THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC

FOR THE YEAR

1895

FIRST EDITION

PUBLISHED IN COMPLIANCE WITH A JOINT RESOLUTION OF THE FORTY-SIXTH CONGRESS

WASHINGTON:
BUREAU OF EQUIPMENT.
1892.

JOINT RESOLUTION

RELATIVE TO THE PUBLICATION OF THE NAUTICAL ALMANAC.

Resolved by the Senate and H
That there shall be printed annu
Ephemeris and Nautical Almanac
sue of the Senate, four hundred p
distributed by the Navy Departmen
Sec. 2. That additional copi
ordered by the Secretary of the
deposited in the Treasury to the cr
Approved, February 11, 1880.

PREFACE.

THE arrangement of *The American Ephemeris* adopted in the volume for the year 1882, and explained in the Appendix to that volume, has been continued without radical change to the present time.

The additions then made comprise more complete data for eclipses of the sun, diagrams showing the configurations of the satellites of Jupiter, data respecting the disks of Mercury and Venus for the reduction of meridian and photometric observations, and diagrams, with tables, for identifying any known satellites of other planets. The work is divided into three parts, as follows:—

Part I, *Ephemeris for the Meridian of Greenwich*, gives the geocentric and heliocentric positions of the major planets, the Ephemeris of the Sun, and other fundamental astronomical data for equi-distant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington*, gives the ephemerides of the fixed stars, sun, moon, and major planets for transit over the meridian of Washington. The mean places of the fixed stars and the data for their reduction are also included in this part. The list of mean and apparent places of fixed stars has been greatly enlarged, for the convenience of field-astronomers.

Part III, *Phenomena*, contains predictions of phenomena to be observed, with data for their computation. Washington mean time is used in this part except in a few cases, notably that of eclipses, where Greenwich mean time was judged more convenient.

SIMON NEWCOMB,

Professor U. S. Navy, Superintendent.

WASHINGTON, *March*, 1882.

CONTENTS.

CORRECTIONS.

Ephemeris for 1891 (*First Edition only*).

Page 298,	Dec. of 4 Ursæ Minoris,	*for*	78° 8′ 35″.14	*read*	78° 3′ 35″.14
306,	R. A., α^2 Capricorni,	"	29^h	"	20^h
332,	Dec., α Leonis,	"	19°	"	12°
350,	R. A., γ Draconis,	"	15^h	"	17^h
387,	Bright Limb of Moon from May 8 to May 18,	"	II	"	I
501,	Lines 30 and 31,	"	Chicago *read*	a point 1° South of Chicago	
	and	"	41° "	40°	

Ephemeris for 1892.

Page 227,	Hor. Parallax of Venus, on July		4th,	9th,	14th,	19th,	24th,	29th.
		for	46″.9	46″.3	46″.8	48″.4	50″.8	53″.7
		read	30.1	30.5	30.1	29.1	27.5	25.7
	and on August		3d,	8th,	13th,	18th,	23rd,	28th.
		for	57″.0	60″.4	63″.8	67″.1	70″.3	73″.4
		read	23.8	22.0	20.4	18.9	17.5	16.3

299,	Line 36,	*for*	* θ Herculis,	*read*	* o Herculis.
394,		"	April 17^d 0^h 2^m.6	"	April 18^d 0^h 2^m.6
	and	"	June 19^d 23^h 55^m.8	"	June 18^d 23^h 55^m.8
448,	January 8,	"	σ Piscium	"	σ Arietis
487,	November 10,	"	♂ ☿ ♄	"	♂ ♀ ♄ ♀ — 0° 31′

Ephemeris for 1893.

Page 274,	Sept. 12.5, Moon's Lat.,	*for*	0° 16′ 57″.9	"	— 0° 16′ 57″.9
411,	Solar Eclipse of April 15—16,	"	Eclipse ends, in Long. 4° 57′.7 E.,	*read*	14° 57′.7 E.
414,	Log Δ y,	"	— 8.	"	— 7.
485,	Aug. 22,	"	♂	"	♅
485,	Sept. 1^d 10^h 14^m,	"	♂ ♀ ☽	"	♂ ♀ ♄
485,	Dec. 6^d 1^h 30^m,	"	☿ — 6° 9′	"	☿ + 6° 9′
485,	Dec. 19^d 23^h 23^m,	"	♂	"	♂
485,		"	Dec. 21^d 20^h 45^m,	"	Dec. 20^d 20^h 45^m
505,	Line 33,	"	cost	"	coast
508,	First line,	"	449	"	445

Ephemeris for 1894.

Page 419,	Greatest Libration of Moon,	*for*	January 25^d 6^h 38^m	*read*	January 25^d 17^h 20^m
489,	November 11^d 21^h 35^m	"	♂ ♀ ⊙	"	♂ ♀ ♁

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1895, WHICH COMPRISES THE LATTER PART OF THE 119TH AND THE BEGINNING OF THE 120TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6608 of the Julian Period;

" 7403–7404 of the Byzantine era, the year 7404 commencing on September 1st;

" 5655–5656 of the Jewish era, the year 5656 commencing on Sept. 19th, or, more exactly, at sunset on September 18th;

" 2648 since the foundation of Rome, according to VARRO;

" 2642 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th; and, in the notation of astronomers, to the 746th year before the birth of CHRIST;

" 2671 of the Olympiads, or the third year of the 668th Olympiad commencing in July, 1895, if we fix the era of the Olympiads at 775½ years before CHRIST, or near the beginning of July of the year 3938 of the Julian Period;

" 2207 of the Grecian era, or the era of the Seleucidæ;

" 1611 of the era of DIOCLETIAN;

" 2555 of the Japanese era and to the 28th year of the period entitled "Meiji."

The year 1313 of the Mohammedan era, or the era of the Hegira, begins on the 24th day of June, 1895.

The first day of January of the year 1895 is the 2,413,195th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	F	Solar Cycle	28
Epact	4	Roman Indiction	8
Lunar Cycle or Golden Number	15	Julian Period	6608

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	1.	♈ Aries.	Autumn Signs.	7.	♎ Libra.
	2.	♉ Taurus.		8.	♏ Scorpius.
	3.	♊ Gemini.		9.	♐ Sagittarius.
Summer Signs.	4.	♋ Cancer.	Winter Signs.	10.	♑ Capricornus.
	5.	♌ Leo.		11.	♒ Aquarius.
	6.	♍ Virgo.		12.	♓ Pisces.

ASPECTS.

☌ Conjunction, or having the same Longitude or Right Ascension.
□ Quadrature, or differing 90° in Longitude or Right Ascension.
☍ Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

☊	Ascending Node.	°	Degrees.
☋	Descending Node.	′	Minutes of Arc.
N.	North.	″	Seconds of Arc.
S.	South.	h	Hours.
E.	East.	m	Minutes of Time.
W.	West.	s	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	18 47 19.51	11.044	S. 23 0 33.6	+12.49	16 18.35	71.05	3 46.50	1.184
Wed.	2	18 51 44.37	11.028	22 55 20.1	13.63	16 18.36	71.01	4 14.72	1.168
Thur.	3	18 56 8.85	11.011	22 49 39.2	14.77	16 18.36	70.96	4 42.57	1.152
Frid.	4	19 0 32.92	10.993	22 43 31.2	+15.90	16 18.35	70.90	5 10.00	1.134
Sat.	5	19 4 56.55	10.975	22 36 56.1	17.02	16 18.34	70.84	5 37.00	1.115
SUN.	6	19 9 19.71	10.955	22 29 54.2	18.13	16 18.32	70.78	6 3.53	1.095
Mon.	7	19 13 42.38	10.934	22 22 25.8	+19.23	16 18.30	70.72	6 29.57	1.074
Tues.	8	19 18 4.54	10.912	22 14 31.0	20.32	16 18.28	70.65	6 55.10	1.052
Wed.	9	19 22 26.16	10.889	22 6 10.0	21.41	16 18.24	70.58	7 20.09	1.030
Thur.	10	19 26 47.21	10.865	21 57 23.2	+22.49	16 18.20	70.50	7 44.52	1.006
Frid.	11	19 31 7.70	10.841	21 48 10.8	23.55	16 18.16	70.42	8 8.38	0.982
Sat.	12	19 35 27.58	10.816	21 38 33.0	24.60	16 18.10	70.34	8 31.64	0.957
SUN.	13	19 39 46.85	10.790	21 28 30.0	+25.64	16 18.04	70.26	8 54.29	0.931
Mon.	14	19 44 5.49	10.763	21 18 2.2	26.67	16 17.98	70.17	9 16.31	0.904
Tues.	15	19 48 23.48	10.736	21 7 10.0	27.69	16 17.91	70.08	9 37.68	0.877
Wed.	16	19 52 40.80	10.708	20 55 53.2	+28.69	16 17.83	69.99	9 58.40	0.849
Thur.	17	19 56 57.46	10.679	20 44 12.6	29.69	16 17.75	69.89	10 18.44	0.820
Frid.	18	20 1 13.41	10.650	20 32 8.3	30.67	16 17.66	69.79	10 37.78	0.791
Sat.	19	20 5 28.66	10.620	20 19 40.6	+31.63	16 17.57	69.69	10 56.42	0.762
SUN.	20	20 9 43.18	10.590	20 6 50.0	32.58	16 17.47	69.59	11 14.33	0.731
Mon.	21	20 13 56.96	10.559	19 53 36.6	33.52	16 17.36	69.48	11 31.52	0.700
Tues.	22	20 18 10.00	10.527	19 40 0.9	+34.44	16 17.26	69.38	11 47.95	0.669
Wed.	23	20 22 22.27	10.495	19 26 3.3	35.35	16 17.15	69.27	12 3.62	0.637
Thur.	24	20 26 33.76	10.462	19 11 44.1	36.24	16 17.04	69.16	12 18.50	0.604
Frid.	25	20 30 44.45	10.429	18 57 3.6	+37.12	16 16.92	69.05	12 32.61	0.571
Sat.	26	20 34 54.35	10.395	18 42 2.4	37.98	16 16.80	68.94	12 45.91	0.537
SUN.	27	20 39 3.43	10.361	18 26 40.8	38.82	16 16.68	68.83	12 58.40	0.503
Mon.	28	20 43 11.69	10.327	18 10 59.2	+39.64	16 16.56	68.72	13 10.06	0.469
Tues.	29	20 47 19.11	10.292	17 54 58.0	40.45	16 16.43	68.60	13 20.91	0.434
Wed.	30	20 51 25.70	10.257	17 38 37.7	41.24	16 16.30	68.49	13 30.91	0.400
Thur.	31	20 55 31.46	10.222	17 21 58.7	42.01	16 16.16	68.38	13 40.08	0.365
Frid.	32	20 59 36.36	10.187	S. 17 5 1.3	+42.76	16 16.02	68.26	13 48.41	0.329

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week	Day of the Month	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	18 47 18.81	11.039	S. 23 0 34.4	+12.48	3 46.42	1.183	18 43 32.39
Wed.	2	18 51 43.59	11.024	22 55 21.1	13.62	4 14.64	1.168	18 47 28.95
Thur.	3	18 56 7.98	11.008	22 49 40.4	14.76	4 42.47	1.151	18 51 25.51
Frid.	4	19 0 31.97	10.990	22 43 32.6	+15.89	5 9.90	1.134	18 55 22.07
Sat.	5	19 4 55.52	10.972	22 36 57.7	17.01	5 36.89	1.115	18 59 18.63
SUN.	6	19 9 18.60	10.952	22 29 56.1	18.12	6 3.42	1.095	19 3 15.18
Mon.	7	19 13 41.20	10.931	22 22 27.9	+19.22	6 29.45	1.074	19 7 11.74
Tues.	8	19 18 3.28	10.909	22 14 33.4	20.32	6 54.98	1.052	19 11 8.30
Wed.	9	19 22 24.82	10.886	22 6 12.7	21.40	7 19.96	1.029	19 15 4.86
Thur.	10	19 26 45.81	10.862	21 57 26.2	+22.47	7 44.39	1.006	19 19 1.42
Frid.	11	19 31 6.22	10.838	21 48 14.0	23.54	8 8.25	0.982	19 22 57.98
Sat.	12	19 35 26.04	10.813	21 38 36.5	24.59	8 31.50	0.956	19 26 54.54
SUN.	13	19 39 45.25	10.787	21 28 33.9	+25.63	8 54.15	0.930	19 30 51.10
Mon.	14	19 44 3.82	10.760	21 18 6.4	26.66	9 16.17	0.904	19 34 47.65
Tues.	15	19 48 21.75	10.733	21 7 14.4	27.67	9 37.54	0.877	19 38 44.21
Wed.	16	19 52 39.02	10.705	20 55 58.0	+28.68	9 58.25	0.849	19 42 40.77
Thur.	17	19 56 55.62	10.677	20 44 17.8	29.67	10 18.29	0.820	19 46 37.33
Frid.	18	20 1 11.52	10.648	20 32 13.8	30.65	10 37.64	0.791	19 50 33.88
Sat.	19	20 5 26.72	10.618	20 19 46.4	+31.62	10 56.28	0.761	19 54 30.44
SUN.	20	20 9 41.20	10.588	20 6 56.2	32.57	11 14.20	0.731	19 58 27.00
Mon.	21	20 13 54.94	10.557	19 53 43.1	33.51	11 31.38	0.700	20 2 23.56
Tues.	22	20 18 7.93	10.525	19 40 7.8	+34.43	11 47.82	0.669	20 6 20.12
Wed.	23	20 22 20.16	10.493	19 26 10.5	35.34	12 3.49	0.637	20 10 16.67
Thur.	24	20 26 31.61	10.461	19 11 51.6	36.23	12 18.38	0.604	20 14 13.23
Frid.	25	20 30 42.28	10.428	18 57 11.5	+37.10	12 32.49	0.571	20 18 9.79
Sat.	26	20 34 52.14	10.394	18 42 10.6	37.96	12 45.79	0.537	20 22 6.34
SUN.	27	20 39 1.19	10.360	18 26 49.3	38.80	12 58.29	0.503	20 26 2.90
Mon.	28	20 43 9.42	10.326	18 11 8.0	+39.63	13 9.96	0.469	20 29 59.46
Tues.	29	20 47 16.82	10.291	17 55 7.1	40.43	13 20.81	0.435	20 33 56.02
Wed.	30	20 51 23.39	10.256	17 38 47.1	41.22	13 30.82	0.400	20 37 52.57
Thur.	31	20 55 29.13	10.221	17 22 8.3	41.99	13 40.00	0.365	20 41 49.13
Frid.	32	20 59 34.02	10.186	S. 17 5 11.2	+42.75	13 48.33	0.330	20 45 45.69

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour, +9ˢ.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ'	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	1	280 52 51.9	52 50.1	152.93	− 0.10	9.9926805	− 1.3	5 15 35.76
2	2	281 54 2.0	54 0.0	152.92	+ 0.02	9.9926782	− 0.5	5 11 39.85
3	3	282 55 11.9	55 9.7	152.91	0.15	9.9926782	+ 0.5	5 7 43.94
4	4	283 56 21.5	56 19.1	152.89	+ 0.27	9.9926804	+ 1.4	5 3 48.02
5	5	284 57 30.5	57 27.9	152.87	0.37	9.9926849	2.4	4 59 52.11
6	6	285 58 39.3	58 36.5	152.85	0.45	9.9926919	3.4	4 55 56.20
7	7	286 59 47.5	59 44.5	152.83	+ 0.52	9.9927014	+ 4.6	4 52 0.29
8	8	288 0 55.2	0 52.0	152.82	0.56	9.9927139	5.7	4 48 4.38
9	9	289 2 2.7	1 59.3	152.80	0.56	9.9927288	6.8	4 44 8.46
10	10	290 3 9.6	3 6.0	152.78	+ 0.54	9.9927465	+ 8.0	4 40 12.55
11	11	291 4 16.3	4 12.6	152.77	0.49	9.9927672	9.2	4 36 16.64
12	12	292 5 22.5	5 18.6	152.75	0.40	9.9927908	10.4	4 32 20.72
13	13	293 6 28.4	6 24.3	152.74	+ 0.30	9.9928170	+11.5	4 28 24.81
14	14	294 7 34.0	7 29.7	152.73	0.18	9.9928462	12.7	4 24 28.90
15	15	295 8 39.3	8 34.8	152.72	+ 0.05	9.9928779	13.8	4 20 32.99
16	16	296 9 44.3	9 39.6	152.71	− 0.08	9.9929122	+14.8	4 16 37.08
17	17	297 10 49.1	10 44.2	152.69	0.22	9.9929489	15.8	4 12 41.16
18	18	298 11 53.5	11 48.5	152.68	0.33	9.9929880	16.7	4 8 45.25
19	19	299 12 57.6	12 52.4	152.66	− 0.44	9.9930290	+17.6	4 4 49.34
20	20	300 14 1.4	13 56.0	152.65	0.52	9.9930724	18.4	4 0 53.43
21	21	301 15 4.7	14 59.2	152.63	0.57	9.9931174	19.1	3 56 57.52
22	22	302 16 7.5	16 1.8	152.60	− 0.59	9.9931643	+19.8	3 53 1.61
23	23	303 17 9.8	17 3.9	152.57	0.59	9.9932127	20.5	3 49 5.69
24	24	304 18 11.3	18 5.3	152.55	0.55	9.9932629	21.2	3 45 9.78
25	25	305 19 12.3	19 6.1	152.52	− 0.49	9.9933144	+21.8	3 41 13.87
26	26	306 20 12.1	20 5.7	152.48	0.40	9.9933674	22.4	3 37 17.96
27	27	307 21 11.1	21 4.5	152.44	0.29	9.9934217	23.0	3 33 22.05
28	28	308 22 9.1	22 2.4	152.40	− 0.17	9.9934777	+23.6	3 29 26.14
29	29	309 23 6.1	22 59.2	152.35	− 0.04	9.9935350	24.2	3 25 30.23
30	30	310 24 1.7	23 54.7	152.29	+ 0.10	9.9935938	24.9	3 21 34.32
31	31	311 24 56.0	24 48.8	152.24	0.22	9.9936543	25.7	3 17 38.40
32	32	312 25 49.1	25 41.7	152.18	+ 0.33	9.9937165	+26.3	3 13 42.49

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January $0^d.0$.

Diff. for 1 Hour, $-9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 49.0	14 51.6	54 15.8	+0.70	54 25.3	+0.90	4 9.6	1.65	5.4
2	14 54.8	14 58.7	54 37.2	1.10	54 51.5	1.29	4 49.5	1.64	6.4
3	15 3.2	15 8.4	55 8.2	1.49	55 27.3	1.69	5 29.4	1.69	7.4
4	15 14.3	15 20.7	55 48.7	+1.88	56 12.2	+2.04	6 11.0	1.78	8.4
5	15 27.6	15 35.0	56 37.7	2.19	57 4.8	2.31	6 55.6	1.95	9.4
6	15 42.7	15 50.7	57 33.2	2.40	58 2.4	2.44	7 44.8	2.16	10.4
7	15 58.7	16 6.6	58 31.8	+2.44	59 1 0	+2.39	8 39.7	2.41	11.4
8	16 14.3	16 21.4	59 29.1	2.27	59 55.4	2.09	9 40.6	2.65	12.4
9	16 27.9	16 33.6	60 19.2	1.85	60 39.9	1.56	10 46.1	2.78	13.4
10	16 38.1	16 41.5	60 56.7	+1.22	61 9.2	+0.83	11 52.9	2.76	14.4
11	16 43.6	16 44.3	61 16.7	+0.42	61 19.3	+0.01	12 57.4	2.60	15.4
12	16 43.6	16 41.7	61 16.9	−0.40	61 9.7	−0.79	13 57.2	2.39	16.4
13	16 38.5	16 34.2	60 58.0	−1.14	60 42.3	−1.46	14 51.9	2.18	17.4
14	16 29.0	16 23.0	60 23.0	1.72	60 1.1	1.92	15 42.4	2.04	18.4
15	16 16.4	16 9.5	59 37.0	2.07	59 11.5	2.15	16 30.2	1.96	19.4
16	16 2.4	15 55.1	58 45.3	−2.20	58 18.7	−2.20	17 16.8	1.94	20.4
17	15 48.0	15 41.0	57 52.5	2.15	57 27.0	2.08	18 3.5	1.97	21.4
18	15 34.4	15 28.0	57 2.5	1.99	56 39.3	1.87	18 51.5	2.03	22.4
19	15 22.1	15 16.6	56 17.6	−1.75	55 57.4	−1.61	19 41.3	2.12	23.4
20	15 11.6	15 7.0	55 38.9	1.48	55 22.0	1.33	20 33.0	2.18	24.4
21	15 2.9	14 59.2	55 6.9	1.19	54 53.4	1.06	21 25.8	2.21	25.4
22	14 55.9	14 53.1	54 41.4	−0.93	54 31.0	−0.81	22 18.6	2.18	26.4
23	14 50.6	14 48.6	54 21.9	0.69	54 14.4	0.58	23 9.9	2.09	27.4
24	14 46.9	14 45.5	54 8.1	0.47	54 3.1	0.36	23 58.7	1.97	28.4
25	14 44.5	14 43.8	53 59.4	−0.26	53 56.9	−0.15	δ		29.4
26	14 43.5	14 43.5	53 55.7	−0.05	53 55.8	+0.06	0 44.6	1.85	0.6
27	14 43.9	14 44.6	53 57.1	+0.17	53 59.9	0.30	1 27.8	1.75	1.6
28	14 45.8	14 47.4	54 4.2	+0.42	54 10.0	+0.55	2 8.7	1.67	2.6
29	14 49.4	14 51.9	54 17.4	0.69	54 26.6	0.84	2 48.4	1.64	3.6
30	14 54.9	14 58.4	54 37.6	1.00	54 50.5	1.16	3 27.7	1.65	4.6
31	15 2.5	15 7.1	55 5.5	1.33	55 22.4	1.49	4 7.9	1.71	5.6
32	15 12.3	15 18.0	55 41.3	+1.66	56 2.3	+1.83	4 50.2	1.83	6.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 1.			
	h m s	s	° ′ ″	″
0	22 46 42.84	1.7652	S. 9 11 20.4	13.519
1	22 48 29.90	1.7656	8 57 48.1	13.557
2	22 50 16.87	1.7660	8 44 13.6	13.593
3	22 52 3.74	1.7664	8 30 36.9	13.629
4	22 53 50.52	1.7670	8 16 58.1	13.664
5	22 55 37.22	1.7677	8 3 17.2	13.699
6	22 57 23.85	1.7685	7 49 34.2	13.733
7	22 59 10.40	1.7753	7 35 49.2	13.767
8	23 0 56.88	1.7742	7 22 2.2	13.799
9	23 2 43.30	1.7732	7 8 13.3	13.831
10	23 4 29.66	1.7722	6 54 22.5	13.863
11	23 6 15.96	1.7712	6 40 29.8	13.894
12	23 8 2.20	1.7704	6 26 35.3	13.923
13	23 9 48.40	1.7697	6 12 39.0	13.952
14	23 11 34.56	1.7690	5 58 41.0	13.981
15	23 13 20.68	1.7683	5 44 41.3	14.008
16	23 15 6.76	1.7678	5 30 39.9	14.037
17	23 16 52.82	1.7674	5 16 36.9	14.063
18	23 18 38.85	1.7670	5 2 32.4	14.088
19	23 20 24.86	1.7667	4 48 26.3	14.114
20	23 22 10.86	1.7665	4 34 18.7	14.139
21	23 23 56.84	1.7663	4 20 9.6	14.163
22	23 25 42.82	1.7663	4 5 59.1	14.187
23	23 27 28.80	1.7663	S. 3 51 47.2	14.209
	WEDNESDAY 2.			
0	23 29 14.78	1.7664	S. 3 37 34.0	14.231
1	23 31 0.77	1.7666	3 23 19.5	14.252
2	23 32 46.77	1.7668	3 9 3.7	14.273
3	23 34 32.79	1.7672	2 54 46.7	14.293
4	23 36 18.83	1.7676	2 40 28.6	14.312
5	23 38 4.90	1.7682	2 26 9.3	14.331
6	23 39 51.01	1.7687	2 11 48.9	14.348
7	23 41 37.15	1.7693	1 57 27.5	14.365
8	23 43 23.33	1.7701	1 43 5.1	14.382
9	23 45 9.56	1.7709	1 28 41.6	14.399
10	23 46 55.84	1.7717	1 14 17.2	14.414
11	23 48 42.17	1.7727	0 59 51.9	14.428
12	23 50 28.57	1.7739	0 45 25.8	14.442
13	23 52 15.04	1.7751	0 30 58.8	14.456
14	23 54 1.58	1.7763	0 16 31.1	14.468
15	23 55 48.19	1.7775	S. 0 2 2.7	14.479
16	23 57 34.88	1.7789	N. 0 12 26.4	14.490
17	23 59 21.66	1.7805	0 26 56.1	14.501
18	0 1 8.54	1.7821	0 41 26.5	14.512
19	0 2 55.51	1.7837	0 55 57.5	14.520
20	0 4 42.58	1.7854	1 10 28.9	14.528
21	0 6 29.76	1.7873	1 25 0.8	14.536
22	0 8 17.06	1.7892	1 39 33.2	14.542
23	0 10 4.47	1.7912	1 54 5.9	14.547
24	0 11 52.00	1.7933	N. 2 8 38.9	14.552

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 3.			
	h m s	s	° ′ ″	″
0	0 11 52.00	1.7933	N. 2 8 38.9	14.552
1	0 13 39.66	1.7955	2 23 12.2	14.557
2	0 15 27.46	1.7977	2 37 45.8	14.561
3	0 17 15.39	1.8000	2 52 19.6	14.564
4	0 19 3.46	1.8025	3 6 53.5	14.567
5	0 20 51.69	1.8051	3 21 27.6	14.569
6	0 22 40.07	1.8077	3 36 1.8	14.570
7	0 24 28.61	1.8104	3 50 36.0	14.569
8	0 26 17.32	1.8132	4 5 10.1	14.568
9	0 28 6.19	1.8160	4 19 44.2	14.567
10	0 29 55.24	1.8191	4 34 18.2	14.564
11	0 31 44.48	1.8222	4 48 51.9	14.560
12	0 33 33.90	1.8253	5 3 25.4	14.556
13	0 35 23.51	1.8285	5 17 58.6	14.552
14	0 37 13.32	1.8318	5 32 31.6	14.546
15	0 39 3.33	1.8352	5 47 4.2	14.539
16	0 40 53.55	1.8386	6 1 36.3	14.532
17	0 42 43.99	1.8424	6 16 8.0	14.524
18	0 44 34.64	1.8460	6 30 39.2	14.515
19	0 46 25.51	1.8498	6 45 9.8	14.504
20	0 48 16.62	1.8538	6 59 39.7	14.493
21	0 50 7.97	1.8578	7 14 9.0	14.482
22	0 51 59.56	1.8618	7 28 37.6	14.469
23	0 53 51.39	1.8659	N. 7 43 5.3	14.454
	FRIDAY 4.			
0	0 55 43.47	1.8702	N. 7 57 32.1	14.439
1	0 57 35.81	1.8746	8 11 58.0	14.424
2	0 59 28.42	1.8790	8 26 23.0	14.408
3	1 1 21.29	1.8835	8 40 47.0	14.391
4	1 3 14.44	1.8882	8 55 9.9	14.372
5	1 5 7.87	1.8929	9 9 31.6	14.352
6	1 7 1.59	1.8977	9 23 52.2	14.332
7	1 8 55.60	1.9027	9 38 11.5	14.310
8	1 10 49.91	1.9077	9 52 29.4	14.287
9	1 12 44.52	1.9128	10 6 46.0	14.264
10	1 14 39.44	1.9179	10 21 1.1	14.239
11	1 16 34.67	1.9232	10 35 14.7	14.213
12	1 18 30.23	1.9286	10 49 26.7	14.187
13	1 20 26.11	1.9341	11 3 37.1	14.159
14	1 22 22.32	1.9397	11 17 45.8	14.129
15	1 24 18.87	1.9453	11 31 52.6	14.098
16	1 26 15.76	1.9511	11 45 57.6	14.067
17	1 28 13.00	1.9570	12 0 0.7	14.036
18	1 30 10.60	1.9630	12 14 1.9	14.003
19	1 32 8.56	1.9690	12 28 1.0	13.968
20	1 34 6.88	1.9750	12 41 58.0	13.931
21	1 36 5.56	1.9812	12 55 52.7	13.893
22	1 38 4.62	1.9876	13 9 45.1	13.854
23	1 40 4.07	1.9941	13 23 35.2	13.815
24	1 42 3.91	2.0006	N. 13 37 22.9	13.774

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 5.			
	h m s	s	° ′ ″	″
0	1 42 3.91	2.0006	N.13 37 22.9	13.774
1	1 44 4.14	2.0072	13 51 8.1	13.738
2	1 46 4.77	2.0138	14 4 50.7	13.686
3	1 48 5.80	2.0206	14 18 30.6	13.643
4	1 50 7.24	2.0275	14 32 7.8	13.597
5	1 52 9.10	2.0344	14 45 42.2	13.549
6	1 54 11.37	2.0414	14 59 13.7	13.500
7	1 56 14.07	2.0486	15 12 42.2	13.449
8	1 58 17.21	2.0559	15 26 7.6	13.397
9	2 0 20.78	2.0633	15 39 29.9	13.345
10	2 2 24.79	2.0708	15 52 49.0	13.290
11	2 4 29.25	2.0789	16 6 4.7	13.233
12	2 6 34.17	2.0857	16 19 17.0	13.176
13	2 8 39.54	2.0933	16 32 25.9	13.117
14	2 10 45.37	2.1011	16 45 31.1	13.056
15	2 12 51.67	2.1089	16 58 32.6	12.993
16	2 14 58.44	2.1168	17 11 30.3	12.930
17	2 17 5.69	2.1248	17 24 24.2	12.865
18	2 19 13.42	2.1329	17 37 14.1	12.797
19	2 21 21.64	2.1411	17 49 59.9	12.729
20	2 23 30.35	2.1493	18 2 41.6	12.660
21	2 25 39.55	2.1575	18 15 19.1	12.588
22	2 27 49.25	2.1659	18 27 52.2	12.514
23	2 29 59.46	2.1744	N.18 40 20.8	12.439
	SUNDAY 6.			
0	2 32 10.18	2.1829	N.18 52 44.9	12.362
1	2 34 21.41	2.1915	19 5 4.3	12.283
2	2 36 33.16	2.2002	19 17 18.9	12.203
3	2 38 45.43	2.2089	19 29 28.7	12.122
4	2 40 58.23	2.2177	19 41 33.5	12.038
5	2 43 11.55	2.2265	19 53 33.2	11.953
6	2 45 25.41	2.2355	20 5 27.8	11.866
7	2 47 39.81	2.2444	20 17 17.1	11.776
8	2 49 54.74	2.2534	20 29 0.9	11.684
9	2 52 10.22	2.2625	20 40 39.2	11.592
10	2 54 26.24	2.2716	20 52 11.9	11.497
11	2 56 42.81	2.2808	21 3 38.9	11.401
12	2 58 59.94	2.2901	21 15 0.0	11.302
13	3 1 17.62	2.2993	21 26 15.1	11.202
14	3 3 35.86	2.3087	21 37 24.2	11.100
15	3 5 54.66	2.3180	21 48 27.1	10.995
16	3 8 14.02	2.3274	21 59 23.6	10.888
17	3 10 33.95	2.3369	22 10 13.7	10.781
18	3 12 54.45	2.3464	22 20 57.3	10.671
19	3 15 15.52	2.3558	22 31 34.2	10.558
20	3 17 37.15	2.3659	22 42 4.3	10.444
21	3 19 59.35	2.3747	22 52 27.5	10.328
22	3 22 22.12	2.3843	23 2 43.7	10.210
23	3 24 45.47	2.3939	23 12 52.7	10.089
24	3 27 9.39	2.4035	N.23 22 54.4	9.967

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 7.			
	h m s	s	° ′ ″	″
0	3 27 9.39	2.4035	N.23 22 54.4	9.967
1	3 29 33.89	2.4131	23 32 48.7	9.843
2	3 31 58.96	2.4226	23 42 35.5	9.717
3	3 34 24.60	2.4322	23 52 14.7	9.588
4	3 36 50.82	2.4417	24 1 46.1	9.457
5	3 39 17.61	2.4513	24 11 9.6	9.325
6	3 41 44.98	2.4609	24 20 25.1	9.190
7	3 44 12.92	2.4704	24 29 32.4	9.053
8	3 46 41.43	2.4799	24 38 31.5	8.915
9	3 49 10.51	2.4894	24 47 22.2	8.774
10	3 51 40.16	2.4988	24 56 4.4	8.631
11	3 54 10.37	2.5083	25 4 37.9	8.485
12	3 56 41.15	2.5177	25 13 2.6	8.337
13	3 59 12.49	2.5270	25 21 18.4	8.188
14	4 1 44.39	2.5363	25 29 25.2	8.037
15	4 4 16.85	2.5456	25 37 22.9	7.884
16	4 6 49.86	2.5547	25 45 11.3	7.728
17	4 9 23.41	2.5637	25 52 50.3	7.571
18	4 11 57.51	2.5726	26 0 19.8	7.411
19	4 14 32.15	2.5818	26 7 39.6	7.249
20	4 17 7.32	2.5907	26 14 49.7	7.086
21	4 19 43.03	2.5996	26 21 49.9	6.920
22	4 22 19.27	2.6088	26 28 40.1	6.752
23	4 24 56.02	2.6166	N.26 35 20.1	6.582
	TUESDAY 8.			
0	4 27 33.29	2.6254	N.26 41 49.9	6.410
1	4 30 11.07	2.6338	26 48 9.3	6.236
2	4 32 49.35	2.6421	26 54 18.2	6.061
3	4 35 28.12	2.6503	27 0 16.6	5.884
4	4 38 7.38	2.6584	27 6 4.3	5.704
5	4 40 47.13	2.6664	27 11 41.1	5.523
6	4 43 27.35	2.6742	27 17 7.0	5.340
7	4 46 8.04	2.6818	27 22 21.9	5.155
8	4 48 49.18	2.6894	27 27 25.6	4.967
9	4 51 30.77	2.6968	27 32 18.0	4.779
10	4 54 12.80	2.7041	27 36 59.1	4.589
11	4 56 55.26	2.7112	27 41 28.7	4.397
12	4 59 38.14	2.7181	27 45 46.7	4.203
13	5 2 21.43	2.7248	27 49 53.1	4.008
14	5 5 5.12	2.7315	27 53 47.7	3.811
15	5 7 49.21	2.7380	27 57 30.4	3.612
16	5 10 33.68	2.7443	28 1 1.2	3.412
17	5 13 18.52	2.7503	28 4 19.9	3.211
18	5 16 3.71	2.7561	28 7 26.5	3.008
19	5 18 49.25	2.7618	28 10 20.9	2.803
20	5 21 35.13	2.7674	28 13 2.9	2.598
21	5 24 21.34	2.7727	28 15 32.6	2.392
22	5 27 7.86	2.7777	28 17 49.9	2.183
23	5 29 54.67	2.7826	28 19 54.6	1.973
24	5 32 41.77	2.7873	N.28 21 46.7	1.763

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 32 41.77	2.7678	N.28 21 46.7	1.783
1	5 35 29.15	2.7916	28 23 26.2	1.559
2	5 38 16.79	2.7981	28 24 52.9	1.336
3	5 41 4.68	2.8009	28 26 6.8	1.194
4	5 43 52.81	2.8039	28 27 7.8	0.910
5	5 46 41.15	2.8074	28 27 56.0	0.886
6	5 49 29.70	2.8106	28 28 31.3	0.460
7	5 52 18.45	2.8140	28 28 53.6	0.262
8	5 55 7.38	2.8168	28 29 2.8	+ 0.044
9	5 57 56.47	2.8195	28 28 58.9	− 0.174
10	6 0 45.72	2.8219	28 28 41.9	0.392
11	6 3 35.10	2.8241	28 28 11.8	0.819
12	6 6 24.61	2.8260	28 27 28.5	0.632
13	6 9 14.22	2.8277	28 26 32.0	1.052
14	6 12 3.93	2.8292	28 25 22.2	1.273
15	6 14 53.72	2.8304	28 23 59.2	1.494
16	6 17 43.58	2.8313	28 22 22.9	1.715
17	6 20 33.48	2.8320	28 20 33.4	1.936
18	6 23 23.42	2.8325	28 18 30.6	2.157
19	6 26 13.36	2.8327	28 16 14.5	2.378
20	6 29 3.35	2.8327	28 13 45.1	2.601
21	6 31 53.31	2.8325	28 11 2.4	2.822
22	6 34 43.25	2.8320	28 8 6.4	3.043
23	6 37 33.15	2.8313	N.28 4 57.2	3.264

THURSDAY 10.

0	6 40 23.01	2.8304	N.28 1 34.7	3.485
1	6 43 12.80	2.8292	27 57 59.0	3.705
2	6 46 2.51	2.8277	27 54 10.1	3.924
3	6 48 52.12	2.8260	27 50 6.1	4.143
4	6 51 41.63	2.8242	27 45 52.9	4.362
5	6 54 31.02	2.8220	27 41 24.6	4.580
6	6 57 20.27	2.8197	27 36 41.3	4.797
7	7 0 9.38	2.8171	27 31 43.0	5.014
8	7 2 58.32	2.8143	27 26 41.7	5.230
9	7 5 47.09	2.8113	27 21 21.4	5.445
10	7 8 35.67	2.8080	27 15 47.3	5.656
11	7 11 24.05	2.8046	27 10 2.4	5.871
12	7 14 12.22	2.8009	27 4 3.8	6.082
13	7 17 0.16	2.7970	26 57 52.5	6.293
14	7 19 47.86	2.7930	26 51 28.6	6.503
15	7 22 35.32	2.7887	26 44 52.1	6.712
16	7 25 22.51	2.7842	26 38 3.1	6.919
17	7 28 9.43	2.7797	26 31 1.6	7.124
18	7 30 56.07	2.7748	26 23 47.7	7.328
19	7 33 42.41	2.7698	26 16 22.4	7.531
20	7 36 28.45	2.7647	26 8 44.4	7.732
21	7 39 14.17	2.759	26 0 54.4	7.933
22	7 41 59.56	2.753	25 52 52.4	8.133
23	7 44 44.62	2.7481	25 44 38.6	8.332
24	7 47 29.33	2.7429	N.25 36 13.1	8.532

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 47 29.33	2.7429	N.25 36 13.1	8.532
1	7 50 13.69	2.7376	25 27 35.9	8.727
2	7 52 57.69	2.7322	25 18 47.1	8.920
3	7 55 41.31	2.7268	25 9 46.9	9.107
4	7 58 24.55	2.7215	25 0 35.4	9.295
5	8 1 7.41	2.7160	24 51 12.7	9.478
6	8 3 49.87	2.7103	24 41 38.8	9.656
7	8 6 31.93	2.7046	24 31 54.0	9.830
8	8 9 13.58	2.6987	24 21 58.3	10.000
9	8 11 54.81	2.6926	24 11 51.8	10.167
10	8 14 35.61	2.6865	24 1 34.7	10.323
11	8 17 15.99	2.6804	23 51 7.1	10.547
12	8 19 55.94	2.6742	23 40 29.1	10.718
13	8 22 35.45	2.6648	23 29 40.9	10.887
14	8 25 14.51	2.6573	23 18 42.6	11.056
15	8 27 53.12	2.6507	23 7 34.2	11.222
16	8 30 31.27	2.6501	22 56 16.0	11.384
17	8 33 8.97	2.6505	22 44 48.1	11.545
18	8 35 46.21	2.6157	22 33 10.6	11.704
19	8 38 22.98	2.6089	22 21 23.6	11.860
20	8 40 59.28	2.6010	22 9 27.4	12.014
21	8 43 35.10	2.5931	21 57 22.0	12.166
22	8 46 10.45	2.5852	21 45 7.5	12.315
23	8 48 45.32	2.5772	N.21 32 44.2	12.462

SATURDAY 12.

0	8 51 19.72	2.5692	N.21 20 12.1	12.607
1	8 53 53.63	2.5612	21 7 31.4	12.748
2	8 56 27.06	2.5531	20 54 42.3	12.888
3	8 59 0.00	2.5449	20 41 44.8	13.027
4	9 1 32.45	2.5368	20 28 39.1	13.163
5	9 4 4.42	2.5287	20 15 25.4	13.294
6	9 6 35.90	2.5206	20 2 3.8	13.425
7	9 9 6.89	2.5124	19 48 34.4	13.553
8	9 11 37.39	2.5043	19 34 57.4	13.678
9	9 14 7.40	2.4962	19 21 13.0	13.800
10	9 16 36.93	2.4881	19 7 21.2	13.920
11	9 19 5.97	2.4799	18 53 22.3	14.040
12	9 21 34.52	2.4718	18 39 16.4	14.156
13	9 24 2.59	2.4637	18 25 3.6	14.270
14	9 26 30.17	2.4557	18 10 44.0	14.382
15	9 28 57.27	2.4477	17 56 17.8	14.490
16	9 31 23.89	2.4397	17 41 45.2	14.596
17	9 33 50.03	2.4317	17 27 6.3	14.699
18	9 36 15.69	2.4238	17 12 21.3	14.801
19	9 38 40.88	2.4159	16 57 30.2	14.900
20	9 41 5.60	2.4080	16 42 33.3	14.996
21	9 43 29.84	2.4002	16 27 30.7	15.090
22	9 45 53.62	2.3925	16 12 22.5	15.182
23	9 48 16.94	2.3847	15 57 8.8	15.272
24	9 50 39.79	2.3770	N.15 41 49.8	15.360

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 13.			
	h m s	s	° ′ ″	″
0	9 50 39.79	2.3770	N. 15 41 49.8	15.360
1	9 53 2.18	2.3694	15 26 25.6	15.444
2	9 55 24.12	2.3619	15 10 56.5	15.526
3	9 57 45.61	2.3544	14 55 22.5	15.607
4	10 0 6.65	2.3470	14 39 43.7	15.684
5	10 2 27.25	2.3396	14 24 0.4	15.759
6	10 4 47.41	2.3323	14 8 12.6	15.833
7	10 7 7.13	2.3251	13 52 20.4	15.904
8	10 9 26.42	2.3180	13 36 24.1	15.972
9	10 11 45.29	2.3109	13 20 23.7	16.039
10	10 14 3.73	2.3038	13 4 19.4	16.103
11	10 16 21.75	2.2969	12 48 11.3	16.166
12	10 18 39.36	2.2901	12 31 59.5	16.226
13	10 20 56.56	2.2833	12 15 44.2	16.283
14	10 23 13.36	2.2766	11 59 25.5	16.339
15	10 25 29.75	2.2699	11 43 3.5	16.392
16	10 27 45.75	2.2634	11 26 38.4	16.443
17	10 30 1.36	2.2569	11 10 10.3	16.493
18	10 32 16.58	2.2505	10 53 39.2	16.541
19	10 34 31.42	2.2443	10 37 5.4	16.585
20	10 36 45.89	2.2382	10 20 29.0	16.628
21	10 39 0.00	2.2321	10 3 50.1	16.669
22	10 41 13.74	2.2260	9 47 8.7	16.706
23	10 43 27.12	2.2200	N. 9 30 25.1	16.744
	MONDAY 14.			
0	10 45 40.14	2.2141	N. 9 13 39.4	16.778
1	10 47 52.81	2.2084	8 56 51.7	16.812
2	10 50 5.15	2.2026	8 40 2.0	16.843
3	10 52 17.15	2.1972	8 23 10.5	16.872
4	10 54 28.82	2.1917	8 6 17.4	16.898
5	10 56 40.16	2.1864	7 49 22.7	16.924
6	10 58 51.19	2.1812	7 32 26.5	16.947
7	11 1 1.90	2.1759	7 15 29.0	16.968
8	11 3 12.30	2.1708	6 58 30.3	16.988
9	11 5 22.40	2.1658	6 41 30.5	17.006
10	11 7 32.20	2.1609	6 24 29.6	17.022
11	11 9 41.71	2.1561	6 7 27.9	17.035
12	11 11 50.93	2.1513	5 50 25.4	17.047
13	11 13 59.87	2.1467	5 33 22.2	17.056
14	11 16 8.54	2.1423	5 16 18.4	17.067
15	11 18 16.95	2.1380	4 59 14.2	17.073
16	11 20 25.10	2.1337	4 42 9.6	17.079
17	11 22 32.99	2.1294	4 25 4.7	17.083
18	11 24 40.62	2.1253	4 7 59.6	17.085
19	11 26 48.01	2.1212	3 50 54.5	17.085
20	11 28 55.17	2.1173	3 33 49.4	17.084
21	11 31 2.09	2.1135	3 16 44.4	17.082
22	11 33 8.79	2.1098	2 59 39.6	17.077
23	11 35 15.27	2.1062	2 42 35.2	17.070
24	11 37 21.53	2.1026	N. 2 25 31.2	17.062

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 15.			
	h m s	s	° ′ ″	″
0	11 37 21.53	2.1026	N. 2 25 31.2	17.062
1	11 39 27.58	2.0992	2 8 27.7	17.052
2	11 41 33.43	2.0959	1 51 24.9	17.042
3	11 43 39.09	2.0927	1 34 22.7	17.030
4	11 45 44.56	2.0896	1 17 21.3	17.016
5	11 47 49.84	2.0865	1 0 20.8	17.001
6	11 49 54.94	2.0836	0 43 21.2	16.984
7	11 51 59.87	2.0807	0 26 22.7	16.966
8	11 54 4.63	2.0780	N. 0 9 25.3	16.946
9	11 56 9.23	2.0753	S. 0 7 30.8	16.924
10	11 58 13.67	2.0727	0 24 25.6	16.902
11	12 0 17.96	2.0703	0 41 19.0	16.878
12	12 2 22.11	2.0680	0 58 10.9	16.852
13	12 4 26.12	2.0657	1 15 1.2	16.825
14	12 6 30.00	2.0636	1 31 49.9	16.797
15	12 8 33.75	2.0615	1 48 36.9	16.768
16	12 10 37.38	2.0596	2 5 22.1	16.737
17	12 12 40.90	2.0577	2 22 5.3	16.704
18	12 14 44.30	2.0558	2 38 46.6	16.671
19	12 16 47.60	2.0542	2 55 25.9	16.637
20	12 18 50.80	2.0526	3 12 3.0	16.600
21	12 20 53.91	2.0511	3 28 37.9	16.562
22	12 22 56.93	2.0497	3 45 10.5	16.524
23	12 24 59.87	2.0483	S. 4 1 40.8	16.484
	WEDNESDAY 16.			
0	12 27 2.73	2.0471	S. 4 18 8.6	16.443
1	12 29 5.52	2.0459	4 34 33.9	16.401
2	12 31 8.24	2.0448	4 50 56.7	16.357
3	12 33 10.90	2.0438	5 7 16.8	16.312
4	12 35 13.50	2.0430	5 23 34.2	16.267
5	12 37 16.06	2.0422	5 39 48.8	16.219
6	12 39 18.57	2.0415	5 56 0.5	16.171
7	12 41 21.04	2.0409	6 12 9.3	16.122
8	12 43 23.48	2.0404	6 28 15.1	16.071
9	12 45 25.89	2.0399	6 44 17.8	16.018
10	12 47 28.27	2.0396	7 0 17.3	15.965
11	12 49 30.64	2.0393	7 16 13.6	15.912
12	12 51 32.99	2.0391	7 32 6.7	15.857
13	12 53 35.33	2.0390	7 47 56.4	15.800
14	12 55 37.67	2.0390	8 3 42.7	15.742
15	12 57 40.01	2.0391	8 19 25.5	15.684
16	12 59 42.36	2.0393	8 35 4.8	15.625
17	13 1 44.72	2.0394	8 50 40.5	15.564
18	13 3 47.09	2.0397	9 6 12.5	15.502
19	13 5 49.48	2.0401	9 21 40.7	15.439
20	13 7 51.90	2.0406	9 37 5.2	15.376
21	13 9 54.35	2.0411	9 52 25.8	15.310
22	13 11 56.83	2.0417	10 7 42.4	15.244
23	13 13 59.35	2.0424	10 22 55.1	15.177
24	13 16 1.92	2.0432	S. 10 38 3.7	15.109

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 17.			
	h m s	s	° ′ ″	″
0	13 16 1.92	2.0432	S. 10 38 3.7	15.109
1	13 18 4.53	2.0439	10 53 8.2	15.040
2	13 20 7.19	2.0448	11 8 8.5	14.970
3	13 22 9.91	2.0458	11 23 4.6	14.899
4	13 24 12.69	2.0469	11 37 56.4	14.827
5	13 26 15.54	2.0480	11 52 43.8	14.754
6	13 28 18.45	2.0492	12 7 26.9	14.681
7	13 30 21.44	2.0505	12 22 5.5	14.605
8	13 32 24.51	2.0518	12 36 39.5	14.528
9	13 34 27.65	2.0531	12 51 8.9	14.451
10	13 36 30.88	2.0546	13 5 33.6	14.374
11	13 38 34.20	2.0562	13 19 53.7	14.295
12	13 40 37.62	2.0577	13 34 9.0	14.214
13	13 42 41.13	2.0593	13 48 19.4	14.133
14	13 44 44.74	2.0611	14 2 25.0	14.052
15	13 46 48.46	2.0629	14 16 25.7	13.970
16	13 48 52.29	2.0647	14 30 21.4	13.886
17	13 50 56.23	2.0666	14 44 12.0	13.801
18	13 53 0.28	2.0685	14 57 57.5	13.716
19	13 55 4.45	2.0705	15 11 37.9	13.629
20	13 57 8.74	2.0726	15 25 13.0	13.541
21	13 59 13.16	2.0747	15 38 42.8	13.453
22	14 1 17.70	2.0768	15 52 7.3	13.364
23	14 3 22.38	2.0791	S. 16 5 26.5	13.274
	FRIDAY 18.			
0	14 5 27.19	2.0814	S. 16 18 40.2	13.183
1	14 7 32.14	2.0837	16 31 48.4	13.091
2	14 9 37.23	2.0860	16 44 51.1	12.997
3	14 11 42.46	2.0884	16 57 48.1	12.903
4	14 13 47.84	2.0909	17 10 39.5	12.809
5	14 15 53.37	2.0933	17 23 25.2	12.714
6	14 17 59.04	2.0958	17 36 5.2	12.617
7	14 20 4.87	2.0985	17 48 39.3	12.519
8	14 22 10.86	2.1012	18 1 7.5	12.422
9	14 24 17.01	2.1038	18 13 29.9	12.323
10	14 26 23.32	2.1065	18 25 46.3	12.223
11	14 28 29.79	2.1092	18 37 56.6	12.122
12	14 30 36.43	2.1120	18 50 0.9	12.021
13	14 32 43.23	2.1148	19 1 59.1	11.918
14	14 34 50.20	2.1177	19 13 51.1	11.814
15	14 36 57.35	2.1206	19 25 36.8	11.709
16	14 39 4.67	2.1234	19 37 16.2	11.604
17	14 41 12.16	2.1263	19 48 49.3	11.499
18	14 43 19.83	2.1293	20 0 16.1	11.392
19	14 45 27.68	2.1322	20 11 36.4	11.284
20	14 47 35.70	2.1352	20 22 50.2	11.176
21	14 49 43.90	2.1382	20 33 57.5	11.067
22	14 51 52.28	2.1412	20 44 58.2	10.957
23	14 54 0.85	2.1443	20 55 52.3	10.847
24	14 56 9.60	2.1474	S. 21 6 39.8	10.735

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 19.			
	h m s	s	° ′ ″	″
0	14 56 9.60	2.1474	S. 21 6 39.8	10.735
1	14 58 18.54	2.1505	21 17 20.5	10.622
2	15 0 27.66	2.1535	21 27 54.4	10.509
3	15 2 36.96	2.1566	21 38 21.5	10.395
4	15 4 46.45	2.1597	21 48 41.8	10.280
5	15 6 56.13	2.1628	21 58 55.1	10.163
6	15 9 5.99	2.1659	22 9 1.4	10.047
7	15 11 16.04	2.1691	22 19 0.7	9.930
8	15 13 26.28	2.1722	22 28 53.0	9.812
9	15 15 36.71	2.1753	22 38 38.2	9.694
10	15 17 47.32	2.1784	22 48 16.3	9.575
11	15 19 58.12	2.1816	22 57 47.2	9.454
12	15 22 9.11	2.1847	23 7 10.8	9.333
13	15 24 20.28	2.1878	23 16 27.1	9.212
14	15 26 31.64	2.1909	23 25 36.2	9.090
15	15 28 43.19	2.1940	23 34 37.9	8.967
16	15 30 54.92	2.1971	23 43 32.2	8.842
17	15 33 6.84	2.2002	23 52 19.0	8.717
18	15 35 18.94	2.2032	24 0 58.3	8.592
19	15 37 31.23	2.2062	24 9 30.1	8.467
20	15 39 43.69	2.2092	24 17 54.3	8.340
21	15 41 56.33	2.2122	24 26 10.9	8.212
22	15 44 9.15	2.2152	24 34 19.8	8.084
23	15 46 22.15	2.2181	S. 24 42 21.0	7.957
	SUNDAY 20.			
0	15 48 35.32	2.2209	S. 24 50 14.5	7.827
1	15 50 48.66	2.2238	24 58 0.2	7.697
2	15 53 2.18	2.2267	25 5 38.1	7.567
3	15 55 15.87	2.2296	25 13 8.2	7.436
4	15 57 29.73	2.2324	25 20 30.4	7.304
5	15 59 43.75	2.2351	25 27 44.6	7.171
6	16 1 57.94	2.2378	25 34 50.9	7.038
7	16 4 12.29	2.2405	25 41 49.2	6.905
8	16 6 26.80	2.2431	25 48 39.5	6.771
9	16 8 41.46	2.2456	25 55 21.7	6.636
10	16 10 56.27	2.2482	26 1 55.8	6.501
11	16 13 11.24	2.2507	26 8 21.8	6.365
12	16 15 26.36	2.2532	26 14 39.6	6.229
13	16 17 41.63	2.2556	26 20 49.2	6.093
14	16 19 57.03	2.2578	26 26 50.7	5.956
15	16 22 12.57	2.2601	26 32 43.9	5.818
16	16 24 28.24	2.2623	26 38 28.8	5.679
17	16 26 44.05	2.2646	26 44 5.4	5.541
18	16 28 59.99	2.2667	26 49 33.7	5.402
19	16 31 16.06	2.2687	26 54 53.6	5.262
20	16 33 32.24	2.2707	27 0 5.1	5.122
21	16 35 48.54	2.2727	27 5 8.2	4.982
22	16 38 4.96	2.2745	27 10 2.9	4.841
23	16 40 21.48	2.2762	27 14 49.1	4.700
24	16 42 38.11	2.2780	S. 27 19 26.9	4.559

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 21.			
	h m s	s	° ′ ″	″
0	16 42 38.11	2.9789	S. 27 19 26.9	4.559
1	16 44 54.84	2.9797	27 23 56.2	4.417
2	16 47 11.67	2.9813	27 28 16.9	4.274
3	16 49 28.59	2.9838	27 32 29.1	4.131
4	16 51 45.60	2.9849	27 36 32.7	3.988
5	16 54 2.69	2.9855	27 40 27.7	3.846
6	16 56 19.86	2.9866	27 44 14.2	3.703
7	16 58 37.11	2.9880	27 47 52.1	3.559
8	17 0 54.42	2.9891	27 51 21.3	3.415
9	17 3 11.80	2.9902	27 54 41.9	3.272
10	17 5 29.24	2.9911	27 57 53.9	3.128
11	17 7 46.73	2.9919	28 0 57.2	2.983
12	17 10 4.27	2.9927	28 3 51.8	2.838
13	17 12 21.86	2.9935	28 6 37.7	2.693
14	17 14 39.49	2.9941	28 9 15.0	2.549
15	17 16 57.15	2.9946	28 11 43.6	2.404
16	17 19 14.84	2.9951	28 14 3.5	2.258
17	17 21 32.56	2.9955	28 16 14.6	2.112
18	17 23 50.30	2.9957	28 18 17.0	1.967
19	17 26 8.05	2.9959	28 20 10.7	1.822
20	17 28 25.81	2.9960	28 21 55.7	1.677
21	17 30 43.57	2.9960	28 23 32.0	1.532
22	17 33 1.33	2.9959	28 24 59.6	1.387
23	17 35 19.08	2.9957	S. 28 26 18.4	1.941
	TUESDAY 22.			
0	17 37 36.82	2.9955	S. 28 27 28.5	1.096
1	17 39 54.54	2.9952	28 28 29.9	0.951
2	17 42 12.24	2.9947	28 29 22.6	0.805
3	17 44 29.91	2.9942	28 30 6.5	0.659
4	17 46 47.55	2.9936	28 30 41.7	0.515
5	17 49 5.14	2.9928	28 31 8.3	0.371
6	17 51 22.68	2.9919	28 31 26.2	0.226
7	17 53 40.17	2.9911	28 31 35.4	− 0.081
8	17 55 57.61	2.9902	28 31 35.9	+ 0.063
9	17 58 14.99	2.9891	28 31 27.8	0.207
10	18 0 32.30	2.9879	28 31 11.0	0.359
11	18 2 49.53	2.9866	28 30 45.6	0.496
12	18 5 6.69	2.9853	28 30 11.5	0.640
13	18 7 23.76	2.9838	28 29 28.8	0.783
14	18 9 40.74	2.9823	28 28 37.6	0.925
15	18 11 57.63	2.9807	28 27 37.8	1.067
16	18 14 14.42	2.9789	28 26 29.5	1.210
17	18 16 31.10	2.9771	28 25 12.6	1.352
18	18 18 47.67	2.9752	28 23 47.2	1.494
19	18 21 4.13	2.9733	28 22 13.3	1.636
20	18 23 20.47	2.9712	28 20 30.9	1.777
21	18 25 36.67	2.9689	28 18 40.1	1.917
22	18 27 52.74	2.9667	28 16 40.9	2.057
23	18 30 8.68	2.9645	28 14 33.3	2.197
24	18 32 24.48	2.9621	S. 28 12 17.3	2.336
	WEDNESDAY 23.			
0	18 32 24.48	2.9621	S. 28 12 17.3	2.336
1	18 34 40.13	2.9596	28 9 53.0	2.475
2	18 36 55.63	2.9570	28 7 20.3	2.613
3	18 39 10.97	2.9543	28 4 39.4	2.751
4	18 41 26.15	2.9516	28 1 50.2	2.888
5	18 43 41.17	2.9489	27 58 52.8	3.025
6	18 45 56.02	2.9460	27 55 47.2	3.162
7	18 48 10.69	2.9430	27 52 33.4	3.297
8	18 50 25.18	2.9400	27 49 11.5	3.432
9	18 52 39.49	2.9369	27 45 41.6	3.566
10	18 54 53.61	2.9337	27 42 3.6	3.700
11	18 57 7.54	2.9305	27 38 17.6	3.833
12	18 59 21.27	2.9272	27 34 23.6	3.966
13	19 1 34.80	2.9238	27 30 21.7	4.098
14	19 3 48.12	2.9203	27 26 11.8	4.230
15	19 6 1.24	2.9169	27 21 54.1	4.360
16	19 8 14.15	2.9133	27 17 28.6	4.491
17	19 10 26.84	2.9097	27 12 55.2	4.621
18	19 12 39.31	2.9060	27 8 14.1	4.749
19	19 14 51.56	2.9022	27 3 25.3	4.877
20	19 17 3.58	2.1984	26 58 28.8	5.004
21	19 19 15.37	2.1946	26 53 24.8	5.130
22	19 21 26.93	2.1907	26 48 13.2	5.257
23	19 23 38.25	2.1867	S. 26 42 54.0	5.383
	THURSDAY 24.			
0	19 25 49.34	2.1827	S. 26 37 27.3	5.507
1	19 28 0.18	2.1787	26 31 53.2	5.630
2	19 30 10.78	2.1746	26 26 11.7	5.752
3	19 32 21.13	2.1704	26 20 22.9	5.874
4	19 34 31.23	2.1662	26 14 26.8	5.995
5	19 36 41.07	2.1619	26 8 23.5	6.116
6	19 38 50.66	2.1576	26 2 12.9	6.237
7	19 40 59.99	2.1533	25 55 55.1	6.355
8	19 43 9.06	2.1490	25 49 30.3	6.472
9	19 45 17.87	2.1447	25 42 58.5	6.588
10	19 47 26.42	2.1402	25 36 19.7	6.705
11	19 49 34.70	2.1357	25 29 33.9	6.821
12	19 51 42.71	2.1312	25 22 41.2	6.935
13	19 53 50.45	2.1267	25 15 41.7	7.049
14	19 55 57.92	2.1222	25 8 35.3	7.162
15	19 58 5.12	2.1177	25 1 22.2	7.274
16	20 0 12.04	2.1131	24 54 2.4	7.385
17	20 2 18.69	2.1085	24 46 36.0	7.495
18	20 4 25.06	2.1038	24 39 3.0	7.604
19	20 6 31.15	2.0992	24 31 23.5	7.713
20	20 8 36.96	2.0946	24 23 37.4	7.822
21	20 10 42.50	2.0900	24 15 44.9	7.930
22	20 12 47.76	2.0853	24 7 46.1	8.033
23	20 14 52.73	2.0805	23 59 40.9	8.136
24	20 16 57.42	2.0758	S. 23 51 29.5	8.240

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 25.			
	h m s	s	° ′ ″	″
0	20 16 57.42	2.0758	S. 23 51 29.5	8.942
1	20 19 1.83	2.0711	23 43 11.9	8.345
2	20 21 5.95	2.0663	23 34 48.1	8.447
3	20 23 9.79	2.0616	23 26 18.2	8.548
4	20 25 13.35	2.0569	23 17 42.3	8.648
5	20 27 16.62	2.0522	23 9 0.4	8.748
6	20 29 19.61	2.0474	23 0 12.5	8.847
7	20 31 22.31	2.0427	22 51 18.8	8.944
8	20 33 24.73	2.0380	22 42 19.3	9.040
9	20 35 26.87	2.0332	22 33 14.0	9.136
10	20 37 28.72	2.0285	22 24 3.0	9.231
11	20 39 30.29	2.0238	22 14 46.3	9.325
12	20 41 31.58	2.0192	22 5 24.0	9.417
13	20 43 32.59	2.0145	21 55 56.2	9.509
14	20 45 33.32	2.0097	21 46 22.9	9.601
15	20 47 33.76	2.0050	21 36 44.1	9.691
16	20 49 33.92	2.0004	21 27 0.0	9.779
17	20 51 33.81	1.9958	21 17 10.6	9.867
18	20 53 33.42	1.9912	21 7 15.9	9.955
19	20 55 32.75	1.9866	20 57 16.0	10.041
20	20 57 31.81	1.9820	20 47 11.0	10.127
21	20 59 30.59	1.9774	20 37 0.8	10.211
22	21 1 29.10	1.9729	20 26 45.6	10.294
23	21 3 27.34	1.9684	S. 20 16 25.5	10.377
	SATURDAY 26.			
0	21 5 25.31	1.9639	S. 20 6 0.4	10.459
1	21 7 23.01	1.9594	19 55 30.4	10.540
2	21 9 20.44	1.9550	19 44 55.6	10.619
3	21 11 17.61	1.9506	19 34 16.1	10.698
4	21 13 14.51	1.9462	19 23 31.8	10.777
5	21 15 11.15	1.9418	19 12 42.8	10.854
6	21 17 7.53	1.9375	19 1 49.3	10.930
7	21 19 3.65	1.9332	18 50 51.2	11.006
8	21 20 59.51	1.9289	18 39 48.6	11.080
9	21 22 55.12	1.9247	18 28 41.6	11.153
10	21 24 50.47	1.9205	18 17 30.2	11.226
11	21 26 45.58	1.9164	18 6 14.4	11.298
12	21 28 40.44	1.9123	17 54 54.4	11.368
13	21 30 35.05	1.9082	17 43 30.2	11.438
14	21 32 29.42	1.9042	17 32 1.8	11.508
15	21 34 23.55	1.9002	17 20 29.2	11.577
16	21 36 17.44	1.8962	17 8 52.6	11.643
17	21 38 11.09	1.8922	16 57 12.0	11.709
18	21 40 4.50	1.8883	16 45 27.5	11.774
19	21 41 57.68	1.8845	16 33 39.1	11.839
20	21 43 50.64	1.8807	16 21 46.8	11.903
21	21 45 43.37	1.8770	16 9 50.7	11.967
22	21 47 35.88	1.8733	15 57 50.8	12.028
23	21 49 28.17	1.8697	15 45 47.3	12.089
24	21 51 20.24	1.8661	S. 15 33 40.1	12.150

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 27.			
	h m s	s	° ′ ″	″
0	21 51 20.24	1.8661	S. 15 33 40.1	12.150
1	21 53 12.10	1.8625	15 21 29.3	12.209
2	21 55 3.74	1.8589	15 9 15.0	12.268
3	21 56 55.17	1.8555	14 56 57.2	12.326
4	21 58 46.40	1.8521	14 44 35.9	12.382
5	22 0 37.42	1.8487	14 32 11.3	12.437
6	22 2 28.24	1.8454	14 19 43.4	12.492
7	22 4 18.87	1.8422	14 7 12.2	12.547
8	22 6 9.30	1.8389	13 54 37.7	12.602
9	22 7 59.54	1.8358	13 42 0.0	12.655
10	22 9 49.60	1.8327	13 29 19.1	12.707
11	22 11 39.47	1.8297	13 16 35.2	12.757
12	22 13 29.16	1.8267	13 3 48.3	12.807
13	22 15 18.67	1.8237	12 50 58.4	12.857
14	22 17 8.01	1.8209	12 38 5.5	12.906
15	22 18 57.18	1.8181	12 25 9.7	12.953
16	22 20 46.18	1.8153	12 12 11.1	13.000
17	22 22 35.02	1.8126	11 59 9.7	13.046
18	22 24 23.69	1.8099	11 46 5.6	13.091
19	22 26 12.21	1.8074	11 32 58.8	13.136
20	22 28 0.58	1.8048	11 19 49.3	13.181
21	22 29 48.79	1.8023	11 6 37.1	13.224
22	22 31 36.86	1.8000	10 53 22.4	13.266
23	22 33 24.79	1.7977	S. 10 40 5.2	13.307
	MONDAY 28.			
0	22 35 12.58	1.7954	S. 10 26 45.6	13.347
1	22 37 0.24	1.7931	10 13 23.5	13.388
2	22 38 47.76	1.7909	9 59 59.0	13.427
3	22 40 35.15	1.7888	9 46 32.3	13.464
4	22 42 22.42	1.7868	9 33 3.3	13.502
5	22 44 9.57	1.7848	9 19 32.0	13.539
6	22 45 56.60	1.7829	9 5 58.6	13.574
7	22 47 43.52	1.7811	8 52 23.1	13.610
8	22 49 30.33	1.7793	8 38 45.4	13.646
9	22 51 17.03	1.7775	8 25 5.6	13.680
10	22 53 3.63	1.7759	8 11 23.8	13.712
11	22 54 50.14	1.7743	7 57 40.1	13.744
12	22 56 36.55	1.7727	7 43 54.5	13.776
13	22 58 22.87	1.7713	7 30 7.0	13.807
14	23 0 9.11	1.7700	7 16 17.6	13.837
15	23 1 55.27	1.7687	7 2 26.5	13.866
16	23 3 41.35	1.7674	6 48 33.7	13.894
17	23 5 27.36	1.7662	6 34 39.2	13.922
18	23 7 13.29	1.7650	6 20 43.0	13.950
19	23 8 59.16	1.7640	6 6 45.2	13.976
20	23 10 44.97	1.7630	5 52 45.9	14.001
21	23 12 30.72	1.7621	5 38 45.1	14.026
22	23 14 16.42	1.7612	5 24 42.8	14.051
23	23 16 2.07	1.7605	5 10 39.0	14.074
24	23 17 47.68	1.7598	S. 4 56 33.9	14.097

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 29.			
	h m s	s	° ′ ″	″
0	23 17 47.68	1.7598	S. 4 56 33.9	14.097
1	23 19 33.25	1.7599	4 42 27.4	14.119
2	23 21 18.78	1.7586	4 28 19.6	14.140
3	23 23 4.28	1.7581	4 14 10.6	14.160
4	23 24 49.75	1.7577	4 0 0.4	14.180
5	23 26 35.20	1.7573	3 45 49.0	14.199
6	23 28 20.63	1.7570	3 31 36.5	14.217
7	23 30 6.04	1.7568	3 17 22.9	14.235
8	23 31 51.45	1.7567	3 3 8.3	14.252
9	23 33 36.85	1.7567	2 48 52.7	14.268
10	23 35 22.25	1.7567	2 34 36.1	14.284
11	23 37 7.66	1.7568	2 20 18.6	14.298
12	23 38 53.07	1.7569	2 6 0.3	14.312
13	23 40 38.49	1.7572	1 51 41.2	14.325
14	23 42 23.93	1.7575	1 37 21.3	14.338
15	23 44 9.39	1.7578	1 23 0.6	14.351
16	23 45 54.87	1.7583	1 8 39.2	14.362
17	23 47 40.39	1.7589	0 54 17.2	14.372
18	23 49 25.94	1.7594	0 39 54.6	14.382
19	23 51 11.52	1.7601	0 25 31.4	14.391
20	23 52 57.15	1.7609	S. 0 11 7.7	14.398
21	23 54 42.83	1.7617	N. 0 3 16.4	14.406
22	23 56 28.56	1.7627	0 17 41.0	14.413
23	23 58 14.35	1.7637	N. 0 32 6.0	14.419
	WEDNESDAY 30.			
0	0 0 0.20	1.7647	N. 0 46 31.3	14.424
1	0 1 46.11	1.7658	1 0 56.9	14.428
2	0 3 32.10	1.7671	1 15 22.7	14.432
3	0 5 18.16	1.7684	1 29 48.8	14.436
4	0 7 4.30	1.7697	1 44 15.0	14.438
5	0 8 50.53	1.7712	1 58 41.3	14.439
6	0 10 36.85	1.7727	2 13 7.7	14.440
7	0 12 23.26	1.7743	2 27 34.1	14.440
8	0 14 9.77	1.7761	2 42 0.5	14.440
9	0 15 56.39	1.7779	2 56 26.9	14.438
10	0 17 43.12	1.7797	3 10 53.1	14.435
11	0 19 29.96	1.7817	3 25 19.1	14.432
12	0 21 16.92	1.7837	3 39 45.0	14.429
13	0 23 4.01	1.7858	3 54 10.6	14.424
14	0 24 51.22	1.7879	4 8 35.9	14.419
15	0 26 38.56	1.7902	4 23 0.9	14.413
16	0 28 26.04	1.7925	4 37 25.5	14.406
17	0 30 13.66	1.7950	4 51 49.6	14.398
18	0 32 1.44	1.7976	5 6 13.3	14.390
19	0 33 49.37	1.8002	5 20 36.4	14.380
20	0 35 37.46	1.8028	5 34 58.9	14.370
21	0 37 25.70	1.8054	5 49 20.8	14.359
22	0 39 14.11	1.8083	6 3 42.0	14.347
23	0 41 2.70	1.8112	6 18 2.5	14.335
24	0 42 51.46	1.8142	N. 6 32 22.2	14.321

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 31.			
	h m s	s	° ′ ″	″
0	0 42 51.46	1.8142	N. 6 32 22.2	14.321
1	0 44 40.40	1.8173	6 46 41.0	14.307
2	0 46 29.54	1.8206	7 0 59.0	14.292
3	0 48 18.87	1.8238	7 15 16.1	14.276
4	0 50 8.39	1.8271	7 29 32.2	14.259
5	0 51 58.12	1.8306	7 43 47.2	14.242
6	0 53 48.06	1.8341	7 58 1.2	14.224
7	0 55 38.21	1.8376	8 12 14.1	14.204
8	0 57 28.57	1.8413	8 26 25.7	14.183
9	0 59 19.16	1.8451	8 40 36.1	14.162
10	1 1 9.98	1.8489	8 54 45.2	14.140
11	1 3 1.03	1.8528	9 8 52.9	14.117
12	1 4 52.32	1.8568	9 22 59.2	14.093
13	1 6 43.85	1.8609	9 37 4.0	14.068
14	1 8 35.63	1.8651	9 51 7.3	14.043
15	1 10 27.67	1.8694	10 5 9.1	14.017
16	1 12 19.96	1.8737	10 19 9.3	13.988
17	1 14 12.52	1.8782	10 33 7.7	13.959
18	1 16 5.35	1.8827	10 47 4.4	13.930
19	1 17 58.45	1.8873	11 0 59.3	13.899
20	1 19 51.83	1.8921	11 14 52.3	13.867
21	1 21 45.50	1.8969	11 28 43.4	13.835
22	1 23 39.46	1.9018	11 42 32.5	13.801
23	1 25 33.72	1.9067	N.11 56 19.5	13.766
	FRIDAY, FEBRUARY 1.			
0	1 27 28.27	1.9117	N.12 10 4.4	13.730

PHASES OF THE MOON.

	d	h	m
☽ First Quarter . . Jan.	3	19	52.2
○ Full Moon	10	18	49.8
☾ Last Quarter	17	10	55.2
● New Moon	25	9	25.9

	d	h
☾ Perigee . . . . Jan.	11	12.2
☾ Apogee	26	5.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	58° 44′ 56″	3465	60° 5′ 59″	3469	61° 27′ 8″	3454	62° 48′ 24″	3446
	Mars	E.	50 53 2	3203	49 26 56	3198	48 0 44	3193	46 34 26	3188
	α Arietis	E.	57 25 52	3094	55 57 35	3091	54 29 15	3087	53 0 50	3083
	Aldebaran	E.	88 35 33	3124	87 7 52	3119	85 40 6	3114	84 12 14	3109
2	Sun	W.	69 36 51	3406	70 59 1	3397	72 21 21	3386	73 43 53	3376
	Mars	E.	39 21 10	3154	37 54 6	3146	36 26 52	3138	34 59 28	3129
	α Arietis	E.	45 37 25	3060	44 8 27	3055	42 39 22	3050	41 10 11	3045
	Aldebaran	E.	76 51 8	3078	75 22 31	3070	73 53 45	3063	72 24 50	3055
	Jupiter	E.	98 21 31	2973	96 50 45	2965	95 19 49	2957	93 48 42	2947
3	Sun	W.	80 39 40	3318	82 3 31	3305	83 27 37	3292	84 51 58	3277
	Fomalhaut	W.	37 32 36	3630	38 50 28	3582	40 9 22	3528	41 29 15	3478
	Aldebaran	E.	64 57 40	3011	63 27 41	3001	61 57 30	2993	60 27 8	2982
	Jupiter	E.	86 10 3	2896	84 37 39	2884	83 5 0	2873	81 32 6	2860
	Pollux	E.	107 58 23	2927	106 26 38	2915	104 54 38	2902	103 22 22	2890
4	Sun	W.	91 58 2	3201	93 24 10	3185	94 50 37	3168	96 17 24	3151
	Fomalhaut	W.	48 21 38	3970	49 46 25	3934	51 11 54	3890	52 38 3	3168
	Aldebaran	E.	52 52 9	2932	51 20 31	2923	49 48 41	2912	48 16 38	2904
	Jupiter	E.	73 43 27	2793	72 8 50	2779	70 33 54	2763	68 58 38	2749
	Pollux	E.	95 36 48	2690	94 2 46	2605	92 28 25	2789	90 53 43	2774
5	Sun	W.	103 36 38	3060	105 5 36	3042	106 34 57	3022	108 4 42	3002
	Fomalhaut	W.	59 58 17	3018	61 28 8	2990	62 58 33	2963	64 29 32	2936
	α Pegasi	W.	39 22 3	3373	40 44 52	3312	42 8 50	3254	43 33 55	3202
	Aldebaran	E.	40 33 38	2865	39 0 34	2860	37 27 24	2857	35 54 10	2855
	Jupiter	E.	60 57 13	2669	59 19 52	2652	57 42 8	2636	56 4 2	2618
	Pollux	E.	82 54 56	2690	81 18 3	2673	79 40 47	2655	78 3 6	2637
6	Sun	W.	115 39 37	2903	117 11 52	2883	118 44 32	2862	120 17 39	2842
	Fomalhaut	W.	72 12 40	2811	73 46 53	2788	75 21 36	2765	76 56 50	2742
	α Pegasi	W.	50 54 5	2977	52 24 47	2939	53 56 17	2901	55 28 34	2867
	Jupiter	E.	47 47 41	2534	46 7 15	2517	44 26 25	2499	42 45 11	2484
	Pollux	E.	69 48 29	2544	68 8 17	2525	66 27 38	2505	64 46 32	2487
	Regulus	E.	106 37 1	2543	104 56 47	2523	103 16 6	2504	101 34 58	2485
7	Fomalhaut	W.	85 0 23	2835	86 38 31	2815	88 17 6	2596	89 56 7	2577
	α Pegasi	W.	63 20 46	2709	64 57 14	2681	66 34 19	2654	68 12 1	2628
	Pollux	E.	56 14 20	2391	54 30 32	2372	52 46 17	2353	51 1 35	2335
	Regulus	E.	93 2 31	2368	91 18 39	2369	89 34 20	2350	87 49 34	2331
8	α Pegasi	W.	76 29 2	2610	78 10 1	2489	79 51 29	2469	81 33 26	2450
	Mars	W.	36 13 0	2377	37 57 8	2359	39 41 42	2341	41 26 42	2324
	α Arietis	W.	33 17 21	2331	35 2 36	2306	36 48 27	2282	38 34 53	2260
	Pollux	E.	42 11 26	2246	40 24 7	2229	38 36 23	2212	36 48 14	2197
	Regulus	E.	78 58 56	2241	77 11 29	2223	75 23 36	2206	73 35 18	2190
9	α Pegasi	W.	90 9 27	2269	91 53 46	2256	93 38 24	2244	95 23 19	2233
	Mars	W.	50 17 42	2245	52 5 2	2231	53 52 43	2218	55 40 44	2205
	α Arietis	W.	47 34 50	2163	49 24 13	2147	51 14 0	2132	53 4 11	2116
	Regulus	E.	64 27 51	2115	62 37 15	2101	60 46 17	2088	58 54 59	2076

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Sun	W.	64° 9′ 48″	3439	65° 31′ 20″	3431	66° 53′ 1″	3423	68° 14′ 51″	3415
	Mars	E.	45 8 2	3182	43 41 31	3175	42 14 52	3166	40 48 5	3160
	α Arietis	E.	51 32 20	3078	50 3 45	3074	48 35 4	3069	47 6 17	3065
	Aldebaran	E	82 44 15	3104	81 16 10	3097	79 47 57	3091	78 19 37	3084
2	Sun	W.	75 6 37	3365	76 29 33	3354	77 52 42	3343	79 16 4	3331
	Mars	E.	33 31 54	3120	32 4 9	3110	30 36 12	3101	29 8 3	3091
	α Arietis	E.	39 40 54	3040	38 11 31	3034	36 42 1	3030	35 12 25	3026
	Aldebaran	E.	70 55 45	3047	69 26 30	3038	67 57 4	3030	66 27 28	3020
	Jupiter	E.	92 17 23	2938	90 45 52	2998	89 14 9	2918	87 42 13	2907
3	Sun	W.	86 16 36	3363	87 41 31	3348	89 6 43	3333	90 32 13	3317
	Fomalhaut	W.	42 50 4	3431	44 11 45	3387	45 34 16	3346	46 57 34	3306
	Aldebaran	E.	58 56 33	2973	57 25 46	2962	55 54 46	2953	54 23 34	2942
	Jupiter	E.	79 58 56	2847	78 25 29	2835	76 51 46	2821	75 17 46	2807
	Pollux	E.	101 49 50	2876	100 17 1	2863	98 43 55	2849	97 10 31	2835
4	Sun	W.	97 44 32	3133	99 12 1	3116	100 39 51	3098	102 8 3	3079
	Fomalhaut	W.	54 4 51	3136	55 32 17	3105	57 0 21	3075	58 29 1	3046
	Aldebaran	E.	46 44 24	2894	45 11 58	2886	43 39 21	2878	42 6 34	2871
	Jupiter	E.	67 23 3	2733	65 47 7	2717	64 10 50	2701	62 34 12	2686
	Pollux	E.	89 18 41	2758	87 43 18	2741	86 7 33	2725	84 31 26	2707
5	Sun	W.	109 34 52	2963	111 5 26	2964	112 36 24	2943	114 7 48	2924
	Fomalhaut	W.	66 1 5	2910	67 33 11	2905	69 5 49	2900	70 38 59	2836
	α Pegasi	W.	45 0 2	3152	46 27 9	3104	47 55 14	3060	49 24 13	3017
	Aldebaran	E.	34 20 54	2956	32 47 39	2951	31 14 30	2939	29 41 31	2931
	Jupiter	E.	54 25 32	2801	52 46 39	2585	51 7 23	2568	49 27 44	2551
	Pollux	E.	76 25 1	2618	74 46 31	2600	73 7 36	2581	71 28 15	2563
6	Sun	W.	121 51 12	2932	123 25 11	2901	124 59 37	2782	126 34 29	2769
	Fomalhaut	W.	78 32 34	2719	80 8 48	2698	81 45 31	2676	83 22 43	2655
	α Pegasi	W.	57 1 35	2833	58 35 20	2800	60 9 48	2769	61 44 57	2738
	Jupiter	E.	41 3 35	2467	39 21 36	2452	37 39 15	2436	35 56 32	2422
	Pollux	E.	63 5 0	2467	61 23 0	2448	59 40 34	2439	57 57 41	2410
	Regulus	E.	99 53 23	2465	98 11 21	2446	96 28 52	2426	94 45 55	2408
7	Fomalhaut	W.	91 35 34	2559	93 15 26	2541	94 55 42	2524	96 36 22	2508
	α Pegasi	W.	69 50 18	2608	71 29 10	2578	73 8 35	2554	74 48 33	2532
	Pollux	E.	49 16 26	2316	47 30 50	2298	45 44 48	2281	43 58 20	2263
	Regulus	E.	86 4 20	2313	84 18 40	2294	82 32 32	2276	80 45 57	2258
8	α Pegasi	W.	83 15 49	2438	84 58 38	2415	86 41 52	2396	88 25 29	2384
	Mars	W.	43 12 6	2307	44 57 55	2291	46 44 8	2275	48 30 44	2260
	α Arietis	W.	40 21 52	2238	42 9 23	2218	43 57 24	2199	45 45 53	2180
	Pollux	E.	34 59 42	2168	33 10 47	2167	31 21 30	2153	29 31 52	2141
	Regulus	E.	71 46 36	2174	69 57 29	2159	68 7 59	2143	66 18 6	2129
9	α Pegasi	W.	97 8 30	2394	98 53 55	2315	100 39 32	2308	102 25 20	2302
	Mars	W.	57 29 4	2193	59 17 42	2181	61 6 38	2170	62 55 50	2161
	α Arietis	W.	54 54 45	2103	56 45 40	2090	58 36 54	2078	60 28 27	2067
	Regulus	E.	57 3 23	2064	55 11 29	2053	53 19 17	2049	51 26 49	2033

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
10	Mars	W.	64° 45′ 16″	2152	66° 34′ 56″	2143	68° 24′ 50″	2135	70° 14′ 56″	2128
	α Arietis	W.	62 20 17	2057	64 12 23	2047	66 4 44	2039	67 57 18	2030
	Aldebaran	W.	32 16 22	2268	34 3 9	2257	35 50 41	2210	37 38 54	2186
	Regulus	E.	49 34 7	2025	47 41 11	2016	45 48 2	2009	43 54 41	2002
	Spica	E.	103 33 48	2021	101 40 46	2013	99 47 32	2005	97 54 5	1998
11	Mars	W.	79 27 37	2106	81 18 27	2163	83 9 21	2102	85 0 17	2102
	α Arietis	W.	77 22 46	2005	79 16 13	2008	81 9 44	2001	83 3 17	2000
	Aldebaran	W.	46 47 31	2107	48 38 19	2098	50 29 22	2090	52 20 37	2083
	Spica	E.	88 24 34	1975	86 30 21	1973	84 36 4	1972	82 41 45	1972
	Saturn	E.	101 52 24	2015	99 59 13	2012	98 5 58	2011	96 12 41	2010
12	α Arietis	W.	92 30 57	2089	94 24 18	2013	96 17 32	2018	98 10 38	2094
	Aldebaran	W.	61 38 38	2079	63 30 21	2072	65 22 3	2075	67 13 41	2078
	Jupiter	W.	40 53 7	1989	42 46 59	1990	44 40 49	1993	46 34 35	1996
	Spica	E.	73 10 25	1981	71 16 20	1985	69 22 22	1989	67 28 31	1995
	Saturn	E.	86 46 24	2019	84 53 19	2023	83 0 21	2028	81 7 31	2034
13	α Arietis	W.	107 33 27	2064	109 25 21	2075	111 16 58	2086	113 8 18	2096
	Aldebaran	W.	76 30 5	2109	78 20 51	2118	80 11 23	2127	82 1 41	2137
	Jupiter	W.	56 1 35	2027	57 54 27	2035	59 47 6	2045	61 39 30	2055
	Pollux	W.	32 53 18	2044	34 45 44	2053	36 37 56	2062	38 29 53	2072
	Spica	E.	58 1 52	2034	56 9 11	2043	54 16 44	2053	52 24 33	2064
	Saturn	E.	71 46 1	2075	69 54 24	2085	68 3 2	2096	66 11 57	2108
	Antares	E.	103 55 52	2034	102 3 11	2043	100 10 44	2053	98 18 33	2064
14	Aldebaran	W.	91 8 58	2198	92 57 28	2212	94 45 37	2227	96 33 24	2242
	Jupiter	W.	70 57 18	2114	72 47 56	2126	74 38 13	2141	76 28 9	2156
	Pollux	W.	47 45 27	2132	49 35 37	2145	51 25 27	2160	53 14 55	2174
	Spica	E.	43 8 8	2127	41 17 50	2141	39 27 53	2155	37 38 17	2170
	Saturn	E.	57 1 19	2175	55 12 14	2191	53 23 33	2207	51 35 16	2223
	Antares	E.	89 2 8	2127	87 11 50	2140	85 21 52	2155	83 32 16	2169
	Sun	E.	134 44 43	2464	133 2 39	2478	131 20 55	2492	129 39 30	2507
15	Aldebaran	W.	105 26 31	2335	107 11 54	2349	108 56 52	2360	110 41 24	2379
	Jupiter	W.	85 32 15	2233	87 19 54	2248	89 7 10	2264	90 54 2	2281
	Pollux	W.	62 16 44	2251	64 3 56	2266	65 50 45	2283	67 37 10	2300
	Regulus	W.	25 28 20	2256	27 15 24	2272	29 2 5	2287	30 48 24	2303
	Saturn	E.	42 40 14	2315	40 54 36	2335	39 9 27	2355	37 24 48	2378
	Antares	E.	74 29 55	2247	72 42 37	2263	70 55 43	2279	69 9 13	2296
	Sun	E.	121 17 42	2585	119 38 27	2601	117 59 34	2619	116 21 5	2637
16	Jupiter	W.	99 42 12	2366	101 26 36	2382	103 10 36	2400	104 54 11	2417
	Pollux	W.	76 23 9	2383	78 7 8	2400	79 50 43	2417	81 33 53	2433
	Regulus	W.	39 34 4	2384	41 18 1	2401	43 1 34	2417	44 44 44	2434
	Antares	E.	60 22 49	2380	58 38 45	2397	56 55 6	2414	55 11 51	2431
	Sun	E.	108 14 36	2725	106 38 30	2743	105 2 47	2761	103 27 28	2779
17	Pollux	W.	90 3 51	2517	91 44 41	2533	93 25 8	2549	95 5 13	2565
	Regulus	W.	53 14 40	2517	54 55 30	2533	56 35 57	2549	58 16 2	2564
	Antares	E.	46 41 33	2514	45 0 39	2530	43 20 8	2546	41 39 59	2563
	Sun	E.	95 36 44	2868	94 3 44	2886	92 31 7	2903	90 58 52	2920

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
10	MARS	W.	72° 5′ 12″	2122	73° 55′ 38″	2117	75° 46′ 11″	2113	77° 36′ 51″	2109
	α Arietis	W.	69 50 5	2021	71 43 3	2018	73 36 9	2012	75 29 24	2008
	Aldebaran	W.	39 27 43	2165	41 17 3	2147	43 6 50	2132	44 57 0	2118
	Regulus	E.	42 1 10	1996	40 7 30	1991	38 13 42	1987	36 19 48	1984
	Spica	E.	96 0 28	1992	94 6 41	1986	92 12 45	1982	90 18 42	1979
11	MARS	W.	86 51 13	2102	88 42 9	2103	90 33 3	2105	92 23 54	2109
	α Arietis	W.	84 56 52	2000	86 50 27	2001	88 44 0	2002	90 37 31	2005
	Aldebaran	W.	54 12 2	2078	56 3 35	2075	57 55 13	2072	59 46 55	2072
	Spica	E.	80 47 26	1972	78 53 7	1973	76 58 50	1974	75 4 35	1977
	SATURN	E.	94 19 23	2010	92 26 5	2011	90 32 48	2013	88 39 34	2016
12	α Arietis	W.	100 3 35	2031	101 56 21	2038	103 48 56	2046	105 41 18	2055
	Aldebaran	W.	69 5 14	2063	70 56 40	2068	72 47 58	2094	74 39 7	2101
	JUPITER	W.	48 28 16	2000	50 21 50	2006	52 15 15	2012	54 8 31	2019
	Spica	E.	65 34 49	2001	63 41 17	2009	61 47 56	2016	59 54 47	2025
	SATURN	E.	79 14 50	2041	77 22 19	2048	75 30 0	2057	73 37 54	2065
13	α Arietis	W.	114 59 20	2111	116 50 3	2124	118 40 26	2137	120 30 28	2151
	Aldebaran	W.	83 51 44	2148	85 41 30	2160	87 30 58	2172	89 20 8	2185
	JUPITER	W.	63 31 38	2066	65 23 30	2077	67 15 4	2089	69 6 20	2101
	Pollux	W.	40 21 35	2083	42 13 0	2094	44 4 8	2107	45 54 57	2119
	Spica	E.	50 32 39	2076	48 41 3	2068	46 49 45	2101	44 58 47	2113
	SATURN	E.	64 21 10	2120	62 30 42	2133	60 40 33	2147	58 50 45	2161
	Antares	E.	96 26 39	2076	94 35 3	2088	92 43 45	2101	90 52 47	2113
14	Aldebaran	W.	98 20 49	2258	100 7 50	2274	101 54 28	2290	103 40 42	2307
	JUPITER	W.	78 17 43	2170	80 6 55	2185	81 55 45	2200	83 44 12	2216
	Pollux	W.	55 4 2	2188	56 52 47	2204	58 41 9	2219	60 29 8	2235
	Spica	E.	35 49 4	2184	34 0 13	2200	32 11 45	2215	30 23 40	2231
	SATURN	E.	49 47 23	2241	47 59 56	2258	46 12 55	2277	44 26 21	2295
	Antares	E.	81 43 2	2184	79 54 11	2199	78 5 42	2215	76 17 37	2231
	SUN	E.	127 58 26	2521	126 17 42	2537	124 37 20	2553	122 57 20	2569
15	Aldebaran	W.	112 25 29	2398	114 9 7	2417	115 52 17	2436	117 35 0	2457
	JUPITER	W.	92 40 29	2298	94 26 32	2315	96 12 10	2332	97 57 23	2348
	Pollux	W.	69 23 10	2316	71 8 46	2333	72 53 58	2349	74 38 46	2366
	Regulus	W.	32 34 19	2319	34 19 51	2335	36 4 59	2352	37 49 43	2368
	SATURN	E.	35 40 41	2400	33 57 6	2424	32 14 5	2448	30 31 39	2475
	Antares	E.	67 23 8	2313	65 37 27	2329	63 52 10	2346	62 7 17	2363
	SUN	E.	114 43 0	2654	113 5 18	2672	111 28 0	2689	109 51 6	2707
16	JUPITER	W.	106 37 21	2434	108 20 7	2451	110 2 29	2468	111 44 27	2486
	Pollux	W.	83 16 40	2450	84 59 3	2467	86 41 2	2484	88 22 38	2500
	Regulus	W.	46 27 30	2450	48 9 53	2467	49 51 52	2484	51 33 28	2501
	Antares	E.	53 29 0	2448	51 46 33	2465	50 4 30	2481	48 22 50	2497
	SUN	E.	101 52 32	2797	100 18 0	2815	98 43 52	2833	97 10 7	2850
17	Pollux	W.	96 44 56	2581	98 24 17	2596	100 3 17	2612	101 41 56	2627
	Regulus	W.	59 55 46	2580	61 35 8	2596	63 14 9	2611	64 52 49	2626
	Antares	E.	40 0 12	2578	38 20 47	2593	36 41 43	2610	35 3 1	2624
	SUN	E.	89 26 59	2937	87 55 27	2954	86 24 17	2970	84 53 27	2987

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Pollux	W.	103° 20′ 14″	2642	104° 58′ 12″	2657	106° 35′ 50″	2672	108° 13′ 8″	2686
	Regulus	W.	66 31 8	2641	68 9 7	2655	69 46 47	2670	71 24 7	2684
	Sun	E.	83 22 58	3003	81 52 49	3019	80 23 0	3034	78 53 30	3050
19	Regulus	W.	79 26 11	2751	81 1 43	2763	82 36 59	2775	84 11 59	2788
	Spica	W.	25 25 9	2750	27 0 43	2762	28 36 1	2774	30 11 3	2785
	Sun	E.	71 30 38	3123	70 2 56	3137	68 35 31	3150	67 8 22	3163
20	Regulus	W.	92 3 12	2843	93 36 44	2853	95 10 3	2863	96 43 9	2873
	Spica	W.	38 2 26	2842	39 36 0	2852	41 9 21	2861	42 42 30	2871
	Saturn	W.	24 44 21	2965	26 14 53	2981	27 45 29	2981	29 16 6	2960
	Sun	E.	59 56 28	3225	58 30 49	3236	57 5 23	3247	55 40 10	3259
21	Spica	W.	50 25 15	2915	51 57 15	2923	53 29 5	2931	55 0 45	2938
	Saturn	W.	36 48 51	2993	38 19 13	2997	39 49 30	3001	41 19 42	3005
	Sun	E.	48 37 11	3309	47 13 10	3319	45 49 20	3327	44 25 40	3337
22	Spica	W.	62 36 51	2971	64 7 40	2977	65 38 21	2983	67 8 55	2989
	Saturn	W.	48 49 23	3026	50 19 3	3030	51 48 38	3034	53 18 8	3039
	Sun	E.	37 29 55	3379	36 7 15	3388	34 44 45	3396	33 22 24	3405
23	Spica	W.	74 40 3	3014	76 9 59	3018	77 39 49	3022	79 9 34	3026
	Saturn	W.	60 44 22	3058	62 13 23	3061	63 42 20	3065	65 11 13	3069
	Sun	E.	26 33 5	3449	25 11 44	3459	23 50 34	3469	22 29 36	3480
27	Sun	W.	17 31 11	3558	18 50 31	3546	20 10 4	3535	21 29 50	3524
	α Arietis	E.	72 13 57	3102	70 45 50	3101	69 17 42	3101	67 49 34	3101
	Mars	E.	77 30 26	3963	76 5 31	3963	74 40 36	3962	73 15 40	3960
	Aldebaran	E.	103 18 31	3148	101 51 20	3147	100 24 7	3145	98 56 52	3143
28	Sun	W.	28 11 6	3488	29 31 44	3481	30 52 29	3475	32 13 21	3470
	α Arietis	E.	60 28 38	3095	59 0 22	3094	57 32 5	3092	56 3 46	3091
	Mars	E.	66 10 33	3959	64 45 25	3949	63 20 14	3947	61 55 0	3944
	Aldebaran	E.	91 39 59	3133	90 12 29	3129	88 44 55	3127	87 17 18	3124
29	Sun	W.	38 59 17	3439	40 20 49	3433	41 42 28	3427	43 4 14	3420
	α Arietis	E.	48 41 37	3080	47 13 3	3078	45 44 27	3076	44 15 48	3074
	Mars	E.	54 47 55	3926	53 22 17	3921	51 56 33	3917	50 30 44	3912
	Aldebaran	E.	79 58 16	3107	78 30 15	3104	77 2 10	3100	75 34 0	3096
	Jupiter	E.	98 40 28	3095	97 10 46	3090	95 40 58	3015	94 11 4	3010
30	Sun	W.	49 55 6	3382	51 17 43	3374	52 40 29	3365	54 3 25	3356
	Venus	W.	35 27 51	3462	36 48 58	3454	38 10 13	3446	39 31 38	3438
	Mars	E.	43 20 3	3183	41 53 33	3177	40 26 56	3169	39 0 10	3162
	Aldebaran	E.	68 11 50	3073	66 43 7	3067	65 14 17	3062	63 45 21	3056
	Jupiter	E.	86 39 53	2981	85 9 16	2973	83 38 30	2966	82 7 35	2959
31	Sun	W.	61 0 49	3306	62 24 54	3295	63 49 11	3283	65 13 42	3272
	Venus	W.	46 21 18	3387	47 43 49	3377	49 6 32	3365	50 29 28	3353
	Aldebaran	E.	56 19 0	3039	54 49 23	3023	53 19 39	3018	51 49 48	3013
	Jupiter	E.	74 30 34	2917	72 58 37	2909	71 26 29	2898	69 54 8	2889
	Pollux	E.	99 5 18	2994	97 33 29	2913	96 1 27	2903	94 29 12	2893

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
18	Pollux	W.	109° 50′ 7″	2699	111° 26′ 48″	2713	113° 3′ 10″	2727	114° 39′ 14″	2740
	Regulus	W.	73 1 8	2698	74 37 51	2712	76 14 15	2725	77 50 22	2736
	Sun	E.	77 24 19	3065	75 55 27	3060	74 26 53	3095	72 58 37	3109
19	Regulus	W.	85 46 43	2799	87 21 12	2811	88 55 26	2821	90 29 26	2830
	Spica	W.	31 45 49	2796	33 20 20	2809	34 54 36	2820	36 28 38	2831
	Sun	E.	65 41 29	3177	64 14 52	3166	62 48 29	3201	61 22 21	3214
20	Regulus	W.	98 16 3	2882	99 48 45	2891	101 21 15	2900	102 53 34	2906
	Spica	W.	44 15 26	2880	45 48 10	2889	47 20 43	2898	48 53 4	2906
	Saturn	W.	30 46 44	2981	32 17 20	2963	33 47 54	2966	35 18 24	2969
	Sun	E.	54 15 10	3269	52 50 22	3260	51 25 47	3269	50 1 23	3300
21	Spica	W.	56 32 16	2946	58 3 37	2958	59 34 50	2959	61 5 54	2965
	Saturn	W.	42 49 49	3009	44 19 51	3014	45 49 47	3018	47 19 38	3022
	Sun	E.	43 2 11	3345	41 38 52	3334	40 15 43	3363	38 52 44	3372
22	Spica	W.	68 39 21	2994	70 9 41	3000	71 39 54	3004	73 10 2	3009
	Saturn	W.	54 47 32	3043	56 16 51	3047	57 46 6	3051	59 15 16	3054
	Sun	E.	32 0 13	3413	30 38 11	3422	29 16 19	3431	27 54 37	3439
23	Spica	W.	80 39 14	3030	82 8 50	3034	83 38 21	3037	85 7 48	3041
	Saturn	W.	66 40 1	3072	68 8 45	3074	69 37 26	3078	71 6 3	3080
	Sun	E.	21 8 50	3494	19 48 19	3508	18 28 4	3536	17 8 9	3548
27	Sun	W.	22 49 48	3515	24 9 55	3507	25 30 11	3500	26 50 35	3494
	α Arietis	E.	66 21 25	3100	64 53 15	3089	63 25 4	3098	61 56 52	3096
	Mars	E.	71 50 42	3959	70 25 43	3958	69 0 42	3956	67 35 39	3953
	Aldebaran	E.	97 29 34	3141	96 2 14	3139	94 34 52	3137	93 7 27	3134
28	Sun	W.	33 34 19	3463	34 55 24	3458	36 16 35	3452	37 37 53	3446
	α Arietis	E.	54 35 25	3060	53 7 2	3067	51 38 36	3065	50 10 8	3068
	Mars	E.	60 29 43	3941	59 4 22	3937	57 38 57	3934	56 13 28	3931
	Aldebaran	E.	85 49 37	3120	84 21 52	3118	82 54 4	3114	81 26 12	3111
29	Sun	W.	44 26 8	3413	45 48 10	3408	47 10 20	3398	48 32 39	3391
	α Arietis	E.	42 47 7	3072	41 18 23	3069	39 49 36	3068	38 20 47	3065
	Mars	E.	49 4 49	3907	47 38 48	3901	46 12 40	3195	44 46 25	3189
	Aldebaran	E.	74 5 45	3091	72 37 25	3087	71 8 59	3089	69 40 27	3078
	Jupiter	E.	92 41 4	3005	91 10 57	2990	89 40 43	2993	88 10 22	2987
30	Sun	W.	55 26 32	3347	56 49 49	3338	58 13 17	3327	59 36 57	3317
	Venus	W.	40 53 12	3498	42 14 57	3418	43 36 53	3408	44 59 0	3399
	Mars	E.	37 33 15	3155	36 6 12	3147	34 38 59	3139	33 11 37	3131
	Aldebaran	E.	62 16 18	3059	60 47 9	3046	59 17 53	3040	57 48 30	3034
	Jupiter	E.	80 36 31	2959	79 5 18	2943	77 33 54	2935	76 2 19	2997
31	Sun	W.	66 38 26	3359	68 3 25	3347	69 28 38	3325	70 54 6	3321
	Venus	W.	51 52 38	3341	53 16 2	3339	54 39 40	3315	56 3 34	3308
	Aldebaran	E.	50 19 51	3007	48 49 47	3002	47 19 37	2997	45 49 21	2993
	Jupiter	E.	68 21 35	2979	66 48 49	2968	65 15 49	2957	63 42 35	2946
	Pollux	E.	92 56 44	2989	91 24 2	2970	89 51 5	2959	88 17 54	2947

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	h	m s	s
Frid.	1	20 59 36.36	10.187	S. 17 5 1.3	+42.76	16 16.02	68.26	13 48.41	0.329
Sat.	2	21 3 40.42	10.152	16 47 46.1	43.50	16 15.88	68.15	13 55.89	0.294
SUN.	3	21 7 43.64	10.117	16 30 13.4	44.22	16 15.73	68.03	14 2.54	0.259
Mon.	4	21 11 46.02	10.082	16 12 23.6	+44.92	16 15.58	67.92	14 8.35	0.224
Tues.	5	21 15 47.57	10.047	15 54 17.2	45.61	16 15.42	67.80	14 13.33	0.190
Wed.	6	21 19 48.29	10.013	15 35 54.5	46.27	16 15.26	67.68	14 17.48	0.156
Thur.	7	21 23 48.19	9.979	15 17 16.0	+46.92	16 15.09	67.57	14 20.81	0.122
Frid.	8	21 27 47.28	9.945	14 58 22.1	47.56	16 14.92	67.46	14 23.34	0.089
Sat.	9	21 31 45.57	9.912	14 39 13.2	48.18	16 14.74	67.35	14 25.07	0.056
SUN.	10	21 35 43.07	9.880	14 19 49.6	+48.78	16 14.56	67.24	14 26.01	0.023
Mon.	11	21 39 39.80	9.848	14 0 11.7	49.37	16 14.37	67.13	14 26.18	0.009
Tues.	12	21 43 35.76	9.816	13 40 20.0	49.94	16 14.18	67.02	14 25.59	0.049
Wed.	13	21 47 30.97	9.785	13 20 14.8	+50.49	16 13.98	66.91	14 24.25	0.071
Thur.	14	21 51 25.45	9.755	12 59 56.5	51.03	16 13.78	66.80	14 22.18	0.101
Frid.	15	21 55 19.20	9.725	12 39 25.6	51.55	16 13.57	66.70	14 19.38	0.131
Sat.	16	21 59 12.24	9.696	12 18 42.3	+52.05	16 13.36	66.60	14 15.88	0.160
SUN.	17	22 3 4.59	9.667	11 57 47.1	52.54	16 13.15	66.50	14 11.68	0.189
Mon.	18	22 6 56.25	9.639	11 36 40.4	53.01	16 12.93	66 40	14 6.80	0.217
Tues.	19	22 10 47.24	9.611	11 15 22.7	+53.46	16 12.71	66.30	14 1.25	0.245
Wed.	20	22 14 37.57	9.584	10 53 54.3	53.89	16 12.49	66.20	13 55.04	0.272
Thur.	21	22 18 27.25	9.557	10 32 15.7	54 31	16 12.26	66.11	13 48.18	0.299
Frid.	22	22 22 16.30	9.531	10 10 27.3	+54.71	16 12.04	66.02	13 40.70	0.325
Sat.	23	22 26 4.72	9.505	9 48 29.5	55.09	16 11.81	65.93	13 32.59	0.350
SUN.	24	22 29 52.53	9.480	9 26 22.7	55.45	16 11.58	65.84	13 23.87	0.375
Mon.	25	22 33 39.75	9.455	9 4 7.5	+55.80	16 11.35	65.75	13 14.56	0.400
Tues.	26	22 37 26.38	9.431	8 41 44.2	56.13	16 11.12	65.67	13 4.66	0.424
Wed.	27	22 41 12.44	9.408	8 19 13.2	56.44	16 10.88	65.59	12 54.20	0.448
Thur.	28	22 44 57.94	9.385	7 56 35.1	+56.73	16 10.65	65.51	12 43.17	0.471
Frid.	29	22 48 42.91	9.362	S. 7 33 50.1	+57.01	16 10.41	65.44	12 31.62	0.493

NOTE.—The mean time of semidiameter passing may be found by subtracting P 18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	20 59 34.02	10.186	S. 17 5 11.2	+42.75	13 48.33	0.330	20 45 45.69
Sat.	2	21 3 38.07	10.151	16 47 56.2	43.49	13 55.82	0.295	20 49 42.24
SUN.	3	21 7 41.28	10.116	16 30 23.8	44.21	14 2.48	0.260	20 53 38.80
Mon.	4	21 11 43.65	10.082	16 12 34.2	+44.91	14 8.29	0.225	20 57 35.36
Tues.	5	21 15 45.19	10.047	15 54 28.0	45.60	14 13.28	0.191	21 1 31.91
Wed.	6	21 19 45.91	10.013	15 36 5.6	46.27	14 17.44	0.156	21 5 28.47
Thur.	7	21 23 45.80	9.979	15 17 27.4	+46.92	14 20.78	0.122	21 9 25.02
Frid.	8	21 27 44.90	9.946	14 58 33.6	47.55	14 23.32	0.089	21 13 21.58
Sat.	9	21 31 43.19	9.913	14 39 24.8	48.17	14 25.05	0.056	21 17 18.14
SUN.	10	21 35 40.69	9.880	14 20 1.4	+48.77	14 26.00	0.024	21 21 14.69
Mon.	11	21 39 37.43	9.848	14 0 23.7	49.36	14 26.18	0.008	21 25 11.25
Tues.	12	21 43 33.40	9.817	13 40 32.1	49.93	14 25.60	0.040	21 29 7.80
Wed.	13	21 47 28 62	9.786	13 20 27.0	+50.49	14 24.26	0.071	21 33 4.36
Thur.	14	21 51 23.11	9.755	13 0 8.8	51.03	14 22.20	0.101	21 37 0.91
Frid.	15	21 55 16.88	9.725	12 39 38.0	51.54	14 19.41	0.131	21 40 57.47
Sat.	16	21 59 9.94	9.696	12 18 54.7	+52.04	14 15.92	0.160	21 44 54.02
SUN.	17	22 3 2.30	9.667	11 57 59.6	52.54	14 11.72	0.189	21 48 50.58
Mon.	18	22 6 53.98	9.639	11 36 53.0	53.01	14 6.85	0.217	21 52 47.13
Tues.	19	22 10 44.99	9.612	11 15 35.3	+53.46	14 1.30	0.245	21 56 43.69
Wed.	20	22 14 35.34	9.585	10 54 6.9	53.89	13 55.10	0.272	22 0 40.24
Thur.	21	22 18 25.05	9.558	10 32 28.3	54.31	13 48.25	0.299	22 4 36.80
Frid.	22	22 22 14.12	9.532	10 10 39.8	+54.71	13 40.77	0.325	22 8 33.35
Sat.	23	22 26 2.58	9.506	9 48 42.0	55.10	13 32.67	0.350	22 12 29.91
SUN.	24	22 29 50.42	9.481	9 26 35.2	55.47	13 23.96	0.375	22 16 26.46
Mon.	25	22 33 37.66	9.456	9 4 19.9	+55.81	13 14.65	0.400	22 20 23.02
Tues.	26	22 37 24.32	9.432	8 41 56.5	56.13	13 4.75	0.424	22 24 19.57
Wed.	27	22 41 10.42	9.409	8 19 25.4	56.44	12 54.29	0.447	22 28 16.12
Thur.	28	22 44 55.96	9.386	7 56 47.2	+56.73	12 43.28	0.470	22 32 12.68
Frid.	29	22 48 40.95	9.364	S. 7 34 2.1	+57.01	12 31.72	0.492	22 36 9.23

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour, +9.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ'	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	° ′ ″	″	″			h m s
1	32	312 25 49.1	25 41.7	152.18	+ 0.33	9.9937165	+26.3	2 13 42.49
2	33	313 26 40.6	26 33.1	152.12	0.43	9.9937804	27.1	2 9 46.58
3	34	314 27 30.8	27 23.1	152.06	0.50	9.9938462	27.9	2 5 50.67
4	35	315 28 19.5	28 11.7	152.00	+ 0.55	9.9939141	+28.7	2 1 54.76
5	36	316 29 6.7	28 58.7	151.94	0.56	9.9939841	29.6	2 57 58.85
6	37	317 29 52.5	29 44.4	151.88	0.54	9.9940562	30.5	2 54 2.94
7	38	318 30 36.8	30 28.5	151.82	+ 0.49	9.9941307	+31.5	2 50 7.03
8	39	319 31 19.6	31 11.2	151.76	0.41	9.9942074	32.5	2 46 11.12
9	40	320 32 1.1	31 52.5	151.70	0.32	9.9942865	33.4	2 42 15.21
10	41	321 32 41.2	32 32.5	151.64	+ 0.20	9.9943679	+34.3	2 38 19.30
11	42	322 33 20.0	33 11.2	151.59	+ 0.08	9.9944516	35.3	2 34 23.39
12	43	323 33 57.5	33 48.5	151.54	− 0.06	9.9945374	36.2	2 30 27.48
13	44	324 34 33.8	34 24.6	151.49	− 0.19	9.9946255	+37.1	2 26 31.57
14	45	325 35 8.8	34 59.5	151.44	0.31	9.9947155	37.9	2 22 35.66
15	46	326 35 42.6	35 33.2	151.38	0.42	9.9948075	38.7	2 18 39.75
16	47	327 36 15.1	36 5.6	151.33	− 0.50	9.9949011	+39.4	2 14 43.84
17	48	328 36 46.3	36 36.6	151.28	0.56	9.9949965	40.0	2 10 47.94
18	49	329 37 16.4	37 6.6	151.23	0.59	9.9950932	40.6	2 6 52.03
19	50	330 37 45.1	37 35.2	151.17	− 0.59	9.9951913	+41.1	2 2 56.12
20	51	331 38 12.5	38 2.4	151.11	0.56	9.9952904	41.5	1 59 0.21
21	52	332 38 38.4	38 28.2	151.05	0.51	9.9953906	41.9	1 55 4.30
22	53	333 39 2.9	38 52.6	150.99	− 0.42	9.9954915	+42.3	1 51 8.39
23	54	334 39 25.8	39 15.3	150.92	0.31	9.9955933	42.6	1 47 12.48
24	55	335 39 47.1	39 36.5	150.85	0.19	9.9956958	42.9	1 43 16.57
25	56	336 40 6.7	39 56.0	150.78	− 0.07	9.9957989	+43.1	1 39 20.66
26	57	337 40 24.4	40 13.6	150.70	+ 0.07	9.9959025	43.4	1 35 24.76
27	58	338 40 40.4	40 29.5	150.62	0.20	9.9960071	43.6	1 31 28.85
28	59	339 40 54.4	40 43.3	150.54	0.31	9.9961120	43.9	1 27 32.94
29	60	340 41 6.4	40 55.2	150.45	+ 0.41	9.9962178	+44.2	1 23 37.03

NOTE — The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0d.0.

