

ASTRONOMICAL EPHEMERIS
OF
Geocentric Places of Planets
FOR
1961

(Indian Standard Time observed throughout)

Published by

SHREE JIWAJI OBSERVATORY, UJJAIN
With the sanction of the Department of Public
Instruction, Madhya Pradesh

GWALIOR
GOVT. REGIONAL PRESS
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Mean Places of Principal Stars on 1st January 1961

Names	Stars	Mag	R.	A.	Decl.	Long.	Lat.
			H. M.		°	°	°
♈ Andromeda	U. Bhadra.	2.1	0	6	+ 28 52	13 46	+ 25 41
♈ Pegasi	U. Bhadra.	2.9	0	11	+ 14 58	8 37	+ 12 36
♈ Piscium	Revati.	5.6	1	12	+ 7 22	19 20	- 0 13
♈ Eridani	Achernar.	0.6	1	36	- 57 26	344 42	- 59 23
♈ Polaris	Dhruva.	2.1	1	56	+ 89 5	88 0	+ 66 6
♈ Arietis	Ashvini.	2.7	1	52	+ 20 37	33 25	+ 8 29
♈ Arietis	Ashvini.	2.2	2	5	+ 23 16	37 7	+ 9 58
♈ Arietis	Bharani.	3.7	2	48	+ 27 6	47 40	+ 10 27
♈ Persei	Algol.	Var	3	5	+ 40 48	55 36	+ 22 25
♈ Tauri	Krittika.	3.0	3	45	+ 23 59	59 27	+ 4 3
♈ Tauri	Rohini.	1.1	4	34	+ 16 26	59 15	- 5 28
♈ Orionis	Rigel.	0.3	5	13	- 8 15	76 17	- 31 8
♈ Aurigae	Capella.	0.2	5	14	+ 45 58	81 19	+ 22 52
♈ Orionis	Mrigashirsh	4.5	5	33	+ 9 28	88 10	- 13 22
♈ Orionis	Ardra.	0.9	5	53	+ 7 24	88 13	- 16 2
♈ Carinae	Agastya.	0.9	6	23	- 52 40	104 25	- 75 50
♈ Canis Majoris	Vyadha.	1.6	6	43	- 16 39	103 33	- 39 36
♈ Geminorum	Punarvasu	1.6	7	32	+ 31 58	109 42	+ 10 6
♈ Canis Minor	Prashva.	0.5	7	37	+ 5 20	115 15	- 16 2
♈ Geminorum	Punarvasu	1.2	7	43	+ 28 7	112 41	+ 6 41
♈ Cancri	Pushya.	4.3	8	42	+ 18 18	128 11	+ 0 5
♈ Cancri	Asulesha.	4.3	8	56	+ 12 1	133 6	- 5 5
♈ Leonis	Magha.	1.3	10	6	+ 12 10	149 17	+ 0 28
♈ Leonis	Purva.	2.6	11	12	+ 20 44	160 46	+ 14 20
♈ Leonis	Uttara.	2.2	11	47	+ 14 47	171 4	+ 12 16
♈ Corvi	Hasta.	3.1	12	28	- 16 17	192 54	- 12 12
♈ Virginis	Chitra.	1.2	13	23	- 10 57	203 18	- 2 3
♈ Bootes	Swati.	0.2	14	14	+ 19 23	203 41	+ 30 46
♈ Libra	Vishakha.	2.9	14	49	- 15 53	224 32	+ 0 20
♈ Scorpii	Anuradha.	2.5	15	58	- 22 31	242 2	- 1 59
♈ Scorpii	Jyeshtha.	1.2	16	27	- 26 21	249 13	- 4 34
♈ Scorpii	Mool.	1.7	17	31	- 37 5	264 2	- 13 47
♈ Sagittarius	P. Shadha.	2.8	18	18	- 29 51	274 2	- 6 28
♈ Sagittarius	P. Shadha.	1.9	18	22	- 34 24	274 32	- 11 2
♈ Lyrae	Abhijit.	0.1	18	36	+ 38 45	284 46	+ 61 44
♈ Sagittarius	U. Shadha.	2.1	18	53	- 26 21	281 49	+ 3 26
♈ Aquillae	Shravana.	0.9	19	49	+ 8 46	301 13	+ 29 18
♈ Delphini	Dhanistha.	3.7	20	36	+ 14 27	315 48	+ 31 55
♈ Delphini	Dhanistha.	3.9	20	38	+ 15 46	316 50	+ 33 2
♈ Cygni	Deneb.	1.3	20	40	+ 45 8	334 48	+ 59 54
♈ Aquarii	Shatabhij.	3.8	22	51	- 7 47	341 2	- 0 23
♈ Pegasi As.r.	Fomalhaut.	1.3	22	55	- 29 50	333 13	- 21 9
♈ Pegasi	P. Bhadra.	2.6	23	2	+ 27 52	358 50	+ 31 8
♈ Pegasi	P. Bhadra.	2.6	23	2	+ 14 59	352 56	+ 19 24

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.

The timings of Moonrise given on pages 28 to 30 are true only for the Central Meridian of India. The method for converting these into I. S. T. for other places in this country is given on the back of this page. Tables for facilitating the calculations will be given in the publications for the next year.

Thanks are due to Shri P. N. Joshi, the retired Superintendent, and Messrs P. S. Karkhanis, D. B. Joshi, P. N. Athalye, who completed the calculation work, before I took charge of the Observatory.

UJJAIN,
1st December 1960

TEJKIRAN ACHARYA,
Officiating Superintendent,
S. J. Observatory.

MOONRISE IN 1961

The timings of moonrise given on pages 28-30 are the Local Mean Times (L.M.T.) of those places whose latitudes are 10° , 20° or 30° and which are situated on the Central Meridian of India. The L. M. T. and I. S. T. for these places coincide with each other. L. M. T. of other places whose latitude lies between these limits can be found by simple interpolation. In order to find the I. S. T. of moonrise for other places, proceed as follows:—

- (i) Find L. M. T. for the latitude of the place by interpolation.
- (ii) Convert the longitude of the place (if given in degrees) into hours and its parts by dividing it by 15, and subtract the result from 5 hours 30 minutes.
- (iii) Add the result in (ii) to (i) algebraically.

Example.—To find the time of moonrise in I. S. T. on March 5, 1961 for (i) CALCUTTA, Lat. $22^\circ 35' N$, Long. $88^\circ 23' E$, i.e. $5^h 54^m$, and for (ii) BOMBAY, Lat. $18^\circ 58' N$, Long. $72^\circ 50' E$, i.e. $4^h 51^m$.

From page 28, we get for Marh 5, 1961:—

Lat.	..	10°	20°	30°
L.M.T.	..	$20^h 30^m$	$20^h 33^m$	$20^h 36^m$

By interpolation, L. M.T. for Calcutta is $20^h 33.8^m$ and that for Bombay is $20^h 32.7^m$.

- (i) For Calcutta, the correction for Long. is ($5^h 30^m$)—($5^h 54^m$), i.e.— 24^m . Hence the time of moonrise is $20^h 33.8^m + (-24^m) = 20^h 9.8^m$ I. S. T.
- (ii) For Bombay, the correction for Long. is ($5^h 30^m$)—($4^h 51^m$), i.e. $+39^m$. Hence the required time is $20^h 33.8^m + 32.7^m + 39^m = 21^h 12.8^m$ I. S. T.

Note.—The correction for longitude is *constant* for a given place and remains the same for all days of any year. The correction for latitude depends on the motion of the Moon and a fresh calculation is necessary for each day.

EPHEMERIS

OF

Planets' Places for 1961

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 $5\frac{1}{2}$ 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 *Ayanamshas* from the *Sayan* places.

It should be noted that the *Tithis* 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.	π Quincunx	= 150°
♋ Rahu.	♐ Pisces.	♌ Opposition	= 180°

2		JANUARY 1961										S. J. O. UJJAIN									
Date	Day	Sidereal Time		☉		☽		Midnight		ψ											
		H.	M.	S.	Long.	Decl.	Long.	Lat.	Decl.	D											
1	Su.	18	42	46	10 37	30	23 5	1 3 4	4 S 35	18 N 49	9 2	10 51									
2	M.		46	42	11 38	59	22 56	14 59	2	36	20 56	52									
3	Tu.		50	39	12 39	49	51 26	51	3	19	2 45	53									
4	W.		54	36	13 40	58	45 8	29	2	28	14 34	54									
5	Th.		58	32	14 42	8	38 20	28	1	29	15 23	65									
6	F.	19	2	29	15 43	17	31 2	19	0	27	10 14	57									
7	S.		6	25	16 44	26	24 14	17	0 N 38	6 46	20 21	58									
8	Su.		10	22	17 45	35	16 26	26	1	41	2 35	59									
9	M.		14	18	18 46	44	8 8	49	2	42	1 S 0	11 0									
10	Tu.		18	15	19 47	53	21 59	21	30	3	28	0									
11	W.		22	12	20 49	2	50 4	37	4	20	8 58	2									
12	Th.		26	8	21 50	10	40 18	12		52	12 34	4									
13	F.		30	5	22 51	17	31 2	17	5	8	15 35	5									
14	S.		34	1	23 52	24	20 16	48		2	17 44	5									
15	Su.		37	58	24 53	31	9 1	44	4	41	18 49	6									
16	M.		41	54	25 54	37	20 58	16 57	3	57	24 36	7									
17	Tu.		45	51	26 55	43	47 2	15	2	56	16 48	8									
18	W.		49	47	27 56	48	35 17	23	1	43	13 58	9									
19	Th.		53	44	28 57	53	22 2	36	0	23	10 15	10									
20	F.		57	40	29 58	57	10 17	2	0 S 56	5 59	24 9	11									
21	S.	20	1	37	1 0	1	19 56	1 11	2	9	1 31	11									
22	Su.		5	34	2 1	4	43 14	53	3	13	2 N 54	12									
23	M.		9	30	3 2	6	29 28	9	4	4	7 1	13									
24	Tu.		13	27	4 3	7	15 11	8	3	42	10 41	13									
25	W.		17	23	5 4	8	1 23	39	5	4	13 46	14									
26	Th.		21	20	6 5	8	18 45	5	5	12	16 10	14									
27	F.		25	16	7 6	7	30 18	5		6	17 49	15									
28	S.		29	13	8 7	5	14 0	6	4	47	18 39	16									
29	Su.		33	10	9 8	2	17 59	11 57		15	40 17	16									
30	M.		37	6	10 8	58	42 23	48	3	32	17 51	17									
31	Tu.		41	3	11 9	53	26 5	37	2	41	16 17	17									

Date	ψ		♈		♉		♊		♋	
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.
1	1 N 45	13 S 25	0 N 45	13 N 46	0 N 7	21 S 54	0 S 5	22 S 47	3 N 43	26 N 54
3		26		48		52		44		59
5		27		49	6	50		41	46	27
7				50		48		38	48	7
9		28		51		46		35	49	9
11		29		53		44		32	49	11
13			46	54		42	7	29	49	13
15				56		40		25	49	13
17	46	30		57		38		22	49	13
19				59	5	36		18	48	13
21		31		14	0	34		15	47	12
23				2		32	8	15	45	11
25				4		29		7	44	10
27				5		27		3	42	8
29		32		7		25		0	40	6
31				9		23	21	56	38	4

EPHEMERIS										JANUARY 1961										3
Date	Longitudes										Lunar Aspects									
	♈	♉	♊	♋	♌	♍	♎	♏	♐	☉	☽	♈	♉	♊	♋	♌	♍	♎	♏	♐
1	25 ^a	22	19	37	14	9	8 ^o	1	25=35	7	51									
2	R	20		43		23	7 R	37	26	43	9	27	☿	Δ	☿	☿	☿	☿	☿	☿
3		19		50		37		14	27	52	11	3								
4		17		57		51	6	51	29	0	12	39	☿	☿	☿	☿	☿	☿	☿	☿
5		15	20	5	15	5		29	0	8	14	16								
6		13		12		19		7	1	16	15	53	☿	☿	☿	☿	☿	☿	☿	☿
7		11		19		33	5	45	2	23	17	31								
8		9		26		47		23	3	30	19	9								
9		8		34	16	1		2	4	38	20	48								
10		6		41		15	4	42	5	45	22	27	☿	☿	☿	☿	☿	☿	☿	☿
11		4		48		29		22	6	51	24	6								
12		2		55		43		3	7	58	25	46	☿	☿	☿	☿	☿	☿	☿	☿
13		0	21	2		57	3	44	9	4	27	26								
14	24	58		9	17	11		26	10	10	29	7								
15		56		16		25		8	11	16	0	48	☿	☿	☿	☿	☿	☿	☿	☿
16		53		23		39	2	51	12	21	2	29								
17		51		30		52		35	13	27	4	11	☿	☿	☿	☿	☿	☿	☿	☿
18		49		37	18	6		20	14	32	5	53								
19		47		45		20		5	15	37	7	36	☿	☿	☿	☿	☿	☿	☿	☿
20		44		52		34	1	51	16	41	9	18	☿	☿	☿	☿	☿	☿	☿	☿
21		42		59		48		33	17	45	11	1	☿	☿	☿	☿	☿	☿	☿	☿
22		4	22	6	19	2		26	18	49	12	43								
23		38		13		16		15	19	52	14	26	☿	☿	☿	☿	☿	☿	☿	☿
24		35		20		30		4	20	54	16	8								
25		33		27		43	0	54	21	57	17	50	☿	☿	☿	☿	☿	☿	☿	☿
26		30		34		57		45	23	0	18	31	☿	☿	☿	☿	☿	☿	☿	☿
27		37		41	20	10		37	24	1	21	11								
28		25		48		24		30	25	3	22	50	☿	☿	☿	☿	☿	☿	☿	☿
29		32		55		38		23	26	4	24	27	☿	☿	☿	☿	☿	☿	☿	☿
30		20	23	2		52		18	27	5	26	2								
31		17		8	21	6		13	28	5	27	35	☿	☿	☿	☿	☿	☿	☿	☿

Date.	♀		♂		Mean		Date.	Time		Phenomena
	Lat.	Decl.	Lat.	Decl.	Ω	H.		M.		
1	1 S 38	14 S 32	1 S 34	24 S 47	9	20	2	4	36	Full Moon Decl. 18° N' 44
3		32 13	40	42	41		13	3	18	☾ at Apogee.
5		26 12	46	50	30		7	6	22	☾ at Ω
7		19 11	51	56	9		1	9	6	☾ on Equator.
9		11 10	55	2	1 23	49	8	54	10 8	33 ☾ at Last Quarter.
11		3	9 59		4	20		48	16	4 30 ☾ at Perigee.
13	0	55		1	6 22	44		42	17	3 0 New Moon D. 17° S 34'
15		46	8	3	6	2		35	19	18 55 ☾ at ♈
17		36	7	4	5	21	14	29	21	.. Heli. rising of ♊
19		26	6	5	1	20	20	23	21	20 7 ☾ on Equator.
21		16	5	5	1	55	19	16	23	21 44 ☾ at First Quarter.
23		5	4	6		47	18	13	10	26 .. Heli. rising of ♊ in West
25	0 N	6	3	6		37	17	2	4	30 .. Heli. rising of ♌
27		18	2	6		23	15	45	7	57 30 18 30 ☾ at Apogee.
29		30	1	6		6	14	25	51	
31		43	0	6	0	47	13	3	44	

FEBRUARY 1961										S. J. O. UJJAIN										
Date	Day	Sidereal Time			☉		☽			Midnight		ψ								
		H.	M.	S.	Long.	Decl.	Long.	Lat.	Decl.		D									
1	W.	20	44	59	12	10	47	17 S	9	17	27	1 S	41	13 N	59	23	24	11 m	17	
2	Th.		48	56	13	11	40	16	52	29	21	0	38	11	8	5	m	19	18	
3	F.		52	52	14	12	31	16	34	11	m	19	0	N	28	7	45	17	22	18
4	S.		56	49	15	13	22	16	23	24	1	33	4	3	29	31			19	
5	Su.	21	0	45	16	14	12	15	58	5	40	2	35	0	8	11	53		19	
6	M.		4	42	17	15	0	40	18	9	3	31	3	S	51	24	29		19	
7	Tu.		8	39	13	15	47	22	0	m	54	4	18	7	45	7	m	24		19
8	W.		12	35	19	16	33		3	13	59		53	11	22	20	39		19	
9	Th.		16	32	20	17	18	14	44	27	26	5	13	14	30	4	18		19	
10	F.		20	28	21	18	2		24	11	17		15	16	55	18	22		R 19	
11	S.		24	25	22	18	44		5	25	35	4	5	18	23	2	52		19	
12	Su.		28	21	23	19	25	13	45	10	17		23	41		17	38		19	
13	M.		32	18	24	20	4		25	25	8	3	28	17	41	2	40		19	
14	Tu.		36	14	25	20	42		5	14	10	2	19	15	27	17	48		19	
15	W.		40	11	26	21	18	12	44	25	21	1	0	12	8	2	52		19	
16	Th.		44	8	27	21	53		23	10	29	0	S	22	8	3	17	44		18
17	F.		48	4	28	22	26		3	5	2	1	42	3	32	2	15		19	
18	S.		52	1	29	22	58	11	41	9	22	2	54	1	N	3	16	22		19
19	Su.		55	57	0	23	29		26	23	16	3	53	5	27	0	8	3		19
20	M.		59	54	1	23	57	10	59	6	43	4	36	9	24	13	17		17	
21	Tu.	22	3	50	2	24	24		37	19	47	5	4	12	47	26	7		17	
22	W.		7	47	3	24	50		15	2	24		17	15	28	8	36		17	
23	Th.		11	43	4	25	14	9	54	14	44		14	17	22	20	49		17	
24	F.		15	40	5	25	37		31	26	50	4	57	18	27	2	49		16	
25	S.		19	37	6	25	57		9	8	46		28	41	14	42		16		
26	Su.		23	33	7	26	16	8	47	20	38	3	47	7		26	32		15	
27	M.		27	30	8	26	33		24	2	25	2	57	16	45	8	19		15	
28	Tu.		31	26	9	26	48		2	14	15	1	59	14	39	20	51		14	

Date	ψ		♈		♉		♊		♋	
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.
2	1 N 46	13 S 32	0 N 46	14 N 11	0 N 4	21 S 21	0 S 9	21 S 52	3 N 36	27 N 2
4	47			12		19		48	33	
6				14		16		43	31	26
8				16		14		39	29	
10				18		12		35	26	
12				19		10		31	23	
14				21		8		26	22	
16				23		3		22	18	
18		31		25		3		18	15	
20	48			26		1		11	13	
22				24		20	59		9	10
24		30		30			57		5	7
26				31			58		0	5
28				33			53	12	20	56

