles' are the inclinations of the planes, in which the circles lie, to one another. In mathematical nomenclature the angles are represented by capital letters and the sides *opposite* those angles by small letters.

The formulæ will only be needed for special cases, but they may be useful for investigating such problems as are set out in Chapter XII of SECTION A, and Articles II and III of this Appendix. Those who have tables of logarithmic values calculated only for sines and cosines, tangents and cotangents, may be glad to be reminded that the cosecant is the reciprocal of the sine, and that the secant is the reciprocal of the cosine. Hence $l. \text{cosec. } A = l. \sin A \text{ (a.c.)}$ and $l. \sec A = l. \cos A \text{ (a.c.)}$, a.c. implying the arithmetical complement. The multiplication is of course performed by means of logarithms as shown in Chapter X. The use of logarithms has been explained in Chapter IX.

I. Right-Angled Spherical Triangles.

Let $A B C$ be any right-angled spherical triangle, C being the right angle, and a, b and c the respective opposite sides, c of course being the hypotenuse. There are six cases, as follows.

- (1) GIVEN, a, b ; SOUGHT, c, A, B .
 $\cos. c = \cos. a \times \cos. b$; $\tan. A = \tan. a \times \text{cosec. } b$; $\tan. B = \tan. b \times \text{cosec. } a$.
- (2) GIVEN, c, b ; SOUGHT, a, A, B .
 $\cos. a = \cos. c \times \sec. b$; $\cos. A = \tan. b \times \cot. c$; $\sin. B = \sin. b \times \text{cosec. } c$.
- (3) GIVEN, a, A ; SOUGHT, b, c, B .
 $\sin. b = \tan. a \times \cot. A$; $\sin. c = \sin. a \times \text{cosec. } A$; $\sin. B = \cos. A \times \sec. a$.
 NOTE.—This case is ambiguous, each of the things sought having two values, either the angle found or its supplement. Thus $\sin. b = \sin. (180^\circ - b)$.
- (4) GIVEN, a, B ; SOUGHT, b, c, A .
 $\tan. b = \sin. a \times \tan. B$; $\cot. c = \cot. a \times \cos. B$; $\cos. A = \cos. a \times \sin. B$.
- (5) GIVEN, c, A ; SOUGHT, a, b, B .
 $\sin. a = \sin. c \times \sin. A$; $\tan. b = \tan. c \times \cos. A$; $\cot. B = \cos. c \times \tan. A$.
- (6) GIVEN, A, B ; SOUGHT, a, b, c .
 $\cos. a = \cos. A \times \text{cosec. } B$; $\cos. b = \cos. B \times \text{cosec. } A$; $\cos. c = \cot. A \times \cot. B$.

¹ A "great" circle is one whose diameter is also a diameter of the sphere. A "small" circle is any circle parallel to a great circle: thus meridians of longitude and the equator are great circles, while parallels of latitude are small circles. Great circles of the sphere correspond to straight lines in a plane, while small circles correspond to curved lines in a plane.

² Taken from Farley's *Tables of Six-Figure Logarithms*, Longmans, 1859.

II. *Oblique-Angled Spherical Triangles.*

Here C may be any angle, acute, obtuse, or right. There are as before six cases, but the formulæ are more complex than those for right-angled spherical triangles.

- (1) GIVEN a, b, c ; SOUGHT, A, B, C .

$$\text{Let } s = \frac{1}{2}(a + b + c).$$

$$\text{Assume } M = \sqrt{\sin.(s-a) \times \sin.(s-b) \times \sin.(s-c) \times \text{cosec. } s.}$$

$$\text{then, } \tan. \frac{1}{2} A = M \times \text{cosec. } (s-a)$$

$$\tan. \frac{1}{2} B = M \times \text{cosec. } (s-b)$$

$$\tan. \frac{1}{2} C = M \times \text{cosec. } (s-c)$$

- (2) GIVEN, a, b, C ; SOUGHT, c, A, B .

There are two methods:

- (i.) Find an angle ϕ such that $\cot. \phi = \tan. a \times \cos. C$; then,

$$\cos. c = \cos. a \times \sin. (b + \phi) \times \text{cosec. } \phi.$$

$$\sin. A = \sin. C \times \sin. a \times \text{cosec. } c.$$

$$\sin. B = \sin. C \times \sin. b \times \text{cosec. } c.$$

- (ii.) Otherwise,

$$\tan. \frac{1}{2} (A + B) = \cot. \frac{1}{2} C \times \cos. \frac{1}{2} (a - b) \times \sec. \frac{1}{2} (a + b).$$

$$\tan. \frac{1}{2} (A - B) = \cot. \frac{1}{2} C \times \sin. \frac{1}{2} (a - b) \times \text{cosec. } \frac{1}{2} (a + b).$$

$$A = \frac{1}{2} (A + B) + \frac{1}{2} (A - B)$$

$$B = \frac{1}{2} (A + B) - \frac{1}{2} (A - B)$$

$$\sin. c = \sin. a \times \sin. C \times \text{cosec. } A = \sin. b \times \sin. C \times \text{cosec. } B.$$

- (3) GIVEN, a, b, A ; SOUGHT, c, B, C .

Find two angles ϕ and ψ such that: $\cot. \phi = \tan. b \times \cos. A$; $\tan. \psi = \cos. b \times \tan. A$; then

$$\sin. (c + \phi) = \cos. a \times \sin. \phi \times \sec. b.$$

$$\sin. B = \sin. A \times \sin. b \times \text{cosec. } a.$$

$$\sin. (C + \psi) = \cot. a \times \tan. b \times \sin. \psi.$$

NOTE.—This case is ambiguous.

- 4) GIVEN, A, B, c ; SOUGHT, a, b, C .

Find two angles ϕ and ψ such that: $\tan. \phi = \cos. c \times \tan. A$; $\tan. \psi = \cos. c \times \tan. B$; then,

$$\tan. a = \tan. c \times \sin. \phi \times \text{cosec. } (B + \phi).$$

$$\tan. b = \tan. c \times \sin. \psi \times \text{cosec. } (A + \psi).$$

$$\cos. C = \cos. A \times \cos. (B + \phi) \times \sec. \phi.$$

$$= \cos. B \times \cos. (A + \psi) \times \sec. \psi.$$

GIVEN, A, B, a ; SOUGHT, b, c, C .

Find two angles ϕ and ψ such that $\tan. \phi = \tan. a \times \cos. B$; $\cot. \psi = \cos. a \times \tan. B$; then,

$$\sin. b = \sin. a \times \sin. B \times \text{cosec. } A.$$

$$\sin. (c - \phi) = \cot. A \times \tan. B \times \sin. \phi.$$

$$\sin. (C - \psi) = \cos. A \times \sin. \psi \times \sec. B.$$

NOTE.—This case is ambiguous.

- (6) GIVEN, A, B, C ; SOUGHT, a, b, c .

$$\text{Let } S = \frac{1}{2} (A + B + C):$$

$$\text{Assume } N = \sqrt{\frac{-\cos. S}{\cos. (S-A) \times \cos. (S-B) \times \cos. (S-C)}}$$

$$\text{then, } \tan. \frac{1}{2} a = N \times \cos. (S-A).$$

$$\tan. \frac{1}{2} b = N \times \cos. (S-B)$$

$$\tan. \frac{1}{2} c = N \times \cos. (S-C).$$

GENERAL SURVEY OF STANDARD TIME*

AS ADOPTED IN VARIOUS COUNTRIES FOR RAILWAYS AND TELEGRAPHS.

Country or Territory.	Time System in use as compared with Greenwich.	When adopted.	When made legal.	Designation of System.
EUROPE.				
Great Britain -	Greenwich Time -	(Footnote, p. 43)	1880 -	-
Ireland -	25 minutes 21 seconds slow (Dublin time).	—	1880 -	-
France -	9 minutes 21 seconds fast (Paris time)	—	1891, March 15	—
(See note on next page.)				
Spain -	Greenwich time -	1901, Jan. -	—	—
Portugal -	—	—	—	—
Belgium -	Greenwich time -	1892, May -	1892, April -	—
Holland -	Greenwich time -	—	—	—
Italy -	1 hour fast -	1893, Nov. 1 -	1893, Nov. -	Mid-European
Switzerland -	1 hour fast -	1894, June 1 -	1894, Jan. -	Mid-European
Norway -	1 hour fast -	1895, Jan. 1. -	—	Mid-European
Sweden -	1 hour fast -	—	—	Mid-European
Germany -	1 hour fast -	1893, April 1 -	1893, April -	Mid-European
Austria -	1 hour fast -	—	—	Mid-European
Russia -	2 hours 1 minute fast (Pulkowa time)	—	—	—
Bulgaria -	hours fast -	—	—	East-European
Turkey -	hours fast -	—	—	East-European
Roumania -	2 hours fast -	—	—	East-European
Greece -	—	—	—	—
Denmark -	1 hour fast -	1894, Jan. 1 -	1893, March -	Mid-European
Mauritius -	4 hours fast -	1907, Jan. 1 -	—	—
Seychelles Islands -	4 hours fast -	1906, June -	—	—
ASIA.				
Chagos Archipelago -	5 hours fast -	1907, Jan. 1 -	—	—
Turkey in Asia -	—	—	—	—
Persia -	—	—	—	—
India -	5 hours 30 minutes fast -	1905, July -	—	—
Further India -	6 hours 30 minutes fast -	1905, July -	—	—
China (Shanghai) -	8 hours fast -	1903, Jan. -	—	—
Japan -	9 hours fast -	1886 -	1886 -	—
Philippine Islands -	9 hours fast -	—	—	—
Hong Kong -	8 hours fast -	1904, Oct. -	—	—
Labuan and N. Borneo -	8 hours fast -	1904, Oct. -	—	—
AFRICA.				
Algeria -	9 minutes 21 seconds fast (Paris time)	—	1891, March 15	—
(See note on next page.)				
Egypt -	2 hours fast -	1900, Oct. 1 -	—	East-European
Orange River Colony -	2 hours fast -	1903 -	—	East-European
Transvaal -	2 hours fast -	1903 -	—	East-European
Natal -	2 hours fast -	1895, Sept. 1 -	—	East-European
Cape Colony -	2 hours fast -	1903 -	—	East-European

* This list was issued from the Royal Observatory, Greenwich, under date of December 4th, 1907.
 13 OVER.

AMERICA (CANADA AND UNITED STATES).

Longitude.					
From	To				
E. Coast	67 $\frac{1}{2}$ ° W.	- 4 hours slow -	- 1883, Nov. 18 -	—	Inter-Colonial
67 $\frac{1}{2}$ ° W.	82 $\frac{1}{2}$ ° W.	- 5 hours slow -	- 1883, Nov. 18 -	—	Eastern
82 $\frac{1}{2}$ ° W.	97 $\frac{1}{2}$ ° W.	- 6 hours slow -	- 1883, Nov. 18 -	—	Central
97 $\frac{1}{2}$ ° W.	112 $\frac{1}{2}$ ° W.	- 7 hours slow -	- 1883, Nov. 18 -	—	Mountain
112 $\frac{1}{2}$ ° W.	W. Coast	- 8 hours slow -	- 1883, Nov. 18 -	—	Pacific

AUSTRALASIA.

W. Australia	-	- 8 hours fast -	- 1895, Feb. 1 -	—	—
S. Australia	-	- 9 $\frac{1}{2}$ hours fast -	- 1895, Feb. 1 -	—	—
Victoria	-	- 10 hours fast -	- 1895, Feb. 1 -	—	—
New South Wales	-	- 10 hours fast -	- 1895, Feb. 1 -	1894, Dec. 18	—
Queensland	-	- 10 hours fast -	- 1895, June 1 -	—	—
New Zealand	-	- 11 $\frac{1}{2}$ hours fast -	- — -	—	—

REMARKS.

America.—The dividing lines of the zones as here given are not rigidly adhered to in all cases.

Austria.—Mid-European time has been in use on the railways of Austria for several years, but this is not the legal time of the country, nor that in common use.

Portugal.—A Bill was brought into the Portuguese Parliament in 1903 with the object of making Greenwich time the standard time of the country.

Twenty-four-Hour Clock.—The system of numbering the hours from 0 to 24, 0 hours being midnight, is legal in Belgium, Italy and Spain, and is also in use on the Canadian railways.

IMPORTANT NOTE.

ALTERATION IN STANDARDS OF TIME.

FRANCE.—While this edition is passing through the press Greenwich Time has become the Standard Time in France. It was officially adopted at 0.0 a.m., 11/3/1911, all French clocks (which had previously kept Paris time) being then put back nine minutes twenty-one seconds. So that France now uses Greenwich Time. The time transmitted from the Eiffel Tower by wireless telegraphy to ships at sea continued to be PARIS time, as before, until June 30th, 1911.

GRENADA, B.W.I.—“COLONIAL SECRETARY'S OFFICE, 14th June, 1911: With the object of securing uniformity of time throughout the British West Indies and British Guiana, Standard Time, *i.e.* time exactly 4 hours later than Greenwich Mean Time, will be adopted in this Colony from the 1st day of July, 1911. Public notice is hereby given that at midnight of the 30th June—1st July the Town Clock of St. George's and all other Government Clocks will be advanced seven minutes.”

THE PRESENT STATUS OF THE USE OF STANDARD TIME. *

STANDARD TIME.

STANDARD time may be defined as time based upon a certain definite meridian that is adopted by law or usage as the time meridian for a more or less wide extent of country, in place of the various meridians upon which local mean time is based. Its advantage is, that neighbouring places then keep exactly the same time instead of differing by a few minutes or seconds according to their differences of longitude, a matter of especial importance in connection with the operation of railroads and telegraphs or the transaction of any business wherein contracts involve any definite time limits.

In the selection of standard time meridians it is of course desirable not to have them so far apart as to cause any very marked variation from true local mean time at any point, and the plan usually adopted is to have them exactly one hour of time, or 15 degrees of longitude, apart. It is also desirable, for the sake of international convenience and harmony, to base them upon the prime meridian that is in most common use throughout the world, namely that of Greenwich, England.

The United States adopted standard time in 1883, on the initiative of the American Railway Association, and at noon on November 18 of that year the telegraphic time signals sent out daily from the Naval Observatory at Washington were changed to the new system, according to which the meridians of

75°, 90°, 105°, and 120°
west from Greenwich became the time meridians of
Eastern, Central, Mountain, and Pacific

standard time, respectively. When it is noon at Washington, Baltimore, Philadelphia, New York, and Boston, it is precisely 11 a.m. at Chicago, Minneapolis, St. Louis, and New Orleans; 10 a.m. from Dakota to Arizona and New Mexico, and 9 a.m. at all points on the Pacific coast.† The same system has been extended to our remotest possessions, and has spread over the greater portion of the civilised world, although a few nations still use their own prime meridians instead of that of Greenwich.

THE INTERNATIONAL DATE LINE.

The meridian 180° east and west from Greenwich, which crosses the Pacific Ocean from the Aleutian to the Fiji Islands, is called the international date line. Here each new day has its birth at the instant when it is exactly noon of the *preceding date* at Greenwich; 7 a.m. at Washington; 4 a.m. at San Francisco, and 1.30 a.m. at Honolulu. It is thus evident that if a vessel west bound across the Pacific were to continue her old calendar, without change, she would find upon arrival in Japan, Australia, or New Zealand, that she was one day behind in the day of the week and month. To avoid this it is customary, upon crossing the one hundred and eightieth meridian, to drop a day when bound west; to repeat a day when bound east. For instance, in the first case, Monday, October 24, would be followed in the log book by Wednesday, October 26, and in the second case, Monday, October 24, would be followed by another Monday, October 24.

* An Extract from the *Brochure* issued by the United States Naval Observatory at Washington (under date of August 9th, 1907), whose courtesy is hereby gratefully acknowledged.—ED.

† A list of the dividing points, indicating the adjacent towns at which the standard time differs by one hour, will be found on p. 328.

The date line does not coincide with the one hundred and eightieth meridian everywhere, because as a mere matter of convenience it is better for all of eastern Siberia to have the same date, for all of the extreme Aleutian and Hawaiian Islands to have the same date as the other islands of those groups and as the United States, and for all of the Fiji and Chatham Islands to have the same date as Australia and New Zealand, with which they are closely connected politically and geographically. The date line is thus slightly irregular, but follows very closely the one hundred and eightieth meridian.

A curious thing brought out by a consideration of this date line is the fact that the total duration or life of each day, if you consider the entire globe and not merely a single locality, is 48 instead of 24 hours. For example, imagine yourself close to but west of this line, near the equator, at midnight, when the new day begins. Remain there until noon and the day will then have lasted 12 hours. Now suppose that you move west, with the Sun overhead all the time, until you return close to, but east of, the date line. During this rapid trip of 900 knots (nautical miles) per hour, you will have passed 24 hours, all the time at noon of the same day, making 36 hours in all. Finally, if you wait there until the day ends, at midnight, it will add 12 hours more, making 48 hours for the total duration of that single day.

THE CONVERSION OF THE TIME OF ONE COUNTRY INTO THAT OF ANOTHER.

The following table is specially arranged for use in converting the time of one country into that of another, *without any confusion regarding the proper date*. It gives the hours, minutes, and seconds earlier or later than Washington or "eastern" standard time, which is in use everywhere from Maine to South Carolina, and also the same data for Greenwich time. Thus when it is noon at Washington it is also noon at New York, Philadelphia and Boston; one hour earlier, or 11 a.m., at Chicago, St. Louis, and New Orleans; 10 a.m. at Denver; 9 a.m. at San Francisco; 6.30 a.m. at Honolulu; and thirteen hours later, or 1 a.m. the next day, at Manila.

One more example will serve to make the use of the table still clearer. When it is 6 p.m. at Chicago, what time is it at Manila? The table shows that Chicago is one hour earlier (—) than Washington, so that it is then 7 p.m. at Washington, and as Manila is thirteen hours later (+) than Washington it must then be 8 a.m. the next day at Manila. In other words, to convert Chicago time into Manila time add 14 hours, and to convert Manila time into Chicago time subtract 14 hours.

Table for the Conversion of Time.

[To the nearest second.]

Place.	Earlier (—) or Later (+) than,					
	Washington.			Greenwich.		
	<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
United States—						
From Maine to South Carolina ...	0	0	0	— 5	0	0
From Dakota and Michigan to Texas and Florida ...	— 1	0	0	— 6	0	0
From Montana to Arizona and New Mexico ...	— 2	0	0	— 7	0	0
Pacific Coast States and Nevada ...	— 3	0	0	— 8	0	0
Sitka, Alaska ...	— 4	0	0	— 9	0	0
Hawaiian Islands ...	— 5	30	0	— 10	30	0
Tutuila, Samoa ...	— 6	30	0	— 11	30	0
Guam ...	+ 14	30	0	+ 9	30	0

Table for the Conversion of Time—Continued.

Place.	Earlier (−) or Later (+) than,					
	Washington.			Greenwich.		
	<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
United States (<i>continued</i>)—						
Philippine Islands ...	+13	0	0	+8	0	0
Porto Rico ...	+1	0	0	−4	0	0
Panama Canal Zone ...	0	0	0	−5	0	0
Algeria ...	+5	9	21	+0	9	21
Argentina ...	+0	43	12	−4	16	48
Australia, western ...	+13	0	0	+8	0	0
Australia, central ...	+14	30	0	+9	30	0
Australia, eastern ...	+15	0	0	+10	0	0
Austria-Hungary ...	+6	0	0	+1	0	0
Belgium ...	+5	0	0	0	0	0
Borneo (British North) and Labuan ...	+13	0	0	+8	0	0
Brazil (Rio Janeiro) ...	+2	7	19	−2	52	41
British Columbia ...	−3	0	0	−8	0	0
Canada, eastern ...	0	0	0	−5	0	0
Canada, central ...	−1	0	0	−6	0	0
Chile ...	+0	17	14	−4	42	46
China (Shanghai) (<i>see pp. 316, 320, however</i>) ...	+13	5	43	+8	5	43
China (Saigon) (" " ") ...	+12	6	49	+7	6	49
Colombia ...	+0	3	6	−4	56	54
Costa Rica ...	−0	36	17	−5	36	17
Cuba ...	−0	29	26	−5	29	26
Denmark ...	+6	0	0	+1	0	0
Ecuador ...	−0	14	7	−5	14	7
Egypt ...	+7	0	0	+2	0	0
England ...	+5	0	0	0	0	0
Fiji Islands (Suva) ...	+16	53	44	+11	53	44
France ...	+5	9	21	+0	9	21
Germany ...	+6	0	0	+1	0	0
Gibraltar ...	+5	0	0	0	0	0
Greece ...	+6	34	53	+1	34	53
Holland ...	+5	0	0	0	0	0
Honduras ...	−1	0	0	−6	0	0
Hongkong ...	+13	0	0	+8	0	0
India (Madras) ...	+10	30	0	+5	30	0
Ireland ...	+4	34	39	−0	25	21
Italy ...	+6	0	0	+1	0	0
Jamaica (Kingston) ...	−0	7	11	−5	7	11
Japan ...	+14	0	0	+9	0	0
Java ...	+12	7	14	+7	7	14
Kiaochau ...	+13	0	0	+8	0	0
Korea ...	+14	0	0	+9	0	0
Madagascar (Tananarivo) ...	+8	10	7	+3	10	7
Malta ...	+6	0	0	+1	0	0
Mauritius ...	+8	50	13	+3	50	13
Mexico ...	−1	36	27	−6	36	27
Newfoundland (St. Johns) ...	+1	29	16	−3	30	44
New Zealand ...	+16	30	0	+11	30	0
Nicaragua ...	−0	45	10	−5	45	10
Norway ...	+6	0	0	+1	0	0
Nova Scotia ...	+1	0	0	−4	0	0
Panama (Colon) ...	−0	19	39	−5	19	39
Peru ...	−0	9	3	−5	9	3

Table for the Conversion of Time—Continued.

Place.	Earlier (−) or Later (+) than,					
	Washington.			Greenwich.		
	<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
Portugal ...	+ 4	23	15	− 0	36	45
Russia (Pulkowa) ...	+ 7	1	19	+ 2	1	19
Russia (Irkutsk) ...	+ 11	57	5	+ 6	57	5
Russia (Vladivostok) ...	+ 13	47	31	+ 8	47	31
Salvador ...	− 0	56	32	− 5	56	32
Servia ...	+ 6	0	0	+ 1	0	0
Singapore ...	+ 11	55	25	+ 6	55	25
South Africa (British) ...	+ 7	0	0	+ 2	0	0
Spain ...	+ 5	0	0	0	0	0
Sweden ...	+ 6	0	0	+ 1	0	0
Switzerland ...	+ 6	0	0	+ 1	0	0
Tunis ...	+ 5	9	21	+ 0	9	21
Turkey ...	+ 7	0	0	+ 2	0	0
Uruguay ...	+ 1	15	11	− 3	44	49
Venezuela ...	+ 0	32	16	− 4	27	44

It may be added that England proposes to adopt for India and Ceylon the time meridian of 10*h.* 30*m.* 0*s.* later than Washington (5*h.* 30*m.* 0*s.* later than Greenwich), and for Burma 11*h.* 30*m.* 0*s.* later than Washington (6*h.* 30*m.* 0*s.* later than Greenwich), thus adding that vast region to the long list of countries that use standard time based upon the meridian of Greenwich.