Diff. for 1 Hour, − 9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 12.3	15 18.0	55 41.3	+1.66	56 2.3	+1.83	4 50.2	1.83	6.6
2	15 24.2	15 30.8	56 25.1	1.97	56 49.6	2.11	5 36.0	2.00	7.6
3	15 38.0	15 45.4	57 15.7	2.23	57 43.1	2.32	6 26.6	2.22	8.6
4	15 53.1	16 0.9	58 11.3	+2.37	58 39.9	+2.38	7 22.7	2.45	9.6
5	16 8.6	16 16.1	59 8.3	2.33	59 35.9	2.24	8 24 0	2.65	10.6
6	16 23.3	16 29.8	60 2.1	2.09	60 26.1	1.88	9 28.8	2.69	11.6
7	16 35.5	16 40.2	60 47.1	+1.60	61 4.4	+1.26	10 33.9	2.67	12 6
8	16 43.8	16 46.0	61 17.4	0.89	61 25.7	+0.47	11 36 2	2.51	13.6
9	16 46.9	16 46.3	61 28.9	+0.05	61 26.8	−0.39	12 31.3	2.33	14.6
10	16 44.4	16 41.0	61 19.6	−0.81	61 7.4	−1.20	13 28.2	2.17	15.6
11	16 36.5	16 30.9	60 50.7	1.55	60 30.2	1.85	14 19.0	2.07	16.6
12	16 24.4	16 17.3	60 6.4	2.09	59 40.1	2.27	15 7.9	2.02	17.6
13	16 9.6	16 1.7	59 12.0	−2.38	58 43.0	−2.43	15 56.3	2.03	18.6
14	15 53.7	15 45.8	58 13.6	2.44	57 44.5	2.39	16 45.5	2.07	19.6
15	15 38.1	15 30.7	57 16.2	2.31	56 49.1	2.20	17 36.0	2.14	20.6
16	15 23.7	15 17.3	56 23.5	−2.06	55 59.7	−1.90	18 28.1	2.20	21.6
17	15 11.4	15 6.0	55 38.0	1.72	55 18.4	1.54	19 21.2	2.22	22.6
18	15 1.3	14 57.2	55 1.0	1.35	54 45.9	1.17	20 14.4	2.19	23.6
19	14 53.6	14 50.7	54 32.9	−1.00	54 22.0	−0.82	21 6.2	2.12	24.6
20	14 48.3	14 46.4	54 13.2	0.65	54 6.4	0.49	21 55.7	2.01	25 6
21	14 45.1	14 44.2	54 1.4	0.34	53 58.2	−0.20	22 42.4	1.89	26.6
22	14 43.7	14 43.7	53 56.5	−0.07	53 56.5	+0.05	23 26.4	1.78	27.6
23	14 44.1	14 44.8	53 57.8	+0.17	54 0.5	0.28	δ		28.6
24	14 45.9	14 47.3	54 4.5	0.38	54 9.6	0.48	0 8.0	1.70	29.6
25	14 49.0	14 51.1	54 16.0	+0.58	54 23.5	+0.67	0 48.1	1.65	0.8
26	14 53.4	14 56.1	54 32.1	0.77	54 42.0	0.87	1 27.6	1.65	1.8
27	14 59.1	15 2.4	54 53.0	0.97	55 5.3	1.08	2 7.5	1.69	2.8
28	15 6.2	15 10.2	55 18.9	+1.19	55 33.8	+1.30	2 49.0	1.78	3.8
29	15 14.6	15 19.4	55 50.1	1.41	56 7.7	1.52	3 33 2	1.91	4.8
30	15 24.6	15 30.1	56 26.6	1.63	56 46.9	1.74	4 21.3	2.10	5.8
31	15 35.9	15 42.1	57 8.3	1.83	57 30.8	1.91	5 14.0	2.30	6.8
32	15 48.4	15 54.9	57 54.2	+1.97	58 18.1	+2.00	6 11.5	2.49	7.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 1.			
	h m s	s	° ′ ″	″
0	1 27 28.27	1.9117	N.12 10 4.4	13.720
1	1 29 23.13	1.9189	12 23 47.1	13.683
2	1 31 18.20	1.9222	12 37 27.6	13.656
3	1 33 13.79	1.9225	12 51 5.8	13.617
4	1 35 9.60	1.9229	13 4 41.7	13.577
5	1 37 5.74	1.9263	13 18 15.1	13.536
6	1 39 2.20	1.9339	13 31 46.0	13.494
7	1 40 59.00	1.9436	13 45 14.4	13.451
8	1 42 56.15	1.9553	13 58 40.1	13.406
9	1 44 53.64	1.9611	14 12 3.1	13.361
10	1 46 51.48	1.9670	14 25 23.4	13.314
11	1 48 49.68	1.9739	14 38 40.8	13.266
12	1 50 48.24	1.9791	14 51 55.3	13.217
13	1 52 47.17	1.9852	15 5 6.8	13.167
14	1 54 46.47	1.9915	15 18 15.3	13.116
15	1 56 46.15	1.9978	15 31 20.7	13.063
16	1 58 46.21	2.0042	15 44 22.9	13.009
17	2 0 46.66	2.0107	15 57 21.8	12.953
18	2 2 47.50	2.0172	16 10 17.3	12.897
19	2 4 48.73	2.0239	16 23 9.4	12.839
20	2 6 50.37	2.0307	16 35 58.0	12.781
21	2 8 52.42	2.0376	16 48 43.1	12.721
22	2 10 54.88	2.0444	17 1 24.5	12.659
23	2 12 57.75	2.0513	N.17 14 2.2	12.596
	SATURDAY 2.			
0	2 15 1.04	2.0583	N.17 26 36.0	12.531
1	2 17 4.75	2.0655	17 39 5.9	12.466
2	2 19 8.90	2.0727	17 51 31.9	12.400
3	2 21 13.48	2.0799	18 3 53.9	12.332
4	2 23 18.49	2.0872	18 16 11.7	12.262
5	2 25 23.95	2.0947	18 28 25.3	12.191
6	2 27 29.86	2.1022	18 40 34.6	12.118
7	2 29 36.22	2.1097	18 52 39.5	12.044
8	2 31 43.03	2.1173	19 4 39.9	11.968
9	2 33 50.30	2.1250	19 16 35.7	11.892
10	2 35 58.03	2.1328	19 28 26.9	11.813
11	2 38 6.24	2.1407	19 40 13.3	11.733
12	2 40 14.92	2.1487	19 51 54.9	11.652
13	2 42 24.08	2.1566	20 3 31.6	11.570
14	2 44 33.71	2.1645	20 15 3.3	11.485
15	2 46 43.82	2.1726	20 26 29.8	11.399
16	2 48 54.42	2.1807	20 37 51.1	11.312
17	2 51 5.51	2.1889	20 49 7.2	11.223
18	2 53 17.09	2.1972	21 0 17.8	11.131
19	2 55 29.17	2.2055	21 11 22.9	11.039
20	2 57 41.75	2.2139	21 22 22.5	10.946
21	2 59 54.84	2.2223	21 33 16.4	10.850
22	3 2 8.43	2.2307	21 44 4.5	10.752
23	3 4 22.53	2.2392	21 54 46.7	10.654
24	3 6 37.14	2.2477	N.22 5 23.0	10.554

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 3.			
	h m s	s	° ′ ″	″
0	3 6 37.14	2.2477	N.22 5 23.0	10.554
1	3 8 52.26	2.2563	22 15 53.2	10.452
2	3 11 7.90	2.2650	22 26 17.2	10.348
3	3 13 24.06	2.2737	22 36 34.9	10.242
4	3 15 40.74	2.2824	22 46 46.2	10.134
5	3 17 57.94	2.2911	22 56 51.0	10.025
6	3 20 15.67	2.2998	23 6 49.2	9.914
7	3 22 33.92	2.3086	23 16 40.7	9.802
8	3 24 52.70	2.3173	23 26 25.4	9.688
9	3 27 12.00	2.3261	23 36 3.2	9.572
10	3 29 31.83	2.3349	23 45 34.0	9.454
11	3 31 52.19	2.3436	23 54 57.7	9.334
12	3 34 13.09	2.3527	24 4 14.1	9.212
13	3 36 34.52	2.3616	24 13 23.2	9.089
14	3 38 56.48	2.3704	24 22 24.8	8.964
15	3 41 18.97	2.3793	24 31 18.9	8.837
16	3 43 41.99	2.3882	24 40 5.3	8.708
17	3 46 5.55	2.3971	24 48 43.9	8.578
18	3 48 29.64	2.4059	24 57 14.7	8.447
19	3 50 54.26	2.4147	25 5 37.5	8.312
20	3 53 19.41	2.4236	25 13 52.1	8.175
21	3 55 45.09	2.4324	25 21 58.5	8.037
22	3 58 11.30	2.4412	25 29 56.6	7.898
23	4 0 38.04	2.4500	N.25 37 46.3	7.757
	MONDAY 4.			
0	4 3 5.30	2.4588	N.25 45 27.4	7.613
1	4 5 33.09	2.4675	25 52 59.9	7.468
2	4 8 1.40	2.4761	26 0 23.6	7.321
3	4 10 30.22	2.4847	26 7 38.4	7.172
4	4 12 59.56	2.4932	26 14 44.2	7.022
5	4 15 29.41	2.5017	26 21 41.0	6.870
6	4 17 59.77	2.5102	26 28 28.6	6.716
7	4 20 30.63	2.5186	26 35 6.9	6.559
8	4 23 2.00	2.5270	26 41 35.7	6.401
9	4 25 33.87	2.5353	26 47 55.0	6.242
10	4 28 6.24	2.5435	26 54 4.7	6.080
11	4 30 39.09	2.5516	27 0 4.6	5.917
12	4 33 12.43	2.5597	27 5 54.7	5.752
13	4 35 46.25	2.5676	27 11 34.8	5.585
14	4 38 20.54	2.5755	27 17 4.9	5.417
15	4 40 55.31	2.5833	27 22 24.8	5.247
16	4 43 30.54	2.5909	27 27 34.5	5.075
17	4 46 6.22	2.5985	27 32 33.8	4.901
18	4 48 42.36	2.6061	27 37 22.6	4.725
19	4 51 18.95	2.6134	27 42 0.8	4.548
20	4 53 55.97	2.6206	27 46 28.4	4.370
21	4 56 33.42	2.6277	27 50 45.2	4.190
22	4 59 11.30	2.6347	27 54 51.2	4.008
23	5 1 49.59	2.6416	27 58 46.2	3.825
24	5 4 28.29	2.6483	N.28 2 30.2	3.641

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 5.			
	h m s	s	° ′ ″	″
0	5 4 28.29	2.6483	N.28 2 30.2	3.641
1	5 7 7.39	2.6549	28 6 3.1	3.454
2	5 9 46.88	2.6614	28 9 24.7	3.266
3	5 12 26.76	2.6677	28 12 35.0	3.077
4	5 15 7.01	2.6739	28 15 33.9	2.886
5	5 17 47.63	2.6799	28 18 21.3	2.694
6	5 20 28.60	2.6857	28 20 57.2	2.501
7	5 23 9.92	2.6915	28 23 21.4	2.306
8	5 25 51.58	2.6970	28 25 33.9	2.110
9	5 28 33.56	2.7023	28 27 34.6	1.913
10	5 31 15.86	2.7075	28 29 23.5	1.715
11	5 33 58.46	2.7125	28 31 0.4	1.515
12	5 36 41.36	2.7174	28 32 25.3	1.314
13	5 39 24.55	2.7221	28 33 38.1	1.112
14	5 42 8.01	2.7265	28 34 38.8	0.910
15	5 44 51.73	2.7307	28 35 27.3	0.706
16	5 47 35.70	2.7349	28 36 3.5	0.501
17	5 50 19.92	2.7389	28 36 27.4	0.296
18	5 53 4.37	2.7426	28 36 38.9	+ 0.089
19	5 55 49.03	2.7461	28 36 38.0	− 0.119
20	5 58 33.90	2.7494	28 36 24.6	0.327
21	6 1 18.96	2.7526	28 35 58.8	0.535
22	6 4 4.21	2.7555	28 35 20.4	0.745
23	6 6 49.62	2.7582	N.28 34 29.4	0.956
	WEDNESDAY 6.			
0	6 9 35.19	2.7607	N.28 33 25.7	1.167
1	6 12 20.90	2.7630	28 32 9.4	1.378
2	6 15 6.75	2.7650	28 30 40.4	1.590
3	6 17 52.72	2.7670	28 28 58.6	1.802
4	6 20 38.79	2.7686	28 27 4.1	2.015
5	6 23 24.95	2.7701	28 24 56.8	2.227
6	6 26 11.20	2.7713	28 22 36.8	2.440
7	6 28 57.51	2.7723	28 20 4.0	2.654
8	6 31 43.88	2.7732	28 17 18.3	2.868
9	6 34 30.30	2.7738	28 14 19.8	3.082
10	6 37 16.74	2.7742	28 11 8.5	3.295
11	6 40 3.20	2.7744	28 7 44.4	3.508
12	6 42 49.67	2.7744	28 4 7.5	3.722
13	6 45 36.13	2.7742	28 0 17.7	3.936
14	6 48 22 57	2.7737	27 56 15.2	4.149
15	6 51 8.97	2.7730	27 51 59.9	4.362
16	6 53 55.33	2.7722	27 47 31.8	4.574
17	6 56 41.63	2.7712	27 42 51.0	4.787
18	6 59 27.87	2.7700	27 37 57.4	4.999
19	7 2 14.03	2.7685	27 32 51.1	5.210
20	7 5 0.09	2.7667	27 27 32.2	5.421
21	7 7 46.04	2.7648	27 22 0.6	5.632
22	7 10 31.87	2.7628	27 16 16.4	5.842
23	7 13 17.58	2.7607	27 10 19.6	6.050
24	7 16 3.15	2.7583	N.27 4 10.4	6.258

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 7.			
	h m s	s	° ′ ″	″
0	7 16 3.15	2.7583	N.27 4 10.4	6.258
1	7 18 48.57	2.7556	26 57 48.7	6.466
2	7 21 33.82	2.7527	26 51 14.5	6.672
3	7 24 18.90	2.7497	26 44 28.0	6.877
4	7 27 3.79	2.7466	26 37 29.2	7.082
5	7 29 48.49	2.7433	26 30 18.1	7.287
6	7 32 32.99	2.7398	26 22 54.7	7.491
7	7 35 17.27	2.7362	26 15 19.2	7.692
8	7 38 1.33	2.7323	26 7 31.7	7.892
9	7 40 45.15	2.7283	25 59 32.2	8.091
10	7 43 28.73	2.7242	25 51 20.8	8.289
11	7 46 12.05	2.7198	25 42 57.5	8.486
12	7 48 55.11	2.7154	25 34 22.5	8.681
13	7 51 37.90	2.7108	25 25 35.8	8.875
14	7 54 20.41	2.7061	25 16 37.5	9.067
15	7 57 2.63	2.7013	25 7 27.7	9.258
16	7 59 44.55	2.6963	24 58 6.5	9.448
17	8 2 26.17	2.6910	24 48 33.9	9.637
18	8 5 7.47	2.6857	24 38 50.1	9.823
19	8 7 48.45	2.6803	24 28 55.2	10.007
20	8 10 29.11	2.6749	24 18 49.3	10.190
21	8 13 9.44	2.6693	24 8 32.4	10.379
22	8 15 49.43	2.6636	23 58 4.7	10.551
23	8 18 29.07	2.6577	N.23 47 26.3	10.736
	FRIDAY 8.			
0	8 21 8.36	2.6518	N.23 36 37.3	10.904
1	8 23 47.29	2.6458	23 25 37.8	11.078
2	8 26 25.86	2.6397	23 14 27.9	11.250
3	8 29 4.06	2.6335	23 3 7.8	11.420
4	8 31 41.88	2.6273	22 51 37.5	11.588
5	8 34 19.33	2.6210	22 39 57.2	11.755
6	8 36 56.40	2.6146	22 28 6.9	11.919
7	8 39 33.08	2.6081	22 16 6.9	12.081
8	8 42 9.37	2.6016	22 3 57.2	12.242
9	8 44 45.27	2.5950	21 51 37.9	12.399
10	8 47 20.77	2.5883	21 39 9.3	12.554
11	8 49 55.87	2.5816	21 26 31.4	12.708
12	8 52 30.57	2.5749	21 13 44.3	12.860
13	8 55 4.86	2.5681	21 0 48.2	13.009
14	8 57 38.74	2.5613	20 47 43.2	13.156
15	9 0 12.22	2.5546	20 34 29.5	13.301
16	9 2 45.29	2.5477	20 21 7.1	13.444
17	9 5 17.94	2.5408	20 7 36.2	13.584
18	9 7 50.18	2.5339	19 53 57.0	13.722
19	9 10 22.01	2.5270	19 40 9.6	13.858
20	9 12 53.42	2.5200	19 26 14.1	13.992
21	9 15 24.41	2.5130	19 12 10.6	14.123
22	9 17 54.98	2.5061	18 57 59.3	14.252
23	9 20 25.14	2.4992	18 43 40.4	14.378
24	9 22 54.88	2.4922	N.18 29 14.0	14.502

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 9.			
	h m s	s	° ′ ″	″
0	9 22 54.88	2.4992	N.18 29 14.0	14.502
1	9 25 24.20	2.4852	18 14 40.2	14.623
2	9 27 53.11	2.4783	17 59 59.2	14.743
3	9 30 21.60	2.4713	17 45 11.0	14.861
4	9 32 49.67	2.4644	17 30 15.9	14.975
5	9 35 17.33	2.4576	17 15 14.0	15.087
6	9 37 44.58	2.4507	17 0 5.4	15.197
7	9 40 11.41	2.4438	16 44 50.3	15.305
8	9 42 37.83	2.4370	16 29 28.8	15.410
9	9 45 3.85	2.4302	16 14 1.1	15.512
10	9 47 29.46	2.4235	15 58 27.3	15.612
11	9 49 54.67	2.4167	15 42 47.6	15.711
12	9 52 19.47	2.4100	15 27 2.0	15.807
13	9 54 43.87	2.4034	15 11 10.8	15.899
14	9 57 7.88	2.3968	14 55 14.1	15.991
15	9 59 31.49	2.3902	14 39 11.9	16.080
16	10 1 54.71	2.3837	14 23 4.5	16.165
17	10 4 17.54	2.3772	14 6 52.1	16.248
18	10 6 39.98	2.3708	13 50 34.7	16.330
19	10 9 2.04	2.3645	13 34 12.5	16.409
20	10 11 23.72	2.3582	13 17 45.6	16.486
21	10 13 45.03	2.3520	13 1 14.2	16.559
22	10 16 5.96	2.3458	12 44 38.5	16.631
23	10 18 26.53	2.3397	N.12 27 58.5	16.701
	SUNDAY 10.			
0	10 20 46.73	2.3337	N.12 11 14.4	16.767
1	10 23 6.57	2.3277	11 54 26.4	16.832
2	10 25 26.05	2.3218	11 37 34.6	16.895
3	10 27 45.18	2.3159	11 20 39.0	16.956
4	10 30 3.96	2.3102	11 3 39.9	17.013
5	10 32 22.40	2.3044	10 46 37.4	17.068
6	10 34 40.49	2.2987	10 29 31.7	17.122
7	10 36 58.25	2.2932	10 12 22.8	17.172
8	10 39 15.68	2.2877	9 55 11.0	17.221
9	10 41 32.78	2.2823	9 37 56.3	17.268
10	10 43 49.56	2.2770	9 20 38.9	17.312
11	10 46 6.02	2.2717	9 3 18.9	17.353
12	10 48 22.17	2.2666	8 45 56.5	17.393
13	10 50 38.01	2.2615	8 28 31.7	17.431
14	10 52 53.55	2.2564	8 11 4.8	17.466
15	10 55 8.78	2.2514	7 53 35.8	17.500
16	10 57 23.72	2.2467	7 36 4.8	17.531
17	10 59 38.38	2.2420	7 18 32.1	17.559
18	11 1 52.76	2.2373	7 0 57.7	17.586
19	11 4 6.86	2.2327	6 43 21.8	17.611
20	11 6 20.68	2.2281	6 25 44.4	17.634
21	11 8 34.23	2.2237	6 8 5.7	17.654
22	11 10 47.52	2.2194	5 50 25.9	17.672
23	11 13 0.56	2.2152	5 32 45.1	17.688
24	11 15 13.35	2.2111	N. 5 15 3.3	17.703
	MONDAY 11.			
	h m s	s	° ′ ″	″
0	11 15 13.35	2.2111	N. 5 15 3.3	17.703
1	11 17 25.89	2.2069	4 57 20.7	17.715
2	11 19 38.18	2.2029	4 39 37.5	17.725
3	11 21 50.24	2.1991	4 21 53.7	17.733
4	11 24 2.07	2.1953	4 4 9.5	17.739
5	11 26 13.68	2.1916	3 46 25.0	17.744
6	11 28 25.06	2.1879	3 28 40.2	17.747
7	11 30 36.23	2.1844	3 10 55.4	17.747
8	11 32 47.19	2.1809	2 53 10.6	17.746
9	11 34 57.94	2.1775	2 35 25.9	17.743
10	11 37 8.49	2.1743	2 17 41.5	17.737
11	11 39 18.86	2.1712	1 59 57.5	17.729
12	11 41 29.04	2.1682	1 42 14.0	17.720
13	11 43 39.04	2.1652	1 24 31.1	17.709
14	11 45 48.86	2.1622	1 6 48.9	17.697
15	11 47 58.50	2.1594	0 49 7.5	17.683
16	11 50 7.98	2.1567	0 31 27.0	17.666
17	11 52 17.30	2.1540	N. 0 13 47.6	17.647
18	11 54 26.46	2.1514	S. 0 3 50.7	17.627
19	11 56 35.47	2.1490	0 21 27.7	17.606
20	11 58 44.34	2.1467	0 39 3.4	17.583
21	12 0 53.08	2.1445	0 56 37.7	17.558
22	12 3 1.68	2.1423	1 14 10.4	17.531
23	12 5 10.15	2.1401	S. 1 31 41.4	17.502
	TUESDAY 12.			
0	12 7 18.49	2.1380	S. 1 49 10.6	17.472
1	12 9 26.71	2.1362	2 6 38.0	17.441
2	12 11 34.83	2.1344	2 24 3.5	17.407
3	12 13 42.84	2.1327	2 41 26.9	17.372
4	12 15 50.75	2.1310	2 58 48.1	17.335
5	12 17 58.56	2.1294	3 16 7.1	17.297
6	12 20 6.28	2.1279	3 33 23.8	17.258
7	12 22 13.91	2.1265	3 50 38.1	17.217
8	12 24 21.46	2.1253	4 7 49.8	17.173
9	12 26 28.94	2.1241	4 24 58.8	17.128
10	12 28 36.35	2.1229	4 42 5.1	17.083
11	12 30 43.69	2.1218	4 59 8.7	17.036
12	12 32 50.97	2.1208	5 16 9.4	16.987
13	12 34 58.19	2.1199	5 33 7.1	16.936
14	12 37 5.36	2.1192	5 50 1.7	16.884
15	12 39 12.49	2.1185	6 6 53.2	16.830
16	12 41 19.58	2.1178	6 23 41.5	16.777
17	12 43 26.63	2.1172	6 40 26.4	16.720
18	12 45 33.65	2.1168	6 57 7.9	16.662
19	12 47 40.65	2.1164	7 13 45.9	16.603
20	12 49 47.62	2.1160	7 30 20.3	16.543
21	12 51 54.57	2.1158	7 46 51.1	16.482
22	12 54 1.51	2.1157	8 3 18.2	16.419
23	12 56 8.45	2.1156	8 19 41.4	16.354
24	12 58 15.38	2.1155	S. 8 36 0.7	16.289

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 13.			
	h m s	s	° ′ ″	″
0	12 58 15.38	2.1155	S. 8 36 0.7	16.969
1	13 0 22.31	2.1156	8 52 16.1	16.922
2	13 2 29.25	2.1157	9 8 27.4	16.153
3	13 4 36.20	2.1159	9 24 34.5	16.063
4	13 6 43.16	2.1163	9 40 37.4	16.013
5	13 8 50.15	2.1167	9 56 36.1	15.942
6	13 10 57.16	2.1171	10 12 30.4	15.868
7	13 13 4.20	2.1176	10 28 20.2	15.793
8	13 15 11.27	2.1181	10 44 5.6	15.718
9	13 17 18.37	2.1187	10 59 46.4	15.641
10	13 19 25.51	2.1194	11 15 22.5	15.562
11	13 21 32.70	2.1201	11 30 53.9	15.483
12	13 23 39.93	2.1209	11 46 20.5	15.402
13	13 25 47.21	2.1218	12 1 42.2	15.321
14	13 27 54.55	2.1229	12 16 59.0	15.238
15	13 30 1.96	2.1240	12 32 10.8	15.154
16	13 32 9.43	2.1250	12 47 17.5	15.069
17	13 34 16.96	2.1261	13 2 19.1	14.982
18	13 36 24.56	2.1273	13 17 15.4	14.894
19	13 38 32.24	2.1286	13 32 6.4	14.806
20	13 40 40.00	2.1299	13 46 52.1	14.717
21	13 42 47.83	2.1312	14 1 32.5	14.627
22	13 44 55.75	2.1327	14 16 7.4	14.535
23	13 47 3.76	2.1342	S. 14 30 36.7	14.442
	THURSDAY 14.			
0	13 49 11.86	2.1358	S. 14 45 0.4	14.348
1	13 51 20.06	2.1374	14 59 18.5	14.253
2	13 53 28.35	2.1390	15 13 30.8	14.157
3	13 55 36.74	2.1407	15 27 37.3	14.060
4	13 57 45.23	2.1424	15 41 38.0	13.962
5	13 59 53.83	2.1442	15 55 32.8	13.863
6	14 2 2.54	2.1461	16 9 21.6	13.763
7	14 4 11.36	2.1479	16 23 4.4	13.662
8	14 6 20.29	2.1498	16 36 41.1	13.560
9	14 8 29.34	2.1518	16 50 11.6	13.457
10	14 10 38.51	2.1538	17 3 35.9	13.353
11	14 12 47.80	2.1559	17 16 54.0	13.249
12	14 14 57.22	2.1581	17 30 5.8	13.143
13	14 17 6.77	2.1603	17 43 11.2	13.036
14	14 19 16.44	2.1625	17 56 10.2	12.928
15	14 21 26.24	2.1644	18 9 2.6	12.819
16	14 23 36.17	2.1667	18 21 48.5	12.711
17	14 25 46.24	2.1689	18 34 27.9	12.601
18	14 27 56.44	2.1712	18 47 0.6	12.489
19	14 30 6.78	2.1735	18 59 26.6	12.377
20	14 32 17.26	2.1758	19 11 45.9	12.264
21	14 34 27.88	2.1782	19 23 58.3	12.150
22	14 36 38.65	2.1806	19 36 3.9	12.036
23	14 38 49.56	2.1830	19 48 2.6	11.920
24	14 41 0.61	2.1854	S. 19 59 54.3	11.803

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 15.			
	h m s	s	° ′ ″	″
0	14 41 0.61	2.1854	S. 19 59 54.3	11.803
1	14 43 11.81	2.1879	20 11 39.0	11.686
2	14 45 23.16	2.1903	20 23 16.7	11.569
3	14 47 34.65	2.1928	20 34 47.3	11.450
4	14 49 46.29	2.1953	20 46 10.7	11.330
5	14 51 58.09	2.1979	20 57 26.9	11.210
6	14 54 10.04	2.2004	21 8 35.9	11.089
7	14 56 22.14	2.2029	21 19 37.6	10.967
8	14 58 34.39	2.2054	21 30 32.0	10.844
9	15 0 46.79	2.2079	21 41 18.9	10.720
10	15 2 59.34	2.2105	21 51 58.4	10.597
11	15 5 12.05	2.2131	22 2 30.5	10.473
12	15 7 24.91	2.2156	22 12 55.1	10.347
13	15 9 37.92	2.2181	22 23 12.1	10.220
14	15 11 51.08	2.2207	22 33 21.5	10.093
15	15 14 4.40	2.2232	22 43 23.3	9.966
16	15 16 17.87	2.2257	22 53 17.4	9.837
17	15 18 31.49	2.2282	23 3 3.7	9.708
18	15 20 45.26	2.2307	23 12 42.3	9.578
19	15 22 59.18	2.2332	23 22 13.1	9.447
20	15 25 13.25	2.2357	23 31 36.0	9.316
21	15 27 27.47	2.2382	23 40 51.0	9.184
22	15 29 41.84	2.2407	23 49 58.1	9.052
23	15 31 56.35	2.2431	S. 23 58 57.3	8.920
	SATURDAY 16.			
0	15 34 11.01	2.2455	S. 24 7 48.5	8.788
1	15 36 25.81	2.2479	24 16 31.6	8.656
2	15 38 40.76	2.2503	24 25 6.7	8.517
3	15 40 55.85	2.2527	24 33 33.7	8.389
4	15 43 11.08	2.2550	24 41 52.5	8.246
5	15 45 26.45	2.2572	24 50 3.2	8.110
6	15 47 41.95	2.2595	24 58 5.7	7.973
7	15 49 57.59	2.2617	25 6 0.0	7.836
8	15 52 13.36	2.2639	25 13 46.0	7.696
9	15 54 29.26	2.2661	25 21 23.7	7.559
10	15 56 45.29	2.2683	25 28 53.1	7.420
11	15 59 1.45	2.2703	25 36 14.1	7.281
12	16 1 17.73	2.2723	25 43 26.8	7.142
13	16 3 34.13	2.2743	25 50 31.1	7.001
14	16 5 50.65	2.2763	25 57 26.9	6.859
15	16 8 7.29	2.2782	26 4 14.2	6.718
16	16 10 24.04	2.2801	26 10 53.1	6.577
17	16 12 40.90	2.2819	26 17 23.5	6.435
18	16 14 57.87	2.2837	26 23 45.3	6.292
19	16 17 14.94	2.2853	26 29 58.5	6.149
20	16 19 32.11	2.2870	26 36 3.2	6.007
21	16 21 49.38	2.2887	26 41 59.3	5.863
22	16 24 6.75	2.2902	26 47 46.8	5.719
23	16 26 24.20	2.2916	26 53 25.6	5.575
24	16 28 41.74	2.2931	S. 26 58 55.8	5.431

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 17.			
	h m s	s	° ′ ″	″
0	16 28 41.74	2.2931	S. 26 58 55.8	5.431
1	16 30 59.37	2.2944	27 4 17.3	5.286
2	16 33 17.07	2.2957	27 9 30.1	5.142
3	16 35 34.85	2.2970	27 14 34.2	4.996
4	16 37 52.71	2.2982	27 19 29.6	4.850
5	16 40 10.63	2.2993	27 24 16.2	4.704
6	16 42 28.62	2.3003	27 28 54.1	4.558
7	16 44 46.67	2.3013	27 33 23.2	4.412
8	16 47 4.77	2.3022	27 37 43.5	4.266
9	16 49 22.93	2.3030	27 41 55.1	4.119
10	16 51 41.13	2.3038	27 45 57.8	3.972
11	16 53 59.38	2.3045	27 49 51.7	3.825
12	16 56 17.67	2.3051	27 53 36.8	3.678
13	16 58 35.99	2.3056	27 57 13.1	3.531
14	17 0 54.34	2.3061	28 0 40.5	3.384
15	17 3 12.72	2.3065	28 3 59.1	3.237
16	17 5 31.12	2.3068	28 7 8.9	3.089
17	17 7 49.54	2.3071	28 10 9.8	2.942
18	17 10 7.97	2.3072	28 13 1.9	2.794
19	17 12 26.41	2.3073	28 15 45.1	2.647
20	17 14 44.85	2.3072	28 18 19.5	2.499
21	17 17 3.28	2.3072	28 20 45.0	2.352
22	17 19 21.71	2.3071	28 23 1.7	2.204
23	17 21 40.13	2.3068	S. 28 25 9.5	2.057
	MONDAY 18.			
0	17 23 58.53	2.3065	S. 28 27 8.5	1.909
1	17 26 16.91	2.3061	28 28 58.6	1.762
2	17 28 35.26	2.3056	28 30 39.9	1.615
3	17 30 53.58	2.3051	28 32 12.4	1.468
4	17 33 11.87	2.3045	28 33 36.1	1.321
5	17 35 30.12	2.3037	28 34 50.9	1.173
6	17 37 48.31	2.3028	28 35 56.9	1.027
7	17 40 6.45	2.3019	28 36 54.1	0.880
8	17 42 24.54	2.3010	28 37 42.5	0.734
9	17 44 42.57	2.2999	28 38 22.2	0.588
10	17 47 0.53	2.2987	28 38 53.1	0.442
11	17 49 18.42	2.2975	28 39 15.2	0.296
12	17 51 36.23	2.2962	28 39 28.6	0.150
13	17 53 53.96	2.2948	28 39 33.2	− 0.005
14	17 56 11.61	2.2933	28 39 29.2	+ 0.139
15	17 58 29.16	2.2917	28 39 16.5	0.284
16	18 0 46.61	2.2901	28 38 55.1	0.429
17	18 3 3.97	2.2884	28 38 25.0	0.573
18	18 5 21.22	2.2866	28 37 46.3	0.717
19	18 7 38.36	2.2847	28 36 59.0	0.860
20	18 9 55.38	2.2827	28 36 3.1	1.003
21	18 12 12.29	2.2807	28 34 58.6	1.146
22	18 14 29.07	2.2786	28 33 45.6	1.288
23	18 16 45.72	2.2763	28 32 24.0	1.430
24	18 19 2.23	2.2740	S. 28 30 54.0	1.571

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 19.			
	h m s	s	° ′ ″	″
0	18 19 2.23	2.2740	S. 28 30 54.0	1.571
1	18 21 18.60	2.2717	28 29 15.5	1.712
2	18 23 34.83	2.2693	28 27 28.5	1.853
3	18 25 50.92	2.2668	28 25 33.1	1.993
4	18 28 6.85	2.2642	28 23 29.3	2.133
5	18 30 22.62	2.2615	28 21 17.1	2.272
6	18 32 38.23	2.2588	28 18 56.6	2.411
7	18 34 53.68	2.2560	28 16 27.8	2.549
8	18 37 8.95	2.2531	28 13 50.7	2.687
9	18 39 24.05	2.2502	28 11 5.3	2.824
10	18 41 38.98	2.2472	28 8 11.8	2.960
11	18 43 53.72	2.2442	28 5 10.1	3.097
12	18 46 8.28	2.2411	28 2 0.2	3.233
13	18 48 22.65	2.2379	27 58 42.2	3.367
14	18 50 36.82	2.2346	27 55 16.2	3.501
15	18 52 50.80	2.2312	27 51 42.1	3.635
16	18 55 4.57	2.2278	27 48 0.0	3.768
17	18 57 18.14	2.2244	27 44 10.0	3.900
18	18 59 31.50	2.2209	27 40 12.0	4.032
19	19 1 44.65	2.2173	27 36 6.1	4.163
20	19 3 57.58	2.2137	27 31 52.4	4.293
21	19 6 10.30	2.2101	27 27 30.9	4.423
22	19 8 22.79	2.2063	27 23 1.6	4.552
23	19 10 35.06	2.2026	S. 27 18 24.6	4.681
	WEDNESDAY 20.			
0	19 12 47.10	2.1988	S. 27 13 39.9	4.809
1	19 14 58.91	2.1949	27 8 47.6	4.936
2	19 17 10.49	2.1910	27 3 47.6	5.062
3	19 19 21.83	2.1870	26 58 40.1	5.187
4	19 21 32.93	2.1830	26 53 25.1	5.312
5	19 23 43.79	2.1790	26 48 2.6	5.437
6	19 25 54.41	2.1749	26 42 32.7	5.560
7	19 28 4.78	2.1708	26 36 55.4	5.682
8	19 30 14.90	2.1667	26 31 10.8	5.804
9	19 32 24.78	2.1625	26 25 18.9	5.925
10	19 34 34.40	2.1582	26 19 19.8	6.046
11	19 36 43.77	2.1540	26 13 13.5	6.165
12	19 38 52.88	2.1497	26 7 0.0	6.284
13	19 41 1.73	2.1453	26 0 39.4	6.402
14	19 43 10.32	2.1410	25 54 11.8	6.519
15	19 45 18.65	2.1367	25 47 37.2	6.635
16	19 47 26.72	2.1323	25 40 55.6	6.751
17	19 49 34.52	2.1278	25 34 7.1	6.866
18	19 51 42.05	2.1233	25 27 11.7	6.980
19	19 53 49.31	2.1188	25 20 9.5	7.093
20	19 55 56.31	2.1144	25 13 0.6	7.204
21	19 58 3.04	2.1099	25 5 45.0	7.316
22	20 0 9.50	2.1053	24 58 22.7	7.427
23	20 2 15.68	2.1007	24 50 53.8	7.537
24	20 4 21.59	2.0962	S. 24 43 18.3	7.646

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 21.			
	h m s	s	° ′ ″	″
0	20 4 21.59	2.0062	S. 24 43 18.3	7.646
1	20 6 27.23	2.0017	24 35 36.3	7.753
2	20 8 32.60	2.0672	24 27 47.9	7.860
3	20 10 37.69	2.0626	24 19 53.1	7.967
4	20 12 42.51	2.0780	24 11 51.9	8.072
5	20 14 47.05	2.0733	24 3 44.4	8.177
6	20 16 51.31	2.0687	23 55 30.7	8.280
7	20 18 55.30	2.0642	23 47 10.8	8.383
8	20 20 59.01	2.0596	23 38 44.7	8.486
9	20 23 2.45	2.0550	23 30 12.5	8.587
10	20 25 5.61	2.0504	23 21 34.3	8.687
11	20 27 8.50	2.0458	23 12 50.1	8.786
12	20 29 11.11	2.0412	23 4 0.0	8.884
13	20 31 13.45	2.0367	22 55 4.0	8.982
14	20 33 15.51	2.0321	22 46 2.1	9.079
15	20 35 17.30	2.0275	22 36 54.5	9.174
16	20 37 18.81	2.0229	22 27 41.2	9.269
17	20 39 20.05	2.0184	22 18 22.2	9.364
18	20 41 21.02	2.0139	22 8 57.5	9.457
19	20 43 21.72	2.0094	21 59 27.3	9.549
20	20 45 22.15	2.0048	21 49 51.6	9.641
21	20 47 22.30	2.0003	21 40 10.4	9.732
22	20 49 22.18	1.9958	21 30 23.8	9.821
23	20 51 21.80	1.9914	S. 21 20 31.9	9.909
	FRIDAY 22.			
0	20 53 21.15	1.9870	S. 21 10 34.7	9.997
1	20 55 20.24	1.9826	21 0 32.2	10.085
2	20 57 19.06	1.9781	20 50 24.5	10.171
3	20 59 17.61	1.9737	20 40 11.7	10.256
4	21 1 15.90	1.9694	20 29 53.8	10.340
5	21 3 13.94	1.9650	20 19 30.9	10.423
6	21 5 11.72	1.9606	20 9 3.0	10.506
7	21 7 9.24	1.9565	19 58 30.2	10.586
8	21 9 6.50	1.9523	19 47 52.5	10.669
9	21 11 3.51	1.9481	19 37 9.9	10.749
10	21 13 0.27	1.9439	19 26 22.6	10.828
11	21 14 56.78	1.9398	19 15 30.6	10.906
12	21 16 53.04	1.9357	19 4 33.9	10.983
13	21 18 49.06	1.9316	18 53 32.6	11.060
14	21 20 44.83	1.9274	18 42 26.7	11.135
15	21 22 40.35	1.9233	18 31 16.4	11.209
16	21 24 35.63	1.9194	18 20 1.6	11.283
17	21 26 30.68	1.9155	18 8 42.4	11.357
18	21 28 25.49	1.9115	17 57 18.8	11.429
19	21 30 20.06	1.9077	17 45 50.9	11.500
20	21 32 14.41	1.9039	17 34 18.8	11.570
21	21 34 8.53	1.9001	17 22 42.5	11.639
22	21 36 2.42	1.8963	17 11 2.1	11.708
23	21 37 56.09	1.8926	16 59 17.5	11.776
24	21 39 49.53	1.8889	S. 16 47 28.9	11.843

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 23.			
	h m s	s	° ′ ″	″
0	21 39 49.53	1.8889	S. 16 47 28.9	11.843
1	21 41 42.75	1.8853	16 35 36.3	11.909
2	21 43 35.76	1.8818	16 23 39.8	11.974
3	21 45 28.56	1.8783	16 11 39.4	12.038
4	21 47 21.15	1.8747	15 59 35.2	12.102
5	21 49 13.52	1.8711	15 47 27.2	12.164
6	21 51 5.68	1.8677	15 35 15.5	12.226
7	21 52 57.64	1.8644	15 23 0.1	12.287
8	21 54 49.40	1.8611	15 10 41.1	12.347
9	21 56 40.97	1.8578	14 58 18.5	12.407
10	21 58 32.34	1.8546	14 45 52.3	12.465
11	22 0 23.52	1.8514	14 33 22.7	12.522
12	22 2 14.51	1.8483	14 20 49.7	12.579
13	22 4 5.31	1.8452	14 8 13.3	12.635
14	22 5 55.93	1.8422	13 55 33.5	12.690
15	22 7 46.37	1.8392	13 42 50.5	12.744
16	22 9 36.63	1.8362	13 30 4.3	12.797
17	22 11 26.72	1.8334	13 17 14.9	12.850
18	22 13 16.64	1.8306	13 4 22.3	12.902
19	22 15 6.39	1.8279	12 51 26.6	12.952
20	22 16 55.98	1.8252	12 38 28.0	13.002
21	22 18 45.41	1.8225	12 25 26.4	13.051
22	22 20 34.68	1.8198	12 12 21.9	13.099
23	22 22 23.79	1.8172	S. 11 59 14.5	13.147
	SUNDAY 24.			
0	22 24 12.75	1.8147	S. 11 46 4.2	13.195
1	22 26 1.56	1.8123	11 32 51.1	13.241
2	22 27 50.23	1.8100	11 19 35.3	13.285
3	22 29 38.76	1.8077	11 6 16.9	13.329
4	22 31 27.15	1.8054	10 52 55.8	13.373
5	22 33 15.41	1.8032	10 39 32.1	13.416
6	22 35 3.53	1.8009	10 26 5.9	13.458
7	22 36 51.52	1.7988	10 12 37.2	13.499
8	22 38 39.39	1.7969	9 59 6.0	13.539
9	22 40 27.15	1.7950	9 45 32.5	13.578
10	22 42 14.79	1.7930	9 31 56.6	13.617
11	22 44 2.31	1.7911	9 18 18.4	13.655
12	22 45 49.72	1.7893	9 4 38.0	13.692
13	22 47 37.03	1.7876	8 50 55.4	13.728
14	22 49 24.23	1.7859	8 37 10.6	13.764
15	22 51 11.33	1.7843	8 23 23.7	13.799
16	22 52 58.34	1.7828	8 9 34.7	13.833
17	22 54 45.26	1.7813	7 55 43.7	13.866
18	22 56 32.09	1.7798	7 41 50.8	13.898
19	22 58 18.83	1.7784	7 27 56.0	13.929
20	23 0 5.50	1.7771	7 13 59.3	13.961
21	23 1 52.09	1.7758	7 0 0.7	13.991
22	23 3 38.60	1.7747	6 46 0.4	14.019
23	23 5 25.05	1.7736	6 31 58.4	14.048
24	23 7 11.43	1.7725	S. 6 17 54.7	14.076

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 25.			
	h m s	s	° ′ ″	″
0	23 7 11.43	1.7795	S. 6 17 54.7	14.076
1	23 8 57.75	1.7715	6 3 49.3	14.102
2	23 10 44.01	1.7706	5 49 42.4	14.127
3	23 12 30.22	1.7697	5 35 34.0	14.152
4	23 14 16.38	1.7689	5 21 24.1	14.177
5	23 16 2.49	1.7682	5 7 12.7	14.201
6	23 17 48.56	1.7675	4 53 0.0	14.224
7	23 19 34.59	1.7669	4 38 45.9	14.246
8	23 21 20.59	1.7663	4 24 30.5	14.267
9	23 23 6.55	1.7658	4 10 13.9	14.287
10	23 24 52.49	1.7655	3 55 56.1	14.307
11	23 26 38.41	1.7652	3 41 37.1	14.327
12	23 28 24.31	1.7649	3 27 16.9	14.345
13	23 30 10.19	1.7647	3 12 55.7	14.362
14	23 31 56.07	1.7646	2 58 33.5	14.378
15	23 33 41.94	1.7644	2 44 10.4	14.393
16	23 35 27.80	1.7644	2 29 46.3	14.408
17	23 37 13.67	1.7645	2 15 21.4	14.422
18	23 38 59.54	1.7646	2 0 55.6	14.436
19	23 40 45.42	1.7648	1 46 29.1	14.449
20	23 42 31.32	1.7651	1 32 1.8	14.461
21	23 44 17.23	1.7654	1 17 33.8	14.472
22	23 46 3.17	1.7659	1 3 5.2	14.481
23	23 47 49.14	1.7663	S. 0 48 36.1	14.490
	TUESDAY 26.			
0	23 49 35.13	1.7668	S. 0 34 6.4	14.499
1	23 51 21.16	1.7675	0 19 36.2	14.507
2	23 53 7.23	1.7682	S. 0 5 5.6	14.514
3	23 54 53.34	1.7689	N. 0 9 25.4	14.520
4	23 56 39.50	1.7697	0 23 56.8	14.525
5	23 58 25.71	1.7707	0 38 28.4	14.529
6	0 0 11.98	1.7717	0 53 0.3	14.533
7	0 1 58.31	1.7727	1 7 32.4	14.537
8	0 3 44.70	1.7738	1 22 4.7	14.538
9	0 5 31.16	1.7749	1 36 37.0	14.539
10	0 7 17.69	1.7762	1 51 9.4	14.540
11	0 9 4.30	1.7775	2 5 41.8	14.539
12	0 10 50.99	1.7788	2 20 14.1	14.538
13	0 12 37.76	1.7803	2 34 46.3	14.536
14	0 14 24.63	1.7819	2 49 18.4	14.534
15	0 16 11.59	1.7835	3 3 50.4	14.531
16	0 17 58.65	1.7852	3 18 22.1	14.525
17	0 19 45.82	1.7870	3 32 53.4	14.519
18	0 21 33.09	1.7888	3 47 24.4	14.513
19	0 23 20.48	1.7907	4 1 55.0	14.506
20	0 25 7.98	1.7927	4 16 25.1	14.498
21	0 26 55.60	1.7947	4 30 54.8	14.490
22	0 28 43.34	1.7969	4 45 23.9	14.480
23	0 30 31.22	1.7991	4 59 52.4	14.469
24	0 32 19.23	1.8013	N. 5 14 20.2	14.457
	WEDNESDAY 27.			
0	0 32 19.23	1.8013	N. 5 14 20.2	14.457
1	0 34 7.38	1.8037	5 28 47.3	14.445
2	0 35 55.67	1.8061	5 43 13.6	14.432
3	0 37 44.11	1.8086	5 57 39.2	14.419
4	0 39 32.70	1.8112	6 12 3.9	14.404
5	0 41 21.45	1.8137	6 26 27.6	14.388
6	0 43 10.35	1.8164	6 40 50.4	14.372
7	0 44 59.42	1.8192	6 55 12.2	14.353
8	0 46 48.66	1.8222	7 9 32.8	14.334
9	0 48 38.08	1.8252	7 23 52.3	14.315
10	0 50 27.68	1.8281	7 38 10.6	14.295
11	0 52 17.45	1.8311	7 52 27.7	14.274
12	0 54 7.41	1.8343	8 6 43.5	14.252
13	0 55 57.57	1.8376	8 20 58.0	14.229
14	0 57 47.92	1.8409	8 35 11.0	14.204
15	0 59 38.47	1.8442	8 49 22.5	14.179
16	1 1 29.23	1.8477	9 3 32.5	14.154
17	1 3 20.20	1.8513	9 17 41.0	14.127
18	1 5 11.39	1.8550	9 31 47.8	14.099
19	1 7 2.80	1.8587	9 45 52.9	14.071
20	1 8 54.43	1.8624	9 59 56.3	14.041
21	1 10 46.29	1.8662	10 13 57.8	14.009
22	1 12 38.38	1.8702	10 27 57.4	13.978
23	1 14 30.71	1.8742	N.10 41 55.1	13.946
	THURSDAY 28.			
0	1 16 23.28	1.8782	N.10 55 50.9	13.913
1	1 18 16.09	1.8823	11 9 44.6	13.877
2	1 20 9.16	1.8866	11 23 36.2	13.841
3	1 22 2.49	1.8910	11 37 25.6	13.804
4	1 23 56.08	1.8953	11 51 12.7	13.767
5	1 25 49.93	1.8997	12 4 57.6	13.728
6	1 27 44.05	1.9043	12 18 40.1	13.688
7	1 29 38.45	1.9089	12 32 20.1	13.647
8	1 31 33.12	1.9135	12 45 57.7	13.606
9	1 33 28.07	1.9182	12 59 32.8	13.563
10	1 35 23.31	1.9231	13 13 5.3	13.519
11	1 37 18.84	1.9280	13 26 35.1	13.473
12	1 39 14.67	1.9330	13 40 2.1	13.427
13	1 41 10.80	1.9381	13 53 26.3	13.380
14	1 43 7.24	1.9432	14 6 47.7	13.332
15	1 45 3.98	1.9483	14 20 6.1	13.282
16	1 47 1.03	1.9535	14 33 21.5	13.231
17	1 48 58.40	1.9589	14 46 33.8	13.178
18	1 50 56.10	1.9643	14 59 42.9	13.125
19	1 52 54.12	1.9697	15 12 48.8	13.072
20	1 54 52.47	1.9753	15 25 51.5	13.017
21	1 56 51.16	1.9810	15 38 50.8	12.960
22	1 58 50.19	1.9867	15 51 46.7	12.902
23	2 0 49.56	1.9924	16 4 39.1	12.844
24	2 2 49.28	1.9983	N.16 17 28.0	12.784

GREENWICH MEAN TIME.

PHASES OF THE MOON.

			d	h	m
☽	First Quarter	Feb.	2	12	16.1
○	Full Moon		9	5	23.0
☾	Last Quarter		16	1	8.8
●	New Moon		24	4	43.6

			d	h
☾	Perigee	Feb.	9	1.2
☾	Apogee		22	6.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	72 19 50	2886	73 45 50	3133	75 12 7	3379	76 38 41	3164
	Venus	W.	57 27 43	2888	58 52 8	3074	60 16 50	3260	61 41 48	3345
	α Pegasi	W.	36 1 40	2832	37 19 40	3585	38 38 53	3582	39 59 15	3444
	Aldebaran	E.	44 19 0	2989	42 48 34	2987	41 18 5	2985	39 47 33	2982
	Jupiter	E.	62 9 7	2825	60 35 24	2823	59 1 26	2811	57 27 13	2798
	Pollux	E.	86 44 27	2825	85 10 44	2822	83 36 45	2820	82 2 29	2796
2	Sun	W.	83 56 6	2865	85 24 33	3089	86 53 21	3058	88 22 29	3034
	Venus	W.	68 51 12	3165	70 18 3	3148	71 45 14	3131	73 12 46	3114
	α Pegasi	W.	46 56 0	2800	48 21 58	3171	49 48 42	3133	51 16 11	3097
	Jupiter	E.	49 31 58	2725	47 56 4	2721	46 19 52	2707	44 43 22	2694
	Pollux	E.	74 6 39	2794	72 30 31	2790	70 54 3	2894	69 17 15	2678
	Regulus	E.	110 56 18	2722	109 20 9	2707	107 43 39	2692	106 6 49	2676
3	Sun	W.	95 53 42	2943	97 25 6	2985	98 56 53	2986	100 29 4	2987
	Venus	W.	80 35 55	2991	82 5 42	3002	83 35 52	2989	85 6 27	2963
	α Pegasi	W.	58 43 58	2930	60 15 27	2910	61 47 33	2863	63 20 14	2855
	Pollux	E.	61 7 46	2595	59 28 44	2577	57 49 18	2561	56 9 29	2543
	Regulus	E.	97 57 8	2593	96 18 3	2575	94 38 34	2558	92 58 41	2540
4	Sun	W.	108 16 13	2789	109 50 56	2769	111 26 5	2749	113 1 40	2729
	Venus	W	92 45 35	2983	94 18 41	2942	95 52 14	2982	97 26 13	2901
	α Pegasi	W.	71 12 10	2729	72 48 11	2706	74 24 43	2683	76 1 46	2660
	α Arietis	W.	27 49 31	2546	29 29 12	2536	31 9 35	2506	32 50 37	2480
	Pollux	E.	47 44 11	2452	46 1 52	2435	44 19 7	2417	42 35 57	2399
	Regulus	E.	84 33 3	2449	82 50 38	2431	81 7 48	2413	79 24 32	2394
5	Sun	W.	121 6 9	2632	122 44 21	2612	124 23 0	2593	126 2 5	2574
	Venus	W	105 22 46	2701	106 59 24	2682	108 36 28	2662	110 13 59	2643
	α Pegasi	W.	84 14 25	2556	85 54 21	2536	87 34 44	2518	89 15 32	2500
	α Arietis	W	41 24 53	2360	43 9 25	2339	44 54 28	2317	46 40 2	2297
	Mars	W	31 9 32	2482	32 51 10	2462	34 33 17	2442	36 15 52	2423
	Pollux	E.	33 53 42	2311	32 7 59	2294	30 21 51	2278	28 35 19	2262
	Regulus	E.	70 41 33	2303	68 55 38	2285	67 9 16	2267	65 22 28	2250
6	α Arietis	W	55 35 10	2202	57 23 34	2184	59 12 25	2168	61 1 41	2151
	Mars	W.	44 55 29	2339	46 40 42	2315	48 26 19	2299	50 12 20	2283
	Regulus	E.	56 22 7	2166	54 32 48	2151	52 43 6	2136	50 53 1	2120
	Spica	E.	110 21 52	2164	108 32 30	2148	106 42 44	2132	104 52 34	2118
7	α Arietis	W.	70 13 52	2080	72 5 22	2068	73 57 11	2056	75 49 18	2046
	Mars	W.	59 7 58	2212	60 56 7	2200	62 44 34	2188	64 33 19	2178
	Aldebaran	W.	30 52 18	2227	41 40 6	2203	43 28 29	2181	45 17 25	2161
	Spica	E.	95 36 19	2051	93 44 4	2039	91 51 30	2028	89 58 39	2017
	Saturn	E.	109 58 7	2063	108 6 41	2070	106 14 55	2058	104 22 51	2048
8	α Arietis	W.	85 13 43	2001	87 7 15	1996	89 0 56	1990	90 54 46	1986
	Mars	W.	73 40 47	2134	75 30 54	2128	77 21 10	2122	79 11 35	2118
	Aldebaran	W.	51 28 53	2085	56 20 16	2074	58 11 55	2064	60 3 49	2057
	Jupiter	W.	35 45 37	2016	37 38 46	2007	39 32 10	1998	41 25 48	1990
	Spica	E.	80 30 41	1975	78 36 28	1970	76 42 6	1964	74 47 35	1960
	Saturn	E.	94 58 42	2004	93 5 14	1998	91 11 36	1993	89 17 50	1987

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Sun	W.	78° 5′ 33″	3149	79° 32′ 43″	3134	81° 0′ 11″	3118	82° 27′ 59″	3103
	Venus	W.	63 7 4	3030	64 32 38	3014	65 58 30	3196	67 24 41	3182
	α Pegasi	W.	41 20 42	3391	42 43 9	3341	44 6 33	3294	45 30 51	3251
	Aldebaran	E.	38 16 56	2969	36 46 23	2965	35 15 51	2960	33 45 24	2995
	Jupiter	E.	55 52 43	2786	54 17 57	2773	52 42 54	2761	51 7 35	2747
	Pollux	E.	80 27 56	2769	78 53 5	2768	77 17 55	2754	75 42 27	2739
2	Sun	W.	89 51 59	3017	91 21 51	2999	92 52 5	2981	94 22 42	2969
	Venus	W.	74 40 39	3096	76 8 54	3077	77 37 32	3059	79 6 32	3040
	α Pegasi	W.	52 44 24	3064	54 13 18	3031	55 42 52	2999	57 13 6	2969
	Jupiter	E.	43 6 34	2681	41 29 28	2667	39 52 4	2654	38 14 22	2640
	Pollux	E.	67 40 5	2662	66 2 34	2645	64 24 40	2629	62 46 24	2619
	Regulus	E.	104 29 37	2660	102 52 4	2643	101 14 8	2627	99 35 50	2610
3	Sun	W.	102 1 40	2868	103 34 40	2848	105 8 6	2836	106 41 57	2806
	Venus	W.	86 37 26	2943	88 8 50	2923	89 40 40	2903	91 12 55	2883
	α Pegasi	W.	64 53 30	2829	66 27 20	2803	68 1 44	2778	69 36 41	2753
	Pollux	E.	54 29 15	2585	52 48 36	2567	51 7 33	2469	49 26 5	2471
	Regulus	E.	91 18 24	2582	89 37 42	2564	87 56 35	2466	86 15 2	2467
4	Sun	W.	114 37 41	2710	116 14 8	2689	117 51 2	2670	119 28 22	2650
	Venus	W.	99 0 39	2782	100 35 31	2761	102 10 50	2741	103 46 35	2722
	α Pegasi	W.	77 39 20	2638	79 17 23	2617	80 55 55	2596	82 34 56	2575
	α Arietis	W.	34 32 18	2465	36 14 35	2439	37 57 27	2466	39 40 53	2389
	Pollux	E.	40 52 21	2389	39 8 20	2364	37 23 53	2346	35 39 0	2398
	Regulus	E.	77 40 49	2376	75 56 40	2357	74 12 4	2339	72 27 2	2321
5	Sun	W.	127 41 35	2556	129 21 31	2538	131 1 51	2520	132 42 36	2508
	Venus	W.	111 51 55	2694	113 30 17	2695	115 9 5	2587	116 48 18	2568
	α Pegasi	W.	90 56 45	2483	92 38 22	2467	94 20 22	2451	96 2 44	2436
	α Arietis	W.	48 26 6	2377	50 12 40	2358	51 59 42	2339	53 47 12	2299
	Mars	W.	37 58 54	2404	39 42 23	2385	41 26 19	2367	43 10 41	2349
	Pollux	E.	26 48 23	2346	25 1 4	2331	23 13 23	2317	21 25 21	2305
	Regulus	E.	63 35 15	2333	61 47 36	2315	59 59 31	2196	58 11 1	2182
6	α Arietis	W.	62 51 22	2136	64 41 26	2121	66 31 53	2107	68 22 42	2093
	Mars	W.	51 58 44	2268	53 45 31	2253	55 32 39	2239	57 20 8	2225
	Regulus	E.	49 2 33	2106	47 11 43	2092	45 20 32	2079	43 29 1	2066
	Spica	E.	103 2 2	2103	101 11 8	2089	99 19 52	2075	97 28 15	2063
7	α Arietis	W.	77 41 41	2035	79 34 20	2025	81 27 15	2017	83 20 23	2009
	Mars	W.	66 22 20	2168	68 11 36	2158	70 1 7	2147	71 50 51	2141
	Aldebaran	W.	47 6 52	2143	48 56 46	2196	50 47 6	2111	52 37 49	2097
	Spica	E.	88 5 32	2008	86 12 10	1998	84 18 33	1990	82 24 43	1989
	Saturn	E.	102 30 31	2037	100 37 55	2028	98 45 4	2019	96 51 59	2011
8	α Arietis	W.	92 48 42	1988	94 42 44	1979	96 36 51	1977	98 31 1	1977
	Mars	W.	81 2 7	2114	82 52 45	2111	84 43 27	2109	86 34 13	2108
	Aldebaran	W.	61 55 55	2049	63 48 13	2043	65 40 40	2039	67 33 14	2035
	Jupiter	W.	43 19 38	1984	45 13 38	1978	47 7 47	1974	49 2 3	1971
	Spica	E.	72 52 57	1956	70 58 13	1953	69 3 25	1951	67 8 33	1950
	Saturn	E.	87 23 56	1984	85 29 57	1981	83 35 53	1979	81 41 46	1978

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	α Arietis	W.	100° 25′ 12″	1977	102° 19′ 23″	1977	104° 13′ 33″	1979	106° 7′ 40″	1981
	Mars	W.	88 25 0	2167	90 15 48	2166	92 6 35	2169	93 57 20	2111
	Aldebaran	W.	69 25 54	2032	71 18 38	2031	73 11 24	2030	75 4 11	2031
	Jupiter	W.	50 56 23	1969	52 50 46	1968	54 45 11	1968	56 39 36	1969
	Pollux	W.	25 43 15	1963	27 37 47	1963	29 32 20	1963	31 26 53	1963
	Spica	E.	65 13 39	1950	63 18 45	1950	61 23 51	1951	59 28 59	1953
	Saturn	E.	79 47 37	1978	77 53 28	1979	75 59 21	1981	74 5 16	1983
	Antares	E.	111 7 39	1949	109 12 44	1950	107 17 50	1951	105 22 58	1953
10	Mars	W.	103 9 48	2138	104 59 53	2143	106 49 47	2151	108 39 28	2160
	Aldebaran	W.	84 27 18	2050	86 19 35	2056	88 11 42	2064	90 3 37	2072
	Jupiter	W.	66 10 46	1987	68 4 40	1994	69 58 23	2001	71 51 55	2010
	Pollux	W.	40 58 50	1982	42 52 53	1988	44 46 46	1996	46 40 27	2003
	Spica	E.	49 55 54	1975	48 1 41	1982	46 7 39	1990	44 13 49	1996
	Saturn	E.	64 36 19	2009	62 42 59	2017	60 49 52	2026	58 56 58	2036
	Antares	E.	95 49 51	1975	93 55 38	1982	92 1 35	1990	90 7 45	1998
11	Aldebaran	W.	99 19 33	2127	101 9 51	2141	102 59 48	2155	104 49 24	2170
	Jupiter	W.	81 16 2	2061	83 8 1	2073	84 59 41	2087	86 51 0	2100
	Pollux	W.	56 5 22	2055	57 57 31	2067	59 49 21	2080	61 40 51	2094
	Saturn	E.	49 36 46	2098	47 45 44	2113	45 55 5	2130	44 4 51	2147
	Antares	E.	80 42 14	2051	78 49 59	2063	76 58 3	2076	75 6 27	2090
12	Jupiter	W.	96 2 8	2177	97 51 10	2194	99 39 47	2211	101 27 58	2229
	Pollux	W.	70 52 53	2169	72 42 7	2186	74 30 56	2202	76 19 20	2219
	Regulus	W.	34 3 0	2171	35 52 11	2187	37 40 58	2204	39 29 20	2220
	Saturn	E.	35 0 47	2250	33 13 34	2276	31 26 59	2302	29 41 3	2332
	Antares	E.	65 53 59	2166	64 4 40	2182	62 15 46	2200	60 27 18	2216
	Sun	E.	141 9 2	2489	139 27 33	2505	137 46 27	2522	136 5 45	2540
13	Pollux	W.	85 14 50	2309	87 0 36	2328	88 45 54	2347	90 30 45	2366
	Regulus	W.	48 24 44	2310	50 10 29	2328	51 55 48	2347	53 40 39	2366
	Antarés	E.	51 31 29	2307	49 45 39	2326	48 0 17	2344	46 15 22	2364
	α Aquilæ	E.	102 53 20	3133	101 25 50	3142	99 58 31	3152	98 31 24	3163
	Sun	E.	127 48 36	2635	126 10 29	2655	124 32 48	2675	122 55 35	2695
14	Pollux	W.	99 8 11	2461	100 50 19	2480	102 32 0	2499	104 13 14	2518
	Regulus	W.	62 18 8	2460	64 0 17	2480	65 41 59	2498	67 23 15	2517
	Antares	E.	37 37 39	2459	35 55 28	2477	34 13 43	2497	32 32 25	2516
	α Aquilæ	E.	91 1? 48	3241	89 54 27	3260	88 29 29	3280	87 4 54	3301
	Sun	E.	114 56 10	2797	113 21 37	2817	111 47 31	2837	110 13 51	2858
15	Pollux	W.	112 32 57	2610	114 11 38	2628	115 49 55	2646	117 27 48	2663
	Regulus	W.	75 43 7	2609	77 21 50	2626	79 0 9	2644	80 38 4	2661
	α Aquilæ	E.	80 8 32	3423	78 46 41	3449	77 25 20	3478	76 4 31	3506
	Sun	E.	102 31 58	2956	101 0 50	2975	99 30 6	2993	97 59 45	3013
16	Regulus	W.	88 41 59	2744	90 17 41	2760	91 53 2	2775	93 28 3	2789
	Spica	W.	34 41 31	2743	36 17 14	2758	37 52 37	2773	39 27 40	2788
	Saturn	W.	21 4 36	2935	22 36 10	2927	24 7 54	2924	25 39 43	2921
	α Aquilæ	E.	69 28 54	3670	68 11 35	3708	66 54 56	3746	65 36 57	3785
	Sun	E.	90 33 42	3101	89 5 34	3119	87 37 47	3134	86 10 19	3151

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
9	α Arietis	W.	108° 1′ 44″	1985	109° 55′ 42″	1989	111° 49′ 33″	1994	113° 43′ 16″	2001
	Mars	W.	95 48 2	2115	97 38 39	2118	99 29 10	2124	101 19 33	2129
	Aldebaran	W.	76 56 57	2033	78 49 40	2035	80 42 19	2039	82 34 52	2044
	Jupiter	W.	58 33 59	1971	60 28 19	1974	62 22 34	1977	64 16 44	1982
	Pollux	W.	33 21 25	1965	35 15 54	1968	37 10 19	1972	39 4 38	1976
	Spica	E.	57 34 10	1956	55 39 26	1960	53 44 48	1964	51 50 17	1969
	Saturn	E.	72 11 15	1987	70 17 20	1991	68 23 31	1996	66 29 50	2002
	Antares	E.	103 28 9	1956	101 33 25	1959	99 38 46	1963	97 44 14	1969
10	Mars	W.	110 28 56	2169	112 18 10	2160	114 7 7	2199	115 55 47	2203
	Aldebaran	W.	91 55 20	2081	93 46 48	2092	95 38 0	2102	97 28 56	2115
	Jupiter	W.	73 45 14	2019	75 38 19	2028	77 31 10	2036	79 23 45	2050
	Pollux	W.	48 33 56	2012	50 27 11	2022	52 20 11	2032	54 12 55	2043
	Spica	E.	42 20 12	2006	40 26 50	2017	38 33 43	2028	36 40 53	2039
	Saturn	E.	57 4 20	2047	55 11 59	2058	53 19 55	2070	51 28 10	2084
	Antares	E.	88 14 8	2007	86 20 45	2017	84 27 38	2028	82 34 47	2039
11	Aldebaran	W.	106 38 37	2186	108 27 26	2202	110 15 51	2219	112 3 50	2237
	Jupiter	W.	88 41 59	2115	90 32 36	2130	92 22 50	2145	94 12 41	2161
	Pollux	W.	63 32 0	2107	65 22 48	2122	67 13 13	2137	69 3 15	2153
	Saturn	E.	42 15 4	2165	40 25 44	2185	38 36 54	2205	36 48 34	2227
	Antares	E.	73 15 13	2104	71 24 20	2119	69 33 50	2134	67 43 43	2149
12	Jupiter	W.	103 15 43	2247	105 3 1	2265	106 49 52	2283	108 36 16	2302
	Pollux	W.	78 7 19	2237	79 54 52	2255	81 41 58	2273	83 28 37	2291
	Regulus	W.	41 17 17	2238	43 4 48	2256	44 51 53	2273	46 38 32	2291
	Saturn	E.	27 55 50	2264	26 11 23	2280	24 27 47	2438	22 45 7	2468
	Antares	E.	58 39 15	2235	56 51 39	2252	55 4 29	2270	53 17 46	2288
	Sun	E.	134 25 28	2559	132 45 36	2577	131 6 10	2596	129 27 10	2615
13	Pollux	W.	92 15 9	2384	93 59 6	2404	95 42 35	2423	97 25 37	2443
	Regulus	W.	55 25 3	2384	57 9 0	2403	58 52 30	2423	60 35 32	2441
	Antares	E.	44 30 55	2382	42 46 55	2402	41 3 23	2420	39 20 17	2440
	α Aquilæ	E.	97 4 31	3176	95 37 53	3190	94 11 32	3206	92 45 30	3223
	Sun	E.	121 18 48	2715	119 42 28	2735	118 6 35	2756	116 31 9	2776
14	Pollux	W.	105 54 2	2537	107 34 24	2556	109 14 20	2574	110 53 51	2592
	Regulus	W.	69 4 5	2535	70 44 29	2554	72 24 27	2573	74 3 59	2591
	Antares	E.	30 51 34	2535	29 11 9	2553	27 31 9	2572	25 51 35	2590
	α Aquilæ	E.	85 40 44	3324	84 17 0	3347	82 53 43	3371	81 30 53	3396
	Sun	E.	108 40 38	2677	107 7 50	2698	105 35 28	2917	104 3 31	2936
15	Pollux	W.	119 5 17	2681	120 42 23	2697	122 19 7	2714	123 55 28	2731
	Regulus	W.	82 15 36	2678	83 52 45	2695	85 29 32	2712	87 5 56	2728
	α Aquilæ	E.	74 44 14	3537	73 24 31	3569	72 5 23	3601	70 46 50	3635
	Sun	E.	96 29 48	3030	95 0 13	3049	93 31 1	3067	92 2 11	3084
16	Regulus	W.	95 2 45	2804	96 37 8	2818	98 11 13	2831	99 45 0	2845
	Spica	W.	41 2 24	2802	42 36 49	2817	44 10 55	2830	45 44 44	2844
	Saturn	W.	27 11 35	2922	28 43 26	2924	30 15 14	2938	31 46 57	2939
	α Aquilæ	E.	64 23 39	3636	63 9 4	3670	61 55 14	3915	60 42 9	3962
	Sun	E.	84 43 11	3167	83 16 22	3189	81 49 51	3197	80 23 38	3211

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day	Star's Name and Position.		Noon.	P. L. of Diff.	III^h.	P. L. of Diff.	VI^h.	P. L. of Diff.	IX^h.	P. L. of Diff.
[illegible]	Regulus	W	101 18 29	[illegible]	102 51 42	[illegible]	104 24 38	[illegible]	105 57 19	[illegible]
	[illegible]	W	47 18 [illegible]	[illegible]	48 51 29	[illegible]	50 24 27	[illegible]	51 57 [illegible]	[illegible]
	[illegible]	W	33 8 33	[illegible]	34 40 5	[illegible]	36 21 27	[illegible]	37 52 [illegible]	[illegible]
	[illegible]	E	39 28 12	[illegible]	38 18 24	[illegible]	37 7 48	[illegible]	35 [illegible] [illegible]	[illegible]
	[illegible]	E	78 37 42	[illegible]	77 22 3	[illegible]	76 6 41	[illegible]	74 [illegible] [illegible]	[illegible]
[illegible]	[illegible]	W.	59 37 3	[illegible]	61 4 24	[illegible]	62 [illegible] 52	[illegible]	64 [illegible] [illegible]	[illegible]
	[illegible]	W.	45 29 34	[illegible]	46 56 54	[illegible]	48 7 3	[illegible]	49 [illegible] [illegible]	[illegible]
	[illegible]	E	49 34 25	[illegible]	48 29 57	[illegible]	48 18 [illegible]	[illegible]	47 [illegible] [illegible]	[illegible]
	[illegible]	E	67 29 37	[illegible]	66 11 48	[illegible]	64 52 5	[illegible]	63 [illegible] [illegible]	[illegible]
[illegible]	[illegible]	W.	71 42 [illegible]	[illegible]	73 12 34	[illegible]	74 42 54	[illegible]	76 12 [illegible]	[illegible]
	[illegible]	W.	67 26 22	[illegible]	38 56 29	[illegible]	40 25 [illegible]	[illegible]	41 [illegible] [illegible]	[illegible]
	[illegible]	W.	26 8 [illegible]	[illegible]	27 [illegible] 39	[illegible]	[illegible]	[illegible]	30 [illegible] [illegible]	[illegible]
	[illegible]	E	56 34 4	[illegible]	55 12 [illegible]	[illegible]	[illegible]	[illegible]	52 [illegible] [illegible]	[illegible]
[illegible]	[illegible]	W.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 6 [illegible]	[illegible]
	[illegible]	W.	[illegible] 11 [illegible]	[illegible]	71 45 36	[illegible]	72 [illegible] [illegible]	[illegible]	73 42 33	[illegible]
	[illegible]	W.	37 4 [illegible]	[illegible]	39 14 [illegible]	[illegible]	41 [illegible] [illegible]	[illegible]	42 12 [illegible]	[illegible]
	[illegible]	E.	4 [illegible] [illegible]	[illegible]	43 17 2	[illegible]	42 [illegible] [illegible]	[illegible]	41 34 [illegible]	[illegible]
[illegible]	[illegible]	W.	[illegible] 30 [illegible]	[illegible]	[illegible]	[illegible]	[illegible] 27 [illegible]	[illegible]	[illegible] 7	[illegible]
	[illegible]	W.	81 1 12	[illegible]	82 32 29	[illegible]	84 [illegible] [illegible]	[illegible]	85 28 49	[illegible]
	Antares	W.	49 30 [illegible]	[illegible]	51 4 50	[illegible]	52 [illegible] [illegible]	[illegible]	54 2 7	[illegible]
	[illegible]	E.	34 48 32	[illegible]	33 27 29	[illegible]	32 [illegible] 25	[illegible]	30 45 [illegible]	[illegible]
[illegible]	[illegible]	W.	92 49 20	[illegible]	94 17 49	[illegible]	95 4 [illegible]	[illegible]	97 14 12	[illegible]
	Antares	W.	61 25 7	[illegible]	62 53 43	[illegible]	64 22 21	[illegible]	65 50 [illegible]	[illegible]
	[illegible]	E.	24 0 38	[illegible]	22 20 43	[illegible]	21 [illegible] 4 [illegible]	[illegible]	19 57 [illegible]	[illegible]
[illegible]	[illegible]	W.	8 45 53	[illegible]	10 7 16	[illegible]	11 28 [illegible]	[illegible]	12 50 [illegible]	[illegible]
	a Arietis	E.	51 37 11	[illegible]	50 8 15	[illegible]	48 39 13	[illegible]	47 10 [illegible]	[illegible]
	Mars	E.	72 9 32	[illegible]	70 44 1	[illegible]	69 18 24	[illegible]	67 52 42	[illegible]
	Aldebaran	E.	82 53 36	[illegible]	81 25 17	[illegible]	79 56 51	[illegible]	78 28 26	[illegible]
	[illegible]	E.	100 54 3	3043	99 24 43	[illegible]	97 55 17	[illegible]	96 25 46	[illegible]
[illegible]	[illegible]	W.	19 43 26	[illegible]	21 6 21	[illegible]	22 29 30	[illegible]	23 52 45	[illegible]
	a Arietis	E.	39 44 5	[illegible]	38 14 46	[illegible]	36 45 26	[illegible]	35 16 5	[illegible]
	Mars	E.	60 42 45	3193	59 16 28	3188	57 50 4	[illegible]	56 23 33	3177
	Aldebaran	E.	71 1 57	[illegible]	69 36 1	[illegible]	68 7 0	[illegible]	66 37 54	[illegible]
	[illegible]	E.	88 56 41	[illegible]	87 26 33	[illegible]	85 56 19	[illegible]	84 25 58	[illegible]
[illegible]	[illegible]	W.	[illegible] 51 7	[illegible]	32 15 11	[illegible]	33 39 30	[illegible]	35 3 35	[illegible]
	Mars	E.	[illegible] [illegible] 16	[illegible]	47 42 2	[illegible]	46 14 41	3133	44 47 12	[illegible]
	[illegible]	E.	5[illegible] [illegible] [illegible]	[illegible]	57 41 16	[illegible]	56 12 10	[illegible]	54 42 30	[illegible]
	[illegible]	E.	[illegible] 5 2	[illegible]	75 21 15	[illegible]	73 50 1	[illegible]	72 18 38	[illegible]
	[illegible]	E.	[illegible] [illegible] 21	[illegible]	100 28 45	[illegible]	98 56 58	[illegible]	97 25 2	[illegible]
[illegible]	[illegible]	W.	[illegible]	[illegible]	4[illegible] 33 56	[illegible]	44 50 33	[illegible]	46 25 21	[illegible]
	[illegible]	[illegible]	[illegible] 1 [illegible]	[illegible]	45 1 26	[illegible]	44 13 30	[illegible]	42 43 34	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	63 7 17	[illegible]	61 3[illegible] 51	[illegible]	60 2 15	[illegible]
	[illegible]	[illegible]	[illegible] 4 [illegible]	[illegible]	8[illegible] 1 3	[illegible]	[illegible] 30 57	[illegible]	85 3 40	[illegible]

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
17	Regulus	W.	107° 29′ 44″	2906	109° 1′ 55″	2916	110° 33′ 51″	2928	112° 5′ 34″	2939
	Spica	W.	53 29 37	2905	55 1 50	2916	56 33 48	2927	58 5 33	2937
	Saturn	W.	39 23 45	2965	40 54 41	2973	42 25 28	2981	43 56 5	2987
	α Aquilæ	E.	54 49 19	4239	53 41 30	4306	52 34 43	4375	51 28 59	4450
	Sun	E.	73 16 40	3277	71 52 2	3290	70 27 39	3301	69 3 29	3313
18	Spica	W.	65 41 14	2982	67 11 49	2990	68 42 14	2998	70 12 29	3005
	Saturn	W.	51 27 2	3022	52 56 48	3027	54 26 27	3034	55 55 58	3039
	α Aquilæ	E.	46 18 16	4910	45 20 9	5025	44 23 33	5149	43 28 33	5283
	Sun	E.	62 5 43	3362	60 42 43	3371	59 19 53	3379	57 57 13	3386
19	Spica	W.	77 41 42	3035	79 11 11	3041	80 40 33	3045	82 9 50	3049
	Saturn	W.	63 21 54	3064	64 50 48	3069	66 19 36	3072	67 48 20	3076
	Antares	W.	31 47 45	3036	33 17 13	3041	34 46 35	3045	36 15 52	3050
	Sun	E.	51 5 54	3490	49 44 0	3495	48 22 12	3431	47 0 30	3436
20	Spica	W.	89 35 3	3067	91 3 53	3069	92 32 41	3071	94 1 26	3073
	Saturn	W.	75 10 58	3090	76 39 20	3092	78 7 39	3094	79 35 56	3095
	Antares	W.	43 41 3	3066	45 9 54	3069	46 38 41	3071	48 7 26	3073
	Sun	E.	40 13 15	3454	38 52 0	3457	37 30 48	3460	36 9 39	3462
21	Spica	W.	101 24 44	3078	102 53 20	3078	104 21 56	3078	105 50 32	3078
	Saturn	W.	86 57 0	3100	88 25 10	3100	89 53 20	3101	91 21 29	3100
	Antares	W.	55 30 44	3078	56 59 20	3078	58 27 56	3079	59 56 31	3078
	Sun	E.	29 24 25	3470	28 3 27	3471	26 42 30	3471	25 21 34	3471
22	Saturn	W.	98 42 25	3096	100 10 39	3095	101 38 55	3094	103 7 12	3092
	Antares	W.	67 19 37	3074	68 48 18	3073	70 17 0	3072	71 45 44	3070
	Sun	E.	18 37 0	3474	17 16 7	3475	15 55 15	3477	14 34 25	3478
25	Sun	W.	14 13 5	3396	15 35 26	3387	16 57 57	3379	18 20 37	3379
	α Arietis	E.	45 41 1	3051	44 11 51	3048	42 42 38	3046	41 13 22	3045
	Mars	E.	66 26 54	3213	65 1 0	3209	63 35 1	3204	62 8 56	3198
	Aldebaran	E.	76 59 54	3078	75 31 17	3073	74 2 35	3069	72 33 48	3066
	Jupiter	E.	94 56 9	3094	93 26 26	3019	91 56 37	3014	90 26 42	3009
26	Sun	W.	25 16 8	3334	26 39 40	3327	28 3 20	3319	29 27 9	3312
	α Arietis	E.	33 46 45	3043	32 17 25	3045	30 48 8	3047	29 18 53	3051
	Mars	E.	54 56 56	3171	53 30 12	3165	52 3 21	3158	50 36 22	3153
	Aldebaran	E.	65 8 44	3047	63 39 29	3043	62 10 10	3039	60 40 46	3036
	Jupiter	E.	82 55 29	2981	81 24 53	2976	79 54 10	2969	78 23 19	2964
27	Sun	W.	36 28 30	3271	37 53 15	3263	39 18 10	3254	40 43 15	3246
	Mars	E.	43 19 34	3119	41 51 48	3113	40 23 54	3105	38 55 51	3099
	Aldebaran	E.	53 12 46	3021	51 42 59	3018	50 13 9	3016	48 43 16	3015
	Jupiter	E.	70 47 7	2931	69 15 27	2924	67 43 39	2916	66 11 41	2909
	Pollux	E.	95 52 56	2903	94 20 41	2896	92 48 17	2888	91 15 43	2880
28	Sun	W.	47 51 21	3196	49 17 32	3188	50 43 56	3178	52 10 32	3167
	Aldebaran	E.	41 13 39	3017	39 43 47	3019	38 13 58	3024	36 44 15	3030
	Jupiter	E.	58 29 29	2871	56 56 33	2869	55 23 26	2864	53 50 8	2846
	Pollux	E.	83 30 12	2837	81 56 32	2838	80 22 40	2818	78 48 36	2809

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	22 48 42.91	9.362	S. 7 33 50.1	+57.01	16 10.41	65.44	12 31.62	0.493
Sat.	2	22 52 27.34	9.341	7 10 58.8	57.26	16 10.18	65.37	12 19.53	0.514
SUN.	3	22 56 11.27	9.320	6 48 1.5	57.50	16 9.94	65.30	12 6.94	0.535
Mon.	4	22 59 54.71	9.300	6 24 58.7	+57.72	16 9.69	65.23	11 53.86	0.555
Tues.	5	23 3 37.68	9.281	6 1 50.7	57.93	16 9.45	65.17	11 40.31	0.574
Wed.	6	23 7 20.20	9.263	5 38 37.9	58.12	16 9.20	65.11	11 26.31	0.592
Thur.	7	23 11 2.29	9.245	5 15 20.6	+58.30	16 8.95	65.05	11 11.89	0.610
Frid.	8	23 14 43.97	9.229	4 51 59.4	58.46	16 8.70	64.99	10 57.06	0.626
Sat.	9	23 18 25.26	9.213	4 28 34.4	58.61	16 8.45	64.94	10 41.84	0.642
SUN.	10	23 22 6.19	9.199	4 5 6.1	+58.74	16 8.19	64.89	10 26.26	0.656
Mon.	11	23 25 46.79	9.185	3 41 34.8	58.86	16 7.93	64.84	10 10.35	0.669
Tues.	12	23 29 27.08	9.173	3 18 0.9	58.96	16 7.66	64.79	9 54.12	0.682
Wed.	13	23 33 7.07	9.161	2 54 24.6	+59.05	16 7.39	64.75	9 37.61	0.694
Thur.	14	23 36 46.79	9.150	2 30 46.5	59.12	16 7.12	64.71	9 20.82	0.704
Frid.	15	23 40 26.28	9.141	2 7 6.7	59.18	16 6.85	64.68	9 3.80	0.714
Sat.	16	23 44 5.54	9.132	1 43 25.6	+59.23	16 6.58	64.65	8 46.56	0.723
SUN.	17	23 47 44.60	9.124	1 19 43.6	59.26	16 6.30	64.62	8 29.11	0.730
Mon.	18	23 51 23.49	9.117	0 56 1.1	59.28	16 6.03	64.59	8 11.49	0.737
Tues.	19	23 55 2.22	9.111	0 32 18.4	+59.28	16 5.75	64.57	7 53.72	0.743
Wed.	20	23 58 40.82	9.106	S. 0 8 35.8	59.26	16 5.47	64.55	7 35.81	0.748
Thur.	21	0 2 19.30	9.102	N. 0 15 6.2	59.23	16 5.19	64.53	7 17.79	0.753
Frid.	22	0 5 57.68	9.098	0 38 47.3	+59.18	16 4.91	64.51	6 59.67	0.757
Sat.	23	0 9 35.99	9.095	1 2 27.1	59.12	16 4.63	64.50	6 41.47	0.760
SUN.	24	0 13 14.23	9.093	1 26 5.2	59.04	16 4.35	64.49	6 23.21	0.762
Mon.	25	0 16 52.43	9.091	1 49 41.2	+58.95	16 4.08	64.48	6 4.90	0.763
Tues.	26	0 20 30.60	9.090	2 13 14.8	58.84	16 3.80	64.48	5 46.58	0.764
Wed.	27	0 24 8.76	9.090	2 36 45.6	58.71	16 3.53	64.48	5 28.23	0.764
Thur.	28	0 27 46.93	9.091	3 0 13.1	+58.57	16 3.25	64.49	5 9.90	0.764
Frid.	29	0 31 25.12	9.092	3 23 37.0	58.41	16 2.98	64.49	4 51.58	0.762
Sat.	30	0 35 3.34	9.094	3 46 56.9	58.24	16 2.71	64.50	4 33.30	0.760
SUN.	31	0 38 41.62	9.097	4 10 12.5	58.05	16 2.43	64.51	4 15.08	0.758
Mon.	32	0 42 19.98	9.100	N. 4 33 23.3	+57.85	16 2.16	64.53	3 56.93	0.754

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	THE SUN'S Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	22 48 40.95	9.364	S. 7 34 2.1	+57.01	12 31.72	0.492	22 36 9.23
Sat.	2	22 52 25.42	9.343	7 11 10.6	57.27	12 19.64	0.514	22 40 5.79
SUN.	3	22 56 9.39	9.322	6 48 13.2	57.51	12 7.05	0.535	22 44 2.34
Mon.	4	22 59 52.87	9.302	6 25 10.2	+57.73	11 53.97	0.555	22 47 58.90
Tues.	5	23 3 35.87	9.283	6 2 2.0	57.94	11 40.42	0.574	22 51 55.45
Wed.	6	23 7 18.43	9.265	5 38 49.0	58.13	11 26.43	0.592	22 55 52 00
Thur.	7	23 11 0.56	9.247	5 15 31.6	+58.31	11 12.00	0.610	22 59 48.56
Frid.	8	23 14 42.28	9.230	4 52 10.1	58.47	10 57.17	0.626	23 3 45.11
Sat.	9	23 18 23.62	9.215	4 28 44.9	58.62	10 41.96	0.642	23 7 41.66
SUN.	10	23 22 4.59	9.201	4 5 16.4	+58.75	10 26.37	0.656	23 11 38.22
Mon.	11	23 25 45.24	9.187	3 41 44.9	58.87	10 10.46	0.670	23 15 34.77
Tues.	12	23 29 25.56	9.174	3 18 10.7	58.97	9 54.24	0.682	23 19 31.33
Wed.	13	23 33 5 60	9.163	2 54 34.2	+59.06	9 37.72	0.694	23 23 27.88
Thur.	14	23 36 45.37	9.152	2 30 55.8	59.14	9 20.94	0.704	23 27 24 43
Frid.	15	23 40 24.90	9.142	2 7 15.7	59.20	9 3.91	0.714	23 31 20.99
Sat.	16	23 44 4.20	9.133	1 43 34.3	+59.24	8 46.66	0.723	23 35 17.54
SUN.	17	23 47 43.31	9.126	1 19 52.1	59.27	8 29.22	0.731	23 39 14.10
Mon.	18	23 51 22.24	9.119	0 56 9.3	59.29	8 11.60	0.737	23 43 10.65
Tues.	19	23 55 1.02	9.113	0 32 26.2	+59.29	7 53.82	0.743	23 47 7.20
Wed.	20	23 58 39.66	9.108	S. 0 8 43.4	59.27	7 35 91	0.748	23 51 3.76
Thur.	21	0 2 18.19	9.103	N. 0 14 58.9	59.24	7 17.88	0.753	23 55 0.31
Frid.	22	0 5 56.62	9.100	0 38 40.3	+59.20	6 59.76	0.757	23 58 56.86
Sat.	23	0 9 34.97	9.097	1 2 20.5	59.14	6 41.56	0.760	0 2 53.42
SUN.	24	0 13 13.26	9.094	1 25 58.9	59.06	6 23.29	0.762	0 6 49.97
Mon.	25	0 16 51.51	9.093	1 49 35.2	+58.96	6 4.98	0.763	0 10 46.52
Tues.	26	0 20 29.73	9.092	2 13 9.1	58.85	5 46.65	0.764	0 14 43.08
Wed.	27	0 24 7.94	9.092	2 36 40.2	58.73	5 28.30	0.764	0 18 39.63
Thur.	28	0 27 46.15	9.093	3 0 8.0	+58.59	5 9.96	0.764	0 22 36.18
Frid.	29	0 31 24.38	9.094	3 23 32.2	58.43	4 51.64	0.763	0 26 32.71
Sat.	30	0 35 2.65	9.096	3 46 52.5	58.25	4 33.36	0.761	0 30 29.29
SUN.	31	0 38 40.98	9.099	4 10 8.3	58.06	4 15.13	0.758	0 34 25.85
Mon.	32	0 42 19.38	9.102	N. 4 33 19.5	+57.86	3 56.98	0.754	0 38 22.40

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff. for 1 Hour, +9.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ'	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	° ′ ″	″	″			h m s
1	60	340 41 6.4	40 55.2	150.45	+ 0.41	9.9962178	+44.2	1 23 37.03
2	61	341 41 16.2	41 4.9	150.37	0.49	9.9963244	44.6	1 19 41.12
3	62	342 41 24.0	41 12.6	150.28	0.54	9.9964318	45.0	1 15 45.21
4	63	343 41 29.6	41 18.1	150.19	+ 0.56	9.9965402	+45.5	1 11 49.30
5	64	344 41 33.0	41 21.3	150.10	0.55	9.9966497	45.9	1 7 53.40
6	65	345 41 34.4	41 22.6	150.01	0.50	9.9967604	46.4	1 3 57.49
7	66	346 41 33.6	41 21.7	149.92	+ 0.44	9.9968722	+46.9	1 0 1.58
8	67	347 41 30.7	41 18.7	149.83	0.35	9.9969853	47.4	0 56 5.67
9	68	348 41 25.7	41 13.6	149.75	0.23	9.9970998	48.0	0 52 9.77
10	69	349 41 18.7	41 6.5	149.67	+ 0.11	9.9972156	+48.6	0 48 13.86
11	70	350 41 9.7	40 57.4	149.59	− 0.02	9.9973329	49.1	0 44 17.95
12	71	351 40 58.8	40 46.3	149.50	0.15	9.9974515	49.7	0 40 22.04
13	72	352 40 45.9	40 33.3	149.42	− 0.27	9.9975714	+50.2	0 36 26.14
14	73	353 40 31.2	40 18.5	149.35	0.38	9.9976924	50.7	0 32 30.23
15	74	354 40 14.9	40 2.1	149.28	0.47	9.9978145	51.1	0 28 34.32
16	75	355 39 56.7	39 43.8	149.21	− 0.54	9.9979376	+51.5	0 24 38.41
17	76	356 39 36.8	39 23.8	149.14	0.58	9.9980615	51.8	0 20 42.50
18	77	357 39 15.2	39 2.1	149.06	0.59	9.9981862	52.0	0 16 46.60
19	78	358 38 51.8	38 38.6	148.99	− 0.57	9.9983113	+52.2	0 12 50.69
20	79	359 38 26.8	38 13.5	148.92	0.51	9.9984367	52.3	0 8 54.78
21	80	0 37 59.9	37 46.4	148.84	0.43	9.9985623	52.3	0 4 58.87
22	81	1 37 31.3	37 17.7	148.77	− 0.33	9.9986877	+52.3	{ 0 1 2.97 } { 23 57 7.06 }
23	82	2 37 0.9	36 47.2	148.69	0.21	9.9988132	52.2	23 53 11 15
24	83	3 36 28.5	36 14.7	148.61	− 0.07	9.9989384	52.1	23 49 15.24
25	84	4 35 54.2	35 40 3	148.53	+ 0.06	9.9990634	+52.0	23 45 19.33
26	85	5 35 17.9	35 3 9	148.45	0.19	9.9991879	51.8	23 41 23.42
27	86	6 34 39.6	34 25.5	148.36	0.31	9.9993119	51.6	23 37 27.52
28	87	7 33 59.0	33 44.8	148.27	+ 0.42	9.9994356	+51.4	23 33 31.61
29	88	8 33 16.4	33 2.1	148.17	0.50	9.9995588	51.2	23 29 35.70
30	89	9 32 31.3	32 16.9	148.08	0.56	9.9996816	51.1	23 25 39.79
31	90	10 31 44.0	31 29.4	147.98	0.58	9.9998039	51.0	23 21 43.89
32	91	11 30 54.4	30 39.7	147.89	+ 0.59	9.9999262	+50.9	23 17 47.98

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0d.0.

Diff. for 1 Hour, − 9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 14.6	15 19.4	55 50.1	+1.41	56 7.7	+1.52	3 33.2	1.91	4.8
2	15 24.6	15 30.1	56 26.6	1.63	56 46.9	1.74	4 21.3	2.10	5.8
3	15 35.9	15 42.1	57 8.3	1.83	57 30.8	1.91	5 14.0	2.30	6.8
4	15 48.4	15 54.9	57 54.2	+1.97	58 18.1	+2.00	6 11.5	2.49	7.8
5	16 1.5	16 8.1	58 42.3	2.01	59 6.3	1.97	7 12.7	2.60	8.8
6	16 14.4	16 20.4	59 29.6	1.89	59 51.6	1.76	8 15.5	2.61	9.8
7	16 25.9	16 30.7	60 11.8	+1.58	60 29.5	+1.35	9 17.1	2.52	10 8
8	16 34.7	16 37.7	60 44.2	1.08	60 55.3	0.75	10 15.8	2.37	11.8
9	16 39.7	16 40.4	61 2.3	+0.40	61 4.9	+0.09	11 11.0	2.23	12.8
10	16 39.8	16 38.0	61 2.8	−0.37	60 56.1	−0.75	12 3.2	2.13	13 8
11	16 34.9	16 30.7	60 44.8	1.11	60 29.4	1.44	12 53.5	2.08	14.8
12	16 25.5	16 19.4	60 10.2	1.73	59 47.8	1.98	13 43.2	2.08	15.8
13	16 12.6	16 5.2	59 22.8	−2.16	58 55.9	−2.29	14 33.5	2.12	16.8
14	15 57.6	15 49.8	58 27.8	2.36	57 59.3	2.38	15 25.2	2.19	17.8
15	15 42.1	15 34.5	57 30.8	2.35	57 2.9	2.28	16 18.4	2.25	18.8
16	15 27.2	15 20.3	56 36.2	−2.16	56 11.0	−2.02	17 12.8	2.28	19.8
17	15 14.0	15 8.2	55 47.7	1.85	55 26.5	1.68	18 7.3	2.25	20.8
18	15 3.0	14 58.5	55 7.5	1.48	54 50.9	1.28	19 0.5	2.17	21.8
19	14 54.7	14 51.5	54 36.8	−1.07	54 25.2	−0.86	19 51.2	2.06	22.8
20	14 49.1	14 47.2	54 16.1	0.66	54 9.3	0.47	20 39.0	1.93	23.8
21	14 46.0	14 45.4	54 4.9	−0.28	54 2.7	−0.10	21 23.8	1.81	24.8
22	14 45.4	14 45.9	54 2.6	+0.08	54 4.5	+0.23	22 6.1	1.72	25.8
23	14 46.9	14 48.3	54 8.1	0.37	54 13.4	0.50	22 46.8	1.67	26.8
24	14 50 1	14 52.3	54 20.1	0.62	54 28.2	0.73	23 26.6	1.65	27.8
25	14 54.9	14 57.6	54 37.5	+0.81	54 47.6	+0.89	δ		28.8
26	15 0.7	15 3.9	54 58.8	0.96	55 10.7	1.02	0 6.6	1.69	0.1
27	15 7.3	15 11.0	55 23.3	1.08	55 36.6	1.13	0 47.9	1.76	1.1
28	15 14.7	15 18.6	55 50.4	+1.17	56 4.7	+1.21	1 31.6	1.89	2.1
29	15 22.7	15 26.8	56 19.5	1.25	56 34.8	1.30	2 18.8	2.05	3.1
30	15 31.1	15 35.5	56 50.6	1.33	57 6.8	1.36	3 10.2	2.24	4.1
31	15 40.0	15 44.6	57 23.8	1.39	57 40.2	1.42	4 5.9	2.40	5.1
32	15 49.3	15 54.0	57 57.4	+1.44	58 14.7	+1.44	5 5.2	2.52	6.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 1.					**SUNDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 2 49.28	1.9868	N.16 17 26.0	12.784	0	3 46 31.76	2.2384	N.24 57 3.4	8.391
1	2 4 49.35	2.0042	16 30 13.2	12.759	1	3 48 52.29	2.2489	25 5 18.8	8.192
2	2 6 49.78	2.0161	16 42 54.7	12.688	2	3 51 13.28	2.2537	25 13 26.5	8.082
3	2 8 50.56	2.0451	16 55 32.4	12.597	3	3 53 34.73	2.2613	25 21 26.3	7.930
4	2 10 51.71	2.0559	17 8 6.3	12.532	4	3 55 56.64	2.2689	25 29 18.1	7.797
5	2 12 53.22	2.0693	17 20 36.2	12.465	5	3 58 19.00	2.2765	25 37 1.9	7.668
6	2 14 55.11	2.0826	17 33 2.1	12.398	6	4 0 41.82	2.2841	25 44 37.5	7.594
7	2 16 57.38	2.0959	17 45 24.0	12.330	7	4 3 5.09	2.2917	25 52 4.8	7.388
8	2 19 0.02	2.0972	17 57 41.7	12.259	8	4 5 28.82	2.2992	25 59 23.8	7.247
9	2 21 3.04	2.0536	18 9 55.1	12.188	9	4 7 53.00	2.3067	26 6 34.4	7.105
10	2 23 6.45	2.0681	18 22 4.2	12.116	10	4 10 17.63	2.3142	26 13 36.4	6.962
11	2 25 10.25	2.0825	18 34 9.0	12.042	11	4 12 42.70	2.3216	26 20 29.8	6.817
12	2 27 14.44	2.0728	18 46 9.3	11.967	12	4 15 8.22	2.3289	26 27 14.5	6.672
13	2 29 19.03	2.0796	18 58 5.1	11.891	13	4 17 34.18	2.3363	26 33 50.4	6.594
14	2 31 24.02	2.0865	19 9 56.2	11.812	14	4 20 0.57	2.3435	26 40 17.4	6.375
15	2 33 29.42	2.0934	19 21 42.6	11.733	15	4 22 27.40	2.3507	26 46 35.4	6.224
16	2 35 35.23	2.1002	19 33 24.2	11.653	16	4 24 54.66	2.3578	26 52 44.3	6.072
17	2 37 41.45	2.1071	19 45 1.0	11.572	17	4 27 22.34	2.3649	26 58 44.1	5.919
18	2 39 48.08	2.1140	19 56 32.8	11.488	18	4 29 50.45	2.3720	27 4 34.6	5.764
19	2 41 55.13	2.1210	20 7 59.6	11.404	19	4 32 18.98	2.3789	27 10 15.8	5.607
20	2 44 2.60	2.1280	20 19 21.3	11.318	20	4 34 47.92	2.3858	27 15 47.5	5.449
21	2 46 10.49	2.1351	20 30 37.8	11.231	21	4 37 17.27	2.3926	27 21 9.7	5.290
22	2 48 18.81	2.1422	20 41 49.0	11.143	22	4 39 47.03	2.3994	27 26 22.3	5.130
23	2 50 27.56	2.1494	N.20 52 54.9	11.053	23	4 42 17.20	2.4061	N.27 31 25.3	4.968
	SATURDAY 2.					**MONDAY 4.**			
0	2 52 36.74	2.1566	N.21 3 55.3	10.961	0	4 44 47.76	2.5126	N.27 36 18.5	4.804
1	2 54 46.36	2.1639	21 14 50.2	10.868	1	4 47 18.71	2.5191	27 41 1.8	4.639
2	2 56 56.41	2.1712	21 25 39.5	10.773	2	4 49 50.05	2.5255	27 45 35.2	4.473
3	2 59 6.90	2.1785	21 36 23.0	10.678	3	4 52 21.77	2.5317	27 49 58.6	4.306
4	3 1 17.83	2.1859	21 47 0.8	10.581	4	4 54 53.86	2.5379	27 54 11.9	4.137
5	3 3 29.21	2.1933	21 57 32.7	10.482	5	4 57 26.32	2.5441	27 58 15.0	3.967
6	3 5 41.03	2.2007	22 7 58.7	10.382	6	4 59 59.15	2.5501	28 2 7.9	3.795
7	3 7 53.30	2.2082	22 18 18.6	10.281	7	5 2 32.33	2.5559	28 5 50.4	3.622
8	3 10 6.02	2.2157	22 28 32.4	10.178	8	5 5 5.86	2.5617	28 9 22.5	3.448
9	3 12 19.19	2.2232	22 38 39.9	10.073	9	5 7 39.74	2.5674	28 12 44.2	3.273
10	3 14 32.81	2.2306	22 48 41.1	9.967	10	5 10 13.95	2.5729	28 15 55.3	3.097
11	3 16 46.89	2.2385	22 58 35.9	9.858	11	5 12 48.49	2.5783	28 18 55.8	2.919
12	3 19 1.43	2.2462	23 8 24.1	9.749	12	5 15 23.35	2.5836	28 21 45.6	2.740
13	3 21 16.43	2.2538	23 18 5.8	9.639	13	5 17 58.52	2.5887	28 24 24.6	2.560
14	3 23 31.88	2.2614	23 27 40.8	9.527	14	5 20 34.00	2.5936	28 26 52.8	2.379
15	3 25 47.79	2.2691	23 37 9.1	9.414	15	5 23 9.78	2.5987	28 29 10.1	2.197
16	3 28 4.17	2.2767	23 46 30.5	9.300	16	5 25 45.85	2.6035	28 31 16.4	2.013
17	3 30 21.00	2.2843	23 55 44.9	9.185	17	5 28 22.20	2.6082	28 33 11.7	1.828
18	3 32 38.29	2.2920	24 4 52.3	9.068	18	5 30 58.83	2.6127	28 34 55.8	1.643
19	3 34 56.04	2.2997	24 13 52.5	8.943	19	5 33 35.72	2.6170	28 36 28.8	1.457
20	3 37 14.26	2.3075	24 22 45.5	8.832	20	5 36 12.87	2.6212	28 37 50.6	1.270
21	3 39 32.94	2.3152	24 31 31.2	8.700	21	5 38 50.27	2.6252	28 39 1.2	1.082
22	3 41 52.08	2.3229	24 40 9.5	8.576	22	5 41 27.90	2.6291	28 40 0.5	0.893
23	3 44 11.69	2.3307	24 48 40.3	8.449	23	5 44 5.76	2.6329	28 40 48.4	0.703
24	3 46 31.76	2.3384	N.24 57 3.4	8.321	24	5 46 43.85	2.6366	N.28 41 24.8	0.512

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 5.			
	h m s	s	° ′ ″	″
0	5 46 43.85	2.6366	N.28 41 24.8	0.512
1	5 49 22.15	2.6400	28 41 49.8	0.391
2	5 52 0.65	2.6438	28 42 3.3	+ 0.129
3	5 54 39.34	2.6463	28 42 5.2	− 0.064
4	5 57 18.21	2.6493	28 41 55.6	0.258
5	5 59 57.26	2.6522	28 41 34.3	0.452
6	6 2 36.48	2.6549	28 41 1.4	0.646
7	6 5 15.85	2.6573	28 40 16.8	0.842
8	6 7 55.36	2.6596	28 39 20.4	1.037
9	6 10 35.00	2.6617	28 38 12.3	1.233
10	6 13 14.77	2.6637	28 36 52.4	1.430
11	6 15 54.65	2.6656	28 35 20.7	1.627
12	6 18 34.64	2.6673	28 33 37.1	1.825
13	6 21 14.72	2.6687	28 31 41.7	2.023
14	6 23 54.88	2.6700	28 29 34.4	2.221
15	6 26 35.12	2.6712	28 27 15.2	2.419
16	6 29 15.42	2.6721	28 24 44.1	2.618
17	6 31 55.77	2.6728	28 22 1.1	2.817
18	6 34 36.16	2.6734	28 19 6.1	3.016
19	6 37 16.58	2.6739	28 15 59.2	3.214
20	6 39 57.03	2.6742	28 12 40.4	3.413
21	6 42 37.49	2.6743	28 9 9.7	3.612
22	6 45 17.95	2.6742	28 5 27.0	3.811
23	6 47 58.40	2.6740	N.28 1 32.4	4.009
	WEDNESDAY 6.			
0	6 50 38.83	2.6736	N.27 57 25.9	4.207
1	6 53 19.23	2.6730	27 53 7.5	4.406
2	6 55 59.59	2.6723	27 48 37.2	4.604
3	6 58 39.91	2.6715	27 43 55.0	4.802
4	7 1 20.17	2.6704	27 39 0.9	5.000
5	7 4 0.36	2.6692	27 33 55.0	5.197
6	7 6 40.47	2.6678	27 28 37.3	5.393
7	7 9 20.50	2.6663	27 23 7.8	5.590
8	7 12 0.43	2.6646	27 17 26.5	5.786
9	7 14 40.25	2.6627	27 11 33.5	5.981
10	7 17 19.96	2.6606	27 5 28.8	6.176
11	7 19 59.55	2.6587	26 59 12.4	6.370
12	7 22 39.00	2.6564	26 52 44.4	6.563
13	7 25 18.31	2.6540	26 46 4.8	6.756
14	7 27 57.48	2.6515	26 39 13.6	6.946
15	7 30 36.49	2.6487	26 32 11.0	7.139
16	7 33 15.33	2.6459	26 24 56.9	7.330
17	7 35 54.00	2.6429	26 17 31.4	7.520
18	7 38 32.48	2.6398	26 9 54.5	7.709
19	7 41 10.77	2.6366	26 2 6.3	7.897
20	7 43 48.87	2.6333	25 54 6.9	8.083
21	7 46 26.76	2.6297	25 45 56.3	8.269
22	7 49 4.44	2.6262	25 37 34.6	8.454
23	7 51 41.90	2.6225	25 29 1.8	8.638
24	7 54 19.14	2.6187	N.25 20 18.0	8.821

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 7.			
	h m s	s	° ′ ″	″
0	7 54 19.14	2.6187	N.25 20 18.0	8.821
1	7 56 56.15	2.6147	25 11 23.3	9.002
2	7 59 32.91	2.6107	25 2 17.7	9.182
3	8 2 9.43	2.6066	24 53 1.4	9.361
4	8 4 45.70	2.6024	24 43 34.4	9.539
5	8 7 21.72	2.5981	24 33 56.7	9.716
6	8 9 57.47	2.5936	24 24 8.5	9.891
7	8 12 32.95	2.5891	24 14 9.8	10.065
8	8 15 8.16	2.5846	24 4 0.7	10.237
9	8 17 43.10	2.5799	23 53 41.4	10.407
10	8 20 17.75	2.5751	23 43 11.9	10.577
11	8 22 52.11	2.5702	23 32 32.2	10.746
12	8 25 26.18	2.5653	23 21 42.4	10.912
13	8 27 59.95	2.5603	23 10 42.7	11.077
14	8 30 33.42	2.5554	22 59 33.1	11.241
15	8 33 6.60	2.5504	22 48 13.8	11.402
16	8 35 39.47	2.5452	22 36 44.8	11.562
17	8 38 12.03	2.5400	22 25 6.3	11.721
18	8 40 44.27	2.5347	22 13 18.3	11.878
19	8 43 16.19	2.5294	22 1 20.9	12.033
20	8 45 47.79	2.5241	21 49 14.3	12.187
21	8 48 19.08	2.5188	21 36 58.5	12.338
22	8 50 50.05	2.5134	21 24 33.7	12.488
23	8 53 20.69	2.5080	N.21 11 59.9	12.637
	FRIDAY 8.			
0	8 55 51.01	2.5025	N.20 59 17.2	12.784
1	8 58 20.99	2.4969	20 46 25.8	12.930
2	9 0 50.64	2.4915	20 33 5.8	13.071
3	9 3 19.97	2.4860	20 20 17.3	13.212
4	9 5 48.96	2.4804	20 7 0.4	13.351
5	9 8 17.62	2.4748	19 53 35.2	13.488
6	9 10 45.94	2.4692	19 40 1.8	13.623
7	9 13 13.92	2.4636	19 26 20.4	13.757
8	9 15 41.57	2.4581	19 12 31.0	13.888
9	9 18 8.89	2.4525	18 58 33.8	14.017
10	9 20 35.87	2.4469	18 44 28.9	14.145
11	9 23 2.52	2.4413	18 30 16.4	14.270
12	9 25 28.83	2.4357	18 15 56.5	14.393
13	9 27 54.81	2.4302	18 1 29.2	14.515
14	9 30 20.45	2.4246	17 46 54.7	14.635
15	9 32 45.76	2.4191	17 32 13.0	14.752
16	9 35 10.74	2.4136	17 17 24.4	14.867
17	9 37 35.39	2.4081	17 2 28.9	14.981
18	9 39 59.71	2.4026	16 47 26.7	15.092
19	9 42 23.70	2.3972	16 32 17.9	15.201
20	9 44 47.37	2.3917	16 17 2.6	15.308
21	9 47 10.71	2.3863	16 1 40.9	15.413
22	9 49 33.73	2.3810	15 46 13.0	15.516
23	9 51 56.43	2.3757	15 30 39.0	15.617
24	9 54 18.81	2.3704	N.15 14 58.9	15.717

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 9.			
	h m s	s	° ′ ″	″
0	9 54 18.81	2.2764	N. 15 14 58.9	15.717
1	9 56 40.88	2.2656	14 59 13.0	15.813
2	9 59 2.63	2.2550	14 43 21.4	15.907
3	10 1 24.07	2.2446	14 27 24.2	15.999
4	10 3 45.20	2.2347	14 11 21.5	16.089
5	10 6 6.03	2.2246	13 55 13.5	16.177
6	10 8 26.55	2.2145	13 39 0.3	16.263
7	10 10 46.77	2.2046	13 22 42.0	16.347
8	10 13 6.70	2.1947	13 6 18.7	16.429
9	10 15 26.34	2.1849	12 49 50.5	16.508
10	10 17 45.69	2.1751	12 33 17.7	16.585
11	10 20 4.75	2.1653	12 16 40.3	16.661
12	10 22 23.52	2.1555	11 59 58.4	16.734
13	10 24 42.01	2.1459	11 43 12.2	16.805
14	10 27 0.23	2.1364	11 26 21.8	16.873
15	10 29 18.8	2.1269	11 9 27.4	16.940
16	10 31 35.86	2.1894	10 52 29.0	17.004
17	10 33 53.27	2.1080	10 35 26.9	17.066
18	10 36 10.42	2.0987	10 18 21.1	17.126
19	10 38 27.32	2.0795	10 1 11.8	17.184
20	10 40 43.96	2.0753	9 43 59.0	17.241
21	10 43 0.35	2.0712	9 26 42.9	17.294
22	10 45 16.50	2.0672	9 9 23.7	17.345
23	10 47 32.41	2.0632	N. 8 52 1.5	17.395
	SUNDAY 10.			
0	10 49 48.08	2.0593	N. 8 34 36.3	17.443
1	10 52 3.52	2.0554	8 17 8.3	17.487
2	10 54 18.73	2.0517	7 59 37.8	17.529
3	10 56 33.72	2.0480	7 42 4.8	17.570
4	10 58 48.49	2.0444	7 24 29.4	17.609
5	11 1 3.05	2.0409	7 6 51.7	17.647
6	11 3 17.40	2.0376	6 49 11.8	17.681
7	11 5 31.55	2.0341	6 31 30.0	17.713
8	11 7 45.49	2.0308	6 13 46.3	17.743
9	11 9 59.24	2.0276	5 56 0.8	17.770
10	11 12 12.80	2.0244	5 38 13.7	17.796
11	11 14 26.17	2.0214	5 20 25.1	17.820
12	11 16 39.37	2.0185	5 2 35.0	17.845
13	11 18 52.39	2.0156	4 44 43.7	17.864
14	11 21 5.24	2.0127	4 26 51.3	17.882
15	11 23 17.92	2.0100	4 8 57.9	17.898
16	11 25 30.44	2.0073	3 51 3.6	17.912
17	11 27 42.80	2.0047	3 33 8.5	17.923
18	11 29 55.01	2.0022	3 15 12.8	17.933
19	11 32 7.07	1.9996	2 57 16.5	17.940
20	11 34 18.99	1.9972	2 39 19.8	17.947
21	11 36 30.78	1.9954	2 21 22.9	17.950
22	11 38 42.44	1.9929	2 3 25.8	17.950
23	11 40 53.96	1.9910	1 45 28.7	17.948
24	11 43 5.36	1.9891	N. 1 27 31.6	17.950
	MONDAY 11.			
0	11 43 5.36	2.1891	N. 1 27 31.6	17.950
1	11 45 16.65	2.1872	1 9 34.7	17.945
2	11 47 27.83	2.1853	0 51 38.2	17.936
3	11 49 38.89	2.1835	0 33 42.1	17.921
4	11 51 49.85	2.1819	N. 0 15 46.5	17.901
5	11 54 0.72	2.1804	S. 0 2 8.4	17.880
6	11 56 11.50	2.1789	0 20 2.6	17.856
7	11 58 22.19	2.1775	0 37 55.9	17.830
8	12 0 32.80	2.1762	0 55 48.2	17.802
9	12 2 43.33	2.1749	1 13 39.3	17.772
10	12 4 53.78	2.1737	1 31 29.2	17.740
11	12 7 4.17	2.1727	1 49 17.7	17.707
12	12 9 14.50	2.1717	2 7 4.8	17.672
13	12 11 24.77	2.1707	2 24 50.3	17.744
14	12 13 34.98	2.1698	2 42 34.1	17.716
15	12 15 45.15	2.1691	3 0 16.2	17.686
16	12 17 55.27	2.1684	3 17 56.4	17.653
17	12 20 5.35	2.1677	3 35 34.6	17.618
18	12 22 15.40	2.1672	3 53 10.6	17.582
19	12 24 25.42	2.1667	4 10 44.4	17.544
20	12 26 35.41	2.1663	4 28 15.9	17.505
21	12 28 45.38	2.1660	4 45 45.0	17.463
22	12 30 55.33	2.1658	5 3 11.5	17.420
23	12 33 5.28	2.1657	S. 5 20 35.4	17.376
	TUESDAY 12.			
0	12 35 15.22	2.1657	S. 5 37 56.6	17.329
1	12 37 25.16	2.1657	5 55 14.9	17.280
2	12 39 35.10	2.1657	6 12 30.2	17.230
3	12 41 45.05	2.1659	6 29 42.5	17.178
4	12 43 55.01	2.1661	6 46 51.6	17.125
5	12 46 4.98	2.1663	7 3 57.5	17.071
6	12 48 14.97	2.1667	7 21 0.1	17.014
7	12 50 24.98	2.1672	7 37 59.2	16.955
8	12 52 35.03	2.1677	7 54 54.7	16.895
9	12 54 45.11	2.1682	8 11 46.6	16.833
10	12 56 55.22	2.1689	8 28 34.7	16.770
11	12 59 5.38	2.1697	8 45 19.0	16.706
12	13 1 15.58	2.1704	9 1 59.4	16.639
13	13 3 25.83	2.1719	9 18 35.7	16.571
14	13 5 36.13	2.1732	9 35 7.9	16.502
15	13 7 46.49	2.1739	9 51 35.9	16.431
16	13 9 56.91	2.1742	10 7 59.6	16.358
17	13 12 7.40	2.1753	10 24 18.9	16.284
18	13 14 17.95	2.1764	10 40 33.7	16.208
19	13 16 28.57	2.1777	10 56 43.9	16.131
20	13 18 39.27	2.1790	11 12 49.4	16.052
21	13 20 50.05	2.1803	11 28 50.2	15.973
22	13 23 0.91	2.1817	11 44 46.2	15.892
23	13 25 11.86	2.1832	12 0 37.2	15.808
24	13 27 22.89	2.1847	S. 12 16 23.1	15.723

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 13.			
	h m s	s	° ′ ″	″
0	13 27 22.89	2.1847	S. 12 16 23.1	15.783
1	13 29 34.02	2.1869	12 32 3.9	15.636
2	13 31 45.24	2.1878	12 47 39.6	15.551
3	13 33 56.56	2.1895	13 3 10.0	15.462
4	13 36 7.98	2.1912	13 18 35.0	15.372
5	13 38 19.51	2.1930	13 33 54.6	15.281
6	13 40 31.14	2.1948	13 49 8.7	15.188
7	13 42 42.88	2.1967	14 4 17.2	15.094
8	13 44 54.74	2.1987	14 19 20.0	14.998
9	13 47 6.72	2.2007	14 34 17.0	14.902
10	13 49 18.82	2.2026	14 49 8.2	14.804
11	13 51 31.03	2.2045	15 3 53.5	14.704
12	13 53 43.36	2.2066	15 18 32.7	14.603
13	13 55 55.82	2.2088	15 33 5.9	14.502
14	13 58 8.42	2.2110	15 47 32.9	14.398
15	14 0 21.14	2.2131	16 1 53.7	14.294
16	14 2 33.99	2.2153	16 16 8.2	14.189
17	14 4 46.98	2.2176	16 30 16.4	14.082
18	14 7 0.11	2.2199	16 44 18.1	13.974
19	14 9 13.37	2.2223	16 58 13.3	13.865
20	14 11 26.78	2.2247	17 12 1.9	13.754
21	14 13 40.33	2.2270	17 25 43.8	13.642
22	14 15 54.02	2.2294	17 39 19.0	13.530
23	14 18 7.86	2.2318	S. 17 52 47.4	13.417
	THURSDAY 14.			
0	14 20 21.84	2.2342	S. 18 6 9.0	13.302
1	14 22 35.97	2.2367	18 19 23.7	13.186
2	14 24 50.25	2.2392	18 32 31.3	13.066
3	14 27 4.68	2.2417	18 45 31.8	12.949
4	14 29 19.26	2.2442	18 58 25.2	12.831
5	14 31 33.99	2.2468	19 11 11.5	12.711
6	14 33 48.88	2.2494	19 23 50.5	12.589
7	14 36 3.92	2.2519	19 36 22.2	12.467
8	14 38 19.11	2.2545	19 48 46.5	12.343
9	14 40 34.46	2.2571	20 1 3.4	12.219
10	14 42 49.95	2.2597	20 13 12.8	12.093
11	14 45 5.62	2.2622	20 25 14.6	11.967
12	14 47 21.43	2.2648	20 37 8.8	11.839
13	14 49 37.40	2.2674	20 48 55.3	11.711
14	14 51 53.52	2.2700	21 0 34.1	11.582
15	14 54 9.80	2.2726	21 12 5.2	11.452
16	14 56 26.23	2.2752	21 23 28.4	11.321
17	14 58 42.82	2.2777	21 34 43.7	11.189
18	15 0 59.56	2.2803	21 45 51.1	11.057
19	15 3 16.46	2.2829	21 56 50.5	10.923
20	15 5 33.51	2.2854	22 7 41.9	10.788
21	15 7 50.71	2.2879	22 18 25.1	10.652
22	15 10 8.06	2.2904	22 29 0.2	10.517
23	15 12 25.56	2.2929	22 39 27.2	10.381
24	15 14 43.21	2.2954	S. 22 49 45.9	10.243
	FRIDAY 15.			
0	15 14 43.21	2.2954	S. 22 49 45.9	10.243
1	15 17 1.01	2.2978	22 59 56.3	10.104
2	15 19 18.95	2.3003	23 9 58.4	9.965
3	15 21 37.04	2.3027	23 19 52.1	9.825
4	15 23 55.27	2.3050	23 29 37.4	9.685
5	15 26 13.64	2.3073	23 39 14.3	9.543
6	15 28 32.15	2.3096	23 48 42.6	9.401
7	15 30 50.80	2.3119	23 58 2.4	9.258
8	15 33 9.58	2.3142	24 7 13.6	9.115
9	15 35 28.50	2.3164	24 16 16.2	8.971
10	15 37 47.55	2.3186	24 25 10.1	8.826
11	15 40 6.73	2.3208	24 33 55.3	8.681
12	15 42 26.04	2.3229	24 42 31.9	8.536
13	15 44 45.47	2.3249	24 50 59.7	8.389
14	15 47 5.02	2.3268	24 59 18.6	8.242
15	15 49 24.69	2.3288	25 7 28.7	8.095
16	15 51 44.47	2.3307	25 15 30.0	7.947
17	15 54 4.37	2.3326	25 23 22.4	7.799
18	15 56 24.38	2.3343	25 31 5.9	7.650
19	15 58 44.49	2.3360	25 38 40.4	7.501
20	16 1 4.70	2.3377	25 46 6.0	7.352
21	16 3 25.02	2.3394	25 53 22.6	7.201
22	16 5 45.43	2.3409	26 0 30.1	7.050
23	16 8 5.93	2.3425	S. 26 7 28.6	6.899
	SATURDAY 16.			
0	16 10 26.53	2.3440	S. 26 14 18.0	6.747
1	16 12 47.21	2.3454	26 20 58.3	6.596
2	16 15 7.97	2.3467	26 27 29.5	6.444
3	16 17 28.81	2.3479	26 33 51.6	6.292
4	16 19 49.72	2.3491	26 40 4.5	6.139
5	16 22 10.70	2.3502	26 46 8.2	5.986
6	16 24 31.74	2.3512	26 52 2.8	5.833
7	16 26 52.85	2.3522	26 57 48.2	5.679
8	16 29 14.01	2.3531	27 3 24.3	5.525
9	16 31 35.22	2.3539	27 8 51.2	5.372
10	16 33 56.48	2.3547	27 14 8.9	5.218
11	16 36 17.78	2.3554	27 19 17.3	5.063
12	16 38 39.13	2.3561	27 24 16.4	4.908
13	16 41 0.51	2.3565	27 29 6.2	4.753
14	16 43 21.91	2.3569	27 33 46.8	4.599
15	16 45 43.34	2.3573	27 38 18.1	4.444
16	16 48 4.79	2.3576	27 42 40.1	4.289
17	16 50 26.25	2.3578	27 46 52.8	4.134
18	16 52 47.72	2.3579	27 50 56.2	3.979
19	16 55 9.20	2.3579	27 54 50.3	3.824
20	16 57 30.67	2.3578	27 58 35.1	3.669
21	16 59 52.14	2.3577	28 2 10.6	3.514
22	17 2 13.60	2.3576	28 5 36.8	3.359
23	17 4 35.05	2.3573	28 8 53.7	3.204
24	17 6 56.47	2.3567	S. 28 12 1.3	3.049

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 17.			
	h m s	s	° ′ ″	″
0	17 6 56.47	2.3567	S. 28 12 1.3	3.049
1	17 9 17.86	2.3563	28 14 59.6	2.894
2	17 11 39.23	2.3558	28 17 48.6	2.740
3	17 14 0.56	2.3551	28 20 28.4	2.586
4	17 16 21.84	2.3544	28 22 58.9	2.431
5	17 18 43.08	2.3536	28 25 20.1	2.276
6	17 21 4.27	2.3527	28 27 32.0	2.122
7	17 23 25.40	2.3516	28 29 34.7	1.968
8	17 25 46.46	2.3505	28 31 28.2	1.814
9	17 28 7.46	2.3494	28 33 12.4	1.660
10	17 30 28.39	2.3481	28 34 47.4	1.507
11	17 32 49.23	2.3467	28 36 13.3	1.355
12	17 35 9.99	2.3452	28 37 30.0	1.202
13	17 37 30.66	2.3437	28 38 37.5	1.049
14	17 39 51.24	2.3422	28 39 35.9	0.897
15	17 42 11.72	2.3404	28 40 25.1	0.744
16	17 44 32.09	2.3386	28 41 5.2	0.593
17	17 46 52.35	2.3367	28 41 36.3	0.443
18	17 49 12.50	2.3348	28 41 58.4	0.292
19	17 51 32.53	2.3327	28 42 11.4	− 0.142
20	17 53 52.43	2.3306	28 42 15.4	+ 0.008
21	17 56 12.20	2.3284	28 42 10.4	0.157
22	17 58 31.84	2.3261	28 41 56.5	0.307
23	18 0 51.33	2.3237	S. 28 41 33.6	0.456
	MONDAY 18.			
0	18 3 10.68	2.3212	S. 28 41 1.8	0.604
1	18 5 29.88	2.3187	28 40 21.1	0.751
2	18 7 48.92	2.3161	28 39 31.6	0.898
3	18 10 7.81	2.3134	28 38 33.3	1.045
4	18 12 26.53	2.3106	28 37 26.2	1.192
5	18 14 45.08	2.3077	28 36 10.3	1.337
6	18 17 3.45	2.3047	28 34 45.7	1.482
7	18 19 21.65	2.3017	28 33 12.4	1.627
8	18 21 39.66	2.2987	28 31 30.5	1.771
9	18 23 57.49	2.2956	28 29 39.9	1.915
10	18 26 15.13	2.2923	28 27 40.7	2.057
11	18 28 32.57	2.2890	28 25 33.0	2.199
12	18 30 49.81	2.2857	28 23 16.8	2.341
13	18 33 6.85	2.2822	28 20 52.1	2.482
14	18 35 23.68	2.2787	28 18 19.0	2.622
15	18 37 40.29	2.2751	28 15 37.5	2.762
16	18 39 56.69	2.2715	28 12 47.6	2.901
17	18 42 12.87	2.2678	28 9 49.4	3.039
18	18 44 28.83	2.2641	28 6 42.9	3.177
19	18 46 44.56	2.2603	28 3 28.2	3.313
20	18 49 0.06	2.2564	28 0 5.3	3.450
21	18 51 15.33	2.2526	27 56 34.2	3.586
22	18 53 30.37	2.2486	27 52 55.0	3.720
23	18 55 45.16	2.2445	27 49 7.8	3.853
24	18 57 59.71	2.2405	S. 27 45 12.6	3.987

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 19.			
	h m s	s	° ′ ″	″
0	18 57 59.71	2.2405	S. 27 45 12.6	3.987
1	19 0 14.02	2.2363	27 41 9.4	4.120
2	19 2 28.07	2.2321	27 36 58.2	4.253
3	19 4 41.87	2.2278	27 32 39.1	4.383
4	19 6 55.41	2.2236	27 28 12.2	4.513
5	19 9 8.70	2.2193	27 23 37.5	4.642
6	19 11 21.73	2.2149	27 18 55.1	4.771
7	19 13 34.49	2.2105	27 14 5.0	4.899
8	19 15 46.99	2.2062	27 9 7.2	5.027
9	19 17 59.23	2.2017	27 4 1.8	5.153
10	19 20 11.20	2.1972	26 58 48.9	5.278
11	19 22 22.89	2.1926	26 53 28.4	5.403
12	19 24 34.31	2.1880	26 48 0.5	5.527
13	19 26 45.45	2.1834	26 42 25.2	5.650
14	19 28 56.32	2.1788	26 36 42.5	5.772
15	19 31 6.91	2.1742	26 30 52.6	5.893
16	19 33 17.22	2.1695	26 24 55.4	6.014
17	19 35 27.25	2.1647	26 18 50.9	6.134
18	19 37 36.99	2.1600	26 12 39.3	6.253
19	19 39 46.45	2.1552	26 6 20.6	6.371
20	19 41 55.62	2.1505	25 59 54.8	6.488
21	19 44 4.51	2.1457	25 53 22.0	6.604
22	19 46 13.11	2.1409	25 46 42.3	6.719
23	19 48 21.42	2.1361	S. 25 39 55.7	6.834
	WEDNESDAY 20.			
0	19 50 29.44	2.1312	S. 25 33 2.2	6.948
1	19 52 37.17	2.1264	25 26 1.9	7.061
2	19 54 44.61	2.1216	25 18 54.9	7.172
3	19 56 51.76	2.1167	25 11 41.2	7.283
4	19 58 58.62	2.1119	25 4 20.9	7.394
5	20 1 5.19	2.1070	24 56 53.9	7.504
6	20 3 11.46	2.1021	24 49 20.4	7.612
7	20 5 17.44	2.0972	24 41 40.4	7.720
8	20 7 23.13	2.0924	24 33 54.0	7.827
9	20 9 28.53	2.0876	24 26 1.2	7.932
10	20 11 33.64	2.0827	24 18 2.1	8.037
11	20 13 38.45	2.0778	24 9 56.7	8.142
12	20 15 42.97	2.0729	24 1 45.1	8.245
13	20 17 47.20	2.0681	23 53 27.3	8.347
14	20 19 51.14	2.0632	23 45 3.4	8.449
15	20 21 54.78	2.0583	23 36 33.4	8.550
16	20 23 58.14	2.0536	23 27 57.4	8.650
17	20 26 1.21	2.0487	23 19 15.4	8.748
18	20 28 3.99	2.0439	23 10 27.6	8.846
19	20 30 6.48	2.0392	23 1 33.9	8.943
20	20 32 8.69	2.0344	22 52 34.4	9.040
21	20 34 10.61	2.0296	22 43 29.1	9.136
22	20 36 12.24	2.0248	22 34 18.1	9.231
23	20 38 13.59	2.0202	22 25 1.4	9.324
24	20 40 14.66	2.0155	S. 22 15 39.2	9.417

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 21.			
	h m s	s	° ′ ″	″
0	20 40 14.66	2.0155	S. 22 15 39.2	9.417
1	20 42 15.45	2.0108	22 6 11.4	9.589
2	20 44 15.96	2.0061	21 56 38.1	9.600
3	20 46 16.18	2.0014	21 46 59.4	9.690
4	20 48 16.13	1.9969	21 37 15.3	9.779
5	20 50 15.81	1.9924	21 27 25.9	9.868
6	20 52 15.22	1.9878	21 17 31.2	9.956
7	20 54 14.35	1.9833	21 7 31.2	10.043
8	20 56 13.21	1.9788	20 57 26.1	10.128
9	20 58 11.81	1.9744	20 47 15.9	10.213
10	21 0 10.14	1.9699	20 37 0.6	10.298
11	21 2 8.20	1.9655	20 26 40.2	10.389
12	21 4 6.00	1.9612	20 16 14.8	10.464
13	21 6 3.54	1.9568	20 5 44.5	10.546
14	21 8 0.82	1.9525	19 55 9.3	10.626
15	21 9 57.84	1.9483	19 44 29.4	10.705
16	21 11 54.61	1.9441	19 33 44.7	10.785
17	21 13 51.13	1.9399	19 22 55.2	10.863
18	21 15 47.40	1.9358	19 12 1.1	10.940
19	21 17 43.42	1.9317	19 1 2.4	11.017
20	21 19 39.20	1.9276	18 49 59.0	11.094
21	21 21 34.73	1.9235	18 38 51.1	11.168
22	21 23 30.02	1.9196	18 27 38.8	11.242
23	21 25 25.08	1.9157	S. 18 16 22.0	11.316
	FRIDAY 22.			
0	21 27 19.90	1.9117	S. 18 5 0.9	11.388
1	21 29 14.48	1.9078	17 53 35.5	11.460
2	21 31 8.84	1.9041	17 42 5.7	11.539
3	21 33 2.97	1.9003	17 30 31.7	11.601
4	21 34 56.87	1.8966	17 18 53.6	11.670
5	21 36 50.56	1.8930	17 7 11.3	11.738
6	21 38 44.03	1.8893	16 55 25.0	11.805
7	21 40 37.28	1.8858	16 43 34.7	11.872
8	21 42 30.32	1.8822	16 31 40.3	11.939
9	21 44 23.15	1.8787	16 19 42.0	12.003
10	21 46 15.77	1.8753	16 7 39.9	12.067
11	21 48 8.19	1.8719	15 55 33.9	12.131
12	21 50 0.40	1.8686	15 43 24.1	12.194
13	21 51 52.42	1.8653	15 31 10.6	12.256
14	21 53 44.24	1.8621	15 18 53.4	12.317
15	21 55 35.87	1.8589	15 6 32.5	12.378
16	21 57 27.31	1.8558	14 54 8.0	12.437
17	21 59 18.57	1.8527	14 41 40.0	12.496
18	22 1 9.64	1.8497	14 29 8.5	12.554
19	22 3 0.53	1.8467	14 16 33.5	12.612
20	22 4 51.25	1.8438	14 3 55.1	12.668
21	22 6 41.80	1.8410	13 51 13.4	12.724
22	22 8 32.18	1.8382	13 38 28.3	12.779
23	22 10 22.39	1.8355	13 25 39.9	12.833
24	22 12 12.44	1.8328	S. 13 12 48.4	12.885

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 23.			
	h m s	s	° ′ ″	″
0	22 12 12.44	1.8328	S. 13 12 48.4	12.885
1	22 14 2.33	1.8302	12 59 53.7	12.938
2	22 15 52.06	1.8276	12 46 55.8	12.990
3	22 17 41.64	1.8251	12 33 54.9	13.040
4	22 19 31.07	1.8227	12 20 51.0	13.091
5	22 21 20.36	1.8203	12 7 44.0	13.141
6	22 23 9.51	1.8180	11 54 34.1	13.189
7	22 24 58.52	1.8157	11 41 21.3	13.237
8	22 26 47.39	1.8134	11 28 5.7	13.284
9	22 28 36.13	1.8112	11 14 47.3	13.330
10	22 30 24.74	1.8092	11 1 26.1	13.376
11	22 32 13.23	1.8072	10 48 2.2	13.420
12	22 34 1.60	1.8052	10 34 35.7	13.464
13	22 35 49.85	1.8032	10 21 6.5	13.507
14	22 37 37.99	1.8014	10 7 34.8	13.549
15	22 39 26.01	1.7996	9 54 0.6	13.591
16	22 41 13.94	1.7978	9 40 23.9	13.632
17	22 43 1.76	1.7962	9 26 44.7	13.672
18	22 44 49.48	1.7946	9 13 3.2	13.711
19	22 46 37.11	1.7930	8 59 19.4	13.749
20	22 48 24.64	1.7914	8 45 33.3	13.787
21	22 50 12.08	1.7900	8 31 44.9	13.825
22	22 51 59.44	1.7887	8 17 54.3	13.861
23	22 53 46.73	1.7875	S. 8 4 1.6	13.896
	SUNDAY 24.			
0	22 55 33.94	1.7863	S. 7 50 6.8	13.930
1	22 57 21.08	1.7851	7 36 10.0	13.964
2	22 59 8.15	1.7839	7 22 11.1	13.997
3	23 0 55.15	1.7828	7 8 10.3	14.029
4	23 2 42.09	1.7819	6 54 7.6	14.061
5	23 4 28.98	1.7810	6 40 3.0	14.092
6	23 6 15.81	1.7801	6 25 56.5	14.123
7	23 8 2.59	1.7793	6 11 48.2	14.152
8	23 9 49.33	1.7786	5 57 38.3	14.179
9	23 11 36.03	1.7780	5 43 26.7	14.207
10	23 13 22.69	1.7774	5 29 13.5	14.234
11	23 15 9.32	1.7769	5 14 58.6	14.261
12	23 16 55.92	1.7764	5 0 42.2	14.286
13	23 18 42.49	1.7760	4 46 24.3	14.310
14	23 20 29.04	1.7757	4 32 5.0	14.333
15	23 22 15.58	1.7755	4 17 44.3	14.356
16	23 24 2.10	1.7753	4 3 22.2	14.379
17	23 25 48.61	1.7752	3 48 58.8	14.400
18	23 27 35.12	1.7751	3 34 34.2	14.420
19	23 29 21.62	1.7751	3 20 8.4	14.440
20	23 31 8.13	1.7752	3 5 41.4	14.459
21	23 32 54.64	1.7753	2 51 13.3	14.477
22	23 34 41.16	1.7755	2 36 44.1	14.494
23	23 36 27.70	1.7758	2 22 14.0	14.510
24	23 38 14.26	1.7762	S. 2 7 42.9	14.526

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 25.			
	h m s	s	° ′ ″	″
0	23 38 14.26	1.7762	S. 2 7 42.9	14.596
1	23 40 0.84	1.7766	1 53 10.9	14.541
2	23 41 47.45	1.7771	1 38 38.0	14.556
3	23 43 34.09	1.7776	1 24 4.2	14.569
4	23 45 20.76	1.7783	1 9 29.7	14.581
5	23 47 7.48	1.7790	0 54 54.5	14.592
6	23 48 54.24	1.7797	0 40 18.7	14.602
7	23 50 41.04	1.7805	0 25 42.2	14.612
8	23 52 27.90	1.7814	S. 0 11 5.2	14.622
9	23 54 14.81	1.7822	N. 0 3 32.4	14.631
10	23 56 1.78	1.7834	0 18 10.5	14.637
11	23 57 48.82	1.7845	0 32 48.9	14.643
12	23 59 35.92	1.7857	0 47 27.7	14.649
13	0 1 23.10	1.7870	1 2 6.8	14.654
14	0 3 10.36	1.7883	1 16 46.2	14.658
15	0 4 57.69	1.7896	1 31 25.8	14.662
16	0 6 45.11	1.7911	1 46 5.6	14.663
17	0 8 32.62	1.7926	2 0 45.4	14.664
18	0 10 20.22	1.7942	2 15 25.3	14.665
19	0 12 7.92	1.7958	2 30 5.2	14.664
20	0 13 55.72	1.7976	2 44 45.0	14.663
21	0 15 43.63	1.7994	2 59 24.8	14.662
22	0 17 31.65	1.8013	3 14 4.4	14.658
23	0 19 19.79	1.8032	N. 3 28 43.7	14.654
	TUESDAY 26.			
0	0 21 8.04	1.8052	N. 3 43 22.8	14.649
1	0 22 56.42	1.8073	3 58 1.6	14.643
2	0 24 44.92	1.8094	4 12 40.0	14.636
3	0 26 33.55	1.8117	4 27 17.9	14.628
4	0 28 22.32	1.8140	4 41 55.3	14.619
5	0 30 11.23	1.8164	4 56 32.2	14.610
6	0 32 0.29	1.8189	5 11 8.5	14.599
7	0 33 49.50	1.8214	5 25 44.1	14.588
8	0 35 38.86	1.8239	5 40 19.0	14.576
9	0 37 28.37	1.8266	5 54 53.2	14.563
10	0 39 18.05	1.8294	6 9 26.6	14.548
11	0 41 7.90	1.8322	6 23 59.0	14.533
12	0 42 57.91	1.8350	6 38 30.5	14.517
13	0 44 48.10	1.8380	6 53 1.0	14.499
14	0 46 38.47	1.8410	7 7 30.4	14.481
15	0 48 29.02	1.8441	7 21 58.7	14.462
16	0 50 19.76	1.8472	7 36 25.8	14.442
17	0 52 10.69	1.8504	7 50 51.7	14.421
18	0 54 1.81	1.8537	8 5 16.3	14.399
19	0 55 53.13	1.8571	8 19 39.6	14.376
20	0 57 44.66	1.8606	8 34 1.4	14.351
21	0 59 36.40	1.8641	8 48 21.7	14.325
22	1 1 28.35	1.8677	9 2 40.4	14.299
23	1 3 20.52	1.8713	9 16 57.6	14.272
24	1 5 12.91	1.8750	N. 9 31 13.1	14.243

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 27.			
	h m s	s	° ′ ″	″
0	1 5 12.91	1.8750	N. 9 31 13.1	14.243
1	1 7 5.52	1.8788	9 45 26.8	14.214
2	1 8 58.37	1.8827	9 59 38.8	14.184
3	1 10 51.45	1.8867	10 13 48.9	14.152
4	1 12 44.77	1.8907	10 27 57.1	14.120
5	1 14 38.33	1.8947	10 42 3.3	14.086
6	1 16 32.13	1.8988	10 56 7.4	14.051
7	1 18 26.19	1.9031	11 10 9.4	14.015
8	1 20 20.51	1.9074	11 24 9.2	13.978
9	1 22 15.08	1.9118	11 38 6.8	13.941
10	1 24 9.92	1.9163	11 52 2.1	13.901
11	1 26 5.02	1.9208	12 5 54.9	13.860
12	1 28 0.39	1.9252	12 19 45.3	13.819
13	1 29 56.04	1.9298	12 33 33.2	13.777
14	1 31 51.97	1.9345	12 47 18.5	13.733
15	1 33 48.18	1.9393	13 1 1.1	13.688
16	1 35 44.68	1.9441	13 14 41.0	13.642
17	1 37 41.47	1.9490	13 28 18.1	13.594
18	1 39 38.56	1.9540	13 41 52.3	13.546
19	1 41 35.95	1.9590	13 55 23.6	13.496
20	1 43 33.64	1.9641	14 8 51.8	13.445
21	1 45 31.64	1.9692	14 22 17.0	13.393
22	1 47 29.95	1.9744	14 35 39.0	13.340
23	1 49 28.57	1.9797	N.14 48 57.8	13.286
	THURSDAY 28.			
0	1 51 27.51	1.9850	N.15 2 13.3	13.230
1	1 53 26.77	1.9904	15 15 25.4	13.173
2	1 55 26.36	1.9959	15 28 34.1	13.115
3	1 57 26.28	2.0015	15 41 39.2	13.055
4	1 59 26.54	2.0071	15 54 40.7	12.995
5	2 1 27.13	2.0127	16 7 38.6	12.933
6	2 3 28.06	2.0184	16 20 32.7	12.869
7	2 5 29.34	2.0242	16 33 22.9	12.805
8	2 7 30.96	2.0299	16 46 9.3	12.740
9	2 9 32.93	2.0358	16 58 51.7	12.673
10	2 11 35.26	2.0417	17 11 30.0	12.604
11	2 13 37.94	2.0477	17 24 4.2	12.534
12	2 15 40.98	2.0538	17 36 34.1	12.462
13	2 17 44.39	2.0599	17 48 59.7	12.390
14	2 19 48.17	2.0660	18 1 21.0	12.318
15	2 21 52.31	2.0722	18 13 37.9	12.243
16	2 23 56.83	2.0785	18 25 50.2	12.167
17	2 26 1.73	2.0848	18 37 57.9	12.088
18	2 28 7.00	2.0911	18 50 0.8	12.009
19	2 30 12.66	2.0975	19 1 59.0	11.929
20	2 32 18.70	2.1039	19 13 52.3	11.847
21	2 34 25.12	2.1103	19 25 40.7	11.764
22	2 36 31.93	2.1168	19 37 24.0	11.680
23	2 38 39.14	2.1234	19 49 2.3	11.595
24	2 40 46.74	2.1300	N.20 0 35.4	11.507

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 29.			
	h m s	s	° ′ ″	″
0	2 40 46.74	2.1300	N.20 0 35.4	11.507
1	2 42 54.74	2.1367	20 12 3.2	11.418
2	2 45 3.14	2.1433	20 23 25.6	11.326
3	2 47 11.93	2.1499	20 34 42.6	11.237
4	2 49 21.13	2.1567	20 45 54.1	11.144
5	2 51 30.74	2.1635	20 56 59.9	11.049
6	2 53 40.75	2.1703	21 8 0.0	10.953
7	2 55 51.17	2.1771	21 18 54.3	10.857
8	2 58 2.00	2.1840	21 29 42.8	10.758
9	3 0 13.25	2.1909	21 40 25.3	10.656
10	3 2 24.91	2.1977	21 51 1.8	10.557
11	3 4 36.98	2.2046	22 1 32.2	10.454
12	3 6 49.46	2.2115	22 11 56.3	10.349
13	3 9 2.36	2.2185	22 22 14.1	10.243
14	3 11 15.68	2.2255	22 32 25.5	10.137
15	3 13 29.42	2.2325	22 42 30.5	10.028
16	3 15 43.58	2.2394	22 52 28.9	9.918
17	3 17 58.15	2.2463	23 2 20.7	9.807
18	3 20 13.14	2.2533	23 12 5.7	9.693
19	3 22 28.55	2.2603	23 21 43.9	9.579
20	3 24 44.38	2.2674	23 31 15.2	9.462
21	3 27 0.64	2.2745	23 40 39.4	9.345
22	3 29 17.32	2.2815	23 49 56.6	9.227
23	3 31 34.42	2.2884	N.23 59 6.6	9.106
	SATURDAY 30.			
0	3 33 51.93	2.2953	N.24 8 9.3	8.983
1	3 36 9.86	2.3024	24 17 4.6	8.860
2	3 38 28.22	2.3094	24 25 52.5	8.737
3	3 40 46.99	2.3163	24 34 33.0	8.611
4	3 43 6.17	2.3233	24 43 5.9	8.483
5	3 45 25.77	2.3301	24 51 31.0	8.353
6	3 47 45.78	2.3370	24 59 48.3	8.223
7	3 50 6.21	2.3438	25 7 57.8	8.092
8	3 52 27.04	2.3506	25 15 59.3	7.958
9	3 54 48.28	2.3574	25 23 52.8	7.824
10	3 57 9.93	2.3642	25 31 38.2	7.687
11	3 59 31.99	2.3710	25 39 15.3	7.549
12	4 1 54.45	2.3777	25 46 44.1	7.410
13	4 4 17.31	2.3843	25 54 4.5	7.270
14	4 6 40.57	2.3909	26 1 16.5	7.129
15	4 9 4.22	2.3974	26 8 20.0	6.986
16	4 11 28.26	2.4039	26 15 14.8	6.841
17	4 13 52.69	2.4103	26 22 0.9	6.695
18	4 16 17.50	2.4167	26 28 38.2	6.548
19	4 18 42.69	2.4230	26 35 6.7	6.400
20	4 21 8.26	2.4293	26 41 26.2	6.249
21	4 23 34.21	2.4356	26 47 36.6	6.096
22	4 26 0.53	2.4417	26 53 37.9	5.946
23	4 28 27.21	2.4477	26 59 30.1	5.792
24	4 30 54.25	2.4537	N.27 5 13.0	5.637

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 31.			
	h m s	s	° ′ ″	″
0	4 30 54.25	2.4537	N.27 5 13.0	5.637
1	4 33 21.65	2.4596	27 10 46.5	5.481
2	4 35 49.40	2.4653	27 16 10.7	5.324
3	4 38 17.49	2.4710	27 21 25.4	5.165
4	4 40 45.92	2.4767	27 26 30.5	5.006
5	4 43 14.69	2.4823	27 31 26.0	4.844
6	4 45 43.80	2.4878	27 36 11.8	4.682
7	4 48 13.23	2.4931	27 40 47.8	4.518
8	4 50 42.97	2.4984	27 45 14.0	4.353
9	4 53 13.03	2.5036	27 49 30.2	4.188
10	4 55 43.40	2.5086	27 53 36.5	4.021
11	4 58 14.06	2.5135	27 57 32.7	3.856
12	5 0 45.02	2.5184	28 1 18.8	3.683
13	5 3 16.27	2.5232	28 4 54.7	3.513
14	5 5 47.80	2.5278	28 8 20.4	3.343
15	5 8 19.60	2.5323	28 11 35.9	3.173
16	5 10 51.67	2.5367	28 14 41.0	2.999
17	5 13 24.00	2.5409	28 17 35.7	2.825
18	5 15 56.58	2.5451	28 20 20.0	2.650
19	5 18 29.41	2.5492	28 22 53.7	2.474
20	5 21 2.48	2.5530	28 25 16.9	2.296
21	5 23 35.77	2.5567	28 27 29.5	2.121
22	5 26 9.28	2.5603	28 29 31.4	1.943
23	5 28 43.01	2.5639	N.28 31 22.6	1.764
	MONDAY, APRIL 1.			
0	5 31 16.95	2.5672	N.28 33 3.1	1.585

PHASES OF THE MOON.