EPHEMERIS										FEBRUARY 1961										5
Date	Longitudes										Lunar Aspects									
	♈	♉	♊	♋	♌	♍	♎	♏	♐	☉	☽	♈	♉	♊	♋	♌	♍	♎	♏	
1	24	15	23	15	21	19	0	9	29	5	29	5	♈	♉	♊	♋	♌	♍	♎	
2	R	13		22	32		R	5	0	31			♈	♉	♊	♋	♌	♍	♎	
3		10		29	46			3	1	3	1	54	♈	♉	♊	♋	♌	♍	♎	
4		7		36	59			1	2	3	11		♈	♉	♊	♋	♌	♍	♎	
5		4		43	22	15		1	3	0	4	23	♈	♉	♊	♋	♌	♍	♎	
6		2		49	26			0		57	5	28	♈	♉	♊	♋	♌	♍	♎	
7	23	59		56	40		D	1	4	54	6	28	♈	♉	♊	♋	♌	♍	♎	
8		37	24	3	53			2	5	50	7	18	♈	♉	♊	♋	♌	♍	♎	
9		54		10	6			3	6	45	8	0	♈	♉	♊	♋	♌	♍	♎	
10		52		16	19			6	7	40	34		♈	♉	♊	♋	♌	♍	♎	
11		49		23	32			9	8	35	56	*	♈	♉	♊	♋	♌	♍	♎	
12		46		29	45			13	9	29	9	9	♈	♉	♊	♋	♌	♍	♎	
13		43		36	58			18	10	22	11		♈	♉	♊	♋	♌	♍	♎	
14		41		42	24	11		24	11	14	R 3		♈	♉	♊	♋	♌	♍	♎	
15		38		49	24			30	12	6	8	44	♈	♉	♊	♋	♌	♍	♎	
16		36		55	37			37		56	16		♈	♉	♊	♋	♌	♍	♎	
17		33	25	1	50			44	13	46	7	38	♈	♉	♊	♋	♌	♍	♎	
18		31		7	25	3		52	14	35	6	51	♈	♉	♊	♋	♌	♍	♎	
19		28		13	16	1		1	15	24	5	58	♈	♉	♊	♋	♌	♍	♎	
20		26		20	28			10	16	11	4	59	♈	♉	♊	♋	♌	♍	♎	
21		23		26	41			20		58	3	56	♈	♉	♊	♋	♌	♍	♎	
22		20		32	53			31	17	43	2	50	♈	♉	♊	♋	♌	♍	♎	
23		17		38	26	6		42	18	28	1	44	♈	♉	♊	♋	♌	♍	♎	
24		14		44	18			53	19	11	0	39	♈	♉	♊	♋	♌	♍	♎	
25		12		50	31	2		5		54	29	36	♈	♉	♊	♋	♌	♍	♎	
26		10		56	43			18	20	35	28	37	♈	♉	♊	♋	♌	♍	♎	
27		7	26	2	55			31	21	15	27	43	♈	♉	♊	♋	♌	♍	♎	
28		4		8	27	7		45		54	26	54	♈	♉	♊	♋	♌	♍	♎	
Date	♈		♉		Mean		Date	Time		Phenomena.										
	Lat.	Decl.	Lat.	Decl.	Ω	H.		M.												
2	0°N	56	0°N	53	0°S	24	11	S	39	7	33	1	0	17	Full Moon, Decl. 15°N14'					
4	1	10	1	52	0°N	2	10	N	18		32	3	1	48	☽ at Ω					
6		24	2	51		31	9		1		25	7	12	48	☽ on Equator					
8		38	3	39	1	3	7	52			19	8	22	20	☽ at Last Quarter.					
10		53	4	46		34	6	46			13	14	16	30	☽ at Perigee.					
12	2	8	5	43	2	8		10			6	15			Heli. setting of ♈ in West					
14		23	6	39		39	5	44			0	15	13	41	New Moon Decl. 11°S52'					
16		39	7	33	3	6		36	6		54	16	5	20	☽ at ♈					
18		55	8	27		30		45			47	18	6	26	☽ on Equator.					
20	3	12	9	19		40	6	17			48	22	14	5	☽ at First Quarter.					
22		28	10	10		44		59			35	27	2	30	☽ at Apogee.					
24		45		59		39	7	50			28									
26	4	2	11	47		25	8	44			22									
28		20	12	33		7	9	38			16									

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MARCH 1961

S. J. O. UJJAIN

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

Date	☉		☽		☿		♂		♂	
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.
2	1 N 48	13 S 29	0 N 46	14 N 35	0 N 2	20 S 51	0 S 12	20 S 51	2 N 59	26 N 23
4		28		36		50		47		57
6				38		47		43		54
8		27		39		45	13	37		52
10	49			41		43		33	49	
12		26		42		41		29	46	4
14		25		43		40		25	44	
16				45	1	38		20	42	25
18		24		46		36		16	39	50
20		23		47		34		12	37	45
22		22		48		33		8	34	40
24				50		31	15	3	32	31
26		21		51		30		19	59	30
28		20		52		28		55	28	21
30		19		53	0	27	16	51	25	15

EPHEMERIS										MARCH 1961										7
Date	Longitudes										Lunar Aspects									
	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	☾	☽	♊	♋	♌	♍	♎	♏	♐	
1	23	2	26	14	27	19	2	59	22	31	26	12								
2	R	0		19		31	3	14	23	5	25	R36	♈	♉	♊	♋	♌	♍	♎	
3	22	57		25		43		29		43	8		♈	♉	♊	♋	♌	♍	♎	
4		54		31		55		45	24	16	24	46	♈	♉	♊	♋	♌	♍	♎	
5		52		37	28	7	4	1		48	32		♈	♉	♊	♋	♌	♍	♎	
6		50		42		18		17	25	19	24	27	♈	♉	♊	♋	♌	♍	♎	
7		47		48		30		35		48	22		♈	♉	♊	♋	♌	♍	♎	
8		45		53		41		52	26	15	D 27		♈	♉	♊	♋	♌	♍	♎	
9		43		58		53	5	9		41	38		♈	♉	♊	♋	♌	♍	♎	
10		41	27	3	29	4		27	27	5	54		♈	♉	♊	♋	♌	♍	♎	
11		38		8		15		46		27	25	16		♈	♉	♊	♋	♌	♍	
12		36		13		26	6	5		47		43	♈	♉	♊	♋	♌	♍	♎	
13		34		18		37		24	28	5	26	14	♈	♉	♊	♋	♌	♍	♎	
14		32		23		48		44		21		50	♈	♉	♊	♋	♌	♍	♎	
15		30		28		59	7	4		35	27	30	♈	♉	♊	♋	♌	♍	♎	
16		28		33	0	10		24		47	28	14		♈	♉	♊	♋	♌	♍	
17		26		38		21		45		57	29	1	♈	♉	♊	♋	♌	♍	♎	
18		24		43		31	8	6	29	4	52		♈	♉	♊	♋	♌	♍	♎	
19		22		48		42		27		9	0	46	♈	♉	♊	♋	♌	♍	♎	
20		20		52		52		4		12	1	42	♈	♉	♊	♋	♌	♍	♎	
21		18		56	1	2	9	11		12	2	42	♈	♉	♊	♋	♌	♍	♎	
22		1	28	1		13		34		R 10	3	45	♈	♉	♊	♋	♌	♍	♎	
23		14		5		23		56		9	4	50	♈	♉	♊	♋	♌	♍	♎	
24		12		9		33	10	19	28	59	5	57	♈	♉	♊	♋	♌	♍	♎	
25		10		14		43		42		4	7	7	♈	♉	♊	♋	♌	♍	♎	
26		9		18		52	11	6		37	8	18	♈	♉	♊	♋	♌	♍	♎	
27		8		22	2	2		30		23	9	32	♈	♉	♊	♋	♌	♍	♎	
28		6		26		11		54		6	10	47	♈	♉	♊	♋	♌	♍	♎	
29		4		30		2	12	18	27	47	12	5	♈	♉	♊	♋	♌	♍	♎	
30		3		33		30		43		25	13	24	♈	♉	♊	♋	♌	♍	♎	
31		1		37		39	13	8		1	14	45	♈	♉	♊	♋	♌	♍	♎	
Date	♈		♉		Mean		Date	Time		Phenomena										
	Lat.	Decl.	Lat.	Decl.	♈		H.	M.												
2	4 N	37	13 N	17	2 N	42	10 S	27	6	9	2	..	Heli. rising of ♈ in East.							
4		55		58		16	11	8		3	2	8	11	☽ at ♈						
6	5	12	14	38	1	48		42	5	56	2	19	5	Full Moon Decl. 7°N 38'						
8		29	15	15		20	12	7		50	4	18	38	☽ on Equator.						
10		46		48	0	53		23		44	10	8	28	☽ at Last Quarter.						
12	6	3	16	19		27		32		37	14	23	30	☽ at Perigee.						
14		19		47		2		33		31	15	16	16	☽ at ☽						
16		35	17	11	0 S	21		25		25	17	0	21	New Moon, Decl. 3° S 15'						
18		50		31		43		11		18	17	17	8	☽ on Equator						
20	7	3		47	1	2	11	50		12	24	8	19	☽ at First Quarter.						
22		16		58		19		22		6	26	20	30	☽ at Apogee.						
24		27	18	4		31	10	45	4	59	29	15	0	☽ at ♈						
26		36		11		48		8												
28		42	17	59	2	0	9	22												
30		47		48		9	8	29												

8		APRIL 1961										S. J. O. UJJAIN	
Date	Day	Sidereal Time		☉		☽		Midnight		ψ			
				Long.	Decl.	Long.	Lat.	Decl.	☽				
1	S.	0	37	35	11° 18'	15	4° 28'	11° 39'	3° N	2	18	2	10m 43
2	Su.	41	34	12	17	2	52	24	30	53	5	52	1m 1
3	M.	45	28	13	16	35	5	15	7m 36	4	35	9	44
4	Tu.	49	25	14	15	42	38	20	46	5	0	13	10
5	W.	53	21	15	14	47	6	0	47 29	10	15	57	11 19
6	Th.	57	18	16	13	49	23	18	12	2	17	54	25 8
7	F.	1	14	17	12	50	46	2	1	4	37	18	48
8	S.	5	11	18	11	49	7	8	16	7	3	55	34
9	Su.	9	7	19	10	45	31	0	16	2	58	17	11
10	M.	13	4	20	9	40	53	14	30	1	51	14	43
11	Tu.	17	1	21	8	32	8	15	28	50	0	36	11
12	W.	20	58	22	7	2	37	13	9	0	5	41	7
13	Th.	24	55	23	6	10	59	27	23	1	55	2	49
14	F.	28	51	24	4	57	9	31	11	33	3	2	1
15	S.	32	48	25	3	41	42	25	31	56	6	11	2
16	Su.	36	44	26	2	24	10	4	9	14	4	36	10
17	M.	40	41	27	1	4	25	22	38	59	13	36	29
18	Tu.	44	37	27	59	43	46	5	42	5	16	14	12
19	W.	48	34	28	58	20	11	7	18	26	4	57	18
20	Th.	52	31	29	56	53	27	0	51	35	51	6	57
21	F.	56	27	0	55	27	48	12	59	2	49	18	59
22	S.	0	24	1	53	58	12	8	24	57	3	15	17
23	Su.	4	20	2	52	27	28	6	47	2	23	16	16
24	M.	8	17	3	50	5	48	18	36	1	24	13	55
25	Tu.	12	13	4	49	20	13	0	59	0	21	10	58
26	W.	16	9	5	47	43	27	12	32	0	43	7	32
27	Th.	20	6	6	46	5	47	24	46	1	56	3	43
28	F.	24	3	7	44	25	14	6	7	18	2	46	0
29	S.	27	59	8	42	42	24	20	10	3	58	4	30
30	Su.	31	56	9	40	58	43	3	21	4	20	8	33

Date	ψ		♈		♉		♊		♋		♌	
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.
1	1° N	50	13° S	18	0° N	45	14° N	53	0° N	0	20° S	25
3												
5												
7												
9												
11												
13												
15												
17												
19												
21												
23												
25												
27												
29												

EPHEM ERIS													APRIL 1961													9	
Date	Longitudes														Lunar Aspects												
	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓			
1	21	59	28	41	2	48	13	33	26	34	16	8	♈	♉							♈	♉					
2	R	58		45		57		58		7	17	33		*	♈						♈	♉					
3		57		48	3	6	1	23	25	R	37	18	59	♈	♉						♈	♉					
4		56		51		15		49		6	20	27			♈						♈	♉					
5		55		54		23	15	15	24		2	21	57	♈	♉		*	*			♈	♉					
6		54		58		31		41	23	58	23	28		♈	♉		♈	♉			♈	♉					
7		52	29		1	39	16	8		22	25	1		♈	♉		♈	♉			♈	♉					
8		51		4		47		34	22	45	26	35		♈	*	♈	♉	♈			♈	♉					
9		50		7		55	17	1		8	28	11					♈	♉			♈	♉					
10		49		10	4	3		27	21	31	29	48	*	♈			♈	♉			♈	♉					
11		48		12		11		55	20	5	1	27		♈	♉		♈	♉			♈	♉					
12		47		15		19	18	22		15	3	7		♈	♉		♈	♉			♈	♉					
13		46		17		26		50	19	37	4	49		♈	♉		♈	♉			♈	♉					
14		45		2		3	19	17		0	6	38		♈	♉		♈	♉			♈	♉					
15		45		22		40		47	18	24	8	18		♈	♉		♈	♉			♈	♉					
16		44		24		47	20	13	17	49	10	5		♈			♈	♉			♈	♉					
17		43		27		54		42		16	11	53		♈	♉		♈	♉			♈	♉					
18		42			5	1	21	10	16	43	13	43		♈	♉		♈	♉			♈	♉					
19		42		31		7		39		13	15	34		♈	♉		♈	♉			♈	♉					
20		42		33		13	22	9	15	44	17	27	*	♈	♉		♈	♉			♈	♉					
21		41		35		20		39		17	19	22		♈	♉		♈	♉			♈	♉					
22		40		37		26	23	7	14	52	21	18		♈	♉		♈	♉			♈	♉					
23		40		38		32		35		29	13	14		♈	♉		♈	♉			♈	♉					
24		40		40		38	24	4		8	25	12					♈	♉			♈	♉					
25		39		41		43		34	13	50	27	14	Δ				♈	♉			♈	♉					
26		39		42		48	25	3		35	29	18		*	♈		♈	♉			♈	♉					
27		39		44		54		33		22	1	22		♈	♉		♈	♉			♈	♉					
28		39		45		59	26	3		11	3	27		♈	♉		♈	♉			♈	♉					
29		39		46	6			33		2	5	33		♈	♉	*	♈	♉			♈	♉					
30		39		47		9	27	3	12	56	7	41		♈			♈	♉			♈	♉					

Date	♀		♂		Mean	Date	Time		Phenomena				
	Lat.	Decl.	Lat.	Decl.			H.	M.					
1	7° N	48	17° N	31	2° S	17	7° S	35	4 34	1	1	23	☾ on Equator.
3	46	8	23	6	33	27	1	11	18	Full Moon, Decl. 1° S 41'			
5	41	16	39	27	5	27	21	4	..	Heli. setting of ♀ in West			
7	33	5	29	4	16	15	8	15	46	☾ at Last Quarter.			
9	21	15	26	29	3	0	8	8	..	Heli. setting of ♀ in East			
11	6	14	43	27	1	40	2	11	13	30	☾ at Perigee.		
13	47	13	57	23	0	16	3	53	11	23	1	☾ at ☉	
15	26	9	17	1	N	12	49	14	2	43	☾ on Equator.		
17	2	12	21	8	2	44	43	15	..	Heli. rising of ♀ in East			
19	5	37	11	33	1	59	4	18	37	15	11	8	New Moon, D. 6° N 2'
21	10	10	47	46	5	57	30	23	3	20	☾ at First Quarter.		
23	4	42	2	31	7	35	24	23	15	30	☾ at Apogee		
25	13	9	21	16	9	19	18	25	19	56	☾ at ☉		
27	3	45	8	44	0	58	11	3	11	28	9	55	☾ on Equator.
29	17	10	0	39	12	43	5						

EPHEMERIS										MAY 1961										11
Date	Longitudes										Lunar Aspects									
	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	☉	☽	♈	♉	♊	♋	♌	♍	♎	♏
1	21	39	29	48	6	13	27	33	12	53	9	49	♈	♈	♈	♈	♈	♈	♈	♈
2	R	39		49		18	28	4	R	51	11	58	♈	♈	♈	♈	♈	♈	♈	♈
3		39		49		22		35		53	14	8	♈	♈	♈	♈	♈	♈	♈	♈
4		40		50		26	29	6	D	56	16	18	♈	♈	♈	♈	♈	♈	♈	♈
5		40		50		30		36	13	2	18	28	♈	♈	♈	♈	♈	♈	♈	♈
6		41		50		34	0	7		10	20	37	♈	♈	♈	♈	♈	♈	♈	♈
7		41		51		37		38		20	22	46	♈	♈	♈	♈	♈	♈	♈	♈
8		42		51		40	1	9		32	24	54	♈	♈	♈	♈	♈	♈	♈	♈
9		42		51		43		40		47	27	2	♈	♈	♈	♈	♈	♈	♈	♈
10		43		51		46	2	11	14	3	29	9	♈	♈	♈	♈	♈	♈	♈	♈
11		43		51		49		43		21	1	16	♈	♈	♈	♈	♈	♈	♈	♈
12		44	R	51		52	3	14		41	3	20	♈	♈	♈	♈	♈	♈	♈	♈
13		44		51		54		46	15	3	5	16	♈	♈	♈	♈	♈	♈	♈	♈
14		45		51		57	4	18		28	7	12	♈	♈	♈	♈	♈	♈	♈	♈
15		46		50		59		50		52	9	7	♈	♈	♈	♈	♈	♈	♈	♈
16		47		49	7	1	5	22	16	19	11	0	♈	♈	♈	♈	♈	♈	♈	♈
17		48		48		2		54		47	12	50	♈	♈	♈	♈	♈	♈	♈	♈
18		49		48		4	6	26	17	17	14	36	♈	♈	♈	♈	♈	♈	♈	♈
19		50		47		5		58		48	16	20	♈	♈	♈	♈	♈	♈	♈	♈
20		51		46		6	7	30	18	21	18	0	♈	♈	♈	♈	♈	♈	♈	♈
21		52		44		7	8	3		55	19	38	♈	♈	♈	♈	♈	♈	♈	♈
22		53		43		8		36	19	30	21	13	♈	♈	♈	♈	♈	♈	♈	♈
23		54		42		9	9	9	20	7	22	44	♈	♈	♈	♈	♈	♈	♈	♈
24		56		41		9		41		45	24	11	♈	♈	♈	♈	♈	♈	♈	♈
25		57		40		9	10	14	21	24	25	35	♈	♈	♈	♈	♈	♈	♈	♈
26		59		38	R	9		47	22	4	26	57	♈	♈	♈	♈	♈	♈	♈	♈
27	22	0		36		9	11	20		44	28	14	♈	♈	♈	♈	♈	♈	♈	♈
28		2		35		9		53	23	27	29	28	♈	♈	♈	♈	♈	♈	♈	♈
29		3		33		8	12	26	24	10	0	39	♈	♈	♈	♈	♈	♈	♈	♈
30		5		31		7		59		54	1	46	♈	♈	♈	♈	♈	♈	♈	♈
31		7		29		6	13	33	25	39	2	49	♈	♈	♈	♈	♈	♈	♈	♈

