

ASTRONOMICAL EPHEMERIS  
OF  
Geocentric Places of Planets  
FOR  
1957

( Indian Standard Time observed throughout )

*Published by*

Shree Jiwaji Observatory, Ujjain  
with the sanction of the Department of Public  
Instruction, Madhya Pradesh

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## PREFACE

The heliocentric places of Jupiter, Saturn, Uranus and Neptune were obtained from Newcomb and Hill's Tables and these were later converted into geocentric longitudes and latitudes. The geocentric places of Mercury, Venus and Mars were computed *directly* from their respective elements and this is why their heliocentric co-ordinates have now been omitted from the following pages.

Owing to the uncertainty in the elements of Pluto, the positions of this planet cannot be taken as strictly correct. It is estimated that the maximum error in its longitude will hardly exceed five minutes of arc.

As a precaution against accidental errors, the final results were differenced and all the doubtful cases were carefully scrutinised.

It was decided to give all the headings both in English and in Hindi from this year, but owing to certain unforeseen difficulties, this idea had to be postponed to next year.

The timings of Lunar and Solar eclipses (visible in India) as well as those of Moonrise for each day of the year and for the Latitudes 10°, 20° and 30°N have also been given. Full elements of the eclipses will be given from next year.

UJJAIN.  
1st December 1956

}

PURSHOTTAM JOSHI,  
Superintendent,  
S. J. Observatory.



## Mean Places of Principal Stars on 1st January 1957

| Names.           | Stars       | Mag | R. A. | Decl.   | Long.  | Lat.    |
|------------------|-------------|-----|-------|---------|--------|---------|
|                  |             |     | H. M. | ° ' "   | ° ' "  | ° ' "   |
| ♈ Andromeda      | U. Bhadra.  | 2.1 | 0 6   | + 28 51 | 13 41  | + 25 41 |
| ♊ Pegasi ..      | U. Bhadra.  | 2.9 | 0 11  | + 14 57 | 8 43   | + 12 36 |
| ♋ Piscium ..     | Revati.     | 5.6 | 1 12  | + 7 21  | 19 16  | - 0 13  |
| ♌ Eridani ..     | Achernar.   | 0.6 | 1 36  | - 57 27 | 344 40 | - 59 23 |
| ♍ Polaris ..     | Dhruva.     | 2.1 | 1 54  | + 89 4  | 87 58  | + 66 5  |
| ♎ Arietis ..     | Ashvini.    | 2.7 | 1 52  | + 20 36 | 33 22  | + 8 29  |
| ♏ Arietis ..     | Ashvini.    | 2.2 | 2 5   | + 23 16 | 37 3   | + 9 58  |
| ♐ Arietis ..     | Bharani.    | 3.7 | 2 47  | + 27 5  | 47 36  | + 10 26 |
| ♑ Persei ..      | Algol.      | Var | 3 5   | + 40 47 | 45 32  | + 22 25 |
| ♒ Tauri ..       | Krittika.   | 3.0 | 3 45  | + 23 58 | 59 23  | + 4 2   |
| ♓ Tauri ..       | Rohini.     | 1.1 | 4 33  | + 16 25 | 69 11  | - 5 28  |
| ♈ Orionis ..     | Rigel.      | 0.3 | 5 12  | - 8 15  | 76 12  | - 31 8  |
| ♉ Aurigae ..     | Capella.    | 0.2 | 5 13  | + 45 57 | 81 15  | + 22 52 |
| ♊ Orionis ..     | Mrigashirsh | 4.5 | 5 32  | + 9 28  | 83 6   | - 13 23 |
| ♋ Orionis ..     | Ardra.      | 0.9 | 5 53  | + 7 24  | 88 9   | - 16 2  |
| ♌ Carinae ..     | Agastya.    | 0.9 | 6 23  | - 52 40 | 104 23 | - 75 50 |
| ♍ Canis Majoris  | Vyadha.     | 1.6 | 6 43  | - 16 39 | 103 30 | - 39 35 |
| ♎ Geminorum      | Punarvasu   | 1.6 | 7 32  | + 31 59 | 109 36 | + 10 57 |
| ♏ Canis Minor    | Prashva.    | 0.5 | 7 37  | + 5 20  | 115 10 | - 16 54 |
| ♐ Geminorum      | Punarvasu   | 1.2 | 7 43  | + 28 8  | 112 38 | + 6 41  |
| ♑ Cancri ..      | Pushya      | 4.2 | 8 42  | + 18 19 | 128 7  | + 0 4   |
| ♒ Cancri ..      | Ashlesha.   | 4.5 | 8 56  | + 12 2  | 133 2  | - 5 5   |
| ♓ Leonis ..      | Magha.      | 1.3 | 10 6  | + 12 11 | 149 14 | + 0 28  |
| ♈ Leonis ..      | Purva.      | 2.6 | 11 12 | + 20 46 | 160 41 | + 14 20 |
| ♉ Leonis ..      | Uttara.     | 2.2 | 11 47 | + 14 49 | 171 2  | + 12 16 |
| ♊ Corvi ..       | Hasta.      | 3.1 | 12 28 | - 16 17 | 192 51 | - 12 12 |
| ♋ Virginis ..    | Chitra.     | 1.2 | 13 23 | - 10 56 | 203 14 | - 2 3   |
| ♌ Bootes ..      | Swati.      | 0.2 | 14 14 | + 19 24 | 203 38 | + 30 50 |
| ♍ Libra ..       | Vishakha.   | 2.9 | 14 48 | - 15 52 | 224 27 | + 0 20  |
| ♎ Scorpii ..     | Anuradha.   | 2.5 | 15 58 | - 22 30 | 241 58 | - 1 58  |
| ♏ Scorpii ..     | Jyeshtha.   | 1.2 | 16 27 | - 26 20 | 249 10 | - 4 33  |
| ♐ Scorpii ..     | Mool.       | 1.7 | 17 31 | - 37 4  | 263 57 | - 13 47 |
| ♑ Sagittarius .. | P. Shadha.  | 2.8 | 18 18 | - 29 51 | 273 59 | - 6 27  |
| ♒ Sagittarius .. | P. Shadha.  | 1.9 | 18 21 | - 34 24 | 274 27 | - 11 2  |
| ♓ Sagittarius .. | U. Shadha.  | 2.1 | 18 53 | - 26 21 | 281 45 | - 3 26  |
| ♈ Lyrae ..       | Abhijit.    | 0.1 | 18 35 | + 38 45 | 284 42 | + 61 44 |
| ♉ Aquillae ..    | Shravana.   | 0.9 | 19 49 | + 8 45  | 301 9  | + 29 18 |
| ♊ Delphini ..    | Dhanistha.  | 3.7 | 20 36 | + 14 27 | 315 42 | + 31 55 |
| ♋ Delphini ..    | Dhanistha.  | 3.9 | 23 38 | + 15 46 | 316 47 | + 33 2  |
| ♌ Cygni ..       | Deneb.      | 1.3 | 20 40 | + 45 8  | 334 42 | + 59 55 |
| ♍ Aquarii ..     | Shatabhij.  | 3.8 | 22 50 | - 7 49  | 340 58 | - 0 23  |
| ♎ Pegasi As r.   | Fomal hant  | 1.3 | 22 55 | - 29 51 | 333 13 | - 21 8  |
| ♏ Pegasi ..      | P. Bhadra.  | 2.6 | 23 2  | + 27 50 | 358 44 | + 31 8  |
| ♐ Pegasi ..      | P. Bhadra.  | 2.6 | 23 3  | + 14 58 | 353 56 | + 19 23 |

## EPHEMERIS

OF

## Planets' Places for 1957

## INTRODUCTION

THE places of the Sun, Moon and the Planets given in the following pages are *Sayan* and are true for the true equinox of each day. They are given for 12 o'clock noon Indian Standard Time (I.S.T.) which is 5½ hours in advance of Greenwich Mean Time, but for convenience, the *Sidereal Time* is given for the *Mean Noon, Ujjain Local Time*.

*Nirayana* places are obtained by subtracting the *Ayanam-shas* from the *Sayan* places.

It should be noted that the *Tilhis* and Aspects are the same both in the *Sayan* and the *Nirayana* systems.

## EXPLANATION OF SYMBOLS

| Planets.             | Signs.         | Aspects.                 |
|----------------------|----------------|--------------------------|
| ☉ Sun.               | ♈ Aries.       | ♌ Conjunction = 0°       |
| ☾ Moon.              | ♉ Taurus.      | ♊ Semi-Sextile = 30°     |
| ♇ Pluto.             | ♊ Gemini.      | ♏ Semi-Quintile = 36°    |
| ♆ Neptune.           | ♋ Cancer.      | ♎ Semi-Square = 45°      |
| ♅ Herschel (Uranus). | ♌ Leo.         | * Sextile = 60°          |
| ♄ Saturn.            | ♍ Virgo.       | ♏ Quintile = 72°         |
| ♃ Jupiter.           | ♎ Libra.       | ☐ Square = 90°           |
| ♂ Mars.              | ♏ Scorpio.     | Δ Trine = 120°           |
| ♀ Venus.             | ♐ Sagittarius. | ☐ Sesqui-quadrant = 135° |
| ☿ Mercury.           | ♑ Capricornus. | ± Bi-quintile = 144°     |
| ♁ Earth.             | ♒ Aquarius.    | ⌵ Quincunx = 150°        |
| ♊ Rahu.              | ♓ Pisces.      | ♌ Opposition = 180°      |



| Date   | Day | Sidereal Time | Long. | Decl. | Long. | Lat.   | Decl.  | Midnight | ψ      |
|--------|-----|---------------|-------|-------|-------|--------|--------|----------|--------|
| 1 Tu.  | 18  | 42 39 10      | 35 43 | 23 51 | 12 34 | 3N 35  | 19S 17 | 18 34    | 2 m 19 |
| 2 W.   |     | 46 35 11      | 33 53 | 22 56 | 24 34 | 4 16   | 17 0   | 0 32     | 20     |
| 3 Th.  |     | 51 32 12      | 38 8  | 51 6  | 29 43 | 14 2   | 12 26  |          | 21     |
| 4 E.   |     | 54 28 13      | 39 12 | 45 18 | 22 5  | 3 10   | 31     | 24 17    | 22     |
| 5 S.   |     | 58 25 14      | 40 21 | 38 0  | 13 7  | 6 36   | 6 8    |          | 23     |
| 6 Su.  | 19  | 2 21 15       | 41 31 | 31 12 | 5 4   | 58 2   | 26 18  | 3        | 24     |
| 7 M.   |     | 7 19 16       | 42 40 | 24 24 | 2 36  | 1 N 51 | 0 4    |          | 25     |
| 8 Tu.  |     | 11 15 17      | 43 49 | 16 6  | 7 8   | 1 6    | 7 12   | 16       | 26     |
| 9 W.   |     | 15 12 18      | 44 58 | 8 18  | 28 3  | 14 10  | 14 24  | 44       | 26     |
| 10 Th. |     | 19 8 19       | 46 6  | 21 59 | 1 8   | 6 2    | 18 14  | 0 7      | 33     |
| 11 F.  |     | 23 5 20       | 47 15 | 50 14 | 7 1   | 12 17  | 13 20  | 47       | 28     |
| 12 S.  |     | 27 2 21       | 48 24 | 41 27 | 35 0  | 0 19   | 42 4   | 29       | 29     |
| 13 Su. |     | 30 58 22      | 49 31 | 31 11 | 32 1  | 14 20  | 57 18  | 41       | 29     |
| 14 M.  |     | 34 55 23      | 50 38 | 21 25 | 57 2  | 26 56  | 3 20   | 30       |        |
| 15 Tu. |     | 38 51 24      | 51 44 | 10 10 | 49 3  | 29 19  | 32 18  | 22       | 31     |
| 16 W.  |     | 42 48 25      | 52 51 | 20 59 | 25 58 | 4 20   | 16 42  | 3        | 32     |
| 17 Th. |     | 46 44 26      | 53 57 | 47 11 | 15 5  | 52 12  | 43 18  | 54       | 32     |
| 18 F.  |     | 50 41 27      | 55 2  | 35 26 | 30 5  | 4 7    | 56 4   | 3        | 32     |
| 19 S.  |     | 54 37 28      | 56 9  | 23 11 | 31 4  | 53 2   | 44 18  | 53       | 33     |
| 20 Su. |     | 58 34 29      | 57 12 | 10 26 | 9 25  | 2 S 1  | 3 19   | 33       |        |
| 21 M.  | 20  | 2 31 0        | 58 14 | 19 57 | 10 22 | 3 40   | 7 32   | 17       | 34     |
| 22 Tu. |     | 6 27 1        | 59 17 | 43 24 | 6 2   | 44 11  | 53 0   | 48       | 34     |
| 23 W.  |     | 10 24 3       | 0 17  | 30 7  | 24 1  | 41 15  | 31 13  | 55       | 35     |
| 24 Th. |     | 14 20 4       | 1 21  | 15 20 | 20 0  | 34 18  | 22 26  | 40       | 35     |
| 25 F.  |     | 18 17 5       | 2 21  | 1 2   | 53 0  | N 33   | 20 12  | 9        | 35     |
| 26 S.  |     | 22 13 6       | 3 19  | 18 46 | 15 17 | 1 57   | 21 1   | 21       | 35     |
| 27 Su. |     | 26 10 7       | 4 20  | 31 27 | 28 2  | 36 20  | 49 3   | 30       | 35     |
| 28 M.  |     | 30 6 8        | 5 18  | 15 9  | 30 3  | 26 19  | 40 15  | 30       | 35     |
| 29 Tu. |     | 34 3 9        | 6 15  | 17 59 | 21 28 | 4 7    | 17 40  | 27       | 35     |
| 30 W.  |     | 38 0 10       | 7 11  | 43 3  | 22 37 | 14 55  | 9 18   | R 34     |        |
| 31 Th. |     | 41 56 11      | 8 8   | 26 15 | 14 55 | 11 34  | 21 20  |          | 34     |

| Date. | ψ    |       | μ    |       | λ    |       | λ    |       | δ    |       |
|-------|------|-------|------|-------|------|-------|------|-------|------|-------|
|       | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. |
| 1     | 1N43 | 10S39 | 0N38 | 19N24 | 1N41 | 20S11 | 1N17 | 0N38  | 0N16 | 5N42  |
| 3     |      | 40    | 37   | 25    |      | 13    |      | 36    | 19   | 611   |
| 5     |      |       | 36   | 26    |      | 15    | 18   | 35    | 21   | 38    |
| 7     |      | 41    | 35   | 27    |      | 17    | 19   | 34    | 24   | 79    |
| 9     | 41   | 42    |      | 28    |      | 19    | 20   | 33    | 26   | 37    |
| 11    |      |       | 36   | 29    |      | 21    |      |       | 29   | 86    |
| 13    |      |       | 37   | 30    |      | 23    | 21   | 32    | 31   | 35    |
| 15    |      |       |      | 32    |      | 24    | 22   |       | 33   | 93    |
| 17    |      | 43    | 38   | 34    |      | 25    |      | 33    | 35   | 32    |
| 19    |      |       |      | 35    |      | 27    | 23   |       | 37   | 100   |
| 21    |      |       |      | 36    |      | 29    |      | 34    | 39   | 28    |
| 23    |      |       |      | 37    | 42   | 30    | 24   | 35    | 41   | 56    |
| 25    | 45   | 44    |      | 38    |      | 31    |      | 36    | 42   | 1124  |
| 27    |      |       |      | 39    |      | 32    | 25   | 38    | 44   | 52    |
| 29    |      |       |      | 41    |      | 33    |      | 40    | 46   | 1219  |
| 31    |      |       |      | 42    |      | 34    | 26   | 42    | 47   | 45    |

| Date | Longitudes |   |    |   |   |    | Lunar Aspects |    |    |   |    |    |   |    |    |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------|------------|---|----|---|---|----|---------------|----|----|---|----|----|---|----|----|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|      | ☿          | ♈ | ♊  | ♉ | ♍ | ♋  | ☾             | ♊  | ♈  | ♋ | ♌  | ♍  | ♎ | ♏  | ♐  |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1    | 5          | ♏ | 58 | 9 | ♏ | 20 | 1♏            | 26 | 13 | ♏ | 48 | 15 | ♏ | 32 | 27 | ♏ | 25 | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ | ♏ |

| Date | ψ     | μ      | λ     | δ      | Mean    | Date  | Time | Phenomena                   |
|------|-------|--------|-------|--------|---------|-------|------|-----------------------------|
| Lat. | Decl. | Lat.   | Decl. | μ      | μ       | H.    | M.   |                             |
| 1    | 0N 58 | 21S 42 | 0N 11 | 20S 30 | 26 m 42 | 1     | 7 45 | New Moon Decl. 19°S 32'     |
| 3    | 53 22 | 1 48   | 19 57 |        | 35 4    |       |      | Heli. setting of ♄ in West. |
| 5    | 49 18 | 1 25   | 32    |        | 29 7    | 1 38  |      | ♄ on Equator.               |
| 7    | 43 32 | 2 4    | 13    |        | 23 9    | 12 35 |      | ♄ at First Quarter.         |
| 9    | 38 44 | 37     | 4     |        | 16 12   | 12 0  |      | ♄ at ♄                      |
| 11   | 33 53 | 3 3    | 2     |        | 10 15   |       |      | Heli. rising of ♄ in East.  |
| 13   | 28 59 | 19 6   |       |        | 4 16    | 11 52 |      | Full Moon Decl. 16°N 43'.   |
| 15   | 25 23 | 0 25   | 15 25 |        | 57 18   | 36    |      | ♄ at Perigee                |
| 17   | 17 3  | 23 28  |       |        | 51 20   | 0 30  |      | ♄ on Equator.               |
| 19   | 12 0  | 13 44  |       |        | 45 13   | 11    |      | ♄ enters ♄                  |
| 21   | 7 22  | 55 2   | 58 20 | 1      | 38 23   | 3 24  |      | ♄ at Last Quarter.          |
| 23   | 1 47  | 40 18  |       |        | 32 24   | 12 0  |      | ♄ at ♄                      |
| 25   | 0 S 4 | 33 20  | 35    |        | 26 25   | 0 11  |      | ♄ at ♄                      |
| 27   | 9 23  | 1 58   | 51    |        | 19 31   | 2 56  |      | New Moon Decl. 12°S 46'     |
| 29   | 14 6  | 37 21  | 4     |        | 13      |       |      |                             |
| 31   | 19 21 | 43 16  | 14    |        | 6       |       |      |                             |



| FEBRUARY 1957 |     |               |    |    |       |       |       |      |       |    |    | S. J. O. UJJAIN |          |    |    |    |    |    |   |   |   |    |    |
|---------------|-----|---------------|----|----|-------|-------|-------|------|-------|----|----|-----------------|----------|----|----|----|----|----|---|---|---|----|----|
| Date          | Day | Sidereal Time |    |    | ☉     |       | ☽     |      |       |    |    |                 | Midnight |    | ψ  |    |    |    |   |   |   |    |    |
|               |     |               |    |    | Long. | Decl. | Long. | Lat. | Decl. |    |    | Decl.           | ψ        |    |    |    |    |    |   |   |   |    |    |
|               |     | H.            | M. | S. | °     | '     | °     | '    | °     | '  | °  | '               | °        | '  |    |    |    |    |   |   |   |    |    |
| 1             | F.  | 20            | 45 | 53 | 12    | 9     | 0     | 17   | S     | 9  | 27 | 6               | 5        | N  | 0  | 7  | S  | 47 | 3 | 3 | 2 | m  | 34 |
| 2             | S.  | 49            | 49 | 13 | 9     | 53    | 16    | 52   | 8     | 59 | 4  | 52              | 3        | 42 | 14 | 56 |    |    |   |   | R | 34 |    |
| 3             | Su. | 53            | 46 | 14 | 10    | 45    | 35    | 20   | 54    | 3  | 1  | 0               | 33       | 26 | 54 |    |    |    |   |   |   | 34 |    |
| 4             | M.  | 57            | 42 | 15 | 11    | 35    | 17    | 2    | 54    | 3  | 58 | 4               | N        | 47 | 8  | 57 |    |    |   |   |   | 34 |    |
| 5             | Tu. | 21            | 1  | 39 | 16    | 12    | 25    | 15   | 59    | 15 | 2  | 13              | 8        | 54 | 21 | 10 |    |    |   |   |   | 34 |    |
| 6             | W.  | 5             | 35 | 17 | 13    | 13    | 41    | 27   | 21    | 2  | 19 | 12              | 42       | 3  | 5  |    |    |    |   |   |   | 34 |    |
| 7             | Th. | 9             | 32 | 18 | 14    | 1     | 22    | 9    | 54    | 1  | 18 | 16              | 1        | 16 | 19 |    |    |    |   |   |   | 33 |    |
| 8             | F.  | 13            | 29 | 19 | 14    | 43    | 3     | 22   | 48    | 0  | 10 | 13              | 39       | 29 | 24 |    |    |    |   |   |   | 33 |    |
| 9             | S.  | 17            | 25 | 20 | 15    | 31    | 14    | 44   | 6     | 1  | 1  | 20              | 20       | 12 | 56 |    |    |    |   |   |   | 33 |    |
| 10            | Su. | 21            | 22 | 21 | 16    | 14    | 25    | 19   | 52    | 2  | 8  | 56              | 26       | 56 |    |    |    |    |   |   |   | 33 |    |
| 11            | M.  | 25            | 18 | 22 | 16    | 57    | 5     | 4    | m     | 7  | 3  | 11              | 12       | 11 | m  | 25 |    |    |   |   |   | 33 |    |
| 12            | Tu. | 29            | 15 | 23 | 17    | 57    | 13    | 45   | 18    | 50 | 4  | 4               | 18       | 6  | 26 | 20 |    |    |   |   |   | 33 |    |
| 13            | W.  | 33            | 11 | 24 | 18    | 16    | 25    | 3    | 55    | 41 | 14 | 43              | 11       | 33 |    |    |    |    |   |   |   | 33 |    |
| 14            | Th. | 37            | 8  | 25 | 18    | 54    | 5     | 19   | 15    | 59 | 10 | 19              | 26       | 57 |    |    |    |    |   |   |   | 33 |    |
| 15            | F.  | 41            | 4  | 26 | 19    | 31    | 12    | 45   | 4     | m  | 37 | 55              | 5        | 15 | 12 | m  | 15 |    |   |   |   | 33 |    |
| 16            | S.  | 45            | 1  | 27 | 20    | 5     | 24    | 19   | 50    | 30 | 0  | S               | 7        | 27 | 19 |    |    |    |   |   |   | 32 |    |
| 17            | Su. | 48            | 58 | 28 | 20    | 39    | 3     | 4    | 43    | 3  | 47 | 5               | 21       | 12 | 10 |    |    |    |   |   |   | 32 |    |
| 18            | M.  | 52            | 54 | 29 | 21    | 10    | 11    | 42   | 19    | 9  | 2  | 51              | 10       | 8  | 26 | 11 |    |    |   |   |   | 32 |    |
| 19            | Tu. | 56            | 51 | 0  | 21    | 42    | 21    | 3    | m     | 6  | 1  | 4               | 14       | 12 | 9  | m  | 52 |    |   |   |   | 32 |    |
| 20            | W.  | 22            | 0  | 47 | 1     | 22    | 9     | 10   | 59    | 16 | 32 | 0               | 37       | 17 | 23 | 5  |    |    |   |   |   | 32 |    |
| 21            | Th. | 4             | 44 | 2  | 22    | 37    | 38    | 29   | 32    | 0  | N  | 32              | 19       | 32 | 5  | 53 |    |    |   |   |   | 32 |    |
| 22            | F.  | 8             | 40 | 3  | 23    | 2     | 16    | 12   | 7     | 9  | 1  | 37              | 20       | 39 | 18 | 20 |    |    |   |   |   | 31 |    |
| 23            | S.  | 12            | 37 | 4  | 23    | 27    | 9     | 54   | 24    | 27 | 2  | 36              | 44       | 0  | 32 |    |    |    |   |   |   | 30 |    |
| 24            | Su. | 16            | 33 | 5  | 23    | 49    | 32    | 6    | 33    | 3  | 26 | 18              | 46       | 12 | 33 |    |    |    |   |   |   | 30 |    |
| 25            | M.  | 20            | 30 | 6  | 24    | 9     | 10    | 18   | 31    | 4  | 7  | 17              | 3        | 24 | 27 |    |    |    |   |   |   | 29 |    |
| 26            | Tu. | 24            | 27 | 7  | 24    | 28    | 8     | 48   | 0     | 23 | 37 | 14              | 3        | 6  | 19 |    |    |    |   |   |   | 27 |    |
| 27            | W.  | 28            | 23 | 8  | 24    | 46    | 25    | 12   | 14    | 55 | 11 | 38              | 18       | 10 |    |    |    |    |   |   |   | 26 |    |
| 28            | Th. | 32            | 20 | 9  | 25    | 1     | 2     | 24   | 6     | 5  | 0  | 8               | 10       | 0  | 2  |    |    |    |   |   |   | 26 |    |

| Date | ☉    |       | ☽    |       | ☽    |       | ☽    |       | ☽    |       |
|------|------|-------|------|-------|------|-------|------|-------|------|-------|
|      | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. |
| 2    | 1N   | 45    | 10S  | 43    | 0N   | 38    | 19N  | 44    | 1N   | 43    |
| 4    |      |       |      |       |      |       | 45   |       |      |       |
| 6    |      |       |      |       |      |       | 46   |       |      |       |
| 8    |      |       |      |       |      |       | 48   |       |      |       |
| 10   | 46   | 42    |      |       |      |       | 49   |       |      |       |
| 12   |      |       |      |       |      |       | 50   |       |      |       |
| 14   |      |       |      |       |      |       | 51   |       |      |       |
| 16   |      | 41    |      |       | 44   | 41    | 30   |       |      |       |
| 18   |      |       |      |       |      |       | 53   |       |      |       |
| 20   |      |       |      |       |      |       | 54   |       |      |       |
| 22   |      | 40    |      |       |      |       | 55   |       |      |       |
| 24   |      |       |      |       | 45   | 43    | 31   |       | 28   | 1     |
| 26   | 47   | 39    |      |       |      |       |      |       | 33   | 2     |
| 28   |      |       |      |       |      |       |      |       | 29   | 3     |
|      |      |       |      |       |      |       |      |       | 43   | 4     |

| EPHEMERIS |            |   |   |   |   |   |   |   |   |   |   | FEBRUARY 1957 |               |   |   |   |   |   |   |   |   |   |   | 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
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| Date      | Longitudes |   |   |   |   |   |   |   |   |   |   |               | Lunar Aspects |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|           | ☿          | ♈ | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ☾             | ☾             | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |

| Date | ☉    |       | ☽    |       | Mean | Date | Time<br>H. M. | Phenomena. |      |    |    |    |    |                         |
|------|------|-------|------|-------|------|------|---------------|------------|------|----|----|----|----|-------------------------|
|      | Lat. | Decl. | Lat. | Decl. | Δ    |      |               |            |      |    |    |    |    |                         |
| 2    | 0 S  | 24    | 21 S | 26    | 0 N  | 55   | 21 S          | 21         | 25 m | 0  | 1  | 3  | 0  | ☾ at Apogee.            |
| 4    |      | 29    |      | 2     |      | 35   |               | 24         | 24   | 54 | 3  | 14 | 29 | ☾ on Equator.           |
| 6    |      | 33    | 20   | 35    |      | 15   |               | 22         |      | 47 | 8  | 4  | 0  | ☿ at ☉                  |
| 8    |      | 38    |      | 6     | 0 S  | 3    |               | 17         |      | 41 | 4  | 50 |    | ☾ at First Quarter.     |
| 10   |      | 42    | 19   | 35    |      | 20   |               | 6          |      | 35 | 15 | 23 |    | ☾ at ☉                  |
| 12   |      | 47    |      | 0     |      | 37   | 20            | 51         |      | 28 | 14 | 22 | 9  | Full Moon, Decl. 8°N12' |
| 14   |      | 51    | 18   | 25    |      | 52   |               | 30         |      | 22 | 16 | 9  | 0  | ☾ at Perigee.           |
| 16   |      | 55    | 17   | 47    | 1    | 6    |               | 5          |      | 16 | 11 | 29 |    | ☾ on Equator.           |
| 18   |      | 58    |      | 7     |      | 18   | 19            | 35         |      | 9  | 19 | 2  | 57 | ☉ enters ♄              |
| 20   | 1    | 2     | 16   | 25    |      | 30   | 18            | 59         |      | 3  | 21 | 0  | 52 | ☾ at Δ                  |
| 22   |      | 5     | 15   | 41    |      | 40   |               | 18 23      |      | 57 |    | 17 | 53 | ☾ at Last Quarter.      |
| 24   |      | 8     | 14   | 55    |      | 49   | 17            | 33         |      | 50 | 21 | 36 |    | ☾ at Apogee.            |
| 26   |      | 11    |      | 8     |      | 56   | 16            | 42         |      | 44 |    |    |    |                         |
| 28   |      | 14    | 13   | 19    | 2    | 2    | 15            | 45         |      | 37 |    |    |    |                         |



| MARCH 1957 |        |               |        |         |        |         |        |         |        | S. J. O. UJJAIN |          |       |   |  |  |  |  |  |  |
|------------|--------|---------------|--------|---------|--------|---------|--------|---------|--------|-----------------|----------|-------|---|--|--|--|--|--|--|
| Date       | Day    | Sidereal Time |        |         | ☉      |         | ♂      |         |        |                 | Midnight |       | Ψ |  |  |  |  |  |  |
|            |        | H.            | M.     | S.      | Long.  | Decl.   | Long.  | Lat.    | Decl.  | ♂               | ♂        |       |   |  |  |  |  |  |  |
| 1          | F.     | 22            | 36     | 16      | 10 25  | 14      | 7 S 40 | 0 0     | 4 N 52 | 4 S 22          | 11 58    | 2m 25 |   |  |  |  |  |  |  |
| 2          | S.     |               | 40     | 13      | 11 25  | 26      | 17 17  | 57      | 31     | 0 23            | 23 58    | R 24  |   |  |  |  |  |  |  |
| 3          | Su.    |               | 44     | 9       | 12 25  | 36      | 6 54   | 29 59   | 3 58   | 3 N 38          | 6 3      | 23    |   |  |  |  |  |  |  |
| 4          | M.     |               | 48     | 6       | 13 25  | 44      | 31 12  | 7       | 14     | 7 3             | 18 15    | 22    |   |  |  |  |  |  |  |
| 5          | Tu.    |               | 52     | 2       | 14 25  | 51      | 7 24   | 24      | 2 20   | 11 12           | 0 36     | 21    |   |  |  |  |  |  |  |
| 6          | W.     |               | 55     | 59      | 15 25  | 55      | 5 45   | 6 8 51  | 1 19   | 14 24           | 13 8     | 20    |   |  |  |  |  |  |  |
| 7          | Th.    |               | 59     | 56      | 16 25  | 58      | 21 19  | 30      | 12     | 16 59           | 25 55    | 20    |   |  |  |  |  |  |  |
| 8          | F.     | 23            | 3      | 52      | 17 25  | 58      | 4 58   | 2 11 25 | 0 S 37 | 18 45           | 8 59     | 19    |   |  |  |  |  |  |  |
| 9          | S.     |               | 7      | 49      | 18 25  | 57      | 35 15  | 49      | 2 4    | 19 34           | 22 25    | 18    |   |  |  |  |  |  |  |
| 10         | Su.    |               | 11     | 45      | 19 25  | 55      | 11 29  | 17      | 3 6    | 11              | 6 14     | 17    |   |  |  |  |  |  |  |
| 11         | M.     |               | 15     | 42      | 20 25  | 49      | 3 48   | 1 20 18 | 59     | 17 46           | 20 28    | 16    |   |  |  |  |  |  |  |
| 12         | Tu.    |               | 19     | 38      | 21 25  | 43      | 24 27  | 44      | 4 48   | 15 8            | 5 6      | 15    |   |  |  |  |  |  |  |
| 13         | W.     |               | 23     | 35      | 22 25  | 34      | 0 12   | 2 32    | 5 0    | 11 28           | 20 2     | 14    |   |  |  |  |  |  |  |
| 14         | Th.    |               | 27     | 31      | 23 25  | 23      | 2 37   | 27 35   | 2 7    | 1 5             | 5 9      | 13    |   |  |  |  |  |  |  |
| 15         | F.     |               | 31     | 28      | 24 25  | 10      | 13 12  | 12 44   | 4 43   | 2 7             | 20 18    | 13    |   |  |  |  |  |  |  |
| 16         | S.     |               | 35     | 25      | 25 24  | 55      | 1 49   | 27 50   | 5 25   | 55              | 5 18     | 11    |   |  |  |  |  |  |  |
| 17         | Su.    |               | 39     | 21      | 26 24  | 9       | 26 12  | 44      | 3 10   | 7 42            | 19 59    | 10    |   |  |  |  |  |  |  |
| 18         | M.     |               | 43     | 18      | 27 24  | 24      | 2 27   | 11      | 2 4    | 11 55           | 4 16     | 8     |   |  |  |  |  |  |  |
| 19         | Tu.    |               | 47     | 14      | 28 24  | 0       | 38 11  | 14      | 52     | 15 19           | 5        | 7     |   |  |  |  |  |  |  |
| 20         | W.     |               | 51     | 11      | 29 24  | 37      | 14 24  | 49      | 0 N 21 | 17 45           | 1 26     | 5     |   |  |  |  |  |  |  |
| 21         | Th.    |               | 55     | 7       | 0 23   | 12      | 0 N 9  | 7 56    | 1 30   | 19 8            | 14 20    | 4     |   |  |  |  |  |  |  |
| 22         | F.     |               | 59     | 3       | 1 22   | 44      | 33 20  | 39      | 2 33   | 29              | 26 53    | 3     |   |  |  |  |  |  |  |
| 23         | S.     |               | 3      | 0       | 2 22   | 16      | 57 3   | 2       | 3 27   | 18 52           | 9 7      | 1     |   |  |  |  |  |  |  |
| 24         | Su.    |               | 6      | 57      | 3 21   | 45      | 1 20   | 15 10   | 4 10   | 17 24           | 21 10    | 0     |   |  |  |  |  |  |  |
| 25         | M.     |               | 10     | 54      | 4 21   | 13      | 44 27  | 8       | 42     | 15 13           | 3 4      | 1 58  |   |  |  |  |  |  |  |
| 26         | Tu.    |               | 14     | 50      | 5 20   | 38      | 2 7    | 9 10    | 5 2    | 12 20           | 14 56    | 57    |   |  |  |  |  |  |  |
| 27         | W.     |               | 18     | 47      | 6 20   | 1       | 31 20  | 51      | 8 9    | 1 26            | 47       | 56    |   |  |  |  |  |  |  |
| 28         | Th.    |               | 22     | 43      | 7 19   | 22      | 54 2   | 44      | 1 5    | 21 8            | 42       | 54    |   |  |  |  |  |  |  |
| 29         | F.     |               | 26     | 40      | 8 18   | 41      | 3 18   | 14 41   | 4 41   | 1 26            | 20 42    | 53    |   |  |  |  |  |  |  |
| 30         | S.     |               | 30     | 36      | 9 17   | 57      | 41 26  | 45      | 8 2    | N 1             | 2 50     | 51    |   |  |  |  |  |  |  |
| 31         | Su.    |               | 34     | 33      | 10 17  | 12      | 4 4    | 8 57    | 3 24   | 6 31            | 15 7     | 50    |   |  |  |  |  |  |  |
| Date       | Ψ      |               | ♂      |         | ♂      |         | ♂      |         | ♂      |                 | ♂        |       |   |  |  |  |  |  |  |
|            | Lat.   | Decl.         | Lat.   | Decl.   | Lat.   | Decl.   | Lat.   | Decl.   | Lat.   | Decl.           | Lat.     | Decl. |   |  |  |  |  |  |  |
| 2          | 1 N 47 | 10 S 38       | 0 N 38 | 19 N 59 | 1 N 46 | 20 S 44 | 1 N 32 | 1 N 49  | 1 N 5  | 18 N 50         |          |       |   |  |  |  |  |  |  |
| 4          |        |               |        | 20      |        |         |        | 33      | 56     | 6               | 19       | 11    |   |  |  |  |  |  |  |
| 6          |        | 37            |        |         | 1      |         |        | 2       | 3      |                 |          | 31    |   |  |  |  |  |  |  |
| 8          |        |               |        |         |        |         |        |         | 9      | 7               |          | 51    |   |  |  |  |  |  |  |
| 10         |        | 36            |        | 2       |        |         |        |         | 15     | 8               | 20       | 10    |   |  |  |  |  |  |  |
| 12         |        | 35            |        |         |        | 47      |        |         | 21     | 9               |          | 28    |   |  |  |  |  |  |  |
| 14         |        | 34            |        | 3       |        |         |        |         | 28     |                 |          | 46    |   |  |  |  |  |  |  |
| 16         |        | 33            |        |         |        |         |        |         | 34     | 10              | 21       | 4     |   |  |  |  |  |  |  |
| 18         |        | 32            |        | 4       |        |         |        |         | 41     |                 |          | 21    |   |  |  |  |  |  |  |
| 20         |        | 31            |        | 5       | 48     |         |        |         | 47     | 11              |          | 37    |   |  |  |  |  |  |  |
| 22         | 48     | 30            |        | 6       |        |         |        |         | 54     | 12              |          | 53    |   |  |  |  |  |  |  |
| 24         |        | 29            |        |         |        |         |        |         | 0      |                 | 22       | 8     |   |  |  |  |  |  |  |
| 26         |        | 28            |        |         |        |         |        |         | 6      |                 |          | 22    |   |  |  |  |  |  |  |
| 28         |        | 27            |        |         | 49     |         |        |         | 12     | 13              |          | 36    |   |  |  |  |  |  |  |
| 30         |        | 25            | 37     | 7       |        | 43      |        |         | 18     |                 |          | 49    |   |  |  |  |  |  |  |

| EPHEMERIS |            |       |      |       |      |      |      |      |    |           |    |                             |                         | MARCH 1957 |   |   |   |   |   |   |   |   |   |   |   |   |  | 7 |
|-----------|------------|-------|------|-------|------|------|------|------|----|-----------|----|-----------------------------|-------------------------|------------|---|---|---|---|---|---|---|---|---|---|---|---|--|---|
| Date      | Longitudes |       |      |       |      |      |      |      |    |           |    |                             | Lunar Aspects           |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
|           | ♈          | ♉     | ♊    | ♋     | ♌    | ♍    | ♎    | ♏    | ♐  | ♑         | ♒  | ♓                           | ☉                       | ☽          | ♈ | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |  |   |
| 1         | 3          | 34    | 13   | 54    | 28   | 58   | 19   | 8    | 27 | 29        | 16 | 24                          | 42                      | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 2         | R          | 32    |      | 56    | R    | 51   | 20   | 10   | 0  | 31        | 26 | 19                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 3         |            | 31    |      | 58    |      | 43   | 21   | 47   | 1  | 46        | 2  | 59                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 4         |            | 29    | 14   | 0     |      | 36   | 21   | 25   | 3  | 0         | 29 | 38                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 5         |            | 27    |      | 1     |      | 29   | 22   | 3    | 4  | 15        | 1  | 20                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 6         |            | 25    |      |       |      | 22   | 22   | 40   | 5  | 30        | 3  | 3                           |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 7         |            | 23    |      | 5     |      | 14   | 23   | 18   | 6  | 45        | 4  | 46                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 8         |            | 22    |      | 7     |      | 7    | 23   | 56   | 8  |           | 6  | 31                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 9         |            | 20    |      | 9     | 27   | 5    | 24   | 33   | 9  | 14        | 8  | 16                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 10        |            | 18    |      | 10    |      | 52   | 25   | 11   | 10 | 29        | 10 | 3                           |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 11        |            | 17    |      | 11    |      | 44   | 25   | 48   | 11 | 44        | 11 | 51                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 12        |            | 15    |      | 12    |      | 36   | 26   | 26   | 12 | 59        | 13 | 4                           |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 13        |            | 14    |      | 13    |      | 29   | 27   | 4    | 14 | 14        | 15 | 31                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 14        |            | 12    |      |       |      | 21   | 27   | 41   | 15 | 28        | 17 | 22                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 15        |            | 11    |      | 14    |      | 13   | 28   | 19   | 16 | 43        | 19 | 15                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 16        |            | 10    |      |       |      | 5    | 28   | 57   | 17 | 58        | 21 | 8                           |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 17        |            | 9     |      | 15    | 26   | 5    | 29   | 34   | 19 | 12        | 23 | 3                           |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 18        |            | 7     |      |       |      | 49   | 0    | 12   | 20 | 27        | 24 | 59                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 19        |            | 6     |      | 16    |      | 42   | 0    | 50   | 21 | 42        | 26 | 57                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 20        |            | 5     |      | 17    |      | 34   | 1    | 27   | 22 | 56        | 28 | 55                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 21        |            | 4     |      | 18    |      | 26   | 2    | 5    | 24 | 1         | 0  | 54                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 22        |            | 3     |      |       |      | 14   | 2    | 43   | 25 | 26        | 2  | 54                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 23        |            | 2     |      |       |      | 11   | 3    | 21   | 26 | 40        | 4  | 54                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 24        |            | 1     |      |       |      | 3    | 3    | 58   | 2  | 55        | 6  | 55                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 25        |            | 0     |      |       | 25   | 56   | 4    | 36   | 29 | 9         | 8  | 57                          |                         | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 26        | 2          | 59    |      | R 17  |      | 48   | 5    | 14   | 0  | 24        | 10 | 59                          | *                       |            | ♈ | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |  |   |
| 27        |            | 59    |      |       |      | 40   | 5    | 51   | 1  | 39        | 13 | 1                           | ♌                       |            | ♈ | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |  |   |
| 28        |            | 58    |      |       |      | 3    | 6    | 29   | 2  | 53        | 15 | 3                           | ♌                       | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 29        |            | 57    |      |       |      | 25   | 7    | 7    | 4  | 7         | 17 | 4                           | ♌                       | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 30        |            | 56    |      |       |      | 18   | 7    | 45   | 5  | 22        | 19 | 5                           | ♌                       | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| 31        |            | 56    |      | 16    |      | 11   | 8    | 23   | 6  | 37        | 21 | 4                           | ♌                       | ♈          | ♉ | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |   |
| Date      | ☽          |       | ☽    |       | Mean |      | Date | Time |    | Phenomena |    |                             |                         |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
|           | Lat.       | Decl. | Lat. | Decl. | Ω    |      |      | H.   | M. |           |    |                             |                         |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 2         | 1 S        | 16    | 2 S  | 9     | 7    | 14 S | 4    | 23   | 31 | 1         | .. | Heli. setting of ☽ in East. |                         |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 4         |            | 18    | 11   | 37    |      | 10   | 13   | 44   | 25 | 2         | 43 | New Moon, Decl. 2° S 45'    |                         |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 6         |            | 20    | 10   | 44    |      | 11   | 12   | 25   | 18 | 14        | 17 | Heli. setting of ☽ in East. |                         |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 8         |            | 22    | 9    | 50    |      | 10   | 11   | 8    | 12 | 7         | 16 | ☽ at ☿                      |                         |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 10        |            | 23    | 8    | 55    |      | 8    | 9    | 46   | 6  | 9         | 17 | ☽ at First Quarter.         |                         |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 12        |            | 24    | 7    | 59    |      | 3    | 8    | 19   | 22 | 59        | 15 | 3                           | ☽ at Perigee.           |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 14        |            | 2     |      | 2     | 1    | 57   | 6    | 47   | 53 | 22        | 6  | 6                           | ☽ on Equator            |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 16        |            | 26    | 6    | 5     |      | 49   | 5    | 11   | 47 | 16        | 7  | 53                          | Full Moon Decl. 2° S 5' |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 18        |            | 27    | 5    | 7     |      | 38   | 3    | 30   | 40 | 20        | 5  | 6                           | ☽ at ♌                  |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 20        |            |       | 4    |       |      | 25   | 1    | 44   | 34 | 21        | 2  | 39                          | ☉ enters ♏              |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 22        |            |       |      | 8     | 0    | 11   | 0    | N 4  | 28 | 22        | 10 | 13                          | ☽ on Equator.           |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 24        |            | 26    | 2    | 9     |      | 54   | 1    | 56   | 21 | 23        | 10 | 36                          | ☽ at Last Quarter.      |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 26        |            |       | 1    |       | 9    | 35   | 3    | 49   | 15 | 27        | 8  | 54                          | ☽ at Apogee.            |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 28        |            | 25    | 0    | 9     |      | 14   | 5    | 43   | 8  | 2         | 19 | 12                          | ☽ on Equator.           |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| 30        |            | 24    | 0    | N 51  | 0    | N 8  | 7    | 36   | 2  | 29        | 18 | 33                          | ☽ at ♏                  |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
|           |            |       |      |       |      |      |      |      |    | 21        | 58 | 10                          | ☽ on Equator.           |            |   |   |   |   |   |   |   |   |   |   |   |   |  |   |

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| 8      |      | APRIL 1957 |          |        |          |        |           |         |      |               |   | S. J. O. UJJAIN |  |
|--------|------|------------|----------|--------|----------|--------|-----------|---------|------|---------------|---|-----------------|--|
| Day    | Time | ☉          |          | ☽      |          |        |           |         |      | Midnight<br>D | ψ |                 |  |
|        |      | Long.      | Decl.    | Long.  | Lat.     | Decl.  |           |         |      |               |   |                 |  |
| H.     | M.   | S.         |          |        |          |        |           |         |      |               |   |                 |  |
| 1 M.   | 0    | 38 29      | 11 16 25 | 4 N 28 | 21 19    | 2 N 29 | 10 N 14   | 27 33   | 1 49 | 49            |   |                 |  |
| 2 Tu.  |      | 42 26      | 12 15 36 | 51     | 3 50     | 1 27   | 13 34     | 10 10   | R 47 |               |   |                 |  |
| 3 W.   |      | 46 23      | 13 14 45 | 5      | 14 16 33 | 0 19   | 16 18     | 22 58   |      | 46            |   |                 |  |
| 4 Th.  |      | 50 19      | 14 13 51 |        | 37 29 27 | 0 S 51 | 18 16     | 6 0     |      | 44            |   |                 |  |
| 5 F.   |      | 54 16      | 15 12 56 | 6      | 0 12 35  | 2      | 0 19 17   | 19 15   |      | 43            |   |                 |  |
| 6 S.   |      | 58 12      | 16 11 58 |        | 22 25 59 | 3      | 4 13      | 2 46    |      | 41            |   |                 |  |
| 7 Su.  | 1    | 2 9        | 17 10 59 |        | 45 9 38  | 4      | 58 18     | 4 16 34 |      | 40            |   |                 |  |
| 8 M.   |      | 6 5        | 18 9 58  | 7      | 8 23 34  | 4      | 40 15 48  | 0 39    |      | 38            |   |                 |  |
| 9 Tu.  |      | 10 2       | 19 8 54  |        | 30 7 47  | 5      | 5 12 34   | 15 0    |      | 37            |   |                 |  |
| 10 W.  |      | 13 58      | 20 7 48  |        | 52 22 15 | 12     | 8 32      | 29 34   |      | 36            |   |                 |  |
| 11 Th. |      | 17 55      | 21 6 40  | 8      | 14 6 54  | 4      | 59 3      | 57 16   |      | 34            |   |                 |  |
| 12 F.  |      | 21 52      | 22 5 31  |        | 36 21 38 |        | 26 54     | 2 0     |      | 33            |   |                 |  |
| 13 S.  |      | 25 48      | 23 4 20  |        | 58 6 20  | 3      | 36 5 S 42 | 13 38   |      | 31            |   |                 |  |
| 14 Su. |      | 29 45      | 24 3 5   | 9      | 20 20 53 | 2      | 32 10     | 5 28 4  |      | 29            |   |                 |  |
| 15 M.  |      | 33 41      | 25 1 50  |        | 41 5 10  | 1      | 19 13 53  | 12 11   |      | 27            |   |                 |  |
| 16 Tu. |      | 37 38      | 26 0 32  | 10     | 3 19 7   | 0      | 3 16 45   | 25 56   |      | 26            |   |                 |  |
| 17 W.  |      | 41 34      | 27 59 12 |        | 24 2 40  | 1 N 11 | 18 35     | 9 18    |      | 24            |   |                 |  |
| 18 Th. |      | 45 31      | 27 57 50 |        | 45 15 50 | 2      | 19 19 20  | 22 16   |      | 22            |   |                 |  |
| 19 F.  |      | 49 27      | 28 56 28 | 11     | 6 28 37  | 3      | 18 3      | 4 53    |      | 21            |   |                 |  |
| 20 S.  |      | 53 24      | 29 55 3  |        | 27 11 5  | 4      | 6 17 50   | 17 12   |      | 19            |   |                 |  |
| 21 Su. |      | 57 21      | 0 53 36  |        | 47 23 17 |        | 43 15 48  | 29 18   |      | 18            |   |                 |  |
| 22 M.  | 2    | 1 17       | 1 52 6   | 12     | 8 5 17   | 5      | 5 13 9    | 11 15   |      | 16            |   |                 |  |
| 23 Tu. |      | 5 14       | 2 50 35  |        | 28 17 12 |        | 15 9 58   | 23 8    |      | 15            |   |                 |  |
| 24 W.  |      | 9 10       | 3 49 2   |        | 48 29 4  |        | 11 6 24   | 5 1     |      | 12            |   |                 |  |
| 25 Th. |      | 13 7       | 4 47 27  | 13     | 7 10 49  | 4      | 54 2 55   | 16 58   |      | 10            |   |                 |  |
| 26 F.  |      | 17 3       | 5 45 51  |        | 27 23 0  |        | 24 1 N 16 | 29 3    |      | 8             |   |                 |  |
| 27 S.  |      | 21 0       | 6 44 13  |        | 46 5 10  | 3      | 42 5 27   | 11 19   |      | 6             |   |                 |  |
| 28 Su. |      | 24 56      | 7 42 32  | 14     | 5 17 31  | 2      | 48 9 28   | 3 47    |      | 4             |   |                 |  |
| 29 M.  |      | 28 53      | 8 40 51  |        | 24 0 6   | 1      | 46 13 10  | 6 29    |      | 2             |   |                 |  |
| 30 Tu. |      | 32 50      | 9 39 6   |        | 42 12 56 | 0      | 37 16 19  | 19 26   |      | 1             |   |                 |  |

| Date | ψ      |         | ♈      |        | ♉      |         | ♊      |        | ♋      |        |
|------|--------|---------|--------|--------|--------|---------|--------|--------|--------|--------|
|      | Lat.   | Decl.   | Lat.   | Decl.  | Lat.   | Decl.   | Lat.   | Decl.  | Lat.   | Decl.  |
| 1    | 1 N 48 | 10 S 24 | 0 N 37 | 20 N 7 | 1 N 49 | 20 S 42 | 1 N 33 | 3 N 24 | 1 N 14 | 23 N 1 |
| 3    |        | 23      |        |        |        |         |        | 30     |        | 13     |
| 5    |        | 22      |        |        | 50     | 41      |        | 35     |        | 24     |
| 7    |        | 21      |        |        |        |         |        | 40     | 15     | 34     |
| 9    |        | 20      |        |        |        | 40      | 32     | 45     |        | 44     |
| 11   |        | 19      |        |        |        |         |        | 49     |        | 53     |
| 13   |        | 17      |        |        | 51     |         |        | 54     | 16 24  | 1      |
| 15   |        | 16      |        |        |        | 39      |        | 58     |        | 9      |
| 17   |        | 15      |        |        |        |         | 4      | 2      |        | 16     |
| 19   |        | 14      |        |        |        | 38      | 31     | 6      |        | 22     |
| 21   |        | 13      |        |        |        | 37      |        | 9      | 17     | 27     |
| 23   |        | 12      |        | 6      |        | 36      |        | 12     |        | 31     |
| 25   |        | 11      |        |        |        | 35      |        | 15     |        | 36     |
| 27   |        | 10      |        | 5      |        | 34      | 30     | 18     |        | 39     |
| 29   |        | 9       |        |        | 52     | 33      |        | 21     |        | 41     |