		d	h	m
☽	First Quarter. March	4	0	40.3
○	Full Moon	10	15	37.9
☾	Last Quarter	17	17	31.6
●	New Moon	25	22	25.0

		d	h
☾	Perigee . . . March	9	12.6
☾	Apogee	21	18.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	53° 37′ 21″	3156	55° 4′ 23″	3145	56° 31′ 38″	3133	57° 59′ 7″	3122
	Venus	W.	32 15 25	3253	33 40 32	3240	35 5 54	3228	36 31 30	3216
	Jupiter	E.	52 16 40	2838	50 43 1	2828	49 9 10	2820	47 35 8	2811
	Pollux	E.	77 14 20	2799	75 39 51	2788	74 5 8	2779	72 30 12	2769
2	Sun	W.	65 20 10	3060	66 49 8	3047	68 18 23	3034	69 47 54	3021
	Venus	W.	43 43 10	3153	45 10 16	3138	46 37 39	3125	48 5 18	3111
	Pollux	E.	64 31 59	2712	62 55 35	2700	61 18 55	2688	59 41 59	2675
	Regulus	E.	101 22 0	2710	99 45 34	2698	98 8 52	2686	96 31 53	2674
3	Sun	W.	77 19 45	2950	78 51 1	2935	80 22 36	2920	81 54 30	2904
	Venus	W.	55 27 53	3039	56 57 18	3023	58 27 2	3008	59 57 5	2992
	α Arietis	W.	24 5 49	2757	25 41 13	2738	27 17 18	2698	28 54 1	2672
	Pollux	E.	51 33 5	2611	49 54 25	2596	48 15 27	2584	46 36 10	2571
	Regulus	E.	88 22 43	2608	86 43 59	2595	85 4 57	2581	83 25 36	2566
4	Sun	W.	89 38 59	2825	91 12 54	2809	92 47 10	2793	94 21 47	2776
	Venus	W.	67 32 18	2912	69 4 21	2895	70 36 46	2879	72 9 32	2862
	α Arietis	W.	37 5 39	2561	38 45 27	2542	40 25 42	2522	42 6 24	2503
	Pollux	E.	38 15 0	2500	36 33 47	2486	34 52 14	2472	33 10 21	2457
	Regulus	E.	75 3 54	2494	73 22 32	2480	71 40 50	2465	69 58 47	2449
5	Sun	W.	102 20 17	2694	103 57 5	2678	105 34 15	2661	107 11 47	2645
	Venus	W.	79 58 43	2779	81 33 39	2762	83 8 57	2745	84 44 37	2729
	α Arietis	W.	50 36 25	2413	52 19 41	2396	54 3 21	2380	55 47 25	2362
	Mars	W.	25 15 43	2592	26 54 49	2572	28 34 23	2553	30 14 23	2534
	Regulus	E.	61 23 8	2373	59 38 55	2358	57 54 20	2343	56 9 23	2328
6	Sun	W.	115 24 58	2564	117 4 42	2549	118 44 47	2534	120 25 13	2519
	α Arietis	W.	64 33 46	2282	66 20 12	2267	68 7 0	2251	69 54 11	2237
	Mars	W.	38 40 44	2447	40 23 12	2430	42 6 4	2415	43 49 18	2398
	Aldebaran	W.	34 27 53	2482	36 9 31	2450	37 51 54	2419	39 35 1	2391
	Regulus	E.	47 19 11	2254	45 32 4	2241	43 44 37	2226	41 56 48	2212
	Spica	E.	101 18 31	2251	99 31 20	2237	97 43 47	2223	95 55 53	2208
7	α Arietis	W.	78 55 19	2170	80 44 32	2157	82 34 4	2145	84 23 54	2134
	Mars	W.	52 30 52	2328	54 16 11	2314	56 1 50	2302	57 47 47	2290
	Aldebaran	W.	48 19 56	2276	50 6 31	2256	51 53 35	2239	53 41 5	2222
	Jupiter	W.	29 21 30	2232	31 9 10	2213	32 57 18	2195	34 45 53	2179
	Spica	E.	86 51 17	2143	85 1 24	2131	83 11 12	2120	81 20 43	2108
	Saturn	E.	100 56 26	2160	99 6 58	2148	97 17 12	2136	95 27 8	2124
8	α Arietis	W.	93 37 7	2086	95 28 28	2077	97 20 2	2070	99 11 47	2064
	Mars	W.	66 41 39	2238	68 29 10	2230	70 16 53	2222	72 4 48	2214
	Aldebaran	W.	62 44 19	2153	64 33 57	2143	66 23 51	2139	68 14 1	2134
	Jupiter	W.	43 54 24	2113	45 45 4	2103	47 35 59	2094	49 27 8	2085
	Spica	E.	72 4 13	2060	70 12 12	2052	68 19 59	2044	66 27 34	2037
	Saturn	E.	86 12 43	2076	84 21 7	2068	82 29 19	2061	80 37 20	2054
9	Mars	W.	81 6 45	2189	82 55 29	2186	84 44 18	2184	86 33 10	2182
	Aldebaran	W.	77 27 51	2090	79 19 5	2087	81 10 24	2084	83 1 48	2083
	Jupiter	W.	58 45 49	2054	60 37 59	2050	62 30 15	2048	64 22 35	2046

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Sun	W.	59° 26′ 50″	3110	60° 54′ 48″	3096	62° 23′ 0″	3086	63° 51′ 27″	3073
	Venus	W.	37 57 20	3204	39 23 24	3191	40 49 44	3178	42 16 19	3165
	Jupiter	E.	46 0 55	2803	44 26 31	2794	42 51 55	2785	41 17 8	2776
	Pollux	E.	70 55 3	2757	69 19 39	2747	67 44 1	2735	66 8 8	2732
2	Sun	W.	71 17 41	3006	72 47 46	2993	74 18 8	2979	75 48 47	2964
	Venus	W.	49 33 14	3097	51 1 27	3089	52 29 58	3069	53 58 46	3053
	Pollux	E.	58 4 46	2663	56 27 17	2650	54 49 30	2638	53 11 26	2625
	Regulus	E.	94 54 38	2661	93 17 6	2648	91 39 16	2635	90 1 9	2621
3	Sun	W.	83 26 44	2889	84 59 17	2873	86 32 11	2857	88 5 25	2842
	Venus	W.	61 27 28	2976	62 58 11	2961	64 29 13	2945	66 0 35	2928
	α Arietis	W.	30 31 18	2648	32 9 8	2625	33 47 29	2603	35 26 20	2583
	Pollux	E.	44 56 35	2557	43 16 41	2543	41 36 27	2528	39 55 53	2515
	Regulus	E.	81 45 55	2553	80 5 55	2538	78 25 35	2524	76 44 55	2509
4	Sun	W.	95 56 46	2760	97 32 6	2744	99 7 48	2728	100 43 51	2710
	Venus	W.	73 42 39	2846	75 16 7	2829	76 49 57	2812	78 21 9	2795
	α Arietis	W.	43 47 33	2485	45 29 8	2467	47 11 8	2448	48 53 34	2431
	Pollux	E.	31 28 7	2413	29 45 33	2429	28 2 40	2415	26 19 27	2402
	Regulus	E.	68 16 22	2434	66 33 36	2419	64 50 28	2404	63 6 59	2389
5	Sun	W.	108 49 41	2928	110 27 58	2612	112 6 36	2596	113 45 36	2580
	Venus	W.	86 20 39	2712	87 57 3	2695	89 33 49	2679	91 10 57	2663
	α Arietis	W.	57 31 54	2346	59 16 47	2330	61 2 3	2313	62 47 43	2298
	Mars	W.	31 54 49	2515	33 35 41	2497	35 16 58	2480	36 58 39	2463
	Regulus	E.	54 24 4	2313	52 38 23	2298	50 52 21	2283	49 5 57	2268
6	Sun	W.	122 6 0	2504	123 47 7	2489	125 28 35	2475	127 10 23	2462
	α Arietis	W.	71 41 43	2293	73 29 36	2209	75 17 50	2195	77 6 25	2182
	Mars	W.	45 32 55	2384	47 16 53	2369	49 1 12	2355	50 45 52	2341
	Aldebaran	W.	41 18 48	2364	43 3 14	2340	44 48 15	2317	46 33 50	2296
	Regulus	E.	40 8 39	2199	38 20 10	2186	36 31 21	2173	34 42 13	2161
	Spica	E.	94 7 38	2195	92 19 3	2181	90 30 7	2169	88 40 52	2156
7	α Arietis	W.	86 14 1	2123	88 4 25	2113	89 55 4	2103	91 45 58	2094
	Mars	W.	59 34 1	2279	61 20 32	2268	63 7 19	2257	64 54 22	2247
	Aldebaran	W.	55 21 0	2206	57 17 18	2192	59 5 58	2178	60 54 59	2165
	Jupiter	W.	36 34 52	2164	38 24 14	2149	40 13 58	2136	42 4 2	2124
	Spica	E.	79 29 56	2098	77 38 53	2087	75 47 34	2077	73 56 0	2069
	Saturn	E.	93 36 46	2114	91 46 8	2103	89 55 14	2094	88 4 5	2085
8	α Arietis	W.	101 3 42	2058	102 55 46	2053	104 47 58	2048	106 40 17	2045
	Mars	W.	73 52 54	2208	75 41 10	2202	77 29 34	2197	79 18 6	2192
	Aldebaran	W.	70 4 24	2115	71 55 0	2107	73 45 48	2101	75 36 45	2096
	Jupiter	W.	51 18 31	2077	53 10 6	2070	55 1 51	2064	56 53 46	2059
	Spica	E.	64 34 58	2039	62 42 13	2026	60 49 19	2021	58 56 17	2017
	Saturn	E.	78 45 10	2048	76 52 51	2043	75 0 24	2039	73 7 50	2035
9	Mars	W.	88 22 5	2181	90 11 1	2182	91 59 56	2182	93 48 :0	2184
	Aldebaran	W.	84 53 14	2081	86 44 42	2081	88 36 11	2082	90 27 38	2083
	Jupiter	W.	66 14 58	2044	68 7 24	2044	69 59 50	2044	71 52 15	2046

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
9	Pollux	W.	33° 52′ 31″	2021	35° 45′ 32″	2018	37° 38′ 38″	2016	39° 31′ 48″	2013
	Spica	E.	57 3 9	2013	55 9 55	2010	53 16 37	2009	51 23 16	2007
	Saturn	E.	71 15 11	2032	69 22 27	2030	67 29 40	2028	65 36 50	2026
	Antares	E.	102 57 11	2013	101 3 57	2010	99 10 39	2008	97 17 17	2007
10	Aldebaran	W.	92 19 3	2066	94 10 24	2069	96 1 40	2094	97 52 49	2069
	Jupiter	W.	73 44 38	2048	75 36 58	2051	77 29 13	2054	79 21 23	2059
	Pollux	W.	48 58 3	2016	50 51 13	2019	52 44 19	2022	54 37 19	2026
	Spica	E.	41 56 19	2011	40 3 2	2014	38 9 50	2018	36 16 44	2023
	Saturn	E.	56 13 0	2039	54 20 27	2044	52 28 1	2050	50 35 45	2057
	Antares	E.	87 50 18	2011	85 57 1	2014	84 3 48	2017	82 10 41	2022
11	Jupiter	W.	88 40 5	2092	90 31 16	2101	92 22 13	2111	94 12 55	2121
	Pollux	W.	64 0 16	2059	65 52 18	2068	67 44 7	2077	69 35 42	2087
	Regulus	W.	27 10 29	2064	29 2 24	2072	30 54 7	2081	32 45 36	2090
	Antares	E	72 47 16	2056	70 55 9	2064	69 3 15	2074	67 11 36	2085
12	Pollux	W.	78 49 23	2147	80 39 10	2161	82 28 37	2175	84 17 43	2190
	Regulus	W.	41 59 3	2148	43 48 49	2161	45 38 15	2175	47 27 20	2190
	Antares	E.	57 57 34	2144	56 7 42	2158	54 18 11	2172	52 29 2	2187
	α Aquilæ	E	108 11 34	3022	106 41 49	3020	105 12 1	3019	103 42 12	3021
13	Pollux	W.	93 17 27	2269	95 4 12	2287	96 50 31	2304	98 36 25	2322
	Regulus	W.	56 27 4	2269	58 13 49	2286	60 0 9	2303	61 46 4	2321
	Antares	E.	43 29 0	2267	41 42 12	2284	39 55 49	2302	38 9 52	2320
	α Aquilæ	E.	96 14 28	3059	94 45 28	3072	93 16 44	3087	91 48 18	3103
14	Regulus	W.	70 29 7	2412	72 12 24	2431	73 55 15	2449	75 37 40	2468
	α Aquilæ	E.	84 31 36	3204	83 5 32	3220	81 39 58	3255	80 14 54	3269
	Sun	E.	134 45 21	2735	133 9 27	2754	131 33 59	2775	129 58 58	2795
15	Regulus	W.	84 3 6	2562	85 42 53	2581	87 22 14	2599	89 1 10	2618
	Spica	W.	30 2 37	2561	31 42 25	2580	33 21 47	2599	35 0 44	2617
	α Aquilæ	E.	73 17 59	3438	71 56 26	3474	70 35 33	3511	69 15 21	3549
	Sun	E.	122 10 30	2896	120 38 6	2916	119 6 8	2936	117 34 35	2957
16	Spica	W.	43 9 22	2705	44 45 55	2722	46 22 5	2739	47 57 53	2756
	Saturn	W.	29 59 45	2793	31 34 22	2801	33 8 48	2810	34 43 3	2820
	α Aquilæ	E.	62 45 29	3769	61 29 55	3890	60 15 14	3873	59 1 27	3998
	Sun	E.	110 3 1	3052	108 33 53	3071	107 5 8	3090	105 36 46	3107
17	Spica	W.	55 51 36	2833	57 25 21	2848	58 58 47	2862	60 31 55	2876
	Saturn	W.	42 30 59	2873	44 3 52	2885	45 36 30	2896	47 8 54	2906
	α Aquilæ	E.	53 7 20	4255	51 59 46	4332	50 53 23	4415	49 48 15	4502
	Fomalhaut	E.	73 16 46	3110	71 48 48	3129	70 21 14	3149	68 54 4	3168
	Sun	E.	98 20 9	3191	96 53 49	3207	95 27 48	3222	94 2 5	3236
18	Spica	W.	68 13 24	2938	69 44 55	2948	71 16 13	2959	72 47 17	2969
	Saturn	W.	54 47 32	2959	56 18 36	2968	57 49 29	2977	59 20 10	2986
	Antares	W.	22 19 31	2938	23 51 2	2950	25 22 18	2960	26 53 21	2970
	Fomalhaut	E.	61 44 9	3270	60 19 23	3292	58 55 2	3313	57 31 6	3337
	Sun	E.	86 57 41	3305	85 33 35	3316	84 9 42	3328	82 46 3	3338

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
9	Pollux	W.	41° 25′ 2″	9012	43° 18′ 18″	9012	45° 11′ 34″	9012	47° 4′ 50″	9014
	Spica	E.	49 29 52	9006	47 36 27	9007	45 43 3	9007	43 49 40	9009
	Saturn	E.	63 44 0	9038	61 51 10	9030	59 58 23	9039	58 5 39	9035
	Antares	E.	95 23 53	9006	93 30 28	9006	91 37 3	9007	89 43 39	9009
10	Aldebaran	W.	99 43 50	9105	101 34 42	9112	103 25 23	9120	105 15 52	9129
	Jupiter	W.	81 13 26	9064	83 5 21	9070	84 57 6	9077	86 48 41	9084
	Pollux	W.	56 30 13	9031	58 22 59	9037	60 15 35	9044	62 8 1	9051
	Spica	E.	34 23 45	9098	32 30 55	9034	30 38 14	9041	28 45 41	9048
	Saturn	E.	48 43 39	9065	46 51 46	9074	45 0 7	9085	43 8 44	9096
	Antares	E.	80 17 41	9097	78 24 49	9033	76 32 7	9041	74 39 36	9048
11	Jupiter	W.	96 3 22	9139	97 53 32	9144	99 43 24	9157	101 32 57	9170
	Pollux	W.	71 27 1	9098	73 18 4	9109	75 8 49	9121	76 59 16	9134
	Regulus	W.	34 36 51	9100	36 27 50	9111	38 18 32	9129	40 8 57	9135
	Antares	E.	65 20 13	9095	63 29 6	9107	61 38 17	9118	59 47 46	9131
12	Pollux	W.	86 6 26	9204	87 54 47	9220	89 42 44	9236	91 30 18	9253
	Regulus	W.	49 16 3	9204	51 4 24	9220	52 52 21	9236	54 39 55	9253
	Antares	E	50 40 15	9202	48 51 51	9218	47 3 50	9234	45 16 13	9250
	α Aquilæ	E.	102 12 25	3024	100 42 42	3030	99 13 7	3039	97 43 42	3047
13	Pollux	W.	100 21 53	9339	102 6 55	9358	103 51 30	9376	105 35 39	9394
	Regulus	W.	63 31 33	9339	65 16 36	9357	67 1 13	9375	68 45 23	9394
	Antares	E.	36 24 21	9337	34 39 16	9355	32 54 37	9374	31 10 25	9392
	α Aquilæ	E.	90 20 12	3130	88 52 27	3139	87 25 5	3159	85 58 7	3182
14	Regulus	W.	77 19 38	9487	79 1 10	9506	80 42 15	9525	82 22 54	9544
	α Aquilæ	E.	78 50 22	3311	77 26 23	3341	76 2 59	3379	74 40 10	3405
	Sun	E.	128 24 24	9815	126 50 16	9836	125 16 35	9856	123 43 20	9876
15	Regulus	W.	90 39 41	9636	92 17 47	9654	93 55 29	9672	95 32 47	9689
	Spica	W.	36 39 16	9635	38 17 24	9653	39 55 7	9671	41 32 26	9688
	α Aquilæ	E.	67 55 51	3590	66 37 6	3639	65 19 6	3676	64 1 53	3729
	Sun	E.	116 3 28	9976	114 32 45	9996	113 2 27	3014	111 32 32	3034
16	Spica	W.	49 33 19	9779	51 8 24	9788	52 43 8	9803	54 17 32	9816
	Saturn	W.	36 17 5	9830	37 50 54	9840	39 24 30	9851	40 57 52	9862
	α Aquilæ	E.	57 48 36	3967	56 36 44	4048	55 25 52	4113	54 16 3	4182
	Sun	E.	104 8 45	3195	102 41 6	3142	101 13 47	3158	99 46 48	3175
17	Spica	W.	62 4 45	9688	63 37 19	9901	65 9 36	9913	66 41 38	9926
	Saturn	W.	48 41 5	9917	50 13 2	9928	51 44 45	9939	53 16 15	9949
	α Aquilæ	E.	48 44 25	4596	47 41 57	4698	46 40 56	4806	45 41 25	4923
	Fomalhaut	E.	67 27 17	3188	66 0 54	3209	64 34 55	3229	63 9 20	3249
	Sun	E.	92 36 39	3951	91 11 30	3965	89 46 38	3979	88 22 2	3992
18	Spica	W.	74 18 9	9979	75 48 48	9988	77 19 16	9997	78 49 32	3005
	Saturn	W.	60 50 40	9995	62 20 59	3004	63 51 7	3011	65 21 6	3019
	Antares	W.	28 24 11	9980	29 54 49	9989	31 25 16	9997	32 55 32	3006
	Fomalhaut	E.	56 7 37	3359	54 44 34	3383	53 21 58	3408	51 59 50	3434
	Sun	E.	81 22 36	3350	79 59 22	3360	78 36 20	3370	77 13 29	3379

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Name and Direction of Object		Noon.	P. L. of Diff.	III.	P. L. of Diff.	VI.	P. L. of Diff.	IX.	P. L. of Diff.
19	Spica	W.	90° 19' 39"	3014	91° 49' 34"	3008	93° 19' 27"	3000	84° 48' 59"	3035
	Regulus	W.	68 50 55	3008	69 20 36	3003	69 50 2	3000	71 19 32	3045
	Antares	W.	24 25 37	3014	25 55 32	3002	27 25 26	3000	32 54 56	3035
	Fomalhaut	E.	50 38 12	3002	49 17 4	3000	47 56 26	3027	46 36 21	3550
	Sun	E.	75 50 49	3007	74 22 12	3004	73 5 57	3000	71 43 44	3410
20	Spica	W.	92 15 16	3001	93 44 13	3005	95 13 6	3000	96 41 54	3072
	Regulus	W.	70 44 52	3000	69 13 39	3003	67 42 22	3006	83 11 1	3079
	Antares	W.	46 21 12	3002	47 50 9	3005	49 19 1	3000	50 47 49	3072
	Sun	E.	64 54 32	3000	63 23 0	3004	62 11 33	3007	60 50 10	3451
21	Regulus	W.	90 33 32	3000	92 1 56	3000	93 30 20	3000	94 58 43	3000
	Antares	W.	52 11 2	3001	53 39 35	3002	61 8 7	3000	62 36 38	3002
	Sun	E.	54 4 3	3000	52 42 56	3000	51 21 49	3000	50 0 43	3463
22	Regulus	W.	102 20 40	3004	103 49 18	3002	105 17 50	3000	106 46 24	3078
	Antares	W.	69 50 21	3078	71 20 5	3074	72 50 46	3072	74 25 30	3069
	Sun	E.	43 15 5	3057	41 53 53	3054	40 32 39	3053	39 11 21	3449
23	Antares	W.	81 50 7	3050	83 19 16	3047	84 48 30	3043	86 17 50	3038
	α Aquilæ	W.	42 24 42	5364	43 17 5	5329	44 11 5	5305	45 6 38	4984
	Sun	E.	32 23 59	3031	31 2 17	3027	29 40 31	3023	28 18 40	3417
24	Antares	W.	93 46 3	3011	95 16 2	3005	96 46 8	3000	98 16 22	2993
	α Aquilæ	W.	50 4 42	4549	51 7 52	4478	52 12 5	4430	53 17 17	4350
	Sun	E.	21 27 57	3001	20 5 30	3005	18 42 58	3001	17 20 20	3376
27	Sun	W.	12 10 31	3015	13 45 22	3004	15 11 27	3000	16 37 46	3181
	Spica	E.	50 12 49	3000	48 41 58	3008	47 11 5	3007	45 40 11	2966
	Mars	E.	56 3 2	3061	54 34 5	3053	53 4 56	3048	51 35 42	3038
	Jupiter	E.	70 34 48	3007	68 2 25	3000	66 29 53	3002	64 57 11	9874
	Pollux	E.	92 48 9	3042	91 14 35	3033	89 40 50	3005	88 6 55	9818
28	Sun	W.	23 52 30	3030	25 20 3	3021	26 47 47	3011	28 15 43	3102
	Mars	E.	44 6 55	3000	42 36 41	3001	41 6 17	3004	39 35 44	2976
	Jupiter	E.	57 11 16	3007	55 37 36	3009	54 3 46	3002	52 29 47	9815
	Pollux	E.	80 14 41	3776	78 39 42	3768	77 4 32	3760	75 29 11	9751
29	Sun	W.	35 38 17	3054	37 7 23	3044	38 36 41	3034	40 6 11	3095
	Jupiter	E.	44 37 35	9781	43 2 42	9775	41 27 41	9769	39 52 32	9763
	Pollux	E.	67 20 30	9769	65 53 11	9760	64 16 31	9752	62 39 40	9683
	Regulus	E.	104 19 44	9797	102 43 13	9808	101 6 31	9809	99 29 37	9681
30	Sun	W.	47 36 41	9976	49 7 24	9965	50 38 20	9956	52 9 28	9946
	Pollux	E.	54 32 27	9650	52 54 25	9639	51 16 10	9631	49 37 43	9619
	Regulus	E.	91 22 9	9636	89 44 3	9636	88 5 44	9618	86 27 13	9608
31	Sun	W.	59 48 23	9964	61 20 50	9963	62 53 30	9973	64 26 24	9982
	α Arietis	W.	34 1 42	9839	35 39 44	9894	37 18 7	9908	38 56 51	9593
	Venus	W.	31 25 13	3008	32 55 16	9994	34 25 36	9981	35 56 12	9969
	Pollux	E.	41 22 23	9566	39 42 41	9556	38 2 46	9548	36 22 39	9538
	Regulus	E.	78 11 24	9561	76 31 35	9551	74 51 32	9541	73 11 16	9539

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
19	Spica	W.	86° 18′ 28″	3041	87° 47′ 50″	3047	89° 17′ 5″	3052	90° 46′ 13″	3056
	Saturn	W.	72 48 49	3051	74 17 59	3056	75 47 2	3060	77 16 0	3065
	Antares	W.	40 24 25	3042	41 53 46	3047	43 23 1	3052	44 52 9	3056
	Fomalhaut	E.	45 16 52	3583	43 57 59	3618	42 39 44	3657	41 22 11	3699
	Sun	E.	70 21 39	3417	68 59 42	3493	67 37 52	3430	66 16 9	3435
20	Spica	W.	98 10 38	3074	99 39 19	3077	101 7 57	3078	102 36 33	3080
	Saturn	W.	84 39 36	3069	86 8 8	3063	87 36 38	3065	89 5 6	3067
	Antares	W.	52 16 33	3074	53 45 14	3077	55 13 52	3078	56 42 28	3080
	Sun	E.	59 28 51	3454	58 7 35	3456	56 46 22	3459	55 25 12	3460
21	Saturn	W.	96 27 7	3068	97 55 31	3067	99 23 56	3067	100 52 22	3066
	Antares	W.	64 5 10	3082	65 33 42	3081	67 2 15	3079	68 30 50	3078
	Sun	E.	48 39 37	3462	47 18 30	3462	45 57 23	3461	44 36 15	3459
22	Saturn	W.	108 15 0	3075	109 43 40	3073	111 12 23	3069	112 41 10	3067
	Antares	W.	75 54 17	3066	77 23 8	3063	78 52 3	3059	80 21 3	3056
	Sun	E.	37 50 0	3446	36 28 36	3443	35 7 8	3439	33 45 36	3435
23	Antares	W.	87 47 16	3033	89 16 48	3098	90 46 26	3022	92 16 11	3017
	α Aquilæ	W.	46 3 38	4890	47 2 1	4794	48 1 42	4705	49 2 37	4623
	Sun	E.	26 56 43	3412	25 34 40	3408	24 12 32	3401	22 50 17	3397
24	Antares	W.	99 46 44	2987	101 17 13	2980	102 47 51	2973	104 18 37	2966
	α Aquilæ	W.	54 23 24	4999	55 30 24	4938	56 38 14	4188	57 46 51	4140
	Sun	E.	15 57 36	3379	14 34 47	3367	13 11 53	3364	11 48 55	3363
27	Sun	W.	18 4 18	3170	19 31 3	3169	20 58 0	3150	22 25 9	3140
	Aldebaran	E.	44 9 16	2967	42 38 22	2969	41 7 31	2972	39 36 43	2977
	Mars	E.	50 6 16	3030	48 36 40	3092	47 6 55	3014	45 37 0	3006
	Jupiter	E.	63 24 19	2867	61 51 18	2859	60 18 7	2852	58 44 46	2845
	Pollux	E.	86 32 50	2809	84 58 34	2801	83 24 7	2792	81 49 29	2785
28	Sun	W.	29 43 50	3092	31 12 9	3089	32 40 40	3073	34 9 23	3064
	Mars	E.	38 5 1	2969	36 34 10	2962	35 3 10	2955	33 32 1	2949
	Jupiter	E.	50 55 39	2808	49 21 22	2801	47 46 55	2794	46 12 19	2788
	Pollux	E.	73 53 39	2743	72 17 56	2734	70 42 1	2726	69 5 56	2717
29	Sun	W.	41 35 53	3015	43 5 47	3005	44 35 53	2996	46 6 11	2986
	Jupiter	E.	38 17 15	2757	36 41 51	2753	35 6 21	2747	33 30 44	2744
	Pollux	E.	61 2 37	2674	59 25 22	2666	57 47 56	2657	56 10 18	2647
	Regulus	E.	97 52 32	2672	96 15 15	2663	94 37 45	2654	93 0 3	2645
30	Sun	W.	53 40 49	2935	55 12 23	2925	56 44 10	2915	58 16 10	2905
	Pollux	E.	47 59 4	2603	46 20 13	2593	44 41 9	2584	43 1 52	2575
	Regulus	E.	84 48 29	2599	83 9 33	2589	81 30 23	2580	79 51 0	2570
31	Sun	W.	65 59 31	2859	67 32 52	2841	69 6 27	2830	70 40 16	2818
	α Arietis	W.	40 35 55	2579	42 15 19	2566	43 55 1	2553	45 35 1	2539
	Venus	W.	37 27 4	2956	38 58 12	2944	40 29 25	2931	42 1 14	2919
	Pollux	E.	34 42 19	2529	33 1 46	2520	31 21 1	2511	29 40 3	2502
	Regulus	E.	71 30 47	2501	69 50 3	2512	68 9 6	2502	66 27 55	2492

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	THE SUN'S Apparent Declination.	Diff. for 1 Hour.	THE SUN'S Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to / Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	0 42 19.98	9.100	N. 4 33 23.3	+57.85	16 2.16	64.53	3 56.93	0.754
Tues.	2	0 45 58.43	9.104	4 56 29.2	57.63	16 1.89	64.55	3 38.88	0.750
Wed.	3	0 49 36.99	9.109	5 19 29.6	57.40	16 1.62	64.57	3 20.93	0.745
Thur.	4	0 53 15.68	9.115	5 42 24.3	+57.15	16 1.35	64.59	3 3.12	0.739
Frid.	5	0 56 54.53	9.122	6 5 12.9	56.89	16 1.08	64.62	2 45.46	0.732
Sat.	6	1 0 33.54	9.130	6 27 55.1	56.62	16 0.81	64.65	2 27.96	0.725
SUN.	7	1 4 12.74	9.138	6 50 30.6	+56.33	16 0.54	64.68	2 10.66	0.717
Mon.	8	1 7 52.16	9.147	7 12 59.1	56.03	16 0.27	64.71	1 53.57	0.707
Tues.	9	1 11 31.80	9.157	7 35 20.2	55.72	16 0.00	64.75	1 36.71	0.697
Wed.	10	1 15 11.71	9.168	7 57 33.7	+55.40	15 59.73	64.78	1 20.10	0.686
Thur.	11	1 18 51.89	9.180	8 19 39.2	55.06	15 59.45	64.82	1 3.77	0.674
Frid.	12	1 22 32.36	9.193	8 41 36.5	54.71	15 59.18	64.86	0 47.74	0.661
Sat.	13	1 26 13.15	9.207	9 3 25.1	+54.34	15 58.91	64.91	0 32.02	0.648
SUN.	14	1 29 54.28	9.221	9 25 4.9	53.96	15 58.63	64.96	0 16.63	0.634
Mon.	15	1 33 35.75	9.236	9 46 35.5	53.57	15 58.36	65.01	0 1.59	0.619
Tues.	16	1 37 17.60	9.252	10 7 56.5	+53.17	15 58.09	65.06	0 13.08	0.603
Wed.	17	1 40 59.84	9.268	10 29 7.6	52.75	15 57.82	65.12	0 27.36	0.587
Thur.	18	1 44 42.47	9.285	10 50 8.6	52.32	15 57.55	65.17	0 41.24	0.570
Frid.	19	1 48 25.53	9.303	11 10 58.9	+51.87	15 57.28	65 23	0 54.70	0.552
Sat.	20	1 52 9.01	9.321	11 31 38.3	51.41	15 57.02	65.29	1 7.74	0.534
SUN.	21	1 55 52.92	9.339	11 52 6.5	50.93	15 56.76	65.36	1 20.34	0.516
Mon.	22	1 59 37.29	9.358	12 12 23.0	+50.44	15 56.50	65.42	1 32.50	0.497
Tues.	23	2 3 22.12	9.378	12 32 27.6	49.93	15 56.24	65.49	1 44.19	0.478
Wed.	24	2 7 7.42	9.397	12 52 19.8	49.41	15 55.99	65.55	1 55.42	0.458
Thur.	25	2 10 53.19	9.417	13 11 59.4	+48.88	15 55.74	65.62	2 6.17	0.438
Frid.	26	2 14 39.45	9.437	13 31 25.9	48.33	15 55.49	65.69	2 16.44	0.418
Sat.	27	2 18 26.20	9.458	13 50 39.0	47.76	15 55.25	65.77	2 26.22	0.397
SUN.	28	2 22 13.44	9.479	14 9 38.4	+47.18	15 55.01	65.84	2 35.51	0.377
Mon.	29	2 26 1.18	9.500	14 28 23.7	46.59	15 54.77	65.92	2 44.30	0.356
Tues.	30	2 29 49.43	9.521	14 46 54.6	45.98	15 54.53	65.99	2 52.58	0.335
Wed.	31	2 33 38.20	9.543	N.15 5 10.8	+45.36	15 54.30	66.07	3 0.35	0.313

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from / Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	0 42 19.38	9.102	N. 4 33 19.5	+57.86	3 56.98	0.754	0 38 22.40
Tues.	2	0 45 57.88	9.106	4 56 25.6	57.64	3 38.92	0.760	0 42 18.95
Wed.	3	0 49 36.48	9.111	5 19 26.4	57.41	3 20.97	0.745	0 46 15 51
Thur.	4	0 53 15.22	9.117	5 42 21.3	+57.16	3 3.16	0.739	0 50 12.06
Frid.	5	0 56 54.11	9.124	6 5 10.2	56.90	2 45.49	0.732	0 54 8.62
Sat.	6	1 0 33.16	9.132	6 27 52.7	56.63	2 27.99	0.725	0 58 5.17
SUN.	7	1 4 12.41	9.140	6 50 28.5	+56.34	2 10.69	0.716	1 2 1.72
Mon.	8	1 7 51.87	9.149	7 12 57.3	56.04	1 53.59	0.707	1 5 58.28
Tues.	9	1 11 31.56	9.159	7 35 18.7	55.73	1 36.73	0.697	1 9 54.83
Wed.	10	1 15 11.51	9.170	7 57 32.4	+55.41	1 20.12	0.686	1 13 51.39
Thur.	11	1 18 51.73	9.182	8 19 38.2	55.07	1 3.79	0.674	1 17 47.94
Frid.	12	1 22 32.24	9.195	8 41 35.7	54.72	0 47.75	0.662	1 21 44.50
Sat.	13	1 26 13.07	9.208	9 3 24.6	+54.35	0 32.02	0.648	1 25 41.05
SUN.	14	1 29 54.24	9.222	9 25 4.7	53.97	0 16.63	0.634	1 29 37.60
Mon.	15	1 33 35.75	9.237	9 46 35.5	53.58	0 1.59	0.619	1 33 34.16
Tues.	16	1 37 17.64	9.253	10 7 56.7	+53.18	0 13.08	0.603	1 37 30.71
Wed.	17	1 40 59.91	9.270	10 29 8.0	52.76	0 27.36	0.587	1 41 27.27
Thur.	18	1 44 42.58	9.287	10 50 9.2	52.33	0 41.24	0.570	1 45 23.82
Frid.	19	1 48 25.67	9.304	11 10 59.7	+51.88	0 54.71	0.552	1 49 20.38
Sat.	20	1 52 9.18	9.322	11 31 39.3	51.42	1 7.75	0.534	1 53 16.93
SUN.	21	1 55 53.13	9.341	11 52 7.6	50.94	1 20.36	0.516	1 57 13 49
Mon.	22	1 59 37.53	9.360	12 12 24.3	+50.45	1 32.51	0.497	2 1 10.04
Tues.	23	2 3 22.39	9.379	12 32 29.0	49.94	1 44.20	0.478	2 5 6.60
Wed.	24	2 7 7.72	9.399	12 52 21.4	49.42	1 55.43	0.458	2 9 3.15
Thur.	25	2 10 53.52	9.419	13 12 1.1	+48.88	2 6.19	0.438	2 12 59.71
Frid.	26	2 14 39.81	9.439	13 31 27.7	48.33	2 16.45	0.418	2 16 56.26
Sat.	27	2 18 26.58	9.459	13 50 40.9	47.76	2 26.24	0.398	2 20 52.82
SUN.	28	2 22 13.85	9.480	14 9 40.4	+47.18	2 35.53	0.377	2 24 49.38
Mon.	29	2 26 1.62	9.501	14 28 25.8	46.59	2 44.32	0.356	2 28 45.93
Tues.	30	2 29 49.89	9.522	14 46 56.8	45.99	2 52.60	0.334	2 32 42.49
Wed.	31	2 33 38.68	9.544	N. 15 5 13.1	+45.37	3 0.36	0.313	2 36 39.04

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinat one are increasing.

Diff. for 1 Hour, +9″.8.65. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	THE SUN'S LATITUDE	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	° ′ ″	″	″			h m s
1	91	11 20 54.4	20 20.7	147.89	+ 0.59	9.9999262	+50.9	23 17 47.98
2	92	12 20 2.6	29 47.8	147.79	0.56	0.0000482	50.8	23 13 52.07
3	93	13 29 8.4	28 53.5	147.70	0.50	0.0001702	50.8	23 9 56.16
4	94	14 28 12.0	27 57.0	147.60	+ 0.42	0.0002922	+50.9	23 6 0.25
5	95	15 27 12.1	26 58.0	147.50	0.30	0.0004143	50.9	23 2 4.34
6	96	16 26 12.0	25 56.8	147.41	0.19	0.0005365	51.0	22 58 8.44
7	97	17 25 8.8	24 53.4	147.32	+ 0.06	0.0006589	+51.1	22 54 12.53
8	98	18 24 2.4	23 47.9	147.23	− 0.06	0.0007817	51.2	22 50 16 62
9	99	19 22 55.9	22 40.3	147.15	0.19	0.0009046	51.3	22 46 20 71
10	100	20 21 46.4	21 30.7	147.07	− 0.30	0.0010279	+51.4	22 42 24 80
11	101	21 20 34.9	20 19.0	146.99	0.39	0.0011513	51.5	22 38 28.90
12	102	22 19 21.6	19 5.6	146.91	0.46	0.0012750	51.5	22 34 32.99
13	103	23 18 6.4	17 50.3	146.83	− 0.51	0.0013987	+51.5	22 30 37.08
14	104	24 16 49.5	16 33.3	146.75	0.52	0.0015224	51.5	22 26 41.17
15	105	25 15 30.8	15 14.4	146.68	0.50	0.0016458	51.4	22 22 45.26
16	106	26 14 10.3	13 53.8	146.61	− 0.44	0.0017691	+ 51.2	22 18 49.35
17	107	27 12 48.3	12 31.7	146.55	0.37	0.0018916	51.0	22 14 53.44
18	108	28 11 24.7	11 8.0	146.48	0.28	0.0020137	50.7	22 10 57.53
19	109	29 9 59.4	9 42.5	146.41	− 0.16	0.0021349	+50.3	22 7 1.62
20	110	30 8 32.4	8 15.4	146.34	− 0.02	0.0022551	49.9	22 3 5.72
21	111	31 7 3.9	6 46.8	146.27	+ 0.12	0.0023741	49.4	21 59 9.81
22	112	32 5 33.5	5 16.2	146.20	+ 0.25	0.0024920	+48.8	21 55 13.90
23	113	33 4 1.3	3 43.9	146.12	0.37	0.0026085	48.2	21 51 17.99
24	114	34 2 27.4	2 9.8	146.04	0.49	0.0027235	47.6	21 47 22.08
25	115	35 0 51.7	0 34.0	145.97	+ 0.57	0.0028372	+47.0	21 43 26.17
26	116	35 59 14.0	58 56.2	145.89	0.63	0.0029493	46.4	21 39 30.26
27	117	36 57 34.5	57 16.5	145.81	0.66	0.0030599	45.8	21 35 34.35
28	118	37 55 52.9	55 34.8	145.73	+ 0.67	0.0031691	+45.2	21 31 38.44
29	119	38 54 9.4	53 51.2	145.65	0.64	0.0032771	44.7	21 27 42.53
30	120	39 52 23.9	52 5.5	145.57	0.59	0.0033836	44.1	21 23 46.62
31	121	40 50 36.3	50 17.8	145.48	+ 0.50	0.0034889	+43.6	21 19 50.71

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0d.0.

Diff. for 1 Hour, −9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 49.3	15 54.0	57 57.4	+1.44	58 14.7	+1.44	5 5.2	2.52	6.1
2	15 58.7	16 3.3	58 31.9	1.43	58 48.9	1.40	6 6.1	2.54	7.1
3	16 7.8	16 12.1	59 5.4	1.34	59 21.1	1.26	7 6.3	2.47	8.1
4	16 16.0	16 19.6	59 35.6	+1.15	59 48.6	+1.00	8 4.0	2.34	9.1
5	16 22.6	16 24.9	59 59.6	0.82	60 8.3	0.61	8 58.5	2.21	10.1
6	16 26.6	16 27.4	60 14.3	+0.37	60 17.2	+0.10	9 50.2	2.11	11.1
7	16 27.3	16 26.2	60 16.8	−0.18	60 13.0	−0.47	10 40.1	2.06	12.1
8	16 24.2	16 21.2	60 5.6	0.76	59 54.7	1.04	11 29.4	2.06	13.1
9	16 17.4	16 12.7	59 40.6	1.30	59 23.5	1.53	12 19.3	2.11	14.1
10	16 7.4	16 1.4	59 3.8	−1.73	58 41.9	−1.89	13 10.8	2.19	15.1
11	15 55.0	15 48.4	58 18.4	2.00	57 53.9	2.07	14 4 3	2.27	16.1
12	15 41.5	15 34.4	57 28.8	2.09	57 3.7	2.07	14 59.7	2.33	17.1
13	15 28.0	15 21.5	56 39.1	−2.01	56 15.4	−1.92	15 55.7	2.33	18.1
14	15 15.5	15 9.9	55 53.1	1.79	55 32.5	1.64	16 50.8	2.26	19.1
15	15 4.8	15 0.3	55 13.8	1.46	54 57.4	1.28	17 43.6	2.14	20.1
16	14 56.4	14 53.3	54 43.2	−1.08	54 31.6	−0.86	18 33.1	1.99	21.1
17	14 50.8	14 49.1	54 22.6	0.65	54 16.1	0.43	19 19.3	1.86	22.1
18	14 48.0	14 47.6	54 12.2	−0.22	54 10.8	−0.01	20 2.5	1.75	23.1
19	14 47.9	14 48.8	54 11.9	+0.19	54 15 3	+0.38	20 43.6	1.68	24.1
20	14 50.4	14 52.5	54 20.9	0.55	54 28.6	0.71	21 23.6	1.66	25.1
21	14 55.0	14 58.1	54 38.0	0.86	54 49.2	0.99	22 3.5	1.68	26.1
22	15 1.5	15 5.2	55 1.7	+1.09	55 15 4	+1.18	22 44.5	1.75	27.1
23	15 9.2	15 13.4	55 30.1	1.26	55 45.6	1.30	23 27.7	1.86	28.1
24	15 17.7	15 22.0	56 1.3	1.32	56 17.2	1.33	6		29.1
25	15 26.4	15 30.7	56 33.3	+1.33	56 49.1	+1.31	0 14.3	2.02	0.5
26	15 35.0	15 39.1	57 4.7	1.28	57 19.8	1.23	1 5.1	2.21	1.5
27	15 43.0	15 46.8	57 34.3	1.18	57 48.2	1.13	2 0.4	2.39	2.5
28	15 50.4	15 53.7	58 1.3	+1.06	58 13.7	+1.00	2 59.5	2.52	3.5
29	15 56.9	15 59.8	58 25.4	0.93	58 36.1	0.86	4 0.5	2.54	4.5
30	16 2.6	16 5.0	58 46.1	0.80	58 55.2	0.71	5 0.9	2.47	5.5
31	16 7.3	16 9.3	59 3.5	+0.65	59 10.8	+0.56	5 58.7	2.33	6.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 1.			
	h m s	s	° ′ ″	″
0	5 31 16.95	2.5672	N.28 33 3.1	1.585
1	5 33 51.08	2.5704	28 34 32.8	1.464
2	5 36 25.40	2.5736	28 35 51.6	1.292
3	5 38 59.91	2.5766	28 36 59.6	1.049
4	5 41 34.59	2.5793	28 37 56.6	0.859
5	5 44 9.43	2.5819	28 38 42.7	0.676
6	5 46 44.42	2.5844	28 39 17.8	0.493
7	5 49 19.56	2.5868	28 39 41.9	0.308
8	5 51 54.84	2.5891	28 39 54.9	+ 0.125
9	5 54 30.25	2.5911	28 39 56.9	− 0.059
10	5 57 5.77	2.5930	28 39 47.8	0.245
11	5 59 41.41	2.5948	28 39 27.5	0.431
12	6 2 17.15	2.5964	28 38 56.1	0.617
13	6 4 52.98	2.5979	28 38 13.5	0.803
14	6 7 28.90	2.5993	28 37 19.7	0.989
15	6 10 4.89	2.6004	28 36 14.8	1.176
16	6 12 40.95	2.6015	28 34 58.6	1.363
17	6 15 17.07	2.6023	28 33 31.2	1.551
18	6 17 53.23	2.6030	28 31 52.5	1.738
19	6 20 29.43	2.6036	28 30 2.6	1.926
20	6 23 5.66	2.6041	28 28 1.4	2.113
21	6 25 41.92	2.6044	28 25 49.0	2.301
22	6 28 18.19	2.6045	28 23 25.3	2.489
23	6 30 54.46	2.6044	N.28 20 50.3	2.677
	TUESDAY 2.			
0	6 33 30.72	2.6042	N.28 18 4.1	2.864
1	6 36 6.97	2.6040	28 15 6.6	3.052
2	6 38 43.20	2.6035	28 11 57.9	3.239
3	6 41 19.39	2.6028	28 8 37.9	3.427
4	6 43 55.54	2.6021	28 5 6.7	3.614
5	6 46 31.64	2.6012	28 1 24.3	3.801
6	6 49 7.68	2.6001	27 57 30.6	3.988
7	6 51 43.65	2.5989	27 53 25.7	4.174
8	6 54 19.55	2.5977	27 49 9.7	4.359
9	6 56 55.37	2.5963	27 44 42.6	4.544
10	6 59 31.09	2.5945	27 40 4.4	4.730
11	7 2 6.71	2.5928	27 35 15.0	4.915
12	7 4 42.23	2.5910	27 30 14.6	5.099
13	7 7 17.63	2.5889	27 25 3.1	5.283
14	7 9 52.90	2.5868	27 19 40.6	5.466
15	7 12 28.04	2.5846	27 14 7.2	5.648
16	7 15 3.05	2.5822	27 8 22.8	5.831
17	7 17 37.91	2.5797	27 2 27.5	6.012
18	7 20 12.61	2.5770	26 56 21.3	6.193
19	7 22 47.15	2.5743	26 50 4.3	6.373
20	7 25 21.53	2.5715	26 43 36.5	6.552
21	7 27 55.73	2.5685	26 36 58.0	6.731
22	7 30 29.75	2.5654	26 30 8.8	6.909
23	7 33 3.58	2.5622	26 23 8.9	7.086
24	7 35 37.21	2.5589	N.26 15 58.5	7.262
	WEDNESDAY 3.			
	h m s	s	° ′ ″	″
0	7 35 37.21	2.5589	N.26 15 58.5	7.262
1	7 38 10.64	2.5555	26 8 37.5	7.437
2	7 40 43.87	2.5521	26 1 6.0	7.612
3	7 43 16.89	2.5485	25 53 24.1	7.785
4	7 45 49.69	2.5448	25 45 31.8	7.957
5	7 48 22.27	2.5411	25 37 29.2	8.129
6	7 50 54.62	2.5372	25 29 16.3	8.300
7	7 53 26.74	2.5332	25 20 53.2	8.469
8	7 55 58.61	2.5292	25 12 20.0	8.637
9	7 58 30.24	2.5251	25 3 36.7	8.805
10	8 1 1.62	2.5209	24 54 43.4	8.971
11	8 3 32.75	2.5166	24 45 40.2	9.135
12	8 6 3.62	2.5123	24 36 27.2	9.299
13	8 8 34.23	2.5080	24 27 4.3	9.462
14	8 11 4.58	2.5036	24 17 31.7	9.623
15	8 13 34.66	2.4991	24 7 49.5	9.783
16	8 16 4.47	2.4945	23 57 57.7	9.943
17	8 18 34.00	2.4898	23 47 56.3	10.102
18	8 21 3.25	2.4850	23 37 45.5	10.258
19	8 23 32.22	2.4805	23 27 25.4	10.413
20	8 26 0.91	2.4757	23 16 56.0	10.567
21	8 28 29.31	2.4709	23 6 17.4	10.719
22	8 30 57.42	2.4661	22 55 29.7	10.870
23	8 33 25.24	2.4612	N.22 44 33.0	11.019
	THURSDAY 4.			
0	8 35 52.77	2.4563	N.22 33 27.4	11.167
1	8 38 20.00	2.4513	22 22 12.9	11.315
2	8 40 46.93	2.4464	22 10 49.6	11.460
3	8 43 13.57	2.4415	21 59 17.7	11.604
4	8 45 39.91	2.4364	21 47 37.2	11.747
5	8 48 5.94	2.4313	21 35 48.1	11.888
6	8 50 31.67	2.4263	21 23 50.6	12.027
7	8 52 57.10	2.4212	21 11 44.8	12.165
8	8 55 22.22	2.4162	20 59 30.8	12.301
9	8 57 47.04	2.4112	20 47 8.7	12.436
10	9 0 11.56	2.4061	20 34 38.5	12.570
11	9 2 35.77	2.4010	20 22 0.3	12.702
12	9 4 59.68	2.3959	20 9 14.3	12.832
13	9 7 23.28	2.3908	19 56 20.5	12.961
14	9 9 46.58	2.3858	19 43 19.0	13.088
15	9 12 9.58	2.3807	19 30 10.0	13.213
16	9 14 32.27	2.3757	19 16 53.5	13.337
17	9 16 54.66	2.3707	19 3 29.6	13.458
18	9 19 16.75	2.3657	18 49 58.5	13.578
19	9 21 38.54	2.3607	18 36 20.2	13.697
20	9 24 0.03	2.3557	18 22 34.8	13.816
21	9 26 21.22	2.3507	18 8 42.3	13.932
22	9 28 42.12	2.3458	17 54 43.0	14.045
23	9 31 2.72	2.3408	17 40 36.9	14.157
24	9 33 23.02	2.3359	N.17 26 24.2	14.267

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 5.			
	h m s	s	° ′ ″	″
0	9 33 23.02	2.3359	N. 17 26 24.2	14.367
1	9 35 43.03	2.3311	17 12 4.9	14.376
2	9 38 2.76	2.3264	16 57 39.1	14.483
3	9 40 22.20	2.3217	16 43 6.9	14.566
4	9 42 41.36	2.3169	16 28 28.5	14.692
5	9 45 0.23	2.3122	16 13 43.9	14.793
6	9 47 18.82	2.3075	15 58 53.3	14.893
7	9 49 37.13	2.3029	15 43 56.7	14.992
8	9 51 55.17	2.2984	15 28 54.3	15.088
9	9 54 12.94	2.2939	15 13 46.1	15.183
10	9 56 30.44	2.2894	14 58 32.3	15.276
11	9 58 47.67	2.2850	14 43 13.0	15.367
12	10 1 4.64	2.2807	14 27 48.3	15.456
13	10 3 21.35	2.2763	14 12 18.3	15.544
14	10 5 37.80	2.2720	13 56 43.0	15.631
15	10 7 53.99	2.2678	13 41 2.6	15.715
16	10 10 9.93	2.2637	13 25 17.2	15.797
17	10 12 25.63	2.2596	13 9 27.0	15.877
18	10 14 41.08	2.2555	12 53 32.0	15.956
19	10 16 56.29	2.2516	12 37 32.3	16.033
20	10 19 11.27	2.2477	12 21 28.0	16.108
21	10 21 26.01	2.2438	12 5 19.3	16.182
22	10 23 40.52	2.2400	11 49 6.2	16.253
23	10 25 54.81	2.2363	N. 11 32 48.9	16.322
	SATURDAY 6.			
0	10 28 8.88	2.2327	N. 11 16 27.5	16.390
1	10 30 22.73	2.2291	11 0 2.1	16.457
2	10 32 36.37	2.2256	10 43 32.7	16.522
3	10 34 49.80	2.2221	10 26 59.5	16.584
4	10 37 3.02	2.2187	10 10 22.6	16.644
5	10 39 16.04	2.2154	9 53 42.2	16.703
6	10 41 28.87	2.2122	9 36 58.3	16.760
7	10 43 41.51	2.2091	9 20 11.0	16.815
8	10 45 53.96	2.2059	9 3 20.5	16.868
9	10 48 6.22	2.2028	8 46 26.8	16.920
10	10 50 18.30	2.1999	8 29 30.1	16.969
11	10 52 30.21	2.1971	8 12 30.5	17.017
12	10 54 41.96	2.1944	7 55 28.0	17.064
13	10 56 53.54	2.1917	7 38 22.8	17.108
14	10 59 4.96	2.1890	7 21 15.0	17.150
15	11 1 16.22	2.1864	7 4 4.8	17.190
16	11 3 27.33	2.1840	6 46 52.2	17.229
17	11 5 38.30	2.1816	6 29 37.3	17.266
18	11 7 49.12	2.1792	6 12 20.3	17.301
19	11 9 59.80	2.1770	5 55 1.2	17.334
20	11 12 10.36	2.1749	5 37 40.2	17.365
21	11 14 20.79	2.1728	5 20 17.4	17.394
22	11 16 31.10	2.1708	5 2 52.9	17.422
23	11 18 41.29	2.1689	4 45 26.7	17.449
24	11 20 51.37	2.1671	N. 4 27 59.0	17.473

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 7.			
	h m s	s	° ′ ″	″
0	11 20 51.37	2.1671	N. 4 27 59.0	17.473
1	11 23 1.34	2.1653	4 10 29.9	17.495
2	11 25 11.21	2.1637	3 52 59.6	17.514
3	11 27 20.98	2.1621	3 35 28.2	17.530
4	11 29 30.66	2.1606	3 17 55.7	17.549
5	11 31 40.25	2.1591	3 0 22.3	17.564
6	11 33 49.75	2.1577	2 42 48.0	17.577
7	11 35 59.17	2.1564	2 25 13.0	17.588
8	11 38 8.52	2.1553	2 7 37.4	17.598
9	11 40 17.81	2.1542	1 50 1.2	17.606
10	11 42 27.03	2.1532	1 32 24.7	17.611
11	11 44 36.19	2.1522	1 14 47.9	17.615
12	11 46 45.30	2.1514	0 57 10.9	17.617
13	11 48 54.36	2.1507	0 39 33.9	17.617
14	11 51 3.38	2.1499	0 21 56.9	17.616
15	11 53 12.35	2.1492	N. 0 4 20.0	17.612
16	11 55 21.29	2.1487	S. 0 13 16.6	17.607
17	11 57 30.20	2.1483	0 30 52.8	17.600
18	11 59 39.09	2.1480	0 48 28.6	17.592
19	12 1 47.96	2.1477	1 6 3.8	17.581
20	12 3 56.82	2.1475	1 23 38.3	17.568
21	12 6 5.66	2.1473	1 41 12.0	17.554
22	12 8 14.50	2.1473	1 58 44.8	17.538
23	12 10 23.34	2.1473	S. 2 16 16.6	17.520
	MONDAY 8.			
0	12 12 32.18	2.1474	S. 2 33 47.2	17.500
1	12 14 41.03	2.1477	2 51 16.6	17.479
2	12 16 49.90	2.1479	3 8 44.7	17.456
3	12 18 58.78	2.1483	3 26 11.3	17.431
4	12 21 7.69	2.1487	3 43 36.4	17.405
5	12 23 16.63	2.1492	4 0 59.9	17.377
6	12 25 25.59	2.1497	4 18 21.6	17.346
7	12 27 34.59	2.1504	4 35 41.4	17.314
8	12 29 43.64	2.1512	4 52 59.3	17.281
9	12 31 52.73	2.1519	5 10 15.1	17.246
10	12 34 1.87	2.1527	5 27 28.8	17.208
11	12 36 11.06	2.1537	5 44 40.1	17.168
12	12 38 20.32	2.1548	6 1 49.0	17.127
13	12 40 29.64	2.1559	6 18 55.4	17.086
14	12 42 39.03	2.1571	6 35 59.3	17.042
15	12 44 48.49	2.1583	6 53 0.5	16.997
16	12 46 58.02	2.1596	7 9 58.9	16.948
17	12 49 7.64	2.1610	7 26 54.3	16 898
18	12 51 17.34	2.1624	7 43 46.7	16.847
19	12 53 27.13	2.1640	8 0 36.0	16.795
20	12 55 37.02	2.1656	8 17 22.1	16.741
21	12 57 47.00	2.1673	8 34 4.9	16.685
22	12 59 57.08	2.1689	8 50 44.3	16.627
23	13 2 7.27	2.1707	9 7 20.1	16.567
24	13 4 17.57	2.1726	S. 9 23 52.3	16.506

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 9.			
	h m s	s	° ′ ″	″
0	13 4 17.57	2.1796	S. 9 23 52.3	16.506
1	13 6 27.98	2.1745	9 40 20.8	16.443
2	13 8 38.51	2.1764	9 56 45.5	16.379
3	13 10 49.15	2.1784	10 13 6.3	16.313
4	13 12 59.92	2.1806	10 29 23.1	16.245
5	13 15 10.82	2.1828	10 45 35.7	16.175
6	13 17 21.85	2.1850	11 1 44.1	16.104
7	13 19 33.02	2.1872	11 17 48.2	16.032
8	13 21 44.32	2.1895	11 33 47.9	15.958
9	13 23 55.76	2.1919	11 49 43.1	15.882
10	13 26 7.35	2.1943	12 5 33.7	15.804
11	13 28 19.08	2.1967	12 21 19.6	15.725
12	13 30 30.96	2.1992	12 37 0.7	15.644
13	13 32 43.00	2.2019	12 52 36.9	15.562
14	13 34 55.19	2.2045	13 8 8.1	15.478
15	13 37 7.54	2.2072	13 23 34.3	15.393
16	13 39 20.05	2.2099	13 38 55.3	15.306
17	13 41 32.73	2.2127	13 54 11.0	15.217
18	13 43 45.58	2.2155	14 9 21.4	15.128
19	13 45 58.59	2.2183	14 24 26.4	15.037
20	13 48 11.78	2.2212	14 39 25.8	14.943
21	13 50 25.14	2.2242	14 54 19.5	14.848
22	13 52 38.68	2.2271	15 9 7.5	14.753
23	13 54 52.39	2.2300	S. 15 23 49.8	14.656
	WEDNESDAY 10.			
0	13 57 6.28	2.2330	S. 15 38 26.2	14.557
1	13 59 20.35	2.2361	15 52 56.6	14.456
2	14 1 34.61	2.2392	16 7 20.9	14.353
3	14 3 49.06	2.2424	16 21 39.0	14.250
4	14 6 3.70	2.2455	16 35 50.9	14.146
5	14 8 18.52	2.2486	16 49 56.5	14.040
6	14 10 33.53	2.2518	17 3 55.7	13.932
7	14 12 48.74	2.2551	17 17 48.4	13.823
8	14 15 4.14	2.2583	17 31 34.5	13.713
9	14 17 19.73	2.2615	17 45 14.0	13.602
10	14 19 35.52	2.2647	17 58 46.7	13.488
11	14 21 51.50	2.2680	18 12 12.6	13.374
12	14 24 7.68	2.2713	18 25 31.6	13.258
13	14 26 24.06	2.2746	18 38 43.6	13.142
14	14 28 40.64	2.2779	18 51 48.6	13.023
15	14 30 57.41	2.2812	19 4 46.4	12.903
16	14 33 14.38	2.2845	19 17 37.0	12.782
17	14 35 31.55	2.2878	19 30 20.3	12.661
18	14 37 48.92	2.2912	19 42 56.3	12.537
19	14 40 6.49	2.2945	19 55 24.8	12.412
20	14 42 24.26	2.2977	20 7 45.8	12.287
21	14 44 42.22	2.3010	20 19 59.2	12.160
22	14 47 0.38	2.3044	20 32 5.0	12.032
23	14 49 18.75	2.3077	20 44 3.1	11.902
24	14 51 37.31	2.3110	S. 20 55 53.3	11.772

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 11.			
	h m s	s	° ′ ″	″
0	14 51 37.31	2.3110	S. 20 55 53.3	11.772
1	14 53 56.07	2.3142	21 7 35.7	11.641
2	14 56 15.02	2.3174	21 19 10.2	11.507
3	14 58 34.16	2.3206	21 30 36.6	11.373
4	15 0 53.49	2.3238	21 41 55.0	11.239
5	15 3 13.02	2.3271	21 53 5.3	11.103
6	15 5 32.74	2.3302	22 4 7.3	10.965
7	15 7 52.65	2.3333	22 15 1.1	10.827
8	15 10 12.74	2.3364	22 25 46.6	10.689
9	15 12 33.02	2.3396	22 36 23.8	10.549
10	15 14 53.49	2.3426	22 46 52.5	10.408
11	15 17 14.13	2.3455	22 57 12.7	10.266
12	15 19 34.95	2.3485	23 7 24.4	10.123
13	15 21 55.95	2.3514	23 17 27.5	9.979
14	15 24 17.12	2.3543	23 27 21.9	9.834
15	15 26 38.47	2.3571	23 37 7.6	9.688
16	15 28 59.98	2.3599	23 46 44.5	9.542
17	15 31 21.66	2.3627	23 56 12.7	9.396
18	15 33 43.50	2.3653	24 5 32.0	9.247
19	15 36 5.50	2.3680	24 14 42.4	9.098
20	15 38 27.66	2.3706	24 23 43.8	8.948
21	15 40 49.97	2.3731	24 32 36.2	8.798
22	15 43 12.43	2.3756	24 41 19.5	8.647
23	15 45 35.04	2.3781	S. 24 49 53.8	8.495
	FRIDAY 12.			
0	15 47 57.80	2.3804	S. 24 58 18.9	8.342
1	15 50 20.69	2.3826	25 6 34.8	8.189
2	15 52 43.71	2.3848	25 14 41.6	8.036
3	15 55 6.87	2.3870	25 22 39.1	7.881
4	15 57 30.15	2.3890	25 30 27.3	7.726
5	15 59 53.55	2.3910	25 38 6.2	7.570
6	16 2 17.07	2.3929	25 45 35.7	7.413
7	16 4 40.70	2.3947	25 52 55.8	7.257
8	16 7 4.44	2.3965	26 0 6.5	7.100
9	16 9 28.28	2.3982	26 7 7.8	6.942
10	16 11 52.22	2.3998	26 13 59.6	6.784
11	16 14 16.25	2.4013	26 20 41.9	6.626
12	16 16 40.38	2.4028	26 27 14.7	6.467
13	16 19 4.59	2.4041	26 33 37.9	6.307
14	16 21 28.87	2.4053	26 39 51.6	6.147
15	16 23 53.23	2.4065	26 45 55.6	5.987
16	16 26 17.65	2.4076	26 51 50.0	5.827
17	16 28 42.14	2.4087	26 57 34.8	5.666
18	16 31 6.69	2.4096	27 3 9.9	5.504
19	16 33 31.29	2.4103	27 8 35.3	5.343
20	16 35 55.93	2.4110	27 13 51.1	5.182
21	16 38 20.61	2.4116	27 18 57.2	5.021
22	16 40 45.32	2.4122	27 23 53.6	4.858
23	16 43 10.07	2.4127	27 28 40.2	4.696
24	16 45 34.84	2.4129	S. 27 33 17.1	4.534

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 13.			
	h m s	s	° ′ ″	″
0	16 45 34.84	2.4139	S. 27 33 17.1	4.534
1	16 47 59.62	2.4131	27 37 44.3	4.379
2	16 50 24.41	2.4139	27 42 1.8	4.210
3	16 52 49.21	2.4139	27 46 9.5	4.047
4	16 55 14.00	2.4139	27 50 7.5	3.885
5	16 57 38.79	2.4139	27 53 55.7	3.723
6	17 0 3.56	2.4137	27 57 34.2	3.561
7	17 2 28.31	2.4133	28 1 3.0	3.396
8	17 4 53.04	2.4118	28 4 22.0	3.236
9	17 7 17.73	2.4119	28 7 31.3	3.074
10	17 9 42.38	2.4104	28 10 30.9	2.919
11	17 12 6.98	2.4096	28 13 20.7	2.749
12	17 14 31.54	2.4088	28 16 0.8	2.587
13	17 16 56.04	2.4077	28 18 31.2	2.426
14	17 19 20.47	2.4066	28 20 51.9	2.265
15	17 21 44.83	2.4053	28 23 3.0	2.104
16	17 24 9.11	2.4040	28 25 4.4	1.943
17	17 26 33.31	2.4026	28 26 56.2	1.782
18	17 28 57.42	2.4010	28 28 38.3	1.622
19	17 31 21.43	2.3993	28 30 10.8	1.462
20	17 33 45.34	2.3976	28 31 33.7	1.302
21	17 36 9.14	2.3957	28 32 47.1	1.143
22	17 38 32.83	2.3938	28 33 50.9	0.984
23	17 40 56.40	2.3917	S. 28 34 45.2	0.826
	SUNDAY 14.			
0	17 43 19.84	2.3896	S. 28 35 30.0	0.668
1	17 45 43.15	2.3873	28 36 5.3	0.510
2	17 48 6.32	2.3849	28 36 31.2	0.352
3	17 50 29.34	2.3824	28 36 47.6	0.195
4	17 52 52.21	2.3799	28 36 54.6	− 0.039
5	17 55 14.93	2.3773	28 36 52.3	+ 0.116
6	17 57 37.49	2.3746	28 36 40.7	0.272
7	17 59 59.88	2.3717	28 36 19.7	0.427
8	18 2 22.09	2.3687	28 35 49.5	0.580
9	18 4 44.13	2.3657	28 35 10.1	0.733
10	18 7 5.98	2.3626	28 34 21.5	0.886
11	18 9 27.64	2.3593	28 33 23.7	1.039
12	18 11 49.10	2.3560	28 32 16.8	1.191
13	18 14 10.36	2.3527	28 31 0.8	1.342
14	18 16 31.42	2.3492	28 29 35.8	1.492
15	18 18 52.27	2.3457	28 28 1.8	1.642
16	18 21 12.90	2.3420	28 26 18.8	1.791
17	18 23 33.31	2.3382	28 24 26.9	1.939
18	18 25 53.49	2.3344	28 22 26.1	2.087
19	18 28 13.44	2.3306	28 20 16.5	2.233
20	18 30 33.16	2.3267	28 17 58 1	2.379
21	18 32 52.64	2.3227	28 15 31.0	2.524
22	18 35 11.88	2.3185	28 12 55.2	2.668
23	18 37 30.86	2.3143	28 10 10.8	2.812
24	18 39 49.59	2.3101	S. 28 7 17.7	2.956

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 15.			
	h m s	s	° ′ ″	″
0	18 39 49.59	2.3101	S. 28 7 17.7	2.956
1	18 42 8.07	2.3058	28 4 16.1	3.098
2	18 44 26.28	2.3014	28 1 6.0	3.239
3	18 46 44.23	2.2970	27 57 47.4	3.380
4	18 49 1.92	2.2925	27 54 20.4	3.519
5	18 51 19.33	2.2879	27 50 45.1	3.658
6	18 53 36.47	2.2833	27 47 1.5	3.796
7	18 55 53.33	2.2787	27 43 9.6	3.933
8	18 58 9.91	2.2739	27 39 9.5	4.069
9	19 0 26.20	2.2691	27 35 1.3	4.204
10	19 2 42.20	2.2643	27 30 45.0	4.339
11	19 4 57.91	2.2594	27 26 20.6	4.472
12	19 7 13.33	2.2545	27 21 48.3	4.604
13	19 9 28.45	2.2495	27 17 8.1	4.736
14	19 11 43.27	2.2446	27 12 20.0	4.867
15	19 13 57.80	2.2396	27 7 24.0	4.997
16	19 16 12.02	2.2344	27 2 20.3	5.126
17	19 18 25.93	2.2292	26 57 8.9	5.254
18	19 20 39.53	2.2241	26 51 49.8	5.381
19	19 22 52.82	2.2189	26 46 23.2	5.507
20	19 25 5.80	2.2137	26 40 49.0	5.632
21	19 27 18.47	2.2085	26 35 7.3	5.757
22	19 29 30.82	2.2032	26 29 18.2	5.880
23	19 31 42.86	2.1980	S. 26 23 21.7	6.002
	TUESDAY 16.			
0	19 33 54.58	2.1927	S. 26 17 18.0	6.123
1	19 36 5.98	2.1873	26 11 7.0	6.243
2	19 38 17.06	2.1819	26 4 48.8	6.363
3	19 40 27.81	2.1765	25 58 23.4	6.482
4	19 42 38.24	2.1712	25 51 50.9	6.599
5	19 44 48.35	2.1658	25 45 11.5	6.715
6	19 46 58.13	2.1603	25 38 25.1	6.831
7	19 49 7.59	2.1549	25 31 31.8	6.946
8	19 51 16.72	2.1495	25 24 31.6	7.060
9	19 53 25.53	2.1441	25 17 24.6	7.172
10	19 55 34.01	2.1387	25 10 10.9	7.284
11	19 57 42.17	2.1332	25 2 50.5	7.395
12	19 59 50.00	2.1277	24 55 23.5	7.504
13	20 1 57.50	2.1223	24 47 50.0	7.613
14	20 4 4.68	2.1169	24 40 9.9	7.721
15	20 6 11.53	2.1114	24 32 23.4	7.828
16	20 8 18.05	2.1060	24 24 30.5	7.934
17	20 10 24.25	2.1007	24 16 31.3	8.039
18	20 12 30.13	2.0953	24 8 25.8	8.143
19	20 14 35.68	2.0899	24 0 14.1	8.246
20	20 16 40.91	2.0845	23 51 56.3	8.347
21	20 18 45.82	2.0791	23 43 32.4	8.448
22	20 20 50.40	2.0737	23 35 2.5	8.549
23	20 22 54.66	2.0684	23 26 26.5	8.649
24	20 24 58.61	2.0630	S. 23 17 44.6	8.747

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour	Right Ascension	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 17.			
	h m s	s	° ′ ″	″
0	20 24 58.61	2.0832	S. 23 17 44.6	8.747
1	20 27 2.24	2.0878	23 8 56.9	8.844
2	20 29 5.55	2.0915	23 0 3.3	8.941
3	20 31 8.54	2.0942	22 51 4.0	9.036
4	20 33 11.22	2.0961	22 41 59.0	9.131
5	20 35 13.59	2.0968	22 32 48.3	9.225
6	20 37 15.64	2.0966	22 23 32.0	9.317
7	20 39 17.38	2.0955	22 14 10.2	9.409
8	20 41 18.82	2.0935	22 4 42.9	9.500
9	20 43 19.96	2.0904	21 55 10.2	9.590
10	20 45 20.79	2.0863	21 45 32.1	9.679
11	20 47 21.32	2.0813	21 35 48.7	9.767
12	20 49 21.55	2.0753	21 26 0.1	9.854
13	20 51 21.48	2.0683	21 16 6.2	9.941
14	20 53 21.11	1.9914	21 6 7.2	10.026
15	20 55 20.45	1.9866	20 56 3.1	10.110
16	20 57 19.50	1.9817	20 45 54.0	10.194
17	20 59 18.26	1.9769	20 35 39.8	10.277
18	21 1 16.73	1.9722	20 25 20.7	10.359
19	21 3 14.92	1.9675	20 14 56.7	10.441
20	21 5 12.83	1.9628	20 4 27.8	10.521
21	21 7 10.45	1.9581	19 53 54.2	10.599
22	21 9 7.80	1.9536	19 43 15.9	10.678
23	21 11 4.88	1.9490	S. 19 32 32.8	10.756
	THURSDAY 18.			
0	21 13 1.68	1.9444	S. 19 21 45.1	10.833
1	21 14 58.21	1.9400	19 10 52.8	10.909
2	21 16 54.48	1.9357	18 59 56.0	10.984
3	21 18 50.49	1.9313	18 48 54.7	11.058
4	21 20 46.24	1.9270	18 37 49.0	11.132
5	21 22 41.73	1.9228	18 26 38.9	11.205
6	21 24 36.97	1.9186	18 15 24.4	11.277
7	21 26 31.96	1.9144	18 4 5.7	11.347
8	21 28 26.70	1.9102	17 52 42.7	11.417
9	21 30 21.19	1.9062	17 41 15.6	11.487
10	21 32 15.44	1.9022	17 29 44.3	11.556
11	21 34 9.46	1.8983	17 18 8.9	11.623
12	21 36 3.24	1.8944	17 6 29.5	11.690
13	21 37 56.79	1.8906	16 54 46.1	11.757
14	21 39 50.11	1.8867	16 42 58.7	11.822
15	21 41 43.20	1.8830	16 31 7.4	11.887
16	21 43 36.07	1.8794	16 19 12.3	11.950
17	21 45 28.73	1.8758	16 7 13.4	12.013
18	21 47 21.17	1.8722	15 55 10.7	12.076
19	21 49 13.40	1.8687	15 43 4.3	12.137
20	21 51 5.42	1.8653	15 30 54.2	12.197
21	21 52 57.24	1.8620	15 18 40.6	12.257
22	21 54 48.89	1.8587	15 6 23.4	12.317
23	21 56 40.35	1.8554	14 54 2.6	12.376
24	21 58 31.51	1.8522	S. 14 41 38.3	12.433
	FRIDAY 19.			
0	21 58 31.51	1.8522	S. 14 41 38.3	12.433
1	22 0 22.55	1.8491	14 29 10.6	12.490
2	22 2 13.40	1.8460	14 16 39.5	12.546
3	22 4 4.07	1.8430	14 4 5.1	12.601
4	22 5 54.56	1.8401	13 51 27.4	12.656
5	22 7 44.86	1.8372	13 38 46.4	12.711
6	22 9 35.03	1.8344	13 26 2.1	12.764
7	22 11 25.01	1.8317	13 13 14.7	12.816
8	22 13 14.83	1.8289	13 0 24.2	12.867
9	22 15 4.48	1.8262	12 47 30.6	12.918
10	22 16 53.98	1.8237	12 34 34.0	12.969
11	22 18 43.33	1.8212	12 21 34.3	13.019
12	22 20 32.53	1.8187	12 8 31.7	13.068
13	22 22 21.58	1.8164	11 55 26.2	13.116
14	22 24 10.50	1.8142	11 42 17.8	13.163
15	22 25 59.28	1.8119	11 29 6.6	13.209
16	22 27 47.93	1.8097	11 15 52.7	13.255
17	22 29 36.45	1.8076	11 2 36.0	13.301
18	22 31 24.84	1.8055	10 49 16.6	13.345
19	22 33 13.11	1.8036	10 35 54.6	13.388
20	22 35 1.27	1.8017	10 22 30.0	13.431
21	22 36 49.32	1.7999	10 9 2.8	13.474
22	22 38 37.26	1.7981	9 55 33.1	13.516
23	22 40 25.09	1.7963	S. 9 42 0.9	13.557
	SATURDAY 20.			
0	22 42 12.82	1.7947	S. 9 28 26.2	13.597
1	22 44 0.46	1.7932	9 14 49.2	13.637
2	22 45 48.01	1.7917	9 1 9.8	13.676
3	22 47 35.46	1.7902	8 47 28.1	13.714
4	22 49 22.83	1.7888	8 33 44.2	13.751
5	22 51 10.12	1.7876	8 19 58.0	13.787
6	22 52 57.34	1.7864	8 6 9.7	13.823
7	22 54 44.49	1.7852	7 52 19.2	13.859
8	22 56 31.57	1.7841	7 38 26.6	13.893
9	22 58 18.58	1.7831	7 24 32.0	13.927
10	23 0 5.54	1.7822	7 10 35.4	13.960
11	23 1 52.45	1.7813	6 56 36.8	13.992
12	23 3 39.30	1.7804	6 42 36.3	14.024
13	23 5 26.10	1.7796	6 28 33.9	14.055
14	23 7 12.87	1.7792	6 14 29.7	14.085
15	23 8 59.60	1.7786	6 0 23.7	14.114
16	23 10 46.30	1.7780	5 46 16.0	14.143
17	23 12 32.96	1.7775	5 32 6.6	14.171
18	23 14 19.60	1.7771	5 17 55.5	14.198
19	23 16 6.22	1.7768	5 3 42.8	14.225
20	23 17 52.82	1.7766	4 49 28.5	14.251
21	23 19 39.41	1.7765	4 35 12.7	14.276
22	23 21 26.00	1.7764	4 20 55.4	14.300
23	23 23 12.58	1.7763	4 6 36.7	14.323
24	23 24 59.16	1.7764	S. 3 52 16.6	14.346

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 21.			
	h m s	s	° ′ ″	″
0	23 24 59.16	1.7764	S. 3 52 16.6	14.346
1	23 26 45.75	1.7766	3 37 55.1	14.368
2	23 28 32.35	1.7768	3 23 32.4	14.389
3	23 30 18.96	1.7770	3 9 8.4	14.410
4	23 32 5.59	1.7773	2 54 43.2	14.430
5	23 33 52.24	1.7777	2 40 16.8	14.449
6	23 35 38.92	1.7782	2 25 49.3	14.467
7	23 37 25.63	1.7788	2 11 20.7	14.485
8	23 39 12.38	1.7794	1 56 51.1	14.502
9	23 40 59.16	1.7801	1 42 20.5	14.518
10	23 42 45.99	1.7809	1 27 49.0	14.533
11	23 44 32.87	1.7818	1 13 16.6	14.548
12	23 46 19.81	1.7827	0 58 43.3	14.562
13	23 48 6.80	1.7837	0 44 9.2	14.574
14	23 49 53.86	1.7848	0 29 34.4	14.586
15	23 51 40.98	1.7859	0 14 58.9	14.597
16	23 53 28.17	1.7872	S. 0 0 22.7	14.607
17	23 55 15.44	1.7885	N. 0 14 14.0	14.617
18	23 57 2.79	1.7899	0 28 51.3	14.626
19	23 58 50.23	1.7913	0 43 29.1	14.634
20	0 0 37.75	1.7928	0 58 7.4	14.642
21	0 2 25.36	1.7944	1 12 46.1	14.648
22	0 4 13.07	1.7961	1 27 25.2	14.653
23	0 6 0.89	1.7978	N. 1 42 4.5	14.657
	MONDAY 22.			
0	0 7 48.81	1.7996	N. 1 56 44.1	14.662
1	0 9 36.84	1.8015	2 11 23.9	14.665
2	0 11 24.99	1.8035	2 26 3.9	14.667
3	0 13 13.26	1.8055	2 40 44.0	14.668
4	0 15 1.65	1.8077	2 55 24.1	14.668
5	0 16 50.18	1.8099	3 10 4.2	14.667
6	0 18 38.84	1.8122	3 24 44.2	14.666
7	0 20 27.64	1.8145	3 39 24.1	14.664
8	0 22 16.58	1.8168	3 54 3.8	14.661
9	0 24 5.66	1.8193	4 8 43.4	14.657
10	0 25 54.89	1.8219	4 23 22.7	14.652
11	0 27 44.28	1.8246	4 38 1.6	14.645
12	0 29 33.84	1.8273	4 52 40.1	14.638
13	0 31 23.56	1.8301	5 7 18.2	14.631
14	0 33 13.45	1.8329	5 21 55.8	14.622
15	0 35 3.51	1.8358	5 36 32.8	14.612
16	0 36 53.75	1.8389	5 51 9.2	14.602
17	0 38 44.18	1.8420	6 5 45.0	14.590
18	0 40 34.79	1.8451	6 20 20.0	14.577
19	0 42 25.59	1.8483	6 34 54.2	14.563
20	0 44 16.59	1.8517	6 49 27.5	14.548
21	0 46 7.80	1.8551	7 4 0.0	14.533
22	0 47 59.21	1.8586	7 18 31.5	14.517
23	0 49 50.83	1.8622	7 33 2.0	14.498
24	0 51 42.67	1.8658	N. 7 47 31.3	14.479

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 23.			
	h m s	s	° ′ ″	″
0	0 51 42.67	1.8658	N. 7 47 31.3	14.479
1	0 53 34.73	1.8695	8 1 59.5	14.460
2	0 55 27.01	1.8732	8 16 26.5	14.439
3	0 57 19.51	1.8770	8 30 52.2	14.417
4	0 59 12.25	1.8810	8 45 16.5	14.394
5	1 1 5.23	1.8850	8 59 39.4	14.370
6	1 2 58.45	1.8890	9 14 0.9	14.345
7	1 4 51.91	1.8932	9 28 20.8	14.318
8	1 6 45.63	1.8974	9 42 39.1	14.291
9	1 8 39.60	1.9017	9 56 55.7	14.262
10	1 10 33.83	1.9060	10 11 10.6	14.233
11	1 12 28.32	1.9103	10 25 23.7	14.202
12	1 14 23.07	1.9148	10 39 34.9	14.171
13	1 16 18.10	1.9195	10 53 44.2	14.138
14	1 18 13.41	1.9241	11 7 51.5	14.103
15	1 20 8.99	1.9288	11 21 56.6	14.068
16	1 22 4.86	1.9336	11 35 59.6	14.032
17	1 24 1.02	1.9385	11 50 0.4	13.994
18	1 25 57.48	1.9434	12 3 58.9	13.955
19	1 27 54.23	1.9484	12 17 55.0	13.915
20	1 29 51.29	1.9535	12 31 48.7	13.874
21	1 31 48.65	1.9586	12 45 39.9	13.832
22	1 33 46.32	1.9638	12 59 28.5	13.788
23	1 35 44.31	1.9691	N. 13 13 14.4	13.743
	WEDNESDAY 24.			
0	1 37 42.61	1.9744	N. 13 26 57.6	13.697
1	1 39 41.23	1.9798	13 40 38.0	13.649
2	1 41 40.18	1.9853	13 54 15.5	13.600
3	1 43 39.47	1.9909	14 7 50.0	13.550
4	1 45 39.09	1.9964	14 21 21.5	13.498
5	1 47 39.04	2.0020	14 34 49.8	13.445
6	1 49 39.33	2.0077	14 48 14.9	13.391
7	1 51 39.97	2.0136	15 1 36.7	13.336
8	1 53 40.96	2.0194	15 14 55.2	13.280
9	1 55 42.30	2.0253	15 28 10.3	13.222
10	1 57 44.00	2.0313	15 41 21.8	13.162
11	1 59 46.06	2.0373	15 54 29.7	13.102
12	2 1 48.48	2.0434	16 7 34.0	13.040
13	2 3 51.27	2.0496	16 20 34.5	12.976
14	2 5 54.43	2.0557	16 33 31.1	12.911
15	2 7 57.96	2.0619	16 46 23.8	12.845
16	2 10 1.86	2.0683	16 59 12.5	12.777
17	2 12 6.15	2.0747	17 11 57.0	12.707
18	2 14 10.82	2.0810	17 24 37.3	12.636
19	2 16 15.87	2.0875	17 37 13.3	12.564
20	2 18 21.32	2.0941	17 49 45.0	12.492
21	2 20 27.16	2.1007	18 2 12.3	12.417
22	2 22 33.40	2.1072	18 14 35.0	12.340
23	2 24 40.03	2.1138	18 26 53.1	12.262
24	2 26 47.06	2.1205	N. 18 39 6.4	12.182

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 25.			
	h m s	s	° ′ ″	″
0	2 26 47.06	2.1905	N.18 39 6.4	12.182
1	2 28 54.49	2.1972	18 51 14.9	12.102
2	2 31 2.33	2.1341	19 3 18.6	12.020
3	2 33 10.58	2.1409	19 15 17.3	11.936
4	2 35 19.24	2.1477	19 27 10.9	11.850
5	2 37 28.31	2.1546	19 38 59.3	11.762
6	2 39 37.79	2.1615	19 50 42.4	11.674
7	2 41 47.69	2.1685	20 2 20.2	11.585
8	2 43 58.01	2.1755	20 13 52.6	11.494
9	2 46 8.75	2.1825	20 25 19.5	11.401
10	2 48 19.91	2.1895	20 36 40.7	11.306
11	2 50 31.49	2.1966	20 47 56.2	11.209
12	2 52 43.50	2.2037	20 59 5.8	11.111
13	2 54 55.94	2.2108	21 10 9.5	11.012
14	2 57 8.80	2.2179	21 21 7.3	10.912
15	2 59 22.09	2.2251	21 31 59.0	10.810
16	3 1 35.81	2.2322	21 42 44.5	10.706
17	3 3 49.96	2.2393	21 53 23.7	10.601
18	3 6 4.53	2.2465	22 3 56.6	10.494
19	3 8 19.54	2.2537	22 14 23.0	10.386
20	3 10 34.98	2.2609	22 24 42.9	10.276
21	3 12 50.85	2.2681	22 34 56.1	10.163
22	3 15 7.15	2.2753	22 45 2.5	10.050
23	3 17 23.89	2.2826	N.22 55 2.1	9.936
	FRIDAY 26.			
0	3 19 41.06	2.2898	N.23 4 54.8	9.820
1	3 21 58.66	2.2969	23 14 40.5	9.702
2	3 24 16.69	2.3041	23 24 19.0	9.582
3	3 26 35.15	2.3112	23 33 50.3	9.461
4	3 28 54.04	2.3184	23 43 14.3	9.338
5	3 31 13.36	2.3256	23 52 30.9	9.213
6	3 33 33.10	2.3326	24 1 39.9	9.088
7	3 35 53.27	2.3397	24 10 41.4	8.961
8	3 38 13.86	2.3468	24 19 35.2	8.832
9	3 40 34.88	2.3538	24 28 21.2	8.701
10	3 42 56.32	2.3608	24 36 59.3	8.569
11	3 45 18.17	2.3677	24 45 29.5	8.436
12	3 47 40.44	2.3747	24 53 51.6	8.301
13	3 50 3.13	2.3815	25 2 5.6	8.164
14	3 52 26.22	2.3883	25 10 11.3	8.026
15	3 54 49.72	2.3951	25 18 8.7	7.887
16	3 57 13.63	2.4018	25 25 57.7	7.746
17	3 59 37.94	2.4085	25 33 38.2	7.604
18	4 2 2.65	2.4152	25 41 10.2	7.461
19	4 4 27.76	2.4217	25 48 33.5	7.315
20	4 6 53.26	2.4282	25 55 48.0	7.167
21	4 9 19.14	2.4346	26 2 53.6	7.018
22	4 11 45.41	2.4410	26 9 50.2	6.869
23	4 14 12.06	2.4472	26 16 37.9	6.719
24	4 16 39.08	2.4534	N.26 23 16.5	6.567

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 27.			
	h m s	s	° ′ ″	″
0	4 16 39.08	2.4534	N.26 23 16.5	6.567
1	4 19 6.47	2.4596	26 29 45.9	6.413
2	4 21 34.23	2.4657	26 36 6.0	6.257
3	4 24 2.35	2.4717	26 42 16.8	6.101
4	4 26 30.83	2.4775	26 48 18.1	5.943
5	4 28 59.65	2.4833	26 54 9.9	5.784
6	4 31 28.82	2.4890	26 59 52.2	5.624
7	4 33 58.33	2.4946	27 5 24.8	5.462
8	4 36 28.17	2.5000	27 10 47.6	5.298
9	4 38 58.33	2.5053	27 16 0.6	5.135
10	4 41 28.81	2.5106	27 21 3.8	4.971
11	4 43 59.61	2.5158	27 25 57.1	4.805
12	4 46 30.71	2.5208	27 30 40.4	4.637
13	4 49 2.11	2.5258	27 35 13.6	4.468
14	4 51 33.81	2.5307	27 39 36.6	4.298
15	4 54 5.79	2.5353	27 43 49.4	4.127
16	4 56 38.05	2.5399	27 47 51.9	3.956
17	4 59 10.58	2.5443	27 51 44.1	3.783
18	5 1 43.37	2.5487	27 55 25.9	3.609
19	5 4 16.42	2.5529	27 58 57.2	3.435
20	5 6 49.72	2.5569	28 2 18.1	3.260
21	5 9 23.25	2.5608	28 5 28.4	3.083
22	5 11 57.01	2.5646	28 8 28.0	2.905
23	5 14 31.00	2.5683	N.28 11 17.0	2.727
	SUNDAY 28.			
0	5 17 5.21	2.5718	N.28 13 55.3	2.548
1	5 19 39.62	2.5752	28 16 22.8	2.368
2	5 22 14.23	2.5783	28 18 39.5	2.188
3	5 24 49.02	2.5813	28 20 45.4	2.007
4	5 27 23.99	2.5842	28 22 40.4	1.826
5	5 29 59.13	2.5870	28 24 24.5	1.643
6	5 32 34.43	2.5896	28 25 57.6	1.460
7	5 35 9.88	2.5921	28 27 19.7	1.277
8	5 37 45.48	2.5944	28 28 30.8	1.093
9	5 40 21.21	2.5965	28 29 30.9	0.909
10	5 42 57.06	2.5985	28 30 19.9	0.723
11	5 45 33.03	2.6003	28 30 57.7	0.537
12	5 48 9.10	2.6020	28 31 24.4	0.352
13	5 50 45.27	2.6035	28 31 39.9	+0.166
14	5 53 21.52	2.6048	28 31 44.3	−0.020
15	5 55 57.85	2.6061	28 31 37.5	0.207
16	5 58 34.25	2.6071	28 31 19.5	0.394
17	6 1 10.70	2.6079	28 30 50.2	0.581
18	6 3 47.20	2.6087	28 30 9.7	0.768
19	6 6 23.74	2.6092	28 29 18.0	0.956
20	6 9 0.30	2.6095	28 28 15.0	1.143
21	6 11 36.88	2.6097	28 27 0.8	1.331
22	6 14 13.47	2.6098	28 25 35.3	1.518
23	6 16 50.06	2.6097	28 23 58.6	1.706
24	6 19 26.64	2.6094	N.28 22 10.6	1.893

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 29.			
	h m s	s	° ′ ″	″
0	6 19 26.64	2.6094	N.28 22 10.6	1.893
1	6 22 3.19	2.6090	28 20 11.4	2.081
2	6 24 39.72	2.6085	28 18 0.9	2.268
3	6 27 16.21	2.6077	28 15 39.2	2.455
4	6 29 52.65	2.6068	28 13 6.3	2.642
5	6 32 29.03	2.6057	28 10 22.2	2.828
6	6 35 5.34	2.6046	28 7 26.9	3.015
7	6 37 41.58	2.6032	28 4 20.4	3.201
8	6 40 17.73	2.6017	28 1 2.8	3.386
9	6 42 53.78	2.6000	27 57 34.1	3.571
10	6 45 29.73	2.5982	27 53 54.3	3.756
11	6 48 5.57	2.5962	27 50 3.4	3.940
12	6 50 41.28	2.5941	27 46 1.5	4.123
13	6 53 16.86	2.5919	27 41 48.6	4.307
14	6 55 52.31	2.5897	27 37 24.6	4.491
15	6 58 27.62	2.5872	27 32 49.7	4.673
16	7 1 2.77	2.5845	27 28 3.9	4.854
17	7 3 37.76	2.5817	27 23 7.2	5.034
18	7 6 12.58	2.5788	27 17 59.8	5.213
19	7 8 47.22	2.5758	27 12 41.6	5.393
20	7 11 21.68	2.5727	27 7 12.6	5.573
21	7 13 55.94	2.5693	27 1 32.9	5.751
22	7 16 30.00	2.5659	26 55 42.5	5.928
23	7 19 3.85	2.5624	N.26 49 41.6	6.103
	TUESDAY 30.			
0	7 21 37.49	2.5588	N.26 43 30.2	6.278
1	7 24 10.91	2.5551	26 37 8.3	6.453
2	7 26 44.10	2.5512	26 30 35.9	6.627
3	7 29 17.05	2.5473	26 23 53.1	6.799
4	7 31 49.77	2.5432	26 17 0.0	6.970
5	7 34 22.24	2.5391	26 9 56.7	7.140
6	7 36 54.46	2.5348	26 2 43.2	7.310
7	7 39 26.42	2.5305	25 55 19.5	7.478
8	7 41 58.12	2.5261	25 47 45.8	7.645
9	7 44 29.55	2.5216	25 40 2.1	7.812
10	7 47 0.71	2.5170	25 32 8.4	7.977
11	7 49 31.59	2.5123	25 24 4.9	8.140
12	7 52 2.19	2.5076	25 15 51.6	8.302
13	7 54 32.51	2.5028	25 7 28.6	8.464
14	7 57 2.53	2.4978	24 58 55.9	8.625
15	7 59 32.25	2.4926	24 50 13.6	8.784
16	8 2 1.67	2.4878	24 41 21.8	8.941
17	8 4 30.79	2.4826	24 32 20.7	9.097
18	8 6 59.61	2.4777	24 23 10.2	9.253
19	8 9 28.12	2.4726	24 13 50.4	9.407
20	8 11 56.31	2.4673	24 4 21.4	9.558
21	8 14 24.19	2.4621	23 54 43.4	9.709
22	8 16 51.76	2.4567	23 44 56.3	9.860
23	8 19 19.00	2.4513	23 35 0.2	10.009
24	8 21 45.92	2.4459	N.23 24 55.2	10.157

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY, MAY 1.			
	h m s	s	° ′ ″	″
0	8 21 45.92	2.4459	N.23 24 55.2	10.157

PHASES OF THE MOON.

		d	h	m
☽	First Quarter . April	2	9	27.9
○	Full Moon	9	1	43.4
☾	Last Quarter	16	11	22.3
●	New Moon	24	13	11.1

		d	h
☾	Perigee . . . . April	6	16.5
☾	Apogee	18	12.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	72° 14′ 20″	2808	73° 48′ 38″	2797	75° 23′ 10″	2786	76° 57′ 56″	2775
	α Arietis	W.	47 15 20	2526	48 55 57	2514	50 36 51	2502	52 18 2	2489
	Venus	W.	43 33 9	2907	45 5 19	2894	46 37 45	2882	48 10 27	2870
	Regulus	E.	64 46 30	2482	63 4 51	2471	61 22 57	2461	59 40 49	2450
	Spica	E.	118 46 37	2480	117 4 55	2470	115 22 59	2459	113 40 48	2449
2	Sun	W.	84 55 28	2719	86 31 43	2707	88 8 13	2696	89 44 58	2685
	α Arietis	W.	60 48 13	2430	62 31 5	2419	64 14 13	2407	65 57 38	2396
	Venus	W.	55 57 47	2810	57 32 2	2798	59 6 32	2786	60 41 18	2775
	Aldebaran	W.	30 53 17	2680	32 30 24	2643	34 8 20	2611	35 47 0	2582
	Regulus	E.	51 6 30	2379	49 22 54	2389	47 39 3	2379	45 54 58	2368
	Spica	E.	105 6 14	2397	103 22 35	2386	101 38 40	2375	99 54 30	2366
3	Sun	W.	97 52 26	2630	99 30 40	2619	101 9 9	2609	102 47 52	2598
	α Arietis	W.	74 38 41	2342	76 23 40	2331	78 8 55	2320	79 54 25	2311
	Venus	W.	68 38 58	2716	70 15 16	2706	71 51 48	2694	73 28 36	2684
	Aldebaran	W.	44 9 26	2465	45 51 28	2447	47 33 56	2429	49 16 49	2412
	Mars	W.	32 35 59	2530	34 16 31	2517	35 57 20	2504	37 38 27	2493
	Spica	E.	91 9 58	2314	89 24 19	2304	87 38 25	2294	85 52 16	2284
	Saturn	E.	103 48 21	2321	102 2 52	2311	100 17 8	2300	98 31 8	2290
4	Sun	W.	111 5 1	2548	112 45 8	2539	114 25 27	2530	116 5 59	2521
	Venus	W.	81 36 9	2632	83 14 21	2621	84 52 47	2612	86 31 25	2603
	Aldebaran	W.	57 56 57	2439	59 41 59	2396	61 27 20	2315	63 12 58	2304
	Mars	W.	46 8 6	2437	47 50 48	2427	49 33 44	2417	51 16 54	2408
	Jupiter	W.	36 36 10	2324	38 21 34	2311	40 7 17	2300	41 53 17	2289
	Spica	E.	76 58 0	2237	75 10 28	2229	73 22 43	2220	71 34 45	2211
	Saturn	E.	89 37 35	2243	87 50 11	2234	86 2 34	2225	84 14 44	2217
5	Venus	W.	94 47 37	2562	96 27 24	2555	98 7 21	2548	99 47 27	2542
	Aldebaran	W.	72 5 0	2255	73 52 6	2247	75 39 23	2239	77 26 52	2233
	Mars	W.	59 55 58	2366	61 40 22	2359	63 24 56	2352	65 9 40	2346
	Jupiter	W.	50 47 5	2241	52 34 31	2233	54 22 9	2226	56 9 58	2219
	Pollux	W.	28 24 56	2186	30 13 45	2178	32 2 45	2171	33 51 56	2164
	Spica	E.	62 31 54	2174	60 42 47	2167	58 53 30	2161	57 4 4	2155
	Saturn	E.	75 12 42	2182	73 23 47	2175	71 34 42	2170	69 45 29	2165
	Antares	E.	108 26 1	2174	106 36 51	2167	104 47 37	2161	102 58 10	2155
6	Aldebaran	W.	86 26 32	2207	88 14 49	2204	90 3 11	2201	91 51 37	2198
	Mars	W.	73 55 21	2321	75 40 50	2318	77 26 23	2315	79 12 1	2313
	Jupiter	W.	65 11 20	2192	66 59 59	2189	68 48 43	2186	70 37 32	2183
	Pollux	W.	43 0 10	2139	44 50 10	2135	46 40 16	2139	48 30 26	2130
	Spica	E.	47 54 55	2133	46 4 46	2130	44 14 32	2127	42 24 14	2125
	Saturn	E.	60 37 44	2147	58 47 57	2145	56 58 7	2144	55 8 15	2144
	Antares	E.	93 49 0	2132	91 58 50	2130	90 8 36	2127	88 18 18	2124
7	Aldebaran	W.	100 54 14	2199	102 42 43	2201	104 31 9	2204	106 19 30	2208
	Mars	W.	88 0 45	2309	89 46 31	2311	91 32 15	2312	93 17 57	2314
	Jupiter	W.	79 42 17	2179	81 31 16	2180	83 20 14	2182	85 9 9	2184
	Pollux	W.	57 41 58	2126	59 32 18	2126	61 22 37	2128	63 12 54	2130
	Saturn	E.	45 59 10	2153	44 9 32	2158	42 20 1	2164	40 30 39	2171
	Antares	E.	79 6 12	2122	77 15 46	2123	75 25 22	2124	73 35 0	2126

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Sun	W.	78° 32′ 57″	9763	80° 8′ 13″	9753	81° 43′ 43″	9741	83° 19′ 28″	9730
	α Arietis	W.	53 59 31	9477	55 41 17	9465	57 23 19	9453	59 5 38	9442
	Venus	W.	49 43 24	9859	51 16 36	9846	52 50 4	9834	54 23 48	9822
	Regulus	E.	57 58 26	9441	56 15 49	9430	54 32 57	9420	52 49 51	9410
	Spica	E.	111 58 23	9438	110 15 43	9428	108 32 48	9417	106 49 38	9408
2	Sun	W.	91 21 58	9674	92 59 13	9663	94 36 42	9652	96 14 27	9641
	α Arietis	W.	67 41 19	9384	69 25 16	9373	71 9 29	9363	72 53 57	9352
	Venus	W.	62 16 19	9763	63 51 36	9751	65 27 8	9740	67 2 55	9728
	Aldebaran	W.	37 26 20	9555	39 6 17	9530	40 46 49	9507	42 27 53	9486
	Regulus	E.	44 10 38	9358	42 26 3	9348	40 41 14	9338	38 56 10	9328
	Spica	E.	98 10 6	9355	96 25 27	9344	94 40 32	9334	92 55 22	9324
3	Sun	W.	104 26 50	9588	106 6 2	9577	107 45 28	9567	109 25 8	9558
	α Arietis	W.	81 40 9	9300	83 26 8	9291	85 12 21	9281	86 58 48	9272
	Venus	W.	75 5 38	9673	76 42 54	9662	78 20 25	9652	79 58 10	9641
	Aldebaran	W.	51 0 7	9396	52 43 48	9381	54 27 50	9366	56 12 14	9353
	Mars	W.	39 19 50	9481	41 1 30	9469	42 43 27	9458	44 25 39	9448
	Spica	E.	84 5 53	9274	82 19 15	9265	80 32 24	9256	78 45 19	9246
	Saturn	E.	96 44 54	9280	94 58 25	9270	93 11 42	9261	91 24 45	9252
4	Sun	W.	117 46 43	9519	119 27 39	9504	121 8 47	9497	122 50 5	9489
	Venus	W.	88 10 16	9594	89 49 19	9585	91 28 34	9577	93 8 0	9569
	Aldebaran	W.	64 58 52	9293	66 45 2	9283	68 31 27	9272	70 18 7	9264
	Mars	W.	53 0 18	9398	54 43 55	9390	56 27 44	9382	58 11 45	9373
	Jupiter	W.	43 39 33	9278	45 26 5	9268	47 12 51	9259	48 59 51	9249
	Spica	E.	69 46 34	9203	67 58 11	9196	66 9 37	9188	64 20 51	9180
	Saturn	E.	82 26 42	9209	80 38 28	9202	78 50 3	9195	77 1 28	9188
5	Venus	W.	101 27 42	9536	103 8 5	9531	104 48 35	9526	106 29 12	9522
	Aldebaran	W.	79 14 31	9297	81 2 19	9290	82 50 16	9285	84 38 21	9281
	Mars	W.	66 54 32	9340	68 39 33	9335	70 24 42	9330	72 9 58	9325
	Jupiter	W.	57 57 57	9212	59 46 6	9207	61 34 23	9202	63 22 48	9197
	Pollux	W.	35 41 18	9158	37 30 49	9153	39 20 28	9147	41 10 16	9143
	Spica	E.	55 14 29	9150	53 24 46	9145	51 34 56	9141	49 44 59	9136
	Saturn	E.	67 56 8	9161	66 6 41	9156	64 17 7	9153	62 27 28	9149
	Antares	E.	101 8 35	9150	99 18 52	9145	97 29 1	9141	95 39 4	9136
6	Aldebaran	W.	93 40 7	9197	95 28 39	9197	97 17 11	9197	99 5 43	9198
	Mars	W.	80 57 42	9311	82 43 26	9309	84 29 12	9309	86 14 59	9309
	Jupiter	W.	72 26 25	9189	74 15 20	9180	76 4 18	9179	77 53 17	9178
	Pollux	W.	50 20 40	9198	52 10 57	9196	54 1 16	9195	55 51 37	9195
	Spica	E.	40 33 53	9193	38 43 29	9192	36 53 4	9192	35 2 38	9192
	Saturn	E.	53 18 23	9144	51 28 31	9145	49 38 41	9147	47 48 53	9150
	Antares	E.	86 27 56	9193	84 37 32	9192	82 47 6	9191	80 56 39	9191
7	Aldebaran	W.	108 7 46	9212	109 55 55	9217	111 43 57	9224	113 31 49	9231
	Mars	W.	95 3 36	9317	96 49 11	9321	98 34 40	9325	100 20 3	9330
	Jupiter	W.	86 58 1	9186	88 46 49	9190	90 35 32	9194	92 24 9	9199
	Pollux	W.	65 3 7	9133	66 53 16	9136	68 43 21	9139	70 33 20	9144
	Saturn	E.	38 41 28	9179	36 52 29	9188	35 3 44	9200	33 15 16	9212
	Antares	E.	71 44 41	9130	69 54 27	9139	68 4 17	9136	66 14 13	9141

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III^h.	P. L. of Diff.	VI^h.	P. L. of Diff.	IX^h.	P. L. of Diff.
8	MARS	W.	102° 5′ 19″	2335	103° 50′ 27″	2341	105° 35′ 27″	2348	107° 20′ 17″	2355
	JUPITER	W.	94 12 38	2304	96 1 0	2310	97 49 13	2316	99 37 16	2323
	Pollux	W.	72 23 12	2149	74 12 57	2155	76 2 33	2161	77 52 0	2168
	Regulus	W.	35 32 59	2151	37 22 41	2156	39 12 15	2162	41 1 40	2168
	Antares	E.	64 24 16	2146	62 34 27	2151	60 44 46	2158	58 55 15	2165
9	Pollux	W.	86 56 24	2309	88 44 38	2230	90 32 36	2230	92 20 19	2241
	Regulus	W.	50 6 3	2209	51 54 17	2219	53 42 16	2229	55 30 0	2241
	Antares	E.	49 50 30	2207	48 2 13	2216	46 14 10	2227	44 26 23	2238
	α Aquilæ	E.	101 30 40	3091	100 0 53	3092	98 31 8	3096	97 1 27	3030
10	Pollux	W.	101 14 36	2203	103 0 31	2316	104 46 7	2331	106 31 22	2345
	Regulus	W.	64 24 22	2309	66 10 19	2315	67 55 56	2329	69 41 13	2343
	α Aquilæ	E.	89 35 11	3060	88 6 37	3096	86 38 22	3112	85 10 27	3130
11	Regulus	W.	78 22 21	2419	80 5 28	2435	81 48 13	2451	83 30 35	2467
	α Aquilæ	E.	77 57 1	3046	76 31 46	3074	75 7 4	3304	73 42 57	3335
	Fomalhaut	E.	102 59 34	2688	101 22 30	2695	99 45 43	2708	98 9 14	2729
12	Regulus	W.	91 56 37	2551	93 36 40	2568	95 16 19	2585	96 55 35	2601
	Spica	W.	37 55 54	2550	39 35 58	2566	41 15 39	2583	42 54 57	2601
	α Aquilæ	E.	66 51 59	3519	65 31 56	3563	64 12 41	3608	62 54 15	3655
	Fomalhaut	E.	90 11 46	2801	88 37 20	2818	87 3 16	2836	85 29 35	2855
13	Regulus	W.	105 6 12	2685	106 43 12	2701	108 19 50	2718	109 56 6	2734
	Spica	W.	51 5 41	2684	52 42 42	2700	54 19 22	2716	55 55 40	2732
	SATURN	W.	39 29 42	2722	41 5 53	2735	42 41 47	2747	44 17 25	2760
	α Aquilæ	E.	56 35 43	3937	55 23 1	4005	54 11 26	4075	53 1 0	4152
	Fomalhaut	E.	77 47 9	2950	76 15 54	2970	74 45 4	2990	73 14 39	3011
	α Pegasi	E.	99 44 1	2940	98 12 33	2955	96 41 24	2969	95 10 33	2994
	SUN	E.	129 36 8	3031	128 6 34	3049	126 37 22	3066	125 8 31	3083
14	Spica	W.	63 52 0	2809	65 26 16	2823	67 0 14	2838	68 33 53	2859
	SATURN	W.	52 11 20	2825	53 45 16	2837	55 18 56	2850	56 52 19	2862
	Antares	W.	17 58 1	2810	19 32 16	2825	21 6 12	2839	22 39 49	2852
	Fomalhaut	E.	65 49 7	3119	64 21 21	3143	62 54 3	3166	61 27 13	3189
	α Pegasi	E.	87 40 56	3060	86 11 57	3075	84 43 17	3091	83 14 56	3105
	SUN	E.	117 49 25	3166	116 22 35	3182	114 56 4	3197	113 29 51	3212
15	Spica	W.	76 17 48	2916	77 49 46	2927	79 21 30	2939	80 52 59	2950
	SATURN	W.	64 35 22	2921	66 7 14	2932	67 38 52	2942	69 10 17	2953
	Antares	W.	30 23 40	2916	31 55 38	2927	33 27 22	2939	34 58 51	2950
	Fomalhaut	E.	54 20 21	3319	52 56 31	3347	51 33 14	3376	50 10 30	3408
	α Pegasi	E.	75 57 53	3184	74 31 25	3200	73 5 16	3216	71 39 26	3231
	SUN	E.	106 23 5	3282	104 58 32	3294	103 34 13	3306	102 10 9	3319
16	Spica	W.	88 27 11	2998	89 57 26	3006	91 27 31	3014	92 57 27	3022
	SATURN	W.	76 44 18	2998	78 14 33	3005	79 44 39	3014	81 14 35	3021
	Antares	W.	42 33 1	2998	44 3 16	3006	45 33 21	3014	47 3 16	3022
	Fomalhaut	E.	43 26 11	3588	42 7 24	3633	40 49 25	3679	39 32 16	3729
	α Pegasi	E.	64 34 55	3313	63 10 58	3330	61 47 21	3346	60 24 3	3364
	SUN	E.	95 13 5	3371	93 50 15	3388	92 27 36	3388	91 5 6	3397

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
8	Mars	W.	109° 4′ 56″	2363	110° 49′ 24″	2371	112° 33′ 40″	2380	114° 17′ 43″	2391
	Jupiter	W.	101 25 9	2231	103 12 50	2239	105 0 19	2248	106 47 35	2258
	Pollux	W.	79 41 16	2175	81 30 21	2182	83 19 15	2191	85 7 56	2200
	Regulus	W.	42 50 56	2175	44 40 1	2183	46 28 54	2191	48 17 35	2200
	Antares	E.	57 5 54	2172	55 16 45	2180	53 27 47	2188	51 39 2	2197
9	Pollux	W.	94 7 46	2252	95 54 56	2264	97 41 48	2277	99 28 21	2289
	Regulus	W.	57 17 27	2251	59 4 38	2264	60 51 31	2276	62 38 6	2289
	Antares	E.	42 38 52	2249	40 51 38	2262	39 4 42	2274	37 18 4	2287
	α Aquilæ	E.	95 31 51	3036	94 2 23	3045	92 33 6	3055	91 4 1	3067
10	Pollux	W.	108 16 16	2359	110 0 49	2375	111 45 0	2389	113 28 50	2405
	Regulus	W.	71 26 10	2358	73 10 45	2373	74 54 59	2388	76 38 51	2403
	α Aquilæ	E.	83 42 54	3150	82 15 45	3178	80 49 2	3195	79 22 47	3290
11	Regulus	W.	85 12 34	2484	86 54 10	2501	88 35 22	2517	90 16 11	2534
	α Aquilæ	E.	72 19 26	3368	70 56 33	3402	69 34 19	3439	68 12 47	3479
	Fomalhaut	E.	96 33 4	2737	94 57 13	2753	93 21 43	2769	91 46 34	2785
12	Regulus	W.	98 34 28	2618	100 12 58	2635	101 51 5	2650	103 28 50	2669
	Spica	W.	44 33 51	2618	46 12 22	2634	47 50 31	2651	49 28 17	2667
	α Aquilæ	E.	61 36 40	3706	60 19 59	3760	59 4 15	3815	57 49 28	3875
	Fomalhaut	E.	83 56 18	2672	82 23 24	2692	80 50 55	2911	79 18 50	2930
13	Regulus	W.	111 32 1	2750	113 7 35	2766	114 42 48	2781	116 17 41	2795
	Spica	W.	57 31 37	2748	59 7 13	2763	60 42 29	2779	62 17 24	2794
	Saturn	W.	45 52 46	2772	47 27 50	2785	49 2 37	2798	50 37 7	2811
	α Aquilæ	E.	51 51 48	4239	50 43 52	4317	49 37 15	4409	48 32 2	4508
	Fomalhaut	E.	71 44 40	3032	70 15 7	3053	68 46 0	3075	67 17 20	3097
	α Pegasi	E.	93 40 0	2999	92 9 46	3014	90 39 51	3029	89 10 14	3044
	Sun	E.	123 40 1	3101	122 11 52	3117	120 44 3	3133	119 16 34	3150
14	Spica	W.	70 7 14	2666	71 40 17	2678	73 13 4	2691	74 45 34	2704
	Saturn	W.	58 25 27	2674	59 58 19	2687	61 30 55	2699	63 3 16	2710
	Antares	W.	24 13 9	2666	25 46 11	2679	27 18 57	2692	28 51 26	2704
	Fomalhaut	E.	60 0 51	3214	58 34 58	3230	57 9 35	3245	55 44 42	3262
	α Pegasi	E.	81 46 53	3121	80 19 9	3138	78 51 45	3153	77 24 40	3168
	Sun	E.	112 3 56	3227	110 38 19	3241	109 12 58	3255	107 47 54	3268
15	Spica	W.	82 24 15	2961	83 55 17	2970	85 26 7	2980	86 56 45	2989
	Saturn	W.	70 41 29	2963	72 12 28	2973	73 43 16	2981	75 13 52	2989
	Antares	W.	36 30 6	2961	38 1 8	2970	39 31 58	2981	41 2 35	2989
	Fomalhaut	E.	48 48 22	3439	47 26 50	3473	46 5 56	3509	44 45 42	3548
	α Pegasi	E.	70 13 54	3247	68 48 41	3264	67 23 47	3279	65 59 11	3296
	Sun	E.	100 46 19	3330	99 22 42	3341	97 59 18	3351	96 36 6	3361
16	Spica	W.	94 27 13	3028	95 56 51	3034	97 26 21	3041	98 55 43	3046
	Saturn	W.	82 44 22	3027	84 14 1	3034	85 43 32	3039	87 12 56	3044
	Antares	W.	48 33 2	3028	50 2 40	3034	51 32 10	3041	53 1 32	3046
	Fomalhaut	E.	38 16 0	3785	37 0 42	3847	35 46 28	3914	34 33 22	3989
	α Pegasi	E.	59 1 5	3381	57 38 27	3400	56 16 10	3418	54 54 14	3438
	Sun	E.	89 42 46	3404	88 20 34	3411	86 58 30	3417	85 36 33	3423

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III^h.	P. L. of Diff.	VI^h.	P. L. of Diff.	IX^h.	P. L. of Diff.
17	Spica	W.	100° 24′ 59″	3051	101° 54′ 9″	3056	103° 23′ 13″	3060	104° 52′ 12″	3061
	Saturn	W.	88 42 14	3049	90 11 26	3054	91 40 32	3058	93 9 33	3061
	Antares	W.	54 30 48	3051	55 59 58	3056	57 29 2	3060	58 58 0	3062
	α Pegasi	E.	53 32 41	3458	52 11 30	3469	50 50 43	3502	49 30 21	3595
	Sun	E.	84 14 43	3429	82 52 59	3434	81 31 21	3438	80 9 48	3442
18	Saturn	W.	100 33 46	3072	102 2 30	3073	103 31 12	3073	104 59 54	3074
	Antares	W.	66 22 5	3073	67 50 47	3073	69 19 29	3074	70 48 10	3073
	Sun	E.	73 22 57	3454	72 1 42	3455	70 40 28	3455	69 19 14	3455
19	Saturn	W.	112 23 29	3069	113 52 17	3067	115 21 7	3064	116 50 1	3061
	Antares	W.	78 11 53	3066	79 40 44	3063	81 9 39	3060	82 38 38	3056
	Sun	E.	62 32 53	3448	61 11 31	3446	59 50 6	3442	58 28 37	3436
20	Antares	W.	90 4 49	3032	91 34 22	3026	93 4 3	3020	94 33 51	3014
	α Aquilæ	W.	47 30 49	4742	48 31 13	4658	49 32 48	4580	50 35 30	4506
	Sun	E.	51 40 2	3415	50 18 2	3408	48 55 55	3402	47 33 41	3396
21	Antares	W.	102 5 1	2977	103 35 43	2968	105 6 36	2960	106 37 39	2951
	α Aquilæ	W.	56 4 4	4203	57 12 27	4154	58 21 37	4107	59 31 32	4063
	Sun	E.	40 40 37	3360	39 17 35	3353	37 54 25	3345	36 31 6	3337
22	α Aquilæ	W.	65 31 17	3873	66 45 4	3842	67 59 23	3811	69 14 14	3782
	Fomalhaut	W.	36 52 48	3667	38 10 10	3606	39 28 36	3553	40 48 2	3501
	Sun	E.	29 32 12	3299	28 7 59	3291	26 43 37	3284	25 19 7	3279
26	Sun	W.	18 7 41	2992	19 38 4	2972	21 8 52	2953	22 40 4	2936
	Mars	E.	39 5 17	2804	37 30 54	2796	35 56 21	2788	34 21 38	2781
	Pollux	E.	57 57 12	2585	56 17 56	2577	54 38 29	2568	52 58 50	2559
	Regulus	E.	94 46 43	2589	93 7 23	2573	91 27 51	2564	89 48 7	2555
27	Sun	W.	30 20 50	2869	31 53 48	2859	33 27 0	2848	35 0 25	2838
	Pollux	E.	44 37 42	2520	42 56 56	2512	41 15 59	2504	39 34 52	2497
	Regulus	E.	81 26 27	2514	79 45 33	2506	78 4 28	2498	76 23 12	2490
28	Sun	W.	42 50 43	2799	44 25 22	2784	46 0 11	2775	47 35 11	2767
	Pollux	E.	31 6 56	2466	29 24 55	2461	27 42 47	2456	26 0 32	2452
	Regulus	E.	67 54 15	2454	66 11 57	2448	64 29 30	2441	62 46 54	2434
29	Sun	W.	55 32 42	2731	57 8 41	2725	58 44 48	2718	60 21 4	2711
	Aldebaran	W.	27 57 53	2738	29 33 43	2697	31 10 27	2662	32 47 58	2632
	Venus	W.	20 34 15	2857	22 7 29	2843	23 41 1	2829	25 14 51	2817
	Regulus	E.	54 11 35	2403	52 28 5	2398	50 44 27	2391	49 0 40	2387
	Spica	E.	108 11 56	2401	106 28 23	2396	104 44 42	2390	103 0 53	2384
	Saturn	E.	118 49 51	2411	117 6 32	2403	115 23 2	2397	113 39 23	2390
30	Sun	W.	68 24 31	2681	70 1 36	2675	71 38 49	2669	73 16 10	2664
	Aldebaran	W.	41 4 22	2525	42 45 1	2508	44 26 3	2494	46 7 25	2481
	Venus	W.	33 7 30	2770	34 42 37	2762	36 17 55	2754	37 53 23	2747
	Regulus	E.	40 19 52	2360	38 35 20	2355	36 50 41	2350	35 5 55	2346
	Spica	E.	94 19 45	2357	92 35 8	2352	90 50 24	2347	89 5 33	2343
	Saturn	E.	104 58 51	2360	103 14 19	2355	101 29 40	2349	99 44 52	2344

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
17	Spica	W.	106° 21′ 7″	3065	107° 49′ 59″	3069	109° 18′ 47″	3070	110° 47′ 33″	3073
	Saturn	W.	94 38 30	3065	96 7 23	3067	97 36 13	3069	99 5 1	3071
	Antares	W.	60 26 56	3065	61 55 48	3069	63 24 36	3071	64 53 21	3072
	α Pegasi	E.	48 10 25	3551	46 50 57	3577	45 31 58	3606	44 13 30	3636
	Sun	E.	78 48 19	3446	77 26 54	3449	76 5 33	3451	74 44 14	3453
18	Saturn	W.	106 28 35	3073	107 57 17	3073	109 25 59	3072	110 54 43	3070
	Antares	W.	72 16 52	3073	73 45 35	3072	75 14 19	3070	76 43 5	3069
	Sun	E.	67 58 0	3455	66 36 46	3454	65 15 30	3453	63 54 13	3450
19	Saturn	W.	118 18 58	3058	119 47 59	3055	121 17 4	3051	122 46 14	3047
	Antares	W.	84 7 41	3059	85 36 49	3047	87 6 3	3043	88 35 23	3038
	Sun	E.	57 7 4	3435	55 45 27	3430	54 23 44	3425	53 1 56	3420
20	Antares	W.	96 3 47	3006	97 33 52	2999	99 4 6	2992	100 34 29	2985
	α Aquilæ	W.	51 39 17	4438	52 44 4	4373	53 49 50	4313	55 56 31	4256
	Sun	E.	46 11 20	3389	44 48 51	3383	43 26 15	3375	42 3 30	3366
21	Antares	W.	108 8 53	2942	109 40 18	2933	111 11 55	2924	112 43 44	2914
	α Aquilæ	W.	60 42 10	4021	61 53 29	3960	63 5 28	3949	64 18 5	3908
	Sun	E.	35 7 37	3330	33 44 0	3321	32 20 13	3313	30 56 17	3306
22	α Aquilæ	W.	70 29 35	3754	71 45 25	3738	73 1 42	3703	74 18 26	3680
	Fomalhaut	W.	42 8 25	3455	43 29 39	3419	44 51 42	3378	46 14 30	3335
	Sun	E.	23 54 31	3973	22 29 48	3970	21 5 1	3966	19 40 10	3965
26	Sun	W.	24 11 37	2991	25 43 20	2906	27 15 40	2894	28 48 7	2881
	Mars	E.	32 46 45	2775	31 11 44	2769	29 36 35	2763	28 1 19	2759
	Pollux	E.	51 18 59	2551	49 38 57	2543	47 58 43	2535	46 18 18	2527
	Regulus	E.	88 8 10	2547	86 28 2	2538	84 47 42	2530	83 7 10	2522
27	Sun	W.	36 34 4	2698	38 7 56	2818	39 42 0	2809	41 16 16	2801
	Pollux	E.	37 53 35	2491	36 12 9	2484	34 30 33	2478	32 48 49	2472
	Regulus	E.	74 41 45	2483	73 0 8	2475	71 18 20	2468	69 36 22	2462
28	Sun	W.	49 10 22	2760	50 45 43	2753	52 21 13	2745	53 56 53	2738
	Pollux	E.	24 18 11	2448	22 35 45	2445	20 53 14	2443	19 10 40	2442
	Regulus	E.	61 4 8	2498	59 21 13	2492	57 38 9	2415	55 54 56	2410
29	Sun	W.	61 57 29	2705	63 34 2	2698	65 10 44	2692	66 47 34	2687
	Aldebaran	W.	34 26 10	2605	36 4 58	2582	37 44 18	2561	39 24 7	2542
	Venus	W.	26 48 57	2806	28 23 17	2797	29 57 49	2787	31 32 34	2779
	Regulus	E.	47 16 46	2381	45 32 44	2375	43 48 34	2371	42 4 17	2365
	Spica	E.	101 16 55	2378	99 32 49	2373	97 48 36	2367	96 4 14	2362
	Saturn	E.	111 55 34	2384	110 11 36	2378	108 27 30	2372	106 43 15	2366
30	Sun	W.	74 53 38	2658	76 31 14	2654	78 8 56	2649	79 46 45	2643
	Aldebaran	W.	47 49 5	2468	49 31 3	2457	51 13 17	2446	52 55 46	2436
	Venus	W.	39 29 0	2741	41 4 46	2734	42 40 41	2728	44 16 44	2722
	Regulus	E.	33 21 3	2349	31 36 4	2337	29 50 59	2331	28 5 48	2329
	Spica	E.	87 20 34	2337	85 35 29	2332	83 50 16	2327	82 4 56	2323
	Saturn	E.	97 59 57	2339	96 14 55	2334	94 29 45	2329	92 44 28	2325

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	2 33 38.20	9.543	N.15 5 10.8	+45.35	15 54.30	66.07	3 0.35	0.313
Thur.	2	2 37 27.49	9.565	15 23 12.0	44.73	15 54.07	66.15	3 7.59	0.291
Frid.	3	2 41 17.31	9.587	15 40 57.9	44.09	15 53.85	66.23	3 14.31	0.269
Sat.	4	2 45 7.66	9.609	15 58 28.2	+43.43	15 53.63	66.31	3 20.50	0.247
SUN.	5	2 48 58.56	9.632	16 15 42.5	42.76	15 53.40	66.39	3 26.15	0.224
Mon.	6	2 52 50.00	9.655	16 32 40.6	42.08	15 53.18	66.47	3 31.25	0.201
Tues.	7	2 56 42.00	9.678	16 49 22.3	+41.39	15 52.96	66.55	3 35.79	0.178
Wed.	8	3 0 34.56	9.702	17 5 47.1	40.68	15 52.74	66.63	3 39.77	0.154
Thur.	9	3 4 27.70	9.726	17 21 55.0	39.96	15 52.53	66.71	3 43.18	0.130
Frid.	10	3 8 21.40	9.750	17 37 45.4	+39.24	15 52.31	66.79	3 46.03	0.106
Sat.	11	3 12 15.70	9.774	17 53 18.3	38.50	15 52.10	66.88	3 48.29	0.082
SUN.	12	3 16 10 57	9.798	18 8 33.4	37.75	15 51.89	66.96	3 49.96	0.058
Mon.	13	3 20 6.03	9.823	18 23 30.2	+36.99	15 51.68	67.04	3 51.06	0.033
Tues.	14	3 24 2.08	9.848	18 38 8.6	36.21	15 51.47	67.12	3 51.56	0.009
Wed.	15	3 27 58.73	9.872	18 52 28.3	35.42	15 51.27	67.20	3 51.47	0.016
Thur.	16	3 31 55.96	9.897	19 6 29.0	+34.63	15 51.07	67.28	3 50 80	0.040
Frid.	17	3 35 53.78	9.921	19 20 10.4	33.82	15 50.87	67.36	3 49.54	0.065
Sat.	18	3 39 52.18	9.945	19 33 32.2	33.00	15 50.67	67.44	3 47.70	0.089
SUN.	19	3 43 51.17	9.969	19 46 34.2	+32.16	15 50.48	67.52	3 45.28	0.112
Mon.	20	3 47 50.71	9.993	19 59 16.0	31.32	15 50.29	67.60	3 42.30	0.136
Tues.	21	3 51 50.82	10.016	20 11 37.4	30.46	15 50.11	67.67	3 38.76	0.159
Wed.	22	3 55 51.48	10.039	20 23 38.1	+29.59	15 49.93	67.75	3 34.67	0.182
Thur.	23	3 59 52.67	10.061	20 35 18.0	28.72	15 49.76	67.82	3 30.05	0.204
Frid.	24	4 3 54.39	10.082	20 46 36.6	27.83	15 49.59	67.90	3 24.90	0.225
Sat.	25	4 7 56.62	10.103	20 57 33.7	+26.93	15 49.43	67.97	3 19.25	0.246
SUN.	26	4 11 59.34	10.123	21 8 9.2	26.02	15 49.27	68.04	3 13.10	0.266
Mon.	27	4 16 2.54	10.143	21 18 22.7	25.10	15 49.12	68.11	3 6.48	0.286
Tues.	28	4 20 6.20	10.162	21 28 14.2	+24.17	15 48.97	68.18	2 59.39	0.305
Wed.	29	4 24 10.31	10.180	21 37 43.2	23.24	15 48.82	68.24	2 51.86	0.323
Thur.	30	4 28 14.86	10.198	21 46 49.8	22.30	15 48.68	68.30	2 43.89	0.340
Frid.	31	4 32 19.81	10.215	21 55 33.6	21.35	15 48.54	68.36	2 35.52	0.357
Sat.	32	4 36 25.17	10.231	N.22 3 54.5	+20.39	15 48.41	68.41	2 26.74	0.374

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	2 33 38.68	9.544	N. 15 5 13.1	+45.37	3 0.36	0.313	2 36 39.04
Thur.	2	2 37 27.99	9.566	15 23 14.4	44.74	3 7.61	0.291	2 40 35.60
Frid.	3	2 41 17.83	9.588	15 41 0.3	44.09	3 14.33	0.269	2 44 32.15
Sat.	4	2 45 8.19	9.610	15 58 30.6	+43.43	3 20.52	0.246	2 48 28.71
SUN.	5	2 48 59.11	9.633	16 15 45.0	42.76	3 26.16	0.223	2 52 25.27
Mon.	6	2 52 50.56	9.656	16 32 43.1	42.08	3 31.26	0.200	2 56 21.82
Tues.	7	2 56 42.58	9.679	16 49 24.8	+41.39	3 35.80	0.177	3 0 18.38
Wed.	8	3 0 35.15	9.702	17 5 49.6	40.68	3 39.78	0.154	3 4 14.94
Thur.	9	3 4 28.30	9.726	17 21 57.4	39.96	3 43.19	0.130	3 8 11.49
Frid.	10	3 8 22.02	9.750	17 37 47.9	+39.23	3 46.03	0.106	3 12 8.05
Sat.	11	3 12 16.32	9.775	17 53 20.8	38.50	3 48.29	0.082	3 16 4.61
SUN.	12	3 16 11.20	9.799	18 8 35.8	37.75	3 49.97	0.058	3 20 1.16
Mon.	13	3 20 6.66	9.823	18 23 32.6	+36.98	3 51.06	0.033	3 23 57.72
Tues.	14	3 24 2.72	9.848	18 38 11.0	36.20	3 51.56	0.009	3 27 54.28
Wed.	15	3 27 59.36	9.872	18 52 30.6	35.42	3 51.47	0.016	3 31 50.83
Thur.	16	3 31 56.60	9.897	19 6 31.2	+34.62	3 50.80	0.040	3 35 47.39
Frid.	17	3 35 54.41	9.921	19 20 12.5	33.81	3 49.54	0.065	3 39 43.95
Sat.	18	3 39 52.81	9.945	19 33 34.3	32.99	3 47.69	0.089	3 43 40.50
SUN.	19	3 43 51.79	9.969	19 46 36.2	+32.16	3 45.27	0.113	3 47 37.06
Mon.	20	3 47 51.33	9.993	19 59 17.9	31.32	3 42.29	0.136	3 51 33.62
Tues.	21	3 51 51.43	10.016	20 11 39.3	30.46	3 38.75	0.159	3 55 30.18
Wed.	22	3 55 52.08	10.038	20 23 39.9	+29.59	3 34.66	0.182	3 59 26.74
Thur.	23	3 59 53.26	10.060	20 35 19.6	28.71	3 30.03	0.204	4 3 23.29
Frid.	24	4 3 54.96	10.081	20 46 38.2	27.82	3 24.89	0.225	4 7 19.85
Sat.	25	4 7 57.18	10.102	20 57 35.2	+26.93	3 19.23	0.246	4 11 16.41
SUN.	26	4 11 59.88	10.122	21 8 10.6	26.02	3 13.09	0.266	4 15 12.97
Mon.	27	4 16 3.06	10.142	21 18 24.1	25.10	3 6.46	0.286	4 19 9.52
Tues.	28	4 20 6.71	10.161	21 28 15.4	+24.17	2 59.37	0.305	4 23 6.08
Wed.	29	4 24 10.80	10.180	21 37 44.4	23.24	2 51.84	0.323	4 27 2.64
Thur.	30	4 28 15.32	10.197	21 46 50.8	22.29	2 43.88	0.340	4 30 59.20
Frid.	31	4 32 20.25	10.214	21 55 34.5	21.34	2 35 50	0.357	4 34 55.76
Sat.	32	4 36 25.59	10.230	N. 22 3 55.3	+20.39	2 26.73	0.373	4 38 52.32

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour, +9".8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ'	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	° ′ ″	″	″			h m s
1	121	40 50 36.3	50 17.8	145.48	+ 0.50	0.0034889	+43.6	21 19 50.71
2	122	41 48 46.7	48 28.0	145.39	0.40	0.0035931	43.2	21 15 54.80
3	123	42 46 55.1	46 36.3	145.31	0.28	0.0036964	42.8	21 11 58.89
4	124	43 45 1.6	44 42.6	145.23	+ 0.15	0.0037986	+42.4	21 8 2.98
5	125	44 43 6.1	42 47.0	145.15	+ 0.02	0.0039000	42.1	21 4 7.07
6	126	45 41 8.9	40 49.6	145.08	− 0.10	0.0040006	41.8	21 0 11.16
7	127	46 39 9.6	38 50.2	145.00	− 0.21	0.0041005	+41.5	20 56 15.25
8	128	47 37 8.9	36 49.3	144.93	0.31	0.0041998	41.2	20 52 19.34
9	129	48 35 6.4	34 46.6	144.86	0.39	0.0042984	40.9	20 48 23.43
10	130	49 33 2.4	32 42.5	144.80	− 0.43	0.0043964	+40.6	20 44 27.52
11	131	50 30 57.0	30 36.9	144.74	0.45	0.0044935	40.4	20 40 31.61
12	132	51 28 50.2	28 30.0	144.69	0.43	0.0045901	40.0	20 36 35.70
13	133	52 26 42.0	26 21.6	144.63	− 0.39	0.0046856	+39.6	20 32 39.78
14	134	53 24 32.5	24 11.9	144.58	0.31	0.0047801	39.1	20 28 43.87
15	135	54 22 21.9	22 1.2	144.53	0.22	0.0048735	38.6	20 24 47.96
16	136	55 20 10.1	19 49.2	144.48	− 0.10	0.0049655	+38.1	20 20 52.05
17	137	56 17 57.1	17 36.0	144.43	+ 0.02	0.0050562	37.5	20 16 56.14
18	138	57 15 43.1	15 21.9	144.39	0.16	0.0051453	36.8	20 13 0.23
19	139	58 13 27.9	13 6.5	144.34	+ 0.30	0.0052327	+36.0	20 9 4.32
20	140	59 11 11.7	10 50.1	144.30	0.42	0.0053181	35.2	20 5 8.41
21	141	60 8 54.3	8 32.6	144.25	0.53	0.0054014	34.3	20 1 12.50
22	142	61 6 35.7	6 13.8	144.20	+ 0.62	0.0054828	+33.4	19 57 16.58
23	143	62 4 16.1	3 54.0	144.15	0.69	0.0055619	32.5	19 53 20.67
24	144	63 1 55.2	1 32.9	144.10	0.73	0.0056389	31.6	19 49 24.76
25	145	63 59 33.0	59 10.6	144.05	+ 0.73	0.0057136	+30.7	19 45 28.85
26	146	64 57 9.5	56 46.9	144.00	0.72	0.0057862	29.8	19 41 32.94
27	147	65 54 44.8	54 22.0	143.94	0.67	0.0058565	28.9	19 37 37.02
28	148	66 52 18.8	51 55.8	143.89	+ 0.59	0.0059246	+28.0	19 33 41.11
29	149	67 49 51.4	49 28.2	143.84	0.49	0.0059907	27.1	19 29 45.20
30	150	68 47 22.7	46 59.4	143.78	0.38	0.0060549	26.3	19 25 49.29
31	151	69 44 52.7	44 29.2	143.72	0.25	0.0061170	25.6	19 21 53.37
32	152	70 42 21.2	41 57.5	143.66	+ 0.12	0.0061774	+24.9	19 17 57.46

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January $0^d.0$.