THE UNIVERSAL TIME SYSTEM.

The need of a common and harmonious international system of time becomes greater every year by reason of the rapid extension of railroads telegraphs and cables, and the increase of international, diplomatic and business relations that are conducted by telegraph. When a telegram is sent it is of course important to know the corresponding date and time of day at its destination, and confusion and errors may be avoided if the difference of time is only a question of hours or half hours, instead of hours, minutes and seconds. Moreover, this question of the best common standard of time is merely part of the still more important question of the best common standard of longitude, as longitude and time are practically the same. By far the greater part of all the charts and maps are based upon the prime meridian of Greenwich, and it is of great importance in navigation and geographic work for all charts, maps, sailing directions and notices to mariners to reckon longitudes from the same prime meridian, exactly as they already reckon latitudes from the equator.

The following quotation from *The Observatory* for November, 1904, supplies a graphic illustration of how this universal time system is spreading over the world by reason of the same self-evident advantages that induced the American people to accept it by common consent when it was first adopted and sent out from the United States Naval Observatory at noon of November 18, 1883:

"Gradually, and without any public notification, the standard time 8 hours fast on Greenwich has crept into use along the coast of China from Newchwang, in the north, to Swatow, nearly the southernmost point; also up the Yangtsekiang as far as Hankau, and at Wei-hai-Wei and Tsingtau. It will be noted that, with the exception of Wei-hai-Wei, this territory is all non-British. There is an observatory at Hongkong, under the colonial government, in longitude 7*h.* 37*m.* east of Greenwich, and this local time is used in the colony; but it seemed good to the Honkong Chamber of Commerce that the port, and conse-

quently the west river ports and Canton, who use the same time, should fall into line with the rest of the country and adopt the times of the 8-hour zone. The main reason urged for the adoption was that the railway systems in China are now being developed, and that it is better that the change should be made now, before the Hongkong lines are connected with those of the rest of China. Another point, perhaps a minor one, in favour of the change is that, if the business time-tables remain the same, there will be more daylight after office hours than at present. The authorities at the colonial office, having been approached by the Governor of Hongkong, gave their consent to the change of time system, which will therefore soon be made. The court of directors of the British North Borneo Company, having been communicated with, expressed their willingness to join the scheme, and gave instructions for the adoption of the 8-hour zone time in British North Borneo and the island of Labuan." (See p. 320.)

DAILY TELEGRAPHIC TIME SIGNALS.

Some philosopher has said that the appreciation of the value of correct time is a good index to the civilisation of a nation, and in this respect the United States is among the very foremost. Since August, 1865, telegraphic time signals have been sent out daily from the Naval Observatory, and they now reach every part of the country, as well as Habana and Panama. The Pacific coast states and Alaska receive their time signals from the observatory at the Mare Island Navy-Yard, and it is proposed soon to extend them to Honolulu. Nineteen time-balls are dropped by these signals in the principal ports of our Atlantic, Pacific, Gulf of Mexico, and Great Lake coasts, and probably in no other country do any such signals cover such a large extent of territory or render such great service to both water-borne and inland commerce. They have, in fact, become an essential part of our everyday life, as transmitted by the voluntary co-operation of the Western Union Telegraph Company, the Postal Telegraph Company, and the American Telephone and Telegraph Company, all of whom receive the signals over special wires connected directly with the transmitting clock at the Naval Observatory.

ABSTRACTS OF OFFICIAL REPORTS OF THE KINDS OF TIME IN USE BY VARIOUS NATIONS.

The following abstracts have been prepared from official reports collected and forwarded to the Superintendent of the United States Naval Observatory by the Department of State, through the Diplomatic and Consular Service, and the Department of the Navy, through the Bureau of Navigation and the Office of Naval Intelligence: [by G.M.S.T. is meant Greenwich Mean Solar Time].

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
		<i>h. m. s.</i>
ALASKA ...	See <i>United States</i> .	
ALGERIA ...	See <i>France</i> .	
ANAM ...	See <i>France</i> .	
ARGENTINA ...	The official time in use throughout Argentina is referred to the meridian of Cordoba, 4 ^h . 16 ^m . 48.25. west from Greenwich. At 11 a.m. a daily signal is telegraphed from the Cordoba Observatory. The greatest deviation of local mean time from the official time would not exceed 26 minutes. La Plata is 25 ^m . 45 ^s . east from Cordoba, and Mendoza, the most western town of importance, is 18 ^m . 32 ^s . west from Cordoba.	− 4 16 48.2

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (-) or Later (+) than G.M.S.T. h. m. s.
AUSTRALIA ...	See British Empire.	
AUSTRIA-HUNGARY ...	Standard time does not exist in Austria except for the service of the railroads. Central European time, 15° east from Greenwich, is required to be used by all the railways. This is not a matter of law, but is in force by order of the proper authorities.	+ 1 0 0
BAHAMAS ...	See British Empire.	
BELGIUM ...	Official time in Belgium is calculated from 0 to 24 hours, zero corresponding to mean midnight at Greenwich. The Royal Observatory at Brussels communicates daily the precise hour to the Central Telegraphic Administration and Government offices; also to important corporations. The Telegraphic Administration transmits it to the towns in Belgium.	0 0 0
BERMUDAS ...	See British Empire.	
BISMARCK-ARCHIPELAGO	See German Empire.	
BORNEO ...	See British Empire.	
BRITISH EMPIRE	GREAT BRITAIN: The meridian of Greenwich is the standard time meridian for— England Scotland } Wales Shetland Islands } legalised 1880. Isle of Man Orkneys }	0 0 0
	IRELAND: The meridian of Dublin 0h. 25m. 21.1s. west from Greenwich is the standard time meridian: legalised 1880.	- 0 25 21.1
	COLONIES: Africa: The meridian of longitude 30° east from Greenwich is the standard time meridian for— Cape Colony, Natal, Orange River Colony, Rhodesia, Transvaal.	+ 2 0 0
	Australia: The standard time meridian is for— New South Wales } longitude 150° east from Queensland } Greenwich. South Australia, including Northern Territory, longitude 142°.5 east from Greenwich. Tasmania } longitude 150° east from Green- Victoria } wick. West Australia, longitude 120° east from Greenwich.	+ 10 0 0 + 9 30 0 + 10 0 0 + 8 0 0
	Canada: The standard time meridian is for— Alberta } Assiniboia } longitude 105° west from Green- Athabasca } wick. British Columbia, longitude 120° west from Greenwich. Keewatin } longitude 90° west from Green- Manitoba } wick.	- 7 0 0 - 8 0 0 - 6 0 0

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
BRITISH EMPIRE	COLONIES—continued.	<i>h. m. s.</i>
	New Brunswick, longitude 75° west from Greenwich.	− 5 0 0
	Nova Scotia, longitude 60° west from Greenwich.	− 4 0 0
	Ontario, longitude 75° west from Greenwich.	− 5 0 0
	Prince Edward Island, longitude 60° west from Greenwich.	− 4 0 0
	Quebec, longitude 75° west from Greenwich.	− 5 0 0
	Chatham Island, longitude 172°·5 east from Greenwich.	+ 11 30 0
	Gibraltar, longitude of Greenwich ...	0 0 0
	Hongkong, longitude 120° east from Greenwich.	+ 8 0 0
	Malta, longitude 15° east from Greenwich ...	+ 1 0 0
	New Zealand, longitude 172°·5 east from Greenwich.	+ 11 30 0
	Straits Settlements, longitude of Fort Fullerton, Singapore, 6h. 55m. 25s. east from Greenwich.	+ 6 55 25·0
	Assuming local mean time for other British colonies gives the following results :	
	Antigua (St. John) ...	− 4 7 21·9
	Arabia (Aden) ...	+ 2 59 55·9
	Bahamas (Nassau) ...	− 5 9 27·9
	Barbados (Bridgetown) ...	− 3 58 29·2
	Bermudas (Hamilton) ...	− 4 19 26·4
	Borneo (Labuan) ...	+ 7 41 1·0
	NOTE.—It is reported unofficially that standard time has been adopted in British North Borneo and Labuan.	+ 8 0 0
	Falkland Islands (Port Stanley) ...	− 3 51 26·0
	Fiji Islands (Suva) ...	+ 11 53 44·3
	Guiana (Demerara) ...	− 3 52 46·0
	Honduras (Belize) ...	− 5 52 46·7
	India (Madras) (<i>see</i> ...)	+ 5 20 59·1
	India (Calcutta) (<i>Note</i> ...)	+ 5 53 20·8
	India (Bombay) (<i>below</i>) ...	+ 4 51 15·7
	Indian Peninsula ...	+ 5 30 0
	NOTE.—Local mean time of the Madras Observatory is practically used as standard time for India and Ceylon, being telegraphed daily all over the country; but for strictly local use it is generally converted into local mean time.	
	The Indian Government has officially adopted standard time of the meridian of longitude 82°30' east from Greenwich for the Indian Peninsula, beginning January 1, 1906. In Burma standard time of the meridian of longitude 97°30' east from Greenwich has been adopted by the Telegraph Administration.	+ 5 30 0 + 6 30 0
	Jamaica (Kingston) ...	− 5 7 10·7
	Mauritius (Royal Alfred Observatory) ...	+ 3 50 12·6
	Newfoundland (St. Johns) ...	− 3 30 43·6
	NOTE.—Local mean time of St. Johns is practically used as standard time for the entire island.	

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than G.M.S.T.
BRITISH EMPIRE	COLONIES— <i>continued.</i>	<i>h. m. s.</i>
	Trinidad (Port of Spain) ...	— 4 6 2.5
CAMBODIA ...	See France.	
CANADA ...	See British Empire.	
CAROLINES ...	See German Empire.	
CHATHAM ISLANDS ...	See British Empire.	
CHILE ...	The official railroad time is that of the meridian of Santiago furnished the central railway station in that city by the Santiago Observatory. This time is telegraphed over the country daily at 7 a.m. The city of Valparaiso uses local time furnished by the observatory at the Naval School located there.	— 4 42 46.1
CHINA ...	An observatory is maintained by the Jesuit mission at Zikawei near Shanghai, and a time-ball suspended from a mast on the French Bund in Shanghai is dropped electrically precisely at noon each day. This furnishes the local time at the port of Shanghai, which is adopted by the railway and telegraph companies represented there, as well as by the coastwise shipping. From Shanghai the time is telegraphed to other ports. The cable companies represented in Peking receive this time from Chefoo; the Imperial Chinese Telegraphs from the office of that company at Tientsin. The Imperial Railways of North China use the same time, taking it from the British gun at Tientsin and passing it on to the stations of the railway twice each day, at 8 a.m. and 8 p.m. No information yet from the Peking-Hankau Railway. NOTE.—Standard time is coming into use all along the east coast of China, from Newchwang to Hongkong, and in the interior as far as Hankau. The Central Government of China has made no authoritative statement in regard to the adoption of Zone Time. But, by the joint action of the Imperial Telegraph Administration, the Imperial Maritime Customs, the Imperial Postal and Railway Services, Zone Time, using the Greenwich meridian as a datum, has practically been adopted all over the Empire. The idea of Zone Time in certain of the Ports in China was initiated by the Zikawei Observatory, and it came fully into operation on the 1st of August, 1905.	— 4 46 34.1 + 8 5 43.3
COCHIN-CHINA	See France.	+ 8 0 0
COLOMBIA ...	At Bogotá the time used is that of the meridian of Bogotá. This time is taken every day at noon in the observatory, but there is no method employed in correcting it daily by signal from a central observatory. Some few people, such as jewellers, go to the observatory daily, but the great mass of business men, railroad officials, etc., let their timepieces run sometimes for weeks with-	— 4 56 54.2

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
		<i>h. m. s.</i>
COLOMBIA ...	COLOMBIA— <i>continued.</i> out correcting them, until the inconveniences caused thereby compel them to make the necessary corrections. So far as communicating the time as corrected in Bogotá to other parts of the country is concerned, this is rendered impossible by the very poor telegraphic service, it frequently taking 4 and 5 days to send messages a distance of from 50 to 100 miles.	
COSTA RICA ...	The Government has established an observatory at the capital, San José, in latitude 9°56' north, longitude 84°4'14" west from Greenwich; altitude 3,800 feet above sea level. The Greenwich meridian is used exclusively to regulate observatory time, which is corrected by observation and reduced to mean time. This time is issued to public offices, railway and telegraph offices, churches, and to all residents whose occupations necessitate correct time. There is no method employed to correct time by signal from the observatory, the corrected time being taken by applicants from the standard chronometer at the observatory.	− 5 36 16.9
CUBA ...	The official time of the Republic is civil mean time of the meridian of Habana and is used by the railroads and telegraphic lines of the government. The Central Meteorological Station gives the time daily to the port and city of Habana as well as to all the telegraph offices of the Republic.	− 5 29 26.0
DANISH WEST INDIES ...	See <i>Denmark.</i>	
DENMARK ...	"Standard time is fixed at one hour earlier than that of Greenwich, corresponding to mean solar time of the 15th degree of longitude east from Greenwich." In Iceland, the Faroe Islands, and the Danish West Indies, local mean time is used.	+ 1 0 0
	Local mean time for the Danish West Indies gives	
	Curaçao	− 4 35 46.9
	St. Thomas	− 4 19 43.5
	Local mean time for Iceland gives for Reikiavik	− 1 27 40.0
ECUADOR ...	The official time is that of the meridian of Quito. It is corrected daily from the National Observatory of Quito.	− 5 14 6.7
EGYPT ...	Standard time is that of the 30th degree of longitude east from Greenwich, eastern European time, and is therefore 2 hours fast of Greenwich or western European time. It is sent out electrically by the standard clock of the observatory to the citadel at Cairo, to Alexandria, Port Said, and Wady-Halfa.	+ 2 0 0
ENGLAND ...	See <i>British Empire.</i>	
FAROE ISLANDS ...	See <i>Denmark.</i>	
FIJI ISLANDS	See <i>British Empire.</i>	
FORMOSA ...	See <i>Japan.</i>	

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations.—Continued

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T
		<i>h. m. s.</i>
FRANCE ...	Legal time in France, Algeria, and Tunis, is local mean time of the Paris Observatory. Local mean time is considered as legal in other French colonies. This gives the following results :	+ 0 9 20.9
	Cochin-China, Cambodia, and Anam (Saigon)	+ 7 6 48.2
	Corsica (Ajaccio)	+ 0 34 57.3
	Guadeloupe (Basse-Terre)	− 4 6 56.6
	Madagascar (Tananarivo)	+ 3 10 7.0
	Marquesas Islands (Port Resolution)	− 9 16 36.0
	Martinique (St. Pierre)	− 4 4 44.8
	Miquelon (St. Pierre)	− 3 44 42.5
	New Caledonia (Nouméa)	+ 11 5 48.4
	Paumotu Archipelago (Pitcairn Island)	− 8 40 23.2
	Senegal (Port Dakar)	− 1 9 42.0
	Tongking (Hai-Phong)	+ 7 6 39.5
GERMAN EMPIRE	GERMANY: The standard time is the mean solar time of the meridian of longitude 15° east from Greenwich. (By Imperial Decree, March 12, 1893.)	+ 1 0 0
	COLONIES: Mean solar time has been adopted for the following—	
	Kiaochau, based on the meridian of longitude 120° east from Greenwich.	+ 8 0 0
	Southwest Africa (German), based on the meridian of longitude 15° east from Greenwich.	+ 1 0 0
	It is proposed to adopt standard time for the following :	
	Bismarck Archipelago } based on the meridian Caroline Islands } of longitude 150° east from Greenwich.	+ 10 0 0
	East Africa (German), based on the meridian of longitude 30° east or possibly 37°.5 east from Greenwich.	+ 2 0 0 + 2 30 0
	Kamerun, based on the meridian of longitude 15° east from Greenwich.	+ 1 0 0
	Mariane Islands } based on the meridian of longi- New Guinea } tude 150° east from Greenwich.	+ 10 0 0
	Samoa, based on the meridian of longitude 180° east from Greenwich, but only after an understanding with the Government at Washington.	+ 12 0 0
	Toga, based on the meridian of Greenwich ...	0 0 0
GIBRALTAR ...	See <i>British Empire</i> .	
GREECE ...	By royal decree of September 14, 1895, the time in common use is that of the mean time of Athens, which is transmitted every day from the observatory by telegraph to the towns of the Kingdom.	+ 1 34 52.9
HAWAIIAN IS- LANDS.	See <i>United States</i> .	
HOLLAND...	The local time of Amsterdam is generally used, but Greenwich time is used by the post and telegraph administration and the railways and other transportation companies. The observatory at Leyden communicates the time twice a week to Amsterdam, The Hague, Rotterdam, and other cities, and the	+ 0 19 32.3 0 0 0

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
		<i>h. m. s.</i>
HOLLAND...	HOLLAND— <i>continued.</i> telegraph bureau at Amsterdam signals the time to all the other telegraph bureaus every morning. In the Grand Duchy of Luxembourg central European time is the legal and uniform time. Local mean time for the colonies gives— Java (Batavia) Sumatra (Padang)	+ 1 0 0 + 7 7 13.7 + 6 41 20.9
HONDURAS ...	"In Honduras the half hour nearest to the meridian of Tegucigalpa, longitude 87°12' west from Greenwich, is generally used. Said hour is frequently determined at the National Institute by means of a solar chronometer and communicated by telephone to the Industrial School, where in turn it is indicated to the public by a steam whistle. The central telegraph office communicates it to the various sub-offices of the Republic, whose clocks generally serve as a basis for the time of the villages, and in this manner an approximately uniform time is established throughout the Republic." Belize. See <i>British Empire.</i>	− 6 0 0
HONGKONG ...	See <i>British Empire.</i>	
ICELAND ...	See <i>Denmark.</i>	
INDIA ...	See <i>British Empire.</i>	
ITALY ...	Mean solar time of the meridian of longitude 15° east from Greenwich is the standard time adopted by royal decree of August 10, 1893, for the Kingdom of Italy. This time is to be kept in all government establishments, offices, dockyards, and is to be used by all ships of the Italian Navy in the ports of or doing duty on the coast of Italy. All railroads, post and telegraph offices, and Italian coasting steamers, are to use this time and regulate their business and time-tables in accordance therewith. The hours run from midnight to midnight—that is to say, in Italy 1 p.m. is 13 hours, 5 p.m. is 17 hours, etc.	+ 1 0 0
JAMAICA ...	See <i>British Empire.</i>	
JAPAN ...	Imperial ordinance No. 51, of 1886: The meridian that passes through the observatory at Greenwich, England, shall be the zero (0) meridian. Longitude shall be counted from the above meridian east and west up to 180 degrees, the east being positive and the west negative. From January 1, 1888, the time of the 135th degree east longitude shall be the standard time of Japan. Imperial ordinance No. 167, of 1895: The standard time hitherto used in Japan shall henceforth be called Central Standard time. The time of the 120th degree east longitude shall be the standard time of Formosa, the Pescadores, the Yaeyama, and the Miyako groups, and shall be called western standard time. This ordinance shall take effect from the 1st of January, 1896.	+ 9 0 0 + 9 0 0 + 8 0 0

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
		h. m. s.
JAVA ...	See <i>Holland</i> .	
KAMERUN ...	See <i>German Empire</i> .	
KIAOCHAU ...	See <i>German Empire</i> .	
KOREA ...	Tokyo time, 135° east from Greenwich, is telegraphed daily to the Imperial Japanese Post and Telegraph Office at Seoul. Before December 1, 1904, this was corrected by subtracting 30 minutes, which nearly represents the difference in longitude, and was then used by the railroads, street railways, and post and telegraph offices, and most of the better classes. Since December 1, 1904, the Japanese post-offices and railways in Korea have begun to use Tokyo time. In the country districts the people use sun dials to some extent.	+ 8 30 0
MADAGASCAR ...	See <i>France</i> .	
MALTA ...	See <i>British Empire</i> .	
MARQUESAS ISLANDS. ...	See <i>France</i> .	
MARIANE ISLANDS. ...	See <i>German Empire</i> .	
MAURITIUS ...	See <i>British Empire</i> .	
MEXICO ...	The National Astronomical Observatory of Tacubaya regulates a clock twice a day which marks the local mean time of the City of Mexico, 6h. 36m. 26s.7 west from Greenwich, and a signal is raised twice a week at noon upon the roof of the national palace, such signal being used to regulate the city's public clocks. This signal, the clock at the central telegraph office, and the public clock on the cathedral, serve as a basis for the time used commonly by the people. The general telegraph office transmits this time daily to all of its branch offices. Not every city in the country uses this time, however, since a local time, very imperfectly determined, is more commonly observed. The following railroad companies use standard City of Mexico time corrected daily by telegraph: Central, Hidalgo, Xico and San Rafael, National and Mexican. The Central and National railroads correct their clocks to City of Mexico time daily by means of the noon signal sent out from the Naval Observatory at Washington, and by a similar signal from the observatory at St. Louis, Mo.	− 6 36 26.7
MIQUELON ...	See <i>France</i> .	
NEW CALEDONIA.	See <i>France</i> .	
NEWFOUNDLAND.	See <i>British Empire</i> .	
NEW GUINEA	See <i>German Empire</i> .	
NEW ZEALAND	See <i>British Empire</i> .	
NICARAGUA ...	Managua time is issued to all public offices, railways, telegraph offices and churches, in a zone that extends from San Juan del Sur, latitude 11°15'44"	− 5 45 10.0