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|-----------|------------|----|----|----|----|----|----|----|----|----|----|----|----|---|---|---------------|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|---|
| Date      | Longitudes |    |    |    |    |    |    |    |    |    |    |    |    |   |   | Lunar Aspects |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
|           | ♈          | ♉  | ♊  | ♋  | ♌  | ♍  | ♎  | ♏  | ♐  | ♑  | ♒  | ♓  | ☾  | ☽ | ♈ | ♉             | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |  |  |  |  |  |   |
| 1         | 2a         | 55 | 14 | 7  | 15 | 25 | 3  | 9  | 0  | 7  | 51 | 23 | 2  |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 2         | R          | 55 | R  | 14 | 24 | 56 | 9  | 38 | 9  | 5  | 24 | 58 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 3         |            | 54 |    | 13 |    | R  | 49 | 10 | 16 | 10 | 20 | 26 | 52 |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 4         |            | 54 |    | 12 |    | 42 | 10 | 57 | 11 | 35 | 28 | 43 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 5         |            | 53 |    | 11 |    | 35 | 11 | 31 | 12 | 49 | 0  | 31 | *  |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 6         |            | 53 |    | 10 |    | 28 | 12 | 9  | 14 | 4  | 2  | 16 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 7         |            | 52 |    | 8  |    | 21 | 12 | 47 | 15 | 18 | 4  |    |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 8         |            | 52 |    | 6  |    | 14 | 13 | 24 | 16 | 32 | 5  | 31 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 9         | D          | 53 |    | 4  |    | 8  | 14 | 2  | 17 | 47 | 7  | 6  |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 10        |            | 53 |    | 2  |    | 2  | 14 | 40 | 19 | 1  | 8  | 34 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 11        |            | 53 |    | 0  | 23 | 56 | 5  | 1  | 20 | 15 | 9  | 57 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 12        |            | 53 | 13 | 58 |    | 50 | 15 | 55 | 21 | 30 | 11 | 14 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 13        |            | 53 |    | 57 |    | 44 | 16 | 33 | 22 | 45 | 12 | 27 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 14        |            | 53 |    | 56 |    | 38 | 17 | 11 | 23 | 59 | 13 | 34 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 15        |            | 54 |    | 54 |    | 32 | 17 | 48 | 25 | 13 | 14 | 27 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 16        |            | 54 |    | 52 |    | 2  | 7  | 18 | 26 | 26 | 15 | 31 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 17        |            | 55 |    | 50 |    | 22 | 19 | 4  | 27 | 41 | 16 | 21 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 18        |            | 55 |    | 48 |    | 17 | 19 | 42 | 28 | 55 | 17 | 6  |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 19        |            | 56 |    | 46 |    | 12 | 20 | 20 | 0  | 8  | 10 | 17 | 44 |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 20        |            | 56 |    | 43 |    | 6  | 2  | 57 | 1  | 24 | 18 | 16 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 21        |            | 56 |    | 40 |    | 0  | 21 | 35 | 2  | 38 | 18 | 42 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 22        |            | 57 |    | 37 | 22 | 55 | 22 | 12 | 3  | 52 | 19 | 2  |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 23        |            | 57 |    | 34 |    | 50 | 22 | 50 | 5  | 6  | 19 | 17 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 24        |            | 58 |    | 31 |    | 45 | 23 | 28 | 6  | 20 | 19 | 25 | *  |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 25        | 2          | 59 |    | 28 |    | 41 | 24 | 5  | 7  | 34 | 19 | 2  |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 26        | 3          | 0  |    | 25 |    | 38 | 24 | 43 | 8  | 49 | 19 | 25 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 27        |            | 1  |    | 22 |    | 34 | 25 | 21 | 10 | 3  | 19 | 16 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 28        |            | 2  |    | 19 |    | 30 | 25 | 58 | 11 | 17 | 19 | 3  |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 29        |            | 3  |    | 16 |    | 26 | 26 | 36 | 12 | 31 | 18 | 45 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |
| 30        |            | 4  | 0  | 13 |    | 23 | 27 | 14 | 13 | 45 | 18 | 22 |    |   |   |               |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |   |

| Date | ☽      |        | ☾      |        | Mean<br>☽ | Date  | Time |    | Phenomena                        |
|------|--------|--------|--------|--------|-----------|-------|------|----|----------------------------------|
|      | Lat.   | Decl.  | Lat.   | Decl.  |           |       | H.   | M. |                                  |
| 1    | 1 S 22 | 1 N 51 | 0 N 31 | 9 N 26 | 21        | 56    | 3    |    | Heli. rising of ♈ in West        |
| 3    | 21 2   | 51     |        | 54 11  | 12        |       | 49   | 18 | 31 ♈ at ☽                        |
| 5    | 19 3   | 51     | 1      | 17 12  | 52        |       | 43   | 8  | 1 59 ♈ at First Quarter.         |
| 7    | 17 4   | 51     |        | 39 14  | 26        |       | 37   | 12 | 2 0 ♈ at Perigee.                |
| 9    | 14 5   | 50     | 2      | 0 15   | 46        |       | 30   | 15 | 16 ♈ on Equator.                 |
| 11   | 12 6   | 48     |        | 18 16  | 59        |       | 24   | 14 | 17 43 Full Moon, Decl. 10° S 59' |
| 13   | 9 7    | 47     |        | 33 18  | 0         |       | 18   | 16 | 12 58 ♈ at ☽                     |
| 15   | 6 8    | 44     |        | 44     |           | 48    | 11   | 20 | 14 2 ☽ enters ♈                  |
| 17   | 3 9    | 40     |        | 52 19  | 29        |       | 5    | 22 | 4 34 ♈ at Last Quarter.          |
| 19   | 0 10   | 36     |        | 56     |           | 56 20 | 59   | 24 | 3 36 ♈ at Apogee.                |
| 21   | 0 56   | 11     | 30     | 55 20  | 11        |       | 52   | 26 | 4 44 ♈ on Equator.               |
| 23   | 53 12  | 24     | 48     |        | 15        |       | 46   | 8  |                                  |
| 25   | 49 13  | 16     | 37     |        | 7         |       | 40   | 30 | 5 21 Heli. setting of ♈ in West  |
| 27   | 45 14  | 7      | 20 19  | 47     |           | 33    |      |    |                                  |
| 29   | 41     |        | 57 1   | 58     |           | 18    |      |    |                                  |
|      |        |        |        |        |           |       | 27   |    |                                  |



| MAY 1957 |        |               |        |       |        |         |        |           |                |          |      |       |       | S. J. O. UJJAIN |  |
|----------|--------|---------------|--------|-------|--------|---------|--------|-----------|----------------|----------|------|-------|-------|-----------------|--|
| Date     | Day    | Sidereal Time |        | ☉     |        | ♂       |        |           | Midnight       |          | ♂    | ☽     | ☿     |                 |  |
|          |        |               |        | Long. | Decl.  | Long.   | Lat.   | Decl.     | ♂              |          |      |       |       |                 |  |
| 1        | W.     | 2             | 36     | 46    | 10 37  | 21      | 15 N   | 1 25 8 59 | 0 S 35 18 N 41 | 2 0 37   |      |       | 0m 59 |                 |  |
| 2        | Th.    | 3             | 40     | 43    | 11 35  | 33      |        | 19 9 17   | 1 49 20 3      | 16 1     | R    |       | 57    |                 |  |
| 3        | F.     | 4             | 44     | 39    | 12 33  | 45      |        | 37 22 4   | 2 54           | 22 29 38 |      |       | 56    |                 |  |
| 4        | S.     | 5             | 48     | 36    | 13 31  | 53      |        | 54 6 31   | 3 51 19 26     | 13 27    |      |       | 54    |                 |  |
| 5        | Su.    | 6             | 52     | 32    | 14 30  | 1       | 16     | 12 20 25  | 4 37 17 20     | 27 25    |      |       | 53    |                 |  |
| 6        | M.     | 7             | 56     | 29    | 15 28  | 8       |        | 29 4 2    | 5 6 14 11      | 11 33    |      |       | 51    |                 |  |
| 7        | Tu.    | 8             | 0      | 25    | 16 26  | 10      |        | 45 18 39  | 17 1 12        | 15 46    |      |       | 49    |                 |  |
| 8        | W.     | 9             | 4      | 22    | 17 24  | 13 17   |        | 2 2 55    | 9 5 38         | 10 4     |      |       | 48    |                 |  |
| 9        | Th.    | 10            | 8      | 19    | 18 22  | 14      |        | 18 17 13  | 4 41 0 44      | 24 22    |      |       | 46    |                 |  |
| 10       | F.     | 11            | 12     | 15    | 19 20  | 13      |        | 34 1 31   | 3 56 4 S 13    | 8 38     |      |       | 45    |                 |  |
| 11       | S.     | 12            | 16     | 12    | 20 18  | 11      |        | 50 15 44  | 2 57 8 55      | 22 48    |      |       | 43    |                 |  |
| 12       | Su.    | 13            | 20     | 8     | 21 16  | 7 18    |        | 5 29 49   | 1 48 13 6      | 6 48     |      |       | 42    |                 |  |
| 13       | M.     | 14            | 24     | 5     | 22 14  | 1       |        | 20 13 43  | 0 33 16 29     | 20 34    |      |       | 40    |                 |  |
| 14       | Tu.    | 15            | 28     | 1     | 23 11  | 55      |        | 35 27 21  | 0 N 43 18 53   | 4 4      |      |       | 39    |                 |  |
| 15       | W.     | 16            | 31     | 58    | 24 9   | 46      |        | 49 10 2   | 1 54 20 11     | 17 15    |      |       | 37    |                 |  |
| 16       | Th.    | 17            | 35     | 54    | 25 7   | 36 19   |        | 3 23 44   | 2 58           | 20 0 9   |      |       | 36    |                 |  |
| 17       | F.     | 18            | 39     | 51    | 26 5   | 25      |        | 17 6 29   | 3 51 19 26     | 12 44    |      |       | 34    |                 |  |
| 18       | S.     | 19            | 43     | 48    | 27 3   | 12      |        | 30 18 56  | 4 3 17 37      | 25 4     |      |       | 33    |                 |  |
| 19       | Su.    | 20            | 48     | 44    | 28 0   | 57      |        | 43 1 9    | 5 0 15 1       | 7 12     |      |       | 32    |                 |  |
| 20       | M.     | 21            | 52     | 41    | 58     | 43      |        | 56 13 12  | 5 15 11 49     | 19 10    |      |       | 30    |                 |  |
| 21       | Tu.    | 22            | 56     | 37    | 29 56  | 26 20   |        | 9 25 8    | 15 8 12        | 1 4      |      |       | 29    |                 |  |
| 22       | W.     | 23            | 0      | 34 0  | 54 8   |         |        | 21 7 1    | 2 4 16         | 12 58    |      |       | 27    |                 |  |
| 23       | Th.    | 24            | 4      | 30 1  | 51 48  |         |        | 32 18 56  | 4 36 0 9       | 24 56    |      |       | 26    |                 |  |
| 24       | F.     | 25            | 8      | 27 2  | 49 27  |         |        | 44 0 59   | 3 58 4 N 1     | 7 3      |      |       | 25    |                 |  |
| 25       | S.     | 26            | 12     | 23 3  | 47 6   |         |        | 55 13 12  | 8 8 6          | 19 24    |      |       | 23    |                 |  |
| 26       | Su.    | 27            | 16     | 20 4  | 44 42  | 21      |        | 5 25 40   | 2 9 11 55      | 2 8 0    |      |       | 22    |                 |  |
| 27       | M.     | 28            | 20     | 17 5  | 42 17  |         |        | 16 8 25   | 1 2 15 17      | 14 55    |      |       | 21    |                 |  |
| 28       | Tu.    | 29            | 24     | 13 6  | 39 51  |         |        | 26 21 30  | 0 S 10 17 59   | 28 10    |      |       | 20    |                 |  |
| 29       | W.     | 30            | 28     | 10 7  | 37 25  |         |        | 35 4 54   | 1 23 19 46     | 11 43    |      |       | 18    |                 |  |
| 30       | Th.    | 31            | 32     | 6 8   | 34 58  |         |        | 44 18 7   | 2 33 20 25     | 25 34    |      |       | 16    |                 |  |
| 31       | F.     |               | 36     | 3 9   | 32 28  |         |        | 53 2 35   | 3 35 19 51     | 9 39     |      |       | 15    |                 |  |
| Date     | ☽      |               | ☿      |       | ♂      |         | ♂      |           | ♂              |          | ♂    |       | ♂     |                 |  |
|          | Lat.   | Decl.         | Lat.   | Decl. | Lat.   | Decl.   | Lat.   | Decl.     | Lat.           | Decl.    | Lat. | Decl. | Lat.  | Decl.           |  |
| 1        | 1 N 48 | 10 S 7        | 0 N 37 | 0 N 4 | 1 N 52 | 20 S 32 | 1 N 29 | 4 N 24    | 1 N 17         | 24 N 43  |      |       |       |                 |  |
| 3        |        | 6             |        |       |        | 31      | 28     | 26        |                |          |      |       |       |                 |  |
| 5        |        | 5             |        | 3     |        |         |        | 28        |                |          |      |       |       |                 |  |
| 7        |        | 4             |        | 2     |        | 30      |        | 29        |                |          |      |       |       |                 |  |
| 9        |        | 3             | 36     | 1     |        | 29      |        | 30        |                |          |      |       |       |                 |  |
| 11       |        | 2             |        | 0     |        | 18      | 27     | 31        |                |          |      |       |       |                 |  |
| 13       |        | 1             |        | 19 59 |        | 27      |        | 32        |                |          |      |       |       |                 |  |
| 15       |        | 0             |        |       |        | 26      |        |           |                |          |      |       |       |                 |  |
| 17       | 9 59   |               |        | 58    |        | 25      | 26     | 23        |                |          |      |       |       |                 |  |
| 19       |        | 58            |        | 57    |        | 24      |        | 32        |                |          |      |       |       |                 |  |
| 21       |        | 57            |        | 56    |        | 23      | 25     | 31        |                |          |      |       |       |                 |  |
| 23       |        | 56            |        | 55    |        | 22      | 24     | 30        |                |          |      |       |       |                 |  |
| 25       |        | 55            |        | 54    |        | 21      |        | 29        |                |          |      |       |       |                 |  |
| 27       |        | 54            |        | 53    |        | 20      | 23     | 28        |                | 23       |      |       |       |                 |  |
| 29       |        | 53            |        | 52    |        | 18      |        | 27        |                |          |      |       |       |                 |  |
| 31       |        | 52            |        | 50    |        | 17      |        | 25        |                |          |      |       |       |                 |  |

| EPHEMERIS |            |         |          |             |      |    |      |      |    |                            |    |    |    | MAY 1957 |               |   |   |   |   |   |   |   |   |   |   |  |  | 11 |  |
|-----------|------------|---------|----------|-------------|------|----|------|------|----|----------------------------|----|----|----|----------|---------------|---|---|---|---|---|---|---|---|---|---|--|--|----|--|
| Date      | Longitudes |         |          |             |      |    |      |      |    |                            |    |    |    |          | Lunar Aspects |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
|           | ♈          | ♉       | ♊        | ♋           | ♌    | ♍  | ♎    | ♏    | ♐  | ♑                          | ♒  | ♓  | ♈  | ♉        | ♊             | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ | ♑ | ♒ | ♓ |   |  |  |    |  |
| 1         | 3          | 5       | 13       | 7           | 10   | 22 | 20   | 27   | 11 | 59                         | 14 | 59 | 17 | 5        | 56            | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 2         |            | 6       |          | R           | 7    |    | R    | 17   | 28 | 30                         | 16 | 13 | 17 | R        | 26            | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 3         |            | 7       |          |             |      |    |      | 14   | 29 | 7                          | 17 | 27 | 16 | 54       |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 4         |            | 9       |          | 1           |      |    |      | 11   | 29 | 44                         | 18 | 41 | 16 | 19       |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 5         |            | 10      | 12       | 57          |      |    |      | 8    | 0  | 22                         | 19 | 55 | 15 | 42       | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 6         |            | 11      |          | 58          |      |    |      | 6    | 1  | 0                          | 21 | 5  | 15 | 6        |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 7         |            | 13      |          | 49          |      |    |      | 4    | 1  | 37                         | 22 | 23 | 14 | 27       | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 8         |            | 14      |          | 44          |      |    |      | 2    | 2  | 1                          | 23 | 37 | 13 | 51       |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 9         |            | 15      |          | 40          |      |    |      | 0    | 2  | 53                         | 24 | 50 | 13 | 1        |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 10        |            | 17      |          | 36          | 21   |    | 58   | 3    |    | 30                         | 26 | 41 | 2  | 41       | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 11        |            | 19      |          | 32          | 21   |    | 56   | 4    |    | 8                          | 27 | 18 | 12 | 9        | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 12        |            | 21      |          | 28          |      |    | 55   | 4    |    | 46                         | 28 | 32 | 11 | 39       |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 13        |            | 22      |          | 24          |      |    | 54   | 5    |    | 23                         | 29 | 46 | 11 | 13       |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 14        |            | 24      |          | 20          |      |    | 54   | 6    | 1  | 1                          | 11 | 0  | 10 | 51       | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 15        |            | 26      |          | 16          |      |    | 53   | 6    |    | 39                         | 2  | 14 | 10 | 32       |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 16        |            | 27      |          | 13          |      |    | 52   | 7    | 16 | 3                          | 27 | 10 | 18 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 17        |            | 29      |          | 10          |      |    | 52   | 7    | 54 | 4                          | 41 | 10 | 8  |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 18        |            | 31      |          | 6           |      |    | 52   | 8    | 32 | 5                          | 55 | 10 | 2  |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 19        |            | 33      |          | 2           |      |    | 51   | 9    | 9  | 7                          | 8  | 10 | 0  |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 20        |            | 35      | 11       | 58          |      |    | 51   | 9    | 47 | 8                          | 22 | 10 | D  | 4        |               | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 21        |            | 37      |          | 53          |      |    | 51   | 10   | 24 | 9                          | 36 | 10 | 12 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 22        |            | 39      |          | 48          |      | D  | 52   | 11   | 2  | 10                         | 50 | 10 | 24 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 23        |            | 41      |          | 44          |      |    | 52   | 11   | 40 | 12                         | 41 | 10 | 41 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 24        |            | 44      |          | 39          |      |    | 53   | 12   | 17 | 13                         | 2  | 11 | 2  |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 25        |            | 46      |          | 35          |      |    | 54   | 12   | 55 | 14                         | 27 | 11 | 27 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 26        |            | 48      |          | 31          |      |    | 55   | 13   | 32 | 15                         | 45 | 11 | 57 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 27        |            | 50      |          | 27          |      |    | 57   | 14   | 10 | 16                         | 58 | 12 | 31 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 28        |            | 53      |          | 23          |      |    | 59   | 14   | 48 | 18                         | 11 | 13 | 9  |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 29        |            | 55      |          | 18          | 22   |    | 1    | 15   | 26 | 19                         | 25 | 13 | 51 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 30        |            | 58      |          | 13          |      |    | 3    | 16   | 3  | 20                         | 9  | 14 | 36 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| 31        | 4          | 0       |          | 8           |      |    | 5    | 16   | 40 | 21                         | 53 | 15 | 25 |          | ♈             | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ | ♈ |  |  |    |  |
| Date      | ♈          |         | ♈        |             | Mean |    | Date | Time |    | Phenomena                  |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
|           | Lat.       | Decl.   | Lat.     | Decl.       | ♈    |    |      | H.   | M. |                            |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 1         | OS 36      | 15 N 45 | 1 N 32   | 18 N 39     | 20   | 20 | 1    | 0    | 20 | D at ☿                     |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 3         | 32 16      | 32      |          | 1 17 52     |      | 14 | 7    | 3    | 32 | ☿ at ☽                     |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 5         | 28 17      | 17      | 0 28     | 0           |      | 8  | 7    | 59   | 59 | D at First Quar. ☿.        |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 7         | 23 18      | 0       | 0 S 6 16 | 5           |      | 1  | 9    | 8    | 24 | D at Perigee               |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 9         | 18         | 41      |          | 41 15 10 19 | 55   |    | 8    | 27   | 27 | D on Equator.              |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 11        | 14 19      | 20      | 1 15 14  | 18          |      | 49 | 13   | 22   | 25 | D at ☽                     |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 13        | 9          | 58      |          | 46 13 31    |      | 4  | 14   | 4    | 8  | Full Moon, D. 18° S 4'     |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 15        | 4 20       | 33      | 2 15 12  | 51          |      | 3  | 16   | 12   | 0  | ☿ at ☽                     |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 17        | 0 N 1 21   | 6       | 3 3      | 20          |      | 3  | 19   | ..   | .. | Heli. rising of ☿ in West. |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 19        | 6          | 36 3    | 0 11 59  |             |      | 2  | 21   | ..   | .. | Heli. rising of ☿ in East  |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 21        | 11 22      | 4       | 16       | 47          |      | 17 |      | 6    | 0  | D at Apogee.               |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 23        | 15         | 30      | 28       | 44          |      | 11 | 13   | 39   | 39 | ☉ enters ☽                 |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 25        | 20         | 53      | 36       | 50          |      | 4  | 22   | 33   | 33 | D at Last Quarter.         |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 27        | 25 23      | 13      | 41 12    | 6 18        | 58   | 23 | 12   | 52   | 52 | D on Equator.              |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 29        | 30         | 31      |          | 28          |      | 40 | 29   | 17   | 40 | D at ☿                     |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |
| 31        | 34         | 46      | 39       | 58          |      | 45 | 29   | 17   | 7  | New Moon, D. 19° N 54'     |    |    |    |          |               |   |   |   |   |   |   |   |   |   |   |  |  |    |  |



| JUNE 1957 |     |               |    |    |       |       |       |       |       |   |      | S. J. O. UJJAIN |      |       |       |  |  |  |  |  |  |  |  |
|-----------|-----|---------------|----|----|-------|-------|-------|-------|-------|---|------|-----------------|------|-------|-------|--|--|--|--|--|--|--|--|
| Date      | Day | Sidereal Time |    | ☉  |       | ☽     |       |       |       |   |      | Midnight        |      | ☿     |       |  |  |  |  |  |  |  |  |
|           |     | H.            | M. | S. | Long. | Decl. | Long. | Lat.  | Decl. |   |      | D               |      | Ψ     |       |  |  |  |  |  |  |  |  |
| 1         | S.  | 4             | 39 | 59 | 10    | 29 59 | 22N   | 2 16  | 45    | 4 | S 24 | 18N             | 1    | 23 53 | 0m 15 |  |  |  |  |  |  |  |  |
| 2         | Su. |               | 43 | 56 | 11    | 27 28 |       | 10 1  | 3     | 5 | 58   | 15              | 5    | 8 13  | R 14  |  |  |  |  |  |  |  |  |
| 3         | M.  |               | 47 | 52 | 12    | 24 55 |       | 17 15 | 23    | 5 | 13   | 11              | 14   | 22 33 | 13    |  |  |  |  |  |  |  |  |
| 4         | Tu. |               | 51 | 49 | 13    | 22 22 |       | 25 29 | 43    | 9 | 6    | 45              |      | 6m 51 | 12    |  |  |  |  |  |  |  |  |
| 5         | W.  |               | 55 | 46 | 14    | 19 48 |       | 31 13 | 58    | 4 | 46   | 1               | 55   | 21 3  | 11    |  |  |  |  |  |  |  |  |
| 6         | Th. |               | 59 | 42 | 15    | 17 14 |       | 38 28 | 5     | 6 | 3    | S 0             |      | 5 6   |       |  |  |  |  |  |  |  |  |
| 7         | F.  | 5             | 3  | 39 | 16    | 14 38 |       | 44 12 | 5     | 3 | 11   | 7               | 42   | 19 1  |       |  |  |  |  |  |  |  |  |
| 8         | S.  |               | 7  | 35 | 17    | 12 2  |       | 50 25 | 54    | 2 | 6    | 11              | 58   | 2m 45 | 7     |  |  |  |  |  |  |  |  |
| 9         | Su. |               | 11 | 32 | 18    | 9 24  |       | 55 9  | m 32  |   | 54   | 15              | 31   | 16 17 | 6     |  |  |  |  |  |  |  |  |
| 10        | M.  |               | 15 | 28 | 19    | 6 46  | 23    | 0 22  | 59    | 0 | N 19 | 18              | 13   | 29 38 | 5     |  |  |  |  |  |  |  |  |
| 11        | Tu. |               | 19 | 25 | 20    | 4 7   |       | 4 6   | 14    | 1 | 30   | 19              | 52   | 12 46 | 5     |  |  |  |  |  |  |  |  |
| 12        | W.  |               | 23 | 21 | 21    | 1 27  |       | 8 19  | 16    | 2 | 35   | 20              | 26   | 25 41 | 4     |  |  |  |  |  |  |  |  |
| 13        | Th. |               | 27 | 18 |       | 58 47 |       | 12 2  | 4     | 3 | 31   | 19              | 54   | 8 23  | 3     |  |  |  |  |  |  |  |  |
| 14        | F.  |               | 31 | 15 | 22    | 56 6  |       | 15 14 | 38    | 4 | 16   | 18              | 24   | 20 51 | 3     |  |  |  |  |  |  |  |  |
| 15        | S.  |               | 35 | 11 | 23    | 53 24 |       | 18 27 | 0     |   | 48   | 16              | 3    | 3 6   | 2     |  |  |  |  |  |  |  |  |
| 16        | Su. |               | 39 | 8  | 24    | 50 42 |       | 21 9  | 10    | 5 | 6    | 13              | 3    | 15 11 | 2     |  |  |  |  |  |  |  |  |
| 17        | M.  |               | 43 | 4  | 25    | 47 59 |       | 23 21 | 11    |   | 10   | 9               | 32   | 27 9  | 1     |  |  |  |  |  |  |  |  |
| 18        | Tu. |               | 47 | 1  | 26    | 45 15 |       | 24 3  | 6     |   | 1    | 5               | 41   | 9 2   | 0 0   |  |  |  |  |  |  |  |  |
| 19        | W.  |               | 50 | 57 | 27    | 42 32 |       | 26 14 | 58    | 4 | 40   | 1               | 37   | 20 55 | 29 59 |  |  |  |  |  |  |  |  |
| 20        | Th. |               | 54 | 54 | 28    | 39 37 |       | 26 26 | 53    |   | 5    | 2               | N 30 | 2 52  | 59    |  |  |  |  |  |  |  |  |
| 21        | F.  |               | 58 | 50 | 29    | 37 2  |       | 27 8  | 54    | 3 | 20   | 6               | 36   | 14 59 | 58    |  |  |  |  |  |  |  |  |
| 22        | S.  | 6             | 2  | 47 | 0     | 34 17 |       | 27 21 | 7     | 2 | 25   | 10              | 29   | 27 19 | 57    |  |  |  |  |  |  |  |  |
| 23        | Su. |               | 6  | 43 | 1     | 31 31 |       | 26 3  | 36    | 1 | 22   | 14              | 1    | 9 57  | 56    |  |  |  |  |  |  |  |  |
| 24        | M.  |               | 10 | 40 | 2     | 28 45 |       | 25 16 | 26    | 0 | 14   | 16              | 58   | 23 0  | 55    |  |  |  |  |  |  |  |  |
| 25        | Tu. |               | 14 | 37 | 3     | 25 58 |       | 24 29 | 39    | 0 | S 57 | 19              | 9    | 6 25  | 55    |  |  |  |  |  |  |  |  |
| 26        | W.  |               | 18 | 33 | 4     | 23 12 |       | 22 13 | 17    | 2 | 7    | 20              | 17   | 20 15 | 54    |  |  |  |  |  |  |  |  |
| 27        | Th. |               | 22 | 30 | 5     | 20 25 |       | 20 27 | 19    | 3 | 12   |                 | 13   | 4 28  | 54    |  |  |  |  |  |  |  |  |
| 28        | F.  |               | 26 | 26 | 6     | 17 38 |       | 18 11 | 41    | 4 | 5    | 18              | 54   | 18 59 | 53    |  |  |  |  |  |  |  |  |
| 29        | S.  |               | 30 | 23 | 7     | 14 51 |       | 15 26 | 19    |   | 44   | 16              | 15   | 3 40  | 53    |  |  |  |  |  |  |  |  |
| 30        | Su. |               | 34 | 19 | 8     | 12 3  |       | 11 11 | 3     | 5 | 4    | 12              | 35   | 18 26 | 52    |  |  |  |  |  |  |  |  |

| Date | ☿    |       | ♂    |       | ☽    |       | ☿    |       | ♂     |       |
|------|------|-------|------|-------|------|-------|------|-------|-------|-------|
|      | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. | Lat.  | Decl. |
| 2    | 1N48 | 9S52  | 0N36 | 19N49 | 1N52 | 20S16 | 1N22 | 4N23  | 1N17  | 23N31 |
| 4    |      |       |      | 48    |      | 15    |      | 19    |       | 20    |
| 6    |      | 51    |      | 47    |      | 13    | 21   | 14    | 16    | 9     |
| 8    |      |       |      | 46    |      | 12    |      | 12    |       | 22 57 |
| 10   | 47   | 50    |      | 44    | 51   | 11    | 20   | 10    |       | 45    |
| 12   |      |       |      | 43    |      | 10    |      | 7     |       | 32    |
| 14   |      | 49    |      | 41    |      | 9     | 19   | 3     |       |       |
| 16   |      |       |      | 39    |      | 8     |      | 3     |       | 3     |
| 18   |      | 48    |      | 38    | 50   | 7     |      | 53    | 15 21 | 48    |
| 20   |      |       |      | 37    |      | 6     | 18   | 49    |       | 3     |
| 22   |      |       |      | 36    |      | 5     |      | 45    |       | 17    |
| 24   |      |       |      | 34    |      | 4     |      | 40    |       | 0     |
| 26   | 47   | 35    |      | 32    | 49   | 3     | 17   | 35    | 14 20 | 42    |
| 28   |      |       |      | 31    |      | 2     |      | 30    |       | 24    |
| 30   |      |       |      | 29    |      | 1     | 16   | 25    |       | 6     |

| EPHEMERIS |             |       |       |        |         |         |       |      |                            |   |   | JUNE 1957 |   |   |   |   |   |   |   |  |  |  |  | 13 |
|-----------|-------------|-------|-------|--------|---------|---------|-------|------|----------------------------|---|---|-----------|---|---|---|---|---|---|---|--|--|--|--|----|
| Date      | Longitudes. |       |       |        |         |         |       |      | Lunar Aspects.             |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
|           | ♄           | ♊     | ♋     | ♌      | ♍       | ♎       | ♏     | ♐    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 1         | 4 11        | 2 11  | 3 22  | 7 17   | 18 23   | 6 16    | 18 18 | 18   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 2         | 5 10        | R 59  |       | 9 17   | 56 24   | 20 17   | 14 14 | 14   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 3         | 8           |       | 55    | 11 18  | 33 25   | 33 18   | 14 14 | 14   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 4         | 10          |       | 51    | 14 19  | 11 26   | 47 19   | 17 17 | 17   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 5         | 13          |       | 47    | 17 19  | 49 28   | 6 20    | 23 23 | 23   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 6         | 16          |       | 43    | 20 20  | 27 29   | 13 21   | 33 33 | 33   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 7         | 19          |       | 38    | 23 21  | 4 00    | 27 22   | 45 45 | 45   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 8         | 21          |       | 33    | 27 21  | 41 1    | 41 24   | 1 1   | 1    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 9         | 24          |       | 28    | 31 22  | 19 2    | 55 25   | 20 20 | 20   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 10        | 27          |       | 24    | 35 22  | 57 4    | 5 26    | 9 9   | 9    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 11        | 30          |       | 20    | 39 23  | 34 5    | 22 28   | 6 6   | 6    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 12        | 32          |       | 16    | 43 24  | 12 6    | 35 29   | 34 34 | 34   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 13        | 35          |       | 12    | 47 24  | 49 7    | 49 7    | 1 1   | 1    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 14        | 38          |       | 8     | 51 25  | 27 9    | 2 2     | 38 38 | 38   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 15        | 41          |       | 3     | 56 26  | 4 10    | 15 4    | 14 14 | 14   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 16        | 44          | 9     | 58 23 | 1 26   | 42 11   | 28 6    | 2 2   | 2    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 17        | 46          |       | 53    | 6 27   | 19 12   | 42 7    | 35 35 | 35   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 18        | 49          |       | 49    | 11 27  | 57 13   | 5 9     | 20 20 | 20   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 19        | 53          |       | 45    | 16 28  | 34 15   | 9 11    | 8 8   | 8    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 20        | 56          |       | 41    | 21 29  | 12 16   | 22 12   | 58 58 | 58   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 21        | 59          |       | 37    | 27 29  | 50 17   | 35 14   | 51 51 | 51   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 22        | 5           | 2     | 33    | 32 0 1 | 27 18   | 48 16   | 46 46 | 46   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 23        | 6           |       | 29    | 38 1   | 5 20    | 2 18    | 44 44 | 44   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 24        | 9           |       | 25    | 44 1   | 42 21   | 15 20   | 44 44 | 44   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 25        | 12          |       | 21    | 50 2   | 20 22   | 28 22   | 47 47 | 47   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 26        | 15          |       | 17    | 55 2   | 58 23   | 41 24   | 51 51 | 51   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 27        | 19          |       | 13 24 | 2 3    | 35 24   | 55 26   | 56 56 | 56   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 28        | 22          |       | 9     | 9 4    | 13 25   | 8 29    | 4 4   | 4    | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 29        | 26          |       | 5     | 16 4   | 50 27   | 21 1 12 | 12 12 | 12   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| 30        | 29          |       | 1     | 23 5   | 28 28   | 34 3    | 22 22 | 22   | ☉                          | ☽ | ♈ | ♉         | ♊ | ♋ | ♌ | ♍ | ♎ | ♏ | ♐ |  |  |  |  |    |
| Date      | ☿           |       | ♊     |        | Mean ☽  |         | Date  | Time | Phenomena                  |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
|           | Lat.        | Decl. | Lat.  | Decl.  | ☽       |         | H. M. |      |                            |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 2         | 0N39        | 23N58 | 3S32  | 13N35  | 18 m 39 | 3       | 12 0  |      | ☽ at Perigee.              |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 4         | 43 24       | 8     | 24 14 | 16     | 32 5    | 12 40   |       |      | ☽ at Last Quarter.         |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 6         | 48 14       | 13 15 | 3     |        | 26      | 21 21   |       |      | ☽ on Equator.              |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 8         | 52 18       | 0     | 53    |        | 20 10   | 5 45    |       |      | ☽ at ☉                     |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 10        | 56 18       | 2 44  | 16 31 |        | 13 12   | 15 33   |       |      | Full Moon D. 20° S 20      |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 12        | 1 0         | 17    | 26 17 | 41     | 7 18    | 17 18   |       |      | ☽ at Apogee.               |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 14        | 4 12        |       | 6 18  | 38     | 1 19    | 21 25   |       |      | ☽ on Equator.              |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 16        | 8 5         | 1 46  | 19 35 | 17     | 54 20   | 15 51   |       |      | ☽ at Last Quarter.         |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 18        | 11 23       | 54    | 23 29 | 29     | 48 21   | 21 41   |       |      | ☽ enters ☍                 |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 20        | 14 40       |       | 1 21  | 21     | 42 22   |         |       |      | Heli. setting of ☽ in East |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 22        | 18 25       | 0 37  | 22 10 |        | 35 24   | 16 40   |       |      | ☽ at ☽                     |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 24        | 21 6        | 14 53 |       |        | 25 25   | 18 33   |       |      | ☽ at ☉                     |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 26        | 23 22       | 44 0N | 8 23  | 29     | 25 28   | 2 22    |       |      | New Moon, D. 19°N 23'      |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 28        | 26 12       | 22 45 |       |        | 16 30   | 14 24   |       |      | ☽ at Perigee.              |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |
| 30        | 28 21       | 53    | 49 24 | 15     | 10      |         |       |      |                            |   |   |           |   |   |   |   |   |   |   |  |  |  |  |    |



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| Date | Day  | Sidereal Time |      |       |      | O     |       | D     |      |       | Midnight |    | Ψ  |    |    |
|------|------|---------------|------|-------|------|-------|-------|-------|------|-------|----------|----|----|----|----|
|      |      |               |      |       |      | Long. | Decl. | Long. | Lat. | Decl. | h        | m  |    |    |    |
| 1    | M.   | 6             | 38   | 16    | 9    | 23N   | 8     | 25    | 47   | 5S    | 4        | 8N | 9  | 3  | 29 |
| 2    | Tu.  |               | 42   | 12    | 10   |       |       | 4     | 10   | 24    | 4        | 44 | 3  | 17 | 38 |
| 3    | W.   |               | 46   | 9     | 11   |       |       | 22    | 59   | 24    | 48       | 7  | 1S | 43 | 52 |
| 4    | Th.  |               | 50   | 6     | 12   |       |       |       | 54   | 8     | 57       | 3  | 15 | 6  | 52 |
| 5    | F.   |               | 54   | 2     |      |       |       |       | 49   | 22    | 48       | 2  | 12 | 10 | 52 |
| 6    | S.   |               | 57   | 59    | 13   |       |       |       | 43   | 6     | 23       | 1  | 3  | 14 | 52 |
| 7    | Su.  | 7             | 1    | 55    | 14   |       |       |       | 37   | 19    | 42       | 0  | N  | 8  | 51 |
| 8    | M.   |               | 5    | 52    | 15   |       |       |       | 30   | 2     | 48       | 1  | 17 | 19 | 51 |
| 9    | Tu.  |               | 9    | 48    | 16   |       |       |       | 23   | 15    | 41       | 2  | 21 | 20 | 51 |
| 10   | W.   |               | 13   | 45    | 17   |       |       |       | 16   | 28    | 23       | 3  | 17 | 9  | 51 |
| 11   | Th.  |               | 17   | 41    | 18   |       |       |       | 8    | 10    | 54       | 4  | 3  | 17 | 5  |
| 12   | F.   |               | 21   | 38    | 19   |       |       |       | 0    | 23    | 16       |    |    | 55 | 5  |
| 13   | S.   |               | 25   | 35    | 20   |       |       | 21    | 52   | 5     | 28       | 5  | 14 | 7  | 5  |
| 14   | Su.  |               | 29   | 31    | 21   |       |       |       | 43   | 17    | 32       | 5  | 3  | 10 | 46 |
| 15   | M.   |               | 33   | 28    | 22   |       |       |       | 34   | 29    | 29       | 4  | 56 | 7  | 2  |
| 16   | Tu.  |               | 37   | 24    | 23   |       |       |       | 24   | 11    | 22       |    | 3  | 3  | 17 |
| 17   | W.   |               | 41   | 21    | 21   |       |       |       | 14   | 23    | 12       |    | 5  | 1  | N  |
| 18   | Th.  |               | 45   | 17    | 25   |       |       |       | 4    | 5     | 7        | 3  | 23 | 5  | 8  |
| 19   | F.   |               | 49   | 14    | 26   |       |       | 20    | 54   | 17    | 4        | 2  | 31 | 9  | 2  |
| 20   | S.   |               | 53   | 10    | 27   |       |       |       | 43   | 29    | 15       | 1  | 32 | 12 | 39 |
| 21   | Su.  |               | 57   | 7     | 28   |       |       |       | 31   | 11    | 42       | 0  | 28 | 15 | 47 |
| 22   | M.   | 8             | 1    | 4     | 29   |       |       |       | 20   | 24    | 30       | 0  | S  | 40 | 18 |
| 23   | Tu.  |               | 5    | 0     | 0    |       |       |       | 8    | 7     | 44       | 1  | 48 | 19 | 50 |
| 24   | W.   |               | 8    | 57    | 1    |       |       | 19    | 55   | 21    | 26       | 2  | 52 | 20 | 18 |
| 25   | Th.  |               | 12   | 53    | 2    |       |       |       | 43   | 5     | 37       | 3  | 47 | 19 | 33 |
| 26   | F.   |               | 16   | 50    | 3    |       |       |       | 30   | 20    | 13       | 4  | 30 | 17 | 28 |
| 27   | S.   |               | 20   | 46    |      |       |       |       | 16   | 5     | 8        |    | 55 | 14 | 13 |
| 28   | Su.  |               | 24   | 43    | 4    |       |       |       | 3    | 20    | 14       | 5  | 0  | 10 | 0  |
| 29   | M.   |               | 28   | 39    | 5    |       |       | 18    | 49   | 5     | 21       | 4  | 44 | 5  | 9  |
| 30   | Tu.  |               | 32   | 36    | 6    |       |       |       | 34   | 20    | 17       |    | 9  | 0  | 2  |
| 31   | W.   |               | 36   | 33    | 7    |       |       |       | 18   | 4     | 57       | 3  | 18 | 4S | 59 |
|      |      |               |      |       |      |       |       |       |      |       |          |    |    |    |    |
| Date | Ψ    |               | Θ    |       | ζ    |       | 2     |       | σ    |       |          |    |    |    |    |
|      | Lat. | Decl.         | Lat. | Decl. | Lat. | Decl. | Lat.  | Decl. | Lat. | Decl. |          |    |    |    |    |
| 2    | 1N46 | 9S46          | 0N35 | 19N27 | 1N48 | 20N2  | 1N15  | 3N18  | 1N13 | 19N   |          |    |    |    |    |
| 4    |      |               |      | 25    |      |       |       | 11    |      |       |          |    |    |    |    |
| 6    |      |               |      | 23    |      | 19    | 59    |       |      |       |          |    |    |    |    |
| 8    |      |               |      | 21    |      |       |       |       |      |       |          |    |    |    |    |
| 10   |      |               |      | 19    | 47   |       |       |       | 14   | 52    | 12       | 18 | 47 | 27 |    |
| 12   |      |               |      |       |      |       |       |       |      |       |          |    |    |    |    |
| 14   |      |               |      |       |      |       |       |       |      |       |          |    |    |    |    |
| 16   |      |               |      |       |      |       |       |       |      |       |          |    |    |    |    |
| 18   |      |               |      |       |      |       |       |       |      |       |          |    |    |    |    |
| 20   | 45   | 47            |      |       | 45   | 56    |       |       |      |       |          |    |    |    |    |
| 22   |      |               |      |       |      |       |       |       | 12   | 8     | 10       |    |    |    |    |
| 24   |      |               |      |       |      |       |       |       |      | 1     |          |    |    |    |    |
| 26   |      |               |      |       |      |       |       |       |      |       |          |    |    |    |    |
| 28   |      | 49            |      |       |      |       |       |       | 11   | 53    | 9        |    |    |    |    |
| 30   |      |               |      |       |      |       |       |       |      |       |          |    |    |    |    |