Diff. for 1 Hour, $-9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 7.3	16 9.3	59 3.5	+0.65	59 10.8	+0.56	5 58.7	2.33	6.5
2	16 11.0	16 12.3	59 16.9	0.47	59 22.0	0.36	6 52.9	2.19	7.5
3	16 13.3	16 13.9	59 25.6	+0.24	59 27.8	+0.12	7 44.0	2.07	8.5
4	16 14.1	16 13.7	59 28.4	−0.03	59 27.1	−0.19	8 32.8	2.00	9.5
5	16 12.8	16 11.4	59 23.8	0.36	59 18.5	0.53	9 20.7	1.99	10.5
6	16 9.3	16 6.7	59 11.0	0.71	59 1.4	0.89	10 8.9	2.03	11.5
7	16 3.5	15 59.8	58 49.6	−1.07	58 35 8	−1.23	10 58.7	2.12	12.5
8	15 55.5	15 50.8	58 20.2	1.37	58 2.9	1.50	11 50.9	2.23	13.5
9	15 45.7	15 40.4	57 44.3	1.59	57 24.7	1.66	12 45.5	2.32	14.5
10	15 34.9	15 29.3	57 4.4	−1.70	56 43.9	−1.70	13 41.9	2.36	15.5
11	15 23.7	15 18.3	56 23.5	1.68	56 3.5	1.63	14 38.3	2.33	16.5
12	15 13.1	15 8.2	55 44.5	1.54	55 26.6	1.43	15 33.1	2.22	17.5
13	15 3.8	14 59.8	55 10.2	−1.29	54 55.6	−1.13	16 24.7	2.08	18.5
14	14 56.4	14 53.5	54 43 0	0.96	54 32.6	0.77	17 12.7	1.92	19.5
15	14 51.4	14 49.8	54 24.6	0.57	54 19.0	−0.36	17 57.2	1.79	20.5
16	14 49.0	14 48.9	54 16.0	−0.14	54 15.6	+0.07	18 39.1	1.71	21.5
17	14 49.5	14 50.8	54 17.8	+0.29	54 22.5	0.50	19 19.2	1.65	22.5
18	14 52.8	14 55.4	54 29.7	0.70	54 39.3	0.89	19 58.8	1.65	23.5
19	14 58.6	15 2.3	54 51.1	+1.07	55 4.9	+1.23	20 39.0	1.70	24.5
20	15 6.6	15 11.3	55 20.5	1.37	55 37.7	1.49	21 21.1	1.81	25.5
21	15 16.3	15 21.6	55 56.2	1.58	56 15.5	1.63	22 6.4	1.97	26.5
22	15 27.0	15 32.5	56 35.4	+1.67	56 55.6	+1.68	22 55.9	2.16	27.5
23	15 37.9	15 43.2	57 15.6	1.65	57 35.1	1.58	23 50.3	2.37	28.5
24	15 48.3	15 53.0	57 53.6	1.50	58 11.0	1.39	6		29.5
25	15 57 4	16 1.2	58 27.0	+1.26	58 41.2	+1.10	0 49.4	2.54	1.0
26	16 4.6	16 7.4	58 53.5	0.94	59 3.8	0.78	1 51.5	2.61	2.0
27	16 9.6	16 11.3	59 12.1	0.60	59 18.3	0.44	2 53.7	2.56	3.0
28	16 12.5	16 13.2	59 22.6	+0.28	59 25.0	+0.13	3 53.5	2.41	4.0
29	16 13.3	16 13.0	59 25.6	−0.02	59 24.6	−0.15	4 49.4	2.24	5.0
30	16 12.4	16 11.3	59 22.1	0.27	59 18.2	0.38	5 41.4	2.09	6.0
31	16 9.9	16 8.2	59 13.1	0.47	59 6.9	0.56	6 30.3	1.99	7.0
32	16 6.2	16 4.0	58 59.6	−0.65	58 51.3	−0.73	7 17.5	1.95	8.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 1.			
	h m s	s	° ′ ″	″
0	8 21 45.92	2.4459	N.23 21 55.2	10.157
1	8 24 12.51	2.4405	23 14 41.4	10.302
2	8 26 38.78	2.4351	23 4 19.0	10.445
3	8 29 4.72	2.4296	22 53 48.0	10.587
4	8 31 30.33	2.4241	22 43 8.5	10.729
5	8 33 55.61	2.4185	22 32 20.5	10.869
6	8 36 20.55	2.4129	22 21 24.2	11.007
7	8 38 45.16	2.4073	22 10 19.6	11.145
8	8 41 9.43	2.4017	21 59 6.8	11.280
9	8 43 33.37	2.3962	21 47 46.0	11.413
10	8 45 56.97	2.3906	21 36 17.2	11.546
11	8 48 20.24	2.3851	21 24 40.5	11.677
12	8 50 43.17	2.3794	21 12 55.9	11.807
13	8 53 5.77	2.3738	21 1 3.6	11.935
14	8 55 28.03	2.3682	20 49 3.7	12.061
15	8 57 49.95	2.3626	20 36 56.3	12.186
16	9 0 11.54	2.3570	20 24 41.4	12.310
17	9 2 32.79	2.3514	20 12 19.1	12.432
18	9 4 53.71	2.3459	19 59 49.6	12.552
19	9 7 14.30	2.3404	19 47 12.9	12.670
20	9 9 34.56	2.3348	19 34 29.2	12.787
21	9 11 54.48	2.3292	19 21 38.5	12.903
22	9 14 14.07	2.3236	19 8 40.9	13.017
23	9 16 33.34	2.3185	N.18 55 36.5	13.129
	THURSDAY 2.			
0	9 18 52.29	2.3131	N.18 42 25.4	13.240
1	9 21 10.91	2.3077	18 29 7.7	13.349
2	9 23 29.21	2.3023	18 15 43.5	13.457
3	9 25 47.18	2.2969	18 2 12.9	13.563
4	9 28 4.84	2.2917	17 48 36.0	13.667
5	9 30 22.19	2.2865	17 34 52.9	13.770
6	9 32 39.22	2.2813	17 21 3.6	13.872
7	9 34 55.94	2.2762	17 7 8.3	13.971
8	9 37 12.36	2.2711	16 53 7.1	14.068
9	9 39 28.47	2.2660	16 39 0.1	14.165
10	9 41 44.28	2.2610	16 24 47.3	14.260
11	9 43 59.79	2.2560	16 10 28.9	14.353
12	9 46 15.00	2.2511	15 56 4.9	14.445
13	9 48 29.92	2.2463	15 41 35.5	14.535
14	9 50 44.55	2.2415	15 27 0.7	14.623
15	9 52 58.90	2.2367	15 12 20.7	14.710
16	9 55 12.96	2.2320	14 57 35.5	14.796
17	9 57 26.74	2.2274	14 42 45.2	14.879
18	9 59 40.25	2.2229	14 27 50.0	14.961
19	10 1 53.49	2.2184	14 12 49.9	15.042
20	10 4 6.46	2.2139	13 57 45.0	15.120
21	10 6 19.16	2.2096	13 42 35.5	15.197
22	10 8 31.60	2.2053	13 27 21.4	15.273
23	10 10 43.79	2.2011	13 12 2.8	15.348
24	10 12 55.73	2.1969	N.12 56 39.7	15.421

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 3.			
	h m s	s	° ′ ″	″
0	10 12 55.73	2.1969	N.12 56 39.7	15.421
1	10 15 7.42	2.1928	12 41 12.3	15.491
2	10 17 18.87	2.1887	12 25 40.8	15.559
3	10 19 30.07	2.1847	12 10 5.2	15.627
4	10 21 41.04	2.1809	11 54 25.6	15.693
5	10 23 51.78	2.1772	11 38 42.0	15.758
6	10 26 2.30	2.1735	11 22 54.6	15.821
7	10 28 12.60	2.1697	11 7 3.5	15.882
8	10 30 22.67	2.1661	10 51 8.7	15.942
9	10 32 32.53	2.1626	10 35 10.4	16.000
10	10 34 42.18	2.1593	10 19 8.7	16.057
11	10 36 51.63	2.1559	10 3 3.6	16.112
12	10 39 0.89	2.1526	9 46 55.3	16.165
13	10 41 9.95	2.1494	9 30 43.8	16.217
14	10 43 18.82	2.1463	9 14 29.3	16.267
15	10 45 27.51	2.1433	8 58 11.8	16.316
16	10 47 36.02	2.1404	8 41 51.4	16.363
17	10 49 44.36	2.1375	8 25 28.2	16.408
18	10 51 52.52	2.1347	8 9 2.4	16.452
19	10 54 0.52	2.1320	7 52 34.0	16.494
20	10 56 8.36	2.1294	7 36 3.1	16.535
21	10 58 16.05	2.1269	7 19 29.8	16.574
22	11 0 23.59	2.1244	7 2 54.2	16.612
23	11 2 30.98	2.1220	N. 6 46 16.4	16.648
	SATURDAY 4.			
0	11 4 38.23	2.1196	N. 6 29 36.5	16.682
1	11 6 45.35	2.1176	6 12 54.6	16.715
2	11 8 52.34	2.1154	5 56 10.7	16.747
3	11 10 59.20	2.1134	5 39 25.0	16.776
4	11 13 5.95	2.1116	5 22 37.6	16.804
5	11 15 12.59	2.1097	5 5 48.5	16.831
6	11 17 19.11	2.1078	4 48 57.9	16.856
7	11 19 25.53	2.1062	4 32 5.8	16.880
8	11 21 31.86	2.1047	4 15 12.3	16.902
9	11 23 38.09	2.1032	3 58 17.6	16.922
10	11 25 44.24	2.1017	3 41 21.7	16.941
11	11 27 50.30	2.1003	3 24 24.7	16.957
12	11 29 56.28	2.0991	3 7 26.8	16.972
13	11 32 2.19	2.0980	2 50 28.0	16.987
14	11 34 8.04	2.0969	2 33 28.4	17.000
15	11 36 13.82	2.0959	2 16 28.0	17.012
16	11 38 19.55	2.0951	1 59 27.0	17.021
17	11 40 25.23	2.0943	1 42 25.5	17.028
18	11 42 30.86	2.0935	1 25 23.6	17.035
19	11 44 36.45	2.0929	1 8 21.3	17.040
20	11 46 42.01	2.0923	0 51 18.8	17.042
21	11 48 47.53	2.0917	0 34 16.2	17.044
22	11 50 53.02	2.0914	0 17 13.5	17.044
23	11 52 58.50	2.0912	N. 0 0 10.9	17.042
24	11 55 3.97	2.0911	S. 0 16 51.6	17.040

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 5.			
	h m s	s	° ′ ″	″
0	11 55 3.97	2.0911	S. 0 16 51.6	17.040
1	11 57 9.43	2.0909	0 33 53.9	17.036
2	11 59 14.88	2.0908	0 50 55.9	17.029
3	12 1 20.33	2.0909	1 7 57.4	17.021
4	12 3 25.79	2.0911	1 24 58.4	17.012
5	12 5 31.26	2.0913	1 41 58.8	17.002
6	12 7 36.75	2.0917	1 58 58.6	16.990
7	12 9 42.26	2.0921	2 15 57.6	16.976
8	12 11 47.80	2.0925	2 32 55.7	16.960
9	12 13 53.36	2.0930	2 49 52.8	16.942
10	12 15 58.96	2.0937	3 6 48.8	16.994
11	12 18 4.61	2.0945	3 23 43.7	16.904
12	12 20 10.30	2.0953	3 40 37.3	16.882
13	12 22 16.04	2.0962	3 57 29.6	16.859
14	12 24 21.84	2.0972	4 14 20.4	16.834
15	12 26 27.70	2.0982	4 31 9.7	16.808
16	12 28 33.62	2.0993	4 47 57.4	16.780
17	12 30 39.62	2.1006	5 4 43.3	16.750
18	12 32 45.69	2.1019	5 21 27.4	16.719
19	12 34 51.84	2.1033	5 38 9.6	16.687
20	12 36 58.08	2.1047	5 54 49.8	16.653
21	12 39 4.40	2.1061	6 11 27.9	16.617
22	12 41 10.81	2.1078	6 28 3.8	16.579
23	12 43 17.33	2.1095	S. 6 44 37.4	16.540
	MONDAY 6.			
0	12 45 23.95	2.1113	S. 7 1 8.6	16.500
1	12 47 30.68	2.1131	7 17 37.4	16.458
2	12 49 37.52	2.1149	7 34 3.6	16.414
3	12 51 44.47	2.1169	7 50 27.1	16.369
4	12 53 51.55	2.1190	8 6 47.9	16.322
5	12 55 58.75	2.1211	8 23 5.8	16.274
6	12 58 6.08	2.1232	8 39 20.8	16.225
7	13 0 13.54	2.1255	8 55 32.8	16.173
8	13 2 21.14	2.1279	9 11 41.6	16.120
9	13 4 28.89	2.1303	9 27 47.2	16.066
10	13 6 36.78	2.1327	9 43 49.5	16.010
11	13 8 44.82	2.1353	9 59 48.4	15.952
12	13 10 53.02	2.1379	10 15 43.8	15.893
13	13 13 1.37	2.1406	10 31 35.6	15.833
14	13 15 9.89	2.1433	10 47 23.7	15.771
15	13 17 18.57	2.1461	11 3 8.1	15.707
16	13 19 27.42	2.1489	11 18 48.6	15.642
17	13 21 36.44	2.1518	11 34 25.1	15.574
18	13 23 45.64	2.1548	11 49 57.5	15.505
19	13 25 55.02	2.1578	12 5 25.7	15.436
20	13 28 4.58	2.1609	12 20 49.8	15.366
21	13 30 14.33	2.1641	12 36 9.6	15.293
22	13 32 24.27	2.1673	12 51 25.0	15.218
23	13 34 34.40	2.1706	13 6 35.8	15.142
24	13 36 44.73	2.1738	S. 13 21 42.0	15.064

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 7.			
	h m s	s	° ′ ″	″
0	13 36 44.73	2.1738	S. 13 21 42.0	15.064
1	13 38 55.26	2.1770	13 36 43.5	14.985
2	13 41 5.99	2.1806	13 51 40.2	14.905
3	13 43 16.92	2.1839	14 6 32.1	14.823
4	13 45 28.06	2.1874	14 21 19.0	14.739
5	13 47 39.41	2.1910	14 36 0.8	14.653
6	13 49 50.98	2.1946	14 50 37.4	14.567
7	13 52 2.76	2.1982	15 5 8.8	14.479
8	13 54 14.76	2.2018	15 19 34.9	14.390
9	13 56 26.98	2.2055	15 33 55.6	14.298
10	13 58 39.42	2.2092	15 48 10.7	14.206
11	14 0 52.09	2.2130	16 2 20.3	14.112
12	14 3 4.98	2.2168	16 16 24.2	14.017
13	14 5 18.10	2.2205	16 30 22.3	13.919
14	14 7 31.45	2.2245	16 44 14.5	13.821
15	14 9 45.04	2.2284	16 58 0.8	13.722
16	14 11 58.86	2.2322	17 11 41.1	13.621
17	14 14 12.91	2.2361	17 25 15.3	13.517
18	14 16 27.19	2.2400	17 38 43.2	13.412
19	14 18 41.71	2.2441	17 52 4.8	13.307
20	14 20 56.48	2.2481	18 5 20.1	13.201
21	14 23 11.48	2.2520	18 18 28.9	13.092
22	14 25 26.72	2.2560	18 31 31.2	12.982
23	14 27 42.20	2.2601	S. 18 44 26.8	12.871
	WEDNESDAY 8.			
0	14 29 57.93	2.2642	S. 18 57 15.7	12.758
1	14 32 13.90	2.2682	19 9 57.8	12.645
2	14 34 30.11	2.2722	19 22 33.1	12.530
3	14 36 46.56	2.2762	19 35 1.4	12.413
4	14 39 3.26	2.2803	19 47 22.7	12.295
5	14 41 20.20	2.2843	19 59 36.8	12.175
6	14 43 37.38	2.2883	20 11 43.7	12.054
7	14 45 54.80	2.2924	20 23 43.3	11.932
8	14 48 12.47	2.2965	20 35 35.6	11.810
9	14 50 30.38	2.3005	20 47 20.5	11.686
10	14 52 48.53	2.3045	20 58 57.9	11.560
11	14 55 6.92	2.3085	21 10 27.7	11.432
12	14 57 25.55	2.3125	21 21 49.8	11.304
13	14 59 44.42	2.3164	21 33 4.2	11.175
14	15 2 3.52	2.3203	21 44 10.8	11.044
15	15 4 22.86	2.3242	21 55 9.5	10.912
16	15 6 42.43	2.3281	22 6 0.2	10.779
17	15 9 2.23	2.3320	22 16 43.0	10.646
18	15 11 22.27	2.3358	22 27 17.7	10.510
19	15 13 42.53	2.3396	22 37 44.2	10.374
20	15 16 3.02	2.3434	22 48 2.5	10.237
21	15 18 23.73	2.3471	22 58 12.6	10.098
22	15 20 44.67	2.3508	23 8 14.3	9.958
23	15 23 5.82	2.3544	23 18 7.5	9.817
24	15 25 27.19	2.3580	S. 23 27 52.3	9.676

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	THURSDAY 9.			
	h m s	s	° ′ ″	″
0	15 25 27.19	2.3580	S. 23 27 52.3	9.676
1	15 27 48.78	2.3615	23 37 28.6	9.533
2	15 30 10.57	2.3649	23 46 56.2	9.388
3	15 32 32.57	2.3681	23 56 15.1	9.243
4	15 34 54.78	2.3717	24 5 25.3	9.098
5	15 37 17.18	2.3750	24 14 26.8	8.952
6	15 39 39.78	2.3783	24 23 19.5	8.804
7	15 42 2.58	2.3815	24 32 3.3	8.655
8	15 44 25.56	2.3846	24 40 38.1	8.505
9	15 46 48.73	2.3877	24 49 3.9	8.354
10	15 49 12.08	2.3906	24 57 20.6	8.203
11	15 51 35.60	2.3935	25 5 28.3	8.051
12	15 53 59.30	2.3964	25 13 26.8	7.898
13	15 56 23.17	2.3992	25 21 16.1	7.745
14	15 58 47.20	2.4018	25 28 56.2	7.591
15	16 1 11.38	2.4043	25 36 27.0	7.436
16	16 3 35.72	2.4069	25 43 48.5	7.280
17	16 6 0.21	2.4094	25 51 0.6	7.124
18	16 8 24.85	2.4117	25 58 3.4	6.967
19	16 10 49.62	2.4139	26 4 56.7	6.809
20	16 13 14.52	2.4161	26 11 40.5	6.651
21	16 15 39.55	2.4182	26 18 14.8	6.492
22	16 18 4.70	2.4201	26 24 39.5	6.332
23	16 20 29.96	2.4220	S. 26 30 54.6	6.172
	FRIDAY 10.			
0	16 22 55.34	2.4238	S. 26 37 0.2	6.012
1	16 25 20.82	2.4255	26 42 56.1	5.851
2	16 27 46.40	2.4270	26 48 42.3	5.690
3	16 30 12.06	2.4284	26 54 18.9	5.529
4	16 32 37.81	2.4298	26 59 45.8	5.366
5	16 35 3.64	2.4312	27 5 2.9	5.203
6	16 37 29.55	2.4323	27 10 10.2	5.040
7	16 39 55.52	2.4333	27 15 7.7	4.878
8	16 42 21.55	2.4342	27 19 55.5	4.715
9	16 44 47.63	2.4350	27 24 33.5	4.551
10	16 47 13.75	2.4357	27 29 1.6	4.387
11	16 49 39.91	2.4363	27 33 19.9	4.223
12	16 52 6.11	2.4368	27 37 28.4	4.059
13	16 54 32.33	2.4372	27 41 27.0	3.894
14	16 56 58.57	2.4374	27 45 15.7	3.730
15	16 59 24.82	2.4376	27 48 54.6	3.566
16	17 1 51.08	2.4376	27 52 23.6	3.400
17	17 4 17.33	2.4374	27 55 42.6	3.235
18	17 6 43.57	2.4372	27 58 51.8	3.071
19	17 9 9.79	2.4368	28 1 51.1	2.906
20	17 11 35.99	2.4364	28 4 40.5	2.742
21	17 14 2.16	2.4358	28 7 20.1	2.577
22	17 16 28.29	2.4351	28 9 49.8	2.412
23	17 18 54.37	2.4342	28 12 9.6	2.248
24	17 21 20.40	2.4333	S. 28 14 19.6	2.085

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	SATURDAY 11.			
	h m s	s	° ′ ″	″
0	17 21 20.40	2.4333	S. 28 14 19.6	2.085
1	17 23 46.37	2.4322	28 16 19.8	1.921
2	17 26 12.27	2.4311	28 18 10.1	1.756
3	17 28 38.10	2.4298	28 19 50.5	1.592
4	17 31 3.85	2.4284	28 21 21.1	1.429
5	17 33 29.51	2.4267	28 22 42.0	1.267
6	17 35 55.06	2.4250	28 23 53.1	1.104
7	17 38 20.51	2.4233	28 24 54.5	0.941
8	17 40 45.86	2.4215	28 25 46.1	0.779
9	17 43 11.09	2.4195	28 26 28.0	0.618
10	17 45 36.20	2.4173	28 27 0.3	0.457
11	17 48 1.17	2.4150	28 27 22.9	0.296
12	17 50 26.00	2.4126	28 27 35.8	− 0.135
13	17 52 50.68	2.4102	28 27 39.1	+ 0.024
14	17 55 15.22	2.4077	28 27 32.9	0.183
15	17 57 39.60	2.4050	28 27 17.1	0.342
16	18 0 3.82	2.4022	28 26 51.8	0.501
17	18 2 27.86	2.3992	28 26 17.0	0.658
18	18 4 51.72	2.3961	28 25 32.8	0.815
19	18 7 15.39	2.3930	28 24 39.2	0.972
20	18 9 38.88	2.3898	28 23 36.2	1.128
21	18 12 2.17	2.3865	28 22 23.8	1.283
22	18 14 25.26	2.3831	28 21 2.2	1.438
23	18 16 48.14	2.3795	S. 28 19 31.3	1.592
	SUNDAY 12.			
0	18 19 10.80	2.3759	S. 28 17 51.2	1.745
1	18 21 33.24	2.3722	28 16 1.9	1.897
2	18 23 55.46	2.3683	28 14 3.5	2.048
3	18 26 17.44	2.3643	28 11 56.1	2.198
4	18 28 39.18	2.3603	28 9 39.7	2.349
5	18 31 0.68	2.3563	28 7 14.2	2.499
6	18 33 21.94	2.3522	28 4 39.8	2.647
7	18 35 42.94	2.3478	28 1 56.6	2.794
8	18 38 3.68	2.3434	27 59 4.5	2.941
9	18 40 24.15	2.3390	27 56 3.6	3.087
10	18 42 44.36	2.3345	27 52 54.0	3.232
11	18 45 4.29	2.3299	27 49 35.7	3.377
12	18 47 23.95	2.3253	27 46 8.8	3.520
13	18 49 43.33	2.3206	27 42 33.3	3.662
14	18 52 2.42	2.3157	27 38 49.3	3.803
15	18 54 21.21	2.3108	27 34 56.9	3.944
16	18 56 39.71	2.3059	27 30 56.0	4.084
17	18 58 57.92	2.3009	27 26 46.8	4.222
18	19 1 15.82	2.2958	27 22 29.3	4.360
19	19 3 33.41	2.2907	27 18 3.6	4.497
20	19 5 50.70	2.2856	27 13 29.7	4.633
21	19 8 7.68	2.2803	27 8 47.7	4.767
22	19 10 24.34	2.2750	27 3 57.7	4.901
23	19 12 40.68	2.2697	26 58 59.6	5.034
24	19 14 56.71	2.2644	S. 26 53 53.6	5.166

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 13.			
	h m s	s	° ′ ″	″
0	19 14 56.71	2.2644	S. 26 53 53.6	5.166
1	19 17 12.41	2.2669	26 48 39.7	5.296
2	19 19 27.78	2.2634	26 43 18.1	5.425
3	19 21 42.82	2.2479	26 37 48.7	5.554
4	19 23 57.53	2.2424	26 32 11.6	5.682
5	19 26 11.91	2.2366	26 26 26.9	5.806
6	19 28 25.95	2.2318	26 20 34.6	5.934
7	19 30 39.66	2.2256	26 14 34.8	6.056
8	19 32 53.02	2.2199	26 8 27.6	6.182
9	19 35 6.04	2.2148	26 2 13.0	6.304
10	19 37 18.72	2.2084	25 55 51.1	6.425
11	19 39 31.05	2.2027	25 49 22.0	6.545
12	19 41 43.04	2.1969	25 42 45.7	6.664
13	19 43 54.68	2.1911	25 36 2.3	6.782
14	19 46 5.97	2.1854	25 29 11.8	6.900
15	19 48 16.92	2.1796	25 22 14.3	7.016
16	19 50 27.51	2.1737	25 15 9.9	7.131
17	19 52 37.76	2.1679	25 7 58.6	7.244
18	19 54 47.66	2.1621	25 0 40.6	7.357
19	19 56 57.21	2.1563	24 53 15.8	7.469
20	19 59 6.40	2.1503	24 45 44.3	7.579
21	20 1 15.24	2.1444	24 38 6.3	7.688
22	20 3 23.73	2.1386	24 30 21.7	7.797
23	20 5 31.87	2.1327	S. 24 22 30.6	7.905
	TUESDAY 14.			
0	20 7 39.66	2.1268	S. 24 14 33.1	8.011
1	20 9 47.09	2.1210	24 6 29.3	8.116
2	20 11 54.18	2.1152	23 58 19.2	8.221
3	20 14 0.92	2.1094	23 50 2.8	8.324
4	20 16 7.31	2.1036	23 41 40.3	8.426
5	20 18 13.35	2.0978	23 33 11.7	8.527
6	20 20 19.04	2.0920	23 24 37.1	8.627
7	20 22 24.39	2.0863	23 15 56.5	8.726
8	20 24 29.39	2.0804	23 7 10.0	8.824
9	20 26 34.04	2.0747	22 58 17.6	8.922
10	20 28 38.35	2.0690	22 49 19.4	9.017
11	20 30 42.32	2.0633	22 40 15.6	9.111
12	20 32 45.95	2.0577	22 31 6.1	9.205
13	20 34 49.24	2.0520	22 21 51.0	9.298
14	20 36 52.19	2.0464	22 12 30.4	9.390
15	20 38 54.81	2.0408	22 3 4.2	9.482
16	20 40 57.09	2.0352	21 53 32.6	9.571
17	20 42 59.04	2.0297	21 43 55.7	9.659
18	20 45 0.66	2.0242	21 34 13.5	9.747
19	20 47 1.95	2.0186	21 24 26.1	9.834
20	20 49 2.92	2.0134	21 14 33.4	9.921
21	20 51 3.56	2.0080	21 4 35.6	10.005
22	20 53 3.88	2.0027	20 54 32.8	10.089
23	20 55 3.89	1.9975	20 44 24.9	10.173
24	20 57 3.58	1.9922	S. 20 34 12.1	10.254

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 15.			
	h m s	s	° ′ ″	″
0	20 57 3.58	1.9922	S. 20 34 12.1	10.254
1	20 59 2.96	1.9870	20 23 54.4	10.335
2	21 1 2.02	1.9818	20 13 31.9	10.415
3	21 3 0.77	1.9767	20 3 4.6	10.495
4	21 4 59.22	1.9716	19 52 32.5	10.573
5	21 6 57.36	1.9665	19 41 55.8	10.650
6	21 8 55.20	1.9616	19 31 14.5	10.727
7	21 10 52.75	1.9567	19 20 28.6	10.802
8	21 12 50.00	1.9518	19 9 38.2	10.877
9	21 14 46.96	1.9469	18 58 43.4	10.950
10	21 16 43.63	1.9422	18 47 44.2	11.023
11	21 18 40.02	1.9374	18 36 40.6	11.096
12	21 20 36.12	1.9327	18 25 32.7	11.167
13	21 22 31.94	1.9281	18 14 20.5	11.237
14	21 24 27.49	1.9236	18 3 4.2	11.306
15	21 26 22.77	1.9190	17 51 43.8	11.374
16	21 28 17.77	1.9145	17 40 19.3	11.442
17	21 30 12.51	1.9102	17 28 50.8	11.509
18	21 32 6.99	1.9058	17 17 18.2	11.576
19	21 34 1.21	1.9015	17 5 41.7	11.640
20	21 35 55.17	1.8972	16 54 1.4	11.704
21	21 37 48.88	1.8931	16 42 17.2	11.767
22	21 39 42.34	1.8890	16 30 29.3	11.830
23	21 41 35.56	1.8849	S. 16 18 37.6	11.892
	THURSDAY 16.			
0	21 43 28.53	1.8808	S. 16 6 42.2	11.953
1	21 45 21.26	1.8769	15 54 43.2	12.013
2	21 47 13.76	1.8731	15 42 40.6	12.072
3	21 49 6.04	1.8694	15 30 34.5	12.131
4	21 50 58.09	1.8657	15 18 24.9	12.189
5	21 52 49.92	1.8619	15 6 11.8	12.247
6	21 54 41.52	1.8582	14 53 55.3	12.303
7	21 56 32.91	1.8547	14 41 35.5	12.358
8	21 58 24.09	1.8513	14 29 12.3	12.413
9	22 0 15.07	1.8479	14 16 45.9	12.467
10	22 2 5.84	1.8445	14 4 16.3	12.520
11	22 3 56.41	1.8413	13 51 43.5	12.572
12	22 5 46.79	1.8381	13 39 7.6	12.624
13	22 7 36.98	1.8349	13 26 28.6	12.675
14	22 9 26.98	1.8317	13 13 46.6	12.725
15	22 11 16.79	1.8287	13 1 1.6	12.775
16	22 13 6.42	1.8258	12 48 13.6	12.824
17	22 14 55.88	1.8230	12 35 22.7	12.871
18	22 16 45.18	1.8202	12 22 29.0	12.918
19	22 18 34.31	1.8174	12 9 32.5	12.965
20	22 20 23.27	1.8147	11 56 33.2	13.012
21	22 22 12.07	1.8121	11 43 31.1	13.057
22	22 24 0.72	1.8096	11 30 26.3	13.102
23	22 25 49.23	1.8072	11 17 18.9	13.145
24	22 27 37.59	1.8048	S. 11 4 8.9	13.188

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 27 37.59	[illegible]	S. 11 4 8.9	[illegible]
1	22 29 25.21	[illegible]	10 50 56.3	[illegible]
2	22 31 13.09	[illegible]	10 37 41.2	[illegible]
3	22 33 1.84	[illegible]	10 24 23.6	[illegible]
4	22 34 49.66	[illegible]	10 11 3.6	[illegible]
5	22 36 37.36	[illegible]	9 57 41.2	[illegible]
6	22 38 24.94	[illegible]	9 44 16.4	[illegible]
7	22 40 12.40	[illegible]	9 30 49.2	13.471
8	22 41 59.76	[illegible]	9 17 19.8	[illegible]
9	22 43 47.01	[illegible]	9 3 48.2	13.546
10	22 45 34.16	[illegible]	8 50 14.4	[illegible]
11	22 47 21.21	[illegible]	8 36 38.4	13.617
12	22 49 8.16	[illegible]	8 23 0.3	[illegible]
13	22 50 55.03	[illegible]	8 9 20.1	[illegible]
14	22 52 41.82	[illegible]	7 55 37.9	[illegible]
15	22 54 28.52	1.7778	7 41 53.7	[illegible]
16	22 56 15.15	[illegible]	7 28 7.6	13.785
17	22 58 1.71	1.7755	7 14 19.5	13.817
18	22 59 48.21	1.7745	7 0 29.5	13.848
19	23 1 34.65	[illegible]	6 46 37.7	13.878
20	23 3 21.03	[illegible]	6 32 44.1	[illegible]
21	23 5 7.35	1.7717	6 18 48.8	[illegible]
22	23 6 53.63	1.7710	6 4 51.8	13.964
23	23 8 39.87	[illegible]	S. 5 50 53.1	[illegible]

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 10 26.07	1.7697	S. 5 36 52.7	[illegible]
1	23 12 12.23	1.7692	5 22 50.7	14.046
2	23 13 58.37	1.7687	5 8 47.2	14.071
3	23 15 44.48	1.7683	4 54 42.2	[illegible]
4	23 17 30.57	1.7681	4 40 35.7	[illegible]
5	23 19 16.65	1.7679	4 26 27.7	14.144
6	23 21 2.72	1.7677	4 12 18.4	14.167
7	23 22 48.78	1.7677	3 58 7.7	14.189
8	23 24 34.84	1.7677	3 43 55.7	14.211
9	23 26 20.90	1.7677	3 29 42.4	[illegible]
10	23 28 6.97	1.7679	3 15 27.9	[illegible]
11	23 29 53.05	1.7682	3 1 12.2	14.271
12	23 31 39.15	1.7685	2 46 55.4	[illegible]
13	23 33 25.27	1.7689	2 32 37.5	14.308
14	23 35 11.42	1.7694	2 18 18.5	[illegible]
15	23 36 57.60	1.7700	2 3 58.4	[illegible]
16	23 38 43.82	1.7707	1 49 37.4	14.358
17	23 40 30.08	1.7714	1 35 15.4	14.374
18	23 42 16.38	1.7721	1 20 52.5	14.389
19	23 44 2.73	1.7730	1 6 28.7	14.402
20	23 45 49.14	1.7740	0 52 4.2	14.415
21	23 47 35.61	1.7750	0 37 38.9	14.427
22	23 49 22.14	1.7762	0 23 12.9	[illegible]
23	23 51 8.75	1.7774	S. 0 8 46.2	14.451
24	23 52 55.43	1.7787	N. 0 5 41.2	[illegible]

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 52 55.43	1.7787	N. 0 5 41.2	[illegible]
1	23 54 42.19	[illegible]	0 20 9.2	14.471
2	23 56 29.03	[illegible]	0 34 37.7	[illegible]
3	23 58 15.96	[illegible]	0 49 6.7	[illegible]
4	0 0 2.99	[illegible]	1 3 36.2	[illegible]
5	0 1 50.11	[illegible]	1 18 6.1	14.501
6	0 3 37.33	[illegible]	1 32 36.3	14.507
7	0 5 24.66	[illegible]	1 47 6.9	14.512
8	0 7 12.11	[illegible]	2 1 37.7	14.516
9	0 8 59.67	[illegible]	2 16 8.8	[illegible]
10	0 10 47.35	[illegible]	2 30 40.1	[illegible]
11	0 12 35.17	[illegible]	2 45 11.5	[illegible]
12	0 14 23.11	[illegible]	2 59 43.0	[illegible]
13	0 16 11.19	[illegible]	3 14 14.6	[illegible]
14	0 17 59.42	[illegible]	3 28 46.1	[illegible]
15	0 19 47.79	[illegible]	3 43 17.6	14.524
16	0 21 36.31	[illegible]	3 57 49.0	[illegible]
17	0 23 24.99	[illegible]	4 12 20.2	14.518
18	0 25 13.83	[illegible]	4 26 51.2	14.514
19	0 27 2.83	[illegible]	4 41 21.9	14.510
20	0 28 52.01	[illegible]	4 55 52.4	14.505
21	0 30 41.37	[illegible]	5 10 22.5	[illegible]
22	0 32 30.91	[illegible]	5 24 52.1	[illegible]
23	0 34 20.64	[illegible]	N. 5 39 21.3	[illegible]

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 36 10.55	1.8335	N. 5 53 50.0	14.473
1	0 38 0.66	1.8368	6 8 18.1	14.463
2	0 39 50.97	[illegible]	6 22 45.5	14.452
3	0 41 41.49	1.8437	6 37 12.3	14.441
4	0 43 32.22	1.8473	6 51 38.4	14.427
5	0 45 23.17	[illegible]	7 6 3.6	14.413
6	0 47 14.33	1.8546	7 20 28.0	14.399
7	0 49 5.72	1.8584	7 34 51.5	14.383
8	0 50 57.34	[illegible]	7 49 14.0	14.367
9	0 52 49.20	1.8663	8 3 35.5	14.349
10	0 54 41.30	1.8703	8 17 55.9	14.330
11	0 56 33.64	1.8744	8 32 15.1	14.310
12	0 58 26.23	1.8787	8 46 33.1	14.290
13	1 0 19.08	1.8830	9 0 49.9	14.268
14	1 2 12.19	1.8873	9 15 5.3	14.245
15	1 4 5.56	1.8917	9 29 19.3	14.222
16	1 5 59.20	1.8963	9 43 31.9	14.197
17	1 7 53.12	[illegible]	9 57 42.9	14.170
18	1 9 47.31	1.9056	10 11 52.3	14.143
19	1 11 41.79	1.9104	10 26 0.0	14.115
20	1 13 36.56	1.9152	10 40 6.1	14.087
21	1 15 31.62	[illegible]	10 54 10.4	14.057
22	1 17 26.98	[illegible]	11 8 12.9	[illegible]
23	1 19 22.65	[illegible]	11 22 13.4	[illegible]
24	1 21 18.62	1.9354	N. 11 36 11.9	13.958

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 21.			
	h m s	s	° ′ ″	″
0	1 21 18.62	1.9354	N.11 36 11.9	13.958
1	1 23 14.90	1.9407	11 50 8.4	13.903
2	1 25 11.50	1.9461	12 4 2.7	13.867
3	1 27 8.43	1.9515	12 17 54.8	13.849
4	1 29 5.68	1.9569	12 31 44.6	13.811
5	1 31 3.26	1.9624	12 45 32.1	13.771
6	1 33 1.17	1.9680	12 59 17.1	13.729
7	1 34 59.42	1.9737	13 12 59.6	13.687
8	1 36 58.02	1.9796	13 26 39.6	13.644
9	1 38 56.97	1.9855	13 40 16.9	13.599
10	1 40 56.28	1.9914	13 53 51.5	13.553
11	1 42 55.94	1.9973	14 7 23.2	13.505
12	1 44 55.96	2.0034	14 20 52.1	13.457
13	1 46 56.35	2.0096	14 34 18.1	13.407
14	1 48 57.11	2.0158	14 47 41.0	13.355
15	1 50 58.25	2.0221	15 1 0.7	13.309
16	1 52 59.77	2.0285	15 14 17.2	13.248
17	1 55 1.67	2.0348	15 27 30.5	13.193
18	1 57 3.95	2.0412	15 40 40.4	13.137
19	1 59 6.62	2.0476	15 53 46.9	13.078
20	2 1 9.69	2.0540	16 6 49.8	13.018
21	2 3 13.17	2.0603	16 19 49.1	12.957
22	2 5 17.05	2.0661	16 32 44.7	12.896
23	2 7 21.34	2.0745	N.16 45 36.5	12.831
	WEDNESDAY 22.			
0	2 9 26.03	2.0817	N.16 58 24.4	12.765
1	2 11 31.14	2.0887	17 11 8.3	12.696
2	2 13 36.67	2.0957	17 23 48.2	12.631
3	2 15 42.62	2.1027	17 36 24.0	12.561
4	2 17 49.00	2.1096	17 48 55.5	12.489
5	2 19 55.80	2.1169	18 1 22.7	12.416
6	2 22 3.03	2.1242	18 13 45.4	12.341
7	2 24 10.70	2.1315	18 26 3.6	12.265
8	2 26 18.81	2.1388	18 38 17.2	12.188
9	2 28 27.35	2.1461	18 50 26.2	12.109
10	2 30 36.34	2.1536	19 2 30.3	12.027
11	2 32 45.78	2.1610	19 14 29.5	11.945
12	2 34 55.66	2.1685	19 26 23.7	11.861
13	2 37 6.00	2.1761	19 38 12.8	11.776
14	2 39 16.79	2.1836	19 49 56.8	11.689
15	2 41 28.03	2.1912	20 1 35.5	11.601
16	2 43 39.73	2.1989	20 13 8.9	11.510
17	2 45 51.90	2.2066	20 24 36.7	11.417
18	2 48 4.53	2.2143	20 35 58.9	11.323
19	2 50 17.62	2.2221	20 47 15.5	11.228
20	2 52 31.18	2.2299	20 58 26.3	11.131
21	2 54 45.21	2.2377	21 9 31.2	11.032
22	2 56 59.70	2.2454	21 20 30.1	10.932
23	2 59 14.66	2.2533	21 31 23.0	10.830
24	3 1 30.10	2.26 2	N.21 42 9.7	10.726

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 23.			
	h m s	s	° ′ ″	″
0	3 1 30.10	2.2612	N.21 42 9.7	10.726
1	3 3 46.01	2.2691	21 52 50.1	10.620
2	3 6 2.39	2.2769	22 3 24.1	10.512
3	3 8 19.24	2.2848	22 13 51.6	10.403
4	3 10 36.57	2.2927	22 24 12.5	10.293
5	3 12 54.37	2.3007	22 34 26.7	10.181
6	3 15 12.65	2.3086	22 44 34.2	10.067
7	3 17 31.40	2.3165	22 54 34.7	9.950
8	3 19 50.63	2.3244	23 4 28.2	9.833
9	3 22 10.33	2.3322	23 14 14.7	9.714
10	3 24 30.50	2.3401	23 23 53.9	9.593
11	3 26 51.14	2.3480	23 33 25.8	9.470
12	3 29 12.26	2.3559	23 42 50.3	9.346
13	3 31 33.85	2.3637	23 52 7.3	9.219
14	3 33 55.91	2.3715	24 1 16.6	9.091
15	3 36 18.43	2.3793	24 10 18.2	8.961
16	3 38 41.42	2.3870	24 19 11.9	8.829
17	3 41 4.87	2.3947	24 27 57.7	8.697
18	3 43 28.79	2.4025	24 36 35.5	8.563
19	3 45 53.17	2.4101	24 45 5.1	8.425
20	3 48 18.00	2.4177	24 53 26.5	8.287
21	3 50 43.29	2.4253	25 1 39.5	8.147
22	3 53 9.03	2.4327	25 9 44.1	8.005
23	3 55 35.22	2.4402	N.25 17 40.1	7.862
	FRIDAY 24.			
0	3 58 1.85	2.4475	N.25 25 27.5	7.717
1	4 0 28.92	2.4548	25 33 6.1	7.570
2	4 2 56.43	2.4622	25 40 35.9	7.422
3	4 5 24.38	2.4694	25 47 56.8	7.272
4	4 7 52.76	2.4765	25 55 8.6	7.121
5	4 10 21.56	2.4834	26 2 11.3	6.967
6	4 12 50.77	2.4903	26 9 4.7	6.812
7	4 15 20.40	2.4972	26 15 48.8	6.657
8	4 17 50.44	2.5041	26 22 23.5	6.500
9	4 20 20.89	2.5107	26 28 48.8	6.341
10	4 22 51.73	2.5172	26 35 4.4	6.179
11	4 25 22.96	2.5237	26 41 10.3	6.017
12	4 27 54.58	2.5302	26 47 6.5	5.854
13	4 30 26.58	2.5364	26 52 52.8	5.688
14	4 32 58.95	2.5426	26 58 29.1	5.522
15	4 35 31.69	2.5487	27 3 55.4	5.354
16	4 38 4.79	2.5546	27 9 11.6	5.185
17	4 40 38.24	2.5604	27 14 17.6	5.014
18	4 43 12.04	2.5662	27 19 13.3	4.842
19	4 45 46.18	2.5717	27 23 58.7	4.669
20	4 48 20.65	2.5771	27 28 33.6	4.494
21	4 50 55.43	2.5824	27 32 58.0	4.318
22	4 53 30.53	2.5876	27 37 11.8	4.141
23	4 56 5 94	2.5926	27 41 14.9	3.963
24	4 58 41.64	2.5974	N.27 45 7.4	3.783

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 25.			
	h m s	s	° ′ ″	″
0	4 56 41.64	2.5974	N.27 45 7.4	3.785
1	5 1 17.63	2.6022	27 48 49.1	3.604
2	5 3 53.90	2.6067	27 52 19.9	3.492
3	5 6 30.44	2.6112	27 55 39.8	3.940
4	5 9 7.24	2.6154	27 58 48.7	3.067
5	5 11 44.29	2.6195	28 1 46.6	2.879
6	5 14 21.58	2.6234	28 4 33.4	2.687
7	5 16 59.10	2.6272	28 7 9.0	2.501
8	5 19 36.84	2.6308	28 9 33.5	2.314
9	5 22 14.80	2.6343	28 11 46.7	2.126
10	5 24 52.96	2.6376	28 13 48.6	1.937
11	5 27 31.31	2.6406	28 15 39.2	1.748
12	5 30 9.83	2.6434	28 17 18.4	1.556
13	5 32 48.52	2.6462	28 18 46.2	1.367
14	5 35 27.38	2.6489	28 20 2.5	1.176
15	5 38 6.39	2.6513	28 21 7.3	0.984
16	5 40 45.53	2.6534	28 22 0.6	0.791
17	5 43 24.80	2.6555	28 22 42.3	0.598
18	5 46 4.19	2.6573	28 23 12.4	0.405
19	5 48 43.68	2.6590	28 23 30.9	0.212
20	5 51 23.27	2.6605	28 23 37.8	+ 0.018
21	5 54 2.94	2.6617	28 23 33.1	− 0.176
22	5 56 42.68	2.6628	28 23 16.7	0.371
23	5 59 22.48	2.6637	N.28 22 48.6	0.566
	SUNDAY 26.			
0	6 2 2.33	2.6645	N.28 22 8.8	0.761
1	6 4 42.22	2.6651	28 21 17.3	0.956
2	6 7 22.14	2.6654	28 20 14.1	1.151
3	6 10 2.07	2.6656	28 18 59.2	1.346
4	6 12 42.01	2.6657	28 17 32.6	1.541
5	6 15 21.95	2.6654	28 15 54.3	1.737
6	6 18 1.86	2.6649	28 14 4.2	1.932
7	6 20 41.74	2.6644	28 12 2.4	2.127
8	6 23 21.59	2.6637	28 9 49.0	2.321
9	6 26 1.39	2.6628	28 7 23.9	2.516
10	6 28 41.13	2.6617	28 4 47.1	2.710
11	6 31 20.79	2.6603	28 1 58.7	2.903
12	6 34 0.37	2.6589	27 58 58.7	3.097
13	6 36 39.86	2.6572	27 55 47.1	3.290
14	6 39 19.24	2.6554	27 52 23.9	3.482
15	6 41 58.51	2.6534	27 48 49.2	3.674
16	6 44 37.65	2.6513	27 45 3.0	3.866
17	6 47 16.66	2.6490	27 41 5.3	4.057
18	6 49 55.53	2.6465	27 36 56.1	4.247
19	6 52 34.24	2.6438	27 32 35.6	4.437
20	6 55 12.79	2.6410	27 28 3.7	4.626
21	6 57 51.16	2.6380	27 23 20.5	4.814
22	7 0 29.35	2.6349	27 18 26.0	5.002
23	7 3 7.35	2.6317	27 13 20.3	5.188
24	7 5 45.15	2.6283	N.27 8 3.5	5.373

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 27.			
	h m s	s	° ′ ″	″
0	7 5 45.15	2.6263	N.27 8 3.5	5.373
1	7 8 22.74	2.6247	27 2 35.6	5.558
2	7 11 0.11	2.6229	26 56 56.6	5.743
3	7 13 37.25	2.6170	26 51 6.5	5.926
4	7 16 14.15	2.6130	26 45 5.5	6.107
5	7 18 50.81	2.6089	26 38 53.6	6.288
6	7 21 27.22	2.6047	26 32 30.9	6.468
7	7 24 3.37	2.6003	26 25 57.4	6.647
8	7 26 39.25	2.5958	26 19 13.2	6.824
9	7 29 14.86	2.5912	26 12 18.5	7.000
10	7 31 50.19	2.5864	26 5 13.2	7.176
11	7 34 25.23	2.5816	25 57 57.4	7.349
12	7 36 59.98	2.5767	25 50 31.3	7.522
13	7 39 34.43	2.5716	25 42 54.8	7.694
14	7 42 8.57	2.5664	25 35 8.0	7.864
15	7 44 42.40	2.5612	25 27 11.1	8.032
16	7 47 15.91	2.5558	25 19 4.1	8.200
17	7 49 49.09	2.5503	25 10 47.1	8.367
18	7 52 21.94	2.5447	25 2 20.1	8.532
19	7 54 54.45	2.5391	24 53 43.3	8.694
20	7 57 26.63	2.5335	24 44 56.8	8.856
21	7 59 58.47	2.5277	24 36 0.6	9.017
22	8 2 29.96	2.5218	24 26 54.8	9.175
23	8 5 1.09	2.5159	N.24 17 39.6	9.332
	TUESDAY 28.			
0	8 7 31.87	2.5100	N.24 8 15.0	9.488
1	8 10 2.29	2.5039	23 58 41.0	9.642
2	8 12 32.34	2.4978	23 48 57.9	9.794
3	8 15 2.03	2.4917	23 39 5.7	9.945
4	8 17 31.35	2.4855	23 29 4.5	10.095
5	8 20 0.29	2.4792	23 18 54.3	10.243
6	8 22 28.86	2.4730	23 8 35.3	10.390
7	8 24 57.05	2.4667	22 58 7.5	10.534
8	8 27 24.86	2.4604	22 47 31.2	10.676
9	8 29 52.30	2.4542	22 36 46.4	10.817
10	8 32 19.36	2.4478	22 25 53.2	10.957
11	8 34 46.03	2.4413	22 14 51.6	11.095
12	8 37 12.31	2.4348	22 3 41.8	11.231
13	8 39 38.21	2.4284	21 52 23.9	11.365
14	8 42 3.72	2.4219	21 40 58.0	11.498
15	8 44 28.84	2.4154	21 29 24.1	11.630
16	8 46 53.57	2.4089	21 17 42.4	11.759
17	8 49 17.91	2.4025	21 5 53.0	11.887
18	8 51 41.87	2.3961	20 53 56.0	12 013
19	8 54 5.44	2.3896	20 41 51.5	12.137
20	8 56 28.62	2.3831	20 29 39.6	12.259
21	8 58 51.41	2.3766	20 17 20.4	12.380
22	9 1 13.81	2.3702	20 4 54.0	12.499
23	9 3 35.83	2.3637	19 52 20.5	12.616
24	9 5 57.46	2.3573	N.19 39 40.1	12.731

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 29.			
	h m s	s	° ′ ″	″
0	9 5 57.46	2.3573	N.19 39 40.1	12.731
1	9 8 18.71	2.3510	19 26 52.8	12.845
2	9 10 39.58	2.3446	19 13 58.7	12.957
3	9 13 0.06	2.3382	19 0 57.9	13.067
4	9 15 20.16	2.3319	18 47 50.6	13.176
5	9 17 39.89	2.3257	18 34 36.8	13.283
6	9 19 59.25	2.3195	18 21 16.6	13.388
7	9 22 18.23	2.3133	18 7 50.2	13.491
8	9 24 36.84	2.3071	17 54 17.7	13.592
9	9 26 55.08	2.3010	17 40 39.1	13.692
10	9 29 12.96	2.2950	17 26 54.6	13.790
11	9 31 30.48	2.2889	17 13 4.3	13.887
12	9 33 47.63	2.2829	16 59 8.2	13.982
13	9 36 4.43	2.2770	16 45 6.5	14.074
14	9 38 20.87	2.2711	16 30 59.3	14.165
15	9 40 36.96	2.2653	16 16 46.7	14.254
16	9 42 52.70	2.2595	16 2 28.8	14.342
17	9 45 8.10	2.2537	15 48 5.7	14.428
18	9 47 23.15	2.2480	15 33 37.5	14.512
19	9 49 37.86	2.2424	15 19 4.3	14.594
20	9 51 52.24	2.2370	15 4 26.2	14.676
21	9 54 6.30	2.2316	14 49 43.2	14.755
22	9 56 20.03	2.2261	14 34 55.6	14.832
23	9 58 33.43	2.2207	N.14 20 3.4	14.908
	THURSDAY 30.			
0	10 0 46.51	2.2154	N.14 5 6.7	14.982
1	10 2 59.28	2.2102	13 50 5.6	15.054
2	10 5 11.74	2.2051	13 35 0.2	15.125
3	10 7 23.89	2.2000	13 19 50.6	15.194
4	10 9 35.74	2.1951	13 4 36.9	15.262
5	10 11 47.30	2.1902	12 49 19.2	15.327
6	10 13 58.56	2.1853	12 33 57.7	15.390
7	10 16 9.53	2.1805	12 18 32.4	15.453
8	10 18 20.22	2.1759	12 3 3.3	15.515
9	10 20 30.64	2.1713	11 47 30.0	15.574
10	10 22 40.78	2.1667	11 31 54.4	15.632
11	10 24 50.65	2.1622	11 16 14.8	15.688
12	10 27 0.25	2.1578	11 0 31.9	15.742
13	10 29 9.59	2.1536	10 44 45.8	15.795
14	10 31 18.68	2.1494	10 28 56.5	15.847
15	10 33 27.52	2.1452	10 13 4.2	15.896
16	10 35 36.11	2.1412	9 57 9.0	15.944
17	10 37 44.47	2.1373	9 41 10.9	15.991
18	10 39 52.59	2.1334	9 25 10.1	16.036
19	10 42 0.48	2.1297	9 9 6.6	16.079
20	10 44 8.15	2.1260	8 53 0.6	16.121
21	10 46 15.60	2.1223	8 36 52.1	16.162
22	10 48 22.83	2.1188	8 20 41.2	16.201
23	10 50 29.86	2.1155	8 4 28.0	16.237
24	10 52 36.69	2.1122	N. 7 48 12.7	16.272

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 31.			
	h m s	s	° ′ ″	″
0	10 52 36.69	2.1122	N. 7 48 12.7	16.272
1	10 54 43.32	2.1089	7 31 55.3	16.307
2	10 56 49.75	2.1057	7 15 35.8	16.341
3	10 58 56.00	2.1027	6 59 14.4	16.372
4	11 1 2.07	2.0997	6 42 51.2	16.401
5	11 3 7.96	2.0967	6 26 26.3	16.429
6	11 5 13.68	2.0939	6 9 59.7	16.457
7	11 7 19.23	2.0912	5 53 31.5	16.482
8	11 9 24.63	2.0886	5 37 1.9	16.505
9	11 11 29.87	2.0861	5 20 30.9	16.528
10	11 13 34.96	2.0837	5 3 58.5	16.549
11	11 15 39.91	2.0813	4 47 25.0	16.567
12	11 17 44.72	2.0791	4 30 50.4	16.585
13	11 19 49.40	2.0770	4 14 14.8	16.602
14	11 21 53.96	2.0749	3 57 38.2	16.618
15	11 23 58.39	2.0728	3 41 0.6	16.632
16	11 26 2.70	2.0710	3 24 22.3	16.643
17	11 28 6.91	2.0693	3 7 43.4	16.653
18	11 30 11.02	2.0677	2 51 3.9	16.663
19	11 32 15.03	2.0660	2 34 23.8	16.672
20	11 34 18.94	2.0644	2 17 43.3	16.678
21	11 36 22.76	2.0630	2 1 2.5	16.683
22	11 38 26.50	2.0618	1 44 21.4	16.687
23	11 40 30.17	2.0606	N. 1 27 40.1	16.688
	SATURDAY, JUNE 1.			
0	11 42 33.77	2.0594	N. 1 10 58.8	16.688

PHASES OF THE MOON.

		d	h	m
☽	First Quarter. . May	1	15	44.0
○	Full Moon	8	11	58.9
☾	Last Quarter	16	5	43.9
●	New Moon	24	0	46.2
☽	First Quarter. . . .	30	20	48.4

		d	h
☾	Perigee . . . . May	3	21.8
☾	Apogee	16	7.8
☾	Perigee	28	22.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	81 24 41	9639	83 2 43	9634	84 40 52	9629	86 19 7	9625
	Aldebaran	W.	54 38 30	9426	56 21 27	9418	58 4 36	9410	59 47 57	9403
	Venus	W.	45 52 55	9716	47 29 14	9710	49 5 41	9704	50 42 15	9699
	Jupiter	W.	29 9 24	9438	30 52 4	9428	32 34 59	9419	34 18 7	9410
	Mars	W.	26 43 14	9547	28 23 22	9538	30 3 42	9530	31 44 13	9522
	Spica	E.	80 19 30	9318	78 33 57	9314	76 48 18	9309	75 2 32	9306
	Saturn	E.	90 59 5	9390	89 13 35	9316	87 27 59	9312	85 42 17	9308
2	Sun	W.	94 31 49	9604	96 10 38	9601	97 49 31	9598	99 28 29	9594
	Venus	W.	58 46 46	9675	60 23 59	9672	62 1 17	9667	63 38 41	9663
	Jupiter	W.	42 56 35	9375	44 40 45	9370	46 25 3	9365	48 9 28	9360
	Mars	W.	40 9 7	9494	41 50 29	9489	43 31 57	9485	45 13 32	9480
	Pollux	W.	24 46 22	9304	26 32 16	9299	28 18 17	9294	30 4 25	9289
	Spica	E.	66 12 18	9287	64 25 59	9283	62 39 34	9280	60 53 5	9277
	Saturn	E.	76 52 23	9290	75 6 9	9287	73 19 51	9284	71 33 28	9282
	Antares	E.	112 6 31	9287	110 20 12	9283	108 33 47	9279	106 47 17	9277
3	Sun	W.	107 44 21	9581	109 23 42	9580	111 3 5	9577	112 42 31	9576
	Venus	W.	71 46 53	9647	73 24 44	9644	75 2 39	9642	76 40 37	9640
	Jupiter	W.	56 53 9	9341	58 38 9	9337	60 23 14	9335	62 8 22	9333
	Mars	W.	53 42 50	9469	55 24 56	9460	57 7 5	9458	58 49 18	9455
	Pollux	W.	38 56 38	9271	40 43 20	9268	42 30 6	9266	44 16 56	9264
	Spica	E.	51 59 33	9264	50 12 40	9261	48 25 43	9259	46 38 43	9258
	Saturn	E.	62 40 47	9273	60 54 8	9272	59 7 27	9271	57 20 45	9270
	Antares	E.	97 53 44	9263	96 6 50	9261	94 19 53	9259	92 32 53	9257
4	Venus	W.	84 51 2	9633	86 29 12	9632	88 7 23	9632	89 45 34	9639
	Jupiter	W.	70 54 49	9294	72 40 13	9294	74 25 37	9294	76 11 2	9294
	Mars	W.	67 21 3	9448	69 3 30	9448	70 45 57	9447	72 28 25	9448
	Pollux	W.	53 11 46	9256	54 58 50	9256	56 45 54	9256	58 32 59	9256
	Spica	E.	37 43 14	9259	35 56 4	9259	34 8 54	9251	32 21 43	9252
	Saturn	E.	48 27 18	9275	46 40 42	9278	44 54 10	9281	43 7 43	9285
	Antares	E.	83 37 19	9251	81 50 8	9251	80 2 57	9251	78 15 45	9251
5	Jupiter	W.	84 57 56	9328	86 43 14	9331	88 28 29	9333	90 13 41	9336
	Mars	W.	81 0 33	9452	82 42 54	9454	84 25 12	9457	86 7 26	9459
	Pollux	W.	67 28 12	9260	69 15 10	9262	71 2 5	9264	72 48 57	9267
	Regulus	W.	30 37 38	9262	32 24 34	9263	34 11 28	9265	35 58 19	9267
	Saturn	E.	34 17 15	9318	32 31 42	9322	30 46 24	9341	29 1 24	9356
	Antares	E.	69 20 0	9257	67 32 57	9258	65 45 56	9261	63 58 59	9263
6	Jupiter	W.	98 58 28	9355	100 43 8	9360	102 27 40	9365	104 12 5	9371
	Mars	W.	94 37 31	9478	96 19 15	9484	98 0 51	9489	99 42 20	9494
	Pollux	W.	81 42 9	9285	83 28 30	9290	85 14 44	9295	87 0 51	9300
	Regulus	W.	44 51 32	9285	46 37 54	9289	48 24 10	9294	50 10 18	9299
	Antares	E.	55 5 21	9282	53 18 55	9287	51 32 36	9291	49 46 24	9298
	α Aquilæ	E.	105 52 8	3124	104 24 27	3114	102 56 35	3108	101 28 35	3104
7	Pollux	W.	95 49 14	9333	97 34 25	9341	99 19 25	9349	101 4 13	9357
	Regulus	W.	58 58 53	9331	60 44 7	9339	62 29 9	9347	64 14 0	9355
	Antares	E.	40 57 37	9330	39 12 21	9338	37 27 17	9346	35 42 24	9354
	α Aquilæ	E.	94 7 51	3105	92 39 48	3110	91 11 51	3117	89 44 2	3196

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Sun	W.	87° 57′ 28″	2991	89° 35′ 55″	2917	91° 14′ 27″	2819	92° 53′ 5″	2606
	Aldebaran	W.	61 31 28	2395	63 15 10	2368	64 59 2	2368	66 43 3	2376
	Venus	W.	52 18 56	2894	53 55 44	2889	55 32 38	2884	57 9 39	2880
	Jupiter	W.	36 1 27	2409	37 44 59	2395	39 28 41	2388	41 12 33	2381
	Mars	W.	33 24 55	2516	35 5 46	2510	36 46 45	2504	38 27 52	2499
	Spica	E.	73 16 41	2309	71 30 44	2296	69 44 41	2294	67 58 32	2290
	Saturn	E.	83 56 29	2304	82 10 35	2300	80 24 36	2297	78 38 32	2294
2	Sun	W.	101 7 32	2591	102 46 39	2589	104 25 49	2586	106 5 3	2583
	Venus	W.	65 16 10	2960	66 53 44	2956	68 31 23	2953	70 9 6	2950
	Jupiter	W.	49 54 0	2356	51 38 38	2351	53 23 23	2348	55 8 13	2344
	Mars	W.	46 55 13	2476	48 37 0	2472	50 18 52	2469	52 0 49	2466
	Pollux	W.	31 50 40	2985	33 37 1	2981	35 23 28	2977	37 10 1	2974
	Spica	E.	59 6 31	2974	57 19 53	2970	55 33 10	2966	53 46 23	2966
	Saturn	E.	69 47 2	2979	68 0 32	2978	66 14 0	2976	64 27 25	2974
	Antares	E.	105 0 43	2973	103 14 4	2970	101 27 21	2966	99 40 34	2966
3	Sun	W.	114 21 59	2574	116 1 29	2574	117 41 0	2573	119 20 32	2572
	Venus	W.	78 18 37	2936	79 56 40	2936	81 34 46	2935	83 12 53	2934
	Jupiter	W.	63 53 34	2331	65 38 49	2326	67 24 7	2327	69 9 27	2326
	Mars	W.	60 31 34	2453	62 13 53	2452	63 56 14	2450	65 38 38	2449
	Pollux	W.	46 3 49	2969	47 50 45	2960	49 37 43	2958	51 24 44	2956
	Spica	E.	44 51 41	2956	43 4 37	2955	41 17 31	2953	39 30 23	2953
	Saturn	E.	55 34 2	2970	53 47 19	2971	52 0 37	2972	50 13 56	2974
	Antares	E.	90 45 50	2956	88 58 45	2954	87 11 38	2953	85 24 29	2952
4	Venus	W.	91 23 45	2933	93 1 55	2933	94 40 5	2935	96 18 13	2936
	Jupiter	W.	77 56 26	2394	79 41 50	2394	81 27 14	2396	83 12 36	2397
	Mars	W.	74 10 52	2448	75 53 19	2448	77 35 45	2449	79 18 10	2450
	Pollux	W.	60 20 3	2956	62 7 7	2957	63 54 10	2958	65 41 12	2959
	Spica	E.	30 34 33	2953	28 47 24	2953	27 0 16	2955	25 13 10	2956
	Saturn	E.	41 21 21	2989	39 35 6	2986	37 48 59	2981	36 3 1	2980
	Antares	E.	76 28 34	2951	74 41 23	2953	72 54 14	2953	71 7 6	2955
5	Jupiter	W.	91 58 48	2339	93 43 51	2342	95 28 49	2346	97 13 42	2350
	Mars	W.	87 49 37	2469	89 31 43	2465	91 13 45	2470	92 55 41	2474
	Pollux	W.	74 35 45	2970	76 22 29	2973	78 9 8	2977	79 55 42	2981
	Regulus	W.	37 45 7	2970	39 31 51	2973	41 18 30	2977	43 5 4	2981
	Saturn	E.	27 16 46	2973	25 32 33	2995	23 48 51	2429	22 5 47	2454
	Antares	E.	62 12 5	2966	60 25 16	2970	58 38 32	2973	56 51 53	2978
6	Jupiter	W.	105 56 21	2378	107 40 28	2384	109 24 26	2391	111 8 13	2398
	Mars	W.	101 23 41	2500	103 4 54	2507	104 45 57	2514	106 26 51	2522
	Pollux	W.	88 46 50	2307	90 32 40	2313	92 18 21	2319	94 3 53	2326
	Regulus	W.	51 56 19	2305	53 42 11	2311	55 27 55	2317	57 13 29	2324
	Antares	E.	48 0 21	2303	46 14 26	2309	44 28 40	2315	42 43 3	2323
	α Aquilæ	E.	100 0 30	3101	98 32 21	3099	97 4 10	3099	95 35 59	3101
7	Pollux	W.	102 48 49	2366	104 33 12	2375	106 17 22	2385	108 1 18	2394
	Regulus	W.	65 58 39	2364	67 43 5	2373	69 27 18	2382	71 11 18	2392
	Antares	E.	33 57 43	2363	32 13 15	2372	30 29 0	2382	28 44 59	2391
	α Aquilæ	E.	88 16 24	3136	86 48 58	3148	85 21 46	3161	83 54 50	3175

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Regulus	W.	72° 55′ 4″	3483	74° 38′ 35″	3412	76° 21′ 52″	3483	78° 4′ 54″	3434
	α Aquilæ	E.	82 28 11	3109	81 1 52	3000	79 35 54	3029	78 10 19	3050
	Fomalhaut	E.	108 8 0	3003	106 30 57	3009	104 54 2	3005	103 17 15	2702
9	Regulus	W.	86 36 3	3402	88 17 27	3505	89 58 33	3518	91 39 21	3530
	Spica	W.	32 34 58	3402	34 16 22	3504	35 57 29	3517	37 38 18	3530
	α Aquilæ	E.	71 9 15	3362	69 46 38	3414	68 24 37	3447	67 3 14	3484
	Fomalhaut	E.	95 16 5	2749	93 40 30	2761	92 5 11	2773	90 30 8	2785
10	Regulus	W.	99 58 53	3507	101 37 52	3511	103 16 32	3505	104 54 53	3638
	Spica	W.	45 57 54	3506	47 36 54	3510	49 15 35	3504	50 53 57	3638
	Saturn	W.	36 23 56	3041	38 1 55	3051	39 39 41	3060	41 17 15	3070
	α Aquilæ	E.	60 27 17	3264	59 10 34	3256	57 54 46	3013	56 39 57	3079
	Fomalhaut	E.	82 39 16	3059	81 6 4	3074	79 33 12	3091	78 0 42	3008
	α Pegasi	E.	104 31 38	3050	102 58 26	3060	101 25 28	3060	99 52 44	3091
11	Spica	W.	59 1 9	2707	60 37 40	2721	62 13 52	2735	63 49 46	2749
	Saturn	W.	49 21 30	2706	50 57 35	2738	52 33 25	2750	54 8 59	2762
	α Aquilæ	E.	50 42 20	4040	49 34 32	4030	48 28 7	4027	47 23 10	4533
	Fomalhaut	E.	70 23 49	3001	68 53 38	3002	67 23 53	3043	65 54 34	3065
	α Pegasi	E.	92 12 48	3054	90 41 37	3060	89 10 44	3081	87 40 8	2985
12	Spica	W.	71 44 46	3015	73 18 54	3000	74 52 45	3041	76 26 20	3053
	Saturn	W.	62 2 49	3023	63 36 47	3035	65 10 30	3046	66 43 58	3059
	Antares	W.	25 50 29	3015	27 24 37	3000	28 58 28	3042	30 32 2	3053
	Fomalhaut	E.	58 34 48	3180	57 8 18	3000	55 42 20	3038	54 16 54	3065
	α Pegasi	E.	80 11 39	3070	78 42 53	3067	77 14 27	3102	75 46 20	3119
	Sun	E.	137 0 41	3189	135 34 19	3203	134 8 13	3015	132 42 22	3227
13	Spica	W.	84 10 20	3012	85 42 23	3023	87 14 13	3034	88 45 49	3043
	Saturn	W.	74 27 33	3014	75 59 34	3025	77 31 21	3035	79 2 55	3045
	Antares	W.	38 16 2	3012	39 48 5	3023	41 19 55	3034	42 51 31	3043
	Fomalhaut	E.	47 18 32	3029	45 56 48	3047	44 35 47	3507	43 15 31	3559
	α Pegasi	E.	68 30 43	3002	67 4 36	3020	65 38 50	3037	64 13 25	3055
	Sun	E.	125 36 41	3068	124 12 15	3086	122 48 1	3080	121 24 0	3090
14	Spica	W.	96 20 45	2000	97 51 11	2000	99 21 26	3006	100 51 31	3013
	Saturn	W.	86 37 47	2000	88 8 12	2000	89 38 27	3006	91 8 32	3013
	Antares	W.	50 26 28	2000	51 56 53	2007	53 27 9	3005	54 57 15	3013
	α Pegasi	E.	57 11 49	3253	55 48 39	3374	54 25 53	3396	53 3 32	3419
	Sun	E.	114 26 54	3068	113 4 1	3377	111 41 18	3385	110 18 44	3393
15	Antares	W.	62 25 41	3041	63 55 1	3047	65 24 16	3051	66 53 26	3055
	α Pegasi	E.	46 18 41	3553	44 59 15	3584	43 40 23	3619	42 22 9	3656
	Sun	E.	103 27 55	3494	102 6 6	3499	100 44 22	3433	99 22 43	3438
16	Antares	W.	74 18 18	3068	75 47 9	3066	77 16 0	3057	78 44 50	3067
	Sun	E.	92 35 24	3449	91 14 3	3450	89 52 43	3450	88 31 23	3450
17	Antares	W.	86 9 16	3058	87 38 17	3056	89 7 21	3052	90 36 30	3047
	α Aquilæ	W.	44 48 49	4098	45 45 46	4895	46 44 5	4801	47 43 40	4715
	Sun	E.	81 44 30	3449	80 23 1	3438	79 1 28	3435	77 39 51	3431

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
8	Regulus	W.	79° 47′ 40″	9445	81° 30′ 11″	9457	83° 12′ 25″	9469	84° 54′ 22″	9480
	α Aquilæ	E.	76 45 9	3873	75 20 26	3897	73 56 11	3394	72 32 27	3351
	Fomalhaut	E.	101 40 38	9710	100 4 11	9719	98 27 56	9729	96 51 54	9738
9	Regulus	W.	93 19 52	9543	95 0 5	9557	96 39 59	9570	98 19 35	9583
	Spica	W.	39 18 50	9543	40 59 4	9556	42 38 59	9569	44 18 36	9583
	α Aquilæ	E.	65 42 32	3523	64 22 33	3564	63 3 19	3606	61 44 53	3654
	Fomalhaut	E.	88 55 21	9799	87 20 52	9813	85 46 41	9826	84 12 49	9849
10	Regulus	W.	106 32 56	9852	108 10 40	9866	109 48 5	9881	111 25 11	9895
	Spica	W.	52 32 1	9852	54 9 46	9866	55 47 12	9879	57 24 20	9893
	Saturn	W.	42 54 35	9681	44 31 41	9691	46 8 33	9703	47 45 9	9714
	α Aquilæ	E.	55 26 9	3836	54 13 26	4005	53 1 51	4078	51 51 28	4156
	Fomalhaut	E.	76 28 33	9996	74 56 47	9944	73 25 24	9962	71 54 24	9969
	α Pegasi	E.	98 20 14	9663	96 47 59	9815	95 15 59	9987	93 44 15	9941
11	Spica	W.	65 25 21	9769	67 0 39	9775	68 35 39	9789	70 10 21	9803
	Saturn	W.	55 44 17	9774	57 19 19	9786	58 54 5	9796	60 28 35	9811
	α Aquilæ	E.	46 19 47	4646	45 18 2	4770	44 18 1	4903	43 19 49	5049
	Fomalhaut	E.	64 25 41	3967	62 57 15	3110	61 29 17	3133	60 1 48	3158
	α Pegasi	E.	86 9 49	3010	84 39 49	3035	83 10 7	3040	81 40 44	3055
12	Spica	W.	77 59 39	9866	79 32 42	9877	81 5 30	9890	82 38 2	9901
	Saturn	W.	68 17 10	9870	69 50 7	9881	71 22 50	9893	72 55 18	9903
	Antares	W.	32 5 21	9866	33 38 24	9877	35 11 12	9890	36 43 44	9901
	Fomalhaut	E.	52 52 2	3294	51 27 44	3395	50 4 2	3358	48 40 57	3393
	α Pegasi	E.	74 18 33	3125	72 51 6	3151	71 23 58	3168	69 57 10	3185
	Sun	E.	131 16 45	3940	129 51 23	3959	128 26 15	3964	127 1 21	3976
13	Spica	W.	90 17 13	9954	91 48 24	9964	93 19 22	9973	94 50 9	9981
	Saturn	W.	80 34 17	9954	82 5 27	9964	83 36 25	9973	85 7 11	9981
	Antares	W.	44 22 55	9954	45 54 6	9963	47 25 5	9973	48 55 52	9981
	Fomalhaut	E.	41 56 4	3598	40 37 28	3650	39 19 48	3706	38 3 7	3766
	α Pegasi	E.	62 48 21	3974	61 23 39	3994	59 59 20	3313	58 35 23	3332
	Sun	E.	120 0 12	3331	118 36 36	3340	117 13 11	3350	115 49 57	3359
14	Spica	W.	102 21 28	3930	103 51 16	3936	105 20 57	3932	106 50 30	3938
	Saturn	W.	92 38 29	3930	94 8 17	3936	95 37 57	3943	97 7 29	3938
	Antares	W.	56 27 12	3930	57 57 0	3936	59 26 41	3942	60 56 14	3937
	α Pegasi	E.	51 41 37	3443	50 20 9	3469	48 59 10	3486	47 38 40	3523
	Sun	E.	108 56 19	3400	107 34 2	3407	106 11 53	3413	104 49 51	3418
15	Antares	W.	68 22 31	3956	69 51 32	3960	71 20 30	3963	72 49 25	3965
	α Pegasi	E.	41 4 35	3696	39 47 44	3740	38 31 39	3788	37 16 24	3840
	Sun	E.	98 1 9	3440	96 39 38	3444	95 18 11	3446	93 56 46	3448
16	Antares	W.	80 13 40	3966	81 42 31	3965	83 11 24	3963	84 40 19	3961
	Sun	E.	87 10 3	3449	85 48 42	3448	84 27 20	3446	83 5 56	3445
17	Antares	W.	92 5 44	3943	93 35 3	3938	95 4 29	3933	96 34 1	3927
	α Aquilæ	W.	48 44 27	4635	49 46 22	4689	50 49 22	4690	51 53 23	4424
	Sun	E.	76 18 9	3496	74 56 22	3491	73 34 20	3415	72 12 29	3409

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Antares	W.	98° 3′ 40″	3021	99° 33′ 27″	3014	101° 3′ 23″	3007	102° 33′ 27″	2999
	α Aquilæ	W.	52 58 23	4363	54 4 18	4306	55 11 5	4251	56 18 43	4201
	Sun	E.	70 50 23	3402	69 28 9	3396	68 5 48	3388	66 43 18	3380
19	α Aquilæ	W.	62 8 8	3984	63 20 3	3946	64 32 36	3912	65 45 44	3877
	Fomalhaut	W.	33 34 29	3908	34 47 41	3838	36 2 14	3755	37 18 3	3689
	Sun	E.	59 48 26	3336	58 24 56	3395	57 1 14	3316	55 37 21	3305
20	α Aquilæ	W.	71 59 36	3728	73 15 53	3703	74 32 37	3677	75 49 48	3654
	Fomalhaut	W.	43 53 3	3430	45 14 46	3389	46 37 15	3350	48 0 29	3313
	Sun	E.	48 34 44	3949	47 9 33	3937	45 44 8	3925	44 18 29	3914
21	α Aquilæ	W.	82 21 48	3548	83 41 19	3530	85 1 10	3513	86 21 20	3497
	Fomalhaut	W.	55 6 38	3156	56 33 40	3129	58 1 15	3103	59 29 22	3078
	α Pegasi	W.	34 36 56	3609	35 55 21	3533	37 15 9	3463	38 36 14	3400
	Sun	E.	37 6 42	3155	35 39 39	3143	34 12 22	3133	32 44 52	3122
26	Sun	W.	25 56 28	9701	27 33 6	9687	29 10 3	9675	30 47 17	9663
	Regulus	E.	58 0 42	9317	56 15 8	9311	54 29 25	9306	52 43 34	9301
	Spica	E.	112 1 34	9316	110 15 58	9311	108 30 14	9305	106 44 22	9300
27	Sun	W.	38 56 47	9621	40 35 13	9616	42 13 46	9611	43 52 26	9606
	Regulus	E.	43 52 39	9281	42 6 11	9278	40 19 39	9274	38 33 2	9272
	Spica	E.	97 53 15	9279	96 6 44	9275	94 20 8	9272	92 33 28	9270
	Saturn	E.	106 43 29	9288	104 57 12	9285	103 10 50	9281	101 24 23	9279
28	Sun	W.	52 7 12	9590	53 46 21	9588	55 25 33	9586	57 4 47	9585
	Spica	E.	83 39 22	9262	81 52 26	9261	80 5 29	9260	78 18 31	9260
	Saturn	E.	92 31 16	9269	90 44 31	9268	88 57 45	9268	87 10 59	9268
29	Sun	W.	65 21 10	9585	67 0 26	9585	68 39 42	9585	70 18 57	9587
	Jupiter	W.	34 30 12	9368	36 14 33	9366	37 58 56	9364	39 43 22	9364
	Spica	E.	69 23 40	9262	67 36 44	9263	65 49 50	9264	64 2 58	9266
	Saturn	E.	78 17 11	9271	76 30 29	9272	74 43 49	9274	72 57 12	9277
30	Sun	W.	78 34 39	9596	80 13 39	9599	81 52 36	9601	83 31 29	9604
	Jupiter	W.	48 25 42	9364	50 10 8	9366	51 54 32	9368	53 38 53	9369
	Venus	W.	37 23 42	9641	39 1 41	9644	40 39 36	9646	42 17 28	9649
	Pollux	W.	35 48 35	9286	37 34 55	9288	39 21 12	9289	41 7 27	9292
	Mars	W.	34 10 46	9482	35 52 25	9482	37 34 3	9485	39 15 38	9486
	Spica	E.	55 9 15	9276	53 22 40	9278	51 36 8	9281	49 49 40	9284
	Saturn	E.	64 4 58	9290	62 18 44	9294	60 32 35	9297	58 46 31	9302
	Antares	E.	101 3 27	9275	99 16 51	9278	97 30 19	9280	95 43 50	9283
31	Sun	W.	91 44 51	9621	93 23 17	9625	95 1 38	9629	96 39 54	9633
	Jupiter	W.	62 19 55	9382	64 3 56	9384	65 47 53	9388	67 31 45	9391
	Venus	W.	50 25 54	9664	52 3 22	9667	53 40 46	9671	55 18 5	9675
	Pollux	W.	49 57 46	9305	51 43 38	9309	53 29 25	9312	55 15 7	9315
	Mars	W.	47 42 47	9499	49 24 1	9503	51 5 10	9506	52 46 15	9510
	Spica	E.	40 58 28	9300	39 12 28	9303	37 26 33	9307	35 40 44	9311
	Saturn	E.	49 57 53	9336	48 12 32	9333	46 27 20	9339	44 42 17	9346
	Antares	E.	86 52 32	9298	85 6 30	9302	83 20 34	9306	81 34 43	9310

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
18	Antares	W.	104° 3′ 41″	9991	105° 34′ 5″	9963	107° 4′ 39″	9974	108° 35′ 24″	9965
	α Aquilæ	W.	57 27 8	4153	58 36 19	4107	59 46 14	4064	60 56 51	4023
	Sun	E.	65 20 39	3372	63 57 51	3364	62 34 53	3355	61 11 45	3345
19	α Aquilæ	W.	66 59 27	3845	68 13 43	3815	69 28 30	3785	70 43 48	3756
	Fomalhaut	W.	38 35 2	3698	39 53 6	3573	41 12 10	3509	42 32 10	3474
	Sun	E.	54 13 15	3994	52 48 57	3983	51 24 26	3978	49 59 42	3960
20	α Aquilæ	W.	77 7 24	3631	78 25 25	3609	79 43 50	3587	81 2 38	3567
	Fomalhaut	W.	49 24 26	3978	50 49 3	3946	52 14 18	3914	53 40 10	3184
	Sun	E.	42 52 36	3909	41 26 29	3189	40 0 7	3178	38 33 31	3167
21	α Aquilæ	W.	87 41 48	3481	89 2 33	3466	90 23 35	3453	91 44 52	3440
	Fomalhaut	W.	60 57 59	3052	62 27 7	3039	63 56 43	3097	65 26 47	2985
	α Pegasi	W.	39 58 30	3343	41 21 52	3991	42 46 14	3942	44 11 33	3197
	Sun	E.	31 17 9	3119	29 49 14	3104	28 21 9	3096	26 52 54	3000
26	Sun	W.	32 24 46	9653	34 2 29	9644	35 40 24	9636	37 18 30	9628
	Regulus	E.	50 57 36	9296	49 11 31	9291	47 25 19	9288	45 39 2	9284
	Spica	E.	104 58 22	9295	103 12 15	9290	101 26 1	9286	99 39 41	9282
27	Sun	W.	45 31 13	9601	47 10 6	9596	48 49 4	9595	50 28 6	9592
	Regulus	E.	36 46 22	9270	34 59 39	9266	33 12 53	9267	31 26 5	9267
	Spica	E.	90 46 45	9268	88 59 58	9266	87 13 8	9264	85 26 16	9263
	Saturn	E.	99 37 52	9276	97 51 17	9274	96 4 39	9272	94 17 59	9270
28	Sun	W.	58 44 2	9585	60 23 18	9584	62 2 35	9583	63 41 53	9584
	Spica	E.	76 31 32	9260	74 44 33	9260	72 57 35	9260	71 10 37	9261
	Saturn	E.	85 24 12	9266	83 37 26	9266	81 50 40	9269	80 3 55	9270
29	Sun	W.	71 58 10	9568	73 37 21	9569	75 16 30	9592	76 55 36	9594
	Jupiter	W.	41 27 49	9263	43 12 17	9269	44 56 46	9263	46 41 14	9263
	Spica	E.	62 16 8	9266	60 29 21	9269	58 42 36	9271	56 55 54	9273
	Saturn	E.	71 10 38	9279	69 24 7	9281	67 37 40	9284	65 51 17	9287
30	Sun	W.	85 10 18	9607	86 49 3	9610	88 27 44	9614	90 6 20	9618
	Jupiter	W.	55 23 12	9271	57 7 28	9273	58 51 41	9276	60 35 50	9279
	Venus	W.	43 55 17	9652	45 33 2	9654	47 10 44	9657	48 48 21	9660
	Pollux	W.	42 53 38	9294	44 39 46	9297	46 25 50	9300	48 11 50	9309
	Mars	W.	40 57 11	9489	42 38 40	9491	44 20 6	9493	46 1 29	9497
	Spica	E.	48 3 17	9287	46 16 58	9289	44 30 43	9293	42 44 33	9296
	Saturn	E.	57 0 34	9306	55 14 43	9311	53 28 59	9315	51 43 22	9321
	Antares	E.	93 57 26	9286	92 11 6	9289	90 24 50	9292	88 38 39	9295
31	Sun	W.	98 18 4	9638	99 56 8	9642	101 34 6	9646	103 11 58	9652
	Jupiter	W.	69 15 32	9295	70 59 14	9298	72 42 51	9403	74 26 22	9407
	Venus	W.	56 55 19	9678	58 32 28	9683	60 9 31	9687	61 46 28	9691
	Pollux	W.	57 0 44	9319	58 46 16	9323	60 31 42	9327	62 17 2	9331
	Mars	W.	54 27 15	9513	56 8 10	9517	57 48 59	9521	59 29 43	9525
	Spica	E.	33 55 0	9315	32 9 22	9310	30 23 51	9303	28 38 25	9298
	Saturn	E.	42 57 24	9353	41 12 42	9361	39 28 11	9370	37 43 53	9379
	Antares	E.	79 48 58	9314	78 3 19	9317	76 17 45	9322	74 32 17	9326

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from / Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	4 36 25.17	10.231	N.22 2 54.5	+20.39	15 48.41	68.41	2 26.74	0.374
SUN.	2	4 40 30.91	10.247	22 11 52.3	19.43	15 48.28	68.46	2 17.59	0.389
Mon.	3	4 44 37.02	10.262	22 19 26.9	18.46	15 48.16	68.51	2 8.06	0.404
Tues.	4	4 48 43.48	10.276	22 26 38.1	+17.48	15 48.04	68 56	1 58.19	0.418
Wed.	5	4 52 50.28	10.290	22 33 25.8	16.50	15 47.92	68.61	1 47.97	0.432
Thur.	6	4 56 57.40	10.303	22 39 49.9	15.51	15 47.80	68.66	1 37.44	0.445
Frid.	7	5 1 4.83	10.316	22 45 50.2	+14.51	15 47.69	68.71	1 26.60	0.458
Sat.	8	5 5 12.55	10.328	22 51 26.5	13.51	15 47.58	68.75	1 15.47	0.470
SUN.	9	5 9 20.55	10.339	22 56 38.8	12.51	15 47.47	68.78	1 4.06	0.481
Mon.	10	5 13 28.80	10.349	23 1 27.0	+11.50	15 47.37	68.81	0 52.40	0.491
Tues.	11	5 17 37.30	10.359	23 5 51.0	10.49	15 47.27	68.84	0 40.49	0.501
Wed.	12	5 21 46.02	10.368	23 9 50.6	9.47	15 47.17	68.87	0 28.36	0.510
Thur.	13	5 25 54.94	10.376	23 13 25.8	+ 8.45	15 47.07	68.90	0 16.03	0.518
Frid.	14	5 30 4.05	10.383	23 16 36.4	7.43	15 46.98	68.92	0 3.52	0.525
Sat.	15	5 34 13.32	10.389	23 19 22.5	6.40	15 46.89	68.94	0 9.16	0.531
SUN.	16	5 38 22.73	10.394	23 21 43.8	+ 5.37	15 46.81	68.95	0 21.97	0.536
Mon.	17	5 42 32.25	10.398	23 23 40.4	4.34	15 46.73	68.96	0 34.90	0.541
Tues.	18	5 46 41.87	10.402	23 25 12.3	3.31	15 46.66	68.97	0 47.93	0.544
Wed.	19	5 50 51.55	10.404	23 26 19 3	+ 2.28	15 46.59	68.97	1 1.01	0.546
Thur.	20	5 55 1.26	10.405	23 27 1.5	1.24	15 46.53	68.97	1 14.13	0.547
Frid.	21	5 59 10.99	10.405	23 27 18.8	+ 0.20	15 46.47	68.97	1 27.26	0.547
Sat.	22	6 3 20.70	10.404	23 27 11.2	− 0.83	15 46.42	68.97	1 40.38	0.545
SUN.	23	6 7 30.36	10.401	23 26 38.8	1.87	15 46.38	68.96	1 53.44	0.543
Mon.	24	6 11 39.94	10.397	23 25 41.6	2.90	15 46.34	68.95	2 6.43	0.539
Tues.	25	6 15 49.43	10.392	23 24 19.5	− 3.93	15 46.30	68.94	2 19.32	0.534
Wed.	26	6 19 58.78	10.386	23 22 32.8	4.96	15 46.27	68.92	2 32.08	0.528
Thur.	27	6 24 7.98	10.379	23 20 21.3	5.99	15 46.25	68.90	2 44.69	0.521
Frid.	28	6 28 17.00	10.371	23 17 45.2	− 7.01	15 46.23	68.87	2 57.11	0.513
Sat.	29	6 32 25.81	10.362	23 14 44.6	8.03	15 46.22	68.84	3 9.33	0.504
SUN.	30	6 36 34.39	10.352	23 11 19.5	9.05	15 46.21	68.81	3 21.32	0.494
Mon.	31	6 40 42.72	10.341	N.23 7 30.2	−10.06	15 46.20	68.78	3 33.06	0.483

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	THE SUN'S Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	4 36 25.59	10.230	N. 22 3 55.3	+20.39	2 26.73	0.373	4 38 52.32
SUN.	2	4 40 31.30	10.246	22 11 53.1	19.42	2 17.57	0.389	4 42 48.87
Mon.	3	4 44 37.38	10.261	22 19 27.6	18.45	2 8.05	0.404	4 46 45.43
Tues.	4	4 48 43.82	10.275	22 26 38.7	+17.47	1 58.18	0.418	4 50 41.99
Wed.	5	4 52 50.59	10.289	22 33 26.4	16.49	1 47.96	0.432	4 54 38.55
Thur.	6	4 56 57.68	10.302	22 39 50.3	15.50	1 37.43	0.445	4 58 35.11
Frid.	7	5 1 5.07	10.314	22 45 50.5	+14.51	1 26.59	0.458	5 2 31.67
Sat.	8	5 5 12.76	10.326	22 51 26.8	13.51	1 15.46	0.470	5 6 28.22
SUN.	9	5 9 20.73	10.337	22 56 39.1	12.51	1 4.05	0.481	5 10 24.78
Mon.	10	5 13 28.95	10.348	23 1 27.2	+11.50	0 52.39	0.491	5 14 21.34
Tues.	11	5 17 37.42	10.357	23 5 51.2	10.49	0 40.49	0.501	5 18 17.90
Wed.	12	5 21 46.10	10.366	23 9 50.7	9.47	0 28.36	0.510	5 22 14.46
Thur.	13	5 25 54.99	10.374	23 13 25.8	+ 8.45	0 16.03	0.518	5 26 11.02
Frid.	14	5 30 4.06	10.381	23 16 36.4	7.43	0 3.52	0.525	5 30 7.58
Sat.	15	5 34 13.30	10.387	23 19 22.5	6.40	0 9.16	0.531	5 34 4.14
SUN.	16	5 38 22.66	10.392	23 21 43.8	+ 5.37	0 21.97	0.536	5 38 0.70
Mon.	17	5 42 32.15	10.396	23 23 40.4	4.34	0 34.90	0.541	5 41 57.25
Tues.	18	5 46 41.73	10.400	23 25 12.3	3.31	0 47 92	0.544	5 45 53.81
Wed.	19	5 50 51.38	10.402	23 26 19.3	+ 2.28	1 1.00	0.546	5 49 50.37
Thur.	20	5 55 1.05	10.403	23 27 1.5	1.24	1 14.12	0.547	5 53 46.93
Frid.	21	5 59 10.74	10.403	23 27 18.8	+ 0.20	1 27.25	0.547	5 57 43.49
Sat.	22	6 3 20.41	10.402	23 27 11.3	− 0.83	1 40.36	0.545	6 1 40.05
SUN.	23	6 7 30 03	10.399	23 26 38.9	1.87	1 53.43	0.543	6 5 36.61
Mon.	24	6 11 39.58	10.396	23 25 41.7	2.90	2 6.41	0.539	6 9 33.17
Tues.	25	6 15 49 03	10.391	23 24 19.7	− 3.93	2 19.30	0.534	6 13 29.72
Wed.	26	6 19 58.34	10.385	23 22 33.0	4.96	2 32.06	0.528	6 17 26.28
Thur.	27	6 24 7.51	10.378	23 20 21.5	5.99	2 44.66	0.521	6 21 22.84
Frid.	28	6 28 16.49	10.370	23 17 45.5	− 7.01	2 57.09	0.513	6 25 19.40
Sat.	29	6 32 25.26	10.361	23 14 45.0	8.03	3 9.20	0.504	6 29 15.96
SUN.	30	6 36 33.81	10.351	23 11 20.0	9.05	3 21.29	0.494	6 33 12.52
Mon.	31	6 40 42.11	10.340	N. 23 7 30.7	−10.06	3 33.03	0.483	6 37 9.08

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

Diff. for 1 Hour, +9ˢ.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	152	70 42 21.2	41 57.5	143.66	+ 0.12	0.0061774	+24.9	19 17 57.46
2	153	71 39 48.6	39 24.7	143.61	− 0.02	0.0062363	24.2	19 14 1.55
3	154	72 37 14.9	36 50.8	143.57	0.12	0.0062937	23.6	19 10 5.64
4	155	73 34 39.9	34 15.6	143.52	− 0.23	0.0063494	+23.0	19 6 9.72
5	156	74 32 3.9	31 39.4	143.48	0.31	0.0064039	22.4	19 2 13.81
6	157	75 29 26.9	29 2.2	143.44	0.36	0.0064568	21.9	18 58 17.90
7	158	76 26 48.9	26 24.1	143.40	− 0.38	0.0065087	+21.4	18 54 21.99
8	159	77 24 10.1	23 45.1	143.37	0.38	0.0065595	20.8	18 50 26.07
9	160	78 21 30.6	21 5.4	143.34	0.34	0.0066088	20.3	18 46 30.16
10	161	79 18 50.4	18 25.0	143.31	− 0.28	0.0066568	+19.7	18 42 34.25
11	162	80 16 9.7	15 44.1	143.29	0.18	0.0067035	19.1	18 38 38.33
12	163	81 13 28.4	13 2.6	143.27	− 0.07	0.0067485	18.5	18 34 42.42
13	164	82 10 46.8	10 20.8	143.26	+ 0.05	0.0067921	+17.8	18 30 46.51
14	165	83 8 4.7	7 38.5	143.24	0.18	0.0068339	17.0	18 26 50.60
15	166	84 5 22.3	4 55.9	143.23	0.32	0.0068738	16.2	18 22 54.68
16	167	85 2 39.6	2 13.0	143.22	+ 0.44	0.0069117	+15.4	18 18 58.77
17	168	85 59 56.7	59 29.9	143.21	0.55	0.0069476	14.5	18 15 2.86
18	169	86 57 13.5	56 46.5	143.19	0.66	0.0069811	13.5	18 11 6.94
19	170	87 54 30.1	54 2.9	143.18	+ 0.73	0.0070124	+12.5	18 7 11.03
20	171	88 51 46.3	51 19.0	143.17	0.78	0.0070411	11.5	18 3 15.12
21	172	89 49 2.3	48 34.8	143.16	0.79	0.0070673	10.4	17 59 19.20
22	173	90 46 17.9	45 50.2	143.14	+ 0.77	0.0070908	+ 9.3	17 55 23.29
23	174	91 43 33.2	43 5.3	143.13	0.72	0.0071117	8.2	17 51 27.38
24	175	92 40 48.0	40 19.9	143.11	0.64	0.0071301	7.1	17 47 31.47
25	176	93 38 2.5	37 34.2	143.10	+ 0.55	0.0071458	+ 6.0	17 43 35.55
26	177	94 35 16.6	34 48.1	143.08	0.43	0.0071590	5.0	17 39 39.64
27	178	95 32 30.3	32 1.6	143.06	0.31	0.0071699	4.0	17 35 43.73
28	179	96 29 43.5	29 14.6	143.04	+ 0.17	0.0071784	+ 3.0	17 31 47.81
29	180	97 26 56.3	26 27.2	143.03	+ 0.04	0.0071846	2.1	17 27 51.90
30	181	98 24 8.7	23 39.4	143.01	− 0.08	0.0071886	1.3	17 23 55.99
31	182	99 21 20.7	20 51.2	142.99	− 0.19	0.0071909	+ 0.5	17 20 0.08

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0d.0.

Diff. for 1 Hour, −9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 6.2	16 4.0	58 59.6	−0.65	58 51.3	−0.73	7 17.5	1.95	8.0
2	16 1.5	15 58.7	58 42.1	0.80	58 32.0	0.88	8 4.4	1.97	9.0
3	15 55.7	15 52.4	58 20.9	0.96	58 8.9	1.03	8 52.4	2.04	10.0
4	15 49.0	15 45.3	57 56.1	−1.10	57 42.5	−1.17	9 42.5	2.14	11.0
5	15 41.3	15 37.2	57 28.1	1.23	57 13.0	1.28	10 35 2	2.25	12.0
6	15 33.0	15 28.6	56 57.4	1.32	56 41.4	1.35	11 30.4	2.33	13.0
7	15 24.2	15 19.7	56 25.1	−1.36	56 8.8	−1.35	12 26.7	2.35	14.0
8	15 15.4	15 11.1	55 52.7	1.33	55 37.0	1.28	13 22.3	2.28	15.0
9	15 7.0	15 3.2	55 22.0	1.21	55 7.9	1.13	14 15.6	2.15	16.0
10	14 59.6	14 56.5	54 54.9	−1.03	54 43.3	−0.90	15 5.3	1.99	17.0
11	14 53.7	14 51.5	54 33.3	0.76	54 25.1	0.60	15 51.4	1.86	18.0
12	14 49.8	14 48.7	54 18.9	0.43	54 14.9	−0.24	16 34.3	1.73	19.0
13	14 48.3	14 48.5	54 13.2	−0.04	54 14.0	+0.16	17 14.9	1.66	20.0
14	14 49.3	14 50.9	54 17.1	+0.37	54 22.9	0.59	17 54.4	1.63	21.0
15	14 53.2	14 56.1	54 31.2	0.80	54 42.0	1.00	18 33.7	1.66	22.0
16	14 59.7	15 4.0	54 55.3	+1.20	55 10.9	+1.39	19 14.3	1.74	23.0
17	15 8.8	15 14.2	55 28.7	1.56	55 48.4	1.72	19 57.5	1.87	24.0
18	15 20.0	15 26.2	56 9.9	1.85	56 32.7	1.94	20 44.6	2.05	25.0
19	15 32.7	15 39.3	56 56.4	+2.00	57 20.8	+2.03	21 36.6	2.28	26.0
20	15 46.0	15 52.5	57 45.2	2.02	58 9.2	1.96	22 34.0	2.50	27.0
21	15 58.8	16 4.7	58 32.2	1.86	58 53.8	1.72	23 35.9	2.64	28.0
22	16 10.0	16 14.7	59 13.4	+1.54	59 30.7	+1.32	6		29.0
23	16 18.6	16 21.7	59 45.1	1.08	59 56.5	0.82	0 39.8	2.66	0.6
24	16 24.0	16 25.3	60 4.7	+0.55	60 9.6	+0.26	1 42.5	2.55	1.6
25	16 25.7	16 25.2	60 11.0	−0.01	60 9.3	−0.26	2 41.6	2.37	2.6
26	16 24.0	16 22.0	60 4.7	0.50	59 57.4	0.70	3 36.4	2.19	3.6
27	16 19.4	16 16.2	59 47.8	0.88	59 36.2	1.03	4 27.3	2.06	4.6
28	16 12.6	16 8.7	59 23.0	−1.15	59 8.6	−1.24	5 15.5	1.98	5.6
29	16 4.5	16 0.1	58 53.2	1.31	58 37.2	1.35	6 2.6	1.96	6 6
30	15 55.7	15 51.2	58 20.8	1.38	58 4.2	1.38	6 50.0	2.00	7.6
31	15 46.6	15 42.2	57 47.6	−1.38	57 31.2	−1.35	7 38.9	2.08	8.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 1.			
	h m s	s	° ′ ″	″
0	11 42 33.77	2.0594	N. 1 10 58.8	16.688
1	11 44 37.30	2.0583	0 54 17.5	16.688
2	11 46 40.77	2.0574	0 37 36.2	16.687
3	11 48 44.19	2.0566	0 20 55.0	16.684
4	11 50 47.56	2.0558	N. 0 4 14.1	16.678
5	11 52 50.88	2.0550	S. 0 12 26.4	16.672
6	11 54 54.16	2.0544	0 29 6.5	16.664
7	11 56 57.41	2.0540	0 45 46.1	16.655
8	11 59 0.64	2.0536	1 2 25.1	16.645
9	12 1 3.84	2.0533	1 19 3.5	16.634
10	12 3 7.03	2.0531	1 35 41.2	16.621
11	12 5 10.21	2.0529	1 52 18.0	16.606
12	12 7 13.38	2.0528	2 8 53.9	16.590
13	12 9 16.55	2.0529	2 25 28.8	16.573
14	12 11 19.73	2.0531	2 42 2.7	16.555
15	12 13 22.92	2.0533	2 58 35.4	16.535
16	12 15 26.13	2.0536	3 15 6.9	16.513
17	12 17 29.35	2.0539	3 31 37.0	16.490
18	12 19 32.60	2.0545	3 48 5.7	16.467
19	12 21 35.89	2.0551	4 4 33.0	16.442
20	12 23 39.21	2.0557	4 20 58.7	16.414
21	12 25 42.57	2.0564	4 37 22.7	16.386
22	12 27 45.98	2.0573	4 53 45.0	16.357
23	12 29 49.44	2.0582	S. 5 10 5.5	16.327
	SUNDAY 2.			
0	12 31 52.96	2.0592	S. 5 26 24.2	16.295
1	12 33 56.55	2.0603	5 42 40.9	16.261
2	12 36 0.20	2.0614	5 58 55.5	16.225
3	12 38 3.92	2.0627	6 15 7.9	16.189
4	12 40 7.72	2.0640	6 31 18.1	16.152
5	12 42 11.60	2.0654	6 47 26.1	16.113
6	12 44 15.57	2.0669	7 3 31.7	16.072
7	12 46 19.63	2.0685	7 19 34.8	16.031
8	12 48 23.79	2.0702	7 35 35.4	15.987
9	12 50 28.06	2.0720	7 51 33.3	15.942
10	12 52 32.43	2.0738	8 7 28.5	15.897
11	12 54 36.91	2.0757	8 23 21.0	15.851
12	12 56 41.51	2.0777	8 39 10.6	15.802
13	12 58 46.23	2.0797	8 54 57.3	15.752
14	13 0 51.07	2.0817	9 10 40.9	15.701
15	13 2 56.04	2.0840	9 26 21.4	15.648
16	13 5 1.15	2.0863	9 41 58.7	15.594
17	13 7 6.40	2.0886	9 57 32.7	15.539
18	13 9 11.78	2.0909	10 13 3.4	15.483
19	13 11 17.31	2.0935	10 28 30.7	15.425
20	13 13 23.00	2.0961	10 43 54.4	15.365
21	13 15 28.84	2.0987	10 59 14.5	15.304
22	13 17 34.84	2.1013	11 14 30.9	15.243
23	13 19 41.00	2.1041	11 29 43.6	15.180
24	13 21 47.33	2.1069	S. 11 44 52.5	15.115
	MONDAY 3.			
0	13 21 47.33	2.1069	S. 11 44 52.5	15.115
1	13 23 53.83	2.1096	11 59 57.4	15.049
2	13 26 0.51	2.1128	12 14 58.3	14.982
3	13 28 7.37	2.1158	12 29 55.2	14.913
4	13 30 14.41	2.1189	12 44 47.9	14.842
5	13 32 21.64	2.1220	12 59 36.3	14.771
6	13 34 29.05	2.1251	13 14 20.4	14.698
7	13 36 36.65	2.1284	13 29 0.1	14.624
8	13 38 44.46	2.1318	13 43 35.3	14.548
9	13 40 52.47	2.1352	13 58 5.9	14.472
10	13 43 0.68	2.1386	14 12 31.9	14.394
11	13 45 9.10	2.1421	14 26 53.2	14.314
12	13 47 17.73	2.1456	14 41 9.6	14.233
13	13 49 26.57	2.1492	14 55 21.1	14.151
14	13 51 35.63	2.1528	15 9 27.7	14.068
15	13 53 44.91	2.1565	15 23 29.3	13.983
16	13 55 54.41	2.1602	15 37 25.7	13.896
17	13 58 4.13	2.1639	15 51 16.8	13.808
18	14 0 14.08	2.1677	16 5 2.7	13.720
19	14 2 24.26	2.1716	16 18 43.2	13.629
20	14 4 34.67	2.1754	16 32 18.2	13.537
21	14 6 45.31	2.1793	16 45 47.7	13.445
22	14 8 56.19	2.1833	16 59 11.6	13.351
23	14 11 7.31	2.1874	S. 17 12 29.8	13.255
	TUESDAY 4.			
0	14 13 18.68	2.1915	S. 17 25 42.2	13.158
1	14 15 30.29	2.1955	17 38 48.8	13.060
2	14 17 42.14	2.1995	17 51 49.4	12.960
3	14 19 54.23	2.2036	18 4 44.0	12.859
4	14 22 6.57	2.2077	18 17 32.5	12.757
5	14 24 19.16	2.2119	18 30 14.9	12.654
6	14 26 32.00	2.2161	18 42 51.0	12.549
7	14 28 45.09	2.2203	18 55 20.8	12.443
8	14 30 58.43	2.2245	19 7 44.2	12.336
9	14 33 12.03	2.2287	19 20 1.1	12.227
10	14 35 25.88	2.2330	19 32 11.5	12.118
11	14 37 39.99	2.2372	19 44 15.3	12.007
12	14 39 54.35	2.2415	19 56 12.3	11.894
13	14 42 8.97	2.2457	20 8 2.5	11.780
14	14 44 23.84	2.2500	20 19 45.9	11.666
15	14 46 38.97	2.2543	20 31 22.4	11.550
16	14 48 54.36	2.2586	20 42 51.9	11.432
17	14 51 10.01	2.2629	20 54 14.3	11.313
18	14 53 25.91	2.2672	21 5 29.5	11.193
19	14 55 42.07	2.2714	21 16 37.5	11.072
20	14 57 58.48	2.2757	21 27 38.2	10.950
21	15 0 15.15	2.2799	21 38 31.5	10.827
22	15 2 32.07	2.2841	21 49 17.4	10.703
23	15 4 49.24	2.2883	21 59 55.8	10.577
24	15 7 6.67	2.2926	S. 22 10 26.6	10.449

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 5.			
	h m s	s	° ′ ″	″
0	15 7 6.67	2.3936	S. 22 10 26.6	10.449
1	15 9 24.35	2.3967	22 20 49.7	10.381
2	15 11 42.28	2.3998	22 31 5.1	10.198
3	15 14 0.45	2.4049	22 41 12.8	10.009
4	15 16 18.87	2.3091	22 51 12.6	9.831
5	15 18 37.54	2.3138	23 1 4.5	9.798
6	15 20 56.45	2.3179	23 10 48.4	9.664
7	15 23 15.60	2.3219	23 20 24.2	9.530
8	15 25 34.99	2.3251	23 29 52.0	9.395
9	15 27 54.61	2.3290	23 39 11.6	9.258
10	15 30 14.47	2.3329	23 48 22.9	9.120
11	15 32 34.56	2.3367	23 57 26.0	8.969
12	15 34 54.87	2.3404	24 6 20.7	8.841
13	15 37 15.41	2.3442	24 15 6.9	8.709
14	15 39 36.17	2.3479	24 23 44.7	8.559
15	15 41 57.16	2.3516	24 32 14.0	8.417
16	15 44 18.36	2.3551	24 40 34.7	8.273
17	15 46 39.77	2.3585	24 48 46.8	8.128
18	15 49 1.38	2.3619	24 56 50.1	7.983
19	15 51 23.20	2.3653	25 4 44.7	7.837
20	15 53 45.22	2.3687	25 12 30.5	7.689
21	15 56 7.44	2.3719	25 20 7.4	7.541
22	15 58 29.85	2.3751	25 27 35.4	7.388
23	16 0 52.45	2.3788	S. 25 34 54.5	7.243
	THURSDAY 6.			
0	16 3 15.23	2.3819	S. 25 42 4.6	7.093
1	16 5 38.19	2.3841	25 49 5.6	6.942
2	16 8 1.32	2.3869	25 55 57.6	6.790
3	16 10 24.62	2.3897	26 2 40.4	6.637
4	16 12 48.08	2.3923	26 9 14.0	6.484
5	16 15 11.70	2.3950	26 15 38.5	6.331
6	16 17 35.48	2.3976	26 21 53.7	6.176
7	16 19 59.41	2.3999	26 27 59.6	6.021
8	16 22 23.47	2.4021	26 33 56.2	5.865
9	16 24 47.66	2.4042	26 39 43.4	5.708
10	16 27 11.98	2.4064	26 45 21.2	5.552
11	16 29 36.43	2.4085	26 50 49.6	5.395
12	16 32 1.00	2.4104	26 56 8.6	5.237
13	16 34 25.68	2.4122	27 1 18.1	5.079
14	16 36 50.47	2.4139	27 6 18.1	4.920
15	16 39 15.35	2.4154	27 11 8.5	4.760
16	16 41 40.32	2.4169	27 15 49.3	4.601
17	16 44 5.38	2.4184	27 20 20.6	4.442
18	16 46 30.53	2.4197	27 24 42.3	4.281
19	16 48 55.75	2.4208	27 28 54.3	4.120
20	16 51 21.03	2.4218	27 32 56.7	3.959
21	16 53 46.37	2.4227	27 36 49.4	3.798
22	16 56 11.76	2.4236	27 40 32.4	3.637
23	16 58 37.20	2.4243	27 44 5.8	3.476
24	17 1 2.68	2.4249	S. 27 47 29.5	3.314

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 7.			
	h m s	s	° ′ ″	″
0	17 1 2.68	2.4249	S. 27 47 29.5	3.314
1	17 3 26.19	2.4253	27 50 43.5	3.152
2	17 5 53.72	2.4257	27 53 47.7	2.989
3	17 8 19.27	2.4259	27 56 42.2	2.827
4	17 10 44.83	2.4260	27 59 27.0	2.665
5	17 13 10.39	2.4259	28 2 2.0	2.503
6	17 15 35.94	2.4257	28 4 27.3	2.341
7	17 18 1.48	2.4255	28 6 42.9	2.179
8	17 20 27.00	2.4259	28 8 48.8	2.017
9	17 22 52.50	2.4247	28 10 44.9	1.854
10	17 25 17.96	2.4240	28 12 31.3	1.692
11	17 27 43.38	2.4239	28 14 8.0	1.530
12	17 30 8.74	2.4223	28 15 34.9	1.368
13	17 32 34.05	2.4213	28 16 52.1	1.207
14	17 34 59.30	2.4209	28 17 59.7	1.046
15	17 37 24.47	2.4189	28 18 57.6	0.885
16	17 39 49.56	2.4175	28 19 45.9	0.724
17	17 42 14.57	2.4161	28 20 24.5	0.563
18	17 44 39.49	2.4144	28 20 53.4	0.402
19	17 47 4.30	2.4127	28 21 12.7	0.242
20	17 49 29.01	2.4108	28 21 22.5	− 0.083
21	17 51 53.60	2.4086	28 21 22.7	+ 0.077
22	17 54 18.06	2.4067	28 21 13.3	0.236
23	17 56 42.40	2.4045	S. 28 20 54.4	0.394
	SATURDAY 8.			
0	17 59 6.60	2.4021	S. 28 20 26.0	0.553
1	18 1 30.65	2.3996	28 19 48.1	0.710
2	18 3 54.55	2.3971	28 19 0.8	0.867
3	18 6 18.30	2.3944	28 18 4.1	1.023
4	18 8 41.88	2.3916	28 16 58.0	1.179
5	18 11 5.29	2.3887	28 15 42.6	1.334
6	18 13 28.53	2.3857	28 14 17.9	1.489
7	18 15 51.58	2.3826	28 12 43.9	1.643
8	18 18 14.44	2.3793	28 11 0.7	1.797
9	18 20 37.10	2.3760	28 9 8.3	1.950
10	18 22 59.56	2.3726	28 7 6.7	2.102
11	18 25 21.81	2.3690	28 4 56.0	2.253
12	18 27 43.84	2.3653	28 2 36.3	2.403
13	18 30 5.65	2.3616	28 0 7.6	2.554
14	18 32 27.23	2.3577	27 57 29.8	2.704
15	18 34 48.58	2.3538	27 54 43.1	2.852
16	18 37 9.69	2.3498	27 51 47.5	3.000
17	18 39 30.56	2.3457	27 48 43.1	3.147
18	18 41 51.17	2.3414	27 45 29.9	3.293
19	18 44 11.53	2.3371	27 42 7.9	3.438
20	18 46 31.63	2.3327	27 38 37.3	3.582
21	18 48 51.46	2.3282	27 34 58.1	3.725
22	18 51 11.02	2.3237	27 31 10.3	3.868
23	18 53 30.31	2.3192	27 27 13.9	4.010
24	18 55 49.32	2.3145	S. 27 23 9.1	4.150

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 9.					**TUESDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 55 49.32	2.3145	S. 27 23 9.1	4.150	0	20 40 36.57	2.0442	S. 21 41 21.6	9.573
1	18 58 8.05	2.3097	27 18 55.9	4.289	1	20 42 39.05	2.0385	21 31 38.5	9.702
2	19 0 26.48	2.3046	27 14 34.3	4.429	2	20 44 41.19	2.0329	21 21 50.1	9.849
3	19 2 44.62	2.2990	27 10 4.4	4.567	3	20 46 43.00	2.0273	21 11 56.6	9.935
4	19 5 2.47	2.2940	27 5 26.3	4.704	4	20 48 44.47	2.0217	21 1 57.9	10.021
5	19 7 20.01	2.2886	27 0 39.9	4.841	5	20 50 45.60	2.0161	20 51 54.1	10.105
6	19 9 37.25	2.2847	26 55 45.4	4.975	6	20 52 46.40	2.0106	20 41 45.3	10.188
7	19 11 54.18	2.2796	26 50 42.9	5.109	7	20 54 46.87	2.0051	20 31 31.5	10.271
8	19 14 10.80	2.2744	26 45 32.3	5.242	8	20 56 47.01	1.9996	20 21 12.8	10.352
9	19 16 27.11	2.2696	26 40 13.8	5.374	9	20 58 46.82	1.9942	20 10 49.3	10.432
10	19 18 43.10	2.2638	26 34 47.4	5.505	10	21 0 46.31	1.9888	20 0 21.0	10.511
11	19 20 58.77	2.2584	26 29 13.2	5.634	11	21 2 45.48	1.9834	19 49 48.0	10.588
12	19 23 14.11	2.2530	26 23 31.3	5.763	12	21 4 44.32	1.9781	19 39 10.4	10.665
13	19 25 29.13	2.2475	26 17 41.7	5.891	13	21 6 42.85	1.9729	19 28 28.2	10.742
14	19 27 43.81	2.2419	26 11 44.4	6.018	14	21 8 41.07	1.9677	19 17 41.4	10.818
15	19 29 58.16	2.2364	26 5 39.5	6.144	15	21 10 38.97	1.9625	19 6 50.1	10.892
16	19 32 12.18	2.2308	25 59 27.1	6.268	16	21 12 36.57	1.9574	18 55 54.4	10.964
17	19 34 25.86	2.2252	25 53 7.3	6.392	17	21 14 33.86	1.9523	18 44 54.4	11.036
18	19 36 39.20	2.2195	25 46 40.1	6.514	18	21 16 30.85	1.9473	18 33 50.1	11.107
19	19 38 52.20	2.2139	25 40 5.6	6.635	19	21 18 27.54	1.9423	18 22 41.5	11.178
20	19 41 4.86	2.2081	25 33 23.9	6.756	20	21 20 23.93	1.9374	18 11 28.7	11.247
21	19 43 17.17	2.2023	25 26 34.9	6.876	21	21 22 20.03	1.9325	18 0 11.8	11.316
22	19 45 29.13	2.1965	25 19 38.8	6.993	22	21 24 15.83	1.9277	17 48 50.8	11.383
23	19 47 40.75	2.1907	S. 25 12 35.7	7.110	23	21 26 11.35	1.9229	S. 17 37 25.8	11.449
	MONDAY 10.					**WEDNESDAY 12.**			
0	19 49 52.02	2.1849	S. 25 5 25.6	7.226	0	21 28 6.58	1.9182	S. 17 25 56.9	11.514
1	19 52 2.94	2.1791	24 58 8.6	7.340	1	21 30 1.53	1.9135	17 14 24.1	11.579
2	19 54 13.51	2.1732	24 50 44.8	7.454	2	21 31 56.20	1.9089	17 2 47.4	11.644
3	19 56 23.72	2.1673	24 43 14.1	7.567	3	21 33 50.60	1.9044	16 51 6.8	11.707
4	19 58 33.58	2.1614	24 35 36.7	7.678	4	21 35 44.73	1.8999	16 39 22.5	11.769
5	20 0 43.09	2.1555	24 27 52.7	7.788	5	21 37 38.59	1.8954	16 27 34.5	11.830
6	20 2 52.24	2.1496	24 20 2.1	7.898	6	21 39 32.18	1.8911	16 15 42.9	11.890
7	20 5 1.04	2.1437	24 12 5.0	8.006	7	21 41 25.52	1.8868	16 3 47.7	11.949
8	20 7 9.48	2.1377	24 4 1.4	8.113	8	21 43 18.60	1.8825	15 51 49.0	12.007
9	20 9 17.57	2.1318	23 55 51.5	8.218	9	21 45 11.42	1.8783	15 39 46.8	12.065
10	20 11 25.30	2.1259	23 47 35.3	8.323	10	21 47 3.99	1.8742	15 27 41.2	12.122
11	20 13 32.68	2.1201	23 39 12.8	8.427	11	21 48 56.32	1.8701	15 15 32.1	12.179
12	20 15 39.71	2.1142	23 30 44.1	8.529	12	21 50 48.40	1.8660	15 3 19.7	12.234
13	20 17 46.38	2.1083	23 22 9.3	8.631	13	21 52 40.24	1.8621	14 51 4.1	12.288
14	20 19 52.70	2.1023	23 13 28.4	8.731	14	21 54 31.85	1.8582	14 38 45.2	12.342
15	20 21 58.66	2.0964	23 4 41.6	8.829	15	21 56 23.23	1.8544	14 26 23.1	12.395
16	20 24 4.27	2.0906	22 55 48.9	8.927	16	21 58 14.38	1.8507	14 13 57.8	12.447
17	20 26 9.53	2.0847	22 46 50.3	9.025	17	22 0 5.31	1.8470	14 1 29.5	12.497
18	20 28 14.43	2.0789	22 37 45.9	9.121	18	22 1 56.02	1.8434	13 48 58.2	12.547
19	20 30 18.99	2.0731	22 28 35.8	9.216	19	22 3 46.52	1.8398	13 36 23.9	12.597
20	20 32 23.20	2.0672	22 19 20.0	9.310	20	22 5 36.80	1.8362	13 23 46.6	12.645
21	20 34 27.06	2.0614	22 9 58.6	9.403	21	22 7 26.87	1.8328	13 11 6.5	12.693
22	20 36 30.57	2.0557	22 0 31.7	9.494	22	22 9 16.74	1.8295	12 58 23.5	12.740
23	20 38 33.74	2.0500	21 50 59.3	9.584	23	22 11 6.41	1.8263	12 45 37.7	12.787
24	20 40 36.57	2.0442	S. 21 41 21.6	9.673	24	22 12 55.89	1.8231	S. 12 32 49.1	12.832

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 13.			
	h m s	s	° ′ ″	″
0	22 12 55.89	1.8831	S. 12 32 49.1	12.832
1	22 14 45.18	1.8198	12 19 57.8	12.877
2	22 16 34.27	1.8167	12 7 3.9	12.921
3	22 18 23.18	1.8137	11 54 7.3	12.964
4	22 20 11.92	1.8108	11 41 8.2	13.007
5	22 22 0.48	1.8079	11 28 6.5	13.049
6	22 23 48.87	1.8051	11 15 2.3	13.090
7	22 25 37.10	1.8024	11 1 55.7	13.130
8	22 27 25.16	1.7997	10 48 46.7	13.170
9	22 29 13.06	1.7971	10 35 35.3	13.209
10	22 31 0.81	1.7946	10 22 21.6	13.247
11	22 32 48.42	1.7922	10 9 5.7	13.284
12	22 34 35.88	1.7898	9 55 47.5	13.321
13	22 36 23.20	1.7876	9 42 27.1	13.357
14	22 38 10.39	1.7853	9 29 4.6	13.392
15	22 39 57.44	1.7831	9 15 40.0	13.427
16	22 41 44.36	1.7810	9 2 13.3	13.461
17	22 43 31.16	1.7791	8 48 44.6	13.494
18	22 45 17.85	1.7772	8 35 14.0	13.527
19	22 47 4.42	1.7753	8 21 41.4	13.559
20	22 48 50.88	1.7735	8 8 6.9	13.591
21	22 50 37.24	1.7718	7 54 30.5	13.622
22	22 52 23.50	1.7702	7 40 52.3	13.651
23	22 54 9.66	1.7686	S. 7 27 12.4	13.680
	FRIDAY 14.			
0	22 55 55.73	1.7671	S. 7 13 30.7	13.709
1	22 57 41.71	1.7658	6 59 47.3	13.737
2	22 59 27.62	1.7645	6 46 2.2	13.764
3	23 1 13.45	1.7633	6 32 15.6	13.790
4	23 2 59.20	1.7619	6 18 27.4	13.817
5	23 4 44.88	1.7609	6 4 37.6	13.843
6	23 6 30.51	1.7600	5 50 46.3	13.867
7	23 8 16.08	1.7590	5 36 53.6	13.891
8	23 10 1.59	1.7581	5 22 59.4	13.915
9	23 11 47.05	1.7573	5 9 3.8	13.937
10	23 13 32.46	1.7566	4 55 6.9	13.959
11	23 15 17.84	1.7560	4 41 8.7	13.981
12	23 17 3.18	1.7554	4 27 9.2	14.002
13	23 18 48.49	1.7550	4 13 8.4	14.022
14	23 20 33.78	1.7546	3 59 6.5	14.041
15	23 22 19.04	1.7543	3 45 3.5	14.059
16	23 24 4.29	1.7541	3 30 59.4	14.078
17	23 25 49.53	1.7538	3 16 54.2	14.096
18	23 27 34.75	1.7537	3 2 47.9	14.113
19	23 29 19.97	1.7537	2 48 40.6	14.129
20	23 31 5.20	1.7539	2 34 32.4	14.144
21	23 32 50.44	1.7541	2 20 23.3	14.159
22	23 34 35.69	1.7543	2 6 13.3	14.174
23	23 36 20.95	1.7545	1 52 2.4	14.187
24	23 38 6.23	1.7549	S. 1 37 50.8	14.200

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 15.			
	h m s	s	° ′ ″	″
0	23 38 6.23	1.7549	S. 1 37 50.8	14.200
1	23 39 51.54	1.7554	1 23 38.4	14.212
2	23 41 36.88	1.7560	1 9 25.3	14.224
3	23 43 22.26	1.7567	0 55 11.5	14.236
4	23 45 7.68	1.7574	0 40 57.0	14.246
5	23 46 53.15	1.7582	0 26 42.0	14.255
6	23 48 38.67	1.7591	S. 0 12 26.4	14.265
7	23 50 24.24	1.7601	N. 0 1 49.8	14.273
8	23 52 9.88	1.7612	0 16 6.4	14.280
9	23 53 55.58	1.7623	0 30 23.4	14.287
10	23 55 41.35	1.7635	0 44 40.8	14.293
11	23 57 27.20	1.7648	0 58 58.6	14.299
12	23 59 13.13	1.7662	1 13 16.7	14.304
13	0 0 59.14	1.7677	1 27 35.1	14.308
14	0 2 45.25	1.7692	1 41 53.7	14.312
15	0 4 31.45	1.7708	1 56 12.5	14.315
16	0 6 17.75	1.7726	2 10 31.5	14.317
17	0 8 4.16	1.7744	2 24 50.6	14.318
18	0 9 50.67	1.7763	2 39 9.7	14.318
19	0 11 37.30	1.7782	2 53 28.8	14.319
20	0 13 24.05	1.7803	3 7 48.0	14.319
21	0 15 10.93	1.7824	3 22 7.1	14.317
22	0 16 57.94	1.7847	3 36 26.1	14.315
23	0 18 45.09	1.7869	N. 3 50 44.9	14.312
	SUNDAY 16.			
0	0 20 32.37	1.7893	N. 4 5 3.6	14.309
1	0 22 19.80	1.7918	4 19 22.0	14.304
2	0 24 7.38	1.7943	4 33 40.1	14.299
3	0 25 55.12	1.7970	4 47 57.9	14.293
4	0 27 43.02	1.7997	5 2 15.3	14.286
5	0 29 31.09	1.8026	5 16 32.2	14.279
6	0 31 19.33	1.8055	5 30 48.7	14.271
7	0 33 7.75	1.8085	5 45 4.7	14.262
8	0 34 56.35	1.8115	5 59 20.1	14.251
9	0 36 45.13	1.8147	6 13 34.8	14.240
10	0 38 34.11	1.8179	6 27 48.9	14.229
11	0 40 23.28	1.8212	6 42 2.3	14.217
12	0 42 12.65	1.8246	6 56 14.9	14.203
13	0 44 2.23	1.8282	7 10 26.7	14.189
14	0 45 52.03	1.8318	7 24 37.6	14.174
15	0 47 42.04	1.8354	7 38 47.6	14.158
16	0 49 32.28	1.8392	7 52 56.6	14.142
17	0 51 22.75	1.8430	8 7 4.6	14.125
18	0 53 13.44	1.8468	8 21 11.6	14.107
19	0 55 4.37	1.8509	8 35 17.4	14.087
20	0 56 55.55	1.8551	8 49 22.0	14.067
21	0 58 46.98	1.8593	9 3 25.4	14.046
22	1 0 38.67	1.8636	9 17 27.5	14.023
23	1 2 30.61	1.8679	9 31 28.2	14.000
24	1 4 22.81	1.8723	N. 9 45 27.5	13.977

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 17.			
	h m s	s	° ′ ″	″
0	1 4 22.81	1.8793	N. 9 45 27.5	13.977
1	1 6 15.28	1.8766	9 59 25.4	13.958
2	1 8 8.03	1.8815	10 13 21.7	13.935
3	1 10 1.06	1.8862	10 27 16.4	13.896
4	1 11 54.37	1.8910	10 41 9.4	13.870
5	1 13 47.98	1.8958	10 55 0.8	13.842
6	1 15 41.88	1.9006	11 8 50.4	13.811
7	1 17 36.08	1.9059	11 22 38.1	13.780
8	1 19 30.59	1.9111	11 36 24.0	13.748
9	1 21 25.41	1.9163	11 50 7.9	13.714
10	1 23 20.54	1.9216	12 3 49.7	13.680
11	1 25 16.00	1.9270	12 17 29.5	13.646
12	1 27 11.78	1.9324	12 31 7.2	13.610
13	1 29 7.89	1.9380	12 44 42.7	13.572
14	1 31 4.34	1.9437	12 58 15.8	13.532
15	1 33 1.13	1.9494	13 11 46.5	13.492
16	1 34 58.27	1.9552	13 25 14.8	13.452
17	1 36 55.76	1.9611	13 38 40.7	13.410
18	1 38 53.60	1.9670	13 52 4.0	13.366
19	1 40 51.80	1.9731	14 5 24.6	13.321
20	1 42 50.37	1.9792	14 18 42.5	13.276
21	1 44 49.31	1.9854	14 31 57.7	13.229
22	1 46 48.62	1.9918	14 45 10.0	13.181
23	1 48 48.32	1.9982	N.14 58 19.4	13.131
	TUESDAY 18.			
0	1 50 48.40	2.0046	N.15 11 25.7	13.079
1	1 52 48.87	2.0111	15 24 28.9	13.027
2	1 54 49.73	2.0177	15 37 29.0	12.975
3	1 56 50.99	2.0243	15 50 25.9	12.920
4	1 58 52.65	2.0312	16 3 19.4	12.864
5	2 0 54.73	2.0381	16 16 9.5	12.807
6	2 2 57.22	2.0449	16 28 56.2	12.748
7	2 5 0.12	2.0519	16 41 39.3	12.687
8	2 7 3.45	2.0590	16 54 18.7	12.626
9	2 9 7.20	2.0661	17 6 54.4	12.563
10	2 11 11.38	2.0733	17 19 26.3	12.499
11	2 13 16.00	2.0806	17 31 54.3	12.433
12	2 15 21.05	2.0879	17 44 18.3	12.366
13	2 17 26.55	2.0953	17 56 38.2	12.297
14	2 19 32.49	2.1027	18 8 54.0	12.227
15	2 21 38.88	2.1102	18 21 5.5	12.156
16	2 23 45.72	2.1178	18 33 12.7	12.083
17	2 25 53.02	2.1255	18 45 15.4	12.008
18	2 28 0.78	2.1332	18 57 13.6	11.932
19	2 30 9.00	2.1409	19 9 7.2	11.854
20	2 32 17.69	2.1488	19 20 56.1	11.774
21	2 34 26.86	2.1567	19 32 40.1	11.693
22	2 36 36.50	2.1647	19 44 19.3	11.612
23	2 38 46.62	2.1727	19 55 53.5	11.528
24	2 40 57.22	2.1807	N.20 7 22.6	11.442