Date	♈		♉		Mean ♈	Date	Time H. M.	Phenomena						
	Lat.	Decl.	Lat.	Decl.										
1	2°N	49°	7°N	38°	0°S	19°	14°N	25°	2	59	1	0	11	Full Moon, D. 10° S 29'
3		22		17	0°N	2°	16°	10°		52	6	17	30	D at Perigee
5	1	53	6	56	0	20	17	39		46	7	21	28	D at Last Quarter.
7		32		40		38	19	5		3	9	1	26	D at ☿
9		8		29	1	4	20	33		33	11	10	32	D on Equator.
11	0	45		21		23	21	46		27	12			Heli. rising of ♀ in West
13		24		18		39	22	48		20	14	22	25	New Moon, D. 13° N 53'
15		4		19		53	23	41		14	21	10	30	D at Apogee.
17	0	S 15		22	2	4	24	23		8	22	21	49	D at First Quarter.
19		32		30		12		55		1	2	22	36	D at ♄
21		48		40		16	25	18	1	53	25	19	44	D on Equator.
23	1	3		53		18		32		49	30	10	8	Full Moon Decl. 16° S 49'
25		17	7	9		16		42						
27		30		27		11		37						
29		42		47		2		28						
31		53	8	9	1	49		15						

12		JUNE 1961										S. J. O. UJJAIN									
Date	Day	Sidereal Time		☉		♂				Midnight		ψ									
				Long.	Decl.	Long.	Lat.	Decl.	♂	♂											
H.	M.	S.	°	'	"	°	'	"	°	'	"	°	'	"							
1	Th.	4	38	6	10	31	51	22	N	2	8	52	9	m	8						
2	F.		42	2	11	29	21	10	23	11		3	18	36	7						
3	S.		45	59	12	26	50	18	7	42	1	57	16	27	5						
4	Su.		49	56	13	24	17	25	22	4	0	43	13	27	4						
5	M.		53	52	14	21	43	32	6	16	0	S	31	9	42						
6	Tu.		57	49	15	1	8	38	20	15	1	43	5	26	2						
7	W.	5	1	45	16	16	32	44	4	3	2	48	0	58	0						
8	Th.		5	42	17	13	56	50	17	38	3	43	3	N	19						
9	F.		9	38	18	11	18	55	1	4	4	24	7	42	8						
10	S.		13	35	19	8	40	23	0	14	17	50	11	28	57						
11	Su.		17	31	20	6	1	5	27	13	5	1	14	38	56						
12	M.		21	28	21	3	22	9	10	0	4	57	17	3	55						
13	Tu.		25	25	22	0	41	12	22	35	3	38	18	36	54						
14	W.		29	21		58	0	16	4	57	6	19	14	11	53						
15	Th.		33	18	23	55	19	18	17	7	3	24	1	58	52						
16	F.		37	14	24	52	37	21	29	7	2	32	17	51	51						
17	S.		41	11	25	49	54	23	10	59	1	35	15	57	50						
18	Su.		45	7	26	47	11	24	22	47	0	33	13	24	49						
19	M.		49	4	27	44	27	26	4	34	0	N	28	10	48						
20	Tu.		53	0	28	41	42	26	16	26	1	32	6	46	47						
21	W.		56	57	29	38	57	27	28	28	2	31	2	55	46						
22	Th.	6	0	54	0	36	12	27	10	45	3	24	1	S	7						
23	F.		4	50	1	33	26	26	23	22	4	9	5	12	44						
24	S.		8	47	2	30	40	25	6	23	4	43	9	11	43						
25	Su.		12	43	3	27	54	24	19	51	5	2	12	50	42						
26	M.		16	40	4	25	7	22	3	46		5	15	54	42						
27	Tu.		20	36	5	22	2	20	18	6	4	48	18	7	41						
28	W.		24	33	6	19	33	18	2	37	13	19	11	10	40						
29	Th.		28	29	7	16	46	15	17	40	3	20	18	58	40						
30	F.		32	26	8	13	58	11	2	37	2	13	17	25	39						

Date	ψ		♂		♂		♂		♂	
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.
2	1N50	2S48	0N43	14N48	0S5	20S21	0S27	18S57	1N28	17N50
4	49			47		22		58	26	29
6		47		46		24		59	25	7
8		46		44	6	25		19	1	23
10				43		26		29	3	22
12		45		42		28		5	20	15
14		44		40		29	30	7	19	36
16				38		31		9	17	12
18		43		37		32		12	16	14
20				35	7	34	31	14	14	23
22		42		33		35		17	13	59
24				32		37	32	20	12	33
26		41		30		40		23	10	
28	48		42	28		42		26	9	12
30				26	8	42	33	29	7	15

EPHEMERIS		JUNE 1961										13									
Date	Day	Longitudes.										Lunar Aspects.									
		♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂
1	22	9	29	27	7	5	14	6	26	23	3	49	π	*	π	π	π	π	π	π	π
2		10	R	25	R	4	40	27	11	4	45	π	π	π	π	π	π	π	π	π	π
3		12		23		3	15	13	58	5	37	π	π	π	π	π	π	π	π	π	π
4		14		20		1	47	28	46	6	25	π	π	π	π	π	π	π	π	π	π
5		16		17	6	59	16	20	29	35	7	9	π	π	π	π	π	π	π	π	π
6		17		15		57		54	0	8	25	49	π	π	π	π	π	π	π	π	π
7		19		12		55	17	28	1	15	8	24	π	π	π	π	π	π	π	π	π
8		21		10		52	18	2	2	6	56	*	π	π	π	π	π	π	π	π	π
9		23		7		49		36		57	9	23	π	π	π	π	π	π	π	π	π
10		25		5		47	19	10	3	49	45	π	π	π	π	π	π	π	π	π	π
11		27		2		44		44	4	42	10	3	π	π	π	π	π	π	π	π	π
12		29	28	59		40	20	18	5	35	17	7	π	π	π	π	π	π	π	π	π
13		32		56		37		52	6	29	26	π	π	π	π	π	π	π	π	π	π
14		34		53		34	21	27	7	23	30	π	π	π	π	π	π	π	π	π	π
15		37		50		30	22	1	8	18	R	30	π	π	π	π	π	π	π	π	π
16		39		46		26		36	9	14	25	π	π	π	π	π	π	π	π	π	π
17		42		43		22	23	10	10	9	17	π	π	π	π	π	π	π	π	π	π
18		44		40		18		45	11	6	3	*	π	π	π	π	π	π	π	π	π
19		47		36		13	24	19	12	2	9	46	π	π	π	π	π	π	π	π	π
20		50		33		9		54	13	0	25	π	π	π	π	π	π	π	π	π	π
21		52		30		4	25	29		57	1	π	π	π	π	π	π	π	π	π	π
22		54		26	5	59	26	4	14	5	8	33	π	π	π	π	π	π	π	π	π
23		57		22		54		39	15	54	3	π	π	π	π	π	π	π	π	π	π
24	23	0		18		49	27	14	16	52	7	31	π	π	π	π	π	π	π	π	π
25		2		14		44		49	17	51	6	57	π	π	π	π	π	π	π	π	π
26		4		11		38	28	24	18	51	22	π	π	π	π	π	π	π	π	π	π
27		7		7		32		59	19	51	5	46	π	π	π	π	π	π	π	π	π
28		10		3		27	29	35	20	51	11	π	π	π	π	π	π	π	π	π	π
29		13	27	59		21	0	10	21	51	4	37	π	π	π	π	π	π	π	π	π
30		16		55		15		45	22	52	3	π	π	π	π	π	π	π	π	π	π

Date	♂		♀		Mean		Date	Time H. M.	Phenomena					
	Lat.	Decl.	Lat.	Decl.	♂	♀								
2	2 S	3	8 N	33	1 N	34	24 N	56	1	17	2	8	30	♂ at Perigee.
4		12		59		16		33		11	5	2	3	♂ at ♀
6		20	9	26	0	54		7		4	6	29	49	♂ at Last Quarter.
8		28		54		29	23	38	0	58	7	17	8	♂ on Equator.
10		34	10	23		1		1		51	13	10	47	New Moon, D. 18° N 33'
12		40		53	0 S	29	22	35		45	16	..		Heli. setting of ♀ in W.
14		45	11	23	1	0		2		39	18	3	30	♂ at Apogee
16		49		54		33	21	29		32	19	0	40	♂ at ♀
18		52	12	26	2	6	20	58		26	21	14	32	♂ at First Quarter.
20		55		58		39		28		20	22	5	27	♂ on Equator.
22		57	13	30	3	11		0		13	28	18	8	Full Moon D. 19° S 15'
24		59	14	1		39	19	35		7	30	6	30	♂ at Perigee.
26	3	0		32	4	4		14		0				
28		0	15	5		23	18	58	29	18	54			
30		0		36		37		47		48				

14		JULY 1961										S. J. O. UJJAIN							
Date	Day	Sidereal Time			☉		♂			♂		Midnight		ψ					
					Long.	Decl.	Long.	Lat.	Decl.	♂	♂								
1	S.	H.	M.	S.	9	11	10	23N	8	17	30	0 N 47	14 S	1	24	53	8m 39		
2	Su.	6	36	23	10	8	22		3	2	11	0 S 22	11	2	9	27	R 38		
3	M.		44	16	11	5	35	22	59	16	37	1	38	6	46	22	43	38	
4	Tu.		48	12	12	2	47		54	0	44	2	47	2	15	7	41	37	
5	W.		52	9	12	59	59		49	14	33	3	44	2 N 17	21	19		37	
6	Th.		56	5	13	57	11		43	28	2	4	28	6	36	4	8	9	36
7	F.	7	0	2	14	54	24		37	11	14	1	56	10	30	17	43		36
8	S.		3	58	15	51	36		30	24	10	5	8	13	49	0	33		35
9	Su.		7	55	16	48	48		32	6	52		5	16	26	13	10		35
10	M.		11	52	17	46	0		16	19	22	2	48	18	13	25	32		35
11	Tu.		15	48	18	43	13		8	1	40	3	17	19	8	7	33		35
12	W.		19	45	19	40	26		0	13	48	3	35	9	19	48			34
13	Th.		23	41	20	37	40	21	52	25	48	2	44	18	18	1	48		34
14	F.		27	38	21	34	53		43	7	41	1	46	16	39	13	35		34
15	S.		31	34	22	32	7		34	19	30	0	43	14	17	25	22		34
16	Su.		35	31	23	29	21		24	1	16	0 N 21	11	21	7	48	8		33
17	M.		39	27	24	26	35		14	13	4	1	54	7	57	18	58		33
18	Tu.		43	24	25	23	50		4	24	56	2	25	4	14	0	55		33
19	W.		47	20	26	21	5	20	53	6	58	3	20	0	18	13	3		33
20	Th.		51	17	27	18	21		42	19	15	4	7	3 S 43	25	28			33
21	F.		55	14	28	15	37		31	1	19	5	43	7	40	8m	10		33
22	S.		59	10	29	12	54		19	14	48	5	6	11	23	21	24		33
23	Su.	8	3	7	0	10	11		7	28	11		14	14	39	5	4		33
24	M.		7	3	1	7	29	19	55	12	7	3	4	17	12	19	8		D 33
25	Tu.		11	0	2	4	48		42	26	22	4	35	18	49	3	40		33
26	W.		14	56	3	2	7		29	11	5	3	47	19	12	18	34		33
27	Th.		18	53	3	59	27		16	26	6	2	43	18	15	3	41		33
28	F.		22	49	4	56	48		2	11	15	1	7	16	0	18	52		33
29	S.		26	46	5	54	9	18	48	26	25	0 S	5	12	35	4	6		34
30	Su.		30	43	6	51	32		34	11	24	1	17	8	29	18	49		34
31	M.		34	39	7	48	55		19	26	6	2	33	3	53	3	21		35

Date	ψ		♂		♂		♂		♂	
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.
2	1 N 48	12 S 40	0 N 43	14 N 24	0 S 8	20 S 44	0 S 33	19 S 33	1 N 6	11 N 49
4			42	22		46	34	36	5	22
6				20		48		40	3	54
8				18		50		43	2	27
10				16		51		47	1	59
12				13	9	53	35	51	0	31
14	47			11		55		54	58	3
16				9		57	36	58	57	34
18				7		59	20	2	55	5
20				5	21	1		6	54	36
22				2	10	3	37	10	53	7
24				0		4		1	51	37
26				13	58	6		17	50	8
28				55		8		21	49	38
30				53		10	38	25	47	7

EPHEMERIS													JULY 1961										15			
Date	Longitudes.												Lunar Aspects.										P			
	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	☾	☿	♈	♉	♊	♋	♌	♍	♎	♏		♐	♑	♒
1	23	19	27	51	5	9	1	20	23	53	3	33	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈
2		22	R	47		R	2		56	24	54	3	3	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
3		25		43	4		56	2	31	25	56	2	37	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
4		28		39			50	3	7	26	58		14	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
5		31		35			44		43	28	0	1	55	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
6		34		30			37	4	19	29	2		40	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
7		37		26			30		54	0	5		30	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
8		40		22			23	5	30	1	8		25	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
9		43		18			16	6	6	2	11		24	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
10		46		13			8		42	3	15		D 29	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
11		49		9			1	7	18	4	18		39	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
12		53		4	3		55		54	5	22		54	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
13		56	26	59			47	8	30	6	26	2	15	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
14		59		55			40	9	6	7	31		40	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
15	24	3		51			32		42	8	35	3	10	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
16		6		47			25	10	19	9	40		48	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
17		9		43			17		55	10	45	4	30	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
18		12		38			10	11	32	11	50	5	17	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
19		15		34			2	12	8	12	55	6	9	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
20		19		29	2		54		45	14	0	7	7	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
21		23		25			47	13	21	15	6	8	10	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
22		26		20			39		58	16	12	9	17	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
23		30		15			31	14	34	17	18	10	30	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
24		33		11			23	15	11	18	24	11	47	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
25		37		7			15		48	19	30	13	9	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
26		40		2			8	16	25	20	37	14	35	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
27		43	25	58			0	17	2	21	43	16	7	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
28		47		54	1		52		39	22	50	17	42	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
29		51		50			44	18	16	23	57	19	21	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
30		55		45			37		53	25	4	21	4	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
31		59		40			29	19	30	26	11	22	50	☾	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓

Date	♀		♂		Mean	Date	Time	Phenomena
	Lat.	Decl.	Lat.	Decl.				
2	2 S 59	16 N 6	4 S 44	18 N 41	29	42	2 5 26	☾ at ☿
4	58	36	45	40	35	4	23 50	☾ on Equator
6	56	17	5	41	45	5	9 3	☾ at Last Quarter.
8	54	33	31	55	22	12	..	Heli. rising of ☿ in East
10	51	18	0	16	19	10	16 13 0 42	New Moon D. 18° N 48
12	48	27	3	57	29	10	15 16 30	☾ at Apogee.
14	45	51	35	50		3	16 4 14	☾ at ☿
16	41	19	15	10	20	13	28 57 19 13 47	☾ on Equator.
18	37	37	2	44	39	51	21 2 44	☾ at First Quarter.
20	33	58	16	21	0	44	28 1 21	Full Moon Dec. 17° S 9
22	28	20	17	1	47	20	38 28 14 30	☾ at Perigee.
24	23	34	18	37		32	29 13 7	☾ at ☿
26	18	50	0	50		49	25	
28	12	21	3	23		58	19	
30	6	15	0 N 3	51		13		

16 AUGUST 1961 S. J. O. UJJAIN									
Date	Day	Sidereal Time		Long.		Decl.		Midnight	
		H.	M.	S.	°	'	"	°	'
1 Tu.	8	38	36	8	46	19	18 N	4	10
2 W.		42	32	9	43	44	17	49	24
3 Th.		46	29	10	41	10	34	7	56
4 F.		50	25	11	38	36	18	21	6
5 S.		54	22	12	36	4	2	3	55
6 Su.		58	19	13	33	32	16	45	16
7 M.	9	2	15	14	31	1	29	28	45
8 Tu.		6	12	15	28	32	12	10	51
9 W.		10	8	16	26	4	15	55	22
10 Th.		14	5	17	23	37	38	4	41
11 F.		18	1	18	21	11	20	16	30
12 S.		21	58	19	18	45	2	28	17
13 Su.		25	54	20	16	21	14	44	10
14 M.		29	51	21	13	59	26	21	56
15 Tu.		33	48	22	11	38	7	3	53
16 W.		37	44	23	9	17	13	48	16
17 Th.		41	41	24	6	58	29	28	9
18 F.		45	37	25	4	41	10	10	55
19 S.		49	34	26	2	25	12	50	23
20 Su.		53	30	27	0	10	31	7	8
21 M.		57	27	27	57	57	11	20	51
22 Tu.	10	1	23	28	55	45	11	51	5
23 W.		5	20	29	53	34	31	19	33
24 Th.		9	16	0	51	26	10	4	25
25 F.		13	13	1	49	18	10	50	19
26 S.		17	9	2	47	12	29	4	43
27 Su.		21	6	3	45	7	8	19	50
28 M.		25	3	4	43	4	9	47	4
29 Tu.		28	59	5	41	2	26	19	17
30 W.		32	56	6	39	3	4	3	24
31 Th.		36	51	7	37	5	8	43	17
Date. Lat. Decl. Lat. Decl. Lat. Decl. Lat. Decl. Lat. Decl.									
1	1 N 46	12 S 41	0 N 12	13 N 50	0 S 11	21 S 12	0 S 38	20 S 28	0 N 46
3				48		13		32	45
5		42		45		15		36	43
7				43		17		39	42
9		43		40		18	39	42	41
11				38		20		45	39
13		44		35		21		49	38
15				33	12	23		52	37
17		45		30		24		54	36
19	45	46		28		26		57	34
21				25		27	40 21	0	33
23		47		23		28		2	32
25		48		20		29		5	31
27		49		18	13	31		7	29
29		50		15		32		9	29
31		51		13		33		11	27