APPENDIX.—STANDARD TIME

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Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
		<i>h. m. s.</i>
NICARAGUA ...	NICARAGUA— <i>continued</i> . north, to El Ocotal, latitude 12°46' north, and from El Castillo, longitude 84°22'37" west from Greenwich, to Corinto, longitude 87°12'31" west from Greenwich. The time of the Atlantic ports is usually obtained from the captains of ships.	
NORWAY ...	Central European time, longitude 15° east from Greenwich, is the standard and, as far as known, is used everywhere in the country. Telegraphic time signals are sent out once a week to the telegraph stations throughout the country from the observatory of the Christiania University.	+ 1 0 0
PANAMA, ...	The railroad company uses the local mean time of Colon, 5h. 19m. 39s. west from Greenwich. This time is obtained from the chronometers of the company's New York steamers. The Central and South American Cable Co. now cables 75th meridian time, 5h. west from Greenwich, daily from Washington, and this will probably be adopted as the standard.	− 5 19 39.0
PANAMA CANAL ZONE.	See <i>United States</i> .	
PAUMOTU ARCHIPELAGO.	See <i>France</i> .	
PERU ...	There is no official time. The railroad from Callao to Oroya takes its time by telegraph from the noon signal at the naval school at Callao, which may be said to be the standard time for Callao, Lima, and the whole of Central Peru. The railroad from Mollendo to Lake Titicaca, in southern Peru, takes its time from ships in the Bay of Mollendo.	− 5 9 3.0
PESCADORES ...	See <i>Japan</i> .	
PHILIPPINE ISLANDS.	See <i>United States</i> .	
PORTO RICO ...	See <i>United States</i> .	
PORTUGAL ...	Standard time is in use throughout Portugal and is based upon the meridian of Lisbon Observatory (9°11'10"). It is established by the Royal Observatory in the Royal Park (Tapada) at Lisbon, and from there sent by telegraph to every telegraphic station throughout Portugal. Clocks on railway platforms are five minutes behind standard time, while clocks outside of stations are true. The adoption of Western European time (Greenwich mean time) is expected soon.	− 0 36 44.7
RUSSIA ...	All telegraph stations use the time of Pulkowa (St. Petersburg). At railroad stations both local and Pulkowa time are given, from which it is to be inferred that for all local purposes local time is used. Local mean time gives for—	+ 2 1 18.6
	Nicolaeff	+ 2 7 53.8
	Riga	+ 1 36 28.2
	Irkutsk	+ 5 57 4.7
	Vladivostok	+ 8 47 30.9
SALVADOR ...	The Government has established a national observatory at San Salvador which issues time on Wednes-	− 5 56 32.0

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
		<i>h. m. s.</i>
SALVADOR ...	SALVADOR— <i>continued</i> . days and Saturdays, at noon, to all public offices, telegraph offices, railways, etc., throughout the Republic.	
SAMOA ...	See <i>German Empire</i> and <i>United States</i> .	
SANTO DOMINGO.	Local mean time is used, but there is no central observatory and no means of correcting the time. The time differs from that of naval vessels in these waters by about 30 minutes.	
SENEGAL ...	Local mean time gives, for Santo Domingo City ...	− 4 39 32.0
SERBIA ...	See <i>France</i> .	
SIBERIA (IRKUTSK and VLADIVOSTOK).	Central European time, longitude 15° east from Greenwich, is used by the railroad, telegraph companies, and the people generally. Clocks are regulated by telegraph from Budapest every day at noon.	+ 1 0 0
SINGAPORE ...	See <i>Russia</i> .	
SOUTH AFRICA	See <i>British Empire</i> .	
SPAIN ...	See <i>British Empire</i> .	
STRAITS SETTLEMENTS.	Official time is the mean time of the meridian of Greenwich, obtained from the Madrid Observatory. It is used by the railroad and telegraph companies and the people of Madrid and provinces generally, in time of which, however, local time is still used for private matters.	0 0 0
SUMATRA ...	See <i>British Empire</i> .	
SWEDEN ...	See <i>Holland</i> .	
SWITZERLAND	Central European time, 15° east from Greenwich, is the standard. It is sent out every week by telegraph from the Stockholm Observatory.	+ 1 0 0
TOGA ...	Central European time is at present the only legal time. It is sent out daily by telegraph from the Cantonal Observatory at Neuchâtel.	+ 1 0 0
TONGKING ...	See <i>German Empire</i> .	
TRINIDAD ...	See <i>France</i> .	
TUNIS ...	See <i>British Empire</i> .	
TURKEY ...	See <i>France</i> .	
	Two kinds of time are used, <i>i.e.</i> , Turkish and eastern European time, the former for the natives and the latter for Europeans. The railroads generally use both, the latter for the actual running of trains and Turkish time-tables for the benefit of the natives. Standard Turkish time is used generally by the people, sunset being the base and 12 hours being added for a theoretical sunrise. The official clocks are set daily so as to read 12 o'clock at the theoretical sunrise, but the tower clocks are set only two or three times a week. The Government telegraph lines use Turkish time throughout the Empire and St. Sophia time, 1h. 47m. 32s. ahead of Paris, for telegrams sent out of the country.	+ 2 0 0
		+ 1 56 53.0

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than G.M.S.T.
		<i>h. m. s.</i>
UNITED STATES.* (see pp. 328 to 331 for list of the Dividing Points)	Standard time based on the meridian of Greenwich is universally used and is sent out daily by telegraph to most of the country and to Habana and Panama from the Naval Observatory at Washington; and to the Pacific coast, from the observatory at Mare Island Navy-Yard, California. Standard times used are as follows: Porto Rico, Atlantic standard time, meridian of longitude 60° west from Greenwich. Atlantic coast and Panama Canal Zone, eastern standard time, meridian of longitude 75° west from Greenwich. Mississippi Valley, central standard time, meridian of longitude 90° west from Greenwich. Rocky Mountain Region, mountain standard time, meridian of longitude 105° west from Greenwich. Pacific coast, Pacific standard time, meridian of longitude 120° west from Greenwich. Sitka, Alaska standard time, meridian of longitude 135° west from Greenwich. Hawaiian Islands, Hawaiian standard time, meridian of longitude 157°.5 west from Greenwich. Tutuila, Samoa, Samoan standard time, meridian of longitude 172°.5 west from Greenwich. Guam, Guam standard time, meridian of longitude 142°.5 east from Greenwich. Philippine Islands, Philippine standard time, meridian of longitude 120° east from Greenwich.	
URUGUAY ...	The time in common use for railways, telegraph companies, and the public in general, is mean time of the meridian of the dome of the Metropolitan Church of Montevideo. The correct time is indicated by a striking clock in the tower of that church. An astronomical geodetic observatory, with meridian telescope and chronometers, has now been established and will in the future furnish the time. It is proposed to install a time-ball for the benefit of navigators at the port of Montevideo. An electric time service will be extended throughout the country, using at first the meridian of the church and afterwards that of the national observatory, when constructed.	− 3 44 48.9
VENEZUELA ...	The time is computed daily at the Caracas Observatory, longitude 66°55'53.6" west from Greenwich, from observations of the sun and is occasionally telegraphed to other parts of Venezuela. The cathedral clock at Caracas is corrected by means of these observations. Railway time is at least 5 minutes later than that indicated by the cathedral clock, which is accepted as standard by the entire people. Some people take time from the observatory flag, which always falls at noon.	− 4 27 43.6

* Columbia, legalised to "Eastern" time, 13/3/1884; Minnesota, legalised to "Central," 26/2/1901.

STANDARD TIME—WHEN ADOPTED.

[Arranged Chronologically.]

THROUGH the courtesy of Mr. W. F. Allen, Vice-President and General Manager of the National Railway Publication Co., of New York, we are enabled to present to our readers the following

MEMORANDUM CONCERNING THE DATES WHEN STANDARD TIME WAS ADOPTED, PREPARED FOR THE OFFICIAL RAILWAY GUIDE OF THE UNITED STATES, CANADA AND MEXICO.

STANDARD TIME was adopted by the railways of the United States and Canada *AT NOON, ON SUNDAY, NOVEMBER 18, 1883*, with a very few exceptions. The Chicago and North Western Railway and the Chicago, Milwaukee and St. Paul Railway with their connecting lines covering a territory extending north-west from Chicago through St. Paul, Minneapolis, etc., did not adopt the new standard until one week later, Sunday, **November 25, 1883**. The Michigan Central Railroad did not conform until **December 9, 1883**, when it adopted Central Time on the same date the New Brunswick (Canada) Ry. adopted Eastern Time. The railways on the Pacific Coast extending westward from El Paso, Texas, and Ogden, Utah, did not conform until **November 1, 1884**. *Most of the cities of the country traversed by these railway lines adopted Standard Time for practical use on the same date as the railways.*

By an act of Congress, approved **March 13, 1884**, Eastern Standard Time was made the legal time in the District of Columbia, but it came into practical use in the City of Washington on **November 18, 1883**.

In October, 1885, there were twenty-seven cities in the United States out of two hundred and twenty-eight that were enumerated in the census of 1880 as containing over ten thousand inhabitants, which still retained the use of mean local time.

By an act of legislature in the STATE OF MICHIGAN, approved February 17, 1885, and which took effect **September 18, 1885**, Central Standard Time was made the legal time within that State.

On **December 15, 1886**, the people of the CITY OF BELFAST, ME., U.S.A., by unanimous consent adopted Eastern Standard Time.

On **January 1, 1887**, by virtue of an ordinance passed by the authorities of the municipality, the CITY OF PITTSBURGH, PA., U.S.A., adopted Eastern Standard Time. On the same date two local Pittsburgh railroads also adopted the same time. Every other railway in the United States and Canada had previously conformed.

By virtue of an Imperial Decree, the time of the one hundred and thirty-fifth degree of East longitude was made the standard time of JAPAN, dating from **July 12, 1886**.

The legislature of the STATE OF MAINE, U.S.A., passed a law which took effect in (7 month) **1887**, making Eastern Standard Time the legal time within the limits of that State.

By an ordinance of the city council of WHEELING, W. VA., U.S.A., Eastern Standard Time was made the legal time in that City after **March 31, 1887**. By an act of the legislature, approved **April 13, 1887**, Eastern Standard Time was made the legal time in WEST VIRGINIA on **July 1, 1887**. The CITY OF ERIE, PA., U.S.A., adopted Eastern Standard Time **July 1, 1887**. The CITY OF SAVANNAH, GA., U.S.A., adopted Central Standard Time, **March 25, 1888**. The CITY OF BRUNSWICK, GA., U.S.A., adopted Central Standard Time on **May 1, 1888**.

On December 31, 1889, at a general conference of Austrian Hungarian Railways, a resolution to adopt the Standard Time of the fifteenth meridian east of Greenwich was unanimously adopted. This resolution was approved by the Ministry on September 7, 1889, on condition that Germany, Switzerland, Italy and Servia would also conform. [See below.]

By an act of the legislature of FLORIDA, U.S.A., approved May 30, 1889, Central Standard Time was made the legal time in that State. The CITY OF SPRINGFIELD, Ohio, U.S.A., adopted Central Standard Time on January 1, 1890. The CITY OF CINCINNATI adopted Central Standard Time on February 22, 1890.

At a meeting of the CLEVELAND (OHIO) City Council, held on May 26, 1890, an ordinance was passed making Central Standard Time the legal time for that City, dating from June 15, 1890.

At a meeting of the GERMAN Railway Union, held at Dresden, July 30-August 1, 1890, a resolution was unanimously adopted favouring the adoption of the time of the fifteenth degree of East longitude for *the railway service only*.

The use of the Standard Time of the Greenwich meridian was introduced for *all purposes* in BELGIUM on May 1, 1891, and on the *railways* of HOLLAND on the same date.

By an act of the legislature of OHIO, U.S.A., Central Time was made the legal time in that State, dating from Noon of April 1, 1893.

Middle European Time (15° East) was adopted by the railways of PRUSSIA on June 1, 1891, and in THE REST OF NORTH GERMANY on April 1, 1893. It was adopted in SOUTHERN GERMANY on April 1, 1892.

Standard Time was adopted upon the AUSTRIAN HUNGARIAN RAILWAYS and in many cities of that Empire on October 1, 1891. On the same date it was adopted by ROUMANIA and SERVIA, and BULGARIA soon followed.

Middle European Time was adopted for *all purposes* in PRUSSIA on April 1, 1893; in ITALY on November 1, 1893; in DENMARK on January 1, 1894; and in SWITZERLAND on June 1, 1894. The railways of Switzerland adopted Middle European Time as their standard on June 1, 1894.

Greenwich time was adopted for all purposes in NORWAY January 1, 1895.

The Standard Time of the 150th meridian east of Greenwich was adopted in QUEENSLAND, Australia, on January 1, 1895, and in NEW SOUTH WALES and VICTORIA on February 1, 1895. SOUTH AUSTRALIA adopted the time of the 135th meridian east of Greenwich on February 1, 1895.

The Standard time of the 60th West Meridian was adopted in PORTO RICO for all purposes on March 28, 1899, as the result of a military order.

MANILA AND THE PHILIPPINE ISLANDS GENERALLY adopted the time of the 120° of East Longitude on May 11, 1899.

"Alaska Time," that of the 135th meridian of West Longitude, was adopted by the WHITE PASS and YUKON RAILWAY on August 20, 1900.

By virtue of a royal decree Greenwich Time was adopted as the standard in SPAIN AND THE BALEARIC ISLANDS on January 1, 1901.

The railroads of NEW BRUNSWICK, NOVA SCOTIA, CAPE BRETON and PRINCE EDWARD'S ISLAND adopted the time of the 60th West Meridian, which they call "Atlantic Time," on June 15, 1902.

In the ORANGE RIVER COLONY, SOUTH AFRICA, and also in the TRANSVAAL, RHODESIA, PORTUGUESE EAST AFRICA, and CAPE COLONY, the Standard Time of the 30th degree of East Longitude was adopted on March 1, 1903.

A *partial approach to Standard Time* was adopted in INDIA on January 1, 1906. It is five hours and thirty minutes faster than Greenwich time, or 82°30' East Longitude.

Seventy-fifth West Meridian Time was adopted as Standard by PERU on July 28, 1908, by virtue of a decree issued by President Prado. The same standard time was also adopted by the REPUBLIC OF CHILE on January 1, 1910.

The Standard Time of the Greenwich meridian was adopted by the REPUBLIC OF FRANCE on March 10, 1911.

List of the Dividing Points, North American Standard Time Sections, with the Time in Use at Each, as Adopted by the American Railway Association.

BETWEEN ATLANTIC OR INTERCOLONIAL AND EASTERN SECTIONS.

CAMPBELLTON, N.B.:—*Atlantic time.*—Intercolonial Railway (east of Campbellton). *Eastern time.*—Intercolonial Railway (west of Campbellton).

VANCEBORO, ME.:—*Atlantic time.*—Canadian Pacific Railway (east of Vanceboro). *Eastern time.*—Canadian Pacific Railway (west of Vanceboro); Maine Central Railway.

BETWEEN EASTERN AND CENTRAL SECTIONS.

ASHEVILLE, N.C.:—*Eastern time.*—Southern (except Asheville and Morristown Line). *Central time.*—Southern (Asheville and Morristown Line). (Note.—*Eastern time is used locally.*)

ATHENS, GA.:—*Eastern time.*—Southern; Seaboard Air Line. *Central time.*—Georgia; Central of Georgia. (Note.—*The city uses Central time.*)

ATLANTA, GA.:—*Eastern time.*—Seaboard Air Line; Southern, main line (east of Atlanta). *Central time.*—Atlanta and West Point; Central of Georgia; Georgia; Southern (west and south of Atlanta); Western and Atlantic. (Note.—*The city uses Central time.*)

AUGUSTA, GA.:—*Eastern time.*—Atlantic Coast Line; Charleston and Western Carolina; Southern. *Central time.*—Central of Georgia; Georgia. (Note.—*The city uses Eastern time.*)

BENWOOD, W. VA.:—*Eastern time.*—Baltimore and Ohio (east of Benwood). *Central time.*—Baltimore and Ohio (west of Benwood). (Note.—*Eastern time is used locally.*)

BRISTOL, TENN.:—*Eastern time.*—Norfolk and Western; Virginia and Southwestern. *Central time.*—Southern (Note.—*Eastern time is used locally.*)

BUFFALO, N.Y.:—*Eastern time.*—Buffalo, Rochester and Pittsburgh; Delaware, Lackawanna and Western; Erie; Grand Trunk; Lehigh Valley; New York Central and Hudson River; Pennsylvania; Wabash; West Shore. *Central time.*—Lake Shore and Michigan Southern; Michigan Central; New York, Chicago and St. Louis. (Note.—*The city uses Eastern time.*)

CARTIER, ONT.:—*Eastern time.*—Canadian Pacific (east of Cartier). *Central time.*—Canadian Pacific (west of Cartier). (Note.—*Central time is used locally.*)

CENTRAL JUNCTION, GA.:—*Eastern time.*—Atlantic Coast Line (north of Junction). *Central time.*—Atlantic Coast Line (south of Junction).

CLIFTON FORGE, VA. (see also West Clifton Forge):—*Eastern time.*—Chesapeake and Ohio (east of Clifton Forge). *Central time.*—Chesapeake and Ohio (west of Clifton Forge). (Note.—*Eastern time is used locally.*)

COLUMBIA, S.C.:—*Eastern time.*—Atlantic Coast Line; Columbia, Newberry and Laurens; Seaboard Air Line (north of Columbia); Southern. *Central time.*—Seaboard Air Line (south of Columbia). (Note.—*Eastern time is used locally.*)

CORRY, PA.:—*Eastern time.*—Pennsylvania. *Central time.*—Erie. (Note.—*Eastern time is used locally.*)

DETROIT, MICH. (see Windsor):—*Eastern time.*—Canadian Pacific; Grand Trunk (in Canada). *Central time.*—Grand Trunk (in Michigan); Lake Shore and Michigan Southern; Michigan Central; Pere Marquette; Wabash. (Note.—*Central time is legal time for the State of Michigan, but local time, twenty-eight minutes faster than Central time, is also used in the city of Detroit.*)

DUNKIRK, N.Y.:—*Eastern time.*—Erie; Pennsylvania. *Central time.*—Dunkirk, Allegheny Valley and Pittsburgh; Lake Shore and Michigan Southern; New York, Chicago and St. Louis. (Note.—*The city uses Eastern time.*)

ERIE, PA.:—*Eastern time.*—Pennsylvania (P. and E. Div.); Bessemer and Lake Erie. *Central time.*—Pennsylvania Company; Lake Shore and Michigan Southern; New York, Chicago and St. Louis. (Note.—*The city uses Eastern time.*)

FRANKLIN, PA.:—*Eastern time.*—Pennsylvania. *Central time.*—Erie; Lake Shore and Michigan Southern. (Note.—*Eastern time is used locally.*)

GAINESVILLE, GA.:—*Eastern time.*—Southern. *Central time.*—Georgia. (Note.—*The city uses local mean time.*)

JAMESTOWN, N.Y.:—*Eastern time.*—Erie (B. and S.W. Div.); Jamestown and

List of Dividing Points, N. American Standard Time Sections, etc.—Continued.

BETWEEN EASTERN AND CENTRAL SECTIONS—Continued.

- Chautauqua. *Central time.*—Erie (main line). (*Note.*—Eastern time is used locally.)
- KENOVA, W. VA.:—*Eastern time.*—Baltimore and Ohio. *Central time.*—Chesapeake and Ohio; Norfolk and Western. (*Note.*—Central time is used locally.)
- NEW CASTLE JUNCTION, PA.:—*Eastern time.*—Baltimore and Ohio (east of New Castle Junction). *Central time.*—Baltimore and Ohio (west of New Castle Junction).
- NORTON, VA.:—*Eastern time.*—Norfolk and Western. *Central time.*—Louisville and Nashville.
- OIL CITY, PA.:—*Eastern time.*—Pennsylvania. *Central time.*—Erie; Lake Shore and Michigan Southern. (*Note.*—Eastern time is used locally.)
- PARKERSBURG, W. VA.:—*Eastern time.*—Baltimore and Ohio. *Central time.*—Baltimore and Ohio Southwestern. (*Note.*—The city uses Eastern time.)
- PITTSBURG, PA.:—*Eastern time.*—Baltimore and Ohio; Buffalo, Rochester and Pittsburgh; Pennsylvania; Pittsburgh and Castle Shannon; Pittsburgh and Western. *Central time.*—Pennsylvania Company; Pittsburgh, Chartiers and Youghiogeny; Pittsburgh and Lake Erie; Pittsburgh, Cincinnati, Chicago and St. Louis. (*Note.*—The city uses Eastern time.)
- PORT HURON, MICH.:—*Eastern time.*—Grand Trunk (in Canada). *Central time.*—Grand Trunk (in Michigan); Pere Marquette. (*Note.*—The city uses Central time.)
- ST. THOMAS, ONT.:—*Eastern time.*—Canadian Pacific; Grand Trunk. *Central time.*—Michigan Central. (*Note.*—The city uses Eastern time.)
- SALAMANCA, N.Y.:—*Eastern time.*—Buffalo, Rochester and Pittsburgh; Erie (east of Salamanca); Pennsylvania. *Central time.*—Erie (west of Salamanca). (*Note.*—Eastern time is used locally.)
- SARNIA, ONT. (see Port Huron). (*Note.*—The city uses Eastern time.)
- SAULT STE. MARIE, MICH.:—*Central time.*—Duluth, South Shore and Atlantic; Minneapolis, St. Paul and Sault Ste. Marie. (*Note.*—Central time is used locally.)
- SAULT STE. MARIE, ONT.:—*Eastern time.*—Algoma Central and Hudson Bay Canadian Pacific. (*Note.*—Eastern time is used locally.)
- TITUSVILLE, PA.:—*Eastern time.*—Pennsylvania. *Central time.*—Dunkirk, Allegheny Valley and Pittsburgh. (*Note.*—Eastern time is used locally.)
- UNION CITY, PA.:—*Eastern time.*—Pennsylvania. *Central time.*—Erie. (*Note.*—Eastern time is used locally.)
- WASHINGTON (WASHINGTON COUNTY), PA.:—*Eastern time.*—Baltimore and Ohio. *Central time.*—Pennsylvania Company; Pittsburgh, Cincinnati, Chicago and St. Louis; Waynesburg and Washington. (*Note.*—The city uses Eastern time.)
- WELLAND, ONT.:—*Eastern time.*—Grand Trunk; Wabash. *Central time.*—Michigan Central; Toronto, Hamilton and Buffalo.
- WEST CLIFTON FORGE, VA. (see also Clifton Forge):—*Eastern time.*—Chesapeake and Ohio (east of West Clifton Forge). *Central time.*—Chesapeake and Ohio (west of West Clifton Forge). (*Note.*—Eastern time is used locally.)
- WESTFIELD, N.Y.:—*Eastern time.*—Jamestown, Chautauqua and Lake Erie. *Central time.*—Lake Shore and Michigan Southern.
- WHEELING, W. VA.:—*Eastern time.*—Baltimore and Ohio. *Central time.*—Cleveland, Lorain and Wheeling; Pittsburgh, Cincinnati, Chicago and St. Louis; Wheeling and Lake Erie. (*Note.*—The city uses Eastern time.)
- WILLIAMSON, W. VA.:—*Eastern time.*—Norfolk and Western (east of Williamson). *Central time.*—Norfolk and Western (west of Williamson). (*Note.*—Central time is used locally.)
- WINDSOR, ONT. (see Detroit):—*Eastern time.*—Canadian Pacific; Grand Trunk (in Canada). *Central time.*—Michigan Central.