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| LONGITUDES. |        |         |       |         |      |     |      |    |      |               |                             |    | Lunar Aspects.        |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------|--------|---------|-------|---------|------|-----|------|----|------|---------------|-----------------------------|----|-----------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Date        |        |         |       |         |      |     |      |    |      |               |                             |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
|             | ♈      | ♉       | ♊     |         | ♋    | ♌   | ♍    | ♎  | ♏    | ♐             | ♑                           | ♒  | ♓                     | ☉ | ☽ | ♁ | ♂ | ♀ | ♃ | ♄ | ♅ | ♆ | ♇ | ♈ |   |
| 1           | 5      | 32      | 8     | 58      | 24   | 30  | 6    | 6  | 29   | 47            | 5                           | 32 | ♌                     | ♈ |   |   |   |   |   |   |   |   |   | ♌ | ♈ |
| 2           |        | 36      | R     | 55      |      | 36  | 6    | 43 | 1    | 0             | 7                           | 43 | ♈                     | ♌ |   | ♏ |   |   |   |   |   |   |   | ♈ | ♌ |
| 3           |        | 39      |       | 52      |      | 43  | 7    | 21 | 2    | 14            | 9                           | 53 |                       | ♈ | ♌ |   | ♏ |   |   |   |   |   |   | ♈ | ♌ |
| 4           |        | 43      |       | 49      |      | 50  | 7    | 58 | 3    | 27            | 12                          | 4  | ♏                     |   | ♈ |   | ♏ |   |   |   |   |   |   | ♈ | ♌ |
| 5           |        | 47      |       | 46      |      | 57  | 8    | 38 | 4    | 40            | 14                          | 12 |                       |   | ♈ |   | ♏ |   |   |   |   |   |   | ♈ | ♌ |
| 6           |        | 50      |       | 43      | 25   |     | 5    | 9  | 18   | 5             | 53                          | 16 | 23                    |   | ♏ | ♏ |   | ♌ | ♏ | ♏ | ♏ | ♏ | ♏ | ♌ | ♈ |
| 7           |        | 54      |       | 40      |      | 13  | 9    | 54 | 7    | 6             | 18                          | 32 |                       | ♏ | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 8           |        | 57      |       | 37      |      | 21  | 10   | 29 | 8    | 19            | 20                          | 39 |                       | ♏ | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 9           | 6      | 1       |       | 33      |      | 29  | 11   | 7  | 9    | 32            | 22                          | 45 |                       | ♏ | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 10          |        | 4       |       | 30      |      | 37  | 11   | 45 | 10   | 45            | 24                          | 50 |                       |   | ♈ |   | ♏ |   |   |   |   |   |   | ♌ | ♈ |
| 11          |        | 8       |       | 27      |      | 45  | 12   | 22 | 11   | 58            | 26                          | 53 |                       |   | ♈ |   | ♏ |   |   |   |   |   |   | ♌ | ♈ |
| 12          |        | 11      |       | 24      |      | 53  | 13   | 0  | 13   | 11            | 28                          | 54 |                       | ♏ |   |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 13          |        | 15      |       | 21      | 26   |     | 2    | 13 | 38   | 14            | 24                          | 0  | 54                    |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 14          |        | 18      |       | 18      |      | 10  | 14   | 15 | 15   | 37            | 2                           | 53 |                       |   | ♈ |   | ♏ |   |   |   |   |   |   | ♌ | ♈ |
| 15          |        | 22      |       | 16      |      | 19  | 14   | 53 | 16   | 50            | 4                           | 49 |                       |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 16          |        | 26      |       | 14      |      | 28  | 15   | 31 | 18   | 3             | 6                           | 44 |                       | ♏ | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 17          |        | 29      |       | 11      |      | 37  | 16   | 9  | 19   | 16            | 8                           | 36 |                       |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 18          |        | 33      |       | 9       |      | 46  | 16   | 47 | 20   | 20            | 10                          | 27 |                       |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 19          |        | 37      |       | 7       |      | 54  | 17   | 24 | 21   | 42            | 12                          | 17 |                       |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 20          |        | 40      |       | 5       | 27   |     | 3    | 18 | 2    | 22            | 54                          | 14 | 4                     |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 21          |        | 44      |       | 3       |      | 12  | 18   | 39 | 24   | 7             | 15                          | 49 |                       |   |   |   | ♏ |   |   |   |   |   |   | ♌ | ♈ |
| 22          |        | 48      |       | 1       |      | 21  | 19   | 17 | 25   | 19            | 17                          | 33 |                       | ♈ |   |   | ♏ |   |   |   |   |   |   | ♌ | ♈ |
| 23          |        | 51      | 7     | 59      |      | 31  | 19   | 55 | 26   | 32            | 19                          | 15 |                       |   |   |   | ♏ |   |   |   |   |   |   | ♌ | ♈ |
| 24          |        | 55      |       | 57      |      | 41  | 20   | 33 | 27   | 45            | 20                          | 55 |                       | ♏ | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 25          |        | 59      |       | 55      |      | 51  | 21   | 10 | 28   | 58            | 22                          | 34 |                       |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 26          | 7      | 2       |       | 53      | 28   |     | 0    | 21 | 48   | 0             | 24                          | 10 |                       |   |   |   | ♏ |   |   |   |   |   |   | ♌ | ♈ |
| 27          |        | 6       |       | 52      |      | 10  | 22   | 26 | 1    | 23            | 25                          | 45 |                       | ♏ |   |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 28          |        | 10      |       | 51      |      | 20  | 23   | 4  | 2    | 36            | 27                          | 18 |                       |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 29          |        | 13      |       | 50      |      | 30  | 23   | 42 | 3    | 48            | 28                          | 49 |                       |   | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 30          |        | 17      |       | 49      |      | 40  | 24   | 19 | 5    | 1             | 0                           | 18 |                       | ♏ | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| 31          |        | 21      |       | 48      |      | 50  | 24   | 57 | 6    | 13            | 1                           | 45 |                       | ♏ | ♏ |   | ♌ |   |   |   |   |   |   | ♌ | ♈ |
| Date        | ♈      |         | ♉     |         | Mean |     | Date |    | Time |               | Phenomena                   |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
|             | Lat.   | Decl.   | Lat.  | Decl.   | ♈    |     |      | H. | M.   |               |                             |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 2           | 1 N 30 | 21 N 24 | 1 N 6 | 24 N 19 | 17   | m 3 | 3    | 3  | 46   | ☽ on Equator. |                             |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 4           |        | 32 20   | 51    | 20      | 14   | 16  | 57   | 4  | 17   | 42            | ☽ at First Quarter.         |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 6           |        | 33      | 21    | 32      | 23   | 53  | 51   | 7  | 9    | 31            | ☽ at ♈                      |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 8           | ♏ 19   | 43      | 41    | 31      | 44   | 12  | 4    | 23 |      |               | Full Moon ☽. 17° S 10°.     |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 10          |        | 35      | 4     | 47      | 22   | 5   | 38   | 16 | 7    | 24            | ☽ at Apogee.                |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 12          | 36     | 18      | 24    | 50      |      | 10  | 32   | 17 | 5    | 51            | ☽ on Equator.               |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 14          |        | 17      | 42    |         | 21   | 18  | 25   | 19 |      |               | Heli. setting of ♈ in West. |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 16          |        | 16      | 58    | 47      | 20   | 20  | 19   | 20 |      |               | Heli. rising of ♉ in West.  |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 18          |        |         | 11    | 42      | 19   | 16  | 13   |    | 7    | 46            | ☽ at Last Quarter.          |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 20          |        | 15      | 24    | 35      | 18   | 8   | 6    | 22 | 21   | 53            | ☽ at ♏                      |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 22          |        | 35      | 14    | 34      | 26   | 16  | 56   |    | 0    | 23            | 8                           | 38 | ☉ enters ♏            |   |   |   |   |   |   |   |   |   |   |   |   |
| 24          |        | 34      | 13    | 43      | 15   | 15  | 42   | 15 | 54   | 27            | 10                          | 0  | New Moon ☽. 14° N 29° |   |   |   |   |   |   |   |   |   |   |   |   |
| 26          |        | 32      | 12    | 51      |      | 2   | 14   | 26 | 47   | 28            | 15                          | 36 | ☽ at Perigee.         |   |   |   |   |   |   |   |   |   |   |   |   |
| 28          |        | 30      | 11    | 58      | 0    |     | 47   | 13 | 9    |               |                             |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |
| 30          |        | 28      |       | 3       | 31   | 11  | 52   |    | 35   |               |                             |    |                       |   |   |   |   |   |   |   |   |   |   |   |   |



| 16 AUGUST 1957 S. J. O. UJJAIN |        |               |        |         |        |         |        |        |          |        |      |       |      |       |     |
|--------------------------------|--------|---------------|--------|---------|--------|---------|--------|--------|----------|--------|------|-------|------|-------|-----|
| Date                           | Day    | Sidereal Time |        |         | ☉      |         | ☽      |        | Midnight |        | ☽    |       | ☽    |       | ☽   |
|                                |        | H.            | M.     | S.      | Long.  | Decl.   | Long.  | Lat.   | Decl.    | ☽      | ☽    | ☽     | ☽    | ☽     |     |
| 1 Th.                          | 8      | 40            | 29     | 8       | 44     | 24      | 18 N   | 5      | 19       | 15     | 2 S  | 15    | 9 S  | 37    | 29  |
| 2 F.                           |        | 44            | 26     | 9       | 41     | 49      | 17     | 50     | 3 m      | 9      | 1    | 6     | 13   | 36    | 58  |
| 3 S.                           |        | 48            | 22     | 10      | 39     | 14      |        | 34     | 16       | 40     | 0 N  | 5     | 16   | 45    | 5   |
| 4 Su.                          |        | 52            | 19     | 11      | 36     | 41      |        | 18     | 29       | 51     | 1    | 14    | 18   | 55    | 5   |
| 5 M.                           |        | 56            | 15     | 12      | 34     | 9       |        | 2      | 12       | 44     | 2    | 17    | 20   | 3     | 0 m |
| 6 Tu.                          | 9      | 0             | 12     | 13      | 31     | 37      | 16     | 4      | 25       | 22     | 3    | 13    | 9    | 1     | 1   |
| 7 W.                           |        | 4             | 8      | 14      | 29     | 7       |        | 29     | 7        | 49     |      | 58    | 19   | 15    | 2   |
| 8 Th.                          |        | 8             | 5      | 15      | 26     | 38      |        | 13     | 20       | 6      | 4    | 32    | 17   | 28    | 3   |
| 9 F.                           |        | 12            | 2      | 16      | 24     | 10      | 15     | 55     | 2        | 15     |      | 52    | 14   | 55    | 3   |
| 10 S.                          |        | 15            | 58     | 17      | 21     | 42      |        | 38     | 14       | 18     | 5    | 11    | 46   | 20    | 4   |
| 11 Su.                         |        | 19            | 55     | 18      | 19     | 17      |        | 20     | 26       | 16     | 4    | 54    | 8    | 9     | 5   |
| 12 M.                          |        | 23            | 51     | 19      | 16     | 51      |        | 3      | 8        | 9      |      | 35    | 5    | 0     | 6   |
| 13 Tu.                         |        | 27            | 48     | 20      | 14     | 27      | 14     | 45     | 20       | 0      |      | 4     | 0    | 13    | 7   |
| 14 W.                          |        | 31            | 44     | 21      | 12     | 5       |        | 26     | 1        | 50     | 3    | 23    | 3    | N 51  | 8   |
| 15 Th.                         |        | 35            | 41     | 22      | 9      | 26      |        | 8      | 13       | 44     | 2    | 33    | 7    | 46    | 9   |
| 16 F.                          |        | 39            | 37     | 23      | 7      | 23      | 13     | 49     | 25       | 43     | 1    | 35    | 11   | 25    | 11  |
| 17 S.                          |        | 43            | 34     | 24      | 5      | 4       |        | 30     | 7        | 52     | 0    | 32    | 14   | 39    | 12  |
| 18 Su.                         |        | 47            | 31     | 25      | 2      | 47      |        | 11     | 20       | 17     | 0    | S 33  | 17   | 17    | 13  |
| 19 M.                          |        | 51            | 27     | 26      | 0      | 31      | 12     | 51     | 3        | 2      | 1    | 39    | 19   | 9     | 14  |
| 20 Tu.                         |        | 55            | 24     |         | 58     | 16      |        | 31     | 16       | 11     | 2    | 42    | 20   | 3     | 15  |
| 21 W.                          |        | 59            | 20     | 27      | 56     | 3       |        | 12     | 29       | 49     | 3    | 37    | 19   | 57    | 16  |
| 22 Th.                         | 10     | 3             | 17     | 28      | 53     | 51      | 11     | 52     | 13       | 37     | 4    | 22    | 18   | 22    | 18  |
| 23 F.                          |        | 7             | 13     | 29      | 51     | 41      |        | 31     | 28       | 53     | 5    | 15    | 43   | 6     | 19  |
| 24 S.                          |        | 11            | 10     | 0       | 49     | 31      |        | 11     | 13       | 32     | 5    | 2     | 11   | 57    | 20  |
| 25 Su.                         |        | 15            | 6      | 1       | 47     | 24      | 10     | 50     | 28       | 46     | 4    | 51    | 7    | 21    | 22  |
| 26 M.                          |        | 19            | 3      | 2       | 45     | 18      |        | 30     | 14       | 4      | 3    | 19    | 2    | 17    | 23  |
| 27 Tu.                         |        | 23            | 0      | 3       | 43     | 13      |        | 9      | 29       | 15     | 3    | 30    | 2    | S 54  | 24  |
| 28 W.                          |        | 26            | 56     | 4       | 41     | 11      | 9      | 48     | 14       | 9      | 2    | 26    | 7    | 50    | 26  |
| 29 Th.                         |        | 30            | 53     | 5       | 39     | 9       |        | 26     | 28       | 39     | 1    | 15    | 12   | 10    | 27  |
| 30 F.                          |        | 34            | 49     | 6       | 37     | 9       |        | 5      | 12       | 43     |      | 1     | 15   | 40    | 29  |
| 31 S.                          |        | 38            | 46     | 7       | 35     | 11      | 8      | 44     | 26       | 19     | 1    | N 11  | 18   | 11    | 30  |
| Date                           | ☽      |               | ☽      |         | ☽      |         | ☽      |        | ☽        |        | ☽    |       | ☽    |       | ☽   |
|                                | Lat.   | Decl.         | Lat.   | Decl.   | Lat.   | Decl.   | Lat.   | Decl.  | Lat.     | Decl.  | Lat. | Decl. | Lat. | Decl. |     |
| 1                              | 1 N 44 | 9 S 50        | 0 N 35 | 18 N 59 | 1 N 42 | 19 N 56 | 1 N 10 | 1 N 28 | 1 N 8    | 14 N 5 |      |       |      |       |     |
| 3                              |        |               |        | 57      |        |         |        | 20     |          | 7      | 13   | 37    |      |       |     |
| 5                              |        | 51            |        | 56      |        | 41      |        | 12     |          |        |      | 11    |      |       |     |
| 7                              |        |               |        | 54      |        |         |        | 4      |          |        |      | 12    | 44   |       |     |
| 9                              |        | 52            |        | 52      |        |         |        | 9      | 0        | 56     |      | 6     | 17   |       |     |
| 11                             |        | 53            |        | 50      |        |         |        |        |          | 46     |      | 11    | 49   |       |     |
| 13                             |        | 54            |        | 48      |        | 40      |        |        |          | 36     |      | 5     | 21   |       |     |
| 15                             |        | 55            |        | 46      |        |         | 58     |        |          | 26     |      | 10    | 53   |       |     |
| 17                             |        | 56            |        | 44      |        | 39      | 59     |        |          | 16     |      | 4     | 25   |       |     |
| 19                             |        |               |        | 42      |        |         |        | 8      |          | 6      |      | 9     | 56   |       |     |
| 21                             | 43     | 57            | 36     | 41      | 38     | 20      | 0      |        | 0 S      | 4      | 3    | 27    |      |       |     |
| 23                             |        | 58            |        | 39      |        | 37      | 1      |        |          | 12     |      | 8     | 58   |       |     |
| 25                             |        | 59            |        | 37      |        |         | 2      |        |          | 20     |      | 2     | 29   |       |     |
| 27                             | 10     | 0             |        | 36      |        | 36      | 3      |        |          | 30     |      | 1     | 59   |       |     |
| 29                             |        | 1             |        | 34      |        |         |        |        |          | 39     |      |       | 29   |       |     |
| 31                             |        | 2             |        | 32      |        |         | 4      |        |          | 49     |      | 0     | 59   |       |     |

| 17 EPHemeris AUGUST 1957 |            |        |        |         |      |    |               |       |      |       |      |       |      |       |                          |
|--------------------------|------------|--------|--------|---------|------|----|---------------|-------|------|-------|------|-------|------|-------|--------------------------|
| Date                     | Longitudes |        |        |         |      |    | Lunar Aspects |       |      |       |      |       |      |       |                          |
|                          | ☽          | ☽      | ☽      | ☽       | ☽    | ☽  | ☽             | ☽     | ☽    | ☽     | ☽    | ☽     | ☽    | ☽     | ☽                        |
| 1                        | 7          | 24     | 7      | 47      | 29   | 11 | 25            | 35    | 7    | 26    | 3    | 11    |      |       |                          |
| 2                        |            | 28     |        | 46      |      |    | 11            | 26    | 13   | 8     | 38   | 4     | 35   |       |                          |
| 3                        |            | 32     |        | 45      |      |    | 21            | 26    | 51   | 9     | 51   | 5     | 56   |       |                          |
| 4                        |            | 36     |        | 44      |      |    | 31            | 27    | 29   | 11    | 3    | 7     | 16   |       |                          |
| 5                        |            | 39     |        |         |      |    | 42            | 28    | 7    | 12    | 15   | 8     | 34   |       |                          |
| 6                        |            | 43     |        |         |      |    | 53            | 28    | 45   | 13    | 28   | 9     | 50   |       |                          |
| 7                        |            | 47     |        | 43      | 0    | 4  | 29            | 22    | 14   | 40    | 11   | 3     |      |       |                          |
| 8                        |            | 51     |        |         |      |    | 14            | 0     | 15   | 52    | 12   | 15    |      |       |                          |
| 9                        |            | 54     |        | 42      |      |    | 25            | 0     | 38   | 17    | 5    | 13    | 26   |       |                          |
| 10                       |            | 58     |        |         |      |    | 36            | 1     | 16   | 18    | 17   | 14    | 31   |       |                          |
| 11                       | 8          | 2      |        | 41      |      |    | 47            | 1     | 54   | 19    | 29   | 15    | 36   |       |                          |
| 12                       |            | 6      |        |         |      |    | 58            | 2     | 32   | 20    | 41   | 16    | 38   |       |                          |
| 13                       |            | 9      |        | 1       |      |    | 9             | 3     | 10   | 21    | 53   | 17    | 37   |       |                          |
| 14                       |            | 12     | D      | 42      |      |    | 20            | 3     | 48   | 23    | 5    | 18    | 34   |       |                          |
| 15                       |            | 16     |        |         |      |    | 31            | 4     | 26   | 24    | 17   | 19    | 27   |       |                          |
| 16                       |            | 19     |        |         |      |    | 43            | 5     | 4    | 25    | 29   | 20    | 18   |       |                          |
| 17                       |            | 23     |        | 43      |      |    | 54            | 5     | 42   | 26    | 42   | 21    | 5    |       |                          |
| 18                       |            | 27     |        |         | 2    |    | 5             | 6     | 21   | 27    | 54   | 21    | 49   |       |                          |
| 19                       |            | 30     |        |         |      |    | 17            | 6     | 59   | 29    | 5    | 22    | 30   |       |                          |
| 20                       |            | 34     |        | 44      |      |    | 29            | 7     | 37   | 0     | 17   | 23    | 6    |       |                          |
| 21                       |            | 37     |        |         |      |    | 45            |       | 41   | 8     | 15   | 1     | 29   | 23    | 39                       |
| 22                       |            | 41     |        |         |      |    | 53            | 8     | 53   | 2     | 41   | 24    | 7    |       |                          |
| 23                       |            | 44     |        | 3       |      |    | 4             | 9     | 31   | 3     | 52   | 24    | 28   |       |                          |
| 24                       |            | 48     |        |         |      |    | 15            | 10    | 9    | 5     | 4    | 24    | 49   |       |                          |
| 25                       |            | 51     |        |         |      |    | 27            | 10    | 47   | 6     | 16   | 25    | 4    |       |                          |
| 26                       |            | 55     |        |         |      |    | 39            | 11    | 26   | 7     | 28   | 25    | 12   |       |                          |
| 27                       |            | 58     |        |         |      |    | 51            | 12    | 4    | 8     | 39   | 25    | 16   |       |                          |
| 28                       | 9          | 2      |        | 54      | 4    |    | 3             | 12    | 42   | 9     | 51   | 25    | R 13 |       |                          |
| 29                       |            | 5      |        |         |      |    | 15            | 13    | 20   | 11    | 3    | 25    | 5    |       |                          |
| 30                       |            | 9      |        |         |      |    | 27            | 13    | 58   | 12    | 14   | 24    | 50   | *     |                          |
| 31                       |            | 12     | 8      | 0       |      |    | 39            | 14    | 37   | 13    | 25   | 24    | 29   |       |                          |
| Date                     | ☽          |        | ☽      |         | Mean |    | ☽             |       | ☽    |       | ☽    |       | ☽    |       | Phenomena.               |
|                          | Lat.       | Decl.  | Lat.   | Decl.   | ☽    | ☽  | Lat.          | Decl. | Lat. | Decl. | Lat. | Decl. | Lat. | Decl. |                          |
| 1                        | 1 N 26     | 10 N 7 | 0 N 14 | 10 N 34 | 15 m | 28 | 3             | 0     | 31   |       |      |       |      |       | ☽ at First Quarter.      |
| 3                        |            | 23     | 9      | 10      | 0 S  | 4  | 9             | 17    |      |       |      |       |      |       | ☽ at ☽                   |
| 5                        |            | 20     | 8      | 12      |      | 23 | 8             | 1     | 15   | 10    | 18   | 41    |      |       | Full Moon D. 10° S 46°.  |
| 7                        |            | 17     | 7      | 14      |      | 43 | 6             | 46    | 9    | 12    | 20   | 24    |      |       | ☽ at Apogee.             |
| 9                        |            | 14     | 6      | 14      | 1    | 4  | 5             | 31    | 3    | 13    | 13   | 17    |      |       | ☽ on Equator.            |
| 11                       |            | 10     | 5      | 14      |      | 24 | 4             | 23    | 14   | 56    | 17   | 23    | 49   |       | ☽ at ☽                   |
| 13                       |            | 6      | 4      | 13      |      | 46 | 3             | 17    |      | 50    | 18   | 2     | 18   |       | ☽ at Last Quarter.       |
| 15                       |            | 1      | 3      | 12      | 2    | 7  | 2             | 14    |      | 44    | 20   | 14    | 17   |       | ☽ on Equator.            |
| 17                       | 0          | 57     | 2      | 11      |      | 29 | 1             | 15    |      | 37    | 16   | 48    |      |       | ☽ on Equator.            |
| 19                       |            | 52     | 1      | 9       |      | 50 | 0             | 23    |      | 31    | 21   | 17    | 25   |       | ☽ on Equator.            |
| 21                       |            | 46     | 0      | 7       | 3    | 6  | 0             | S 19  |      | 25    | 23   | 15    | 18   |       | ☽ enters ☽               |
| 23                       |            | 41     | 0      | S 55    |      | 30 | 1             | 2     |      | 18    | 25   | 0     | 42   |       | ☽ at Perigee.            |
| 25                       |            | 35     | 1      | 57      |      | 47 |               | 31    |      | 12    | 17   | 3     |      |       | New Moon Decl 6° N 16'   |
| 27                       |            | 30     | 2      | 59      | 4    | 3  |               | 46    |      | 6     | 23   |       |      |       | Heli. setting of ☽ in W. |
| 29                       |            | 24     | 4      | 1       |      | 15 |               | 57    | 13   | 59    | 22   | 34    |      |       | ☽ on Equator.            |
| 31                       |            | 17     | 5      | 3       |      | 23 |               | 50    |      | 53    | 30   | 12    | 20   |       | ☽ at ☽                   |



| 18 SEPTEMBER 1957 |     |               |    |    |                   |       |        |                     |        | S. J. O. UJJAIN |                       |                   |    |  |  |  |  |  |  |
|-------------------|-----|---------------|----|----|-------------------|-------|--------|---------------------|--------|-----------------|-----------------------|-------------------|----|--|--|--|--|--|--|
| Date              | Day | Sidereal Time |    |    | ☉                 |       | ☽      |                     |        | Midnight        |                       | ψ                 |    |  |  |  |  |  |  |
|                   |     |               |    |    | Long.             | Decl. | Long.  | Lat.                | Decl.  | ☽               |                       |                   |    |  |  |  |  |  |  |
|                   |     | H.            | M. | S. |                   |       |        |                     |        |                 |                       |                   |    |  |  |  |  |  |  |
| 1                 | Su. | 10            | 42 | 42 | 8 <sup>m</sup> 33 | 17    | 8 N 22 | 9 31                | 2 N 17 | 19 S 38         | 15 58                 | 0 <sup>m</sup> 32 |    |  |  |  |  |  |  |
| 2                 | M.  |               | 45 | 39 | 9 31              | 20    |        | 0 22                | 21 3   | 14 20           | 0 28                  | 29 33             |    |  |  |  |  |  |  |
| 3                 | Tu. |               | 49 | 35 | 10 29             | 27    | 7 38   | 4 53                | 4 0    | 19 21           | 11 4                  | 35                |    |  |  |  |  |  |  |
| 4                 | W.  |               | 53 | 32 | 11 27             | 35    |        | 16 17               | 11     | 35 17           | 48 23                 | 17 37             |    |  |  |  |  |  |  |
| 5                 | Th. |               | 57 | 29 | 12 25             | 44    | 6 54   | 29 20               |        | 56 15           | 28 5                  | 21 38             |    |  |  |  |  |  |  |
| 6                 | F.  | 11            | 1  | 25 | 13 23             | 57    |        | 32 11               | 21     | 5 4             | 12 30                 | 17 19             | 40 |  |  |  |  |  |  |
| 7                 | S.  |               | 5  | 22 | 14 22             | 11    |        | 9 23                | 17     | 4 59            | 9 3                   | 29 13             | 41 |  |  |  |  |  |  |
| 8                 | Su. |               | 9  | 18 | 15 20             | 26    | 5 47   | 5 10                |        | 40 5            | 16 11                 | 11 6              | 43 |  |  |  |  |  |  |
| 9                 | M.  |               | 13 | 15 | 16 18             | 43    |        | 24 17               | 1      | 10 1            | 18 22                 | 57 44             | 44 |  |  |  |  |  |  |
| 10                | Tu. |               | 17 | 11 | 17 17             | 2     |        | 1 28                | 53     | 3 28            | 2 N 45                | 4 50              | 46 |  |  |  |  |  |  |
| 11                | W.  |               | 21 | 8  | 18 15             | 23    | 4 39   | 10 17               | 47     | 2 38            | 6 43                  | 16 45             | 48 |  |  |  |  |  |  |
| 12                | Th. |               | 25 | 4  | 19 13             | 46    |        | 16 22               | 45     | 1 40            | 10 23                 | 28 46             | 49 |  |  |  |  |  |  |
| 13                | F.  |               | 29 | 1  | 20 12             | 10    | 3 53   | 4 49                |        | 0 36            | 13 42                 | 10 55             | 51 |  |  |  |  |  |  |
| 14                | S.  |               | 32 | 58 | 21 10             | 37    |        | 30 17               | 3      | 0 S 30          | 16 28                 | 23 15             | 54 |  |  |  |  |  |  |
| 15                | Su. |               | 36 | 54 | 22 9              | 5     |        | 7 29                | 30     | 1 35            | 18 30                 | 5 50              | 55 |  |  |  |  |  |  |
| 16                | M.  |               | 40 | 51 | 23 7              | 35    | 2 44   | 12 15               | 2      | 38 19           | 40 18                 | 45 57             | 57 |  |  |  |  |  |  |
| 17                | Tu. |               | 44 | 47 | 24 6              | 5     |        | 21 25               | 21     | 3 34            | 48 20                 | 4 59              | 59 |  |  |  |  |  |  |
| 18                | W.  |               | 48 | 44 | 25 4              | 41    | 1 57   | 8 53                | 4      | 20 18           | 50 15                 | 48 1              | 1  |  |  |  |  |  |  |
| 19                | Th. |               | 52 | 40 | 26 3              | 17    |        | 34 22               | 51     | 52 16           | 42 0                  | 0 3               | 3  |  |  |  |  |  |  |
| 20                | F.  |               | 56 | 37 | 27 1              | 55    |        | 11 7                | 15     | 5 8             | 13 27                 | 14 36             | 5  |  |  |  |  |  |  |
| 21                | S.  | 12            | 0  | 33 | 28 0              | 34    | 0 48   | 22 3                |        | 3 9             | 22 29                 | 34 7              | 9  |  |  |  |  |  |  |
| 22                | Su. |               | 4  | 30 |                   | 59    | 16     | 24 7 <sup>m</sup> 8 | 4      | 38 4            | 35 14 <sup>m</sup> 45 |                   | 7  |  |  |  |  |  |  |
| 23                | M.  |               | 8  | 27 | 29 57             | 59    |        | 1 22                | 22     | 3 53            | 0 S 32                | 29 58             | 11 |  |  |  |  |  |  |
| 24                | Tu. |               | 12 | 23 | 0 56              | 45    | 0 S 23 | 7 33                | 3      | 51 5            | 37 15                 | 4 13              | 13 |  |  |  |  |  |  |
| 25                | W.  |               | 16 | 19 | 1 55              | 33    |        | 46 22               | 32     | 1 39            | 10 18                 | 29 54             | 15 |  |  |  |  |  |  |
| 26                | Th. |               | 20 | 16 | 2 54              | 22    | 1 9    | 7 <sup>m</sup> 10   | 0      | 21 14           | 14 14 <sup>m</sup> 20 |                   | 17 |  |  |  |  |  |  |
| 27                | F.  |               | 24 | 13 | 3 53              | 14    |        | 33 21               | 23     | 0 N 56          | 17 12                 | 28 19             | 19 |  |  |  |  |  |  |
| 28                | S.  |               | 28 | 9  | 4 52              | 8     |        | 56 5 8              | 2      | 8 18            | 56 11 50              |                   | 21 |  |  |  |  |  |  |
| 29                | Su. |               | 32 | 6  | 5 51              | 3     | 2 19   | 18 26               | 3      | 10 19           | 47 24                 | 56 23             | 23 |  |  |  |  |  |  |
| 30                | M.  |               | 36 | 2  | 6 50              | 1     |        | 43 1 20             | 4      | 1 26            | 7 39                  |                   | 25 |  |  |  |  |  |  |

| Date | ☽      |        | ♈      |         | ♉      |        | ♊     |        | ♋     |        |
|------|--------|--------|--------|---------|--------|--------|-------|--------|-------|--------|
|      | Lat.   | Decl.  | Lat.   | Decl.   | Lat.   | Decl.  | Lat.  | Decl.  | Lat.  | Decl.  |
| 2    | 1 N 43 | 10 S 3 | 0 N 36 | 18 N 31 | 1 N 35 | 20 N 5 | 1 N 7 | 0 S 59 | 1 N 0 | 6 N 29 |
| 4    |        |        |        | 29      |        |        | 6     | 1 9    | 0 59  | 5 59   |
| 6    |        |        |        | 27      |        |        | 7     | 19     |       | 25     |
| 8    |        |        |        | 25      | 34     |        | 8     | 29     | 58    | 4 57   |
| 10   |        |        |        | 23      |        |        | 9     | 39     | 57    | 26     |
| 12   |        |        |        | 21      | 33     |        | 10    | 49     |       | 3 55   |
| 14   | 42     |        |        | 20      |        |        | 12    | 59     | 56    | 24     |
| 16   |        |        |        | 18      |        |        | 13    | 2 9    |       | 2 53   |
| 18   |        |        |        | 17      | 32     |        | 15    | 19     | 55    | 22     |
| 20   |        |        |        | 16      |        |        | 17    | 6 29   | 54    | 1 50   |
| 22   |        |        |        | 14      | 31     |        | 18    | 39     | 53    | 19     |
| 24   |        |        |        | 12      |        |        | 19    | 49     |       | 0 48   |
| 26   |        |        |        | 11      |        |        | 20    | 59     | 52    | 16     |
| 28   |        |        |        | 10      |        |        | 22    | 3 9    | 51    | 0 S 16 |
| 30   |        |        |        | 9       | 30     |        | 24    | 19     |       | 47     |

| 19 SEPTEMBER 1957 |            |     |     |       |       |       |      |     |     |     |               |   |   |   |   |   |   |
|-------------------|------------|-----|-----|-------|-------|-------|------|-----|-----|-----|---------------|---|---|---|---|---|---|
| Date              | Longitudes |     |     |       |       |       |      |     |     |     | Lunar Aspects |   |   |   |   |   |   |
|                   | ♈          | ♉   | ♊   | ♋     | ♌     | ♍     | ♎    | ♏   | ♐   | ♑   | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 1                 | 9 15       | 8 7 | 2 4 | 52 15 | 15 15 | 14 37 | 24 3 | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 2                 | 18         |     | 4 5 | 4 15  | 54 15 | 48 23 | 28   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 3                 | 22         |     | 6   | 16 16 | 32 16 | 59 22 | 51   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 4                 | 25         |     | 8   | 28 17 | 10 18 | 11 22 | 7    | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 5                 | 28         |     | 9   | 41 17 | 49 19 | 22 21 | 18   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 6                 | 32         |     | 11  | 53 18 | 27 20 | 33 20 | 24   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 7                 | 35         |     | 13  | 6 19  | 6 21  | 44 19 | 28   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 8                 | 38         |     | 15  | 19 19 | 44 22 | 55 18 | 29   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 9                 | 41         |     | 17  | 31 20 | 22 24 | 6 17  | 29   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 10                | 44         |     | 20  | 43 21 | 1 25  | 17 16 | 29   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 11                | 47         |     | 23  | 55 21 | 39 26 | 28 15 | 30   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 12                | 50         |     | 27  | 8 22  | 18 27 | 38 14 | 35   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 13                | 54         |     | 31  | 21 22 | 57 28 | 50 13 | 44   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 14                | 57         |     | 34  | 54 23 | 36 0  | 12 59 | 45   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 15 10             | 0          |     | 37  | 47 24 | 14 1  | 11 12 | 20   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 16                | 2          |     | 40  | 0 24  | 52 2  | 21 11 | 4    | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 17                | 5          |     | 43  | 12 25 | 31 3  | 32 11 | 27   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 18                | 8          |     | 47  | 34 26 | 10 4  | 43 11 | 13   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 19                | 11         |     | 51  | 37 26 | 48 5  | 53 11 | 10   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 20                | 14         |     | 55  | 50 27 | 27 7  | 4 11  | 13   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 21                | 17         |     | 58  | 3 28  | 6 8   | 14 11 | 31   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 22                | 20         | 9   |     | 16 28 | 41 9  | 24 11 | 57   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 23                | 23         |     | 4   | 29 29 | 23 10 | 34 12 | 31   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 24                | 25         |     | 8   | 42 0  | 2 11  | 44 13 | 14   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 25                | 27         |     | 12  | 55 0  | 41 12 | 54 14 | 6    | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 26                | 29         |     | 16  | 8 1   | 20 14 | 4 15  | 5    | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 27                | 32         |     | 20  | 21 1  | 59 15 | 14 16 | 12   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 28                | 34         |     | 25  | 34 2  | 37 16 | 23 17 | 25   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 29                | 37         |     | 30  | 47 3  | 16 17 | 33 18 | 43   | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |
| 30                | 39         |     | 34  | 0 3   | 55 18 | 43 29 | 7    | 3 0 | 2 0 | 2 0 | ☉             | ☽ | ♈ | ♉ | ♊ | ♋ | ♌ |

  

| Date | ♀      | ♊     | Mean   | Date   | Time  | Phenomena                     |
|------|--------|-------|--------|--------|-------|-------------------------------|
| Lat. | Decl.  | Lat.  | Decl.  | Ω      | H. M. |                               |
| 2    | 0 N 11 | 6 S 3 | 4 S 26 | 1 S 29 | 13 47 | 6 J at First Quarter.         |
| 4    | 4 7    | 4     | 22     | 53     | 40 7  | 12 0 ♀ at ☉                   |
| 6    | 0 S 3  | 8 4   | 12     | 3      | 34 8  | 0 ♀ on Equator.               |
| 8    | 10 9   | 4 3   | 53     | 0 N 59 | 27 9  | 0 J at Apogee.                |
| 10   | 16 10  | 2     | 27     | 2 10   | 21 19 | 27 Full Moon Decl. 1° S 33'   |
| 12   | 24 11  | 1 2   | 55     | 3 23   | 15 14 | 1 5 J at ☉                    |
| 14   | 31     | 58    | 18     | 4 34   | 8 17  | 9 32 J at Last Quarter.       |
| 16   | 38 12  | 54 1  | 34     | 5 41   | 2 18  | .. Heli. setting of ♃ in W.   |
| 18   | 46 13  | 48 0  | 59     | 6 27   | 56 19 | .. Heli. rising of ♃ in East  |
| 20   | 53 14  | 43    | 22     | 7 1    | 49 22 | 18 40 ♀ at ☉                  |
| 22   | 1      | 15 35 | 0 N 13 | 17     | 43 23 | 9 30 J on Equator.            |
| 24   | 8 16   | 27    | 42     | 14     | 37 9  | 36 J at Perigee.              |
| 26   | 16 17  | 16 1  | 6 6    | 54     | 30 12 | 49 ☉ enters ♈                 |
| 28   | 23 18  | 5     | 25     | 18     | 24 24 | 0 51 New Moon, Decl. 3° S 21' |
| 30   | 31     | 51    | 39     | 5 26   | 18 26 | 18 33 J at ☉                  |

[Contd. on  
Page 37.]



| Date | Day | Sidereal Time |    |    | O                 |       | D     |                       |        | Midnight                 |                   | ψ                 |
|------|-----|---------------|----|----|-------------------|-------|-------|-----------------------|--------|--------------------------|-------------------|-------------------|
|      |     | H.            | M. | S. | Long.             | Decl. | Long. | Lat.                  | Decl.  | D                        |                   |                   |
| 1    | Tu. | 12            | 39 | 59 | 7 <sup>h</sup> 49 | 1     | 3 S   | 6 13 <sup>h</sup> 53  | 4 N 38 | 18 S 7                   | 20 <sup>h</sup> 4 | 1 <sup>m</sup> 27 |
| 2    | W.  |               | 43 | 56 | 8 48              | 5     |       | 29 26 10              | 5      | 2 15 58                  | 2 <sup>m</sup> 14 | 29                |
| 3    | Th. |               | 47 | 52 | 9 47              | 6     |       | 53 8 = 15             | 12 13  | 11 14 14                 |                   | 31                |
| 4    | F.  |               | 51 | 49 | 10 46             | 12    | 4     | 16 20 12              | 8      | 9 52 26                  | 9                 | 33                |
| 5    | S.  |               | 55 | 45 | 11 45             | 19    |       | 39 2 <sup>m</sup> 5   | 4 51   | 6 12 8 <sup>m</sup> 0    |                   | 35                |
| 6    | Su. |               | 59 | 42 | 12 44             | 29    | 5     | 2 13 56               | 22 2   | 17 19 52                 |                   | 37                |
| 7    | M.  | 13            | 3  | 38 | 13 43             | 42    |       | 25 25 48              | 3 41   | 1 N 43                   | 1 <sup>m</sup> 46 | 39                |
| 8    | Tu. |               | 7  | 35 | 14 42             | 55    |       | 48 7 <sup>m</sup> 44  | 2 51   | 5 41 13                  | 44                | 42                |
| 9    | W.  |               | 11 | 31 | 15 42             | 12    | 6     | 11 19 45              | 1 52   | 9 27 25                  | 48                | 44                |
| 10   | Th. |               | 15 | 28 | 16 41             | 30    |       | 34 1 <sup>m</sup> 53  | 0 48   | 12 52 8 <sup>m</sup> 0   |                   | 46                |
| 11   | F.  |               | 19 | 25 | 17 40             | 50    |       | 58 14 9               | 0 S 20 | 15 47 20                 | 21                | 48                |
| 12   | S.  |               | 23 | 21 | 18 40             | 11    | 7     | 19 26 35              | 1 27   | 17 59 2 <sup>m</sup> 53  |                   | 50                |
| 13   | Su. |               | 27 | 17 | 19 39             | 36    |       | 42 9 <sup>m</sup> 14  | 2 32   | 19 20 15                 | 39                | 52                |
| 14   | M.  |               | 31 | 14 | 20 39             | 3     | 8     | 4 22 8                | 3 30   | 43 23 41                 |                   | 54                |
| 15   | Tu. |               | 35 | 11 | 21 38             | 32    |       | 26 5 <sup>m</sup> 18  | 4 18   | 3 12 <sup>m</sup> 1      |                   | 57                |
| 16   | W.  |               | 39 | 7  | 22 38             | 1     |       | 47 18 48              | 53 17  | 17 25 40                 | 2                 | 0                 |
| 17   | Th. |               | 43 | 4  | 23 37             | 34    | 9     | 11 2 <sup>m</sup> 38  | 5 13   | 14 30 9 <sup>m</sup> 40  |                   | 2                 |
| 18   | F.  |               | 47 | 0  | 24 37             | 8     |       | 32 16 48              | 14 10  | 49 24 6                  |                   | 4                 |
| 19   | S.  |               | 50 | 57 | 25 36             | 44    |       | 54 1 <sup>m</sup> 17  | 4 56   | 6 25 8 <sup>m</sup> 38   |                   | 6                 |
| 20   | Su. |               | 54 | 54 | 26 36             | 23    | 10    | 16 16 1               | 18 1   | 33 23 27                 |                   | 8                 |
| 21   | M.  |               | 58 | 50 | 27 33             | 3     |       | 37 0 <sup>m</sup> 54  | 3 27   | 3 S 27 8 <sup>m</sup> 22 |                   | 10                |
| 22   | Tu. | 14            | 2  | 47 | 28 35             | 45    |       | 59 15 49              | 2 13   | 8 16 23                  | 14                | 12                |
| 23   | W.  |               | 6  | 43 | 29 35             | 36    | 11    | 20 0 <sup>m</sup> 36  | 0 54   | 12 32 7 <sup>m</sup> 55  |                   | 14                |
| 24   | Th. |               | 10 | 40 | 0 <sup>m</sup> 35 | 17    |       | 41 15 10              | 0 N 26 | 15 59 22                 | 19                | 17                |
| 25   | F.  |               | 14 | 36 | 1 35              | 5     | 12    | 2 29 23               | 1 43   | 18 21 6 <sup>m</sup> 21  |                   | 19                |
| 26   | S.  |               | 18 | 33 | 2 34              | 56    |       | 22 13 <sup>m</sup> 13 | 2 50   | 19 34 19                 | 58                | 21                |
| 27   | Su. |               | 22 | 29 | 3 34              | 47    |       | 43 26 37              | 3 49   | 35 3 <sup>m</sup> 10     |                   | 23                |
| 28   | M.  |               | 26 | 26 | 4 34              | 40    | 13    | 3 9 <sup>m</sup> 37   | 4 32   | 18 34 15                 | 58                | 25                |
| 29   | Tu. |               | 30 | 23 | 5 34              | 37    |       | 23 22 15              | 5      | 1 16 38                  | 28                | 27                |
| 30   | W.  |               | 34 | 19 | 6 34              | 35    |       | 43 4 <sup>m</sup> 54  | 16 14  | 14 10 <sup>m</sup> 39    |                   | 29                |
| 31   | Th. |               | 38 | 16 | 7 34              | 35    | 14    | 3 16 40               | 16 10  | 49 22 39                 |                   | 32                |

| Date | ψ      |         | μ      |        | ζ      |         | λ     |        | δ      |        |
|------|--------|---------|--------|--------|--------|---------|-------|--------|--------|--------|
|      | Lat.   | Decl.   | Lat.   | Decl.  | Lat.   | Decl.   | Lat.  | Decl.  | Lat.   | Decl.  |
| 2    | 1 N 42 | 10 S 23 | 0 N 37 | 18 N 7 | 1 N 29 | 20 N 25 | 1 N 6 | 3 S 29 | 0 N 50 | 1 S 19 |
| 4    |        | 25      |        | 6      |        | 27      |       | 40     | 49     | 50     |
| 6    |        | 26      |        | 5      | 28     | 29      |       | 50     | 48     | 22     |
| 8    |        | 28      |        | 4      |        | 31      | 4     | 0      |        | 53     |
| 10   |        | 29      |        | 3      |        | 32      |       | 10     | 47     | 3      |
| 12   |        | 31      |        | 2      |        | 34      |       | 20     | 46     | 56     |
| 14   |        | 33      |        |        | 27     | 36      |       | 30     | 45     | 4      |
| 16   |        | 35      |        | 1      |        | 38      |       | 40     |        | 58     |
| 18   |        | 36      |        | 0      |        | 40      |       | 50     | 44     | 5      |
| 20   |        | 38      | 17     | 59     |        | 42      | 5     | 0      | 43     | 6      |
| 22   |        | 39      |        |        | 26     | 44      |       | 19     | 42     | 32     |
| 24   |        | 41      | 38     | 58     |        | 46      | 7     | 20     | 41     | 7      |
| 26   |        | 42      |        |        |        | 48      |       | 30     | 40     | 33     |
| 28   |        | 44      |        | 57     |        | 50      |       | 39     |        | 8      |
| 30   |        | 45      |        | 56     | 25     | 52      |       | 48     | 39     | 34     |

[illegible]



| 22     |     | NOVEMBER 1957 |       |       |           |         |        |          |       |       |  | S. J. O. UJJAIN |  |
|--------|-----|---------------|-------|-------|-----------|---------|--------|----------|-------|-------|--|-----------------|--|
| Date   | Day | Sidereal Time | ☉     |       | ♂         |         |        | Midnight |       | ψ     |  |                 |  |
|        |     |               | Long. | Decl. | Long.     | Lat.    | Decl.  | ♂        |       |       |  |                 |  |
| 1 F.   |     | H. M. S.      |       |       |           |         |        |          |       |       |  |                 |  |
| 2 S.   |     | 14 42 12      | 8m 34 | 37    | 14 S 22   | 28m 37  | 5 N 2  | 7 S 14   | 4m 33 | 2m 35 |  |                 |  |
| 3 Su.  |     | 46 9 9        | 34 41 | 41    | 10m 28    | 4 37    | 3 22   | 16 23    |       | 37    |  |                 |  |
| 4 M.   |     | 50 5 10       | 34 47 | 15    | 0 22 19   | 3 57    | 0 N 35 | 28 16    |       | 39    |  |                 |  |
| 5 Tu.  |     | 52 2 11       | 34 54 |       | 19 4m 13  | 8 4     | 34     | 10m 13   |       | 41    |  |                 |  |
| 6 W.   |     | 57 58 12      | 35 3  |       | 37 16 14  | 2 11    | 8 24   | 22 18    |       | 43    |  |                 |  |
| 7 Th.  | 15  | 1 55 13       | 35 14 |       | 55 28 24  | 1 7 11  | 57     | 4m 33    |       | 45    |  |                 |  |
| 8 F.   |     | 5 52 14       | 35 27 | 16    | 13 10 45  | 0 S 3   | 15 0   | 17 0     |       | 47    |  |                 |  |
| 9 S.   |     | 9 48 15       | 35 42 |       | 31 23 18  | 1 10 17 | 28     | 29 39    |       | 50    |  |                 |  |
| 10 Su. |     | 13 45 18      | 35 57 |       | 48 6m 14  | 2 17 19 | 5      | 12m 32   |       | 53    |  |                 |  |
| 11 M.  |     | 17 41 17      | 36 16 | 17    | 5 19 4    | 3 18    | 43     | 25 38    |       | 55    |  |                 |  |
| 12 Tu. |     | 21 38 18      | 36 36 |       | 22 2m 17  | 4 9     | 16     | 8m 58    |       | 57    |  |                 |  |
| 13 W.  |     | 25 34 19      | 36 58 |       | 39 15 43  |         | 48 17  | 46 22    | 31    | 59    |  |                 |  |
| 14 Th. |     | 29 31 20      | 37 20 |       | 55 29 22  | 5 11    | 15 13  | 6m 16    |       | 3     |  |                 |  |
| 15 F.  |     | 33 27 21      | 37 46 | 18    | 11 13 14  |         | 17 11  | 48 20    | 14    | 1     |  |                 |  |
| 16 S.  |     | 37 24 22      | 38 12 |       | 26 7 17   |         | 3 7    | 40 4m 22 |       | 5     |  |                 |  |
| 17 Su. |     | 41 21 23      | 38 41 |       | 41 11m 30 | 4 32    | 3 4    | 18 39    |       | 7     |  |                 |  |
| 18 M.  |     | 45 17 24      | 39 0  |       | 56 25 51  | 3 43    | 1 S 46 | 3m 3     |       | 10    |  |                 |  |
| 19 Tu. |     | 49 14 25      | 39 42 | 19    | 11 10 17  | 2 40    | 6 31   | 17 30    |       | 12    |  |                 |  |
| 20 W.  |     | 53 10 26      | 40 15 |       | 25 24 43  | 1 26    | 10 46  | 1m 56    |       | 14    |  |                 |  |
| 21 Th. |     | 57 7 27       | 40 49 |       | 39 9m 6   | 0 8     | 14 40  | 16 15    |       | 16    |  |                 |  |
| 22 F.  | 16  | 1 3 28        | 41 0  |       | 52 23 20  | 1 N 10  | 17 29  | 0m 23    |       | 18    |  |                 |  |
| 23 S.  |     | 5 0 29        | 42 1  | 20    | 6 7 21    | 2 23    | 19 11  | 14 14    |       | 20    |  |                 |  |
| 24 Su. |     | 8 56 0        | 42 40 |       | 18 21 3   | 3 25    |        | 44 27    | 47    | 22    |  |                 |  |
| 25 M.  |     | 12 53 1       | 43 20 |       | 31 4m 25  | 4 15    |        | 8 10m 59 |       | 24    |  |                 |  |
| 26 Tu. |     | 16 50 2       | 44 2  |       | 43 17 27  |         | 50 17  | 31 23    | 49    | 27    |  |                 |  |
| 27 W.  |     | 20 46 3       | 44 45 |       | 54 0m 7   | 5 10    | 15 5   | 6m 20    |       | 29    |  |                 |  |
| 28 Th. |     | 24 43 4       | 45 28 | 21    | 6 12 30   |         | 14 12  | 3 18     | 35    | 31    |  |                 |  |
| 29 F.  |     | 28 39 5       | 46 14 |       | 16 24 37  |         | 5 8    | 32 0m 37 |       | 33    |  |                 |  |
| 30 S.  |     | 32 36 6       | 47 0  |       | 27 6m 34  | 4 42    | 4 44   | 12 31    |       | 35    |  |                 |  |
|        |     | 36 32 7       | 47 49 |       | 37 18 26  |         | 7 0    | 47 24    | 21    | 37    |  |                 |  |

| Date. | ψ      |         | μ      |         | ζ      |         | η     |        | δ      |       |    |    |
|-------|--------|---------|--------|---------|--------|---------|-------|--------|--------|-------|----|----|
|       | Lat.   | Decl.   | Lat.   | Decl.   | Lat.   | Decl.   | Lat.  | Decl.  | Lat.   | Decl. |    |    |
| 1     | 1 N 42 | 10 S 47 | 0 N 38 | 17 N 55 | 1 N 25 | 20 S 54 | 1 N 7 | 5 S 58 | 0 N 38 | 9 S 4 |    |    |
| 3     |        | 49      |        |         |        | 56      |       | 6      | 8      | 37    | 33 |    |
| 5     |        | 50      |        |         |        | 58      |       |        | 18     | 36    | 10 | 3  |
| 7     |        | 51      |        |         |        | 59      |       |        | 27     | 35    | 33 |    |
| 9     |        | 53      |        | 54      | 24     | 21      | 0     |        | 36     | 34    | 11 | 2  |
| 11    |        | 54      |        |         |        | 2       |       |        | 45     | 33    |    | 30 |
| 13    |        | 56      |        |         |        | 4       |       | 8      | 55     | 32    |    | 59 |
| 15    |        | 57      |        |         |        | 6       |       |        | 3      | 31    | 12 | 27 |
| 17    |        | 58      |        |         | 23     | 8       |       |        | 11     | 30    |    | 55 |
| 19    |        | 11 0    |        |         |        | 10      |       |        | 21     | 29    | 13 | 22 |
| 21    |        | 1       |        |         |        | 12      |       |        | 29     | 28    |    | 50 |
| 2     |        | 2       |        |         |        | 14      |       | 9      | 37     | 27    | 14 | 16 |
| 2     |        | 4       | 39     | 55      | 22     | 15      |       |        | 45     | 26    |    | 43 |
| 2     |        | 5       |        |         |        | 17      |       |        | 52     | 25    | 15 | 9  |
| 2     |        | 6       |        |         |        | 19      |       |        | 58     | 24    |    | 34 |