EPHEMERIS AUGUST 1961 17									
Date	Longitudes						Lunar Aspects		
	♈	♉	♊	♋	♌	♍	☉	☽	☿
1	25	25	36	1	21	20	7	27	19
2	6	R 32	R 14				41	28	26
3	9		28	6	21	22	29	34	28
4	13		24	0	58	59	0	41	0
5	16		20	51	22	36	1	50	2
6	20		16	43	23	13	2	58	4
7	24		11	36		51	4	6	6
8	28		6	29	24	28	5	14	8
9	31		3	22	25	6	6	23	10
10	35	24	59	15		44	7	31	12
11	39		56	8	26	22	8	40	14
12	43		52	1		59	9	49	16
13	46		48	29	54	27	10	58	18
14	50		44	47	28	15	12	7	20
15	54		41	40		53	13	16	
16	58		37	33	29	31	14	26	24
17	26	1	33	27	0	15	35	26	52
18	5		29	21		47	16	44	8
19	9		26	15	1	25	17	54	0
20	13		23	9	2	3	19	4	2
21	16		20	3		42	20	14	4
22	20		17	28	57	3	20	21	24
23	24		13	51		59	22	34	8
24	28		10	46	4	37	23	44	10
25	31		7	41	5	15	24	54	11
26	35		4	35		53	26	4	13
27	39		1	30	6	32	27	15	15
28	43	23	58	25	7	11	28	25	17
29	46		56	20		50	29	36	19
30	50		53	15	8	28	0	47	20
31	54		50	11	9	7	1	58	22
Date. Lat. Decl. Lat. Decl. Mean. Date. Time. Phenomena.									
1	2 S 0	21 N 25	0 N 27	21 N 38	28	1	8	47	☽ on Equator.
3	1	54	33	47	14		0	3	Heli. setting of ☽ in E.
5	48	38	1	52	41	27	54	3	☽ at Last Quarter.
7	41	42	20	19	57		47	11	New Moon Decl. 14° N 31'
9	35	43	31		3		41	11	☽ at Apogee.
11	28	42	39	18	0		34	12	☽ at ☉
13	21	39	44	16	50		28	15	☽ on Equator.
15	14	33	46	15	34		22	19	☽ at First Quarter.
17	7	25	45	14	12		15	26	☽ at ☽
19	0	15	41	12	50		9	26	☽ at Perigee.
21	0	53	3	36	11	19	3	26	New Moon D. 11° S 0.
23	46	20	48	28	9	49	26	56	☽ on Equator.
25	39	31	19	8	17			50	
27	32	11	10	6	46			44	
29	25	19	50	0	57	5	13	37	
31	19	26	44	3	41			31	

18		SEPTEMBER 1961										S. J. O. UJJAIN	
Date	Day	Sidereal Time		☉		☽		Midnight		ψ			
		H.	M.	S.	Long.	Decl.	Long.	Lat.	Decl.	ψ			
1	F.	10	40	48	8 ^m 35	8	8 N 21	0 13	5 S 17	15 N 3	6 48	9 ^m	1
2	S.		44	44	9 33	13	7 59	13 9	5 17	20 19	27		2
3	Su.		48	41	10 31	20	37 25	38 4	39 18	43 1	47		4
4	M.		52	38	11 29	28	15 7	51 1	19 12	13 52			5
5	Tu.		56	34	12 27	38	6 53	19 51	3 13	18 48	25 48		7
6	W.	11	0	31	13 25	50	31 1	43 2	17 17	33 7	38		9
7	Th.		4	27	14 24	4	9 13	30 1	17 15	34 19	23		10
8	F.		8	24	15 22	19	5 46	25 17	0 11	12 55	1 ^m 10		11
9	S.		12	21	16 20	36	23 7 ^m	5 0	N 54	9 45	13 1		13
10	Su.		16	18	17 18	55	1 18	59 1	56 6	10 24	57		14
11	M.		20	14	18 17	16	4 38	0 59	2 55	2 18	7 1		16
12	Tu.		24	11	19 15	38	15 13	6 3	46 1	S 42	19 13		17
13	W.		28	8	20 14	3	3 52	25 24	4 28	5 40	1 ^m 37		19
14	Th.		32	4	21 12	29	29 7 ^m	54 9	27 14	12 20			20
15	F.		36	1	22 10	57	6 20	37 5	12 12	53 27	3		22
16	S.		39	57	23 9	27	2 43	3 30	11 15	46 10	7 10		24
17	Su.		43	54	24 7	59	20 15	52 4	55 17	53 23	35		26
18	M.		47	50	25 6	33	1 57	0 28	22 19	4 7 ^m	21		27
19	Tu.		51	47	26 5	9	33 14	24 3	32 8	21 26			29
20	W.		55	43	27 3	47	10 28	40 29	18 0	5 55	55		31
21	Th.		59	40	28 2	16	0 47	13 15	1 14	15 37	20 36		33
22	F.	12	3	37	29 1	8	23 28	4 0	S 6	12 15	5 31		34
23	S.		7	33	59 51	0	0 13	2 1	27 8	0 20	3		36
24	Su.		11	30	0 58	37	S 23	28 1	2 41	3 15	5 29		38
25	M.		15	26	1 57	24	47 12	r 53	3 44	1 N 38	20 13		40
26	Tu.		19	23	2 56	14	1 10	27 28	4 31	6 21	4 39		41
27	W.		23	19	3 55	5	33 11	41 5	0 10	34 18	40		43
28	Th.		27	16	4 53	59	57 25	28 11	14 6	2 13			45
29	F.		31	12	5 52	54	2 20	8 48	4 16	46 15	12		47
30	S.		35	9	6 51	53	44 21	52 4	41 18	30 28	2		49
		ψ		♈		♉		♊		♋			
Date		Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.		
2	1 N 45	12 S 51	0 N 42	13 N 10	0 S 13	21 S 34	0 S 40	21 S 13	0 N 25	3 S 44			
4		52				35		14	24	4	16		
6	44	53				36		16	23	47			
8		54				2		17	22	5	18		
10		55				0		18	20	51			
2		57		12	58		38		19	19	6	2	
4		58			55				18	53			
6		59			53	14		20	17	7	25		
8		0			51		39		15	56			
10	13	1			48		40		14	8	27		
22		2			46				13	57			
24		3			44				12	9	20		
26		5			41		41		10	58			
28		6			39				9	10	29		
30		7			37		15		8	59			

19		SEPTEMBER 1961											
EPHEMERIS		Longitudes										Lunar Aspects	
Date		♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	☉	☽
1	26 ^m 59	23 ^m 47	28 ^m 7	9 ^m 46	3 ^m 9	24 ^m 4						☉	☽
2	27	1	R 45	R 3	10 25	4 20	25 43					☉	☽
3		5	43	27	59 11	4 5	31 27	20				☉	☽
4		9	41		55	43	6 42	28 57	*			☉	☽
5		12	39		51 12	22 7	53 0	34				☉	☽
6		15	37		48 13	1 9	5 2	9				☉	☽
7		19	35		45	40 10	16 3	39				☉	☽
8		23	33		42 14	20 11	28 5	8				☉	☽
9		27	31		39	59 12	39 6	37	*			☉	☽
10		30	29		36 15	38 12	51 8	6				☉	☽
11		34	27		34 16	17 15	3 9	34				☉	☽
12		37	26		32	57 16	15 11	1				☉	☽
13		41	25		30 17	36 17	27 12	26				☉	☽
14		44	23		28 18	16 18	39 13	50				☉	☽
15		48	22		26	55 19	51 15	13	*			☉	☽
16		51	21		24 19	35 21	3 16	33				☉	☽
17		55	20		23 20	15 22	16 17	53				☉	☽
18		58	19		22	55 23	28 19	13				☉	☽
19	28	1	18		21 21	35 24	40 20	30				☉	☽
20		4	17		20 22	15 5	53 21	44				☉	☽
21		7	16		20	55 27	6 22	58				☉	☽
22		11	16		19 23	35 28	18 24	12				☉	☽
23		15	16		19 24	15 29	31 25	23				☉	☽
24		18	15	D 19	19 25	55 0	44 26	31				☉	☽
25		22	15		19 25	35 1	57 27	38				☉	☽
26		25	14		20 26	15 3	10 28	43				☉	☽
27		28	14		20	55 4	3 29	47				☉	☽
28		31	14		21 27	36 5	36 0	m 45				☉	☽
29		34	D 14		22 28	16 6	49 1	43				☉	☽
30		37	14		23	57 8	2 2	37				☉	☽
		☉		☽		Mean		Date		Time		Phenomena	
		Lat.	Decl.	Lat.	Decl.	Lat.	Decl.			H.	M.		
2	0 S 12	18 N 59	0 N 30	2 N 10	26 25	2	4 36					☉ at Last Quarter	
4	5	31	0 15	0 46	18 7		..					Heli. rising of ♀ in Wes	
6	0 N 1	1	0 S 1	0 S 50	12 8	1	30					☉ at Apogee.	
8	8 17	28	15	2 16	5 8	16	38					☉ at ♈	
10	14 16	54	31	3 41	25 59	10	20					New Moon, Decl. 6° N 46	
12	20	17	47	5 4	5 12	1	51					☉ on Equator.	
14	26 15	39	1	2 6	25 40	18	1	54				☉ at First Quarter.	
16	32 14	59	17	7 44	40 22	10	10					☉ at ♉	
18	37	17	35	8 59	34 23	9	30					☉ at Perigee.	
20	43 13	34	50	40 11	27 24	17	4					Full Moon Decl. 2° S 14'	
22	48 12	49	2	6 11	20 25	3	57					☉ on Equator.	
24	53	2	21	12 25	5 28	..						Heli. setting of ♀	
26	57 11	15	35	13 26	8								
28	1	2 10	25	47 14	21 52								
30	6 9	35	59 15	11 24	5								

22		NOVEMBER 1961										S. J. O. UJJAIN	
Date	Day	Sidereal Time		☉		☽		Midnight		ψ			
		H.	M.	S.	Long.	Decl.	Long.	Lat.	Decl.	D			
1	W.	14	41	19	8m 36	24 14 S 23	18m 18	0 S 31	14 N 51	24m 12	10m 5		
2	Th.	45	15	9	36 30	42 0m 6	0 N 31	11 56	5m 59		5		
3	F.	49	12	10	36 35	15 11 55	1 33	8 31	17 51		11		
4	S.	53	8	11	36 42	19 23 52	2 30	4 45	29 55				
5	Su.	57	5	12	36 51	38 5m 59	3 22	0 43	12m 7				
6	M.	15	1	2	13 37	2 56 18	21 4	5 3 S 24	24 37		8		
7	Tu.	4	58	14	37 15	16 14 0m 59	37 7	29 7m 22		10			
8	W.	8	55	15	37 30	31 13 53	56 11	17 20 25		13			
9	Th.	12	51	18	37 46	49 27 2	59 14	38 17 42		15			
10	F.	16	48	17	38 4	17 6 10 26	46 17	17 3 21		17			
11	S.	20	44	18	38 24	23 24 1	17 19	1 0m 51		19			
12	Su.	24	41	19	38 46	39 7m 45	3 33	40 14 40		22			
13	M.	28	37	20	39 9	55 21 36	2 36	9 28 30		24			
14	Tu.	32	34	21	39 33	18 11 5m 32	1 29	17 27 12m 33		26			
15	W.	36	31	22	40 0	27 19 33	0 16	14 42 26 36		28			
16	Th.	40	27	23	40 28	42 3m 38	0 S 58	11 5 10m 43		31			
17	F.	44	23	24	40 58	57 17 47	2 10	6 49 24 52		33			
18	S.	48	20	25	41 30	19 11 1m 58	3 12	2 9 9m 1		35			
19	Su.	52	17	26	42 2	25 16 8	4 3	2 N 36 23 14		37			
20	M.	56	13	27	42 36	39 0m 15	38 7	12 7m 16		40			
21	Tu.	16	0	10	28 43	12 53 14	14 57	11 22 21 10		22			
22	W.	4	6	29	43 49	20 6 23	1 58	14 52 4m 48		44			
23	Th.	8	3	0	44 27	19 11 30	42 17	30 18 9		46			
24	F.	12	0	1	45 7	31 24 41	12 19	8 1m 9		49			
25	S.	15	56	2	45 49	43 7m 31	3 29	20 13 48		51			
26	Su.	19	53	3	46 31	55 20 2	2 35	22 26 11		53			
27	M.	23	49	4	47 16	21 6 2m 15	1 38	18 4 8m 17		55			
28	Tu.	27	46	5	48 1	14 15 0	36 15	59 20 11		57			
29	W.	31	42	6	48 48	27 26 6	0 N 27	13 14 2m 0		59			
30	Tu.	35	39	7	49 35	37 7m 54	1 24	9 58 13 47		12	1		
Date		ψ		♈		♉		♊		♋			
		Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.		
1		1 N 43	13 S 29	0 N 44	12 N 9	0 S 16	21 S 33	0 S 40	20 S 52	0 S 12	18 S 12		
3			30		8		31		49		13		35
5			32		7		30		47		14		5
7			33		6	17	29		44		15	19	20
9			35		5		28		39		16		41
11			36		4		26		35		18	20	2
13			37		3		25		32		19		24
15			39		2		24		28		20		41
17			40				22	39	24		21		58
19			41		1		21		19		22	21	17
21			43				19		15		23		34
23			44	45	0		17		10		25		51
25			45			18	15		6		26	22	6
27			46		11 59		13		1		27		21
29			48				11	19 56			28		34

EPHEMERIS																NOVEMBER 1961																23	
Date	Longitudes															Lunar Aspects																	
	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	☉	☽	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓							
1	29	0m 59	24m 12	29m 39	39m 21	1m 17	33m 22	21m 21																									
2	0m	1	15	46	43	18	47	D 32																									
3	3	19	54	22	26	20	17	54	*	*																							
4	5	23	0m	1	23	9	21	32	23	24	Δ	Δ	*	*																			
5	6	26	9	52	22	2	24	5																									
6	8	30	16	24	34	23	47	53																									
7	1m	34	24	25	16	25	2	47																									
8	12	38	32	58	26	17	26	48	δ	δ																							
9	13	42	40	26	41	27	32	27	55																								
10	14	46	48	27	24	28	47	29	6																								
11	15	50	57	28	7	0m	2	0m 21																									
12	16	54	5	50	1	17	1	39	Δ	*																							
13	18	58	14	29	33	2	32	3	21	*	*																						
14	19	25	2	23	0	16	3	47	4	24																							
15	20	7	32	59	5	2	5	50																									
16	21	11	41	1	42	6	17	7	13																								
17	23	16	50	2	25	7	32	8	47																								
18	24	20	59	3	8	8	48	10	16	Δ	Δ	*	*																				
19	25	25	9	51	10	3	11	48	Δ	Δ	Δ	*	*																				
20	26	30	18	4	34	11	11	13	20																								
21	27	35	26	5	18	12	33	14	52																								
22	28	40	38	6	1	13	48	16	25	Δ	Δ	*	*																				
23	29	45	48	7	45	15	4	17	58																								
24	30	50	58	7	28	16	19	19	31																								
25	30	55	8	8	12	17	34	21	5	Δ	Δ	*	*																				
26	31	26	0	18	55	18	50	22	39	Δ	Δ	Δ	Δ	*	*																		
27	31	6	29	9	39	20	5	24	13	Δ	Δ																						
28	32	11	39	10	23	21	20	25	47																								
29	32	16	50	11	7	22	35	27	21	*	Δ	Δ	Δ	*	*																		
30	32	21	4	1	51	23	51	28	55																								
Date	♈		♉		Mean. ♊		Date	Time. H. M.		Phenomena.																							
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.																											
1	1 N 34	5 S 26	1 N 40	7 S 10	23m 14	1	23 58			☽ at ♈																							
3	34 6 23	58	5	8	2 7 30					☽ at Perigee.																							
5	33 7 20	2	27	1	5 16 12					☽ on Equator.																							
7	31 8 16	15	53	22	8 15 29					New Moon Decl. 11° S 48'																							
9	30 9 12	15	8	38	48 15 17					☽ at ♉																							
11	28 10 7	12	9	32	42 15 17					☽ at First Quarter.																							
13	26 11 0	6	10	33	36 17 10					☽ at Perigee.																							
15	24 53 1	58	11	37	29 18 22					☽ on Equator.																							
17	21 12 45	47	12	44	23 22 5					Full Moon D. 15° N 16'																							
19	19 13 35	36	13	51	17 29					Heli. rising of ♈ in East																							
21	16 14 25	24	14	57	10 29 1					☽ at ♊																							
23	12 15 12	10	16	5	4 30 3					☽ at Apogee.																							
25	9 58 0	56	17	8	21 58					☽ at Last Quarter.																							
27	5 16 43	42	18	9	51																												
29	2 17 26	28	19	7	45																												

24		DECEMBER 1961										S. J. O. UJJAIN	
Date	Day	Sidereal Time		☉		☽			Midnight		ψ		
				Long.	Decl.	Long.	Lat.	Decl.	D				
1	F.	H. 16	M. 39	S. 35	8 50	24	21 S 47	19 44	2 N 26	6 N 19	25 40	12 3	
2	S.		43	32	9 51	15	56	1 41	3 18	2 21	7 44	5	
3	Su.		47	29	10 52	6	22	5 13	52	4	2 1 S 45	7	
4	M.		51	25	11 52	58		13 26	19	36	5 52	9	
5	Tu.		55	22	12 53	52		21 9 41	6	56	9 50	11	
6	W.		59	18	13 54	47		29 22	14	5	2 13	13	
7	Th.	17	3	15	14 55	43		36 5 43	4	52	16 28	15	
8	F.		7	11	15 56	39		42 19	30	24	18 38	17	
9	S.		11	8	16 57	35		48 3 43	3	40	19 43	19	
10	Su.		15	4	17 58	35		54 17	42	2	42	21	
11	M.		19	1	18 59	34		59 1 58	1	33	18 12	21	
12	Tu.		22	58	20 0	34	23	4 16	14	0	9 15	23	
13	W.		26	54	21 1	35		8 0 28	0 S 57	12 13	7 35	25	
14	Th.		30	51	22 2	37		12 14	38	2	9 8	27	
15	F.		34	47	23 3	39		16 28	41	3	13 3	29	
16	S.		38	44	24 4	43		19 12 7	38	4	5 1 N 14	31	
17	Su.		42	40	25 5	47		21 26	28	4	5 50	33	
18	M.		46	37	26 6	51		23 10 8	10	5	2 10	35	
19	Tu.		50	33	27 7	56		25 23	41	5	13 46	37	
20	W.		54	30	28 9	2		26 7 11	2	4	5 16	39	
21	Th.		58	27	29 10	8		27 20	8	23	18 42	41	
22	F.	18	2	23	0 11	14		27 3 40	0	3	41 19	43	
23	S.		6	20	1 12	21		26 15	37	2	49	45	
24	Su.		10	16	2 13	29		26 27	59	1	50 18	47	
25	M.		14	13	2 14	37		24 10 8	8	0	46 16	49	
26	Tu.		18	9	4 15	45		23 22	6	0 N 18	14 25	51	
27	W.		22	6	5 16	54		20 3 47	57	1	22 11	53	
28	Th.		26	2	6 18	3		18 15	44	2	21 7	55	
29	F.		29	59	7 19	11		15 27	33	3	15 3	57	
30	S.		33	55	8 20	20		11 9 43	30	4	1 0 S 4	59	
31	Su.		37	52	9 21	30		7 21	39	37	4 9	61	
Date	ψ		♈		♉		♊		♋		♌		
	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	Lat.	Decl.	
1	1 N 43	13 S 49	0 N 45	11 N 59	0 S 18	21 S 9	0 S 39	1 S 51	0 S 29	22 S	59		
3		50						46	30				
5	44	51						49	31	23			
7		52	46					35	32		20		
9		53						29	34		30		
11		55			20	39		23	35		38		
13		56		12	0			17	36		45		
15		57	46		19			11	37		52		
17		58		1				5	38		57		
19		59				49		18	39	24	2		
21	14	0		2		47		52	40		5		
23		0		3		44		46	41		7		
25		1				41		39	42		8		
27		2		4		39		32	43		9		
29		3		5		36	40	25	44		8		
31	45	4		6	20	33		18	45		6		