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 19.			
	h m s	s	° ′ ″	″
0	2 40 57.22	2.1807	N.20 7 22.6	11.442
1	2 43 8.30	2.1888	20 18 46.5	11.355
2	2 45 19.87	2.1969	20 30 5.2	11.266
3	2 47 31.93	2.2051	20 41 18.4	11.174
4	2 49 44.48	2.2133	20 52 26.1	11.082
5	2 51 57.52	2.2215	21 3 28.3	10.989
6	2 54 11.06	2.2298	21 14 24.8	10.893
7	2 56 25.10	2.2382	21 25 15.5	10.796
8	2 58 39.64	2.2465	21 36 0.3	10.697
9	3 0 54.68	2.2548	21 46 39.1	10.596
10	3 3 10.22	2.2632	21 57 11.8	10.493
11	3 5 26.27	2.2717	22 7 38.3	10.388
12	3 7 42.83	2.2802	22 17 58.4	10.282
13	3 9 59.89	2.2886	22 28 12.1	10.174
14	3 12 17.46	2.2972	22 38 19.3	10.066
15	3 14 35.55	2.3057	22 48 20.0	9.955
16	3 16 54.15	2.3142	22 58 13.9	9.842
17	3 19 13.26	2.3227	23 8 1.0	9.727
18	3 21 32.88	2.3312	23 17 41.1	9.610
19	3 23 53.01	2.3397	23 27 14.2	9.492
20	3 26 13.65	2.3483	23 36 40.1	9.371
21	3 28 34.81	2.3569	23 45 58.7	9.248
22	3 30 56.48	2.3653	23 55 9.9	9.125
23	3 33 18.65	2.3738	N.24 4 13.7	9.000
	THURSDAY 20.			
0	3 35 41.33	2.3823	N.24 13 9.9	8.872
1	3 38 4.52	2.3908	24 21 58.4	8.743
2	3 40 28.22	2.3993	24 30 39.1	8.612
3	3 42 52.43	2.4077	24 39 11.8	8.478
4	3 45 17.14	2.4160	24 47 36.5	8.344
5	3 47 42.35	2.4244	24 55 53.1	8.207
6	3 50 8.07	2.4327	25 4 1.4	8.069
7	3 52 34.28	2.4410	25 12 1.4	7.929
8	3 55 0.99	2.4492	25 19 52.9	7.787
9	3 57 28.19	2.4574	25 27 35.8	7.643
10	3 59 55.88	2.4655	25 35 10.0	7.498
11	4 2 24.05	2.4735	25 42 35.5	7.351
12	4 4 52.70	2.4815	25 49 52.1	7.202
13	4 7 21.83	2.4895	25 56 59.7	7.051
14	4 9 51.44	2.4974	26 3 58.2	6.898
15	4 12 21.52	2.5052	26 10 47.5	6.744
16	4 14 52.07	2.5130	26 17 27.5	6.588
17	4 17 23.08	2.5206	26 23 58.1	6.430
18	4 19 54.54	2.5281	26 30 19.1	6.270
19	4 22 26.45	2.5356	26 36 30.5	6.109
20	4 24 58.81	2.5430	26 42 32.2	5.947
21	4 27 31.61	2.5502	26 48 24.2	5.783
22	4 30 4.84	2.5574	26 54 6.2	5.617
23	4 32 38.50	2.5644	26 59 38.2	5.449
24	4 35 12.57	2.5713	N.27 5 0.1	5.280

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 21.			
	h m s	s	° ′ ″	″
0	4 35 12.57	2.5713	N.27 5 0.1	5.269
1	4 37 47.05	2.5782	27 10 11.8	5.169
2	4 40 21.95	2.5850	27 15 13.2	4.937
3	4 42 57.25	2.5916	27 20 4.2	4.763
4	4 45 32.94	2.5980	27 24 44.8	4.588
5	4 48 9.01	2.6042	27 29 14.8	4.411
6	4 50 45.45	2.6104	27 33 34.1	4.230
7	4 53 22.26	2.6165	27 37 42.7	4.053
8	4 55 59.43	2.6225	27 41 40.5	3.872
9	4 58 36.96	2.6283	27 45 27.4	3.690
10	5 1 14.82	2.6337	27 49 3.3	3.506
11	5 3 53.01	2.6392	27 52 28.1	3.321
12	5 6 31.53	2.6446	27 55 41.8	3.135
13	5 9 10.36	2.6497	27 58 44.3	2.948
14	5 11 49.49	2.6547	28 1 35.6	2.760
15	5 14 28.92	2.6595	28 4 15.5	2.570
16	5 17 8.63	2.6641	28 6 44.0	2.379
17	5 19 48.61	2.6686	28 9 1.0	2.187
18	5 22 28.86	2.6729	28 11 6.5	1.995
19	5 25 9.36	2.6770	28 13 0.4	1.801
20	5 27 50.10	2.6809	28 14 42.6	1.607
21	5 30 31.07	2.6847	28 16 13.2	1.412
22	5 33 12.26	2.6882	28 17 32.1	1.216
23	5 35 53.65	2.6915	N.28 18 39.1	1.018
	SATURDAY 22.			
0	5 38 35.24	2.6947	N.28 19 34.2	0.819
1	5 41 17.01	2.6977	28 20 17.4	0.621
2	5 43 58.96	2.7005	28 20 48.7	0.422
3	5 46 41.07	2.7031	28 21 8.1	0.223
4	5 49 23.33	2.7054	28 21 15.5	+ 0.022
5	5 52 5.72	2.7076	28 21 10.8	− 0.179
6	5 54 48.24	2.7096	28 20 54.0	0.380
7	5 57 30.87	2.7113	28 20 25.2	0.582
8	6 0 13.60	2.7129	28 19 44.2	0.784
9	6 2 56.42	2.7142	28 18 51.1	0.987
10	6 5 39.31	2.7154	28 17 45.8	1.189
11	6 8 22.27	2.7164	28 16 28.4	1.392
12	6 11 5.28	2.7172	28 14 58.8	1.595
13	6 13 48.33	2.7177	28 13 17.0	1.798
14	6 16 31.40	2.7180	28 11 23.0	2.001
15	6 19 14.49	2.7182	28 9 16.9	2.204
16	6 21 57.59	2.7182	28 6 58.6	2.406
17	6 24 40.67	2.7179	28 4 28.0	2.611
18	6 27 23.73	2.7174	28 1 45.3	2.813
19	6 30 6.76	2.7167	27 58 50.4	3.016
20	6 32 49.74	2.7158	27 55 43.4	3.218
21	6 35 32.66	2.7147	27 52 24.2	3.421
22	6 38 15.51	2.7135	27 48 52.9	3.622
23	6 40 58.28	2.7121	27 45 9.5	3.823
24	6 43 40.96	2.7104	N.27 41 14.1	4.024

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 23.			
	h m s	s	° ′ ″	″
0	6 43 40.96	2.7104	N.27 41 14.1	4.024
1	6 46 23.53	2.7086	27 37 6.6	4.225
2	6 49 5.99	2.7066	27 32 47.1	4.424
3	6 51 48.32	2.7043	27 28 15.7	4.622
4	6 54 30.51	2.7019	27 23 32.3	4.822
5	6 57 12.55	2.6993	27 18 37.0	5.020
6	6 59 54.43	2.6966	27 13 29.9	5.217
7	7 2 36.14	2.6937	27 8 11.0	5.413
8	7 5 17.67	2.6905	27 2 40.4	5.606
9	7 7 59.00	2.6872	26 56 58.0	5.803
10	7 10 40.13	2.6837	26 51 4.0	5.996
11	7 13 21.05	2.6802	26 44 58.4	6.188
12	7 16 1.75	2.6764	26 38 41.4	6.379
13	7 18 42.22	2.6724	26 32 12.9	6.571
14	7 21 22.44	2.6683	26 25 32.9	6.761
15	7 24 2.41	2.6640	26 18 41.6	6.948
16	7 26 42.12	2.6597	26 11 39.1	7.135
17	7 29 21.57	2.6552	26 4 25.4	7.321
18	7 32 0.74	2.6505	25 57 0.6	7.506
19	7 34 39.63	2.6457	25 49 24.7	7.689
20	7 37 18.22	2.6407	25 41 37.9	7.870
21	7 39 56.51	2.6356	25 33 40.3	8.050
22	7 42 34.49	2.6304	25 25 31.9	8.230
23	7 45 12.16	2.6251	N.25 17 12.7	8.406
	MONDAY 24.			
0	7 47 49.50	2.6196	N.25 8 42.9	8.584
1	7 50 26.51	2.6141	25 0 2.6	8.758
2	7 53 3.19	2.6085	24 51 11.9	8.931
3	7 55 39.53	2.6027	24 42 10.9	9.102
4	7 58 15.52	2.5969	24 32 59.6	9.272
5	8 0 51.16	2.5910	24 23 38.2	9.441
6	8 3 26.44	2.5850	24 14 6.7	9.607
7	8 6 1.36	2.5788	24 4 25.3	9.772
8	8 8 35.90	2.5726	23 54 34.1	9.935
9	8 11 10.07	2.5663	23 44 33.1	10.097
10	8 13 43.86	2.5600	23 34 22.5	10.256
11	8 16 17.27	2.5536	23 24 2.4	10.414
12	8 18 50.29	2.5471	23 13 32.8	10.571
13	8 21 22.92	2.5406	23 2 53.9	10.725
14	8 23 55.16	2.5340	22 52 5.8	10.877
15	8 26 27.00	2.5273	22 41 8.7	11.027
16	8 28 58.44	2.5207	22 30 2.6	11.176
17	8 31 29.48	2.5139	22 18 47.6	11.323
18	8 34 0.11	2.5072	22 7 23.8	11.468
19	8 36 30.34	2.5004	21 55 51.4	11.611
20	8 39 0.16	2.4935	21 44 10.5	11.752
21	8 41 29.56	2.4866	21 32 21.1	11.892
22	8 43 58.55	2.4797	21 20 23.5	12.029
23	8 46 27.13	2.4728	21 8 17.7	12.164
24	8 48 55.29	2.4659	N.20 56 3.8	12.297

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 25.			
	h m s	s	° ′ ″	″
0	8 48 55.29	2.4659	N.20 56 3.8	12.997
1	8 51 23.04	2.4590	20 43 42.0	12.498
2	8 53 50.37	2.4590	20 31 12.4	12.557
3	8 56 17.28	2.4451	20 18 35.1	12.685
4	8 58 43.78	2.4382	20 5 50.2	12.810
5	9 1 9.86	2.4319	19 52 57.9	12.933
6	9 3 35.53	2.4243	19 39 58.2	13.055
7	9 6 0.78	2.4173	19 26 51.3	13.174
8	9 8 25.61	2.4104	19 13 37.3	13.292
9	9 10 50.03	2.4035	19 0 16.3	13.407
10	9 13 14.03	2.3966	18 46 48.5	13.519
11	9 15 37.62	2.3897	18 33 14.0	13.631
12	9 18 0.80	2.3829	18 19 32.8	13.741
13	9 20 23.57	2.3761	18 5 45.1	13.847
14	9 22 45.93	2.3693	17 51 51.1	13.952
15	9 25 7.89	2.3626	17 37 50.8	14.056
16	9 27 29.44	2.3558	17 23 44.4	14.157
17	9 29 50.59	2.3491	17 9 32.0	14.257
18	9 32 11.34	2.3425	16 55 13.6	14.354
19	9 34 31.69	2.3359	16 40 49.5	14.449
20	9 36 51.65	2.3293	16 26 19.7	14.542
21	9 39 11.21	2.3228	16 11 44.4	14.633
22	9 41 30.39	2.3164	15 57 3.7	14.722
23	9 43 49.18	2.3100	N.15 42 17.7	14.810
	WEDNESDAY 26.			
0	9 46 7.59	2.3037	N.15 27 26.5	14.895
1	9 48 25.62	2.2973	15 12 30.3	14.979
2	9 50 43.27	2.2911	14 57 29.1	15.061
3	9 53 0.55	2.2849	14 42 23.0	15.140
4	9 55 17.46	2.2788	14 27 12.3	15.217
5	9 57 34.01	2.2727	14 11 57.0	15.292
6	9 59 50.19	2.2667	13 56 37.2	15.366
7	10 2 6.01	2.2608	13 41 13.1	15.437
8	10 4 21.48	2.2550	13 25 44.7	15.507
9	10 6 36.61	2.2492	13 10 12.2	15.575
10	10 8 51.39	2.2435	12 54 35.7	15.641
11	10 11 5.83	2.2378	12 38 55.3	15.706
12	10 13 19.93	2.2322	12 23 11.0	15.768
13	10 15 33.70	2.2267	12 7 23.1	15.828
14	10 17 47.14	2.2213	11 51 31.6	15.887
15	10 20 0.26	2.2160	11 35 36.7	15.943
16	10 22 13.06	2.2107	11 19 38.4	15.998
17	10 24 25.55	2.2056	11 3 36.9	16.051
18	10 26 37.73	2.2005	10 47 32.3	16.102
19	10 28 49.61	2.1955	10 31 24.7	16.152
20	10 31 1.19	2.1905	10 15 14.1	16.200
21	10 33 12.47	2.1856	9 59 0.7	16.246
22	10 35 23.46	2.1809	9 42 44.6	16.290
23	10 37 34.18	2.1763	9 26 25.9	16.333
24	10 39 44.62	2.1717	N. 9 10 4.8	16.372

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 27.			
	h m s	s	° ′ ″	″
0	10 39 44.62	2.1717	N. 9 10 4.8	16.372
1	10 41 54.78	2.1671	8 53 41.3	16.411
2	10 44 4.67	2.1698	8 37 15.5	16.448
3	10 46 14.31	2.1585	8 20 47.5	16.484
4	10 48 23.69	2.1542	8 4 17.4	16.517
5	10 50 32.82	2.1501	7 47 45.4	16.549
6	10 52 41.70	2.1460	7 31 11.5	16.580
7	10 54 50.34	2.1421	7 14 35.8	16.608
8	10 56 58.75	2.1382	6 57 58.5	16.635
9	10 59 6.93	2.1344	6 41 19.6	16.660
10	11 1 14.88	2.1307	6 24 39.3	16.683
11	11 3 22.61	2.1271	6 7 57.6	16.706
12	11 5 30.13	2.1236	5 51 14.6	16.727
13	11 7 37.44	2.1202	5 34 30.4	16.745
14	11 9 44.55	2.1169	5 17 45.2	16.762
15	11 11 51.47	2.1137	5 0 59.0	16.778
16	11 13 58.20	2.1106	4 44 11.8	16.792
17	11 16 4.74	2.1075	4 27 23.9	16.804
18	11 18 11.10	2.1046	4 10 35.3	16.815
19	11 20 17.29	2.1017	3 53 46.1	16.825
20	11 22 23.31	2.0990	3 36 56.3	16.833
21	11 24 29.17	2.0963	3 20 6.1	16.839
22	11 26 34.87	2.0938	3 3 15.6	16.843
23	11 28 40.43	2.0914	N. 2 46 24.9	16.847
	FRIDAY 28.			
0	11 30 45.84	2.0890	N. 2 29 34.0	16.849
1	11 32 51.11	2.0867	2 12 43.0	16.849
2	11 34 56.24	2.0845	1 55 52.1	16.847
3	11 37 1.25	2.0825	1 39 1.3	16.845
4	11 39 6.14	2.0805	1 22 10.7	16.841
5	11 41 10.91	2.0786	1 5 20.4	16.835
6	11 43 15.57	2.0768	0 48 30.5	16.828
7	11 45 20.12	2.0751	0 31 41.0	16.820
8	11 47 24.58	2.0735	N. 0 14 52.1	16.810
9	11 49 28.94	2.0719	S. 0 1 56.2	16.799
10	11 51 33.21	2.0705	0 18 43.8	16.786
11	11 53 37.40	2.0692	0 35 30.5	16.771
12	11 55 41.51	2.0679	0 52 16.3	16.756
13	11 57 45.55	2.0668	1 9 1.2	16.739
14	11 59 49.53	2.0658	1 25 45.0	16.720
15	12 1 53.45	2.0648	1 42 27.6	16.700
16	12 3 57.31	2.0639	1 59 9.0	16.680
17	12 6 1.12	2.0632	2 15 49.2	16.657
18	12 8 4.89	2.0625	2 32 27.9	16.633
19	12 10 8.62	2.0619	2 49 5.1	16.608
20	12 12 12.32	2.0614	3 5 40.8	16.582
21	12 14 15.99	2.0610	3 22 14.9	16.554
22	12 16 19.64	2.0607	3 38 47.3	16.525
23	12 18 23.28	2.0605	3 55 17.9	16.494
24	12 20 26.90	2.0603	S. 4 11 46.6	16.462

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 29.			
	h m s	s	° ′ ″	″
0	12 20 26.90	2.0603	S. 4 11 46.6	16.468
1	12 22 30.52	2.0603	4 28 13.4	16.499
2	12 24 34.14	2.0604	4 44 38.1	16.394
3	12 26 37.77	2.0606	5 1 0.7	16.358
4	12 28 41.41	2.0608	5 17 21.1	16.322
5	12 30 45.06	2.0610	5 33 39.3	16.283
6	12 32 48.73	2.0614	5 49 55.1	16.243
7	12 34 52.43	2.0619	6 6 8.5	16.202
8	12 36 56.16	2.0625	6 22 19.4	16.160
9	12 38 59.93	2.0632	6 38 27.7	16.117
10	12 41 3.74	2.0639	6 54 33.4	16.073
11	12 43 7.60	2.0647	7 10 36.4	16.028
12	12 45 11.51	2.0656	7 26 36.5	15.978
13	12 47 15.47	2.0666	7 42 33.7	15.929
14	12 49 19.50	2.0677	7 58 28.0	15.880
15	12 51 23.60	2.0689	8 14 19.4	15.830
16	12 53 27.77	2.0702	8 30 7.6	15.777
17	12 55 32.02	2.0714	8 45 52.6	15.722
18	12 57 36.34	2.0727	9 1 34.3	15.667
19	12 59 40.75	2.0742	9 17 12.7	15.612
20	13 1 45.25	2.0758	9 32 47.7	15.556
21	13 3 49.85	2.0775	9 48 19.3	15.497
22	13 5 54.55	2.0792	10 3 47.3	15.436
23	13 7 59.35	2.0809	S.10 19 11.6	15.375
	SUNDAY 30.			
0	13 10 4.26	2.0827	S.10 34 32.3	15.313
1	13 12 9.28	2.0847	10 49 49.2	15.250
2	13 14 14.42	2.0867	11 5 2.3	15.185
3	13 16 19.69	2.0888	11 20 11.4	15.119
4	13 18 25.08	2.0909	11 35 16.5	15.052
5	13 20 30.60	2.0932	11 50 17.6	14.983
6	13 22 36.26	2.0955	12 5 14.5	14.913
7	13 24 42.06	2.0978	12 20 7.2	14.842
8	13 26 48.00	2.1002	12 34 55.6	14.771
9	13 28 54.08	2.1026	12 49 39.7	14.698
10	13 31 0.31	2.1052	13 4 19.4	14.624
11	13 33 6.70	2.1078	13 18 54.6	14.547
12	13 35 13.25	2.1105	13 33 25.1	14.470
13	13 37 19.96	2.1132	13 47 51.0	14.392
14	13 39 26.84	2.1160	14 2 12.2	14.314
15	13 41 33.88	2.1188	14 16 28.7	14.234
16	13 43 41.10	2.1218	14 30 40.3	14.152
17	13 45 48.50	2.1248	14 44 46.9	14.069
18	13 47 56.07	2.1278	14 58 48.6	13.986
19	13 50 3.83	2.1309	15 12 45.2	13.900
20	13 52 11.78	2.1340	15 26 36.6	13.813
21	13 54 19.91	2.1372	15 40 22.8	13.726
22	13 56 28.24	2.1404	15 54 3.7	13.637
23	13 58 36.76	2.1437	16 7 39.3	13.547
24	14 0 45.48	2.1470	S.16 21 9.4	13.456

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY, JULY 1.			
0	h m s 14 0 45.48	s 2.1470	° ′ ″ S.16 21 9.4	″ 13.456

PHASES OF THE MOON.

		d	h	m
○	Full Moon . . June	6	23	0.0
☾	Last Quarter	14	23	27.8
●	New Moon	22	9	50.8
☽	First Quarter . . .	29	2	0.7

		d	h
☾	Apogee . . . . June	13	2.1
☾	Perigee	24	23.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Spica	W.	67° 19′ 48″	2774	68° 54′ 50″	2785	70° 29′ 37″	2795	72° 4′ 11″	2807
	Saturn	W.	59 9 22	2793	60 43 59	2803	62 18 23	2813	63 52 34	2822
	Fomalhaut	E.	62 42 9	3118	61 14 21	3140	59 47 0	3163	58 20 6	3186
	α Pegasi	E.	84 19 43	3018	82 49 53	3039	81 20 18	3043	79 50 59	3056
9	Spica	W.	79 53 30	2859	81 26 42	2869	82 59 40	2880	84 32 25	2889
	Saturn	W.	71 40 18	2873	73 13 12	2882	74 45 54	2891	76 18 24	2901
	Antares	W.	33 59 6	2859	35 32 17	2869	37 5 16	2879	38 38 2	2889
	Fomalhaut	E.	51 13 1	3302	49 49 15	3354	48 26 6	3388	47 3 36	3494
	α Pegasi	E.	72 28 32	3127	71 0 55	3142	69 33 36	3158	68 6 36	3174
10	Spica	W.	92 13 5	2937	93 44 37	2946	95 15 58	2954	96 47 8	2962
	Saturn	W.	83 57 50	2948	85 29 8	2957	87 0 15	2965	88 31 11	2974
	Antares	W.	46 18 44	2936	47 50 17	2946	49 21 38	2954	50 52 48	2962
	Fomalhaut	E.	40 22 19	3651	39 4 40	3709	37 48 3	3779	36 32 32	3843
	α Pegasi	E.	60 56 36	3281	59 31 39	3281	58 7 5	3300	56 42 54	3321
	α Arietis	E.	101 56 29	2969	100 25 29	2971	98 54 40	2979	97 24 1	2988
11	Spica	W.	104 20 25	3001	105 50 36	3006	107 20 39	3015	108 50 33	3021
	Saturn	W.	96 3 16	3014	97 33 12	3020	99 3 0	3027	100 32 39	3033
	Antares	W.	58 26 6	3001	59 56 18	3006	61 26 21	3014	62 56 16	3021
	α Pegasi	E.	49 48 17	3439	48 26 45	3468	47 5 45	3497	45 45 17	3528
	α Arietis	E.	89 53 18	3026	88 23 37	3033	86 54 5	3039	85 24 41	3045
	Sun	E.	133 17 57	3393	131 55 32	3399	130 33 14	3405	129 11 3	3410
12	Saturn	W.	107 59 4	3061	109 28 1	3065	110 56 53	3070	112 25 39	3073
	Antares	W.	70 24 5	3046	71 53 21	3050	73 22 32	3054	74 51 38	3057
	α Arietis	E.	77 59 28	3072	76 30 44	3077	75 2 6	3080	73 33 32	3084
	Sun	E.	122 21 36	3434	120 59 58	3438	119 38 24	3441	118 16 54	3445
13	Antares	W.	82 16 19	3067	83 45 9	3068	85 13 58	3068	86 42 47	3067
	α Aquilæ	W.	42 14 27	5296	43 7 37	5173	44 2 19	5059	44 58 28	4955
	α Arietis	E.	66 11 42	3096	64 43 28	3098	63 15 16	3099	61 47 5	3100
	Sun	E.	111 30 5	3453	110 8 48	3453	108 47 31	3453	107 26 14	3452
14	Antares	W.	94 7 9	3059	95 36 9	3056	97 5 12	3058	98 34 20	3049
	α Aquilæ	W.	49 58 5	4546	51 1 17	4480	52 5 27	4419	53 10 31	4363
	α Arietis	E.	54 26 14	3097	52 58 1	3096	51 29 46	3094	50 1 29	3091
	Sun	E.	100 39 29	3449	99 18 0	3438	97 56 27	3435	96 34 50	3431
15	Antares	W.	106 1 23	3092	107 31 9	3015	109 1 3	3007	110 31 7	3000
	α Aquilæ	W.	58 47 54	4195	59 57 32	4065	61 7 48	4046	62 18 42	4011
	α Arietis	E.	42 39 17	3078	41 10 40	3073	39 41 58	3070	38 13 12	3066
	Sun	E.	89 45 17	3400	88 23 1	3393	87 0 36	3386	85 38 3	3377
16	α Aquilæ	W.	68 21 38	3852	69 35 47	3894	70 50 24	3796	72 5 30	3770
	Fomalhaut	W.	40 17 19	3629	41 35 22	3580	42 54 18	3534	44 14 5	3490
	Sun	E.	78 42 41	3398	77 19 2	3317	75 55 10	3306	74 31 5	3294
17	α Aquilæ	W.	78 27 31	3653	79 45 8	3639	81 3 8	3611	82 21 30	3599
	Fomalhaut	W.	51 4 14	3307	52 28 17	3276	53 52 57	3246	55 18 12	3216
	Sun	E.	67 27 1	3298	66 1 25	3214	64 35 33	3199	63 9 23	3185

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
8	Spica	W.	73° 38′ 30″	2818	75° 12′ 35″	2886	76° 46′ 27″	2886	78° 20′ 5″	2946
	Saturn	W.	65 26 33	2833	67 0 18	2842	68 33 51	2850	70 7 11	2869
	Fomalhaut	E.	56 53 40	3216	55 27 43	3226	54 2 17	3263	52 37 22	3292
	α Pegasi	E.	78 21 56	3070	76 53 10	3063	75 24 40	3057	73 56 27	3112
9	Spica	W.	86 4 58	2869	87 37 18	2909	89 9 26	2919	90 41 21	2957
	Saturn	W.	77 50 41	2911	79 22 46	2926	80 54 39	2930	82 26 20	2930
	Antares	W.	40 10 35	2896	41 42 56	2909	43 15 4	2918	44 47 0	2927
	Fomalhaut	E.	45 41 47	3463	44 20 42	3506	43 0 24	3550	41 40 55	3586
	α Pegasi	E.	66 39 56	3190	65 13 35	3206	63 47 35	3225	62 21 55	3242
10	Spica	W.	98 18 8	2971	99 48 57	2979	101 19 36	2987	102 50 5	2994
	Saturn	W.	90 1 56	2969	91 32 31	2980	93 2 56	2986	94 33 11	2986
	Antares	W.	52 23 48	2971	53 54 37	2979	55 25 16	2989	56 55 46	2994
	Fomalhaut	E.	35 18 14	3919	34 5 14	4005	32 53 39	4101	31 43 38	4210
	α Pegasi	E.	55 19 7	3343	53 55 45	3385	52 32 48	3388	51 10 18	3414
	α Arietis	E.	95 53 33	2996	94 23 15	3003	92 53 6	3011	91 23 7	3019
11	Spica	W.	110 20 20	3007	111 49 59	3032	113 19 32	3036	114 48 58	3042
	Saturn	W.	102 2 11	3039	103 31 35	3046	105 0 51	3051	106 30 1	3056
	Antares	W.	64 26 3	3006	65 55 43	3031	67 25 17	3037	68 54 44	3042
	α Pegasi	E.	44 25 24	3569	43 6 8	3596	41 47 31	3627	40 29 37	3679
	α Arietis	E.	83 55 24	3058	82 26 15	3057	80 57 13	3068	79 28 17	3066
	Sun	E.	127 48 58	3415	126 26 59	3421	125 5 6	3425	123 43 18	3431
12	Saturn	W.	113 54 21	3078	115 22 58	3069	116 51 32	3063	118 20 2	3067
	Antares	W.	76 20 40	3060	77 49 38	3068	79 18 34	3065	80 47 27	3065
	α Arietis	E.	72 5 3	3087	70 36 38	3090	69 8 16	3093	67 39 58	3095
	Sun	E.	116 55 28	3446	115 34 4	3449	114 12 43	3450	112 51 23	3458
13	Antares	W.	88 11 37	3067	89 40 27	3065	91 9 19	3064	92 38 13	3062
	α Aquilæ	W.	45 55 59	4800	46 54 46	4771	47 54 46	4691	48 55 53	4615
	α Arietis	E.	60 18 55	3101	58 50 46	3100	57 22 36	3109	55 54 26	3096
	Sun	E.	106 4 56	3451	104 43 37	3450	103 22 17	3447	102 0 54	3446
14	Antares	W.	100 3 32	3044	101 32 50	3039	103 2 14	3034	104 31 45	3026
	α Aquilæ	W.	54 16 26	4309	55 23 10	4259	56 30 41	4212	57 38 56	4166
	α Arietis	E.	48 33 9	3069	47 4 46	3087	45 36 20	3093	44 7 50	3091
	Sun	E.	95 13 8	3425	93 51 20	3430	92 29 26	3414	91 7 25	3406
15	Antares	W.	112 1 20	2991	113 31 44	2993	115 2 18	2973	116 33 4	2965
	α Aquilæ	W.	63 30 11	3975	64 42 15	3943	65 54 51	3912	67 7 59	3881
	α Arietis	E.	36 44 21	3084	35 15 27	3069	33 46 29	3056	32 17 28	3055
	Sun	E.	84 15 20	3368	82 52 27	3358	81 29 23	3349	80 6 8	3338
16	α Aquilæ	W.	73 21 3	3746	74 37 2	3781	75 53 27	3807	77 10 17	3875
	Fomalhaut	W.	45 34 40	3450	46 56 0	3411	48 18 4	3375	49 40 49	3340
	Sun	E.	73 6 46	3981	71 42 12	3969	70 17 24	3955	68 52 20	3942
17	α Aquilæ	W.	83 40 13	3673	84 59 17	3555	86 18 41	3536	87 38 25	3509
	Fomalhaut	W.	56 44 2	3188	58 10 26	3161	59 37 22	3134	61 4 50	3108
	Sun	E.	61 42 56	3170	60 16 11	3155	58 49 8	3140	57 21 47	3194

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	α Aquilæ	W.	88° 58′ 27″	3504	90° 18′ 47″	3496	91° 39′ 24″	3474	93° 0′ 17″	3469
	Fomalhaut	W.	62 32 50	3063	64 1 20	3059	65 30 20	3035	66 59 49	3011
	α Pegasi	W.	41 18 20	3321	42 42 7	3273	44 6 50	3226	45 32 28	3183
	Sun	E.	55 54 7	3169	54 26 8	3083	52 57 50	3077	51 29 12	3069
19	α Aquilæ	W.	99 48 11	3466	101 10 19	3490	102 32 36	3393	103 55 0	3366
	Fomalhaut	W.	74 34 21	2999	76 6 37	2982	77 39 19	2982	79 12 26	2943
	α Pegasi	W.	52 52 44	2998	54 22 59	2987	55 53 53	2937	57 25 25	2907
	Sun	E.	44 1 4	2981	42 30 27	2985	40 59 30	2950	39 28 14	2935
20	Fomalhaut	W.	87 4 6	2753	88 39 35	2726	90 15 25	2782	91 51 36	2707
	α Pegasi	W.	65 12 2	2777	66 47 0	2753	68 22 29	2738	69 58 27	2710
	Sun	E.	31 47 16	2966	30 14 14	2955	28 40 57	2945	27 7 27	2936
24	Sun	W.	21 57 7	2545	23 37 18	2589	25 17 51	2516	26 58 42	2506
	Spica	E.	88 14 40	2147	86 24 52	2144	84 35 0	2141	82 45 4	2140
	Saturn	E.	96 7 56	2167	94 18 38	2164	92 29 16	2161	90 39 50	2160
25	Sun	W.	35 25 51	2477	37 7 37	2475	38 49 26	2474	40 31 16	2473
	Spica	E.	73 35 4	2139	71 45 5	2141	69 55 8	2143	68 5 14	2145
	Saturn	E.	81 32 22	2161	79 42 55	2162	77 53 30	2165	76 4 9	2167
26	Sun	W.	49 0 8	2484	50 41 44	2488	52 23 14	2492	54 4 38	2498
	Spica	E.	58 56 53	2164	57 7 31	2169	55 18 16	2174	53 29 9	2180
	Saturn	E.	66 58 42	2180	65 9 58	2185	63 21 23	2201	61 32 57	2208
	Antares	E.	104 51 4	2163	103 1 41	2168	101 12 25	2173	99 23 17	2178
27	Sun	W.	62 29 39	2529	64 10 12	2536	65 50 35	2544	67 30 47	2552
	Mars	W.	27 41 9	2410	29 24 29	2417	31 7 40	2494	32 50 40	2431
	Spica	E.	44 25 54	2213	42 37 46	2220	40 49 49	2229	39 2 4	2237
	Saturn	E.	52 33 34	2249	50 46 20	2259	48 59 20	2269	47 12 35	2279
	Antares	E.	90 19 54	2212	88 31 44	2220	86 43 46	2227	84 55 59	2235
28	Sun	W.	75 48 54	2596	77 27 54	2605	79 6 42	2615	80 45 17	2625
	Mars	W.	41 22 50	2475	43 4 39	2483	44 46 16	2493	46 27 39	2503
	Venus	W.	30 55 2	2606	32 33 49	2615	34 12 23	2625	35 50 44	2635
	Saturn	E.	38 23 1	2343	36 38 4	2357	34 53 28	2373	33 9 15	2391
	Antares	E.	76 0 5	2278	74 13 33	2287	72 27 14	2296	70 41 8	2305
29	Sun	W.	88 54 47	2676	90 31 59	2686	92 8 58	2696	93 45 43	2707
	Mars	W.	54 51 14	2552	56 31 15	2561	58 11 3	2572	59 50 37	2583
	Venus	W.	43 59 8	2685	45 36 8	2695	47 12 54	2706	48 49 26	2716
	Regulus	W.	38 2 42	2355	39 47 22	2364	41 31 48	2374	43 16 0	2383
	Antares	E.	61 54 6	2353	60 9 23	2363	58 24 55	2372	56 40 40	2382
	α Aquilæ	E.	111 40 41	3946	110 15 26	3936	108 49 59	3927	107 24 22	3920
30	Sun	W.	101 45 56	2760	103 21 16	2771	104 56 22	2782	106 31 14	2792
	Mars	W.	68 4 56	2633	69 43 6	2643	71 21 2	2654	72 58 44	2664
	Venus	W.	56 48 39	2769	58 23 48	2779	59 58 44	2789	61 33 26	2799
	Regulus	W.	51 53 33	2433	53 36 21	2442	55 18 56	2452	57 1 17	2462
	Antares	E.	48 3 1	2432	46 20 12	2441	44 37 36	2451	42 55 14	2461
	α Aquilæ	E.	100 15 .2	3913	98 49 8	3915	97 23 17	3930	95 57 31	3934

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
18	α Aquilæ	W.	94° 21′ 26″	3448	95° 42′ 48″	3436	97° 4′ 24″	3425	98° 26′ 12″	3415
	Fomalhaut	W.	68 29 48	2969	70 0 15	2956	71 31 10	2945	73 2 32	2934
	α Pegasi	W.	46 58 57	3142	48 26 16	3104	49 54 21	3067	51 23 11	3032
	Sun	E.	50 0 14	3044	48 30 56	3039	47 1 19	3018	45 31 21	2997
19	α Aquilæ	W.	105 17 30	3385	106 40 4	3364	108 2 39	3384	109 25 14	3366
	Fomalhaut	W.	80 45 58	2885	82 19 54	2805	83 54 15	2788	85 28 59	2770
	α Pegasi	W.	58 57 35	2979	60 30 21	2958	62 3 41	2936	63 37 35	2901
	Sun	E.	37 56 39	2990	36 24 45	2985	34 52 33	2991	33 20 3	2978
20	Fomalhaut	W.	93 28 7	2992	95 4 57	2978	96 42 6	2966	98 19 32	2953
	α Pegasi	W.	71 34 54	2989	73 11 49	2969	74 49 10	2950	76 26 57	2931
	Sun	E.	25 33 46	2989	23 59 56	2985	22 26 0	2984	20 52 3	2987
24	Sun	W.	28 39 47	2997	30 21 5	2989	32 2 33	2984	33 44 9	2989
	Spica	E.	80 55 6	2139	79 5 6	2136	77 15 5	2136	75 25 4	2139
	Saturn	E.	88 50 22	2159	87 0 52	2159	85 11 22	2159	83 21 52	2159
25	Sun	W.	42 13 7	2974	43 54 57	2976	45 36 44	2978	47 18 28	2981
	Spica	E.	66 15 24	2148	64 25 38	2151	62 35 57	2155	60 46 22	2159
	Saturn	E.	74 14 52	2170	72 25 40	2174	70 36 34	2178	68 47 34	2184
26	Sun	W.	55 45 54	2963	57 27 3	2969	59 8 4	2915	60 48 56	2969
	Spica	E.	51 40 11	2186	49 51 22	2192	48 2 42	2199	46 14 13	2206
	Saturn	E.	59 44 41	2215	57 56 36	2223	56 8 43	2231	54 21 2	2240
	Antares	E.	97 34 17	2185	95 45 27	2191	93 56 46	2198	92 8 15	2204
27	Sun	W.	69 10 48	2961	70 50 37	2969	72 30 15	2977	74 9 41	2987
	Mars	W.	34 33 30	2449	36 16 8	2448	37 58 34	2457	39 40 48	2465
	Spica	E.	37 14 31	2245	35 27 10	2253	33 40 2	2269	31 53 7	2271
	Saturn	E.	45 26 5	2291	43 39 52	2302	41 53 56	2315	40 8 19	2328
	Antares	E.	83 8 23	2243	81 21 0	2251	79 33 49	2260	77 46 51	2268
28	Sun	W.	82 23 38	2935	84 1 46	2945	85 39 40	2956	87 17 20	2965
	Mars	W.	48 8 49	2512	49 49 46	2522	51 30 29	2532	53 10 58	2541
	Venus	W.	37 28 52	2646	39 6 46	2655	40 44 27	2665	42 21 54	2675
	Saturn	E.	31 25 27	2410	29 42 6	2430	27 59 14	2453	26 16 55	2480
	Antares	E.	68 55 16	2315	67 9 38	2324	65 24 13	2333	63 39 2	2344
29	Sun	W.	95 22 14	2717	96 58 31	2729	98 34 33	2739	100 10 22	2750
	Mars	W.	61 29 57	2588	63 9 3	2602	64 47 55	2613	66 26 32	2623
	Venus	W.	50 25 44	2727	52 1 48	2737	53 37 39	2747	55 13 16	2758
	Regulus	W.	44 59 59	2394	46 43 43	2403	48 27 14	2412	50 10 31	2423
	Antares	E.	54 56 40	2399	53 12 54	2408	51 29 22	2418	49 46 4	2429
	α Aquilæ	E.	105 58 37	3316	104 32 47	3313	103 6 53	3312	101 40 58	3311
30	Sun	W.	108 5 52	2603	109 40 16	2614	111 14 26	2605	112 48 22	2635
	Mars	W.	74 36 12	2674	76 13 27	2684	77 50 28	2695	79 27 15	2704
	Venus	W.	63 7 55	2610	64 42 10	2620	66 16 12	2630	67 50 1	2641
	Regulus	W.	58 43 24	2479	60 25 17	2481	62 6 57	2491	63 48 23	2501
	Antares	E.	41 13 6	2471	39 31 12	2481	37 49 32	2490	36 8 5	2500
	α Aquilæ	E.	94 31 50	3321	93 6 17	3317	91 40 52	3316	90 15 37	3316

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	″	h m s	m s	s
Mon.	1	6 40 42.72	10.341	N.23 7 30.2	−10.06	15 46.20	6 8.78	3 33.06	0.483
Tues.	2	6 44 58.78	10.329	23 3 16.6	11.07	15 46.20	6 8.75	3 44.53	0.471
Wed.	3	6 48 58.54	10.317	22 58 38.8	12.07	15 46.21	6 8.71	3 55.70	0.459
Thur.	4	6 53 5.99	10.304	22 53 37.1	−13.07	15 46.21	6 8.67	4 6.56	0.446
Frid.	5	6 57 13.12	10.290	22 48 11.6	14.06	15 46.22	6 8.62	4 17.10	0.432
Sat.	6	7 1 19.91	10.275	22 42 22.3	15.05	15 46.23	6 8.57	4 27.30	0.417
SUN.	7	7 5 26.33	10.260	22 36 9.4	−16.03	15 46.25	6 8.52	4 37.14	0.402
Mon.	8	7 9 32.38	10.244	22 29 33.1	17.00	15 46.27	6 8.47	4 46.61	0.386
Tues.	9	7 13 38.05	10.228	22 22 33.4	17.97	15 46.29	6 8.41	4 55.69	0.370
Wed.	10	7 17 43.32	10.211	22 15 10.6	−18.93	15 46.32	6 8.35	5 4.38	0.353
Thur.	11	7 21 48.17	10.193	22 7 24.8	19.88	15 46.35	6 8.29	5 12.65	0.336
Frid.	12	7 25 52.59	10.175	21 59 16.1	20.83	15 46.38	6 8.23	5 20.49	0.318
Sat.	13	7 29 56.57	10.157	21 50 44.8	−21.77	15 46.42	6 8.17	5 27.90	0.299
SUN.	14	7 34 0.10	10.137	21 41 51.0	22.71	15 46.46	6 8.10	5 34.85	0.280
Mon.	15	7 38 3.16	10.117	21 32 34.9	23.63	15 46.50	6 8.03	5 41.34	0.260
Tues.	16	7 42 5.74	10.097	21 22 56.7	−24.55	15 46.55	6 7.96	5 47.34	0.240
Wed.	17	7 46 7.83	10.076	21 12 56.6	25.45	15 46.61	6 7.88	5 52.85	0.219
Thur.	18	7 50 9.40	10.054	21 2 34.9	26.35	15 46.67	6 7.80	5 57.85	0.197
Frid.	19	7 54 10.45	10.032	20 51 51.7	−27.24	15 46.73	6 7.73	6 2.33	0.175
Sat.	20	7 58 10.96	10.010	20 40 47.3	28.12	15 46.80	6 7.65	6 6.27	0.153
SUN.	21	8 2 10.92	9.987	20 29 22.0	28.99	15 46.88	6 7.57	6 9.66	0.130
Mon.	22	8 6 10.32	9.963	20 17 36.0	−29.84	15 46.96	6 7.49	6 12.50	0.106
Tues.	23	8 10 9.14	9.939	20 5 29.5	30.69	15 47.05	6 7.41	6 14.75	0.082
Wed.	24	8 14 7.37	9.914	19 53 2.9	31.52	15 47.14	6 7.33	6 16.42	0.057
Thur.	25	8 18 5.01	9.889	19 40 16.5	−32.34	15 47.24	6 7.25	6 17.50	0.032
Frid.	26	8 22 2.04	9.864	19 27 10.4	33.15	15 47.34	6 7.16	6 17.98	0.007
Sat.	27	8 25 58.46	9.838	19 13 45.1	33.95	15 47.45	6 7.06	6 17.84	0.018
SUN.	28	8 29 54.27	9.812	19 0 0.7	−34.74	15 47.56	6 6.99	6 17.09	0.044
Mon.	29	8 33 49.45	9.786	18 45 57.7	35.51	15 47.68	6 6.91	6 15.72	0.070
Tues.	30	8 37 44.01	9.760	18 31 36.1	36.27	15 47.80	6 6.82	6 13.72	0.096
Wed.	31	8 41 37.94	9.734	18 16 56.5	37.02	15 47.92	6 6.74	6 11.11	0.122
Thur.	32	8 45 31.25	9.708	N.18 1 59.0	−37.76	15 48.05	6 6.65	6 7.87	0.148

NOTE.—The mean time of semi-diameter passing may be found by subtracting 0.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	THE SUN'S Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	6 40 42.11	10.340	N. 23 7 30.7	−10.06	3 33.03	0.483	6 37 9.08
Tues.	2	6 44 50.13	10.328	23 3 17.2	11.07	3 44.50	0.471	6 41 5.64
Wed.	3	6 48 57.86	10.316	22 58 39.6	12.07	3 55.67	0.459	6 45 2.20
Thur.	4	6 53 5.29	10.303	22 53 38.0	−13.06	4 6.53	0.446	6 48 58.75
Frid.	5	6 57 12.39	10.289	22 48 12.6	14.05	4 17.08	0.432	6 52 55.31
Sat.	6	7 1 19.14	10.274	22 42 23.4	15.04	4 27.27	0.417	6 56 51.87
SUN.	7	7 5 25.54	10.259	22 36 10.6	−16.02	4 37.11	0.402	7 0 48.43
Mon.	8	7 9 31.57	10.243	22 29 34.4	16.99	4 46.58	0.386	7 4 44.99
Tues.	9	7 13 37.21	10.227	22 22 34.8	17.96	4 55.66	0.370	7 8 41.55
Wed.	10	7 17 42.45	10.210	22 15 12.2	−18.92	5 4.35	0.353	7 12 38.10
Thur.	11	7 21 47.28	10.192	22 7 26.4	19.88	5 12.62	0.336	7 16 34.66
Frid.	12	7 25 51.69	10.174	21 59 17.9	20.83	5 20.47	0.318	7 20 31.22
Sat.	13	7 29 55.65	10.156	21 50 46.8	−21.77	5 27.87	0.299	7 24 27.78
SUN.	14	7 33 59.16	10.137	21 41 53.1	22.70	5 34.82	0.280	7 28 24.34
Mon.	15	7 38 2.21	10.117	21 32 37.1	23.63	5 41.31	0.260	7 32 20.90
Tues.	16	7 42 4.77	10.097	21 22 59.0	−24.54	5 47.32	0.240	7 36 17.45
Wed.	17	7 46 6.84	10.076	21 12 59.1	25.45	5 52.83	0.219	7 40 14.01
Thur.	18	7 50 8.40	10.054	21 2 37.4	26.35	5 57.83	0.197	7 44 10.57
Frid.	19	7 54 9.44	10.032	20 51 54.4	−27.24	6 2.31	0.175	7 48 7.13
Sat.	20	7 58 9.94	10.009	20 40 50.1	28.12	6 6.25	0.153	7 52 3.69
SUN.	21	8 2 9.89	9.986	20 29 24.9	28.98	6 9.65	0.130	7 56 0.24
Mon.	22	8 6 9.29	9.963	20 17 39.0	−29.83	6 12.49	0.106	7 59 56.80
Tues.	23	8 10 8.10	9.939	20 5 32.7	30.68	6 14.74	0.082	8 3 53.36
Wed.	24	8 14 6.34	9.914	19 53 6.2	31.52	6 16.42	0.057	8 7 49.92
Thur.	25	8 18 3.97	9.889	19 40 19.8	−32.34	6 17.50	0.032	8 11 46.47
Frid.	26	8 22 1.01	9.864	19 27 13.8	33.15	6 17.98	0.007	8 15 43.03
Sat.	27	8 25 57.43	9.838	19 13 48.6	33.95	6 17.84	0.018	8 19 39.59
SUN.	28	8 29 53.24	9.812	19 0 4.3	−34.74	6 17.09	0.044	8 23 36.14
Mon.	29	8 33 48.43	9.787	18 46 1.3	35.51	6 15.73	0.070	8 27 32.70
Tues.	30	8 37 42.99	9.761	18 31 39.8	36.27	6 13.73	0.096	8 31 29.26
Wed.	31	8 41 36.94	9.735	18 17 0.2	37.02	6 11.12	0.122	8 35 25.82
Thur.	32	8 45 30.26	9.709	N. 18 2 2.8	−37.76	6 7.88	0.148	8 39 22.37

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour, +9ˢ.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ'	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	182	99 21 20.7	20 51.2	142.99	− 0.19	0.0071909	+ 0.5	17 20 0.08
2	183	100 18 32.4	18 2.8	142.98	0.27	0.0071911	− 0.3	17 16 4.16
3	184	101 15 43.8	15 14.0	142.97	0.33	0.0071898	0.9	17 12 8.25
4	185	102 12 55.1	12 25.1	142.96	− 0.36	0.0071868	− 1.6	17 8 12.34
5	186	103 10 6.1	9 35.9	142.96	0.36	0.0071821	2.2	17 4 16.43
6	187	104 7 17.2	6 46.8	142.96	0.33	0.0071761	2.8	17 0 20.51
7	188	105 4 28.4	3 57.8	142.97	− 0.28	0.0071686	− 3.4	16 56 24.60
8	189	106 1 39.6	1 8.8	142.98	0.19	0.0071597	4.0	16 52 28.69
9	190	106 58 51.1	58 20.1	142.99	− 0.08	0.0071494	4.6	16 48 32.78
10	191	107 56 2.9	55 31.7	143.00	+ 0.04	0.0071376	− 5.2	16 44 36.86
11	192	108 53 15.1	52 43.7	143.02	0.15	0.0071243	5.9	16 40 40.95
12	193	109 50 27.8	49 56.3	143.04	0.29	0.0071092	6.6	16 36 45.04
13	194	110 47 41.0	47 9.3	143.06	+ 0.42	0.0070924	− 7.4	16 32 49.13
14	195	111 44 54.8	44 22.9	143.09	0.53	0.0070737	8.2	16 28 53.21
15	196	112 42 9.3	41 37.2	143.12	0.63	0.0070532	9.0	16 24 57.30
16	197	113 39 24.4	38 52.1	143.15	+ 0.71	0.0070304	− 9.9	16 21 1.39
17	198	114 36 40.2	36 7.7	143.18	0.76	0.0070055	10.9	16 17 5.48
18	199	115 33 56.8	33 24.2	143.21	0.78	0.0069781	11.9	16 13 9.56
19	200	116 31 13.9	30 41.1	143.23	+ 0.76	0.0069485	−12.9	16 9 13.65
20	201	117 28 31.6	27 58.6	143.26	0.71	0.0069162	13.9	16 5 17.74
21	202	118 25 50.0	25 16.8	143.28	0.65	0.0068815	15.0	16 1 21.83
22	203	119 23 9.1	22 35.8	143.30	+ 0.56	0.0068442	−16.1	15 57 25.92
23	204	120 20 28.7	19 55.2	143.33	0.44	0.0068044	17.1	15 53 30.00
24	205	121 17 49.0	17 15.3	143.35	0.31	0.0067619	18.2	15 49 34.09
25	206	122 15 9.6	14 35.7	143.37	+ 0.18	0.0067171	−19.2	15 45 38.18
26	207	123 12 30.8	11 56.7	143.39	+ 0.05	0.0066699	20.1	15 41 42.27
27	208	124 9 52.6	9 18.3	143.42	− 0.08	0.0066205	21.1	15 37 46.36
28	209	125 7 14.8	6 40.4	143.44	− 0.19	0.0065688	−21.9	15 33 50.45
29	210	126 4 37.6	4 3.0	143.46	0.28	0.0065152	22.7	15 29 54.54
30	211	127 2 0.8	1 26.1	143.48	0.35	0.0064599	23.5	15 25 58.63
31	212	127 59 24.7	58 49.9	143.51	0.39	0.0064027	24.2	15 22 2.72
32	213	128 56 49.2	56 14.3	143.54	− 0.40	0.0063439	−24.8	15 18 6.80

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0d.0.

Diff. for 1 Hour, − 9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 46.6	15 42.2	57 47.6	−1.38	57 31.2	−1.35	7 38.9	2.08	8.6
2	15 37.7	15 33.4	57 14.9	1.35	56 58.8	1.33	8 30.0	2.18	9.6
3	15 29.1	15 24.9	56 43.1	1.30	56 27.7	1.27	9 23.5	2.27	10.6
4	15 20.8	15 16.9	56 12.7	−1.23	55 58.2	−1.19	10 18.8	2.32	11.6
5	15 13.0	15 9.3	55 44.1	1.16	55 30.4	1.11	11 14.2	2.29	12.6
6	15 5.8	15 2.4	55 17.5	1.05	55 5.2	1.00	12 8.1	2.19	13.6
7	14 59.3	14 56.4	54 53.6	−0.93	54 43 0	−0.84	12 59.0	2.05	14.6
8	14 53.8	14 51.5	54 33.5	0.75	54 25.1	0.65	13 46.4	1.90	15.6
9	14 49.6	14 48.1	54 18.0	0.53	54 12.5	0.39	14 30.4	1.77	16.6
10	14 47.0	14 46.4	54 8.6	−0.25	54 6.5	−0.10	15 11.7	1.68	17.6
11	14 46.4	14 46.9	54 6.3	+0.07	54 8.2	+0.25	15 51.3	1.63	18.6
12	14 48.0	14 49.8	54 12.4	0.44	54 18.8	0.63	16 30.2	1.63	19.6
13	14 52.2	14 55.2	54 27.6	+0.83	54 38.8	+1.04	17 9.7	1.67	20.6
14	14 59.0	15 3.3	54 52.5	1.24	55 8.6	1.44	17 50.9	1.77	21.6
15	15 8.4	15 14.0	55 27.0	1.63	55 47.6	1.80	18 35.2	1.93	22.6
16	15 20.1	15 26.8	56 10.3	+1.96	56 34.7	+2.10	19 23.9	2.13	23.6
17	15 33.8	15 41.2	57 0.6	2.20	57 27.5	2.27	20 17.9	2.36	24.6
18	15 48.7	15 56.2	57 55.0	2.30	58 22.7	2.28	21 17.1	2.56	25.6
19	16 3.5	16 10.6	58 49.7	+2.20	59 15.6	+2.09	22 20.1	2.67	26.6
20	16 17.2	16 23.1	59 39.8	1.91	60 1.5	1.68	23 24.2	2.65	27.6
21	16 28.2	16 32.3	60 20.1	1.40	60 35.1	1.09	6		28.6
22	16 35.3	16 37.1	60 46.2	+0.75	60 53.1	+0.39	0 26.3	2.51	0.3
23	16 37.8	16 37.3	60 55.5	+0.02	60 53.5	−0.34	1 24.5	2.34	1.3
24	16 35.6	16 32.9	60 47.4	−0.67	60 37.4	0.98	2 18.6	2.18	2.3
25	16 29.2	16 24.7	60 23.9	−1.25	60 7.5	−1.47	3 9.5	2.07	3.3
26	16 19.6	16 14.0	59 48.7	1.64	59 28.1	1.77	3 58.4	2.02	4.3
27	16 8.0	16 1.9	59 6.2	1.86	58 43.5	1.90	4 46.8	2.02	5.3
28	15 55.6	15 49.4	58 20.6	−1.90	57 57.8	−1.89	5 35.9	2.08	6.3
29	15 43.3	15 37.4	57 35.3	1.84	57 13.6	1.77	6 26.7	2.16	7.3
30	15 31.7	15 26.3	56 52.8	1.69	56 33.0	1.60	7 19.6	2.24	8.3
31	15 21.3	15 16.5	56 14.4	1.50	55 57.0	1.40	8 14.1	2.29	9.3
32	15 12.1	15 8.0	55 40.8	−1.30	55 25.8	−1.20	9 9.1	2.28	10.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
	MONDAY 1.					**WEDNESDAY 3.**			
0	14 0 45.48	2.1470	S. 16 21 9.4	13.456	0	15 48 7.16	2.3005	S. 25 0 53.2	7.797
1	14 2 54.40	2.1504	16 34 34.0	13.364	1	15 50 26.86	2.3005	25 8 36.8	7.655
2	14 5 3.53	2.1538	16 47 53.1	13.271	2	15 52 46.75	2.3331	25 16 11.8	7.512
3	14 7 12.86	2.1572	17 1 6.5	13.178	3	15 55 6.83	2.3368	25 23 38.2	7.368
4	14 9 22.40	2.1607	17 14 14.2	13.081	4	15 57 27.10	2.3304	25 30 56.0	7.225
5	14 11 32.15	2.1642	17 27 16.2	12.984	5	15 59 47.56	2.3435	25 38 5.2	7.080
6	14 13 42.11	2.1678	17 40 12.3	12.886	6	16 2 8.20	2.3465	25 45 5.6	6.934
7	14 15 52.29	2.1715	17 53 2.5	12.787	7	16 4 29.02	2.3494	25 51 57.2	6.787
8	14 18 2.69	2.1751	18 5 46.7	12.687	8	16 6 50.01	2.3523	25 58 40.0	6.641
9	14 20 13.30	2.1788	18 18 24.9	12.586	9	16 9 11.17	2.3552	26 5 14.1	6.494
10	14 22 24.14	2.1825	18 30 57.0	12.482	10	16 11 32.50	2.3580	26 11 39.3	6.345
11	14 24 35.20	2.1862	18 43 22.8	12.378	11	16 13 53.99	2.3605	26 17 55.5	6.196
12	14 26 46.49	2.1900	18 55 42.4	12.274	12	16 16 15.64	2.3631	26 24 2.8	6.047
13	14 28 58.00	2.1938	19 7 55.7	12.168	13	16 18 37.44	2.3656	26 30 1.1	5.897
14	14 31 9.74	2.1976	19 20 2.6	12.061	14	16 20 59.39	2.3679	26 35 50.4	5.746
15	14 33 21.71	2.2014	19 32 3.0	11.952	15	16 23 21.48	2.3705	26 41 30.6	5.594
16	14 35 33.91	2.2053	19 43 56.9	11.843	16	16 25 43.71	2.3716	26 47 1.7	5.442
17	14 37 46.34	2.2092	19 55 44.2	11.732	17	16 28 6.07	2.3737	26 52 23.7	5.290
18	14 39 59.01	2.2131	20 7 24.8	11.621	18	16 30 28.55	2.3758	26 57 36.5	5.137
19	14 42 11.91	2.2169	20 18 58.7	11.508	19	16 32 51.16	2.3778	27 2 40.2	4.984
20	14 44 25.04	2.2208	20 30 25.8	11.394	20	16 35 13.89	2.3797	27 7 34.6	4.830
21	14 46 38.41	2.2247	20 41 46.0	11.279	21	16 37 36.72	2.3814	27 12 19.8	4.676
22	14 48 52.01	2.2287	20 52 59.3	11.164	22	16 39 59.66	2.3831	27 16 55.7	4.522
23	14 51 5.85	2.2327	S. 21 4 5.7	11.047	23	16 42 22.70	2.3846	S. 27 21 22.4	4.367
	TUESDAY 2.					**THURSDAY 4.**			
0	14 53 19.93	2.2366	S. 21 15 5.0	10.929	0	16 44 45.83	2.3863	S. 27 25 39.8	4.212
1	14 55 34.24	2.2406	21 25 57.2	10.810	1	16 47 9.05	2.3877	27 29 47.8	4.056
2	14 57 48.79	2.2445	21 36 42.2	10.689	2	16 49 32.35	2.3889	27 33 46.5	3.900
3	15 0 3.58	2.2484	21 47 19.9	10.568	3	16 51 55.72	2.3901	27 37 35.8	3.743
4	15 2 18.60	2.2523	21 57 50.3	10.446	4	16 54 19.16	2.3912	27 41 15.7	3.587
5	15 4 33.86	2.2562	22 8 13.4	10.323	5	16 56 42.67	2.3922	27 44 46.2	3.431
6	15 6 49.35	2.2602	22 18 29.1	10.199	6	16 59 6.23	2.3931	27 48 7.4	3.274
7	15 9 5.08	2.2641	22 28 37.3	10.073	7	17 1 29.84	2.3939	27 51 19.1	3.116
8	15 11 21.04	2.2680	22 38 37.9	9.946	8	17 3 53.50	2.3946	27 54 21.3	2.958
9	15 13 37.24	2.2719	22 48 30.8	9.819	9	17 6 17.19	2.3951	27 57 14.1	2.801
10	15 15 53.67	2.2757	22 58 16.1	9.691	10	17 8 40.91	2.3955	27 59 57.4	2.643
11	15 18 10.33	2.2796	23 7 53.7	9.562	11	17 11 4.65	2.3958	28 2 31.3	2.486
12	15 20 27.22	2.2834	23 17 23.5	9.431	12	17 13 28.41	2.3961	28 4 55.7	2.327
13	15 22 44.34	2.2872	23 26 45.4	9.300	13	17 15 52.18	2.3963	28 7 10.6	2.169
14	15 25 1.69	2.2910	23 35 59.5	9.168	14	17 18 15.95	2.3963	28 9 16.0	2.012
15	15 27 19.26	2.2947	23 45 5.6	9.035	15	17 20 39.72	2.3961	28 11 12.0	1.854
16	15 29 37.05	2.2984	23 54 3.7	8.901	16	17 23 3.48	2.3958	28 12 58.5	1.696
17	15 31 55.06	2.3021	24 2 53.7	8.765	17	17 25 27.22	2.3954	28 14 35.5	1.537
18	15 34 13.30	2.3057	24 11 35.5	8.629	18	17 27 50.93	2.3949	28 16 3.0	1.379
19	15 36 31.75	2.3093	24 20 9.1	8.493	19	17 30 14.61	2.3943	28 17 21.0	1.220
20	15 38 50.41	2.3129	24 28 34.6	8.356	20	17 32 38.25	2.3937	28 18 29.6	1.061
21	15 41 9.29	2.3164	24 36 51.8	8.217	21	17 35 1.85	2.3929	28 19 28.7	0.902
22	15 43 28.38	2.3198	24 45 0.6	8.078	22	17 37 25.40	2.3920	28 20 18.4	0.742
23	15 45 47.67	2.3232	24 53 1.1	7.938	23	17 39 48.89	2.3909	28 20 58.6	0.582
24	15 48 7.16	2.3266	S. 25 0 53.2	7.797	24	17 42 12.31	2.3897	S. 28 21 29.4	0.424

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 5.			
	h m s	s	° ′ ″	″
0	17 42 12.31	9.3897	S. 28 21 29.4	0.434
1	17 44 35.66	9.3865	28 21 50.7	0.377
2	17 46 58.93	9.3871	28 22 2.7	− 0.191
3	17 49 22.11	9.3856	28 22 5.3	+ 0.035
4	17 51 45.20	9.3840	28 21 58.5	0.191
5	17 54 8.19	9.3892	28 21 42.4	0.346
6	17 56 31.07	9.3803	28 21 17.0	0.501
7	17 58 53.83	9.3784	28 20 42.3	0.656
8	18 1 16.48	9.3764	28 19 58.3	0.811
9	18 3 39.00	9.3742	28 19 5.0	0.965
10	18 6 1.38	9.3719	28 18 2.5	1.118
11	18 8 23.63	9.3696	28 16 50.8	1.271
12	18 10 45.73	9.3670	28 15 29.9	1.424
13	18 13 7.67	9.3644	28 13 59.9	1.577
14	18 15 29.46	9.3617	28 12 20.7	1.728
15	18 17 51.08	9.3588	28 10 32.5	1.879
16	18 20 12.52	9.3559	28 8 35.2	2.030
17	18 22 33.79	9.3529	28 6 28.9	2.179
18	18 24 54.87	9.3498	28 4 13.7	2.328
19	18 27 15.76	9.3466	28 1 49.5	2.476
20	18 29 36.46	9.3432	27 59 16.5	2.624
21	18 31 56.95	9.3398	27 56 34.6	2.772
22	18 34 17.24	9.3364	27 53 43.8	2.919
23	18 36 37.32	9.3327	S. 27 50 44.3	3.064
	SATURDAY 6.			
0	18 38 57.17	9.3290	S. 27 47 36.1	3.209
1	18 41 16.80	9.3252	27 44 19.2	3.354
2	18 43 36.20	9.3214	27 40 53.6	3.498
3	18 45 55.37	9.3174	27 37 19.4	3.641
4	18 48 14.29	9.3133	27 33 36.7	3.783
5	18 50 32.97	9.3092	27 29 45.4	3.925
6	18 52 51.40	9.3051	27 25 45.7	4.065
7	18 55 9.58	9.3007	27 21 37.6	4.205
8	18 57 27.49	9.2963	27 17 21.1	4.343
9	18 59 45.14	9.2919	27 12 56.4	4.481
10	19 2 2.52	9.2874	27 8 23.4	4.618
11	19 4 19.63	9.2829	27 3 42.2	4.755
12	19 6 36.47	9.2783	26 58 52.8	4.891
13	19 8 53.03	9.2736	26 53 55.3	5.025
14	19 11 9.30	9.2688	26 48 49.8	5.157
15	19 13 25.28	9.2639	26 43 36.4	5.289
16	19 15 40.97	9.2590	26 38 15.1	5.421
17	19 17 56.36	9.2541	26 32 45.9	5.552
18	19 20 11.46	9.2491	26 27 8.8	5.682
19	19 22 26.25	9.2440	26 21 24.0	5.810
20	19 24 40.74	9.2389	26 15 31.6	5.938
21	19 26 54.92	9.2338	26 9 31.5	6.065
22	19 29 8.79	9.2286	26 3 23.8	6.191
23	19 31 22.35	9.2233	25 57 8.6	6.315
24	19 33 35.59	9.2180	S. 25 50 46.0	6.438

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 7.			
	h m s	s	° ′ ″	″
0	19 33 35.59	9.2180	S. 25 50 46.0	6.438
1	19 35 48.51	9.2127	25 44 16.0	6.561
2	19 38 1.11	9.2073	25 37 38.7	6.682
3	19 40 13.39	9.2019	25 30 54.1	6.803
4	19 42 25.34	9.1964	25 24 2.3	6.922
5	19 44 36.96	9.1910	25 17 3.5	7.039
6	19 46 48.26	9.1856	25 9 57.6	7.156
7	19 48 59.23	9.1800	25 2 44.7	7.273
8	19 51 9.86	9.1744	24 55 24.8	7.388
9	19 53 20.16	9.1689	24 47 58.1	7.502
10	19 55 30.13	9.1633	24 40 24.6	7.615
11	19 57 39.76	9.1577	24 32 44.3	7.727
12	19 59 49.05	9.1520	24 24 57.3	7.838
13	20 1 58.00	9.1463	24 17 3.7	7.947
14	20 4 6.61	9.1407	24 9 3.6	8.056
15	20 6 14.89	9.1351	24 0 57.0	8.163
16	20 8 22.83	9.1294	23 52 44.0	8.270
17	20 10 30.42	9.1238	23 44 24.6	8.375
18	20 12 37.68	9.1182	23 35 59.0	8.479
19	20 14 44.60	9.1124	23 27 27.2	8.582
20	20 16 51.17	9.1067	23 18 49.2	8.684
21	20 18 57.40	9.1010	23 10 5.1	8.785
22	20 21 3.29	9.0953	23 1 15.0	8.884
23	20 23 8.84	9.0896	S. 22 52 19.0	8.983
	MONDAY 8.			
0	20 25 14.04	9.0839	S. 22 43 17.0	9.080
1	20 27 18.90	9.0783	22 34 9.2	9.178
2	20 29 23.43	9.0727	22 24 55.7	9.273
3	20 31 27.62	9.0670	22 15 36.5	9.367
4	20 33 31.47	9.0613	22 6 11.7	9.460
5	20 35 34.98	9.0557	21 56 41.3	9.552
6	20 37 38.16	9.0502	21 47 5.4	9.643
7	20 39 41.00	9.0446	21 37 24.1	9.733
8	20 41 43.51	9.0390	21 27 37.4	9.822
9	20 43 45.68	9.0334	21 17 45.4	9.911
10	20 45 47.52	9.0279	21 7 48.1	9.998
11	20 47 49.03	9.0225	20 57 45.7	10.083
12	20 49 50.22	9.0171	20 47 38.2	10.168
13	20 51 51.08	9.0116	20 37 25.6	10.250
14	20 53 51.61	9.0061	20 27 8.0	10.333
15	20 55 51.81	9.0007	20 16 45.6	10.414
16	20 57 51.69	8.9954	20 6 18.3	10.495
17	20 59 51.26	8.9901	19 55 46.2	10.574
18	21 1 50.51	8.9848	19 45 9.4	10.650
19	21 3 49.44	8.9796	19 34 27.9	10.730
20	21 5 48.06	8.9743	19 23 41.8	10.807
21	21 7 46.36	8.9691	19 12 51.1	10.882
22	21 9 44.35	8.9640	19 1 55.9	10.956
23	21 11 42.04	8.9590	18 50 56.4	11.029
24	21 13 39.43	8.9539	S. 18 39 52.5	11.101

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 9.					**THURSDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 13 39.43	1.9539	S. 18 39 52.5	11.101	0	22 42 35.48	1.7747	S. 8 41 32.1	13.501
1	21 15 36.51	1.9488	18 28 44.3	11.179	1	22 44 21.89	1.7794	8 28 1.1	13.531
2	21 17 33.29	1.9439	18 17 31.8	11.242	2	22 46 8.17	1.7703	8 14 28.4	13.559
3	21 19 29.78	1.9390	18 6 15.2	11.319	3	22 47 54.33	1.7663	8 0 54.0	13.588
4	21 21 25.97	1.9341	17 54 54.4	11.381	4	22 49 40.37	1.7664	7 47 17.9	13.616
5	21 23 21.87	1.9292	17 43 29.5	11.447	5	22 51 26.30	1.7645	7 33 40.1	13.643
6	21 25 17.48	1.9244	17 32 0.7	11.513	6	22 53 12.11	1.7626	7 20 0.7	13.669
7	21 27 12.80	1.9197	17 20 27.9	11.579	7	22 54 57.81	1.7608	7 6 19.8	13.695
8	21 29 7.84	1.9150	17 8 51.2	11.643	8	22 56 43.41	1.7592	6 52 37.3	13.721
9	21 31 2.60	1.9103	16 57 10.7	11.707	9	22 58 28.92	1.7577	6 38 53.3	13.745
10	21 32 57.08	1.9057	16 45 26.4	11.769	10	23 0 14.33	1.7561	6 25 7.9	13.769
11	21 34 51.29	1.9012	16 33 38.4	11.831	11	23 1 59.65	1.7547	6 11 21.0	13.792
12	21 36 45.22	1.8967	16 21 46.7	11.892	12	23 3 44.89	1.7533	5 57 32.8	13.814
13	21 38 38.89	1.8922	16 9 51.4	11.952	13	23 5 30.05	1.7520	5 43 43.3	13.836
14	21 40 32.29	1.8878	15 57 52.5	12.010	14	23 7 15.13	1.7507	5 29 52.5	13.857
15	21 42 25.43	1.8835	15 45 50.2	12.067	15	23 9 0.13	1.7496	5 16 0.4	13.877
16	21 44 18.31	1.8792	15 33 44.5	12.124	16	23 10 45.07	1.7485	5 2 7.2	13 897
17	21 46 10.94	1.8750	15 21 35.3	12.181	17	23 12 29.95	1.7475	4 48 12.8	13.916
18	21 48 3.31	1.8708	15 9 22.8	12.236	18	23 14 14.77	1.7465	4 34 17.3	13.934
19	21 49 55.43	1.8667	14 57 7.0	12.290	19	23 15 59.53	1.7457	4 20 20.7	13.952
20	21 51 47.31	1.8627	14 44 48.0	12.343	20	23 17 44.25	1.7449	4 6 23.1	13.969
21	21 53 38.95	1.8587	14 32 25.8	12.396	21	23 19 28.92	1.7442	3 52 24.5	13.985
22	21 55 30.35	1.8548	14 20 0.5	12.447	22	23 21 13.55	1.7435	3 38 24.9	14.001
23	21 57 21.52	1.8509	S. 14 7 32.1	12.497	23	23 22 58.14	1.7429	S. 3 24 24.4	14.016
	WEDNESDAY 10.					**FRIDAY 12.**			
0	21 59 12.46	1.8471	S. 13 55 0.8	12.547	0	23 24 42.70	1.7426	S. 3 10 23.0	14.030
1	22 1 3.17	1.8433	13 42 26.5	12.597	1	23 26 27.24	1.7421	2 56 20.8	14.043
2	22 2 53.66	1.8396	13 29 49.2	12.645	2	23 28 11.75	1.7417	2 42 17.8	14.056
3	22 4 43.92	1.8359	13 17 9.1	12.692	3	23 29 56.24	1.7414	2 28 14.1	14.068
4	22 6 33.97	1.8324	13 4 26.2	12.738	4	23 31 40.72	1.7413	2 14 9.7	14.079
5	22 8 23.81	1.8289	12 51 40.5	12.784	5	23 33 25.19	1.7412	2 0 4.6	14.091
6	22 10 13.43	1.8254	12 38 52.1	12.828	6	23 35 9.66	1.7412	1 45 58.8	14.102
7	22 12 2.85	1.8220	12 26 1.1	12.872	7	23 36 54.13	1.7412	1 31 52.4	14.111
8	22 13 52.07	1.8187	12 13 7.4	12.916	8	23 38 38.60	1.7413	1 17 45.5	14.119
9	22 15 41.09	1.8154	12 0 11.2	12.958	9	23 40 23.08	1.7415	1 3 38.1	14.127
10	22 17 29.92	1.8123	11 47 12.5	12.999	10	23 42 7.58	1.7418	0 49 30.2	14.135
11	22 19 18.56	1.8092	11 34 11.3	13.041	11	23 43 52.10	1.7422	0 35 21.9	14.142
12	22 21 7.02	1.8061	11 21 7.6	13.081	12	23 45 36.64	1.7426	0 21 13.1	14.149
13	22 22 55.29	1.8031	11 8 1.6	13.119	13	23 47 21.21	1.7431	S. 0 7 4.0	14.154
14	22 24 43.39	1.8002	10 54 53.3	13.157	14	23 49 5.81	1.7437	N. 0 7 5.4	14.159
15	22 26 31.31	1.7973	10 41 42.7	13.195	15	23 50 50.45	1.7444	0 21 15.1	14.164
16	22 28 19.06	1.7945	10 28 29.9	13.232	16	23 52 35.14	1.7452	0 35 25.1	14.167
17	22 30 6.65	1.7918	10 15 14.8	13.269	17	23 54 19.87	1.7459	0 49 35.2	14.170
18	22 31 54.08	1.7892	10 1 57.6	13.304	18	23 56 4.65	1.7468	1 3 45.5	14.172
19	22 33 41.35	1.7866	9 48 38.3	13.338	19	23 57 49.49	1.7478	1 17 55.9	14.174
20	22 35 28.47	1.7840	9 35 17.0	13.372	20	23 59 34.39	1.7489	1 32 6.4	14.175
21	22 37 15.43	1.7815	9 21 53.7	13.405	21	0 1 19.36	1.7501	1 46 16.9	14.175
22	22 39 2. 5	1.7792	9 8 28.4	13.437	22	0 3 4.40	1.7513	2 0 27.4	14.175
23	22 40 48.93	1.7769	8 55 1.2	13.469	23	0 4 49.52	1.7526	2 14 37.9	14.174
24	22 42 35.48	1.7747	S. 8 41 32.1	13.501	24	0 6 34.71	1.7539	N. 2 28 48.3	14.172

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 13.			
0	h m s 0 6 34.71	s 1.7539	° ′ ″ N. 2 26 48.3	″ 14.179
1	0 8 19.99	1.7565	2 42 58.6	14.170
2	0 10 5.37	1.7571	2 57 8.7	14.167
3	0 11 50.84	1.7587	3 11 18.6	14.163
4	0 13 36.41	1.7604	3 25 28.3	14.159
5	0 15 22.09	1.7622	3 39 37.7	14.153
6	0 17 7.87	1.7640	3 53 46.7	14.147
7	0 18 53.77	1.7660	4 7 55.3	14.141
8	0 20 39.79	1.7681	4 22 3.6	14.134
9	0 22 25.94	1.7703	4 36 11.4	14.126
10	0 24 12.22	1.7725	4 50 18.7	14.117
11	0 25 58.64	1.7747	5 4 25.5	14.107
12	0 27 45.19	1.7771	5 18 31.6	14.097
13	0 29 31.89	1.7796	5 32 37.1	14.087
14	0 31 18.74	1.7821	5 46 42.0	14.075
15	0 33 5.74	1.7847	6 0 46.1	14.062
16	0 34 52.90	1.7874	6 14 49.4	14.049
17	0 36 40.23	1.7902	6 28 52.0	14.036
18	0 38 27.72	1.7930	6 42 53.7	14.021
19	0 40 15.39	1.7960	6 56 54.5	14.005
20	0 42 3.24	1.7990	7 10 54.3	13.989
21	0 43 51.27	1.8021	7 24 53.1	13.972
22	0 45 39.49	1.8053	7 38 50.9	13.954
23	0 47 27.91	1.8087	N. 7 52 47.6	13.936
	SUNDAY 14.			
0	0 49 16.53	1.8120	N. 8 6 43.2	13.917
1	0 51 5.35	1.8154	8 20 37.6	13.897
2	0 52 54.38	1.8190	8 34 30.8	13.875
3	0 54 43.63	1.8227	8 48 22.6	13.853
4	0 56 33.10	1.8264	9 2 13.1	13.830
5	0 58 22.80	1.8301	9 16 2.2	13.807
6	1 0 12.72	1.8339	9 29 49.9	13.782
7	1 2 2.87	1.8379	9 43 36.1	13.757
8	1 3 53.27	1.8421	9 57 20.8	13.731
9	1 5 43.92	1.8462	10 11 3.8	13.704
10	1 7 34.82	1.8504	10 24 45.2	13.676
11	1 9 25.97	1.8547	10 38 24.9	13.647
12	1 11 17.38	1.8590	10 52 2.9	13.617
13	1 13 9.05	1.8635	11 5 39.0	13.587
14	1 15 1.00	1.8681	11 19 13.3	13.556
15	1 16 53.23	1.8726	11 32 45.7	13.523
16	1 18 45.74	1.8776	11 46 16.1	13.490
17	1 20 38.54	1.8823	11 59 44.5	13.456
18	1 22 31.62	1.8872	12 13 10.8	13.420
19	1 24 25.00	1.8922	12 26 34.9	13.384
20	1 26 18.69	1.8973	12 39 56.9	13.347
21	1 28 12.68	1.9024	12 53 16.6	13.309
22	1 30 6.98	1.9077	13 6 34.0	13.270
23	1 32 1.60	1.9131	13 19 49.0	13.229
24	1 33 56.55	1.9185	N. 13 33 1.5	13.188

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 15.			
0	h m s 1 33 56.55	s 1.9185	° ′ ″ N. 13 33 1.5	″ 13.188
1	1 35 51.82	1.9239	13 46 11.5	13.146
2	1 37 47.42	1.9295	13 59 19.0	13.102
3	1 39 43.36	1.9352	14 12 23.8	13.057
4	1 41 39.64	1.9409	14 25 25.9	13.012
5	1 43 36.27	1.9467	14 38 25.3	12.966
6	1 45 33.24	1.9525	14 51 21.8	12.918
7	1 47 30.57	1.9586	15 4 15.4	12.869
8	1 49 28.27	1.9647	15 17 6.1	12.819
9	1 51 26.33	1.9708	15 29 53.7	12.767
10	1 53 24.76	1.9770	15 42 38.2	12.715
11	1 55 23.57	1.9834	15 55 19.5	12.662
12	1 57 22.77	1.9896	16 7 57.6	12.606
13	1 59 22.35	1.9960	16 20 32.4	12.550
14	2 1 22.32	2.0027	16 33 3.8	12.494
15	2 3 22.68	2.0093	16 45 31.7	12.436
16	2 5 23.44	2.0160	16 57 56.1	12.377
17	2 7 24.60	2.0228	17 10 16.9	12.315
18	2 9 26.17	2.0297	17 22 33.9	12.253
19	2 11 28.16	2.0366	17 34 47.2	12.190
20	2 13 30.56	2.0435	17 46 56.7	12.125
21	2 15 33.38	2.0506	17 59 2.2	12.059
22	2 17 36.63	2.0577	18 11 3.7	11.992
23	2 19 40.31	2.0649	N. 18 23 1.2	11.923
	TUESDAY 16.			
0	2 21 44.42	2.0722	N. 18 34 54.5	11.853
1	2 23 48.97	2.0796	18 46 43.6	11.782
2	2 25 53.97	2.0870	18 58 28.4	11.709
3	2 27 59.41	2.0944	19 10 8.7	11.634
4	2 30 5.30	2.1020	19 21 44.5	11.559
5	2 32 11.65	2.1095	19 33 15.8	11.482
6	2 34 18.45	2.1172	19 44 42.4	11.404
7	2 36 25.72	2.1250	19 56 4.3	11.324
8	2 38 33.45	2.1327	20 7 21.3	11.242
9	2 40 41.65	2.1406	20 18 33.4	11.160
10	2 42 50.32	2.1485	20 29 40.5	11.076
11	2 44 59.47	2.1564	20 40 42.5	10.990
12	2 47 9.09	2.1643	20 51 39.3	10.902
13	2 49 19.19	2.1724	21 2 30.8	10.814
14	2 51 29.78	2.1806	21 13 17.0	10.724
15	2 53 40.86	2.1887	21 23 57.7	10.632
16	2 55 52.43	2.1969	21 34 32.8	10.538
17	2 58 4.49	2.2052	21 45 2.3	10.443
18	3 0 17.05	2.2134	21 55 26.0	10.346
19	3 2 30.10	2.2217	22 5 43.8	10.247
20	3 4 43.66	2.2301	22 15 55.7	10.148
21	3 6 57.72	2.2385	22 26 1.6	10.047
22	3 9 12.28	2.2469	22 36 1.3	9.943
23	3 11 27.35	2.2553	22 45 54.8	9.839
24	3 13 42.92	2.2637	N. 22 55 42.0	9.732

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 13 42.92	2.3637	N.22 55 42.0	9.739
1	3 15 59.00	2.3723	23 5 22.7	9.694
2	3 18 15.60	2.3809	23 14 56.9	9.514
3	3 20 32.71	2.3894	23 24 24.4	9.409
4	3 22 50.33	2.3979	23 33 45.2	9.290
5	3 25 8.46	2.3065	23 42 59.2	9.175
6	3 27 27.11	2.3151	23 52 6.2	9.058
7	3 29 46.27	2.3237	24 1 6.2	8.940
8	3 32 5.95	2.3322	24 9 59.0	8.819
9	3 34 26.14	2.3408	24 18 44.5	8.697
10	3 36 46.85	2.3495	24 27 22.7	8.574
11	3 39 8.08	2.3581	24 35 53.4	8.448
12	3 41 29.82	2.3667	24 44 16.5	8.321
13	3 43 52.08	2.3752	24 52 31.9	8.192
14	3 46 14.85	2.3837	25 0 39.6	8.062
15	3 48 38.13	2.3922	25 8 39.4	7.930
16	3 51 1.92	2.4007	25 16 31.2	7.796
17	3 53 26.22	2.4092	25 24 14.9	7.659
18	3 55 51.03	2.4177	25 31 50.3	7.521
19	3 58 16.35	2.4262	25 39 17.4	7.382
20	4 0 42.17	2.4345	25 46 36.1	7.242
21	4 3 8.49	2.4428	25 53 46.4	7.099
22	4 5 35.31	2.4511	26 0 48.0	6.954
23	4 8 2.63	2.4594	N.26 7 40.9	6.807

THURSDAY 18.

0	4 10 30.44	2.4676	N.26 14 24.9	6.659
1	4 12 58.74	2.4757	26 21 0.0	6.510
2	4 15 27.53	2.4838	26 27 26.1	6.358
3	4 17 56.80	2.4918	26 33 43.0	6.204
4	4 20 26.55	2.4998	26 39 50.6	6.049
5	4 22 56.78	2.5077	26 45 48.9	5.893
6	4 25 27.47	2.5154	26 51 37.8	5.735
7	4 27 58.63	2.5232	26 57 17.1	5.575
8	4 30 30.25	2.5308	27 2 46.8	5.413
9	4 33 2.33	2.5384	27 8 6.7	5.250
10	4 35 34.86	2.5458	27 13 16.8	5.086
11	4 38 7.83	2.5532	27 18 17.0	4.919
12	4 40 41.24	2.5604	27 23 7.1	4.751
13	4 43 15.08	2.5676	27 27 47.1	4.582
14	4 45 49.35	2.5746	27 32 16.9	4.410
15	4 48 24.03	2.5814	27 36 36.3	4.237
16	4 50 59.12	2.5883	27 40 45.3	4.063
17	4 53 34.62	2.5951	27 44 43.8	3.887
18	4 56 10.53	2.6017	27 48 31.7	3.709
19	4 58 46.82	2.6080	27 52 8.9	3.531
20	5 1 23.49	2.6142	27 55 35.4	3.351
21	5 4 0.53	2.6204	27 58 51.0	3.169
22	5 6 37.94	2.6265	28 1 55.7	2.986
23	5 9 15.71	2.6323	28 4 49.4	2.802
24	5 11 53.82	2.6380	N.28 7 32.0	2.617

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 11 53.82	2.6380	N.28 7 32.0	2.617
1	5 14 32.27	2.6436	28 10 3.4	2.430
2	5 17 11.05	2.6491	28 12 23.6	2.242
3	5 19 50.16	2.6543	28 14 32.4	2.052
4	5 22 29.57	2.6593	28 16 29.8	1.862
5	5 25 9.28	2.6643	28 18 15.8	1.671
6	5 27 49.29	2.6692	28 19 50.3	1.478
7	5 30 29.58	2.6737	28 21 13.2	1.284
8	5 33 10.13	2.6780	28 22 24.4	1.089
9	5 35 50.94	2.6823	28 23 23.9	0.893
10	5 38 32.01	2.6864	28 24 11.6	0.697
11	5 41 13.31	2.6902	28 24 47.6	0.501
12	5 43 54.83	2.6938	28 25 11.7	0.302
13	5 46 36.57	2.6974	28 25 23.9	+ 0.103
14	5 49 18.52	2.7007	28 25 24.1	− 0.097
15	5 52 0.66	2.7039	28 25 12.2	0.298
16	5 54 42.99	2.7068	28 24 48.3	0.499
17	5 57 25.48	2.7095	28 24 12.3	0.701
18	6 0 8.13	2.7121	28 23 24.1	0.904
19	6 2 50.93	2.7144	28 22 23.8	1.107
20	6 5 33.86	2.7166	28 21 11.3	1.310
21	6 8 16.92	2.7186	28 19 46.6	1.514
22	6 11 0.09	2.7203	28 18 9.6	1.718
23	6 13 43.35	2.7218	N.28 16 20.4	1.922

SATURDAY 20.

0	6 16 26.70	2.7232	N.28 14 18.9	2.127
1	6 19 10.13	2.7243	28 12 5.1	2.332
2	6 21 53.62	2.7252	28 9 39.0	2.538
3	6 24 37.16	2.7260	28 7 0.5	2.744
4	6 27 20.74	2.7265	28 4 9.7	2.949
5	6 30 4.34	2.7268	28 1 6.6	3.154
6	6 32 47.96	2.7270	27 57 51.2	3.359
7	6 35 31.58	2.7269	27 54 23.5	3.565
8	6 38 15.19	2.7267	27 50 43.4	3.771
9	6 40 58.78	2.7263	27 46 51.0	3.976
10	6 43 42.34	2.7256	27 42 46.3	4.181
11	6 46 25.85	2.7247	27 38 29.3	4.385
12	6 49 9.31	2.7237	27 34 0.1	4.589
13	6 51 52.70	2.7225	27 29 18.6	4.793
14	6 54 36.01	2.7211	27 24 24.9	4.996
15	6 57 19.23	2.7194	27 19 19.1	5.198
16	7 0 2.34	2.7176	27 14 1.1	5.401
17	7 2 45.34	2.7157	27 8 31.0	5.603
18	7 5 28.22	2.7135	27 2 48.8	5.803
19	7 8 10.96	2.7111	26 56 54.6	6.003
20	7 10 53.55	2.7086	26 50 48.4	6.203
21	7 13 35.99	2.7059	26 44 30.2	6.402
22	7 16 18.26	2.7030	26 38 0.1	6.600
23	7 19 0.35	2.7000	26 31 18.2	6.797
24	7 21 42.26	2.6968	N.26 24 24.5	6.993

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 21.			
	h m s	s	° ′ ″	″
0	7 21 42.26	2.6966	N.26 24 24.5	6.903
1	7 24 23.97	2.6934	26 17 19.0	7.186
2	7 27 5.47	2.6899	26 10 1.9	7.361
3	7 29 46.76	2.6860	26 2 33.2	7.574
4	7 32 27.82	2.6823	25 54 53.0	7.767
5	7 35 8.64	2.6783	25 47 1.2	7.956
6	7 37 49.22	2.6742	25 38 58.0	8.147
7	7 40 29.55	2.6700	25 30 43.5	8.335
8	7 43 9.62	2.6656	25 22 17.8	8.522
9	7 45 49.42	2.6610	25 13 40.9	8.707
10	7 48 28.94	2.6564	25 4 53.0	8.891
11	7 51 8.19	2.6517	24 55 54.0	9.074
12	7 53 47.15	2.6468	24 46 44.1	9.255
13	7 56 25.81	2.6417	24 37 23.4	9.434
14	7 59 4.16	2.6366	24 27 52.0	9.612
15	8 1 42.20	2.6313	24 18 9.9	9.790
16	8 4 19.92	2.6260	24 8 17.2	9.965
17	8 6 57.32	2.6205	23 58 14.1	10.138
18	8 9 34.38	2.6149	23 48 0.7	10.309
19	8 12 11.11	2.6093	23 37 37.0	10.479
20	8 14 47.50	2.6036	23 27 3.2	10.647
21	8 17 23.54	2.5977	23 16 19.3	10.814
22	8 19 59.23	2.5918	23 5 25.5	10.978
23	8 22 34.56	2.5859	N.22 54 21.9	11.142
	MONDAY 22.			
0	8 25 9.54	2.5799	N.22 43 8.5	11.303
1	8 27 44.15	2.5738	22 31 45.5	11.462
2	8 30 18.39	2.5676	22 20 13.1	11.618
3	8 32 52.26	2.5613	22 8 31.3	11.774
4	8 35 25.75	2.5550	21 56 40.2	11.927
5	8 37 58.86	2.5487	21 44 40.0	12.078
6	8 40 31.60	2.5424	21 32 30.8	12.227
7	8 43 3.95	2.5360	21 20 12.7	12.375
8	8 45 35.91	2.5295	21 7 45.8	12.521
9	8 48 7.49	2.5231	20 55 10.2	12.664
10	8 50 38.68	2.5165	20 42 26.1	12.805
11	8 53 9.47	2.5099	20 29 33.6	12.945
12	8 55 39.87	2.5034	20 16 32.7	13.083
13	8 58 9.88	2.4968	20 3 23.7	13.217
14	9 0 39.49	2.4902	19 50 6.7	13.349
15	9 3 8.70	2.4836	19 36 41.8	13.480
16	9 5 37.52	2.4770	19 23 9.1	13.606
17	9 8 5.94	2.4703	19 9 28.8	13.735
18	9 10 33.96	2.4637	18 55 40.9	13.860
19	9 13 1.58	2.4571	18 41 45.6	13.982
20	9 15 28.81	2.4505	18 27 43.1	14.102
21	9 17 55.64	2.4438	18 13 33.4	14.220
22	9 20 22.07	2.4372	17 59 16.7	14.335
23	9 22 48.11	2.4307	17 44 53.2	14.448
24	9 25 13.75	2.4241	N.17 30 22.9	14.560

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 23.			
	h m s	s	° ′ ″	″
0	9 25 13.75	2.4241	N.17 30 22.9	14.560
1	9 27 39.00	2.4176	17 15 46.0	14.669
2	9 30 3.86	2.4110	17 1 2.6	14.776
3	9 32 28.32	2.4045	16 46 12.9	14.881
4	9 34 52.40	2.3981	16 31 16.9	14.983
5	9 37 16.09	2.3917	16 16 14.9	15.083
6	9 39 39.40	2.3853	16 1 6.9	15.180
7	9 42 2.32	2.3789	15 45 53.1	15.275
8	9 44 24.86	2.3726	15 30 33.6	15.371
9	9 46 47.03	2.3663	15 15 8.6	15.462
10	9 49 8.82	2.3601	14 59 38.2	15.552
11	9 51 30.24	2.3539	14 44 2.4	15.640
12	9 53 51.29	2.3477	14 28 21.4	15.725
13	9 56 11.97	2.3417	14 12 35.4	15.807
14	9 58 32.29	2.3357	13 56 44.6	15.887
15	10 0 52.25	2.3297	13 40 49.0	15.966
16	10 3 11.85	2.3237	13 24 48.7	16.042
17	10 5 31 10	2.3178	13 8 43.9	16.116
18	10 7 49.99	2.3120	12 52 34.8	16.187
19	10 10 8.54	2.3063	12 36 21.4	16.257
20	10 12 26.75	2.3007	12 20 3.9	16.325
21	10 14 44.62	2.2951	12 3 42.4	16.390
22	10 17 2.16	2.2896	11 47 17.1	16.453
23	10 19 19.37	2.2841	N.11 30 48.0	16.515
	WEDNESDAY 24.			
0	10 21 36.25	2.2786	N.11 14 15.3	16.574
1	10 23 52.81	2.2733	10 57 39.1	16.631
2	10 26 9.05	2.2681	10 40 59.6	16.686
3	10 28 24.98	2.2629	10 24 16.8	16.739
4	10 30 40.60	2.2578	10 7 30.9	16.789
5	10 32 55.92	2.2528	9 50 42.1	16.837
6	10 35 10.94	2.2478	9 33 50.4	16.884
7	10 37 25.66	2.2430	9 16 56.0	16.928
8	10 39 40.10	2.2382	8 59 59.0	16.970
9	10 41 54.25	2.2335	8 42 59.4	17.010
10	10 44 8.12	2.2289	8 25 57.5	17.050
11	10 46 21.72	2.2244	8 8 53.4	17.087
12	10 48 35.05	2.2199	7 51 47.1	17.122
13	10 50 48.11	2.2155	7 34 38.8	17.154
14	10 53 0.91	2.2112	7 17 28.6	17.184
15	10 55 13.46	2.2071	7 0 16.7	17.212
16	10 57 25.76	2.2030	6 43 3.1	17.239
17	10 59 37.82	2.1989	6 25 48.0	17.264
18	11 1 49.63	2.1949	6 8 31.4	17.287
19	11 4 1.21	2.1911	5 51 13.5	17.308
20	11 6 12.56	2.1873	5 33 54.4	17.327
21	11 8 23.69	2.1837	5 16 34.2	17.344
22	11 10 34.61	2.1801	4 59 13.1	17.359
23	11 12 45.31	2.1766	4 41 51.1	17.373
24	11 14 55.80	2.1732	N. 4 24 28.3	17.385

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 25.			
	h m s	s	° ′ ″	″
0	11 14 55.80	2.1739	N. 4 24 26.3	17.385
1	11 17 6.09	2.1699	4 7 4.9	17.395
2	11 19 16.19	2.1667	3 49 40.9	17.403
3	11 21 26.10	2.1636	3 32 16.6	17.408
4	11 23 35.82	2.1605	3 14 52.0	17.413
5	11 25 45.36	2.1576	2 57 27.1	17.416
6	11 27 54.73	2.1547	2 40 2.1	17.417
7	11 30 3.93	2.1520	2 22 37.1	17.416
8	11 32 12.97	2.1493	2 5 12.2	17.413
9	11 34 21.85	2.1467	1 47 47.6	17.408
10	11 36 30.58	2.1443	1 30 23.3	17.402
11	11 38 39.17	2.1419	1 12 59.4	17.394
12	11 40 47.61	2.1395	0 55 36.0	17.385
13	11 42 55.91	2.1373	0 38 13.2	17.373
14	11 45 4.09	2.1353	0 20 51.2	17.360
15	11 47 12.15	2.1333	N. 0 3 30.0	17.346
16	11 49 20.09	2.1314	S. 0 13 50.3	17.330
17	11 51 27.92	2.1295	0 31 9.6	17.313
18	11 53 35.63	2.1277	0 48 27.8	17.293
19	11 55 43.24	2.1261	1 5 44.8	17.272
20	11 57 50.76	2.1246	1 23 0.5	17.249
21	11 59 58.19	2.1231	1 40 14.7	17.224
22	12 2 5.53	2.1218	1 57 27.4	17.199
23	12 4 12.80	2.1205	S. 2 14 38.6	17.172
	FRIDAY 26.			
0	12 6 19.99	2.1193	S. 2 31 48.1	17.143
1	12 8 27.11	2.1182	2 48 55.8	17.113
2	12 10 34.17	2.1171	3 6 1.6	17.081
3	12 12 41.16	2.1161	3 23 5.5	17.047
4	12 14 48.10	2.1153	3 40 7.3	17.012
5	12 16 55.00	2.1146	3 57 7.0	16.976
6	12 19 1.86	2.1140	4 14 4.4	16.938
7	12 21 8.68	2.1134	4 30 59.5	16.898
8	12 23 15.47	2.1129	4 47 52.2	16.857
9	12 25 22.23	2.1125	5 4 42.4	16.815
10	12 27 28.97	2.1122	5 21 30.0	16.772
11	12 29 35.69	2.1119	5 38 15.0	16.727
12	12 31 42.40	2.1118	5 54 57.2	16.680
13	12 33 49.10	2.1118	6 11 36.6	16.632
14	12 35 55.81	2.1118	6 28 13.0	16.582
15	12 38 2.52	2.1119	6 44 46.4	16.532
16	12 40 9.24	2.1121	7 1 16.8	16.480
17	12 42 15.98	2.1124	7 17 44.0	16.426
18	12 44 22.73	2.1127	7 34 7.9	16.371
19	12 46 29.51	2.1132	7 50 28.5	16.315
20	12 48 36.32	2.1137	8 6 45.7	16.257
21	12 50 43.16	2.1143	8 22 59.3	16.198
22	12 52 50.04	2.1150	8 39 9.3	16.137
23	12 54 56.96	2.1158	8 55 15.7	16.076
24	12 57 3.93	2.1167	S. 9 11 18.4	16.013

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 27.			
	h m s	s	° ′ ″	″
0	12 57 3.93	2.1167	S. 9 11 18.4	16.013
1	12 59 10.96	2.1176	9 27 17.3	15.948
2	13 1 18.04	2.1185	9 43 12.2	15.883
3	13 3 25.18	2.1196	9 59 3.2	15.817
4	13 5 32.39	2.1207	10 14 50.2	15.748
5	13 7 39.67	2.1219	10 30 33.0	15.678
6	13 9 47.02	2.1232	10 46 11.6	15.607
7	13 11 54.45	2.1246	11 1 45.9	15.536
8	13 14 1.97	2.1261	11 17 15.9	15.463
9	13 16 9.58	2.1276	11 32 41.5	15.389
10	13 18 17.28	2.1292	11 48 2.6	15.313
11	13 20 25.08	2.1308	12 3 19.1	15.236
12	13 22 32.97	2.1324	12 18 30.9	15.157
13	13 24 40.97	2.1342	12 33 38.0	15.078
14	13 26 49.08	2.1360	12 48 40.3	14.998
15	13 28 57.29	2.1378	13 3 37.8	14.917
16	13 31 5.62	2.1399	13 18 30.3	14.833
17	13 33 14.08	2.1420	13 33 17.8	14.749
18	13 35 22.66	2.1441	13 48 0.2	14.664
19	13 37 31.37	2.1462	14 2 37.5	14.577
20	13 39 40.20	2.1484	14 17 9.5	14.489
21	13 41 49.17	2.1507	14 31 36.2	14.401
22	13 43 58.28	2.1530	14 45 57.6	14.311
23	13 46 7.53	2.1553	S. 15 0 13.5	14.219
	SUNDAY 28.			
0	13 48 16.92	2.1577	S. 15 14 23.9	14.127
1	13 50 26.46	2.1602	15 28 28.8	14.034
2	13 52 36.15	2.1627	15 42 28.0	13.939
3	13 54 45.99	2.1653	15 56 21.5	13.843
4	13 56 55.99	2.1680	16 10 9.2	13.747
5	13 59 6.15	2.1706	16 23 51.1	13.649
6	14 1 16.46	2.1733	16 37 27.1	13.550
7	14 3 26.94	2.1761	16 50 57.1	13.450
8	14 5 37.59	2.1789	17 4 21.1	13.349
9	14 7 48.41	2.1817	17 17 39.0	13.247
10	14 9 59.40	2.1846	17 30 50.7	13.143
11	14 12 10.56	2.1875	17 43 56.2	13.038
12	14 14 21.90	2.1905	17 56 55.3	12.933
13	14 16 33.42	2.1935	18 9 48.1	12.827
14	14 18 45.12	2.1965	18 22 34.5	12.719
15	14 20 57.00	2.1995	18 35 14.4	12.610
16	14 23 9.06	2.2026	18 47 47.7	12.500
17	14 25 21.31	2.2057	19 0 14.4	12.390
18	14 27 33.75	2.2089	19 12 34.5	12.278
19	14 29 46.38	2.2121	19 24 47.8	12.165
20	14 31 59.20	2.2152	19 36 54.3	12.051
21	14 34 12.20	2.2184	19 48 53.9	11.936
22	14 36 25.40	2.2216	20 0 46.6	11.821
23	14 38 38.79	2.2248	20 12 32.4	11.704
24	14 40 52.38	2.2281	S. 20 24 11.1	11.586

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 29.			
	h m s	s	° ′ ″	″
0	14 40 52.38	2.2961	S. 20 24 11.1	11.586
1	14 43 6.17	2.2814	20 35 42.7	11.467
2	14 45 20.15	2.2347	20 47 7.2	11.347
3	14 47 34.33	2.2369	20 58 24.4	11.227
4	14 49 48.71	2.2419	21 9 34.4	11.106
5	14 52 3.28	2.2445	21 20 37.1	10.968
6	14 54 18.05	2.2478	21 31 32.3	10.858
7	14 56 33.02	2.2511	21 42 20.1	10.734
8	14 58 48.19	2.2544	21 53 0.4	10.609
9	15 1 3.55	2.2577	22 3 33.2	10.483
10	15 3 19.11	2.2610	22 13 58.4	10.356
11	15 5 34.87	2.2644	22 24 15.9	10.227
12	15 7 50.84	2.2677	22 34 25.6	10.098
13	15 10 7.00	2.2709	22 44 27.6	9.968
14	15 12 23.35	2.2742	22 54 21.8	9.837
15	15 14 39.90	2.2774	23 4 8.1	9.706
16	15 16 56.64	2.2806	23 13 46.5	9.574
17	15 19 13.57	2.2838	23 23 16.9	9.441
18	15 21 30.70	2.2871	23 32 39.4	9.307
19	15 23 48.02	2.2903	23 41 53.8	9.172
20	15 26 5.53	2.2933	23 51 0.0	9.036
21	15 28 23.22	2.2964	23 59 58.1	8.900
22	15 30 41.10	2.2996	24 8 48.0	8.762
23	15 32 59.17	2.3027	S. 24 17 29.6	8.624
	TUESDAY 30.			
0	15 35 17.42	2.3057	S. 24 26 2.9	8.485
1	15 37 35.85	2.3087	24 34 27.8	8.346
2	15 39 54.46	2.3116	24 42 44.4	8.207
3	15 42 13.24	2.3145	24 50 52.6	8.066
4	15 44 32.20	2.3173	24 58 52.3	7.924
5	15 46 51.32	2.3201	25 6 43.4	7.781
6	15 49 10.61	2.3229	25 14 26.0	7.638
7	15 51 30.07	2.3257	25 22 0.0	7.494
8	15 53 49.69	2.3283	25 29 25.3	7.350
9	15 56 9.47	2.3309	25 36 42.0	7.206
10	15 58 29.40	2.3334	25 43 50.0	7.060
11	16 0 49.48	2.3360	25 50 49.2	6.913
12	16 3 9.72	2.3385	25 57 39.6	6.767
13	16 5 30.10	2.3409	26 4 21.2	6.620
14	16 7 50.62	2.3433	26 10 54.0	6.472
15	16 10 11.28	2.3455	26 17 17.9	6.324
16	16 12 32.08	2.3477	26 23 32.9	6.175
17	16 14 53.00	2.3498	26 29 38.9	6.025
18	16 17 14.05	2.3518	26 35 35.9	5.875
19	16 19 35.22	2.3538	26 41 23.9	5.725
20	16 21 56.51	2.3557	26 47 2.9	5.575
21	16 24 17.91	2.3576	26 52 32.9	5.424
22	16 26 39.42	2.3593	26 57 53.8	5.273
23	16 29 1.03	2.3611	27 3 5.6	5.121
24	16 31 22.75	2.3627	S. 27 8 8.3	4.968
	WEDNESDAY 31.			
0	16 31 22.75	2.3627	S. 27 8 8.3	4.968
1	16 33 44.56	2.3642	27 13 1.8	4.815
2	16 36 6.46	2.3657	27 17 46.1	4.663
3	16 38 28.44	2.3670	27 22 21.3	4.510
4	16 40 50.50	2.3682	27 26 47.3	4.356
5	16 43 12.63	2.3694	27 31 4.0	4.201
6	16 45 34.83	2.3706	27 35 11.4	4.047
7	16 47 57.10	2.3716	27 39 9.6	3.893
8	16 50 19.42	2.3724	27 42 58.5	3.738
9	16 52 41.79	2.3732	27 46 38.2	3.584
10	16 55 4.21	2.3740	27 50 8.6	3.428
11	16 57 26.67	2.3746	27 53 29.6	3.272
12	16 59 49.16	2.3751	27 56 41.3	3.117
13	17 2 11.68	2.3756	27 59 43.7	2.960
14	17 4 34.23	2.3760	28 2 36.8	2.807
15	17 6 56.80	2.3762	28 5 20.5	2.651
16	17 9 19.38	2.3763	28 7 54.9	2.496
17	17 11 41.96	2.3763	28 10 20.0	2.340
18	17 14 4.54	2.3763	28 12 35.7	2.184
19	17 16 27.11	2.3762	28 14 42.1	2.028
20	17 18 49.68	2.3760	28 16 39.1	1.872
21	17 21 12.23	2.3756	28 18 26.8	1.717
22	17 23 34.75	2.3751	28 20 5.2	1.562
23	17 25 57.24	2.3745	S. 28 21 34.2	1.406
	THURSDAY, AUGUST 1.			
0	17 28 19.69	2.3736	S. 28 22 53.9	1.251

PHASES OF THE MOON.

		d	h	m
○	Full Moon . . July	6	11	28.8
☾	Last Quarter	14	15	31.0
●	New Moon	21	17	31.8
☽	First Quarter	28	8	35.7

		d	h
☾	Apogee . . . . July	10	19.1
☾	Perigee	23	0.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	114° 22′ 4″	9849	115° 55′ 32″	9856	117° 28′ 47″	9868	119° 1′ 47″	9878
	Mars	W.	81 3 49	9714	82 40 10	9795	84 16 17	9735	85 52 11	9745
	Venus	W.	69 23 36	9851	70 56 58	9891	72 30 7	9871	74 3 3	9881
	Regulus	W.	65 29 35	9510	67 10 34	9540	68 51 20	9530	70 31 52	9539
	α Aquilæ	E.	88 50 34	3966	87 25 43	3977	86 1 5	3990	84 36 42	3994
2	Mars	W.	93 48 24	9794	95 23 0	9883	96 57 24	9813	98 31 35	9833
	Venus	W.	81 44 30	9931	83 16 10	9941	84 47 37	9950	86 18 53	9960
	Regulus	W.	78 51 18	9585	80 30 33	9595	82 9 35	9604	83 48 25	9613
	α Aquilæ	E.	77 39 10	3389	76 16 41	3409	74 54 35	3431	73 32 54	3455
	Fomalhaut	E.	102 29 32	9866	100 56 29	9871	99 23 33	9878	97 50 46	9884
3	Venus	W.	93 52 9	3967	95 22 13	3017	96 52 5	3026	98 21 45	3035
	Regulus	W.	91 59 28	9658	93 37 4	9667	95 14 28	9676	96 51 40	9685
	Spica	W.	37 58 40	9659	39 36 15	9668	41 13 38	9677	42 50 49	9686
	Saturn	W.	30 40 24	9750	32 15 57	9751	33 51 29	9753	35 26 59	9756
	α Aquilæ	E.	66 51 35	3595	65 32 55	3639	64 14 52	3664	62 57 27	3702
	Fomalhaut	E.	90 9 13	9926	88 37 27	9935	87 5 52	9945	85 34 30	9955
	α Pegasi	E.	112 4 30	9932	110 32 52	9935	109 1 18	9939	107 29 48	9948
4	Venus	W.	105 47 15	3962	107 15 47	3091	108 44 8	3100	110 12 18	3109
	Spica	W.	50 53 49	9729	52 29 50	9738	54 5 40	9746	55 41 19	9755
	Saturn	W.	43 23 11	9780	44 58 5	9785	46 32 52	9792	48 7 31	9796
	α Aquilæ	E.	56 41 15	3933	55 28 29	3990	54 16 40	4050	53 5 50	4115
	Fomalhaut	E.	78 0 59	3811	76 31 0	3093	75 1 16	3036	73 31 48	3059
	α Pegasi	E.	99 53 48	9970	98 22 58	9977	96 52 16	9983	95 21 42	9991
5	Venus	W.	117 30 24	3153	118 57 29	3163	120 24 23	3171	121 51 7	3179
	Spica	W.	63 36 45	9797	65 11 17	9805	66 45 38	9814	68 19 48	9891
	Saturn	W.	55 58 33	9833	57 32 18	9840	59 5 54	9847	60 39 21	9855
	Fomalhaut	E.	66 8 51	3196	64 41 13	3143	63 13 55	3161	61 46 59	3179
	α Pegasi	E.	87 51 20	3039	86 21 47	3049	84 52 26	3051	83 23 16	3060
6	Spica	W.	76 7 59	9862	77 41 6	9871	79 14 2	9878	80 46 49	9887
	Saturn	W.	68 24 11	9899	69 56 40	9900	71 28 59	9907	73 1 9	9915
	Antares	W.	30 13 30	9862	31 46 37	9870	33 19 34	9878	34 52 21	9887
	Fomalhaut	E.	54 38 16	3988	53 13 51	3315	51 49 57	3342	50 26 34	3378
	α Pegasi	E.	76 0 33	3114	74 32 41	3136	73 5 3	3138	71 37 39	3151
	α Arietis	E.	117 55 21	9892	116 22 52	9899	114 50 32	9906	113 18 21	9914
7	Spica	W.	88 28 10	9995	89 59 57	9932	91 31 35	9940	93 3 3	9947
	Saturn	W.	80 39 35	9952	82 10 48	9959	83 41 52	9966	85 12 47	9974
	Antares	W.	42 33 44	9994	44 5 32	9939	45 37 10	9939	47 8 39	9947
	Fomalhaut	E.	43 38 47	3553	42 19 21	3598	41 0 44	3648	39 43 1	3708
	α Pegasi	E.	64 24 39	2990	62 58 54	3036	61 33 27	3052	60 8 19	3069
	α Arietis	E.	105 39 45	9950	104 8 29	9957	102 37 22	9964	101 6 24	9970
8	Spica	W.	100 38 11	9981	102 8 47	9987	103 39 16	9994	105 9 36	3000
	Saturn	W.	92 45 6	3008	94 15 9	3015	95 45 3	3022	97 14 49	3029
	Antares	W.	54 43 50	9981	56 14 27	9987	57 44 56	9993	59 15 17	9999
	α Pegasi	E.	53 7 55	3366	51 45 0	3389	50 22 31	3413	49 0·29	3436
	α Arietis	E.	93 33 40	3004	92 3 32	3010	90 33 32	3017	89 3 40	3032

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	120° 34′ 34″	9689	122° 7′ 7″	9699	123° 39′ 27″	9910	125° 11′ 33″	9921
	Mars	W.	87 27 51	9755	89 3 18	9764	90 38 33	9774	92 13 35	9784
	Venus	W.	75 35 46	9691	77 8 16	9701	78 40 33	9911	80 12 38	9921
	Regulus	W.	72 12 11	9548	73 52 17	9558	75 32 10	9567	77 11 50	9576
	α Aquilæ	E.	83 12 35	3319	81 48 45	3334	80 25 13	3351	79 2 1	3370
2	Mars	W.	100 5 33	9639	101 39 19	9649	103 12 53	9851	104 46 15	9861
	Venus	W.	87 49 56	9969	89 20 47	9979	90 51 26	9989	92 21 53	9997
	Regulus	W.	85 27 2	9932	87 5 27	9931	88 43 40	9940	90 21 40	9949
	α Aquilæ	E.	72 11 40	3489	70 50 53	3506	69 30 36	3534	68 10 49	3564
	Fomalhaut	E.	96 18 7	9892	94 45 38	9900	93 13 19	9900	91 41 11	9916
3	Venus	W.	99 51 14	3045	101 20 31	3054	102 49 37	3063	104 18 32	3073
	Regulus	W.	98 28 40	9694	100 5 28	9702	101 42 5	9711	103 18 30	9719
	Spica	W.	44 27 48	9694	46 4 36	9703	47 41 12	9712	49 17 36	9720
	Saturn	W.	37 2 25	9760	38 37 46	9764	40 13 1	9769	41 48 9	9774
	α Aquilæ	E.	61 40 42	3743	60 24 40	3766	59 9 23	3839	57 54 54	3881
	Fomalhaut	E.	84 3 21	9965	82 32 25	9976	81 1 42	9987	79 31 13	9999
	α Pegasi	E.	105 58 23	9947	104 27 4	9953	102 55 52	9958	101 24 46	9964
4	Venus	W.	111 40 17	3118	113 8 5	3197	114 35 42	3136	116 3 8	3144
	Spica	W.	57 16 46	9763	58 52 3	9772	60 27 8	9780	62 2 2	9788
	Saturn	W.	49 42 1	9695	51 16 22	9811	52 50 35	9818	54 24 39	9826
	α Aquilæ	E.	51 56 3	4185	50 47 23	4961	49 3.) 54	4342	48 33 40	4430
	Fomalhaut	E.	72 2 37	3064	70 33 43	3078	69 5 7	3093	67 36 49	3110
	α Pegasi	E.	93 51 18	9998	92 21 3	3006	90 50 58	3015	89 21 4	3023
5	Venus	W.	123 17 41	3188	124 44 4	3197	126 10 17	3206	127 36 19	3214
	Spica	W.	69 53 48	9830	71 27 37	9838	73 1 15	9847	74 34 42	9855
	Saturn	W.	62 12 38	9869	63 45 46	9869	65 18 44	9877	66 51 32	9884
	Fomalhaut	E.	60 20 25	3189	58 54 15	3220	57 28 29	3242	56 3 9	3265
	α Pegasi	E.	81 54 18	3070	80 25 32	3081	78 56 59	3091	77 28 39	3163
6	Spica	W.	82 19 25	9894	83 51 51	9902	85 24 7	9910	86 56 13	9917
	Saturn	W.	74 33 9	9922	76 5 0	9930	77 36 41	9937	79 8 13	9945
	Antares	W.	36 24 57	9894	37 57 23	9901	39 29 40	9909	41 1 47	9917
	Fomalhaut	E.	49 3 45	3402	47 41 31	3436	46 19 55	3471	44 58 59	3511
	α Pegasi	E.	70 10 31	3163	68 43 38	3178	67 17 2	3191	65 50 42	3205
	α Arietis	E.	111 46 20	9930	110 14 27	9998	108 42 44	9935	107 11 10	9943
7	Spica	W.	94 34 22	9954	96 5 32	9961	97 36 34	9968	99 7 27	9975
	Saturn	W.	86 43 32	9961	88 14 8	9968	89 44 36	9995	91 14 55	3001
	Antares	W.	48 39 58	9954	50 11 9	9961	51 42 11	9967	53 13 5	9974
	Fomalhaut	E.	38 26 16	3769	37 10 34	3698	35 56 1	3901	34 42 42	3963
	α Pegasi	E.	58 43 31	3987	57 19 4	3306	55 54 58	3385	54 31 15	3345
	α Arietis	E.	99 35 34	9977	98 4 53	9984	96 34 20	9991	95 3 56	9997
8	Spica	W.	106 39 49	3005	108 9 55	3012	109 39 53	3018	111 9 44	3092
	Saturn	W.	98 44 27	3034	100 13 58	3040	101 43 21	3046	103 12 37	3052
	Antares	W.	60 45 31	3005	62 15 37	3011	63 45 36	3017	65 15 28	3022
	α Pegasi	E.	47 38 56	3466	46 17 54	3496	44 57 25	3527	43 37 31	3560
	α Arietis	E.	87 33 55	3039	86 4 18	3034	84 34 48	3040	83 5 25	3045

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Saturn	W.	104° 41′ 45″	3057	106° 10′ 47″	3063	107° 39′ 42″	3068	109° 8′ 31″	3073
	Antares	W.	66 45 14	3036	68 14 54	3039	69 44 27	3037	71 13 54	3041
	α Arietis	E.	81 36 8	3061	80 6 58	3056	78 37 54	3061	77 8 57	3065
	Aldebaran	E.	112 45 25	3114	111 17 32	3116	109 49 42	3119	108 21 56	3123
10	Antares	W.	78 39 55	3059	80 8 55	3062	81 37 51	3065	83 6 44	3067
	α Arietis	E.	69 45 30	3086	68 17 3	3089	66 48 40	3092	65 20 21	3096
	Aldebaran	E.	101 3 59	3136	99 36 33	3138	98 9 9	3140	96 41 48	3142
11	Antares	W.	90 30 36	3073	91 59 19	3073	93 28 2	3073	94 56 45	3072
	α Aquilæ	W.	47 19 9	4799	48 19 44	4655	49 21 22	4585	50 24 0	4519
	α Arietis	E.	57 59 32	3105	56 31 29	3106	55 3 27	3108	53 35 27	3108
	Aldebaran	E.	89 25 28	3147	87 58 15	3148	86 31 3	3148	85 3 51	3147
	Sun	E.	130 1 17	3459	128 40 7	3458	127 18 56	3457	125 57 44	3456
12	Antares	W.	102 20 41	3063	103 49 36	3060	105 18 34	3057	106 47 36	3053
	α Aquilæ	W.	55 50 18	4956	56 57 51	4914	58 6 4	4173	59 14 56	4135
	α Arietis	E.	46 15 32	3109	44 47 33	3108	43 19 33	3107	41 51 32	3107
	Aldebaran	E.	77 47 38	3142	76 20 19	3139	74 52 57	3138	73 25 33	3134
	Sun	E.	119 11 13	3444	117 49 46	3439	116 28 14	3436	115 6 38	3431
13	α Aquilæ	W.	65 7 47	3979	66 19 54	3944	67 32 29	3919	68 45 30	3899
	Fomalhaut	W.	37 12 7	3835	38 26 33	3778	39 41 58	3735	40 58 19	3675
	Aldebaran	E.	66 7 38	3118	64 39 50	3114	63 11 57	3109	61 43 58	3105
	Sun	E.	108 17 9	3401	106 54 54	3394	105 32 31	3386	104 9 59	3379
14	α Aquilæ	W.	74 56 51	3778	76 12 16	3757	77 28 3	3738	78 44 10	3718
	Fomalhaut	W.	47 32 8	3476	48 52 59	3449	50 14 28	3411	51 36 32	3381
	Aldebaran	E.	54 22 37	3079	52 54 2	3074	51 25 21	3069	49 56 34	3064
	Sun	E.	97 14 49	3331	95 51 13	3319	94 27 24	3308	93 3 22	3296
15	α Aquilæ	W.	85 9 41	3631	86 27 42	3614	87 46 1	3599	89 4 36	3585
	Fomalhaut	W.	58 35 7	3245	60 0 23	3220	61 26 8	3196	62 52 22	3173
	Aldebaran	E.	42 31 9	3043	41 1 50	3041	39 32 28	3040	38 3 5	3040
	Sun	E.	85 59 34	3331	84 34 1	3316	83 8 11	3301	81 42 3	3186
16	Fomalhaut	W.	70 10 29	3060	71 39 28	3038	73 8 54	3017	74 38 46	2996
	α Pegasi	W.	48 26 32	3181	49 53 4	3146	51 20 18	3111	52 48 14	3079
	Sun	E.	74 26 42	3105	72 58 38	3087	71 30 13	3070	70 1 27	3058
17	Fomalhaut	W.	82 14 34	2894	83 47 0	2875	85 19 51	2856	86 53 6	2837
	α Pegasi	W.	60 17 29	2931	61 49 9	2903	63 21 24	2876	64 54 13	2851
	Sun	E.	62 32 2	2960	61 0 59	2942	59 29 33	2923	57 57 43	2903
18	Fomalhaut	W.	94 45 22	2748	96 20 58	2732	97 56 55	2716	99 33 13	2701
	α Pegasi	W.	72 46 25	2730	74 22 25	2707	75 58 55	2686	77 35 54	2665
	α Arietis	W.	29 28 44	2566	31 8 25	2540	32 48 42	2515	34 29 35	2491
	Sun	E.	50 12 25	2808	48 38 7	2789	47 3 25	2771	45 28 19	2758
19	α Pegasi	W.	85 47 44	2566	87 27 25	2549	89 7 30	2539	90 47 59	2516
	α Arietis	W.	43 2 8	2380	44 46 11	2361	46 30 42	2349	48 15 41	2333
	Sun	E.	37 26 45	2664	35 49 17	2648	34 11 27	2632	32 33 15	2617

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff	XXI^h.	P. L. of Diff.
9	Saturn	W.	110° 37′ 14″	3078	112° 5′ 51″	3062	113° 34′ 22″	3057	115° 2′ 48″	3091
	Antares	W.	72 43 16	3046	74 12 32	3049	75 41 44	3053	77 10 51	3056
	α Arietis	E.	75 40 5	3070	74 11 19	3074	72 42 38	3078	71 14 2	3082
	Aldebaran	E.	106 54 14	3135	105 26 35	3129	103 59 0	3131	102 31 28	3133
10	Antares	W.	84 35 34	3069	86 4 22	3070	87 33 8	3072	89 1 52	3072
	α Arietis	E.	63 52 6	3096	62 23 54	3100	60 55 44	3102	59 27 37	3104
	Aldebaran	E.	95 14 29	3143	93 47 12	3144	92 19 56	3146	90 52 42	3146
11	Antares	W.	96 25 29	3071	97 54 14	3069	99 23 1	3068	100 51 50	3066
	α Aquilæ	W.	51 27 35	4459	52 32 3	4402	53 37 22	4351	54 43 28	4303
	α Arietis	E.	52 7 27	3109	50 39 28	3109	49 11 29	3110	47 43 31	3109
	Aldebaran	E.	83 36 38	3147	82 9 25	3146	80 42 11	3144	79 14 55	3143
	Sun	E.	124 36 31	3454	123 15 16	3452	121 53 58	3449	120 32 37	3446
12	Antares	W.	108 16 43	3049	109 45 55	3044	111 15 13	3039	112 44 37	3033
	α Aquilæ	W.	60 24 24	4100	61 34 26	4065	62 45 2	4033	63 56 9	4002
	α Arietis	E.	40 23 31	3106	38 55 29	3105	37 27 26	3104	35 59 21	3102
	Aldebaran	E.	71 58 5	3139	70 30 34	3139	69 3 0	3135	67 35 21	3132
	Sun	E.	113 44 56	3496	112 23 9	3491	111 1 16	3415	109 39 16	3486
13	α Aquilæ	W.	69 58 58	3667	71 12 51	3644	72 27 8	3621	73 41 48	3799
	Fomalhaut	W.	42 15 33	3630	43 33 35	3587	44 52 24	3547	46 11 56	3511
	Aldebaran	E.	60 15 54	3100	58 47 44	3095	57 19 28	3090	55 51 6	3084
	Sun	E.	102 47 18	3370	101 24 27	3360	100 1 25	3351	98 38 13	3341
14	α Aquilæ	W.	80 0 38	3760	81 17 25	3681	82 34 32	3664	83 51 57	3647
	Fomalhaut	W.	52 59 10	3351	54 22 22	3394	55 46 6	3397	57 10 21	3970
	Aldebaran	E.	48 27 40	3959	46 58 40	3955	45 29 35	3950	44 0 24	3947
	Sun	E.	91 39 6	3984	90 14 36	3971	88 49 51	3959	87 24 51	3944
15	α Aquilæ	W.	90 23 27	3570	91 42 34	3557	93 1 55	3545	94 21 30	3532
	Fomalhaut	W.	64 19 4	3149	65 46 14	3196	67 13 52	3104	68 41 57	3062
	Aldebaran	E.	36 33 42	3942	35 4 21	3946	33 35 5	3952	32 5 56	3960
	Sun	E.	80 15 37	3171	78 48 53	3154	77 21 49	3136	75 54 26	3121
16	Fomalhaut	W.	76 9 4	9975	77 39 48	9954	79 10 58	9935	80 42 33	9914
	α Pegasi	W.	54 16 49	3947	55 46 3	3917	57 15 55	3967	58 46 24	9956
	Sun	E.	68 32 19	3934	67 2 49	3916	65 32 56	3996	64 2 41	9979
17	Fomalhaut	W.	88 26 46	9818	90 0 50	9800	91 35 18	9789	93 10 9	9766
	α Pegasi	W.	66 27 35	9895	68 1 30	9901	69 35 57	9777	71 10 55	9753
	Sun	E.	56 25 28	9884	54 52 49	9866	53 19 46	9846	51 46 18	9827
18	Fomalhaut	W.	101 9 52	9857	102 46 50	9878	104 24 7	9859	106 1 42	9847
	α Pegasi	W.	79 13 21	9844	80 51 16	9894	82 29 39	9804	84 8 29	9545
	α Arietis	W.	36 11 1	9467	37 53 0	9444	39 35 32	9492	41 18 35	9401
	Sun	E.	43 52 48	9734	42 16 53	9716	40 40 34	9698	39 3 51	9681
19	α Pegasi	W.	92 28 50	9500	94 10 3	9485	95 51 37	9471	97 33 31	9458
	α Arietis	W.	50 1 7	9304	51 47 0	9287	53 33 19	9270	55 20 3	9253
	Sun	E.	30 54 43	9602	29 15 51	9569	27 36 41	9577	25 57 15	9567

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III^h.	P. L. of Diff.	VI^h.	P. L. of Diff.	IX^h.	P. L. of Diff.
23	Sun	W.	17° 56′ 56″	2397	19° 40′ 35″	2386	21° 24′ 30″	2378	23° 8′ 37″	2372
	Spica	E.	64 21 32	2030	62 28 45	2031	60 35 59	2033	58 43 16	2035
	Saturn	E.	72 37 31	2066	70 45 40	2068	68 53 52	2071	67 2 8	2074
	Antares	E.	110 15 45	2029	108 22 56	2030	106 30 9	2032	104 37 25	2034
24	Sun	W.	31 50 15	2379	33 34 30	2376	35 18 39	2381	37 2 41	2387
	Spica	E.	49 21 0	2058	47 28 56	2064	45 37 1	2071	43 45 17	2078
	Saturn	E.	57 45 8	2102	55 54 12	2111	54 3 29	2119	52 12 59	2129
	Antares	E.	95 14 59	2056	93 22 52	2062	91 30 55	2069	89 39 8	2077
25	Sun	W.	45 40 20	2428	47 23 15	2438	49 5 55	2449	50 48 20	2460
	Saturn	E.	43 4 32	2188	41 15 47	2204	39 27 25	2220	37 39 27	2237
	Antares	E.	80 23 22	2122	78 32 56	2132	76 42 45	2143	74 52 51	2153
26	Sun	W.	59 16 17	2523	60 56 58	2536	62 37 21	2550	64 17 25	2564
	Mars	W.	34 12 6	2407	35 55 31	2420	37 38 37	2434	39 21 23	2448
	Antares	E.	65 47 41	2214	63 59 35	2227	62 11 48	2241	60 24 21	2255
27	Sun	W.	72 32 47	2638	74 10 51	2652	75 48 35	2668	77 25 58	2684
	Mars	W.	47 50 9	2522	49 30 52	2536	51 11 15	2551	52 51 17	2566
	Venus	W.	28 10 32	2581	29 49 53	2596	31 28 53	2611	33 7 33	2626
	Antares	E.	51 32 12	2324	49 46 48	2338	48 1 44	2353	46 17 2	2367
	α Aquilæ	E.	103 16 4	3122	101 48 21	3137	100 20 44	3139	98 53 13	3139
28	Sun	W.	85 27 44	2760	87 3 4	2775	88 38 4	2791	90 12 44	2805
	Mars	W.	61 6 17	2642	62 44 15	2657	64 21 53	2679	65 59 10	2687
	Venus	W.	41 15 54	2699	42 52 35	2713	44 28 57	2739	46 4 59	2743
	Antares	E.	37 38 41	2440	35 56 3	2454	34 13 45	2468	32 31 47	2482
	α Aquilæ	E.	91 38 17	3193	90 11 59	3207	88 45 58	3222	87 20 15	3239
29	Sun	W.	98 1 11	2880	99 33 55	2895	101 6 20	2909	102 38 27	2923
	Mars	W.	74 0 43	2760	75 36 4	2774	77 11 6	2788	78 45 50	2801
	Venus	W.	54 0 26	2814	55 34 36	2827	57 8 29	2841	58 42 4	2855
	α Aquilæ	E.	80 16 53	3336	78 53 23	3358	77 30 18	3381	76 7 40	3406
	Fomalhaut	E.	105 15 43	2842	103 42 9	2851	102 8 47	2861	100 35 38	2870
30	Sun	W.	110 14 40	2991	111 45 4	3005	113 15 11	3018	114 45 2	3030
	Mars	W.	86 35 6	2868	88 8 6	2880	89 40 50	2893	91 13 18	2905
	Venus	W.	66 25 45	2918	67 57 41	2931	69 29 21	2942	71 0 46	2954
	Spica	W.	35 1 13	2657	36 38 50	2669	38 16 12	2681	39 53 18	2693
	α Aquilæ	E.	69 21 58	3549	68 2 28	3569	66 43 34	3616	65 25 17	3653
	Fomalhaut	E.	92 53 13	2926	91 21 27	2937	89 49 55	2950	88 18 39	2962
	α Pegasi	E.	114 54 56	2936	113 23 23	2941	111 51 56	2946	110 20 36	2953
31	Sun	W.	122 10 27	3091	123 38 48	3102	125 6 55	3114	126 34 48	3125
	Mars	W.	98 51 48	2964	100 22 46	2974	101 53 31	2985	103 24 2	2996
	Venus	W.	78 34 14	3010	80 4 14	3020	81 34 2	3030	83 3 37	3040
	Spica	W.	47 55 3	2747	49 30 41	2757	51 6 5	2767	52 41 16	2778
	Saturn	W.	39 50 48	2821	41 24 48	2828	42 58 39	2835	44 32 21	2843
	α Aquilæ	E.	59 4 20	3867	57 50 27	3919	56 37 26	3972	55 25 19	4030
	Fomalhaut	E.	80 46 11	3026	79 16 30	3039	77 47 5	3052	76 17 57	3067
	α Pegasi	E.	102 46 1	2988	101 15 33	2996	99 45 15	3004	98 15 7	3012

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XV^h.	P.L. of Diff.	XVIII^h.	P.L. of Diff.	XXI^h.	P.L. of Diff.
23	Sun	W.	24° 52′ 52″	2386	26° 37′ 12″	2367	28° 21′ 34″	2367	30° 5′ 56″	2369
	Spica	E.	56 50 37	2039	54 58 3	2042	53 5 35	2046	51 13 13	2052
	Saturn	E.	65 10 29	2078	63 18 56	2083	61 27 31	2089	59 36 15	2095
	Antares	E.	102 44 44	2037	100 52 8	2041	98 59 38	2046	97 7 15	2050
24	Sun	W.	38 46 34	2394	40 30 18	2401	42 13 51	2410	43 57 12	2419
	Spica	E.	41 53 44	2086	40 2 24	2095	38 11 17	2104	36 20 24	2115
	Saturn	E.	50 22 44	2139	48 32 45	2150	46 43 2	2162	44 53 37	2175
	Antares	E.	87 47 33	2085	85 56 10	2093	84 5 0	2102	82 14 4	2111
25	Sun	W.	52 30 30	2479	54 12 23	2464	55 53 59	2497	57 35 17	2510
	Saturn	E.	35 51 54	2255	34 4 48	2275	32 18 12	2296	30 32 7	2319
	Antares	E.	73 3 13	2165	71 13 53	2176	69 24 50	2189	67 36 6	2202
26	Sun	W.	65 57 9	2579	67 36 33	2593	69 15 38	2607	70 54 23	2623
	Mars	W.	41 3 49	2462	42 45 55	2477	44 27 40	2492	46 9 5	2507
	Antares	E.	58 37 15	2268	56 50 29	2282	55 4 3	2296	53 17 57	2310
27	Sun	W.	79 3 0	2696	80 39 42	2714	82 16 3	2739	83 52 4	2745
	Mars	W.	54 30 59	2582	56 10 19	2596	57 49 19	2612	59 27 58	2626
	Venus	W.	34 45 53	2640	36 23 53	2655	38 1 33	2670	39 38 53	2684
	Antares	E.	44 32 40	2382	42 48 39	2396	41 4 59	2411	39 21 40	2425
	α Aquilæ	E.	97 25 51	3148	95 58 39	3157	94 31 38	3168	93 4 50	3180
28	Sun	W.	91 47 5	2831	93 21 6	2836	94 54 47	2851	96 28 9	2868
	Mars	W.	67 36 8	2701	69 12 46	2716	70 49 4	2731	72 25 3	2745
	Venus	W.	47 40 42	2757	49 16 6	2772	50 51 11	2785	52 25 58	2800
	Antares	E.	30 50 9	2497	29 8 51	2511	27 27 53	2525	25 47 14	2539
	α Aquilæ	E.	85 54 52	3256	84 29 49	3274	83 5 7	3294	81 40 48	3314
29	Sun	W.	104 10 17	2937	105 41 49	2951	107 13 3	2965	108 44 0	2978
	Mars	W.	80 20 16	2815	81 54 24	2828	83 28 15	2842	85 1 49	2855
	Venus	W.	60 15 21	2867	61 48 22	2880	63 21 6	2893	64 53 34	2906
	α Aquilæ	E.	74 45 30	3439	73 23 50	3459	72 2 40	3488	70 42 2	3518
	Fomalhaut	E.	99 2 41	2881	97 29 58	2892	95 57 29	2903	94 25 14	2914
30	Sun	W.	116 14 37	3043	117 43 57	3055	119 13 2	3067	120 41 52	3079
	Mars	W.	92 45 30	2917	94 17 27	2929	95 49 9	2941	97 20 36	2953
	Venus	W.	72 31 56	2965	74 2 52	2977	75 33 33	2989	77 4 0	2999
	Spica	W.	41 30 9	2704	43 6 44	2714	44 43 5	2725	46 19 11	2736
	α Aquilæ	E.	64 7 40	3692	62 50 44	3731	61 34 30	3774	60 19 1	3830
	Fomalhaut	E.	86 47 38	2974	85 16 53	2986	83 46 23	2999	82 16 9	3012
	α Pegasi	E.	108 49 24	2959	107 18 20	2966	105 47 25	2973	104 16 38	2981
31	Sun	W.	128 2 27	3136	129 29 53	3147	130 57 6	3157	132 24 7	3168
	Mars	W.	104 54 20	3006	106 24 25	3017	107 54 17	3026	109 23 57	3037
	Venus	W.	84 33 0	3051	86 2 10	3060	87 31 9	3069	88 59 56	3079
	Spica	W.	54 16 13	2787	55 50 58	2797	57 25 30	2806	58 59 50	2815
	Saturn	W.	46 5 53	2850	47 39 16	2857	49 12 30	2865	50 45 34	2872
	α Aquilæ	E.	54 14 9	4091	53 3 59	4157	51 54 52	4226	50 46 52	4303
	Fomalhaut	E.	74 49 7	3081	73 20 34	3096	71 52 19	3110	70 24 22	3125
	α Pegasi	E.	96 45 9	3030	95 15 21	3039	93 45 44	3037	92 16 17	3046

AT GREENWICH APPARENT NOON.