| EPHEMERIS |            |    |    |    |    |    |    |    |    | NOVEMBER 1957 |               |    |    |   |   |   |   |   |   | 23 |
|-----------|------------|----|----|----|----|----|----|----|----|---------------|---------------|----|----|---|---|---|---|---|---|----|
| Date      | Longitudes |    |    |    |    |    |    |    |    |               | Lunar Aspects |    |    |   |   |   |   |   |   |    |
|           | ♈          | ♉  | ♊  | ♋  | ♌  | ♍  | ♎  | ♏  | ♐  | ♑             | ☾             | ☾  | ☾  | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 1         | 11         | 34 | 12 | 28 | 17 | 51 | 24 | 55 | 24 | 53            | 13            | 41 |    | Δ |   |   | ☾ | Δ | * |    |
| 2         |            | 35 |    | 34 | 18 |    | 3  | 25 | 35 | 25            | 59            | 15 | 16 | Δ | Δ | ☾ | ☾ | ☾ | Δ |    |
| 3         |            | 35 |    | 40 |    |    | 16 | 26 | 15 | 27            | 4             | 16 | 51 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 4         |            | 36 |    | 46 |    |    | 29 | 26 | 55 | 28            | 9             | 18 | 25 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 5         |            | 37 |    | 52 |    |    | 41 | 27 | 35 | 29            | 13            | 19 | 59 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 6         |            | 37 |    | 58 |    |    | 53 | 28 | 14 | 0             | 18            | 21 | 33 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 7         |            | 38 | 13 |    | 5  | 19 | 6  | 28 | 54 | 1             | 22            | 23 | 6  | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 8         |            | 39 |    | 11 |    |    | 19 | 29 | 34 | 2             | 26            | 24 | 39 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 9         |            | 39 |    | 17 |    |    | 32 | 0  | 15 | 3             | 29            | 26 | 12 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 10        |            | 40 |    | 23 |    |    | 44 | 0  | 55 | 4             | 33            | 27 | 44 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 11        |            | 40 |    | 29 |    |    | 56 | 1  | 35 | 5             | 36            | 29 | 16 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 12        |            | 40 |    | 36 | 20 |    | 8  | 2  | 15 | 6             | 39            | 0  | 48 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 13        |            | 40 |    | 43 |    |    | 20 | 2  | 55 | 7             | 41            | 2  | 19 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 14        |            | 41 |    | 51 |    |    | 32 | 3  | 35 | 8             | 43            | 3  | 50 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 15        |            | 41 |    | 59 |    |    | 44 | 4  | 15 | 9             | 45            | 5  | 21 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 16        |            | 41 | 14 | 7  |    |    | 56 | 4  | 56 | 10            | 47            | 6  | 51 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 17        |            | 41 |    | 14 | 21 |    | 8  | 5  | 36 | 11            | 48            | 8  | 21 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 18        |            | 41 |    | 21 |    |    | 20 | 6  | 16 | 12            | 49            | 9  | 51 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 19        |            | 41 |    | 28 |    |    | 32 | 6  | 57 | 13            | 49            | 11 | 20 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 20        |            | 41 |    | 35 |    |    | 43 | 7  | 37 | 14            | 49            | 12 | 49 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 21        | R          | 40 |    | 42 |    |    | 54 | 8  | 17 | 15            | 49            | 14 | 17 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 22        |            | 40 |    | 49 | 22 |    | 6  | 8  | 58 | 16            | 48            | 15 | 45 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 23        |            | 40 |    | 56 |    |    | 18 | 9  | 38 | 17            | 48            | 17 | 13 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 24        |            | 40 | 15 | 2  |    |    | 29 | 10 | 19 | 18            | 45            | 18 | 40 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 25        |            | 39 |    | 9  |    |    | 41 | 10 | 59 | 19            | 43            | 20 | 6  | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 26        |            | 39 |    | 16 |    |    | 53 | 11 | 40 | 20            | 40            | 21 | 32 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 27        |            | 39 |    | 23 | 23 |    | 4  | 12 | 21 | 21            | 37            | 22 | 57 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 28        |            | 38 |    | 30 |    |    | 14 | 13 | 1  | 22            | 33            | 24 | 21 |   | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 29        |            | 37 |    | 37 |    |    | 24 | 13 | 42 | 23            | 29            | 25 | 44 | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |
| 30        |            | 36 |    | 44 |    |    | 34 | 14 | 22 | 24            | 24            | 27 | 5  | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |    |

| Date. | ♀    |       | ♂    |       | Mean. | Date. | Time. | Phenomena. |              |                            |
|-------|------|-------|------|-------|-------|-------|-------|------------|--------------|----------------------------|
|       | Lat. | Decl. | Lat. | Decl. | Ω     |       | H. M. |            |              |                            |
| 1     | 3 S  | 6     | 26 S | 26    | 0 S   | 16    | 16 S  | 12 10m 36  | 2 17 48      | ☾ at Apogee.               |
| 3     |      | 9     |      | 34    |       | 30    | 17    | 21         | 30 3 8 27    | ☾ on Equator.              |
| 5     |      | 12    |      | 38    |       | 43    | 18    | 25         | 23 7 10 58   | ☾ at ☿                     |
| 7     |      | 14    |      | 41    |       | 56    | 19    | 26         | 17 19 59     | Full Moon D. 15° N 48      |
| 9     |      | 16    |      | 40    | 1     | 8     | 20    | 22         | 10 15 3 27   | ☾ at Last Quarter.         |
| 11    |      | 17    |      | 37    |       | 20    | 21    | 15         | 4 16 ..      | Heli. rising of ♀ in West  |
| 13    |      | 18    |      | 31    |       | 31    | 22    | 7          | 9 58 17 3 14 | ☾ on Equator.              |
| 15    |      |       |      | 23    |       | 42    |       | 52         | 51 18 16 18  | ☾ at Apogee.               |
| 17    |      |       |      | 12    |       | 51    | 23    | 32         | 45 18 ..     | Heli. rising of ☿ in East. |
| 19    |      | 17    | 25   | 59    | 2     | 0     | 24    | 8          | 39 20 14 28  | ☾ at Ω                     |
| 21    |      | 15    |      | 44    |       | 8     |       | 38         | 32 21 21 53  | New Moon Decl. 18° S 9'    |
| 23    |      | 12    |      | 22    |       | 15    | 25    | 4          | 26 22 19 5   | ☉ enters ♏                 |
| 25    |      | 9     |      | 7     |       | 20    |       | 24         | 19 26 ..     | Heli. setting of ♄ in W.   |
| 27    |      | 5     | 24   | 45    |       | 24    |       | 39         | 13 29 12 29  | ☾ at First Quarter.        |
| 29    |      | 0     |      | 21    |       | 25    |       | 48         | 7 30 14 42   | ☾ at Apogee.               |
|       |      |       |      |       |       |       |       |            | 16 43        | ☾ on Equator.              |



| 24   |     | DECEMBER 1957 |    |    |       |       |       |      |       |          |      | S. J. O. UJJAIN |      |    |      |    |      |    |      |
|------|-----|---------------|----|----|-------|-------|-------|------|-------|----------|------|-----------------|------|----|------|----|------|----|------|
| Date | Day | Sidereal Time |    |    | ☉     |       | ☽     |      |       | Midnight |      | Ψ               |      |    |      |    |      |    |      |
|      |     |               |    |    | Long. | Decl. | Long. | Lat. | Decl. | ☽        |      |                 |      |    |      |    |      |    |      |
| 1    | Su. | 16            | 40 | 29 | 8     | 48    | 38    | 21   | S 47  | 0        | 17   | 3               | N 22 | 3  | N 12 | 6  | 13   | 3  | m 39 |
| 2    | M.  |               | 44 | 25 | 9     | 49    | 28    |      | 56    | 12       | 11   | 2               | 30   | 7  | 7    | 18 | 12   |    | 41   |
| 3    | Tu. |               | 48 | 22 | 10    | 50    | 19    | 22   | 5     | 24       | 15   | 1               | 27   | 10 | 45   | 0  | 8    | 21 | 43   |
| 4    | W.  |               | 52 | 19 | 11    | 51    | 12    |      | 13    | 6        | 31   | 0               | 21   | 14 | 2    | 12 | 45   |    | 45   |
| 5    | Th. |               | 56 | 15 | 12    | 52    | 5     |      | 21    | 19       | 3    | 0               | S 48 | 16 | 44   | 25 | 26   |    | 47   |
| 6    | F.  | 17            | 0  | 12 | 13    | 53    | 0     |      | 28    | 1        | 53   | 1               | 55   | 18 | 7    | 8  | 25   |    | 49   |
| 7    | S.  |               | 4  | 8  | 14    | 53    | 56    |      | 35    | 15       | 1    | 2               | 58   | 19 | 6    | 21 | 42   |    | 51   |
| 8    | Su. |               | 8  | 5  | 15    | 54    | 52    |      | 42    | 28       | 26   | 3               | 52   | 18 | 54   | 5  | 14   |    | 53   |
| 9    | M.  |               | 12 | 1  | 16    | 55    | 49    |      | 48    | 12       | 26   | 7               | 4    | 35 | 20   | 19 | 2    |    | 55   |
| 10   | Tu. |               | 15 | 58 | 17    | 56    | 48    |      | 54    | 25       | 59   | 5               | 1    | 16 | 2    | 2  | 59   |    | 56   |
| 11   | W.  |               | 19 | 54 | 18    | 57    | 48    |      | 59    | 10       | 1    | 10              | 12   | 46 | 17   | 7  | 4    |    | 57   |
| 12   | Th. |               | 23 | 51 | 19    | 58    | 48    | 23   | 4     | 24       | 7    |                 | 1    | 8  | 45   | 1  | m 12 |    | 59   |
| 13   | F.  |               | 27 | 48 | 20    | 59    | 49    |      | 8     | 8        | m 16 | 4               | 33   | 4  | 15   | 15 | 21   | 4  | 1    |
| 14   | S.  |               | 31 | 44 | 22    | 0     | 50    |      | 12    | 22       | 25   | 3               | 48   | 0  | S 29 | 29 | 29   |    | 3    |
| 15   | Su. |               | 35 | 41 | 23    | 1     | 53    |      | 16    | 6        | 32   | 2               | 50   | 5  | 12   | 13 | 35   |    | 5    |
| 16   | M.  |               | 39 | 37 | 24    | 2     | 56    |      | 19    | 20       | 36   | 1               | 42   | 9  | 37   | 27 | 37   |    | 7    |
| 17   | Tu. |               | 43 | 34 | 25    | 4     | 0     |      | 21    | 4        | m 36 | 0               | 28   | 13 | 30   | 11 | m 34 |    | 8    |
| 18   | W.  |               | 47 | 30 | 26    | 5     | 3     |      | 23    | 18       | 30   | 0               | N 47 | 16 | 35   | 25 | 25   |    | 9    |
| 19   | Th. |               | 51 | 27 | 27    | 6     | 10    |      | 25    | 2        | 17   | 1               | 59   | 18 | 41   | 9  | 7    |    | 10   |
| 20   | F.  |               | 55 | 23 | 28    | 7     | 15    |      | 26    | 15       | 53   | 3               | 2    | 19 | 41   | 22 | 37   |    | 12   |
| 21   | S.  |               | 59 | 20 | 29    | 8     | 22    |      | 27    | 29       | 17   | 4               | 54   | 32 | 5    | 5  | 54   |    | 13   |
| 22   | Su. | 18            | 3  | 17 | 0     | 9     | 28    |      | 27    | 12       | 27   | 4               | 33   | 18 | 20   | 18 | 56   |    | 14   |
| 23   | M.  |               | 7  | 13 | 1     | 10    | 35    |      | 26    | 25       | 20   |                 | 57   | 16 | 12   | 1  | m 41 |    | 15   |
| 24   | Tu. |               | 11 | 10 | 2     | 11    | 43    |      | 26    | 7        | m 57 | 5               | 6    | 13 | 18   | 14 | 9    |    | 16   |
| 25   | W.  |               | 15 | 6  | 3     | 12    | 50    |      | 24    | 20       | 18   |                 | 0    | 9  | 59   | 26 | 23   |    | 18   |
| 26   | Th. |               | 19 | 3  | 4     | 13    | 58    |      | 23    | 2        | x 25 | 4               | 41   | 6  | 15   | 8  | x 24 |    | 20   |
| 27   | F.  |               | 22 | 59 | 5     | 15    | 8     |      | 20    | 14       | 22   | 9               | 2    | 19 | 20   | 17 |      |    | 21   |
| 28   | S.  |               | 26 | 56 | 6     | 16    | 17    |      | 18    | 26       | 12   | 3               | 27   | 1  | N 41 | 2  | 7    |    | 22   |
| 29   | Su. |               | 30 | 52 | 7     | 17    | 25    |      | 15    | 8        | 7    | 2               | 36   | 5  | 35   | 13 | 57   |    | 24   |
| 30   | M.  |               | 33 | 49 | 8     | 18    | 35    |      | 11    | 19       | 55   | 1               | 39   | 9  | 19   | 25 | 55   |    | 25   |
| 31   | Tu. |               | 37 | 46 | 9     | 19    | 44    |      | 7     | 1        | 58   | 0               | 36   | 12 | 43   | 8  | 4    |    | 26   |

| Date | Ψ     |        | μ      |         | h      |         | λ      |       | δ      |         |
|------|-------|--------|--------|---------|--------|---------|--------|-------|--------|---------|
|      |       |        |        |         |        |         |        |       |        |         |
| 1    | 1N 43 | 11 S 7 | 0 N 39 | 17 N 56 | 1 N 21 | 21 S 21 | 1 N 10 | 8 S 7 | 0 N 23 | 15 S 59 |
| 3    |       | 9      |        |         |        | 23      |        | 17    |        | 22 16   |
| 5    |       | 10     |        | 57      |        | 25      |        | 25    |        | 21 48   |
| 7    |       | 11     |        |         |        | 27      |        | 33    |        | 20 17   |
| 9    |       | 12     |        | 58      |        | 28      |        | 40    |        | 19 35   |
| 11   |       | 13     |        | 59      |        | 30      | 11     | 47    |        | 18 57   |
| 13   |       | 14     | 18     | 0       |        | 31      |        | 54    |        | 16 18   |
| 15   |       | 15     |        | 1       |        | 32      | 9      | 1     |        | 15 41   |
| 17   |       | 16     |        | 2       |        | 33      |        | 7     |        | 14 19   |
| 19   |       | 17     | 40     | 3       |        | 34      | 12     | 12    |        | 13 22   |
| 21   |       | 18     |        | 4       |        | 35      |        | 19    |        | 12 42   |
| 23   |       | 19     |        | 5       |        | 36      | 13     | 25    |        | 10 20   |
| 25   |       | 20     |        | 6       |        | 37      |        | 31    |        | 9 19    |
| 27   | 44    | 21     |        | 7       | 20     | 38      |        | 36    |        | 8 37    |
| 29   |       |        |        | 8       |        | 39      | 14     | 41    |        | 7 54    |
| 31   |       | 22     |        | 9       |        | 41      |        | 45    |        | 5 21    |

| EPHEMERIS |            |      |    |    |     |    |    |    |    |    |    | DECEMBER 1957 |               |   |   |   |   |   |   |   |   |   |  | 25 |
|-----------|------------|------|----|----|-----|----|----|----|----|----|----|---------------|---------------|---|---|---|---|---|---|---|---|---|--|----|
| Date      | Longitudes |      |    |    |     |    |    |    |    |    |    |               | Lunar Aspects |   |   |   |   |   |   |   |   |   |  |    |
|           | ♈          | ♉    | ♊  | ♋  | ♌   | ♍  | ♎  | ♏  | ♐  | ♑  | ♒  | ♓             | ☾             | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 1         | 11         | 36   | 15 | 51 | 23  | 44 | 15 | m  | 1  | 25 | 19 | 28            | 26            | π | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 2         |            | R 35 |    | 59 |     | 58 | 15 |    | 43 | 26 | 12 | 29            | 44            | Δ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 3         |            | 34   | 16 |    | 6   | 24 | 9  | 16 | 25 | 27 | 6  | 1             | 1             | Δ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 4         |            | 33   |    | 14 |     | 20 | 17 | 6  | 27 | 59 | 2  | 16            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 5         |            | 32   |    | 22 |     | 31 | 17 | 46 | 28 | 51 | 3  | 29            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 6         |            | 31   |    | 30 |     | 41 | 18 | 27 | 29 | 42 | 4  | 39            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 7         |            | 30   |    | 37 |     | 51 | 19 | 8  | 0  | 32 | 5  | 44            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 8         |            | 29   |    | 44 | 25  | 1  | 19 | 49 | 1  | 21 | 6  | 44            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 9         |            | 28   |    | 50 |     | 11 | 20 | 30 | 2  | 10 | 7  | 45            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 10        |            | 27   |    | 55 |     | 22 | 21 | 11 | 2  | 5  | 8  | 38            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 11        |            | 26   | 17 |    |     | 32 | 21 | 52 | 3  | 45 | 9  | 26            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 12        |            | 24   |    | 9  |     | 42 | 22 | 33 | 4  | 31 | 10 | 7             |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 13        |            | 23   |    | 16 |     | 52 | 23 | 14 | 5  | 16 | 10 | 41            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 14        |            | 21   |    | 23 | 26  | 1  | 23 | 56 | 6  | 0  | 11 | 7             |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 15        |            | 20   |    | 30 |     | 10 | 24 | 37 | 6  | 43 | 11 | 25            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 16        |            | 18   |    | 37 |     | 19 | 25 | 18 | 7  | 25 | 11 | 32            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 17        |            | 17   |    | 44 |     | 29 | 25 | 59 | 8  | 6  | 11 | R 29          |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 18        |            | 15   |    | 51 |     | 39 | 26 | 40 | 8  | 46 | 11 | 15            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 19        |            | 14   |    | 58 |     | 48 | 27 | 22 | 9  | 24 | 10 | 48            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 20        |            | 12   | 18 | 5  |     | 57 | 28 | 3  | 10 | 2  | 10 | 10            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 21        |            | 10   |    | 12 | 27  | 6  | 28 | 44 | 10 | 37 | 9  | 21            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 22        |            | 8    |    | 19 |     | 16 | 29 | 26 | 11 | 11 | 8  | 21            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 23        |            | 7    |    | 26 |     | 25 | 0  | 7  | 11 | 44 | 7  | 12            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 24        |            | 5    |    | 33 |     | 34 | 0  | 49 | 12 | 16 | 5  | 57            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 25        |            | 3    |    | 40 |     | 42 | 1  | 30 | 12 | 45 | 4  | 36            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 26        |            | 1    |    | 47 |     | 50 | 2  | 12 | 13 | 14 | 3  | 14            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 27        |            | 0    |    | 54 |     | 58 | 2  | 5  | 13 | 40 | 1  | 52            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 28        | 10         | 58   | 19 |    | 128 | 6  | 3  | 35 | 14 | 5  | 0  | 34            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 29        |            | 56   |    | 8  |     | 14 | 4  | 17 | 14 | 28 | 29 | 22            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 30        |            | 54   |    | 15 |     | 23 | 4  | 5  | 14 | 48 | 28 | 17            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |
| 31        |            | 52   |    | 22 |     | 31 | 5  | 40 | 15 | 7  | 27 | 21            |               | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ | ☾ |  |    |

| Date | ☾      |         | ☽      |         | Mean<br>Ω | Date       | Time<br>H. M.             | Phenomena |
|------|--------|---------|--------|---------|-----------|------------|---------------------------|-----------|
|      | Lat.   | Decl.   | Lat.   | Decl.   |           |            |                           |           |
| 1    | 2 S 54 | 23 S 56 | 2 S 25 | 25 S 51 | 9 m 1     | 4 12 44    | ☾ at ☽                    |           |
| 3    | 47     | 29      | 23     | 49      | 8         | 54 7 11 46 | Full Moon. Decl. 19° N 2' |           |
| 5    | 40     | 23 0    | 17     | 41      | 48 14     | 9 33       | ☾ on Equator.             |           |
| 7    | 31     | 22 30   | 9      | 28      | 41        | 10 18      | ☾ at Perigee.             |           |
| 9    | 22     | 21 59   | 1 57   | 10      | 35        | 11 15      | ☾ at Last Quarter.        |           |
| 11   | 11     | 27      | 40     | 24 47   | 29        | 17 20 38   | ☾ at Ω                    |           |
| 13   | 0      | 20 53   | 19     | 20      | 22        | 19 16 0    | ☽ at ☽                    |           |
| 15   | 1 47   | 19 0    | 53     | 23 50   | 16        | 21         | Heli. setting of ☽ in W.  |           |
| 17   | 33     | 19 44   | 21     | 18      | 10        | 11 42      | New Moon. D. 19° S 32'    |           |
| 19   | 18     | 9       | 0 N 15 | 22 46   | 3         | 22 8 27    | ☾ enters ♊                |           |
| 21   | 1      | 18 34   | 44     | 23      | 7         | 57 25      | Heli. rising of ♊ in E.   |           |
| 23   | 0 44   | 17 58   | 1 33   | 21 42   | 51        | 27 20 44   | ☽ at Ω                    |           |
| 25   | 25     | 23      | 2 10   | 12      | 44        | 28 1 54    | ☾ on Equator.             |           |
| 27   | 0 4    | 16 47   | 39     | 20 47   | 38        | 9 6        | ☾ at Apogee.              |           |
| 29   | 0 N 18 | 13 59   | 28     | 32      | 29        | 10 20      | ☾ at First Quarter.       |           |
| 31   | 41     | 15 39   | 3 9    | 16      | 25        |            |                           |           |



| SUNRISE IN 1957         |           |     |      |      |      |      |      |      |      |      |      |
|-------------------------|-----------|-----|------|------|------|------|------|------|------|------|------|
| Months<br>and<br>Dates. | Latitudes |     |      |      |      |      |      |      |      |      |      |
|                         | +5°       | +8° | +11° | +14° | +17° | +20° | +23° | +26° | +29° | +32° | +35° |
| Jan. 6                  | 6         | 10  | 16   | 21   | 26   | 31   | 36   | 42   | 48   | 55   | 7    |
| 13                      | 11        | 16  | 21   | 26   | 31   | 36   | 44   | 50   | 56   | 1    | 8    |
| 20                      | 14        | 19  | 23   | 26   | 32   | 36   | 44   | 50   | 56   | 0    | 6    |
| 27                      | 16        | 19  | 24   | 27   | 31   | 35   | 42   | 46   | 50   | 6    | 3    |
| Feb. 3                  | 16        | 19  | 23   | 27   | 31   | 34   | 40   | 44   | 48   | 53   | 6    |
| 10                      | 16        | 19  | 22   | 25   | 29   | 31   | 36   | 40   | 44   | 48   | 52   |
| 17                      | 15        | 17  | 20   | 23   | 26   | 28   | 32   | 35   | 38   | 41   | 45   |
| 24                      | 14        | 16  | 18   | 20   | 22   | 24   | 26   | 29   | 31   | 34   | 37   |
| Mar. 3                  | 12        | 13  | 15   | 16   | 18   | 19   | 21   | 23   | 24   | 27   | 28   |
| 10                      | 8         | 9   | 10   | 12   | 13   | 14   | 15   | 19   | 17   | 18   | 19   |
| 17                      | 5         | 6   | 6    | 6    | 8    | 8    | 8    | 9    | 9    | 9    | 9    |
| 24                      | 3         | 2   | 2    | 2    | 2    | 2    | 2    | 1    | 0    | 0    | 0    |
| 31                      | 0         | 5   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| Apr. 7                  | 5         | 5   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| 14                      | 5         | 5   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| 21                      | 5         | 5   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| 28                      | 5         | 5   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| May 5                   | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 12                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 19                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 26                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| June 2                  | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 9                       | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 16                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 23                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 30                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| July 7                  | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 14                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 21                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 28                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| Aug. 4                  | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 11                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 18                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 25                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| Sep. 1                  | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 8                       | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 15                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 22                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 29                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| Oct. 6                  | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 13                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 20                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 27                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| Nov. 3                  | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 10                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 17                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 24                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| Dec. 1                  | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 8                       | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 15                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 22                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 29                      | 4         | 4   | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |

| SUNSET IN 1957         |           |     |      |      |      |      |      |      |      |      |      |
|------------------------|-----------|-----|------|------|------|------|------|------|------|------|------|
| Months<br>and<br>Dates | Latitudes |     |      |      |      |      |      |      |      |      |      |
|                        | +5°       | +8° | +11° | +14° | +17° | +20° | +23° | +26° | +29° | +32° | +35° |
| Jan. 6                 | 18        | 17  | 56   | 17   | 51   | 17   | 46   | 17   | 39   | 17   | 36   |
| 13                     | 4         | 59  | 54   | 50   | 45   | 42   | 34   | 29   | 23   | 17   | 9    |
| 20                     | 7         | 18  | 3    | 58   | 54   | 49   | 46   | 39   | 33   | 28   | 16   |
| 27                     | 9         | 6   | 18   | 2    | 57   | 53   | 44   | 39   | 34   | 28   | 23   |
| Feb. 3                 | 12        | 8   | 5    | 18   | 1    | 57   | 54   | 48   | 44   | 39   | 30   |
| 10                     | 13        | 10  | 7    | 3    | 18   | 0    | 57   | 52   | 49   | 45   | 37   |
| 17                     | 13        | 11  | 8    | 5    | 3    | 18   | 1    | 57   | 54   | 51   | 44   |
| 24                     | 13        | 11  | 9    | 7    | 5    | 3    | 18   | 1    | 58   | 56   | 50   |
| Mar. 3                 | 13        | 11  | 10   | 8    | 7    | 6    | 4    | 18   | 2    | 18   | 5    |
| 10                     | 12        | 11  | 11   | 10   | 9    | 8    | 7    | 6    | 5    | 18   | 4    |
| 17                     | 12        | 11  | 11   | 11   | 10   | 10   | 10   | 10   | 9    | 9    | 9    |
| 24                     | 10        | 11  | 11   | 11   | 12   | 12   | 12   | 13   | 13   | 14   | 14   |
| 31                     | 9         | 10  | 11   | 12   | 13   | 14   | 15   | 16   | 18   | 19   | 20   |
| Apr. 7                 | 8         | 10  | 12   | 12   | 14   | 16   | 18   | 20   | 21   | 23   | 25   |
| 14                     | 7         | 9   | 12   | 13   | 16   | 18   | 20   | 23   | 25   | 28   | 31   |
| 21                     | 7         | 9   | 12   | 15   | 17   | 19   | 23   | 26   | 29   | 32   | 36   |
| 28                     | 6         | 9   | 12   | 15   | 19   | 21   | 26   | 30   | 34   | 38   | 42   |
| May 5                  | 6         | 10  | 13   | 17   | 21   | 24   | 29   | 33   | 38   | 43   | 48   |
| 12                     | 6         | 10  | 13   | 19   | 24   | 26   | 33   | 38   | 42   | 48   | 54   |
| 19                     | 7         | 11  | 16   | 20   | 25   | 28   | 34   | 41   | 46   | 52   | 54   |
| 26                     | 8         | 13  | 18   | 23   | 28   | 31   | 39   | 44   | 50   | 57   | 19   |
| June 2                 | 10        | 15  | 20   | 25   | 31   | 34   | 42   | 48   | 54   | 19   | 1    |
| 9                      | 12        | 17  | 22   | 27   | 33   | 36   | 45   | 51   | 58   | 5    | 12   |
| 16                     | 13        | 18  | 24   | 29   | 35   | 38   | 47   | 53   | 19   | 0    | 8    |
| 23                     | 15        | 20  | 25   | 31   | 36   | 40   | 49   | 55   | 2    | 9    | 17   |
| 30                     | 16        | 21  | 26   | 32   | 37   | 41   | 50   | 55   | 3    | 10   | 18   |
| July 7                 | 17        | 22  | 27   | 32   | 38   | 41   | 50   | 56   | 3    | 10   | 17   |
| 14                     | 17        | 22  | 27   | 32   | 38   | 41   | 49   | 55   | 1    | 8    | 15   |
| 21                     | 18        | 22  | 27   | 31   | 36   | 40   | 47   | 51   | 18   | 58   | 5    |
| 28                     | 17        | 21  | 26   | 30   | 35   | 38   | 44   | 49   | 55   | 0    | 7    |
| Aug. 4                 | 16        | 19  | 23   | 28   | 32   | 34   | 41   | 46   | 50   | 18   | 56   |
| 11                     | 14        | 18  | 21   | 25   | 28   | 31   | 36   | 40   | 45   | 49   | 18   |
| 18                     | 12        | 15  | 18   | 21   | 24   | 26   | 31   | 34   | 38   | 42   | 46   |
| 25                     | 10        | 12  | 14   | 17   | 19   | 21   | 25   | 27   | 30   | 33   | 37   |
| Sep. 1                 | 6         | 8   | 10   | 12   | 14   | 16   | 18   | 20   | 24   | 25   | 28   |
| 8                      | 3         | 4   | 6    | 7    | 9    | 10   | 11   | 13   | 15   | 16   | 18   |
| 15                     | 0         | 1   | 1    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    |
| 22                     | 17        | 56  | 17   | 56   | 17   | 56   | 17   | 57   | 17   | 57   | 17   |
| 29                     | 53        | 52  | 52   | 52   | 51   | 51   | 51   | 50   | 49   | 49   | 48   |
| Oct. 6                 | 50        | 49  | 48   | 46   | 45   | 44   | 43   | 42   | 41   | 40   | 38   |
| 13                     | 47        | 45  | 44   | 42   | 40   | 39   | 37   | 35   | 33   | 31   | 29   |
| 20                     | 44        | 42  | 40   | 38   | 36   | 34   | 31   | 29   | 26   | 23   | 20   |
| 27                     | 42        | 40  | 37   | 34   | 32   | 30   | 26   | 22   | 19   | 16   | 12   |
| Nov. 3                 | 41        | 38  | 35   | 32   | 28   | 26   | 21   | 17   | 13   | 9    | 5    |
| 10                     | 41        | 38  | 34   | 30   | 26   | 23   | 17   | 13   | 9    | 4    | 16   |
| 17                     | 41        | 38  | 33   | 29   | 24   | 21   | 15   | 10   | 5    | 16   | 59   |
| 24                     | 42        | 38  | 33   | 29   | 24   | 17   | 14   | 8    | 3    | 57   | 50   |
| Dec. 1                 | 44        | 39  | 34   | 29   | 24   | 17   | 13   | 8    | 2    | 56   | 49   |
| 8                      | 46        | 41  | 36   | 31   | 26   | 23   | 15   | 8    | 2    | 55   | 48   |
| 15                     | 50        | 45  | 39   | 34   | 28   | 25   | 17   | 10   | 4    | 57   | 50   |
| 22                     | 53        | 48  | 43   | 37   | 32   | 28   | 20   | 13   | 7    | 17   | 0    |
| 29                     | 57        | 53  | 46   | 41   | 35   | 32   | 24   | 17   | 11   | 4    | 56   |



## Timings of Moonrise in 1957

| Date. | January |    |    |     |    |    | February |    |    |     |    |    | March |    |    |     |    |    | April |    |    |     |    |    |
|-------|---------|----|----|-----|----|----|----------|----|----|-----|----|----|-------|----|----|-----|----|----|-------|----|----|-----|----|----|
|       | 10°     |    |    | 20° |    |    | 30°      |    |    | 10° |    |    | 20°   |    |    | 30° |    |    | 10°   |    |    | 20° |    |    |
|       | H.      | M. | M. | H.  | M. | M. | H.       | M. | M. | H.  | M. | M. | H.    | M. | M. | H.  | M. | M. | H.    | M. | M. | H.  | M. | M. |
| 1     | 6       | 24 | 0  | 6   | 40 | 7  | 7        | 10 | 0  | 7   | 58 | 24 | 5     | 56 | 6  | 6   | 30 | 1  | 6     | 29 | 6  | 22  | 6  | 14 |
| 2     | 7       | 11 | 7  | 7   | 24 | 8  | 7        | 10 | 7  | 5   | 29 | 58 | 6     | 32 | 7  | 7   | 30 | 2  | 7     | 15 | 7  | 4   | 50 | 32 |
| 3     | 8       | 35 | 8  | 8   | 42 | 9  | 8        | 11 | 8  | 30  | 0  | 8  | 7     | 44 | 8  | 8   | 35 | 3  | 8     | 8  | 8  | 49  | 7  | 32 |
| 4     | 9       | 13 | 9  | 9   | 49 | 10 | 9        | 12 | 9  | 31  | 0  | 9  | 8     | 23 | 9  | 9   | 36 | 4  | 9     | 16 | 9  | 35  | 8  | 16 |
| 5     | 10      | 31 | 10 | 10  | 54 | 11 | 10       | 13 | 10 | 32  | 1  | 10 | 32    | 8  | 10 | 10  | 39 | 5  | 10    | 24 | 10 | 28  | 9  | 10 |
| 6     | 11      | 52 | 11 | 11  | 5  | 12 | 11       | 14 | 11 | 33  | 2  | 11 | 41    | 9  | 11 | 11  | 46 | 6  | 11    | 33 | 11 | 23  | 10 | 6  |
| 7     | 12      | 37 | 12 | 12  | 12 | 13 | 12       | 15 | 12 | 34  | 3  | 12 | 44    | 10 | 12 | 12  | 48 | 7  | 12    | 35 | 12 | 22  | 11 | 4  |
| 8     | 13      | 23 | 13 | 13  | 10 | 14 | 13       | 16 | 13 | 35  | 4  | 13 | 48    | 11 | 13 | 13  | 51 | 8  | 13    | 38 | 13 | 22  | 12 | 9  |
| 9     | 14      | 14 | 14 | 14  | 1  | 15 | 14       | 17 | 14 | 36  | 5  | 14 | 49    | 12 | 14 | 14  | 52 | 9  | 14    | 39 | 14 | 23  | 13 | 12 |
| 10    | 15      | 16 | 15 | 15  | 1  | 16 | 15       | 18 | 15 | 37  | 6  | 15 | 50    | 13 | 15 | 15  | 53 | 10 | 15    | 40 | 15 | 24  | 14 | 19 |
| 11    | 16      | 20 | 16 | 16  | 1  | 17 | 16       | 19 | 16 | 38  | 7  | 16 | 51    | 14 | 16 | 16  | 54 | 11 | 16    | 41 | 16 | 25  | 15 | 24 |
| 12    | 17      | 23 | 17 | 17  | 6  | 18 | 17       | 20 | 17 | 39  | 8  | 17 | 52    | 15 | 17 | 17  | 55 | 12 | 17    | 42 | 17 | 26  | 16 | 30 |
| 13    | 18      | 24 | 18 | 18  | 13 | 19 | 18       | 21 | 18 | 40  | 9  | 18 | 53    | 16 | 18 | 18  | 56 | 13 | 18    | 43 | 18 | 27  | 17 | 35 |
| 14    | 19      | 27 | 19 | 19  | 18 | 20 | 19       | 22 | 19 | 41  | 10 | 19 | 54    | 17 | 19 | 19  | 57 | 14 | 19    | 44 | 19 | 28  | 18 | 42 |
| 15    | 20      | 26 | 20 | 20  | 23 | 21 | 20       | 23 | 20 | 42  | 11 | 20 | 55    | 18 | 20 | 20  | 58 | 15 | 20    | 45 | 20 | 29  | 19 | 46 |
| 16    | 21      | 24 | 21 | 21  | 25 | 22 | 21       | 24 | 21 | 43  | 12 | 21 | 56    | 19 | 21 | 21  | 59 | 16 | 21    | 46 | 21 | 30  | 20 | 46 |
| 17    | 22      | 21 | 22 | 22  | 23 | 23 | 22       | 25 | 22 | 44  | 13 | 22 | 57    | 20 | 22 | 22  | 60 | 17 | 22    | 47 | 22 | 31  | 21 | 47 |
| 18    | 23      | 12 | 23 | 23  | 23 | 24 | 23       | 26 | 23 | 45  | 14 | 23 | 58    | 21 | 23 | 23  | 61 | 18 | 23    | 48 | 23 | 32  | 22 | 48 |
| 19    | 24      | 8  | 24 | 24  | 20 | 25 | 24       | 27 | 24 | 46  | 15 | 24 | 59    | 22 | 24 | 24  | 62 | 19 | 24    | 49 | 24 | 33  | 23 | 49 |
| 20    | 25      | 1  | 25 | 25  | 13 | 26 | 25       | 28 | 25 | 47  | 16 | 25 | 60    | 23 | 25 | 25  | 63 | 20 | 25    | 50 | 25 | 34  | 24 | 50 |
| 21    | 26      | 1  | 26 | 26  | 18 | 27 | 26       | 29 | 26 | 48  | 17 | 26 | 61    | 24 | 26 | 26  | 64 | 21 | 26    | 51 | 26 | 35  | 25 | 51 |
| 22    | 27      | 1  | 27 | 27  | 23 | 28 | 27       | 30 | 27 | 49  | 18 | 27 | 62    | 25 | 27 | 27  | 65 | 22 | 27    | 52 | 27 | 36  | 26 | 52 |
| 23    | 28      | 1  | 28 | 28  | 28 | 29 | 28       | 31 | 28 | 50  | 19 | 28 | 63    | 26 | 28 | 28  | 66 | 23 | 28    | 53 | 28 | 37  | 27 | 53 |
| 24    | 29      | 1  | 29 | 29  | 33 | 30 | 29       | 32 | 29 | 51  | 20 | 29 | 64    | 27 | 29 | 29  | 67 | 24 | 29    | 54 | 29 | 38  | 28 | 54 |
| 25    | 30      | 1  | 30 | 30  | 38 | 31 | 30       | 33 | 30 | 52  | 21 | 30 | 65    | 28 | 30 | 30  | 68 | 25 | 30    | 55 | 30 | 39  | 29 | 55 |
| 26    | 31      | 1  | 31 | 31  | 43 | 32 | 31       | 34 | 31 | 53  | 22 | 31 | 66    | 29 | 31 | 31  | 69 | 26 | 31    | 56 | 31 | 40  | 30 | 56 |
| 27    | 32      | 1  | 32 | 32  | 48 | 33 | 32       | 35 | 32 | 54  | 23 | 32 | 67    | 30 | 32 | 32  | 70 | 27 | 32    | 57 | 32 | 41  | 31 | 57 |
| 28    | 33      | 1  | 33 | 33  | 53 | 34 | 33       | 36 | 33 | 55  | 24 | 33 | 68    | 31 | 33 | 33  | 71 | 28 | 33    | 58 | 33 | 42  | 32 | 58 |
| 29    | 34      | 1  | 34 | 34  | 58 | 35 | 34       | 37 | 34 | 56  | 25 | 34 | 69    | 32 | 34 | 34  | 72 | 29 | 34    | 59 | 34 | 43  | 33 | 59 |
| 30    | 35      | 1  | 35 | 35  | 63 | 36 | 35       | 38 | 35 | 57  | 26 | 35 | 70    | 33 | 35 | 35  | 73 | 30 | 35    | 60 | 35 | 44  | 34 | 60 |
| 31    | 36      | 1  | 36 | 36  | 68 | 37 | 36       | 39 | 36 | 58  | 27 | 36 | 71    | 34 | 36 | 36  | 74 | 31 | 36    | 61 | 36 | 45  | 35 | 61 |

## Timings of Moonrise in 1957

| Date. | May |    |    |     |    |    | June |     |    |     |    |    | July |    |    |     |    |    | August |    |    |     |    |    |     |    |    |
|-------|-----|----|----|-----|----|----|------|-----|----|-----|----|----|------|----|----|-----|----|----|--------|----|----|-----|----|----|-----|----|----|
|       | 10° |    |    | 20° |    |    | 30°  |     |    | 10° |    |    | 20°  |    |    | 30° |    |    | 10°    |    |    | 20° |    |    | 30° |    |    |
|       | H.  | M. | M. | H.  | M. | M. | H.   | M.  | M. | H.  | M. | M. | H.   | M. | M. | H.  | M. | M. | H.     | M. | M. | H.  | M. | M. | H.  | M. | M. |
| 1     | 6   | 46 | 6  | 6   | 33 | 7  | 6    | 16  | 6  | 24  | 8  | 7  | 9    | 10 | 8  | 5   | 56 | 6  | 10     | 47 | 10 | 54  | 11 | 3  | 3   | 3  | 3  |
| 2     | 7   | 40 | 7  | 7   | 25 | 8  | 7    | 17  | 7  | 25  | 9  | 8  | 10   | 9  | 9  | 6   | 57 | 7  | 11     | 48 | 11 | 52  | 12 | 4  | 4   | 4  | 4  |
| 3     | 8   | 35 | 8  | 8   | 20 | 9  | 8    | 18  | 8  | 20  | 10 | 11 | 10   | 11 | 10 | 7   | 58 | 8  | 12     | 38 | 12 | 50  | 13 | 4  | 4   | 4  | 4  |
| 4     | 9   | 34 | 9  | 9   | 15 | 10 | 9    | 23  | 9  | 17  | 11 | 13 | 11   | 12 | 11 | 8   | 59 | 9  | 13     | 30 | 13 | 46  | 14 | 4  | 4   | 4  | 4  |
| 5     | 10  | 32 | 10 | 10  | 10 | 11 | 10   | 28  | 10 | 13  | 12 | 10 | 12   | 11 | 10 | 9   | 60 | 10 | 14     | 25 | 14 | 40  | 15 | 1  | 1   | 1  | 1  |
| 6     | 11  | 30 | 11 | 11  | 19 | 12 | 11   | 33  | 11 | 14  | 13 | 10 | 13   | 12 | 11 | 10  | 61 | 11 | 15     | 15 | 15 | 33  | 16 | 5  | 5   | 5  | 5  |
| 7     | 12  | 24 | 12 | 12  | 17 | 13 | 12   | 38  | 12 | 15  | 14 | 6  | 14   | 13 | 12 | 11  | 62 | 12 | 16     | 3  | 16 | 18  | 17 | 16 | 16  | 16 | 16 |
| 8     | 13  | 22 | 13 | 13  | 18 | 13 | 12   | 43  | 13 | 16  | 15 | 1  | 15   | 14 | 13 | 12  | 63 | 13 | 17     | 50 | 17 | 4   | 17 | 16 | 16  | 16 | 16 |
| 9     | 14  | 17 | 14 | 14  | 15 | 14 | 13   | 48  | 14 | 17  | 16 | 5  | 16   | 15 | 14 | 13  | 64 | 14 | 18     | 35 | 17 | 45  | 17 | 16 | 16  | 16 | 16 |
| 10    | 15  | 10 | 15 | 15  | 20 | 16 | 15   | 53  | 15 | 18  | 17 | 17 | 17   | 16 | 15 | 14  | 65 | 15 | 19     | 18 | 18 | 21  | 18 | 16 | 16  | 16 | 16 |
| 11    | 16  | 8  | 16 | 16  | 14 | 17 | 16   | 58  | 16 | 19  | 18 | 18 | 18   | 17 | 16 | 15  | 66 | 16 | 20     | 55 | 19 | 0   | 19 | 7  | 7   | 7  | 7  |
| 12    | 17  | 2  | 17 | 17  | 13 | 18 | 17   | 63  | 17 | 20  | 19 | 19 | 19   | 18 | 17 | 16  | 67 | 17 | 21     | 36 | 20 | 37  | 20 | 38 | 38  | 38 | 38 |
| 13    | 18  | 59 | 18 | 18  | 16 | 19 | 18   | 68  | 18 | 21  | 20 | 20 | 20   | 19 | 18 | 17  | 68 | 18 | 22     | 53 | 21 | 47  | 21 | 40 | 40  | 40 | 40 |
| 14    | 19  | 50 | 19 | 19  | 11 | 20 | 19   | 73  | 19 | 22  | 21 | 21 | 21   | 20 | 19 | 18  | 69 | 19 | 23     | 33 | 22 | 48  | 22 | 31 | 31  | 31 | 31 |
| 15    | 20  | 44 | 20 | 20  | 6  | 21 | 20   | 78  | 20 | 23  | 22 | 22 | 22   | 21 | 20 | 19  | 70 | 20 | 24     | 16 | 22 | 3   | 23 | 34 | 34  | 34 | 34 |
| 16    | 21  | 32 | 21 | 21  | 49 | 22 | 21   | 83  | 21 | 24  | 23 | 23 | 23   | 22 | 21 | 20  | 71 | 21 | 25     | 38 | 23 | 48  | 23 | 31 | 31  | 31 | 31 |
| 17    | 22  | 20 | 22 | 22  | 31 | 22 | 22   | 88  | 22 | 25  | 24 | 24 | 24   | 23 | 22 | 21  | 72 | 22 | 26     | 41 | 23 | 49  | 23 | 34 | 34  | 34 | 34 |
| 18    | 23  | 12 | 23 | 23  | 23 | 23 | 23   | 93  | 23 | 26  | 25 | 25 | 25   | 24 | 23 | 22  | 73 | 23 | 27     | 14 | 23 | 49  | 23 | 34 | 34  | 34 | 34 |
| 19    | 24  | 4  | 24 | 24  | 49 | 24 | 24   | 98  | 24 | 27  | 26 | 26 | 26   | 25 | 24 | 23  | 74 | 24 | 28     | 53 | 24 | 0   | 24 | 0  | 7   | 7  | 7  |
| 20    | 25  | 1  | 25 | 25  | 29 | 25 | 25   | 103 | 25 | 28  | 27 | 27 | 27   | 26 | 25 | 24  | 75 | 25 | 29     | 36 | 25 | 1   | 24 | 0  | 7   | 7  | 7  |
| 21    | 26  | 1  | 26 | 26  | 24 | 26 | 26   | 108 | 26 | 29  | 28 | 28 | 28   | 27 | 26 | 25  | 76 | 26 | 30     | 36 | 26 | 1   | 24 | 0  | 7   | 7  | 7  |
| 22    | 27  | 1  | 27 | 27  | 19 | 27 | 27   | 113 | 27 | 30  | 29 | 29 | 29   | 28 | 27 | 26  | 77 | 27 | 31     | 36 | 27 | 1   | 24 | 0  | 7   | 7  | 7  |
| 23    | 28  | 1  | 28 | 28  | 14 | 28 | 28   | 118 | 28 | 31  | 30 | 30 | 30   | 29 | 28 | 27  | 78 | 28 | 32     | 37 | 28 | 2   | 24 | 0  | 7   | 7  | 7  |
| 24    | 29  | 1  | 29 | 29  | 9  | 29 | 29   | 123 | 29 | 32  | 31 | 31 | 31   | 30 | 29 | 28  | 79 | 29 | 33     | 37 | 29 | 2   | 24 | 0  | 7   | 7  | 7  |
| 25    | 30  | 1  | 30 | 30  | 4  | 30 | 30   | 128 | 30 | 33  | 32 | 32 | 32   | 31 | 30 | 29  | 80 | 30 | 34     | 37 | 30 | 2   | 24 | 0  | 7   | 7  | 7  |
| 26    | 31  | 1  | 31 | 31  | 0  | 31 | 31   | 133 | 31 | 34  | 33 | 33 | 33   | 32 | 31 | 30  | 81 | 31 | 35     | 38 | 31 | 2   | 24 | 0  | 7   | 7  | 7  |
| 27    | 32  | 1  | 32 | 32  | 0  | 32 | 32   | 138 | 32 | 35  | 34 | 34 | 34   | 33 | 32 | 31  | 82 | 32 | 36     | 38 | 32 | 2   | 24 | 0  | 7   | 7  | 7  |
| 28    | 33  | 1  | 33 | 33  | 0  | 33 | 33   | 143 | 33 | 36  | 35 | 35 | 35   | 34 | 33 | 32  | 83 | 33 | 37     | 38 | 33 | 2   | 24 | 0  | 7   | 7  | 7  |
| 29    | 34  | 1  | 34 | 34  | 0  | 34 | 34   | 148 | 34 | 37  | 36 | 36 | 36   | 35 | 34 | 33  | 84 | 34 | 38     | 38 | 34 | 2   | 24 | 0  | 7   | 7  | 7  |
| 30    | 35  | 1  | 35 | 35  | 0  | 35 | 35   | 153 | 35 | 38  | 37 | 37 | 37   | 36 | 35 | 34  | 85 | 35 | 39     | 38 | 35 | 2   | 24 | 0  | 7   | 7  | 7  |
| 31    | 36  | 1  | 36 | 36  | 0  | 36 | 36   | 158 | 36 | 39  | 38 | 38 | 38   | 37 | 36 | 35  | 86 | 36 | 40     | 38 | 36 | 2   | 24 | 0  | 7   | 7  | 7  |