EPHEMERIS										DECEMBER 1961										25		
Date	Longitudes										Lunar Aspects											
	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	☉	☽	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑
1	0	32	26	27	4	12	12	35	25	6	0	29										
2		33		33		23	13	19	26	22	2	3	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
3			39		34	14		3	27	37	3	37	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
4			44		45		47	28	52	5	11	15	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
5			50		56	15	31	0	7	8	6	45	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
6				56	5	8	16	15	1	23	8	19			☉	☽	☉	☽	☉	☽	☉	☽
7			27	2		19		59	2	39	9	53	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
8				7		31	17	43	3	54	11	27	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
9		32		13		42	18	28	5	9	13	1	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
10				20		54	19	12	6	25	14	35	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
11				26	6	6		57	7	40	16	10	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
12				32		18	20	41	8	56	17	44	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
13		31		38		30	21	26	10	11	19	18	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
14				44		42	22	10	11	27	20	52	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
15				50		54		56	12	42	22	27	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
16		30		56	7	6	23	40	13	58	24	1	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
17		29	28	3		19	24	24	15	13	25	36	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
18		28		9		31	25	9	16	29	27	11	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
19				16		43		54	17	44	28	46	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
20		27		22		55	26	39	19	0	0	21	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
21		26		29	8	8	27	24	20	15	1	56	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
22		25		35		21		59	21	30	3	31	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
23				42		34	28	54	22	46	5	7	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
24		24		48		46	29	39	24	1	6	43	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
25		23		55		59	0	24	25	17	8	20	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
26		22	29	2	9	12	1	9	26	32	9	56	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
27		21		9		25		54	27	48	11	32	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
28		20		15		38	2	39	29	31	3	9	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
29		19		22		51	3	24	0	19	14	47	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
30		18		29	10	4	4	9	1	34	16	24	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
31		16		36		18		55	2	50	18	1	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
Date	☉		☽		Mean		Date	Time		Phenomena												
	Lat.	Decl.	Lat.	Decl.	☉	☽		H. M.														
1	0 N 58	18 S 7	0 N 14	20 S 2	21 39	3 1 53	1	53	☉ on Equator.													
3	54	46	0	53	31 8	5 22	5	22	New Moon. D. 18° S 8'													
5	50 19	22	0 S 13	21 40	26 12	5 30	5	30	☉ at Perigee.													
7	45	57	27 22	23	20 12	17 54	12	17	☉ at ☉													
9	41 20	30	39 23	1	13 15	1 36	15	1	☉ at First Quarter.													
11	36 21	0	52	35	7 16	5 41	16	5	☉ on Equator.													
13	32	28	1 32	4	4 21	...	...	...	Heli. setting of ☉ in East													
15	27	53	14	28	5 22	6 12	22	6	Full Moon. Decl 19° N 34'													
17	22 22	15	25	47	48 25	...	...	...	Heli. setting of ☉ in East.													
19	17	35	34 25	1	41 26	5 14	26	5	☉ at ☉													
21	13	52	43	10	35 28	0 30	28	0	☉ at Apogee.													
23	8 23	7	51	11	29 30	9 27	30	9	☉ at Last Quarter.													
25	3	19	57	8	22	11 38	11	38	☉ on Equator.													
27	0 S 2	28	2 24	58	16																	
29	7	34	6	43	10																	
31	12	37	9	21	3																	

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

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

Timings of Moonrise in 1961 (Please see page iii)

28

Lat. Date.	January			February			March			April		
	+10°			+20°			+30°			+10°		
	H.	M.	+30°	H.	M.	+30°	H.	M.	+30°	H.	M.	+30°
1	17	27	17	13	16	55	18	13	17	0	18	25
2	18	15	18	0	17	43	19	5	18	6	19	14
3	19	3	18	49	18	3	20	9	18	53	20	6
4	19	51	19	40	19	25	20	54	19	41	21	0
5	20	38	20	28	20	17	21	43	20	30	21	55
6	21	25	21	10	21	10	22	32	22	18	22	9
7	22	12	22	8	22	3	23	2	23	10	23	49
8	22	58	22	58	22	57	0	14	23	59	0	5
9	23	46	23	49	23	51	0	37	23	30	0	46
10							1	10	0	25	1	41
11	0	36	0	42	0	49	2	21	2	39	0	57
12	1	29	1	38	1	48	3	8	3	23	1	29
13	2	25	2	37	2	50	4	8	4	23	2	28
14	3	24	3	38	3	53	5	8	5	20	3	22
15	4	26	4	41	4	58	6	5	6	16	4	14
16	5	28	5	43	5	6	7	0	7	6	5	2
17	6	29	6	43	6	58	7	51	7	54	6	28
18	7	28	7	40	7	53	8	41	8	40	7	16
19	8	23	8	32	8	42	9	28	9	24	8	3
20	9	15	9	20	9	26	10	14	10	7	9	51
21	10	4	10	6	10	8	11	0	10	51	10	42
22	10	51	10	48	10	46	11	46	11	35	11	29
23	11	35	11	30	11	24	12	3	12	20	12	5
24	12	21	12	12	12	3	13	20	13	5	12	48
25	13	6	12	54	12	42	14	8	13	53	13	18
26	13	51	13	38	13	23	14	56	14	42	14	0
27	14	37	14	23	14	6	15	44	15	31	15	15
28	15	24	15	9	15	14	16	32	16	20	16	7
29	16	12	15	57	15	40						
30	17	0	16	46	16	30						
31	17	48	17	36	17	21						

Timings of Moonrise in 1961 (Please see page iii)

29

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

Lat. Date.	September						October						November						December					
	+10°			+20°			+30°			+10°			+20°			+30°			+10°			+20°		
	H.	M.		H.	M.		H.	M.		H.	M.		H.	M.		H.	M.		H.	M.		H.	M.	
1	23	28	0	23	15	0	23	33	0	23	48	0	23	33	0	23	15	0	23	48	0	23	15	0
2	0	17	1	0	2	1	0	22	1	0	38	1	0	21	1	0	32	1	0	21	1	0	32	1
3	1	6	2	1	11	2	1	12	2	1	26	2	1	1	2	2	1	2	1	1	2	1	2	1
4	1	54	3	1	21	3	1	12	3	1	14	3	1	1	3	3	1	3	1	1	3	3	1	3
5	2	43	4	2	28	4	2	51	4	2	14	4	2	2	4	4	2	4	2	2	4	4	2	4
6	2	43	5	2	31	5	2	41	5	3	47	5	3	4	5	5	3	5	3	4	5	5	3	5
7	3	31	6	3	17	6	3	34	6	4	33	6	4	5	6	6	4	6	4	5	6	6	4	6
8	4	18	7	4	7	7	4	30	7	5	20	7	5	6	7	7	5	7	5	6	7	7	5	7
9	5	5	8	5	4	8	5	19	8	6	6	8	6	8	8	8	6	8	6	7	8	8	6	8
10	5	51	9	5	39	9	5	19	9	7	54	9	7	9	9	9	7	9	7	8	9	9	7	9
11	6	37	10	6	35	10	6	32	10	8	44	10	8	10	10	10	8	10	8	9	10	10	8	10
12	7	23	11	7	24	11	7	25	11	9	31	11	9	11	11	11	9	11	9	10	11	11	9	11
13	8	9	12	8	13	12	8	13	12	10	25	12	10	12	12	12	10	12	10	11	12	12	10	12
14	8	58	13	8	59	13	8	58	13	11	21	13	11	13	13	13	11	13	11	12	13	13	11	13
15	9	47	14	9	52	14	9	52	14	12	17	14	12	14	14	14	12	14	12	13	14	14	12	14
16	10	40	15	10	43	15	10	43	15	13	12	15	13	15	15	15	13	15	13	14	15	15	13	15
17	11	34	16	11	38	16	11	38	16	14	16	16	14	16	16	16	14	16	14	15	16	16	14	16
18	12	30	17	12	34	17	12	34	17	15	14	17	15	17	17	17	15	17	15	16	17	17	15	17
19	13	28	18	13	32	18	13	32	18	16	13	18	16	18	18	18	16	18	16	17	18	18	16	18
20	14	25	19	14	29	19	14	29	19	17	12	19	17	19	19	19	17	19	17	18	19	19	17	19
21	15	21	20	15	25	20	15	25	20	18	11	20	18	20	20	20	18	20	18	19	20	20	18	20
22	16	16	21	16	20	21	16	20	21	19	10	21	19	21	21	21	19	21	19	20	21	21	19	21
23	17	9	22	17	13	22	17	13	22	20	9	22	20	22	22	22	20	22	20	21	22	22	20	22
24	18	1	23	18	5	23	18	5	23	21	8	23	21	23	23	23	21	23	21	22	23	23	21	23
25	18	51	24	18	55	24	18	55	24	22	7	24	22	24	24	24	22	24	22	23	24	24	22	24
26	19	41	25	19	45	25	19	45	25	23	6	25	23	25	25	25	23	25	23	24	25	25	23	25
27	20	30	26	20	34	26	20	34	26	24	5	26	24	26	26	26	24	26	24	25	26	26	24	26
28	21	19	27	21	23	27	21	23	27	25	4	27	25	27	27	27	25	27	25	26	27	27	25	27
29	22	9	28	22	13	28	22	13	28	26	3	28	26	28	28	28	26	28	26	27	28	28	26	28
30	22	59	29	22	63	29	22	63	29	27	2	29	27	29	29	29	27	29	27	28	29	29	27	29
31			30			30			30	28	1													

Geocentric position of Pluto and Mean Longitudes of the Sun and the Moon in 1961 31

Month and Date.	Pluto									Sun			Moon							
	Long.			Lat.			Decl.			Mean Long.			Mean Long.		Hor. Par.	Semi-Dia.				
Jan.	1	158	R0	7	12	52	2	20	27	49	280	40	45	90	42	19	54	10	14	46
	11	157	51	33	12	55	58		35	27	290	32	8	222	28	0	57	34	15	39
	21	157	41	42	13	0	0		41	35	300	23	32	354	14	58	58	53	16	3
	31	157	28	40	13	2	0		48	44	310	14	55	127	59	49	53	59	14	40
Feb.	10	157	14	54	13	4	28		56	28	320	6	18	257	45	39	58	58	16	40
	20	156	59	49	13	5	58	21	3	2	329	57	42	29	31	49	57	15	15	36
Mar.	2	156	44	24	13	6	50		10	15	339	49	5	161	17	19	54	37	14	53
	12	156	29	22	13	6	46		15	52	349	40	28	293	3	10	59	48	16	17
	22	156	14	54	13	6	8		20	58	359	31	52	64	49	0	55	44	15	11
Apr.	1	156	2	40	13	4	54		24	31	9	23	15	196	34	50	55	59	15	15
	11	155	50	25	13	2	56		27	8	19	14	38	328	20	40	59	36	16	14
	21	155	42	16	13	0	32		28	13	29	6	1	100	6	31	54	38	14	54
May	1	155	36	7	12	57	0		28	3	38	57	25	231	52	21	57	51	15	46
	11	55	32	50	12	54	40		26	34	48	48	48	3	38	11	58	26	15	55
	21	155	D32	28	12	51	36		23	44	58	40	11	135	24	0	54	14	14	46
	31	155	35	18	12	48	26		19	53	68	31	35	267	9	51	59	41	16	15
June	10	155	41	0	12	45	20		14	40	78	22	58	38	55	41	56	45	15	28
	20	155	48	48	12	42	24		8	41	88	14	21	170	41	31	54	32	14	51
	30	156	0	34	12	39	38		1	56	98	5	44	302	27	22	60	48	16	34
July	10	156	12	58	12	37	17	20	54	23	107	57	3	74	13	12	55	12	15	2
	20	156	30	4	12	35	44		46	51	117	48	31	205	59	2	55	31	15	8
	31	156	49	12	12	33	48		38	52	127	39	54	337	44	52	60	45	16	33
August	9	157	6	18	12	32	4		30	47	137	31	18	109	30	43	54	13	14	46
	19	157	26	11	12	32	36		22	50	147	22	41	241	16	33	56	56	15	31
	29	157	46	33	12	32	41		15	12	157	14	4	13	2	24	59	34	16	13
Sep.	8	158	7	12	12	33	36		8	6	167	5	28	144	48	14	54	0	14	42
	18	158	27	23	12	35	3		1	38	176	56	51	276	34	4	58	24	15	54
	28	158	46	45	12	37	5	19	56	1	186	48	14	48	19	55	57	50	15	46
Oct.	8	159	4	55	12	39	44		51	20	196	39	37	180	5	45	54	36	14	52
	18	159	21	31	12	42	45		47	50	206	31	1	311	51	35	59	21	16	10
	28	159	36	8	12	46	21		45	30	216	22	25	83	37	25	56	7	15	17
Nov.	7	159	48	0	12	50	20		44	32	226	13	47	215	23	16	55	58	15	15
	17	159	57	23	12	54	42		44	50	236	5	11	347	9	6	59	19	16	10
	27	160	3	51	12	59	6		46	33	245	56	34	118	54	56	54	50	14	56
Dec.	7	160	7	16	13	3	51		49	32	255	47	57	250	40	46	57	51	15	46
	17	160	7	0	13	8	30		53	45	265	39	20	22	26	37	58	18	15	53
	27	160	4	4	13	13	2		59	6	275	30	44	154	12	27	54	12	14	46
	31	160	2	12	13	14	44	20	1	28	279	27	17	206	54	48	55	10	15	2

Ending Moments of *Tithis* for each date in 1961
(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	14	H. M. 2 20	15	H. M. 0 17	14	H. M. 17 1	15	H. M. 11 18	{15 0 11}	17	H. M. 4 49	
2	15	4 36	16	2 51	15	19 5	16	11 34	{16 22 51}			
3	16	7 10	17	5 12	16	20 47	17	11 22	18 19 31	{18 1 58}		
4	17	10 11	18	7 16	17	22 2	18	10 42	19 17 11	{19 23 10}		
5	18	12 31	19	8 57	18	22 50	19	9 39	20 14 58	20 20 30		
6	19	15 4	20	10 7	19	23 8	20	8 18	21 12 44	21 18 3		
7	20	17 17	21	10 42	20	22 58	21	6 46	22 10 33	22 15 52		
8	21	19 2	22	10 36	21	22 20	22	4 50	23 8 26	23 14 0		
9	22	20 10	23	9 47	22	21 11	23	2 44	24 6 28	24 12 27		
10	23	20 32	24	8 17	23	19 33	{24 0 32}	25 4 36	25 11 14	26 10 20		
11	24	20 1	25	6 6	24	17 30	{25 22 12}	26 2 53	27 9 47	28 9 46		
12	25	18 40	26	3 17	25	15 3	26	19 45	27 10 4	28 9 46		
13	26	16 34	{27 0 12}		27	17 22	{27 1 21}	28 9 46	29 10 4	30 10 47		
14	27	13 51	{28 20 52}		28	15 8	{28 0 4}	29 10 4	30 10 47	1 12 2		
15	28	10 32	29 17 18		29	12 59	{29 23 51}	30 10 47	1 12 2			
16	29	6 52	30 13 41		30	11 8	30 22 25	1 12 2				
17	30	3 0	1 10 20		1	9 44	2 22 51	2 13 45	3 15 53	4 18 18		
18	{1 23 18}		2 7 20		2	8 53	3 23 54	3 15 53	4 18 18			
19	2 19 37		3 4 49		3	8 37	4 18 18	4 18 18				
20	3 16 14		4 2 55		4	9 1	5 20 52	5 20 52				
21	4 13 44		5 1 44		5	10 7	6 23 22	6 23 22				
22	5 11 40		6 1 18		6	11 51	7 1 34	7 1 34				
23	6 10 22		7 1 41		7	14 6	8 3 13	8 3 13				
24	7 9 49		8 2 52		8	16 37	9 4 9	9 4 9				
25	8 9 59		9 4 39		9	18 50	10 12 57	10 12 57				
26	9 10 47		10 6 53		10	19 34	11 3 36	11 3 36				
27	10 12 17		11 9 21		11	23 13	12 2 6	12 2 6				
28	11 14 13		12 12 4		12	27 2	13 23 56	13 23 56				
29	12 16 28		13 14 39		13	0 27	14 21 13	14 21 13				
30	13 19 3		14 7 17		14	0 59	15 18 8	15 18 8				
31	14 21 40		15 9 10		15	0 52	16 14 46	16 14 46				
	15 ..		16 10 30		16	7 34	17 11 21	17 11 21				

Ending Moments of *Tithis* for each date in 1961
(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	18	H. M. 8 0	20	H. M. 10 47	22	H. M. 16 35	22	H. M. 7 0	23	H. M. 3 48	23	H. M. 1 9
2	19	4 55	21	7 4	23	17 0	23	8 37	24	6 28	24	3 35
3	{20 2 10}		22	5 48	24	18 9	24	10 44	25	9 7	25	5 33
4	{21 23 49}		23	5 13	25	19 55	25	13 16	26	11 27	26	6 54
5	22 21 55		24	5 14	26	22 10	26	15 57	27	13 20	27	7 31
6	23 20 31		25	6 1	27	..	27	18 31	28	14 37	28	7 25
7	24 19 4		26	7 17	28	0 41	28	20 53	29	15 19	29	6 38
8	25 19 21		27	9 3	29	3 19	29	22 49	30	15 29	30	5 22
9	26 19 34		28	11 10	29	5 55	30	..	1 15 6	1 3 36		
10	27 20 12		29	13 35	30	8 20	30	0 23	2 14 17	{2 1 35}		
11	28 22 13		30	16 6	1 10 29	1 1 25	3 13 10	3 13 10	4 21 7	4 21 7		
12	29 22 50		31	18 43	2 12 21	2 1 59	4 11 49	4 11 49	5 18 52	5 18 52		
13	30 0 42		1 21 15	3 13 44	3 2 7	5 10 12	6 16 41	6 16 41				
14	1 3 0		3 23 35	4 14 40	4 1 52	6 8 14	7 14 37	7 14 37				
15	2 5 27		4 ..	5 15 8	5 1 14	7 6 41	8 12 43	8 12 43				
16	3 8 3		4 1 35	6 15 2	{6 0 13}	8 4 43	9 10 59	9 10 59				
17	4 10 38		5 3 7	7 14 25	7 22 51	9 2 41	10 9 27	10 9 27				
18	5 13 1		6 4 5	8 13 12	8 21 8	10 0 35	11 8 7	11 8 7				
19	6 14 56		7 4 23	9 11 25	9 19 5	11 22 27	12 7 6	12 7 6				
20	7 16 14		8 3 57	10 8 34	10 16 44	12 20 22	13 6 28	13 6 28				
21	8 16 53		9 2 48	11 6 20	11 14 7	13 18 23	14 6 7	14 6 7				
22	9 16 36		{10 0 57}	{12 3 14}	12 11 19	14 16 40	15 6 12	15 6 12				
23	10 15 41		{11 22 29}	{13 23 56}	13 8 28	15 15 14	16 7 0	16 7 0				
24	11 13 55		12 19 30	14 20 31	14 5 41	16 14 26	17 8 16	17 8 16				
25	12 11 29		15 17 4	16 13 50	15 3 1	17 14 10	18 10 5	18 10 5				
26	13 8 26		16 5 4	17 11 3	16 0 53	18 14 37	19 12 22	19 12 22				
27	14 4 59		17 1 39	18 8 48	17 23 16	19 15 45	20 14 58	20 14 58				
28	15 1 21		{18 22 35}	19 7 11	18 22 11	20 17 32	21 17 42	21 17 42				
29	16 21 37		19 20 2	20 6 20	19 21 45	21 19 52	22 20 16	22 20 16				
30	17 18 6		20 18 8	21 6 2	20 22 17	22 22 30	23 22 26	23 22 26				
31	18 14 34				21 23 27	23 ..	24 24 0	24 24 0				