List of Dividing Points, N. American Standard Time Sections, etc.—Continued.

BETWEEN CENTRAL AND MOUNTAIN SECTIONS.

- ALLIANCE, NEB.:**—*Central time.*—Chicago, Burlington and Quincy; Lines west of the Missouri River (east of Alliance). *Mountain time.*—Chicago, Burlington and Quincy; Lines west of the Missouri River (west of Alliance). (*Note.*—Mountain time is used locally.)
- BROADVIEW, ASSINIBOIA:**—*Central time.*—Canadian Pacific (east of Broadview). *Mountain time.*—Canadian Pacific (west of Broadview). (*Note.*—Central time is used locally.)
- DODGE CITY, KAN.:**—*Central time.*—Atchison, Topeka and Santa Fé (east of Dodge City); Chicago, Rock Island and Pacific. *Mountain time.*—Atchison, Topeka and Santa Fé (west of Dodge City). (*Note.*—The city uses Central time.)
- ELLIS, KAN.:**—*Central time.*—Union Pacific, Kansas Division (east of Ellis). *Mountain time.*—Union Pacific, Colorado Division (west of Ellis). (*Note.*—Central time is used locally.)
- EL PASO, TEX.:**—*Central time.*—Galveston, Harrisburg and San Antonio; Texas and Pacific. *Mountain time.*—Atchison, Topeka and Santa Fé; El Paso and Northeastern. *City of Mexico time.*—Mexican Central. (*Note.*—Mountain time is used locally.)
- HOLYOKE, COLO.:**—*Central time.*—Chicago, Burlington and Quincy; Lines west of the Missouri River (east of Holyoke). *Mountain time.*—Chicago, Burlington and Quincy; Lines west of the Missouri River (west of Holyoke). (*Note.*—Central time is used locally.)
- HOISINGTON, KAN.:**—*Central time.*—Missouri Pacific (east of Hoisington). *Mountain time.*—Missouri Pacific (west of Hoisington). (*Note.*—Central time is used locally.)
- LONG PINE, NEB.:**—*Central time.*—Fremont, Elkhorn and Missouri Valley (east of Long Pine). *Mountain time.*—Fremont, Elkhorn and Missouri Valley (west of Long Pine). (*Note.*—Central time is used locally.)
- MANDAN, N. DAK.:**—*Central time.*—Northern Pacific (east of Mandan). *Mountain time.*—Northern Pacific (west of Mandan). (*Note.*—Mountain time is used locally.)
- MCCOOK, NEB.:**—*Central time.*—Chicago, Burlington and Quincy; Lines west of the Missouri River (east of McCook). *Mountain time.*—Chicago, Burlington and Quincy; Lines west of the Missouri River (west of McCook). (*Note.*—Mountain time is used locally.)
- MINOT, N. DAK.:**—*Central time.*—Great Northern (east of Minot); Minnesota, St. Paul and Sault Ste. Marie. *Mountain time.*—Great Northern (west of Minot). (*Note.*—Central time is used locally.)
- NORTH PLATTE, NEB.:**—*Central time.*—Union Pacific (east of North Platte). *Mountain time.*—Union Pacific (west of North Platte). (*Note.*—Central time is used locally.)
- PORTAL, N. DAK.:**—*Central time.*—Minneapolis, St. Paul and Sault Ste. Marie. *Mountain time.*—Canadian Pacific. (*Note.*—Central time is used locally.)
- PHILLIPSBURG, KAN.:**—*Central time.*—Chicago, Rock Island and Pacific (east of Phillipsburg). *Mountain time.*—Chicago, Rock Island and Pacific (west of Phillipsburg). (*Note.*—Central time is used locally.)
- PLAINVILLE, KAN.:**—*Central time.*—Union Pacific, Oakley Branch (east of Plainville). *Mountain time.*—Union Pacific, Oakley Branch (west of Plainville).
- RIO GRANDE, TEX.:**—*Central time.*—Galveston, Harrisburg and San Antonio. *Pacific time.*—Southern Pacific.
- SANTA ROSA, N. MEX.:**—*Central time.*—Chicago, Rock Island and El Paso. *Mountain time.*—El Paso and Rock Island Railway. (*Note.*—Central time is used locally.)
- TEXLINE, TEX.:**—*Central time.*—Fort Worth and Denver City. *Mountain time.*—Colorado and Southern. (*Note.*—Mountain time is used locally.)

List of Dividing Points, N. American Standard Time Sections, etc.—Concluded
BETWEEN MOUNTAIN AND PACIFIC SECTIONS.

DEMING, N. MEX.:— <i>Mountain time</i> .—Atchison, Topeka and Santa Fé. <i>Pacific time</i> .—Southern Pacific. (<i>Note</i> .— <i>Mountain time</i> is used locally.)	Santa Fé Route (east of Seligman). <i>Pacific time</i> .—Santa Fé Route (west of Seligman). (<i>Note</i> .— <i>Mountain time</i> is used locally.)
HUNTINGTON, ORE.:— <i>Mountain time</i> .—Oregon Short Line. <i>Pacific time</i> .—Oregon Railroad and Navigation Company. (<i>Note</i> .— <i>Pacific time</i> is used locally.)	SPARKS, NEV.:— <i>Mountain time</i> .—Southern Pacific (east of Sparks). <i>Pacific time</i> .—Southern Pacific (west of Sparks). (<i>Note</i> .— <i>Mountain time</i> is used locally.)
LAGGAN, BRITISH COLUMBIA.:— <i>Mountain time</i> .—Canadian Pacific (east of Laggan). <i>Pacific time</i> .—Canadian Pacific (west of Laggan). (<i>Note</i> .— <i>Pacific time</i> is used locally.)	TROUT CREEK, MONT.:— <i>Mountain time</i> .—Northern Pacific (east of Trout Creek). <i>Pacific time</i> .—Northern Pacific (west of Trout Creek). (<i>Note</i> .— <i>Mountain time</i> is used locally.)
RIO GRANDE, TEX.:— <i>Central time</i> .—Galveston, Harrisburg and San Antonio. <i>Pacific time</i> .—Southern Pacific.	TROY, MONT.:— <i>Mountain time</i> .—Great Northern (east of Troy). <i>Pacific time</i> .—Great Northern (west of Troy). (<i>Note</i> .— <i>Mountain time</i> is used locally.)
SELIGMAN, ARIZ.:— <i>Mountain time</i> .—	

NOTE ON THE LATITUDE OF LONDON.

"It may be worth while to draw attention to a small error which has taken root and perpetuated itself in all the astrological treatises that I can recall in connection with the latitude of London. This is invariably given as $51^{\circ}32'N$. As a matter of fact latitude $51^{\circ}32'$ passes through the centre of Regent's Park. The latitude of St. Paul's Cathedral is, as near as may be, $51^{\circ}30'54''N$. Latitude $51^{\circ}31'$ passes through Paddington Station and (approximately) through the Bank of England, and $51^{\circ}30'$ falls just south of Victoria Station and Lambeth Palace. The latitude of Kensington Palace, where Queen Victoria was born, is not, as it is invariably given, $51^{\circ}32'N$, but $51^{\circ}30'20''$, and the latitude of Buckingham Palace, where King Edward was born, is latitude $51^{\circ}30'$ nearly. Latitude $51^{\circ}29'30''$ passes through Earl's Court and South Kensington Stations, Gloucester Road Station being a little farther north, and the latitude of Greenwich Observatory is of course $51^{\circ}28'38''$. These will be found useful landmarks to go by in computing horoscopes for different parts of London. I do not wish to be thought an astrological pedant in referring to such apparently trifling differences, but it seems to me that the value of accuracy in calculation is a thing much more likely to be under-estimated than over-estimated in astrological computations, and it is manifestly absurd to work out horoscopes for King Edward or Queen Victoria, with semi-arcs and so forth computed to seconds, when the latitude on which the semi-arc depends for its validity is in error by fully two minutes. Even when dealing merely with minutes it is well not to fall into an entirely unnecessary inaccuracy, which, through appearing in print, will mislead countless other students."—From *The Horoscope*, October, 1902.

THE APPROXIMATE POSITIONS OF THE FIVE MAJOR PLANETS, from 1914-1933 inclusive.*

1st of month	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
1914	27	7	12	11	25	16	9	25	27	11	10	10
Jan.	27	7	12	11	25	16	9	25	27	11	10	10
Feb.	26	8	11	3	7	8	8	27	25	7	4	4
Mar.	26	9	11	9	8	8	7	28	23	6	27	27
Apr.	25	11	13	15	17	17	1	21	21	7	21	7
May	26	11	16	20	14	14	1	21	11	13	13	13
June	26	11	20	22	17	17	1	22	17	5	5	5
July	27	10	24	22	3	3	1	25	23	26	26	26
Aug.	28	9	28	19	22	22	9	0	29	0	17	17
Sept.	29	8	0	15	12	12	10	29	3	7	7	7
Oct.	0	7	2	13	1	1	11	28	6	12	25	25
Nov.	0	7	2	13	23	23	12	28	9	16	14	14
Dec.	0	8	0	17	15	15	12	28	11	18	1	1
1915	0	10	27	23	8	8	11	29	11	17	19	19
Jan.	0	10	27	23	8	8	11	29	11	17	19	19
Feb.	29	12	26	29	2	2	10	0	10	13	4	4
Mar.	28	13	25	6	25	25	9	2	8	10	9	9
Apr.	28	15	26	14	16	16	9	4	6	8	7	7
May	28	15	29	20	12	12	9	5	5	9	26	26
June	28	15	3	25	6	6	9	6	5	13	20	20
July	29	14	6	28	27	27	10	5	7	18	27	27
Aug.	0	13	10	28	19	19	12	4	11	24	9	9
Sept.	1	12	13	26	9	9	13	3	14	1	29	29
Oct.	2	11	15	22	27	27	14	2	18	7	18	18
Nov.	3	11	16	19	14	14	14	1	21	13	10	10
Dec.	2	12	15	19	25	25	14	2	24	17	3	3
1916	2	14	13	23	1	1	13	3	25	19	27	27
Jan.	2	14	13	23	1	1	13	3	25	19	27	27
Feb.	1	15	10	28	23	23	12	4	24	18	21	21
Mar.	0	17	9	4	13	13	11	6	22	14	12	12
Apr.	0	18	10	12	13	13	11	8	20	11	5	5
May	0	19	11	19	20	20	11	9	18	9	26	26
June	0	19	15	26	2	2	12	9	18	10	18	18
July	1	19	19	18	17	17	13	9	19	13	8	8
Aug.	3	18	23	5	6	6	14	9	22	18	29	29
Sept.	4	17	26	6	25	25	15	7	26	25	19	19
Oct.	5	16	25	3	16	16	16	6	29	1	7	7
Nov.	5	16	0	29	8	8	16	6	3	8	27	27
Dec.	5	16	0	26	0	0	16	6	6	13	15	15
1917	4	18	28	26	24	24	15	7	7	17	3	3
Jan.	4	18	28	26	24	24	15	7	7	17	3	3
Feb.	3	19	26	29	18	18	14	8	7	19	21	21
Mar.	2	21	24	3	10	10	14	10	6	18	6	6
Apr.	2	22	23	10	5	5	13	11	3	14	19	19
May	2	23	24	17	28	28	13	13	2	11	25	25
June	3	23	27	24	20	20	14	13	1	9	20	20
July	4	23	1	0	12	12	15	13	2	10	12	12
Aug.	5	22	5	6	3	3	16	13	4	13	12	12
Sept.	6	21	9	10	23	23	17	12	7	18	24	24
Oct.	7	20	12	12	12	12	18	10	11	24	11	11
Nov.	7	20	14	10	29	29	18	10	14	1	2	2
Dec.	7	20	14	6	15	15	18	10	17	7	22	22
1918	6	21	13	3	27	27	18	10	19	13	15	15
Jan.	6	21	13	3	27	27	18	10	19	13	15	15
Feb.	5	23	11	2	3	3	17	12	20	17	7	7
Mar.	5	25	8	3	29	29	16	13	19	19	29	29
Apr.	4	26	7	8	18	18	16	15	17	18	21	21
May	4	27	8	14	15	15	16	16	15	14	10	10
June	3	28	10	21	22	22	16	17	13	11	2	2
July	6	27	13	27	4	4	17	17	14	9	21	21
Aug.	7	26	17	4	20	20	18	17	15	10	11	11
Sept.	8	25	21	10	10	10	19	16	18	13	1	1
Oct.	9	24	24	14	0	0	20	14	21	19	20	20
Nov.	9	24	27	16	23	23	20	14	25	25	9	9
Dec.	9	24	28	15	15	15	20	14	29	2	29	29
1919	9	25	27	11	10	10	20	14	14	14	14	14
Jan.	9	25	27	11	10	10	20	14	14	14	14	14
Feb.	8	27	25	7	4	4	19	16	2	14	9	9
Mar.	7	28	23	6	27	27	18	17	2	18	27	27
Apr.	7	0	21	7	21	21	18	19	0	20	17	17
May	7	1	21	11	13	13	18	20	28	19	5	5
June	7	1	22	17	5	5	18	21	26	16	22	22
July	8	1	25	23	26	26	19	21	26	12	2	2
Aug.	9	0	29	0	17	17	20	21	27	10	3	3
Sept.	10	29	3	7	7	7	21	20	29	11	25	25
Oct.	11	28	6	12	25	25	22	19	2	14	24	24
Nov.	12	28	9	16	14	14	23	18	6	20	4	4
Dec.	12	28	11	18	1	1	23	17	9	26	19	19
1920	11	29	11	17	19	19	22	18	12	3	7	7
Jan.	11	29	11	17	19	19	22	18	12	3	7	7
Feb.	10	0	10	13	4	4	21	19	14	10	27	27
Mar.	9	2	8	10	9	9	21	21	14	16	15	15
Apr.	9	4	6	8	7	7	20	23	13	20	5	5
May	9	5	5	9	26	26	20	24	11	23	25	25
June	9	6	5	13	20	20	20	25	9	22	14	14
July	10	5	7	18	27	27	21	25	8	19	3	3
Aug.	12	4	11	24	9	9	22	25	8	15	23	23
Sept.	13	3	14	1	29	29	23	24	10	13	13	13
Oct.	14	2	18	7	18	18	24	23	13	14	2	2
Nov.	14	1	21	13	10	10	25	22	16	17	22	22
Dec.	14	2	24	17	3	3	25	21	20	22	12	12
1921	13	3	25	19	27	27	24	22	23	29	3	3
Jan.	13	3	25	19	27	27	24	22	23	29	3	3
Feb.	12	4	24	18	21	21	24	23	25	26	6	6
Mar.	11	6	22	14	12	12	23	25	26	13	14	14
Apr.	11	8	20	11	5	5	22	26	25	19	7	7
May	11	9	18	9	26	26	22	28	24	24	28	28
June	12	9	18	10	18	18	23	29	21	27	21	21
July	13	9	19	13	8	8	24	29	20	27	12	12
Aug.	14	9	22	18	29	29	25	29	20	24	2	2
Sept.	15	7	26	25	19	19	26	28	21	20	15	15
Oct.	16	6	29	1	7	7	26	27	23	18	19	19
Nov.	16	6	3	8	27	27	27	26	27	18	11	11
Dec.	16	6	6	13	15	15	27	25	0	21	4	4
1922	15	7	7	17	3	3	27	25	0	21	4	4
Jan.	15	7	7	17	3	3	27	25	0	21	4	4
Feb.	14	8	7	19	21	21	26	27	6	4	19	19
Mar.	14	10	6	18	6	6	25	28	8	10	4	4
Apr.	13	11	3	14	19	19	25	0	7	18	21	21
May	13	13	2	11	25	25	24	1	6	24	9	9
June	14	13	1	9	20	20	25	3	4	0	28	28
July	15	13	2	10	12	12	26	3	2	3	16	16
Aug.	16	13	4	13	12	12	27	3	1	4	5	5
Sept.	17	12	7	18	24	24	28	2	2	2	25	25
Oct.	18	10	11	24	11	11	29	1	4	28	14	14
Nov.	18	10	14	1	2	2	29	0	7	25	5	5
Dec.	18	10	17	7	22	22	29	29	10	24	26	26
1923	18	10	19	13	15	15	29	29	10	24	26	26
Jan.	18	10	19	13	15	15	29	29	10	24	26	26
Feb.	17	12	20	17	7	7	28	0	14	27	18	18
Mar.	16	13	19	19	29	29	27	1	17	27	11	11
Apr.	16	15	17	18	21	21	27	2	19	8	2	2
May	16	16	15	14	10	10	27	4	19	16	25	25
June	16	17	13	11	2	2	27	5	18	23	18	18
July	17	17	14	9	21	21	27	7	16	0	12	12
Aug.	18	17	15	10	11	11	28	7	14	5	4	4
Sept.	19	16	18	13	1	1	29	7	13	9	25	25
Oct.	20	14	21	19	20	20	0	6	13	11	15	15
Nov.	20	14	25	25	9	9	1	5	14	9	0	0
Dec.	20	14	29	2	29	29	1	3	20	2	6	6
1924	20	14	14	8	19	19	20	14	14	14	14	14
Jan.	20	14	14	8	19	19	20	14				

A Condensed Ephemeris of the Planets' Places

FOR EVERY SEVENTH DAY

(☿ EVERY 3RD OR 4TH DAY)

FROM 1850 TO 1913 INCLUSIVE

INCLUDING ☉ AND ♀, WITH THE STATIONARY POSITIONS DURING EACH
YEAR OF ♂, ♀ AND ☿.

(ONE YEAR TO A PAGE)

ALSO

The Moon's Place for every day

DURING THE SAME PERIOD

(TWO YEARS TO A PAGE)

From which a Horoscope may be computed correctly to within
a few minutes of the true longitude of any planet.

Calculated for mean noon, Greenwich.

A FEW REMARKS RESPECTING THE CONDENSED EPHEMERIS.

1. The longitudes only of the planets have been given, it having been found impossible in the space available to include either their latitudes or their declinations.¹

The Latitude of a planet is of no practical utility at the stage the student has reached so far, and it can therefore be disregarded entirely. The meaning of the word has been fully explained in SECTION A.

A planet's Declination is required only for the purpose of determining whether it is in parallel to some other planet, to the ascendant, or to the M.C. in the horoscope. Now, a table of the declination of each degree of the Zodiac is given,² and from this can be found the declinations of the Sun, Ascendant, and M.C., which have no latitude; their declinations consequently being the same as those of the zodiacal degrees they occupy. It is therefore sufficient to turn them up in the table referred to and write down the corresponding declination against them. Thus in King George's horoscope, given on p. viii, we find

	☉	Asc.	M.C.
in longitude	♌ 12°26'	♌ 2½°	♌ 1°
from which we find dec.	22°18'N.	1°0'N.	23°27'S.

The same procedure will not be feasible in the case of planets and moon, however, since they have *latitude*, and therefore to obtain their declinations the ephemeris for the year must be consulted. Their omission

¹ THE PLANETARY DECLINATIONS AND LATITUDES.—It is true that by means of certain tables which a Hindu gentleman, after having computed them, was generous enough to place at our disposal for use in this book, it would have been practicable within the space of about ten pages to include all the necessary data for calculating the declinations and latitudes both of the moon and planets for the whole period covered by the Condensed Ephemeris. The calculations involved, while simple enough to any one familiar with things of the kind, proved however sufficiently intricate to render it probable that less than one per cent of the readers for whom this publication is designed would ever attempt them—and the tables referred to were consequently, though with reluctance, omitted.

² Or rather, to put it more accurately, a table of the zodiacal points corresponding to each degree of declination—which comes to very much the same thing (p. 349).

is not serious, for while the parallel of declination is certainly a position of importance the majority of beginners pay little or no attention to it.

2. The *Sidereal Time for each day at Noon* is also omitted, since this may be found from the table on p. 328.

With these exceptions the *Condensed Ephemeris* supplies all the elements given in the most popular Ephemerides in general use and can therefore be considered a complete substitute for all ordinary purposes. Where the birth time is known accurately or has been "rectified" to a certain definite time, then it may be advisable to procure a separate Ephemeris for the year of birth and work from that: not otherwise.¹

NOTE.

THE method of using the Condensed Ephemeris has been explained in SECTION B. To save unnecessary turning over of pages, the lunar positions are alternated with the planetary, instead of being printed separately at the end as might otherwise have been done.

¹ An Ephemeris for any year from 1800 onwards may be procured from the office of *Modern Astrology* for 1s. per year.