Day of the Week	Day of the Month	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to / Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	h	m s	s
Thur.	1	8 45 31.25	9.708	N.18 1 59.0	-37.76	15 48.05	66.65	6 7.87	0.148
Frid.	2	8 49 23.94	9.682	17 46 43.9	38.49	15 48.18	66.57	6 4.01	0.174
Sat.	3	8 53 16.01	9.657	17 31 11.5	39.20	15 48.32	66.48	5 59.54	0.199
SUN.	4	8 57 7.47	9.631	17 15 22.2	-39.91	15 48.45	66.39	5 54.45	0.225
Mon.	5	9 0 58.32	9.606	16 59 16.0	40.60	15 48.59	66.30	5 48.76	0.250
Tues.	6	9 4 48.56	9.581	16 42 53.4	41.28	15 48.73	66.21	5 42.47	0.275
Wed.	7	9 8 38.22	9.557	16 26 14.7	-41.96	15 48.88	66.13	5 35.59	0.299
Thur.	8	9 12 27.30	9.533	16 9 20.0	42.61	15 49.03	66.05	5 28.13	0.323
Frid.	9	9 16 15.80	9.509	15 52 9.7	43.25	15 49.18	65.97	5 20.09	0.347
Sat.	10	9 20 3.73	9.485	15 34 44.0	-43.88	15 49.33	65.88	5 11.49	0.370
SUN.	11	9 23 51.10	9.462	15 17 3.3	44.50	15 49.49	65.80	5 2.34	0.393
Mon.	12	9 27 37.93	9.439	14 59 7.8	45.11	15 49.65	65.72	4 52.63	0.416
Tues.	13	9 31 24.21	9.417	14 40 57.9	-45.71	15 49.81	65.64	4 42.39	0.438
Wed.	14	9 35 9.96	9.396	14 22 33.8	46.29	15 49.97	65.56	4 31.61	0.460
Thur.	15	9 38 55.18	9.374	14 3 55.8	46.86	15 50.14	65.48	4 20.31	0.482
Frid.	16	9 42 39.89	9.352	13 45 4.3	-47.42	15 50.32	65.40	4 8 49	0.503
Sat.	17	9 46 24.09	9.331	13 25 59.6	47.96	15 50.50	65.33	3 56.17	0.524
SUN.	18	9 50 7.79	9.310	13 6 42.0	48.49	15 50.68	65.25	3 43.35	0.545
Mon.	19	9 53 50.99	9.290	12 47 11.8	-49.01	15 50.87	65.18	3 30.04	0.565
Tues.	20	9 57 33.72	9.270	12 27 29.5	49.51	15 51.06	65.11	3 16.24	0.585
Wed.	21	10 1 15.96	9.250	12 7 35.3	50.00	15 51.26	65.04	3 1.97	0.604
Thur.	22	10 4 57.74	9.231	11 47 29.6	-50.47	15 51.46	64.97	2 47.23	0.623
Frid.	23	10 8 39.06	9.212	11 27 12.6	50.93	15 51.66	64.91	2 32.04	0.642
Sat.	24	10 12 19.93	9.194	11 6 44.9	51.37	15 51.87	64.85	2 16.40	0.661
SUN.	25	10 16 0.37	9.176	10 46 6.7	-51.80	15 52.08	64.79	2 0.32	0.679
Mon.	26	10 19 40.38	9.159	10 25 18.3	52.22	15 52.30	64.73	1 43.83	0.696
Tues.	27	10 23 19.98	9.142	10 4 20.1	52.62	15 52.52	64.68	1 26.92	0.713
Wed.	28	10 26 59.19	9.126	9 43 12.5	-53.01	15 52.75	64.62	1 9.62	0.729
Thur.	29	10 30 38.01	9.110	9 21 55.7	53.39	15 52.97	64.57	0 51.94	0.744
Frid.	30	10 34 16.48	9.096	9 0 30.1	53.75	15 53.20	64.52	0 33.90	0.759
Sat.	31	10 37 54.59	9.081	8 38 55.9	54.10	15 53.43	64.47	0 15.51	0.773
SUN.	32	10 41 32.38	9.068	N. 8 17 13.6	-54.43	15 53.66	64.43	0 3.21	0.786

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	THE SUN'S Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	8 45 30.26	9.709	N. 18 2 2.8	−37.76	6 7.88	0.148	8 39 22.37
Frid.	2	8 49 22.96	9.683	17 46 47.7	38.49	6 4.03	0.174	8 43 18.93
Sat.	3	8 53 15.04	9.657	17 31 15.4	39.20	5 59.56	0.199	8 47 15.49
SUN.	4	8 57 6.52	9.632	17 15 26.0	−39.90	5 54.47	0.224	8 51 12.04
Mon.	5	9 0 57.39	9.607	16 59 19.9	40.60	5 48.79	0.250	8 55 8.60
Tues.	6	9 4 47.65	9.582	16 42 57.3	41.28	5 42.50	0.275	8 59 5.16
Wed.	7	9 8 37.33	9.558	16 26 18.5	−41.95	5 35.62	0.299	9 3 1.71
Thur.	8	9 12 26.43	9.534	16 9 23.8	42.61	5 28.16	0.323	9 6 58.27
Frid.	9	9 16 14.95	9.510	15 52 13.5	43.25	5 20.12	0.347	9 10 54.83
Sat.	10	9 20 2.90	9.487	15 34 47.8	−43.89	5 11.52	0.370	9 14 51.38
SUN.	11	9 23 50.31	9.464	15 17 7.0	44.51	5 2.37	0.393	9 18 47.94
Mon.	12	9 27 37.16	9.441	14 59 11.4	45.12	4 52.67	0.416	9 22 44.49
Tues.	13	9 31 23.47	9.419	14 41 1.4	−45.71	4 42.42	0.438	9 26 41.05
Wed.	14	9 35 9.25	9.397	14 22 37.2	46.30	4 31.64	0.460	9 30 37.60
Thur.	15	9 38 54.50	9.375	14 3 59.2	46.87	4 20.34	0.482	9 34 34.16
Frid.	16	9 42 39.24	9.354	13 45 7.5	−47.43	4 8.53	0.503	9 38 30.72
Sat.	17	9 46 23.48	9.333	13 26 2.7	47.97	3 56.21	0.524	9 42 27.27
SUN.	18	9 50 7.21	9.312	13 6 45.0	48.50	3 43.38	0.545	9 46 23.83
Mon.	19	9 53 50.45	9.292	12 47 14.6	−49.02	3 30.07	0.565	9 50 20.38
Tues.	20	9 57 33.21	9.272	12 27 32.1	49.52	3 16.27	0.585	9 54 16.94
Wed.	21	10 1 15.49	9.252	12 7 37.7	50.01	3 2.00	0.604	9 58 13.49
Thur.	22	10 4 57.31	9.233	11 47 31.8	−50.48	2 47.26	0.623	10 2 10.05
Frid.	23	10 8 38.67	9.214	11 27 14.7	50.94	2 32.07	0.642	10 6 6.60
Sat.	24	10 12 19.58	9.196	11 6 46.7	51.38	2 16.42	0.661	10 10 3.16
SUN.	25	10 16 0.06	9.178	10 46 8.3	−51.81	2 0.35	0.679	10 13 59.71
Mon.	26	10 19 40.11	9.160	10 25 19.7	52.23	1 43.84	0.696	10 17 56.27
Tues.	27	10 23 19.76	9.144	10 4 21.3	52.63	1 26.94	0.713	10 21 52.82
Wed.	28	10 26 59.01	9.128	9 43 13.4	−53.02	1 9.63	0.729	10 25 49.38
Thur.	29	10 30 37.88	9.112	9 21 56.4	53.40	0 51.95	0.744	10 29 45.93
Frid.	30	10 34 16.39	9.097	9 0 30.5	53.76	0 33.90	0.759	10 33 42.49
Sat.	31	10 37 54.55	9.083	8 38 56.1	54.11	0 15.51	0.773	10 37 39.04
SUN.	32	10 41 32.38	9.070	N. 8 17 13.4	−54.44	0 3.21	0.786	10 41 35.59

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour, +9s.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ'	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	° ′	″				h m s
1	213	126 56 49.2	56 14.3	143.54	− 0.49	0.0063439	−94.8	15 18 6.89
2	214	129 54 14.5	53 39.4	143.57	0.38	0.0062836	95.4	15 14 10.89
3	215	130 51 40.4	51 5.1	143.60	0.22	0.0062221	95.9	15 10 14.98
4	216	131 49 7.1	48 31.6	143.63	− 0.24	0.0061592	−96.4	15 6 19.07
5	217	132 46 34.7	45 59.1	143.67	0.14	0.0060952	96.9	15 2 23.16
6	218	133 44 3.3	43 27.5	143.71	− 0.02	0.0060300	97.4	14 58 27.25
7	219	134 41 33.1	40 57.2	143.76	+ 0.11	0.0059637	−97.9	14 54 31.34
8	220	135 39 4.0	38 27.9	143.81	0.24	0.0058962	98.4	14 50 35.43
9	221	136 36 36.1	35 59.8	143.87	0.37	0.0058276	98.9	14 46 39.52
10	222	137 34 9.6	33 32.2	143.92	+ 0.49	0.0057576	−99.4	14 42 43.61
11	223	138 31 44.5	31 7.9	143.98	0.59	0.0056862	99.9	14 38 47.70
12	224	139 29 20.8	28 44.1	144.04	0.66	0.0056135	99.6	14 34 51.79
13	225	140 26 58.6	26 21.7	144.11	+ 0.72	0.0055392	−99.3	14 30 55.88
14	226	141 24 37.9	24 0.9	144.17	0.74	0.0054633	99.0	14 26 59.97
15	227	142 22 18.8	21 41.7	144.24	0.74	0.0053856	98.8	14 23 4.06
16	228	143 20 1.2	19 23.9	144.30	+ 0.71	0.0053060	−98.6	14 19 8.15
17	229	144 17 45.1	17 7.7	144.36	0.65	0.0052245	98.4	14 15 12.24
18	230	145 15 30.5	14 52.9	144.42	0.56	0.0051410	98.2	14 11 16.33
19	231	146 13 17.5	12 39.8	144.49	+ 0.44	0.0050555	−98.1	14 7 20.42
20	232	147 11 5.9	10 28.1	144.55	0.32	0.0049678	97.0	14 3 24.51
21	233	148 8 55.8	8 17.8	144.61	0.19	0.0048782	97.8	13 59 28.60
22	234	149 6 47.0	6 8.9	144.67	+ 0.06	0.0047863	−98.7	13 55 32.69
23	235	150 4 39.6	4 1.4	144.72	− 0.07	0.0046925	99.5	13 51 36.78
24	236	151 2 33.5	1 55.1	144.78	0.18	0.0045969	40.2	13 47 40.87
25	237	151 60 28.7	59 50.2	144.83	− 0.27	0.0044995	−40.9	13 43 44.97
26	238	152 58 25.3	57 46.7	144.88	0.35	0.0044004	41.5	13 39 49.06
27	239	153 56 23.0	55 44.2	144.93	0.40	0.0042999	42.1	13 35 53.15
28	240	154 54 22.1	53 43.2	144.99	− 0.41	0.0041981	−42.6	13 31 57.24
29	241	155 52 22.4	51 43.4	145.04	0.39	0.0040950	43.1	13 28 1.33
30	242	156 50 24.2	49 45.1	145.10	0.34	0.0039910	43.5	13 24 5.42
31	243	157 48 27.3	47 48.1	145.16	0.27	0.0038860	43.9	13 20 9.51
32	244	158 46 31.8	45 52.4	145.22	− 0.18	0.0037802	−44.2	13 16 13.61

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0d.0.

Diff. for 1 Hour, − 9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 12.1	15 8.0	55 40.8	−1.30	55 25.8	−1.20	9 9.1	2.28	10.3
2	15 4.3	15 0.9	55 12.0	1.10	54 59.5	1.00	10 3.1	2.21	11.3
3	14 57.8	14 55.0	54 48.1	0.90	54 37.9	0.80	10 54.6	2.08	12.3
4	14 52.5	14 50.4	54 28.8	−0.70	54 21.0	−0.61	11 42.9	1.94	13.3
5	14 48.5	14 47.0	54 14.2	0.52	54 8.6	0.41	12 27.9	1.81	14.3
6	14 45.9	14 45.1	54 4.4	0.30	54 1.5	−0.18	13 9.9	1.70	15.3
7	14 44.7	14 44.6	54 0.0	−0.07	53 59.9	+0.06	13 50.0	1.64	16.3
8	14 45.1	14 45.9	54 1.5	+0.20	54 4.6	0.35	14 28.9	1.62	17.3
9	14 47.3	14 49.2	54 9.7	0.50	54 16.6	0.66	15 7.8	1.64	18.3
10	14 51.6	14 54.6	54 25.5	+0.83	54 36.5	+1.01	15 47.8	1.70	19.3
11	14 58.2	15 2.4	54 49.7	1.19	55 5.0	1.37	16 30.1	1.83	20.3
12	15 7.1	15 12.5	55 22.5	1.55	55 42.2	1.73	17 15.9	2.00	21.3
13	15 18.4	15 24.8	56 3.9	+1.89	56 27.5	+2.04	18 6.2	2.20	22.3
14	15 31.7	15 39.0	56 52.9	2.18	57 19.7	2.28	19 1.6	2.41	23.3
15	15 46.6	15 54.4	57 47.6	2.35	58 16.0	2.37	20 1.4	2.57	24.3
16	16 2.1	16 9.8	58 44.5	+2.37	59 12.8	+2.30	21 3.9	2.62	25.3
17	16 17.2	16 24.0	59 39.7	2.17	60 4.8	1.98	22 6.5	2.57	26.3
18	16 30.1	16 35.4	60 27.3	1.74	60 46.6	1.44	23 6.6	2.44	27.3
19	16 39.5	16 42.5	61 1.9	+1.10	61 12.9	+0.71			28.3
20	16 44.2	16 44.5	61 19.0	+0.30	61 20.2	−0.11	0 3.4	2.29	29.3
21	16 43.5	16 41.1	61 16.4	−0.52	61 7.8	0.90	0 56.8	2.17	1.0
22	16 37.6	16 32.9	60 54.7	−1.26	60 37.6	−1.57	1 48.0	2.10	2.0
23	16 27.3	16 21.1	60 17.1	1.82	59 54.0	2.01	2 38.2	2.09	3.0
24	16 14.2	16 7.0	59 28.8	2.15	59 2.3	2.24	3 28.7	2.13	4.0
25	15 59.5	15 52.1	58 35.0	−2.28	58 7.7	−2.26	4 20.5	2.19	5.0
26	15 44.8	15 37.7	57 40.8	2.21	57 14.6	2.13	5 14.0	2.26	6.0
27	15 30.9	15 24.4	56 49.7	2.02	56 26.1	1.90	6 9.0	2.31	7.0
28	15 18.5	15 13.0	56 4.2	−1.75	55 44.1	−1.60	7 4.5	2.30	8.0
29	15 8.0	15 3.5	55 25.7	1.45	55 9.3	1.29	7 59.1	2.23	9.0
30	14 59.6	14 56.1	54 54.7	1.14	54 41.9	0.99	8 51.3	2.12	10.0
31	14 53.1	14 50.6	54 31.0	0.84	54 21.7	0.70	9 40.4	1.97	11.0
32	14 48.5	14 46.8	54 14.1	−0.57	54 8.0	−0.44	10 26.1	1.84	12.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 1.			
	h m s	s	° ′ ″	″
0	17 28 19.69	2.3738	S. 28 22 53.9	1.351
1	17 30 42.10	2.3731	28 24 4.3	1.096
2	17 33 4.46	2.3722	28 25 5.4	0.940
3	17 35 26.76	2.3712	28 25 57.1	0.785
4	17 37 49.00	2.3702	28 26 39.6	0.631
5	17 40 11.18	2.3690	28 27 12.8	0.477
6	17 42 33.28	2.3677	28 27 36.8	0.322
7	17 44 55.30	2.3662	28 27 51.5	0.168
8	17 47 17.23	2.3647	28 27 57.0	− 0.015
9	17 49 39.07	2.3629	28 27 53.3	+ 0.138
10	17 52 0.81	2.3616	28 27 40.4	0.292
11	17 54 22.41	2.3597	28 27 18.3	0.445
12	17 56 43.97	2.3578	28 26 47.0	0.597
13	17 59 5.38	2.3558	28 26 6.6	0.749
14	18 1 26.66	2.3537	28 25 17.1	0.901
15	18 3 47.82	2.3515	28 24 18.5	1.052
16	18 6 8.84	2.3492	28 23 10.9	1.202
17	18 8 29.72	2.3467	28 21 54.2	1.353
18	18 10 50.45	2.3442	28 20 28.5	1.503
19	18 13 11.03	2.3417	28 18 53.9	1.653
20	18 15 31.45	2.3390	28 17 10.3	1.801
21	18 17 51.71	2.3362	28 15 17.8	1.949
22	18 20 11.80	2.3333	28 13 16.4	2.097
23	18 22 31.71	2.3304	S. 28 11 6.2	2.244
	FRIDAY 2.			
0	18 24 51.45	2.3274	S. 28 8 47.1	2.391
1	18 27 11.00	2.3242	28 6 19.3	2.537
2	18 29 30.36	2.3210	28 3 42.7	2.682
3	18 31 49.52	2.3177	28 0 57.4	2.827
4	18 34 8.48	2.3142	27 58 3.5	2.970
5	18 36 27.23	2.3107	27 55 1.0	3.114
6	18 38 45.77	2.3072	27 51 49.8	3.257
7	18 41 4.10	2.3036	27 48 30.1	3.399
8	18 43 22.20	2.2999	27 45 1.9	3.540
9	18 45 40.08	2.2961	27 41 25.3	3.680
10	18 47 57.73	2.2922	27 37 40.3	3.820
11	18 50 15.14	2.2882	27 33 46.9	3.959
12	18 52 32.32	2.2842	27 29 45.2	4.097
13	18 54 49.25	2.2801	27 25 35.2	4.235
14	18 57 5.93	2.2760	27 21 17.0	4.372
15	18 59 22.37	2.2718	27 16 50.6	4.507
16	19 1 38.55	2.2675	27 12 16.1	4.642
17	19 3 54.47	2.2631	27 7 33.5	4.776
18	19 6 10.12	2.2587	27 2 42.9	4.910
19	19 8 25.51	2.2542	26 57 44.3	5.042
20	19 10 40.63	2.2497	26 52 37.8	5.174
21	19 12 55.47	2.2451	26 47 23.4	5.305
22	19 15 10.04	2.2404	26 42 1.2	5.435
23	19 17 24.32	2.2357	26 36 31.2	5.564
24	19 19 38.32	2.2309	S. 26 30 53.5	5.692

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 3.			
	h m s	s	° ′ ″	″
0	19 19 38.32	2.2309	S. 26 30 53.5	5.692
1	19 21 52.03	2.2261	26 25 8.2	5.819
2	19 24 5.45	2.2213	26 19 15.2	5.946
3	19 26 18.59	2.2165	26 13 14.7	6.070
4	19 28 31.43	2.2115	26 7 6.8	6.194
5	19 30 43.97	2.2066	26 0 51.4	6.318
6	19 32 56.22	2.2016	25 54 28.6	6.441
7	19 35 8.16	2.1965	25 47 58.5	6.562
8	19 37 19.80	2.1914	25 41 21.2	6.682
9	19 39 31.13	2.1862	25 34 36.7	6.801
10	19 41 42.15	2.1811	25 27 45.1	6.920
11	19 43 52.86	2.1759	25 20 46.3	7.039
12	19 46 3.26	2.1707	25 13 40.5	7.155
13	19 48 13.34	2.1654	25 6 27.7	7.270
14	19 50 23.11	2.1602	24 59 8.1	7.383
15	19 52 32.57	2.1550	24 51 41.7	7.497
16	19 54 41.71	2.1497	24 44 8.5	7.610
17	19 56 50.53	2.1443	24 36 28.5	7.722
18	19 58 59.03	2.1390	24 28 41.9	7.832
19	20 1 7.21	2.1337	24 20 48.7	7.941
20	20 3 15.07	2.1283	24 12 49.0	8.049
21	20 5 22.61	2.1229	24 4 42.8	8.157
22	20 7 29.82	2.1175	23 56 30.2	8.263
23	20 9 36.71	2.1121	S. 23 48 11.2	8.368
	SUNDAY 4.			
0	20 11 43.28	2.1067	S. 23 39 46.0	8.472
1	20 13 49.52	2.1013	23 31 14.6	8.575
2	20 15 55.44	2.0960	23 22 37.0	8.678
3	20 18 1.04	2.0906	23 13 53.2	8.780
4	20 20 6.31	2.0852	23 5 3.4	8.879
5	20 22 11.26	2.0796	22 56 7.7	8.977
6	20 24 15.89	2.0744	22 47 6.2	9.074
7	20 26 20.19	2.0690	22 37 58.8	9.171
8	20 28 24.17	2.0637	22 28 45.6	9.268
9	20 30 27.83	2.0583	22 19 26.6	9.363
10	20 32 31.17	2.0530	22 10 2.0	9.457
11	20 34 34.19	2.0476	22 0 31.8	9.549
12	20 36 36.88	2.0422	21 50 56.1	9.640
13	20 38 39.25	2.0369	21 41 15.0	9.731
14	20 40 41.31	2.0316	21 31 28.4	9.821
15	20 42 43.05	2.0263	21 21 36.5	9.909
16	20 44 44.47	2.0211	21 11 39.3	9.997
17	20 46 45.58	2.0159	21 1 36.9	10.083
18	20 48 46.38	2.0107	20 51 29.3	10.169
19	20 50 46.87	2.0055	20 41 16.6	10.253
20	20 52 47.04	2.0003	20 30 58.9	10.336
21	20 54 46.90	1.9951	20 20 36.3	10.418
22	20 56 46.45	1.9900	20 10 8.7	10.500
23	20 58 45.70	1.9849	19 59 36.3	10.580
24	21 0 44.64	1.9798	S. 19 48 59.1	10.659

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 5.			
	h m s	s	° ′ ″	″
0	21 0 44.64	1.9796	S. 19 48 59.1	10.650
1	21 2 43.28	1.9748	19 38 17.2	10.737
2	21 4 41.62	1.9696	19 27 30.6	10.815
3	21 6 39.66	1.9648	19 16 39.4	10.891
4	21 8 37.40	1.9599	19 5 43.7	10.966
5	21 10 34.85	1.9550	18 54 43.5	11.040
6	21 12 32.00	1.9501	18 43 38.9	11.113
7	21 14 28.86	1.9453	18 32 29.9	11.186
8	21 16 25.44	1.9406	18 21 16.6	11.257
9	21 18 21.73	1.9358	18 9 59.1	11.327
10	21 20 17.74	1.9311	17 58 37.4	11.397
11	21 22 13.47	1.9264	17 47 11.5	11.465
12	21 24 8.91	1.9217	17 35 41.6	11.532
13	21 26 4.08	1.9170	17 24 7.7	11.598
14	21 27 58.98	1.9127	17 12 29.8	11.663
15	21 29 53.60	1.9080	17 0 48.1	11.728
16	21 31 47.96	1.9037	16 49 2.5	11.792
17	21 33 42.05	1.8993	16 37 13.1	11.854
18	21 35 35.88	1.8950	16 25 20.0	11.916
19	21 37 29.45	1.8907	16 13 23.2	11.977
20	21 39 22.76	1.8864	16 1 22.8	12.036
21	21 41 15.82	1.8822	15 49 18.9	12.094
22	21 43 8.63	1.8781	15 37 11.5	12.150
23	21 45 1.19	1.8739	S. 15 25 0.7	12.209
	TUESDAY 6.			
0	21 46 53.50	1.8696	S. 15 12 46.4	12.266
1	21 48 45.57	1.8658	15 0 28.8	12.320
2	21 50 37.40	1.8619	14 48 8.0	12.374
3	21 52 29.00	1.8580	14 35 43.9	12.426
4	21 54 20.36	1.8542	14 23 16.6	12.480
5	21 56 11.50	1.8504	14 10 46.3	12.531
6	21 58 2.41	1.8466	13 58 12.9	12.582
7	21 59 53.09	1.8429	13 45 36.5	12.632
8	22 1 43.56	1.8393	13 32 57.1	12.681
9	22 3 33.81	1.8357	13 20 14.8	12.728
10	22 5 23.84	1.8322	13 7 29.7	12.775
11	22 7 13.67	1.8287	12 54 41.8	12.822
12	22 9 3.29	1.8253	12 41 51.1	12.867
13	22 10 52.71	1.8220	12 28 57.7	12.912
14	22 12 41.93	1.8187	12 16 1.7	12.955
15	22 14 30.95	1.8154	12 3 3.1	12.998
16	22 16 19.78	1.8122	11 50 1.9	13.040
17	22 18 8.42	1.8092	11 36 58.3	13.080
18	22 19 56.88	1.8062	11 23 52.3	13.120
19	22 21 45.16	1.8032	11 10 43.9	13.160
20	22 23 33.26	1.8002	10 57 33.1	13.199
21	22 25 21.18	1.7973	10 44 20.0	13.237
22	22 27 8.93	1.7945	10 31 4.6	13.274
23	22 28 56.52	1.7917	10 17 47.1	13.309
24	22 30 43.94	1.7890	S. 10 4 27.5	13.344
	WEDNESDAY 7.			
0	22 30 43.94	1.7890	S. 10 4 27.5	13.344
1	22 32 31.20	1.7864	9 51 5.8	13.379
2	22 34 18.31	1.7839	9 37 42.0	13.413
3	22 36 5.27	1.7814	9 24 16.2	13.447
4	22 37 52.08	1.7790	9 10 48.4	13.479
5	22 39 38.75	1.7766	8 57 18.7	13.510
6	22 41 25.28	1.7743	8 43 47.2	13.540
7	22 43 11.67	1.7721	8 30 13.9	13.570
8	22 44 57.93	1.7699	8 16 38.8	13.600
9	22 46 44.06	1.7677	8 3 1.9	13.628
10	22 48 30.06	1.7657	7 49 23.4	13.655
11	22 50 15.95	1.7638	7 35 43.3	13.682
12	22 52 1.72	1.7619	7 22 1.6	13.708
13	22 53 47.38	1.7601	7 8 18.3	13.733
14	22 55 32.93	1.7583	6 54 33.6	13.758
15	22 57 18.37	1.7565	6 40 47.4	13.782
16	22 59 3.71	1.7549	6 26 59.8	13.804
17	23 0 48.96	1.7534	6 13 10.9	13.826
18	23 2 34.11	1.7519	5 59 20.7	13.847
19	23 4 19.18	1.7504	5 45 29.2	13.868
20	23 6 4.16	1.7490	5 31 36.5	13.888
21	23 7 49.06	1.7477	5 17 42.6	13.908
22	23 9 33.88	1.7464	5 3 47.5	13.927
23	23 11 18.63	1.7453	S. 4 49 51.4	13.944
	THURSDAY 8.			
0	23 13 3.32	1.7443	S. 4 35 54.2	13.961
1	23 14 47.95	1.7432	4 21 56.0	13.978
2	23 16 32.51	1.7422	4 7 56.9	13.993
3	23 18 17.01	1.7413	3 53 56.8	14.008
4	23 20 1.46	1.7405	3 39 55.9	14.022
5	23 21 45.87	1.7397	3 25 54.2	14.036
6	23 23 30.23	1.7390	3 11 51.6	14.049
7	23 25 14.55	1.7384	2 57 48.3	14.061
8	23 26 58.84	1.7378	2 43 44.3	14.072
9	23 28 43.09	1.7373	2 29 39.7	14.082
10	23 30 27.32	1.7370	2 15 34.5	14.092
11	23 32 11.53	1.7367	2 1 28.7	14.102
12	23 33 55.72	1.7364	1 47 22.3	14.111
13	23 35 39.89	1.7362	1 33 15.4	14.118
14	23 37 24.06	1.7361	1 19 8.1	14.124
15	23 39 8.22	1.7360	1 5 0.5	14.130
16	23 40 52.38	1.7361	0 50 52.5	14.136
17	23 42 36.55	1.7362	0 36 44.2	14.142
18	23 44 20.72	1.7363	0 22 35.5	14.146
19	23 46 4.91	1.7366	S. 0 8 26.6	14.149
20	23 47 49.11	1.7369	N. 0 5 42.4	14.152
21	23 49 33.33	1.7373	0 19 51.6	14.154
22	23 51 17.57	1.7377	0 34 0.9	14.155
23	23 53 1.85	1.7382	0 48 10.2	14.156
24	23 54 46.16	1.7388	N. 1 2 19.6	14.157

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 54 46.16	1.7388	N. 1 2 19.6	14.157
1	23 56 30.51	1.7395	1 16 29.0	14.156
2	23 58 14.90	1.7402	1 30 38.3	14.154
3	23 59 59.34	1.7411	1 44 47.5	14.152
4	0 1 43.83	1.7420	1 58 56.6	14.149
5	0 3 28.39	1.7430	2 13 5.4	14.146
6	0 5 12.99	1.7440	2 27 14.0	14.141
7	0 6 57.65	1.7451	2 41 22.4	14.137
8	0 8 42.39	1.7462	2 55 30.4	14.131
9	0 10 27.20	1.7475	3 9 38.1	14.125
10	0 12 12.10	1.7489	3 23 45.4	14.118
11	0 13 57.07	1.7503	3 37 52.2	14.110
12	0 15 42.13	1.7517	3 51 58.6	14.102
13	0 17 27.25	1.7533	4 6 4.4	14.092
14	0 19 12.53	1.7550	4 20 9.6	14.082
15	0 20 57.85	1.7567	4 34 14.2	14.072
16	0 22 43.33	1.7585	4 48 18.2	14.060
17	0 24 28.90	1.7604	5 2 21.4	14.048
18	0 26 14.65	1.7622	5 16 23.9	14.035
19	0 28 0.35	1.7642	5 30 25.6	14.021
20	0 29 46.30	1.7664	5 44 26.4	14.007
21	0 31 32.35	1.7686	5 58 26.4	13.992
22	0 33 18.53	1.7706	6 12 25.5	13.976
23	0 35 4.85	1.7731	N. 6 26 23.6	13.960

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 36 51.31	1.7756	N. 6 40 20.6	13.942
1	0 38 37.91	1.7780	6 54 16.6	13.924
2	0 40 24.67	1.7806	7 8 11.5	13.905
3	0 42 11.59	1.7832	7 22 5.2	13.885
4	0 43 58.65	1.7859	7 35 57.7	13.864
5	0 45 45.99	1.7887	7 49 48.9	13.843
6	0 47 33.39	1.7916	8 3 38.9	13.821
7	0 49 20.95	1.7945	8 17 27.5	13.798
8	0 51 8.64	1.7975	8 31 14.7	13.775
9	0 52 56.56	1.8006	8 45 0.5	13.751
10	0 54 44.71	1.8038	8 58 44.8	13.725
11	0 56 33.04	1.8071	9 12 27.5	13.699
12	0 58 21.56	1.8104	9 26 8.7	13.672
13	1 0 10.29	1.8138	9 39 48.2	13.644
14	1 1 59.22	1.8173	9 53 26.0	13.616
15	1 3 48.36	1.8208	10 7 2.2	13.588
16	1 5 37.72	1.8245	10 20 36.6	13.558
17	1 7 27.30	1.8282	10 34 9.1	13.528
18	1 9 17.10	1.8319	10 47 39.7	13.494
19	1 11 7.13	1.8358	11 1 8.4	13.462
20	1 12 57.40	1.8398	11 14 35.1	13.428
21	1 14 47.91	1.8438	11 27 59.7	13.393
22	1 16 38.66	1.8479	11 41 22.2	13.358
23	1 18 29.66	1.8521	11 54 42.6	13.323
24	1 20 20.91	1.8564	N. 12 8 0.9	13.286

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 20 20.91	1.8564	N. 12 8 0.9	13.286
1	1 22 12.42	1.8608	12 21 16.9	13.247
2	1 24 4.20	1.8652	12 34 30.6	13.208
3	1 25 56.24	1.8697	12 47 41.9	13.168
4	1 27 48.55	1.8742	13 0 50.8	13.127
5	1 29 41.14	1.8789	13 13 57.2	13.085
6	1 31 34.01	1.8836	13 27 1.0	13.042
7	1 33 27.17	1.8883	13 40 2.2	12.998
8	1 35 20.62	1.8932	13 53 0.8	12.955
9	1 37 14.36	1.8982	14 5 56.8	12.910
10	1 39 8.40	1.9032	14 18 50.0	12.863
11	1 41 2.75	1.9083	14 31 40.3	12.815
12	1 42 57.40	1.9135	14 44 27.8	12.767
13	1 44 52.37	1.9188	14 57 12.4	12.717
14	1 46 47.66	1.9241	15 9 53.9	12.666
15	1 48 43.26	1.9294	15 22 32.3	12.614
16	1 50 39.19	1.9350	15 35 7.6	12.562
17	1 52 35.46	1.9406	15 47 39.8	12.509
18	1 54 32.06	1.9462	16 0 8.7	12.454
19	1 56 29.00	1.9519	16 12 34.3	12.398
20	1 58 26.29	1.9576	16 24 56.5	12.342
21	2 0 23.92	1.9635	16 37 15.3	12.284
22	2 2 21.91	1.9695	16 49 30.6	12.224
23	2 4 20.26	1.9754	N. 17 1 42.2	12.163

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 6 18.96	1.9814	N. 17 13 50.2	12.102
1	2 8 18.03	1.9876	17 25 54.5	12.040
2	2 10 17.47	1.9939	17 37 55.0	11.977
3	2 12 17.29	2.0002	17 49 51.7	11.913
4	2 14 17.49	2.0065	18 1 44.5	11.847
5	2 16 18.07	2.0128	18 13 33.3	11.779
6	2 18 19.03	2.0192	18 25 18.0	11.711
7	2 20 20.38	2.0256	18 36 58.6	11.642
8	2 22 22.13	2.0325	18 48 35.0	11.571
9	2 24 24.28	2.0392	19 0 7.1	11.499
10	2 26 26.83	2.0460	19 11 34.8	11.426
11	2 28 29.78	2.0526	19 22 58.2	11.352
12	2 30 33.14	2.0595	19 34 17.1	11.277
13	2 32 36.92	2.0664	19 45 31.4	11.199
14	2 34 41.11	2.0733	19 56 41.0	11.121
15	2 36 45.72	2.0804	20 7 45.9	11.042
16	2 38 50.76	2.0875	20 18 46.0	10.961
17	2 40 56.22	2.0946	20 29 41.2	10.879
18	2 43 2.11	2.1018	20 40 31.5	10.796
19	2 45 8.44	2.1091	20 51 16.7	10.711
20	2 47 15.20	2.1164	21 1 56.8	10.625
21	2 49 22.40	2.1237	21 12 31.7	10.537
22	2 51 30.04	2.1311	21 23 1.3	10.448
23	2 53 38.13	2.1386	21 33 25.5	10.358
24	2 55 46.67	2.1461	N. 21 43 44.3	10.267

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 13.			
	h m s	s	° ′ ″	″
0	2 55 46.67	2.1461	N.21 43 44.3	10.987
1	2 57 55.66	2.1536	21 53 57.6	10.174
2	3 0 5.10	2.1611	22 4 5.2	10.079
3	3 2 14.99	2.1687	22 14 7.1	9.984
4	3 4 25.34	2.1764	22 24 3.3	9.887
5	3 6 36.15	2.1841	22 33 53.6	9.788
6	3 8 47.43	2.1918	22 43 37.9	9.688
7	3 10 59.17	2.1995	22 53 16.2	9.587
8	3 13 11.37	2.2073	23 2 48.4	9.484
9	3 15 24.04	2.2151	23 12 14.3	9.379
10	3 17 37.18	2.2229	23 21 33.9	9.274
11	3 19 50.79	2.2308	23 30 47.2	9.167
12	3 22 4.88	2.2387	23 39 54.0	9.058
13	3 24 19.44	2.2466	23 48 54.2	8.948
14	3 26 34.47	2.2545	23 57 47.7	8.836
15	3 28 49.98	2.2625	24 6 34.5	8.723
16	3 31 5.97	2.2704	24 15 14.4	8.608
17	3 33 22.43	2.2783	24 23 47.4	8.492
18	3 35 39.37	2.2863	24 32 13.4	8.374
19	3 37 56.78	2.2943	24 40 32.3	8.254
20	3 40 14.68	2.3023	24 48 43.9	8.132
21	3 42 33.06	2.3103	24 56 48.2	8.010
22	3 44 51.92	2.3182	25 4 45.1	7.886
23	3 47 11.25	2.3262	N.25 12 34.5	7.760
	WEDNESDAY 14.			
0	3 49 31.06	2.3342	N.25 20 16.3	7.632
1	3 51 51.35	2.3421	25 27 50.4	7.504
2	3 54 12.11	2.3500	25 35 16.8	7.374
3	3 56 33.35	2.3579	25 42 35.3	7.242
4	3 58 55.06	2.3658	25 49 45.9	7.109
5	4 1 17.24	2.3737	25 56 48.4	6.973
6	4 3 39.90	2.3815	26 3 42.7	6.837
7	4 6 3.02	2.3893	26 10 28.8	6.698
8	4 8 26.61	2.3971	26 17 6.5	6.558
9	4 10 50.67	2.4048	26 23 35.8	6.417
10	4 13 15.19	2.4124	26 29 56.6	6.275
11	4 15 40.16	2.4200	26 36 8.8	6.130
12	4 18 5.59	2.4276	26 42 12.2	5.984
13	4 20 31.48	2.4352	26 48 6.8	5.837
14	4 22 57.82	2.4427	26 53 52.6	5.688
15	4 25 24.60	2.4501	26 59 29.4	5.537
16	4 27 51.83	2.4575	27 4 57.1	5.385
17	4 30 19.50	2.4648	27 10 15.6	5.232
18	4 32 47.61	2.4721	27 15 24.9	5.077
19	4 35 16.15	2.4792	27 20 24.9	4.921
20	4 37 45.11	2.4863	27 25 15.4	4.762
21	4 40 14.50	2.4933	27 29 56.3	4.602
22	4 42 44.31	2.5002	27 34 27.6	4.442
23	4 45 14.53	2.5071	27 38 49.3	4.280
24	4 47 45.16	2.5138	N.27 43 1.2	4.116

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 15.			
	h m s	s	° ′ ″	″
0	4 47 45.16	2.5138	N.27 43 1.2	4.116
1	4 50 16.19	2.5205	27 47 3.2	3.950
2	4 52 47.62	2.5271	27 50 55.2	3.783
3	4 55 19.44	2.5335	27 54 37.2	3.616
4	4 57 51.64	2.5399	27 58 9.1	3.447
5	5 0 24.22	2.5462	28 1 30.8	3.276
6	5 2 57.18	2.5523	28 4 42.2	3.103
7	5 5 30.50	2.5583	28 7 43.2	2.930
8	5 8 4.18	2.5642	28 10 33.8	2.756
9	5 10 38.21	2.5700	28 13 13.9	2.580
10	5 13 12.58	2.5757	28 15 43.4	2.402
11	5 15 47.29	2.5813	28 18 2.2	2.223
12	5 18 22.33	2.5867	28 20 10.2	2.043
13	5 20 57.69	2.5919	28 22 7.4	1.863
14	5 23 33.36	2.5971	28 23 53.8	1.682
15	5 26 9.34	2.6022	28 25 29.2	1.499
16	5 28 45.62	2.6070	28 26 53.6	1.315
17	5 31 22.18	2.6117	28 28 7.0	1.130
18	5 33 59.02	2.6162	28 29 9.2	0.944
19	5 36 36.13	2.6207	28 30 0.2	0.757
20	5 39 13.50	2.6250	28 30 40.0	0.569
21	5 41 51.13	2.6292	28 31 8.5	0.380
22	5 44 29.00	2.6331	28 31 25.6	+ 0.190
23	5 47 7.10	2.6369	N.28 31 31.3	− 0.001
	FRIDAY 16.			
0	5 49 45.43	2.6406	N.28 31 25.5	0.192
1	5 52 23.97	2.6441	28 31 8.2	0.384
2	5 55 2.72	2.6474	28 30 39.4	0.577
3	5 57 41.66	2.6506	28 29 59.0	0.771
4	6 0 20.79	2.6536	28 29 6.9	0.966
5	6 3 0.09	2.6563	28 28 3.1	1.160
6	6 5 39.55	2.6590	28 26 47.7	1.355
7	6 8 19.17	2.6615	28 25 20.5	1.550
8	6 10 58.93	2.6638	28 23 41.5	1.746
9	6 13 38.83	2.6660	28 21 50.7	1.945
10	6 16 18.85	2.6679	28 19 48.1	2.142
11	6 18 58.98	2.6697	28 17 33.6	2.340
12	6 21 39.22	2.6714	28 15 7.3	2.538
13	6 24 19.55	2.6728	28 12 29.1	2.737
14	6 26 59.96	2.6741	28 9 38.9	2.936
15	6 29 40.44	2.6752	28 6 36.8	3.135
16	6 32 20.98	2.6761	28 3 22.7	3.334
17	6 35 1.57	2.6768	27 59 56.7	3.533
18	6 37 42.20	2.6774	27 56 18.8	3.732
19	6 40 22.86	2.6778	27 52 28.9	3.932
20	6 43 3.54	2.6780	27 48 27.0	4.131
21	6 45 44.22	2.6780	27 44 13.2	4.330
22	6 48 24.90	2.6779	27 39 47.4	4.529
23	6 51 5.57	2.6777	27 35 9.7	4.728
24	6 53 46.23	2.6773	N.27 30 20.1	4.927

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 17.			
	h m s	s	° ′ ″	″
0	6 53 46.23	9.6773	N.27 30 20.1	4.997
1	6 56 26.85	9.6766	27 25 18.5	5.196
2	6 59 7.42	9.6757	27 20 5.0	5.393
3	7 1 47.94	9.6748	27 14 39.7	5.591
4	7 4 28.40	9.6737	27 9 2.5	5.718
5	7 7 8.79	9.6724	27 3 13.5	5.916
6	7 9 49.09	9.6709	26 57 12.6	6.113
7	7 12 29.30	9.6693	26 50 59.9	6.309
8	7 15 9.41	9.6676	26 44 35.5	6.503
9	7 17 49.41	9.6657	26 37 59.5	6.696
10	7 20 29.29	9.6636	26 31 11.8	6.893
11	7 23 9.04	9.6614	26 24 12.4	7.087
12	7 25 48.66	9.6591	26 17 1.4	7.280
13	7 28 28.13	9.6565	26 9 38.8	7.472
14	7 31 7.44	9.6538	26 2 4.8	7.662
15	7 33 46.59	9.6510	25 54 19.4	7.852
16	7 36 25.56	9.6480	25 46 22.6	8.042
17	7 39 4.35	9.6450	25 38 14.4	8.231
18	7 41 42.96	9.6418	25 29 54.9	8.418
19	7 44 21.37	9.6385	25 21 24.2	8.604
20	7 46 59.58	9.6350	25 12 42.4	8.789
21	7 49 37.57	9.6314	25 3 49.5	8.973
22	7 52 15.34	9.6278	24 54 45.6	9.157
23	7 54 52.90	9.6241	N.24 45 30.7	9.338
	SUNDAY 18.			
0	7 57 30.23	9.6202	N.24 36 5.0	9.518
1	8 0 7.32	9.6161	24 26 28.5	9.697
2	8 2 44.16	9.6119	24 16 41.3	9.876
3	8 5 20.75	9.6077	24 6 43.4	10.053
4	8 7 57.08	9.6034	23 56 34.9	10.228
5	8 10 33.15	9.5990	23 46 16.0	10.402
6	8 13 8.96	9.5945	23 35 46.7	10.574
7	8 15 44.49	9.5899	23 25 7.1	10.745
8	8 18 19.74	9.5852	23 14 17.3	10.914
9	8 20 54.71	9.5804	23 3 17.4	11.082
10	8 23 29.39	9.5756	22 52 7.5	11.248
11	8 26 3.78	9.5707	22 40 47.7	11.413
12	8 28 37.88	9.5658	22 29 18.0	11.576
13	8 31 11.68	9.5608	22 17 38.6	11.737
14	8 33 45.17	9.5557	22 5 49.6	11.897
15	8 36 18.36	9.5506	21 53 51.0	12.055
16	8 38 51.24	9.5453	21 41 43.0	12.211
17	8 41 23.80	9.5400	21 29 25.7	12.365
18	8 43 56.04	9.5348	21 16 59.2	12.517
19	8 46 27.97	9.5295	21 4 23.6	12.668
20	8 48 59.58	9.5241	20 51 39.0	12.817
21	8 51 30.86	9.5187	20 38 45.5	12.964
22	8 54 1.82	9.5132	20 25 43.3	13.109
23	8 56 32.45	9.5078	20 12 32.4	13.252
24	8 59 2.76	9.5024	N.19 59 13.0	13.394
	MONDAY 19.			
0	8 59 2.76	9.5024	N.19 59 13.0	13.394
1	9 1 32.74	9.4968	19 45 45.1	13.533
2	9 4 2.38	9.4912	19 32 9.0	13.670
3	9 6 31.69	9.4857	19 18 24.7	13.806
4	9 9 0.66	9.4801	19 4 32.3	13.939
5	9 11 29.30	9.4746	18 50 32.0	14.071
6	9 13 57.61	9.4690	18 36 23.8	14.200
7	9 16 25.58	9.4634	18 22 8.0	14.327
8	9 18 53.22	9.4578	18 7 44.6	14.452
9	9 21 20.52	9.4522	17 53 13.7	14.576
10	9 23 47.49	9.4467	17 38 35.5	14.696
11	9 26 14.13	9.4412	17 23 50.2	14.814
12	9 28 40.43	9.4356	17 8 57.8	14.929
13	9 31 6.40	9.4301	16 53 58.4	15.046
14	9 33 32.04	9.4246	16 38 52.3	15.157
15	9 35 57.35	9.4191	16 23 39.5	15.268
16	9 38 22.33	9.4136	16 8 20.1	15.377
17	9 40 46.98	9.4082	15 52 54.3	15.483
18	9 43 11.31	9.4028	15 37 22.2	15.586
19	9 45 35.32	9.3974	15 21 44.0	15.687
20	9 47 59.00	9.3920	15 5 59.7	15.787
21	9 50 22.36	9.3867	14 50 9.5	15.884
22	9 52 45.40	9.3814	14 34 13.6	15.978
23	9 55 8.13	9.3761	N.14 18 12.1	16.072
	TUESDAY 20.			
0	9 57 30.54	9.3709	N.14 2 5.0	16.162
1	9 59 52.64	9.3658	13 45 52.6	16.250
2	10 2 14.44	9.3608	13 29 35.0	16.337
3	10 4 35.93	9.3557	13 13 12.2	16.421
4	10 6 57.12	9.3507	12 56 44.5	16.502
5	10 9 18.01	9.3457	12 40 12.0	16.582
6	10 11 38.60	9.3408	12 23 34.7	16.659
7	10 13 58.90	9.3359	12 6 52.9	16.733
8	10 16 18.91	9.3311	11 50 6.7	16.807
9	10 18 38.64	9.3264	11 33 16.1	16.877
10	10 20 58.08	9.3218	11 16 21.4	16.945
11	10 23 17.25	9.3172	10 59 22.7	17.012
12	10 25 36.14	9.3126	10 42 20.0	17.076
13	10 27 54.76	9.3081	10 25 13.6	17.137
14	10 30 13.11	9.3037	10 8 3.6	17.196
15	10 32 31.20	9.2994	9 50 50.1	17.253
16	10 34 49.03	9.2951	9 33 33.2	17.308
17	10 37 6.61	9.2908	9 16 13.1	17.362
18	10 39 23.93	9.2866	8 58 49.8	17.412
19	10 41 41.00	9.2825	8 41 23.6	17.460
20	10 43 57.83	9.2786	8 23 54.6	17.507
21	10 46 14.43	9.2747	8 6 22.8	17.551
22	10 48 30.79	9.2708	7 48 48.5	17.592
23	10 50 46.92	9.2670	7 31 11.8	17.632
24	10 53 2.83	9.2633	N. 7 13 32.7	17.669

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 21.			
	h m s	s	° ′ ″	″
0	10 53 2.83	2.9333	N. 7 13 32.7	17.669
1	10 55 18.52	2.9297	6 55 51.5	17.704
2	10 57 33.99	2.9561	6 38 8.2	17.737
3	10 59 49.25	2.9526	6 20 23.0	17.768
4	11 2 4.30	2.9492	6 2 36.0	17.797
5	11 4 19.16	2.9460	5 44 47.3	17.825
6	11 6 33.82	2.9428	5 26 57.0	17.850
7	11 8 48.29	2.9396	5 9 5.3	17.872
8	11 11 2.57	2.9365	4 51 12.4	17.892
9	11 13 16.67	2.9335	4 33 18.3	17.911
10	11 15 30.59	2.9306	4 15 23.1	17.927
11	11 17 44.34	2.9278	3 57 27.1	17.940
12	11 19 57.93	2.9251	3 39 30.3	17.952
13	11 22 11.36	2.9224	3 21 32.8	17.962
14	11 24 24.62	2.9198	3 3 34.8	17.970
15	11 26 37.73	2.9173	2 45 36.4	17.977
16	11 28 50.70	2.9150	2 27 37.6	17.981
17	11 31 3.53	2.9127	2 9 38.7	17.982
18	11 33 16.22	2.9104	1 51 39.8	17.981
19	11 35 28.78	2.9083	1 33 41.0	17.979
20	11 37 41.21	2.9062	1 15 42.3	17.976
21	11 39 53.52	2.9042	0 57 43.9	17.970
22	11 42 5.71	2.9023	0 39 45.9	17.962
23	11 44 17.80	2.9006	N. 0 21 48.5	17.951
	THURSDAY 22.			
0	11 46 29.78	2.1969	N. 0 3 51.8	17.938
1	11 48 41.66	2.1972	S. 0 14 4.1	17.925
2	11 50 53.45	2.1957	0 31 59.2	17.910
3	11 53 5.14	2.1949	0 49 53.3	17.892
4	11 55 16.75	2.1938	1 7 46.2	17.872
5	11 57 28.28	2.1915	1 25 37.9	17.851
6	11 59 39.73	2.1903	1 43 28.3	17.827
7	12 1 51.11	2.1892	2 1 17.2	17.802
8	12 4 2.43	2.1882	2 19 4.5	17.774
9	12 6 13.69	2.1872	2 36 50.1	17.745
10	12 8 24.89	2.1864	2 54 33.9	17.714
11	12 10 36.05	2.1856	3 12 15.8	17.682
12	12 12 47.16	2.1848	3 29 55.7	17.647
13	12 14 58.23	2.1842	3 47 33.5	17.611
14	12 17 9.27	2.1837	4 5 9.0	17.573
15	12 19 20.27	2.1832	4 22 42.2	17.533
16	12 21 31.25	2.1828	4 40 13.0	17.492
17	12 23 42.21	2.1826	4 57 41.2	17.448
18	12 25 53.16	2.1824	5 15 6.8	17.403
19	12 28 4.10	2.1822	5 32 29.6	17.357
20	12 30 15.03	2.1822	5 49 49.6	17.308
21	12 32 25.96	2.1822	6 7 6.6	17.257
22	12 34 36.89	2.1823	6 24 20.5	17.206
23	12 36 47.83	2.1825	6 41 31.3	17.153
24	12 38 58.79	2.1828	S. 6 58 38.9	17.098

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 23.			
	h m s	s	° ′ ″	″
0	12 38 58.79	2.1828	S. 6 58 38.9	17.098
1	12 41 9.77	2.1832	7 15 43.1	17.041
2	12 43 20.77	2.1836	7 32 43.8	16.982
3	12 45 31.79	2.1839	7 49 40.9	16.922
4	12 47 42.84	2.1845	8 6 34.4	16.861
5	12 49 53.93	2.1851	8 23 24.2	16.797
6	12 52 5.06	2.1858	8 40 10.1	16.732
7	12 54 16.23	2.1866	8 56 52.1	16.666
8	12 56 27.45	2.1875	9 13 30.0	16.597
9	12 58 38.73	2.1884	9 30 3.8	16.528
10	13 0 50.06	2.1894	9 46 33.4	16.457
11	13 3 1.46	2.1905	10 2 58.7	16.385
12	13 5 12.92	2.1916	10 19 19.6	16.311
13	13 7 24.45	2.1928	10 35 36.0	16.235
14	13 9 36.06	2.1941	10 51 47.8	16.157
15	13 11 47.74	2.1954	11 7 54.9	16.079
16	13 13 59.50	2.1968	11 23 57.3	15.999
17	13 16 11.35	2.1983	11 39 54.8	15.917
18	13 18 23.29	2.1998	11 55 47.4	15.835
19	13 20 35.32	2.2013	12 11 35.0	15.751
20	13 22 47.45	2.2030	12 27 17.5	15.664
21	13 24 59.68	2.2047	12 42 54.7	15.577
22	13 27 12.01	2.2064	12 58 26.7	15.489
23	13 29 24.45	2.2081	S. 13 13 53.4	15.399
	SATURDAY 24.			
0	13 31 36.99	2.2100	S. 13 29 14.6	15.307
1	13 33 49.65	2.2120	13 44 30.3	15.215
2	13 36 2.43	2.2139	13 59 40.4	15.121
3	13 38 15.32	2.2159	14 14 44.8	15.025
4	13 40 28.34	2.2181	14 29 43.4	14.929
5	13 42 41.49	2.2202	14 44 36.2	14.832
6	13 44 54.76	2.2224	14 59 23.1	14.732
7	13 47 8.17	2.2246	15 14 4.0	14.631
8	13 49 21.71	2.2268	15 28 38.8	14.528
9	13 51 35.38	2.2290	15 43 7.4	14.425
10	13 53 49.19	2.2314	15 57 29.8	14.321
11	13 56 3.15	2.2338	16 11 45.9	14.216
12	13 58 17.25	2.2362	16 25 55.7	14.109
13	14 0 31.50	2.2387	16 39 59.0	14.001
14	14 2 45.90	2.2411	16 53 55.8	13.892
15	14 5 0.44	2.2436	17 7 46.0	13.781
16	14 7 15.13	2.2462	17 21 29.5	13.668
17	14 9 29.98	2.2488	17 35 6.2	13.555
18	14 11 44.99	2.2515	17 48 36.1	13.442
19	14 14 0.16	2.2541	18 1 59.2	13.327
20	14 16 15.48	2.2567	18 15 15.3	13.210
21	14 18 30.96	2.2594	18 28 24.4	13.092
22	14 20 46.61	2.2622	18 41 26.4	12.974
23	14 23 2.42	2.2649	18 54 21.3	12.855
24	14 25 18.40	2.2677	S. 19 7 9.0	12.734

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 25.			
	h m s	s	° ′ ″	″
0	14 25 18.40	2.2677	S. 19 7 9.0	12.734
1	14 27 34.54	2.2704	19 19 49.4	12.619
2	14 29 50.85	2.2739	19 32 22.4	12.489
3	14 32 7.33	2.2761	19 44 48.0	12.365
4	14 34 23.98	2.2789	19 57 6.2	12.240
5	14 36 40.79	2.2816	20 9 16.8	12.114
6	14 38 57.77	2.2844	20 21 19.8	11.987
7	14 41 14.92	2.2873	20 33 15.2	11.859
8	14 43 32.24	2.2902	20 45 2.9	11.730
9	14 45 49.74	2.2931	20 56 42.8	11.599
10	14 48 7.41	2.2959	21 8 14.8	11.468
11	14 50 25.24	2.2987	21 19 39.0	11.337
12	14 52 43.25	2.3016	21 30 55.3	11.205
13	14 55 1.43	2.3044	21 42 3.6	11.071
14	14 57 19.77	2.3071	21 53 3.8	10.936
15	14 59 38.26	2.3099	22 3 55.9	10.801
16	15 1 56.96	2.3128	22 14 39.9	10.664
17	15 4 15.81	2.3156	22 25 15.6	10.526
18	15 6 34.83	2.3183	22 35 43.0	10.387
19	15 8 54.01	2.3211	22 46 2.1	10.249
20	15 11 13.36	2.3238	22 56 12.9	10.110
21	15 13 32.87	2.3265	23 6 15.3	9.970
22	15 15 52.54	2.3292	23 16 9.3	9.828
23	15 18 12.37	2.3318	S. 23 25 54.7	9.686
	MONDAY 26.			
0	15 20 32.36	2.3344	S. 23 35 31.6	9.543
1	15 22 52.50	2.3370	23 44 59.9	9.400
2	15 25 12.80	2.3396	23 54 19.6	9.256
3	15 27 33.26	2.3422	24 3 30.6	9.110
4	15 29 53.87	2.3447	24 12 32.8	8.964
5	15 32 14.62	2.3471	24 21 26.3	8.818
6	15 34 35.52	2.3496	24 30 11.0	8.671
7	15 36 56.57	2.3519	24 38 46.8	8.523
8	15 39 17.75	2.3542	24 47 13.7	8.375
9	15 41 39.07	2.3565	24 55 31.8	8.227
10	15 44 0.53	2.3587	25 3 40.9	8.077
11	15 46 22.12	2.3609	25 11 41.0	7.926
12	15 48 43.84	2.3631	25 19 32.0	7.775
13	15 51 5.69	2.3652	25 27 14.0	7.624
14	15 53 27.66	2.3672	25 34 46.9	7.473
15	15 55 49.75	2.3692	25 42 10.7	7.320
16	15 58 11.96	2.3711	25 49 25.3	7.167
17	16 0 34.28	2.3729	25 56 30.7	7.013
18	16 2 56.70	2.3746	26 3 26.9	6.859
19	16 5 19.23	2.3763	26 10 13.8	6.705
20	16 7 41.86	2.3780	26 16 51.5	6.551
21	16 10 4.59	2.3797	26 23 19.9	6.396
22	16 12 27.42	2.3812	26 29 39.0	6.241
23	16 14 50.33	2.3825	26 35 48.8	6.085
24	16 17 13.32	2.3838	S. 26 41 49.2	5.928
	TUESDAY 27.			
0	16 17 13.32	2.3838	S. 26 41 49.2	5.928
1	16 19 36.39	2.3850	26 47 40.2	5.772
2	16 21 59.54	2.3864	26 53 21.8	5.616
3	16 24 22.76	2.3876	26 58 54.1	5.460
4	16 26 46.05	2.3888	27 4 16.9	5.304
5	16 29 9.39	2.3895	27 9 30.2	5.143
6	16 31 32.79	2.3904	27 14 34.1	4.986
7	16 33 56.24	2.3912	27 19 28.5	4.828
8	16 36 19.74	2.3920	27 24 13.4	4.669
9	16 38 43.28	2.3927	27 28 48.8	4.511
10	16 41 6.86	2.3932	27 33 14.7	4.352
11	16 43 30.46	2.3936	27 37 31.1	4.194
12	16 45 54.09	2.3940	27 41 38.0	4.036
13	16 48 17.74	2.3943	27 45 35.4	3.877
14	16 50 41.40	2.3945	27 49 23.2	3.717
15	16 53 5.08	2.3946	27 53 1.5	3.558
16	16 55 28.76	2.3946	27 56 30.2	3.399
17	16 57 52.43	2.3945	27 59 49.4	3.241
18	17 0 16.10	2.3943	28 2 59.1	3.082
19	17 2 39.75	2.3940	28 5 59.2	2.922
20	17 5 3.38	2.3937	28 8 49.8	2.764
21	17 7 26.99	2.3932	28 11 30.9	2.606
22	17 9 50.57	2.3927	28 14 2.5	2.447
23	17 12 14.11	2.3920	S. 28 16 24.5	2.288
	WEDNESDAY 28.			
0	17 14 37.61	2.3912	S. 28 18 37.0	2.129
1	17 17 1.06	2.3903	28 20 40.0	1.971
2	17 19 24.45	2.3894	28 22 33.5	1.813
3	17 21 47.79	2.3884	28 24 17.6	1.656
4	17 24 11.06	2.3873	28 25 52.2	1.497
5	17 26 34.26	2.3861	28 27 17.3	1.339
6	17 28 57.39	2.3848	28 28 32.9	1.182
7	17 31 20.44	2.3833	28 29 39.1	1.025
8	17 33 43.39	2.3817	28 30 35.9	0.869
9	17 36 6.24	2.3800	28 31 23.4	0.713
10	17 38 28.99	2.3783	28 32 1.5	0.557
11	17 40 51.64	2.3766	28 32 30.2	0.400
12	17 43 14.18	2.3747	28 32 49.5	0.244
13	17 45 36.60	2.3726	28 32 59.5	− 0.090
14	17 47 58.89	2.3705	28 33 0.3	+ 0.064
15	17 50 21.06	2.3684	28 32 51.8	0.219
16	17 52 43.10	2.3661	28 32 34.0	0.372
17	17 55 4.99	2.3636	28 32 7.1	0.525
18	17 57 26.73	2.3611	28 31 31.0	0.677
19	17 59 48.32	2.3585	28 30 45.8	0.830
20	18 2 9.75	2.3559	28 29 51.4	0.982
21	18 4 31.03	2.3532	28 28 47.9	1.133
22	18 6 52.14	2.3503	28 27 35.4	1.284
23	18 9 13.07	2.3474	28 26 13.8	1.435
24	18 11 33.83	2.3445	S. 28 24 43.2	1.585

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 29.			
	h m s	s	° ′ ″	″
0	18 11 33.83	2.3445	S. 28 24 43.2	1.565
1	18 13 54.41	2.3413	28 23 3.6	1.734
2	18 16 14.79	2.3381	28 21 15.1	1.898
3	18 18 34.98	2.3348	28 19 17.8	2.059
4	18 20 54.97	2.3315	28 17 11.7	2.176
5	18 23 14.76	2.3281	28 14 56.7	2.363
6	18 25 34.34	2.3245	28 12 32.9	2.469
7	18 27 53.70	2.3209	28 10 0.4	2.614
8	18 30 12.85	2.3173	28 7 19.2	2.758
9	18 32 31.78	2.3137	28 4 29.4	2.900
10	18 34 50.49	2.3098	28 1 31.0	3.045
11	18 37 8.96	2.3058	27 58 24.0	3.187
12	18 39 27.19	2.3018	27 55 8.5	3.329
13	18 41 45.18	2.2978	27 51 44.5	3.470
14	18 44 2.93	2.2936	27 48 12.1	3.610
15	18 46 20.44	2.2897	27 44 31.3	3.749
16	18 48 37.70	2.2855	27 40 42.2	3.887
17	18 50 54.70	2.2812	27 36 44.8	4.025
18	18 53 11.44	2.2768	27 32 39.2	4.162
19	18 55 27.92	2.2724	27 28 25.4	4.298
20	18 57 44.13	2.2680	27 24 3.4	4.433
21	19 0 0.06	2.2635	27 19 33.4	4.567
22	19 2 15.75	2.2589	27 14 55.4	4.700
23	19 4 31.15	2.2543	S. 27 10 9.4	4.832
	FRIDAY 30.			
0	19 6 46.27	2.2497	S. 27 5 15.4	4.965
1	19 9 1.11	2.2449	27 0 13.6	5.096
2	19 11 15.66	2.2402	26 55 3.9	5.226
3	19 13 29.93	2.2354	26 49 46.5	5.354
4	19 15 43.91	2.2305	26 44 21.4	5.483
5	19 17 57.59	2.2255	26 38 48.6	5.611
6	19 20 10.97	2.2206	26 33 8.1	5.737
7	19 22 24.06	2.2156	26 27 20.1	5.862
8	19 24 36.85	2.2106	26 21 24.7	5.986
9	19 26 49.33	2.2055	26 15 21.8	6.110
10	19 29 1.51	2.2005	26 9 11.5	6.232
11	19 31 13.39	2.1955	26 2 53.9	6.354
12	19 33 24.97	2.1904	25 56 29.0	6.475
13	19 35 36.24	2.1852	25 49 56.9	6.595
14	19 37 47.19	2.1799	25 43 17.6	6.713
15	19 39 57.83	2.1747	25 36 31.3	6.831
16	19 42 8.16	2.1695	25 29 37.9	6.948
17	19 44 18.17	2.1642	25 22 37.5	7.064
18	19 46 27.87	2.1589	25 15 30.2	7.178
19	19 48 37.25	2.1537	25 8 16.1	7.292
20	19 50 46.31	2.1484	25 0 55.1	7.406
21	19 52 55.06	2.1432	24 53 27.4	7.517
22	19 55 3.49	2.1378	24 45 53.0	7.628
23	19 57 11.60	2.1325	24 38 12.0	7.738
24	19 59 19.39	2.1272	S. 24 30 24.4	7.847
	SATURDAY 31.			
0	19 59 19.39	2.1272	S. 24 30 24.4	7.847
1	20 1 26.86	2.1218	24 22 30.3	7.955
2	20 3 34.00	2.1164	24 14 29.8	8.062
3	20 5 40.83	2.1111	24 6 22.9	8.168
4	20 7 47.34	2.1057	23 58 9.6	8.273
5	20 9 53.52	2.1003	23 49 50.1	8.376
6	20 11 59.38	2.0950	23 41 24.4	8.479
7	20 14 4.92	2.0897	23 32 52.6	8.582
8	20 16 10.14	2.0843	23 24 14.6	8.683
9	20 18 15.04	2.0790	23 15 30.6	8.783
10	20 20 19.62	2.0737	23 6 40.7	8.882
11	20 22 23.88	2.0683	22 57 44.8	8.980
12	20 24 27.82	2.0630	22 48 43.1	9.077
13	20 26 31.44	2.0577	22 39 35.6	9.173
14	20 28 34.75	2.0523	22 30 22.4	9.267
15	20 30 37.74	2.0472	22 21 3.6	9.361
16	20 32 40.41	2.0419	22 11 39.1	9.454
17	20 34 42.77	2.0367	22 2 9.1	9.546
18	20 36 44.82	2.0316	21 52 33.6	9.637
19	20 38 46.56	2.0263	21 42 52.7	9.727
20	20 40 47.98	2.0211	21 33 6.4	9.816
21	20 42 49.09	2.0159	21 23 14.8	9.903
22	20 44 49.89	2.0108	21 13 18.0	9.989
23	20 46 50.39	2.0057	S. 21 3 16.0	10.077
	SUNDAY, SEPTEMBER 1.			
0	20 48 50.58	2.0007	S. 20 53 8.8	10.163

PHASES OF THE MOON.

	d	h	m
○ Full Moon . . Aug.	5	1	51.2
☾ Last Quarter	13	5	18.5
● New Moon	20	0	55.7
☽ First Quarter	26	17	43.3

	d	h
☾ Apogee . . . . Aug.	7	7.3
☾ Perigee	20	8.9

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Venus	W.	90° 28′ 31″	3088	91° 56′ 55″	3096	93° 25′ 9″	3105	94° 53′ 13″	3114
	Spica	W.	60 33 58	9985	62 7 54	9833	63 41 39	9842	65 15 12	9851
	Saturn	W.	52 18 29	2880	53 51 14	2887	55 23 50	2894	56 56 16	2902
	Fomalhaut	E.	68 56 43	3142	67 29 24	3158	66 2 24	3174	64 35 44	3192
	α Pegasi	E.	90 47 1	3055	89 17 56	3065	87 49 3	3073	86 20 20	3082
2	Spica	W.	73 0 18	2891	74 32 49	2898	76 5 11	2905	77 37 24	2912
	Saturn	W.	64 36 7	2937	66 7 39	2944	67 39 2	2950	69 10 17	2958
	Antares	W.	27 5 47	2891	28 38 18	2898	30 10 40	2905	31 42 52	2912
	Fomalhaut	E.	57 27 50	3288	56 3 25	3312	54 39 27	3335	53 15 56	3360
	α Pegasi	E.	78 59 41	3131	77 32 9	3142	76 4 50	3153	74 37 44	3163
3	Spica	W.	85 16 15	2946	86 47 36	2951	88 18 50	2958	89 49 56	2963
	Saturn	W.	76 44 27	2989	78 14 54	2995	79 45 13	3001	81 15 25	3007
	Antares	W.	39 21 45	2945	40 53 7	2951	42 24 21	2957	43 55 28	2963
	Fomalhaut	E.	46 26 2	3509	45 5 48	3547	43 46 16	3587	42 27 28	3631
	α Pegasi	E.	67 25 31	3221	65 59 47	3234	64 34 18	3247	63 9 4	3261
	α Arietis	E.	108 51 9	2969	107 20 18	2975	105 49 34	2981	104 18 57	2985
4	Spica	W.	97 23 38	2991	98 54 2	2996	100 24 20	3001	101 54 31	3005
	Saturn	W.	88 44 38	3034	90 14 9	3039	91 43 33	3044	93 12 51	3048
	Antares	W.	51 29 13	2990	52 59 38	2995	54 29 57	3001	56 0 9	3005
	α Pegasi	E.	56 7 14	3340	54 43 49	3358	53 20 44	3378	51 58 2	3398
	α Arietis	E.	96 47 32	3012	95 17 34	3018	93 47 43	3022	92 17 58	3026
5	Saturn	W.	100 37 54	3072	102 6 38	3077	103 35 16	3081	105 3 49	3085
	Antares	W.	63 29 47	3027	64 59 26	3030	66 29 1	3034	67 58 31	3038
	α Arietis	E.	84 50 35	3049	83 21 23	3052	81 52 15	3056	80 23 12	3060
	Aldebaran	E.	115 57 30	3119	114 29 44	3121	113 2 0	3123	111 34 18	3125
6	Antares	W.	75 25 0	3053	76 54 7	3056	78 23 10	3059	79 52 10	3060
	α Arietis	E.	72 59 6	3078	71 30 29	3080	70 1 55	3083	68 33 25	3087
	Aldebaran	E.	104 16 22	3133	102 48 53	3135	101 21 26	3138	99 54 2	3138
7	Antares	W.	87 16 35	3069	88 45 22	3070	90 14 8	3071	91 42 53	3072
	α Aquilæ	W.	45 6 33	4923	46 4 29	4822	47 3 39	4748	48 3 58	4671
	α Arietis	E.	61 11 44	3098	59 43 32	3101	58 15 23	3101	56 47 15	3104
	Aldebaran	E.	92 37 25	3145	91 10 10	3146	89 42 56	3148	88 15 44	3148
8	Antares	W.	99 6 31	3072	100 35 15	3070	102 4 1	3069	103 32 48	3068
	α Aquilæ	W.	53 20 28	4366	54 26 20	4317	55 32 57	4273	56 40 15	4231
	α Arietis	E.	49 27 6	3110	47 59 9	3111	46 31 13	3112	45 3 18	3113
	Aldebaran	E.	80 59 51	3150	79 32 42	3149	78 5 32	3149	76 38 22	3149
9	α Aquilæ	W.	62 25 52	4058	63 36 35	4028	64 47 47	4002	65 59 25	3975
	Fomalhaut	W.	34 37 6	4006	35 48 40	3937	37 1 22	3875	38 15 7	3818
	Aldebaran	E.	69 22 22	3144	67 55 6	3143	66 27 49	3142	65 0 30	3141
10	α Aquilæ	W.	72 3 37	3865	73 17 32	3846	74 31 47	3828	75 46 20	3810
	Fomalhaut	W.	44 37 4	3598	45 55 40	3565	47 14 53	3532	48 34 42	3501
	Aldebaran	E.	57 43 26	3131	56 15 54	3129	54 48 20	3127	53 20 43	3125
	Sun	E.	126 26 9	3389	125 3 40	3383	123 41 4	3376	122 18 20	3368

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1	Venus	W.	96° 21′ 6″	3122	97° 48′ 49″	3129	99° 16′ 23″	3138	100° 43′ 47″	3144
	Spica	W.	66 48 34	2859	68 21 45	2867	69 54 46	2875	71 27 37	2883
	Saturn	W.	58 28 32	2909	60 0 39	2916	61 32 37	2924	63 4 26	2930
	Fomalhaut	E.	63 9 25	3899	61 43 27	3939	60 17 52	3947	58 52 39	3968
	α Pegasi	E.	84 51 49	3091	83 23 29	3101	81 55 21	3111	80 27 25	3121
2	Spica	W.	79 9 27	2919	80 41 22	2926	82 13 8	2932	83 44 46	2939
	Saturn	W.	70 41 23	2964	72 12 21	2970	73 43 11	2977	75 13 53	2983
	Antares	W.	33 14 56	2919	34 46 51	2926	36 18 37	2932	37 50 15	2939
	Fomalhaut	E.	51 52 54	3366	50 30 22	3414	49 8 21	3444	47 46 54	3475
	α Pegasi	E.	73 10 50	3174	71 44 10	3185	70 17 43	3197	68 51 30	3209
3	Spica	W.	91 20 55	2969	92 51 46	2975	94 22 30	2981	95 53 7	2985
	Saturn	W.	82 45 29	3013	84 15 26	3018	85 45 17	3023	87 15 1	3029
	Antares	W.	45 26 27	2969	46 57 19	2974	48 28 4	2980	49 58 42	2985
	Fomalhaut	E.	41 9 27	3678	39 52 17	3731	38 36 3	3789	37 20 49	3853
	α Pegasi	E.	61 44 7	3276	60 19 27	3290	58 55 4	3306	57 30 59	3323
	α Arietis	E.	102 48 26	2998	101 18 3	2997	99 47 46	3009	98 17 36	3007
4	Spica	W.	103 24 37	3010	104 54 37	3015	106 24 31	3019	107 54 20	3023
	Saturn	W.	94 42 4	3053	96 11 11	3059	97 40 11	3064	99 9 5	3068
	Antares	W.	57 30 16	3009	59 0 17	3014	60 30 12	3018	62 0 2	3022
	α Pegasi	E.	50 35 43	3420	49 13 49	3443	47 52 21	3468	46 31 21	3496
	α Arietis	E.	90 48 18	3031	89 18 44	3036	87 49 16	3040	86 19 53	3044
5	Saturn	W.	106 32 17	3069	108 0 40	3092	109 28 59	3096	110 57 13	3101
	Antares	W.	69 27 57	3042	70 57 18	3044	72 26 36	3047	73 55 50	3051
	α Arietis	E.	78 54 14	3065	77 25 21	3068	75 56 32	3071	74 27 47	3074
	Aldebaran	E.	110 6 39	3126	108 39 1	3129	107 11 26	3130	105 43 53	3130
6	Antares	W.	81 21 8	3063	82 50 3	3065	84 18 56	3067	85 47 46	3068
	α Arietis	E.	67 4 59	3089	65 36 36	3091	64 8 16	3094	62 39 59	3096
	Aldebaran	E.	96 26 39	3140	96 59 18	3142	95 31 59	3143	94 4 41	3144
7	Antares	W.	93 11 37	3072	94 40 21	3073	96 9 4	3073	97 37 47	3072
	α Aquilæ	W.	49 5 22	4600	50 7 47	4535	51 11 8	4474	52 15 23	4418
	α Arietis	E.	55 19 10	3105	53 51 7	3106	52 23 5	3108	50 55 5	3109
	Aldebaran	E.	86 48 32	3148	85 21 21	3149	83 54 11	3149	82 27 1	3149
8	Antares	W.	105 1 37	3066	106 30 28	3065	107 59 21	3062	109 28 17	3060
	α Aquilæ	W.	57 48 12	4192	58 56 46	4154	60 5 56	4120	61 15 38	4087
	α Arietis	E.	43 35 24	3114	42 7 31	3114	40 39 39	3115	39 11 48	3116
	Aldebaran	E.	75 11 12	3148	73 44 1	3148	72 16 49	3147	70 49 36	3146
9	α Aquilæ	W.	67 11 29	3951	68 23 57	3907	69 36 49	3867	70 50 2	3885
	Fomalhaut	W.	39 29 51	3767	40 45 28	3719	42 1 55	3676	43 19 8	3635
	Aldebaran	E.	63 33 10	3139	62 5 48	3137	60 38 23	3135	59 10 56	3133
10	α Aquilæ	W.	77 1 12	3793	78 16 21	3777	79 31 47	3762	80 47 29	3747
	Fomalhaut	W.	49 55 5	3479	51 16 0	3446	52 37 25	3420	53 59 19	3395
	Aldebaran	E.	51 53 4	3123	50 25 22	3129	48 57 39	3130	47 29 54	3119
	Sun	E.	120 55 27	3260	119 32 25	3252	118 9 14	3244	116 45 53	3235

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11	α Aquilæ	W.	82° 3′ 26″	3733	83° 19′ 38″	3719	84° 36′ 5″	3706	85° 52′ 46″	3693
	Fomalhaut	W.	55 21 41	3372	56 44 30	3349	58 7 45	3326	59 31 26	3305
	Aldebaran	E.	46 2 7	3118	44 34 19	3118	43 6 31	3118	41 38 43	3119
	Pollux	E.	88 17 9	2969	86 46 17	2959	85 15 13	2950	83 43 58	2940
	Sun	E.	115 22 22	3325	113 58 40	3315	112 34 46	3306	111 10 41	3294
12	α Aquilæ	W.	92 19 19	3638	93 37 12	3629	94 55 15	3620	96 13 28	3611
	Fomalhaut	W.	66 35 54	3304	68 1 58	3186	69 28 24	3167	70 55 13	3148
	α Pegasi	W.	44 51 31	3359	46 14 34	3334	47 38 18	3309	49 2 42	3257
	Pollux	E.	76 4 27	2987	74 31 51	2974	72 58 59	2962	71 25 51	2949
	Sun	E.	104 6 57	3326	102 41 30	3322	101 15 47	3309	99 49 48	3194
13	Fomalhaut	W.	78 14 49	3058	79 43 50	3040	81 13 13	3022	82 42 58	3005
	α Pegasi	W.	56 13 51	3111	57 41 47	3084	59 10 16	3059	60 39 16	3034
	Pollux	E.	63 35 57	2781	62 1 4	2766	60 25 51	2751	58 50 19	2735
	Sun	E.	92 35 33	3119	91 7 47	3103	89 39 41	3087	88 11 15	3069
14	Fomalhaut	W.	90 17 7	2920	91 49 1	2902	93 21 17	2886	94 53 54	2870
	α Pegasi	W.	68 11 55	2914	69 43 56	2891	71 16 26	2869	72 49 25	2847
	Pollux	E.	50 47 23	2655	49 9 42	2638	47 31 39	2621	45 53 13	2604
	Jupiter	E.	55 6 14	2732	53 30 16	2715	51 53 56	2698	50 17 13	2680
	Sun	E.	80 43 46	2981	79 13 10	2969	77 42 10	2944	76 10 47	2924
15	α Pegasi	W.	80 41 21	2741	82 17 7	2720	83 53 20	2700	85 30 0	2681
	α Arietis	W.	37 43 55	2561	39 23 43	2539	41 4 2	2517	42 44 52	2495
	Pollux	E.	37 35 5	2517	35 54 15	2499	34 13 1	2489	32 31 23	2465
	Jupiter	E.	42 7 45	2593	40 28 40	2575	38 49 11	2559	37 9 19	2541
	Sun	E.	68 27 41	2897	66 53 48	2808	65 19 30	2788	63 44 46	2767
16	α Pegasi	W.	93 39 46	2588	95 18 57	2571	96 58 32	2555	98 38 29	2539
	α Arietis	W.	51 16 29	2391	53 0 16	2371	54 44 32	2352	56 29 16	2333
	Sun	E.	55 44 28	2668	54 7 5	2649	52 29 16	2629	50 51 1	2610
17	α Arietis	W.	65 19 49	2241	67 7 15	2224	68 55 7	2208	70 43 23	2191
	Aldebaran	W.	35 2 40	2445	36 45 11	2411	38 28 30	2379	40 12 35	2348
	Sun	E.	42 33 15	2518	40 52 27	2500	39 11 14	2483	37 29 37	2467
18	α Arietis	W.	79 50 37	2118	81 41 9	2105	83 32 1	2093	85 23 12	2080
	Aldebaran	W.	49 2 58	2228	50 50 44	2208	52 39 0	2190	54 27 43	2173
	Sun	E.	28 55 57	2392	27 12 11	2379	25 28 6	2367	23 43 44	2357
21	Sun	W.	13 40 2	2287	15 26 21	2287	17 12 39	2290	18 58 53	2295
	Saturn	E.	50 36 9	2048	48 43 50	2057	46 51 44	2065	44 59 51	2075
	Antares	E.	86 31 0	1989	84 36 58	1967	82 43 4	1993	80 49 18	1999
22	Sun	W.	27 47 48	2334	29 32 58	2344	31 17 53	2355	33 2 32	2368
	Saturn	E.	35 44 58	2145	33 55 8	2164	32 5 46	2184	30 16 55	2206
	Antares	E.	71 23 20	2041	69 30 50	2052	67 38 36	2063	65 46 40	2074
23	Sun	W.	41 41 9	2436	43 23 52	2452	45 6 13	2467	46 48 12	2484
	Antares	E.	56 31 40	2140	54 41 42	2155	52 52 6	2169	51 2 52	2184
	α Aquilæ	E.	107 27 9	2977	105 56 27	2976	104 25 44	2977	102 55 3	2981

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11	α Aquilæ	W.	87° 9′ 40″	3681	88° 26′ 47″	3670	89° 44′ 6″	3659	91° 1′ 37″	3649
	Fomalhaut	W.	60 55 32	3284	62 20 2	3264	63 44 56	3244	65 10 13	3224
	Aldebaran	E.	40 10 56	3190	38 43 11	3194	37 15 30	3198	35 47 54	3133
	Pollux	E.	82 12 30	2931	80 40 50	2980	79 8 56	2909	77 36 49	2898
	Sun	E.	109 46 23	3983	108 21 52	3972	106 57 8	3960	105 32 10	3947
12	α Aquilæ	W.	97 31 50	3604	98 50 20	3598	100 8 57	3591	101 27 41	3586
	Fomalhaut	W.	72 22 24	3130	73 49 57	3111	75 17 53	3094	76 46 10	3076
	α Pegasi	W.	50 27 44	3225	51 53 23	3195	53 19 38	3166	54 46 28	3138
	Pollux	E.	69 52 27	2836	68 18 46	2893	66 44 48	2909	65 10 32	2795
	Sun	E.	98 23 32	3189	96 56 59	3166	95 30 9	3150	94 3 0	3135
13	Fomalhaut	W.	84 13 4	2969	85 43 32	2970	87 14 22	2953	88 45 34	2936
	α Pegasi	W.	62 8 47	3009	63 38 49	2985	65 9 21	2961	66 40 23	2937
	Pollux	E.	57 14 26	2730	55 38 13	2704	54 1 38	2688	52 24 42	2671
	Sun	E.	86 42 28	3059	85 13 20	3035	83 43 51	3018	82 14 0	2999
14	Fomalhaut	W.	96 26 51	2854	98 0 9	2838	99 33 47	2823	101 7 45	2808
	α Pegasi	W.	74 22 52	2885	75 56 48	2804	77 31 11	2789	79 6 2	2761
	Pollux	E.	44 14 23	2586	42 35 9	2569	40 55 32	2552	39 15 31	2534
	Jupiter	E.	48 40 6	2663	47 2 36	2646	45 24 43	2628	43 46 26	2610
	Sun	E.	74 38 59	2905	73 6 47	2886	71 34 10	2866	70 1 8	2847
15	α Pegasi	W.	87 7 6	2861	88 44 38	2842	90 22 36	2824	92 0 59	2806
	α Arietis	W.	44 26 12	2474	46 8 2	2453	47 50 22	2439	49 33 11	2419
	Pollux	E.	30 49 20	2448	29 6 53	2431	27 24 3	2415	25 40 50	2400
	Jupiter	E.	35 29 3	2595	33 48 24	2508	32 7 22	2492	30 25 57	2476
	Sun	E.	62 9 35	2747	60 33 58	2727	58 57 54	2707	57 21 24	2688
16	α Pegasi	W.	100 18 48	2594	101 59 28	2510	103 40 28	2496	105 21 47	2482
	α Arietis	W.	58 14 28	2313	60 0 8	2295	61 46 15	2277	63 32 49	2259
	Sun	E.	49 12 19	2591	47 33 11	2572	45 53 38	2553	44 13 39	2535
17	α Arietis	W.	72 32 4	2178	74 21 8	2160	76 10 36	2145	78 0 26	2130
	Aldebaran	W.	41 57 24	2321	43 42 53	2295	45 29 0	2270	47 15 43	2249
	Sun	E.	35 47 37	2450	34 5 14	2436	32 22 30	2420	30 39 24	2405
18	α Arietis	W.	87 14 42	2069	89 6 29	2059	90 58 31	2050	92 50 48	2041
	Aldebaran	W.	56 16 51	2157	58 6 23	2142	59 56 18	2129	61 46 33	2116
	Sun	E.	21 59 7	2346	20 14 15	2337	18 29 9	2328	16 43 51	2322
21	Sun	W.	20 45 0	2301	22 30 58	2307	24 16 47	2315	26 2 24	2324
	Saturn	E.	43 8 14	2066	41 16 54	2069	39 25 53	2113	37 35 14	2198
	Antares	E.	78 55 42	2007	77 2 18	2014	75 9 5	2022	73 16 5	2032
22	Sun	W.	34 46 53	2380	36 30 56	2394	38 14 40	2407	39 58 5	2422
	Saturn	E.	28 28 40	2235	26 41 4	2265	24 54 13	2300	23 8 13	2340
	Antares	E.	63 55 1	2066	62 3 41	2069	60 12 40	2113	58 22 0	2196
23	Sun	W.	48 29 48	2500	50 11 1	2517	51 51 50	2534	53 32 16	2552
	Antares	E.	49 14 1	2200	47 25 34	2216	45 37 30	2233	43 49 51	2249
	α Aquilæ	E.	101 24 26	2966	99 53 56	2993	98 23 35	3009	96 53 25	3014

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24	Sun	W.	55° 12′ 17″	2570	56° 51′ 53″	2566	58° 31′ 5″	2566	60° 9′ 52″	2694
	Mars	W.	39 42 54	2465	41 24 56	2462	43 6 34	2508	44 47 47	2519
	Antares	E.	42 2 36	2266	40 15 46	2263	38 29 21	2260	36 43 21	2217
	α Aquilæ	E.	95 23 29	3026	93 53 48	3039	92 24 23	3054	90 55 17	3071
25	Sun	W.	68 17 29	2718	69 53 45	2737	71 29 36	2756	73 5 2	2775
	Mars	W.	53 7 32	2610	54 46 14	2629	56 24 30	2647	58 2 21	2665
	Venus	W.	36 20 58	2475	38 2 47	2490	39 44 14	2505	41 25 20	2520
	α Aquilæ	E.	83 35 22	3173	82 8 40	3196	80 42 26	3221	79 16 42	3248
26	Sun	W.	80 56 4	2867	82 29 5	2866	84 1 42	2863	85 33 57	2921
	Mars	W.	66 5 32	2756	67 40 58	2773	69 16 1	2791	70 50 41	2806
	Venus	W.	49 45 40	2595	51 24 42	2610	53 3 23	2625	54 41 44	2640
	Spica	W.	31 33 30	2546	33 13 39	2563	34 53 25	2579	36 32 49	2596
	α Aquilæ	E.	72 16 18	3299	70 54 0	3434	69 32 22	3470	68 11 24	3507
	Fomalhaut	E.	96 6 34	3818	94 32 29	3839	92 58 43	3848	91 25 18	3864
27	Sun	W.	93 9 39	3006	94 39 44	3023	96 9 28	3039	97 38 53	3055
	Venus	W.	62 48 36	2710	64 25 2	2734	66 1 10	2737	67 37 1	2750
	Spica	W.	44 44 20	2674	46 21 35	2689	47 58 30	2703	49 35 6	2718
	Saturn	W.	35 3 26	2777	36 38 24	2786	38 13 10	2796	39 47 43	2807
	α Aquilæ	E.	61 37 33	3723	60 21 10	3773	59 5 40	3885	57 51 4	3881
	Fomalhaut	E.	83 43 26	2948	82 12 8	2965	80 41 11	2983	79 10 37	3000
	α Pegasi	E.	105 48 40	2919	104 16 45	2931	102 45 5	2942	101 13 40	2954
28	Sun	W.	105 1 14	3129	106 28 49	3143	107 56 7	3156	109 23 9	3166
	Venus	W.	75 32 6	2811	77 6 20	2821	78 40 20	2833	80 14 5	2843
	Spica	W.	57 33 23	2785	59 8 10	2798	60 42 40	2811	62 16 54	2823
	Saturn	W.	47 37 1	2860	49 10 11	2870	50 43 8	2881	52 15 51	2892
	α Aquilæ	E.	51 53 7	4219	50 44 52	4299	49 37 52	4377	48 32 10	4468
	Fomalhaut	E.	71 43 15	3091	70 14 54	3110	68 46 57	3129	67 19 23	3148
	α Pegasi	E.	93 40 21	3015	92 10 27	3027	90 40 48	3039	89 11 24	3052
29	Sun	W.	116 34 34	3229	118 0 9	3241	119 25 30	3251	120 50 39	3261
	Venus	W.	87 59 35	2891	89 32 5	2901	91 4 23	2909	92 36 31	2917
	Spica	W.	70 4 17	2878	71 37 4	2889	73 9 37	2898	74 41 58	2909
	Saturn	W.	59 56 8	2942	61 27 34	2950	62 58 49	2960	64 29 52	2969
	Antares	W.	24 9 47	2879	25 42 33	2889	27 15 6	2899	28 47 26	2908
	Fomalhaut	E.	60 7 32	3353	58 42 26	3376	57 17 46	3399	55 53 33	3394
	α Pegasi	E.	81 48 11	3114	80 20 18	3135	78 52 39	3138	77 25 15	3150
30	Spica	W.	82 20 49	2950	83 52 4	2958	85 23 9	2965	86 54 5	2973
	Saturn	W.	72 2 29	3009	73 32 31	3016	75 2 24	3023	76 32 8	3030
	Antares	W.	36 26 19	2950	37 57 34	2958	39 28 39	2965	40 59 35	2972
	Fomalhaut	E.	48 59 59	3464	47 38 55	3498	46 18 29	3534	44 58 42	3571
	α Pegasi	E.	70 12 2	3214	68 46 9	3227	67 20 32	3240	65 55 10	3254
31	Spica	W.	94 26 39	3063	95 56 48	3069	97 26 50	3074	98 56 45	3078
	Saturn	W.	83 58 49	3060	85 27 47	3065	86 56 39	3070	88 25 25	3075
	Antares	W.	48 32 13	3003	50 2 22	3008	51 32 25	3014	53 2 21	3018
	α Pegasi	E.	58 52 31	3297	57 28 51	3345	56 5 31	3368	54 42 31	3379
	α Arietis	E.	99 44 15	3094	98 14 32	3030	96 44 56	3094	95 15 26	3039

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24	Sun	W.	61° 48′ 14″	9643	63° 26′ 11″	9689	65° 3′ 42″	9681	66° 40′ 48″	9699
	Mars	W.	46 28 34	9537	48 8 56	9555	49 48 53	9573	51 28 25	9591
	Antares	E.	34 57 46	9335	33 12 37	9359	31 27 53	9370	29 43 35	9397
	α Aquilæ	E.	89 26 32	3068	87 58 8	3108	86 30 8	3198	85 2 32	3149
25	Sun	W.	74 40 3	9783	76 14 40	9812	77 48 52	9831	79 22 40	9849
	Mars	W.	59 39 48	9684	61 16 50	9701	62 53 28	9719	64 29 42	9738
	Venus	W.	43 6 6	9535	44 46 31	9550	46 26 35	9565	48 6 18	9580
	α Aquilæ	E.	77 51 30	3276	76 26 50	3305	75 2 44	3335	73 39 13	3366
26	Sun	W.	87 5 49	9939	88 37 19	9956	90 8 27	9973	91 39 14	9990
	Mars	W.	72 24 58	9695	73 58 53	9849	75 32 27	9859	77 5 39	9876
	Venus	W.	56 19 45	9654	57 57 27	9669	59 34 49	9683	61 11 52	9697
	Spica	W.	38 11 50	9611	39 50 30	9627	41 28 48	9643	43 6 44	9658
	α Aquilæ	E.	66 51 8	3546	65 31 35	3587	64 12 47	3631	62 54 46	3676
	Fomalhaut	E.	89 52 13	9880	88 19 29	9896	86 47 7	9914	85 15 6	9931
27	Sun	W.	99 7 58	3070	100 36 44	3085	102 5 12	3100	103 33 22	3114
	Venus	W.	69 12 34	9763	70 47 51	9775	72 22 52	9787	73 57 37	9799
	Spica	W.	51 11 22	9729	52 47 19	9746	54 22 58	9760	55 58 19	9778
	Saturn	W.	41 22 2	9818	42 56 7	9836	44 29 59	9838	46 3 37	9849
	α Aquilæ	E.	56 37 25	3939	55 24 45	4002	54 13 7	4067	53 2 33	4137
	Fomalhaut	E.	77 40 24	3018	76 10 33	3036	74 41 5	3054	73 11 59	3079
	α Pegasi	E.	99 42 30	9966	98 11 35	9978	96 40 55	9990	95 10 30	3003
28	Sun	W.	110 49 56	3168	112 16 27	3193	113 42 44	3206	115 8 46	3218
	Venus	W.	81 47 37	9854	83 20 55	9863	84 54 1	9873	86 26 54	9883
	Spica	W.	63 50 52	9835	65 24 35	9846	66 58 3	9857	68 31 17	9868
	Saturn	W.	53 48 20	9902	55 20 36	9912	56 52 39	9922	58 24 30	9938
	α Aquilæ	E.	47 27 50	4567	46 24 57	4673	45 23 35	4789	44 23 50	4913
	Fomalhaut	E.	65 52 12	3168	64 25 25	3186	62 59 2	3209	61 33 4	3231
	α Pegasi	E.	87 42 15	3064	86 13 21	3077	84 44 43	3089	83 16 20	3101
29	Sun	W.	122 15 36	3271	123 40 21	3281	125 4 55	3290	126 29 18	3299
	Venus	W.	94 8 28	9994	95 40 16	9932	97 11 54	9939	98 43 23	9946
	Spica	W.	76 14 6	9917	77 46 3	9926	79 17 49	9935	80 49 24	9942
	Saturn	W.	66 0 44	9977	67 31 26	9985	69 1 57	9993	70 32 18	3001
	Antares	W.	30 19 35	9916	31 51 33	9926	33 23 19	9935	34 54 54	9942
	Fomalhaut	E.	54 29 49	3349	53 6 34	3376	51 43 50	3404	50 21 38	3433
	α Pegasi	E.	75 58 6	3163	74 31 12	3178	73 4 34	3188	71 38 10	3201
30	Spica	W.	88 24 52	9979	89 55 31	9986	91 26 1	9992	92 56 24	9998
	Saturn	W.	78 1 44	3037	79 31 11	3043	81 0 31	3048	82 29 44	3055
	Antares	W.	42 30 23	9979	44 1 2	9985	45 31 33	9991	47 1 57	9997
	Fomalhaut	E.	43 39 36	3612	42 21 15	3657	41 3 42	3705	39 47 0	3758
	α Pegasi	E.	64 30 5	3068	63 5 16	3089	61 40 44	3297	60 16 29	3312
31	Spica	W.	100 26 35	3093	101 56 19	3097	103 25 58	3032	104 55 31	3035
	Saturn	W.	89 54 5	3080	91 22 39	3084	92 51 8	3049	94 19 31	3098
	Antares	W.	54 32 12	3022	56 1 57	3027	57 31 36	3031	59 1 10	3034
	α Pegasi	E.	53 19 51	3399	51 57 33	3416	50 35 37	3439	49 14 5	3462
	α Arietis	E.	93 46 2	3043	92 16 43	3046	90 47 30	3052	89 18 22	3056

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	10 41 32.38	9.068	N. 8 17 13.6	-54.43	15 53.66	64.43	0 3.21	0.786
Mon.	2	10 45 9.86	9.056	7 55 23.3	54.75	15 53.90	64.39	0 22.23	0.798
Tues.	3	10 48 47.05	9.044	7 33 25.4	55.06	15 54.13	64.35	0 41.54	0.810
Wed.	4	10 52 23.98	9.034	7 11 20.2	-55.36	15 54.37	64.31	1 1.11	0.821
Thur.	5	10 56 0.66	9.024	6 49 8.0	55.65	15 54.60	64.27	1 20.92	0.830
Frid.	6	10 59 37.12	9.015	6 26 49.0	55.93	15 54.84	64.24	1 40.97	0.839
Sat.	7	11 3 13.38	9.007	6 4 23.6	-56.19	15 55.08	64.21	2 1.21	0.847
SUN.	8	11 6 49.45	9.000	5 41 52.1	56.44	15 55.32	64.18	2 21.63	0.854
Mon.	9	11 10 25.37	8.994	5 19 14.7	56.67	15 55.56	64.15	2 42.21	0.860
Tues.	10	11 14 1.15	8.989	4 56 31.8	-56.90	15 55.81	64.13	3 2.93	0.865
Wed.	11	11 17 36.81	8.984	4 33 43.6	57.11	15 56.05	64.11	3 23.77	0.870
Thur.	12	11 21 12.37	8.980	4 10 50.7	57.30	15 56.30	64.09	3 44.70	0.874
Frid.	13	11 24 47.85	8.977	3 47 53.2	-57.48	15 56.55	64.08	4 5.72	0.877
Sat.	14	11 28 23.28	8.975	3 24 51.4	57.65	15 56.80	64.07	4 26.79	0.879
SUN.	15	11 31 58.65	8.974	3 1 45.8	57.81	15 57.05	64.06	4 47.91	0.880
Mon.	16	11 35 34.01	8.973	2 38 36.7	-57.95	15 57.31	64.06	5 9.05	0.881
Tues.	17	11 39 9.36	8.973	2 15 24.4	58.07	15 57.57	64.06	5 30.20	0.881
Wed.	18	11 42 44.71	8.974	1 52 9.3	58.18	15 57.83	64.06	5 51.34	0.880
Thur.	19	11 46 20.09	8.975	1 28 51.8	-58.27	15 58.10	64.06	6 12.46	0.879
Frid.	20	11 49 55.51	8.977	1 5 32.2	58.35	15 58.37	64.07	6 33.53	0.877
Sat.	21	11 53 31.00	8.980	0 42 10.9	58.41	15 58.63	64.08	6 54.54	0.874
SUN.	22	11 57 6.56	8.984	N. 0 18 48.3	-58.46	15 58.90	64.10	7 15.48	0.870
Mon.	23	12 0 42.21	8.988	S. 0 4 35.2	58.49	15 59.18	64.12	7 36.32	0.866
Tues.	24	12 4 17.98	8.993	0 27 59.4	58.51	15 59.45	64.14	7 57.04	0.861
Wed.	25	12 7 53.88	8.999	0 51 23.8	-58.51	15 59.73	64.17	8 17.64	0.855
Thur.	26	12 11 29.93	9.006	1 14 48.1	58.50	16 0.01	64.20	8 38.09	0.848
Frid.	27	12 15 6.15	9.013	1 38 12.0	58.48	16 0.29	64.23	8 58.37	0.841
Sat.	28	12 18 42.56	9.022	2 1 35.0	-58.44	16 0.57	64.26	9 18.46	0.833
SUN.	29	12 22 19.19	9.031	2 24 57.0	58.38	16 0.85	64.29	9 38.33	0.823
Mon.	30	12 25 56.05	9.041	2 48 17.5	58.32	16 1.13	64.33	9 57.97	0.813
Tues.	31	12 29 33.16	9.052	S. 3 11 36.2	-58.24	16 1.41	64.37	10 17.36	0.802

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	10 41 32.38	9.070	N. 8 17 13.4	-54.44	0 3.21	0.786	10 41 35.59
Mon.	2	10 45 9.92	9.058	7 55 22.9	54.76	0 22.23	0.799	10 45 32.15
Tues.	3	10 48 47.16	9.047	7 33 24.7	55.08	0 41.55	0.810	10 49 28.70
Wed.	4	10 52 24.13	9.036	7 11 19.2	-55.38	1 1.13	0.821	10 53 25.26
Thur.	5	10 56 0.87	9.026	6 49 6.6	55.66	1 20.94	0.831	10 57 21.81
Frid.	6	10 59 37.38	9.017	6 26 47.4	55.94	1 40.99	0.840	11 1 18.37
Sat.	7	11 3 13.68	9.009	6 4 21.6	-56.20	2 1.24	0.847	11 5 14.92
SUN.	8	11 6 49.81	9.002	5 41 49.8	56.45	2 21.67	0.854	11 9 11.47
Mon.	9	11 10 25.78	8.996	5 19 12.1	56.69	2 42.25	0.861	11 13 8.03
Tues.	10	11 14 1.60	8.990	4 56 28.8	-56.91	3 2.98	0.866	11 17 4.58
Wed.	11	11 17 37.32	8.986	4 33 40.4	57.12	3 23.82	0.870	11 21 1.14
Thur.	12	11 21 12.93	8.982	4 10 47.1	57.32	3 44.76	0.874	11 24 57.69
Frid.	13	11 24 48.46	8.979	3 47 49.2	-57.50	4 5.78	0.877	11 28 54.24
Sat.	14	11 28 23.94	8.977	3 24 47.1	57.67	4 26.86	0.879	11 32 50.80
SUN.	15	11 31 59.37	8.976	3 1 41.1	57.82	4 47.98	0.881	11 36 47.35
Mon.	16	11 35 34.78	8.975	2 38 31.6	-57.96	5 9.13	0.881	11 40 43.90
Tues.	17	11 39 10.18	8.975	2 15 19.0	58.09	5 30.28	0.881	11 44 40.46
Wed.	18	11 42 45.58	8.976	1 52 3.6	58.20	5 51.43	0.881	11 48 37.01
Thur.	19	11 46 21.02	8.977	1 28 45.7	-58.29	6 12.55	0.879	11 52 33.56
Frid.	20	11 49 56.50	8.979	1 5 25.8	58.37	6 33.62	0.877	11 56 30.12
Sat.	21	11 53 32.03	8.982	0 42 4.2	58.43	6 54.64	0.874	12 0 26.67
SUN.	22	11 57 7.64	8.986	N. 0 18 41.2	-58.48	7 15.58	0.870	12 4 23.23
Mon.	23	12 0 43.35	8.990	S. 0 4 42.7	58.51	7 36.43	0.866	12 8 19.78
Tues.	24	12 4 19.17	8.995	0 28 7.2	58.53	7 57.16	0.861	12 12 16.33
Wed.	25	12 7 55.12	9.001	0 51 31.9	-58.53	8 17.76	0.855	12 16 12.89
Thur.	26	12 11 31.23	9.008	1 14 56.6	58.52	8 38.21	0.848	12 20 9.44
Frid.	27	12 15 7.50	9.016	1 38 20.8	58.49	8 58.49	0.841	12 24 5.99
Sat.	28	12 18 43.96	9.024	2 1 44.2	-58.45	9 18.59	0.833	12 28 2.55
SUN.	29	12 22 20.64	9.033	2 25 6.4	58.40	9 38.46	0.823	12 31 59.10
Mon.	30	12 25 57.55	9.043	2 48 27.2	58.33	9 58.11	0.813	12 35 55.66
Tues.	31	12 29 34.72	9.055	S. 3 11 46.2	-58.25	10 17.49	0.801	12 39 52.21

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

Diff. for 1 Hour, +9s.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	° ′ ″	″	″			h m s
1	244	158 46 31.8	45 52.4	145.22	− 0.18	0.0037802	−44.2	13 16 13.61
2	245	159 44 38.0	43 58.5	145.28	− 0.06	0.0036738	44.5	13 12 17.70
3	246	160 42 45.6	42 6.0	145.35	+ 0.07	0.0035668	44.7	13 8 21.79
4	247	161 40 54.8	40 15.1	145.42	+ 0.21	0.0034593	−44.9	13 4 25.88
5	248	162 39 5.9	38 26.1	145.50	0.34	0.0033515	45.1	13 0 29.97
6	249	163 37 18.8	36 38.8	145.57	0.46	0.0032431	45.3	12 56 34.06
7	250	164 35 33.5	34 53.4	145.65	+ 0.57	0.0031342	−45.5	12 52 38.16
8	251	165 33 50.2	33 10.0	145.73	0.65	0.0030248	45.7	12 48 42.25
9	252	166 32 8.9	31 28.6	145.82	0.71	0.0029150	45.9	12 44 46.34
10	253	167 30 29.7	29 49.3	145.91	+ 0.74	0.0028045	−46.2	12 40 50.43
11	254	168 28 52.7	28 12.1	146.00	0.74	0.0026932	46.5	12 36 54.52
12	255	169 27 17.7	26 37.0	146.09	0.71	0.0025812	46.9	12 32 58.62
13	256	170 25 44.9	25 4.1	146.18	+ 0.66	0.0024683	−47.3	12 29 2.71
14	257	171 24 14.3	23 33.4	146.27	0.57	0.0023543	47.7	12 25 6.80
15	258	172 22 45.7	22 4.7	146.35	0.46	0.0022392	48.2	12 21 10.89
16	259	173 21 19.3	20 38.2	146.44	+ 0.34	0.0021229	−48.7	12 17 14.98
17	260	174 19 55.0	19 13.8	146.53	0.21	0.0020055	49.2	12 13 19.08
18	261	175 18 32.6	17 51.2	146.61	+ 0.08	0.0018868	49.7	12 9 23.17
19	262	176 17 12.2	16 30.7	146.69	− 0.05	0.0017669	−50.2	12 5 27.26
20	263	177 15 53.8	15 12.2	146.77	0.16	0.0016459	50.7	12 1 31.35
21	264	178 14 37.2	13 55.5	146.85	0.26	0.0015237	51.2	11 57 35.44
22	265	179 13 22.4	12 40.6	146.93	− 0.34	0.0014003	−51.6	11 53 39.54
23	266	180 12 9.5	11 27.6	147.00	0.39	0.0012761	51.9	11 49 43.63
24	267	181 10 58.3	10 16.3	147.07	0.41	0.0011511	52.2	11 45 47.72
25	268	182 9 48.8	9 6.7	147.14	− 0.38	0.0010254	−52.5	11 41 51.82
26	269	183 8 41.1	7 58.9	147.22	0.34	0.0008992	52.7	11 37 55.91
27	270	184 7 35.1	6 52.8	147.29	0.27	0.0007726	52.8	11 34 0.00
28	271	185 6 30.9	5 48.5	147.36	− 0.18	0.0006460	−52.8	11 30 4.09
29	272	186 5 28.3	4 45.8	147.43	− 0.05	0.0005193	52.8	11 26 8.18
30	273	187 4 27.6	3 44.9	147.51	+ 0.07	0.0003926	52.7	11 22 12.28
31	274	188 3 28.7	2 45.9	147.59	+ 0.21	0.0002663	−52.5	11 18 16.37

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0d.0.

Diff. for 1 Hour, −9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 48.5	14 46.8	54 14.1	−0.57	54 8.0	−0.44	10 26.1	1.84	12.0
2	14 45.6	14 44.8	54 3.5	0.32	54 0.3	−0.20	11 8.9	1.73	13.0
3	14 44.3	14 44.2	53 58.6	−0.09	53 58.1	+0.02	11 49.5	1.66	14.0
4	14 44.4	14 45.0	53 59.0	+0.13	54 1.2	+0.24	12 28.7	1.62	15.0
5	14 45.9	14 47.3	54 4.7	0.35	54 9.5	0.46	13 7.6	1.63	16.0
6	14 48.9	14 51.0	54 15.7	0.58	54 23.4	0.70	13 47.2	1.68	17.0
7	14 53.5	14 56.4	54 32.5	+0.83	54 43.2	+1.00	14 28.5	1.77	18.0
8	14 59.8	15 3.6	54 55.6	1.14	55 9.6	1.24	15 12.7	1.91	19.0
9	15 7.9	15 12.7	55 25.3	1.38	55 42.8	1.53	16 0.6	2.09	20.0
10	15 17.9	15 23.6	56 2.0	+1.67	56 22.9	+1.80	16 52.9	2.27	21.0
11	15 29.7	15 36.2	56 45.3	1.93	57 9.1	2.04	17 49.4	2.43	22.0
12	15 43.0	15 50.1	57 34.2	2.13	58 0.2	2.18	18 49.0	2.52	23.0
13	15 57.3	16 4.5	58 26.6	+2.21	58 53.2	+2.20	19 49.6	2.52	24.0
14	16 11.6	16 18.4	59 19.3	2.13	59 44.3	2.01	20 49.1	2.44	25.0
15	16 24.8	16 30.5	60 7.6	1.85	60 28.6	1.62	21 46.2	2.32	26.0
16	16 35.3	16 39.2	60 46.5	+1.34	61 0.8	+1.01	22 40.5	2.21	27.0
17	16 42.0	16 43.5	61 10.8	+0.65	61 16.3	+0.25	23 32.8	2.15	28.0
18	16 43.6	16 42.4	61 16.8	−0.16	61 12.4	−0.57	δ		29.0
19	16 39.9	16 36.1	61 3.2	−0.96	60 49.4	−1.32	0 24.0	2.13	0.6
20	16 31.3	16 25.4	60 31.5	1.64	60 10.1	1.90	1 15.5	2.17	1.6
21	16 18.8	16 11.6	59 45.8	2.11	59 19.4	2.26	2 8.2	2.24	2.6
22	16 4.0	15 56.2	58 51.5	−2.36	58 22.8	−2.40	3 2.9	2.32	3.6
23	15 48.4	15 40.7	57 54.0	2.38	57 25.7	2.32	3 59.2	2.37	4.6
24	15 33.2	15 26.1	56 58.3	2.23	56 32.3	2.10	4 56.3	2.37	5.6
25	15 19.5	15 13.4	56 8.0	−1.95	55 45.5	−1.78	5 52.6	2.30	6.6
26	15 7.9	15 2.9	55 25.2	1.60	55 7.1	1.42	6 46.5	2.18	7.6
27	14 58.6	14 54.9	54 51.2	1.23	54 37.7	1.03	7 37.0	2.03	8.6
28	14 51.9	14 49.4	54 26.4	−0.85	54 17.4	−0.67	8 23.8	1.88	9.6
29	14 47.5	14 46.2	54 10.4	0.49	54 5.6	0.33	9 7.5	1.76	10.6
30	14 45.4	14 45.1	54 2.6	−0.17	54 1.5	−0.03	9 48.6	1.68	11.6
31	14 45.2	14 45.8	54 2.0	+0.10	54 4.0	+0.23	10 28.2	1.63	12.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 1.			
	h m s	s	° ′ ″	″
0	20 48 50.58	2.0087	S. 20 53 8.8	10.168
1	20 50 50.47	1.9956	20 42 56.6	10.245
2	20 52 50.05	1.9905	20 32 39.4	10.398
3	20 54 49.33	1.9856	20 22 17.2	10.461
4	20 56 48.32	1.9807	20 11 50.1	10.492
5	20 58 47.01	1.9757	20 1 18.2	10.573
6	21 0 45.40	1.9708	19 50 41.5	10.651
7	21 2 43.50	1.9659	19 40 0.1	10.729
8	21 4 41.31	1.9611	19 29 14.0	10.806
9	21 6 38.83	1.9563	19 18 23.4	10.882
10	21 8 36.07	1.9516	19 7 28.2	10.957
11	21 10 33.02	1.9468	18 56 28.5	11.032
12	21 12 29.69	1.9422	18 45 24.4	11.105
13	21 14 26.08	1.9375	18 34 15.9	11.177
14	21 16 22.19	1.9329	18 23 3.1	11.249
15	21 18 18.03	1.9283	18 11 46.0	11.320
16	21 20 13.59	1.9237	18 0 24.7	11.389
17	21 22 8.88	1.9193	17 48 59.3	11.458
18	21 24 3.91	1.9149	17 37 29.8	11.526
19	21 25 58.67	1.9105	17 25 56.2	11.592
20	21 27 53.17	1.9061	17 14 18.7	11.657
21	21 29 47.41	1.9018	17 2 37.3	11.722
22	21 31 41.39	1.8976	16 50 52.0	11.787
23	21 33 35.12	1.8934	S. 16 39 2.8	11.851
	MONDAY 2.			
0	21 35 28.60	1.8892	S. 16 27 9.9	11.913
1	21 37 21.83	1.8851	16 15 13.3	11.974
2	21 39 14.81	1.8810	16 3 13.0	12.034
3	21 41 7.55	1.8770	15 51 9.2	12.093
4	21 43 0.05	1.8731	15 39 1.8	12.152
5	21 44 52.32	1.8692	15 26 50.9	12.210
6	21 46 44.35	1.8653	15 14 36.6	12.267
7	21 48 36.15	1.8614	15 2 18.9	12.322
8	21 50 27.72	1.8577	14 49 57.9	12.377
9	21 52 19.07	1.8540	14 37 33.6	12.432
10	21 54 10.20	1.8503	14 25 6.1	12.485
11	21 56 1.11	1.8467	14 12 35.4	12.538
12	21 57 51.80	1.8431	14 0 1.5	12.590
13	21 59 42.28	1.8396	13 47 24.6	12.640
14	22 1 32.56	1.8362	13 34 44.7	12.690
15	22 3 22.63	1.8328	13 22 1.8	12.739
16	22 5 12.50	1.8295	13 9 16.0	12.787
17	22 7 2.17	1.8262	12 56 27.3	12.834
18	22 8 51.64	1.8229	12 43 35.9	12.880
19	22 10 40.92	1.8198	12 30 41.7	12.927
20	22 12 30.02	1.8167	12 17 44.7	12.972
21	22 14 18.93	1.8137	12 4 45.1	13.015
22	22 16 7.66	1.8107	11 51 42.9	13.058
23	22 17 56.21	1.8077	11 38 38.2	13.100
24	22 19 44.58	1.8048	S. 11 25 30.9	13.149
	TUESDAY 3.			
0	22 19 44.58	1.8048	S. 11 25 30.9	13.142
1	22 21 32.78	1.8020	11 12 21.2	13.182
2	22 23 20.82	1.7992	10 59 9.1	13.222
3	22 25 8.69	1.7965	10 45 54.6	13.261
4	22 26 56.40	1.7939	10 32 37.8	13.299
5	22 28 43.96	1.7914	10 19 18.7	13.336
6	22 30 31.37	1.7889	10 5 57.4	13.373
7	22 32 18.63	1.7864	9 52 34.0	13.408
8	22 34 5.74	1.7839	9 39 8.4	13.444
9	22 35 52.70	1.7816	9 25 40.7	13.478
10	22 37 39.53	1.7794	9 12 11.0	13.511
11	22 39 26.23	1.7771	8 58 39.4	13.543
12	22 41 12.79	1.7749	8 45 5.9	13.574
13	22 42 59.22	1.7728	8 31 30.5	13.605
14	22 44 45.53	1.7709	8 17 53.3	13.636
15	22 46 31.73	1.7690	8 4 14.2	13.666
16	22 48 17.81	1.7670	7 50 33.4	13.694
17	22 50 3.77	1.7651	7 36 50.9	13.722
18	22 51 49.62	1.7633	7 23 6.8	13.748
19	22 53 35.37	1.7616	7 9 21.1	13.774
20	22 55 21.02	1.7600	6 55 33.9	13.800
21	22 57 6.57	1.7584	6 41 45.1	13.825
22	22 58 52.03	1.7569	6 27 54.9	13.848
23	23 0 37.40	1.7554	S. 6 14 3.3	13.871
	WEDNESDAY 4.			
0	23 2 22.68	1.7540	S. 6 0 10.4	13.893
1	23 4 7.88	1.7527	5 46 16.2	13.915
2	23 5 53.00	1.7514	5 32 20.6	13.937
3	23 7 38.05	1.7503	5 18 23.8	13.956
4	23 9 23.03	1.7491	5 4 25.9	13.975
5	23 11 7.94	1.7479	4 50 26.8	13.994
6	23 12 52.78	1.7469	4 36 26.6	14.012
7	23 14 37.57	1.7460	4 22 25.4	14.028
8	23 16 22.30	1.7451	4 8 23.2	14.045
9	23 18 6.98	1.7443	3 54 20.0	14.061
10	23 19 51.62	1.7436	3 40 15.9	14.075
11	23 21 36.21	1.7429	3 26 11.0	14.088
12	23 23 20.76	1.7422	3 12 5.3	14.102
13	23 25 5.28	1.7417	2 57 58.8	14.115
14	23 26 49.77	1.7412	2 43 51.5	14.127
15	23 28 34.22	1.7407	2 29 43.6	14.137
16	23 30 18.65	1.7404	2 15 35.1	14.147
17	23 32 3.07	1.7402	2 1 26.0	14.157
18	23 33 47.47	1.7399	1 47 16.3	14.166
19	23 35 31.86	1.7397	1 33 6.1	14.173
20	23 37 16.24	1.7397	1 18 55.5	14.180
21	23 39 0.62	1.7397	1 4 44.5	14.186
22	23 40 45.00	1.7397	0 50 33.2	14.192
23	23 42 29.39	1.7398	0 36 21.5	14.197
24	23 44 13.78	1.7400	S. 0 22 9.5	14.201

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 5.			
	h m s	s	° ′ ″	″
0	23 44 13.78	1.7460	S. 0 22 9.5	14.901
1	23 45 58.19	1.7463	S. 0 7 57.3	14.904
2	23 47 42.62	1.7466	N. 0 6 15.0	14.907
3	23 49 27.06	1.7469	0 20 27.5	14.909
4	23 51 11.53	1.7474	0 34 40.1	14.910
5	23 52 56.03	1.7478	0 48 52.7	14.911
6	23 54 40.55	1.7484	1 3 5.4	14.911
7	23 56 25.11	1.7491	1 17 18.0	14.909
8	23 58 9.72	1.7498	1 31 30.5	14.907
9	23 59 54.37	1.7506	1 45 42.8	14.904
10	0 1 39.07	1.7515	1 59 54.9	14.901
11	0 3 23.83	1.7524	2 14 6.9	14.197
12	0 5 8.64	1.7473	2 28 18.6	14.192
13	0 6 53.51	1.7484	2 42 29.9	14.186
14	0 8 38.45	1.7496	2 56 40.9	14.180
15	0 10 23.46	1.7508	3 10 51.5	14.172
16	0 12 8.54	1.7590	3 25 1.6	14.164
17	0 13 53.70	1.7533	3 39 11.2	14.156
18	0 15 38.94	1.7547	3 53 20.3	14.147
19	0 17 24.27	1.7562	4 7 28.8	14.138
20	0 19 9.69	1.7577	4 21 36.6	14.194
21	0 20 55.20	1.7593	4 35 43.7	14.112
22	0 22 40.81	1.7611	4 49 50.0	14.099
23	0 24 26.53	1.7698	N. 5 3 55.6	14.087
	FRIDAY 6.			
0	0 26 12.35	1.7646	N. 5 18 0.4	14.073
1	0 27 58.28	1.7665	5 32 4.3	14.057
2	0 29 44.33	1.7685	5 46 7.2	14.041
3	0 31 30.50	1.7705	6 0 9.2	14.025
4	0 33 16.79	1.7726	6 14 10.2	14.007
5	0 35 3.21	1.7747	6 28 10.1	13.988
6	0 36 49.76	1.7769	6 42 8.8	13.969
7	0 38 36.44	1.7793	6 56 6.4	13.949
8	0 40 23.27	1.7817	7 10 2.7	13.928
9	0 42 10.24	1.7841	7 23 57.8	13.907
10	0 43 57.36	1.7866	7 37 51.6	13.885
11	0 45 44.63	1.7892	7 51 44.0	13.862
12	0 47 32.06	1.7919	8 5 35.0	13.837
13	0 49 19.65	1.7946	8 19 24.5	13.812
14	0 51 7.41	1.7973	8 33 12.5	13.787
15	0 52 55.33	1.8002	8 46 59.0	13.762
16	0 54 43.43	1.8032	9 0 43.9	13.734
17	0 56 31.71	1.8062	9 14 27.1	13.706
18	0 58 20.17	1.8092	9 28 8.5	13.676
19	1 0 8.81	1.8124	9 41 48.2	13.647
20	1 1 57.65	1.8156	9 55 26.1	13.616
21	1 3 46.68	1.8188	10 9 2.1	13.584
22	1 5 35.91	1.8222	10 22 36.2	13.552
23	1 7 25.34	1.8256	10 36 8.3	13.518
24	1 9 14.98	1.8291	N.10 49 38.4	13.484

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 7.			
	h m s	s	° ′ ″	″
0	1 9 14.98	1.8291	N.10 49 38.4	13.484
1	1 11 4.83	1.8327	11 3 6.4	13.449
2	1 12 54.90	1.8363	11 16 32.3	13.413
3	1 14 45.18	1.8399	11 29 56.0	13.376
4	1 16 35.69	1.8437	11 43 17.4	13.338
5	1 18 26.43	1.8476	11 56 36.5	13.299
6	1 20 17.40	1.8514	12 9 53.3	13.260
7	1 22 8.60	1.8554	12 23 7.7	13.219
8	1 24 0.05	1.8595	12 36 19.6	13.178
9	1 25 51.74	1.8636	12 49 29.0	13.136
10	1 27 43.68	1.8677	13 2 35.9	13.092
11	1 29 35.87	1.8720	13 15 40.1	13.047
12	1 31 28.32	1.8763	13 28 41.6	13.002
13	1 33 21.03	1.8807	13 41 40.4	12.957
14	1 35 14.00	1.8851	13 54 36.4	12.909
15	1 37 7.24	1.8896	14 7 29.5	12.861
16	1 39 0.75	1.8942	14 20 19.7	12.812
17	1 40 54.54	1.8988	14 33 6.9	12.762
18	1 42 48.61	1.9036	14 45 51.1	12.711
19	1 44 42.97	1.9083	14 58 32.2	12.658
20	1 46 37.61	1.9131	15 11 10.1	12.605
21	1 48 32.54	1.9180	15 23 44.8	12.551
22	1 50 27.77	1.9230	15 36 16.2	12.496
23	1 52 23.30	1.9280	N.15 48 44.3	12.440
	SUNDAY 8.			
0	1 54 19.13	1.9331	N.16 1 9.0	12.382
1	1 56 15.27	1.9382	16 13 30.2	12.324
2	1 58 11.72	1.9434	16 25 47.9	12.265
3	2 0 8.48	1.9487	16 38 2.0	12.204
4	2 2 5.56	1.9541	16 50 12.4	12.143
5	2 4 2.97	1.9595	17 2 19.2	12.080
6	2 6 0.70	1.9649	17 14 22.2	12.016
7	2 7 58.76	1.9705	17 26 21.3	11.953
8	2 9 57.16	1.9761	17 38 16.5	11.888
9	2 11 55.89	1.9817	17 50 7.8	11.821
10	2 13 54.96	1.9873	18 1 55.0	11.753
11	2 15 54.37	1.9931	18 13 38.1	11.684
12	2 17 54.13	1.9989	18 25 17.1	11.614
13	2 19 54.24	2.0047	18 36 51.8	11.542
14	2 21 54.70	2.0107	18 48 22.2	11.470
15	2 23 55.52	2.0167	18 59 48.2	11.396
16	2 25 56.70	2.0227	19 11 9.7	11.322
17	2 27 58.24	2.0287	19 22 26.8	11.247
18	2 30 0.15	2.0349	19 33 39.3	11.169
19	2 32 2.43	2.0411	19 44 47.1	11.091
20	2 34 5.08	2.0473	19 55 50.2	11.012
21	2 36 8.10	2.0535	20 6 48.5	10.931
22	2 38 11.50	2.0598	20 17 41.9	10.849
23	2 40 15.28	2.0662	20 28 30.3	10.766
24	2 42 19.44	2.0726	N.20 39 13.8	10.682

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 9.			
	h m s	s	° ′ ″	″
0	2 42 19.44	2.0796	N.20 39 13.8	10.688
1	2 44 23.99	2.0791	20 49 52.2	10.597
2	2 46 28.93	2.0655	21 0 25.4	10.510
3	2 48 34.25	2.0920	21 10 53.4	10.428
4	2 50 39.97	2.0966	21 21 16.1	10.333
5	2 52 46.09	2.1052	21 31 33.4	10.243
6	2 54 52.60	2.1118	21 41 45.3	10.159
7	2 56 59.51	2.1185	21 51 51.6	10.059
8	2 59 6.82	2.1252	22 1 52.3	9.965
9	3 1 14.54	2.1320	22 11 47.4	9.870
10	3 3 22.66	2.1388	22 21 36.7	9.773
11	3 5 31.19	2.1456	22 31 20.1	9.675
12	3 7 40.13	2.1524	22 40 57.7	9.577
13	3 9 49.48	2.1593	22 50 29.3	9.476
14	3 11 59.24	2.1661	22 59 54.8	9.374
15	3 14 9.41	2.1730	23 9 14.2	9.271
16	3 16 20.00	2.1799	23 18 27.3	9.166
17	3 18 31.00	2.1868	23 27 34.1	9.061
18	3 20 42.42	2.1938	23 36 34.6	8.954
19	3 22 54.26	2.2007	23 45 28.6	8.846
20	3 25 6.51	2.2077	23 54 16.1	8.736
21	3 27 19.18	2.2147	24 2 56.9	8.624
22	3 29 32.27	2.2217	24 11 31.0	8.512
23	3 31 45.78	2.2288	N.24 19 58.4	8.400
	TUESDAY 10.			
0	3 33 59.72	2.2358	N.24 28 19.0	8.285
1	3 36 14.08	2.2427	24 36 32.6	8.168
2	3 38 28.85	2.2497	24 44 39.2	8.050
3	3 40 44.04	2.2567	24 52 38.6	7.931
4	3 42 59.66	2.2637	25 0 30.9	7.812
5	3 45 15.69	2.2707	25 8 16.0	7.690
6	3 47 32.14	2.2777	25 15 53.7	7.567
7	3 49 49.01	2.2847	25 23 24.0	7.442
8	3 52 6.30	2.2917	25 30 46.8	7.317
9	3 54 24.01	2.2986	25 38 2.1	7.191
10	3 56 42.13	2.3054	25 45 9.7	7.069
11	3 59 0.66	2.3123	25 52 9.5	6.939
12	4 1 19.61	2.3192	25 59 1.5	6.801
13	4 3 38.97	2.3261	26 5 45.6	6.668
14	4 5 58.74	2.3329	26 12 21.7	6.535
15	4 8 18.92	2.3397	26 18 49.8	6.401
16	4 10 39.50	2.3464	26 25 9.8	6.264
17	4 13 0.49	2.3532	26 31 21.5	6.126
18	4 15 21.88	2.3598	26 37 24.9	5.987
19	4 17 43.67	2.3664	26 43 19.9	5.847
20	4 20 5.85	2.3730	26 49 6.5	5.706
21	4 22 28.43	2.3796	26 54 44.6	5.562
22	4 24 51.40	2.3860	27 0 14.0	5.417
23	4 27 14.75	2.3924	27 5 34.7	5.272
24	4 29 38.49	2.3988	N.27 10 46.7	5.126
	WEDNESDAY 11.			
0	4 29 38.49	2.3988	N.27 10 46.7	5.126
1	4 32 2.61	2.4051	27 15 49.8	4.978
2	4 34 27.10	2.4114	27 20 44.0	4.829
3	4 36 51.97	2.4176	27 25 29.3	4.679
4	4 39 17.21	2.4237	27 30 5.5	4.527
5	4 41 42.81	2.4297	27 34 32.5	4.373
6	4 44 8.77	2.4357	27 38 50.3	4.219
7	4 46 35.09	2.4416	27 42 58.8	4.064
8	4 49 1.76	2.4473	27 46 58.0	3.906
9	4 51 28.77	2.4530	27 50 47.8	3.751
10	4 53 56.12	2.4587	27 54 28.1	3.592
11	4 56 23.81	2.4642	27 57 58.8	3.431
12	4 58 51.83	2.4697	28 1 19.8	3.270
13	5 1 20.17	2.4751	28 4 31.2	3.108
14	5 3 48.84	2.4804	28 7 32.8	2.944
15	5 6 17.82	2.4856	28 10 24.5	2.779
16	5 8 47.11	2.4907	28 13 6.3	2.614
17	5 11 16.70	2.4957	28 15 38.2	2.448
18	5 13 46.59	2.5005	28 18 0.1	2.281
19	5 16 16.76	2.5053	28 20 11.9	2.112
20	5 18 47.22	2.5100	28 22 13.5	1.942
21	5 21 17.96	2.5146	28 24 4.9	1.772
22	5 23 48.97	2.5190	28 25 46.1	1.601
23	5 26 20.24	2.5232	N.28 27 17.0	1.428
	THURSDAY 12.			
0	5 28 51.76	2.5274	N.28 28 37.5	1.255
1	5 31 23.53	2.5315	28 29 47.6	1.081
2	5 33 55.54	2.5355	28 30 47.2	0.906
3	5 36 27.79	2.5393	28 31 36.3	0.730
4	5 39 0.26	2.5430	28 32 14.8	0.553
5	5 41 32.95	2.5466	28 32 42.7	0.376
6	5 44 5.85	2.5500	28 32 59.9	0.196
7	5 46 38.95	2.5533	28 33 6.4	+ 0.019
8	5 49 12.25	2.5566	28 33 2.2	− 0.160
9	5 51 45.74	2.5597	28 32 47.2	0.340
10	5 54 19.41	2.5626	28 32 21.4	0.521
11	5 56 53.25	2.5653	28 31 44.7	0.702
12	5 59 27.25	2.5680	28 30 57.1	0.884
13	6 2 1.41	2.5705	28 29 58.6	1.067
14	6 4 35.71	2.5728	28 28 49.1	1.250
15	6 7 10.15	2.5750	28 27 28.6	1.433
16	6 9 44.72	2.5772	28 25 57.1	1.617
17	6 12 19.41	2.5792	28 24 14.5	1.802
18	6 14 54.22	2.5810	28 22 20.9	1.986
19	6 17 29.13	2.5827	28 20 16.2	2.171
20	6 20 4.14	2.5842	28 18 0.4	2.357
21	6 22 39.23	2.5855	28 15 33.4	2.542
22	6 25 14.40	2.5867	28 12 55.3	2.727
23	6 27 49.64	2.5878	28 10 6.1	2.913
24	6 30 24.95	2.5889	N.28 7 5.7	3.100