34 Time when the Moon enters the Zodiacal Signs in 1961

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.
♈	1	5 53	♈	2	13 18	♈	1	19 41	♈	2	22 4	♈	2	10 54	♈	2	23 16
♈	3	18 30	♈	5	0 55	♈	4	6 51	♈	5	4 4	♈	4	14 10	♈	5	1 25
♈	6	18 18	♈	7	10 18	♈	6	15 51	♈	7	8 30	♈	6	16 55	♈	7	4 57
♈	8	18 55	♈	9	16 27	♈	8	22 31	♈	9	11 33	♈	8	19 54	♈	9	10 7
♈	11	3 33	♈	11	19 13	♈	11	2 45	♈	11	15 5	♈	10	23 29	♈	11	17 14
♈	13	7 8	♈	13	19 44	♈	13	4 54	♈	13	16 26	♈	13	3 59	♈	13	2 24
♈	15	9 14	♈	15	19 27	♈	15	5 56	♈	15	19 51	♈	15	10 9	♈	16	13 47
♈	17	8 23	♈	17	20 19	♈	17	6 39	♈	18	1 32	♈	17	18 51	♈	19	2 42
♈	19	7 52	♈	20	0 1	♈	19	10 1	♈	20	10 22	♈	20	6 18	♈	21	15 0
♈	21	10 0	♈	22	7 45	♈	21	16 8	♈	22	22 15	♈	22	19 6	♈	24	0 14
♈	23	15 27	♈	24	18 22	♈	24	1 48	♈	25	10 6	♈	25	6 45	♈	26	5 30
♈	26	0 23	♈	27	7 55	♈	26	14 20	♈	27	22 1	♈	27	15 7	♈	28	7 27
♈	28	11 48				♈	29	2 58	♈	30	5 54	♈	31	21 49			
♈	31	0 35				♈	31	13 50									

July			August			September			October			November			December		
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	8 26	♈	2	21 56	♈	1	11 26	♈	1	3 49	♈	2	11 48	♈	2	8 37
♈	4	10 45	♈	5	4 40	♈	3	20 35	♈	3	15 15	♈	5	1 9	♈	4	18 55
♈	6	15 34	♈	7	14 29	♈	6	4 32	♈	6	4 15	♈	7	10 10	♈	7	1 50
♈	8	23 1	♈	10	2 30	♈	8	21 35	♈	8	16 32	♈	9	17 19	♈	9	5 59
♈	11	8 45	♈	12	15 30	♈	11	10 2	♈	11	2 47	♈	11	22 27	♈	11	8 42
♈	13	20 29	♈	15	4 12	♈	13	20 50	♈	13	10 50	♈	14	2 28	♈	13	11 13
♈	16	9 25	♈	17	15 12	♈	16	5 21	♈	15	16 52	♈	16	5 49	♈	15	14 16
♈	18	22 6	♈	19	23 8	♈	18	11 11	♈	18	11 17	♈	18	8 40	♈	17	18 11
♈	21	8 32	♈	22	3 31	♈	20	14 12	♈	19	23 38	♈	20	11 34	♈	19	23 21
♈	23	15 9	♈	24	4 52	♈	22	15 6	♈	22	1 6	♈	22	15 32	♈	22	6 24
♈	25	17 56	♈	26	4 33	♈	24	15 12	♈	24	2 41	♈	24	21 57	♈	24	15 59
♈	27	18 11	♈	28	4 24	♈	26	16 17	♈	26	6 0	♈	27	7 35	♈	27	4 0
♈	29	17 44	♈	30	6 13	♈	28	20 10	♈	28	12 34	♈	29	19 56	♈	29	16 55
♈	31	18 32				♈	30	23 4									

Distances apart of all ♈s and ♈s in 1961

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Date.	Aspect	Time.	Dis- tance.	Date.	Aspect	Time.	Dis- tance.	Date.	Aspect	Time.	Dis- tance.
January				March				May			
15	♈	13 43	0 50	1	♈	5 34	2 2	1	♈	0 7	4 29
16	♈	7 55	12 17	1	♈	12 9	1 53	1	♈	13 17	1 25
16	♈	8 47	3 5	2	♈	19 5	0 28	2	♈	22 50	1 46
18	♈	5 44	15 16	2	♈	6 54	8 32	5	♈	4 54	0 18
18	♈	21 34	5 49	6	♈	10 42	3 7	6	♈	16 38	2 50
19	♈	1 43	0 14	7	♈	12 36	7 25	6	♈	17 18	4 9
15	♈	20 23	2 57	11	♈	0 23	3 50	6	♈	4 6	3 28
15	♈	5 23	1 3	13	♈	4 10	3 42	8	♈	5 44	1 46
16	♈	22 20	8 1	13	♈	17 46	1 53	9	♈	5 23	1 44
1	♈	22 11	10 47	14	♈	1 23	0 58	12	♈	0 5	3 50
22	♈	22 20	8 1	15	♈	15 46	11 59	13	♈	23 6	4 53
22	♈	22 53	3 28	15	♈	0 14	1 41	14	♈	5 40	6 57
23	♈	22 53	3 28	17	♈	8 32	10 16	16	♈	17 25	1 13
24	♈	22 53	3 28	17	♈	5 23	2 51	16	♈	4 6	3 28
24	♈	22 53	3 28	20	♈	17 4	10 39	7	♈	5 44	1 46
25	♈	22 53	3 28	24	♈	22 44	6 55	8	♈	5 23	1 44
26	♈	22 53	3 28	24	♈	10 53	3 10	9	♈	5 0	3 50
27	♈	22 53	3 28	25	♈	18 13	3 12	13	♈	21 18	2 44
28	♈	22 53	3 28	25	♈	11 6	1 51	14	♈	23 6	4 53
29	♈	22 53	3 28	28	♈	15 18	2 7	16	♈	5 40	6 57
30	♈	22 53	3 28	30	♈	4 48	1 17	19	♈	17 25	1 13
February				April				June			
1	♈	0 19	2 13	1	♈	11 21	2 40	23	♈	1 8	2 17
2	♈	1 41	1 51	2	♈	12 47	9 42	27	♈	7 33	2 45
2	♈	14 39	0 43	2	♈	30 6	38 73	28	♈	1 5	3 19
3	♈	5 17	2 2	4	♈	12 47	6 73				
5	♈	6 20	1 12	8	♈	10 3	3 1				
8	♈	7 7	2 55								
8	♈	12 0	13 4								
11	♈	19 28	8 27								
12	♈	22 7	1 4								
13	♈	10 5	3 43								
15	♈	9 17	1 50								

Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.
January											
1	☿ ☿	6 17	11	☿ ☿	17 54	6	☿ ☿	12 0	21	☿ ☿	6 18
2	☿ ☿	13 40	12	☿ ☿	13 30	7	☿ ☿	18 20	22	☿ ☿	22 40
3	☿ ☿	17 2	13	☿ ☿	18 59	10	☿ ☿	0 0	23	☿ ☿	20 0
4	☿ ☿	14 0	14	☿ ☿	2 52	11	☿ ☿	2 18	24	☿ ☿	14 19
5	☿ ☿	15 15	15	☿ ☿	14 18	12	☿ ☿	4 24	25	☿ ☿	2 7
6	☿ ☿	17 2	16	☿ ☿	5 44	13	☿ ☿	8 3	26	☿ ☿	8 51
7	☿ ☿	18 51	17	☿ ☿	1 43	14	☿ ☿	13 57	27	☿ ☿	7 47
8	☿ ☿	1 7	18	☿ ☿	13 43	15	☿ ☿	3 52	28	☿ ☿	14 18
9	☿ ☿	9 28	19	☿ ☿	5 32	16	☿ ☿	6 11	29	☿ ☿	23 47
10	☿ ☿	2 10	20	☿ ☿	5 23	17	☿ ☿	1 29	30	☿ ☿	1 50
11	☿ ☿	5 20	21	☿ ☿	13 31	18	☿ ☿	5 38			
12	☿ ☿	5 48	22	☿ ☿	12 38	19	☿ ☿	14 45	June		
13	☿ ☿	8 18	23	☿ ☿	22 14	20	☿ ☿	15 29	3	☿ ☿	12 0
14	☿ ☿	18 37	24	☿ ☿	6 53	21	☿ ☿	14 29	4	☿ ☿	3 42
15	☿ ☿	10 24	25	☿ ☿	8 24	22	☿ ☿	18 36	5	☿ ☿	6 47
16	☿ ☿	18 29	26	☿ ☿	11 0	23	☿ ☿	16 33	6	☿ ☿	16 18
17	☿ ☿	11 33	27	☿ ☿	1 33	24	☿ ☿	17 40	7	☿ ☿	6 0
18	☿ ☿	1 39	28	☿ ☿	14 43	25	☿ ☿	21 36	8	☿ ☿	13 43
19	☿ ☿	9 53	29	☿ ☿	16 34	26	☿ ☿	20 12	9	☿ ☿	15 37
20	☿ ☿	12 0	30	☿ ☿	10 38	27	☿ ☿	12 0	10	☿ ☿	2 33
21	☿ ☿	18 18			16 11	28	☿ ☿	16 43	11	☿ ☿	15 22
22	☿ ☿	20 22			2 0	29	☿ ☿	15 15	12	☿ ☿	1 32
23	☿ ☿	0 29			10 38	30	☿ ☿	18 48	13	☿ ☿	10 46
24	☿ ☿	8 22			16 11				14	☿ ☿	2 19
25	☿ ☿	11 9			2 0	May			15	☿ ☿	14 42
26	☿ ☿	0 38			9 24	1	☿ ☿	13 17	16	☿ ☿	23 34
27	☿ ☿	19 10			19 25	2	☿ ☿	4 54	17	☿ ☿	8 27
28	☿ ☿	21 45			19 46	3	☿ ☿	21 56	18	☿ ☿	1 20
29	☿ ☿	22 50			6 43	4	☿ ☿	19 25	19	☿ ☿	7 38
30	☿ ☿	11 22			17 4	5	☿ ☿	22 50	20	☿ ☿	3 47
31	☿ ☿	16 43			21 14	6	☿ ☿	23 54	21	☿ ☿	15 49
		14 45			3 8	7	☿ ☿	10 42	22	☿ ☿	18 12
February											
1	☿ ☿	12 0	28	☿ ☿	17 18	8	☿ ☿	19 56	23	☿ ☿	1 54
2	☿ ☿	5 4	29	☿ ☿	17 47	9	☿ ☿	22 25	24	☿ ☿	2 14
3	☿ ☿	12 24	30	☿ ☿	21 59	10	☿ ☿	23 31	25	☿ ☿	12 53
4	☿ ☿	7 21	31	☿ ☿	14 48	11	☿ ☿	15 49	26	☿ ☿	1 56
5	☿ ☿	20 0			22 0	12	☿ ☿	17 26	27	☿ ☿	22 51
6	☿ ☿	12 0			6 6	13	☿ ☿	8 49			
7	☿ ☿	7 21			12 18	14	☿ ☿	17 26	July		
8	☿ ☿	20 0			17 47	15	☿ ☿	20 15	3	☿ ☿	14 29
9	☿ ☿	18 51			21 59	16	☿ ☿	14 45	4	☿ ☿	2 55
10	☿ ☿	1 17			22 0	17	☿ ☿	17 25	5	☿ ☿	1 2
					0	18	☿ ☿	19 53			

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

(For the latitude 23° 11' N)

Rises.

Mercury

23th January, in West.
2nd March, in East.
12th May, in West.
12th July, in East.
7th September, in West.
29th October, in East.

Venus

15th April in East.

Mars

5th April, in West.
20th December in East.

Jupiter

30th January

Saturn

30th January.

Sets.

15th February, in West.
8th April, in East.
16th June, in West.
3rd August, in East.
10th October, in West.
25th November, in East.

Eclipses in 1961

There will be two solar and two lunar eclipses in 1961 as follows:—

- (1) February 15, Total Eclipse of the Sun. Partially visible in India.
- (2) March 2, Partial eclipse of the Moon. Visible in India.
- (3) August 11, Annular eclipse of the Sun. Invisible in India.
- (4) August 26, Partial Eclipse of the Moon. Invisible in India.

- (1) Total Eclipse: 15-2-61.

Place	Eclipse		Greatest Phase	Magnitude	Eclipse	
	H.	M.	H.	M.	H.	M.
Ujjain	..	13	57	14	39	0.14
Bhopal	..	14	4	14	42	0.11
Delhi ..	..	13	49	14	45	0.26
Bombay	..	14	0	14	30	0.06

- (2) Partial Eclipse of the Moon dated the 2nd March 1961.

	Eclipse		Position	Angles from the
	H.	M.	North Point	First 141 to E Last 107 to W.
First Contact	..	17	21	
Middle of the (Eclipse)	..	18	58	
Last contact	..	20	35	
Magnitude	..	0.81		

Elements of the Planetary Orbits for 12 o'clock Noon (I. S. T.) on 1st January 1961

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Planet.	Mean. Long.	Mean. Daily Motion.	Per. of Revolu- tion (Sid.)	Long. of Asc. Node.	Long. of Perihelion or Perigee.	Eccen- tricity.	Mean Distance from the Sun.	Inclina- tion of the Orbit.
Mercury	279 29 38.6	4 5 32	87.9693	47 52 8.3	76 50 54.8	0.205626	0.3870984	7 10 14.3
Venus	40 19 14.8	1 36 8	224.7008	76 19 43.4	131 1 20.7	0.0067922	0.7233302	3 23 39.2
Earth	100 40 45.1	0 59 8	365.2563	..	102 16 10.8	0.0167258	1.0000000	..
Mars	90 27 25.9	0 31 26	686.9796	49 15 24.4	335 20 28	0.0933681	1.523691	1 50 59.8
Jupiter	290 14 12.8	0 4 59	4332.5848	100 3 35.4	13 42 12.1	0.0484353	5.202803	1 18 19.3
Saturn	292 55 26.0	0 2 0	10739.2198	113 18 22.6	92 17 32.3	0.0556817	9.538843	2 29 23.8
Uranus	146 25 13.6	0 0 42	30685.45	73 47 54.4	172 7 15.3	0.0472091	19.181945	0 46 23.0
Neptune	218 35 29.9	0 0 21.5	60189.48	131 20 6	47 3 47.3	0.0085748	30.057767	1 46 25.5
Pluto	18 1 52.5	0 0 14.3	90794.45	109 53 29.4	224 16 33.6	0.2514688	39.53315	17 9 57.5
Moon	90 42 18.7	13 10 35	27.32166	159 19 50.0	296 29 40.2	0.05490	..	5 8 43.4

Daily Motion of Moon's Node — 0 3 10.6
Perigee + 0 6 41.0.