Date	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	Date	♒
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /		o /
Jan. 1	26 10	2 41	22 22	1 53	23 0	21 17	10 48	26 13	18 31	Jan. 4	23 28	
" 8	25 48	2 51	22 23	2 16	23 5	19 31	17 56	5 0	0 3	" 11	4 56	
" 15	25 26	3 3	22 28	2 44	22 59	18 22	25 4	13 47	11 16	" 18	15 41	
" 22	25 4	3 17	22 35	3 16	22 43	17 54	2 11	22 35	20 42	" 25	23 25	
" 29	24 42	3 32	22 44	3 51	22 19	18 D. 4	9 18	1 23	24 55	Feb. 1	24 9	
Feb. 5	24 19	3 46	22 55	4 31	21 47	18 49	16 24	10 10	20 49	" 8	17 21	
" 12	23 56	4 3	23 9	5 13	21 7	20 4	23 29	18 56	13 0	" 15	10 45	
" 19	23 34	4 19	23 25	5 58	20 21	21 45	0 33	27 42	9 31	" 22	9 D. 49	
" 26	23 12	4 35	23 41	6 46	19 31	23 48	7 35	6 27	11 D. 33	Mar. 1	13 40	
Mar. 5	22 50	4 53	24 0	7 35	18 36	26 11	14 36	15 12	17 17	" 8	20 28	
" 12	22 27	5 10	24 21	8 26	17 42	28 49	21 35	23 56	25 15	" 15	29 9	
" 19	22 5	5 26	24 43	9 17	16 48	1 40	28 33	2 38	4 44	" 22	9 10	
" 26	21 43	5 41	25 6	10 10	15 57	4 43	5 29	11 21	15 26	" 29	20 21	
Apr. 2	21 21	5 52	25 30	11 3	15 11	7 56	12 23	20 1	27 16	Apr. 5	2 41	
" 9	20 59	6 3	25 53	11 56	14 30	11 18	19 16	28 42	10 15	" 12	16 12	
" 16	20 37	6 15	26 17	12 47	13 57	14 46	26 8	7 21	24 25	" 19	0 45	
" 23	20 15	6 27	26 41	13 40	13 32	18 20	2 57	15 58	9 17	" 26	15 35	
" 30	19 52	6 39	27 4	14 30	13 15	22 1	9 45	24 35	23 36	May 3	29 11	
May 7	19 30	6 48	27 28	15 17	13 7	25 46	16 32	3 10	5 52	" 10	10 14	
" 14	19 8	6 54	27 51	16 4	13 D. 8	29 35	23 17	11 45	15 10	" 17	18 8	
" 21	18 46	6 59	28 12	16 49	13 18	3 28	0 1	20 17	21 6	" 24	22 32	
" 28	18 24	7 3	28 33	17 31	13 36	7 24	6 44	28 50	23 21	" 31	23 9	
June 4	18 1	7 4	28 53	18 11	14 3	11 33	13 27	7 20	21 56	June 7	20 30	
" 11	17 39	7 4	29 10	18 46	14 37	15 26	20 8	15 49	18 17	" 14	16 44	
" 18	17 16	7 1	29 27	19 18	15 19	19 31	26 49	24 16	15 13	" 21	14 46	
" 25	16 54	6 59	29 41	19 47	16 8	23 40	3 30	2 42	15 D. 12	" 28	16 D. 22	
July 2	16 32	6 53	29 54	20 10	17 1	27 49	10 10	11 6	19 2	July 5	21 51	
" 9	16 9	6 46	0 4	20 30	18 2	2 3	16 51	19 28	26 36	" 12	0 54	
" 16	15 47	6 39	0 12	20 44	19 7	6 18	23 31	27 48	7 31	" 19	13 4	
" 23	15 25	6 32	0 17	20 55	20 17	10 35	0 12	6 5	21 4	" 26	27 19	
" 30	15 2	6 25	0 21	20 59	21 31	14 56	6 54	14 19	5 44	Aug. 2	11 58	
Aug. 6	14 40	6 17	0 21	20 59	22 49	19 17	13 36	22 30	19 59	" 9	25 45	
" 13	14 18	6 5	0 20	20 54	24 10	23 43	20 19	0 38	3 6	" 16	8 23	
" 20	13 56	5 53	0 17	20 44	25 33	28 9	27 3	8 40	15 4	" 23	19 50	
" 27	13 34	5 42	0 11	20 30	26 59	2 38	3 48	16 37	25 53	" 30	0 10	
Sep. 3	13 12	5 32	0 1	20 10	28 26	7 10	10 35	24 29	5 32	Sep. 6	9 17	
" 10	12 50	5 20	29 51	19 46	29 55	11 44	17 23	2 14	13 51	" 13	16 53	
" 17	12 28	5 8	29 40	19 19	1 26	16 22	24 13	9 51	20 18	" 20	22 14	
" 24	12 5	4 58	29 26	18 50	2 56	21 0	1 4	17 18	23 43	" 27	23 47	
Oct. 1	11 43	4 49	29 12	18 18	4 28	25 43	7 56	24 32	22 11	Oct. 4	19 41	
" 8	11 20	4 40	28 55	17 46	5 58	0 26	14 51	1 30	15 10	" 11	11 47	
" 15	10 58	4 31	28 38	17 11	7 27	5 13	21 47	8 8	8 54	" 18	8 D. 34	
" 22	10 36	4 26	28 21	16 39	8 56	10 3	28 45	14 21	10 D. 34	" 25	13 30	
" 29	10 14	4 22	28 3	16 8	10 24	14 55	5 44	19 58	18 38	Nov. 1	23 3	
Nov. 5	9 52	4 19	27 46	15 38	11 49	19 50	12 45	24 50	29 16	" 8	4 4	
" 12	9 29	4 16	27 31	15 12	13 12	24 47	19 47	28 42	10 32	" 15	15 21	
" 19	9 7	4 15	27 16	14 51	14 31	29 47	26 51	1 15	21 45	" 22	26 30	
" 26	8 45	4 D. 16	27 2	14 33	15 47	4 50	3 56	2 5	2 49	" 29	7 33	
Dec. 3	8 23	4 21	26 51	14 19	16 59	9 56	11 2	0 59	13 49	Dec. 6	18 32	
" 10	8 1	4 26	26 40	14 12	18 6	15 3	18 9	28 1	24 48	" 13	29 32	
" 17	7 39	4 32	26 33	14 9	19 7	20 13	25 16	23 55	5 50	" 20	10 34	
" 24	7 16	4 40	26 28	14 D. 11	20 4	25 25	2 24	20 1	16 50	" 27	21 27	
" 31	6 54	4 50	26 25	14 20	20 53	0 40	9 32	17 26	27 19			

Jan. 29: δ stat. in $24^\circ 55'$
 " 23: δ " " $17^\circ 53'$
 Feb. 20: δ " " $9^\circ 30'$

May 28: δ stat. in $23^\circ 21'$
 June 22: δ " " $14^\circ 45'$
 Sep. 26: δ " " $23^\circ 53'$

Oct. 17: δ stat. in $8^\circ 30'$
 Nov 25: δ " " $2^\circ 5'$

THE PLACE OF THE MOON FOR THE YEARS 1850-1851

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	21 45	11 58	19 49	6 26	8 40	22 17	24 52	12 15	3 23	12 9	5 7	12 13
2	6 8	25 11	3 8	18 44	20 32	4 13	7 16	25 45	17 49	26 39	19 9	25 27
3	20 2	7 59	16 3	0 47	2 21	16 21	20 1	9 41	2 31	11 14	3 0	8 26
4	3 30	20 27	28 36	12 40	14 11	28 46	3 11	24 2	17 24	25 48	16 37	21 10
5	16 33	2 39	10 52	24 30	26 8	11 33	16 48	8 45	2 22	10 15	29 56	3 38
6	29 15	14 38	22 53	6 20	8 17	24 46	0 54	23 45	17 16	24 29	12 55	15 53
7	11 40	26 31	4 46	18 16	20 42	8 27	15 25	8 54	1 58	8 22	25 35	27 55
8	23 51	8 20	16 34	0 24	3 29	22 35	0 17	24 3	16 21	21 53	7 55	9 47
9	5 53	20 8	28 24	12 47	16 40	7 6	15 23	9 3	0 20	5 0	20 1	21 35
10	17 49	2 0	10 19	25 27	0 16	21 54	0 34	23 45	13 52	17 43	1 55	3 22
11	29 40	13 57	22 22	8 28	14 14	6 51	15 39	8 5	26 58	0 5	13 44	15 14
12	11 30	26 2	4 37	21 48	28 31	21 47	0 30	21 57	9 40	12 12	25 32	27 16
13	23 20	8 16	17 3	5 27	13 1	6 36	15 1	5 25	22 1	24 6	7 25	9 33
14	5 11	20 41	29 49	19 20	27 37	21 10	29 10	18 26	4 7	5 55	19 28	22 10
15	17 7	3 17	12 48	3 23	12 11	5 27	12 53	1 5	16 1	17 43	1 47	5 11
16	29 8	16 7	26 1	17 33	26 39	19 24	26 14	13 26	27 50	29 36	14 25	18 37
17	11 17	29 12	9 27	1 45	10 57	3 1	9 13	25 33	9 37	11 38	27 24	2 29
18	23 38	12 32	23 5	15 57	25 2	16 21	21 53	7 29	21 28	23 53	10 44	16 43
19	6 13	26 10	6 53	0 5	8 55	29 25	4 18	9 20	3 25	6 22	24 24	1 14
20	19 7	10 5	20 51	14 10	22 35	12 13	16 31	1 8	15 31	19 9	8 21	15 56
21	2 23	24 17	4 56	28 9	6 4	24 49	28 34	12 56	27 48	2 13	22 30	0 42
22	16 3	8 45	19 8	12 3	19 21	7 14	10 29	24 47	10 18	15 31	6 46	15 24
23	0 8	23 24	3 24	25 51	2 26	19 28	22 20	6 44	23 0	29 2	21 4	29 58
24	14 38	8 10	17 43	9 29	15 19	1 33	4 8	18 48	5 55	12 44	5 20	14 18
25	29 28	22 56	2 1	22 57	28 1	13 30	15 56	1 1	19 2	26 34	19 32	28 22
26	14 32	7 35	16 14	6 12	10 30	25 21	27 46	13 25	2 23	10 29	3 38	12 11
27	29 42	22 0	0 19	19 12	22 47	7 9	9 41	26 3	15 55	24 29	17 38	25 44
28	14 48	6 6	14 10	1 57	4 53	18 57	21 43	8 54	29 40	8 33	1 30	9 1
29	29 41		27 44	14 25	16 49	0 47	3 56	22 3	13 38	22 40	15 14	22 4
30	14 12		10 58	26 38	28 40	12 44	16 23	5 30	27 48	6 50	28 50	4 54
31	28 19		23 52		10 27		29 9	19 17		20 59		17 30

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	29 55	14 47	23 34	8 7	11 58	1 8	8 59	2 41	24 59	0 36	16 13	18 3
2	12 9	26 35	5 22	20 23	24 54	15 3	23 32	17 9	8 25	13 16	28 9	29 54
3	24 13	8 23	17 13	2 49	8 4	29 5	8 2	1 18	21 27	25 37	10 0	11 49
4	6 9	20 13	29 10	15 27	21 24	13 13	22 27	15 6	4 8	7 43	21 50	23 51
5	17 59	2 8	11 14	28 16	4 55	27 23	6 42	28 33	16 32	19 39	3 43	6 5
6	29 46	14 11	23 26	11 16	18 36	11 35	20 45	11 40	28 42	1 30	15 43	18 31
7	11 33	26 26	5 49	24 30	2 26	25 45	4 36	24 30	10 44	13 20	27 50	1 12
8	23 25	8 55	18 23	7 58	16 25	9 52	18 12	7 4	22 39	25 11	10 7	14 7
9	5 25	21 44	1 13	21 42	0 33	23 55	1 34	19 26	4 31	7 6	22 34	27 17
10	17 39	4 55	14 20	5 42	14 50	7 50	14 14	1 38	16 22	19 6	5 12	10 40
11	0 12	18 32	27 47	20 0	29 12	21 35	27 35	13 42	28 13	1 12	18 0	24 15
12	13 7	2 35	11 37	4 32	13 36	5 8	10 15	25 40	10 7	13 25	0 59	8 0
13	26 27	17 5	25 50	19 16	27 57	18 25	22 42	7 33	22 4	25 46	14 10	21 53
14	10 16	1 56	10 25	4 6	12 9	1 25	4 57	19 24	4 8	8 17	27 32	5 54
15	24 31	17 5	25 18	18 52	26 7	14 8	17 3	1 14	16 19	21 0	11 9	20 0
16	9 9	2 21	10 24	3 28	9 47	26 35	29 0	13 7	28 41	3 57	25 0	4 11
17	24 6	17 34	25 33	17 46	23 5	8 48	10 52	25 6	11 18	17 11	9 6	18 25
18	9 12	2 34	10 36	1 39	6 1	20 50	22 43	7 14	24 12	0 44	23 26	2 38
19	24 18	17 14	25 22	15 6	18 36	2 44	4 35	19 35	7 28	14 39	7 56	16 47
20	9 17	1 28	9 45	28 7	0 52	14 34	16 33	2 13	21 9	28 57	22 37	0 49
21	23 59	15 13	23 40	10 43	12 56	26 27	28 42	15 13	5 17	13 36	7 16	14 39
22	8 21	28 30	7 5	23 0	24 49	8 25	11 8	28 37	19 50	28 32	21 47	28 16
23	22 19	11 22	20 2	5 1	6 40	20 35	23 48	12 27	4 46	13 36	6 5	18 35
24	5 54	23 52	2 35	16 53	18 31	3 0	6 53	26 45	19 58	28 39	20 3	24 36
25	19 6	6 6	14 49	28 41	0 29	15 44	20 22	11 28	5 16	13 31	3 38	7 18
26	1 58	18 7	26 48	10 30	12 37	28 49	4 17	26 29	20 28	28 4	16 48	19 44
27	14 32	29 59	8 39	22 25	25 0	12 16	18 35	11 42	5 24	12 11	29 35	1 55
28	26 53	11 47	20 25	4 29	7 39	26 4	3 13	26 55	19 56	25 49	12 1	13 56
29	9 2		2 12	16 45	20 37	10 10	18 4	11 59	3 59	8 58	24 11	25 50
30	21 3		14 3	29 14	3 32	24 30	3 1	26 44	17 31	21 42	6 10	7 42
31	2 57		26 0		17 23		17 56	11 5	4 5			19 37

Date	α	ψ	μ	η	ζ	δ	⊙	♀	♂	Date	♀
Jan. 1	6h50	4x52	26γ25	14γ22	21Δ0	1W25	10W33	17γ14	28W43	Jan. 4	2=34
" 8	6 28	5 2	26D.25	14 35	21 40	6 42	17 41	16D.56	6=38	" 11	8 23
" 15	6 5	5 14	26 27	14 55	22 13	12 1	24 49	18 31	8R18	" 18	6R16
" 22	5 43	5 28	26 32	15 19	22 37	17 22	1=56	21 40	1 41	" 25	27W58
" 29	5 21	5 42	26 39	15 47	22 53	22 45	9 3	26 2	24W18	Feb. 1	22 59
Feb. 5	4 59	5 57	26 50	16 21	23 0	28 9	16 9	1W18	23D. 8	" 8	24D.23
" 12	4 36	6 12	27 2	16 57	22R58	3=34	23 14	7 16	27 11	" 15	29 55
" 19	4 14	6 28	27 17	17 38	22 46	9 0	0x18	13 45	4=12	" 22	7=47
" 26	3 52	6 44	27 33	18 21	22 24	14 27	7 20	20 39	12 59	Mar. 1	17 7
Mar. 5	3 30	7 0	27 51	19 6	21 55	19 56	14 21	27 50	22 56	" 8	27 30
" 12	3 8	7 16	28 11	19 55	21 18	25 24	21 21	5=16	3x53	" 15	8x52
" 19	2 46	7 32	28 32	20 45	20 34	0x53	28 18	12 53	15 50	" 22	21 16
" 26	2 23	7 47	28 54	21 36	19 46	6 21	5γ15	20 39	28 48	" 29	4γ40
Apr. 2	2 1	8 1	29 17	22 28	18 54	11 48	12 9	28 33	12γ46	Apr. 5	19 0
" 9	1 38	8 14	29 41	23 21	18 0	17 17	19 2	6x32	27 19	" 12	3x25
" 16	1 16	8 26	0x5	24 14	17 6	22 43	25 53	14 36	11x4	" 19	16 15
" 23	0 54	8 37	0 30	25 8	16 14	28 9	2x43	22 43	22 17	" 26	26 1
" 30	0 32	8 47	0 54	26 1	15 27	3γ33	9 31	0γ54	29 51	May 3	1Π51
May 7	0 10	8 56	1 17	26 55	14 44	8 55	16 18	9 8	3Π17	" 10	3R26
" 14	29=48	9 3	1 40	27 44	14 8	14 16	23 3	17 24	2R34	" 17	1 16
" 21	29 25	9 9	2 2	28 33	13 40	19 35	29 48	25 41	29x3	" 24	27 23
" 28	29 3	9 13	2 23	29 20	13 20	24 51	6Π31	4x1	25 37	" 31	24 53
June 4	28 41	9 14	2 44	0x5	13 9	0x4	13 13	12 22	24D.54	June 7	25D.40
" 11	28 19	9 15	3 3	0 47	13 5	5 16	19 55	20 45	27 44	" 14	0Π1
" 18	27 56	9R15	3 20	1 27	13D.11	10 24	26 36	29 8	3Π57	" 21	7 33
" 25	27 34	9 14	3 36	2 3	13 26	15 29	3=16	7Π34	13 10	" 28	17 57
July 2	27 12	9 10	3 50	2 36	13 48	20 30	9 57	16 0	25 6	July 5	0=57
" 9	26 50	9 5	4 3	3 4	14 19	25 28	16 37	24 29	9=12	" 12	15 36
" 16	26 28	8 58	4 11	3 28	14 57	0Π23	23 18	2x58	24 11	" 19	0x29
" 23	26 6	8 51	4 18	3 48	15 44	5 13	29 58	11 29	8x38	" 26	14 27
" 30	25 43	8 42	4 22	4 4	16 34	9 59	6x40	20 3	21 49	Aug. 2	27 2
Aug. 6	25 20	8 32	4 24	4 14	17 32	14 41	13 22	28 37	3=39	" 9	8=19
" 13	24 58	8 22	4R25	4 18	18 36	19 18	20 5	7x13	14 12	" 16	18 17
" 20	24 36	8 11	4 23	4R19	19 44	23 49	26 49	15 50	23 18	" 23	26 45
" 27	24 14	7 59	4 19	4 13	20 57	28 16	3=44	24 29	0=46	" 30	3=18
Sep. 3	23 52	7 48	4 12	4 4	22 12	2=37	10 21	3=10	5 51	Sep. 6	7 0
" 10	23 29	7 36	4 2	3 48	23 33	6 51	17 9	11 51	7R15	" 13	6R20
" 17	23 7	7 25	3 51	3 29	24 56	10 59	23 58	20 33	3 33	" 20	0 33
" 24	22 45	7 14	3 38	3 1	26 21	14 58	0=49	29 16	26=18	" 27	23=50
Oct. 1	22 23	7 4	3 24	2 38	27 49	18 50	7 42	8=1	22D.35	Oct. 4	23D.25
" 8	22 1	6 55	3 8	2 9	29 18	22 32	14 36	16 45	26 41	" 11	0=22
" 15	21 38	6 47	2 51	1 36	0m49	26 4	21 32	25 30	6=16	" 18	11 6
" 22	21 16	6 40	2 34	1 2	2 20	29 23	28 30	4m16	17 46	" 25	22 48
" 29	20 54	6 34	2 18	0 29	3 52	2x28	5m29	13 2	29 31	Nov. 1	4m30
Nov. 5	20 32	6 32	2 0	29γ55	5 24	5 18	12 30	21 47	11m3	" 8	15 53
" 12	20 9	6 30	1 43	29 23	6 56	7 49	19 32	0x33	22 14	" 15	26 58
" 19	19 47	6 28	1 28	28 54	8 26	9 59	26 36	9 19	3x13	" 22	7x52
" 26	19 25	6D.29	1 14	28 28	9 55	11 45	3x41	18 6	14 3	" 29	18 39
Dec. 3	19 2	6 32	1 1	28 7	11 22	13 2	10 47	26 52	24 43	Dec. 6	29 14
" 10	18 40	6 37	0 49	27 51	12 46	13 46	17 53	5W37	5W7	" 13	9W22
" 17	18 18	6 43	0 40	27 37	14 9	13R55	25 1	14 23	14 40	" 20	18 5
" 24	17 55	6 51	0 33	27 30	15 27	13 24	2W9	23 8	21 29	" 27	22 41
" 31	17 33	7 0	0 29	27 27	16 40	12 12	9 17	1=53	21R48		

Jan. 6: ♀ stat. in 16° 48'
 " 13: ♀ " " 8° 45'
 Feb. 3: ♀ " " 22° 49'

May 9: ♀ stat. in 3° 28'
 June 2: ♀ " " 24° 44'
 Sep. 9: ♀ " " 7° 20'

Oct. 1: ♀ stat. in 22° 35'
 Dec. 14: ♂ " " 13° 56'
 " 28: ♀ " " 22° 45'