## Timings of Moonrise in 1957

| Date. | September |    |    | October |    |    | November |    |    | December |    |    |
|-------|-----------|----|----|---------|----|----|----------|----|----|----------|----|----|
|       | 10°       |    |    | 20°     |    |    | 30°      |    |    | 10°      |    |    |
|       | H.        | M. | M. | H.      | M. | M. | H.       | M. | M. | H.       | M. | M. |
| 1     | 12        | 12 | 36 | 12      | 36 | 12 | 12       | 36 | 12 | 12       | 36 | 12 |
| 2     | 13        | 12 | 36 | 13      | 36 | 13 | 13       | 36 | 13 | 13       | 36 | 13 |
| 3     | 14        | 12 | 36 | 14      | 36 | 14 | 14       | 36 | 14 | 14       | 36 | 14 |
| 4     | 15        | 12 | 36 | 15      | 36 | 15 | 15       | 36 | 15 | 15       | 36 | 15 |
| 5     | 16        | 12 | 36 | 16      | 36 | 16 | 16       | 36 | 16 | 16       | 36 | 16 |
| 6     | 17        | 12 | 36 | 17      | 36 | 17 | 17       | 36 | 17 | 17       | 36 | 17 |
| 7     | 18        | 12 | 36 | 18      | 36 | 18 | 18       | 36 | 18 | 18       | 36 | 18 |
| 8     | 19        | 12 | 36 | 19      | 36 | 19 | 19       | 36 | 19 | 19       | 36 | 19 |
| 9     | 20        | 12 | 36 | 20      | 36 | 20 | 20       | 36 | 20 | 20       | 36 | 20 |
| 10    | 21        | 12 | 36 | 21      | 36 | 21 | 21       | 36 | 21 | 21       | 36 | 21 |
| 11    | 22        | 12 | 36 | 22      | 36 | 22 | 22       | 36 | 22 | 22       | 36 | 22 |
| 12    | 23        | 12 | 36 | 23      | 36 | 23 | 23       | 36 | 23 | 23       | 36 | 23 |
| 13    | 24        | 12 | 36 | 24      | 36 | 24 | 24       | 36 | 24 | 24       | 36 | 24 |
| 14    | 25        | 12 | 36 | 25      | 36 | 25 | 25       | 36 | 25 | 25       | 36 | 25 |
| 15    | 26        | 12 | 36 | 26      | 36 | 26 | 26       | 36 | 26 | 26       | 36 | 26 |
| 16    | 27        | 12 | 36 | 27      | 36 | 27 | 27       | 36 | 27 | 27       | 36 | 27 |
| 17    | 28        | 12 | 36 | 28      | 36 | 28 | 28       | 36 | 28 | 28       | 36 | 28 |
| 18    | 29        | 12 | 36 | 29      | 36 | 29 | 29       | 36 | 29 | 29       | 36 | 29 |
| 19    | 30        | 12 | 36 | 30      | 36 | 30 | 30       | 36 | 30 | 30       | 36 | 30 |
| 20    | 31        | 12 | 36 | 31      | 36 | 31 | 31       | 36 | 31 | 31       | 36 | 31 |
| 21    | 1         | 13 | 37 | 1       | 37 | 1  | 1        | 37 | 1  | 1        | 37 | 1  |
| 22    | 2         | 13 | 37 | 2       | 37 | 2  | 2        | 37 | 2  | 2        | 37 | 2  |
| 23    | 3         | 13 | 37 | 3       | 37 | 3  | 3        | 37 | 3  | 3        | 37 | 3  |
| 24    | 4         | 13 | 37 | 4       | 37 | 4  | 4        | 37 | 4  | 4        | 37 | 4  |
| 25    | 5         | 13 | 37 | 5       | 37 | 5  | 5        | 37 | 5  | 5        | 37 | 5  |
| 26    | 6         | 13 | 37 | 6       | 37 | 6  | 6        | 37 | 6  | 6        | 37 | 6  |
| 27    | 7         | 13 | 37 | 7       | 37 | 7  | 7        | 37 | 7  | 7        | 37 | 7  |
| 28    | 8         | 13 | 37 | 8       | 37 | 8  | 8        | 37 | 8  | 8        | 37 | 8  |
| 29    | 9         | 13 | 37 | 9       | 37 | 9  | 9        | 37 | 9  | 9        | 37 | 9  |
| 30    | 10        | 13 | 37 | 10      | 37 | 10 | 10       | 37 | 10 | 10       | 37 | 10 |
| 31    | 11        | 13 | 37 | 11      | 37 | 11 | 11       | 37 | 11 | 11       | 37 | 11 |

## Geocentric position of Pluto and Mean Longitudes of the Sun and the Moon in 1957

| Month and Date. | Pluto  |        |        | Sun        |            |           | Moon      |  |  |  |
|-----------------|--------|--------|--------|------------|------------|-----------|-----------|--|--|--|
|                 | Long.  | Lat.   | Decl.  | Mean Long. | Mean Long. | Hor. Par. | Semi-Dia. |  |  |  |
| Jan.            | 1 0 13 | 11N 15 | 21N 54 | 280 38 54  | 279 59 51  | 54.5      | 14.8      |  |  |  |
|                 | 11 11  | 18     | 59     | 290 30 18  | 51 45 42   | 57.3      | 15.6      |  |  |  |
|                 | 29 29  | 20     | 6      | 300 21 41  | 183 31 32  | 59.0      | 16.1      |  |  |  |
|                 | 31 38  | 23     | 13     | 310 13 4   | 315 17 22  | 53.9      | 14.7      |  |  |  |
| Feb.            | 10 24  | 24     | 20     | 320 4 27   | 87 3 12    | 58.9      | 16.0      |  |  |  |
|                 | 20 9   | 25     | 26     | 329 55 51  | 218 49 3   | 57.5      | 15.7      |  |  |  |
| Mar.            | 2 28   | 54     | 25     | 339 47 14  | 350 34 53  | 54.2      | 14.8      |  |  |  |
|                 | 12 40  | 25     | 37     | 349 38 37  | 122 20 43  | 60.0      | 16.4      |  |  |  |
|                 | 22 27  | 24     | 40     | 359 30 2   | 254 6 34   | 56.0      | 15.3      |  |  |  |
| Apr.            | 1 16   | 23     | 43     | 9 21 25    | 25 52 24   | 55.2      | 15.1      |  |  |  |
|                 | 11 7   | 21     | 45     | 19 12 48   | 157 33 14  | 60.1      | 16.4      |  |  |  |
|                 | 21 1   | 19     | 45     | 29 4 10    | 2.9 24 4   | 54.8      | 14.9      |  |  |  |
| May             | 1 27   | 56     | 17     | 38 55 33   | 61 9 55    | 57.0      | 15.5      |  |  |  |
|                 | 11 55  | 14     | 42     | 48 46 56   | 192 55 45  | 59.2      | 16.1      |  |  |  |
|                 | 21 57  | 11     | 39     | 58 38 19   | 324 41 35  | 54.3      | 14.8      |  |  |  |
|                 | 31 28  | 2      | 9      | 68 29 43   | 6 27 26    | 58.9      | 16.0      |  |  |  |
| June            | 10 10  | 6      | 30     | 78 21 6    | 228 13 16  | 57.5      | 15.7      |  |  |  |
|                 | 20 20  | 5      | 25     | 88 12 29   | 359 59 6   | 54.4      | 14.8      |  |  |  |
|                 | 30 33  | 2      | 18     | 98 3 53    | 131 44 56  | 60.3      | 16.4      |  |  |  |
| July            | 10 47  | 1      | 11     | 107 55 16  | 263 30 47  | 55.8      | 15.2      |  |  |  |
|                 | 20 4   | 0      | 4      | 117 46 39  | 35 16 37   | 55.3      | 15.1      |  |  |  |
|                 | 30 22  | 10     | 59     | 127 38 3   | 167 2 27   | 60.6      | 16.5      |  |  |  |
| August          | 9 41   | 10     | 50     | 137 29 26  | 298 48 17  | 54.5      | 14.8      |  |  |  |
|                 | 19 58  | 58     | 43     | 147 20 49  | 70 34 8    | 56.7      | 15.4      |  |  |  |
|                 | 29 0   | 20     | 59     | 157 12 11  | 202 19 58  | 59.7      | 16.3      |  |  |  |
| Sep.            | 8 40   | 11     | 30     | 167 3 36   | 334 5 48   | 54.0      | 14.7      |  |  |  |
|                 | 18 58  | 2      | 25     | 176 55 0   | 105 51 39  | 58.2      | 15.9      |  |  |  |
|                 | 28 16  | 5      | 21     | 186 46 23  | 247 37 29  | 58.1      | 15.8      |  |  |  |
| Oct.            | 8 32   | 7      | 17     | 196 37 47  | 9 23 19    | 54.2      | 14.8      |  |  |  |
|                 | 18 47  | 11     | 15     | 206 29 10  | 141 9 9    | 59.4      | 16.2      |  |  |  |
|                 | 28 59  | 14     | 14     | 216 20 33  | 272 55 0   | 56.4      | 15.4      |  |  |  |
| Nov.            | 7 2    | 8      | 18     | 226 11 57  | 44 40 50   | 55.3      | 15.1      |  |  |  |
|                 | 17 2   | 15     | 22     | 236 3 23   | 176 23 40  | 59.7      | 16.2      |  |  |  |
|                 | 27 19  | 26     | 17     | 245 54 43  | 308 12 31  | 55.1      | 15.0      |  |  |  |
| Dec.            | 7 19   | 30     | 21     | 255 46 6   | 79 58 21   | 57.1      | 15.5      |  |  |  |
|                 | 17 R   | 34     | 25     | 265 37 30  | 211 44 11  | 58.9      | 16.0      |  |  |  |
|                 | 27 11  | 38     | 31     | 275 28 53  | 343 30 1   | 54.3      | 14.8      |  |  |  |
|                 | 31 8   | 40     | 34     | 280 24 35  | 36 12 22   | 54.9      | 15.0      |  |  |  |



(Calculated in I. S. T.)

| Date. | January. |            | February. |       | March. |       | April. |       | May. |       | June. |       |
|-------|----------|------------|-----------|-------|--------|-------|--------|-------|------|-------|-------|-------|
|       | Ti.      | Time.      | Ti.       | Time. | Ti.    | Time. | Ti.    | Time. | Ti.  | Time. | Ti.   | Time. |
| 1     | 30       | H. M. 7 45 | 1         | 5 29  | 30     | 21 43 | 1      | 16 6  | 1    | 5 19  | 3     | 11 33 |
| 2     | 1        | 9 56       | 2         | 7 59  | 1      | 23 54 | 2      | 16 59 | 2    | 4 48  | 4     | 9 6   |
| 3     | 2        | 12 20      | 3         | 10 23 | 2      | ..    | 3      | 17 26 | 3    | 3 54  | 5     | 6 40  |
| 4     | 3        | 14 53      | 4         | 12 37 | 2      | 1 52  | 4      | 17 28 | 4    | 2 37  | 6     | 4 12  |
| 5     | 4        | 17 27      | 5         | 14 29 | 3      | 3 33  | 5      | 17 6  | 5    | 1 1   | 7     | 1 49  |
| 6     | 5        | 19 56      | 6         | 15 55 | 4      | 4 50  | 6      | 16 12 | 6    | 23 10 | 8     | 23 37 |
| 7     | 6        | 22 8       | 7         | 16 43 | 5      | 5 41  | 7      | 14 52 | 7    | 21 5  | 9     | 21 35 |
| 8     | 7        | 23 55      | 8         | 16 45 | 6      | 5 59  | 8      | 13 5  | 8    | 18 50 | 10    | 19 46 |
| 9     | 8        | 0 0        | 9         | 16 3  | 7      | 5 42  | 9      | 10 49 | 9    | 16 30 | 11    | 18 15 |
| 10    | 8        | 0 59       | 10        | 14 32 | 8      | 4 40  | 10     | 8 14  | 10   | 14 4  | 12    | 17 2  |
| 11    | 9        | 1 22       | 11        | 12 18 | 9      | 2 58  | 11     | 5 21  | 11   | 11 40 | 13    | 16 10 |
| 12    | 10       | 0 53       | 12        | 9 19  | 10     | 0 43  | 12     | 2 21  | 12   | 9 25  | 14    | 15 38 |
|       | 11       | 23 34      |           |       | 11     | 21 53 | 13     | 23 18 | 13   | 7 20  | 15    | 15 33 |
| 13    | 12       | 21 31      | 13        | 5 50  | 12     | 18 40 | 14     | 20 16 | 14   | 5 32  | 16    | 15 58 |
| 14    | 13       | 18 44      | 14        | 2 3   | 13     | 15 42 | 15     | 17 43 | 15   | 4 8   | 17    | 16 50 |
|       |          |            | 15        | 22 9  |        |       |        |       |      |       |       |       |
| 15    | 14       | 15 29      | 16        | 18 17 | 14     | 11 28 | 16     | 15 27 | 16   | 3 13  | 18    | 18 11 |
| 16    | 15       | 11 52      | 17        | 14 36 | 15     | 7 53  | 17     | 13 43 | 17   | 2 50  | 19    | 19 59 |
| 17    | 16       | 8 1        | 18        | 11 22 | 16     | 4 35  | 18     | 12 37 | 18   | 3 3   | 20    | 22 6  |
| 18    | 17       | 4 16       | 19        | 8 47  | 17     | 1 43  | 19     | 12 16 | 19   | 3 54  | 21    | ..    |
|       |          |            |           |       | 18     | 23 26 |        |       |      |       |       |       |
| 19    | 18       | 0 45       | 20        | 6 55  | 19     | 21 52 | 20     | 12 42 | 20   | 5 19  | 21    | 0 26  |
|       | 19       | 21 34      |           |       |        |       |        |       |      |       |       |       |
| 20    | 20       | 18 55      | 21        | 5 53  | 20     | 21 5  | 21     | 13 49 | 21   | 7 11  | 22    | 2 46  |
| 21    | 21       | 16 56      | 22        | 5 42  | 21     | 21 7  | 22     | 15 31 | 22   | 9 25  | 23    | 4 53  |
| 22    | 22       | 15 41      | 23        | 6 17  | 22     | 21 59 | 23     | 17 40 | 23   | 11 46 | 24    | 6 34  |
| 23    | 23       | 15 14      | 24        | 7 37  | 23     | 23 29 | 24     | 20 2  | 24   | 13 59 | 25    | 7 42  |
| 24    | 24       | 15 32      | 25        | 9 29  | 24     | ..    | 25     | 22 25 | 25   | 15 56 | 26    | 8 4   |
| 25    | 25       | 16 27      | 26        | 11 45 | 24     | 1 33  | 26     | ..    | 26   | 17 24 | 27    | 7 40  |
| 26    | 26       | 17 57      | 27        | 14 15 | 25     | 3 55  | 26     | 0 38  | 27   | 18 17 | 28    | 6 31  |
| 27    | 27       | 19 52      | 28        | 16 50 | 26     | 6 27  | 27     | 2 32  | 28   | 18 30 | 29    | 4 42  |
| 28    | 28       | 22 4       | 29        | 19 18 | 27     | 8 55  | 28     | 3 58  | 29   | 18 7  | 30    | 2 22  |
|       |          |            |           |       |        |       |        |       |      |       | 30    | 2 22  |
| 29    | 29       | ..         |           |       | 28     | 11 12 | 29     | 4 56  | 30   | 17 7  | 1     | 23 36 |
| 30    | 29       | 0 25       |           |       | 29     | 13 11 | 30     | 5 21  | 1    | 15 38 | 2     | 20 35 |
| 31    | 30       | 2 56       |           |       | 30     | 14 49 |        |       | 2    | 13 27 | 3     | 17 29 |

(Calculated in I. S. T.)—(concl'd.)

| Date. | July. |       | August. |       | September. |       | October. |       | November. |       | December. |       |
|-------|-------|-------|---------|-------|------------|-------|----------|-------|-----------|-------|-----------|-------|
|       | Ti.   | Time. | Ti.     | Time. | Ti.        | Time. | Ti.      | Time. | Ti.       | Time. | Ti.       | Time. |
| 1     | 4     | 14 24 | 6       | 14 45 | 8          | 22 11 | 8        | 11 52 | 9         | 7 33  | 9         | 4 19  |
| 2     | 5     | 11 28 | 7       | 13 33 | 9          | 22 43 | 9        | 13 22 | 10        | 10 3  | 10        | 6 47  |
| 3     | 6     | 8 53  | 8       | 11 58 | 10         | 23 53 | 10       | 15 21 | 11        | 12 35 | 11        | 8 55  |
| 4     | 7     | 6 40  | 9       | 11 31 | 11         | ..    | 11       | 17 39 | 12        | 14 59 | 12        | 10 35 |
| 5     | 8     | 4 52  | 10      | 11 40 | 11         | 1 29  | 12       | 20 6  | 13        | 17 3  | 13        | 11 37 |
| 6     | 9     | 3 31  | 11      | 12 21 | 12         | 3 25  | 13       | 22 36 | 14        | 18 44 | 14        | 12 0  |
| 7     | 10    | 2 37  | 12      | 13 25 | 13         | 5 37  | 14       | ..    | 15        | 19 59 | 15        | 11 46 |
| 8     | 11    | 2 10  | 13      | 14 54 | 14         | 7 58  | 14       | 1 0   | 16        | 20 46 | 16        | 11 0  |
| 9     | 12    | 2 9   | 14      | 16 39 | 15         | 10 27 | 15       | 3 11  | 17        | 21 4  | 17        | 9 45  |
| 10    | 13    | 2 30  | 15      | 18 41 | 16         | 12 53 | 16       | 5 8   | 18        | 20 55 | 18        | 8 12  |
| 11    | 14    | 3 15  | 16      | 20 54 | 17         | 15 12 | 17       | 6 45  | 19        | 20 22 | 19        | 6 23  |
| 12    | 15    | 4 23  | 17      | 23 18 | 18         | 17 22 | 18       | 7 59  | 20        | 19 24 | 20        | 4 25  |
| 13    | 16    | 5 53  | 18      | ..    | 19         | 19 13 | 19       | 8 46  | 21        | 18 4  | 21        | 2 23  |
| 14    | 17    | 7 43  | 18      | 1 46  | 20         | 20 38 | 20       | 9 1   | 22        | 16 25 | 22        | 0 18  |
|       |       |       |         |       |            |       |          |       | 23        | 22 16 | 23        | 22 16 |
| 15    | 18    | 9 51  | 19      | 4 9   | 21         | 21 29 | 21       | 8 45  | 23        | 14 27 | 24        | 20 17 |
| 16    | 19    | 12 13 | 20      | 6 20  | 22         | 21 40 | 22       | 7 51  | 24        | 12 16 | 25        | 18 23 |
| 17    | 20    | 14 40 | 21      | 8 10  | 23         | 21 5  | 23       | 6 23  | 25        | 9 51  | 26        | 16 36 |
| 18    | 21    | 16 58 | 22      | 9 25  | 24         | 19 45 | 24       | 4 23  | 26        | 7 19  | 27        | 14 59 |
| 19    | 22    | 18 57 | 23      | 9 56  | 25         | 17 44 | 25       | 1 55  | 27        | 4 46  | 28        | 13 34 |
|       |       |       |         |       |            |       | 26       | 23 3  |           |       |           |       |
| 20    | 23    | 20 24 | 24      | 9 36  | 26         | 5 6   | 27       | 19 55 | 28        | 2 16  | 29        | 12 27 |
| 21    | 24    | 21 11 | 25      | 8 26  | 27         | 11 56 | 28       | 16 39 | 29        | 23 56 |           |       |
| 22    | 25    | 21 9  | 26      | 6 26  | 28         | 8 41  | 29       | 13 22 | 30        | 21 53 | 30        | 11 42 |
|       |       |       |         |       |            |       |          |       | 1         | 20 14 | 1         | 11 24 |
| 23    | 26    | 20 18 | 27      | 3 45  | 29         | 4 35  | 30       | 10 15 | 2         | 19 7  | 2         | 11 42 |
| 24    | 27    | 18 39 | 28      | 0 32  | 30         | 0 51  | 1        | 7 26  | 3         | 18 35 | 3         | 12 32 |
|       |       |       | 29      | 20 54 | 1          | 21 15 |          |       |           |       |           |       |
| 25    | 28    | 16 17 | 30      | 17 3  | 2          | 17 58 | 2        | 5 6   | 4         | 18 46 | 4         | 13 59 |
| 26    | 29    | 13 21 | 1       | 13 9  | 3          | 15 9  | 3        | 3 20  | 5         | 19 40 | 5         | 15 59 |
| 27    | 30    | 10 0  | 2       | 9 25  | 4          | 12 56 | 4        | 2 16  | 6         | 21 11 | 6         | 18 24 |
| 28    | 1     | 6 23  | 3       | 6 2   | 5          | 11 30 | 5        | 1 56  | 7         | 23 18 | 7         | 21 1  |
| 29    | 2     | 2 43  | 4       | 3 8   | 6          | 10 52 | 6        | 2 22  | 8         | ..    | 8         | 23 36 |
|       | 3     | 23 12 |         |       |            |       |          |       |           |       |           |       |
| 30    | 4     | 19 58 | 5       | 0 50  | 7          | 11 0  | 7        | 3 33  | 8         | 1 45  | 9         | ..    |
|       |       |       | 6       | 23 12 |            |       |          |       |           |       |           |       |
| 31    | 5     | 17 6  | 7       | 22 20 |            |       | 8        | 5 20  |           |       | 9         | 1 55  |



#### 4 Time when the Moon enters the Zodiacal Signs in 1957

| January |       |       | February |       |       | March |       |       | April |       |       | May   |       |       | June  |       |       |
|---------|-------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Sign.   | Date. | Time. | Sign.    | Date. | Time. | Sign. | Date. | Time. | Sign. | Date. | Time. | Sign. | Date. | Time. | Sign. | Date. | Time. |
|         |       | H. M. |          |       | H. M. |       |       | H. M. |       |       | H. M. |       |       | H. M. |       |       | H. M. |
| 2       | 22    | 57    | x        | 1     | 17    | 51    | 7     | 3     | 12    | 2     | 2     | 4     | 39    | 11    | 19    | 15    | 11    |
| 5       | 11    | 34    | 7        | 4     | 6     | 12    | 8     | 5     | 22    | 48    | 11    | 13    | 0     | 4     | 0     | 36    | 4     |
| 7       | 23    | 50    | 8        | 6     | 17    | 4     | 11    | 8     | 7     | 31    | 6     | 19    | 4     | 6     | 4     | 22    | 6     |
| 10      | 9     | 55    | 11       | 9     | 0     | 59    | 10    | 10    | 13    | 14    | 8     | 22    | 52    | 8     | 7     | 6     | 8     |
| 12      | 16    | 10    | 12       | 11    | 5     | 4     | 12    | 12    | 15    | 41    | 11    | 0     | 43    | 10    | 9     | 27    | 11    |
| 14      | 18    | 32    | 13       | 13    | 5     | 45    | 14    | 14    | 15    | 50    | 13    | 1     | 41    | 12    | 12    | 19    | 13    |
| 16      | 18    | 20    | 15       | 14    | 4     | 47    | 16    | 16    | 15    | 30    | 15    | 3     | 19    | 14    | 16    | 46    | 15    |
| 18      | 17    | 36    | 16       | 17    | 4     | 24    | 18    | 18    | 16    | 49    | 17    | 7     | 16    | 16    | 23    | 48    | 18    |
| 20      | 18    | 30    | 17       | 19    | 6     | 20    | 20    | 21    | 20    | 29    | 19    | 14    | 40    | 19    | 9     | 44    | 20    |
| 22      | 22    | 39    | 18       | 21    | 12    | 53    | 22    | 23    | 21    | 7     | 22    | 1     | 26    | 21    | 21    | 50    | 23    |
| 25      | 6     | 25    | 19       | 23    | 23    | 1     | 25    | 17    | 43    | 24    | 13    | 53    | 24    | 10    | 2     | 11    | 25    |
| 27      | 17    | 3     | 20       | 26    | 11    | 14    | 28    | 6     | 29    | 7     | 27    | 1     | 49    | 26    | 20    | 9     | 27    |
| 30      | 5     | 13    | 21       | 28    | 23    | 54    | 30    | 18    | 24    | 29    | 11    | 48    | 29    | 3     | 13    | 11    | 29    |

| July | August | September | October | November | December |
|------|--------|-----------|---------|----------|----------|
| 1    | 18     | 56        | 11      | 48       | 1        |
| 3    | 20     | 49        | 13      | 4        | 11       |
| 6    | 6      | 52        | 8       | 15       | 3        |
| 10   | 15     | 6         | 10      | 7        | 6        |
| 13   | 1      | 15        | 12      | 9        | 8        |
| 15   | 13     | 3         | 15      | 16       | 13       |
| 18   | 1      | 44        | 17      | 18       | 14       |
| 20   | 13     | 27        | 20      | 23       | 18       |
| 22   | 21     | 58        | 22      | 25       | 21       |
| 25   | 2      | 30        | 25      | 28       | 23       |
| 27   | 3      | 44        | 27      | 31       | 26       |
| 29   | 3      | 30        | 29      | 28       | 28       |
| 31   | 3      | 54        | 31      | 29       | 31       |

## Distances apart of all ♂s and ♀s in 1957

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| Date.    | Aspect | Time. | Dis-<br>tance. | Date  | Aspect | Time. | Dis-<br>tance. | Date. | pect. | Time. | Dis-<br>tance. |    |    |
|----------|--------|-------|----------------|-------|--------|-------|----------------|-------|-------|-------|----------------|----|----|
| January  |        |       |                | March |        |       |                | May   |       |       |                |    |    |
| 1        | D      | 7     | 45             | 3     | 22     | 1     | 21             | 22    | D     | 5     | 19             | 6  | 9  |
| 2        | D      | 17    | 34             | 3     | 47     | 2     | 21             | 24    | D     | 9     | 51             | 16 | 3  |
| 3        | D      | 10    | 47             | 5     | 11     | 3     | 21             | 26    | D     | 11    | 16             | 3  | 23 |
| 4        | D      | 11    | 50             | 15    | 19     | 4     | 21             | 29    | D     | 13    | 45             | 8  | 15 |
| 5        | D      | 3     | 11             | 3     | 54     | 5     | 21             | 30    | D     | 5     | 2              | 0  | 54 |
| 8        | D      | 11    | 54             | 2     | 37     | 6     | 21             |       | D     | 13    | 39             | 1  | 12 |
| 9        | D      | 14    | 29             | 3     | 38     | 7     | 21             |       | D     | 21    | 40             | 1  | 14 |
| 10       | D      | 20    | 41             | 2     | 53     | 11    | 21             |       |       |       |                |    |    |
| 13       | D      | 10    | 19             | 0     | 28     | 12    | 21             |       |       |       |                |    |    |
| 14       | D      | 22    | 27             | 2     | 37     | 14    | 21             |       |       |       |                |    |    |
| 15       | D      | 17    | 29             | 0     | 22     | 15    | 21             |       |       |       |                |    |    |
| 16       | D      | 11    | 51             | 4     | 17     | 16    | 21             |       |       |       |                |    |    |
| 17       | D      | 2     | 41             | 5     | 19     | 17    | 21             |       |       |       |                |    |    |
| 18       | D      | 17    | 27             | 15    | 16     | 18    | 21             |       |       |       |                |    |    |
| 20       | D      | 21    | 28             | 4     | 8      | 19    | 21             |       |       |       |                |    |    |
| 22       | D      | 3     | 13             | 2     | 48     | 21    | 21             |       |       |       |                |    |    |
| 23       | D      | 15    | 51             | 1     | 43     | 22    | 21             |       |       |       |                |    |    |
| 25       | D      | 3     | 18             | 5     | 24     | 23    | 21             |       |       |       |                |    |    |
| 26       | D      | 11    | 32             | 0     | 37     | 25    | 21             |       |       |       |                |    |    |
| 28       | D      | 5     | 6              | 0     | 16     | 28    | 21             |       |       |       |                |    |    |
| 29       | D      | 20    | 51             | 1     | 49     | 30    | 21             |       |       |       |                |    |    |
| 30       | D      | 9     | 55             | 4     | 16     | 31    | 21             |       |       |       |                |    |    |
| 31       | D      | 14    | 45             | 5     | 8      |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
| February |        |       |                | April |        |       |                | June  |       |       |                |    |    |
| 1        | D      | 17    | 5              | 15    | 17     | 1     | 11             | 22    | D     | 5     | 19             | 6  | 9  |
| 2        | D      | 2     | 16             | 2     | 25     | 2     | 11             | 24    | D     | 9     | 51             | 16 | 3  |
| 4        | D      | 8     | 43             | 3     | 16     | 3     | 11             | 26    | D     | 11    | 16             | 3  | 23 |
| 6        | D      | 21    | 58             | 3     | 19     | 4     | 11             | 29    | D     | 13    | 45             | 8  | 15 |
| 7        | D      | 3     | 55             | 0     | 43     | 5     | 11             | 30    | D     | 5     | 2              | 0  | 54 |
| 9        | D      | 23    | 46             | 0     | 1      | 6     | 11             |       | D     | 13    | 39             | 1  | 12 |
| 13       | D      | 6     | 43             | 5     | 11     | 9     | 11             |       | D     | 21    | 40             | 1  | 14 |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
| 14       | D      | 22    | 9              | 4     | 45     | 10    | 11             |       |       |       |                |    |    |
| 15       | D      | 3     | 38             | 15    | 26     | 12    | 11             |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
| 17       | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
| 19       | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
| 20       | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
| 22       | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
| 26       | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
| 28       | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             | 5     | 11     |       |                |       |       |       |                |    |    |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
|          | D      | 22    | 9              | 4     | 45     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 38             | 15    | 26     |       |                |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
|          | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
|          | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
|          | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
|          | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             | 5     | 11     |       |                |       |       |       |                |    |    |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
|          | D      | 22    | 9              | 4     | 45     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 38             | 15    | 26     |       |                |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
|          | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
|          | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
|          | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
|          | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             | 5     | 11     |       |                |       |       |       |                |    |    |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
|          | D      | 22    | 9              | 4     | 45     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 38             | 15    | 26     |       |                |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
|          | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
|          | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
|          | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
|          | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             | 5     | 11     |       |                |       |       |       |                |    |    |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
|          | D      | 22    | 9              | 4     | 45     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 38             | 15    | 26     |       |                |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
|          | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
|          | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
|          | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
|          | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             | 5     | 11     |       |                |       |       |       |                |    |    |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
|          | D      | 22    | 9              | 4     | 45     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 38             | 15    | 26     |       |                |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
|          | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
|          | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
|          | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
|          | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             | 5     | 11     |       |                |       |       |       |                |    |    |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
|          | D      | 22    | 9              | 4     | 45     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 38             | 15    | 26     |       |                |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
|          | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
|          | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
|          | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
|          | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             | 5     | 11     |       |                |       |       |       |                |    |    |
|          | D      | 12    | 24             | 5     | 7      |       |                |       |       |       |                |    |    |
|          | D      | 21    | 9              | 5     | 38     |       |                |       |       |       |                |    |    |
|          | D      | 22    | 9              | 4     | 45     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 38             | 15    | 26     |       |                |       |       |       |                |    |    |
|          | D      | 19    | 49             | 0     | 24     |       |                |       |       |       |                |    |    |
|          | D      | 4     | 50             | 2     | 33     |       |                |       |       |       |                |    |    |
|          | D      | 11    | 2              | 3     | 41     |       |                |       |       |       |                |    |    |
|          | D      | 7     | 8              | 0     | 14     |       |                |       |       |       |                |    |    |
|          | D      | 14    | 48             | 0     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 18    | 3              | 6     | 13     |       |                |       |       |       |                |    |    |
|          | D      | 9     | 35             | 10    | 13     |       |                |       |       |       |                |    |    |
|          | D      | 20    | 50             | 6     | 36     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 45             | 15    | 47     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 56             | 4     | 48     |       |                |       |       |       |                |    |    |
|          | D      | 17    | 5              | 15    | 17     |       |                |       |       |       |                |    |    |
|          | D      | 2     | 16             | 2     | 25     |       |                |       |       |       |                |    |    |
|          | D      | 8     | 43             | 3     | 16     |       |                |       |       |       |                |    |    |
|          | D      | 21    | 58             | 3     | 19     |       |                |       |       |       |                |    |    |
|          | D      | 3     | 55             | 0     | 43     |       |                |       |       |       |                |    |    |
|          | D      | 23    | 46             | 0     | 1      |       |                |       |       |       |                |    |    |
|          | D      | 6     | 43             |       |        |       |                |       |       |       |                |    |    |



| Date.  | Aspect              | Time.        | Distance. | Date.   | Aspect              | Time.        | Distance. | Date.    | Aspect              | Time.        | Distance. |
|--------|---------------------|--------------|-----------|---------|---------------------|--------------|-----------|----------|---------------------|--------------|-----------|
| August |                     |              |           | October |                     |              |           | November |                     |              |           |
| 15     | D $\delta$ $\theta$ | H. M. 10 6 5 | 56        | 2       | D $\delta$ $\theta$ | H. M. 6 30 2 | 51        | 3        | D $\delta$ $\theta$ | H. M. 6 56 2 | 20        |
| 16     | D $\delta$ $\theta$ | 3 13 6       | 41        | 3       | D $\delta$ $\theta$ | 2 41 0       | 15        | 5        | D $\delta$ $\theta$ | 10 43 14     | 52        |
| 18     | D $\delta$ $\theta$ | 2 19 15      | 4         | 5       | D $\delta$ $\theta$ | 22 0 9       | 11        | 8        | D $\delta$ $\theta$ | 22 26 1      | 4         |
| 20     | D $\delta$ $\theta$ | 18 13 0      | 30        | 9       | D $\delta$ $\theta$ | 13 19 5      | 27        | 10       | D $\delta$ $\theta$ | 3 12 2       | 4         |
| 23     | D $\delta$ $\theta$ | 4 58 3       | 10        | 10      | D $\delta$ $\theta$ | 18 41 4      | 46        | 13       | D $\delta$ $\theta$ | 14 57 3      | 13        |
| 26     | D $\delta$ $\theta$ | 4 26 0       | 10        | 11      | D $\delta$ $\theta$ | 19 3 14      | 36        | 14       | D $\delta$ $\theta$ | 22 8 3       | 39        |
| 27     | D $\delta$ $\theta$ | 11 14 3      | 26        | 12      | D $\delta$ $\theta$ | 0 1 5        | 8         | 15       | D $\delta$ $\theta$ | 11 46 2      | 23        |
| 28     | D $\delta$ $\theta$ | 2 22 3       | 54        | 13      | D $\delta$ $\theta$ | 6 44 2       | 12        | 16       | D $\delta$ $\theta$ | 0 24 4       | 22        |
| 29     | D $\delta$ $\theta$ | 13 50 6      | 3         | 14      | D $\delta$ $\theta$ | 16 15 3      | 37        | 17       | D $\delta$ $\theta$ | 14 35 1      | 13        |
| 30     | D $\delta$ $\theta$ | 2 30 6       | 8         | 15      | D $\delta$ $\theta$ | 20 50 2      | 40        | 18       | D $\delta$ $\theta$ | 0 0 0        | 50        |
|        | D $\delta$ $\theta$ | 2 54 5       | 33        | 16      | D $\delta$ $\theta$ | 20 33 0      | 28        | 19       | D $\delta$ $\theta$ | 18 43 0      | 25        |
|        | D $\delta$ $\theta$ | 12 41 0      | 37        | 17      | D $\delta$ $\theta$ | 16 48 0      | 20        | 20       | D $\delta$ $\theta$ | 16 37 0      | 25        |
| July   |                     |              |           | 18      | D $\delta$ $\theta$ | 7 10 10      | 10        | 21       | D $\delta$ $\theta$ | 2 48 5       | 50        |
| 1      | D $\delta$ $\theta$ | 16 35 15     | 7         | 19      | D $\delta$ $\theta$ | 4 23 5       | 33        | 22       | D $\delta$ $\theta$ | 12 51 15     | 1         |
| 3      | D $\delta$ $\theta$ | 11 52 1      | 32        | 20      | D $\delta$ $\theta$ | 14 14 49     | 24        | 23       | D $\delta$ $\theta$ | 5 2 4        | 2         |
| 4      | D $\delta$ $\theta$ | 11 2 1       | 20        | 21      | D $\delta$ $\theta$ | 17 3 4       | 24        | 24       | D $\delta$ $\theta$ | 11 54 3      | 6         |
| 6      | D $\delta$ $\theta$ | 0 29 3       | 1         | 22      | D $\delta$ $\theta$ | 7 41 5       | 13        | 25       | D $\delta$ $\theta$ | 16 13 2      | 25        |
| 8      | D $\delta$ $\theta$ | 10 58 0      | 58        | 23      | D $\delta$ $\theta$ | 5 42 0       | 8         | 26       | D $\delta$ $\theta$ | 8 52 1       | 34        |
| 12     | D $\delta$ $\theta$ | 22 47 0      | 9         | 24      | D $\delta$ $\theta$ | 19 31 3      | 54        | 27       | D $\delta$ $\theta$ | 10 15 1      | 0         |
| 13     | D $\delta$ $\theta$ | 4 23 4       | 50        | 25      | D $\delta$ $\theta$ | 4 28 1       | 47        | 28       | D $\delta$ $\theta$ | 14 42 2      | 10        |
| 14     | D $\delta$ $\theta$ | 1 15 6       | 35        | 26      | D $\delta$ $\theta$ | 15 5 2       | 37        | 29       | D $\delta$ $\theta$ | 9 33 0       | 36        |
| 15     | D $\delta$ $\theta$ | 13 34 5      | 21        | 27      | D $\delta$ $\theta$ | 15 5 2       | 37        |          | D $\delta$ $\theta$ | 11 45 1      | 20        |
| 16     | D $\delta$ $\theta$ | 5 7 6        | 25        | 28      | D $\delta$ $\theta$ | 9 18 0       | 38        |          | D $\delta$ $\theta$ | 6 12 1       | 35        |
| 17     | D $\delta$ $\theta$ | 7 46 6       | 28        | 29      | D $\delta$ $\theta$ | 8 41 5       | 21        |          | D $\delta$ $\theta$ | 9 38 1       | 21        |
| 20     | D $\delta$ $\theta$ | 10 52 14     | 56        |         | D $\delta$ $\theta$ | 17 27 4      | 33        |          | D $\delta$ $\theta$ | 21 55 6      | 18        |
| 23     | D $\delta$ $\theta$ | 18 59 0      | 14        |         | D $\delta$ $\theta$ | 2 52 14      | 53        |          | D $\delta$ $\theta$ | 1 50 1       | 24        |
| 24     | D $\delta$ $\theta$ | 13 9 3       | 0         |         | D $\delta$ $\theta$ | 10 27 3      | 5         |          |                     |              |           |
| 25     | D $\delta$ $\theta$ | 2 26 0       | 6         |         | D $\delta$ $\theta$ | 12 52 0      | 27        |          |                     |              |           |
| 27     | D $\delta$ $\theta$ | 3 29 0       | 18        |         | D $\delta$ $\theta$ | 19 10 4      | 30        |          |                     |              |           |
| 28     | D $\delta$ $\theta$ | 17 9 8       | 1         |         | D $\delta$ $\theta$ | 2 14 3       | 16        |          |                     |              |           |
| 29     | D $\delta$ $\theta$ | 10 10 4      | 48        |         | D $\delta$ $\theta$ | 4 4 3        | 44        |          |                     |              |           |
| 30     | D $\delta$ $\theta$ | 15 8 5       | 26        |         | D $\delta$ $\theta$ | 22 47 0      | 36        |          |                     |              |           |
| 31     | D $\delta$ $\theta$ | 16 42 5      | 50        |         | D $\delta$ $\theta$ | 4 5 2        | 27        |          |                     |              |           |
|        | D $\delta$ $\theta$ | 2 27 14      | 54        |         | D $\delta$ $\theta$ | 6 31 2       | 5         |          |                     |              |           |
|        | D $\delta$ $\theta$ | 9 20 6       | 52        |         | D $\delta$ $\theta$ | 5 14 0       | 54        |          |                     |              |           |
|        | D $\delta$ $\theta$ | 20 33 9      | 36        |         | D $\delta$ $\theta$ | 16 51 5      | 38        |          |                     |              |           |
|        | D $\delta$ $\theta$ | 0 14 0       | 34        |         | D $\delta$ $\theta$ | 18 0 0       | 40        |          |                     |              |           |
|        | D $\delta$ $\theta$ | 1 52 1       | 17        |         | D $\delta$ $\theta$ | 2 23 14      | 52        |          |                     |              |           |
|        | D $\delta$ $\theta$ |              |           |         | D $\delta$ $\theta$ | 20 4 4       | 26        |          |                     |              |           |
|        | D $\delta$ $\theta$ |              |           |         | D $\delta$ $\theta$ | 23 55 2      | 2         |          |                     |              |           |
|        | D $\delta$ $\theta$ |              |           |         | D $\delta$ $\theta$ | 0 51 2       | 57        |          |                     |              |           |
|        | D $\delta$ $\theta$ |              |           |         | D $\delta$ $\theta$ | 15 30 3      | 34        |          |                     |              |           |
|        | D $\delta$ $\theta$ |              |           |         | D $\delta$ $\theta$ | 2 19 2       | 14        |          |                     |              |           |
|        | D $\delta$ $\theta$ |              |           |         | D $\delta$ $\theta$ | 0 41 0       | 50        |          |                     |              |           |
|        | D $\delta$ $\theta$ |              |           |         | D $\delta$ $\theta$ | 19 47 1      | 6         |          |                     |              |           |

| Date.    | Aspect              | Time.         | Distance. | Date. | Aspect              | Time.        | Distance. | Date. | Aspect              | Time.       | Distance. |
|----------|---------------------|---------------|-----------|-------|---------------------|--------------|-----------|-------|---------------------|-------------|-----------|
| December |                     |               |           |       |                     |              |           |       |                     |             |           |
| 23       | D $\delta$ $\theta$ | H. M. 21 53 1 | 49        | 5     | D $\delta$ $\theta$ | H. M. 9 24 0 | 18        | 22    | D $\delta$ $\theta$ | H. M. 6 3 3 | 27        |
| 25       | D $\delta$ $\theta$ | 1 12 1        | 45        | 7     | D $\delta$ $\theta$ | 11 46 3      | 29        | 24    | D $\delta$ $\theta$ | 10 0 0      | 12        |
| 27       | D $\delta$ $\theta$ | 4 29 5        | 29        | 9     | D $\delta$ $\theta$ | 14 53 2      | 22        | 26    | D $\delta$ $\theta$ | 18 7 3      | 59        |
| 29       | D $\delta$ $\theta$ | 16 39 7       | 48        | 11    | D $\delta$ $\theta$ | 3 44 6       | 41        | 28    | D $\delta$ $\theta$ | 20 44 2     | 16        |
|          | D $\delta$ $\theta$ | 10 21 5       | 52        | 13    | D $\delta$ $\theta$ | 9 23 1       | 20        | 30    | D $\delta$ $\theta$ | 11 34 15    | 16        |
|          | D $\delta$ $\theta$ | 3 28 15       | 9         | 15    | D $\delta$ $\theta$ | 0 39 7       | 17        | 31    | D $\delta$ $\theta$ | 5 3 2       | 1         |
|          | D $\delta$ $\theta$ |               |           | 17    | D $\delta$ $\theta$ | 14 24 5      | 37        |       | D $\delta$ $\theta$ | 16 50 1     | 53        |
|          | D $\delta$ $\theta$ |               |           | 19    | D $\delta$ $\theta$ | 1 53 15      | 28        |       |                     |             |           |
|          | D $\delta$ $\theta$ |               |           | 21    | D $\delta$ $\theta$ | 21 55 2      | 1         |       |                     |             |           |
|          | D $\delta$ $\theta$ |               |           | 23    | D $\delta$ $\theta$ | 11 12 2      | 4         |       |                     |             |           |
|          | D $\delta$ $\theta$ |               |           | 25    | D $\delta$ $\theta$ | 2 59 1       | 22        |       |                     |             |           |
|          | D $\delta$ $\theta$ |               |           | 27    | D $\delta$ $\theta$ | 15 58 1      | 55        |       |                     |             |           |
|          | D $\delta$ $\theta$ |               |           | 29    | D $\delta$ $\theta$ | 11 43 3      | 50        |       |                     |             |           |

(Contd. from page 7)

| Date | Time        | Phenomena               |
|------|-------------|-------------------------|
| 31   | H. M. 14 49 | New Moon, Decl. 6°N56'. |