Timings of Lunar Aspects in 1961

[illegible][illegible]

44 Timings of Lunar Aspects in 1961.—(cont.)

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

Timings of Lunar Aspects in 1961.—(cont.) 45

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

June

Date.	Aspect	Time.
1	♂ ♀	2 51
	♂ ♀	7 2
	♂ ♀	8 37
	♂ ♀	9 0
	♂ ♀	9 37

Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.
July											
12	H.	M.	12	H.	M.	12	H.	M.	12	H.	M.
21	21	51	13	3	6	23	2	45	1	13	40
6	6	11	13	3	55	23	6	25	2	23	33
7	7	45	13	5	47	23	8	6	2	22	27
10	10	19	13	12	33	23	12	38	2	22	41
18	18	59	13	19	34	23	17	12	2	11	34
22	22	17	13	19	34	23	17	12	2	11	34
3	3	35	13	19	34	23	17	12	2	11	34
8	8	20	13	19	34	23	17	12	2	11	34
8	8	32	13	19	34	23	17	12	2	11	34
10	10	56	13	19	34	23	17	12	2	11	34
14	14	18	13	19	34	23	17	12	2	11	34
1	1	4	13	19	34	23	17	12	2	11	34
10	10	51	13	19	34	23	17	12	2	11	34
11	11	43	13	19	34	23	17	12	2	11	34
0	0	14	13	19	34	23	17	12	2	11	34
0	0	14	13	19	34	23	17	12	2	11	34
10	10	56	13	19	34	23	17	12	2	11	34
13	13	13	13	19	34	23	17	12	2	11	34
13	13	35	13	19	34	23	17	12	2	11	34
16	16	46	13	19	34	23	17	12	2	11	34
1	1	44	13	19	34	23	17	12	2	11	34
3	3	11	13	19	34	23	17	12	2	11	34
5	5	56	13	19	34	23	17	12	2	11	34
14	14	57	13	19	34	23	17	12	2	11	34
15	15	33	13	19	34	23	17	12	2	11	34
15	15	37	13	19	34	23	17	12	2	11	34
18	18	34	13	19	34	23	17	12	2	11	34
21	21	3	13	19	34	23	17	12	2	11	34
3	3	36	13	19	34	23	17	12	2	11	34
6	6	49	13	19	34	23	17	12	2	11	34
9	9	5	13	19	34	23	17	12	2	11	34
14	14	49	13	19	34	23	17	12	2	11	34
17	17	47	13	19	34	23	17	12	2	11	34
20	20	44	13	19	34	23	17	12	2	11	34
20	20	44	13	19	34	23	17	12	2	11	34
11	11	15	13	19	34	23	17	12	2	11	34
12	12	45	13	19	34	23	17	12	2	11	34
17	17	20	13	19	34	23	17	12	2	11	34
19	19	18	13	19	34	23	17	12	2	11	34
15	15	21	13	19	34	23	17	12	2	11	34
16	16	10	13	19	34	23	17	12	2	11	34
20	20	24	13	19	34	23	17	12	2	11	34
22	22	26	13	19	34	23	17	12	2	11	34
2	2	33	13	19	34	23	17	12	2	11	34
21	21	29	13	19	34	23	17	12	2	11	34
3	3	8	13	19	34	23	17	12	2	11	34
7	7	53	13	19	34	23	17	12	2	11	34
15	15	24	13	19	34	23	17	12	2	11	34

Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.
August											
11	H.	M.	11	H.	M.	11	H.	M.	11	H.	M.
15	15	19	11	4	25	11	4	25	11	4	25
20	20	13	11	4	27	11	4	27	11	4	27
3	3	37	11	4	25	11	4	25	11	4	25
6	6	17	11	4	25	11	4	25	11	4	25
12	12	2	11	4	25	11	4	25	11	4	25
16	16	37	11	4	25	11	4	25	11	4	25
21	21	6	11	4	25	11	4	25	11	4	25
0	0	42	11	4	25	11	4	25	11	4	25
1	1	39	11	4	25	11	4	25	11	4	25
2	2	13	11	4	25	11	4	25	11	4	25
0	0	46	11	4	25	11	4	25	11	4	25
2	2	25	11	4	25	11	4	25	11	4	25
3	3	0	11	4	25	11	4	25	11	4	25
7	7	10	11	4	25	11	4	25	11	4	25
8	8	15	11	4	25	11	4	25	11	4	25
14	14	24	11	4	25	11	4	25	11	4	25
3	3	58	11	4	25	11	4	25	11	4	25
9	9	19	11	4	25	11	4	25	11	4	25
9	9	19	11	4	25	11	4	25	11	4	25
11	11	38	11	4	25	11	4	25	11	4	25
13	13	47	11	4	25	11	4	25	11	4	25
9	9	10	11	4	25	11	4	25	11	4	25
18	18	14	11	4	25	11	4	25	11	4	25
21	21	19	11	4	25	11	4	25	11	4	25
2	2	54	11	4	25	11	4	25	11	4	25
16	16	19	11	4	25	11	4	25	11	4	25
17	17	29	11	4	25	11	4	25	11	4	25
22	22	28	11	4	25	11	4	25	11	4	25
2	2	49	11	4	25	11	4	25	11	4	25
3	3	59	11	4	25	11	4	25	11	4	25
6	6	49	11	4	25	11	4	25	11	4	25
9	9	16	11	4	25	11	4	25	11	4	25
22	22	27	11	4	25	11	4	25	11	4	25
13	13	1	11	4	25	11	4	25	11	4	25
27	27	24	11	4	25	11	4	25	11	4	25
9	9	12	11	4	25	11	4	25	11	4	25
13	13	29	11	4	25	11	4	25	11	4	25
15	15	22	11	4	25	11	4	25	11	4	25
1	1	23	11	4	25	11	4	25	11	4	25
4	4	14	11	4	25	11	4	25	11	4	25
10	10	15	11	4	25	11	4	25	11	4	25
11	11	0	11	4	25	11	4	25	11	4	25
15	15	17	11	4	25	11	4	25	11	4	25
16	16	29	11	4	25	11	4	25	11	4	25
0	0	45	11	4	25	11	4	25	11	4	25
11	11	5	11	4	25	11	4	25	11	4	25
15	15	17	11	4	25	11	4	25	11	4	25
16	16	31	11	4	25	11	4	25	11	4	25
20	20	27	11	4	25	11	4	25	11	4	25
21	21	44	11	4	25	11	4	25	11	4	25

Timings of Lunar Aspects in 1961.—(contd.)

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

Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.
24	♂	H. 10 53	3	♂	H. 10 12	14	♂	H. 5 32	23	♂	H. 17 29
	♂	M. 12 28		♂	M. 12 45		♂	M. 10 29		♂	M. 23 21
	♂	16 47		♂	17 31		♂	1 14		♂	0 38
	♂	17 7		♂	2 15		♂	2 41		♂	2 11
25	♂	6 48		♂	8 25		♂	5 17		♂	3 46
	♂	7 43		♂	11 25		♂	6 13		♂	15 46
	♂	12 48		♂	13 16		♂	8 35		♂	18 42
	♂	19 18		♂	18 6		♂	10 27		♂	20 40
26	♂	5 2		♂	14 36		♂	13 28		♂	5 35
	♂	5 49		♂	22 36		♂	15 44		♂	19 18
	♂	9 54		♂	23 17		♂	4 7		♂	19 58
	♂	11 45		♂	2 2		♂	9 14		♂	22 35
	♂	13 37		♂	10 14		♂	9 59		♂	4 12
	♂	14 17		♂	18 20		♂	11 7		♂	5 36
	♂	21 55		♂	21 5		♂	11 8		♂	10 28
	♂	22 31		♂	22 35		♂	10 1		♂	21 53
27	♂	7 2		♂	0 34		♂	10 4		♂	23 1
	♂	8 40		♂	5 47		♂	11 23		♂	1 11
28	♂	8 7		♂	7 46		♂	18 3		♂	1 32
	♂	8 7		♂	14 2		♂	19 56		♂	7 10
	♂	14 9		♂	18 21		♂	20 9		♂	13 26
	♂	15 23		♂	1 35		♂	5 1		♂	15 43
	♂	17 31		♂	3 16		♂	13 4		♂	23 20
	♂	22 15		♂	6 46		♂	14 52		♂	1 5
29	♂	6 20		♂	11 56		♂	16 25		♂	1 8
	♂	8 4		♂	14 38		♂	23 51		♂	1 23
	♂	10 59		♂	1 55		♂	13 2		♂	4 45
	♂	12 2		♂	1 59		♂	16 44		♂	11 7
	♂	13 49		♂	10 28		♂	20 59		♂	12 5
	♂	18 34		♂	12 27		♂	22 52		♂	19 7
	♂	20 40		♂	20 11		♂	22 52		♂	22 12
30	♂	3 37		♂	0 29		♂	3 16		♂	6 57
	♂	17 45		♂	7 46		♂	4 25		♂	9 17
	♂	14 40		♂	14 8		♂	15 16		♂	15 26
	♂	22 44		♂	15 36		♂	17 5		♂	17 11
	♂			♂	23 29		♂	19 25		♂	1 52
	♂			♂	1 11		♂	21 0		♂	8 21
	♂			♂	15 8		♂	21 57		♂	11 17
	♂			♂	15 12		♂	2 59		♂	12 22
	♂			♂	17 59		♂	14 46		♂	22 1
	♂			♂	20 8		♂	17 48		♂	22 56
	♂			♂	22 3		♂	21 54		♂	23 31
	♂			♂	22 8		♂	22 46		♂	14 31
	♂			♂	22 24		♂	22 51		♂	18 30
	♂			♂	22 42		♂	0 30		♂	21 3
	♂			♂	7 0		♂	1 43		♂	
	♂			♂	9 28		♂	9 7		♂	
	♂			♂	19 58		♂	16 40		♂	
	♂			♂	0 30		♂	18 32		♂	
	♂			♂	1 26		♂	0 45		♂	
	♂			♂	1 44		♂	1 15		♂	
	♂			♂	3 39		♂	16 18		♂	
	♂			♂			♂			♂	
	♂			♂			♂			♂	
	♂			♂			♂			♂	
	♂			♂			♂			♂	
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Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.
January			March			May			July		
3	H. M.	6 40	1	H. M.	4 16	18	L. ♄	0 36	12	L. ♄	2 13
4	L. ♄	0 27	2	L. ♄	12 0	24	L. ♄	1 7	14	L. ♄	22 42
5	L. ♄	1 43	3	L. ♄	22 17	25	L. ♄	23 37	15	L. ♄	21 42
6	L. ♄	6 29	4	L. ♄	2 24	30	L. ♄	22 25	16	L. ♄	0 23
11	L. ♄	10 3	5	L. ♄	22 41	31	L. ♄	8 38	17	L. ♄	17 17
12	L. ♄	19 50	6	L. ♄	20 30				18	L. ♄	18 53
13	L. ♄	19 18	7	L. ♄	3 22				19	L. ♄	12 0
14	L. ♄	20 21	8	L. ♄	11 11				20	L. ♄	3 1
15	L. ♄	22 28	9	L. ♄	12 0				21	L. ♄	12 0
16	L. ♄	12 4	10	L. ♄	12 0				22	L. ♄	11 7
17	L. ♄	12 15	11	L. ♄	19 14				23	L. ♄	15 48
18	L. ♄	12 18	12	L. ♄	13 30				24	L. ♄	0 26
19	L. ♄	15 1	13	L. ♄	19 14				25	L. ♄	1 7
20	L. ♄	18 51	14	L. ♄	9 37				26	L. ♄	7 46
21	L. ♄	9 35	15	L. ♄	0 26				27	L. ♄	12 0
22	L. ♄	21 55	16	L. ♄	13 59				28	L. ♄	13 22
23	L. ♄	10 3	17	L. ♄	2 7				29	L. ♄	
24	L. ♄	15 0	18	L. ♄	13 7						
25	L. ♄	15 27	19	L. ♄	19 53						
26	L. ♄	14 20	20	L. ♄	17 19						
27	L. ♄	2 55	21	L. ♄	7 58						
28	L. ♄	17 16	22	L. ♄	18 13						
29	L. ♄	14 46	23	L. ♄	1 47						
30	L. ♄	19 2	24	L. ♄							
February			April			June			September		
1	L. ♄	10 5	2	L. ♄	5 27	2	L. ♄	21 29	3	L. ♄	13 7
2	L. ♄	15 47	3	L. ♄	18 34	4	L. ♄	1 12	4	L. ♄	12 48
3	L. ♄	16 34	4	L. ♄	2 24	5	L. ♄	15 59	5	L. ♄	10 57
4	L. ♄	7 26	5	L. ♄	3 6	6	L. ♄	14 41	6	L. ♄	12 8
5	L. ♄	17 29	6	L. ♄	19 31	7	L. ♄	11 3	7	L. ♄	13 51
6	L. ♄	4 36	7	L. ♄	8 0	8	L. ♄	21 51	8	L. ♄	17 32
7	L. ♄	10 21	8	L. ♄	9 44	9	L. ♄	12 38	9	L. ♄	19 55
8	L. ♄	13 55	9	L. ♄	20 44	10	L. ♄	11 7	10	L. ♄	1 3
9	L. ♄	19 35	10	L. ♄	22 38	11	L. ♄	12 38	11	L. ♄	0 0
10	L. ♄	3 35	11	L. ♄	4 4	12	L. ♄	12 38	12	L. ♄	6 35
11	L. ♄	4 3	12	L. ♄	10 5						
12	L. ♄	6 57	13	L. ♄	20 44						
13	L. ♄	9 35	14	L. ♄	4 2						
14	L. ♄	15 42	15	L. ♄	11 7						
15	L. ♄	22 3	16	L. ♄	13 26						
16	L. ♄	10 52	17	L. ♄	12 53						
17	L. ♄	5 52	18	L. ♄	15 15						
18	L. ♄	11 25	19	L. ♄	12 53						
19	L. ♄	22 3	20	L. ♄	12 53						
20	L. ♄	18 34	21	L. ♄	12 53						
21	L. ♄	3 3	22	L. ♄	12 53						
22	L. ♄	13 26	23	L. ♄	12 53						
23	L. ♄	12 53	24	L. ♄	12 53						
24	L. ♄	12 53	25	L. ♄	12 53						

Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.	Date.	Aspect	Time.
August			October			December			November		
2	L. ♄	7 8	4	L. ♄	8 5	22	L. ♄	11 9	1	L. ♄	15 28
3	L. ♄	7 30	5	L. ♄	0 36	23	L. ♄	21 42	2	L. ♄	23 15
4	L. ♄	13 23	6	L. ♄	2 7	24	L. ♄	22 33	3	L. ♄	20 42
5	L. ♄	10 24	7	L. ♄	5 5	25	L. ♄	20 12	4	L. ♄	6 47
6	L. ♄	18 57	8	L. ♄	18 24	26	L. ♄	6 47	5	L. ♄	8 33
11	L. ♄	16 48	9	L. ♄	12 37	27	L. ♄	16 28	6	L. ♄	1 43
12	L. ♄	23 21	10	L. ♄	12 37	28	L. ♄	2 2	7	L. ♄	14 47
13	L. ♄	7 7	11	L. ♄	12 37	29	L. ♄	14 47			
14	L. ♄	13 58	12	L. ♄	12 37						
15	L. ♄	12 4	13	L. ♄	12 37						
16	L. ♄	18 0	14	L. ♄	12 37						
17	L. ♄	5 26	15	L. ♄	12 37						
18	L. ♄	6 2	16	L. ♄	12 37						
19	L. ♄	7 0	17	L. ♄	12 37						
20	L. ♄	11 11	18	L. ♄	12 37						
21	L. ♄	12 0	19	L. ♄	12 37						
22	L. ♄	14 8	20	L. ♄	12 37						
23	L. ♄	17 3	21	L. ♄	12 37						
24	L. ♄	17 54	22	L. ♄	12 37						
25	L. ♄	21 12	23	L. ♄	12 37						
26	L. ♄	11 33	24	L. ♄	12 37						
27	L. ♄	7 3	25	L. ♄	12 37						
28	L. ♄	4 42	26	L. ♄	12 37						
29	L. ♄	6 40	27	L. ♄	12 37						
30	L. ♄	17 33	28	L. ♄	12 37						
31	L. ♄	17 33	29	L. ♄	12 37						
September			November			December			November		
3	L. ♄	13 7	1	L. ♄	15 28	22	L. ♄	11 9	1	L. ♄	15 28
4	L. ♄	12 48	2	L. ♄	23 15	23	L. ♄	21 42	2	L. ♄	23 15
5	L. ♄	10 57	3	L. ♄	20 42	24	L. ♄	22 33	3	L. ♄	20 42
6	L. ♄	12 8	4	L. ♄	6 47	25	L. ♄	6 47	4	L. ♄	6 47
7	L. ♄	13 51	5	L. ♄	8 33	26	L. ♄	16 28	5	L. ♄	8 33
8	L. ♄	17 32	6	L. ♄	1 43	27	L. ♄	2 2	6	L. ♄	1 43
9	L. ♄	19 55	7	L. ♄	14 47	28	L. ♄	14 47	7	L. ♄	14 47
10	L. ♄	1 3	8	L. ♄	15 28	29	L. ♄	14 47	8	L. ♄	15 28
11	L. ♄	6 35	9	L. ♄	23 15				9	L. ♄	23 15
12	L. ♄	12 0	10	L. ♄	20 42				10	L. ♄	20 42
13	L. ♄	0 0	11	L. ♄	12 12				11	L. ♄	12 12
			12	L. ♄	6 17				12	L. ♄	6 17
			13	L. ♄	15 22				13	L. ♄	15 22
			14	L. ♄	24 27				14	L. ♄	24 27
			15	L. ♄	33 32				15	L. ♄	33 32
			16	L. ♄	42 37				16	L. ♄	42 37
			17	L. ♄	51 42				17	L. ♄	51 42
			18	L. ♄	60 47				18	L. ♄	60 47
			19	L. ♄	69 52				19	L. ♄	69 52
			20	L. ♄	78 57				20	L. ♄	78 57
			21	L. ♄	87 62				21	L. ♄	87 62
			22	L. ♄	96 67				22	L. ♄	96 67
			23	L. ♄	105 72				23	L. ♄	105 72
			24	L. ♄	114 77				24	L. ♄	114 77
			25	L. ♄	123 82				25	L. ♄	123 82
			26	L. ♄	132 87				26	L. ♄	132 87
			27	L. ♄	141 92				27	L. ♄	141 92
			28	L. ♄	150 97				28	L. ♄	150 97
			29	L. ♄	159 102				29	L. ♄	159 102
			30	L. ♄	168 107				30	L. ♄	168 107
			31	L. ♄	177 112				31	L. ♄	177 112

Table of Ascendants for Latitudes 7° to 20°.

54

Sid. Time.	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°
H. M.	°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	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 38	99 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 62	102 86	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 51	50 106	15 106	38 107	27 107	52 108	17 108
1	0 106	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 44	114 67	114 90	14 114
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 14
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 32
2	0 120	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 13
30	127 26	127 45	128 4	128 24	128 42	129 1	129 21	129 41	129 58	130 17	130 37	130 56	131 15	131 34
45	131 11	131 31	131 51	132 11	132 31	132 51	133 11	133 31	133 51	134 11	134 31	134 51	135 11	135 31
3	0 134	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 41
30	141 53	142 10	142 25	142 40	142 55	143 10	143 25	143 40	143 55	144 10	144 25	144 40	144 55	145 10
45	145 36	145 50	146 4	146 19	146 31	146 45	146 59	147 12	147 27	147 41	147 55	148 9	148 23	148 38
4	0 149	20 149	33 149	45 149	59 150	10 150	22 150	35 150	47 150	59 151	11 151	23 151	35 151	47 151
15	153 6	153 17	153 29	153 40	153 50	154 0	154 11	154 22	154 33	154 43	154 54	155 5	155 15	155 26
30	156 54	157 3	157 12	157 22	157 32	157 41	157 51	158 0	158 10	158 20	158 30	158 40	158 50	159 0
45	160 41	160 51	161 2	161 12	161 21	161 31	161 41	161 51	162 0	162 10	162 20	162 30	162 40	162 50
5	0 164	33 164	51 164	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 38	168 53	168 68	168 83	168 98	168 113	168 128	168 143	168 158	169 173	169 188	169 203	169 218
30	172 16	172 31	172 46	172 61	172 76	172 91	172 106	172 121	172 136	172 151	172 166	172 181	172 196	172 211
45	176 6	176 16	176 31	176 46	176 61	176 76	176 91	176 106	176 121	176 136	176 151	176 166	176 181	176 196
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

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

55

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 47	183 45	183 43	183 41	183 39	183 37	183 35	183 33	183 31	183 29	183 27
30	187 45	187 41	187 39	187 37	187 35	187 33	187 31	187 29	187 27	187 25	187 23	187 21	187 19	187 17
45	191 36	191 32	191 29	191 27	191 25	191 23	191 21	191 19	191 17	191 15	191 13	191 11	191 9	191 7
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 39	198 32	198 25	198 18	198 11	198 4	197 57	197 50	197 43
30	203 7	202 57	202 48	202 38	202 28	202 19	202 10	202 0	201 51	201 41	201 32	201 23	201 14	201 5
45	206 55	206 43	206 31	206 19	206 7	205 55	205 43	205 31	205 19	205 7	204 55	204 43	204 31	204 19
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 0	12 12	48 12	33 12	21 12	8 12	55 11	41 11
30	218 42	217 50	217 35	217 20	217 5	216 50	216 35	216 20	216 5	215 50	215 35	215 20	215 5	214 50
45	221 46	221 30	221 13	220 56	220 41	220 25	220 10	219 54	219 38	219 22	219 6	218 50	218 35	218 19
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 27	227 7	226 53	226 35	226 17	225 59	225 40	225 22	225 4
30	232 34	232 15	232 0	231 56	231 36	231 18	231 0	230 56	230 37	230 19	229 59	229 40	229 22	229 4
45	236 6	235 46	235 26	235 6	234 46	234 26	234 6	233 46	233 26	233 6	232 46	232 26	232 6	231 46
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 21	240 58	240 37	240 16	239 55	239 34	239 13	238 52	238 31
30	246 36	246 13	245 51	245 28	245 5	244 45	244 24	244 3	243 42	243 21	242 50	242 29	242 8	241 47
45	250 2	249 40	249 18	248 55	248 32	248 9	247 47	247 25	247 3	246 41	245 19	244 57	244 35	244 13
11	0 253	29 253	7 252	44 252	20 251	57 251	34 251	11 250	47 250	24 250	1 249	15 248	30 248	45 248
15	256 56	256 32	256 8	255 45	255 22	255 0	254 37	254 14	253 51	253 28	253 5	252 42	252 19	252 0
30	260 21	259 57	259 34	259 10	258 46	258 22	257 58	257 34	257 10	256 46	256 22	255 58	255 34	255 10
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 24
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.)