Date	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	Date	♒
Jan. 1	17 30	7 1	0 29	27 26	16 51	12 0	10 18	3 = 7	21 4	Jan. 4	17 58	
" 8	17 8	7 11	0 R 28	27 31	17 59	10 R 5	17 26	11 50	12 R 42	" 11	9 R 20	
" 15	16 46	7 23	0 D 28	27 40	19 2	7 40	24 34	20 34	6 51	" 18	6 D 38	
" 22	16 24	7 36	0 31	27 55	20 0	4 58	1 = 41	29 14	8 D 3	" 25	10 6	
" 29	16 2	7 49	0 38	28 16	20 51	2 9	8 48	7 54	13 46	Feb. 1	17 1	
Feb. 5	15 39	8 4	0 46	28 41	21 35	29 34	15 54	16 31	21 49	" 8	25 42	
" 12	15 17	8 20	0 58	29 10	22 11	27 25	22 59	25 6	1 = 12	" 15	5 = 30	
" 19	14 55	8 36	1 11	29 43	22 39	25 49	0 3	3 39	11 29	" 22	16 10	
" 26	14 33	8 51	1 26	0 20	22 59	24 53	7 6	12 8	22 37	" 29	27 37	
Mar. 4	14 10	9 7	1 43	1 1	23 9	24 D 35	14 7	20 32	4 33	Mar. 7	9 57	
" 11	13 48	9 23	2 2	1 45	23 R 10	24 52	21 6	28 54	17 23	" 14	23 11	
" 18	13 26	9 39	2 23	2 31	23 3	25 42	28 4	7 10	1 6	" 21	7 9	
" 25	13 4	9 53	2 43	3 20	22 46	27 1	5 1	15 21	15 11	" 28	21 1	
Apr. 1	12 41	10 8	3 6	4 10	22 20	28 45	11 55	23 25	28 12	Apr. 4	2 56	
" 8	12 19	10 22	3 29	5 2	21 47	0 50	18 48	1 21	8 5	" 11	10 58	
" 15	11 56	10 35	3 53	5 55	21 7	3 13	25 39	9 8	13 24	" 18	14 9	
" 22	11 34	10 47	4 17	6 49	20 20	5 52	2 29	16 46	13 R 46	" 25	12 R 38	
" 29	11 12	10 57	4 42	7 42	19 31	8 44	9 17	24 11	10 20	May 2	8 25	
May 6	10 50	11 6	5 6	8 36	18 37	11 48	16 4	1 20	6 11	" 9	5 3	
" 13	10 28	11 15	5 29	9 30	17 43	15 2	22 49	8 12	4 D 30	" 16	4 D 55	
" 20	10 6	11 22	5 52	10 22	16 50	18 24	29 34	14 41	6 28	" 23	8 21	
" 27	9 43	11 26	6 14	11 14	16 1	21 55	6 17	20 40	11 45	" 30	14 53	
June 3	9 21	11 27	6 36	12 3	15 17	25 32	12 59	26 4	19 47	June 6	23 57	
" 10	8 59	11 28	6 56	12 51	14 38	29 16	19 41	0 37	0 12	" 13	5 23	
" 17	8 37	11 29	7 13	13 36	14 6	3 5	26 22	4 9	12 52	" 20	18 55	
" 24	8 14	11 R 28	7 31	14 20	13 42	7 0	3 2	6 19	27 23	" 27	3 54	
July 1	7 52	11 25	7 46	15 0	13 25	10 59	9 43	6 R 49	12 35	July 4	18 58	
" 8	7 30	11 20	7 59	15 36	13 19	15 2	16 23	5 23	27 7	" 11	2 56	
" 15	7 7	11 14	8 10	16 11	13 D 21	19 10	23 4	2 12	10 14	" 18	15 24	
" 22	6 45	11 7	8 18	16 39	13 32	23 23	29 45	27 59	21 52	" 25	26 23	
" 29	6 23	10 58	8 25	17 4	13 51	27 38	6 26	23 56	1 57	Aug. 1	5 47	
Aug. 5	6 1	10 48	8 28	17 25	14 18	1 57	13 8	21 13	10 22	" 8	13 22	
" 12	5 39	10 38	8 30	17 40	14 54	6 21	19 51	20 D 23	16 40	" 15	18 33	
" 19	5 17	10 28	8 R 29	17 50	15 37	10 48	26 35	21 25	20 3	" 22	20 R 17	
" 26	4 55	10 17	8 27	17 56	16 27	15 19	3 20	24 2	19 R 16	" 29	17 27	
Sep. 2	4 32	10 5	8 20	17 R 56	17 23	19 51	10 7	27 55	13 58	Sep. 5	11 3	
" 9	4 9	9 53	8 13	17 51	18 23	24 29	16 55	2 46	7 48	" 12	6 32	
" 16	3 47	9 42	8 4	17 40	19 33	29 9	23 44	8 24	6 D 57	" 19	8 D 53	
" 23	3 25	9 32	7 51	17 25	20 44	3 54	0 35	14 36	13 16	" 26	17 34	
" 30	3 3	9 23	7 38	17 6	22 1	8 41	7 28	21 16	24 5	Oct. 3	29 17	
Oct. 7	2 41	9 12	7 22	16 42	23 21	13 32	14 22	28 19	6 20	" 10	11 37	
" 14	2 19	9 2	7 6	16 14	24 45	18 25	21 18	5 40	18 34	" 17	23 40	
" 21	1 56	8 55	6 49	15 44	26 11	23 23	28 16	13 16	0 21	" 24	5 15	
" 28	1 34	8 51	6 32	15 11	27 40	28 23	5 15	21 5	11 39	" 31	16 23	
Nov. 4	1 11	8 46	6 15	14 38	29 11	3 26	12 15	29 3	22 35	Nov. 7	27 9	
" 11	0 49	8 44	5 58	14 4	0 43	8 33	19 18	7 10	3 11	" 14	7 38	
" 18	0 27	8 42	5 42	13 31	2 16	13 41	26 21	15 26	13 27	" 21	17 43	
" 25	0 5	8 D 43	5 27	12 58	3 51	18 54	3 26	23 46	23 12	" 28	27 3	
Dec. 2	29 43	8 44	5 13	12 30	5 25	24 8	10 32	2 10	1 37	Dec. 5	4 23	
" 9	29 20	8 48	5 2	12 2	6 59	29 25	17 39	10 41	6 37	" 12	6 R 43	
" 16	28 58	8 54	4 51	11 41	8 31	4 45	24 46	19 13	4 R 18	" 19	0 44	
" 23	28 36	9 0	4 42	11 24	10 3	10 7	1 54	27 48	25 24	" 26	22 20	
" 31	28 11	9 10	4 36	11 10	11 46	16 17	10 3	7 40	20 34			

Jan. 17: ♄ stat. in 6° 13' 33"
 Mar. 3: ♄ " " 24° 35'
 Apr. 19: ♄ " " 14° 12'

May 13: ♄ stat. in 4° 43' 30"
 June 29: ♄ " " 6° 52'
 Aug. 11: ♄ " " 20° 23'

Aug. 21: ♄ stat. in 20° 18'
 Sep. 13: ♄ " " 6° 23'
 Dec. 11: ♄ " " 6° 52'

THE PLACE OF THE MOON FOR THE YEARS 1852-1853

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	18 39	16 II 52	7 56	28 9	6 43	0 36	7 52	26 5	11 25	13 44	28 II 26	2 48
2	13 53	0 2	21 27	12 57	21 51	15 10	21 31	8 40	23 21	25 34	10 39	15 41
3	26 22	13 37	5 27	28 6	7 2	29 26	4 51	21 1	5 13	7 II 26	23 7	28 51
4	9 II 10	27 37	19 56	13 26	22 7	13 20	17 53	3 10	17 3	19 25	5 53	12 22
5	22 18	12 1	4 49	28 47	6 56	26 50	0 35	15 9	28 56	1 36	19 3	26 14
6	5 46	26 42	19 58	13 55	21 21	9 55	13 0	27 3	10 II 56	14 3	2 38	10 27
7	19 33	11 33	5 13	28 43	5 18	22 39	25 11	8 55	23 9	26 52	16 41	25 0
8	3 36	26 26	20 24	13 4	18 48	5 3	7 12	20 51	5 40	10 7	1 11	9 48
9	17 50	11 13	5 20	26 54	1 50	17 13	19 7	2 II 54	18 34	23 51	16 5	24 45
10	2 12	25 48	19 54	10 17	14 30	29 13	1 0	15 9	1 54	8 6	1 15	9 42
11	16 36	10 5	4 2	23 13	26 51	11 6	12 56	27 43	15 42	22 48	16 31	24 32
12	0 58	24 2	17 43	5 48	8 57	22 59	25 0	10 37	29 59	7 52	1 43	9 7
13	15 14	7 39	0 59	18 6	20 55	4 54	7 II 15	23 54	14 38	23 9	16 41	23 20
14	29 22	20 58	13 53	0 13	2 47	16 55	19 45	7 35	29 35	8 26	1 16	7 8
15	13 20	3 39	26 29	12 10	14 38	29 6	2 32	21 39	14 39	23 33	15 25	20 31
16	27 7	16 47	8 51	24 4	26 31	11 27	15 37	6 1	29 40	8 21	29 6	3 28
17	10 41	29 22	21 3	5 55	8 28	24 1	29 1	20 35	14 29	22 45	12 20	16 4
18	24 3	11 47	3 7	17 47	20 31	6 49	12 42	5 15	29 1	6 42	25 10	28 22
19	7 13	24 3	15 5	29 40	2 II 42	19 50	26 37	19 52	13 11	20 12	7 41	10 26
20	20 9	6 11	27 0	11 37	15 2	3 6	10 43	4 22	26 58	3 19	19 55	22 21
21	2 53	18 13	8 53	23 38	27 31	16 34	24 57	18 40	10 25	16 6	1 59	4 12
22	15 24	0 9	20 45	5 45	10 12	0 16	9 13	2 43	23 33	28 36	13 55	16 2
23	27 42	12 2	2 38	18 1	23 6	14 9	23 30	16 31	6 24	10 53	25 47	27 55
24	9 50	23 53	14 33	0 27	6 14	28 12	7 43	0 5	19 3	23 1	7 37	9 55
25	21 50	5 45	26 32	13 7	19 39	12 25	21 50	13 25	1 31	5 2	19 29	22 4
26	3 44	17 43	8 40	26 5	3 22	26 44	5 51	26 32	13 49	16 59	1 II 24	4 24
27	15 35	29 50	21 0	9 24	17 23	11 17	19 43	9 27	26 0	28 52	13 24	16 56
28	27 28	12 II 12	3 37	23 8	1 43	25 30	3 24	22 12	8 4	10 43	25 30	29 41
29	9 28	24 52	16 34	7 16	16 17	9 47	16 55	4 45	20 1	22 34	7 45	12 39
30	21 39		29 57	21 50	1 2	23 56	0 12	17 8	1 54	4 II 26	20 10	25 50
31	4 5		13 49		15 51		13 16	29 21		16 23		9 15

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	22 53	15 53	26 51	19 13	25 46	12 38	15 14	29 II 4	14 29	19 28	10 57	19 12
2	6 44	0 1	10 58	2 38	8 33	24 40	27 2	11 9	27 35	3 30	25 55	4 22
3	20 47	14 6	24 54	15 48	21 6	6 34	8 II 50	23 27	11 0	17 49	10 52	19 19
4	5 2	28 8	8 39	28 44	3 25	18 23	20 21	6 0	24 43	2 20	25 42	3 56
5	19 24	12 6	22 14	11 27	15 34	0 II 10	2 39	18 49	8 38	16 54	10 18	18 9
6	3 53	25 55	5 38	24 0	27 35	11 59	14 46	1 52	22 42	1 27	24 36	1 55
7	18 23	9 35	18 53	6 22	9 30	23 50	27 3	15 9	6 51	15 54	8 34	15 17
8	2 49	23 1	1 57	18 35	21 20	5 46	9 32	28 39	21 2	0 10	22 12	28 14
9	17 6	6 13	14 48	0 39	3 II 8	17 50	22 14	12 20	5 11	14 15	5 31	10 52
10	1 9	19 7	27 28	12 35	14 55	0 4	5 10	26 9	19 19	28 7	18 32	23 12
11	14 53	1 44	9 54	24 25	26 45	12 30	18 20	10 7	3 22	11 48	1 17	5 20
12	28 15	14 4	22 8	6 II 12	8 40	25 11	1 44	24 11	17 22	25 15	13 49	17 19
13	11 16	26 10	4 10	18 0	20 45	8 9	15 25	8 22	1 17	8 31	26 9	29 11
14	23 56	8 7	16 4	29 51	3 2	21 28	29 20	22 37	15 4	21 34	8 19	11 0
15	6 17	19 57	27 53	11 52	15 36	5 8	13 31	6 55	28 43	4 25	20 21	22 48
16	18 24	1 II 46	9 41	24 8	28 32	19 12	27 56	21 13	12 10	17 3	2 II 15	4 37
17	0 20	13 40	21 33	6 43	11 53	3 37	12 31	5 26	25 23	29 28	14 5	16 29
18	12 10	25 44	3 35	19 41	25 41	18 20	27 13	19 30	8 20	11 41	25 52	28 26
19	24 0	8 3	15 52	3 8	9 56	3 17	11 55	3 20	21 0	23 43	7 39	10 30
20	5 55	20 41	28 30	17 4	24 36	18 20	26 32	16 52	3 24	5 II 37	19 30	22 44
21	17 59	3 41	11 32	1 28	9 36	3 21	10 55	0 3	15 33	17 25	1 28	5 11
22	0 15	17 4	25 2	16 16	24 47	18 11	25 0	12 54	27 30	29 12	13 37	17 55
23	12 47	0 50	8 59	1 20	10 0	2 43	8 43	25 24	9 II 20	11 1	26 2	0 57
24	25 36	14 56	23 21	16 31	25 6	16 51	22 1	7 37	21 8	22 58	8 47	14 21
25	8 43	29 15	8 1	1 38	9 55	0 34	4 54	19 36	2 58	5 8	21 55	28 9
26	22 7	13 42	22 54	16 33	24 22	13 50	17 26	1 II 28	14 56	17 36	5 30	12 22
27	5 45	28 10	7 48	1 10	8 24	26 42	29 40	13 16	27 8	0 26	19 33	26 59
28	19 35	12 35	22 36	15 24	21 59	9 11	11 39	25 7	9 39	13 42	4 2	11 55
29	3 34		7 12	29 13	5 9	21 24	23 31	7 5	22 31	27 25	18 53	27 4
30	17 38		21 31	12 40	17 56	3 23	5 II 19	19 16	5 47	11 35	3 59	12 16
31	1 45		5 31		0 25		17 8	1 43		26 8		27 22

Date	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	Date	♒
Jan. 1	28 11 8	9 12	4 35	11 8 8	11 7 58	17 13 4	11 13 4	8 7 53	20 7 43	Jan. 4	21 7 53	
" 8	27 46	9 23	4 R 32	11 R 3	13 25	22 30	18 13	17 33	24 49	" 11	27 43	
" 15	27 23	9 35	4 D 32	11 D 3	14 49	27 58	25 21	26 13	2 15	" 18	5 59	
" 22	27 1	9 48	4 34	11 7	16 10	3 27	2 28	4 54	11 18	" 25	15 28	
" 29	26 39	10 1	4 39	11 18	17 26	8 57	9 35	13 35	21 15	Feb. 1	25 43	
Feb. 5	26 16	10 15	4 47	11 34	18 38	14 28	16 41	22 18	1 54	" 8	6 39	
" 12	25 54	10 30	4 57	11 56	19 46	19 59	23 46	1 0	13 11	" 15	18 14	
" 19	25 32	10 47	5 10	12 22	20 46	25 31	0 49	9 42	25 10	" 22	0 33	
" 26	25 10	11 3	5 24	12 52	21 41	1 1	7 51	18 24	7 56	Mar. 1	13 38	
Mar. 5	24 48	11 18	5 39	13 27	22 29	6 33	14 52	27 6	21 22	" 8	27 12	
" 12	24 25	11 34	5 57	14 5	23 10	12 4	21 52	5 48	4 48	" 15	10 10	
" 19	24 3	11 50	6 18	14 47	23 42	17 34	28 50	14 30	16 28	" 22	20 16	
" 26	23 41	12 5	6 39	15 31	24 6	23 3	5 45	23 10	23 55	" 29	25 23	
Apr. 2	23 19	12 19	6 58	16 18	24 22	28 30	12 40	1 51	25 R 37	Apr. 5	24 R 40	
" 9	22 56	12 33	7 23	17 7	24 28	3 57	19 33	10 31	22 15	" 12	20 2	
" 16	22 34	12 46	7 47	17 59	24 R 25	9 21	26 24	19 10	17 16	" 19	15 42	
" 23	22 12	12 58	8 10	18 51	24 13	14 43	3 13	27 48	14 40	" 26	14 D 45	
" 30	21 49	13 9	8 36	19 44	23 52	20 4	10 1	6 27	15 D 59	May 3	17 39	
May 7	21 27	13 18	8 59	20 39	23 23	25 22	16 48	15 4	20 45	" 10	23 39	
" 14	21 5	13 26	9 23	21 33	22 46	0 38	23 33	23 42	28 13	" 17	2 6	
" 21	20 43	13 33	9 46	22 27	22 2	5 51	0 17	2 18	7 51	" 24	12 34	
" 28	20 20	13 38	10 10	23 21	21 14	11 2	7 0	10 55	19 25	" 31	24 58	
June 4	19 58	13 42	10 31	24 13	20 23	16 10	13 43	19 31	2 52	June 7	9 11 8	
" 11	19 36	13 43	10 51	25 5	19 29	21 15	20 24	28 7	17 47	" 14	24 23	
" 18	19 14	13 43	11 10	25 55	18 36	26 17	27 5	6 42	3 4	" 21	9 23	
" 25	18 51	13 R 42	11 28	26 43	17 45	1 16	3 45	15 17	17 22	" 28	23 2	
July 2	18 29	13 40	11 44	27 29	16 57	6 13	10 26	23 53	0 5	July 5	5 0	
" 9	18 7	13 34	11 58	28 12	16 15	11 6	17 6	2 27	11 3	" 12	15 13	
" 16	17 45	13 28	12 10	28 53	15 39	15 56	23 47	11 2	20 14	" 19	23 32	
" 23	17 23	13 22	12 20	29 30	15 11	20 43	0 28	19 37	27 18	" 26	29 33	
" 30	17 0	13 14	12 28	0 3	14 51	25 27	7 9	28 10	1 39	Aug. 2	2 27	
Aug. 6	16 38	13 5	12 33	0 32	14 40	0 7	13 52	6 43	2 R 23	" 9	1 R 22	
" 13	16 16	12 55	12 36	0 57	14 D 38	4 44	20 35	15 16	28 55	" 16	26 27	
" 20	15 54	12 44	12 R 36	1 17	14 45	9 17	27 19	23 48	23 5	" 23	21 5	
" 27	15 31	12 32	12 34	1 33	15 1	13 47	4 4	2 19	19 50	" 30	20 D 18	
Sep. 3	15 9	12 21	12 30	1 44	15 26	18 14	10 51	10 49	22 D 50	Sep. 6	26 3	
" 10	14 47	12 10	12 23	1 49	15 59	22 36	17 39	19 17	1 46	" 13	6 45	
" 17	14 25	11 59	12 14	1 R 48	16 40	26 53	24 28	27 45	13 56	" 20	19 28	
" 24	14 2	11 48	12 3	1 43	17 29	1 7	1 19	6 11	26 51	" 27	2 19	
Oct. 1	13 40	11 38	11 50	1 32	18 24	5 15	8 12	14 36	9 24	Oct. 4	14 35	
" 8	13 18	11 28	11 36	1 16	19 25	9 19	15 7	22 58	21 18	" 11	26 13	
" 15	12 55	11 20	11 21	0 56	20 33	13 16	22 3	1 19	2 36	" 18	7 16	
" 22	12 33	11 12	11 4	0 32	21 45	17 8	29 1	9 37	13 22	" 25	17 50	
" 29	12 11	11 5	10 47	0 3	23 3	20 52	6 0	17 52	23 39	Nov. 1	27 54	
Nov. 5	11 49	11 0	10 30	29 32	24 24	24 28	13 1	26 4	3 23	" 8	7 18	
" 12	11 27	10 57	10 12	28 59	25 49	27 56	20 3	4 12	12 10	" 15	15 24	
" 19	11 5	10 56	9 56	28 25	27 17	1 13	27 7	12 13	18 53	" 22	20 33	
" 26	10 43	10 D 56	9 40	27 51	28 48	4 19	4 12	20 8	20 R 52	" 29	19 R 20	
Dec. 3	10 20	10 57	9 25	27 17	0 21	7 12	11 18	27 53	14 56	Dec. 6	10 50	
" 10	9 58	11 1	9 12	26 45	1 56	9 49	18 25	5 28	6 27	" 13	4 55	
" 17	9 36	11 7	9 1	26 16	3 32	12 8	25 32	12 48	5 D 19	" 20	7 D 2	
" 24	9 13	11 14	8 51	25 50	5 9	14 7	2 40	19 50	10 37	" 27	13 55	
" 31	8 51	11 22	8 44	25 29	6 46	15 41	9 48	26 27	18 53			

Apr. 1: 8 stat. in 25° 45'
 " 24: 8 " " 14° 36'

Aug. 4: 8 stat. in 2° 36'
 " 27: 8 " " 19° 50'

Nov. 25: 8 stat. in 21° 2'
 Dec. 14: 8 " " 4° 47'

Date	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	Date	♒
Jan. 1	8 II 48	11 X 23	8 X 44	25 X 26	7 V 0	15 X 52	10 V 49	27 X 21	20 X 11		Jan. 4	24 X 14
" 8	8 26	11 33	8 R 40	25 R 10	8 37	16 55	17 58	3 X 22	29 52		" 11	4 V 13
" 15	8 3	11 45	8 38	24 58	10 13	17 25	25 5	8 40	10 V 10		" 18	14 44
" 22	7 41	11 57	8 D 39	24 53	11 48	17 R 20	2 X 13	13 0	20 57		" 25	25 44
" 29	7 19	12 10	8 42	24 D 53	13 21	16 36	9 20	16 6	2 X 15		Feb. 1	7 X 16
Feb. 5	6 57	12 24	8 48	24 59	14 53	15 14	16 26	17 37	14 7		" 8	19 23
" 12	6 34	12 39	8 56	25 10	16 21	13 16	23 31	17 R 12	26 35		" 15	2 X 6
" 19	6 12	12 55	9 7	25 26	17 46	10 50	0 X 34	14 46	9 X 33		" 22	15 7
" 26	5 50	13 11	9 20	25 47	19 9	8 7	7 37	10 50	22 16		Mar. 1	27 10
Mar. 5	5 28	13 27	9 36	26 14	20 26	5 22	14 38	6 34	2 X 40		" 8	5 X 41
" 12	5 5	13 43	9 52	26 43	21 38	2 50	21 37	3 15	7 51		" 15	7 R 59
" 19	4 43	13 59	10 11	27 18	22 46	0 44	28 35	1 45	6 R 21		" 22	4 8
" 26	4 21	14 14	10 31	27 57	23 48	29 X 21	5 X 31	2 D 14	0 41		" 29	28 X 20
Apr. 2	3 59	14 28	10 52	28 39	24 44	28 18	12 26	4 26	26 X 9		Apr. 5	25 28
" 9	3 37	14 42	11 14	29 23	25 31	28 1	19 18	8 0	25 D 48		" 12	26 D 55
" 16	3 15	14 56	11 37	0 II 11	26 13	28 D 21	26 9	12 37	29 24		" 19	1 X 54
" 23	2 53	15 8	12 2	1 0	26 45	29 13	2 X 59	18 2	5 X 56		" 26	9 26
" 30	2 30	15 19	12 26	1 51	27 10	0 X 34	9 47	24 4	13 18		May 3	18 56
May 7	2 7	15 29	12 51	2 44	27 25	2 21	16 34	0 X 32	25 8		" 10	0 X 8
" 14	1 45	15 38	13 15	3 37	27 31	4 29	23 19	7 22	7 X 16		" 17	12 58
" 21	1 23	15 45	13 39	4 31	27 R 28	6 56	0 II 3	14 29	21 0		" 24	27 20
" 28	1 1	15 50	14 2	5 26	27 17	9 40	6 47	21 49	6 II 2		" 31	12 II 38
June 4	0 39	15 54	14 24	6 21	26 55	12 38	13 29	29 20	21 18		June 7	27 33
" 11	0 17	15 56	14 45	7 15	26 25	15 49	20 10	6 X 59	5 X 26		" 14	10 X 56
" 18	29 X 54	15 57	15 6	8 8	25 49	19 10	26 51	14 46	17 44		" 21	22 27
" 25	29 32	15 58	15 24	9 0	25 5	22 41	3 X 32	22 39	28 3		" 28	1 X 49
July 2	29 10	15 R 56	15 42	9 51	24 16	26 22	10 12	0 II 37	6 X 12		July 5	8 57
" 9	28 47	15 51	15 57	10 39	23 24	0 X 10	16 53	8 40	11 47		" 12	13 13
" 16	28 25	15 45	16 10	11 25	22 30	4 5	23 33	16 48	14 7		" 19	13 R 56
" 23	28 3	15 39	16 22	12 10	21 37	8 8	0 X 14	24 59	12 R 35		" 26	10 51
" 30	27 41	15 32	16 31	12 51	20 44	12 16	6 56	3 X 14	7 58		Aug. 2	5 46
Aug. 6	27 18	15 23	16 38	13 29	19 57	16 30	13 38	11 32	3 32		" 9	2 46
" 13	26 56	15 13	16 42	14 3	19 14	20 51	20 21	19 54	3 D 17		" 16	4 D 56
" 20	26 34	15 2	16 44	14 33	18 39	25 15	27 5	28 18	8 47		" 23	12 45
" 27	26 12	14 51	16 R 43	14 59	18 11	29 46	3 X 51	6 X 46	19 10		" 30	24 35
Sep. 3	25 50	14 40	16 41	15 20	17 52	4 X 21	10 37	15 17	2 X 11		Sep. 6	7 X 59
" 10	25 28	14 28	16 35	15 35	17 43	9 1	17 25	23 50	15 38		" 13	21 15
" 17	25 6	14 17	16 27	15 47	17 D 42	13 45	24 14	2 X 26	28 30		" 20	3 X 46
" 24	24 43	14 5	16 17	15 51	17 52	18 33	1 X 6	11 4	10 X 34		" 27	15 30
Oct. 1	24 20	13 55	16 6	15 R 52	18 11	23 26	7 58	19 44	21 52		Oct. 4	26 30
" 8	23 58	13 45	15 53	15 47	18 38	28 22	14 53	28 26	2 X 30		" 11	6 X 51
" 15	23 36	13 36	15 38	15 36	19 15	3 X 22	21 49	7 X 10	12 27		" 18	16 29
" 22	23 14	13 28	15 21	15 22	19 59	8 26	28 46	15 54	21 35		" 25	25 9
" 29	22 52	13 21	15 5	15 1	20 51	13 34	5 X 46	24 40	29 23		Nov. 1	2 X 2
Nov. 5	22 30	13 16	14 47	14 37	21 50	18 45	12 47	3 X 27	4 X 30		" 8	5 13
" 12	22 7	13 13	14 30	14 9	22 55	23 59	19 49	12 13	4 R 7		" 15	1 R 33
" 19	21 45	13 11	14 13	13 37	24 7	29 16	26 52	21 2	26 X 27		" 22	22 X 39
" 26	21 23	13 10	13 56	13 4	25 24	4 X 36	3 X 57	29 50	19 30		" 29	19 D 7
Dec. 3	21 1	13 D 11	13 41	12 29	26 45	9 58	11 3	8 X 38	20 D 53		Dec. 6	23 25
" 10	20 39	13 14	13 27	11 55	28 10	15 22	18 10	17 26	27 50		" 13	1 X 38
" 17	20 16	13 19	13 15	11 21	29 39	20 49	25 17	26 15	7 X 4		" 20	11 21
" 24	19 54	13 25	13 4	10 49	1 X 11	26 17	2 X 25	5 X 4	17 12		" 27	21 41
" 31	19 32	13 33	12 56	10 21	2 46	1 X 46	9 33	13 52	27 45			