(Contd. from page 19)

| Date | Time        | Phenomena           |
|------|-------------|---------------------|
| 30   | H. M. 23 25 | D at First Quarter. |



| Date.           | Aspect | Time. | Date. | Aspect | Time. | Date.        | Aspect | Time. | Date. | Aspect | Time. |
|-----------------|--------|-------|-------|--------|-------|--------------|--------|-------|-------|--------|-------|
| <b>January</b>  |        |       |       |        |       |              |        |       |       |        |       |
| 15              | ♂ ♀    | 19 49 | 15    | ♂ ♀    | 19 49 | 26           | ♂ ♀    | 21 36 | 26    | ♂ ♀    | 21 36 |
| 16              | ♂ ♀    | 16 40 | 16    | ♂ ♀    | 16 40 | 27           | ♂ ♀    | 15 54 | 27    | ♂ ♀    | 15 54 |
| 18              | ♂ ♀    | 5 11  | 18    | ♂ ♀    | 5 11  | 28           | ♂ ♀    | 17 22 | 28    | ♂ ♀    | 17 22 |
| 19              | ♂ ♀    | 5 12  | 19    | ♂ ♀    | 5 12  | 29           | ♂ ♀    | 2 57  | 29    | ♂ ♀    | 2 57  |
| 21              | ♂ ♀    | 16 14 | 21    | ♂ ♀    | 16 14 | 30           | ♂ ♀    | 13 36 | 30    | ♂ ♀    | 13 36 |
| 22              | ♂ ♀    | 15 33 | 22    | ♂ ♀    | 15 33 |              |        |       |       |        |       |
| 23              | ♂ ♀    | 21 35 | 23    | ♂ ♀    | 21 35 | <b>April</b> |        |       |       |        |       |
| 24              | ♂ ♀    | 9 46  | 24    | ♂ ♀    | 9 46  | 2            | ♂ ♀    | 5 51  | 2     | ♂ ♀    | 5 51  |
|                 |        | 21 41 |       |        | 21 41 | 3            | ♂ ♀    | 9 24  | 3     | ♂ ♀    | 9 24  |
|                 |        | 3 6   |       |        | 3 6   | 4            | ♂ ♀    | 11 12 | 4     | ♂ ♀    | 11 12 |
|                 |        | 2 50  |       |        | 2 50  | 5            | ♂ ♀    | 11 31 | 5     | ♂ ♀    | 11 31 |
| <b>March</b>    |        |       |       |        |       |              |        |       |       |        |       |
| 1               | ♂ ♀    | 5 41  | 1     | ♂ ♀    | 5 41  | 6            | ♂ ♀    | 19 16 | 6     | ♂ ♀    | 19 16 |
| 2               | ♂ ♀    | 6 44  | 2     | ♂ ♀    | 6 44  | 7            | ♂ ♀    | 4 9   | 7     | ♂ ♀    | 4 9   |
| 3               | ♂ ♀    | 21 36 | 3     | ♂ ♀    | 21 36 | 8            | ♂ ♀    | 13 54 | 8     | ♂ ♀    | 13 54 |
| 4               | ♂ ♀    | 21 58 | 4     | ♂ ♀    | 21 58 | 9            | ♂ ♀    | 20 18 | 9     | ♂ ♀    | 20 18 |
| 5               | ♂ ♀    | 23 50 | 5     | ♂ ♀    | 23 50 | 10           | ♂ ♀    | 13 12 | 10    | ♂ ♀    | 13 12 |
| 6               | ♂ ♀    | 0 50  | 6     | ♂ ♀    | 0 50  | 11           | ♂ ♀    | 19 33 | 11    | ♂ ♀    | 19 33 |
| 7               | ♂ ♀    | 21 2  | 7     | ♂ ♀    | 21 2  | 12           | ♂ ♀    | 10 48 | 12    | ♂ ♀    | 10 48 |
| 8               | ♂ ♀    | 1 50  | 8     | ♂ ♀    | 1 50  | 13           | ♂ ♀    | 2 46  | 13    | ♂ ♀    | 2 46  |
| 9               | ♂ ♀    | 2 5   | 9     | ♂ ♀    | 2 5   | 14           | ♂ ♀    | 5 42  | 14    | ♂ ♀    | 5 42  |
| 10              | ♂ ♀    | 17 2  | 10    | ♂ ♀    | 17 2  | 15           | ♂ ♀    | 18 24 | 15    | ♂ ♀    | 18 24 |
| 11              | ♂ ♀    | 9 15  | 11    | ♂ ♀    | 9 15  | 16           | ♂ ♀    | 21 37 | 16    | ♂ ♀    | 21 37 |
| 12              | ♂ ♀    | 6 55  | 12    | ♂ ♀    | 6 55  | 17           | ♂ ♀    | 15 47 | 17    | ♂ ♀    | 15 47 |
| 13              | ♂ ♀    | 18 59 | 13    | ♂ ♀    | 18 59 | 18           | ♂ ♀    | 9 22  | 18    | ♂ ♀    | 9 22  |
| 14              | ♂ ♀    | 11 40 | 14    | ♂ ♀    | 11 40 | 19           | ♂ ♀    | 14 2  | 19    | ♂ ♀    | 14 2  |
| 15              | ♂ ♀    | 1 20  | 15    | ♂ ♀    | 1 20  | 20           | ♂ ♀    | 8 0   | 20    | ♂ ♀    | 8 0   |
| 16              | ♂ ♀    | 10 4  | 16    | ♂ ♀    | 10 4  | 21           | ♂ ♀    | 10 25 | 21    | ♂ ♀    | 10 25 |
| 17              | ♂ ♀    | 22 32 | 17    | ♂ ♀    | 22 32 | 22           | ♂ ♀    | 17 55 | 22    | ♂ ♀    | 17 55 |
| 18              | ♂ ♀    | 21 21 | 18    | ♂ ♀    | 21 21 | 23           | ♂ ♀    | 12 0  | 23    | ♂ ♀    | 12 0  |
| 19              | ♂ ♀    | 15 50 | 19    | ♂ ♀    | 15 50 | 24           | ♂ ♀    | 14 32 | 24    | ♂ ♀    | 14 32 |
| 20              | ♂ ♀    | 23 28 | 20    | ♂ ♀    | 23 28 | 25           | ♂ ♀    | 9 9   | 25    | ♂ ♀    | 9 9   |
| 21              | ♂ ♀    | 9 7   | 21    | ♂ ♀    | 9 7   | 26           | ♂ ♀    | 23 40 | 26    | ♂ ♀    | 23 40 |
| 22              | ♂ ♀    | 14 22 | 22    | ♂ ♀    | 14 22 | 27           | ♂ ♀    | 7 3   | 27    | ♂ ♀    | 7 3   |
| 23              | ♂ ♀    | 6 45  | 23    | ♂ ♀    | 6 45  | 28           | ♂ ♀    | 14 7  | 28    | ♂ ♀    | 14 7  |
| 24              | ♂ ♀    | 23 36 | 24    | ♂ ♀    | 23 36 | 29           | ♂ ♀    | 2 2   | 29    | ♂ ♀    | 2 2   |
| 25              | ♂ ♀    | 11 23 | 25    | ♂ ♀    | 11 23 | 30           | ♂ ♀    |       | 30    | ♂ ♀    |       |
| 26              | ♂ ♀    | 1 53  | 26    | ♂ ♀    | 1 53  |              |        |       |       |        |       |
| 27              | ♂ ♀    | 8 47  | 27    | ♂ ♀    | 8 47  | <b>May</b>   |        |       |       |        |       |
| 28              | ♂ ♀    | 13 47 | 28    | ♂ ♀    | 13 47 | 1            | ♂ ♀    | 14 32 | 1     | ♂ ♀    | 14 32 |
| 29              | ♂ ♀    | 0 18  | 29    | ♂ ♀    | 0 18  | 2            | ♂ ♀    | 4 32  | 2     | ♂ ♀    | 4 32  |
| 30              | ♂ ♀    | 3 31  | 30    | ♂ ♀    | 3 31  | 3            | ♂ ♀    | 23 48 | 3     | ♂ ♀    | 23 48 |
| 31              | ♂ ♀    | 3 44  | 31    | ♂ ♀    | 3 44  |              |        |       |       |        |       |
| <b>February</b> |        |       |       |        |       |              |        |       |       |        |       |
| 1               | ♂ ♀    | 14 32 | 1     | ♂ ♀    | 14 32 |              |        |       |       |        |       |
| 2               | ♂ ♀    | 2 16  | 2     | ♂ ♀    | 2 16  |              |        |       |       |        |       |
| 3               | ♂ ♀    | 6 0   | 3     | ♂ ♀    | 6 0   |              |        |       |       |        |       |
| 4               | ♂ ♀    | 11 37 | 4     | ♂ ♀    | 11 37 |              |        |       |       |        |       |
| 5               | ♂ ♀    | 16 40 | 5     | ♂ ♀    | 16 40 |              |        |       |       |        |       |
| 6               | ♂ ♀    | 22 38 | 6     | ♂ ♀    | 22 38 |              |        |       |       |        |       |
| 7               | ♂ ♀    | 2 43  | 7     | ♂ ♀    | 2 43  |              |        |       |       |        |       |
| 8               | ♂ ♀    | 12 37 | 8     | ♂ ♀    | 12 37 |              |        |       |       |        |       |
| 9               | ♂ ♀    | 6 0   | 9     | ♂ ♀    | 6 0   |              |        |       |       |        |       |
| 10              | ♂ ♀    | 7 18  | 10    | ♂ ♀    | 7 18  |              |        |       |       |        |       |
| 11              | ♂ ♀    | 18 51 | 11    | ♂ ♀    | 18 51 |              |        |       |       |        |       |
| 12              | ♂ ♀    | 0 0   | 12    | ♂ ♀    | 0 0   |              |        |       |       |        |       |
| 13              | ♂ ♀    | 17 34 | 13    | ♂ ♀    | 17 34 |              |        |       |       |        |       |
| 14              | ♂ ♀    |       | 14    | ♂ ♀    |       |              |        |       |       |        |       |

| Date.            | Aspect | Time. | Date. | Aspect | Time. | Date.          | Aspect | Time. | Date. | Aspect | Time. |
|------------------|--------|-------|-------|--------|-------|----------------|--------|-------|-------|--------|-------|
| <b>July</b>      |        |       |       |        |       |                |        |       |       |        |       |
| 20               | ♂ ♀    | 3 26  | 20    | ♂ ♀    | 3 26  | 25             | ♂ ♀    | 17 9  | 25    | ♂ ♀    | 17 9  |
| 21               | ♂ ♀    | 11 41 | 21    | ♂ ♀    | 11 41 | 26             | ♂ ♀    | 6 35  | 26    | ♂ ♀    | 6 35  |
| 22               | ♂ ♀    | 13 27 | 22    | ♂ ♀    | 13 27 | 27             | ♂ ♀    | 6 22  | 27    | ♂ ♀    | 6 22  |
| 23               | ♂ ♀    | 17 3  | 23    | ♂ ♀    | 17 3  | 28             | ♂ ♀    | 20 33 | 28    | ♂ ♀    | 20 33 |
| 24               | ♂ ♀    | 20 41 | 24    | ♂ ♀    | 20 41 | 29             | ♂ ♀    | 6 0   | 29    | ♂ ♀    | 6 0   |
| 25               | ♂ ♀    | 3 56  | 25    | ♂ ♀    | 3 56  | 30             | ♂ ♀    | 0 14  | 30    | ♂ ♀    | 0 14  |
| 26               | ♂ ♀    | 4 49  | 26    | ♂ ♀    | 4 49  | 31             | ♂ ♀    | 12 35 |       |        |       |
| 27               | ♂ ♀    | 2 53  | 27    | ♂ ♀    | 2 53  |                |        |       |       |        |       |
| 28               | ♂ ♀    | 0 49  | 28    | ♂ ♀    | 0 49  | <b>August</b>  |        |       |       |        |       |
| 29               | ♂ ♀    | 16 30 | 29    | ♂ ♀    | 16 30 | 1              | ♂ ♀    | 11 19 | 1     | ♂ ♀    | 11 19 |
| 30               | ♂ ♀    | 23 5  | 30    | ♂ ♀    | 23 5  | 2              | ♂ ♀    | 18 54 | 2     | ♂ ♀    | 18 54 |
|                  |        | 11 33 |       |        | 11 33 | 3              | ♂ ♀    | 12 0  | 3     | ♂ ♀    | 12 0  |
|                  |        | 5 34  |       |        | 5 34  | 4              | ♂ ♀    | 18 24 | 4     | ♂ ♀    | 18 24 |
|                  |        | 11 40 |       |        | 11 40 | 5              | ♂ ♀    | 20 37 | 5     | ♂ ♀    | 20 37 |
|                  |        | 12 41 |       |        | 12 41 | 6              | ♂ ♀    | 16 48 | 6     | ♂ ♀    | 16 48 |
| <b>September</b> |        |       |       |        |       |                |        |       |       |        |       |
| 1                | ♂ ♀    | 12 0  | 1     | ♂ ♀    | 12 0  | 7              | ♂ ♀    | 18 24 | 7     | ♂ ♀    | 18 24 |
| 2                | ♂ ♀    | 13 39 | 2     | ♂ ♀    | 13 39 | 8              | ♂ ♀    | 7 12  | 8     | ♂ ♀    | 7 12  |
| 3                | ♂ ♀    | 20 41 | 3     | ♂ ♀    | 20 41 | 9              | ♂ ♀    | 19 26 | 9     | ♂ ♀    | 19 26 |
| 4                | ♂ ♀    | 1 0   | 4     | ♂ ♀    | 1 0   | 10             | ♂ ♀    | 22 0  | 10    | ♂ ♀    | 22 0  |
| 5                | ♂ ♀    | 5 46  | 5     | ♂ ♀    | 5 46  | 11             | ♂ ♀    | 5 30  | 11    | ♂ ♀    | 5 30  |
| 6                | ♂ ♀    | 10 58 | 6     | ♂ ♀    | 10 58 | 12             | ♂ ♀    | 13 54 | 12    | ♂ ♀    | 13 54 |
| 7                | ♂ ♀    | 4 53  | 7     | ♂ ♀    | 4 53  | 13             | ♂ ♀    | 0 27  | 13    | ♂ ♀    | 0 27  |
| 8                | ♂ ♀    | 17 37 | 8     | ♂ ♀    | 17 37 | 14             | ♂ ♀    | 0 23  | 14    | ♂ ♀    | 0 23  |
| 9                | ♂ ♀    | 21 0  | 9     | ♂ ♀    | 21 0  | 15             | ♂ ♀    | 14 28 | 15    | ♂ ♀    | 14 28 |
| 10               | ♂ ♀    | 9 3   | 10    | ♂ ♀    | 9 3   | 16             | ♂ ♀    | 11 20 | 16    | ♂ ♀    | 11 20 |
| 11               | ♂ ♀    | 21 45 | 11    | ♂ ♀    | 21 45 | 17             | ♂ ♀    | 16 32 | 17    | ♂ ♀    | 16 32 |
| 12               | ♂ ♀    | 4 27  | 12    | ♂ ♀    | 4 27  | 18             | ♂ ♀    | 10 24 | 18    | ♂ ♀    | 10 24 |
| 13               | ♂ ♀    | 11 12 | 13    | ♂ ♀    | 11 12 | 19             | ♂ ♀    | 3 32  | 19    | ♂ ♀    | 3 32  |
| 14               | ♂ ♀    | 23 12 | 14    | ♂ ♀    | 23 12 | 20             | ♂ ♀    | 16 48 | 20    | ♂ ♀    | 16 48 |
| 15               | ♂ ♀    | 6 24  | 15    | ♂ ♀    | 6 24  | 21             | ♂ ♀    | 23 22 | 21    | ♂ ♀    | 23 22 |
| 16               | ♂ ♀    | 8 7   | 16    | ♂ ♀    | 8 7   | 22             | ♂ ♀    | 18 7  | 22    | ♂ ♀    | 18 7  |
| 17               | ♂ ♀    | 6 47  | 17    | ♂ ♀    | 6 47  | 23             | ♂ ♀    | 23 22 | 23    | ♂ ♀    | 23 22 |
| 18               | ♂ ♀    | 6 35  | 18    | ♂ ♀    | 6 35  | 24             | ♂ ♀    | 19 39 | 24    | ♂ ♀    | 19 39 |
| 19               | ♂ ♀    | 5 30  | 19    | ♂ ♀    | 5 30  | 25             | ♂ ♀    | 16 10 | 25    | ♂ ♀    | 16 10 |
| 20               | ♂ ♀    | 10 42 | 20    | ♂ ♀    | 10 42 | 26             | ♂ ♀    | 18 42 | 26    | ♂ ♀    | 18 42 |
| 21               | ♂ ♀    | 5 34  | 21    | ♂ ♀    | 5 34  | 27             | ♂ ♀    | 22 43 | 27    | ♂ ♀    | 22 43 |
| 22               | ♂ ♀    | 3 29  | 22    | ♂ ♀    | 3 29  |                |        |       |       |        |       |
| 23               | ♂ ♀    | 10 29 | 23    | ♂ ♀    | 10 29 | <b>October</b> |        |       |       |        |       |
| 24               | ♂ ♀    |       | 24    | ♂ ♀    |       | 3              | ♂ ♀    | 11 34 | 3     | ♂ ♀    | 11 34 |
|                  |        |       |       |        |       | 4              | ♂ ♀    | 4 20  | 4     | ♂ ♀    | 4 20  |
|                  |        |       |       |        |       | 5              | ♂ ♀    | 13 16 | 5     | ♂ ♀    | 13 16 |
|                  |        |       |       |        |       | 6              | ♂ ♀    | 22 26 | 6     | ♂ ♀    | 22 26 |
|                  |        |       |       |        |       | 7              | ♂ ♀    | 13 39 | 7     | ♂ ♀    | 13 39 |
|                  |        |       |       |        |       | 8              | ♂ ♀    | 15 48 | 8     | ♂ ♀    | 15 48 |
|                  |        |       |       |        |       | 9              | ♂ ♀    | 6 6   | 9     | ♂ ♀    | 6 6   |
|                  |        |       |       |        |       | 10             | ♂ ♀    | 9 6   | 10    | ♂ ♀    | 9 6   |
|                  |        |       |       |        |       | 11             | ♂ ♀    | 11 15 | 11    | ♂ ♀    | 11 15 |
|                  |        |       |       |        |       | 12             | ♂ ♀    | 21 17 | 12    | ♂ ♀    | 21 17 |
|                  |        |       |       |        |       | 13             | ♂ ♀    | 16 33 | 13    | ♂ ♀    | 16 33 |
|                  |        |       |       |        |       | 14             | ♂ ♀    | 20 57 | 14    | ♂ ♀    | 20 57 |
|                  |        |       |       |        |       | 15             | ♂ ♀    | 18 14 | 15    | ♂ ♀    | 18 14 |
|                  |        |       |       |        |       | 16             | ♂ ♀    | 1 59  | 16    | ♂ ♀    | 1 59  |
|                  |        |       |       |        |       | 17             | ♂ ♀    | 0 0   | 17    | ♂ ♀    | 0 0   |
|                  |        |       |       |        |       | 18             | ♂ ♀    | 18 43 | 18    | ♂ ♀    | 18 43 |
|                  |        |       |       |        |       | 19             | ♂ ♀    | 7 3   | 19    | ♂ ♀    | 7 3   |
|                  |        |       |       |        |       | 20             | ♂ ♀    | 16 37 | 20    | ♂ ♀    | 16 37 |
|                  |        |       |       |        |       | 21             | ♂ ♀    | 3 51  | 21    | ♂ ♀    | 3 51  |
|                  |        |       |       |        |       | 22             | ♂ ♀    | 5 2   | 22    | ♂ ♀    | 5 2   |
|                  |        |       |       |        |       | 23             | ♂ ♀    | 27 29 | 23    | ♂ ♀    | 27 29 |
|                  |        |       |       |        |       | 24             | ♂ ♀    | 5 41  | 24    | ♂ ♀    | 5 41  |

November

October



| Date.    | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
|----------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
| December |        |       |       |        |       |       |        |       |       |        |       |
|          |        | H. M. |       |        | H. M. |       |        | H. M. |       |        | H. M. |
| 1        | ☉ ♄ ♄  | 9 39  | 9     | ♄ ♄ ♄  | 0 50  | 8     | ♄ ♄ ♄  | 11 14 | 25    | ♄ * ♄  | 17 9  |
| 2        | ♄ ♄ ♄  | 22 58 | 10    | ☉ ♄ ♄  | 9 23  | 8     | ♄ ♄ ♄  | 12 0  | 26    | ♄ ☐ ♄  | 12 0  |
| 4        | ☉ ♄ ♄  | 5 2   | 11    | ☉ ♄ ♄  | 13 43 | 19    | ☉ ♄ ♄  | 15 52 | 27    | ☉ * ♄  | 14 24 |
|          | ♄ ♄ ♄  | 6 33  | 11    | ☉ ♄ ♄  | 11 36 | 20    | ☉ ♄ ♄  | 3 41  | 27    | ♄ ♄ ♄  | 0 6   |
|          | ♄ ♄ ♄  | 12 58 | 15    | ♄ ♄ ♄  | 18 33 | 22    | ♄ ♄ ♄  | 7 12  | 29    | ♄ ♄ ♄  | 6 22  |
| 5        | ♄ * ♄  | 18 18 | 18    | ♄ ♄ ♄  | 5 41  | 22    | ♄ ♄ ♄  | 14 17 | 29    | ♄ ♄ ♄  | 10 29 |
|          |        |       | 18    | ♄ ♄ ♄  | 1 55  | 24    | ☉ ♄ ♄  | 10 0  | 30    | ♄ ♄ ♄  | 16 12 |
|          |        |       |       |        |       |       |        |       |       | ♄ * ♄  | 10 3  |

(For the latitude 23°N11')

Rises.

Mercury

Sets.

15th January, in East.

4th January, in West.

3rd April, in West.

1st March, in East.

21st May, in East.

28th April, in West.

20th July, in West.

22nd June, in East.

19th September, in East.

26th August, in West.

16th November, in West.

1st October, in East.

21st December, in West.

Venus

19th May, in West.

2nd March, in East.

Jupiter

24th October, in East.

18th September, in West.

Mars

18th November, in East.

19th July, in West.

Saturn

25th December, in East.

26th November, in West.

## Timings of Eclipses

There are four eclipses, two of the Sun and two of the Moon, and also a transit of Mercury over the disc of the Sun. *The Solar Eclipses and the transit of Mercury will not be visible in India.*

## 1. Total Lunar Eclipse, May 14—

|                             | H.  | M. |
|-----------------------------|-----|----|
| First Contact .. ..         | 2   | 15 |
| Total Eclipse begins .. ..  | 3   | 22 |
| Middle of the Eclipse .. .. | 4   | 1  |
| Total Eclipse ends .. ..    | 4   | 40 |
| Last contact .. ..          | 5   | 47 |
| Magnitude .. ..             | 1.3 |    |

## 2. Total Lunar Eclipse, November 7—

|                             | H.  | M. |
|-----------------------------|-----|----|
| First contact .. ..         | 18  | 13 |
| Total Eclipse begins .. ..  | 19  | 42 |
| Middle of the Eclipse .. .. | 19  | 57 |
| Total Eclipse ends .. ..    | 20  | 12 |
| Last contact .. ..          | 21  | 40 |
| Magnitude .. ..             | 1.4 |    |

Annular Solar Eclipse .. .. 30th April.

Total Solar Eclipse .. .. 23rd October.

Transit of Mercury across the Sun's disc on May 6.



|                             | $\theta$ | $\iota$ | $e$    |
|-----------------------------|----------|---------|--------|
| Daily Motion of Moon's Node | -0       | 3       | 10.62. |
| " " "                       | +0       | 6       | 41.05. |

| Date.   | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date.    | Aspect | Time. |
|---------|--------|-------|-------|--------|-------|-------|--------|-------|----------|--------|-------|
| January |        |       |       |        | H. M. |       |        | H. M. |          |        | H. M. |
| 1       | ☉      | 7 45  | 11    | ♂      | 5 2   | 20    | ♂      | 11 20 | 29       | ♂      | 22 23 |
|         | ♂      | 14 35 |       | ♀      | 9 47  |       | ☐      | 12 21 |          | ☐      | 9 50  |
|         | ♂      | 17 18 |       | ☐      | 16 42 |       | ☐      | 16 16 |          | ☐      | 23 14 |
|         | ♂      | 18 37 |       | ☐      | 20 23 |       | ☐      | 21 54 |          | ☐      | 4 31  |
| 2       | ♂      | 11 44 | 12    | ☐      | 22 12 |       | ☐      | 2 13  | 30       | ♂      | 6 56  |
|         | ♂      | 17 34 |       | ☐      | 0 51  |       | ☐      | 9 55  |          | ☐      | 8 15  |
|         | ♂      | 23 20 |       | ☐      | 15 13 |       | ☐      | 18 18 |          | ☐      | 10 23 |
| 3       | ♂      | 1 58  |       | ☐      | 16 14 |       | ☐      | 18 55 |          | ☐      | 14 45 |
|         | ♂      | 3 40  |       | ☐      | 19 12 |       | ☐      | 21 28 | 31       | ☐      | 2 56  |
|         | ♂      | 4 14  |       | ☐      | 20 26 | 21    | ☐      | 22 49 |          | ☐      | 5 45  |
|         | ♂      | 10 47 |       | ☐      | 20 29 |       | ☐      | 3 11  |          | ☐      | 13 41 |
| 4       | ♂      | 18 13 | 13    | ☐      | 1 35  |       | ☐      | 12 19 |          | ☐      | 14 27 |
|         | ♂      | 1 25  |       | ☐      | 1 39  |       | ☐      | 13 36 | February |        |       |
|         | ♂      | 5 57  |       | ☐      | 5 7   |       | ☐      | 13 39 | 1        | ♂      | 5 38  |
|         | ♂      | 8 21  |       | ☐      | 10 19 | 22    | ♂      | 15 51 |          | ♂      | 17 5  |
| 5       | ♂      | 14 5  |       | ☐      | 19 57 |       | ♂      | 16 9  |          | ♂      | 20 40 |
|         | ♂      | 4 3   | 14    | ☐      | 2 49  | 23    | ♂      | 22 21 |          | ♂      | 21 51 |
|         | ♂      | 10 47 |       | ☐      | 4 2   |       | ♂      | 1 47  |          | ♂      | 22 52 |
|         | ♂      | 11 50 |       | ☐      | 8 14  |       | ♂      | 3 18  | 2        | ♂      | 23 2  |
|         | ♂      | 14 48 |       | ☐      | 18 31 |       | ♂      | 3 24  |          | ♂      | 3 12  |
|         | ♂      | 15 5  |       | ☐      | 21 26 |       | ♂      | 7 45  |          | ♂      | 15 29 |
|         | ♂      | 23 15 |       | ☐      | 22 27 |       | ♂      | 19 34 |          | ♂      | 18 37 |
| 6       | ♂      | 7 27  | 15    | ☐      | 22 35 |       | ♂      | 19 38 |          | ♂      | 21 13 |
|         | ♂      | 8 34  |       | ☐      | 3 15  |       | ♂      | 23 34 | 3        | ♂      | 5 17  |
|         | ♂      | 19 56 |       | ☐      | 11 54 | 24    | ♂      | 5 18  |          | ♂      | 6 46  |
|         | ♂      | 21 41 |       | ☐      | 17 29 | 25    | ♂      | 0 22  |          | ♂      | 7 50  |
|         | ♂      | 22 41 |       | ☐      | 18 36 |       | ♂      | 2 0   |          | ♂      | 9 20  |
| 7       | ♂      | 5 21  | 16    | ☐      | 6 22  |       | ♂      | 5 57  | 4        | ♂      | 1 8   |
|         | ♂      | 9 45  |       | ☐      | 11 49 | 25    | ♂      | 6 56  |          | ♂      | 1 18  |
|         | ♂      | 12 27 |       | ☐      | 11 51 |       | ♂      | 9 38  |          | ♂      | 7 1   |
| 8       | ♂      | 0 11  |       | ☐      | 18 17 |       | ♂      | 11 24 |          | ♂      | 8 43  |
|         | ♂      | 3 1   | 17    | ☐      | 21 11 | 26    | ♂      | 15 55 |          | ♂      | 11 20 |
|         | ♂      | 4 39  |       | ☐      | 22 19 |       | ♂      | 16 27 |          | ♂      | 14 22 |
|         | ♂      | 11 5  |       | ☐      | 2 14  |       | ♂      | 5 6   | 5        | ♂      | 15 13 |
|         | ♂      | 19 43 |       | ☐      | 2 41  |       | ♂      | 6 17  |          | ♂      | 7 0   |
| 9       | ♂      | 5 25  |       | ☐      | 11 30 |       | ♂      | 8 27  |          | ♂      | 11 1  |
|         | ♂      | 11 54 | 18    | ☐      | 14 20 |       | ♂      | 15 18 |          | ♂      | 14 29 |
|         | ♂      | 12 35 |       | ☐      | 20 44 |       | ♂      | 16 32 | 6        | ♂      | 0 50  |
|         | ♂      | 17 57 |       | ☐      | 3 54  |       | ♂      | 21 6  |          | ♂      | 12 27 |
| 10      | ♂      | 2 54  |       | ☐      | 7 28  | 27    | ♂      | 0 24  |          | ♂      | 16 6  |
|         | ♂      | 10 2  |       | ☐      | 13 4  |       | ♂      | 15 33 |          | ♂      | 18 46 |
|         | ♂      | 13 10 |       | ☐      | 14 29 |       | ♂      | 16 27 |          | ♂      | 19 10 |
|         | ♂      | 14 29 | 19    | ☐      | 17 27 | 28    | ♂      | 20 15 | 7        | ♂      | 21 58 |
|         | ♂      | 20 16 |       | ☐      | 20 27 |       | ♂      | 22 12 |          | ♂      | 1 31  |
|         | ♂      |       |       | ☐      | 21 36 |       | ♂      | 2 43  |          | ♂      | 3 55  |
|         | ♂      |       |       | ☐      | 1 57  |       | ♂      | 8 55  |          | ♂      | 17 11 |
|         | ♂      |       |       | ☐      | 5 54  |       | ♂      | 16 53 |          | ♂      | 23 23 |
|         | ♂      |       |       | ☐      | 8 22  |       | ♂      | 20 51 | 8        | ♂      | 4 50  |



| Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
|       |        | H. M. |       |        | H. M. |       |        | H. M. |       |        | H. M. |
| 9     | Pl     | 15 23 |       |        |       |       |        |       |       |        |       |
|       | Δ      | 23 59 |       |        |       |       |        |       |       |        |       |
|       | π      | 2 42  |       |        |       |       |        |       |       |        |       |
|       | ♄      | 2 5   |       |        |       |       |        |       |       |        |       |
|       | ♅      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♆      | 13 51 |       |        |       |       |        |       |       |        |       |
|       | ♇      | 20 53 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 23 46 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 7 58  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 10 58 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 13 14 |       |        |       |       |        |       |       |        |       |
|       | ♌      | 14 32 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 17 3  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 1 9   |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 2   |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 22  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 9 22  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 11 48 |       |        |       |       |        |       |       |        |       |
|       | ♓      | 16 45 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 17 33 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 19 12 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 28  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 15 13 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 19 37 |       |        |       |       |        |       |       |        |       |
|       | ♎      | 2 41  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 43  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 6 49  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 9 49  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 12 22 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 12 58 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 21 9  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 25  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 6 11  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 22 9  |       |        |       |       |        |       |       |        |       |
|       | ♍      | 3 38  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 5 19  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 8 46  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 10 15 |       |        |       |       |        |       |       |        |       |
|       | ♑      | 22 13 |       |        |       |       |        |       |       |        |       |
|       | ♒      | 0 19  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 1 23  |       |        |       |       |        |       |       |        |       |
|       | ♈      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♉      | 10 44 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 12 18 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 23 8  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 0 58  |       |        |       |       |        |       |       |        |       |
| 10    | Pl     | 15 23 |       |        |       |       |        |       |       |        |       |
|       | Δ      | 23 59 |       |        |       |       |        |       |       |        |       |
|       | π      | 2 42  |       |        |       |       |        |       |       |        |       |
|       | ♄      | 2 5   |       |        |       |       |        |       |       |        |       |
|       | ♅      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♆      | 13 51 |       |        |       |       |        |       |       |        |       |
|       | ♇      | 20 53 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 23 46 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 7 58  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 10 58 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 13 14 |       |        |       |       |        |       |       |        |       |
|       | ♌      | 14 32 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 17 3  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 1 9   |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 2   |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 22  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 9 22  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 11 48 |       |        |       |       |        |       |       |        |       |
|       | ♓      | 16 45 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 17 33 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 19 12 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 28  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 15 13 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 19 37 |       |        |       |       |        |       |       |        |       |
|       | ♎      | 2 41  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 43  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 6 49  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 9 49  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 12 22 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 12 58 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 21 9  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 25  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 6 11  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 22 9  |       |        |       |       |        |       |       |        |       |
|       | ♍      | 3 38  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 5 19  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 8 46  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 10 15 |       |        |       |       |        |       |       |        |       |
|       | ♑      | 22 13 |       |        |       |       |        |       |       |        |       |
|       | ♒      | 0 19  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 1 23  |       |        |       |       |        |       |       |        |       |
|       | ♈      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♉      | 10 44 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 12 18 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 23 8  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 0 58  |       |        |       |       |        |       |       |        |       |
| 11    | Pl     | 15 23 |       |        |       |       |        |       |       |        |       |
|       | Δ      | 23 59 |       |        |       |       |        |       |       |        |       |
|       | π      | 2 42  |       |        |       |       |        |       |       |        |       |
|       | ♄      | 2 5   |       |        |       |       |        |       |       |        |       |
|       | ♅      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♆      | 13 51 |       |        |       |       |        |       |       |        |       |
|       | ♇      | 20 53 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 23 46 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 7 58  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 10 58 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 13 14 |       |        |       |       |        |       |       |        |       |
|       | ♌      | 14 32 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 17 3  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 1 9   |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 2   |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 22  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 9 22  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 11 48 |       |        |       |       |        |       |       |        |       |
|       | ♓      | 16 45 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 17 33 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 19 12 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 28  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 15 13 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 19 37 |       |        |       |       |        |       |       |        |       |
|       | ♎      | 2 41  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 43  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 6 49  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 9 49  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 12 22 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 12 58 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 21 9  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 25  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 6 11  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 22 9  |       |        |       |       |        |       |       |        |       |
|       | ♍      | 3 38  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 5 19  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 8 46  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 10 15 |       |        |       |       |        |       |       |        |       |
|       | ♑      | 22 13 |       |        |       |       |        |       |       |        |       |
|       | ♒      | 0 19  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 1 23  |       |        |       |       |        |       |       |        |       |
|       | ♈      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♉      | 10 44 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 12 18 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 23 8  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 0 58  |       |        |       |       |        |       |       |        |       |
| 12    | Pl     | 15 23 |       |        |       |       |        |       |       |        |       |
|       | Δ      | 23 59 |       |        |       |       |        |       |       |        |       |
|       | π      | 2 42  |       |        |       |       |        |       |       |        |       |
|       | ♄      | 2 5   |       |        |       |       |        |       |       |        |       |
|       | ♅      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♆      | 13 51 |       |        |       |       |        |       |       |        |       |
|       | ♇      | 20 53 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 23 46 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 7 58  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 10 58 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 13 14 |       |        |       |       |        |       |       |        |       |
|       | ♌      | 14 32 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 17 3  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 1 9   |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 2   |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 22  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 9 22  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 11 48 |       |        |       |       |        |       |       |        |       |
|       | ♓      | 16 45 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 17 33 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 19 12 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 28  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 15 13 |       |        |       |       |        |       |       |        |       |
|       | ♍      | 19 37 |       |        |       |       |        |       |       |        |       |
|       | ♎      | 2 41  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 4 40  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 6 43  |       |        |       |       |        |       |       |        |       |
|       | ♑      | 6 49  |       |        |       |       |        |       |       |        |       |
|       | ♒      | 9 49  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 12 22 |       |        |       |       |        |       |       |        |       |
|       | ♈      | 12 58 |       |        |       |       |        |       |       |        |       |
|       | ♉      | 21 9  |       |        |       |       |        |       |       |        |       |
|       | ♊      | 2 25  |       |        |       |       |        |       |       |        |       |
|       | ♋      | 6 11  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 22 9  |       |        |       |       |        |       |       |        |       |
|       | ♍      | 3 38  |       |        |       |       |        |       |       |        |       |
|       | ♎      | 5 19  |       |        |       |       |        |       |       |        |       |
|       | ♏      | 8 46  |       |        |       |       |        |       |       |        |       |
|       | ♐      | 10 15 |       |        |       |       |        |       |       |        |       |
|       | ♑      | 22 13 |       |        |       |       |        |       |       |        |       |
|       | ♒      | 0 19  |       |        |       |       |        |       |       |        |       |
|       | ♓      | 1 23  |       |        |       |       |        |       |       |        |       |
|       | ♈      | 8 23  |       |        |       |       |        |       |       |        |       |
|       | ♉      | 10 44 |       |        |       |       |        |       |       |        |       |
|       | ♊      | 12 18 |       |        |       |       |        |       |       |        |       |
|       | ♋      | 23 8  |       |        |       |       |        |       |       |        |       |
|       | ♌      | 0 58  |       |        |       |       |        |       |       |        |       |
| 13    | Pl     | 15 23 |       |        |       |       |        |       |       |        |       |
|       | Δ      | 23 59 |       |        |       |       |        |       |       |        |       |
|       | π      | 2 42  |       |        |       |       | </     |       |       |        |       |



| Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
|       |        | H. M. |       |        | H. M. |       |        | H. M. |       |        | H. M. |
| 24    | ♂      | 23 19 | 3     | ♀      | 1 33  | 12    | ♂      | 17 41 | 22    | ♂      | 17 41 |
|       | ♂      | 0 2   |       | ♂      | 1 51  |       | ♂      | 22 33 |       | ♂      | 22 33 |
|       | ♂      | 9 51  |       | ♂      | 3 40  |       | ♂      | 22 47 |       | ♂      | 18 59 |
|       | ♂      | 16 17 |       | ♂      | 11 0  |       | ♂      | 20 33 |       | ♂      | 20 34 |
|       | ♂      | 19 52 |       | ♂      | 20 58 |       | ♂      | 21 35 |       | ♂      | 4 58  |
|       | ♂      | 22 25 |       | ♂      | 20 59 |       | ♂      | 11 30 |       | ♂      | 17 51 |
| 25    | ♂      | 4 19  | 4     | ♂      | 2 12  | 13    | ♂      | 17 51 | 24    | ♂      | 1 51  |
|       | ♂      | 16 57 |       | ♂      | 3 16  |       | ♂      | 10 0  |       | ♂      | 10 52 |
|       | ♂      | 21 31 |       | ♂      | 6 6   |       | ♂      | 15 55 |       | ♂      | 17 25 |
|       | ♂      | 2 0   |       | ♂      | 6 33  |       | ♂      | 8 26  |       | ♂      | 11 34 |
|       | ♂      | 4 52  |       | ♂      | 23 5  |       | ♂      | 14 49 |       | ♂      | 23 39 |
|       | ♂      | 7 9   |       | ♂      | 23 10 |       | ♂      | 4 46  |       | ♂      | 13 36 |
|       | ♂      | 11 16 |       | ♂      | 1 1   |       | ♂      | 16 22 |       | ♂      | 20 50 |
|       | ♂      | 13 48 |       | ♂      | 4 12  |       | ♂      | 17 32 |       | ♂      | 10 14 |
|       | ♂      | 15 34 |       | ♂      | 11 3  |       | ♂      | 19 54 |       | ♂      | 17 7  |
|       | ♂      | 21 49 |       | ♂      | 14 55 |       | ♂      | 6 20  |       | ♂      | 19 54 |
| 27    | ♂      | 4 0   | 6     | ♂      | 0 49  | 15    | ♂      | 15 18 | 28    | ♂      | 12 52 |
|       | ♂      | 7 45  |       | ♂      | 0 49  |       | ♂      | 23 39 |       | ♂      | 12 39 |
|       | ♂      | 10 15 |       | ♂      | 5 48  |       | ♂      | 3 47  |       | ♂      | 10 14 |
|       | ♂      | 15 18 |       | ♂      | 5 50  |       | ♂      | 17 51 |       | ♂      | 17 51 |
|       | ♂      | 22 33 |       | ♂      | 9 48  |       | ♂      | 23 8  |       | ♂      | 22 6  |
| 28    | ♂      | 3 8   | 7     | ♂      | 16 27 | 16    | ♂      | 19 54 | 17    | ♂      | 16 57 |
|       | ♂      | 3 53  |       | ♂      | 2 11  |       | ♂      | 6 15  |       | ♂      | 19 10 |
|       | ♂      | 14 52 |       | ♂      | 5 12  |       | ♂      | 14 53 |       | ♂      | 21 48 |
|       | ♂      | 21 27 |       | ♂      | 8 24  |       | ♂      | 18 59 |       | ♂      | 3 7   |
|       | ♂      | 28 58 |       | ♂      | 17 44 |       | ♂      | 21 37 |       | ♂      | 4 26  |
|       | ♂      | 8 30  |       | ♂      | 18 53 |       | ♂      | 16 20 |       | ♂      | 4 46  |
|       | ♂      | 7 54  |       | ♂      | 3 35  |       | ♂      | 17 45 |       | ♂      | 9 43  |
|       | ♂      | 8 30  |       | ♂      | 8 27  |       | ♂      | 20 20 |       | ♂      | 13 29 |
|       | ♂      | 13 45 |       | ♂      | 10 50 |       | ♂      | 16 20 |       | ♂      | 13 35 |
|       | ♂      | 17 31 |       | ♂      | 12 32 |       | ♂      | 17 45 |       | ♂      | 17 7  |
|       | ♂      | 1 40  |       | ♂      | 4 24  |       | ♂      | 22 54 |       | ♂      | 15 51 |
|       | ♂      | 5 22  |       | ♂      | 5 37  |       | ♂      | 16 20 |       | ♂      | 22 6  |
|       | ♂      | 10 30 |       | ♂      | 9 34  |       | ♂      | 10 14 |       | ♂      | 2 19  |
|       | ♂      | 12 31 |       | ♂      | 13 44 |       | ♂      | 17 51 |       | ♂      | 2 37  |
|       | ♂      | 13 39 |       | ♂      | 14 4  |       | ♂      | 23 8  |       | ♂      | 5 46  |
|       | ♂      | 21 40 |       | ♂      | 20 1  |       | ♂      | 6 20  |       | ♂      | 15 29 |
|       | ♂      |       |       | ♂      | 5 59  |       | ♂      | 10 14 |       | ♂      | 1 30  |
|       | ♂      |       |       | ♂      | 5 57  |       | ♂      | 17 51 |       | ♂      | 2 52  |
|       | ♂      |       |       | ♂      | 10 43 |       | ♂      | 23 8  |       | ♂      | 9 1   |
|       | ♂      |       |       | ♂      | 14 59 |       | ♂      | 6 20  |       | ♂      | 12 2  |
|       | ♂      |       |       | ♂      | 15 30 |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      | 17 6  |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      | 5 39  |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      | 6 10  |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      | 6 37  |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
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|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
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|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 6 20  |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 17 51 |       | ♂      |       |
|       | ♂      |       |       | ♂      |       |       | ♂      | 23 8  |       | ♂      |       |
|       | ♂      |       |       |        |       |       |        |       |       |        |       |



| Date. | Aspect | Time. | Date. | Aspect | Time. | Date.  | Aspect | Time. | Date. | Aspect | Time. |
|-------|--------|-------|-------|--------|-------|--------|--------|-------|-------|--------|-------|
|       |        | H. M. |       |        | H. M. |        |        | H. M. |       |        | H. M. |
| 9     | ☾☽     | 6 36  | 19    | ☽☾     | 4 58  | 28     | ☽☾     | 15 8  | 6     | ☽☾     | 2 41  |
|       | ☽☾     | 8 7   |       | ☽☾     | 12 51 |        | ☽☾     | 16 20 |       | ☽☾     | 3 22  |
|       | ☽☾     | 17 54 |       | ☽☾     | 14 57 |        | ☽☾     | 0 55  |       | ☽☾     | 11 1  |
|       | ☽☾     | 18 1  |       | ☽☾     | 18 8  |        | ☽☾     | 0 42  |       | ☽☾     | 11 40 |
|       | ☽☾     | 22 47 |       | ☽☾     | 0 41  |        | ☽☾     | 0 28  |       | ☽☾     | 16 19 |
| 10    | ☽☾     | 23 21 | 20    | ☽☾     | 5 55  | 29     | ☽☾     | 0 52  | 7     | ☽☾     | 6 56  |
|       | ☽☾     | 3 3   |       | ☽☾     | 12 43 |        | ☽☾     | 2 27  |       | ☽☾     | 18 37 |
|       | ☽☾     | 10 27 |       | ☽☾     | 22 8  |        | ☽☾     | 3 22  |       | ☽☾     | 18 52 |
|       | ☽☾     | 14 15 |       | ☽☾     | 23 53 |        | ☽☾     | 9 20  |       | ☽☾     | 20 9  |
|       | ☽☾     | 22 7  |       | ☽☾     | 7 36  |        | ☽☾     | 12 53 |       | ☽☾     | 20 50 |
| 11    | ☽☾     | 3 59  | 21    | ☽☾     | 7 46  | 30     | ☽☾     | 15 1  | 8     | ☽☾     | 20 59 |
|       | ☽☾     | 6 26  |       | ☽☾     | 11 38 |        | ☽☾     | 15 59 |       | ☽☾     | 11 48 |
|       | ☽☾     | 6 43  |       | ☽☾     | 13 9  |        | ☽☾     | 3 24  |       | ☽☾     | 11 56 |
|       | ☽☾     | 8 45  |       | ☽☾     | 2 24  |        | ☽☾     | 14 43 |       | ☽☾     | 19 0  |
|       | ☽☾     | 12 46 |       | ☽☾     | 4 59  |        | ☽☾     | 15 17 |       | ☽☾     | 1 19  |
| 12    | ☽☾     | 14 49 | 22    | ☽☾     | 12 57 | 31     | ☽☾     | 18 54 | 9     | ☽☾     | 1 30  |
|       | ☽☾     | 2 49  |       | ☽☾     | 20 56 |        | ☽☾     | 1 52  |       | ☽☾     | 2 8   |
|       | ☽☾     | 7 19  |       | ☽☾     | 1 43  |        | ☽☾     | 2 51  |       | ☽☾     | 2 50  |
|       | ☽☾     | 14 18 |       | ☽☾     | 13 38 |        | ☽☾     | 3 48  |       | ☽☾     | 17 10 |
|       | ☽☾     | 15 0  |       | ☽☾     | 17 14 |        | ☽☾     | 6 11  |       | ☽☾     | 3 39  |
| 13    | ☽☾     | 17 13 | 23    | ☽☾     | 20 25 | August | ☽☾     | 14 19 | 10    | ☽☾     | 6 55  |
|       | ☽☾     | 12 23 |       | ☽☾     | 21 9  |        | ☽☾     | 16 3  |       | ☽☾     | 7 39  |
|       | ☽☾     | 12 16 |       | ☽☾     | 21 45 |        | ☽☾     | 16 47 |       | ☽☾     | 8 19  |
|       | ☽☾     | 17 13 |       | ☽☾     | 10 24 |        | ☽☾     | 17 6  |       | ☽☾     | 8 38  |
|       | ☽☾     | 22 59 |       | ☽☾     | 12 26 |        | ☽☾     | 20 47 |       | ☽☾     | 11 38 |
| 14    | ☽☾     | 0 55  | 24    | ☽☾     | 0 31  | 1      | ☽☾     | 22 51 | 11    | ☽☾     | 23 19 |
|       | ☽☾     | 1 15  |       | ☽☾     | 1 57  |        | ☽☾     | 14 39 |       | ☽☾     | 18 41 |
|       | ☽☾     | 13 34 |       | ☽☾     | 10 23 |        | ☽☾     | 20 53 |       | ☽☾     | 19 3  |
|       | ☽☾     | 17 43 |       | ☽☾     | 10 58 |        | ☽☾     | 21 16 |       | ☽☾     | 21 16 |
|       | ☽☾     | 20 46 |       | ☽☾     | 12 49 |        | ☽☾     | 11 3  |       | ☽☾     | 0 1   |
| 15    | ☽☾     | 23 12 | 25    | ☽☾     | 23 42 | 2      | ☽☾     | 6 44  | 12    | ☽☾     | 2 6   |
|       | ☽☾     | 5 7   |       | ☽☾     | 1 9   |        | ☽☾     | 16 25 |       | ☽☾     | 12 31 |
|       | ☽☾     | 7 46  |       | ☽☾     | 2 18  |        | ☽☾     | 16 25 |       | ☽☾     | 16 15 |
|       | ☽☾     | 5 34  |       | ☽☾     | 5 32  |        | ☽☾     | 22 42 |       | ☽☾     | 8 33  |
|       | ☽☾     | 10 52 |       | ☽☾     | 12 57 |        | ☽☾     | 11 23 |       | ☽☾     | 10 58 |
| 16    | ☽☾     | 12 42 | 26    | ☽☾     | 14 15 | 3      | ☽☾     | 12 15 | 13    | ☽☾     | 21 34 |
|       | ☽☾     | 0 51  |       | ☽☾     | 15 36 |        | ☽☾     | 2 34  |       | ☽☾     | 23 50 |
|       | ☽☾     | 1 59  |       | ☽☾     | 15 46 |        | ☽☾     | 5 26  |       | ☽☾     | 0 55  |
|       | ☽☾     | 5 38  |       | ☽☾     | 2 10  |        | ☽☾     | 10 0  |       | ☽☾     |       |
|       | ☽☾     | 5 41  |       | ☽☾     | 2 57  |        | ☽☾     | 3 35  |       | ☽☾     |       |
| 17    | ☽☾     | 19 4  | 27    | ☽☾     | 14 40 | 4      | ☽☾     | 7 50  | 14    | ☽☾     | 7 56  |
|       | ☽☾     | 20 53 |       | ☽☾     | 16 17 |        | ☽☾     | 7 28  |       | ☽☾     | 8 33  |
|       | ☽☾     | 3 7   |       | ☽☾     | 19 7  |        | ☽☾     | 11 23 |       | ☽☾     | 16 11 |
|       | ☽☾     | 8 30  |       | ☽☾     | 0 40  |        | ☽☾     | 12 15 |       | ☽☾     | 21 34 |
|       | ☽☾     | 12 57 |       | ☽☾     | 2 34  |        | ☽☾     | 2 30  |       | ☽☾     | 23 50 |
| 18    | ☽☾     | 14 40 | 28    | ☽☾     | 3 35  | 5      | ☽☾     | 7 28  | 15    | ☽☾     | 0 55  |
|       | ☽☾     | 18 59 |       | ☽☾     | 5 26  |        | ☽☾     | 11 23 |       | ☽☾     | 21 34 |
|       | ☽☾     | 23 41 |       | ☽☾     | 10 0  |        | ☽☾     | 12 15 |       | ☽☾     | 23 50 |
|       | ☽☾     | 1 26  |       | ☽☾     |       |        | ☽☾     | 2 30  |       | ☽☾     | 0 55  |
|       | ☽☾     |       |       | ☽☾     |       |        | ☽☾     |       |       | ☽☾     |       |

| Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
|       |        | H. M. |       |        | H. M. |       |        | H. M. |       |        | H. M. |
| 16    | ☽☾     | 14 15 | 25    | ☽☾     | 19 32 |       | ☽☾     | 23 10 |       | ☽☾     | 0 42  |
|       | ☽☾     | 0 3   |       | ☽☾     | 23 10 |       | ☽☾     | 6 4   |       | ☽☾     | 4 5   |
|       | ☽☾     | 0 19  |       | ☽☾     | 14 14 |       | ☽☾     | 14 31 |       | ☽☾     | 12 49 |
|       | ☽☾     | 5 58  |       | ☽☾     | 14 31 |       | ☽☾     | 17 27 |       | ☽☾     | 17 4  |
|       | ☽☾     | 6 21  |       | ☽☾     | 19 27 |       | ☽☾     | 0 46  |       | ☽☾     | 18 30 |
|       | ☽☾     | 11 29 |       | ☽☾     | 20 46 |       | ☽☾     | 2 13  |       | ☽☾     | 18 57 |
|       | ☽☾     | 20 15 |       | ☽☾     | 2 13  |       | ☽☾     | 3 53  |       | ☽☾     | 22 1  |
|       | ☽☾     | 20 50 |       | ☽☾     | 7 41  |       | ☽☾     | 7 41  |       | ☽☾     | 4 29  |
|       | ☽☾     | 0 2   |       | ☽☾     | 14 5  |       | ☽☾     | 13 37 |       | ☽☾     | 20 38 |
|       | ☽☾     | 8 14  |       | ☽☾     | 3 37  |       | ☽☾     | 13 51 |       | ☽☾     | 22 50 |
|       | ☽☾     | 11 42 |       | ☽☾     | 5 42  |       | ☽☾     | 19 31 |       | ☽☾     | 1 18  |
|       | ☽☾     | 13 0  |       | ☽☾     | 5 42  |       | ☽☾     | 19 42 |       | ☽☾     | 14 37 |
|       | ☽☾     | 20 12 |       | ☽☾     | 13 37 |       | ☽☾     | 0 57  |       | ☽☾     | 14 41 |
|       | ☽☾     | 2 18  |       | ☽☾     | 13 51 |       | ☽☾     | 5 40  |       | ☽☾     | 15 29 |
|       | ☽☾     | 5 43  |       | ☽☾     | 19 31 |       | ☽☾     | 8 41  |       | ☽☾     | 3 52  |
|       | ☽☾     | 15 3  |       | ☽☾     | 19 42 |       | ☽☾     | 0 54  |       | ☽☾     | 5 14  |
|       | ☽☾     | 3 48  |       | ☽☾     | 1 55  |       | ☽☾     | 0 57  |       | ☽☾     | 7 49  |
|       | ☽☾     | 6 13  |       | ☽☾     | 3 43  |       | ☽☾     | 5 40  |       | ☽☾     | 11 13 |
|       | ☽☾     | 6 43  |       | ☽☾     | 4 28  |       | ☽☾     | 8 41  |       | ☽☾     | 18 48 |
|       | ☽☾     | 10 34 |       | ☽☾     | 9 34  |       | ☽☾     | 16 29 |       | ☽☾     | 22 16 |
|       | ☽☾     | 19 34 |       | ☽☾     | 13 53 |       | ☽☾     | 3 6   |       | ☽☾     | 9 32  |
|       | ☽☾     | 20 33 |       | ☽☾     | 21 49 |       | ☽☾     | 4 53  |       | ☽☾     | 11 31 |
|       | ☽☾     | 22 2  |       | ☽☾     | 2 31  |       | ☽☾     | 7 32  |       | ☽☾     | 12 19 |
|       | ☽☾     | 10 18 |       | ☽☾     | 6 9   |       | ☽☾     | 8 32  |       | ☽☾     | 21 56 |
|       | ☽☾     | 0 41  |       | ☽☾     | 11 27 |       | ☽☾     | 8 32  |       | ☽☾     | 22 1  |
|       | ☽☾     | 1 3   |       | ☽☾     | 14 53 |       | ☽☾     | 2 52  |       | ☽☾     | 3 54  |
|       | ☽☾     | 8 34  |       | ☽☾     | 15 5  |       | ☽☾     | 2 59  |       | ☽☾     | 11 8  |
|       | ☽☾     | 12 22 |       | ☽☾     | 21 42 |       | ☽☾     | 14 22 |       | ☽☾     | 11 49 |
|       | ☽☾     | 12 46 |       | ☽☾     | 0 50  |       | ☽☾     | 18 11 |       | ☽☾     | 14 9  |
|       | ☽☾     | 15 6  |       | ☽☾     | 3 53  |       | ☽☾     | 18 16 |       | ☽☾     | 16 0  |
|       | ☽☾     | 16 57 |       | ☽☾     | 5 53  |       | ☽☾     | 21 5  |       | ☽☾     | 0 12  |
|       | ☽☾     | 1 29  |       | ☽☾     | 7 10  |       | ☽☾     | 9 21  |       | ☽☾     | 13 40 |
|       | ☽☾     | 2 59  |       | ☽☾     | 11 6  |       | ☽☾     | 10 27 |       | ☽☾     | 17 33 |
|       | ☽☾     | 3 1   |       | ☽☾     | 14 19 |       | ☽☾     | 12 52 |       | ☽☾     | 17 44 |
|       | ☽☾     | 11 54 |       | ☽☾     | 0 4   |       | ☽☾     | 19 10 |       | ☽☾     | 18 54 |
|       | ☽☾     | 13 50 |       | ☽☾     | 8 51  |       | ☽☾     | 3 34  |       | ☽☾     | 1 42  |
|       | ☽☾     | 2 31  |       | ☽☾     | 16 12 |       | ☽☾     | 5 44  |       | ☽☾     | 11 54 |
|       | ☽☾     | 5 4   |       | ☽☾     | 19 27 |       | ☽☾     | 15 48 |       | ☽☾     | 14 36 |
|       | ☽☾     | 5 7   |       | ☽☾     | 19 37 |       | ☽☾     | 4 4   |       | ☽☾     | 14 42 |
|       | ☽☾     | 14 15 |       | ☽☾     | 8 51  |       | ☽☾     | 7 8   |       | ☽☾     | 16 51 |
|       | ☽☾     | 14 29 |       | ☽☾     | 16 12 |       | ☽☾     | 9 58  |       | ☽☾     | 18 34 |
|       | ☽☾     | 14 50 |       | ☽☾     | 19 19 |       | ☽☾     | 20 47 |       | ☽☾     | 20 19 |
|       | ☽☾     | 21 15 |       | ☽☾     | 2 48  |       | ☽☾     | 21 59 |       | ☽☾     | 20 49 |
|       | ☽☾     | 4 23  |       | ☽☾     | 5 54  |       | ☽☾     | 4 19  |       | ☽☾     | 22 3  |
|       | ☽☾     | 5 54  |       | ☽☾     | 23 16 |       | ☽☾     | 11 3  |       | ☽☾     | 22 9  |
|       | ☽☾     | 6 20  |       | ☽☾     | 23 16 |       | ☽☾     | 13 24 |       | ☽☾     | 2 23  |
|       | ☽☾     |       |       | ☽☾     |       |       | ☽☾     | 22 47 |       | ☽☾     | 2 27  |