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 13.			
	h m s	s	° ′ ″	″
0	6 30 24.95	2.5669	N.28 7 5.7	2.109
1	6 33 0.31	2.5697	28 3 54.1	2.987
2	6 35 35.71	2.5909	28 0 31.3	3.473
3	6 38 11.14	2.5697	27 56 57.4	3.659
4	6 40 46.60	2.5912	27 53 12.2	3.846
5	6 43 22.08	2.5915	27 49 15.8	4.033
6	6 45 57.58	2.5917	27 45 8.2	4.220
7	6 48 33.08	2.5916	27 40 49.4	4.407
8	6 51 8.57	2.5913	27 36 19.4	4.593
9	6 53 44.04	2.5910	27 31 38.3	4.778
10	6 56 19.49	2.5906	27 26 46.0	4.965
11	6 58 54.91	2.5900	27 21 42.5	5.151
12	7 1 30.29	2.5893	27 16 27.9	5.337
13	7 4 5.62	2.5884	27 11 2.1	5.522
14	7 6 40.90	2.5875	27 5 25.2	5.707
15	7 9 16.12	2.5864	26 59 37.2	5.892
16	7 11 51.27	2.5852	26 53 38.1	6.077
17	7 14 26.34	2.5837	26 47 28.0	6.261
18	7 17 1.32	2.5822	26 41 6.8	6.445
19	7 19 36.21	2.5807	26 34 34.6	6.629
20	7 22 11.00	2.5790	26 27 51.4	6.811
21	7 24 45.69	2.5772	26 20 57.3	6.993
22	7 27 20.26	2.5752	26 13 52.3	7.174
23	7 29 54.71	2.5731	N.26 6 36.4	7.355
	SATURDAY 14.			
0	7 32 29.03	2.5708	N.25 59 9.7	7.535
1	7 35 3.21	2.5685	25 51 32.2	7.714
2	7 37 37.26	2.5662	25 43 44.0	7.893
3	7 40 11.16	2.5637	25 35 45.0	8.072
4	7 42 44.90	2.5611	25 27 35.3	8.249
5	7 45 18.49	2.5584	25 19 15.1	8.425
6	7 47 51.91	2.5556	25 10 44.3	8.601
7	7 50 25.16	2.5527	25 2 3.0	8.776
8	7 52 58.23	2.5497	24 53 11.2	8.950
9	7 55 31.12	2.5466	24 44 9.0	9.122
10	7 58 3.82	2.5434	24 34 56.5	9.294
11	8 0 36.33	2.5402	24 25 33.7	9.465
12	8 3 8.64	2.5368	24 16 0.7	9.634
13	8 5 40.75	2.5334	24 6 17.6	9.803
14	8 8 12.65	2.5299	23 56 24.3	9.972
15	8 10 44.34	2.5264	23 46 21.0	10.138
16	8 13 15.82	2.5228	23 36 7.8	10.303
17	8 15 47.08	2.5191	23 25 44.6	10.468
18	8 18 18.11	2.5154	23 15 11.6	10.631
19	8 20 48.92	2.5116	23 4 28.9	10.792
20	8 23 19.50	2.5077	22 53 36.5	10.953
21	8 25 49.84	2.5038	22 42 34.5	11.119
22	8 28 19.95	2.4998	22 31 23.0	11.270
23	8 30 49.82	2.4957	22 20 2.1	11.427
24	8 33 19.44	2.4917	N.22 8 31.8	11.583

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 15.			
	h m s	s	° ′ ″	″
0	8 33 19.44	2.4917	N.22 8 31.8	11.583
1	8 35 48.82	2.4876	21 56 52.2	11.737
2	8 38 17.95	2.4834	21 45 3.4	11.888
3	8 40 46.83	2.4793	21 33 5.6	12.038
4	8 43 15.46	2.4751	21 20 58.8	12.188
5	8 45 43.84	2.4708	21 8 43.0	12.337
6	8 48 11.96	2.4665	20 56 18.3	12.484
7	8 50 39.82	2.4622	20 43 44.9	12.630
8	8 53 7.42	2.4579	20 31 2.9	12.778
9	8 55 34.77	2.4536	20 18 12.3	12.913
10	8 58 1.85	2.4492	20 5 13.2	13.054
11	9 0 28.67	2.4447	19 52 5.8	13.196
12	9 2 55.22	2.4403	19 38 50.1	13.336
13	9 5 21.51	2.4360	19 25 26.2	13.466
14	9 7 47.54	2.4316	19 11 54.2	13.599
15	9 10 13.30	2.4272	18 58 14.3	13.731
16	9 12 38.80	2.4228	18 44 26.5	13.860
17	9 15 4.04	2.4184	18 30 30.9	13.991
18	9 17 29.01	2.4140	18 16 27.6	14.118
19	9 19 53.72	2.4097	18 2 16.8	14.243
20	9 22 18.17	2.4053	17 47 58.5	14.367
21	9 24 42.35	2.4009	17 33 32.8	14.486
22	9 27 6.27	2.3965	17 18 59.9	14.607
23	9 29 29.93	2.3922	N.17 4 19.9	14.725
	MONDAY 16.			
0	9 31 53.33	2.3878	N.16 49 32.9	14.841
1	9 34 16.47	2.3836	16 34 39.0	14.956
2	9 36 39.36	2.3793	16 19 38.2	15.069
3	9 39 1.99	2.3750	16 4 30.7	15.179
4	9 41 24.36	2.3708	15 49 16.7	15.287
5	9 43 46.48	2.3666	15 33 56.2	15.395
6	9 46 8.35	2.3624	15 18 29.3	15.500
7	9 48 29.97	2.3583	15 2 56.2	15.602
8	9 50 51.34	2.3542	14 47 17.0	15.703
9	9 53 12.47	2.3501	14 31 31.8	15.802
10	9 55 33.35	2.3461	14 15 40.7	15.900
11	9 57 54.00	2.3422	13 59 43.8	15.996
12	10 0 14.41	2.3382	13 43 41.2	16.089
13	10 2 34.58	2.3343	13 27 33.1	16.180
14	10 4 54.52	2.3305	13 11 19.6	16.269
15	10 7 14.24	2.3267	12 55 0.8	16.357
16	10 9 33.73	2.3230	12 38 36.8	16.442
17	10 11 53.00	2.3193	12 22 7.8	16.524
18	10 14 12.04	2.3156	12 5 33.9	16.606
19	10 16 30.87	2.3121	11 48 55.1	16.686
20	10 18 49.49	2.3085	11 32 11.6	16.762
21	10 21 7.89	2.3050	11 15 23.6	16.837
22	10 23 26.09	2.3016	10 58 31.1	16.911
23	10 25 44.08	2.2982	10 41 34.3	16.982
24	10 28 1.87	2.2949	N.10 24 33.3	17.051

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 17.			
	h m s	s	° ′ ″	″
0	10 28 1.87	2.2949	N. 10 24 33.3	17.651
1	10 30 19.46	2.2917	10 7 28.2	17.117
2	10 32 36.87	2.2886	9 50 19.2	17.189
3	10 34 54.09	2.2855	9 33 6.3	17.946
4	10 37 11.13	2.2824	9 15 49.7	17.306
5	10 39 27.98	2.2793	8 58 29.6	17.364
6	10 41 44.65	2.2764	8 41 6.0	17.422
7	10 44 1.15	2.2737	8 23 39.0	17.476
8	10 46 17.49	2.2709	8 6 8.9	17.527
9	10 48 33.66	2.2682	7 48 35.7	17.578
10	10 50 49.67	2.2655	7 30 59.5	17.627
11	10 53 5.52	2.2629	7 13 20.5	17.673
12	10 55 21.22	2.2605	6 55 38.8	17.717
13	10 57 36.78	2.2581	6 37 54.5	17.758
14	10 59 52.19	2.2557	6 20 7.8	17.796
15	11 2 7.46	2.2534	6 2 18.7	17.837
16	11 4 22.60	2.2512	5 44 27.4	17.872
17	11 6 37.61	2.2492	5 26 34.1	17.904
18	11 8 52.50	2.2472	5 8 38.9	17.936
19	11 11 7.27	2.2452	4 50 41.8	17.965
20	11 13 21.92	2.2432	4 32 43.1	17.992
21	11 15 36.46	2.2414	4 14 42.8	18.017
22	11 17 50.89	2.2397	3 56 41.1	18.040
23	11 20 5.22	2.2380	N. 3 38 38.0	18.062
	WEDNESDAY 18.			
0	11 22 19.45	2.2364	N. 3 20 33.7	18.080
1	11 24 33.59	2.2349	3 2 28.4	18.096
2	11 26 47.64	2.2335	2 44 22.2	18.111
3	11 29 1.61	2.2322	2 26 15.1	18.123
4	11 31 15.50	2.2309	2 8 7.4	18.133
5	11 33 29.32	2.2298	1 49 59.1	18.142
6	11 35 43.08	2.2287	1 31 50.4	18.148
7	11 37 56.77	2.2277	1 13 41.4	18.152
8	11 40 10.40	2.2267	0 55 32.2	18.153
9	11 42 23.98	2.2259	0 37 23.0	18.153
10	11 44 37.51	2.2251	0 19 13.8	18.152
11	11 46 50.99	2.2243	N. 0 1 4.8	18.147
12	11 49 4.43	2.2237	S. 0 17 3.8	18.140
13	11 51 17.84	2.2230	0 35 12.0	18.132
14	11 53 31.22	2.2227	0 53 19.6	18.122
15	11 55 44.57	2.2224	1 11 26.6	18.109
16	11 57 57.90	2.2221	1 29 32.7	18.094
17	12 0 11.22	2.2218	1 47 37.9	18.077
18	12 2 24.52	2.2217	2 5 42.0	18.059
19	12 4 37.82	2.2217	2 23 45.0	18.038
20	12 6 51.12	2.2217	2 41 46.6	18.015
21	12 9 4.42	2.2217	2 59 46.8	17.990
22	12 11 17.73	2.2219	3 17 45.4	17.963
23	12 13 31.05	2.2221	3 35 42.4	17.935
24	12 15 44.38	2.2224	S. 3 53 37.6	17.904

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 19.			
	h m s	s	° ′ ″	″
0	12 15 44.38	2.2224	S. 3 53 37.6	17.904
1	12 17 57.74	2.2229	4 11 30.9	17.872
2	12 20 11.13	2.2233	4 29 22.2	17.837
3	12 22 24.54	2.2238	4 47 11.3	17.799
4	12 24 37.99	2.2245	5 4 58.1	17.761
5	12 26 51.48	2.2253	5 22 42.6	17.721
6	12 29 5.02	2.2261	5 40 24.6	17.677
7	12 31 18.61	2.2269	5 58 3.9	17.632
8	12 33 32.25	2.2277	6 15 40.5	17.587
9	12 35 45.94	2.2287	6 33 14.3	17.538
10	12 37 59.70	2.2298	6 50 45.1	17.487
11	12 40 13.52	2.2309	7 8 12.8	17.435
12	12 42 27.41	2.2322	7 25 37.3	17.381
13	12 44 41.38	2.2335	7 42 58.5	17.325
14	12 46 55.43	2.2348	8 0 16.3	17.267
15	12 49 9.55	2.2361	8 17 30.5	17.207
16	12 51 23.76	2.2376	8 34 41.1	17.145
17	12 53 38.07	2.2392	8 51 47.9	17.082
18	12 55 52.47	2.2408	9 8 50.9	17.017
19	12 58 6.97	2.2425	9 25 49.9	16.949
20	13 0 21.57	2.2442	9 42 44.8	16.880
21	13 2 36.27	2.2459	9 59 35.5	16.809
22	13 4 51.08	2.2478	10 16 21.9	16.737
23	13 7 6.01	2.2496	S. 10 33 3.9	16.662
	FRIDAY 20.			
0	13 9 21.06	2.2518	S. 10 49 41.3	16.585
1	13 11 36.23	2.2538	11 6 14.1	16.507
2	13 13 51.52	2.2558	11 22 42.2	16.427
3	13 16 6.93	2.2579	11 39 5.4	16.346
4	13 18 22.47	2.2602	11 55 23.7	16.262
5	13 20 38.15	2.2625	12 11 36.9	16.177
6	13 22 53.97	2.2648	12 27 45.0	16.091
7	13 25 9.92	2.2671	12 43 47.8	16.002
8	13 27 26.02	2.2695	12 59 45.2	15.912
9	13 29 42.26	2.2719	13 15 37.2	15.820
10	13 31 58.65	2.2744	13 31 23.6	15.727
11	13 34 15.19	2.2770	13 47 4.4	15.632
12	13 36 31.89	2.2796	14 2 39.4	15.535
13	13 38 48.74	2.2822	14 18 8.6	15.437
14	13 41 5.75	2.2849	14 33 31.8	15.336
15	13 43 22.92	2.2876	14 48 48.9	15.234
16	13 45 40.26	2.2903	15 3 59.9	15.132
17	13 47 57.76	2.2930	15 19 4.7	15.027
18	13 50 15.42	2.2958	15 34 3.1	14.920
19	13 52 33.25	2.2987	15 48 55.1	14.812
20	13 54 51.26	2.3016	16 3 40.6	14.703
21	13 57 9.44	2.3044	16 18 19.5	14.592
22	13 59 27.79	2.3073	16 32 51.7	14.480
23	14 1 46.32	2.3102	16 47 17.1	14.367
24	14 4 5.02	2.3130	S. 17 1 35.7	14.252

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 21.			
	h m s	s	° ′ ″	″
0	14 4 5.02	2.3130	S. 17 1 35.7	14.258
1	14 6 23.90	2.3169	17 15 47.3	14.134
2	14 8 42.96	2.3198	17 29 51.8	14.016
3	14 11 2.21	2.3223	17 43 49.2	13.897
4	14 13 21.64	2.3253	17 57 39.4	13.776
5	14 15 41.25	2.3283	18 11 22.3	13.653
6	14 18 1.04	2.3314	18 24 57.8	13.530
7	14 20 21.02	2.3345	18 38 25.9	13.405
8	14 22 41.18	2.3375	18 51 46.4	13.277
9	14 25 1.52	2.3406	19 4 59.2	13.149
10	14 27 22.05	2.3437	19 18 4.3	13.021
11	14 29 42.76	2.3467	19 31 1.7	12.891
12	14 32 3.66	2.3498	19 43 51.2	12.759
13	14 34 24.74	2.3529	19 56 32.8	12.627
14	14 36 46.01	2.3560	20 9 6.4	12.492
15	14 39 7.46	2.3590	20 21 31.9	12.357
16	14 41 29.09	2.3621	20 33 49.3	12.221
17	14 43 50.91	2.3652	20 45 58.4	12.083
18	14 46 12.92	2.3683	20 57 59.2	11.944
19	14 48 35.11	2.3713	21 9 51.7	11.805
20	14 50 57.47	2.3743	21 21 35.8	11.663
21	14 53 20.01	2.3773	21 33 11.3	11.521
22	14 55 42.73	2.3802	21 44 38.3	11.378
23	14 58 5.63	2.3831	S. 21 55 56.7	11.235
	SUNDAY 22.			
0	15 0 28.70	2.3860	S. 22 7 6.5	11.090
1	15 2 51.95	2.3888	22 18 7.5	10.943
2	15 5 15.36	2.3916	22 28 59.7	10.796
3	15 7 38.94	2.3944	22 39 43.0	10.647
4	15 10 2.69	2.3972	22 50 17.4	10.498
5	15 12 26.61	2.4000	23 0 42.8	10.348
6	15 14 50.69	2.4027	23 10 59.1	10.197
7	15 17 14.93	2.4053	23 21 6.4	10.046
8	15 19 39.33	2.4079	23 31 4.6	9.893
9	15 22 3.88	2.4104	23 40 53.5	9.739
10	15 24 28.58	2.4129	23 50 33.2	9.585
11	15 26 53.43	2.4154	24 0 3.7	9.430
12	15 29 18.43	2.4178	24 9 24.8	9.273
13	15 31 43.57	2.4202	24 18 36.5	9.117
14	15 34 8.85	2.4224	24 27 38.8	8.960
15	15 36 34.26	2.4246	24 36 31.7	8.802
16	15 38 59.80	2.4268	24 45 15.0	8.643
17	15 41 25.47	2.4289	24 53 48.8	8.483
18	15 43 51.27	2.4310	25 2 13.0	8.323
19	15 46 17.19	2.4329	25 10 27.6	8.162
20	15 48 43.22	2.4348	25 18 32.5	8.001
21	15 51 9.36	2.4366	25 26 27.7	7.839
22	15 53 35.61	2.4383	25 34 13.2	7.677
23	15 56 1.96	2.4399	25 41 49.0	7.515
24	15 58 28.40	2.4415	S. 25 49 15.0	7.352

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 23.			
	h m s	s	° ′ ″	″
0	15 58 28.40	2.4415	S. 25 49 15.0	7.352
1	16 0 54.94	2.4431	25 56 31.2	7.187
2	16 3 21.57	2.4445	26 3 37.5	7.022
3	16 5 48.28	2.4456	26 10 33.9	6.857
4	16 8 15.07	2.4471	26 17 20.4	6.692
5	16 10 41.93	2.4482	26 23 57.0	6.527
6	16 13 8.86	2.4493	26 30 23.7	6.362
7	16 15 35.85	2.4503	26 36 40.4	6.196
8	16 18 2.90	2.4512	26 42 47.2	6.030
9	16 20 30.00	2.4520	26 48 44.0	5.863
10	16 22 57.14	2.4527	26 54 30.8	5.696
11	16 25 24.32	2.4533	27 0 7.5	5.528
12	16 27 51.54	2.4539	27 5 34.2	5.360
13	16 30 18.79	2.4543	27 10 50.8	5.193
14	16 32 46.06	2.4546	27 15 57.4	5.027
15	16 35 13.34	2.4548	27 20 54.0	4.859
16	16 37 40.63	2.4549	27 25 40.5	4.691
17	16 40 7.93	2.4550	27 30 16.9	4.523
18	16 42 35.23	2.4549	27 34 43.3	4.356
19	16 45 2.52	2.4547	27 38 59.6	4.188
20	16 47 29.80	2.4544	27 43 5.8	4.020
21	16 49 57.05	2.4540	27 47 2.0	3.852
22	16 52 24.28	2.4536	27 50 48.1	3.684
23	16 54 51.48	2.4530	S. 27 54 24.1	3.516
	TUESDAY 24.			
0	16 57 18.64	2.4522	S. 27 57 50.0	3.348
1	16 59 45.75	2.4514	28 1 5.9	3.181
2	17 2 12.81	2.4505	28 4 11.7	3.013
3	17 4 39.81	2.4494	28 7 7.5	2.847
4	17 7 6.74	2.4483	28 9 53.3	2.680
5	17 9 33.61	2.4472	28 12 29.1	2.513
6	17 12 0.40	2.4458	28 14 54.9	2.347
7	17 14 27.10	2.4443	28 17 10.7	2.181
8	17 16 53.71	2.4426	28 19 16.6	2.015
9	17 19 20.23	2.4411	28 21 12.5	1.848
10	17 21 46.64	2.4393	28 22 58.4	1.683
11	17 24 12.94	2.4374	28 24 34.5	1.519
12	17 26 39.13	2.4353	28 26 0.7	1.354
13	17 29 5.19	2.4339	28 27 17.0	1.190
14	17 31 31.12	2.4311	28 28 23.5	1.027
15	17 33 56.92	2.4288	28 29 20.2	0.863
16	17 36 22.58	2.4264	28 30 7.1	0.701
17	17 38 48.09	2.4239	28 30 44.3	0.539
18	17 41 13.45	2.4213	28 31 11.8	0.377
19	17 43 38.65	2.4186	28 31 29.6	0.216
20	17 46 3.68	2.4157	28 31 37.7	− 0.054
21	17 48 28.54	2.4128	28 31 36.1	+ 0.106
22	17 50 53.22	2.4098	28 31 25.0	0.264
23	17 53 17.72	2.4067	28 31 4.4	0.423
24	17 55 42.03	2.4035	S. 28 30 34.2	0.580

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 25.			
	h m s	s	° ′ ″	″
0	17 55 42.03	2.4035	S. 28 30 34.2	0.588
1	17 58 6.14	2.4008	28 29 54.6	0.739
2	18 0 30.06	2.3969	28 29 5.5	0.896
3	18 2 53.77	2.3934	28 28 7.0	1.053
4	18 5 17.27	2.3896	28 26 59.1	1.208
5	18 7 40.55	2.3861	28 25 42.0	1.363
6	18 10 3.60	2.3823	28 24 15.6	1.517
7	18 12 26.42	2.3785	28 22 40.0	1.670
8	18 14 49.02	2.3747	28 20 55.2	1.823
9	18 17 11.38	2.3706	28 19 1.2	1.975
10	18 19 33.49	2.3665	28 16 58.2	2.126
11	18 21 55.36	2.3624	28 14 46.1	2.276
12	18 24 16.98	2.3582	28 12 25.1	2.425
13	18 26 38.34	2.3538	28 9 55.1	2.574
14	18 28 59.44	2.3494	28 7 16.2	2.722
15	18 31 20.27	2.3449	28 4 28.5	2.869
16	18 33 40.83	2.3404	28 1 32.0	3.015
17	18 36 1.12	2.3358	27 58 26.7	3.160
18	18 38 21.13	2.3312	27 55 12.8	3.304
19	18 40 40.86	2.3264	27 51 50.3	3.448
20	18 43 0.30	2.3216	27 48 19.1	3.591
21	18 45 19.45	2.3167	27 44 39.4	3.732
22	18 47 38.31	2.3118	27 40 51.3	3.872
23	18 49 56.87	2.3068	S. 27 36 54.7	4.012
	THURSDAY 26.			
0	18 52 15.13	2.3018	S. 27 32 49.8	4.151
1	18 54 33.09	2.2967	27 28 36.6	4.289
2	18 56 50.74	2.2916	27 24 15.1	4.426
3	18 59 8.08	2.2864	27 19 45.5	4.561
4	19 1 25.11	2.2812	27 15 7.8	4.696
5	19 3 41.82	2.2758	27 10 22.0	4.830
6	19 5 58.21	2.2705	27 5 28.2	4.962
7	19 8 14.28	2.2652	27 0 26.5	5.094
8	19 10 30.03	2.2598	26 55 16.9	5.226
9	19 12 45.45	2.2544	26 49 59.4	5.357
10	19 15 0.55	2.2489	26 44 34.1	5.485
11	19 17 15.32	2.2433	26 39 1.2	5.612
12	19 19 29.75	2.2377	26 33 20.7	5.738
13	19 21 43.85	2.2322	26 27 32.6	5.865
14	19 23 57.61	2.2266	26 21 36.9	5.990
15	19 26 11.04	2.2210	26 15 33.8	6.114
16	19 28 24.13	2.2153	26 9 23.3	6.237
17	19 30 36.88	2.2097	26 3 5.4	6.358
18	19 32 49.29	2.2040	25 56 40.3	6.478
19	19 35 1.36	2.1982	25 50 8.0	6.598
20	19 37 13.08	2.1925	25 43 28.5	6.717
21	19 39 24.46	2.1868	25 36 41.9	6.835
22	19 41 35.50	2.1811	25 29 48.3	6.951
23	19 43 46.19	2.1753	25 22 47.8	7.066
24	19 45 56.54	2.1696	S. 25 15 40.4	7.181

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 27.			
	h m s	s	° ′ ″	″
0	19 45 56.54	2.1696	S. 25 15 40.4	7.181
1	19 48 6.54	2.1638	25 8 26.1	7.294
2	19 50 16.19	2.1580	25 1 5.1	7.406
3	19 52 25.50	2.1522	24 53 37.4	7.517
4	19 54 34.46	2.1464	24 46 3.0	7.628
5	19 56 43.07	2.1406	24 38 22.0	7.737
6	19 58 51.33	2.1348	24 30 34.5	7.845
7	20 0 59.25	2.1291	24 22 40.6	7.952
8	20 3 6.82	2.1233	24 14 40.2	8.059
9	20 5 14.05	2.1176	24 6 33.5	8.164
10	20 7 20.93	2.1118	23 58 20.5	8.268
11	20 9 27.47	2.1061	23 50 1.3	8.371
12	20 11 33.66	2.1003	23 41 36.0	8.473
13	20 13 39.51	2.0946	23 33 4.6	8.573
14	20 15 45.02	2.0889	23 24 27.2	8.673
15	20 17 50.18	2.0832	23 15 43.8	8.772
16	20 19 55.00	2.0776	23 6 54.5	8.870
17	20 21 59.49	2.0720	22 57 59.4	8.967
18	20 24 3.64	2.0663	22 48 58.5	9.063
19	20 26 7.45	2.0607	22 39 51.9	9.157
20	20 28 10.92	2.0551	22 30 39.6	9.251
21	20 30 14.06	2.0496	22 21 21.8	9.344
22	20 32 16.87	2.0441	22 11 58.4	9.436
23	20 34 19.35	2.0385	S. 22 2 29.5	9.526
	SATURDAY 28.			
0	20 36 21.49	2.0330	S. 21 52 55.3	9.615
1	20 38 23.31	2.0276	21 43 15.7	9.704
2	20 40 24.80	2.0222	21 33 30.8	9.792
3	20 42 25.97	2.0168	21 23 40.6	9.880
4	20 44 26.81	2.0114	21 13 45.2	9.965
5	20 46 27.34	2.0061	21 3 44.8	10.049
6	20 48 27.55	2.0008	20 53 39.3	10.133
7	20 50 27.44	1.9956	20 43 28.8	10.217
8	20 52 27.02	1.9904	20 33 13.3	10.298
9	20 54 26.29	1.9853	20 22 53.0	10.378
10	20 56 25.25	1.9803	20 12 27.9	10.458
11	20 58 23.91	1.9751	20 1 58.0	10.538
12	21 0 22.26	1.9700	19 51 23.3	10.617
13	21 2 20.31	1.9650	19 40 44.0	10.693
14	21 4 18.06	1.9600	19 30 0.1	10.769
15	21 6 15.51	1.9551	19 19 11.7	10.844
16	21 8 12.67	1.9500	19 8 18.8	10.919
17	21 10 9.54	1.9453	18 57 21.4	10.993
18	21 12 6.11	1.9405	18 46 19.6	11.066
19	21 14 2.40	1.9358	18 35 13.5	11.137
20	21 15 58.41	1.9312	18 24 3.2	11.207
21	21 17 54.14	1.9265	18 12 48.7	11.277
22	21 19 49.59	1.9219	18 1 30.0	11.346
23	21 21 44.77	1.9173	17 50 7.2	11.414
24	21 23 39.67	1.9128	S. 17 38 40.3	11.482

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 29.			
	h m s	s	° ′ ″	″
0	21 23 39.67	1.9198	S. 17 38 40.3	11.488
1	21 25 34.31	1.9084	17 27 9.4	11.547
2	21 27 28.68	1.9040	17 15 34.6	11.612
3	21 29 22.79	1.8997	17 3 56.0	11.676
4	21 31 16.64	1.8954	16 52 13.5	11.740
5	21 33 10.24	1.8912	16 40 27.2	11.803
6	21 35 3.58	1.8869	16 28 37.1	11.866
7	21 36 56.67	1.8826	16 16 43.3	11.926
8	21 38 49.52	1.8783	16 4 46.0	11.985
9	21 40 42.13	1.8740	15 52 45.1	12.044
10	21 42 34.49	1.8696	15 40 40.7	12.103
11	21 44 26.62	1.8650	15 28 32.8	12.161
12	21 46 18.52	1.8631	15 16 21.4	12.218
13	21 48 10.19	1.8593	15 4 6.6	12.273
14	21 50 1.63	1.8555	14 51 48.6	12.328
15	21 51 52.85	1.8518	14 39 27.3	12.382
16	21 53 43.85	1.8480	14 27 2.8	12.435
17	21 55 34.64	1.8447	14 14 35.1	12.488
18	21 57 25.22	1.8412	14 2 4.2	12.541
19	21 59 15.59	1.8377	13 49 30.2	12.592
20	22 1 5.75	1.8343	13 36 53.2	12.641
21	22 2 55.71	1.8311	13 24 13.3	12.689
22	22 4 45.48	1.8278	13 11 30.5	12.736
23	22 6 35.05	1.8246	S. 12 58 44.8	12.786
	MONDAY 30.			
0	22 8 24.43	1.8215	S. 12 45 56.2	12.836
1	22 10 13.63	1.8184	12 33 4.9	12.878
2	22 12 2.64	1.8153	12 20 10.8	12.924
3	22 13 51.47	1.8124	12 7 14.0	12.968
4	22 15 40.13	1.8095	11 54 14.6	13.012
5	22 17 28.61	1.8066	11 41 12.6	13.055
6	22 19 16.92	1.8038	11 28 8.0	13.097
7	22 21 5.07	1.8012	11 15 0.9	13.138
8	22 22 53.06	1.7985	11 1 51.4	13.178
9	22 24 40.89	1.7959	10 48 39.5	13.218
10	22 26 28.57	1.7934	10 35 25.3	13.257
11	22 28 16.10	1.7910	10 22 8.7	13.296
12	22 30 3.49	1.7886	10 8 49.8	13.333
13	22 31 50.73	1.7862	9 55 28.7	13.369
14	22 33 37.84	1.7840	9 42 5.5	13.405
15	22 35 24.81	1.7818	9 28 40.1	13.441
16	22 37 11.65	1.7796	9 15 12.6	13.475
17	22 38 58.36	1.7775	9 1 43.1	13.509
18	22 40 44.95	1.7755	8 48 11.6	13.541
19	22 42 31.42	1.7736	8 34 38.1	13.573
20	22 44 17.78	1.7717	8 21 2.8	13.604
21	22 46 4.02	1.7699	8 7 25.6	13.635
22	22 47 50.16	1.7682	7 53 46.6	13.666
23	22 49 36.20	1.7665	7 40 5.8	13.694
24	22 51 22.14	1.7648	S. 7 26 23.3	13.722

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY, OCTOBER 1.			
	h m s	s	° ′ ″	″
0	22 51 22.14	1.7648	S. 7 26 23.3	13.722

PHASES OF THE MOON.

		d	h	m
○	Full Moon . . Sept.	3	17	55.3
☾	Last Quarter	11	16	50.8
●	New Moon	18	8	55.4
☽	First Quarter . . .	25	6	22.6

		d	h
☾	Apogee . . . Sept.	3	9.6
☾	Perigee	17	19.2
☾	Apogee	30	14.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Spica	W.	106° 25′ 0″	3039	107° 54′ 24″	3043	109° 23′ 44″	3046	110° 53′ 0″	3048
	Saturn	W.	95 47 50	3096	97 16 4	3100	98 44 14	3104	100 12 19	3106
	Antares	W.	60 30 40	3038	62 0 6	3042	63 29 27	3045	64 58 44	3047
	α Pegasi	E.	47 52 58	3486	46 32 18	3513	45 12 8	3541	43 52 29	3571
	α Arietis	E.	87 49 18	3060	86 20 19	3063	84 51 24	3066	83 22 33	3069
	Aldebaran	E.	118 52 37	3138	117 25 13	3138	115 57 49	3138	114 30 26	3139
2	Saturn	W.	107 31 52	3120	108 59 37	3123	110 27 19	3125	111 54 58	3127
	Antares	W.	72 24 23	3059	73 53 23	3060	75 22 21	3062	76 51 17	3064
	α Arietis	E.	75 59 10	3062	74 30 38	3063	73 2 8	3066	71 33 41	3067
	Aldebaran	E.	107 13 45	3143	105 46 27	3143	104 19 9	3143	102 51 52	3144
3	Antares	W.	84 15 36	3067	85 44 26	3068	87 13 15	3068	88 42 4	3068
	α Aquilæ	W.	43 12 47	5144	44 7 51	5034	45 4 20	4931	46 2 10	4837
	α Arietis	E.	64 11 54	3094	62 43 37	3095	61 15 21	3096	59 47 7	3096
	Aldebaran	E.	95 35 32	3145	94 8 17	3144	92 41 1	3144	91 13 45	3144
4	Antares	W.	96 6 15	3065	97 35 8	3064	99 4 2	3062	100 32 58	3061
	α Aquilæ	W.	51 8 41	4472	52 12 58	4415	53 18 6	4362	54 24 2	4311
	α Arietis	E.	52 26 5	3100	50 57 55	3100	49 29 45	3101	48 1 36	3101
	Aldebaran	E.	83 57 21	3143	82 30 3	3142	81 2 44	3141	79 35 24	3141
	Pollux	E.	127 2 16	3071	125 33 31	3069	124 4 44	3069	122 35 56	3066
5	Antares	W.	107 58 6	3051	109 27 16	3049	110 56 28	3047	112 25 43	3043
	α Aquilæ	W.	60 4 11	4111	61 14 2	4079	62 24 24	4049	63 35 15	4020
	Fomalhaut	W.	32 17 41	4160	33 26 45	4074	34 37 12	3997	35 48 55	3998
	α Arietis	E.	40 40 58	3104	39 12 53	3105	37 44 49	3105	36 16 46	3106
	Aldebaran	E.	72 18 33	3137	70 51 8	3136	69 23 42	3134	67 56 14	3134
	Pollux	E.	115 11 19	3056	113 42 16	3053	112 13 9	3051	110 43 59	3048
6	α Aquilæ	W.	69 36 5	3901	70 49 24	3881	72 3 3	3862	73 17 1	3845
	Fomalhaut	W.	42 2 59	3669	43 20 19	3630	44 38 21	3595	45 57 1	3562
	Aldebaran	E.	60 38 41	3129	59 11 7	3129	57 43 33	3129	56 15 58	3128
	Pollux	E.	103 17 12	3031	101 47 38	3026	100 17 58	3022	98 48 13	3018
	Jupiter	E.	112 11 11	3104	110 43 6	3100	109 14 56	3096	107 46 41	3091
7	α Aquilæ	W.	79 31 4	3770	80 46 37	3758	82 2 23	3746	83 18 21	3735
	Fomalhaut	W.	52 38 37	3497	54 0 23	3466	55 22 33	3385	56 45 7	3364
	Aldebaran	E.	48 57 57	3129	47 30 22	3130	46 2 49	3131	44 35 17	3134
	Pollux	E.	91 18 1	2993	89 47 39	2986	88 17 9	2981	86 46 32	2975
	Jupiter	E.	100 23 54	3064	98 55 0	3058	97 25 59	3052	95 56 50	3046
8	α Aquilæ	W.	89 40 54	3690	90 57 52	3682	92 14 58	3677	93 32 10	3670
	Fomalhaut	W.	63 43 29	3975	65 8 10	3959	66 33 10	3943	67 58 28	3927
	α Pegasi	W.	42 4 25	3469	43 25 24	3432	44 47 4	3398	46 9 23	3365
	Aldebaran	E.	37 18 41	3159	35 51 43	3168	34 24 56	3180	32 58 23	3193
	Pollux	E.	79 11 25	2939	77 39 56	2939	76 8 18	2994	74 36 29	2916
	Jupiter	E.	88 29 1	3009	86 58 59	3001	85 28 48	2993	83 58 26	2985
	Sun	E.	133 13 9	3994	131 48 50	3985	130 24 21	3976	128 59 42	3967
9	α Aquilæ	W.	99 59 33	3650	101 17 13	3649	102 34 54	3649	103 52 36	3649
	Fomalhaut	W.	75 9 26	3155	76 36 29	3141	78 3 49	3127	79 31 26	3114

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Spica	W.	112° 22′ 13″	3058	113° 51′ 22″	3054	115° 20′ 28″	3056	116° 49′ 31″	3058
	Saturn	W.	101 40 21	3110	103 8 19	3113	104 36 13	3115	106 4 4	3118
	Antares	W.	66 27 58	3051	67 57 8	3059	69 26 16	3055	70 55 21	3057
	α Pegasi	E.	42 33 23	3004	41 14 53	3041	39 57 3	3080	38 39 55	3796
	α Arietis	E.	81 53 46	3072	80 25 2	3075	78 56 22	3078	77 27 45	3079
	Aldebaran	E.	113 3 4	3140	111 35 43	3141	110 8 23	3142	108 41 4	3142
2	Saturn	W.	113 22 35	3129	114 50 10	3130	116 17 43	3133	117 45 13	3133
	Antares	W.	78 20 11	3065	79 49 4	3066	81 17 55	3066	82 46 46	3067
	α Arietis	E.	70 5 16	3069	68 36 53	3091	67 8 32	3091	65 40 12	3093
	Aldebaran	E.	101 24 36	3144	99 57 20	3144	98 30 4	3144	97 2 48	3144
3	Antares	W.	90 10 53	3067	91 39 43	3067	93 8 33	3066	94 37 24	3066
	α Aquilæ	W.	47 1 16	4752	48 1 32	4673	49 2 54	4601	50 5 18	4533
	α Arietis	E.	58 18 53	3097	56 50 40	3096	55 22 28	3096	53 54 16	3089
	Aldebaran	E.	89 46 29	3144	88 19 13	3143	86 51 56	3143	85 24 39	3143
4	Antares	W.	102 1 55	3060	103 30 54	3057	104 59 56	3056	106 29 0	3054
	α Aquilæ	W.	55 30 44	4986	56 38 8	4923	57 46 12	4183	58 54 54	4146
	α Arietis	E.	46 33 27	3101	45 5 19	3101	43 37 11	3102	42 9 4	3103
	Aldebaran	E.	78 8 4	3139	76 40 42	3139	75 13 20	3136	73 45 57	3136
	Pollux	E.	121 7 5	3065	119 38 12	3063	118 9 17	3060	116 40 19	3059
5	Antares	W.	113 55 2	3041	115 24 24	3037	116 53 51	3034	118 23 22	3030
	α Aquilæ	W.	64 46 35	3089	65 58 21	3968	67 10 32	3944	68 23 7	3921
	Fomalhaut	W.	37 1 48	3065	38 15 43	3606	39 30 37	3756	40 46 23	3710
	α Arietis	E.	34 48 46	3110	33 20 48	3112	31 52 53	3115	30 25 2	3119
	Aldebaran	E.	66 28 46	3133	65 1 16	3133	63 33 46	3131	62 6 14	3130
	Pollux	E.	109 14 46	3045	107 45 29	3041	106 16 7	3039	104 46 42	3034
6	α Aquilæ	W.	74 31 17	3698	75 45 50	3612	77 0 40	3797	78 15 45	3784
	Fomalhaut	W.	47 16 17	3531	48 36 7	3503	49 56 28	3477	51 17 18	3451
	Aldebaran	E.	54 48 22	3198	53 20 46	3197	51 53 9	3198	50 25 33	3198
	Pollux	E.	97 18 23	3014	95 48 27	3009	94 18 25	3003	92 48 16	2998
	Jupiter	E.	106 18 20	3066	104 49 53	3061	103 21 20	3075	101 52 40	3070
7	α Aquilæ	W.	84 34 31	3795	85 50 52	3715	87 7 23	3706	88 24 4	3697
	Fomalhaut	W.	58 8 5	3345	59 31 25	3398	60 55 6	3308	62 19 8	3992
	Aldebaran	E.	43 7 49	3137	41 40 24	3140	40 13 3	3145	38 45 48	3152
	Pollux	E.	85 15 48	2998	83 44 55	2998	82 13 54	2954	80 42 44	2947
	Jupiter	E.	94 27 34	3039	92 58 9	3031	91 28 35	3035	89 58 53	3017
8	α Aquilæ	W.	94 49 29	3064	96 6 54	3061	97 24 23	3057	98 41 56	3053
	Fomalhaut	W.	69 24 5	3813	70 49 59	3196	72 16 11	3183	73 42 40	3189
	α Pegasi	W.	47 32 19	3335	48 55 50	3306	50 19 55	3978	51 44 32	3953
	Aldebaran	E.	31 32 6	3011	30 6 10	3031	28 40 38	3058	27 15 37	3991
	Pollux	E.	73 4 30	2997	71 32 20	2996	69 59 58	2989	68 27 25	2979
	Jupiter	E.	82 27 54	2976	80 57 11	2986	79 26 16	2987	77 55 9	2947
	Sun	E.	127 34 52	3958	126 9 51	3948	124 44 39	3938	123 19 15	3927
9	α Aquilæ	W.	105 10 17	3050	106 27 57	3058	107 45 35	3056	109 3 9	3060
	Fomalhaut	W.	80 59 19	3101	82 27 28	3067	83 55 54	3074	85 24 35	3089

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
9	α Pegasi	W.	53° 9′ 39″	3088	54° 35′ 15″	3084	56° 1′ 20″	3180	57° 27′ 53″	3156
	Pollux	E.	66 54 39	2989	65 21 41	2959	63 48 30	2949	62 15 6	2939
	Jupiter	E.	76 23 50	2937	74 52 18	2987	73 20 34	2916	71 48 36	2905
	Sun	E.	121 53 38	3017	120 27 49	3006	119 1 47	3194	117 35 31	3183
10	Fomalhaut	W.	86 53 33	3047	88 22 47	3034	89 52 17	3022	91 22 3	3009
	α Pegasi	W.	64 47 4	3056	66 16 8	3036	67 45 36	3018	69 15 27	2998
	Pollux	E.	54 24 33	2782	52 49 41	2789	51 14 33	2756	49 39 8	2744
	Jupiter	E.	64 5 10	2947	62 31 43	2935	60 58 0	2921	59 24 0	2906
	Sun	E.	110 20 38	3139	108 52 53	3106	107 24 51	3093	105 56 33	3078
11	Fomalhaut	W.	98 54 48	3047	100 26 7	2935	101 57 41	2994	103 29 29	2912
	α Pegasi	W.	76 50 30	2998	78 22 38	2991	79 55 9	2973	81 28 2	2955
	α Arietis	W.	33 43 46	2734	35 19 41	2714	36 56 2	2695	38 32 49	2676
	Pollux	E.	41 37 43	2977	40 0 32	2963	38 23 2	2949	36 45 13	2934
	Jupiter	E.	51 29 38	2740	49 53 51	2725	48 17 44	2710	46 41 18	2695
	Regulus	E.	78 27 9	2957	76 49 45	2952	75 12 1	2938	73 33 57	2922
	Sun	E.	98 30 33	3063	97 0 24	2998	95 29 56	2972	93 59 8	2955
12	Fomalhaut	W.	111 11 56	2999	112 45 3	2955	114 18 20	2946	115 51 48	2940
	α Pegasi	W.	89 17 58	2779	90 53 2	2756	92 28 27	2741	94 4 13	2725
	α Arietis	W.	46 43 5	2583	48 22 24	2564	50 2 8	2545	51 42 18	2527
	Jupiter	E.	38 34 7	2939	36 55 39	2905	35 16 51	2890	33 37 42	2874
	Regulus	E.	65 18 20	2543	63 38 7	2527	61 57 31	2510	60 16 32	2494
	Sun	E.	86 19 51	2970	84 46 54	2959	83 13 34	2935	81 39 51	2917
13	α Pegasi	W.	102 8 8	2959	103 45 53	2938	105 23 56	2925	107 2 17	2913
	α Arietis	W.	60 9 27	2737	61 52 9	2719	63 35 17	2701	65 18 50	2684
	Aldebaran	W.	30 10 16	2716	31 46 35	2699	33 23 56	2687	35 2 14	2680
	Regulus	E.	51 45 46	2910	50 2 25	2883	48 18 40	2875	46 34 30	2859
	Sun	E.	73 45 25	2736	72 9 20	2706	70 32 51	2690	68 55 58	2672
14	α Arietis	W.	74 2 53	2990	75 48 56	2981	77 35 24	2964	79 22 16	2948
	Aldebaran	W.	43 25 34	2735	45 8 19	2709	46 51 41	2694	48 35 38	2681
	Regulus	E.	37 47 36	2975	36 1 0	2950	34 14 1	2943	32 26 38	2928
	Sun	E.	60 45 25	2563	59 6 6	2545	57 26 23	2548	55 46 16	2530
15	α Arietis	W.	88 22 27	2972	90 11 36	2959	92 1 6	2945	93 50 57	2932
	Aldebaran	W.	57 23 26	2756	59 10 28	2940	60 57 56	2923	62 45 49	2906
	Sun	E.	47 19 54	2950	45 37 31	2936	43 54 48	2922	42 11 44	2908
16	α Arietis	W.	103 4 51	2975	104 56 28	2966	106 48 20	2957	108 40 25	2949
	Aldebaran	W.	71 51 0	2137	73 41 3	2126	75 31 23	2115	77 22 0	2105
	Sun	E.	33 31 45	2947	31 46 54	2937	30 1 49	2928	28 16 30	2918
20	Sun	W.	23 3 43	2997	24 47 22	2979	26 30 43	2964	28 13 44	2948
	Antares	E.	48 5 47	2986	46 14 41	2169	44 23 56	2152	42 33 32	2137
	α Aquilæ	E.	100 27 26	2976	98 54 36	2961	97 21 53	2966	95 49 19	2937
21	Sun	W.	36 43 19	2539	38 24 4	2538	40 4 24	2556	41 44 19	2575
	α Aquilæ	E.	88 10 7	2989	86 39 15	2992	85 8 48	3009	83 38 47	3033
	Fomalhaut	E.	113 55 22	2549	112 15 4	2548	110 34 57	2558	108 55 4	2566

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
9	α Pegasi	W.	58° 54′ 55″	3137	60° 22′ 17″	3115	61° 50′ 8″	3095	63° 18′ 24″	3078
	Pollux	E.	60 41 29	9896	59 7 37	9817	57 33 31	9805	55 59 10	9783
	Jupiter	E.	70 16 24	9894	68 43 58	9863	67 11 17	9871	65 38 21	9850
	Sun	E.	116 9 2	3171	114 42 18	3159	113 15 20	3147	111 48 7	3133
10	Fomalhaut	W.	92 52 5	9906	94 22 23	9864	95 52 56	9972	97 23 44	9950
	α Pegasi	W.	70 45 42	9940	72 16 20	9968	73 47 21	9944	75 18 44	9898
	Pollux	E.	48 3 26	9731	46 27 27	9717	44 51 10	9704	43 14 36	9696
	Jupiter	E.	57 49 43	9795	56 15 9	9769	54 40 17	9768	53 5 7	9753
	Sun	E.	104 27 57	3065	102 59 4	3049	101 29 52	3034	100 0 22	3019
11	Fomalhaut	W.	105 1 32	9902	106 33 48	9891	108 6 18	9881	109 39 1	9872
	α Pegasi	W.	83 1 18	98.8	84 34 56	9922	86 8 55	9905	87 43 16	9789
	α Arietis	W.	40 10 1	9857	41 47 39	9838	43 25 42	9819	45 4 11	9801
	Pollux	E.	35 7 4	9880	33 28 36	9806	31 49 49	9591	30 10 42	9577
	Jupiter	E.	45 4 32	9881	43 27 26	9806	41 50 0	9851	40 12 14	9836
	Regulus	E.	71 55 32	9907	70 16 46	9891	68 37 39	9576	66 58 11	9559
	Sun	E.	92 27 59	9959	90 56 29	9922	89 24 38	9905	87 52 26	9887
12	Fomalhaut	W.	117 25 24	9934	118 59 8	9889	120 32 58	9896	122 6 52	9888
	α Pegasi	W.	95 40 20	9709	97 16 48	9895	98 53 35	9880	100 30 42	9806
	α Arietis	W.	53 22 53	9510	55 3 53	9491	56 45 19	9473	58 27 10	9455
	Jupiter	E.	31 58 12	9560	30 18 22	9545	28 38 12	9531	26 57 42	9517
	Regulus	E.	58 35 10	9477	56 53 25	9460	55 11 16	9443	53 28 43	9426
	Sun	E.	80 5 45	9799	78 31 16	9781	76 56 23	9763	75 21 6	9744
13	α Pegasi	W.	108 40 54	9901	110 19 47	9891	111 58 55	9880	113 38 17	9878
	α Arietis	W.	67 2 48	9886	68 47 11	9846	70 32 0	9331	72 17 14	9314
	Aldebaran	W.	36 41 23	9866	38 21 20	9922	40 2 3	9492	41 43 28	9468
	Regulus	E.	44 49 56	9342	43 4 58	9395	41 19 35	9369	39 33 48	9391
	Sun	E.	67 18 40	9864	65 40 56	9835	64 2 51	9818	62 24 20	9806
14	α Arietis	W.	81 9 32	9923	82 57 11	9916	84 45 14	9902	86 33 39	9186
	Aldebaran	W.	50 20 9	9930	52 5 12	9917	53 50 47	9896	55 36 52	9877
	Regulus	E.	30 38 52	9912	28 50 43	9197	27 2 11	9169	25 13 17	9169
	Sun	E.	54 5 45	9514	52 24 51	9497	50 43 34	9469	49 1 55	9466
15	α Arietis	W.	95 41 7	9190	97 31 36	9167	99 22 24	9096	101 13 29	9065
	Aldebaran	W.	64 34 7	9191	66 22 48	9176	68 11 51	9169	70 1 16	9149
	Sun	E.	40 28 21	9395	38 44 39	9369	37 0 38	9370	35 16 20	9358
16	α Arietis	W.	110 32 43	9942	112 25 12	9955	114 17 52	9939	116 10 41	9965
	Aldebaran	W.	79 12 52	9906	81 3 58	9966	82 55 16	9961	84 46 45	9974
	Sun	E.	26 30 57	9311	24 45 13	9309	22 59 18	9296	21 13 15	9293
20	Sun	W.	29 56 24	9454	31 38 42	9470	33 20 38	9487	35 2 10	9503
	Antares	E.	40 43 29	9152	38 53 49	9167	37 4 31	9189	35 15 37	9198
	α Aquilæ	E.	94 16 56	9906	92 44 47	9921	91 12 55	9935	89 41 21	9951
21	Sun	W.	43 23 48	9563	45 2 52	9613	46 41 29	9632	48 19 40	9650
	α Aquilæ	E.	82 9 15	3056	80 40 12	3069	79 11 41	3110	77 43 43	3139
	Fomalhaut	E.	107 15 25	9560	105 36 3	9563	103 56 58	9997	102 18 12	9981

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
22	Sun	W.	49 57 25	2672	51 34 43	2692	53 11 34	2719	54 47 58	2732
	Spica	W.	26 42 48	2360	28 27 20	2378	30 11 26	2396	31 55 6	2415
	α Aquilæ	E.	76 16 21	3169	74 49 35	3202	73 23 28	3226	71 58 1	3270
	Fomalhaut	E.	100 39 46	2636	99 1 40	2656	97 23 56	2669	95 46 34	2686
23	Sun	W.	62 43 20	2633	64 17 5	2653	65 50 24	2673	67 23 17	2693
	Spica	W.	40 26 53	2507	42 7 56	2526	43 48 33	2544	45 28 45	2563
	Saturn	W.	28 23 2	2656	30 0 41	2663	31 38 11	2678	33 15 29	2693
	α Aquilæ	E.	65 1 45	3477	63 40 55	3504	62 20 57	3574	61 1 54	3626
	Fomalhaut	E.	87 45 38	2779	86 10 42	2796	84 36 11	2818	83 2 6	2836
	α Pegasi	E.	109 51 17	2763	108 16 1	2778	106 41 4	2792	105 6 25	2806
24	Sun	W.	75 1 28	2990	76 31 53	3009	78 1 55	3027	79 31 34	3045
	Saturn	W.	41 18 1	2747	42 53 39	2760	44 28 59	2774	46 4 1	2788
	α Aquilæ	E.	54 41 44	3936	53 29 1	4010	52 17 31	4067	51 7 17	4171
	Fomalhaut	E.	75 18 26	2945	73 47 4	2967	72 16 10	2989	70 45 44	3013
	α Pegasi	E.	97 18 1	2883	95 45 20	2899	94 13 0	2915	92 41 0	2931
25	Sun	W.	86 54 22	3139	88 21 53	3148	89 49 5	3163	91 15 58	3179
	Saturn	W.	53 54 33	2959	55 27 45	2972	57 0 40	2985	58 33 18	2998
	Fomalhaut	E.	63 20 48	3133	61 53 18	3158	60 26 18	3184	58 59 50	3210
	α Pegasi	E.	85 6 6	3013	83 36 9	3029	82 6 32	3045	80 37 15	3061
26	Sun	W.	98 25 54	3250	99 51 4	3264	101 15 58	3276	102 40 38	3288
	Saturn	W.	66 12 25	2959	67 43 29	2971	69 14 18	2981	70 44 54	2992
	Antares	W.	33 11 0	2891	34 43 31	2901	36 15 48	2913	37 47 50	2924
	Fomalhaut	E.	51 55 40	3358	50 32 35	3391	49 10 8	3425	47 48 20	3463
	α Pegasi	E.	73 15 49	3143	71 48 31	3159	70 21 33	3176	68 54 55	3193
	α Arietis	E.	115 0 39	2915	113 28 39	2927	111 56 54	2937	110 25 22	2948
27	Sun	W.	109 40 37	3342	111 4 0	3351	112 27 13	3360	113 50 15	3369
	Saturn	W.	78 14 44	3040	79 44 7	3048	81 13 20	3056	82 42 23	3064
	Antares	W.	45 24 42	2973	46 55 29	2981	48 26 5	2989	49 56 31	2997
	α Pegasi	E.	61 46 43	3278	60 22 6	3295	58 57 49	3313	57 33 53	3330
	α Arietis	E.	102 50 54	2995	101 20 35	3003	99 50 26	3011	98 20 27	3019
28	Sun	W.	120 43 7	3406	122 5 17	3411	123 27 21	3416	124 49 19	3423
	Saturn	W.	90 5 27	3096	91 33 41	3102	93 1 48	3107	94 29 49	3112
	Antares	W.	57 26 26	3030	58 56 2	3035	60 25 31	3040	61 54 54	3045
	α Pegasi	E.	50 39 53	3437	49 18 18	3462	47 57 11	3487	46 36 32	3515
	α Arietis	E.	90 52 44	3052	89 23 35	3056	87 54 32	3061	86 25 35	3066
	Aldebaran	E.	121 53 5	3134	120 25 37	3137	118 58 12	3139	117 30 50	3141
29	Saturn	W.	101 48 35	3131	103 16 7	3133	104 43 36	3137	106 11 1	3138
	Antares	W.	69 20 34	3062	70 49 30	3065	72 18 23	3066	73 47 14	3069
	α Arietis	E.	79 2 9	3064	77 33 40	3067	76 5 15	3090	74 36 53	3091
	Aldebaran	E.	110 14 29	3148	108 47 17	3149	107 20 7	3150	105 52 58	3150
30	Antares	W.	81 11 1	3073	82 39 44	3073	84 8 27	3072	85 37 11	3072
	α Aquilæ	W.	41 22 46	5419	42 14 32	5977	43 7 56	5154	44 2 52	5041
	α Arietis	E.	67 15 33	3098	65 47 21	3099	64 19 10	3099	62 50 59	3100
	Aldebaran	E.	98 37 16	3150	97 10 7	3150	95 42 58	3149	94 15 48	3148

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
22	Sun	W.	56° 23′ 56″	2752	57° 59′ 27″	2772	59° 34′ 31″	2792	61° 9′ 9″	2813
	Spica	W.	33 38 20	2433	35 21 8	2452	37 3 29	2470	38 45 24	2489
	α Aquilæ	E.	70 33 15	3308	69 9 13	3347	67 45 56	3388	66 23 26	3431
	Fomalhaut	E.	94 9 35	2703	92 32 59	2721	90 56 47	2740	89 21 0	2759
23	Sun	W.	68 55 45	2912	70 27 48	2932	71 59 26	2952	73 30 39	2971
	Spica	W.	47 8 31	2581	48 47 52	2599	50 26 49	2617	52 5 21	2634
	Saturn	W.	34 52 32	2694	36 29 20	2707	38 5 51	2719	39 42 5	2733
	α Aquilæ	E.	59 43 48	3681	58 26 41	3741	57 10 37	3802	55 55 37	3867
	Fomalhaut	E.	81 28 28	2859	79 55 17	2880	78 22 33	2901	76 50 16	2923
	α Pegasi	E.	103 32 5	2821	101 58 4	2836	100 24 23	2859	98 51 2	2867
24	Sun	W.	81 0 51	3063	82 29 46	3081	83 58 19	3098	85 26 31	3115
	Saturn	W.	47 38 44	2602	49 13 9	2617	50 47 15	2631	52 21 3	2645
	α Aquilæ	E.	49 58 23	4259	48 50 52	4365	47 44 50	4457	46 40 20	4567
	Fomalhaut	E.	69 15 47	3035	67 46 18	3060	66 17 19	3083	64 48 49	3107
	α Pegasi	E.	91 9 20	2947	89 38 1	2963	88 7 2	2980	86 36 24	2996
25	Sun	W.	92 42 32	3194	94 8 48	3209	95 34 47	3223	97 0 29	3237
	Saturn	W.	60 5 39	2911	61 37 44	2924	63 9 33	2935	64 41 7	2948
	Fomalhaut	E.	57 33 53	3238	56 8 29	3266	54 43 38	3295	53 19 21	3326
	α Pegasi	E.	79 8 18	3078	77 39 41	3094	76 11 24	3110	74 43 27	3126
26	Sun	W.	104 5 4	3299	105 29 17	3311	106 53 16	3322	108 17 2	3332
	Saturn	W.	72 15 17	3002	73 45 27	3013	75 15 24	3022	76 45 10	3031
	Antares	W.	39 19 38	2925	40 51 13	2945	42 22 35	2955	43 53 44	2964
	Fomalhaut	E.	46 27 14	3501	45 6 51	3542	43 47 13	3586	42 28 23	3633
	α Pegasi	E.	67 28 37	3909	66 2 39	3925	64 37 0	3942	63 11 41	3960
	α Arietis	E.	108 54 4	2958	107 22 58	2968	105 52 5	2977	104 21 24	2988
27	Sun	W.	115 13 7	3377	116 35 50	3385	117 58 24	3393	119 20 49	3399
	Saturn	W.	84 11 17	3071	85 40 2	3078	87 8 38	3085	88 37 6	3091
	Antares	W.	51 26 47	3005	52 56 54	3011	54 26 53	3018	55 56 43	3024
	α Pegasi	E.	56 10 19	3351	54 47 7	3372	53 24 18	3393	52 1 53	3415
	α Arietis	E.	96 50 38	3026	95 20 57	3033	93 51 25	3039	92 22 1	3045
28	Sun	W.	126 11 10	3427	127 32 56	3431	128 54 37	3436	130 16 13	3439
	Saturn	W.	95 57 44	3116	97 25 34	3120	98 53 19	3124	100 20 59	3128
	Antares	W.	63 24 11	3049	64 53 23	3052	66 22 31	3056	67 51 34	3059
	α Pegasi	E.	45 16 24	3544	43 56 48	3575	42 37 46	3609	41 19 21	3645
	α Arietis	E.	84 56 44	3071	83 27 59	3074	81 59 18	3078	80 30 42	3081
	Aldebaran	E.	116 3 30	3143	114 36 12	3144	113 8 56	3146	111 41 42	3147
29	Saturn	W.	107 38 24	3140	109 5 45	3143	110 33 3	3144	112 0 19	3145
	Antares	W.	75 16 2	3069	76 44 49	3071	78 13 34	3072	79 42 18	3073
	α Arietis	E.	73 8 33	3094	71 40 16	3095	70 12 0	3096	68 43 46	3097
	Aldebaran	E.	104 25 49	3151	102 58 41	3151	101 31 33	3151	100 4 25	3150
30	Antares	W.	87 5 55	3071	88 34 40	3069	90 3 27	3069	91 32 15	3067
	α Aquilæ	W.	44 59 15	4938	45 56 59	4843	46 56 0	4756	47 56 13	4676
	α Arietis	E.	61 22 49	3100	59 54 39	3099	58 26 28	3099	56 58 17	3098
	Aldebaran	E.	92 48 36	3147	91 21 23	3146	89 54 9	3144	88 26 53	3143

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	12 29 33.16	9.052	S. 3 11 36.2	-58.24	16 1.41	64.37	10 17.36	0.802
Wed.	2	12 33 10.56	9.065	3 34 52.8	58.14	16 1.69	64.42	10 36.46	0.790
Thur.	3	12 36 48.26	9.078	3 58 6.9	58.03	16 1.97	64.47	10 55.26	0.776
Frid.	4	12 40 26.30	9.093	4 21 18.3	-57.91	16 2.24	64.52	11 13.73	0.762
Sat.	5	12 44 4.68	9.109	4 44 26.6	57.77	16 2.52	64.57	11 31.85	0.747
SUN.	6	12 47 43.44	9.124	5 7 31.5	57.62	16 2.79	64.62	11 49.60	0.731
Mon.	7	12 51 22.59	9.140	5 30 32.6	-57.46	16 3.07	64.68	12 6.95	0.714
Tues.	8	12 55 2.18	9.158	5 53 29.6	57.28	16 3.34	64.74	12 23.87	0.696
Wed.	9	12 58 42.20	9.177	6 16 22.1	57.09	16 3.61	64.80	12 40.36	0.677
Thur.	10	13 2 22.68	9.197	6 39 9.8	-56.88	16 3.88	64.87	12 56.38	0.657
Frid.	11	13 6 3.66	9.218	7 1 52.3	56.66	16 4.15	64.94	13 11.92	0.637
Sat.	12	13 9 45.14	9.239	7 24 29.3	56.42	16 4.42	65.02	13 26.96	0.616
SUN.	13	13 13 27.14	9.261	7 47 0.3	-56.16	16 4.69	65.09	13 41.47	0.594
Mon.	14	13 17 9.68	9.284	8 9 24.9	55.89	16 4.96	65.17	13 55.44	0.571
Tues.	15	13 20 52.79	9.308	8 31 42.8	55.60	16 5.23	65.25	14 8.85	0.547
Wed.	16	13 24 36.46	9.332	8 53 53.6	-55.29	16 5.50	65.33	14 21.70	0.523
Thur.	17	13 28 20.73	9.357	9 15 56.8	54.97	16 5.77	65.41	14 33.95	0.498
Frid.	18	13 32 5.59	9.382	9 37 52.0	54.63	16 6.04	65.50	14 45.61	0.473
Sat.	19	13 35 51.07	9.408	9 59 38.9	-54.27	16 6.32	65.59	14 56.65	0.447
SUN.	20	13 39 37.18	9.435	10 21 16.9	53.89	16 6.59	65.69	15 7.07	0.421
Mon.	21	13 43 23.94	9.462	10 42 45.7	53.50	16 6.86	65.78	15 16.84	0.394
Tues.	22	13 47 11.34	9.489	11 4 4.8	-53.09	16 7.13	65.88	15 25.97	0.366
Wed.	23	13 50 59.41	9.517	11 25 13.9	52.66	16 7.40	65.98	15 34.43	0.338
Thur	24	13 54 48.16	9.546	11 46 12.6	52.22	16 7.67	66.08	15 42.22	0.310
Frid.	25	13 58 37.60	9.575	12 7 0.4	-51.76	16 7.94	66.18	15 49.32	0.281
Sat.	26	14 2 27.74	9.604	12 27 36.9	51.28	16 8.21	66.28	15 55.71	0.252
SUN.	27	14 6 18.59	9.634	12 48 1.8	50.79	16 8.48	66.39	16 1.40	0.222
Mon.	28	14 10 10.18	9.665	13 8 14.6	-50.28	16 8.74	66.50	16 6.35	0.191
Tues.	29	14 14 2.50	9.696	13 28 15.0	49.75	16 9.00	66.61	16 10.57	0.160
Wed.	30	14 17 55.59	9.728	13 48 2.6	49.21	16 9.26	66.72	16 14.03	0.128
Thur.	31	14 21 49.44	9.760	14 7 37.0	48.65	16 9.52	66.83	16 16.73	0.096
Frid.	32	14 25 44.08	9.793	S. 14 26 57.9	-48.08	16 9.77	66.94	16 18.64	0.063

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	THE SUN'S Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	12 29 34.72	9.055	S. 3 11 46.2	−58.25	10 17.49	0.801	12 39 52.21
Wed.	2	12 33 12.17	9.067	3 35 3.1	58.15	10 36.60	0.789	12 43 48.76
Thur.	3	12 36 49.92	9.080	3 58 17.5	58.04	10 55.40	0.777	12 47 45.32
Frid.	4	12 40 28.00	9.094	4 21 29.2	−57.92	11 13.87	0.763	12 51 41.87
Sat.	5	12 44 6.43	9.109	4 44 37.7	57.78	11 31.99	0.747	12 55 38.42
SUN.	6	12 47 45.24	9.125	5 7 42.9	57.63	11 49.74	0.731	12 59 34.98
Mon.	7	12 51 24.44	9.142	5 30 44.2	−57.47	12 7.09	0.714	13 3 31.53
Tues.	8	12 55 4.07	9.160	5 53 41.4	57.29	12 24.01	0.696	13 7 28.08
Wed.	9	12 58 44.14	9.179	6 16 34.2	57.10	12 40.50	0.677	13 11 24.64
Thur.	10	13 2 24.67	9.199	6 39 22.1	−56.89	12 56.52	0.657	13 15 21.19
Frid.	11	13 6 5.69	9.220	7 2 4.8	56.66	13 12.06	0.637	13 19 17.75
Sat.	12	13 9 47.21	9.241	7 24 41.9	56.42	13 27.09	0.615	13 23 14.30
SUN.	13	13 13 29.26	9.263	7 47 13.1	−56.17	13 41.60	0.593	13 27 10.86
Mon.	14	13 17 11.84	9.286	8 9 37.9	55.90	13 55.57	0.570	13 31 7.41
Tues.	15	13 20 54.98	9.310	8 31 56.0	55.62	14 8.98	0.547	13 35 3.96
Wed.	16	13 24 38.70	9.334	8 54 6.9	−55.30	14 21.82	0.523	13 39 0.52
Thur.	17	13 28 23.00	9.358	9 16 10.2	54.97	14 34.07	0.498	13 42 57.07
Frid.	18	13 32 7.90	9.384	9 38 5.5	54.63	14 45.72	0.473	13 46 53.63
Sat.	19	13 35 53.42	9.410	9 59 52.4	−54.27	14 56.76	0.447	13 50 50.18
SUN.	20	13 39 39.56	9.436	10 21 30.4	53.89	15 7.17	0.421	13 54 46.74
Mon.	21	13 43 26.35	9.463	10 42 59.3	53.50	15 16.94	0.394	13 58 43.29
Tues.	22	13 47 13.78	9.490	11 4 18.5	−53.09	15 26.07	0.366	14 2 39.85
Wed.	23	13 51 1.88	9.518	11 25 27.6	52.66	15 34.52	0.338	14 6 36.40
Thur.	24	13 54 50.66	9.547	11 46 26.2	52.22	15 42.30	0.310	14 10 32.96
Frid.	25	13 58 40.12	9.576	12 7 14.0	−51.76	15 49.39	0.281	14 14 29.51
Sat.	26	14 2 30.29	9.605	12 27 50.5	51.28	15 55.78	0.251	14 18 26.07
SUN.	27	14 6 21.17	9.635	12 48 15.3	50.78	16 1.45	0.221	14 22 22.62
Mon.	28	14 10 12.77	9.666	13 8 28.1	−50.27	16 6.40	0.191	14 26 19.18
Tues.	29	14 14 5.12	9.697	13 28 28.4	49.75	16 10.61	0.160	14 30 15.73
Wed.	30	14 17 58.22	9.729	13 48 15.9	49.21	16 14.06	0.128	14 34 12.29
Thur.	31	14 21 52.09	9.761	14 7 50.2	48.65	16 16.75	0.096	14 38 8.84
Frid.	32	14 25 46.74	9.794	S. 14 27 11.0	−48.07	16 18.66	0.063	14 42 5.40

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign − prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour, +9s.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	274	188 3 28.7	2 45.9	147.59	+ 0.21	0.0002663	−52.5	11 18 16.37
2	275	189 2 31.8	1 48.9	147.67	0.35	0.0001404	52.3	11 14 20.46
3	276	190 1 36.7	0 53.7	147.75	0.47	0.0000150	52.1	11 10 24.55
4	277	191 0 43.8	0 0.7	147.84	+ 0.58	9.9998901	−51.9	11 6 28.64
5	278	191 59 52.8	59 9.6	147.92	0.66	9.9997658	51.7	11 2 32.74
6	279	192 59 4.0	58 20.7	148.01	0.73	9.9996419	51.5	10 58 36.83
7	280	193 58 17.3	57 33.9	148.10	+ 0.77	9.9995185	−51.3	10 54 40.92
8	281	194 57 33.0	56 49.4	148.19	0.78	9.9993958	51.1	10 50 45.01
9	282	195 56 50.9	56 7.2	148.29	0.76	9.9992735	50.9	10 46 49.10
10	283	196 56 11.1	55 27.3	148.39	+ 0.71	9.9991514	−50.8	10 42 53.20
11	284	197 55 33.7	54 49.8	148.49	0.63	9.9990297	50.7	10 38 57.29
12	285	198 54 58.5	54 14.5	148.58	0.53	9.9989082	50.6	10 35 1.38
13	286	199 54 25.8	53 41.7	148.68	+ 0.41	9.9987867	−50.6	10 31 5.47
14	287	200 53 55.3	53 11.0	148.78	0.28	9.9986653	50.6	10 27 9.56
15	288	201 53 27.1	52 42.7	148.87	0.15	9.9985436	50.7	10 23 13.66
16	289	202 53 1.1	52 16.6	148.96	+ 0.01	9.9984221	−50.7	10 19 17.75
17	290	203 52 37.2	51 52.6	149.05	− 0.10	9.9983003	50.8	10 15 21.84
18	291	204 52 15.6	51 30.9	149.14	0.21	9.9981783	50.9	10 11 25.93
19	292	205 51 55.8	51 10.9	149.22	− 0.29	9.9980562	−50.9	10 7 30.02
20	293	206 51 38.1	50 53.1	149.30	0.34	9.9979341	50.9	10 3 34.11
21	294	207 51 22.2	50 37.1	149.38	0.36	9.9978118	50.9	9 59 38.20
22	295	208 51 8.2	50 23.0	149.45	− 0.36	9.9976898	−50.8	9 55 42.30
23	296	209 50 55.9	50 10.5	149.52	0.32	9.9975678	50.7	9 51 46.39
24	297	210 50 45.3	49 59.8	149.60	0.25	9.9974463	50.5	9 47 50.48
25	298	211 50 36.5	49 50.9	149.67	− 0.16	9.9973253	−50.3	9 43 54.57
26	299	212 50 29.3	49 43.5	149.74	− 0.05	9.9972051	50.0	9 39 58.66
27	300	213 50 23.7	49 37.8	149.80	+ 0.07	9.9970855	49.6	9 36 2.75
28	301	214 50 19.8	49 33.7	149.87	+ 0.20	9.9969670	−49.1	9 32 6.84
29	302	215 50 17.5	49 31.3	149.94	0.34	9.9968497	48.6	9 28 10.93
30	303	216 50 17.0	49 30.7	150.01	0.46	9.9967336	48.0	9 24 15.02
31	304	217 50 18.2	49 31.7	150.09	0.57	9.9966189	47.4	9 20 19.11
32	305	218 50 21.1	49 34.5	150.16	+ 0.67	9.9965059	−46.8	9 16 23.20

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0d.0.

Diff. for 1 Hour, − 9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 45.2	14 45.8	54 2.0	+0.10	54 4.0	+0.23	10 28.2	1.63	12.6
2	14 46.7	14 48.0	54 7.5	0.35	54 12.3	0.45	11 7.2	1.63	13.6
3	14 49.7	14 51.6	54 18.4	0.55	54 25.6	0.65	11 46.7	1.67	14.6
4	14 53.9	14 56.4	54 33.9	+0.73	54 43.2	+0.82	12 27.7	1.75	15.6
5	14 59.2	15 2.3	54 53.5	0.90	55 4.7	0.98	13 11.2	1.88	16.6
6	15 5.6	15 9.2	55 17.0	1.06	55 30.2	1.15	13 58.1	2.04	17.6
7	15 13.1	15 17.2	55 44.4	+1.23	55 59.6	+1.31	14 48.9	2.20	18.6
8	15 21.7	15 26.4	56 15.9	1.40	56 33.1	1.48	15 43.6	2.35	19.6
9	15 31.3	15 36.5	56 51.3	1.56	57 10.5	1.63	16 41.3	2.44	20.6
10	15 42.0	15 47.6	57 30.4	+1.69	57 51.0	+1.74	17 40.1	2.45	21.6
11	15 53.3	15 59.1	58 12.2	1.77	58 33.5	1.77	18 38.1	2.38	22.6
12	16 4.9	16 10.5	58 54.6	1.74	59 15.3	1.69	19 34.0	2.26	23.6
13	16 15.9	16 20.8	59 35.0	+1.58	59 53.2	+1.44	20 27.5	2.18	24.6
14	16 25.3	16 29.0	60 9.5	1.25	60 23.3	1.03	21 18.9	2.11	25.6
15	16 32.0	16 33.9	60 34.1	0.75	60 41.3	+0.45	22 9.3	2.10	26.6
16	16 34.9	16 34.7	60 44.8	+0.12	60 44.2	−0.23	23 0.0	2.13	27.6
17	16 33.4	16 31.0	60 39.4	−0.58	60 30.4	0.92	23 52.2	2.22	28.6
18	16 27.4	16 22.9	60 17.4	1.24	60 0.7	1.53	6		0.2
19	16 17.5	16 11.3	59 40.8	−1.77	59 18.2	−1.97	0 46.6	2.32	1.2
20	16 4.6	15 57.4	58 53.5	2.12	58 27.3	2.22	1 43.6	2.42	2.2
21	15 50.1	15 42.7	58 0.3	2.36	57 33.1	2.35	2 42.1	2.45	3.2
22	15 35.4	15 28.3	57 6.2	−2.20	56 40.2	−2.11	3 40.6	2.41	4.2
23	15 21.6	15 15.3	56 15.5	1.99	55 52.4	1.85	4 37.1	2.29	5.2
24	15 9.5	15 4.4	55 31.2	1.67	55 12.3	1.48	5 30.1	2.12	6.2
25	14 59.8	14 56.0	54 55.7	−1.28	54 41.5	−1.08	6 18.9	1.95	7.2
26	14 52.8	14 50.3	54 29.9	0.87	54 20.7	0.66	7 4.0	1.81	8.2
27	14 48.5	14 47.4	54 14.1	0.45	54 10.0	−0.25	7 46.1	1.70	9.2
28	14 46.9	14 47.0	54 8.2	−0.06	54 8.6	+0.13	8 26.1	1.64	10.2
29	14 47.7	14 48.9	54 11.2	+0.29	54 15.6	0.45	9 5.2	1.63	11.2
30	14 50.6	14 52.8	54 21.9	0.59	54 29.8	0.72	9 44.5	1.66	12.2
31	14 55.3	14 58.1	54 39.1	0.82	54 49.5	0.91	10 25.1	1.73	13.2
32	15 1.3	15 4.6	55 0.9	+0.99	55 13.3	+1.06	11 8.1	1.85	14.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 1.			
	h m s	s	° ′ ″	″
0	22 51 22.14	1.7648	S. 7 26 23.3	13.722
1	22 53 7.98	1.7639	7 12 39.1	13.750
2	22 54 53.73	1.7618	6 58 53.3	13.777
3	22 56 39.40	1.7604	6 45 5.9	13.803
4	22 58 24.98	1.7590	6 31 17.0	13.828
5	23 0 10.48	1.7577	6 17 26.6	13.853
6	23 1 55.90	1.7564	6 3 34.7	13.877
7	23 3 41.25	1.7553	5 49 41.4	13.899
8	23 5 26.54	1.7542	5 35 46.8	13.921
9	23 7 11.76	1.7529	5 21 50.9	13.942
10	23 8 56.92	1.7522	5 7 53.7	13.963
11	23 10 42.03	1.7513	4 53 55.3	13.984
12	23 12 27.08	1.7504	4 39 55.6	14.004
13	23 14 12.08	1.7497	4 25 54.8	14.022
14	23 15 57.04	1.7491	4 11 53.0	14.039
15	23 17 41.97	1.7485	3 57 50.1	14.057
16	23 19 26.86	1.7478	3 43 46.2	14.073
17	23 21 11.71	1.7479	3 29 41.3	14.089
18	23 22 56.53	1.7468	3 15 35.5	14.103
19	23 24 41.33	1.7465	3 1 28.9	14.117
20	23 26 26.11	1.7462	2 47 21.5	14.131
21	23 28 10.87	1.7459	2 33 13.2	14.144
22	23 29 55.62	1.7458	2 19 4.2	14.155
23	23 31 40.37	1.7457	S. 2 4 54.6	14.166
	WEDNESDAY 2.			
0	23 33 25.11	1.7457	S. 1 50 44.3	14.177
1	23 35 9.85	1.7457	1 36 33.4	14.186
2	23 36 54.59	1.7458	1 22 22.0	14.194
3	23 38 39.34	1.7459	1 8 10.1	14.202
4	23 40 24.10	1.7462	0 53 57.7	14.210
5	23 42 8.88	1.7465	0 39 44.9	14.217
6	23 43 53.68	1.7468	0 25 31.7	14.222
7	23 45 38.50	1.7479	S. 0 11 18.2	14.227
8	23 47 23.35	1.7477	N. 0 2 55.6	14.232
9	23 49 8.23	1.7483	0 17 9.6	14.235
10	23 50 53.15	1.7490	0 31 23.8	14.237
11	23 52 38.11	1.7497	0 45 38.1	14.239
12	23 54 23.11	1.7504	0 59 52.5	14.241
13	23 56 8.16	1.7513	1 14 7.0	14.241
14	23 57 53.26	1.7522	1 28 21.4	14.240
15	23 59 38.42	1.7532	1 42 35.8	14.239
16	0 1 23.64	1.7542	1 56 50.1	14.237
17	0 3 8.92	1.7552	2 11 4.3	14.235
18	0 4 54.27	1.7564	2 25 18.3	14.232
19	0 6 39.69	1.7577	2 39 32.1	14.227
20	0 8 25.19	1.7590	2 53 45.5	14.221
21	0 10 10.77	1.7603	3 7 58.6	14.216
22	0 11 56.43	1.7618	3 22 11.4	14.209
23	0 13 42.19	1.7634	3 36 23.7	14.201
24	0 15 28.04	1.7649	N. 3 50 35.5	14.192
	THURSDAY 3.			
0	0 15 28.04	1.7649	N. 3 50 35.5	14.192
1	0 17 13.98	1.7666	4 4 46.8	14.183
2	0 19 0.03	1.7683	4 18 57.5	14.173
3	0 20 46.18	1.7700	4 33 7.6	14.163
4	0 22 32.43	1.7718	4 47 17.1	14.151
5	0 24 18.80	1.7736	5 1 25.8	14.138
6	0 26 5.29	1.7756	5 15 33.7	14.125
7	0 27 51.90	1.7778	5 29 40.8	14.112
8	0 29 38.63	1.7799	5 43 47.1	14.097
9	0 31 25.49	1.7822	5 57 52.4	14.080
10	0 33 12.49	1.7844	6 11 56.7	14.062
11	0 34 59.62	1.7867	6 26 0.0	14.046
12	0 36 46.89	1.7890	6 40 2.2	14.027
13	0 38 34.30	1.7915	6 54 3.3	14.008
14	0 40 21.87	1.7941	7 8 3.2	13.988
15	0 42 9.59	1.7967	7 22 1.9	13.967
16	0 43 57.47	1.7993	7 35 59.3	13.945
17	0 45 45.51	1.8020	7 49 55.3	13.923
18	0 47 33.71	1.8048	8 3 50.0	13.900
19	0 49 22.08	1.8077	8 17 43.3	13.875
20	0 51 10.63	1.8106	8 31 35.0	13.849
21	0 52 59.35	1.8135	8 45 25.1	13.822
22	0 54 48.25	1.8166	8 59 13.6	13.795
23	0 56 37.34	1.8197	N. 9 13 0.5	13.767
	FRIDAY 4.			
0	0 58 26.62	1.8229	N. 9 26 45.6	13.737
1	1 0 16.09	1.8262	9 40 28.9	13.707
2	1 2 5.76	1.8294	9 54 10.4	13.677
3	1 3 55.62	1.8327	10 7 50.1	13.646
4	1 5 45.69	1.8362	10 21 27.9	13.613
5	1 7 35.97	1.8397	10 35 3.7	13.579
6	1 9 26.46	1.8432	10 48 37.4	13.544
7	1 11 17.16	1.8469	11 2 9.0	13.508
8	1 13 8.09	1.8507	11 15 38.4	13.472
9	1 14 59.24	1.8544	11 29 5.6	13.434
10	1 16 50.62	1.8582	11 42 30.5	13.396
11	1 18 42.23	1.8621	11 55 53.1	13.357
12	1 20 34.07	1.8660	12 9 13.3	13.316
13	1 22 26.15	1.8701	12 22 31.0	13.274
14	1 24 18.48	1.8742	12 35 46.2	13.232
15	1 26 11.05	1.8783	12 48 58.9	13.189
16	1 28 3.87	1.8825	13 2 8.9	13.144
17	1 29 56.95	1.8868	13 15 16.2	13.098
18	1 31 50.29	1.8912	13 28 20.7	13.052
19	1 33 43.89	1.8955	13 41 22.4	13.005
20	1 35 37.75	1.8999	13 54 21.3	12.957
21	1 37 31.88	1.9044	14 7 17.2	12.907
22	1 39 26.28	1.9090	14 20 10.1	12.856
23	1 41 20.96	1.9137	14 32 59.9	12.804
24	1 43 15.92	1.9183	N. 14 45 46.6	12.752

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 5.			
	h m s	s	° ′ ″	″
0	1 43 15.92	1.9163	N.14 45 46.6	12.750
1	1 45 11.16	1.9231	14 58 30.1	12.696
2	1 47 6.69	1.9276	15 11 10.4	12.643
3	1 49 2.50	1.9336	15 23 47.3	12.587
4	1 50 58.60	1.9376	15 36 20.8	12.530
5	1 52 55.01	1.9427	15 48 50.9	12.472
6	1 54 51.72	1.9477	16 1 17.5	12.413
7	1 56 48.73	1.9527	16 13 40.5	12.353
8	1 58 46.04	1.9578	16 25 59.8	12.292
9	2 0 43.66	1.9629	16 38 15.5	12.230
10	2 2 41.59	1.9682	16 50 27.4	12.166
11	2 4 39.84	1.9735	17 2 35.4	12.101
12	2 6 38.41	1.9788	17 14 39.5	12.035
13	2 8 37.30	1.9842	17 26 39.6	11.968
14	2 10 36.51	1.9896	17 38 35.7	11.901
15	2 12 36.05	1.9951	17 50 27.7	11.832
16	2 14 35.92	2.0006	18 2 15.5	11.761
17	2 16 36.12	2.0062	18 13 59.0	11.688
18	2 18 36.66	2.0118	18 25 38.1	11.615
19	2 20 37.54	2.0175	18 37 12.8	11.542
20	2 22 38.76	2.0232	18 48 43.1	11.467
21	2 24 40.32	2.0289	19 0 8.9	11.392
22	2 26 42.23	2.0347	19 11 30.1	11.314
23	2 28 44.49	2.0405	N.19 22 46.6	11.235
	SUNDAY 6.			
0	2 30 47.09	2.0463	N.19 33 58.3	11.155
1	2 32 50.05	2.0523	19 45 5.2	11.074
2	2 34 53.37	2.0582	19 56 7.2	10.992
3	2 36 57.04	2.0642	20 7 4.3	10.909
4	2 39 1.07	2.0702	20 17 56.3	10.824
5	2 41 5.47	2.0763	20 28 43.2	10.739
6	2 43 10.23	2.0824	20 39 25.0	10.652
7	2 45 15.36	2.0885	20 50 1.5	10.563
8	2 47 20.85	2.0946	21 0 32.6	10.473
9	2 49 26.71	2.1007	21 10 58.3	10.382
10	2 51 32.94	2.1069	21 21 18.5	10.291
11	2 53 39.54	2.1132	21 31 33.2	10.196
12	2 55 46.52	2.1194	21 41 42.3	10.104
13	2 57 53.87	2.1257	21 51 45.7	10.006
14	3 0 1.60	2.1320	22 1 43.3	9.911
15	3 2 9.71	2.1383	22 11 35.0	9.812
16	3 4 18.20	2.1446	22 21 20.8	9.713
17	3 6 27.06	2.1508	22 31 0.6	9.612
18	3 8 36.30	2.1572	22 40 34.3	9.511
19	3 10 45.92	2.1636	22 50 1.9	9.408
20	3 12 55.93	2.1700	22 59 23.3	9.303
21	3 15 6.32	2.1763	23 8 38.3	9.197
22	3 17 17.09	2.1827	23 17 46.9	9.090
23	3 19 28.24	2.1891	23 26 49.1	8.982
24	3 21 39.78	2.1955	N.23 35 44.8	8.873
	MONDAY 7.			
0	3 21 39.78	2.1955	N.23 35 44.8	8.873
1	3 23 51.70	2.2018	23 44 33.9	8.762
2	3 26 4.00	2.2082	23 53 16.3	8.650
3	3 28 16.68	2.2146	24 1 51.9	8.536
4	3 30 29.75	2.2210	24 10 20.6	8.422
5	3 32 43.20	2.2273	24 18 42.5	8.307
6	3 34 57.03	2.2337	24 26 57.4	8.189
7	3 37 11.24	2.2400	24 35 5.2	8.071
8	3 39 25.83	2.2463	24 43 5.9	7.950
9	3 41 40.80	2.2526	24 50 59.4	7.831
10	3 43 56.14	2.2589	24 58 45.6	7.706
11	3 46 11.86	2.2652	25 6 24.4	7.585
12	3 48 27.96	2.2714	25 13 55.8	7.461
13	3 50 44.43	2.2776	25 21 19.7	7.336
14	3 53 1.27	2.2838	25 28 36.0	7.207
15	3 55 18.49	2.2901	25 35 44.6	7.079
16	3 57 36.08	2.2962	25 42 45.5	6.950
17	3 59 54.03	2.3022	25 49 38.6	6.821
18	4 2 12.34	2.3083	25 56 23.8	6.689
19	4 4 31.02	2.3143	26 3 1.1	6.554
20	4 6 50.06	2.3203	26 9 30.3	6.419
21	4 9 9.45	2.3262	26 15 51.4	6.284
22	4 11 29.20	2.3321	26 22 4.4	6.148
23	4 13 49.30	2.3379	N.26 28 9.2	6.010
	TUESDAY 8.			
0	4 16 9.75	2.3437	N.26 34 5.6	5.871
1	4 18 30.55	2.3496	26 39 53.7	5.731
2	4 20 51.69	2.3551	26 45 33.3	5.589
3	4 23 13.16	2.3607	26 51 4.4	5.447
4	4 25 34.97	2.3663	26 56 26.9	5.303
5	4 27 57.11	2.3718	27 1 40.8	5.158
6	4 30 19.58	2.3773	27 6 45.9	5.012
7	4 32 42.38	2.3826	27 11 42.3	4.866
8	4 35 5.49	2.3878	27 16 29.9	4.718
9	4 37 28.91	2.3929	27 21 8.5	4.569
10	4 39 52.64	2.3981	27 25 38.2	4.419
11	4 42 16.68	2.4032	27 29 58.8	4.267
12	4 44 41.02	2.4081	27 34 10.3	4.115
13	4 47 5.65	2.4130	27 38 12.6	3.962
14	4 49 30.58	2.4178	27 42 5.8	3.809
15	4 51 55.79	2.4225	27 45 49.7	3.654
16	4 54 21.28	2.4272	27 49 24.3	3.498
17	4 56 47.05	2.4317	27 52 49.5	3.341
18	4 59 13.09	2.4362	27 56 5.2	3.183
19	5 1 39.39	2.4405	27 59 11.4	3.024
20	5 4 5.95	2.4447	28 2 8.1	2.865
21	5 6 32.76	2.4489	28 4 55.2	2.704
22	5 8 59.82	2.4530	28 7 32.6	2.543
23	5 11 27.12	2.4569	28 10 0.3	2.381
24	5 13 54.65	2.4607	N.28 12 18.3	2.218

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 9.			
	h m s	s	° ′ ″	″
0	5 13 54.65	2.4697	N.28 12 18.3	2.218
1	5 16 22.41	2.4645	28 14 26.5	2.054
2	5 18 50.39	2.4602	28 16 24.8	1.890
3	5 21 18.59	2.4717	28 18 13.3	1 725
4	5 23 47.00	2.4751	28 19 51.8	1.559
5	5 26 15.60	2.4784	28 21 20.3	1.393
6	5 28 44.40	2.4816	28 22 38.9	1.226
7	5 31 13.39	2.4847	28 23 47.4	1.057
8	5 33 42.56	2.4876	28 24 45.8	0.888
9	5 36 11.90	2.4904	28 25 34.0	0.719
10	5 38 41.41	2.4928	28 26 12.1	0.550
11	5 41 11.08	2.4956	28 26 40.0	0.380
12	5 43 40.90	2.4969	28 26 57.7	0.209
13	5 46 10.87	2.5006	28 27 5.1	+ 0.037
14	5 48 40.97	2.5007	28 27 2.2	− 0.134
15	5 51 11.20	2.5048	28 26 49.0	0.306
16	5 53 41.55	2.5068	28 26 25.5	0.479
17	5 56 12.02	2.5066	28 25 51.6	0.650
18	5 58 42.59	2.5163	28 25 7.3	0.825
19	6 1 13.26	2.5139	28 24 12.6	0.998
20	6 3 44.03	2.5125	28 23 7.5	1.172
21	6 6 14.88	2.5148	28 21 51.9	1.347
22	6 8 45.81	2.5161	28 20 25.8	1.522
23	6 11 16.81	2.5172	N.28 18 49.3	1.696
	THURSDAY 10.			
0	6 13 47.87	2.5182	N.28 17 2.3	1.871
1	6 16 18.99	2.5190	28 15 4.8	2.047
2	6 18 50.15	2.5197	28 12 56.7	2.222
3	6 21 21.35	2.5202	28 10 38.2	2.396
4	6 23 52.58	2.5207	28 8 9.2	2.572
5	6 26 23.83	2.5210	28 5 29.6	2.747
6	6 28 55.10	2.5212	28 2 39.5	2.922
7	6 31 26.38	2.5213	27 59 38.9	3.096
8	6 33 57.66	2.5212	27 56 27.7	3.274
9	6 36 28.93	2.5211	27 53 6.0	3.449
10	6 39 0.19	2.5208	27 49 33.8	3.625
11	6 41 31.43	2.5204	27 45 51.0	3.801
12	6 44 2.64	2.5199	27 41 57.7	3.976
13	6 46 33.82	2.5192	27 37 53.9	4.151
14	6 49 4.95	2.5184	27 33 39.6	4.325
15	6 51 36.03	2.5176	27 29 14.9	4.499
16	6 54 7.06	2.5167	27 24 39.7	4.673
17	6 56 38.03	2.5155	27 19 54.1	4.847
18	6 59 8.92	2.5142	27 14 58.1	5.021
19	7 1 39.73	2.5129	27 9 51.6	5.194
20	7 4 10.47	2.5116	27 4 34.8	5.367
21	7 6 41.12	2.5100	26 59 7.6	5.539
22	7 9 11.67	2.5083	26 53 30.1	5.712
23	7 11 42.12	2.5066	26 47 42.2	5.884
24	7 14 12.46	2.5047	N.26 41 44.0	6.055
	FRIDAY 11.			
0	7 14 12.46	2.5047	N.26 41 44.0	6.055
1	7 16 42.68	2.5027	26 35 35.6	6.225
2	7 19 12.79	2.5007	26 29 17.0	6.395
3	7 21 42.77	2.4988	26 22 48.2	6.565
4	7 24 12.62	2.4963	26 16 9.2	6.734
5	7 26 42.33	2.4940	26 9 20.1	6.902
6	7 29 11.90	2.4916	26 2 21.0	7.069
7	7 31 41.32	2.4891	25 55 11.8	7.236
8	7 34 10.59	2.4865	25 47 52.6	7.403
9	7 36 39.70	2.4837	25 40 23.4	7.569
10	7 39 8.64	2.4809	25 32 44.3	7.734
11	7 41 37.41	2.4781	25 24 55.3	7.899
12	7 44 6.02	2.4753	25 16 56.4	8.063
13	7 46 34.45	2.4723	25 8 47.7	8.225
14	7 49 2.69	2.4692	25 0 29.4	8.386
15	7 51 30.75	2.4661	24 52 1.4	8.547
16	7 53 58.62	2.4630	24 43 23.8	8.707
17	7 56 26.30	2.4597	24 34 36.5	8.867
18	7 58 53.78	2.4563	24 25 39.7	9.025
19	8 1 21.06	2.4529	24 16 33.5	9.182
20	8 3 48.13	2.4495	24 7 17.8	9.339
21	8 6 15.00	2.4461	23 57 52.8	9.494
22	8 8 41.66	2.4425	23 48 18.5	9.649
23	8 11 8.10	2.4389	N.23 38 34.9	9.803
	SATURDAY 12.			
0	8 13 34.33	2.4353	N.23 28 42.1	9.956
1	8 16 0.34	2.4317	23 18 40.2	10.107
2	8 18 26.13	2.4279	23 8 29.3	10.257
3	8 20 51.69	2.4242	22 58 9.4	10.406
4	8 23 17.03	2.4204	22 47 40.6	10.554
5	8 25 42.14	2.4166	22 37 2.9	10.702
6	8 28 7.02	2.4127	22 26 16.4	10.848
7	8 30 31.67	2.4089	22 15 21.2	10.993
8	8 32 56.09	2.4051	22 4 17.3	11.136
9	8 35 20.28	2.4012	21 53 4.9	11.278
10	8 37 44.23	2.3972	21 41 44.0	11.419
11	8 40 7.94	2.3932	21 30 14.6	11.559
12	8 42 31.42	2.3893	21 18 36.9	11.697
13	8 44 54.66	2.3853	21 6 50.9	11.835
14	8 47 17.66	2.3813	20 54 56.7	11.971
15	8 49 40.42	2.3773	20 42 54.4	12.106
16	8 52 2.94	2.3733	20 30 44.0	12.239
17	8 54 25.22	2.3694	20 18 25.7	12.371
18	8 56 47.27	2.3655	20 5 59.5	12.502
19	8 59 9.08	2.3614	19 53 25.5	12.632
20	9 1 30.64	2.3573	19 40 43.7	12.760
21	9 3 51.96	2.3533	19 27 54.3	12.886
22	9 6 13.04	2.3494	19 14 57.4	13.012
23	9 8 33.89	2.3455	19 1 52.9	13.137
24	9 10 54.50	2.3415	N.18 48 41.0	13.259

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 13.			
	h m s	s	° ′ ″	″
0	9 10 54.50	2.3415	N.18 48 41.0	13.959
1	9 13 14.87	2.3376	18 35 21.8	13.880
2	9 15 35.01	2.3337	18 21 55.4	13.800
3	9 17 54.92	2.3296	18 8 21.8	13.618
4	9 20 14.59	2.3259	17 54 41.2	13.736
5	9 22 34.03	2.3221	17 40 53.6	13.651
6	9 24 53.24	2.3183	17 26 59.1	13.965
7	9 27 12.22	2.3145	17 12 57.8	14.077
8	9 29 30.98	2.3107	16 58 49.8	14.188
9	9 31 49.51	2.3070	16 44 35.2	14.296
10	9 34 7.82	2.3033	16 30 14.1	14.406
11	9 36 25.91	2.2996	16 15 46.5	14.512
12	9 38 43.77	2.2959	16 1 12.6	14.617
13	9 41 1.42	2.2923	15 46 32.5	14.720
14	9 43 18.86	2.2888	15 31 46.2	14.822
15	9 45 36.08	2.2853	15 16 53.8	14.922
16	9 47 53.10	2.2819	15 1 55.5	15.021
17	9 50 9.91	2.2785	14 46 51.3	15.118
18	9 52 26.52	2.2752	14 31 41.3	15.214
19	9 54 42.93	2.2719	14 16 25.6	15.307
20	9 56 59.14	2.2686	14 1 4.4	15.399
21	9 59 15.16	2.2653	13 45 37.7	15.490
22	10 1 30.98	2.2622	13 30 5.6	15.579
23	10 3 46.62	2.2591	N.13 14 28.2	15.667
	MONDAY 14.			
0	10 6 2.07	2.2560	N.12 58 45.6	15.752
1	10 8 17.34	2.2530	12 42 57.9	15.836
2	10 10 32.43	2.2501	12 27 5.3	15.918
3	10 12 47.35	2.2472	12 11 7.8	15.999
4	10 15 2.10	2.2444	11 55 5.4	16.078
5	10 17 16.68	2.2417	11 38 58.4	16.155
6	10 19 31.10	2.2390	11 22 46.8	16.231
7	10 21 45.36	2.2363	11 6 30.7	16.305
8	10 23 59.46	2.2337	10 50 10.2	16.377
9	10 26 13.41	2.2312	10 33 45.4	16.447
10	10 28 27.21	2.2288	10 17 16.5	16.516
11	10 30 40.87	2.2264	10 0 43.5	16.583
12	10 32 54.38	2.2241	9 44 6.5	16.648
13	10 35 7.76	2.2219	9 27 25.7	16.712
14	10 37 21.01	2.2198	9 10 41.1	16.774
15	10 39 34.13	2.2177	8 53 52.8	16.834
16	10 41 47.13	2.2157	8 37 1.0	16.892
17	10 44 0.01	2.2137	8 20 5.7	16.949
18	10 46 12.77	2.2118	8 3 7.1	17.003
19	10 48 25.42	2.2100	7 46 5.3	17.057
20	10 50 37.97	2.2083	7 29 0.3	17.108
21	10 52 50.42	2.2067	7 11 52.3	17.157
22	10 55 2.77	2.2051	6 54 41.4	17.205
23	10 57 15.03	2.2037	6 37 27.7	17.250
24	10 59 27.21	2.2022	N. 6 20 11.4	17.293
	TUESDAY 15.			
0	10 59 27.21	2.2022	N. 6 20 11.4	17.293
1	11 1 39.30	2.2008	6 2 52.5	17.336
2	11 3 51.31	2.1996	5 45 31.0	17.377
3	11 6 3.25	2.1984	5 28 7.2	17.415
4	11 8 15.12	2.1973	5 10 41.2	17.452
5	11 10 26.93	2.1963	4 53 13.0	17.487
6	11 12 38.67	2.1953	4 35 42.8	17.519
7	11 14 50.36	2.1944	4 18 10.7	17.551
8	11 17 2.00	2.1937	4 0 36.7	17.581
9	11 19 13.60	2.1930	3 43 1.0	17.608
10	11 21 25.16	2.1923	3 25 23.8	17.633
11	11 23 36.68	2.1917	3 7 45.1	17.657
12	11 25 48.17	2.1912	2 50 5.0	17.678
13	11 27 59.63	2.1909	2 32 23.7	17.696
14	11 30 11.08	2.1909	2 14 41.2	17.717
15	11 32 22.51	2.1904	1 56 57.7	17.733
16	11 34 33.93	2.1903	1 39 13.3	17.747
17	11 36 45.35	2.1900	1 21 28.1	17.758
18	11 38 56.76	2.1900	1 3 42.3	17.768
19	11 41 8.17	2.1904	0 45 55.9	17.777
20	11 43 19.60	2.1909	0 28 9.0	17.784
21	11 45 31.04	2.1906	N. 0 10 21.8	17.788
22	11 47 42.50	2.1912	S. 0 7 25.6	17.791
23	11 49 53.98	2.1916	S. 0 25 13.1	17.793
	WEDNESDAY 16.			
0	11 52 5.49	2.1921	S. 0 43 0.7	17.792
1	11 54 17.03	2.1927	1 0 48.1	17.788
2	11 56 28.61	2.1934	1 18 35.3	17.783
3	11 58 40.24	2.1942	1 36 22.1	17.776
4	12 0 51.92	2.1950	1 54 8.4	17.767
5	12 3 3.64	2.1959	2 11 54.2	17.757
6	12 5 15.42	2.1969	2 29 39.3	17.745
7	12 7 27.27	2.1981	2 47 23.6	17.730
8	12 9 39.19	2.1992	3 5 6.9	17.713
9	12 11 51.17	2.2004	3 22 49.2	17.695
10	12 14 3.23	2.2017	3 40 30.3	17.674
11	12 16 15.37	2.2031	3 58 10.1	17.652
12	12 18 27.60	2.2046	4 15 48.5	17.627
13	12 20 39.92	2.2061	4 33 25.4	17.601
14	12 22 52.34	2.2077	4 51 0.6	17.573
15	12 25 4.85	2.2093	5 8 34.1	17.543
16	12 27 17.47	2.2112	5 26 5.7	17.510
17	12 29 30.20	2.2131	5 43 35.3	17.477
18	12 31 43.04	2.2150	6 1 2.9	17.441
19	12 33 56.00	2.2170	6 18 28.2	17.402
20	12 36 9.08	2.2191	6 35 51.2	17.362
21	12 38 22.29	2.2213	6 53 11.7	17.320
22	12 40 35.63	2.2235	7 10 29.6	17.277
23	12 42 49.11	2.2257	7 27 44.9	17.232
24	12 45 2.72	2.2281	S. 7 44 57.4	17.184

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 17.					**SATURDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 45 2.72	2.0001	S. 7 44 57.4	17.104	0	14 35 43.98	2.3972	S. 19 56 50.6	12.706
1	12 47 16.48	2.0006	8 2 7.0	17.134	1	14 38 7.98	2.4011	20 11 28.9	12.571
2	12 49 30.29	2.0020	8 19 13.5	17.092	2	14 40 32.11	2.4050	20 23 59.1	12.434
3	12 51 44.44	2.0039	8 36 16.8	17.082	3	14 42 56.53	2.4090	20 36 21.0	12.296
4	12 53 58.65	2.0061	8 53 16.8	16.973	4	14 45 21.18	2.4130	20 48 34.6	12.157
5	12 56 13.02	2.0086	9 10 13.5	16.916	5	14 47 46.06	2.4167	21 0 39.8	12.017
6	12 58 27.55	2.0115	9 27 6.7	16.856	6	14 50 11.18	2.4206	21 12 36.6	11.875
7	13 0 42.25	2.0144	9 43 56.2	16.794	7	14 52 36.53	2.4243	21 24 24.8	11.731
8	13 2 57.12	2.0180	10 0 42.0	16.732	8	14 55 2.10	2.4280	21 36 4.3	11.586
9	13 5 12.17	2.0218	10 17 24.0	16.667	9	14 57 27.89	2.4317	21 47 35.1	11.440
10	13 7 27.39	2.0256	10 34 2.0	16.599	10	14 59 53.91	2.4355	21 58 57.1	11.293
11	13 9 42.80	2.0303	10 50 35.9	16.530	11	15 2 20.15	2.4393	22 10 10.2	11.144
12	13 11 58.39	2.0344	11 7 5.6	16.459	12	15 4 46.61	2.4429	22 21 14.4	10.994
13	13 14 14.17	2.0386	11 23 31.0	16.387	13	15 7 13.29	2.4469	22 32 9.5	10.843
14	13 16 30.14	2.0378	11 39 52.0	16.312	14	15 9 40.17	2.4498	22 42 55.5	10.691
15	13 18 46.30	2.0710	11 56 8.4	16.235	15	15 12 7.26	2.4533	22 58 32.4	10.538
16	13 21 2.66	2.0743	12 12 20.2	16.157	16	15 14 34.56	2.4567	23 4 0.0	10.383
17	13 23 19.22	2.0777	12 28 27.2	16.077	17	15 17 2.06	2.4602	23 14 18.3	10.227
18	13 25 35.99	2.0813	12 44 29.4	15.995	18	15 19 29.76	2.4633	23 24 27.2	10.069
19	13 27 52.96	2.0846	13 0 26.6	15.910	19	15 21 57.66	2.4665	23 34 26.6	9.911
20	13 30 10.14	2.0880	13 16 18.6	15.823	20	15 24 25.74	2.4696	23 44 16.6	9.753
21	13 32 27.54	2.0917	13 32 5.4	15.726	21	15 26 54.01	2.4727	23 53 57.0	9.593
22	13 34 45.15	2.0953	13 47 46.9	15.647	22	15 29 22.46	2.4757	24 3 27.8	9.432
23	13 37 2.98	2.0989	S. 14 3 23.0	15.566	23	15 31 51.09	2.4786	S. 24 12 48.8	9.269
	FRIDAY 18.					**SUNDAY 20.**			
0	13 39 21.02	2.3025	S. 14 18 53.6	15.482	0	15 34 19.89	2.4814	S. 24 22 0.1	9.106
1	13 41 39.28	2.3063	14 34 18.5	15.367	1	15 36 48.86	2.4842	24 31 1.6	8.942
2	13 43 57.77	2.3101	14 49 37.6	15.270	2	15 39 17.99	2.4868	24 39 53.2	8.778
3	13 46 16.49	2.3139	15 4 50.9	15.172	3	15 41 47.28	2.4894	24 48 35.0	8.613
4	13 48 35.44	2.3176	15 19 58.2	15.072	4	15 44 16.72	2.4920	24 57 6.8	8.447
5	13 50 54.61	2.3214	15 34 59.5	14.969	5	15 46 46.32	2.4945	25 5 28.6	8.280
6	13 53 14.01	2.3253	15 49 54.5	14.864	6	15 49 16.06	2.4966	25 13 40.4	8.112
7	13 55 33.65	2.3292	16 4 43.2	14.759	7	15 51 45.93	2.4990	25 21 42.1	7.943
8	13 57 53.52	2.3330	16 19 25.6	14.652	8	15 54 15.94	2.5013	25 29 33.6	7.774
9	14 0 13.63	2.3371	16 34 1.5	14.543	9	15 56 46.07	2.5033	25 37 15.0	7.604
10	14 2 33.97	2.3410	16 48 30.8	14.432	10	15 59 16.32	2.5051	25 44 46.1	7.433
11	14 4 54.55	2.3450	17 2 53.3	14.318	11	16 1 46.68	2.5069	25 52 7.0	7.262
12	14 7 15.37	2.3490	17 17 9.0	14.204	12	16 4 17.15	2.5087	25 59 17.6	7.091
13	14 9 36.43	2.3530	17 31 17.8	14.088	13	16 6 47.72	2.5103	26 6 17.9	6.918
14	14 11 57.73	2.3570	17 45 19.6	13.971	14	16 9 18.39	2.5118	26 13 7.8	6.745
15	14 14 19.27	2.3610	17 59 14.3	13.852	15	16 11 49.14	2.5129	26 19 47.3	6.572
16	14 16 41.05	2.3650	18 13 1.8	13.731	16	16 14 19.97	2.5145	26 26 16.4	6.398
17	14 19 3.07	2.3691	18 26 42.0	13.608	17	16 16 50.88	2.5157	26 32 35.1	6.225
18	14 21 25.34	2.3732	18 40 14.8	13.483	18	16 19 21.86	2.5168	26 38 43.4	6.051
19	14 23 47.85	2.3773	18 53 40.0	13.358	19	16 21 52.90	2.5177	26 44 41.2	5.876
20	14 26 10.60	2.3811	19 6 57.7	13.231	20	16 24 23.99	2.5185	26 50 28.5	5.700
21	14 28 33.58	2.3850	19 20 7.7	13.102	21	16 26 55.13	2.5193	26 56 5.2	5.524
22	14 30 56.80	2.3891	19 33 9.9	12.971	22	16 29 26.31	2.5199	27 1 31.4	5.349
23	14 33 20.27	2.3932	19 46 4.2	12.839	23	16 31 57.52	2.5203	27 6 47.1	5.173
24	14 35 43.98	2.3972	S. 19 58 50.6	12.706	24	16 34 28.75	2.5207	S. 27 11 52.3	4.997

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 21.			
	h m s	s	° ′ ″	″
0	16 34 28.75	2.5897	S. 27 11 52.2	4.697
1	16 37 0.00	2.5899	27 16 46.7	4.691
2	16 39 31.26	2.5811	27 21 30.7	4.645
3	16 42 2.53	2.5911	27 26 4.1	4.466
4	16 44 33.79	2.5899	27 30 26.9	4.291
5	16 47 5.04	2.5899	27 34 39.1	4.114
6	16 49 36.26	2.5891	27 38 40.6	3.938
7	16 52 7.45	2.5196	27 42 31.6	3.762
8	16 54 38.61	2.5190	27 46 12.0	3.585
9	16 57 9.73	2.5168	27 49 41.8	3.406
10	16 59 40.80	2.5173	27 53 1.0	3.230
11	17 2 11.81	2.5161	27 56 9.7	3.056
12	17 4 42.74	2.5149	27 59 7.8	2.880
13	17 7 13.60	2.5137	28 1 55.3	2.704
14	17 9 44.38	2.5122	28 4 32.3	2.529
15	17 12 15.07	2.5107	28 6 58.8	2.354
16	17 14 45.66	2.5090	28 9 14.8	2.179
17	17 17 16.15	2.5072	28 11 20.3	2.005
18	17 19 46.52	2.5052	28 13 15.4	1.831
19	17 22 16.77	2.5031	28 15 0.0	1.657
20	17 24 46.89	2.5008	28 16 34.2	1.484
21	17 27 16.87	2.4985	28 17 58.1	1.312
22	17 29 46.71	2.4961	28 19 11.6	1.139
23	17 32 16.40	2.4934	S. 28 20 14.8	0.967
	TUESDAY 22.			
0	17 34 45.92	2.4906	S. 28 21 7.7	0.797
1	17 37 15.27	2.4878	28 21 50.4	0.626
2	17 39 44.46	2.4850	28 22 22.8	0.455
3	17 42 13.47	2.4819	28 22 45.0	0.285
4	17 44 42.29	2.4787	28 22 57.0	− 0.117
5	17 47 10.91	2.4753	28 22 59.0	+ 0.051
6	17 49 39.33	2.4719	28 22 50.9	0.218
7	17 52 7.54	2.4683	28 22 32.8	0.385
8	17 54 35.53	2.4647	28 22 4.7	0.552
9	17 57 3.30	2.4609	28 21 26.6	0.717
10	17 59 30.84	2.4570	28 20 38.6	0.882
11	18 1 58.14	2.4530	28 19 40.8	1.045
12	18 4 25.20	2.4489	28 18 33.2	1.207
13	18 6 52.01	2.4447	28 17 15.9	1.370
14	18 9 18.57	2.4404	28 15 48.8	1.532
15	18 11 44.86	2.4360	28 14 12.1	1.693
16	18 14 10.88	2.4314	28 12 25.8	1.851
17	18 16 36.63	2.4269	28 10 30.0	2.009
18	18 19 2.11	2.4222	28 8 24.7	2.167
19	18 21 27.30	2.4174	28 6 10.0	2.323
20	18 23 52.20	2.4125	28 3 45.9	2.479
21	18 26 16.80	2.4075	28 1 12.5	2.633
22	18 28 41.10	2.4025	27 58 29.9	2.787
23	18 31 5.10	2.3975	27 55 38.0	2.941
24	18 33 28.80	2.3923	S. 27 52 37.0	3.092
	WEDNESDAY 23.			
0	18 33 28.80	2.3923	S. 27 52 37.0	3.092
1	18 35 52.18	2.3869	27 49 27.0	3.242
2	18 38 15.23	2.3815	27 46 7.9	3.392
3	18 40 37.96	2.3761	27 42 39.9	3.540
4	18 43 0.36	2.3706	27 39 3.1	3.687
5	18 45 22.43	2.3651	27 35 17.4	3.834
6	18 47 44.17	2.3595	27 31 23.0	3.979
7	18 50 5.57	2.3537	27 27 19.9	4.123
8	18 52 26.62	2.3479	27 23 8.2	4.267
9	18 54 47.32	2.3421	27 18 47.9	4.409
10	18 57 7.67	2.3362	27 14 19.1	4.550
11	18 59 27.66	2.3303	27 9 41.9	4.688
12	19 1 47.30	2.3243	27 4 56.5	4.826
13	19 4 6.58	2.3180	27 0 2.8	4.964
14	19 6 25.49	2.3122	26 55 0.8	5.101
15	19 8 44.04	2.3061	26 49 50.7	5.235
16	19 11 2.22	2.3003	26 44 32.6	5.369
17	19 13 20.03	2.2937	26 39 6.4	5.502
18	19 15 37.47	2.2875	26 33 32.3	5.634
19	19 17 54.53	2.2812	26 27 50.3	5.764
20	19 20 11.21	2.2749	26 22 0.6	5.893
21	19 22 27.52	2.2686	26 16 3.2	6.021
22	19 24 43.45	2.2622	26 9 58.1	6.148
23	19 26 58.99	2.2558	S. 26 3 45.5	6.273
	THURSDAY 24.			
0	19 29 14.15	2.2495	S. 25 57 25.4	6.396
1	19 31 28.93	2.2431	25 50 57.8	6.521
2	19 33 43.32	2.2366	25 44 22.9	6.642
3	19 35 57.32	2.2301	25 37 40.7	6.763
4	19 38 10.93	2.2237	25 30 51.3	6.882
5	19 40 24.16	2.2172	25 23 54.8	7.001
6	19 42 37.00	2.2107	25 16 51.2	7.118
7	19 44 49.45	2.2042	25 9 40.6	7.234
8	19 47 1.51	2.1977	25 2 23.1	7.349
9	19 49 13.18	2.1913	24 54 58.7	7.463
10	19 51 24.46	2.1848	24 47 27.5	7.576
11	19 53 35.36	2.1784	24 39 49.6	7.687
12	19 55 45.87	2.1719	24 32 5.1	7.797
13	19 57 55.99	2.1654	24 24 14.0	7.906
14	20 0 5.72	2.1589	24 16 16.4	8.014
15	20 2 15.06	2.1524	24 8 12.3	8.121
16	20 4 24.01	2.1459	24 0 1.9	8.226
17	20 6 32.58	2.1395	23 51 45.2	8.330
18	20 8 40.76	2.1330	23 43 22.3	8.433
19	20 10 48.56	2.1266	23 34 53.3	8.535
20	20 12 55.98	2.1201	23 26 18.1	8.637
21	20 15 3.01	2.1140	23 17 36.9	8.737
22	20 17 9.66	2.1077	23 8 49.7	8.835
23	20 19 15.93	2.1014	22 59 56.7	8.932
24	20 21 21.83	2.0950	S. 22 50 57.9	9.026

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 25.			
	h m s	s	° ′ ″	″
0	20 21 21.83	2.0959	S. 22 50 57.9	9.098
1	20 23 27.35	2.0889	22 41 53.3	9.124
2	20 25 32.50	2.0897	22 32 43.0	9.217
3	20 27 37.27	2.0764	22 23 27.2	9.310
4	20 29 41.67	2.0703	22 14 5.8	9.402
5	20 31 45.70	2.0642	22 4 38.9	9.493
6	20 33 49.37	2.0581	21 55 6.6	9.582
7	20 35 52.67	2.0520	21 45 29.0	9.671
8	20 37 55.61	2.0460	21 35 46.1	9.759
9	20 39 58.19	2.0400	21 25 57.9	9.846
10	20 42 0.41	2.0341	21 16 4.6	9.931
11	20 44 2.28	2.0283	21 6 6.2	10.016
12	20 46 3.79	2.0223	20 56 2.7	10.099
13	20 48 4.95	2.0165	20 45 54.3	10.181
14	20 50 5.77	2.0107	20 35 41.0	10.262
15	20 52 6.24	2.0050	20 25 22.8	10.343
16	20 54 6.37	1.9993	20 14 59.8	10.422
17	20 56 6.16	1.9937	20 4 32.1	10.500
18	20 58 5.62	1.9882	19 53 59.8	10.577
19	21 0 4.74	1.9826	19 43 22.8	10.654
20	21 2 3.53	1.9772	19 32 41.3	10.729
21	21 4 2.00	1.9717	19 21 55.3	10.804
22	21 6 0.14	1.9663	19 11 4.8	10.877
23	21 7 57.96	1.9611	S. 19 0 10.0	10.949
	SATURDAY 26.			
0	21 9 55.47	1.9558	S. 18 49 10.9	11.021
1	21 11 52.66	1.9506	18 38 7.5	11.092
2	21 13 49.54	1.9454	18 26 59.9	11.161
3	21 15 46.11	1.9403	18 15 48.2	11.229
4	21 17 42.38	1.9353	18 4 32.4	11.297
5	21 19 38.35	1.9303	17 53 12.5	11.364
6	21 21 34.02	1.9253	17 41 48.7	11.429
7	21 23 29.39	1.9205	17 30 21.0	11.494
8	21 25 24.48	1.9157	17 18 49.4	11.558
9	21 27 19.28	1.9109	17 7 14.0	11.622
10	21 29 13.79	1.9062	16 55 34.8	11.684
11	21 31 8.03	1.9017	16 43 51.9	11.745
12	21 33 1.99	1.8971	16 32 5.4	11.805
13	21 34 55.68	1.8926	16 20 15.3	11.865
14	21 36 49.10	1.8881	16 8 21.6	11.924
15	21 38 42.25	1.8837	15 56 24.4	11.982
16	21 40 35.14	1.8794	15 44 23.8	12.039
17	21 42 27.78	1.8752	15 32 19.8	12.095
18	21 44 20.17	1.8711	15 20 12.4	12.151
19	21 46 12.31	1.8669	15 8 1.7	12.205
20	21 48 4.20	1.8628	14 55 47.8	12.258
21	21 49 55.85	1.8589	14 43 30.7	12.311
22	21 51 47.27	1.8550	14 31 10.4	12.363
23	21 53 38.45	1.8511	14 18 47.1	12.414
24	21 55 29.40	1.8473	S. 14 6 20.7	12.465
	SUNDAY 27.			
0	21 55 29.40	1.8473	S. 14 6 20.7	12.465
1	21 57 20.12	1.8436	13 53 51.3	12.514
2	21 59 10.63	1.8400	13 41 19.0	12.563
3	22 1 0.92	1.8364	13 28 43.7	12.611
4	22 2 51.00	1.8329	13 16 5.6	12.658
5	22 4 40.87	1.8294	13 3 24.7	12.705
6	22 6 30.53	1.8260	12 50 41.0	12.751
7	22 8 19.99	1.8227	12 37 54.6	12.796
8	22 10 9.26	1.8195	12 25 5.5	12.840
9	22 11 58.33	1.8163	12 12 13.8	12.883
10	22 13 47.21	1.8132	11 59 19.5	12.926
11	22 15 35.91	1.8102	11 46 22.7	12.968
12	22 17 24.43	1.8072	11 33 23.3	13.010
13	22 19 12.78	1.8043	11 20 21.5	13.050
14	22 21 0.95	1.8014	11 7 17.3	13.089
15	22 22 48.95	1.7987	10 54 10.8	13.128
16	22 24 36.79	1.7961	10 41 1.9	13.166
17	22 26 24.48	1.7935	10 27 50.8	13.203
18	22 28 12.01	1.7909	10 14 37.5	13.240
19	22 29 59.39	1.7884	10 1 22.0	13.277
20	22 31 46.62	1.7860	9 48 4.3	13.312
21	22 33 33.71	1.7837	9 34 44.5	13.347
22	22 35 20.66	1.7814	9 21 22.6	13.381
23	22 37 7.48	1.7792	S. 9 7 58.8	13.414
	MONDAY 28.			
0	22 38 54.17	1.7771	S. 8 54 33.0	13.446
1	22 40 40.73	1.7750	8 41 5.3	13.477
2	22 42 27.17	1.7731	8 27 35.7	13.509
3	22 44 13.50	1.7712	8 14 4.2	13.540
4	22 45 59.71	1.7694	8 0 30.9	13.569
5	22 47 45.82	1.7676	7 46 55.9	13.598
6	22 49 31.82	1.7658	7 33 19.2	13.626
7	22 51 17.72	1.7642	7 19 40.8	13.653
8	22 53 3.53	1.7627	7 6 0.8	13.680
9	22 54 49.25	1.7612	6 52 19.2	13.707
10	22 56 34.88	1.7598	6 38 36.0	13.732
11	22 58 20.43	1.7585	6 24 51.3	13.757
12	23 0 5.90	1.7573	6 11 5.1	13.781
13	23 1 51.30	1.7561	5 57 17.5	13.804
14	23 3 36.63	1.7549	5 43 28.6	13.827
15	23 5 21.89	1.7538	5 29 38.3	13.849
16	23 7 7.09	1.7529	5 15 46.7	13.871
17	23 8 52.24	1.7520	5 1 53.8	13.892
18	23 10 37.33	1.7511	4 47 59.7	13.911
19	23 12 22.37	1.7503	4 34 4.5	13.930
20	23 14 7.37	1.7497	4 20 8.1	13.949
21	23 15 52.34	1.7492	4 6 10.6	13.967
22	23 17 37.27	1.7486	3 52 12.1	13.983
23	23 19 22.17	1.7481	3 38 12.6	14.000
24	23 21 7.04	1.7477	S. 3 24 12.1	14.016

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 29.			
	h m s	s	° ′ ″	″
0	23 21 7.04	1.7477	S. 3 24 12.1	14.016
1	23 22 51.89	1.7473	3 10 10.7	14.031
2	23 24 36.72	1.7471	2 56 8.4	14.046
3	23 26 21.54	1.7469	2 42 5.3	14.058
4	23 28 6.35	1.7468	2 28 1.4	14.072
5	23 29 51.16	1.7468	2 13 56.7	14.084
6	23 31 35.97	1.7468	1 59 51.3	14.096
7	23 33 20.78	1.7469	1 45 45.2	14.107
8	23 35 5.60	1.7471	1 31 38.5	14.117
9	23 36 50.43	1.7474	1 17 31.2	14.127
10	23 38 35.28	1.7477	1 3 23.3	14.135
11	23 40 20.15	1.7480	0 49 15.0	14.143
12	23 42 5.04	1.7484	0 35 6.2	14.151
13	23 43 49.96	1.7490	0 20 56.9	14.157
14	23 45 34.92	1.7496	S. 0 6 47.3	14.162
15	23 47 19.92	1.7503	N. 0 7 22.6	14.167
16	23 49 4.96	1.7511	0 21 32.8	14.172
17	23 50 50.05	1.7519	0 35 43.2	14.176
18	23 52 35.19	1.7528	0 49 53.9	14.179
19	23 54 20.39	1.7538	1 4 4.7	14.181
20	23 56 5.65	1.7548	1 18 15.6	14.182
21	23 57 50.97	1.7559	1 32 26.6	14.183
22	23 59 36.36	1.7571	1 46 37.6	14.183
23	0 1 21.83	1.7584	N. 2 0 48.6	14.183
	WEDNESDAY 30.			
0	0 3 7.37	1.7598	N. 2 14 59.6	14.182
1	0 4 53.00	1.7612	2 29 10.5	14.179
2	0 6 38.71	1.7626	2 43 21.1	14.175
3	0 8 24.51	1.7641	2 57 31.5	14.170
4	0 10 10.40	1.7658	3 11 41.7	14.163
5	0 11 56.40	1.7675	3 25 51.6	14.153
6	0 13 42.50	1.7692	3 40 1.2	14.157
7	0 15 28.70	1.7710	3 54 10.4	14.149
8	0 17 15.02	1.7730	4 8 19.1	14.141
9	0 19 1.46	1.7750	4 22 27.3	14.132
10	0 20 48.02	1.7770	4 36 35.0	14.123
11	0 22 34.70	1.7791	4 50 42.1	14.113
12	0 24 21.51	1.7813	5 4 48.6	14.102
13	0 26 8.46	1.7836	5 18 54.4	14.091
14	0 27 55.54	1.7858	5 32 59.5	14.078
15	0 29 42.76	1.7882	5 47 3.8	14.064
16	0 31 30.13	1.7907	6 1 7.2	14.049
17	0 33 17.65	1.7933	6 15 9.7	14.035
18	0 35 5.33	1.7960	6 29 11.4	14.020
19	0 36 53.17	1.7987	6 43 12.1	14.002
20	0 38 41.17	1.8014	6 57 11.7	13.984
21	0 40 29.33	1.8042	7 11 10.2	13.966
22	0 42 17.67	1.8070	7 25 7.6	13.947
23	0 44 6.18	1.8100	7 39 3.8	13.926
24	0 45 54.87	1.8130	N. 7 52 58.7	13.904
	THURSDAY 31.			
0	0 45 54.87	1.8130	N. 7 52 58.7	13.904
1	0 47 43.74	1.8162	8 6 52.3	13.882
2	0 49 32.81	1.8194	8 20 44.6	13.860
3	0 51 22.07	1.8227	8 34 35.5	13.836
4	0 53 11.53	1.8260	8 48 24.9	13.811
5	0 55 1.19	1.8293	9 2 12.8	13.786
6	0 56 51.05	1.8327	9 15 59.2	13.760
7	0 58 41.12	1.8363	9 29 44.0	13.732
8	1 0 31.41	1.8399	9 43 27.0	13.702
9	1 2 21.91	1.8435	9 57 8.2	13.672
10	1 4 12.63	1.8473	10 10 47.6	13.642
11	1 6 3.58	1.8512	10 24 25.2	13.611
12	1 7 54.77	1.8551	10 38 0.9	13.578
13	1 9 46.19	1.8589	10 51 34.6	13.545
14	1 11 37.84	1.8628	11 5 6.3	13.511
15	1 13 29.73	1.8668	11 18 35.9	13.475
16	1 15 21.86	1.8710	11 32 3.3	13.439
17	1 17 14.25	1.8752	11 45 28.5	13.402
18	1 19 6.89	1.8794	11 58 51.5	13.364
19	1 20 59.78	1.8836	12 12 12.2	13.324
20	1 22 52.94	1.8882	12 25 30.4	13.283
21	1 24 46.36	1.8926	12 38 46.1	13.241
22	1 26 40.05	1.8972	12 51 59.3	13.198
23	1 28 34.02	1.9018	N.13 5 10.0	13.156
	FRIDAY, NOVEMBER 1.			
0	1 30 28.26	1.9064	N.13 18 18.0	13.111

PHASES OF THE MOON.

		d	h	m
○	Full Moon . . Oct.	3	10	47.5
☾	Last Quarter. . . .	11	2	34.1
●	New Moon	17	18	9.9
☽	First Quarter. . . .	24	23	4.0

		d	h
☾	Perigee. . . . Oct.	16	4.2
☾	Apogee.	28	3.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Antares	W.	93° 1′ 5″	3065	94° 29′ 57″	3063	95° 58′ 52″	3061	97° 27′ 49″	3058
	α Aquilæ	W.	48 57 33	4891	49 59 57	4533	51 3 20	4469	52 7 39	4410
	α Arietis	E.	55 30 5	3098	54 1 53	3096	52 33 39	3096	51 5 24	3095
	Aldebaran	E.	86 59 36	3142	85 32 17	3139	84 4 55	3138	82 37 31	3136
2	Antares	W.	104 53 28	3043	106 22 47	3039	107 52 11	3036	109 21 39	3032
	α Aquilæ	W.	57 41 30	4171	58 50 24	4131	59 59 56	4096	61 10 2	4061
	α Arietis	E.	43 43 53	3090	42 15 31	3090	40 47 9	3089	39 18 46	3088
	Aldebaran	E.	75 19 55	3125	73 52 16	3123	72 24 34	3120	70 56 49	3118
	Pollux	E.	118 16 3	3049	116 46 51	3045	115 17 34	3041	113 48 12	3037
3	α Aquilæ	W.	67 8 19	3919	68 21 20	3895	69 34 45	3872	70 48 33	3852
	Fomalhaut	W.	39 26 57	3738	40 43 4	3690	42 0 2	3647	43 17 46	3606
	Aldebaran	E.	63 37 21	3106	62 9 19	3105	60 41 15	3102	59 13 8	3101
	Pollux	E.	106 20 4	3014	104 50 9	3010	103 20 9	3005	101 50 3	3000
	Jupiter	E.	119 48 24	3070	118 19 38	3065	116 50 46	3060	115 21 48	3055
4	α Aquilæ	W.	77 2 30	3764	78 18 10	3749	79 34 5	3736	80 50 14	3794
	Fomalhaut	W.	49 56 20	3447	51 17 43	3422	52 39 35	3396	54 1 54	3375
	Aldebaran	E.	51 52 7	3095	50 23 51	3096	48 55 36	3096	47 27 21	3097
	Pollux	E.	94 17 54	2973	92 47 8	2968	91 16 15	2962	89 45 14	2956
	Jupiter	E.	107 55 15	3026	106 25 35	3021	104 55 48	3014	103 25 53	3009
5	α Aquilæ	W.	87 14 1	3673	88 31 17	3664	89 48 42	3658	91 6 14	3652
	Fomalhaut	W.	60 59 31	3280	62 24 6	3263	63 49 1	3247	65 14 15	3232
	α Pegasi	W.	39 31 19	3519	40 51 22	3477	42 12 12	3438	43 33 46	3402
	Aldebaran	E.	40 6 43	3113	38 38 49	3120	37 11 4	3129	35 43 29	3139
	Pollux	E.	82 8 16	2985	80 36 29	2918	79 4 33	2912	77 32 29	2905
	Jupiter	E.	95 54 22	2976	94 23 39	2969	92 52 48	2962	91 21 48	2955
6	Fomalhaut	W.	72 24 37	3164	73 51 29	3153	75 18 35	3141	76 45 55	3129
	α Pegasi	W.	50 30 56	3256	51 55 59	3232	53 21 30	3210	54 47 27	3188
	Pollux	E.	69 49 56	2969	68 16 58	2962	66 43 50	2955	65 10 33	2947
	Jupiter	E.	83 44 32	2919	82 12 37	2911	80 40 32	2903	79 8 17	2895
	Regulus	E.	106 41 28	2965	105 8 24	2957	103 35 10	2949	102 1 46	2942
7	Fomalhaut	W.	84 5 58	3076	85 34 37	3067	87 3 27	3057	88 32 29	3047
	α Pegasi	W.	62 3 17	3095	63 31 33	3078	65 0 9	3062	66 29 5	3047
	Pollux	E.	57 21 36	2987	55 47 17	2798	54 12 47	2790	52 38 6	2783
	Jupiter	E.	71 24 28	2954	69 51 10	2945	68 17 40	2936	66 43 59	2928
	Regulus	E.	94 12 12	2901	92 37 45	2792	91 3 7	2783	89 28 17	2775
	Venus	E.	114 20 32	2778	112 45 35	2770	111 10 28	2762	109 35 10	2754
	Sun	E.	139 35 45	3164	138 8 53	3154	136 41 49	3144	135 14 33	3134
8	Fomalhaut	W.	96 0 26	3005	97 30 33	2997	99 0 49	2989	100 31 15	2982
	α Pegasi	W.	73 58 24	2974	75 29 9	2961	77 0 11	2948	78 31 29	2935
	α Arietis	W.	30 43 55	2808	32 18 13	2792	33 52 52	2775	35 27 52	2760
	Pollux	E.	44 41 49	2737	43 5 58	2797	41 29 54	2718	39 53 38	2709
	Jupiter	E.	58 52 36	2780	57 17 42	2770	55 42 35	2760	54 7 15	2750
	Regulus	E.	81 31 9	2728	79 55 6	2717	78 18 49	2707	76 42 19	2696
	Venus	E.	101 36 2	2713	99 59 39	2704	98 23 5	2695	96 46 19	2686
	Sun	E.	127 55 8	3082	126 26 37	3071	124 57 52	3060	123 28 53	3049