Jan. 18: δ stat. in $17^{\circ} 27'$
 Feb. 7: ϵ " " $17^{\circ} 42'$
 Mar. 14: ϵ " " $8^{\circ} 4'$
 " 21: ϵ " " $1^{\circ} 41'$

Apr. 6: ϵ stat. in $25^{\circ} 25'$
 " 9: δ " " $28^{\circ} 1'$
 July 17: ϵ " " $14^{\circ} 8'$

Aug. 10: ϵ stat. in $2^{\circ} 43'$
 Nov. 8: ϵ " " $5^{\circ} 13'$
 " 28: ϵ " " $19^{\circ} 4'$

THE PLACE OF THE MOON FOR THE YEARS 1854-1855

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	12=13	2715	107 5	268 9	28111	121 9	15124	311 6	247 56	4= 9	26158	3831
2	26 40	15 25	23 13	8116	1011	24 12	27 55	6 54	9117	18 32	10737	16 16
3	10139	28 8	5858	20 12	21 51	6127	10144	0745	23 53	2155	24 4	28 55
4	24 10	10830	18 21	212	3145	18 59	23 54	14 59	8=39	17 13	7815	11120
5	7713	22 34	01128	13 51	15 48	1152	7128	29 36	23 29	1722	20 12	23 35
6	19 51	41128	12 24	25 45	28 5	15 8	21 29	14131	8114	15 14	21152	5141
7	2810	16 15	24 13	7149	10140	28 51	5756	29 38	22 46	28 48	15 18	17 40
8	14 13	28 2	611	20 7	23 37	1310	20 46	14=48	6758	1211	27 30	29 33
9	26 7	9153	17 54	2143	6158	27 34	5154	29 49	20 46	24 52	9132	11124
10	71154	21 51	29 57	15 39	20 43	12727	21 10	14132	48 6	7124	21 27	23 16
11	19 41	410	12112	28 57	4152	27 33	6=25	28 51	17 2	19 40	3119	5113
12	1129	16 20	24 43	12135	19 22	12143	21 27	12741	29 34	1142	15 11	17 19
13	13 22	28 54	7131	26 31	473	27 46	617	26 1	11149	13 37	27 10	29 38
14	25 22	11141	20 36	10142	18 52	12=35	20 21	8154	23 50	25 28	9120	12116
15	7130	24 39	3157	25 1	3142	27 3	475	21 25	5143	7122	21 44	25 17
16	19 47	7149	17 32	9725	18 24	1117	17 21	3137	17 33	19 21	4127	8143
17	2115	21 10	1117	23 49	2=54	24 45	0812	15 36	29 25	1132	17 31	22 36
18	14 54	4141	15 9	819	17 8	7758	12 41	27 27	11123	13 57	0159	6757
19	27 45	18 23	29 8	22 23	113	20 50	24 53	9116	23 30	26 38	14 49	21 40
20	10151	2716	13711	6=28	14 40	3823	6154	21 6	5149	9137	28 59	6139
21	24 12	16 20	27 16	20 24	27 58	15 42	18 46	310	18 20	22 52	13724	21 45
22	7150	0135	11124	419	10759	27 49	0135	15 0	115	6126	28 0	6=48
23	21 48	14 59	25 32	17 42	23 45	9148	12 24	27 9	14 3	20 13	12139	21 40
24	675	29 29	9=40	17 2	6817	21 41	24 14	9128	27 12	4711	27 15	6112
25	20 39	14=0	23 44	14 8	18 37	3131	619	21 56	10133	18 16	11=43	20 22
26	5127	28 25	7141	27 1	0147	15 21	18 8	4134	24 4	2127	25 59	478
27	20 23	12138	21 27	9839	12 49	27 11	0114	17 23	7746	16 40	1010	17 30
28	5=19	26 33	4759	22 4	24 44	914	12 29	0124	21 38	0=53	23 45	0832
29	20 5		18 14	4116	6135	21 2	24 52	13 38	5140	15 3	7715	13 17
30	4134		1811	16 18	18 24	318	7128	27 7	19 51	29 9	20 39	25 47
31	18 38		13 49		0114		20 19	10753		1318		8115

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	20115	511	13147	28133	2123	2271	0=22	24125	15153	20147	616	7148
2	2119	16 54	25 42	1110	15 34	6123	15 19	8755	29 13	3126	18 4	19 38
3	14 18	28 49	7142	23 38	29 1	20 52	0110	23 0	12119	15 47	29 57	1131
4	26 12	10147	19 49	6128	12742	5=25	14 46	6839	24 45	27 55	11148	13 33
5	815	22 50	212	19 31	26 35	19 54	29 3	19 53	714	9152	23 41	25 47
6	19 57	510	14 24	2746	10137	4115	1370	2148	19 12	21 45	5142	8117
7	1150	17 19	26 56	16 14	24 46	18 25	26 37	15 25	1111	3135	17 52	21 7
8	13 47	29 51	9138	29 55	8=59	2723	9855	27 49	13 5	15 28	0115	4717
9	25 52	12140	22 35	13150	23 14	16 7	22 56	1012	24 57	27 24	12 52	17 48
10	818	25 50	5748	27 57	7126	29 38	5143	22 7	6148	9127	25 44	1137
11	20 39	9725	19 19	12=16	21 35	12856	18 18	417	18 40	21 38	8751	15 39
12	3132	23 26	3112	26 42	5738	26 1	0143	16 2	0136	3159	22 11	29 52
13	16 49	7155	17 25	11113	19 32	8155	12 17	27 54	12 36	16 30	5145	14=9
14	0734	22 48	1=58	25 42	3815	21 36	25 8	9145	24 43	29 14	19 30	28 26
15	14 49	7=58	16 47	1075	16 45	416	719	21 36	6159	12711	3=25	12139
16	29 31	23 16	1144	24 15	29 59	16 25	19 5	3129	19 26	25 23	17 27	26 47
17	14136	8130	16 41	888	12158	28 34	0156	15 28	27 9	8151	1136	10748
18	29 55	23 29	1729	21 41	25 41	10134	12 47	27 36	15 11	22 36	15 50	24 41
19	15=15	875	16 0	4153	819	22 28	24 38	9157	28 34	6=38	076	8826
20	0127	22 12	087	17 43	20 23	4120	6135	22 36	12122	20 57	14 21	22 2
21	15 18	5849	13 48	0114	2127	16 13	18 42	5738	26 35	5129	28 33	5130
22	29 44	18 57	27 3	12 30	14 23	28 11	113	19 5	11=11	20 9	12837	18 46
23	13740	1141	9152	24 33	26 16	10121	13 45	312	26 5	4753	26 31	1150
24	27 7	14 5	22 21	6129	8110	22 45	26 51	17 28	1111	19 34	10110	14 40
25	1089	26 13	4133	18 22	20 11	5130	10725	2=19	26 19	484	23 31	27 16
26	22 48	8112	16 34	0117	2122	18 39	24 28	17 29	11719	18 18	6134	9138
27	5111	20 4	28 28	12 17	14 48	2714	910	2148	26 2	2111	19 18	21 47
28	17 20	1155	10119	24 27	27 33	16 16	23 56	18 5	10823	15 41	1144	3145
29	29 21		22 13	6151	10138	0142	9=7	379	24 18	28 47	13 55	15 36
30	11116		4111	19 29	24 6	15 27	24 22	17 51	7145	11131	25 55	27 25
31	23 9		16 17		7754		9131	28 6		23 56		9117

Date	α	β	γ	δ	ε	ζ	η	θ	ι	κ	Date	λ
Jan. 1	19 28	13 34	12 54	10 16	2 59	2 34	10 34	15 7	29 17		Jan. 4	3 54
" 8	19 6	13 43	12 48	9 50	4 36	8 4	17 42	23 56	10 10		" 11	14 56
" 15	18 43	13 54	12 45	9 29	6 15	13 35	24 50	2 44	21 25		" 18	26 22
" 22	18 21	14 7	12 44	9 12	7 53	19 7	1 58	11 32	3 5		" 25	8 16
" 29	17 59	14 20	12 46	9 2	9 32	24 38	9 5	20 18	15 12		Feb. 1	20 33
Feb. 5	17 37	14 34	12 50	8 56	11 13	0 12	16 11	29 4	27 39		" 8	2 54
" 12	17 14	14 48	12 57	8 56	12 51	5 43	23 16	7 49	9 28		" 15	13 52
" 19	16 52	15 4	13 7	9 1	14 31	11 14	0 20	16 33	18 22		" 22	20 25
" 26	16 29	15 20	13 19	9 11	16 9	16 45	7 22	25 16	20 54		Mar. 1	19 35
Mar. 5	16 7	15 36	13 33	9 27	17 46	22 13	14 23	3 58	16 20		" 8	13 22
" 12	15 45	15 51	13 49	9 48	19 19	27 41	21 22	12 36	9 48		" 15	7 58
" 19	15 23	16 7	14 6	10 14	20 50	3 6	28 20	21 14	7 5		" 22	7 21
" 26	15 1	16 23	14 26	10 45	22 17	8 30	5 17	29 51	8 59		" 29	10 58
Apr. 2	14 39	16 38	14 46	11 20	23 41	13 53	12 11	8 25	14 26		Apr. 5	17 34
" 9	14 16	16 52	15 8	11 59	25 1	19 13	19 4	16 56	22 15		" 12	26 9
" 16	13 54	17 6	15 31	12 40	26 18	24 29	25 55	25 25	1 49		" 19	6 24
" 23	13 32	17 18	15 54	13 25	27 28	29 45	2 45	3 52	12 54		" 26	18 4
" 30	13 10	17 29	16 18	14 12	28 30	4 58	9 33	12 16	25 21		May 3	1 8 9
May 7	12 48	17 39	16 41	15 2	29 29	10 8	16 20	20 35	9 15		" 10	15 35
" 14	12 26	17 48	17 6	15 52	0 20	15 15	23 5	28 52	24 16		" 17	0 49
" 21	12 3	17 57	17 31	16 45	1 5	20 22	29 50	7 5	9 24		" 24	15 32
" 28	11 41	18 3	17 55	17 39	1 40	25 23	6 33	15 13	23 12		" 31	28 30
June 4	11 20	18 7	18 18	18 32	2 7	0 23	13 15	23 17	4 55		June 7	9 10
" 11	10 58	18 10	18 40	19 28	2 26	5 20	19 57	1 13	14 11		" 14	17 23
" 18	10 35	18 12	19 1	20 22	2 35	10 15	26 38	9 4	20 52		" 21	22 49
" 25	10 13	18 12	19 21	21 17	2 35	15 7	3 18	16 46	24 26		" 28	24 51
July 2	9 50	18 10	19 40	22 10	2 26	19 57	9 59	24 19	24 21		July 5	23 14
" 9	9 28	18 7	19 56	23 3	2 7	24 44	16 39	1 40	21 1		" 12	19 4
" 16	9 5	18 2	20 10	23 53	1 40	29 28	23 20	8 48	16 41		" 19	15 24
" 23	8 43	17 56	20 23	24 43	1 3	4 10	0 1	15 38	14 51		" 26	15 24
" 30	8 21	17 49	20 34	25 30	0 21	8 50	6 42	22 9	17 37		Aug. 2	20 16
Aug. 6	7 59	17 40	20 41	26 13	29 33	13 28	13 24	28 10	25 11		" 9	29 46
" 13	7 37	17 31	20 48	26 56	28 40	18 1	20 7	3 37	6 47		" 16	12 32
" 20	7 15	17 21	20 52	27 34	27 46	22 33	26 51	8 21	20 30		" 23	26 30
" 27	6 52	17 9	20 53	28 9	26 51	27 3	3 37	12 5	4 24		" 30	10 9
Sep. 3	6 30	16 58	20 52	28 39	25 57	1 31	10 23	14 31	17 33		Sep. 6	22 53
" 10	6 8	16 47	20 48	29 6	25 8	5 57	17 11	15 21	29 43		" 13	4 39
" 17	5 46	16 35	20 42	29 27	24 23	10 18	24 1	14 20	11 0		" 20	15 34
" 24	5 23	16 24	20 35	29 44	23 46	14 38	0 51	11 27	21 25		" 27	25 37
Oct. 1	5 1	16 13	20 23	29 56	23 17	18 55	7 44	7 21	0 57		Oct. 4	4 45
" 8	4 39	16 3	20 10	0 2	22 56	23 8	14 38	3 16	9 24		" 11	12 32
" 15	4 16	15 54	19 56	0 4	22 47	27 20	21 34	0 26	16 2		" 18	17 59
" 22	3 54	15 45	19 41	29 58	22 46	1 26	28 32	29 28	19 18		" 25	19 0
" 29	3 32	15 38	19 24	29 47	22 54	5 30	5 31	0 26	16 34		Nov. 1	13 12
Nov. 5	3 9	15 32	19 6	29 33	23 13	9 30	12 32	3 5	8 4		" 8	5 1
" 12	2 46	15 28	18 50	29 13	23 42	13 25	19 34	7 3	3 23		" 15	4 7
" 19	2 24	15 25	18 32	28 48	24 20	17 17	26 38	12 3	7 5		" 22	10 21
" 26	2 2	15 24	18 16	28 19	25 5	21 2	3 43	17 51	15 29		" 29	19 41
Dec. 3	1 41	15 25	17 59	27 50	25 59	24 41	10 48	24 14	25 33		Dec. 6	0 4
" 10	1 19	15 27	17 45	27 15	27 0	28 12	17 55	1 7	6 11		" 13	10 46
" 17	0 56	15 31	17 31	26 40	28 7	1 37	25 3	8 19	16 58		" 20	21 38
" 24	0 34	15 37	17 18	26 6	29 20	4 51	2 10	15 49	27 54		" 27	2 39
" 31	0 11	15 45	17 9	25 32	0 39	7 55	9 18	23 33	9 2			

Feb. 15: 8 stat. in 21° 2'
 Mar. 20: 8 " " 7° 3'
 June 28: 8 " " 24° 51'

July 23: 8 stat. in 14° 51'
 Sep. 9: 8 " " 15° 21'
 Oct. 22: 8 " " 29° 28'

Oct. 23: 8 stat. in 19° 21'
 Nov. 12: 8 " " 3° 23'

Date	Ω	Ψ	ϕ	λ	μ	δ	θ	φ	χ	Date	χ
	o /	o /	o /	o /	o /	o /	o /	o /	o /		o /
Jan. 1	08 8	15 46	17 8	25 28	0 51	8 21	10 20	24 40	10 38	Jan. 4	15 31
" 8	29 46	15 55	16 59	24 55	2 15	11 11	17 28	27 35	22 7	" 11	27 6
" 15	29 24	16 5	16 56	24 27	3 43	13 46	24 36	10 40	3 51	" 18	8 56
" 22	29 2	16 16	16 54	24 2	5 14	16 6	1 43	18 49	15 38	" 25	20 29
" 29	28 40	16 29	16 55	23 41	6 49	18 5	8 50	27 4	26 25	Feb. 1	0 8
Feb. 5	28 17	16 43	16 57	23 23	8 26	19 41	15 56	5 23	3 30	" 8	4 24
" 12	27 55	16 57	17 2	23 12	10 4	20 51	23 1	13 46	3 8	" 15	0 36
" 19	27 33	17 13	17 10	23 6	11 44	21 32	0 5	22 11	26 17	" 22	23 9
" 26	27 11	17 28	17 20	23 5	13 26	21 37	7 7	0 37	20 21	" 29	19 29
Mar. 4	26 48	17 44	17 34	23 11	15 8	21 7	14 9	9 7	19 51	Mar. 7	21 7
" 11	26 26	18 0	17 48	23 21	16 49	19 59	21 8	17 36	23 51	" 14	26 30
" 18	26 4	18 16	18 5	23 39	18 30	18 13	28 6	26 7	0 40	" 21	4 14
" 25	25 42	18 32	18 23	23 58	20 10	15 59	5 2	4 38	9 25	" 28	13 37
Apr. 1	25 19	18 47	18 43	24 24	21 49	13 23	11 57	13 10	19 36	Apr. 4	24 20
" 8	24 57	19 1	19 4	24 53	23 26	10 43	18 50	21 43	1 1	" 11	6 12
" 15	24 34	19 15	19 27	25 28	25 2	8 10	25 42	0 15	13 41	" 18	19 30
" 22	24 12	19 28	19 49	26 7	26 35	6 0	2 31	8 49	27 35	" 25	3 54
" 29	23 50	19 40	20 13	26 48	28 5	4 24	9 19	17 22	12 29	May 2	18 57
May 6	23 28	19 51	20 37	27 31	29 32	3 24	16 6	25 54	27 19	" 9	3 17
" 13	23 6	20 1	21 2	28 19	0 53	3 3	22 52	4 28	10 36	" 16	15 33
" 20	22 44	20 9	21 26	29 8	2 12	3 20	29 36	13 1	21 22	" 23	25 6
" 27	22 22	20 15	21 50	29 59	3 25	4 11	6 19	21 34	29 15	" 30	1 39
June 3	21 59	20 20	22 14	0 51	4 34	5 33	13 1	0 8	3 53	June 6	4 46
" 10	21 37	20 24	22 37	1 45	5 35	7 24	19 43	8 42	4 54	" 13	4 15
" 17	21 15	20 26	22 59	2 39	6 30	9 38	26 24	17 17	2 32	" 20	0 52
" 24	20 53	20 27	23 19	3 34	7 17	12 13	3 4	25 51	28 35	" 27	27 12
July 1	20 30	20 26	23 38	4 29	7 58	15 6	9 45	4 26	26 9	July 4	26 9
" 8	20 8	20 23	23 56	5 25	8 29	18 15	16 25	13 2	27 22	" 11	29 8
" 15	19 45	20 19	24 12	6 20	8 53	21 39	23 6	21 39	2 43	" 18	6 15
" 22	19 23	20 13	24 26	7 13	9 7	25 16	29 47	0 16	12 2	" 25	17 5
" 29	19 1	20 6	24 39	8 3	9 11	29 2	6 28	8 54	24 35	Aug. 1	0 36
Aug. 5	18 39	19 58	24 48	8 52	9 6	3 0	13 10	17 32	8 52	" 8	15 4
" 12	18 17	19 49	24 56	9 39	8 51	7 6	19 53	26 11	23 8	" 15	28 59
" 19	17 55	19 39	25 0	10 24	8 27	11 21	26 37	4 49	6 29	" 22	11 51
" 26	17 33	19 28	25 2	11 5	7 54	15 44	3 22	13 30	18 43	" 29	23 38
Sep. 2	17 10	19 16	25 4	11 44	7 13	20 14	10 9	22 10	29 53	Sep. 5	4 23
" 9	16 48	19 5	25 2	12 18	6 26	24 51	16 57	0 50	10 3	" 12	14 5
" 16	16 26	18 54	24 57	12 49	5 34	29 33	23 46	9 30	19 6	" 19	22 33
" 23	16 4	18 42	24 50	13 16	4 38	4 21	0 37	18 10	26 39	" 26	29 17
" 30	15 41	18 31	24 41	13 37	3 42	9 13	7 30	26 50	1 54	Oct. 3	3 3
Oct. 7	15 19	18 21	24 30	13 54	2 48	14 13	14 24	5 30	3 5	" 10	1 46
" 14	14 56	18 12	24 16	14 6	1 55	19 15	21 20	14 10	28 9	" 17	24 31
" 21	14 34	18 3	24 2	14 12	1 8	24 23	28 17	22 49	20 3	" 24	18 4
" 28	14 12	17 55	23 46	14 13	0 28	29 34	5 17	1 28	18 2	" 31	19 45
Nov. 4	13 50	17 49	23 30	14 7	29 56	4 47	12 18	10 6	23 49	Nov. 7	27 40
" 11	13 28	17 44	23 14	13 57	29 33	10 6	19 20	18 45	3 27	" 14	8 1
" 18	13 6	17 41	22 54	13 42	29 19	15 25	26 23	27 22	14 15	" 21	18 58
" 25	12 43	17 39	22 36	13 22	29 17	20 48	3 28	5 58	25 16	" 28	0 1
Dec. 2	12 21	17 39	22 20	12 57	29 24	26 12	10 34	14 34	6 18	Dec. 5	11 1
" 9	11 59	17 41	22 4	12 30	29 40	1 38	17 40	23 7	17 17	" 12	22 0
" 16	11 36	17 44	21 49	11 57	0 7	7 6	24 48	1 39	28 19	" 19	3 6
" 23	11 14	17 49	21 36	11 24	0 42	12 35	1 56	10 10	9 30	" 26	14 20
" 31	10 49	17 57	21 24	10 44	1 34	18 50	10 5	19 48	22 24		