| Timings of Lunar Aspects in 1957.—(contd.) |        |       |       |        |       |       |        |       |       |        |       |
|--------------------------------------------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
| Date.                                      | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
| October                                    |        |       |       |        |       |       |        |       |       |        |       |
|                                            |        | H. M. |       |        | H. M. |       |        | H. M. |       |        | H. M. |
| 50                                         | ☿ ♀    | 14 10 | 1     | ♂ ♀    | 3 50  | 12    | ♂ ♀    | 8 40  | 22    | ♂ ♀    | 6 18  |
|                                            | ☿ ☿    | 14 59 |       | ♂ ☿    | 5 53  |       | ♂ ☿    | 12 18 |       | ♂ ☿    | 13 32 |
|                                            | ☿ ♀    | 15 25 |       | ♂ ♀    | 6 49  |       | ♂ ♀    | 15 53 |       | ♂ ♀    | 14 3  |
|                                            | ☿ ☿    | 17 3  | 2     | ♂ ☿    | 0 56  | 13    | ♂ ☿    | 21 36 | 22    | ♂ ☿    | 4 48  |
|                                            | ☿ ♀    | 20 4  |       | ♂ ♀    | 5 11  |       | ♂ ♀    | 21 59 |       | ♂ ♀    | 4 59  |
| 23                                         | ♂ ♀    | 2 14  |       | ♂ ♀    | 9 7   | 14    | ♂ ♀    | 0 24  | 23    | ♂ ♀    | 8 33  |
|                                            | ♂ ☿    | 16 47 |       | ♂ ☿    | 22 23 |       | ♂ ☿    | 2 36  |       | ♂ ☿    | 11 53 |
|                                            | ♂ ♀    | 17 29 |       | ♂ ♀    | 22 35 |       | ♂ ♀    | 14 35 |       | ♂ ♀    | 13 42 |
|                                            | ♂ ☿    | 23 35 | 3     | ♂ ☿    | 6 56  | 15    | ♂ ☿    | 15 9  | 23    | ♂ ☿    | 16 13 |
| 24                                         | ♂ ☿    | 0 51  |       | ♂ ☿    | 6 59  |       | ♂ ☿    | 17 38 |       | ♂ ☿    | 5 25  |
|                                            | ♂ ♀    | 1 52  |       | ♂ ♀    | 15 4  | 16    | ♂ ♀    | 18 12 |       | ♂ ♀    | 8 52  |
|                                            | ♂ ☿    | 1 58  |       | ♂ ☿    | 15 21 | 17    | ♂ ☿    | 20 40 | 24    | ♂ ☿    | 10 15 |
|                                            | ♂ ♀    | 14 33 |       | ♂ ♀    | 15 22 |       | ♂ ♀    | 2 14  |       | ♂ ♀    | 10 53 |
|                                            | ♂ ☿    | 15 30 |       | ♂ ☿    | 18 57 | 14    | ♂ ☿    | 9 1   |       | ♂ ☿    | 14 7  |
|                                            | ♂ ♀    | 16 36 | 4     | ♂ ♀    | 14 49 | 15    | ♂ ♀    | 19 22 | 24    | ♂ ♀    | 14 42 |
|                                            | ♂ ☿    | 19 16 |       | ♂ ☿    | 19 3  |       | ♂ ☿    | 5 26  |       | ♂ ☿    | 5 47  |
| 25                                         | ♂ ♀    | 21 40 | 5     | ♂ ♀    | 0 16  | 16    | ♂ ♀    | 5 52  | 25    | ♂ ♀    | 6 12  |
|                                            | ♂ ☿    | 1 48  |       | ♂ ☿    | 1 43  |       | ♂ ☿    | 13 16 |       | ♂ ☿    | 13 39 |
|                                            | ♂ ♀    | 14 45 |       | ♂ ♀    | 2 22  | 17    | ♂ ♀    | 21 51 | 26    | ♂ ♀    | 13 45 |
|                                            | ♂ ☿    | 23 47 |       | ♂ ☿    | 10 43 |       | ♂ ☿    | 22 30 |       | ♂ ☿    | 19 53 |
| 26                                         | ♂ ♀    | 1 59  |       | ♂ ♀    | 10 59 | 18    | ♂ ♀    | 3 43  | 27    | ♂ ♀    | 15 33 |
|                                            | ♂ ☿    | 2 13  |       | ♂ ☿    | 22 53 |       | ♂ ☿    | 4 8   |       | ♂ ☿    | 16 7  |
|                                            | ♂ ♀    | 2 19  | 6     | ♂ ♀    | 4 0   | 19    | ♂ ♀    | 8 30  | 28    | ♂ ♀    | 17 6  |
|                                            | ♂ ☿    | 4 30  |       | ♂ ☿    | 5 48  |       | ♂ ☿    | 18 10 |       | ♂ ☿    | 17 49 |
|                                            | ♂ ♀    | 15 34 |       | ♂ ♀    | 8 38  | 17    | ♂ ♀    | 19 10 | 29    | ♂ ♀    | 22 45 |
|                                            | ♂ ☿    | 17 5  |       | ♂ ☿    | 9 21  |       | ♂ ☿    | 0 25  |       | ♂ ☿    | 8 57  |
| 27                                         | ♂ ♀    | 17 37 |       | ♂ ♀    | 19 27 | 18    | ♂ ♀    | 10 28 | 26    | ♂ ♀    | 9 38  |
|                                            | ♂ ☿    | 0 41  |       | ♂ ☿    | 12 48 |       | ♂ ☿    | 10 57 |       | ♂ ☿    | 18 11 |
|                                            | ♂ ♀    | 2 30  | 7     | ♂ ♀    | 14 13 | 19    | ♂ ♀    | 22 15 | 27    | ♂ ♀    | 19 25 |
|                                            | ♂ ☿    | 3 50  |       | ♂ ☿    | 23 30 |       | ♂ ☿    | 2 17  |       | ♂ ☿    | 20 27 |
|                                            | ♂ ♀    | 4 13  |       | ♂ ♀    | 23 49 | 18    | ♂ ♀    | 2 48  | 28    | ♂ ♀    | 21 55 |
|                                            | ♂ ☿    | 19 2  | 8     | ♂ ☿    | 1 5   |       | ♂ ☿    | 8 42  |       | ♂ ☿    | 23 46 |
| 28                                         | ♂ ♀    | 5 14  |       | ♂ ♀    | 14 57 | 19    | ♂ ♀    | 9 59  | 27    | ♂ ♀    | 2 33  |
|                                            | ♂ ☿    | 5 23  |       | ♂ ☿    | 16 58 |       | ♂ ☿    | 19 1  |       | ♂ ☿    | 11 45 |
|                                            | ♂ ♀    | 7 27  |       | ♂ ♀    | 18 28 | 20    | ♂ ♀    | 1 55  | 28    | ♂ ♀    | 11 56 |
|                                            | ♂ ☿    | 11 30 |       | ♂ ☿    | 22 8  |       | ♂ ☿    | 10 1  |       | ♂ ☿    | 22 40 |
|                                            | ♂ ♀    | 19 47 | 9     | ♂ ♀    | 23 31 | 21    | ♂ ♀    | 12 6  | 29    | ♂ ♀    | 1 56  |
|                                            | ♂ ☿    | 21 51 |       | ♂ ☿    | 3 12  |       | ♂ ☿    | 12 51 |       | ♂ ☿    | 7 0   |
| 29                                         | ♂ ♀    | 21 58 |       | ♂ ♀    | 5 36  | 22    | ♂ ♀    | 13 23 | 30    | ♂ ♀    | 15 35 |
|                                            | ♂ ☿    | 8 16  | 10    | ♂ ☿    | 23 1  |       | ♂ ☿    | 23 0  |       | ♂ ☿    | 16 42 |
|                                            | ♂ ♀    | 10 15 |       | ♂ ♀    | 8 26  | 23    | ♂ ♀    | 4 12  | 31    | ♂ ♀    | 2 17  |
|                                            | ♂ ☿    | 12 35 |       | ♂ ☿    | 11 24 |       | ♂ ☿    | 4 16  |       | ♂ ☿    | 10 39 |
|                                            | ♂ ♀    | 1 24  |       | ♂ ♀    | 11 46 | 24    | ♂ ♀    | 4 18  |       | ♂ ♀    | 13 24 |
|                                            | ♂ ☿    | 11 58 |       | ♂ ☿    | 22 46 | 25    | ♂ ☿    | 4 18  |       | ♂ ☿    | 21 40 |
|                                            | ♂ ♀    | 12 10 | 11    | ♂ ♀    | 4 43  | 26    | ♂ ♀    | 10 51 |       | ♂ ♀    | 7 56  |
|                                            | ♂ ☿    | 17 2  |       | ♂ ☿    | 5 40  |       | ♂ ☿    | 13 38 |       | ♂ ☿    | 16 44 |
|                                            | ♂ ♀    | 17 13 |       | ♂ ♀    | 5 57  | 21    | ♂ ♀    | 15 25 |       | ♂ ♀    | 18 50 |
|                                            | ♂ ☿    | 23 25 |       | ♂ ☿    | 10 28 |       | ♂ ☿    | 2 26  |       | ♂ ☿    |       |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 19 25 |       | ♂ ♀    | 4 36  |       | ♂ ♀    |       |

| Timings of Lunar Aspects in 1957.—(contd.) |        |       |       |        |       |       |        |       |       |        |       |
|--------------------------------------------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
| Date.                                      | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
| November                                   |        |       |       |        |       |       |        |       |       |        |       |
|                                            |        | H. M. |       |        | H. M. |       |        | H. M. |       |        | H. M. |
| 31                                         | ♂ ♀    | 1 31  | 10    | ♂ ♀    | 1 26  | 19    | ♂ ♀    | 18 49 | 2     | ♂ ♀    | 11 24 |
|                                            | ♂ ☿    | 1 50  |       | ♂ ☿    | 1 48  |       | ♂ ☿    | 23 36 |       | ♂ ☿    | 3 28  |
|                                            | ♂ ♀    | 3 24  |       | ♂ ♀    | 5 52  |       | ♂ ♀    | 6 38  |       | ♂ ♀    | 5 59  |
|                                            | ♂ ☿    | 14 2  |       | ♂ ☿    | 9 4   |       | ♂ ☿    | 15 0  |       | ♂ ☿    | 12 29 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 9 52  |       | ♂ ♀    | 15 30 |       | ♂ ♀    | 15 46 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 13 14 |       | ♂ ☿    | 19 59 |       | ♂ ☿    | 16 12 |
|                                            | ♂ ♀    |       | 11    | ♂ ♀    | 5 48  | 20    | ♂ ♀    | 0 36  |       | ♂ ♀    | 22 12 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 10 40 |       | ♂ ☿    | 2 14  | 30    | ♂ ☿    | 3 17  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 11 49 |       | ♂ ♀    | 9 24  |       | ♂ ♀    | 6 34  |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 13 1  |       | ♂ ☿    | 16 21 |       | ♂ ☿    | 12 22 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 14 34 |       | ♂ ♀    | 18 59 |       | ♂ ♀    | 22 33 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 18 26 |       | ♂ ☿    | 21 19 |       | ♂ ☿    |       |
|                                            | ♂ ♀    |       | 12    | ♂ ♀    | 4 46  |       | ♂ ♀    | 22 22 |       | ♂ ♀    |       |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 8 11  | 21    | ♂ ☿    | 9 33  |       | ♂ ☿    |       |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 12 10 |       | ♂ ♀    | 21 53 |       | ♂ ♀    |       |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 14 36 | 22    | ♂ ☿    | 1 47  |       | ♂ ☿    |       |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 19 24 |       | ♂ ♀    | 3 19  |       | ♂ ♀    |       |
|                                            | ♂ ☿    |       | 13    | ♂ ☿    | 19 53 |       | ♂ ☿    | 5 6   | 1     | ♂ ☿    | 4 32  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 10 44 |       | ♂ ♀    | 1 34  |       | ♂ ♀    | 7 46  |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 16 53 |       | ♂ ☿    | 14 59 |       | ♂ ☿    | 11 26 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 17 44 |       | ♂ ♀    | 19 34 |       | ♂ ♀    | 16 6  |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 18 20 | 23    | ♂ ☿    | 1 12  |       | ♂ ☿    | 19 8  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 18 27 |       | ♂ ♀    | 4 29  |       | ♂ ♀    | 19 8  |
|                                            | ♂ ☿    |       | 14    | ♂ ☿    | 3 33  |       | ♂ ☿    | 5 52  | 2     | ♂ ☿    | 6 47  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 9 19  |       | ♂ ♀    | 7 10  |       | ♂ ♀    | 10 47 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 13 4  |       | ♂ ☿    | 14 16 |       | ♂ ☿    | 19 27 |
|                                            | ♂ ♀    |       | 15    | ♂ ♀    | 0 39  |       | ♂ ♀    | 18 47 |       | ♂ ♀    | 19 38 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 3 27  |       | ♂ ☿    | 22 5  |       | ♂ ☿    | 22 1  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 7 20  | 24    | ♂ ♀    | 6 46  | 3     | ♂ ♀    | 11 48 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 20 21 |       | ♂ ☿    | 8 12  |       | ♂ ☿    | 15 23 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 21 49 |       | ♂ ♀    | 10 12 |       | ♂ ♀    | 18 0  |
|                                            | ♂ ☿    |       | 16    | ♂ ☿    | 0 21  |       | ♂ ☿    | 23 27 |       | ♂ ☿    | 18 0  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 2 28  | 25    | ♂ ♀    | 1 20  | 4     | ♂ ♀    | 2 54  |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 3 14  |       | ♂ ☿    | 7 44  |       | ♂ ☿    | 3 47  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 10 42 |       | ♂ ♀    | 11 43 |       | ♂ ♀    | 6 34  |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 12 18 |       | ♂ ☿    | 12 35 |       | ♂ ☿    | 21 38 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 16 25 |       | ♂ ♀    | 16 39 |       | ♂ ♀    | 23 7  |
|                                            | ♂ ☿    |       | 17    | ♂ ☿    | 23 6  |       | ♂ ☿    | 17 40 | 5     | ♂ ☿    | 6 48  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 2 48  |       | ♂ ♀    | 22 5  |       | ♂ ♀    | 9 24  |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 4 0   | 26    | ♂ ☿    | 12 17 |       | ♂ ☿    | 10 48 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 9 51  |       | ♂ ♀    | 16 16 |       | ♂ ♀    | 22 21 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 13 23 |       | ♂ ☿    | 18 33 | 6     | ♂ ☿    | 7 38  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 22 38 |       | ♂ ♀    | 19 39 |       | ♂ ♀    | 12 47 |
|                                            | ♂ ☿    |       | 18    | ♂ ☿    | 0 12  |       | ♂ ☿    | 2 2   |       | ♂ ☿    | 15 33 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 5 0   |       | ♂ ♀    | 10 21 |       | ♂ ♀    | 17 31 |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 11 12 |       | ♂ ☿    | 11 41 | 7     | ♂ ☿    | 1 24  |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 12 41 |       | ♂ ♀    | 17 36 |       | ♂ ♀    | 5 35  |
|                                            | ♂ ☿    |       |       | ♂ ☿    | 14 20 |       | ♂ ☿    | 7 34  |       | ♂ ☿    | 11 46 |
|                                            | ♂ ♀    |       |       | ♂ ♀    | 16 32 |       | ♂ ♀    | 9 13  |       | ♂ ♀    | 12 59 |

# December



| Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
|       |        | H. M. |       |        | H. M. |       |        | H. H. |       |        | H. M. |
| 8     | ♂ ♀    | 14 53 | 14    | ♂ ♀    | 3 24  | 21    | ♂ ♀    | 3 45  | 27    | ♂ ♀    | 15 59 |
|       | ♂ ♀    | 18 52 |       | ♂ ♀    | 6 16  |       | ♂ ♀    | 4 59  |       | ♂ ♀    | 5 15  |
|       | ♂ ♀    | 19 46 |       | ♂ ♀    | 9 28  |       | ♂ ♀    | 15 58 |       | ♂ ♀    | 9 0   |
|       | ♂ ♀    | 5 48  |       | ♂ ♀    | 11 16 |       | ♂ ♀    | 17 57 |       | ♂ ♀    | 10 33 |
|       | ♂ ♀    | 8 31  |       | ♂ ♀    | 14 42 |       | ♂ ♀    | 5 8   |       | ♂ ♀    | 21 17 |
|       | ♂ ♀    | 16 51 |       | ♂ ♀    | 18 11 |       | ♂ ♀    | 6 24  |       | ♂ ♀    | 22 7  |
|       | ♂ ♀    | 21 35 |       | ♂ ♀    | 18 41 |       | ♂ ♀    | 8 3   |       | ♂ ♀    | 11 32 |
|       | ♂ ♀    | 23 47 |       | ♂ ♀    | 4 46  |       | ♂ ♀    | 10 58 |       | ♂ ♀    | 15 54 |
|       | ♂ ♀    | 3 44  |       | ♂ ♀    | 7 49  |       | ♂ ♀    | 11 43 |       | ♂ ♀    | 18 3  |
|       | ♂ ♀    | 10 52 |       | ♂ ♀    | 12 20 |       | ♂ ♀    | 17 25 |       | ♂ ♀    | 19 59 |
|       | ♂ ♀    | 20 13 |       | ♂ ♀    | 17 32 |       | ♂ ♀    | 21 0  |       | ♂ ♀    | 0 6   |
|       | ♂ ♀    | 20 58 |       | ♂ ♀    | 20 10 |       | ♂ ♀    | 6 3   |       | ♂ ♀    | 3 55  |
|       | ♂ ♀    | 21 0  |       | ♂ ♀    | 20 24 |       | ♂ ♀    | 9 35  |       | ♂ ♀    | 4 37  |
|       | ♂ ♀    | 3 16  |       | ♂ ♀    | 6 52  |       | ♂ ♀    | 15 54 |       | ♂ ♀    | 10 20 |
|       | ♂ ♀    | 10 55 |       | ♂ ♀    | 18 23 |       | ♂ ♀    | 20 57 |       | ♂ ♀    | 17 50 |
|       | ♂ ♀    | 22 14 |       | ♂ ♀    | 20 28 |       | ♂ ♀    | 23 2  |       | ♂ ♀    | 1 22  |
|       | ♂ ♀    | 22 48 |       | ♂ ♀    | 21 55 |       | ♂ ♀    | 16 1  |       | ♂ ♀    | 6 25  |
|       | ♂ ♀    | 0 39  |       | ♂ ♀    | 8 2   |       | ♂ ♀    | 21 38 |       | ♂ ♀    | 10 38 |
|       | ♂ ♀    | 0 51  |       | ♂ ♀    | 8 46  |       | ♂ ♀    | 0 6   |       | ♂ ♀    | 12 6  |
|       | ♂ ♀    | 1 37  |       | ♂ ♀    | 11 12 |       | ♂ ♀    | 1 8   |       | ♂ ♀    | 3 28  |
|       | ♂ ♀    | 10 56 |       | ♂ ♀    | 18 21 |       | ♂ ♀    | 3 38  |       | ♂ ♀    | 5 3   |
|       | ♂ ♀    | 14 24 |       | ♂ ♀    | 22 9  |       | ♂ ♀    | 4 59  |       | ♂ ♀    | 12 20 |
|       | ♂ ♀    | 0 3   |       | ♂ ♀    | 23 31 |       | ♂ ♀    | 8 32  |       | ♂ ♀    | 16 44 |
|       | ♂ ♀    | 4 25  |       | ♂ ♀    | 23 41 |       | ♂ ♀    | 18 7  |       | ♂ ♀    | 16 50 |
|       | ♂ ♀    | 9 12  |       | ♂ ♀    | 10 52 |       | ♂ ♀    | 20 44 |       | ♂ ♀    | 19 40 |
|       | ♂ ♀    | 13 46 |       | ♂ ♀    | 0 14  |       | ♂ ♀    | 7 35  |       | ♂ ♀    |       |
|       | ♂ ♀    | 14 43 |       | ♂ ♀    | 2 15  |       | ♂ ♀    | 8 44  |       | ♂ ♀    |       |
|       | ♂ ♀    | 1 53  |       | ♂ ♀    | 2 21  |       | ♂ ♀    | 10 46 |       | ♂ ♀    |       |
|       | ♂ ♀    | 4 46  |       | ♂ ♀    | 2 59  |       | ♂ ♀    | 11 34 |       | ♂ ♀    |       |
|       | ♂ ♀    | 6 38  |       | ♂ ♀    | 11 58 |       | ♂ ♀    | 11 33 |       | ♂ ♀    |       |
|       | ♂ ♀    | 16 14 |       | ♂ ♀    | 15 20 |       | ♂ ♀    | 13 28 |       | ♂ ♀    |       |
|       | ♂ ♀    | 16 27 |       | ♂ ♀    | 1 2   |       | ♂ ♀    | 15 51 |       | ♂ ♀    |       |
|       | ♂ ♀    | 17 16 |       | ♂ ♀    | 2 22  |       | ♂ ♀    |       |       | ♂ ♀    |       |

| Date.   | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. | Date. | Aspect | Time. |
|---------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|
|         |        | H. M. |       |        | H. M. |       |        | H. M. |       |        | H. M. |
| January |        |       |       |        |       | May   |        |       |       |        |       |
| 1       | ♂ ♀    | 10 4  | 7     | ♂ ♀    | 7 42  | 16    | ♂ ♀    | 7 8   | 1     | ♂ ♀    | 11 29 |
| 3       | ♂ ♀    | 4 25  | 9     | ♂ ♀    | 3 38  | 17    | ♂ ♀    | 10 19 | 2     | ♂ ♀    | 13 16 |
| 4       | ♂ ♀    | 10 58 | 10    | ♂ ♀    | 4 24  | 18    | ♂ ♀    | 4 57  | 3     | ♂ ♀    | 19 43 |
| 5       | ♂ ♀    | 11 48 | 11    | ♂ ♀    | 0 40  | 19    | ♂ ♀    | 9 0   | 4     | ♂ ♀    | 12 21 |
| 6       | ♂ ♀    | 13 36 | 12    | ♂ ♀    | 16 23 | 20    | ♂ ♀    | 12 30 | 5     | ♂ ♀    | 14 58 |
| 7       | ♂ ♀    | 22 17 | 13    | ♂ ♀    | 23 54 | 21    | ♂ ♀    | 22 30 | 6     | ♂ ♀    | 19 55 |
| 8       | ♂ ♀    | 4 49  | 14    | ♂ ♀    | 6 18  | 22    | ♂ ♀    | 15 38 | 7     | ♂ ♀    | 12 42 |
| 9       | ♂ ♀    | 12 47 | 15    | ♂ ♀    | 9 20  | 23    | ♂ ♀    | 9 44  | 8     | ♂ ♀    | 13 27 |
| 10      | ♂ ♀    | 14 58 | 16    | ♂ ♀    | 23 29 | 24    | ♂ ♀    | 15 22 | 9     | ♂ ♀    | 18 24 |
| 12      | ♂ ♀    | 5 53  | 17    | ♂ ♀    | 17 9  | 25    | ♂ ♀    | 1 31  | 10    | ♂ ♀    | 12 4  |
| 13      | ♂ ♀    | 9 6   | 18    | ♂ ♀    | 6 13  | 26    | ♂ ♀    | 1 1   | 11    | ♂ ♀    | 13 27 |
| 14      | ♂ ♀    | 21 8  | 19    | ♂ ♀    | 17 9  | 27    | ♂ ♀    | 1 34  | 12    | ♂ ♀    | 8 39  |
| 15      | ♂ ♀    | 12 0  | 20    | ♂ ♀    | 15 15 | 28    | ♂ ♀    | 8 34  | 13    | ♂ ♀    | 2 7   |
| 17      | ♂ ♀    | 1 7   | 21    | ♂ ♀    | 20 31 | 29    | ♂ ♀    | 12 0  | 14    | ♂ ♀    | 6 27  |
| 18      | ♂ ♀    | 14 19 | 22    | ♂ ♀    | 12 0  | 30    | ♂ ♀    | 2 17  | 15    | ♂ ♀    | 18 18 |
| 19      | ♂ ♀    | 2 35  | 23    | ♂ ♀    | 8 47  | 31    | ♂ ♀    | 2 30  | 16    | ♂ ♀    | 13 46 |
| 20      | ♂ ♀    | 0 4   | 24    | ♂ ♀    | 5 25  |       | ♂ ♀    | 18 55 | 17    | ♂ ♀    | 12 0  |
| 21      | ♂ ♀    | 7 26  | 25    | ♂ ♀    | 3 28  | April |        |       |       |        |       |
| 22      | ♂ ♀    | 5 6   | 26    | ♂ ♀    | 19 23 | 1     | ♂ ♀    | 5 8   | 21    | ♂ ♀    | 12 0  |
| 23      | ♂ ♀    | 5 34  | 27    | ♂ ♀    | 2 24  | 2     | ♂ ♀    | 13 12 | 22    | ♂ ♀    | 0 16  |
| 24      | ♂ ♀    | 13 43 | 28    | ♂ ♀    | 21 58 | 3     | ♂ ♀    | 9 54  | 23    | ♂ ♀    | 10 28 |
| 25      | ♂ ♀    | 0 0   | 29    | ♂ ♀    | 0 50  | 4     | ♂ ♀    | 16 17 | 24    | ♂ ♀    | 14 11 |
| 26      | ♂ ♀    | 1 28  | 30    | ♂ ♀    | 10 28 | 5     | ♂ ♀    | 22 30 | 25    | ♂ ♀    | 14 56 |
| 27      | ♂ ♀    | 9 36  |       | ♂ ♀    | 15 32 | 6     | ♂ ♀    | 17 17 | 26    | ♂ ♀    | 23 25 |
| 28      | ♂ ♀    | 17 55 | March |        |       |       |        |       | 27    | ♂ ♀    | 12 2  |
| 29      | ♂ ♀    | 12 0  | 2     | ♂ ♀    | 3 28  | 7     | ♂ ♀    | 15 14 | 28    | ♂ ♀    | 16 57 |
| 30      | ♂ ♀    | 0 0   | 3     | ♂ ♀    | 1 37  | 8     | ♂ ♀    | 22 30 | 29    | ♂ ♀    | 2 0   |
| 31      | ♂ ♀    | 7 37  | 4     | ♂ ♀    | 6 14  | 9     | ♂ ♀    | 15 14 | 30    | ♂ ♀    | 12 13 |
|         | ♂ ♀    | 17 17 | 5     | ♂ ♀    | 8 16  | 10    | ♂ ♀    | 22 30 | 31    | ♂ ♀    |       |
|         | ♂ ♀    |       | 6     | ♂ ♀    | 12 7  | 11    | ♂ ♀    | 13 2  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 7     | ♂ ♀    | 18 13 | 12    | ♂ ♀    | 5 29  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 8     | ♂ ♀    | 4 44  | 13    | ♂ ♀    | 22 1  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 9     | ♂ ♀    | 12 0  | 14    | ♂ ♀    | 7 31  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 10    | ♂ ♀    | 14 40 | 15    | ♂ ♀    | 13 10 |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 11    | ♂ ♀    | 16 46 | 16    | ♂ ♀    | 1 43  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 12    | ♂ ♀    | 6 40  | 17    | ♂ ♀    | 18 0  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 13    | ♂ ♀    | 10 29 | 18    | ♂ ♀    | 0 0   |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 14    | ♂ ♀    | 12 6  | 19    | ♂ ♀    | 56 6  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 15    | ♂ ♀    | 10 28 | 20    | ♂ ♀    | 20 18 |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 16    | ♂ ♀    | 11 24 | 21    | ♂ ♀    | 15 9  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 17    | ♂ ♀    | 11 28 | 22    | ♂ ♀    | 2 54  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 18    | ♂ ♀    | 16 3  | 23    | ♂ ♀    | 12 0  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 19    | ♂ ♀    | 10 29 | 24    | ♂ ♀    | 5 21  |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 20    | ♂ ♀    | 12 6  | 25    | ♂ ♀    | 16 32 |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 21    | ♂ ♀    | 10 4  | 26    | ♂ ♀    | 22 23 |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 22    | ♂ ♀    | 11 28 | 27    | ♂ ♀    | 4 3   |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 23    | ♂ ♀    | 13 16 | 28    | ♂ ♀    | 15 12 |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 24    | ♂ ♀    | 15 15 | 29    | ♂ ♀    | 3 9   |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 25    | ♂ ♀    | 17 17 | 30    | ♂ ♀    | 15 33 |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 26    | ♂ ♀    | 19 40 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 27    | ♂ ♀    | 21 55 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 28    | ♂ ♀    | 23 5  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 29    | ♂ ♀    | 5 34  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 30    | ♂ ♀    | 13 43 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       | 31    | ♂ ♀    | 23 5  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 0 0   |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 1 37  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 6 14  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 12 7  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 18 13 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 4 44  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 12 0  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 14 40 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 16 46 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 6 40  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 10 29 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 12 6  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 10 28 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 11 24 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 11 28 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 16 3  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 10 29 |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 12 6  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 10 4  |       | ♂ ♀    |       |       | ♂ ♀    |       |
|         | ♂ ♀    |       |       | ♂ ♀    | 11 28 |       | ♂ ♀    |       |       | ♂ ♀    |       |



## 54 The "Parallel" Aspects of Planets in 1957—(contd.)

| Date. | Aspect | Time. | Date.  | Aspect | Time. | Date.     | Aspect | Time. | Date.    | Aspect | Time. |
|-------|--------|-------|--------|--------|-------|-----------|--------|-------|----------|--------|-------|
| 17    | L      | H. M. | 28     | L      | H. M. | 28        | L      | H. M. | October  |        |       |
| 18    | L      | 10 4  | 29     | L      | 23 31 | 29        | L      | 11 32 | 1        | L      | 8 55  |
| 20    | L      | 16 24 | 30     | L      | 12 54 | 30        | L      | 22 0  | 2        | L      | 20 12 |
| 21    | L      | 22 43 |        | L      | 4 33  | 31        | L      | 0 0   | 3        | L      | 8 2   |
| 22    | L      | 19 37 |        | L      | 19 43 |           |        | 17 44 | 4        | L      | 21 36 |
| 23    | L      | 21 0  | August |        |       | September |        |       | 5        | L      | 21 39 |
| 24    | L      | 5 9   |        |        |       |           |        |       | 6        | L      | 23 47 |
| 25    | L      | 7 47  |        |        |       |           |        |       | 7        | L      | 24 42 |
| 26    | L      | 1 31  |        |        |       |           |        |       | 8        | L      | 11 31 |
| 27    | L      | 3 16  |        |        |       |           |        |       | 9        | L      | 14 47 |
| 28    | L      | 22 46 |        |        |       |           |        |       | 10       | L      | 17 50 |
| 29    | L      | 20 2  |        |        |       |           |        |       | 11       | L      | 12 50 |
| 30    | L      | 2 40  |        |        |       |           |        |       | 12       | L      | 19 8  |
| 31    | L      | 7 4   |        |        |       |           |        |       | 13       | L      | 12 31 |
|       |        | 15 2  |        |        |       |           |        |       | 14       | L      | 18 33 |
|       |        | 0 28  |        |        |       |           |        |       | 15       | L      | 9 0   |
| July  |        |       |        |        |       |           |        |       | 16       | L      | 14 34 |
| 1     | L      | 1 20  |        |        |       |           |        |       | 17       | L      | 2 2   |
| 2     | L      | 12 5  |        |        |       |           |        |       | 18       | L      | 13 11 |
| 3     | L      | 19 45 |        |        |       |           |        |       | 19       | L      | 18 28 |
| 4     | L      | 5 42  |        |        |       |           |        |       | 20       | L      | 8 39  |
| 5     | L      | 7 58  |        |        |       |           |        |       | 21       | L      | 15 7  |
| 6     | L      | 10 32 |        |        |       |           |        |       | 22       | L      | 19 16 |
| 7     | L      | 16 5  |        |        |       |           |        |       | 23       | L      | 20 17 |
| 8     | L      | 1 47  |        |        |       |           |        |       | 24       | L      | 2 51  |
| 9     | L      | 13 41 |        |        |       |           |        |       | 25       | L      | 21 59 |
| 10    | L      | 20 23 |        |        |       |           |        |       | 26       | L      | 1 27  |
| 11    | L      | 0 4   |        |        |       |           |        |       | 27       | L      | 4 39  |
| 12    | L      | 1 6   |        |        |       |           |        |       | 28       | L      | 19 48 |
| 13    | L      | 8 52  |        |        |       |           |        |       | 29       | L      | 8 7   |
| 14    | L      | 8 26  |        |        |       |           |        |       | 30       | L      | 19 39 |
| 15    | L      | 20 56 |        |        |       |           |        |       | 31       | L      | 5 54  |
| 16    | L      | 8 6   |        |        |       |           |        |       |          |        | 1 38  |
| 17    | L      | 20 6  |        |        |       |           |        |       | November |        |       |
| 18    | L      | 16 52 |        |        |       |           |        |       | 1        | L      | 0 30  |
| 19    | L      | 5 28  |        |        |       |           |        |       | 2        | L      | 19 42 |
| 20    | L      | 0 36  |        |        |       |           |        |       | 3        | L      | 13 30 |
| 21    | L      | 0 24  |        |        |       |           |        |       | 4        | L      | 22 34 |
| 22    | L      | 1 24  |        |        |       |           |        |       | 5        | L      | 0 0   |
| 23    | L      | 17 9  |        |        |       |           |        |       |          |        |       |
| 24    | L      | 22 32 |        |        |       |           |        |       |          |        |       |
| 25    | L      | 11 44 |        |        |       |           |        |       |          |        |       |
| 26    | L      | 4 44  |        |        |       |           |        |       |          |        |       |
| 27    | L      | 17 11 |        |        |       |           |        |       |          |        |       |
| 28    | L      | 1 43  |        |        |       |           |        |       |          |        |       |
| 29    | L      | 14 54 |        |        |       |           |        |       |          |        |       |

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| Date. | Aspect | Time. | Date. | Aspect | Time. | Date.    | Aspect | Time. | Date. | Aspect | Time. |
|-------|--------|-------|-------|--------|-------|----------|--------|-------|-------|--------|-------|
| 18    | L      | H. M. | 19    | L      | H. M. | December |        |       | 19    | L      | H. M. |
| 19    | L      | 4 2   | 20    | L      | 13 26 | 2        | L      | 19 19 | 20    | L      | 8 0   |
| 20    | L      | 1 29  | 21    | L      | 5 2   | 3        | L      | 4 56  | 21    | L      | 0 39  |
| 21    | L      | 18 2  | 22    | L      | 17 53 | 4        | L      | 13 21 | 22    | L      | 4 46  |
| 22    | L      | 19 59 | 23    | L      | 12 41 | 5        | L      | 9 7   | 23    | L      | 2 44  |
| 23    | L      | 23 46 | 24    | L      | 6 4   | 6        | L      | 15 50 | 24    | L      | 7 41  |
| 24    | L      | 11 6  | 25    | L      | 13 7  | 7        | L      | 19 15 | 25    | L      | 12 52 |
| 25    | L      | 9 52  | 26    | L      | 18 0  | 8        | L      | 7 46  | 26    | L      | 15 0  |
| 26    | L      | 10 26 | 27    | L      | 14 36 | 9        | L      | 16 35 | 27    | L      | 2 55  |
| 27    | L      | 10 30 | 28    | L      | 15 11 | 10       | L      | 21 16 | 28    | L      | 21 18 |
| 28    | L      | 9 16  |       |        |       | 11       | L      | 17 39 | 29    | L      | 9 41  |
| 29    | L      | 17 2  |       |        |       | 12       | L      | 21 16 | 30    | L      | 2 21  |
| 30    | L      | 15 10 |       |        |       | 13       | L      | 8 59  | 31    | L      | 14 58 |
|       |        |       |       |        |       | 14       | L      | 2 12  |       |        | 1 20  |
|       |        |       |       |        |       | 15       | L      | 12 12 |       |        | 14 51 |
|       |        |       |       |        |       | 16       | L      | 2 12  |       |        | 2 28  |



Table of Ascendants for Latitudes 7° to 20°.—(contd.)

| Sid. Time. | 7°  | 8°     | 9°     | 10°    | 11°    | 12°    | 13°    | 14°    | 15°    | 16°    | 17°    | 18°    | 19°    | 20°    |
|------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| H. M.      | °   | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      |
| 0          | 92  | 48 93  | 12 93  | 34 94  | 0 94   | 25 94  | 50 95  | 15 95  | 40 96  | 5 96   | 30 96  | 56 97  | 22 97  | 47 98  |
| 15         | 96  | 13 96  | 37 97  | 1 97   | 25 97  | 50 98  | 14 98  | 39 99  | 3 99   | 28 99  | 53 100 | 18 100 | 44 101 | 10 101 |
| 30         | 99  | 39 100 | 3 100  | 27 100 | 50 101 | 14 101 | 38 102 | 2 102  | 27 102 | 51 103 | 15 103 | 40 104 | 5 104  | 31 104 |
| 45         | 102 | 3 103  | 28 103 | 52 104 | 15 104 | 39 105 | 3 105  | 27 105 | 50 106 | 15 106 | 38 107 | 3 107  | 27 107 | 52 108 |
| 1          | 106 | 31 106 | 54 107 | 16 107 | 40 108 | 3 108  | 26 108 | 49 109 | 13 109 | 36 110 | 0 110  | 23 110 | 47 111 | 11 111 |
| 15         | 109 | 58 110 | 20 110 | 42 111 | 5 111  | 28 111 | 51 112 | 13 112 | 36 112 | 59 113 | 21 113 | 45 114 | 8 114  | 31 114 |
| 30         | 113 | 24 113 | 47 114 | 9 114  | 31 114 | 53 115 | 15 115 | 37 115 | 59 116 | 21 116 | 43 117 | 6 117  | 28 117 | 51 118 |
| 45         | 116 | 54 117 | 14 117 | 36 117 | 58 118 | 19 118 | 40 119 | 2 119  | 23 119 | 45 120 | 6 120  | 27 120 | 49 121 | 11 121 |
| 2          | 120 | 23 120 | 44 121 | 4 121  | 25 121 | 45 122 | 7 122  | 27 122 | 47 123 | 9 123  | 29 123 | 50 124 | 11 124 | 31 124 |
| 15         | 123 | 53 124 | 14 124 | 34 124 | 55 125 | 14 125 | 34 125 | 53 126 | 13 126 | 33 126 | 53 127 | 13 127 | 33 127 | 53 128 |
| 30         | 127 | 26 127 | 45 128 | 4 128  | 24 128 | 42 129 | 1 129  | 24 129 | 39 129 | 58 130 | 17 130 | 37 130 | 56 131 | 15 131 |
| 45         | 131 | 1 131  | 18 131 | 37 131 | 56 132 | 13 132 | 31 132 | 49 133 | 7 133  | 25 133 | 43 134 | 1 134  | 20 134 | 38 134 |
| 3          | 134 | 37 134 | 54 135 | 12 135 | 29 135 | 45 136 | 2 136  | 19 136 | 36 136 | 53 137 | 10 137 | 26 137 | 43 138 | 0 138  |
| 15         | 138 | 14 138 | 31 138 | 47 139 | 4 139  | 19 139 | 35 139 | 51 140 | 6 140  | 22 140 | 38 140 | 54 141 | 10 141 | 25 141 |
| 30         | 141 | 53 142 | 10 142 | 25 142 | 40 142 | 55 143 | 10 143 | 25 143 | 39 143 | 54 144 | 8 144  | 23 144 | 37 144 | 52 145 |
| 45         | 145 | 36 145 | 50 146 | 4 146  | 19 146 | 31 146 | 45 146 | 59 147 | 12 147 | 27 147 | 39 147 | 52 148 | 5 148  | 19 148 |
| 4          | 149 | 20 149 | 33 149 | 45 149 | 59 150 | 10 150 | 22 150 | 35 150 | 47 150 | 59 151 | 11 151 | 23 151 | 35 151 | 46 151 |
| 15         | 153 | 6 153  | 17 153 | 29 153 | 40 153 | 50 154 | 0 154  | 11 154 | 22 154 | 33 154 | 43 154 | 55 155 | 5 155  | 15 155 |
| 30         | 156 | 54 157 | 3 157  | 22 157 | 32 157 | 41 157 | 51 158 | 0 158  | 10 158 | 19 158 | 29 158 | 37 158 | 46 158 | 55 158 |
| 45         | 160 | 41 160 | 51 161 | 12 161 | 21 161 | 27 161 | 35 161 | 42 161 | 50 161 | 58 162 | 5 162  | 13 162 | 20 162 | 28 162 |
| 5          | 164 | 33 164 | 39 164 | 45 164 | 51 164 | 58 165 | 4 165  | 11 165 | 17 165 | 23 165 | 30 165 | 36 165 | 42 165 | 49 165 |
| 15         | 168 | 22 168 | 28 168 | 33 168 | 38 168 | 43 168 | 47 168 | 52 168 | 57 169 | 2 169  | 7 169  | 11 169 | 16 169 | 20 169 |
| 30         | 172 | 16 172 | 19 172 | 21 172 | 24 172 | 28 172 | 31 172 | 35 172 | 37 172 | 40 172 | 42 172 | 47 172 | 51 172 | 54 172 |
| 45         | 176 | 6 176  | 9 176  | 11 176 | 12 176 | 14 176 | 15 176 | 18 176 | 19 176 | 20 176 | 22 176 | 23 176 | 24 176 | 27 176 |
| 6          | 180 | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  |

Table of Ascendants for Latitudes 7° to 20°.—(contd.)

| Sid. Time. | 7°    | 8°     | 9°     | 10°    | 11°    | 12°    | 13°    | 14°    | 15°    | 16°    | 17°    | 18°    | 19°    | 20°    |
|------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| H. M.      | °     | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      |
| 6          | 0 180 | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  | 0 180  |
| 15         | 183   | 53 183 | 51 183 | 49 183 | 48 183 | 46 183 | 45 183 | 42 183 | 41 183 | 40 183 | 38 183 | 37 183 | 36 183 | 33 183 |
| 30         | 187   | 45 187 | 41 187 | 39 187 | 36 187 | 32 187 | 29 187 | 25 187 | 23 187 | 20 187 | 16 187 | 13 187 | 9 187  | 6 187  |
| 45         | 191   | 36 191 | 32 191 | 27 191 | 22 191 | 17 191 | 13 191 | 8 191  | 3 190  | 58 190 | 53 190 | 49 190 | 44 190 | 40 190 |
| 7          | 0 195 | 27 195 | 22 195 | 15 195 | 9 195  | 2 194  | 56 194 | 49 194 | 43 194 | 37 194 | 30 194 | 24 194 | 18 194 | 11 194 |
| 15         | 199   | 19 199 | 10 199 | 2 198  | 52 198 | 46 198 | 37 198 | 25 198 | 18 198 | 14 198 | 6 198  | 0 197  | 51 197 | 44 197 |
| 30         | 203   | 7 202  | 57 202 | 48 202 | 38 202 | 28 202 | 19 202 | 9 202  | 0 201  | 51 201 | 41 201 | 32 201 | 23 201 | 14 201 |
| 45         | 206   | 55 206 | 43 206 | 31 206 | 20 206 | 10 205 | 59 205 | 49 205 | 38 205 | 27 205 | 17 205 | 5 204  | 55 204 | 45 204 |
| 8          | 0 210 | 40 210 | 27 210 | 15 210 | 1 209  | 50 209 | 38 209 | 25 209 | 13 209 | 1 208  | 49 208 | 37 208 | 25 208 | 14 208 |
| 15         | 214   | 24 214 | 10 213 | 56 213 | 41 213 | 29 213 | 15 213 | 1 212  | 48 212 | 33 212 | 21 212 | 8 211  | 55 211 | 41 211 |
| 30         | 218   | 4 217  | 50 217 | 35 217 | 20 217 | 5 216  | 50 216 | 35 216 | 21 216 | 6 215  | 52 215 | 37 215 | 23 215 | 8 214  |
| 45         | 221   | 46 221 | 30 221 | 13 220 | 56 220 | 41 220 | 25 220 | 9 219  | 54 219 | 38 219 | 22 219 | 6 218  | 50 218 | 35 218 |
| 9          | 0 225 | 22 225 | 6 224  | 49 224 | 31 224 | 15 223 | 58 223 | 41 223 | 24 223 | 7 222  | 50 222 | 34 222 | 17 222 | 0 221  |
| 15         | 229   | 0 228  | 42 228 | 23 228 | 4 227  | 47 227 | 29 227 | 11 226 | 53 226 | 35 226 | 17 225 | 59 225 | 40 225 | 22 225 |
| 30         | 232   | 34 232 | 15 231 | 56 231 | 36 231 | 18 230 | 59 230 | 46 230 | 21 230 | 2 229  | 43 229 | 23 229 | 7 231  | 47 228 |
| 45         | 236   | 6 235  | 46 235 | 26 235 | 5 234  | 46 234 | 26 234 | 7 233  | 47 233 | 27 233 | 7 232  | 47 232 | 27 232 | 7 231  |
| 10         | 0 239 | 37 239 | 17 238 | 56 238 | 35 238 | 15 237 | 53 237 | 33 237 | 13 236 | 51 236 | 31 236 | 10 235 | 49 235 | 29 235 |
| 15         | 243   | 7 242  | 46 242 | 24 242 | 2 241  | 41 241 | 20 240 | 58 240 | 37 240 | 15 239 | 54 239 | 33 239 | 11 238 | 48 238 |
| 30         | 246   | 36 246 | 13 245 | 51 245 | 29 245 | 7 244  | 45 244 | 23 244 | 1 243  | 39 243 | 17 242 | 54 242 | 32 242 | 9 241  |
| 45         | 250   | 2 249  | 40 249 | 18 248 | 55 248 | 32 248 | 9 247  | 47 247 | 25 247 | 1 246  | 39 246 | 15 245 | 52 245 | 29 245 |
| 11         | 0 253 | 29 253 | 7 252  | 44 252 | 20 251 | 57 251 | 34 251 | 11 250 | 47 250 | 24 250 | 0 249  | 37 249 | 13 248 | 49 248 |
| 15         | 256   | 56 256 | 37 256 | 8 255  | 45 255 | 21 254 | 33 254 | 52 254 | 10 253 | 45 253 | 22 252 | 57 252 | 33 252 | 8 251  |
| 30         | 260   | 21 259 | 57 259 | 34 259 | 10 258 | 24 258 | 22 257 | 58 257 | 35 257 | 9 256  | 45 256 | 20 255 | 55 255 | 29 255 |
| 45         | 263   | 47 263 | 23 262 | 59 262 | 35 262 | 10 261 | 46 261 | 21 260 | 57 260 | 32 260 | 7 259  | 42 259 | 16 258 | 50 258 |
| 12         | 0 267 | 13 266 | 48 266 | 23 266 | 0 265  | 35 265 | 10 264 | 45 264 | 20 263 | 55 263 | 30 263 | 4 262  | 38 262 | 13 261 |



Table of Ascendants for Latitudes 7° to 20°.—(contd.)