56

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
15 270	38 270	14 269	49 269	25 269	0 268	35 268	10 267	44 267	19 266	53 266	27 266	27 266	1 265	34 265
30 274	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	34 268
45 277	34 277	9 276	44 276	20 275	55 275	30 275	4 274	39 274	13 273	47 273	21 272	54 272	27 271	59 271
13 0	281	3290	38 280	14 279	50 279	25 279	0 278	35 278	9 277	43 277	17 276	51 276	24 275	57 275
15 284	34 284	10 283	45 283	21 282	56 282	31 282	6 281	41 281	15 280	48 280	22 279	55 279	28 278	36 278
30 288	8 287	44 287	19 286	55 286	30 286	6 285	41 285	15 284	50 284	24 283	58 283	30 283	8 282	41 282
45 291	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	15 286
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
15 299	0 298	38 298	15 297	52 297	28 297	5 296	41 296	16 295	52 295	27 295	2 294	35 294	9 293	41 293
30 302	43 302	21 301	59 301	37 301	14 300	51 300	28 300	4 299	40 299	15 298	50 298	25 297	59 297	32 297
45 306	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	28 301
15 314	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	34 309
30 318	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	46 313
45 322	6 321	50 321	32 321	18 320	58 320	41 320	23 320	3 319	45 319	25 319	5 318	45 318	24 318	3 318
16 0	326	11 325	55 325	39 325	24 324	7 324	51 324	34 324	17 324	0 323	42 323	23 323	5 322	45 322
15 330	14 330	32 329	48 329	33 329	20 329	5 328	49 328	34 328	18 328	32 327	46 327	29 327	10 326	52 326
30 334	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	28 331
45 338	37 338	25 338	15 338	53 338	5 337	42 337	31 337	48 337	38 337	56 336	43 336	30 336	17 336	2 336
17 0	342	37 342	3 342	53 342	15 342	6 341	58 341	48 341	38 341	28 341	17 341	7 340	56 340	45 340
15 347	5 346	58 346	52 346	47 346	39 346	33 346	25 346	18 346	11 346	3 345	55 345	47 345	39 345	31 345
30 351	23 351	18 351	11 351	6 351	3 351	1 350	56 350	51 350	46 350	41 350	36 350	30 350	25 350	20 350
45 355	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	9 355
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.)

57

Sid. Time.	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°
H. M.	°	'	°	'	°	'	°	'	°	'	°	'	°	'
13 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 4	19 4	20 4	23 4	26 4	27 4	29 4	31 4	34 4	37 4	40 4	43 4	45 4	47 4	50 4
30 8	37 8	42 8	46 8	49 8	54 8	59 8	64 8	69 8	74 8	79 8	84 8	89 8	94 8	99 8
45 12	56 13	2 13	8 13	13 13	17 13	21 13	25 13	29 13	33 13	37 13	41 13	45 13	49 13	53 13
19 0	17 17	19 17	27 17	35 17	45 17	54 17	63 17	72 17	81 17	90 17	99 17	108 17	117 17	126 17
15 21	27 21	35 21	45 21	55 21	65 21	75 21	85 21	95 21	105 21	115 21	125 21	135 21	145 21	155 21
30 25	35 25	45 25	55 25	65 25	75 25	85 25	95 25	105 25	115 25	125 25	135 25	145 25	155 25	165 25
45 29	46 29	58 30	12 30	27 30	40 30	55 30	70 30	85 30	100 30	115 30	130 30	145 30	160 30	175 30
20 0	33 34	5 34	21 34	36 34	53 34	69 34	85 34	101 34	117 34	133 34	149 34	165 34	181 34	197 34
15 37	54 38	10 38	27 38	42 38	59 38	75 38	91 38	107 38	123 38	139 38	155 38	171 38	187 38	203 38
30 41	53 42	10 42	28 42	48 42	68 42	88 42	108 42	128 42	148 42	168 42	188 42	208 42	228 42	248 42
45 47	48 46	9 46	28 46	48 46	68 46	88 46	108 46	128 46	148 46	168 46	188 46	208 46	228 46	248 46
21 0	49 50	52 50	54 50	56 50	58 50	60 50	62 50	64 50	66 50	68 50	70 50	72 50	74 50	76 50
15 53	53 53	52 54	54 54	56 54	58 54	60 54	62 54	64 54	66 54	68 54	70 54	72 54	74 54	76 54
30 57	57 57	57 57	58 58	59 58	60 58	61 58	62 58	63 58	64 58	65 58	66 58	67 58	68 58	69 58
45 61	61 61	61 61	62 62	63 62	64 62	65 62	66 62	67 62	68 62	69 62	70 62	71 62	72 62	73 62
22 0	64 64	64 64	65 65	66 65	67 65	68 65	69 65	70 65	71 65	72 65	73 65	74 65	75 65	76 65
15 68	68 68	68 68	69 69	70 69	71 69	72 69	73 69	74 69	75 69	76 69	77 69	78 69	79 69	80 69
30 71	71 71	71 71	72 72	73 72	74 72	75 72	76 72	77 72	78 72	79 72	80 72	81 72	82 72	83 72
45 75	75 75	75 75	76 76	77 76	78 76	79 76	80 76	81 76	82 76	83 76	84 76	85 76	86 76	87 76
23 0	78 78	78 78	79 79	80 79	81 79	82 79	83 79	84 79	85 79	86 79	87 79	88 79	89 79	90 79
15 82	82 82	82 82	83 83	84 83	85 83	86 83	87 83	88 83	89 83	90 83	91 83	92 83	93 83	94 83
30 85	85 85	85 85	86 86	87 86	88 86	89 86	90 86	91 86	92 86	93 86	94 86	95 86	96 86	97 86
45 89	89 89	89 89	90 90	91 90	92 90	93 90	94 90	95 90	96 90	97 90	98 90	99 90	100 90	101 90
24 0	92 92	92 92	93 93	94 93	95 93	96 93	97 93	98 93	99 93	100 93	101 93	102 93	103 93	104 93

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	8 99	35 100	3 100	31 100	59 101	27 101	56 102	34 102	57 103	26 103	57 104	29 105
15	102	2 102	28 102	55 103	22 103	49 104	17 104	45 105	18 105	43 106	12 106	41 107	11 107	42 108
30	105	22 105	48 106	14 106	40 107	7 107	33 108	2 108	29 108	58 109	26 109	54 110	24 110	53 111
45	108	42 109	7 109	32 109	57 110	23 110	49 111	16 111	43 112	11 112	38 113	6 113	34 114	2 114
1	0 112	0 112	24 112	49 113	14 113	39 114	5 114	31 114	56 115	22 115	49 116	16 116	43 117	10 117
15	115	18 115	42 116	16 116	30 116	54 117	19 117	44 118	9 118	34 119	0 119	25 119	50 120	18 120
30	118	39 119	0 119	23 119	46 120	10 120	33 120	57 121	21 121	46 122	11 122	35 123	0 123	25 123
45	121	14 125	35 125	57 126	18 126	39 127	1 127	23 127	32 128	56 129	21 129	44 130	8 130	32 130
2	0 125	14 125	35 125	57 126	18 126	39 127	1 127	23 127	32 128	56 129	21 129	44 130	8 130	32 130
15	128	31 128	53 129	14 129	34 129	54 130	15 130	36 130	57 131	19 131	40 132	2 132	24 132	45 133
30	131	54 132	13 132	35 132	51 133	10 133	30 133	50 134	9 134	29 134	50 135	11 135	30 135	51 136
45	135	15 135	32 135	50 136	7 136	26 136	44 137	3 137	22 137	41 138	11 138	18 138	37 138	57 139
3	0 138	34 138	52 139	9 139	26 139	43 140	0 140	17 140	34 140	51 141	11 141	28 141	45 142	3 142
15	141	57 142	13 142	29 142	45 143	1 143	17 143	33 143	49 144	5 144	23 144	39 144	55 145	12 145
30	145	20 145	35 145	50 146	5 146	19 146	33 146	48 147	3 147	18 147	33 147	49 148	4 148	19 148
45	148	45 148	59 149	12 149	26 149	38 149	51 150	5 150	19 150	33 150	46 150	59 151	13 151	28 151
4	0 152	10 152	22 152	32 152	46 152	58 153	10 153	22 153	35 153	47 153	59 154	11 154	24 154	36 154
15	155	36 155	58 156	8 156	16 156	19 156	30 156	40 156	51 157	2 157	13 157	24 157	34 157	45 157
30	159	4 159	13 159	22 159	31 159	40 159	50 159	59 160	8 160	18 160	27 160	36 160	46 160	56 161
45	162	35 162	44 162	50 162	26 163	3 163	10 163	18 163	25 163	33 163	41 163	49 163	57 164	6 164
5	0 166	2 166	14 166	20 166	26 166	32 166	38 166	44 166	50 166	57 166	3 167	9 167	16 167	22 167
15	169	30 169	35 169	40 169	44 169	48 169	53 169	58 170	2 170	7 170	13 170	17 170	22 170	26 170
30	173	0 173	3 173	6 173	9 173	12 173	15 173	19 173	21 173	24 173	28 173	31 173	34 173	37 173
45	176	29 176	32 176	33 176	34 176	36 176	38 176	40 176	41 176	43 176	44 176	45 176	47 176	50 176
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

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	0 180	6 180	0 180	0 180	0 180	0 180	0 180
15	183	31 183	28 183	27 183	26 183	24 183	22 183	20 183	19 183	17 183	16 183	15 183	13 183	10 183
30	187	0 186	57 186	54 186	51 186	46 186	41 186	36 186	31 186	26 186	21 186	16 186	11 186	6 186
45	190	30 190	25 190	20 190	16 189	12 190	7 190	2 189	58 189	53 189	47 189	43 189	38 189	34 189
7	0 193	58 193	52 193	46 193	40 193	34 193	28 193	22 193	16 193	10 193	3 192	57 192	51 192	45 192
15	197	29 197	20 197	14 197	1 196	57 196	50 196	42 196	35 196	27 196	19 196	11 196	3 195	54 195
30	200	56 200	47 200	38 200	29 200	20 200	10 200	1 199	52 199	42 199	33 199	24 199	14 199	5 198
45	204	24 204	13 204	2 203	52 203	41 203	30 203	20 203	9 202	58 202	47 202	37 202	26 202	15 202
8	0 207	50 207	38 207	27 207	14 207	2 206	50 206	38 2 2	25 206	13 206	1 205	49 205	36 205	24 205
15	211	15 211	1 210	48 210	34 210	22 210	9 209	55 209	41 209	27 209	14 209	1 208	47 208	32 208
30	214	40 214	25 214	10 213	55 213	42 213	27 213	12 212	57 212	42 212	27 212	11 211	56 211	41 211
45	218	3 217	47 217	31 217	15 216	59 216	43 216	27 216	11 215	55 215	37 215	21 215	5 214	48 214
9	0 221	26 221	8 220	51 220	34 220	17 220	0 219	43 219	26 219	9 218	49 218	32 218	15 217	57 217
15	224	46 224	28 224	10 223	53 223	37 223	16 222	57 222	38 222	19 221	59 221	42 221	23 221	3 220
30	228	4 227	47 227	28 227	9 226	5 226	30 226	20 226	51 225	31 225	10 224	50 224	30 224	9 223
45	231	29 231	7 230	46 230	26 230	6 229	45 229	24 229	3 228	41 228	20 227	58 227	37 227	15 226
10	0 234	46 234	25 234	3 233	42 233	21 232	59 232	37 232	15 231	52 231	29 231	6 230	45 230	23 229
15	238	6 237	43 237	21 236	58 236	36 236	13 235	51 235	28 235	4 234	39 234	16 233	53 233	28 233
30	241	22 241	0 240	37 240	14 239	50 239	27 239	3 238	39 238	14 237	49 237	25 237	0 236	35 236
45	244	42 244	18 243	54 243	30 243	6 242	41 242	16 241	51 241	26 241	0 240	35 240	9 239	42 239
11	0 248	0 247	36 247	11 246	46 246	21 245	55 245	29 245	4 244	38 244	11 243	44 243	17 242	50 242
15	251	18 250	53 250	28 250	3 249	37 249	11 248	44 248	17 247	49 247	22 246	54 246	26 245	58 245
30	254	38 254	12 253	46 253	20 252	53 252	26 251	58 251	31 251	17 250	34 250	49 249	36 248	72 248
45	257	58 257	32 257	5 256	38 256	11 255	43 255	15 254	46 254	17 253	48 253	19 252	49 252	18 251
12	0 261	19 260	52 260	25 259	57 259	29 259	1 258	31 258	4 257	34 257	3 256	34 256	3 255	31 254

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	19260	52260	25259	57259	29259	0258	31258	4257	34257	3256	34256	3255	31254
15 0	264	41264	14263	45263	18262	49262	20261	51261	22260	51260	19259	49259	18258	45258
30 0	268	6267	38267	8266	41266	12265	42265	12264	42264	11263	39263	8262	36262	22261
45 0	271	32271	42270	35270	6269	38269	7268	37268	6267	34267	1266	23265	56265	22264
13 0	275	1274	33274	4273	34273	6272	34272	4271	33271	0270	27269	54269	21268	46268
15 0	278	32278	8277	35277	5276	36276	4275	34275	2274	29273	55273	22272	48272	12271
30 0	282	7281	38281	9280	39280	10279	38279	8278	35278	2277	28276	54276	19275	43275
45 0	285	46285	17284	48284	18283	49283	17282	47282	13281	40281	5280	32279	36283	20278
14 0	289	28288	59288	30288	0287	31286	59286	29285	55285	22284	48284	14283	36283	1282
15 0	293	14292	46292	17291	48291	18290	46290	16289	43289	10288	35288	1287	25286	49286
30 0	297	5296	38296	9295	40295	11294	11294	11293	38293	5292	30291	57291	20290	43290
45 0	301	2304	34300	7299	38299	9298	39298	10297	38297	5296	31295	57295	22294	45294
15 0	305	2304	36304	8303	41303	13302	44302	14301	42301	10300	36300	3299	28298	52298
30 0	309	9308	44308	18307	51307	24306	55306	26305	56305	24304	52304	20303	46303	10302
45 0	313	22312	59312	54312	8311	42311	15310	47310	18309	48309	17308	45308	13307	38307
16 0	322	5321	18316	56316	31316	6315	40315	14314	47314	55318	27317	59317	30316	59316
15 0	326	33326	15325	56325	35325	14324	52324	30324	6232	42323	16322	51322	24321	55321
30 0	331	9330	53330	35330	16329	57329	38329	18328	57328	35328	12327	50327	25326	59326
45 0	335	49335	35335	19335	3334	48334	31334	14333	55333	36333	17332	57332	33332	13331
17 0	340	34340	22340	9339	56339	43339	30339	16339	0338	44338	29338	12337	58337	35337
15 0	345	22345	13345	3344	54344	43344	33344	22344	11343	59343	46343	33343	19343	4342
30 0	350	14350	7350	1349	54349	47349	41349	34349	25349	17349	8348	59348	49348	20348
45 0	355	7355	4354	59354	56354	53354	49354	46354	42354	38354	33354	29354	24354	19354
18 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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.	°	°	°	°	°	°	°	°	°	°	°	°	°	°
18 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 0	453	456	55	5	7	5	11	5	18	5	27	5	36	5
30 0	946	953	959	10	13	10	19	10	35	10	52	11	11	11
45 0	1438	1447	1457	15	16	15	27	15	49	16	16	16	16	16
19 0	1926	1938	1951	20	20	17	30	20	21	16	21	21	22	22
15 0	2411	2425	2441	24	25	22	36	24	26	24	26	27	27	27
30 0	2851	2872	2895	29	30	27	42	26	31	25	31	32	33	33
45 0	3327	3345	3364	34	35	32	47	31	36	18	36	37	38	38
20 0	3755	3778	3803	39	40	37	52	35	43	31	37	38	39	39
15 0	4219	4242	4268	43	44	41	56	40	48	34	41	42	43	43
30 0	4638	4671	4707	47	48	45	60	44	53	40	47	48	49	49
45 0	5051	5085	5121	52	53	50	65	49	58	45	51	52	53	53
21 0	5458	5495	5533	56	57	54	69	53	62	50	56	57	58	58
15 0	5858	5899	5941	60	61	58	73	57	66	54	60	61	62	62
30 0	6255	6302	6350	64	65	62	77	61	70	57	63	64	65	65
45 0	6667	6714	6763	68	69	66	81	65	74	61	67	68	69	69
22 0	7032	7079	7127	72	73	70	85	69	78	65	71	72	73	73
15 0	7414	7454	7495	75	76	73	88	72	81	68	74	75	76	76
30 0	7753	7795	7838	79	80	77	92	76	85	72	78	79	80	80
45 0	8128	8172	8217	82	83	80	95	79	88	75	81	82	83	83
23 0	8459	8505	8552	86	87	84	99	83	92	79	85	86	87	87
15 0	8828	8876	8925	89	90	87	104	86	95	82	88	89	90	90
30 0	9154	9203	9252	93	94	91	106	89	98	85	91	92	93	93
45 0	9519	9569	9619	96	97	94	111	93	101	88	94	95	96	96
24 0	9841	9891	9941	100	101	98	113	96	104	91	97	98	99	99

LOGARITHMIC TABLE

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	.5722	.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	1.2238	.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	.3149	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	.4900	.4374	.3905	.3481	.3096	46
47	1.4863	1.1290	.9356	.8023	.7005	.6180	.5488	.4890	.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	.6929	.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	.6094	.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. — (cont'd.)

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.)

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	.1357	.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	.1587	.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