Feb. 8: χ stat. in $4^{\circ} 24'$
 " 25: δ " " $21^{\circ} 39'$
 Mar. 1: χ " " $19^{\circ} 24'$

May 13: δ stat. in $3^{\circ} 3'$
 June 8: χ " " $5^{\circ} 0'$
 July 3: χ " " $26^{\circ} 13'$

Oct. 5: χ stat. in $3^{\circ} 19'$
 " 26: χ " " $17^{\circ} 40'$

THE PLACE OF THE MOON FOR THE YEARS 1856-1857

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	21 16	6 48	28 25	19 31	28 17	21 28	28 35	16 31	1 29	3 47	19 4	24 16
2	3 29	20 3	12 4	4 14	13 4	5 42	11 59	28 53	13 17	15 38	1 33	7 25
3	16 0	3 50	26 13	19 14	27 53	19 42	25 8	11 3	25 2	27 35	14 15	20 47
4	28 54	18 6	10 49	4 22	12 38	3 26	7 59	23 1	6 50	9 42	27 13	4 23
5	12 13	2 47	25 48	19 29	27 11	16 49	20 33	4 52	18 43	22 2	10 30	18 13
6	25 59	17 46	11 0	4 27	11 26	29 50	2 50	16 39	0 47	4 39	24 7	2 17
7	10 9	2 54	26 16	19 6	25 19	12 30	14 54	28 27	13 7	17 37	8 6	16 35
8	24 38	18 0	11 26	3 23	8 47	24 52	26 46	10 21	25 46	0 59	22 27	1 8 6
9	9 19	2 54	26 19	17 13	21 50	6 58	8 37	22 26	8 49	14 47	7 7	15 45
10	24 5	17 30	10 51	0 36	4 30	18 53	20 26	4 47	22 20	29 2	22 2	0 27
11	8 46	1 44	24 56	13 34	16 51	0 43	2 21	17 29	6 18	13 40	7 8 5	15 5
12	23 17	15 36	8 35	26 11	28 57	12 32	14 26	0 36	20 43	28 39	22 8	29 31
13	7 35	29 5	21 50	8 29	10 52	24 26	26 48	14 10	5 31	13 49	7 11	13 39
14	21 36	12 15	4 42	20 34	22 41	6 30	9 30	28 10	20 34	29 3	21 37	27 23
15	5 21	25 8	17 16	2 29	4 30	18 48	22 33	12 33	5 43	14 10	5 48	10 42
16	18 51	7 47	29 35	14 19	16 22	1 22	6 0	27 14	20 49	29 1	19 32	23 35
17	2 8	20 14	11 43	26 8	28 21	14 14	19 49	12 5	5 43	13 30	2 48	6 5
18	15 12	2 31	23 42	7 57	10 31	27 25	3 57	26 57	20 19	27 33	15 37	18 17
19	28 6	14 39	5 35	19 51	22 53	10 54	18 17	11 43	4 33	11 8	28 4	0 14
20	10 49	26 41	17 26	1 51	5 29	24 37	2 45	26 17	18 24	24 16	10 13	12 4
21	23 22	8 36	29 15	13 59	18 19	8 32	17 13	10 36	1 51	7 1	22 9	23 50
22	5 44	20 28	11 4	26 19	1 24	22 34	1 38	24 38	14 56	19 26	3 58	5 40
23	17 56	2 16	22 5	8 49	14 42	6 41	15 55	8 21	27 42	1 36	15 44	17 37
24	29 59	14 4	4 55	21 33	28 13	20 50	0 8 2	21 48	10 12	13 34	27 31	29 45
25	11 54	25 56	17 0	4 31	11 55	4 56	14 0	4 59	22 28	25 25	9 24	12 7
26	23 44	7 54	29 16	17 46	25 48	19 6	27 47	17 55	4 34	7 12	21 25	24 44
27	5 31	20 3	11 46	1 17	9 51	3 11	11 24	0 37	16 32	18 59	3 36	7 38
28	17 21	2 28	24 33	15 7	24 2	17 12	24 50	13 8	28 24	0 48	15 59	20 46
29	29 18	15 14	7 42	29 15	8 20	1 8	8 4	25 27	10 12	12 41	28 32	4 7
30	11 27		21 13	13 39	22 43	14 57	21 6	7 36	21 59	24 40	11 18	17 39
31	23 55		5 10		7 7		3 56	19 36		6 47		1 19

DM	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /	o /
1	15 7	8 6	18 46	10 54	16 51	2 47	4 54	18 50	4 42	9 43	1 24	9 56
2	29 1	22 10	2 58	24 16	29 30	14 41	16 43	1 0	18 1	23 54	16 36	25 15
3	13 1	6 9	16 55	7 18	11 50	26 30	28 37	13 42	1 39	8 25	1 52	10 21
4	27 7	20 1	0 38	20 1	23 57	8 18	10 38	26 31	15 36	23 12	17 0	25 3
5	11 17	3 45	14 5	2 30	5 54	20 8	22 50	9 37	29 48	8 6	1 52	9 17
6	25 31	17 19	27 17	14 45	17 45	2 4	5 13	22 58	14 10	23 0	16 19	23 0
7	9 46	0 41	10 15	26 51	29 34	14 7	17 49	6 33	28 37	7 46	0 20	6 13
8	23 56	13 50	23 0	8 50	11 23	26 18	0 37	20 18	13 4	22 17	13 54	19 1
9	7 59	26 43	5 33	20 43	23 14	8 38	13 36	4 13	27 28	6 30	27 2	1 28
10	21 47	9 20	17 55	2 34	5 9	21 9	26 48	18 15	11 44	20 23	9 49	13 38
11	5 19	21 42	0 3	14 23	17 9	3 50	10 10	2 21	25 51	3 55	22 17	25 38
12	18 30	3 51	12 4	26 13	29 18	16 43	23 43	16 31	9 45	17 7	4 32	7 31
13	1 19	15 48	23 58	8 7	11 35	29 50	7 28	0 43	23 28	0 3	16 37	19 21
14	13 49	27 39	5 48	20 8	24 4	13 12	21 24	14 55	6 57	12 44	28 36	1 11
15	26 1	9 27	17 37	2 18	6 48	26 50	5 32	29 3	20 12	25 12	10 30	13 4
16	8 0	21 18	29 28	14 43	19 48	10 48	1 50	13 6	3 13	7 29	22 22	25 0
17	19 51	3 16	11 26	27 24	3 8	25 4	4 17	27 0	16 1	19 38	4 13	7 1
18	1 38	15 27	23 35	10 27	16 51	9 37	18 48	10 41	28 35	1 40	16 5	19 8
19	13 29	27 55	6 0	23 54	0 58	24 24	3 17	24 7	10 57	13 35	27 59	1 22
20	25 27	10 44	18 46	7 47	15 28	9 18	17 38	7 16	23 7	25 28	9 57	13 44
21	7 39	23 57	1 55	22 6	0 8 19	24 11	1 45	20 7	5 8	7 18	22 2	26 18
22	20 7	7 35	15 30	6 49	15 24	8 54	15 33	2 40	17 2	19 9	4 16	9 4
23	2 55	21 35	29 31	21 51	0 35	23 19	28 58	14 58	28 53	1 4	16 43	22 8
24	16 3	5 54	13 57	7 4	15 42	7 20	12 1	27 3	10 44	13 6	29 27	5 31
25	29 31	20 27	28 43	22 17	0 34	20 54	24 41	8 59	22 40	25 20	12 33	19 18
26	13 16	5 6	13 42	7 22	15 4	4 1	7 3	20 51	4 44	7 50	26 4	3 29
27	27 14	19 46	28 45	22 8	29 6	16 42	19 9	2 43	17 2	20 40	10 3	18 3
28	11 21	4 21	13 44	6 30	12 39	29 4	1 5	14 39	29 38	3 55	24 30	2 57
29	25 33		28 32	20 24	25 44	11 9	12 57	26 46	12 35	17 37	9 23	18 4
30	9 47		13 1	3 50	8 23	23 4	24 48	9 7	25 56	1 48	24 35	3 13
31	23 58		27 9		20 43		6 45	21 44		16 25		18 15

Date	α	ψ	μ	λ	ϕ	δ	⊙	♀	♂	Date	♀
Jan. 1	10 46	17 58	21 23	10 42	1 41	19 38	11 3 6	21 0	24 2	Jan. 4	28 48
" 8	10 24	18 7	21 R 13	10 R 7	2 36	25 7	18 14	29 22	4 58	" 11	9 17
" 15	10 1	18 17	21 9	9 33	3 38	0 36	25 22	7 38	14 8	" 18	16 44
" 22	9 39	18 28	21 6	9 4	4 47	6 5	2 29	15 50	18 3	" 25	17 R 12
" 29	9 17	18 41	21 D. 4	8 36	6 1	11 34	9 36	23 54	13 R 38	Feb. 1	10 2
Feb. 5	8 54	18 55	21 7	8 11	7 19	17 0	16 42	1 48	5 38	" 8	3 28
" 12	8 32	19 9	21 10	7 50	8 43	22 25	23 47	9 32	2 26	" 15	2 D. 54
" 19	8 10	19 24	21 17	7 34	10 12	27 49	0 51	17 4	4 D. 53	" 22	7 10
" 26	7 48	19 39	21 26	7 23	11 43	3 12	7 53	24 16	10 56	Mar. 1	14 14
Mar. 5	7 26	19 55	21 38	7 18	13 17	8 33	14 54	1 11	19 6	" 8	23 3
" 12	7 3	20 11	21 52	7 D. 18	14 54	13 52	21 53	7 39	28 40	" 15	3 8
" 19	6 41	20 27	22 7	7 24	16 32	19 8	28 51	13 34	9 23	" 22	14 19
" 26	6 19	20 43	22 23	7 34	18 12	24 21	5 47	18 47	21 10	" 29	26 33
Apr. 2	5 57	20 58	22 44	7 51	19 53	29 34	12 42	23 5	4 3	Apr. 5	9 55
" 9	5 34	21 13	23 5	8 12	21 34	4 43	19 35	26 14	18 2	" 12	24 19
" 16	5 12	21 27	23 27	8 38	23 15	9 50	26 26	27 46	2 45	" 19	9 0
" 23	4 50	21 40	23 49	9 7	24 56	14 55	3 15	27 R 31	17 1	" 26	22 32
" 30	4 27	21 52	24 13	9 42	26 36	19 57	10 3	25 16	29 9	May 3	3 26
May 7	4 5	22 4	24 36	10 19	28 15	24 57	16 50	21 29	8 8	" 10	10 54
" 14	3 43	22 14	25 1	11 1	29 53	29 54	23 35	17 9	13 29	" 17	14 35
" 21	3 21	22 22	25 26	11 45	1 28	4 48	0 19	13 32	14 R 55	" 24	14 R 22
" 28	2 59	22 29	25 51	12 32	3 1	9 41	7 3	11 39	12 47	" 31	11 12
June 4	2 36	22 34	26 14	13 21	4 30	14 31	13 45	11 D. 40	9 1	June 7	7 37
" 11	2 14	22 38	26 38	14 12	5 58	19 19	20 26	13 28	6 32	" 14	6 D. 26
" 18	1 51	22 40	27 0	15 4	7 21	24 5	27 7	16 40	7 D. 23	" 21	8 53
" 25	1 29	22 41	27 21	15 57	8 41	28 49	3 48	20 58	11 55	" 28	14 57
July 2	1 7	22 R 40	27 41	16 50	9 54	3 31	10 28	26 13	19 54	July 5	24 17
" 9	0 44	22 38	28 0	17 44	11 5	8 11	17 9	1 54	0 59	" 12	6 33
" 16	0 22	22 34	28 18	18 38	12 8	12 49	23 49	8 14	14 35	" 19	20 53
" 23	0 0	22 29	28 33	19 33	13 5	17 25	0 30	14 55	29 22	" 26	5 40
" 30	29 38	22 22	28 46	20 27	13 55	22 0	7 12	21 55	13 48	Aug. 2	19 40
Aug. 6	29 16	22 15	28 57	21 20	14 36	26 33	13 54	29 10	27 6	" 9	2 25
" 13	28 54	22 7	29 6	22 10	15 10	1 5	20 37	6 38	9 9	" 16	13 56
" 20	28 32	21 56	29 13	22 59	15 36	5 34	27 21	14 17	20 0	" 23	24 15
" 27	28 10	21 45	29 16	23 47	15 52	10 3	4 7	22 6	29 35	" 30	3 17
Sep. 3	27 47	21 34	29 R 17	24 32	15 59	14 29	10 53	0 2	7 44	Sep. 6	10 40
" 10	27 25	21 22	29 16	25 12	15 R 55	18 55	17 41	8 6	13 54	" 13	15 40
" 17	27 3	21 10	29 14	25 51	15 43	23 20	24 31	16 17	16 55	" 20	16 R 49
" 24	26 40	20 59	29 7	26 25	15 19	27 43	1 22	24 32	15 R 3	" 27	12 29
Oct. 1	26 18	20 50	28 58	26 57	14 48	2 4	8 15	2 53	8 3	Oct. 4	4 51
" 8	25 56	20 39	28 48	27 23	14 8	6 24	15 9	11 18	2 10	" 11	1 D. 59
" 15	25 33	20 28	28 37	27 44	13 22	10 43	22 5	19 48	4 D. 4	" 18	7 5
" 22	25 11	20 19	28 23	28 0	12 30	15 0	29 3	28 22	12 22	" 25	16 52
" 29	24 49	20 11	28 8	28 14	11 34	19 16	6 2	6 58	23 15	Nov. 1	28 9
Nov. 5	24 27	20 4	27 53	28 20	10 36	23 29	13 3	15 37	4 44	" 8	9 38
" 12	24 4	20 0	27 34	28 R 19	9 40	27 41	20 6	24 18	16 6	" 15	20 55
" 19	23 42	19 56	27 15	28 15	8 47	1 51	27 9	3 0	27 16	" 22	2 0
" 26	23 20	19 54	26 59	28 4	7 58	5 58	4 14	11 45	8 16	" 29	12 57
Dec. 3	22 57	19 D. 53	26 41	27 49	7 16	10 3	11 20	20 30	19 12	Dec. 6	23 52
" 10	22 35	19 54	26 25	27 28	6 41	14 5	18 27	29 16	0 5	" 13	4 44
" 17	22 13	19 57	26 9	27 2	6 16	18 4	25 34	8 3	10 51	" 20	15 21
" 24	21 51	20 2	25 56	26 34	6 0	21 59	2 42	16 50	21 4	" 27	24 57
" 31	21 29	20 9	25 44	26 6	5 D. 57	25 49	9 50	25 38	29 14		

Jan. 22: ♀ stat. in 18° = 3'
 Feb. 12: ♀ " " 2° = 26'
 Apr. 19: ♀ " " 27° 8 54'

May 20: ♀ stat. in 14° 11 57'
 June 1: ♀ " " 11° 8 25'
 " 13: ♀ " " 6° 11 23'

Sept. 18: ♀ stat. in 17° = 0'
 Oct. 10: ♀ " " 1° = 51'

Date	α	ψ	μ	δ	ζ	δ	⊙	♀	♂	Date	♂
Jan. 1	21 26	20 10	25 42	26 2	5 57	26 22	10 51	26 53	0 5	Jan. 4	1 44
" 8	21 4	20 18	25 32	25 27	6 6	om 8	17 59	5 41	1 33	" 11	29 24
" 15	20 41	20 27	25 25	24 53	6 23	3 48	25 7	14 28	24 38	" 18	20 51
" 22	20 19	20 38	25 19	24 19	6 49	7 22	2 15	23 16	17 14	" 25	16 4
" 29	19 57	20 50	25 17	23 46	7 25	10 48	9 22	2 3	16 24	Feb. 1	17 50
Feb. 5	19 35	21 3	25 18	23 13	8 9	14 7	16 27	10 50	20 48	" 8	23 40
" 12	19 12	21 17	25 20	22 45	9 1	17 15	23 32	19 36	28 5	" 15	1 45
" 19	18 50	21 32	25 24	22 20	10 0	20 12	0 36	28 23	7 0	" 22	11 10
" 26	18 28	21 47	25 32	21 59	11 5	22 56	7 39	7 8	17 1	Mar. 1	21 35
Mar. 5	18 6	22 3	25 42	21 43	12 16	25 25	14 39	15 52	27 57	" 8	2 55
" 12	17 43	22 19	25 54	21 31	13 33	27 35	21 39	24 37	9 48	" 15	15 11
" 19	17 21	22 35	26 9	21 27	14 54	29 25	28 37	3 19	22 37	" 22	28 25
" 26	16 59	22 51	26 26	21 25	16 19	0 49	5 33	12 2	6 24	" 29	12 32
Apr. 2	16 37	23 7	26 43	21 31	17 47	1 46	12 27	20 43	20 45	Apr. 5	26 48
" 9	16 15	23 22	27 3	21 41	19 19	2 10	19 20	29 22	4 24	" 12	9 35
" 16	15 53	23 36	27 25	21 57	20 52	1 58	26 11	8 1	15 28	" 19	19 2
" 23	15 31	23 49	27 47	22 17	22 28	1 10	3 1	16 39	22 37	" 26	24 18
" 30	15 8	24 2	28 9	22 42	24 5	29 45	9 49	25 16	25 15	May 3	25 3
May 7	14 46	24 14	28 34	23 12	25 43	27 49	16 36	3 50	23 40	" 10	22 6
" 14	14 24	24 24	28 58	23 45	27 22	25 29	23 21	12 25	19 45	" 17	18 8
" 21	14 2	24 33	29 23	24 22	29 1	23 0	0 5	20 57	16 39	" 24	16 14
" 28	13 40	24 40	29 47	25 3	0 39	20 37	6 48	29 29	16 41	" 31	17 49
June 4	13 17	24 46	0 11	25 47	2 17	18 35	13 31	7 58	20 17	June 7	22 49
" 11	12 55	24 51	0 35	26 33	3 55	17 5	20 12	16 27	27 3	" 14	0 47
" 18	12 32	24 54	0 59	27 21	5 31	16 13	26 53	24 54	6 33	" 21	11 24
" 25	12 10	24 56	1 21	28 11	7 4	16 2	3 34	3 19	18 33	" 28	24 25
July 2	11 48	24 56	1 42	29 3	8 36	16 30	10 14	11 43	2 41	July 5	9 8
" 9	11 25	24 54	2 1	29 56	10 6	17 36	16 55	20 4	17 47	" 12	24 10
" 16	11 3	24 50	2 19	0 49	11 32	19 15	23 36	28 22	2 23	" 19	8 16
" 23	10 41	24 45	2 36	1 44	12 55	21 23	0 16	6 39	15 42	" 26	20 59
" 30	10 19	24 39	2 50	2 38	14 13	23 58	6 58	14 51	27 37	Aug. 2	2 18
Aug. 6	9 56	24 32	3 4	3 32	15 28	26 55	13 40	23 1	8 8	" 9	12 11
" 13	9 34	24 23	3 14	4 26	16 36	0 11	20 23	1 6	17 10	" 16	20 30
" 20	9 12	24 14	3 22	5 18	17 40	3 45	27 7	9 7	24 22	" 23	26 46
" 27	8 50	24 4	3 27	6 9	18 37	7 34	3 52	17 2	29 7	" 30	0 4
Sep. 3	8 27	23 53	3 30	6 59	19 28	11 36	10 39	24 52	0 5	Sep. 6	29 0
" 10	8 5	23 41	3 31	7 45	20 11	15 49	17 27	2 34	26 6	" 13	23 9
" 17	7 43	23 29	3 29	8 30	20 45	20 12	24 17	10 6	19 8	" 20	16 52
" 24	7 21	23 17	3 25	9 12	21 12	24 46	1 8	17 29	15 50	" 27	16 48
Oct. 1	6 58	23 7	3 18	9 50	21 28	29 26	8 0	24 37	20 13	Oct. 4	23 57
" 8	6 36	22 56	3 10	10 27	21 36	4 12	14 55	1 28	29 58	" 11	4 54
" 15	6 14	22 45	2 59	10 56	21 33	9 6	21 51	7 58	11 44	" 18	16 53
" 22	5 52	22 36	2 46	11 22	21 22	14 5	28 49	13 57	23 43	" 25	28 46
" 29	5 30	22 28	2 32	11 44	20 59	19 8	5 48	19 20	5 23	Nov. 1	10 16
Nov. 5	5 8	22 21	2 15	12 1	20 28	24 14	12 49	23 52	16 41	" 8	21 25
" 12	4 45	22 16	1 58	12 13	19 49	29 25	19 51	27 18	27 39	" 15	2 17
" 19	4 23	22 11	1 41	12 19	19 2	4 37	26 55	29 16	8 24	" 22	12 57
" 26	4 1	22 8	1 24	12 20	18 11	9 52	3 59	29 26	18 57	" 29	23 23
Dec. 3	3 38	22 7	1 6	12 14	17 15	15 9	11 5	27 38	29 9	Dec. 6	3 17
" 10	3 16	22 8	0 48	12 4	16 18	20 26	18 12	24 8	8 23	" 13	11 42
" 17	2 54	22 10	0 33	11 50	15 21	25 45	25 20	19 56	14 57	" 20	16 3
" 24	2 31	22 14	0 18	11 28	14 27	1 4	2 27	16 23	15 3	" 27	12 19
" 31	2 9	22 20	0 5	11 1	13 38	6 22	9 35	14 30	7 6		

Jan. 6: ♀ stat. in 2° 0'
 " 26: ♀ " " 15° 57'
 Apr. 10: ♂ " " 2° 10'
 May 1: ♀ " " 25° 16'

May 25: ♀ stat. in 16° 13'
 June 24: ♂ " " 16° 1'
 Sep. 1: ♀ " " 0° 18'

Sep. 24: ♀ stat. in 15° 50'
 Nov. 23: ♀ " " 20° 37'
 Dec. 2: ♀ " " 16° 5'