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| Sid. Time. | 7°  | 8°     | 9°     | 10°    | 11°    | 12°    | 13°    | 14°    | 15°    | 16°    | 17°    | 18°    | 19°    | 20°    |
|------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| H. M.      | °   | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      | °      |
| 12 0       | 267 | 13 266 | 48 266 | 23 266 | 0 265  | 35 265 | 10 264 | 45 264 | 20 263 | 55 263 | 30 263 | 4 262  | 38 262 | 13 261 |
| 15 0       | 270 | 38 270 | 14 269 | 49 269 | 25 269 | 0 268  | 35 268 | 10 267 | 44 267 | 19 266 | 53 266 | 27 266 | 1 265  | 34 265 |
| 30 0       | 274 | 4 273  | 41 273 | 17 272 | 51 272 | 27 272 | 2 271  | 36 271 | 11 270 | 47 270 | 21 269 | 55 269 | 27 269 | 0 268  |
| 45 0       | 277 | 34 277 | 9 276  | 44 276 | 20 275 | 55 275 | 3 274  | 42 274 | 39 274 | 13 273 | 47 273 | 21 272 | 54 272 | 27 271 |
| 13 0       | 281 | 3 280  | 38 280 | 14 279 | 50 279 | 25 279 | 0 278  | 35 278 | 9 277  | 43 277 | 17 276 | 51 276 | 24 275 | 57 275 |
| 15 0       | 284 | 34 284 | 10 283 | 45 283 | 21 282 | 56 282 | 31 282 | 6 281  | 41 281 | 15 280 | 48 280 | 22 279 | 55 279 | 28 279 |
| 30 0       | 288 | 8 287  | 44 287 | 19 286 | 55 286 | 30 286 | 6 285  | 41 285 | 15 284 | 50 284 | 24 283 | 58 283 | 30 283 | 3 282  |
| 45 0       | 291 | 41 291 | 19 290 | 55 290 | 32 290 | 7 289  | 43 289 | 18 288 | 53 288 | 27 288 | 0 287  | 35 287 | 8 286  | 41 286 |
| 14 0       | 295 | 19 294 | 56 294 | 33 294 | 11 293 | 46 293 | 22 292 | 58 292 | 34 292 | 8 291  | 42 291 | 17 290 | 50 290 | 23 289 |
| 30 0       | 302 | 43 302 | 21 301 | 59 301 | 37 301 | 14 300 | 51 300 | 28 300 | 4 299  | 40 299 | 15 298 | 50 298 | 25 297 | 9 297  |
| 45 0       | 306 | 29 306 | 8 305  | 46 305 | 27 305 | 3 304  | 41 304 | 18 303 | 55 303 | 32 303 | 8 302  | 44 302 | 19 301 | 54 301 |
| 15 0       | 310 | 17 309 | 59 309 | 38 309 | 17 308 | 56 308 | 35 308 | 13 307 | 51 307 | 28 307 | 5 306  | 41 306 | 17 305 | 52 305 |
| 30 0       | 314 | 11 313 | 52 313 | 32 313 | 12 312 | 52 312 | 32 312 | 12 311 | 51 311 | 30 311 | 6 310  | 45 310 | 22 309 | 58 309 |
| 45 0       | 318 | 7 317  | 50 317 | 32 317 | 12 316 | 55 316 | 34 316 | 15 315 | 55 315 | 35 315 | 14 314 | 53 314 | 31 314 | 9 313  |
| 16 0       | 322 | 6 321  | 50 321 | 32 321 | 12 320 | 58 320 | 41 320 | 23 319 | 53 319 | 35 319 | 14 318 | 53 318 | 31 318 | 9 317  |
| 30 0       | 326 | 11 325 | 55 325 | 39 325 | 24 325 | 7 324  | 51 324 | 34 324 | 17 324 | 0 323  | 42 323 | 23 323 | 5 322  | 45 322 |
| 45 0       | 330 | 14 330 | 2 329  | 49 329 | 33 329 | 20 329 | 5 328  | 49 328 | 34 328 | 18 328 | 2 327  | 46 327 | 29 327 | 10 326 |
| 17 0       | 334 | 25 334 | 11 334 | 0 333  | 47 333 | 35 333 | 22 333 | 9 332  | 56 332 | 41 332 | 28 332 | 13 331 | 58 331 | 42 331 |
| 30 0       | 338 | 37 338 | 25 338 | 15 338 | 5 337  | 54 337 | 42 337 | 31 337 | 19 337 | 8 336  | 56 336 | 43 336 | 30 336 | 17 336 |
| 45 0       | 342 | 37 342 | 41 342 | 33 342 | 25 342 | 15 342 | 6 341  | 58 341 | 48 341 | 38 341 | 28 341 | 17 341 | 7 340  | 56 340 |
| 15 0       | 346 | 53 346 | 58 346 | 52 346 | 47 346 | 39 346 | 33 346 | 25 346 | 18 346 | 11 346 | 3 345  | 55 345 | 47 345 | 39 345 |
| 30 0       | 351 | 22 351 | 18 351 | 15 351 | 11 351 | 6 351  | 56 351 | 46 351 | 35 351 | 24 351 | 13 350 | 56 350 | 47 350 | 39 350 |
| 45 0       | 355 | 42 355 | 40 355 | 38 355 | 34 355 | 33 355 | 31 355 | 29 355 | 26 355 | 23 355 | 20 355 | 17 355 | 15 355 | 13 355 |
| 18 0       | 0   | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |

Table of Ascendants for Latitudes 7° to 20°.—(contd.)

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| Sid. Time. | 7° | 8°  | 9° | 10° | 11° | 12° | 13° | 14° | 15° | 16° | 17° | 18° | 19° | 20° |
|------------|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| H. M.      | °  | °   | °  | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   |
| 18 0       | 0  | 0   | 0  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 15 0       | 4  | 19  | 4  | 26  | 4   | 27  | 4   | 31  | 4   | 34  | 4   | 43  | 4   | 47  |
| 30 0       | 8  | 37  | 8  | 46  | 8   | 54  | 8   | 49  | 9   | 9   | 9   | 24  | 9   | 35  |
| 45 0       | 12 | 56  | 13 | 13  | 13  | 21  | 13  | 35  | 13  | 42  | 13  | 57  | 14  | 14  |
| 19 0       | 17 | 14  | 17 | 27  | 17  | 45  | 17  | 54  | 18  | 12  | 18  | 18  | 13  | 19  |
| 15 0       | 21 | 27  | 21 | 45  | 21  | 62  | 21  | 61  | 22  | 18  | 22  | 28  | 18  | 23  |
| 30 0       | 25 | 35  | 25 | 55  | 25  | 72  | 25  | 68  | 26  | 23  | 26  | 32  | 23  | 28  |
| 45 0       | 29 | 46  | 29 | 62  | 29  | 89  | 29  | 84  | 30  | 27  | 32  | 37  | 28  | 33  |
| 20 0       | 33 | 51  | 34 | 70  | 34  | 101 | 34  | 96  | 35  | 30  | 35  | 40  | 30  | 36  |
| 15 0       | 37 | 54  | 38 | 77  | 38  | 104 | 38  | 99  | 39  | 33  | 38  | 43  | 33  | 39  |
| 30 0       | 41 | 58  | 42 | 82  | 42  | 108 | 42  | 103 | 43  | 36  | 41  | 46  | 36  | 42  |
| 45 0       | 45 | 62  | 46 | 86  | 46  | 112 | 46  | 107 | 47  | 39  | 44  | 49  | 38  | 45  |
| 21 0       | 49 | 66  | 50 | 90  | 50  | 116 | 50  | 111 | 51  | 41  | 46  | 51  | 41  | 47  |
| 15 0       | 53 | 70  | 53 | 97  | 53  | 120 | 53  | 115 | 54  | 44  | 49  | 54  | 44  | 50  |
| 30 0       | 57 | 74  | 57 | 101 | 57  | 124 | 57  | 119 | 58  | 47  | 52  | 57  | 47  | 53  |
| 45 0       | 61 | 78  | 61 | 105 | 61  | 128 | 61  | 123 | 62  | 50  | 55  | 60  | 50  | 56  |
| 22 0       | 64 | 81  | 64 | 108 | 64  | 131 | 64  | 126 | 65  | 53  | 58  | 63  | 53  | 59  |
| 15 0       | 68 | 85  | 68 | 112 | 68  | 135 | 68  | 130 | 69  | 56  | 61  | 66  | 56  | 62  |
| 30 0       | 71 | 88  | 71 | 115 | 71  | 138 | 71  | 133 | 72  | 59  | 64  | 69  | 59  | 65  |
| 45 0       | 75 | 92  | 75 | 119 | 75  | 142 | 75  | 137 | 76  | 62  | 67  | 72  | 62  | 68  |
| 23 0       | 78 | 95  | 78 | 122 | 78  | 145 | 78  | 140 | 79  | 65  | 70  | 75  | 65  | 71  |
| 15 0       | 82 | 99  | 82 | 126 | 82  | 149 | 82  | 144 | 83  | 68  | 73  | 78  | 68  | 74  |
| 30 0       | 85 | 102 | 85 | 129 | 85  | 152 | 85  | 147 | 86  | 71  | 76  | 81  | 71  | 77  |
| 45 0       | 89 | 106 | 89 | 133 | 89  | 156 | 89  | 151 | 90  | 74  | 79  | 84  | 74  | 80  |
| 24 0       | 92 | 109 | 92 | 136 | 92  | 159 | 92  | 154 | 93  | 77  | 82  | 87  | 77  | 83  |



Table of Ascendants for Latitudes 21° to 34°.—(contd.)

| Sid. Time. | 21° | 22° | 23° | 24° | 25° | 26° | 27° | 28° | 29° | 30° | 31° | 32° | 33° | 34° |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| H. M.      | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   |
| 0          | 98  | 41  | 99  | 35  | 100 | 31  | 100 | 59  | 101 | 27  | 101 | 56  | 102 | 34  |
| 15         | 102 | 2   | 102 | 55  | 103 | 22  | 103 | 49  | 104 | 17  | 104 | 45  | 105 | 18  |
| 30         | 105 | 22  | 105 | 48  | 106 | 14  | 106 | 40  | 107 | 7   | 107 | 33  | 108 | 2   |
| 45         | 108 | 42  | 109 | 7   | 109 | 23  | 110 | 49  | 111 | 16  | 111 | 43  | 112 | 29  |
| 1          | 0   | 112 | 24  | 112 | 49  | 113 | 39  | 114 | 5   | 114 | 31  | 114 | 56  | 115 |
| 15         | 115 | 18  | 115 | 42  | 116 | 16  | 116 | 30  | 116 | 54  | 117 | 19  | 117 | 44  |
| 30         | 118 | 39  | 119 | 0   | 119 | 23  | 119 | 46  | 120 | 10  | 120 | 33  | 120 | 57  |
| 45         | 121 | 54  | 122 | 17  | 122 | 38  | 123 | 21  | 123 | 47  | 124 | 9   | 124 | 34  |
| 2          | 0   | 125 | 14  | 125 | 35  | 125 | 57  | 126 | 18  | 126 | 39  | 127 | 1   | 127 |
| 15         | 128 | 31  | 128 | 53  | 129 | 14  | 129 | 34  | 129 | 54  | 130 | 15  | 130 | 36  |
| 30         | 131 | 54  | 132 | 13  | 132 | 51  | 133 | 10  | 133 | 30  | 133 | 50  | 134 | 9   |
| 45         | 135 | 15  | 135 | 32  | 135 | 50  | 136 | 7   | 136 | 26  | 136 | 44  | 137 | 3   |
| 3          | 0   | 138 | 34  | 138 | 52  | 139 | 9   | 139 | 26  | 139 | 43  | 140 | 0   | 140 |
| 15         | 141 | 57  | 142 | 13  | 142 | 29  | 142 | 45  | 143 | 1   | 143 | 17  | 143 | 33  |
| 30         | 145 | 20  | 145 | 35  | 145 | 50  | 146 | 5   | 146 | 19  | 146 | 33  | 146 | 48  |
| 45         | 148 | 45  | 148 | 59  | 149 | 12  | 149 | 26  | 149 | 38  | 149 | 51  | 150 | 5   |
| 4          | 0   | 152 | 10  | 152 | 22  | 152 | 32  | 152 | 46  | 152 | 58  | 153 | 10  | 153 |
| 15         | 155 | 36  | 155 | 47  | 155 | 58  | 156 | 8   | 156 | 19  | 156 | 30  | 156 | 40  |
| 30         | 159 | 4   | 159 | 13  | 159 | 22  | 159 | 31  | 159 | 40  | 159 | 50  | 159 | 59  |
| 45         | 162 | 35  | 162 | 44  | 162 | 52  | 162 | 61  | 163 | 3   | 163 | 10  | 163 | 18  |
| 5          | 0   | 166 | 2   | 166 | 8   | 166 | 14  | 166 | 20  | 166 | 26  | 166 | 32  | 166 |
| 15         | 169 | 30  | 169 | 35  | 169 | 40  | 169 | 44  | 169 | 48  | 169 | 53  | 169 | 58  |
| 30         | 173 | 0   | 173 | 3   | 173 | 6   | 173 | 9   | 173 | 12  | 173 | 15  | 173 | 18  |
| 45         | 176 | 29  | 176 | 32  | 176 | 33  | 176 | 34  | 176 | 36  | 176 | 38  | 176 | 40  |
| 6          | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 |

Table of Ascendants for Latitudes 21° to 34°.—(contd.)

| Sid. Time. | 21° | 22° | 23° | 24° | 25° | 26° | 27° | 28° | 29° | 30° | 31° | 32° | 33° | 34° |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| M.         | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   | °   |
| 6          | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 | 0   | 180 |
| 15         | 183 | 31  | 183 | 27  | 183 | 24  | 183 | 20  | 183 | 17  | 183 | 13  | 183 | 10  |
| 30         | 187 | 0   | 186 | 54  | 186 | 46  | 186 | 41  | 186 | 39  | 186 | 36  | 186 | 33  |
| 45         | 190 | 30  | 190 | 20  | 190 | 16  | 190 | 12  | 190 | 8   | 190 | 5   | 190 | 2   |
| 7          | 0   | 193 | 58  | 193 | 46  | 193 | 34  | 193 | 28  | 193 | 16  | 193 | 11  | 8   |
| 15         | 197 | 29  | 197 | 20  | 197 | 14  | 197 | 1   | 197 | 52  | 199 | 35  | 196 | 27  |
| 30         | 200 | 56  | 200 | 47  | 200 | 38  | 200 | 29  | 200 | 20  | 200 | 10  | 200 | 1   |
| 45         | 204 | 24  | 204 | 13  | 204 | 2   | 204 | 2   | 206 | 13  | 206 | 1   | 206 | 1   |
| 8          | 0   | 207 | 50  | 207 | 38  | 207 | 27  | 207 | 14  | 207 | 1   | 207 | 1   | 1   |
| 15         | 211 | 15  | 211 | 12  | 211 | 8   | 211 | 4   | 211 | 3   | 211 | 2   | 211 | 1   |
| 30         | 214 | 40  | 214 | 25  | 214 | 10  | 214 | 5   | 214 | 3   | 214 | 2   | 214 | 1   |
| 45         | 218 | 32  | 217 | 17  | 217 | 15  | 217 | 12  | 217 | 9   | 217 | 6   | 217 | 3   |
| 9          | 0   | 221 | 26  | 221 | 8   | 221 | 5   | 221 | 3   | 221 | 2   | 221 | 1   | 1   |
| 15         | 224 | 46  | 224 | 28  | 224 | 10  | 224 | 5   | 224 | 3   | 224 | 2   | 224 | 1   |
| 30         | 228 | 4   | 227 | 47  | 227 | 36  | 227 | 25  | 227 | 14  | 227 | 3   | 227 | 1   |
| 45         | 231 | 29  | 231 | 7   | 231 | 26  | 231 | 15  | 231 | 4   | 231 | 2   | 231 | 1   |
| 10         | 0   | 234 | 46  | 234 | 25  | 234 | 8   | 234 | 3   | 234 | 2   | 234 | 1   | 1   |
| 15         | 238 | 6   | 237 | 43  | 237 | 32  | 237 | 21  | 237 | 10  | 237 | 3   | 237 | 1   |
| 30         | 241 | 22  | 241 | 0   | 240 | 37  | 240 | 24  | 240 | 14  | 240 | 3   | 240 | 1   |
| 45         | 244 | 42  | 244 | 18  | 244 | 6   | 244 | 2   | 244 | 1   | 244 | 1   | 244 | 1   |
| 11         | 0   | 248 | 0   | 247 | 36  | 247 | 11  | 246 | 46  | 246 | 31  | 246 | 15  | 1   |
| 15         | 251 | 18  | 250 | 53  | 250 | 32  | 250 | 20  | 250 | 10  | 250 | 3   | 250 | 1   |
| 30         | 254 | 38  | 254 | 12  | 253 | 46  | 253 | 31  | 253 | 17  | 253 | 4   | 253 | 1   |
| 45         | 257 | 58  | 257 | 32  | 257 | 5   | 256 | 38  | 256 | 11  | 255 | 43  | 255 | 1   |
| 12         | 0   | 261 | 19  | 260 | 52  | 260 | 25  | 259 | 57  | 259 | 1   | 258 | 31  | 258 |



Table of Ascendants for Latitudes 21° to 34°.—(contd.)

| Sid. Time. | 21° | 22°    | 23°    | 24°    | 25°    | 26°    | 27°    | 28°    | 29°    | 30°    | 31°    | 32°    | 33°    | 34°    |
|------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| H. M.      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 12 0       | 261 | 19 260 | 52 260 | 25 259 | 57 259 | 29 259 | 0 258  | 31 258 | 4 257  | 34 257 | 3 256  | 34 256 | 3 255  | 31 254 |
| 15 30      | 264 | 41 264 | 14 263 | 45 263 | 18 262 | 49 262 | 20 261 | 51 261 | 22 260 | 51 260 | 19 259 | 49 259 | 18 258 | 45 258 |
| 45 20      | 268 | 6 267  | 38 267 | 8 266  | 41 266 | 12 265 | 42 265 | 12 264 | 42 264 | 11 263 | 39 263 | 8 262  | 36 262 | 2 261  |
| 13 0       | 271 | 32 271 | 4 270  | 35 270 | 6 269  | 38 269 | 7 268  | 37 268 | 6 267  | 34 267 | 1 266  | 29 265 | 56 265 | 22 264 |
| 45 20      | 275 | 1 274  | 33 274 | 4 273  | 34 273 | 6 272  | 34 272 | 4 271  | 33 271 | 0 270  | 27 269 | 54 269 | 21 268 | 46 268 |
| 15 30      | 278 | 32 278 | 3 277  | 35 277 | 5 276  | 36 276 | 4 275  | 34 275 | 2 274  | 29 273 | 55 273 | 22 272 | 48 272 | 12 271 |
| 45 20      | 282 | 7 281  | 38 281 | 9 280  | 39 280 | 10 279 | 38 279 | 8 278  | 35 278 | 2 277  | 28 276 | 54 276 | 19 275 | 43 275 |
| 14 0       | 285 | 46 285 | 17 284 | 48 284 | 18 283 | 49 283 | 17 282 | 47 282 | 13 281 | 40 281 | 5 280  | 32 279 | 57 279 | 20 278 |
| 45 20      | 289 | 28 288 | 59 288 | 30 288 | 0 287  | 31 286 | 59 286 | 29 285 | 53 285 | 22 284 | 48 284 | 14 283 | 36 283 | 1 282  |
| 15 30      | 293 | 14 292 | 46 292 | 17 291 | 48 291 | 18 290 | 46 290 | 16 289 | 43 289 | 10 288 | 35 288 | 1 287  | 25 286 | 49 286 |
| 45 20      | 297 | 5 296  | 38 296 | 9 295  | 40 295 | 11 294 | 11 294 | 11 293 | 38 293 | 5 292  | 30 291 | 57 291 | 20 290 | 43 290 |
| 16 0       | 301 | 2 300  | 34 300 | 7 299  | 38 299 | 9 298  | 39 298 | 10 297 | 48 297 | 5 296  | 31 295 | 57 295 | 22 294 | 45 294 |
| 45 20      | 305 | 2 304  | 36 304 | 8 303  | 41 303 | 13 302 | 44 302 | 14 301 | 42 301 | 10 300 | 36 300 | 3 299  | 28 298 | 52 298 |
| 15 30      | 309 | 9 308  | 44 308 | 18 307 | 51 307 | 24 306 | 55 306 | 26 305 | 56 305 | 24 304 | 52 304 | 20 303 | 46 303 | 10 302 |
| 45 30      | 313 | 22 312 | 59 312 | 54 312 | 8 311  | 42 311 | 15 310 | 47 310 | 18 309 | 48 309 | 17 308 | 45 308 | 13 307 | 38 307 |
| 16 0       | 317 | 41 317 | 18 316 | 56 316 | 31 316 | 6 315  | 40 315 | 14 314 | 47 314 | 18 313 | 48 313 | 19 312 | 48 312 | 15 311 |
| 45 20      | 322 | 5 321  | 43 321 | 21 320 | 59 320 | 36 320 | 12 319 | 48 319 | 23 318 | 55 318 | 27 317 | 59 317 | 30 316 | 59 316 |
| 15 30      | 326 | 33 326 | 15 325 | 56 325 | 35 325 | 14 324 | 52 324 | 30 324 | 6 323  | 42 323 | 16 322 | 51 322 | 24 321 | 55 321 |
| 45 20      | 331 | 9 330  | 53 330 | 35 330 | 16 329 | 57 329 | 38 329 | 18 328 | 57 328 | 35 328 | 12 327 | 50 327 | 25 326 | 59 326 |
| 16 30      | 335 | 49 335 | 35 335 | 19 335 | 3 334  | 48 334 | 30 334 | 14 333 | 55 333 | 36 333 | 17 332 | 57 332 | 36 332 | 13 331 |
| 45 30      | 340 | 24 340 | 22 340 | 9 339  | 56 339 | 43 339 | 30 339 | 16 338 | 0 338  | 44 338 | 29 338 | 12 337 | 58 337 | 35 337 |
| 17 0       | 345 | 32 345 | 13 345 | 8 344  | 54 344 | 44 344 | 33 344 | 22 344 | 11 343 | 59 343 | 46 343 | 33 343 | 19 343 | 4 342  |
| 45 20      | 350 | 14 350 | 7 350  | 1 349  | 54 349 | 47 349 | 41 349 | 34 349 | 25 349 | 17 349 | 8 348  | 59 348 | 49 348 | 40 348 |
| 18 0       | 355 | 7 355  | 4 354  | 59 354 | 56 354 | 53 354 | 49 354 | 46 354 | 42 354 | 38 354 | 33 354 | 29 354 | 24 354 | 19 354 |
|            | 0   | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |

**Table of Ascendants for Latitudes 21° to 34°.—( *contd.* )**

| Sid.<br>Time. | 21°   | 22°   | 23°   | 24°   | 25°    | 26°    | 27°    | 28°    | 29°    | 30°    | 31°    | 32°    | 33°    | 34°     |
|---------------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| H. M.         |       |       |       |       |        |        |        |        |        |        |        |        |        |         |
| 18 0          | 0     | 0     | 0     | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0       |
| 15 15         | 4 53  | 4 56  | 5 1   | 5 4   | 5 7    | 5 11   | 5 14   | 5 18   | 5 22   | 5 27   | 5 31   | 5 36   | 5 41   | 5 45    |
| 30 30         | 9 46  | 9 53  | 9 59  | 10 6  | 10 13  | 10 19  | 10 26  | 10 35  | 10 43  | 10 52  | 11 1   | 11 11  | 11 20  | 11 33   |
| 45 15         | 14 38 | 14 47 | 14 57 | 15 6  | 15 16  | 15 27  | 15 38  | 15 49  | 16 1   | 16 14  | 16 27  | 16 41  | 16 56  | 17 11   |
| 19 0          | 19 26 | 19 38 | 19 51 | 20 4  | 20 17  | 20 30  | 20 44  | 21 0   | 21 16  | 21 31  | 21 48  | 22 6   | 22 25  | 22 44   |
| 15 15         | 24 21 | 24 25 | 24 41 | 24 57 | 25 12  | 25 29  | 25 46  | 26 5   | 26 24  | 26 43  | 27 3   | 27 24  | 27 47  | 28 28   |
| 30 30         | 28 51 | 29 7  | 29 25 | 29 44 | 30 3   | 30 22  | 30 42  | 31 3   | 31 25  | 31 48  | 32 10  | 32 35  | 33 1   | 33 22   |
| 45 45         | 33 27 | 33 45 | 34 4  | 34 25 | 34 46  | 35 8   | 35 30  | 35 54  | 36 18  | 36 44  | 37 7   | 37 36  | 38 5   | 38 33   |
| 20 0          | 37 55 | 38 17 | 38 39 | 39 1  | 39 24  | 39 48  | 40 12  | 40 37  | 41 5   | 41 33  | 42 1   | 42 30  | 43 1   | 43 33   |
| 15 15         | 42 19 | 42 43 | 43 4  | 43 29 | 43 54  | 44 8   | 44 46  | 45 13  | 45 42  | 46 12  | 46 41  | 47 12  | 47 45  | 48 11   |
| 30 30         | 46 38 | 47 1  | 47 26 | 47 52 | 48 18  | 48 45  | 49 13  | 49 42  | 50 12  | 50 43  | 51 15  | 51 47  | 52 22  | 52 55   |
| 45 45         | 50 51 | 51 16 | 51 42 | 52 9  | 52 36  | 53 5   | 53 34  | 54 4   | 54 36  | 55 8   | 55 40  | 56 14  | 56 50  | 57 24   |
| 21 0          | 54 58 | 55 24 | 55 52 | 56 19 | 56 47  | 57 17  | 57 50  | 58 18  | 58 52  | 59 24  | 59 57  | 60 32  | 61 8   | 61 48   |
| 15 15         | 58 58 | 59 26 | 59 53 | 60 22 | 60 51  | 61 21  | 61 50  | 62 22  | 62 55  | 63 29  | 64 3   | 64 38  | 65 15  | 65 55   |
| 30 30         | 62 55 | 63 22 | 63 51 | 64 20 | 64 48  | 65 19  | 65 49  | 66 22  | 66 55  | 67 30  | 68 3   | 68 40  | 69 17  | 69 55   |
| 45 45         | 66 46 | 67 14 | 67 43 | 68 12 | 68 42  | 69 14  | 69 44  | 70 17  | 70 50  | 71 25  | 71 59  | 72 35  | 73 11  | 73 47   |
| 22 0          | 70 32 | 71 1  | 71 30 | 72 0  | 72 29  | 73 1   | 73 31  | 74 5   | 74 38  | 75 12  | 75 46  | 76 24  | 76 59  | 77 33   |
| 15 15         | 74 14 | 74 43 | 75 12 | 75 42 | 76 11  | 76 43  | 77 13  | 77 47  | 78 20  | 78 55  | 79 28  | 80 3   | 80 40  | 81 16   |
| 30 30         | 77 53 | 78 22 | 78 51 | 79 21 | 79 50  | 80 22  | 80 52  | 81 25  | 81 54  | 82 32  | 83 6   | 83 41  | 84 17  | 84 55   |
| 45 45         | 81 28 | 81 57 | 82 25 | 82 55 | 83 24  | 83 56  | 84 26  | 84 58  | 85 31  | 86 5   | 86 38  | 87 12  | 87 48  | 88 22   |
| 23 0          | 84 59 | 85 27 | 85 56 | 86 26 | 86 54  | 87 23  | 87 56  | 88 27  | 89 0   | 89 33  | 90 6   | 90 39  | 91 14  | 91 44   |
| 15 15         | 88 28 | 88 56 | 89 25 | 89 54 | 90 22  | 90 53  | 91 23  | 91 54  | 92 26  | 92 59  | 93 31  | 94 4   | 94 38  | 95 11   |
| 30 30         | 91 54 | 92 22 | 92 52 | 93 19 | 93 48  | 94 18  | 94 48  | 95 18  | 95 49  | 96 4   | 96 52  | 97 24  | 97 58  | 98 33   |
| 45 45         | 95 19 | 95 46 | 96 15 | 96 42 | 97 11  | 97 40  | 98 8   | 98 38  | 99 9   | 99 41  | 100 11 | 100 42 | 101 15 | 101 44  |
| 24 0          | 98 41 | 99 8  | 99 35 | 100 3 | 100 31 | 100 59 | 101 27 | 101 56 | 102 26 | 102 57 | 103 26 | 103 57 | 104 29 | 105 105 |



## Hours or Degrees.

| Min. | 0      | 1      | 2      | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | Min. |
|------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 0    | 3.1584 | 1.3802 | 1.0792 | .9031 | .7781 | .6812 | .6021 | .5351 | .4771 | .4260 | .3802 | .3388 | 0    |
| 1    | 3.1584 | 1.3730 | 1.0756 | .9007 | .7763 | .6798 | .6009 | .5341 | .4762 | .4252 | .3797 | .3382 | 1    |
| 2    | 2.8573 | 1.3660 | 1.0720 | .8983 | .7745 | .6784 | .5997 | .5330 | .4753 | .4244 | .3788 | .3375 | 2    |
| 3    | 2.6812 | 1.3590 | 1.0685 | .8959 | .7728 | .6769 | .5985 | .5320 | .4744 | .4236 | .3780 | .3368 | 3    |
| 4    | 2.5563 | 1.3522 | 1.0649 | .8935 | .7710 | .6755 | .5973 | .5310 | .4735 | .4228 | .3773 | .3362 | 4    |
| 5    | 2.4594 | 1.3454 | 1.0614 | .8912 | .7692 | .6741 | .5961 | .5300 | .4726 | .4220 | .3766 | .3355 | 5    |
| 6    | 2.3802 | 1.3388 | 1.0580 | .8888 | .7674 | .6726 | .5949 | .5289 | .4717 | .4212 | .3759 | .3349 | 6    |
| 7    | 2.3133 | 1.3323 | 1.0546 | .8865 | .7657 | .6712 | .5937 | .5279 | .4708 | .4204 | .3752 | .3342 | 7    |
| 8    | 2.2553 | 1.3258 | 1.0511 | .8842 | .7639 | .6698 | .5925 | .5269 | .4699 | .4196 | .3745 | .3336 | 8    |
| 9    | 2.2041 | 1.3195 | 1.0478 | .8819 | .7622 | .6684 | .5913 | .5259 | .4690 | .4188 | .3737 | .3329 | 9    |
| 10   | 2.1584 | 1.3133 | 1.0444 | .8796 | .7604 | .6670 | .5902 | .5249 | .4682 | .4180 | .3730 | .3323 | 10   |
| 11   | 2.1170 | 1.3071 | 1.0411 | .8773 | .7587 | .6656 | .5890 | .5239 | .4673 | .4172 | .3723 | .3316 | 11   |
| 12   | 2.0792 | 1.3010 | 1.0378 | .8751 | .7570 | .6642 | .5878 | .5229 | .4664 | .4164 | .3716 | .3310 | 12   |
| 13   | 2.0444 | 1.2950 | 1.0345 | .8728 | .7552 | .6628 | .5866 | .5219 | .4655 | .4156 | .3709 | .3303 | 13   |
| 14   | 2.0122 | 1.2891 | 1.0313 | .8706 | .7535 | .6614 | .5855 | .5209 | .4646 | .4148 | .3702 | .3297 | 14   |
| 15   | 1.9823 | 1.2833 | 1.0280 | .8683 | .7518 | .6600 | .5843 | .5199 | .4638 | .4141 | .3695 | .3291 | 15   |
| 16   | 1.9542 | 1.2775 | 1.0248 | .8661 | .7501 | .6587 | .5832 | .5189 | .4629 | .4133 | .3688 | .3284 | 16   |
| 17   | 1.9279 | 1.2719 | 1.0216 | .8639 | .7484 | .6573 | .5820 | .5179 | .4620 | .4125 | .3681 | .3278 | 17   |
| 18   | 1.9031 | 1.2663 | 1.0185 | .8617 | .7467 | .6559 | .5809 | .5169 | .4611 | .4117 | .3674 | .3271 | 18   |
| 19   | 1.8796 | 1.2607 | 1.0153 | .8595 | .7451 | .6546 | .5797 | .5159 | .4603 | .4109 | .3667 | .3265 | 19   |
| 20   | 1.8573 | 1.2553 | 1.0122 | .8573 | .7434 | .6532 | .5786 | .5149 | .4594 | .4102 | .3660 | .3258 | 20   |
| 21   | 1.8361 | 1.2499 | 1.0091 | .8552 | .7417 | .6519 | .5774 | .5139 | .4585 | .4094 | .3653 | .3252 | 21   |
| 22   | 1.8159 | 1.2445 | 1.0061 | .8530 | .7401 | .6505 | .5761 | .5129 | .4577 | .4086 | .3646 | .3246 | 22   |
| 23   | 1.7966 | 1.2393 | 1.0030 | .8509 | .7384 | .6492 | .5752 | .5100 | .4568 | .4079 | .3639 | .3239 | 23   |
| 24   | 1.7781 | 1.2341 | 1.0000 | .8487 | .7368 | .6478 | .5740 | .5110 | .4559 | .4071 | .3632 | .3233 | 24   |
| 25   | 1.7604 | 1.2289 | .9970  | .8466 | .7351 | .6465 | .5729 | .5100 | .4551 | .4063 | .3625 | .3227 | 25   |
| 26   | 1.7434 | 1.2239 | .9940  | .8445 | .7335 | .6451 | .5718 | .5090 | .4542 | .4055 | .3618 | .3220 | 26   |
| 27   | 1.7270 | 1.2188 | .9910  | .8424 | .7318 | .6438 | .5706 | .5081 | .4534 | .4048 | .3611 | .3214 | 27   |
| 28   | 1.7112 | 1.2139 | .9881  | .8403 | .7302 | .6425 | .5695 | .5071 | .4525 | .4040 | .3604 | .3208 | 28   |
| 29   | 1.6960 | 1.2090 | .9852  | .8382 | .7286 | .6412 | .5684 | .5061 | .4516 | .4032 | .3597 | .3201 | 29   |

## LOGARITHMIC TABLE.—(contd.)

## Hours or Degrees.

| Min. | 0      | 1      | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | Min. |
|------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 30   | 1.6812 | 1.2041 | .9823 | .8361 | .7270 | .6398 | .5673 | .5051 | .4508 | .4025 | .3590 | .3195 | 30   |
| 31   | 1.6670 | 1.1993 | .9794 | .8341 | .7254 | .6385 | .5662 | .5042 | .4499 | .4017 | .3583 | .3189 | 31   |
| 32   | 1.6532 | 1.1946 | .9765 | .8327 | .7238 | .6372 | .5651 | .5032 | .4491 | .4010 | .3576 | .3183 | 32   |
| 33   | 1.6398 | 1.1899 | .9737 | .8300 | .7222 | .6359 | .5640 | .5023 | .4482 | .4002 | .3570 | .3176 | 33   |
| 34   | 1.6269 | 1.1852 | .9708 | .8279 | .7206 | .6346 | .5629 | .5013 | .4474 | .3994 | .3563 | .3170 | 34   |
| 35   | 1.6143 | 1.1806 | .9680 | .8259 | .7190 | .6333 | .5618 | .5003 | .4466 | .3987 | .3556 | .3164 | 35   |
| 36   | 1.6021 | 1.1761 | .9652 | .8239 | .7174 | .6320 | .5607 | .4994 | .4457 | .3979 | .3549 | .3157 | 36   |
| 37   | 1.5902 | 1.1716 | .9625 | .8219 | .7159 | .6307 | .5596 | .4984 | .4449 | .3972 | .3542 | .3151 | 37   |
| 38   | 1.5786 | 1.1671 | .9597 | .8199 | .7143 | .6294 | .5585 | .4975 | .4440 | .3964 | .3535 | .3145 | 38   |
| 39   | 1.5673 | 1.1627 | .9570 | .8179 | .7128 | .6282 | .5573 | .4965 | .4432 | .3957 | .3529 | .3139 | 39   |
| 40   | 1.5563 | 1.1584 | .9542 | .8159 | .7112 | .6269 | .5563 | .4956 | .4424 | .3949 | .3522 | .3133 | 40   |
| 41   | 1.5456 | 1.1540 | .9515 | .8140 | .7097 | .6256 | .5552 | .4947 | .4415 | .3942 | .3515 | .3126 | 41   |
| 42   | 1.5351 | 1.1498 | .9488 | .8120 | .7081 | .6243 | .5541 | .4937 | .4407 | .3934 | .3508 | .3120 | 42   |
| 43   | 1.5249 | 1.1455 | .9462 | .8101 | .7066 | .6231 | .5531 | .4928 | .4399 | .3927 | .3501 | .3114 | 43   |
| 44   | 1.5149 | 1.1413 | .9435 | .8081 | .7050 | .6218 | .5520 | .4918 | .4390 | .3919 | .3495 | .3108 | 44   |
| 45   | 1.5051 | 1.1372 | .9409 | .8062 | .7035 | .6205 | .5509 | .4909 | .4382 | .3912 | .3488 | .3102 | 45   |
| 46   | 1.4956 | 1.1331 | .9383 | .8042 | .7020 | .6193 | .5498 | .4890 | .4374 | .3905 | .3481 | .3096 | 46   |
| 47   | 1.4863 | 1.1290 | .9356 | .8023 | .7005 | .6180 | .5488 | .4880 | .4365 | .3897 | .3475 | .3089 | 47   |
| 48   | 1.4771 | 1.1249 | .9330 | .8004 | .6990 | .6168 | .5477 | .4881 | .4357 | .3890 | .3468 | .3083 | 48   |
| 49   | 1.4682 | 1.1209 | .9305 | .7985 | .6975 | .6155 | .5466 | .4872 | .4349 | .3882 | .3461 | .3077 | 49   |
| 50   | 1.4594 | 1.1170 | .9279 | .7966 | .6960 | .6143 | .5456 | .4863 | .4341 | .3875 | .3454 | .3071 | 50   |
| 51   | 1.4508 | 1.1130 | .9254 | .7947 | .6945 | .6131 | .5445 | .4853 | .4333 | .3868 | .3448 | .3065 | 51   |
| 52   | 1.4424 | 1.1091 | .9228 | .7929 | .6928 | .6118 | .5435 | .4844 | .4324 | .3860 | .3441 | .3059 | 52   |
| 53   | 1.4341 | 1.1053 | .9203 | .7910 | .6915 | .6101 | .5424 | .4835 | .4316 | .3853 | .3434 | .3053 | 53   |
| 54   | 1.4260 | 1.1015 | .9178 | .7891 | .6900 | .6089 | .5414 | .4826 | .4308 | .3846 | .3428 | .3047 | 54   |
| 55   | 1.4180 | 1.0977 | .9153 | .7873 | .6885 | .6081 | .5403 | .4817 | .4300 | .3838 | .3421 | .3041 | 55   |
| 56   | 1.4102 | 1.0939 | .9128 | .7854 | .6871 | .6069 | .5393 | .4808 | .4292 | .3831 | .3415 | .3034 | 56   |
| 57   | 1.4025 | 1.0902 | .9104 | .7836 | .6856 | .6057 | .5382 | .4798 | .4284 | .3824 | .3408 | .3028 | 57   |
| 58   | 1.3949 | 1.0865 | .9079 | .7818 | .6841 | .6045 | .5372 | .4789 | .4276 | .3817 | .3401 | .3022 | 58   |
| 59   | 1.3875 | 1.0828 | .9055 | .7800 | .6827 | .6033 | .5361 | .4780 | .4268 | .3809 | .3395 | .3016 | 59   |



LOGARITHMIC TABLE. — (contd.)

66

Hours or Degrees.

| Min. | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | Min. |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 0    | .3010 | .2663 | .2341 | .2041 | .1761 | .1498 | .1249 | .1015 | .0792 | .0580 | .0378 | .0185 | 0    |
| 1    | .3004 | .2657 | .2336 | .2036 | .1756 | .1493 | .1245 | .1011 | .0788 | .0576 | .0375 | .0182 | 1    |
| 2    | .2998 | .2652 | .2330 | .2032 | .1752 | .1489 | .1241 | .1007 | .0785 | .0573 | .0371 | .0179 | 2    |
| 3    | .2992 | .2646 | .2325 | .2027 | .1747 | .1485 | .1237 | .1003 | .0781 | .0570 | .0368 | .0175 | 3    |
| 4    | .2986 | .2640 | .2320 | .2022 | .1743 | .1481 | .1233 | .0999 | .0778 | .0566 | .0363 | .0172 | 4    |
| 5    | .2980 | .2635 | .2315 | .2017 | .1738 | .1476 | .1229 | .0996 | .0774 | .0563 | .0361 | .0169 | 5    |
| 6    | .2974 | .2629 | .2310 | .2012 | .1734 | .1472 | .1225 | .0992 | .0770 | .0559 | .0358 | .0166 | 6    |
| 7    | .2968 | .2624 | .2305 | .2008 | .1729 | .1468 | .1221 | .0988 | .0766 | .0556 | .0355 | .0163 | 7    |
| 8    | .2962 | .2618 | .2300 | .2003 | .1725 | .1464 | .1217 | .0984 | .0763 | .0552 | .0352 | .0160 | 8    |
| 9    | .2956 | .2613 | .2295 | .1998 | .1720 | .1459 | .1213 | .0980 | .0759 | .0549 | .0348 | .0157 | 9    |
| 10   | .2950 | .2607 | .2289 | .1993 | .1716 | .1455 | .1209 | .0977 | .0756 | .0546 | .0345 | .0154 | 10   |
| 11   | .2944 | .2602 | .2284 | .1988 | .1711 | .1451 | .1205 | .0973 | .0752 | .0542 | .0342 | .0150 | 11   |
| 12   | .2938 | .2596 | .2279 | .1984 | .1707 | .1447 | .1201 | .0969 | .0749 | .0539 | .0339 | .0147 | 12   |
| 13   | .2933 | .2591 | .2274 | .1979 | .1702 | .1443 | .1197 | .0965 | .0745 | .0535 | .0335 | .0144 | 13   |
| 14   | .2927 | .2585 | .2269 | .1974 | .1698 | .1438 | .1193 | .0962 | .0741 | .0532 | .0332 | .0141 | 14   |
| 15   | .2921 | .2580 | .2264 | .1969 | .1694 | .1434 | .1190 | .0958 | .0738 | .0529 | .0329 | .0138 | 15   |
| 16   | .2915 | .2574 | .2259 | .1965 | .1689 | .1430 | .1186 | .0954 | .0734 | .0525 | .0326 | .0135 | 16   |
| 17   | .2909 | .2569 | .2253 | .1960 | .1685 | .1426 | .1182 | .0950 | .0731 | .0522 | .0322 | .0132 | 17   |
| 18   | .2903 | .2564 | .2249 | .1955 | .1680 | .1422 | .1178 | .0947 | .0727 | .0518 | .0319 | .0129 | 18   |
| 19   | .2897 | .2558 | .2244 | .1950 | .1676 | .1417 | .1174 | .0943 | .0724 | .0515 | .0316 | .0125 | 19   |
| 20   | .2891 | .2553 | .2239 | .1946 | .1671 | .1413 | .1170 | .0939 | .0720 | .0512 | .0313 | .0122 | 20   |
| 21   | .2885 | .2547 | .2234 | .1941 | .1667 | .1409 | .1166 | .0935 | .0716 | .0508 | .0309 | .0119 | 21   |
| 22   | .2880 | .2542 | .2229 | .1936 | .1662 | .1405 | .1162 | .0932 | .0713 | .0505 | .0306 | .0116 | 22   |
| 23   | .2874 | .2536 | .2223 | .1932 | .1658 | .1401 | .1158 | .0928 | .0709 | .0501 | .0303 | .0113 | 23   |
| 24   | .2868 | .2531 | .2218 | .1927 | .1654 | .1397 | .1154 | .0924 | .0706 | .0498 | .0300 | .0110 | 24   |
| 25   | .2862 | .2526 | .2213 | .1922 | .1649 | .1392 | .1150 | .0920 | .0702 | .0495 | .0296 | .0107 | 25   |
| 26   | .2856 | .2520 | .2208 | .1917 | .1645 | .1388 | .1146 | .0917 | .0699 | .0491 | .0293 | .0104 | 26   |
| 27   | .2850 | .2515 | .2203 | .1913 | .1640 | .1384 | .1142 | .0913 | .0695 | .0488 | .0290 | .0101 | 27   |
| 28   | .2845 | .2509 | .2198 | .1908 | .1636 | .1380 | .1138 | .0909 | .0692 | .0484 | .0287 | .0098 | 28   |
| 29   | .2839 | .2504 | .2193 | .1903 | .1632 | .1376 | .1134 | .0906 | .0688 | .0481 | .0284 | .0095 | 29   |

LOGARITHMIC TABLE. — (concl'd.)

67

Hours or Degrees.

| Min. | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | Min. |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 30   | .2833 | .2499 | .2188 | .1899 | .1627 | .1372 | .1130 | .0902 | .0685 | .0478 | .0280 | .0091 | 30   |
| 31   | .2827 | .2493 | .2183 | .1894 | .1623 | .1368 | .1127 | .0898 | .0681 | .0474 | .0277 | .0088 | 31   |
| 32   | .2821 | .2488 | .2178 | .1889 | .1618 | .1363 | .1123 | .0894 | .0678 | .0471 | .0274 | .0085 | 32   |
| 33   | .2816 | .2483 | .2173 | .1885 | .1614 | .1359 | .1119 | .0891 | .0674 | .0468 | .0271 | .0082 | 33   |
| 34   | .2810 | .2477 | .2168 | .1880 | .1610 | .1355 | .1115 | .0887 | .0670 | .0464 | .0267 | .0079 | 34   |
| 35   | .2804 | .2472 | .2164 | .1875 | .1605 | .1351 | .1111 | .0883 | .0667 | .0461 | .0264 | .0076 | 35   |
| 36   | .2798 | .2467 | .2159 | .1871 | .1601 | .1347 | .1107 | .0880 | .0663 | .0458 | .0261 | .0073 | 36   |
| 37   | .2793 | .2461 | .2154 | .1866 | .1597 | .1343 | .1103 | .0876 | .0660 | .0454 | .0258 | .0070 | 37   |
| 38   | .2787 | .2456 | .2149 | .1862 | .1592 | .1339 | .1099 | .0872 | .0656 | .0451 | .0255 | .0067 | 38   |
| 39   | .2781 | .2451 | .2144 | .1857 | .1588 | .1335 | .1095 | .0869 | .0652 | .0448 | .0251 | .0064 | 39   |
| 40   | .2775 | .2445 | .2139 | .1852 | .1584 | .1331 | .1091 | .0865 | .0649 | .0444 | .0248 | .0061 | 40   |
| 41   | .2770 | .2440 | .2134 | .1848 | .1579 | .1326 | .1088 | .0861 | .0646 | .0441 | .0245 | .0058 | 41   |
| 42   | .2764 | .2435 | .2129 | .1843 | .1575 | .1322 | .1084 | .0857 | .0642 | .0438 | .0242 | .0055 | 42   |
| 43   | .2758 | .2430 | .2124 | .1838 | .1571 | .1318 | .1080 | .0854 | .0639 | .0434 | .0239 | .0052 | 43   |
| 44   | .2753 | .2424 | .2119 | .1834 | .1566 | .1314 | .1076 | .0850 | .0635 | .0431 | .0236 | .0049 | 44   |
| 45   | .2747 | .2419 | .2114 | .1829 | .1561 | .1310 | .1072 | .0846 | .0632 | .0428 | .0232 | .0046 | 45   |
| 46   | .2741 | .2414 | .2109 | .1825 | .1558 | .1306 | .1068 | .0843 | .0628 | .0424 | .0229 | .0042 | 46   |
| 47   | .2736 | .2409 | .2104 | .1820 | .1553 | .1302 | .1064 | .0839 | .0625 | .0421 | .0226 | .0039 | 47   |
| 48   | .2730 | .2403 | .2099 | .1816 | .1549 | .1298 | .1061 | .0835 | .0622 | .0418 | .0223 | .0036 | 48   |
| 49   | .2724 | .2398 | .2095 | .1811 | .1545 | .1294 | .1057 | .0832 | .0618 | .0414 | .0220 | .0033 | 49   |
| 50   | .2719 | .2393 | .2090 | .1806 | .1540 | .1290 | .1053 | .0828 | .0615 | .0411 | .0216 | .0030 | 50   |
| 51   | .2713 | .2388 | .2085 | .1802 | .1536 | .1286 | .1049 | .0825 | .0611 | .0408 | .0213 | .0027 | 51   |
| 52   | .2707 | .2382 | .2080 | .1797 | .1532 | .1282 | .1045 | .0821 | .0608 | .0404 | .0210 | .0024 | 52   |
| 53   | .2702 | .2377 | .2075 | .1793 | .1528 | .1278 | .1041 | .0817 | .0604 | .0401 | .0207 | .0021 | 53   |
| 54   | .2696 | .2372 | .2070 | .1788 | .1523 | .1274 | .1038 | .0814 | .0601 | .0398 | .0204 | .0018 | 54   |
| 55   | .2691 | .2367 | .2065 | .1784 | .1519 | .1270 | .1034 | .0810 | .0597 | .0394 | .0201 | .0015 | 55   |
| 56   | .2685 | .2362 | .2061 | .1779 | .1515 | .1266 | .1030 | .0806 | .0594 | .0391 | .0197 | .0012 | 56   |
| 57   | .2679 | .2356 | .2056 | .1774 | .1510 | .1261 | .1026 | .0803 | .0590 | .0388 | .0194 | .0009 | 57   |
| 58   | .2674 | .2351 | .2051 | .1770 | .1506 | .1257 | .1022 | .0799 | .0587 | .0384 | .0191 | .0006 | 58   |
| 59   | .2668 | .2346 | .2046 | .1765 | .1502 | .1253 | .1018 | .0795 | .0583 | .0381 | .0188 | .0003 | 59   |



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