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Antares	W.	98° 56′ 50″	3056	100° 25′ 54″	3052	101° 55′ 5″	3050	103° 24′ 13″	3047
	α Aquilæ	W.	53 12 51	4355	54 18 53	4304	55 25 42	4256	56 33 15	4212
	α Arietis	E.	49 37 8	3094	48 8 51	3093	46 40 33	3092	45 12 14	3091
	Aldebaran	E.	81 10 5	3133	79 42 36	3132	78 15 5	3129	76 47 31	3126
2	Antares	W.	110 51 12	3038	112 20 50	3034	113 50 33	3019	115 20 22	3015
	α Aquilæ	W.	62 20 42	4029	63 31 53	3999	64 43 34	3970	65 55 43	3943
	α Arietis	E.	37 50 22	3088	36 21 58	3089	34 53 35	3090	33 25 13	3091
	Aldebaran	E.	69 29 1	3115	68 1 10	3114	66 33 17	3110	65 5 20	3109
	Pollux	E.	112 18 45	3033	110 49 13	3039	109 19 36	3034	107 49 53	3019
3	α Aquilæ	W.	72 2 42	3632	73 17 11	3613	74 32 0	3796	75 47 6	3779
	Fomalhaut	W.	44 36 14	3569	45 55 22	3535	47 15 7	3504	48 35 27	3474
	Aldebaran	E.	57 44 59	3099	56 16 48	3098	54 48 36	3096	53 20 22	3096
	Pollux	E.	100 19 50	2995	98 49 31	2989	97 19 5	2985	95 48 33	2979
	JUPITER	E.	113 52 43	3050	112 23 32	3043	110 54 13	3039	109 24 48	3039
4	α Aquilæ	W.	82 6 36	3711	83 23 11	3701	84 39 57	3691	85 56 54	3681
	Fomalhaut	W.	55 24 39	3354	56 47 48	3333	58 11 21	3314	59 35 16	3297
	Aldebaran	E.	45 59 8	3099	44 30 57	3101	43 2 48	3104	41 34 43	3106
	Pollux	E.	88 14 6	2959	86 42 50	2944	85 11 27	2938	83 39 56	2931
	JUPITER	E.	101 55 51	3002	100 25 41	2996	98 55 23	2989	97 24 57	2982
5	α Aquilæ	W.	92 23 52	3647	93 41 36	3642	94 59 25	3638	96 17 18	3636
	Fomalhaut	W.	66 39 46	3318	68 5 34	3304	69 31 39	3190	70 58 0	3177
	α Pegasi	W.	44 56 0	3368	46 18 53	3338	47 42 21	3308	49 6 23	3282
	Aldebaran	E.	34 16 7	3159	32 49 0	3166	31 22 12	3186	29 55 46	3209
	Pollux	E.	76 0 16	2996	74 27 54	2991	72 55 24	2984	71 22 45	2976
	JUPITER	E.	89 50 39	2948	88 19 21	2941	86 47 54	2934	85 16 18	2926
6	Fomalhaut	W.	78 13 29	3118	79 41 17	3107	81 9 18	3096	82 37 32	3087
	α Pegasi	W.	56 13 50	3168	57 40 37	3148	59 7 48	3129	60 35 22	3112
	Pollux	E.	63 37 6	2939	62 3 29	2931	60 29 42	2923	58 55 44	2915
	JUPITER	E.	77 35 52	2987	76 3 17	2979	74 30 31	2971	72 57 35	2962
	Regulus	E.	100 28 12	2935	98 54 28	2925	97 20 33	2918	95 46 28	2909
7	Fomalhaut	W.	90 1 43	3039	91 31 8	3030	93 0 43	3022	94 30 29	3013
	α Pegasi	W.	67 58 20	3031	69 27 54	3017	70 57 46	3002	72 27 56	2988
	Pollux	E.	51 3 14	2772	49 28 10	2764	47 52 55	2755	46 17 28	2746
	JUPITER	E.	65 10 7	2818	63 36 3	2806	62 1 46	2799	60 27 17	2790
	Regulus	E.	87 53 16	2766	86 18 3	2756	84 42 37	2747	83 6 59	2738
	VENUS	E.	107 59 42	2746	106 24 3	2738	104 48 14	2730	103 12 14	2721
	SUN	E.	133 47 5	3194	132 19 25	3114	130 51 32	3103	129 23 26	3093
8	Fomalhaut	W.	102 1 50	2976	103 32 33	2969	105 3 25	2962	106 34 25	2957
	α Pegasi	W.	80 3 4	2922	81 34 55	2909	83 7 2	2896	84 39 24	2885
	α Arietis	W.	37 3 12	2745	38 38 52	2731	40 14 51	2716	41 51 9	2702
	Pollux	E.	38 17 10	2699	36 40 29	2689	35 3 35	2680	33 26 28	2670
	JUPITER	E.	52 31 41	2740	50 55 54	2730	49 19 53	2719	47 43 39	2708
	Regulus	E.	75 5 36	2687	73 28 39	2676	71 51 27	2666	70 14 1	2655
	VENUS	E.	95 9 20	2678	93 32 10	2668	91 54 47	2658	90 17 11	2649
	SUN	E.	121 59 41	3038	120 30 15	3026	119 0 34	3014	117 30 39	3003

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	α Pegasi	W.	86° 12′ 2″	9873	87° 44′ 55″	9861	89° 16′ 4″	9850	90° 51′ 27″	9838
	α Arietis	W.	43 27 46	9686	45 4 42	9675	46 41 56	9661	48 19 28	9647
	Jupiter	E.	46 7 10	9698	44 30 27	9687	42 53 29	9675	41 16 16	9665
	Regulus	E.	68 36 20	9643	66 58 24	9632	65 20 13	9621	63 41 47	9610
	Venus	E.	88 39 23	9640	87 1 22	9629	85 23 7	9620	83 44 39	9610
	Sun	E.	116 0 30	9991	114 30 6	9978	112 59 26	9966	111 28 31	9954
10	α Pegasi	W.	98 42 0	9785	100 16 48	9775	101 51 48	9766	103 27 1	9756
	α Arietis	W.	56 31 45	9580	58 11 8	9566	59 50 49	9553	61 30 49	9540
	Aldebaran	W.	26 45 20	9929	28 17 2	9877	29 49 50	9839	31 23 36	9791
	Regulus	E.	55 25 35	9550	53 45 31	9537	52 5 9	9525	50 24 30	9519
	Venus	E.	75 28 47	9557	73 48 53	9546	72 8 44	9535	70 28 19	9594
	Sun	E.	103 49 54	9889	102 17 21	9875	100 44 30	9869	99 11 22	9848
11	α Arietis	W.	69 55 31	9471	71 37 25	9458	73 19 38	9443	75 2 11	9430
	Aldebaran	W.	39 24 27	9639	41 2 38	9607	42 41 23	9583	44 20 42	9560
	Regulus	E.	41 56 48	9447	40 14 20	9434	38 31 34	9421	36 48 29	9408
	Venus	E.	62 2 22	9467	60 20 23	9456	58 38 8	9444	56 55 36	9433
	Sun	E.	91 21 16	9779	89 46 20	9765	88 11 6	9750	86 35 33	9736
12	α Arietis	W.	83 39 45	9369	85 24 14	9348	87 9 3	9335	88 54 11	9322
	Aldebaran	W.	52 44 47	9458	54 27 0	9440	56 9 38	9422	57 52 41	9405
	Venus	E.	48 18 53	9376	46 34 44	9365	44 50 19	9354	43 5 38	9344
	Sun	E.	78 33 4	9665	76 55 37	9652	75 17 52	9638	73 39 48	9624
13	α Arietis	W.	97 44 32	9260	99 31 31	9248	101 18 47	9236	103 6 21	9225
	Aldebaran	W.	66 33 53	9396	68 19 14	9319	70 4 56	9298	71 50 58	9285
	Pollux	W.	23 3 0	9266	24 49 49	9250	26 37 2	9235	28 24 37	9221
	Sun	E.	65 24 48	9557	63 44 54	9544	62 4 42	9539	60 24 13	9580
14	Aldebaran	W.	80 45 49	9998	82 33 38	9215	84 21 43	9205	86 10 3	9196
	Pollux	W.	37 27 26	9161	39 16 53	9150	41 6 36	9140	42 56 34	9130
	Sun	E.	51 57 48	9465	50 15 46	9456	48 33 31	9447	46 51 3	9438
15	Aldebaran	W.	95 14 47	9161	97 4 14	9155	98 53 50	9151	100 43 32	9147
	Pollux	W.	52 9 46	9091	54 0 59	9085	55 52 21	9079	57 43 52	9075
	Jupiter	W.	37 6 4	9139	38 56 14	9194	40 46 36	9116	42 37 7	9113
	Sun	E.	38 15 56	9405	36 32 29	9401	34 48 55	9396	33 5 17	9395
19	Sun	W.	17 32 38	9606	19 11 25	9609	20 50 8	9614	22 28 44	9622
	α Aquilæ	E.	81 21 44	9965	79 51 13	3006	78 21 10	3039	76 51 37	3059
	Fomalhaut	E.	106 26 47	9511	104 45 48	9521	103 5 4	9530	101 24 33	9541
20	Sun	W.	30 38 13	9686	32 15 12	9701	33 51 50	9718	35 28 6	9735
	α Aquilæ	E.	69 32 45	3290	68 7 0	3959	66 42 1	3301	65 17 51	3345
	Fomalhaut	E.	93 6 17	9619	91 27 38	9636	89 49 21	9645	88 11 27	9663
	α Pegasi	E.	115 7 47	9614	113 29 11	9694	111 50 48	9635	110 12 40	9646
21	Sun	W.	43 23 44	9694	44 57 41	9643	46 31 13	9669	48 4 21	9660
	α Aquilæ	E.	58 30 29	3606	57 12 1	3669	55 54 41	3735	54 38 31	3806
	Fomalhaut	E.	80 8 16	9769	78 32 58	9783	76 58 8	9805	75 23 47	9836
	α Pegasi	E.	102 6 10	9713	100 29 48	9729	98 53 47	9745	97 18 7	9769

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9	α Pegasi	W.	92° 25′ 5″	9697	93° 58′ 58″	9816	95° 33′ 5″	9805	97° 7′ 26″	9795
	α Arietis	W.	49 57 19	9634	51 35 28	9621	53 13 55	9607	54 52 41	9593
	Jupiter	E.	39 38 49	9654	38 1 7	9642	36 23 9	9632	34 44 57	9620
	Regulus	E.	62 3 5	9596	60 24 7	9586	58 44 53	9574	57 5 22	9563
	Venus	E.	82 5 57	9599	80 27 1	9589	78 47 51	9578	77 8 26	9568
	Sun	E.	109 57 20	9941	108 25 53	9936	106 54 10	9915	105 22 10	9909
10	α Pegasi	W.	105 2 27	9747	106 38 4	9736	108 13 53	9731	109 49 52	9723
	α Arietis	W.	63 11 7	9525	64 51 45	9519	66 32 41	9499	68 13 56	9485
	Aldebaran	W.	32 58 16	9753	34 33 45	9730	36 9 58	9689	37 46 53	9660
	Regulus	E.	48 43 34	9499	47 2 20	9487	45 20 48	9473	43 38 57	9460
	Venus	E.	68 47 39	9519	67 6 43	9509	65 25 32	9490	63 44 5	9479
	Sun	E.	97 37 57	9835	96 4 14	9831	94 30 13	9807	92 55 54	9799
11	α Arietis	W.	76 45 3	9417	78 28 14	9403	80 11 45	9389	81 55 35	9375
	Aldebaran	W.	46 0 32	9538	47 40 53	9517	49 21 43	9497	51 3 1	9477
	Regulus	E.	35 5 6	9396	33 21 24	9381	31 37 22	9368	29 53 2	9356
	Venus	E.	55 12 48	9422	53 29 44	9410	51 46 23	9398	50 2 46	9387
	Sun	E.	84 59 41	9799	83 23 30	9797	81 47 0	9693	80 10 11	9680
12	α Arietis	W.	90 39 38	9309	92 25 24	9297	94 11 28	9284	95 57 51	9272
	Aldebaran	W.	59 36 9	9366	61 20 1	9379	63 4 16	9356	64 48 54	9342
	Venus	E.	41 20 42	9333	39 35 31	9323	37 50 5	9313	36 4 25	9304
	Sun	E.	72 1 25	9610	70 22 43	9596	68 43 43	9583	67 4 24	9570
13	α Arietis	W.	104 54 11	9214	106 42 18	9204	108 30 40	9193	110 19 18	9184
	Aldebaran	W.	73 37 20	9279	75 24 0	9260	77 10 59	9247	78 58 16	9237
	Pollux	W.	30 12 33	9206	32 0 49	9196	33 49 23	9183	35 38 16	9172
	Sun	E.	58 43 28	9508	57 2 26	9497	55 21 9	9486	53 39 36	9475
14	Aldebaran	W.	87 58 36	9188	89 47 22	9180	91 36 20	9172	93 25 29	9167
	Pollux	W.	44 46 47	9122	46 37 13	9113	48 27 52	9105	50 18 43	9098
	Sun	E.	45 8 22	9430	43 25 30	9423	41 42 28	9416	39 59 16	9410
15	Aldebaran	W.	102 33 20	9144	104 23 12	9141	106 13 8	9140	108 3 6	9140
	Pollux	W.	59 35 30	9070	61 27 15	9066	63 19 6	9064	65 11 1	9061
	Jupiter	W.	44 27 47	9108	46 18 34	9104	48 9 27	9101	50 0 25	9098
	Sun	E.	31 21 35	9394	29 37 51	9394	27 54 7	9395	26 10 25	9398
19	Sun	W.	24 7 9	9632	25 45 20	9643	27 23 16	9657	29 0 54	9671
	α Aquilæ	E.	75 22 37	3087	73 54 12	3117	72 26 23	3149	70 59 13	3184
	Fomalhaut	E.	99 44 17	9553	98 4 18	9567	96 24 38	9581	94 45 17	9596
20	Sun	W.	37 4 0	9752	38 39 31	9769	40 14 39	9788	41 49 23	9805
	α Aquilæ	E.	63 54 31	3391	62 32 4	3440	61 10 33	3493	59 50 1	3547
	Fomalhaut	E.	86 33 58	9661	84 56 53	9701	83 20 14	9790	81 44 1	9741
	α Pegasi	E.	108 34 47	9658	106 57 11	9671	105 19 52	9685	103 42 52	9698
21	Sun	W.	49 37 5	9899	51 9 25	9919	52 41 20	9938	54 12 51	9957
	α Aquilæ	E.	53 23 35	3881	52 9 56	3961	50 57 38	4048	49 46 46	4140
	Fomalhaut	E.	73 49 56	9859	72 16 35	9875	70 43 44	9899	69 11 24	9924
	α Pegasi	E.	95 42 49	9778	94 7 52	9795	92 33 18	9813	90 59 7	9830

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Sun	W.	55° 43′ 58″	2975	57° 14′ 42″	2994	58° 45′ 2″	3013	60° 14′ 59″	3031
	Fomalhaut	E.	67 39 36	2950	66 8 20	2976	64 37 37	3003	63 7 28	3030
	α Pegasi	E.	89 25 18	2848	87 51 52	2886	86 18 50	2885	84 46 12	2903
23	Sun	W.	67 39 6	3121	69 6 50	3138	70 34 13	3155	72 1 16	3172
	Antares	W.	29 1 2	2756	30 36 27	2772	32 11 31	2788	33 46 14	2803
	Fomalhaut	E.	55 45 30	3181	54 18 58	3214	52 53 5	3246	51 27 53	3285
	α Pegasi	E.	77 8 56	2997	75 38 40	3018	74 8 49	3037	72 39 22	3056
	α Arietis	E.	119 8 2	2784	117 33 13	2799	115 58 44	2814	114 24 34	2829
24	Sun	W.	79 11 43	3249	80 36 54	3263	82 1 49	3277	83 26 27	3291
	Antares	W.	41 35 3	2874	43 7 55	2887	44 40 30	2900	46 12 49	2912
	Fomalhaut	E.	44 33 3	3495	43 12 33	3545	41 52 58	3598	40 34 21	3656
	α Pegasi	E.	65 18 10	3157	63 51 9	3178	62 24 33	3198	60 58 22	3220
	α Arietis	E.	106 38 24	2896	105 6 2	2910	103 33 56	2923	102 2 6	2935
25	Sun	W.	90 25 55	3351	91 49 8	3369	93 12 8	3379	94 34 57	3381
	Antares	W.	53 50 40	2967	55 21 34	2977	56 52 15	2986	58 22 45	2995
	α Pegasi	E.	53 53 54	3334	52 30 22	3358	51 7 18	3385	49 44 44	3411
	α Arietis	E.	94 26 34	2989	92 56 8	2998	91 25 53	3008	89 55 50	3017
26	Sun	W.	101 26 27	3493	102 48 18	3499	104 10 2	3436	105 31 38	3441
	Antares	W.	65 52 43	3031	67 22 17	3038	68 51 43	3043	70 21 2	3048
	α Arietis	E.	82 28 8	3054	80 59 2	3060	79 30 3	3066	78 1 12	3071
	Aldebaran	E.	113 40 2	3129	112 12 17	3134	110 44 37	3138	109 17 1	3139
27	Sun	W.	112 18 14	3463	113 39 20	3466	115 0 22	3468	116 21 22	3471
	Antares	W.	77 46 16	3067	79 15 6	3069	80 43 54	3071	82 12 39	3072
	α Arietis	E.	70 38 22	3091	69 10 2	3094	67 41 45	3096	66 13 31	3099
	Aldebaran	E.	102 0 0	3144	100 32 44	3146	99 5 30	3148	97 38 18	3148
28	Sun	W.	123 5 56	3474	124 26 49	3473	125 47 43	3472	127 8 38	3471
	Antares	W.	89 36 11	3073	91 4 54	3072	92 33 38	3071	94 2 23	3069
	α Aquilæ	W.	46 32 46	4771	47 32 46	4690	48 33 54	4615	49 36 6	4544
	α Arietis	E.	58 52 50	3104	57 24 45	3103	55 56 39	3103	54 28 33	3102
	Aldebaran	E.	90 22 22	3148	88 55 10	3146	87 27 56	3145	86 0 41	3144
29	Antares	W.	101 26 53	3054	102 55 59	3051	104 25 9	3047	105 54 24	3042
	α Aquilæ	W.	55 1 6	4963	56 8 33	4918	57 16 42	4175	58 25 32	4134
	α Arietis	E.	47 7 48	3096	45 39 34	3095	44 11 18	3093	42 43 0	3091
	Aldebaran	E.	78 43 54	3133	77 16 24	3129	75 48 50	3126	74 21 12	3123
30	α Aquilæ	W.	64 18 46	3963	65 31 2	3935	66 43 46	3909	67 56 57	3882
	Fomalhaut	W.	36 36 28	3873	37 50 15	3812	39 5 5	3755	40 20 54	3704
	Aldebaran	E.	67 1 59	3104	65 33 54	3101	64 5 45	3096	62 37 31	3092
	Pollux	E.	109 47 59	3021	108 18 12	3015	106 48 18	3009	105 18 16	3001
31	α Aquilæ	W.	74 9 4	3771	75 24 36	3753	76 40 27	3735	77 56 37	3718
	Fomalhaut	W.	46 52 22	3500	48 12 46	3468	49 33 46	3437	50 55 21	3448
	Aldebaran	E.	55 15 10	3073	53 46 28	3071	52 17 43	3068	50 48 54	3066
	Pollux	E.	97 45 56	2966	96 15 1	2958	94 43 56	2951	93 12 42	2943
	Jupiter	E.	114 26 26	2993	112 56 5	2985	111 25 34	2977	109 54 53	2970

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
22	Sun	W.	61° 44′ 33″	3049	63° 13′ 45″	3068	64° 42′ 34″	3086	66° 11′ 1″	3104
	Fomalhaut	E.	61 37 53	3059	60 8 53	3066	58 40 29	3118	57 12 41	3148
	α Pegasi	E.	83 13 57	2999	81 42 6	2941	80 10 39	2960	78 39 36	2978
23	Sun	W.	73 27 59	3188	74 54 23	3204	76 20 28	3220	77 46 14	3234
	Antares	W.	35 20 38	2818	36 54 42	2833	38 26 27	2847	40 1 54	2861
	Fomalhaut	E.	50 3 24	3382	48 39 38	3368	47 16 38	3403	45 54 25	3448
	α Pegasi	E.	71 10 19	3076	69 41 40	3096	68 13 26	3116	66 45 36	3136
	α Arietis	E.	112 50 44	2843	111 17 12	2858	109 43 59	2871	108 11 3	2884
24	Sun	W.	84 50 50	3304	86 14 57	3316	87 38 50	3328	89 2 29	3339
	Antares	W.	47 44 52	2994	49 16 40	2935	50 48 14	2946	52 19 34	2958
	Fomalhaut	E.	39 16 47	3718	38 0 19	3766	36 45 2	3668	35 31 2	3941
	α Pegasi	E.	59 32 36	3042	58 7 16	3064	56 42 22	3096	55 17 54	3316
	α Arietis	E.	100 30 31	2946	98 59 11	2958	97 28 5	2969	95 57 13	2979
25	Sun	W.	95 57 35	3291	97 20 2	3299	98 42 20	3406	100 4 28	3415
	Antares	W.	59 53 4	3003	61 23 13	3011	62 53 12	3018	64 23 2	3026
	α Pegasi	E.	48 22 40	3439	47 1 8	3479	45 40 10	3501	44 19 47	3535
	α Arietis	E.	88 25 58	3026	86 56 17	3033	85 26 45	3040	83 57 22	3047
26	Sun	W.	106 53 8	3446	108 14 32	3451	109 35 51	3455	110 57 5	3460
	Antares	W.	71 50 15	3052	73 19 23	3057	74 48 25	3061	76 17 22	3064
	α Arietis	E.	76 32 27	3076	75 3 48	3081	73 35 15	3084	72 6 46	3088
	Aldebaran	E.	107 49 30	3135	106 22 3	3138	104 54 39	3140	103 27 18	3143
27	Sun	W.	117 42 19	3471	119 3 15	3473	120 24 9	3473	121 45 3	3474
	Antares	W.	83 41 23	3073	85 10 5	3073	86 38 47	3073	88 7 29	3073
	α Arietis	E.	64 45 20	3101	63 17 11	3101	61 49 3	3100	60 20 56	3103
	Aldebaran	E.	96 11 6	3148	94 43 55	3148	93 16 44	3148	91 49 33	3148
28	Sun	W.	128 29 34	3470	129 50 32	3468	131 11 32	3465	132 32 35	3463
	Antares	W.	95 31 11	3067	97 0 1	3064	98 28 55	3061	99 57 52	3058
	α Aquilæ	W.	50 39 19	4481	51 43 28	4490	52 48 31	4364	53 54 25	4313
	α Arietis	E.	53 0 26	3102	51 32 19	3101	50 4 10	3100	48 36 0	3098
	Aldebaran	E.	84 33 25	3142	83 6 6	3140	81 38 45	3138	80 11 21	3135
29	Antares	W.	107 23 45	3037	108 53 12	3032	110 22 45	3026	111 52 25	3022
	α Aquilæ	W.	59 35 1	4096	60 45 7	4061	61 55 47	4036	63 7 1	3995
	α Arietis	E.	41 14 40	3090	39 46 18	3068	38 17 54	3067	36 49 28	3066
	Aldebaran	E.	72 53 30	3119	71 25 44	3116	69 57 54	3112	68 29 59	3106
30	α Aquilæ	W.	69 10 35	3657	70 24 38	3635	71 39 4	3613	72 53 53	3792
	Fomalhaut	W.	41 37 37	3656	42 55 11	3619	44 13 32	3579	45 32 37	3535
	Aldebaran	E.	61 9 12	3068	59 40 48	3065	58 12 20	3061	56 43 47	3078
	Pollux	E.	103 48 5	2995	102 17 46	2988	100 47 18	2981	99 16 42	2973
31	α Aquilæ	W.	79 13 5	3702	80 29 50	3688	81 46 50	3673	83 4 6	3660
	Fomalhaut	W.	52 17 28	3381	53 40 6	3356	55 3 13	3329	56 26 47	3309
	Aldebaran	E.	49 20 3	3064	47 51 9	3069	46 22 13	3061	44 53 16	3061
	Pollux	E.	91 41 18	2935	90 9 44	2927	88 38 0	2919	87 6 5	2911
	Jupiter	E.	108 24 3	2988	106 53 2	2954	105 21 51	2945	103 50 29	2936

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Dif. for 1 Hour.	Apparent Declination.	Dif. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Dif. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	h	m s	s
Frid.	1	14 25 44.08	9.793	S. 14 26 57.9	−48.08	16 9.77	66.94	16 18.64	0.063
Sat.	2	14 29 39.51	9.827	14 46 4.8	47.49	16 10.02	67.05	16 19.76	0.030
SUN.	3	14 33 35.75	9.861	15 4 57.4	46.88	16 10.27	67.17	16 20.08	0.004
Mon.	4	14 37 32.81	9.895	15 23 35.2	−46.26	16 10.51	67.28	16 19.57	0.038
Tues.	5	14 41 30.71	9.930	15 41 57.9	45.62	16 10.75	67.40	16 18.24	0.073
Wed.	6	14 45 29.45	9.965	16 0 5.2	44.97	16 10.98	67.52	16 16.06	0.108
Thur.	7	14 49 29.03	10.001	16 17 56.5	−44.30	16 11.21	67.64	16 13.04	0.144
Frid.	8	14 53 29.48	10.037	16 35 31.5	43.61	16 11.44	67.76	16 9.15	0.180
Sat.	9	14 57 30.80	10.073	16 52 49.8	42.91	16 11.67	67.88	16 4.41	0.216
SUN.	10	15 1 32.98	10.109	17 9 51.0	−42.19	16 11.89	68.00	15 58.80	0.252
Mon.	11	15 5 36.04	10.145	17 26 34.7	41.45	16 12.11	68.12	15 52.32	0.288
Tues.	12	15 9 39.96	10.182	17 43 0.4	40.69	16 12.32	68.24	15 44.97	0.324
Wed.	13	15 13 44.76	10.218	17 59 7.8	−39.91	16 12.54	68.36	15 36.75	0.360
Thur.	14	15 17 50.42	10.254	18 14 56.3	39.12	16 12.75	68.48	15 27.68	0.396
Frid.	15	15 21 56.94	10.290	18 30 25.7	38.31	16 12.96	68.59	15 17.73	0.432
Sat.	16	15 26 4.32	10.325	18 45 35.4	−37.49	16 13.17	68.71	15 6.94	0.467
SUN.	17	15 30 12.55	10.360	19 0 25.2	36.65	16 13.38	68.82	14 55.30	0.502
Mon.	18	15 34 21.61	10.395	19 14 54.5	35.79	16 13.58	68.94	14 42.83	0.537
Tues.	19	15 38 31.50	10.429	19 29 3.0	−34.91	16 13.78	69.05	14 29.54	0.571
Wed.	20	15 42 42.20	10.463	19 42 50.2	34.02	16 13.98	69.17	14 15.43	0.605
Thur.	21	15 46 53.71	10.496	19 56 16.0	33.11	16 14.18	69.28	14 0.52	0.638
Frid.	22	15 51 6.01	10.529	20 9 19.7	−32.19	16 14.38	69.39	13 44.82	0.670
Sat.	23	15 55 19.08	10.561	20 22 1.2	31.26	16 14.57	69.49	13 28.35	0.702
SUN.	24	15 59 32.92	10.592	20 34 20.1	30.31	16 14.76	69.60	13 11.12	0.733
Mon.	25	16 3 47.50	10.623	20 46 15.9	−29.34	16 14.94	69.70	12 53.15	0.764
Tues.	26	16 8 2.82	10.653	20 57 48.5	28.36	16 15.12	69.81	12 34.44	0.794
Wed.	27	16 12 18.85	10.683	21 8 57.4	27.37	16 15.30	69.91	12 15.02	0.824
Thur.	28	16 16 35.59	10.712	21 19 42.4	−26.37	16 15.47	70.01	11 54.88	0.853
Frid.	29	16 20 53.03	10.740	21 30 3.2	25.36	16 15.64	70.10	11 34.07	0.881
Sat.	30	16 25 11.13	10.768	21 39 59.5	24.33	16 15.80	70.19	11 12.58	0.909
SUN.	31	16 29 29.90	10.795	S. 21 49 31.0	−23.29	16 15.95	70.28	10 50.43	0.936

NOTE.—The mean time of semidiameter passing may be found by subtracting 0ᵐ.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	14 25 46.74	9.794	S. 14 27 11.0	−48.07	16 18.66	0.063	14 42 5.40
Sat.	2	14 29 42.18	9.827	14 46 17.7	47.48	16 19.77	0.030	14 46 1.95
SUN.	3	14 33 38.44	9.861	15 5 10.1	46.88	16 20.07	0.004	14 49 58.51
Mon.	4	14 37 35.51	9.895	15 23 47.8	−46.26	16 19.56	0.038	14 53 55.07
Tues.	5	14 41 33.41	9.930	15 42 10.3	45.62	16 18.21	0.073	14 57 51.62
Wed.	6	14 45 32.15	9.965	16 0 17.3	44.96	16 16.03	0.108	15 1 48.18
Thur.	7	14 49 31.74	10.001	16 18 8.4	−44.29	16 13.00	0.144	15 5 44.73
Frid.	8	14 53 32.19	10.037	16 35 43.2	43.60	16 9.10	0.180	15 9 41.29
Sat.	9	14 57 33.50	10.073	16 53 1.3	42.90	16 4.35	0.216	15 13 37.85
SUN.	10	15 1 35.67	10.109	17 10 2.2	−42.18	15 58.73	0.252	15 17 34.40
Mon.	11	15 5 38.72	10.145	17 26 45.6	41.43	15 52.24	0.288	15 21 30.96
Tues.	12	15 9 42.63	10.181	17 43 11.1	40.67	15 44.88	0.324	15 25 27.52
Wed.	13	15 13 47.41	10.217	17 59 18.1	−39.90	15 36.66	0.361	15 29 24.07
Thur.	14	15 17 53.06	10.253	18 15 6.4	39.11	15 27.57	0.397	15 33 20.63
Frid.	15	15 21 59.57	10.289	18 30 35.4	38.30	15 17.62	0.432	15 37 17.19
Sat.	16	15 26 6.92	10.324	18 45 44.8	−37.48	15 6.83	0.468	15 41 13.75
SUN.	17	15 30 15.12	10.359	19 0 34.2	36.63	14 55.18	0.503	15 45 10.30
Mon.	18	15 34 24.16	10.394	19 15 3.2	35.77	14 42.70	0.537	15 49 6.86
Tues.	19	15 38 34.02	10.428	19 29 11.3	−34.90	14 29.40	0.571	15 53 3.42
Wed.	20	15 42 44.69	10.461	19 42 58.3	34.01	14 15.28	0.605	15 56 59.97
Thur.	21	15 46 56.16	10.494	19 56 23.7	33.10	14 0.37	0.638	16 0 56.53
Frid.	22	15 51 8.42	10.527	20 9 27.1	−32.18	13 44.67	0.670	16 4 53.09
Sat.	23	15 55 21.45	10.559	20 22 8.2	31.24	13 28.19	0.702	16 8 49.65
SUN.	24	15 59 35.24	10.590	20 34 26.7	30.29	13 10.96	0.734	16 12 46.20
Mon.	25	16 3 49.78	10.621	20 46 22.2	−29.33	12 52.98	0.765	16 16 42.76
Tues.	26	16 8 5.05	10.651	20 57 54.4	28.35	12 34.27	0.795	16 20 39.32
Wed.	27	16 12 21.03	10.681	21 9 3.0	27.36	12 14.85	0.824	16 24 35.88
Thur.	28	16 16 37.72	10.710	21 19 47.6	−26.36	11 54.72	0.853	16 28 32.44
Frid.	29	16 20 55.10	10.738	21 30 8.1	25.34	11 33.90	0.881	16 32 28.99
Sat.	30	16 25 13.14	10.766	21 40 4.0	24.31	11 12.41	0.909	16 36 25.55
SUN.	31	16 29 31.85	10.793	S. 21 49 35.2	−23.28	10 50.26	0.936	16 40 22.11

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour, +9ˢ.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	305	218 50 21.1	49 34.5	150.16	+ 0.67	9.9965059	−46.8	9 16 23.20
2	306	219 50 25.7	49 38.9	150.23	0.74	9.9963943	46.1	9 12 27.29
3	307	220 50 32.3	49 45.4	150.31	0.79	9.9962845	45.4	9 8 31.38
4	308	221 50 40.8	49 53.7	150.39	+ 0.80	9.9961763	−44.7	9 4 35.47
5	309	222 50 51.2	50 4.0	150.47	0.78	9.9960696	44.1	9 0 39.56
6	310	223 51 3.5	50 16.1	150.55	0.73	9.9959646	43.5	8 56 43.65
7	311	224 51 17.8	50 30.3	150.64	+ 0.65	9.9958612	−42.8	8 52 47.74
8	312	225 51 34.2	50 46.5	150.73	0.56	9.9957592	42.2	8 48 51.83
9	313	226 51 52.5	51 4.7	150.81	0.44	9.9956587	41.6	8 44 55.92
10	314	227 52 12.9	51 24.9	150.89	+ 0.32	9.9955595	−41.1	8 41 0.01
11	315	228 52 35.3	51 47.2	150.97	0.18	9.9954613	40.6	8 37 4.10
12	316	229 52 59.6	52 11.3	151.05	+ 0.05	9.9953646	40.2	8 33 8.19
13	317	230 53 25.8	52 37.3	151.13	− 0.07	9.9952686	−39.8	8 29 12.28
14	318	231 53 53.8	53 5.2	151.21	0.18	9.9951737	39.4	8 25 16.37
15	319	232 54 23.7	53 34.9	151.28	0.26	9.9950797	39.0	8 21 20.45
16	320	233 54 55.2	54 6.2	151.35	− 0.32	9.9949865	−38.6	8 17 24.54
17	321	234 55 28.2	54 39.1	151.41	0.35	9.9948943	38.2	8 13 28.63
18	322	235 56 2.9	55 13.7	151.47	0.35	9.9948029	37.8	8 9 32.72
19	323	236 56 39.0	55 49.6	151.53	− 0.32	9.9947125	−37.4	8 5 36.81
20	324	237 57 16.4	56 26.8	151.59	0.27	9.9946232	37.0	8 1 40.90
21	325	238 57 55.1	57 5.4	151.64	0.18	9.9945351	36.5	7 57 44.99
22	326	239 58 35.0	57 45.1	151.69	− 0.07	9.9944481	−35.9	7 53 49.08
23	327	240 59 16.0	58 25.9	151.73	+ 0.05	9.9943626	35.3	7 49 53.16
24	328	241 59 58.1	59 7.8	151.78	0.17	9.9942786	34.6	7 45 57.25
25	329	242 60 41.2	59 50.7	151.82	+ 0.31	9.9941964	−33.8	7 42 1.34
26	330	244 1 25.4	0 34.7	151.86	0.44	9.9941161	33.0	7 38 5.43
27	331	245 2 10.6	1 19.8	151.90	0.55	9.9940378	32.2	7 34 9.52
28	332	246 2 56.8	2 5.8	151.95	+ 0.65	9.9939615	−31.3	7 30 13.60
29	333	247 3 44.0	2 52.8	151.99	0.73	9.9938876	30.3	7 26 17.69
30	334	248 4 32.3	3 40.9	152.04	0.78	9.9938162	29.3	7 22 21.78
31	335	249 5 21.6	4 30.0	152.08	+ 0.80	9.9937472	−28.3	7 18 25.87

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0d.0.

Diff. for 1 Hour, −9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 1.3	15 4.6	55 0.9	+0.99	55 13.3	+1.06	11 8.1	1.85	14.2
2	15 8.2	15 11.8	55 26.3	1.10	55 39.8	1.14	11 54.4	2.01	15.2
3	15 15.6	15 19.5	55 53.7	1.17	56 7.9	1.19	12 44.7	2.18	16.2
4	15 23.4	15 27.3	56 22.2	+1.20	56 36.6	+1.20	13 38.9	2.33	17.2
5	15 31.3	15 35.2	56 51.1	1.20	57 5.6	1.20	14 36.3	2.43	18.2
6	15 39.2	15 43.1	57 20.1	1.20	57 34.6	1.20	15 35.0	2.44	19.2
7	15 47.0	15 50.9	57 49.0	+1.19	58 3.2	+1.18	16 32.9	2.37	20.2
8	15 54.7	15 58.5	58 17.3	1.17	58 31.2	1.14	17 28.5	2.26	21.2
9	16 2.2	16 5.7	58 44.6	1.10	58 57.6	1.05	18 21.3	2.14	22.2
10	16 9.0	16 12.1	59 9.8	+0.98	59 21.1	+0.89	19 11.5	2.05	23.2
11	16 14.8	16 17.1	59 31.1	0.77	59 39.6	0.63	20 0.4	2.02	24.2
12	16 19.0	16 20.2	59 46.3	0.47	59 50.9	+0.28	20 49.1	2.05	25.2
13	16 20.8	16 20.6	59 53.0	+0.07	59 52.5	−0.16	21 39.0	2.12	26.2
14	16 19.7	16 18.0	59 49.1	−0.40	59 42.8	0.65	22 31.3	2.24	27.2
15	16 15.5	16 12.2	59 33.5	0.90	59 21.3	1.13	23 26.6	2.37	28.2
16	16 8.1	16 3.4	59 6.3	−1.35	58 49.0	−1.53			29.2
17	15 58.0	15 52.3	58 29.5	1.69	58 8.4	1.81	0 24.7	2.46	0.8
18	15 46.2	15 39.9	57 46.1	1.89	57 23.0	1.93	1 24.2	2.48	1.8
19	15 33.6	15 27.3	56 59.7	−1.93	56 36.6	−1.90	2 22.9	2.40	2.8
20	15 21.2	15 15.4	56 14.2	1.83	55 52.8	1.72	3 18.7	2.24	3.8
21	15 10.0	15 5.0	55 32.9	1.58	55 14.8	1.43	4 10.4	2.06	4.8
22	15 0.7	14 56.9	54 58.7	−1.25	54 44.9	−1.05	4 57.7	1.89	5.8
23	14 53.8	14 51.3	54 33.4	0.85	54 24.5	0.63	5 41.3	1.75	6.8
24	14 49.6	14 48.6	54 18.2	−0.41	54 14.6	−0.20	6 22.2	1.66	7.8
25	14 48.3	14 48.8	54 13.5	+0.02	54 15.1	+0.24	7 1.6	1.63	8.8
26	14 49.9	14 51.6	54 19.2	0.44	54 25.6	0.63	7 40.5	1.63	9.8
27	14 54.0	14 56.9	54 34.3	0.81	54 45.0	0.97	8 20.3	1.69	10.8
28	15 0.3	15 4.2	54 57.5	+1.11	55 11.6	+1.23	9 2.2	1.80	11.8
29	15 8.4	15 12.9	55 27.1	1.33	55 43.6	1.40	9 47.2	1.96	12.8
30	15 17.6	15 22.4	56 0.8	1.45	56 18.4	1.48	10 36.4	2.14	13.8
31	15 27.2	15 32.0	56 36.2	+1.47	56 53.7	+1.44	11 30.0	2.32	14.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 1.			
	h m s	s	° ′ ″	″
0	1 30 28.26	1.9064	N.13 18 18.0	13.111
1	1 32 22.78	1.9111	13 31 23.3	13.065
2	1 34 17.59	1.9158	13 44 25.8	13.018
3	1 36 12.68	1.9207	13 57 25.5	12.971
4	1 38 8.07	1.9256	14 10 22.3	12.922
5	1 40 3.75	1.9306	14 23 16.1	12.871
6	1 41 59.73	1.9355	14 36 6.8	12.819
7	1 43 56.01	1.9406	14 48 54.4	12.767
8	1 45 52.60	1.9457	15 1 38.9	12.714
9	1 47 49.50	1.9509	15 14 20.1	12.659
10	1 49 46.71	1.9561	15 26 58.0	12.603
11	1 51 44.23	1.9613	15 39 32.5	12.547
12	1 53 42.07	1.9667	15 52 3.6	12.489
13	1 55 40.23	1.9721	16 4 31.2	12.430
14	1 57 38.72	1.9776	16 16 55.2	12.368
15	1 59 37.54	1.9831	16 29 15.4	12.306
16	2 1 36.69	1.9886	16 41 31.9	12.244
17	2 3 36.17	1.9942	16 53 44.7	12.181
18	2 5 35.99	1.9998	17 5 53.6	12.115
19	2 7 36.15	2.0056	17 17 58.5	12.048
20	2 9 36.66	2.0113	17 29 59.4	11.981
21	2 11 37.51	2.0171	17 41 56.2	11.912
22	2 13 38.71	2.0229	17 53 48.8	11.842
23	2 15 40.26	2.0288	N.18 5 37.2	11.771
	SATURDAY 2.			
0	2 17 42.17	2.0348	N.18 17 21.3	11.698
1	2 19 44.44	2.0407	18 29 1.0	11.624
2	2 21 47.06	2.0467	18 40 36.2	11.548
3	2 23 50.04	2.0528	18 52 6.8	11.472
4	2 25 53.39	2.0589	19 3 32.8	11.394
5	2 27 57.11	2.0650	19 14 54.1	11.315
6	2 30 1.19	2.0711	19 26 10.6	11.235
7	2 32 5.64	2.0773	19 37 22.3	11.153
8	2 34 10.47	2.0836	19 48 29.0	11.070
9	2 36 15.68	2.0899	19 59 30.7	10.986
10	2 38 21.26	2.0962	20 10 27.3	10.901
11	2 40 27.22	2.1025	20 21 18.8	10.814
12	2 42 33.56	2.1088	20 32 5.0	10.725
13	2 44 40.28	2.1152	20 42 45.8	10.636
14	2 46 47.38	2.1216	20 53 21.3	10.546
15	2 48 54.87	2.1280	21 3 51.3	10.454
16	2 51 2.74	2.1344	21 14 15.8	10.361
17	2 53 11.00	2.1409	21 24 34.6	10.265
18	2 55 19.65	2.1474	21 34 47.6	10.168
19	2 57 28.69	2.1539	21 44 54.8	10.071
20	2 59 38.12	2.1603	21 54 56.2	9.973
21	3 1 47.93	2.1668	22 4 51.6	9.872
22	3 3 58.13	2.1733	22 14 41.0	9.772
23	3 6 8.73	2.1799	22 24 24.2	9.668
24	3 8 19.72	2.1864	N.22 34 1.2	9.564
	SUNDAY 3.			
0	3 8 19.72	2.1864	N.22 34 1.2	9.564
1	3 10 31.10	2.1929	22 43 31.9	9.459
2	3 12 42.87	2.1994	22 52 56.3	9.358
3	3 14 55.03	2.2059	23 2 14.2	9.244
4	3 17 7.58	2.2125	23 11 25.6	9.134
5	3 19 20.53	2.2191	23 20 30.3	9.023
6	3 21 33.87	2.2256	23 29 28.3	8.911
7	3 23 47.60	2.2321	23 38 19.6	8.797
8	3 26 1.72	2.2385	23 47 4.0	8.682
9	3 28 16.22	2.2449	23 55 41.4	8.565
10	3 30 31.11	2.2514	24 4 11.8	8.447
11	3 32 46.39	2.2578	24 12 35.1	8.329
12	3 35 2.05	2.2642	24 20 51.3	8.209
13	3 37 18.09	2.2706	24 29 0.2	8.087
14	3 39 34.52	2.2770	24 37 1.8	7.964
15	3 41 51.33	2.2834	24 44 55.9	7.839
16	3 44 8.52	2.2897	24 52 42.5	7.714
17	3 46 26.09	2.2959	25 0 21.6	7.587
18	3 48 44.03	2.3021	25 7 53.0	7.456
19	3 51 2.35	2.3083	25 15 16.6	7.329
20	3 53 21.03	2.3144	25 22 32.5	7.199
21	3 55 40.08	2.3206	25 29 40.5	7.067
22	3 57 59.50	2.3266	25 36 40.5	6.933
23	4 0 19.27	2.3325	N.25 43 32.5	6.799
	MONDAY 4.			
0	4 2 39.40	2.3385	N.25 50 16.4	6.663
1	4 4 59.89	2.3444	25 56 52.1	6.526
2	4 7 20.73	2.3502	26 3 19.5	6.387
3	4 9 41.92	2.3560	26 9 38.6	6.246
4	4 12 3.45	2.3617	26 15 49.3	6.106
5	4 14 25.33	2.3674	26 21 51.5	5.962
6	4 16 47.54	2.3729	26 27 45.2	5.818
7	4 19 10.08	2.3785	26 33 30.2	5.673
8	4 21 32.96	2.3840	26 39 6.6	5.533
9	4 23 56.16	2.3893	26 44 34.2	5.387
10	4 26 19.67	2.3945	26 49 53.0	5.239
11	4 28 43.50	2.3997	26 55 2.9	5.091
12	4 31 7.64	2.4048	27 0 3.9	4.942
13	4 33 32.08	2.4098	27 4 55.9	4.790
14	4 35 56.82	2.4148	27 9 38.7	4.638
15	4 38 21.86	2.4197	27 14 12.4	4.485
16	4 40 47.19	2.4245	27 18 36.9	4.331
17	4 43 12.80	2.4291	27 22 52.1	4.176
18	4 45 38.68	2.4336	27 26 58.0	4.020
19	4 48 4.83	2.4381	27 30 54.5	3.863
20	4 50 31.25	2.4425	27 34 41.6	3.706
21	4 52 57.93	2.4467	27 38 19.2	3.547
22	4 55 24.86	2.4508	27 41 47.3	3.387
23	4 57 52.03	2.4548	27 45 5.7	3.227
24	5 0 19.44	2.4587	N.27 48 14.5	3.066

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 5.			
	h m s	s	° ′ ″	″
0	5 0 19.44	2.4587	N.27 48 14.5	2.066
1	5 2 47.08	2.4636	27 51 13.6	2.064
2	5 5 14.95	2.4663	27 54 2.9	2.741
3	5 7 43.04	2.4689	27 56 42.5	2.577
4	5 10 11.34	2.4734	27 59 12.2	2.419
5	5 12 39.85	2.4767	28 1 32.0	2.247
6	5 15 8.55	2.4799	28 3 41.9	2.068
7	5 17 37.44	2.4830	28 5 41.8	1.915
8	5 20 6.51	2.4859	28 7 31.7	1.746
9	5 22 35.76	2.4886	28 9 11.6	1.581
10	5 25 5.17	2.4915	28 10 41.4	1.413
11	5 27 34.74	2.4942	28 12 1.1	1.244
12	5 30 4.47	2.4967	28 13 10.7	1.075
13	5 32 34.34	2.4990	28 14 10.1	0.905
14	5 35 4.35	2.5012	28 14 59.3	0.734
15	5 37 34.48	2.5030	28 15 38.2	0.563
16	5 40 4.73	2.5051	28 16 6.9	0.392
17	5 42 35.09	2.5069	28 16 25.3	0.220
18	5 45 5.56	2.5087	28 16 33.3	+ 0.048
19	5 47 36.13	2.5102	28 16 31.0	− 0.124
20	5 50 6.78	2.5115	28 16 18.4	0.297
21	5 52 37.51	2.5127	28 15 55.4	0.470
22	5 55 8.31	2.5139	28 15 22.0	0.642
23	5 57 39.18	2.5149	N.28 14 38.3	0.815
	WEDNESDAY 6.			
0	6 0 10.10	2.5157	N.28 13 44.2	0.986
1	6 2 41.06	2.5164	28 12 39.7	1.158
2	6 5 12.07	2.5171	28 11 24.7	1.330
3	6 7 43.11	2.5175	28 9 59.3	1.510
4	6 10 14.17	2.5178	28 8 23.5	1.684
5	6 12 45.25	2.5180	28 6 37.2	1.858
6	6 15 16.33	2.5180	28 4 40.5	2.032
7	6 17 47.41	2.5179	28 2 33.4	2.205
8	6 20 18.48	2.5177	28 0 15.9	2.379
9	6 22 49.53	2.5173	27 57 47.9	2.553
10	6 25 20.56	2.5168	27 55 9.5	2.727
11	6 27 51.55	2.5162	27 52 20.7	2.900
12	6 30 22.50	2.5154	27 49 21.5	3.073
13	6 32 53.40	2.5145	27 46 11.9	3.246
14	6 35 24.24	2.5135	27 42 51.9	3.419
15	6 37 55.02	2.5124	27 39 21.6	3.591
16	6 40 25.73	2.5112	27 35 41.0	3.764
17	6 42 56.36	2.5098	27 31 50.0	3.936
18	6 45 26.90	2.5083	27 27 48.7	4.107
19	6 47 57.34	2.5066	27 23 37.2	4.278
20	6 50 27.69	2.5049	27 19 15.4	4.449
21	6 52 57.93	2.5030	27 14 43.3	4.620
22	6 55 28.05	2.5010	27 10 1.0	4.789
23	6 57 58.05	2.4989	27 5 8.6	4.958
24	7 0 27.92	2.4966	N.27 0 6.0	5.127
	THURSDAY 7.			
0	7 0 27.92	2.4966	N.27 0 6.0	5.127
1	7 2 57.65	2.4943	26 54 53.3	5.295
2	7 5 27.24	2.4920	26 49 30.6	5.463
3	7 7 56.69	2.4890	26 43 57.8	5.630
4	7 10 25.99	2.4860	26 38 15.0	5.796
5	7 12 55.12	2.4841	26 32 22.3	5.961
6	7 15 24.08	2.4813	26 26 19.7	6.126
7	7 17 52.87	2.4784	26 20 7.2	6.290
8	7 20 21.49	2.4754	26 13 44.9	6.454
9	7 22 49.92	2.4723	26 7 12.7	6.617
10	7 25 18.16	2.4691	26 0 30.8	6.778
11	7 27 46.21	2.4658	25 53 39.3	6.939
12	7 30 14.06	2.4624	25 46 38.1	7.100
13	7 32 41.70	2.4590	25 39 27.3	7.259
14	7 35 9.14	2.4556	25 32 7.0	7.418
15	7 37 36.37	2.4520	25 24 37.1	7.577
16	7 40 3.38	2.4483	25 16 57.8	7.733
17	7 42 30.16	2.4445	25 9 9.1	7.889
18	7 44 56.72	2.4407	25 1 11.1	8.044
19	7 47 23.05	2.4369	24 53 3.8	8.198
20	7 49 49.15	2.4330	24 44 47.3	8.350
21	7 52 15.01	2.4290	24 36 21.6	8.504
22	7 54 40.63	2.4250	24 27 46.8	8.655
23	7 57 6.01	2.4209	N.24 19 3.0	8.804
	FRIDAY 8.			
0	7 59 31.14	2.4168	N.24 10 10.3	8.953
1	8 1 56.02	2.4126	24 1 8.6	9.102
2	8 4 20.65	2.4084	23 51 58.1	9.248
3	8 6 45.03	2.4042	23 42 38.8	9.394
4	8 9 9.15	2.3998	23 33 10.8	9.539
5	8 11 33.01	2.3954	23 23 34.1	9.683
6	8 13 56.60	2.3910	23 13 48.9	9.825
7	8 16 19.93	2.3866	23 3 55.1	9.967
8	8 18 43.00	2.3822	22 53 52.9	10.106
9	8 21 5.80	2.3777	22 43 42.4	10.244
10	8 23 28.33	2.3733	22 33 23.6	10.382
11	8 25 50.60	2.3689	22 22 56.5	10.519
12	8 28 12.60	2.3643	22 12 21.3	10.654
13	8 30 34.32	2.3597	22 1 38.0	10.788
14	8 32 55.77	2.3550	21 50 46.7	10.922
15	8 35 16.95	2.3507	21 39 47.4	11.053
16	8 37 37.85	2.3461	21 28 40.3	11.183
17	8 39 58.48	2.3415	21 17 25.4	11.313
18	8 42 18.83	2.3369	21 6 2.8	11.441
19	8 44 38.91	2.3324	20 54 32.5	11.567
20	8 46 58.72	2.3278	20 42 54.7	11.693
21	8 49 18.25	2.3232	20 31 9.5	11.815
22	8 51 37.51	2.3187	20 19 16.9	11.936
23	8 53 56.50	2.3140	20 7 16.9	12.056
24	8 56 15.21	2.3096	N.19 55 9.7	12.180

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 9.			
	h m s	s	° ′ ″	″
0	8 56 15.21	2.3006	N.19 55 9.7	12.189
1	8 58 33.65	2.3051	19 42 55.3	12.996
2	9 0 51.82	2.3097	19 30 33.9	12.415
3	9 3 9.73	2.3089	19 18 5.5	12.532
4	9 5 27.37	2.3017	19 5 30.1	12.647
5	9 7 44.74	2.3079	18 52 47.9	12.759
6	9 10 1.83	2.3037	18 39 59.0	12.871
7	9 12 18.66	2.3784	18 27 3.4	12.982
8	9 14 35.24	2.3741	18 14 1.2	13.091
9	9 16 51.56	2.3696	18 0 52.5	13.198
10	9 19 7.62	2.3655	17 47 37.4	13.305
11	9 21 23.42	2.3612	17 34 15.9	13.411
12	9 23 38.96	2.3569	17 20 48.1	13.515
13	9 25 54.25	2.3526	17 7 14.1	13.617
14	9 28 9.29	2.3487	16 53 34.1	13.717
15	9 30 24.09	2.3446	16 39 48.1	13.817
16	9 32 38.64	2.3405	16 25 56.1	13.915
17	9 34 52.95	2.3366	16 11 58.3	14.011
18	9 37 7.03	2.3327	15 57 54.8	14.106
19	9 39 20.87	2.3287	15 43 45.6	14.200
20	9 41 34.47	2.3248	15 29 30.8	14.293
21	9 43 47.84	2.3210	15 15 10.5	14.383
22	9 46 0.99	2.3173	15 0 44.8	14.473
23	9 48 13.92	2.3136	N.14 46 13.8	14.561
	SUNDAY 10.			
0	9 50 26.62	2.3099	N.14 31 37.5	14.647
1	9 52 39.11	2.3064	14 16 56.1	14.732
2	9 54 51.39	2.3028	14 2 9.6	14.817
3	9 57 3.45	2.1994	13 47 18.1	14.899
4	9 59 15.31	2.1960	13 32 21.7	14.980
5	10 1 26.97	2.1926	13 17 20.5	15.059
6	10 3 38.42	2.1893	13 2 14.6	15.137
7	10 5 49.68	2.1861	12 47 4.1	15.213
8	10 8 0.75	2.1830	12 31 49.0	15.289
9	10 10 11.64	2.1799	12 16 29.4	15.363
10	10 12 22.34	2.1768	12 1 5.4	15.435
11	10 14 32.86	2.1739	11 45 37.2	15.505
12	10 16 43.21	2.1711	11 30 4.8	15.574
13	10 18 53.39	2.1683	11 14 28.3	15.642
14	10 21 3.40	2.1655	10 58 47.7	15.709
15	10 23 13.25	2.1628	10 43 3.2	15.774
16	10 25 22.94	2.1602	10 27 14.8	15.837
17	10 27 32.48	2.1577	10 11 22.7	15.898
18	10 29 41.87	2.1552	9 55 27.0	15.958
19	10 31 51.11	2.1529	9 39 27.7	16.016
20	10 34 0.22	2.1507	9 23 24.8	16.077
21	10 36 9.20	2.1486	9 7 18.5	16.133
22	10 38 18.05	2.1464	8 51 8.9	16.187
23	10 40 26.77	2.1443	8 34 56.1	16.239
24	10 42 35.37	2.1423	N. 8 18 40.2	16.291
	MONDAY 11.			
0	10 42 35.37	2.1423	N. 8 18 40.2	16.291
1	10 44 43.85	2.1405	8 2 21.2	16.341
2	10 46 52.23	2.1387	7 45 59.3	16.389
3	10 49 0.50	2.1370	7 29 34.5	16.437
4	10 51 8.67	2.1353	7 13 6.9	16.483
5	10 53 16.74	2.1337	6 56 36.6	16.528
6	10 55 24.72	2.1322	6 40 3.8	16.568
7	10 57 32.61	2.1309	6 23 28.5	16.606
8	10 59 40.43	2.1297	6 6 50.8	16.643
9	11 1 48.17	2.1284	5 50 10.7	16.687
10	11 3 55.84	2.1272	5 33 28.4	16.723
11	11 6 3.44	2.1260	5 16 44.0	16.757
12	11 8 10.96	2.1250	4 59 57.6	16.790
13	11 10 18.46	2.1244	4 43 9.2	16.822
14	11 12 25.90	2.1236	4 26 19.0	16.853
15	11 14 33.29	2.1228	4 9 27.0	16.880
16	11 16 40.64	2.1226	3 52 33.4	16.906
17	11 18 47.96	2.1217	3 35 38.1	16.934
18	11 20 55.25	2.1219	3 18 41.3	16.958
19	11 23 2.51	2.1208	3 1 43.1	16.980
20	11 25 9.75	2.1206	2 44 43.7	17.000
21	11 27 16.98	2.1204	2 27 43.1	17.019
22	11 29 24.20	2.1203	2 10 41.4	17.037
23	11 31 31.42	2.1203	N. 1 53 38.6	17.054
	TUESDAY 12.			
0	11 33 38.64	2.1204	N. 1 36 34.9	17.068
1	11 35 45.87	2.1208	1 19 30.4	17.081
2	11 37 53.11	2.1208	1 2 25.2	17.092
3	11 40 0.36	2.1211	0 45 19.3	17.102
4	11 42 7.64	2.1216	0 28 12.9	17.110
5	11 44 14.95	2.1221	N. 0 11 6.1	17.117
6	11 46 22.29	2.1227	S. 0 6 1.1	17.122
7	11 48 29.67	2.1234	0 23 8.6	17.126
8	11 50 37.10	2.1242	0 40 16.2	17.127
9	11 52 44.57	2.1250	0 57 23.8	17.127
10	11 54 52.10	2.1260	1 14 31.4	17.125
11	11 56 59.69	2.1270	1 31 38.8	17.122
12	11 59 7.34	2.1281	1 48 46.0	17.117
13	12 1 15.06	2.1293	2 5 52.9	17.111
14	12 3 22.86	2.1307	2 22 59.3	17.102
15	12 5 30.75	2.1322	2 40 5.2	17.093
16	12 7 38.72	2.1336	2 57 10.5	17.082
17	12 9 46.78	2.1351	3 14 15.0	17.068
18	12 11 54.93	2.1367	3 31 18.7	17.053
19	12 14 3.18	2.1384	3 48 21.4	17.037
20	12 16 11.54	2.1403	4 5 23.1	17.019
21	12 18 20.02	2.1422	4 22 23.7	16.999
22	12 20 28.61	2.1442	4 39 23.0	16.978
23	12 22 37.32	2.1462	4 56 21.0	16.955
24	12 24 46.16	2.1484	S. 5 13 17.6	16.930

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 13.			
0	h m s 12 24 46.16	s 2.1484	° ′ ″ S. 5 13 17.6	″ 16.930
1	12 26 55.13	2.1567	5 30 12.6	16.903
2	12 29 4.24	2.1589	5 47 6.0	16.875
3	12 31 13.48	2.1558	6 3 57.6	16.845
4	12 33 22.87	2.1577	6 20 47.4	16.813
5	12 35 32.41	2.1663	6 37 35.2	16.779
6	12 37 42.11	2.1686	6 54 20.9	16.744
7	12 39 51.97	2.1657	7 11 4.5	16.707
8	12 42 1.99	2.1684	7 27 45.8	16.668
9	12 44 12.18	2.1713	7 44 24.7	16.628
10	12 46 22.55	2.1743	8 1 1.1	16.585
11	12 48 33.10	2.1773	8 17 35.0	16.542
12	12 50 43.83	2.1804	8 34 6.2	16.497
13	12 52 54.75	2.1836	8 50 34.6	16.449
14	12 55 5.86	2.1868	9 7 0.1	16.400
15	12 57 17.16	2.1900	9 23 22.6	16.349
16	12 59 28.66	2.1934	9 39 42.0	16.297
17	13 1 40.37	2.1969	9 55 58.2	16.243
18	13 3 52.29	2.2004	10 12 11.1	16.187
19	13 6 4.42	2.2039	10 28 20.6	16.128
20	13 8 16.76	2.2076	10 44 26.5	16.068
21	13 10 29.33	2.2114	11 0 28.8	16.007
22	13 12 42.13	2.2151	11 16 27.3	15.943
23	13 14 55.15	2.2189	S. 11 32 22.0	15.879
	THURSDAY 14.			
0	13 17 8.40	2.2228	S. 11 48 12.8	15.813
1	13 19 21.89	2.2268	12 3 59.6	15.744
2	13 21 35.62	2.2308	12 19 42.1	15.673
3	13 23 49.59	2.2349	12 35 20.3	15.600
4	13 26 3.81	2.2390	12 50 54.1	15.527
5	13 28 18.27	2.2432	13 6 23.5	15.452
6	13 30 32.99	2.2475	13 21 48.3	15.374
7	13 32 47.97	2.2517	13 37 8.4	15.295
8	13 35 3.20	2.2560	13 52 23.7	15.214
9	13 37 18.69	2.2604	14 7 34.1	15.132
10	13 39 34.45	2.2648	14 22 39.5	15.047
11	13 41 50.47	2.2692	14 37 39.7	14.960
12	13 44 6.76	2.2736	14 52 34.7	14.872
13	13 46 23.33	2.2781	15 7 24.4	14.782
14	13 48 40.17	2.2826	15 22 8.6	14.691
15	13 50 57.28	2.2870	15 36 47.3	14.597
16	13 53 14.67	2.2915	15 51 20.3	14.502
17	13 55 32.35	2.2960	16 5 47.6	14.406
18	13 57 50.31	2.3017	16 20 9.0	14.307
19	14 0 8.55	2.3054	16 34 24.4	14.207
20	14 2 27.08	2.3111	16 48 33.8	14.106
21	14 4 45.89	2.3159	17 2 37.0	14.001
22	14 7 4.99	2.3209	17 16 33.9	13.895
23	14 9 24.38	2.3257	17 30 24.4	13.787
24	14 11 44.07	2.3306	S. 17 44 8.4	13.678

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 15.			
0	h m s 14 11 44.07	s 2.3306	° ′ ″ S. 17 44 8.4	″ 13.678
1	14 14 4.05	2.3354	17 57 45.8	13.568
2	14 16 24.32	2.3402	18 11 16.5	13.456
3	14 18 44.88	2.3451	18 24 40.5	13.342
4	14 21 5.73	2.3500	18 37 57.6	13.226
5	14 23 26.86	2.3549	18 51 7.6	13.107
6	14 25 48.32	2.3598	19 4 10.5	12.986
7	14 28 10.06	2.3647	19 17 6.2	12.863
8	14 30 32.09	2.3696	19 29 54.7	12.738
9	14 32 54.41	2.3745	19 42 35.7	12.611
10	14 35 17.03	2.3794	19 55 9.2	12.482
11	14 37 39.94	2.3843	20 7 35.2	12.350
12	14 40 3.15	2.3892	20 19 53.5	12.216
13	14 42 26.65	2.3941	20 32 4.0	12.080
14	14 44 50.44	2.3990	20 44 6.6	11.977
15	14 47 14.51	2.4036	20 56 1.3	11.844
16	14 49 38.87	2.4084	21 7 47.9	11.709
17	14 52 3.52	2.4132	21 19 26.4	11.573
18	14 54 28.45	2.4179	21 30 56.6	11.434
19	14 56 53.67	2.4226	21 42 18.5	11.295
20	14 59 19.16	2.4272	21 53 32.0	11.154
21	15 1 44.93	2.4317	22 4 37.0	11.012
22	15 4 10.97	2.4363	22 15 33.4	10.868
23	15 6 37.29	2.4409	S. 22 26 21.1	10.723
	SATURDAY 16.			
0	15 9 3.88	2.4454	S. 22 37 0.1	10.577
1	15 11 30.73	2.4498	22 47 30.3	10.430
2	15 13 57.85	2.4542	22 57 51.5	10.278
3	15 16 25.23	2.4585	23 8 3.7	10.126
4	15 18 52.87	2.4627	23 18 6.8	9.976
5	15 21 20.75	2.4668	23 28 0.8	9.822
6	15 23 48.88	2.4708	23 37 45.5	9.667
7	15 26 17.25	2.4749	23 47 20.9	9.512
8	15 28 45.87	2.4789	23 56 46.9	9.355
9	15 31 14.72	2.4828	24 6 3.5	9.197
10	15 33 43.80	2.4869	24 15 10.6	9.036
11	15 36 13.11	2.4906	24 24 8.1	8.878
12	15 38 42.63	2.4946	24 32 55.9	8.716
13	15 41 12.37	2.4974	24 41 34.0	8.553
14	15 43 42.32	2.5009	24 50 2.3	8.390
15	15 46 12.48	2.5042	24 58 20.8	8.226
16	15 48 42.83	2.5074	25 6 29.4	8.060
17	15 51 13.37	2.5106	25 14 28.0	7.894
18	15 53 44.10	2.5137	25 22 16.6	7.727
19	15 56 15.01	2.5168	25 29 55.2	7.556
20	15 58 46.09	2.5194	25 37 23.6	7.388
21	16 1 17.34	2.5223	25 44 41.8	7.218
22	16 3 48.75	2.5249	25 51 49.8	7.048
23	16 6 20.32	2.5273	25 58 47.6	6.877
24	16 8 52.03	2.5297	S. 26 5 35.1	6.705

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 17.			
	h m s	s	° ′ ″	″
0	16 8 52.03	2.5397	S. 26 5 35.1	6.705
1	16 11 23.88	2.5319	26 12 12.2	6.539
2	16 13 55.86	2.5341	26 18 38.9	6.358
3	16 16 27.97	2.5362	26 24 55.2	6.184
4	16 19 0.20	2.5361	26 31 1.0	6.009
5	16 21 32.54	2.5397	26 36 56.3	5.833
6	16 24 4.97	2.5413	26 42 41.0	5.658
7	16 26 37.50	2.5439	26 48 15.2	5.482
8	16 29 10.12	2.5443	26 53 38.8	5.305
9	16 31 42.82	2.5456	26 58 51.8	5.127
10	16 34 15.59	2.5467	27 3 54.1	4.950
11	16 36 48.42	2.5475	27 8 45.8	4.772
12	16 39 21.29	2.5483	27 13 26.8	4.594
13	16 41 54.21	2.5490	27 17 57.1	4.416
14	16 44 27.17	2.5496	27 22 16.7	4.237
15	16 47 0.16	2.5500	27 26 25.5	4.058
16	16 49 33.17	2.5503	27 30 23.6	3.879
17	16 52 6.18	2.5502	27 34 11.0	3.700
18	16 54 39.20	2.5502	27 37 47.6	3.521
19	16 57 12.21	2.5500	27 41 13.5	3.342
20	16 59 45.20	2.5497	27 44 28.6	3.162
21	17 2 18.17	2.5492	27 47 32.9	2.983
22	17 4 51.11	2.5486	27 50 26.5	2.804
23	17 7 24.00	2.5477	S. 27 53 9.4	2.625
	MONDAY 18.			
0	17 9 56.84	2.5468	S. 27 55 41.5	2.446
1	17 12 29.62	2.5457	27 58 2.9	2.267
2	17 15 2.33	2.5444	28 0 13.5	2.088
3	17 17 34.95	2.5430	28 2 13.4	1.909
4	17 20 7.49	2.5416	28 4 2.6	1.730
5	17 22 39.94	2.5399	28 5 41.2	1.554
6	17 25 12.28	2.5381	28 7 9.1	1.377
7	17 27 44.51	2.5361	28 8 26.4	1.199
8	17 30 16.61	2.5339	28 9 33.0	1.022
9	17 32 48.58	2.5317	28 10 29.1	0.847
10	17 35 20.41	2.5293	28 11 14.6	0.671
11	17 37 52.09	2.5268	28 11 49.6	0.495
12	17 40 23.62	2.5241	28 12 14.0	0.319
13	17 42 54.98	2.5212	28 12 27.9	− 0.146
14	17 45 26.16	2.5182	28 12 31.5	+ 0.027
15	17 47 57.16	2.5151	28 12 24.7	0.200
16	17 50 27.97	2.5118	28 12 7.5	0.372
17	17 52 58.58	2.5085	28 11 40.0	0.544
18	17 55 28.99	2.5050	28 11 2.2	0.715
19	17 57 59.18	2.5013	28 10 14.2	0.885
20	18 0 29.15	2.4975	28 9 16.0	1.054
21	18 2 58.88	2.4935	28 8 7.7	1.223
22	18 5 28.37	2.4895	28 6 49.3	1.391
23	18 7 57.62	2.4854	28 5 20.8	1.558
24	18 10 26.62	2.4812	S. 28 3 42.3	1.724

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 19.			
	h m s	s	° ′ ″	″
0	18 10 26.62	2.4812	S. 28 3 42.3	1.724
1	18 12 55.36	2.4767	28 1 53.9	1.889
2	18 15 23.83	2.4722	27 59 55.6	2.053
3	18 17 52.02	2.4675	27 57 47.5	2.216
4	18 20 19.93	2.4626	27 55 29.7	2.378
5	18 22 47.56	2.4580	27 53 2.1	2.540
6	18 25 14.89	2.4530	27 50 24.9	2.699
7	18 27 41.92	2.4480	27 47 38.2	2.858
8	18 30 8.65	2.4426	27 44 41.9	3.017
9	18 32 35.06	2.4375	27 41 36.1	3.175
10	18 35 1.15	2.4322	27 38 20.9	3.331
11	18 37 26.92	2.4267	27 34 56.4	3.485
12	18 39 52.36	2.4212	27 31 22.7	3.639
13	18 42 17.46	2.4155	27 27 39.8	3.792
14	18 44 42.22	2.4096	27 23 47.7	3.943
15	18 47 6.64	2.4041	27 19 46.6	4.093
16	18 49 30.71	2.3982	27 15 36.5	4.242
17	18 51 54.42	2.3922	27 11 17.5	4.390
18	18 54 17.78	2.3862	27 6 49.7	4.537
19	18 56 40.77	2.3801	27 2 13.1	4.683
20	18 59 3.39	2.3739	26 57 27.8	4.826
21	19 1 25.64	2.3677	26 52 33.8	4.971
22	19 3 47.51	2.3613	26 47 31.3	5.112
23	19 6 9.00	2.3550	S. 26 42 20.4	5.253
	WEDNESDAY 20.			
0	19 8 30.11	2.3487	S. 26 37 1.1	5.392
1	19 10 50.84	2.3422	26 31 33.4	5.530
2	19 13 11.17	2.3356	26 25 57.5	5.666
3	19 15 31.11	2.3290	26 20 13.5	5.801
4	19 17 50.65	2.3224	26 14 21.4	5.935
5	19 20 9.80	2.3158	26 8 21.3	6.068
6	19 22 28.55	2.3092	26 2 13.2	6.200
7	19 24 46.90	2.3024	25 55 57.3	6.330
8	19 27 4.84	2.2956	25 49 33.6	6.459
9	19 29 22.37	2.2887	25 43 2.2	6.587
10	19 31 39.49	2.2819	25 36 23.1	6.713
11	19 33 56.20	2.2751	25 29 36.6	6.837
12	19 36 12.51	2.2683	25 22 42.7	6.960
13	19 38 28.40	2.2614	25 15 41.4	7.083
14	19 40 43.88	2.2545	25 8 32.7	7.205
15	19 42 58.94	2.2475	25 1 16.8	7.324
16	19 45 13.58	2.2406	24 53 53.8	7.442
17	19 47 27.81	2.2337	24 46 23.7	7.559
18	19 49 41.62	2.2267	24 38 46.7	7.674
19	19 51 55.01	2.2197	24 31 2.8	7.789
20	19 54 7.98	2.2127	24 23 12.0	7.902
21	19 56 20.54	2.2058	24 15 14.5	8.014
22	19 58 32.68	2.1988	24 7 10.3	8.125
23	20 0 44.40	2.1919	23 58 59.5	8.234
24	20 2 55.71	2.1850	S. 23 50 42.2	8.342

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 21.			
	h m s	s	° ′ ″	″
0	20 2 55.71	2.1650	S. 23 50 42.2	8.348
1	20 5 6.60	2.1780	23 42 18.4	8.449
2	20 7 17.07	2.1711	23 33 48.3	8.553
3	20 9 27.13	2.1642	23 25 12.0	8.657
4	20 11 36.78	2.1573	23 16 29.5	8.760
5	20 13 46.01	2.1503	23 7 40.8	8.863
6	20 15 54.82	2.1434	22 58 46.1	8.966
7	20 18 3.22	2.1366	22 49 45.4	9.061
8	20 20 11.22	2.1299	22 40 38.8	9.158
9	20 22 18.81	2.1231	22 31 26.4	9.254
10	20 24 25.99	2.1163	22 22 8.3	9.349
11	20 26 32.77	2.1096	22 12 44.5	9.443
12	20 28 39.15	2.1029	22 3 15.1	9.536
13	20 30 45.12	2.0962	21 53 40.2	9.627
14	20 32 50.69	2.0899	21 43 59.9	9.717
15	20 34 55.87	2.0830	21 34 14.1	9.807
16	20 37 0.65	2.0764	21 24 23.0	9.895
17	20 39 5.04	2.0699	21 14 26.7	9.981
18	20 41 9.04	2.0634	21 4 25.3	10.066
19	20 43 12.65	2.0570	20 54 18.8	10.151
20	20 45 15.88	2.0506	20 44 7.2	10.234
21	20 47 18.72	2.0443	20 33 50.7	10.316
22	20 49 21.18	2.0379	20 23 29.3	10.397
23	20 51 23.27	2.0317	S. 20 13 3.1	10.477
	FRIDAY 22.			
0	20 53 24.98	2.0254	S. 20 2 32.1	10.556
1	20 55 26.32	2.0193	19 51 56.4	10.632
2	20 57 27.29	2.0132	19 41 16.2	10.708
3	20 59 27.90	2.0072	19 30 31.4	10.784
4	21 1 28.15	2.0011	19 19 42.1	10.858
5	21 3 28.03	1.9950	19 8 48.4	10.931
6	21 5 27.55	1.9891	18 57 50.4	11.003
7	21 7 26.72	1.9833	18 46 48.1	11.074
8	21 9 25.55	1.9776	18 35 41.5	11.144
9	21 11 24.03	1.9718	18 24 30.8	11.213
10	21 18 22.17	1.9660	18 13 16.0	11.281
11	21 15 19.97	1.9605	18 1 57.1	11.348
12	21 17 17.43	1.9549	17 50 34.2	11.414
13	21 19 14.56	1.9495	17 39 7.4	11.478
14	21 21 11.37	1.9441	17 27 36.8	11.542
15	21 23 7.85	1.9387	17 16 2.4	11.604
16	21 25 4.01	1.9334	17 4 24.3	11.666
17	21 26 59.86	1.9282	16 52 42.5	11.727
18	21 28 55.39	1.9229	16 40 57.0	11.787
19	21 30 50.61	1.9178	16 29 8.0	11.846
20	21 32 45.53	1.9129	16 17 15.5	11.903
21	21 34 40.16	1.9068	16 5 19.6	11.960
22	21 36 34.49	1.9030	15 53 20.3	12.017
23	21 38 28.52	1.8981	15 41 17.6	12.072
24	21 40 22.26	1.8933	S. 15 29 11.6	12.127

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 23.			
	h m s	s	° ′ ″	″
0	21 40 22.26	1.8933	S. 15 29 11.6	12.127
1	21 42 15.72	1.8886	15 17 2.4	12.180
2	21 44 8.90	1.8840	15 4 50.0	12.232
3	21 46 1.80	1.8794	14 52 34.6	12.283
4	21 47 54.43	1.8750	14 40 16.1	12.334
5	21 49 46.80	1.8706	14 27 54.5	12.385
6	21 51 38.90	1.8662	14 15 29.9	12.434
7	21 53 30.74	1.8619	14 3 2.4	12.482
8	21 55 22.33	1.8577	13 50 32.1	12.530
9	21 57 13.67	1.8536	13 37 59.0	12.575
10	21 59 4.76	1.8495	13 25 23.1	12.621
11	22 0 55.61	1.8455	13 12 44.5	12.666
12	22 2 46.22	1.8416	13 0 3.2	12.710
13	22 4 36.60	1.8377	12 47 19.3	12.753
14	22 6 26.75	1.8340	12 34 32.8	12.796
15	22 8 16.68	1.8303	12 21 43.8	12.837
16	22 10 6.39	1.8267	12 8 52.4	12.878
17	22 11 55.89	1.8232	11 55 58.5	12.918
18	22 13 45.17	1.8197	11 43 2.2	12.957
19	22 15 34.25	1.8163	11 30 3.6	12.996
20	22 17 23.13	1.8130	11 17 2.7	13.034
21	22 19 11.81	1.8098	11 3 59.6	13.071
22	22 21 0.30	1.8066	10 50 54.2	13.107
23	22 22 48.60	1.8034	S. 10 37 46.7	13.142
	SUNDAY 24.			
0	22 24 36.71	1.8003	S. 10 24 37.2	13.176
1	22 26 24.64	1.7974	10 11 25.6	13.211
2	22 28 12.40	1.7947	9 58 11.9	13.245
3	22 30 0.00	1.7919	9 44 56.2	13.277
4	22 31 47.43	1.7892	9 31 38.6	13.309
5	22 33 34.70	1.7865	9 18 19.1	13.340
6	22 35 21.81	1.7839	9 4 57.8	13.371
7	22 37 8.77	1.7814	8 51 34.6	13.401
8	22 38 55.58	1.7790	8 38 9.7	13.429
9	22 40 42.25	1.7767	8 24 43.1	13.458
10	22 42 28.78	1.7744	8 11 14.8	13.486
11	22 44 15.18	1.7722	7 57 44.8	13.513
12	22 46 1.45	1.7702	7 44 13.2	13.539
13	22 47 47.60	1.7682	7 30 40.1	13.564
14	22 49 33.63	1.7662	7 17 5.5	13.590
15	22 51 19.54	1.7643	7 3 29.3	13.615
16	22 53 5.34	1.7625	6 49 51.7	13.638
17	22 54 51.04	1.7606	6 36 12.7	13.661
18	22 56 36.64	1.7589	6 22 32.4	13.683
19	22 58 22.14	1.7576	6 8 50.7	13.705
20	23 0 7.55	1.7562	5 55 7.8	13.726
21	23 1 52.88	1.7548	5 41 23.6	13.747
22	23 3 38.13	1.7535	5 27 38.2	13.766
23	23 5 23.30	1.7522	5 13 51.7	13.785
24	23 7 8.39	1.7509	S. 5 0 4.0	13.804

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 25.			
	h m s	s	° ′ ″	″
0	23 7 8.39	1.7509	S. 5 0 4.0	13.804
1	23 8 53.41	1.7498	4 46 15.2	13.822
2	23 10 38.37	1.7489	4 32 25.4	13.838
3	23 12 23.28	1.7480	4 18 34.6	13.855
4	23 14 8.13	1.7471	4 4 42.8	13.871
5	23 15 52.93	1.7463	3 50 50.1	13.886
6	23 17 37.69	1.7456	3 36 56.5	13.901
7	23 19 22.41	1.7450	3 23 2.0	13.914
8	23 21 7.09	1.7444	3 9 6.8	13.927
9	23 22 51.74	1.7439	2 55 10.8	13.939
10	23 24 36.36	1.7436	2 41 14.1	13.952
11	23 26 20.97	1.7433	2 27 16.6	13.964
12	23 28 5.56	1.7431	2 13 18.4	13.975
13	23 29 50.14	1.7429	1 59 19.6	13.984
14	23 31 34.71	1.7428	1 45 20.3	13.993
15	23 33 19.27	1.7428	1 31 20.4	14.002
16	23 35 3.84	1.7429	1 17 20.0	14.010
17	23 36 48.42	1.7430	1 3 19.2	14.018
18	23 38 33.00	1.7432	0 49 17.9	14.025
19	23 40 17.60	1.7436	0 35 16.2	14.031
20	23 42 2.23	1.7440	0 21 14.2	14.036
21	23 43 46.88	1.7444	S. 0 7 11.9	14.041
22	23 45 31.56	1.7450	N. 0 6 50.7	14.045
23	23 47 16.28	1.7456	N. 0 20 53.5	14.048
	TUESDAY 26.			
0	23 49 1.03	1.7463	N. 0 34 56.5	14.052
1	23 50 45.83	1.7471	0 48 59.7	14.054
2	23 52 30.68	1.7479	1 3 3.0	14.055
3	23 54 15.58	1.7488	1 17 6.3	14.056
4	23 56 0.54	1.7499	1 31 9.7	14.057
5	23 57 45.57	1.7510	1 45 13.1	14.056
6	23 59 30.66	1.7522	1 59 16.4	14.055
7	0 1 15.83	1.7535	2 13 19.7	14.053
8	0 3 1.08	1.7548	2 27 22.8	14.050
9	0 4 46.40	1.7561	2 41 25.7	14.047
10	0 6 31.81	1.7576	2 55 28.4	14.043
11	0 8 17.31	1.7592	3 9 30.8	14.038
12	0 10 2.91	1.7608	3 23 33.0	14.033
13	0 11 48.61	1.7626	3 37 34.8	14.027
14	0 13 34.42	1.7644	3 51 36.2	14.021
15	0 15 20.33	1.7663	4 5 37.3	14.014
16	0 17 6.36	1.7683	4 19 37.9	14.005
17	0 18 52.51	1.7703	4 33 37.9	13.996
18	0 20 38.78	1.7723	4 47 37.4	13.987
19	0 22 25.18	1.7745	5 1 36.3	13.976
20	0 24 11.72	1.7767	5 15 34.5	13.965
21	0 25 58.39	1.7791	5 29 32.1	13.954
22	0 27 45.21	1.7816	5 43 29.0	13.941
23	0 29 32.18	1.7840	5 57 25.0	13.927
24	0 31 19.29	1.7865	N. 6 11 20.2	13.913

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 27.			
	h m s	s	° ′ ″	″
0	0 31 19.29	1.7865	N. 6 11 20.2	13.913
1	0 33 6.56	1.7892	6 25 14.5	13.898
2	0 34 54.00	1.7920	6 39 7.9	13.883
3	0 36 41.60	1.7948	6 53 0.4	13.867
4	0 38 29.37	1.7977	7 6 51.9	13.849
5	0 40 17.32	1.8006	7 20 42.3	13.830
6	0 42 5.44	1.8036	7 34 31.5	13.811
7	0 43 53.75	1.8067	7 48 19.6	13.792
8	0 45 42.25	1.8099	8 2 6.5	13.771
9	0 47 30.94	1.8132	8 15 52.1	13.749
10	0 49 19.83	1.8166	8 29 36.4	13.727
11	0 51 8.93	1.8200	8 43 19.4	13.704
12	0 52 58.23	1.8234	8 57 0.9	13.679
13	0 54 47.74	1.8270	9 10 40.9	13.655
14	0 56 37.47	1.8307	9 24 19.5	13.630
15	0 58 27.43	1.8345	9 37 56.5	13.603
16	1 0 17.61	1.8382	9 51 31.9	13.576
17	1 2 8.02	1.8422	10 5 5.6	13.547
18	1 3 58.67	1.8462	10 18 37.5	13.517
19	1 5 49.55	1.8501	10 32 7.7	13.487
20	1 7 40.68	1.8542	10 45 36.0	13.456
21	1 9 32.06	1.8584	10 59 2.4	13.424
22	1 11 23.69	1.8627	11 12 26.9	13.392
23	1 13 15.58	1.8670	N.11 25 49.4	13.358
	THURSDAY 28.			
0	1 15 7.73	1.8713	N.11 39 9.8	13.323
1	1 17 0.14	1.8758	11 52 28.1	13.287
2	1 18 52.83	1.8804	12 5 44.2	13.249
3	1 20 45.79	1.8850	12 18 58.0	13.211
4	1 22 39.03	1.8897	12 32 9.5	13.172
5	1 24 32.55	1.8944	12 45 18.7	13.132
6	1 26 26.36	1.8993	12 58 25.4	13.091
7	1 28 20.46	1.9042	13 11 29.6	13.049
8	1 30 14.86	1.9091	13 24 31.3	13.007
9	1 32 9.55	1.9141	13 37 30.4	12.963
10	1 34 4.55	1.9192	13 50 26.8	12.917
11	1 35 59.86	1.9244	14 3 20.5	12.871
12	1 37 55.48	1.9297	14 16 11.3	12.824
13	1 39 51.42	1.9350	14 28 59.3	12.776
14	1 41 47.68	1.9403	14 41 44.4	12.726
15	1 43 44.26	1.9457	14 54 26.4	12.674
16	1 45 41.17	1.9513	15 7 5.3	12.622
17	1 47 38.42	1.9569	15 19 41.1	12.570
18	1 49 36.00	1.9625	15 32 13.7	12.516
19	1 51 33.92	1.9683	15 44 43.0	12.461
20	1 53 32.19	1.9740	15 57 9.0	12.404
21	1 55 30.80	1.9798	16 9 31.5	12.346
22	1 57 29.77	1.9857	16 21 50.5	12.287
23	1 59 29.09	1.9917	16 34 6.0	12.228
24	2 1 28.77	1.9977	N.16 46 17.9	12.167

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 29.			
	h m s	s	° ′ ″	″
0	2 1 28.77	1.9977	N.16 46 17.9	12.167
1	2 3 28.81	2.0037	16 58 26.1	12.105
2	2 5 29.22	2.0098	17 10 30.5	12.041
3	2 7 29.99	2.0160	17 22 31.0	11.975
4	2 9 31.14	2.0222	17 34 27.5	11.909
5	2 11 32.66	2.0285	17 46 20.1	11.842
6	2 13 34.56	2.0348	17 58 8.6	11.773
7	2 15 36.84	2.0412	18 9 52.9	11.703
8	2 17 39.51	2.0477	18 21 33.0	11.632
9	2 19 42.57	2.0542	18 33 8.8	11.560
10	2 21 46.02	2.0607	18 44 40.2	11.486
11	2 23 49.86	2.0672	18 56 7.1	11.410
12	2 25 54.09	2.0738	19 7 29.4	11.333
13	2 27 58.72	2.0806	19 18 47.1	11.256
14	2 30 3.76	2.0873	19 30 0.1	11.177
15	2 32 9.20	2.0941	19 41 8.3	11.096
16	2 34 15.05	2.1008	19 52 11.6	11.014
17	2 36 21.30	2.1076	20 3 10.0	10.930
18	2 38 27.96	2.1144	20 14 3.4	10.847
19	2 40 35.03	2.1213	20 24 51.7	10.761
20	2 42 42.52	2.1283	20 35 34.7	10.672
21	2 44 50.43	2.1353	20 46 12.4	10.583
22	2 46 58.76	2.1422	20 56 44.7	10.493
23	2 49 7.50	2.1492	N.21 7 11.6	10.402
	SATURDAY 30.			
0	2 51 16.66	2.1562	N.21 17 33.0	10.310
1	2 53 26.25	2.1633	21 27 48.8	10.215
2	2 55 36.26	2.1703	21 37 58.8	10.118
3	2 57 46.69	2.1774	21 48 3.0	10.021
4	2 59 57.55	2.1846	21 58 1.3	9.922
5	3 2 8.84	2.1917	22 7 53.6	9.822
6	3 4 20.56	2.1988	22 17 39.9	9.720
7	3 6 32.70	2.2060	22 27 20.0	9.617
8	3 8 45.28	2.2132	22 36 53.9	9.512
9	3 10 58.29	2.2204	22 46 21.4	9.405
10	3 13 11.73	2.2275	22 55 42.5	9.296
11	3 15 25.59	2.2346	23 4 57.2	9.189
12	3 17 39.88	2.2417	23 14 5.2	9.078
13	3 19 54.60	2.2489	23 23 6.5	8.966
14	3 22 9.75	2.2561	23 32 1.1	8.853
15	3 24 25.33	2.2633	23 40 48.8	8.738
16	3 26 41.34	2.2703	23 49 29.6	8.622
17	3 28 57.77	2.2774	23 58 3.4	8.503
18	3 31 14.63	2.2845	24 6 30.0	8.383
19	3 33 31.91	2.2916	24 14 49.4	8.263
20	3 35 49.62	2.2987	24 23 1.5	8.141
21	3 38 7.75	2.3057	24 31 6.3	8.017
22	3 40 26.30	2.3126	24 39 3.6	7.892
23	3 42 45.26	2.3195	24 46 53.3	7.764
24	3 45 4.64	2.3265	N.24 54 35.3	7.636

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY, DECEMBER 1.			
	h m s	s	° ′ ″	″
0	3 45 4.64	2.3265	N.24 54 35.3	7.636

PHASES OF THE MOON.

		d	h	m
○	Full Moon . . Nov.	2	3	18.3
☾	Last Quarter	9	11	6.5
●	New Moon	16	5	11.5
☽	First Quarter . . .	23	19	18.7

		d	h
☾	Perigee . . . . Nov.	13	3.7
☾	Apogee	24	22.9

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Apparent Time of Observation	Name and Direction of Object.		Noon.	P.L. of Diff.	III.	P.L. of Diff.	VI.	P.L. of Diff.	IX.	P.L. of Diff.
1	α Aquilæ	W.	84° 21′ 26″	2648	85° 29′ 19″	2625	86° 57′ 15″	2594	88° 15′ 23″	2565
	Fomalhaut	W.	57 50 48	2669	59 15 14	2647	60 49 4	2617	62 5 17	2589
	α Pegasi	W.	36 35 17	2647	37 54 6	2626	39 13 55	2601	40 34 40	2577
	Aldebaran	E.	43 24 19	2661	41 55 22	2634	40 26 28	2605	38 57 37	2571
	Pollux	E.	85 34 0	2662	84 1 44	2634	82 29 18	2605	80 56 40	2577
	Jupiter	E.	102 18 56	2627	100 47 12	2599	99 15 18	2569	97 43 12	2541
2	α Aquilæ	W.	94 48 22	2679	96 7 19	2675	97 26 21	2671	98 45 27	2668
	Fomalhaut	W.	69 16 40	2745	70 43 55	2121	72 11 27	3117	73 39 16	3162
	α Pegasi	W.	47 29 56	2687	48 55 0	2680	50 20 36	2681	51 46 44	3175
	Pollux	E.	73 10 49	2625	71 37 6	2625	70 3 11	2616	68 29 6	2606
	Jupiter	E.	89 59 55	2667	88 26 41	2640	86 53 16	2630	85 19 39	2631
	Regulus	E.	110 2 22	2669	108 28 32	2630	106 54 30	2621	105 20 17	2602
3	Fomalhaut	W.	81 2 20	2643	82 31 40	2638	84 1 13	2632	85 30 59	2612
	α Pegasi	W.	59 4 29	2669	60 33 17	2659	62 2 28	2652	63 32 1	2646
	Pollux	E.	60 35 49	2766	59 0 36	2757	57 25 12	2748	55 49 36	2741
	Jupiter	E.	77 28 42	2785	75 53 56	2777	74 18 58	2769	72 43 49	2768
	Regulus	E.	97 26 19	2759	95 50 57	2750	94 15 23	2741	92 39 38	2733
4	Fomalhaut	W.	93 2 41	2959	94 33 32	2962	96 4 32	2955	97 35 41	2950
	α Pegasi	W.	71 4 38	2942	72 36 3	2930	74 7 45	2917	75 39 42	2905
	α Arietis	W.	27 42 35	2790	29 17 16	2771	30 52 22	2754	32 27 50	2738
	Pollux	E.	47 48 50	2700	46 12 16	2699	44 35 25	2684	42 58 24	2676
	Jupiter	E.	64 45 10	2716	63 8 52	2706	61 32 23	2699	59 55 42	2691
	Regulus	E.	84 38 3	2690	83 1 10	2681	81 24 5	2673	79 46 49	2665
5	Fomalhaut	W.	105 13 7	2987	106 44 52	2994	108 16 41	2991	109 48 33	2990
	α Pegasi	W.	83 23 7	2962	84 56 28	2949	86 30 1	2934	88 3 45	2925
	α Arietis	W.	40 20 53	2675	42 7 7	2663	43 44 37	2652	45 22 22	2641
	Jupiter	E.	51 49 30	2650	50 11 43	2641	48 33 44	2633	46 55 34	2626
	Regulus	E.	71 37 40	2624	69 59 17	2615	68 20 42	2607	66 41 57	2599
	Venus	E.	102 2 44	2669	100 29 46	2662	98 56 39	2654	97 23 21	2647
6	α Pegasi	W.	95 55 6	2788	97 29 50	2781	99 4 43	2775	100 39 44	2769
	α Arietis	W.	53 34 36	2591	55 13 43	2589	56 53 3	2578	58 32 36	2564
	Jupiter	E.	38 42 5	2586	37 2 51	2579	35 23 27	2572	33 43 53	2564
	Regulus	E.	58 25 22	2559	56 45 30	2550	55 5 26	2542	53 25 11	2534
	Venus	E.	80 34 23	2606	88 0 5	2600	86 25 37	2792	84 50 59	2785
	Mun	E.	133 37 4	2904	132 5 15	2913	130 33 13	2904	129 0 59	2894
7	α Arietis	W.	66 53 25	2600	68 34 11	2510	70 15 10	2502	71 56 21	2494
	Aldebaran	W.	36 24 43	2701	38 1 21	2679	39 38 29	2657	41 16 6	2638
	Regulus	E.	45 1 10	2494	43 19 49	2486	41 38 16	2478	39 56 32	2470
	Venus	E.	76 55 19	2747	75 19 41	2736	73 43 52	2729	72 7 54	2723
	Mun	E.	121 16 47	2648	119 43 21	2638	118 9 43	2629	116 35 53	2621
8	α Arietis	W.	80 25 11	2451	82 7 33	2443	83 50 6	2435	85 32 51	2427
	Aldebaran	W.	49 30 23	2556	51 10 19	2541	52 50 35	2528	54 31 9	2515
	Venus	E.	64 5 28	2685	62 28 28	2678	60 51 18	2670	59 13 58	2668
	Spica	E.	85 25 59	2430	83 43 7	2429	82 0 4	2415	80 16 50	2406
	Mun	E.	108 43 49	2775	107 8 49	2767	105 33 38	2758	103 58 15	2749

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	α Aquilæ	W.	89° 33′ 41″	3606	90° 52′ 9″	3606	92° 10′ 46″	3590	93° 29′ 31″	3585
	Fomalhaut	W.	63 30 53	3210	64 56 50	3193	66 23 7	3177	67 49 44	3161
	α Pegasi	W.	41 56 15	3394	43 18 38	3357	44 41 44	3320	46 5 32	3288
	Aldebaran	E.	37 28 52	3077	36 0 14	3065	34 31 46	3095	33 3 30	3107
	Pollux	E.	79 23 52	2999	77 50 53	2980	76 17 43	2952	74 44 22	2948
	Jupiter	E.	96 10 55	2993	94 38 27	2984	93 5 48	2975	91 32 57	2966
2	α Aquilæ	W.	100 4 35	3567	101 23 45	3567	102 42 55	3568	104 2 4	3570
	Fomalhaut	W.	75 7 22	3090	76 35 44	3078	78 4 21	3065	79 33 13	3053
	α Pegasi	W.	53 13 23	3158	54 40 30	3139	56 8 4	3108	57 36 4	3087
	Pollux	E.	66 54 49	2990	65 20 21	2792	63 45 42	2782	62 10 51	2774
	Jupiter	E.	83 45 51	2991	82 11 51	2813	80 37 40	2804	79 3 17	2795
	Regulus	E.	103 45 52	2794	102 11 16	2785	100 36 28	2776	99 1 29	2768
3	Fomalhaut	W.	87 0 57	3068	88 31 7	3063	90 1 28	2995	91 32 0	2977
	α Pegasi	W.	65 1 54	3068	66 32 7	3065	68 2 39	2960	69 33 30	2956
	Pollux	E.	54 13 50	2732	52 37 53	2794	51 1 45	2716	49 25 26	2707
	Jupiter	E.	71 8 28	2731	69 32 56	2742	67 57 12	2734	66 21 17	2725
	Regulus	E.	91 3 42	2794	89 27 34	2716	87 51 15	2707	86 14 45	2698
4	Fomalhaut	W.	99 6 57	3044	100 38 20	3039	102 9 50	2934	103 41 26	2930
	α Pegasi	W.	77 11 55	3004	78 44 22	3002	80 17 4	2972	81 49 59	2962
	α Arietis	W.	34 3 39	2794	35 39 47	2711	37 16 12	2698	38 52 54	2686
	Pollux	E.	41 21 12	3030	39 43 51	2991	38 6 19	2954	36 28 37	2947
	Jupiter	E.	58 18 50	2993	56 41 47	2974	55 4 32	2966	53 27 6	2958
	Regulus	E.	78 9 22	2956	76 31 43	2948	74 53 53	2940	73 15 52	2939
5	Fomalhaut	W.	111 20 27	3019	112 52 22	2919	114 24 17	2930	115 56 11	2929
	α Pegasi	W.	89 37 41	3017	91 11 47	2906	92 46 4	2901	94 20 30	2794
	α Arietis	W.	47 0 21	3031	48 38 34	2991	50 17 1	2910	51 55 42	2901
	Jupiter	E.	45 17 14	3018	43 38 43	2910	42 0 1	2901	40 21 8	2894
	Regulus	E.	65 3 0	2991	63 23 52	2983	61 44 33	2974	60 5 3	2966
	Venus	E.	95 49 54	3030	94 16 17	3031	92 42 29	3033	91 8 31	3015
6	α Pegasi	W.	102 14 52	2764	103 50 7	2760	105 25 28	2756	107 0 54	2752
	α Arietis	W.	60 12 21	2555	61 52 18	2545	63 32 28	2537	65 12 50	2547
	Jupiter	E.	32 4 9	2957	30 24 15	2951	28 44 12	2943	27 3 59	2538
	Regulus	E.	51 44 45	2996	50 4 8	2518	48 23 20	2510	46 42 21	2502
	Venus	E.	83 16 11	2777	81 41 13	2769	80 6 5	2762	78 30 47	2754
	Sun	E.	127 28 32	2994	125 55 53	2976	124 23 3	2966	122 50 1	2957
7	α Arietis	W.	73 37 43	2465	75 19 17	2477	77 1 3	2468	78 43 1	2460
	Aldebaran	W.	42 54 10	2619	44 32 39	2601	46 11 32	2585	47 50 47	2570
	Regulus	E.	38 14 36	2462	36 32 29	2454	34 50 11	2446	33 7 42	2438
	Venus	E.	70 31 45	2716	68 55 26	2706	67 18 57	2701	65 42 18	2692
	Sun	E.	115 1 52	2811	113 27 39	2800	111 53 14	2793	110 18 37	2785
8	α Arietis	W.	87 15 47	2419	88 58 55	2411	90 42 14	2403	92 25 45	2395
	Aldebaran	W.	56 12 1	2503	57 53 10	2491	59 34 36	2479	61 16 19	2468
	Venus	E.	57 36 27	2656	55 58 47	2647	54 20 56	2640	52 42 55	2632
	Spica	E.	78 33 24	2390	76 49 47	2380	75 5 58	2382	73 21 58	2374
	Sun	E.	102 22 40	2741	100 46 54	2728	99 10 56	2722	97 34 46	2714

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	α Arietis	W.	94° 9′ 27″	2287	95° 53′ 20″	2279	97° 37′ 25″	2271	99° 21′ 41″	2264
	Aldebaran	W.	62 58 17	2457	64 40 31	2447	66 22 59	2436	68 5 42	2426
	Venus	E.	51 4 44	2625	49 26 23	2618	47 47 53	2610	46 9 12	2604
	Spica	E.	71 37 46	2266	69 53 23	2258	68 8 48	2250	66 24 2	2243
	Sun	E.	95 58 25	2706	94 21 53	2697	92 45 9	2689	91 8 14	2681
10	α Arietis	W.	108 5 40	2298	109 50 59	2291	111 36 28	2315	113 22 6	2306
	Aldebaran	W.	76 42 41	2361	78 26 43	2373	80 10 57	2365	81 55 22	2357
	Pollux	W.	33 23 58	2290	35 9 28	2312	36 55 10	2303	38 41 5	2295
	Venus	E.	37 53 28	2571	36 13 53	2564	34 34 9	2559	32 54 18	2553
	Spica	E.	57 37 26	2305	55 51 34	2298	54 5 31	2291	52 19 18	2283
	Sun	E.	83 0 54	2640	81 22 54	2632	79 44 43	2625	78 6 22	2617
11	Aldebaran	W.	90 40 11	2292	92 25 38	2316	94 11 14	2311	95 56 58	2306
	Pollux	W.	47 33 32	2256	49 20 33	2251	51 7 44	2245	52 55 4	2239
	Jupiter	W.	30 11 23	2274	31 58 0	2267	33 44 48	2260	35 31 47	2253
	Spica	E.	43 25 41	2251	41 38 29	2245	39 51 9	2239	38 3 40	2234
	Sun	E.	69 52 9	2584	68 12 52	2577	66 33 26	2570	64 53 52	2566
12	Aldebaran	W.	104 47 18	2286	106 33 38	2283	108 20 2	2281	110 6 29	2280
	Pollux	W.	61 53 54	2213	63 42 2	2209	65 30 16	2205	67 18 36	2201
	Jupiter	W.	44 28 57	2295	46 16 47	2290	48 4 44	2216	49 52 47	2213
	Regulus	W.	24 58 55	2207	26 47 12	2203	28 35 35	2200	30 24 3	2196
	Sun	E.	56 34 16	2543	54 54 3	2540	53 13 45	2538	51 33 24	2535
13	Pollux	W.	76 21 26	2190	78 10 9	2186	79 58 54	2188	81 47 40	2187
	Jupiter	W.	58 54 14	2200	60 42 42	2196	62 31 12	2198	64 19 44	2197
	Regulus	W.	39 27 33	2184	41 16 24	2183	43 5 17	2182	44 54 11	2182
	Sun	E.	43 11 2	2531	41 30 32	2533	39 50 4	2535	38 9 39	2536
14	Pollux	W.	90 51 22	2193	92 40 0	2196	94 28 34	2199	96 17 3	2202
	Jupiter	W.	73 22 17	2202	75 10 42	2204	76 59 3	2207	78 47 20	2210
	Regulus	W.	53 58 32	2186	55 47 17	2190	57 35 59	2194	59 24 36	2197
	Sun	E.	29 49 2	2569	28 9 24	2579	26 30 0	2592	24 50 54	2607
18	Sun	W.	23 29 33	2926	25 1 19	2933	26 32 56	2942	28 4 22	2951
	α Aquilæ	E.	52 26 36	3852	51 12 27	3933	49 59 41	4022	48 48 23	4117
	Fomalhaut	E.	72 48 53	9806	71 14 36	9830	69 40 47	9852	68 7 27	9876
	α Pegasi	E.	94 34 36	9719	92 58 22	9735	91 22 28	9749	89 46 53	9765
19	Sun	W.	35 38 6	3013	37 8 3	3027	38 37 42	3042	40 7 3	3056
	Fomalhaut	E.	60 28 38	3007	58 58 34	3036	57 29 6	3067	56 0 16	3099
	α Pegasi	E.	81 54 16	9848	80 20 51	9866	78 47 49	9885	77 15 11	9903
20	Sun	W.	47 29 13	3139	48 56 44	3148	50 23 56	3163	51 50 50	3178
	Fomalhaut	E.	48 46 27	3985	47 21 58	3999	45 58 20	3375	44 35 35	3494
	α Pegasi	E.	69 38 4	3009	68 7 54	3023	66 38 10	3045	65 8 53	3066
	α Arietis	E.	111 16 45	9769	109 41 36	9783	108 6 46	9798	106 32 15	9813
21	Sun	W.	59 0 55	3950	60 26 5	3964	61 50 59	3976	63 15 38	3990
	α Pegasi	E.	57 49 14	3182	56 22 43	3907	54 56 42	3933	53 31 12	3959
	α Arietis	E.	98 44 14	9880	97 11 30	9894	95 39 3	9906	94 6 52	9918

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
9	α Arietis	W.	101° 6′ 7″	2257	102° 50′ 44″	2249	104° 35′ 32″	2242	106° 20′ 31″	2235
	Aldebaran	W.	69 48 39	2417	71 31 50	2408	73 15 14	2398	74 58 51	2389
	Venus	E.	44 30 22	2586	42 51 22	2580	41 12 13	2563	39 32 55	2577
	Spica	E.	64 39 5	2335	62 53 57	2326	61 8 38	2320	59 23 8	2319
	Sun	E.	89 31 8	2672	87 53 51	2664	86 16 23	2656	84 38 44	2648
10	α Arietis	W.	115 7 54	2302	116 53 51	2296	118 39 57	2290	120 26 11	2285
	Aldebaran	W.	83 39 59	2349	85 24 47	2342	87 9 45	2335	88 54 53	2328
	Pollux	W.	40 27 12	2267	42 13 30	2279	44 0 0	2272	45 46 41	2265
	Venus	E.	31 14 19	2548	29 34 13	2544	27 54 1	2540	26 13 44	2537
	Spica	E.	50 32 54	2277	48 46 20	2270	46 59 37	2264	45 12 44	2257
	Sun	E.	76 27 50	2610	74 49 9	2603	73 10 18	2596	71 31 18	2589
11	Aldebaran	W.	97 42 49	2301	99 28 47	2296	101 14 52	2293	103 1 2	2289
	Pollux	W.	54 42 34	2233	56 30 12	2227	58 17 59	2223	60 5 53	2218
	Jupiter	W.	37 18 55	2267	39 6 13	2241	40 53 39	2235	42 41 14	2230
	Spica	E.	36 16 3	2269	34 28 19	2264	32 40 27	2219	30 52 28	2215
	Sun	E.	63 14 10	2561	61 34 21	2556	59 54 26	2551	58 14 24	2547
12	Aldebaran	W.	111 52 58	2279	113 39 28	2279	115 25 59	2279	117 12 29	2281
	Pollux	W.	69 7 2	2196	70 55 32	2195	72 44 7	2193	74 32 45	2191
	Jupiter	W.	51 40 55	2269	53 29 9	2206	55 17 27	2204	57 5 49	2203
	Regulus	W.	32 12 37	2193	34 1 15	2196	35 49 58	2186	37 38 44	2186
	Sun	E.	49 52 59	2533	48 12 32	2529	46 32 3	2531	44 51 33	2530
13	Pollux	W.	83 36 27	2188	85 25 13	2186	87 13 58	2190	89 2 41	2191
	Jupiter	W.	66 8 16	2197	67 56 48	2196	69 45 19	2196	71 33 49	2200
	Regulus	W.	46 43 5	2188	48 31 59	2183	50 20 52	2184	52 9 43	2186
	Sun	E.	36 29 18	2541	34 49 2	2546	33 8 53	2550	31 28 52	2560
14	Pollux	W.	98 5 27	2206	99 53 45	2212	101 41 55	2216	103 29 58	2222
	Jupiter	W.	80 35 32	2214	82 23 38	2218	84 11 38	2224	85 59 30	2229
	Regulus	W.	61 13 8	2201	63 1 34	2206	64 49 53	2210	66 38 5	2216
	Sun	E.	23 12 8	2665	21 33 47	2648	19 55 57	2675	18 18 44	2710
18	Sun	W.	29 35 36	2662	31 6 36	2673	32 37 22	2686	34 7 52	2699
	α Aquilæ	E.	47 38 38	4221	46 30 32	4333	45 24 10	4455	44 19 38	4548
	Fomalhaut	E.	66 34 37	2909	65 2 18	2985	63 30 31	2951	61 59 17	2979
	α Pegasi	E.	88 11 39	2781	86 36 46	2797	85 2 14	2814	83 28 4	2831
19	Sun	W.	41 36 6	3071	43 4 51	3067	44 33 17	3102	46 1 24	3117
	Fomalhaut	E.	54 32 5	3133	53 4 35	3168	51 37 47	3205	50 11 44	3244
	α Pegasi	E.	75 42 56	2992	74 11 6	2942	72 39 40	2969	71 8 39	2968
20	Sun	W.	53 17 26	3193	54 43 44	3207	56 9 45	3222	57 35 28	3236
	Fomalhaut	E.	43 13 46	3478	41 52 57	3536	40 33 11	3597	39 14 33	3663
	α Pegasi	E.	63 40 2	3068	62 11 38	3111	60 43 42	3134	59 16 14	3158
	α Arietis	E.	104 58 3	2898	103 24 9	2940	101 50 33	2954	100 17 15	2967
21	Sun	W.	64 40 1	3302	66 4 9	3315	67 28 3	3328	68 51 42	3339
	α Pegasi	E.	52 6 13	3267	50 41 46	3316	49 17 53	3345	47 54 34	3377
	α Arietis	E.	92 34 56	2931	91 3 16	2942	89 31 51	2954	88 0 40	2965

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Sun	W.	70° 15′ 8″	3251	71° 38′ 21″	3268	73° 1′ 21″	3272	74° 24′ 10″	3269
	α Pegasi	E.	46 31 51	3410	45 9 46	3445	43 48 20	3458	42 27 36	3521
	α Arietis	E.	86 29 43	2976	84 59 0	2965	83 28 29	2996	81 58 11	3005
23	Sun	W.	81 15 32	3495	82 37 20	3432	83 59 0	3430	85 20 33	3446
	α Arietis	E.	74 29 26	3047	73 0 11	3053	71 31 4	3060	70 2 6	3065
	Aldebaran	E.	105 52 40	3102	104 24 33	3106	102 56 33	3114	101 28 40	3118
24	Sun	W.	92 6 41	3469	93 27 40	3471	94 48 36	3474	96 9 29	3476
	α Aquilæ	W.	43 52 9	4965	44 49 16	4886	45 47 42	4797	46 47 21	4715
	α Arietis	E.	62 38 56	3091	61 10 35	3094	59 42 18	3097	58 14 5	3100
	Aldebaran	E.	94 10 32	3137	92 43 7	3139	91 15 45	3141	89 48 25	3143
25	Sun	W.	102 53 33	3479	104 14 21	3477	105 35 11	3476	106 56 2	3473
	α Aquilæ	W.	52 1 20	4368	53 6 52	4336	54 13 11	4288	55 20 15	4243
	α Arietis	E.	50 53 38	3106	49 25 38	3106	47 57 38	3109	46 29 38	3106
	Aldebaran	E.	82 32 10	3146	81 4 56	3146	79 37 42	3144	78 10 26	3143
26	Sun	W.	113 41 4	3456	115 2 17	3452	116 23 35	3446	117 44 59	3440
	α Aquilæ	W.	61 5 29	4051	62 16 18	4029	63 27 38	3988	64 39 29	3960
	Fomalhaut	W.	33 37 46	4110	34 47 38	4029	35 58 49	3954	37 11 14	3888
	α Arietis	E.	39 9 31	3105	37 41 27	3104	36 13 22	3103	34 45 16	3102
	Aldebaran	E.	70 53 35	3131	69 26 3	3129	67 58 28	3125	66 30 49	3121
	Pollux	E.	113 40 54	3056	112 11 50	3050	110 42 39	3045	109 13 22	3039
27	Sun	W.	124 33 44	3407	125 55 53	3400	127 18 10	3391	128 40 37	3383
	α Aquilæ	W.	70 45 33	3833	72 0 1	3811	73 14 52	3798	74 30 5	3768
	Fomalhaut	W.	43 28 33	3630	44 46 35	3589	46 5 21	3558	47 24 48	3516
	Aldebaran	E.	59 11 20	3101	57 43 11	3096	56 14 56	3091	54 46 36	3087
	Pollux	E.	101 44 58	3004	100 14 50	2997	98 44 33	2988	97 14 5	2980
	Jupiter	E.	119 26 45	2999	117 56 31	2992	116 26 8	2983	114 55 34	2974
28	α Aquilæ	W.	80 51 15	3678	82 8 25	3663	83 25 51	3648	84 43 34	3634
	Fomalhaut	W.	54 11 14	3365	55 34 10	3339	56 57 36	3314	58 21 31	3291
	Aldebaran	E.	47 23 36	3067	45 54 46	3063	44 25 53	3062	42 56 57	3061
	Pollux	E.	89 38 59	2939	88 7 21	2923	86 35 31	2919	85 3 27	2901
	Jupiter	E.	107 19 50	2996	105 48 4	2916	104 16 5	2905	102 43 52	2894
29	α Aquilæ	W.	91 15 46	3579	92 34 51	3562	93 54 7	3553	95 13 33	3545
	Fomalhaut	W.	65 27 43	3183	66 54 12	3163	68 21 5	3145	69 48 20	3127
	α Pegasi	W.	43 44 6	3319	45 7 55	3983	46 32 26	3948	47 57 38	3915
	Aldebaran	E.	35 32 20	3073	34 3 37	3080	32 35 3	3091	31 6 42	3105
	Pollux	E.	77 19 40	2845	75 46 11	2835	74 12 28	2822	72 38 29	2811
	Jupiter	E.	94 59 17	2838	93 25 38	2825	91 51 43	2814	90 17 33	2802
	Regulus	E.	114 11 51	2840	112 38 15	2828	111 4 23	2816	109 30 16	2805
30	α Aquilæ	W.	101 52 34	3519	103 12 37	3516	104 32 43	3516	105 52 49	3517
	Fomalhaut	W.	77 9 56	3043	78 39 15	3037	80 8 54	3013	81 38 51	2998
	α Pegasi	W.	55 12 45	3076	56 41 24	3052	58 10 33	3039	59 40 10	3006
	Pollux	E.	64 44 46	2753	63 9 15	2740	61 33 28	2729	59 57 26	2716
	Jupiter	E.	82 22 48	2741	80 47 3	2729	79 11 2	2717	77 34 45	2704
	Regulus	E.	101 35 49	2744	100 0 8	2732	98 24 11	2721	96 47 59	2708

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
22	Sun	W.	75° 46′ 47″	3399	77° 9′ 13″	3400	78° 31′ 29″	3409	79° 53′ 35″	3417
	α Pegasi	E.	41 7 35	3564	39 48 21	3610	38 29 57	3660	37 12 27	3713
	α Arietis	E.	80 28 4	3014	78 58 9	3022	77 28 24	3031	75 58 50	3039
23	Sun	W.	86 41 58	3451	88 3 17	3456	89 24 30	3461	90 45 38	3465
	α Arietis	E.	68 33 15	3072	67 4 31	3078	65 35 54	3083	64 7 22	3087
	Aldebaran	E.	100 0 52	3123	98 33 10	3127	97 5 33	3131	95 38 1	3133
24	Sun	W.	97 30 20	3477	98 51 10	3479	100 11 58	3480	101 32 45	3479
	α Aquilæ	W.	47 48 8	4639	48 49 59	4569	49 52 51	4505	50 56 39	4445
	α Arietis	E.	56 45 55	3103	55 17 48	3104	53 49 43	3105	52 21 40	3106
	Aldebaran	E.	88 21 8	3144	86 53 52	3146	85 26 38	3146	83 59 24	3146
25	Sun	W.	108 16 56	3471	109 37 52	3468	110 58 52	3464	112 19 56	3461
	α Aquilæ	W.	56 28 1	4360	57 36 27	4159	58 45 32	4121	59 55 13	4085
	α Arietis	E.	45 1 38	3107	43 33 37	3107	42 5 36	3106	40 37 34	3105
	Aldebaran	E.	76 43 9	3149	75 15 50	3139	73 48 28	3137	72 21 3	3134
26	Sun	W.	119 6 30	3435	120 28 7	3426	121 49 52	3422	123 11 44	3415
	α Aquilæ	W.	65 51 48	3932	67 4 35	3906	68 17 49	3880	69 31 29	3856
	Fomalhaut	W.	38 24 46	3897	39 39 20	3771	40 54 52	3731	42 11 17	3673
	α Arietis	E.	33 17 9	3102	31 49 2	3103	30 20 55	3103	28 52 49	3105
	Aldebaran	E.	65 3 5	3118	63 35 17	3113	62 7 23	3109	60 39 24	3105
	Pollux	E.	107 43 57	3033	106 14 25	3026	104 44 45	3019	103 14 56	3018
27	Sun	W.	130 3 13	3374	131 25 59	3365	132 48 55	3357	134 12 1	3348
	α Aquilæ	W.	75 45 40	3749	77 1 35	3730	78 17 50	3713	79 34 23	3695
	Fomalhaut	W.	48 44 54	3483	50 5 37	3451	51 26 56	3421	52 48 49	3393
	Aldebaran	E.	53 18 10	3062	51 49 39	3078	50 21 3	3074	48 52 22	3070
	Pollux	E.	95 43 27	2971	94 12 38	2968	92 41 37	2963	91 10 24	2949
	Jupiter	E.	113 24 49	2965	111 53 52	2956	110 22 44	2946	108 51 23	2936
28	α Aquilæ	W.	86 1 32	3630	87 19 45	3607	88 38 12	3594	89 56 53	3583
	Fomalhaut	W.	59 45 53	3966	61 10 42	3946	62 35 57	3924	64 1 38	3904
	Aldebaran	E.	41 28 0	3060	39 59 2	3061	38 30 5	3063	37 1 10	3067
	Pollux	E.	83 31 10	2991	81 58 39	2980	80 25 54	2968	78 52 54	2957
	Jupiter	E.	101 11 26	2963	99 38 46	2972	98 5 51	2980	96 32 41	2949
29	α Aquilæ	W.	96 33 7	3537	97 52 50	3532	99 12 39	3526	100 32 34	3522
	Fomalhaut	W.	71 15 57	3109	72 43 56	3091	74 12 16	3075	75 40 56	3059
	α Pegasi	W.	49 23 29	3164	50 49 57	3155	52 17 0	3138	53 44 36	3101
	Aldebaran	E.	29 38 39	3194	28 10 58	3148	26 43 46	3178	25 17 11	3230
	Pollux	E.	71 4 15	2799	69 29 46	2787	67 55 1	2775	66 20 1	2764
	Jupiter	E.	88 43 8	2790	87 8 27	2778	85 33 30	2766	83 58 17	2753
	Regulus	E.	107 55 54	2792	106 21 16	2781	104 46 23	2769	103 11 14	2756
30	α Aquilæ	W.	107 12 54	3519	108 32 57	3503	109 52 56	3508	111 12 49	3535
	Fomalhaut	W.	83 9 6	2965	84 39 38	2971	86 10 27	2958	87 41 32	2946
	α Pegasi	W.	61 10 15	2965	62 40 46	2965	64 11 42	2946	65 43 3	2927
	Pollux	E.	58 21 8	2705	56 44 35	2693	55 7 46	2688	53 30 42	2670
	Jupiter	E.	75 58 11	2692	74 21 21	2681	72 44 16	2669	71 6 54	2657
	Regulus	E.	95 11 30	2696	93 34 45	2684	91 57 44	2672	90 20 27	2661

AT GREENWICH APPARENT NOON.

Day of Week	Day of Month	THE SUN'S Apparent Right Ascension	Diff. for 1 Hour	Apparent Declination	Diff. for 1 Hour	Semi-diameter	Equation of Time, to be Subtracted from	Equation of Time, to be Added to Apparent Time	Diff. for 1 Hour
		h m s	s	° ′ ″	″	′ ″	m s	m s	s
S[illegible]	1	16 29 29.10	11.705	S. 21 49 31.0	-23.29	16 15.95	70.26	10 58.43	0.926
Mon.	2	16 33 40.81	11.721	21 56 37.4	22.34	16 16.10	70.26	10 57.64	0.932
Tues.	3	16 37 52.34	11.737	22 3 36.6	21.40	16 16.24	70.44	10 4.23	0.938
Wed.	4	16 42 29.59	11.752	22 15 34.0	-20.11	16 16.38	70.52	9 40.21	1.013
Thur.	5	16 46 51.22	11.766	22 23 23.7	19.02	16 16.52	70.60	9 15.61	1.037
Fri.	6	16 51 12.91	11.780	22 30 47.2	17.93	16 16.64	70.67	8 50.44	1.060
Sat.	7	16 55 35.34	11.791	22 37 44.4	-16.83	16 16.76	70.74	8 24.74	1.082
S[illegible]	8	16 59 58.19	11.802	22 44 15.1	15.72	16 16.88	70.80	7 58.52	1.103
Mon.	9	17 4 21.54	11.812	22 50 18.9	14.60	16 16.99	70.86	7 31.50	1.123
Tues.	10	17 8 45.34	11.821	22 55 55.8	-13.47	16 17.10	70.92	7 4.63	1.141
Wed.	11	17 13 9.56	11.829	23 1 5.4	12.33	16 17.21	70.97	6 37.03	1.158
Thur.	12	17 17 34.22	11.834	23 5 47.7	11.19	16 17.31	71.02	6 9.02	1.174
Fri.	13	17 21 59.23	11.840	23 10 2.4	-10.04	16 17.40	71.07	5 40.65	1.189
Sat.	14	17 26 24.57	11.842	23 13 49.4	8.88	16 17.49	71.11	5 11.95	1.202
S[illegible]	15	17 30 50.21	11.844	23 17 8.6	7.72	16 17.58	71.14	4 42.94	1.214
Mon.	16	17 35 16.11	11.844	23 19 59.7	- 6.55	16 17.67	71.17	4 13.68	1.224
Tues.	17	17 39 42.23	11.842	23 22 22.8	5.38	16 17.75	71.20	3 44.20	1.232
Wed.	18	17 44 8.54	11.839	23 24 17.8	4.20	16 17.83	71.22	3 14.54	1.239
Thur.	19	17 48 34.99	11.834	23 25 44.5	- 3.02	16 17.90	71.24	2 44.73	1.244
Fri.	20	17 53 1.54	11.828	23 26 42.0	1.85	16 17.97	71.25	2 14.62	1.248
Sat.	21	17 57 28.17	11.819	23 27 10.1	- 0.67	16 18.04	71.26	1 44.83	1.250
S[illegible]	22	18 1 54.83	11.811	23 27 14.9	+ 0.51	16 18.10	71.27	1 14.81	1.251
Mon.	23	18 6 21.48	11.800	23 26 48.4	1.69	16 18.16	71.27	0 44.80	1.250
Tues.	24	18 10 48.10	11.787	23 25 53.6	2.87	16 18.21	71.27	0 14.82	1.247
Wed.	25	18 15 14.64	11.773	23 24 30.5	+ 4.04	16 18.26	71.26	0 15.07	1.243
Thur.	26	18 19 41.06	11.758	23 22 39.3	5.22	16 18.30	71.24	0 44.86	1.238
Fri.	27	18 24 7.35	11.742	23 20 19.8	6.39	16 18.33	71.22	1 14.51	1.232
Sat.	28	18 28 33.46	11.724	23 17 32.4	+ 7.56	16 18.36	71.20	1 43.98	1.224
S[illegible]	29	18 32 59.38	11.705	23 14 16.9	8.72	16 18.39	71.17	2 13.26	1.215
Mon.	30	18 37 25.06	11.685	23 10 33.5	9.88	16 18.40	71.14	2 42.30	1.205
Tues.	31	18 41 50.48	11.663	23 6 22.2	11.03	16 18.41	71.11	3 11.08	1.193
Wed.	32	18 46 15.62	11.640	8.23 1 43.2	+12.17	16 18.42	71.07	3 39.58	1.180

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	THE SUN'S Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	16 29 31.85	10.793	S. 21 49 35.2	−23.28	10 50.26	0.936	16 40 22.11
Mon.	2	16 33 51.20	10.819	21 58 41.3	22.23	10 27.47	0.962	16 44 18.67
Tues.	3	16 38 11.16	10.845	22 7 22.1	21.17	10 4.06	0.988	16 48 15.23
Wed.	4	16 42 31.74	10.869	22 15 37.3	−20.10	9 40.05	1.013	16 52 11.79
Thur.	5	16 46 52.90	10.893	22 23 26.6	19.01	9 15.45	1.037	16 56 8.34
Frid.	6	16 51 14.61	10.916	22 30 49.9	17.92	8 50.29	1.060	17 0 4.90
Sat.	7	16 55 36.87	10.938	22 37 46.8	−16.82	8 24.59	1.082	17 4 1.46
SUN.	8	16 59 59.65	10.959	22 44 17.2	15.71	7 58.37	1.103	17 7 58.02
Mon.	9	17 4 22.92	10.979	22 50 20.7	14.59	7 31.66	1.122	17 11 54.58
Tues.	10	17 8 46.64	10.998	22 55 57.3	−13.46	7 4.50	1.141	17 15 51.14
Wed.	11	17 13 10.80	11.015	23 1 6.8	12.32	6 36.90	1.158	17 19 47.70
Thur.	12	17 17 35.35	11.031	23 5 48.8	11.18	6 8.91	1.174	17 23 44.26
Frid.	13	17 22 0.27	11.045	23 10 3.3	−10.03	5 40.54	1.189	17 27 40.81
Sat.	14	17 26 25.53	11.058	23 13 50.2	8.87	5 11.84	1.202	17 31 37.37
SUN.	15	17 30 51.08	11.070	23 17 9.2	7.71	4 42.85	1.213	17 35 33.93
Mon.	16	17 35 16.89	11.080	23 20 0.2	− 6.54	4 13.60	1.223	17 39 30.49
Tues.	17	17 39 42.92	11.088	23 22 23.2	5.37	3 44.13	1.232	17 43 27.05
Wed.	18	17 44 9.13	11.095	23 24 18.0	4.20	3 14.48	1.239	17 47 23.61
Thur.	19	17 48 35.49	11.100	23 25 44.6	− 3.02	2 44.67	1.244	17 51 20.17
Frid.	20	17 53 1.96	11.104	23 26 43.0	1.84	2 14.77	1.248	17 55 16.73
Sat.	21	17 57 28.49	11.106	23 27 13.1	− 0.66	1 44.79	1.250	17 59 13.28
SUN.	22	18 1 55.06	11.107	23 27 14.9	+ 0.51	1 14.79	1.250	18 3 9.84
Mon.	23	18 6 21.62	11.106	23 26 48.4	1.69	0 44.78	1.249	18 7 6.40
Tues.	24	18 10 48.14	11.103	23 25 53.6	2.87	0 14.82	1.247	18 11 2.96
Wed.	25	18 15 14.59	11.098	23 24 30.6	+ 4.05	0 15.07	1.243	18 14 59.52
Thur.	26	18 19 40.92	11.092	23 22 39.4	5.22	0 44.84	1.238	18 18 56.08
Frid.	27	18 24 7.12	11.086	23 20 20.0	6.39	1 14.48	1.231	18 22 52.64
Sat.	28	18 28 33.14	11.079	23 17 32.6	+ 7.56	1 43.95	1.224	18 26 49.20
SUN.	29	18 32 58.97	11.071	23 14 17.2	8.72	2 13.21	1.215	18 30 45.76
Mon.	30	18 37 24.56	11.061	23 10 33.9	9.88	2 42.25	1.204	18 34 42.32
Tues.	31	18 41 49.89	11.050	23 6 22.8	11.04	3 11.02	1.193	18 38 38.87
Wed.	32	18 46 14.94	11.037	S. 23 1 44.0	+12.19	3 39.51	1.180	18 42 35.43

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

Diff. for 1 Hour, +9s.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Dif. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Dif. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	335	249 5 21.6	4 30.0	152.08	+ 0.80	9.9937472	−28.3	7 18 25.87
2	336	250 6 12.2	5 20.4	152.13	0.79	9.9936805	27.3	7 14 29.95
3	337	251 7 3.8	6 11.8	152.18	0.74	9.9936164	26.2	7 10 34.04
4	338	252 7 56.6	7 4.5	152.22	+ 0.68	9.9935549	−25.2	7 6 38.13
5	339	253 8 50.6	7 58.3	152.27	0.59	9.9934958	24.1	7 2 42.22
6	340	254 9 45.7	8 53.2	152.33	0.47	9.9934392	23.1	6 58 46.30
7	341	255 10 42.1	9 49.4	152.37	+ 0.34	9.9933849	−22.2	6 54 50.39
8	342	256 11 39.7	10 46.8	152.43	0.21	9.9933327	21.3	6 50 54.48
9	343	257 12 38.6	11 45.5	152.48	+ 0.08	9.9932828	20.4	6 46 58.57
10	344	258 13 38.6	12 45.3	152.53	− 0.04	9.9932350	−19.5	6 43 2.65
11	345	259 14 39.6	13 46.1	152.57	0.15	9.9931890	18.8	6 39 6.74
12	346	260 15 41.8	14 48.1	152.61	0.24	9.9931449	18.1	6 35 10.83
13	347	261 16 45.0	15 51.1	152.65	− 0.31	9.9931024	−17.4	6 31 14.91
14	348	262 17 49.2	16 55.2	152.69	0.35	9.9930616	16.7	6 27 19.00
15	349	263 18 54.1	17 59.9	152.72	0.36	9.9930225	16.0	6 23 23.09
16	350	264 19 59.8	19 5.4	152.75	− 0.34	9.9929848	−15.3	6 19 27.18
17	351	265 21 6.1	20 11.5	152.78	0.28	9.9929488	14.7	6 15 31.26
18	352	266 22 13.0	21 18.2	152.80	0.21	9.9929144	14.0	6 11 35.35
19	353	267 23 20.4	22 25.4	152.82	− 0.11	9.9928815	−13.4	6 7 39.44
20	354	268 24 28.0	23 32.8	152.83	+ 0.01	9.9928503	12.6	6 3 43.52
21	355	269 25 36.0	24 40.6	152.84	0.14	9.9928210	11.8	5 59 47.61
22	356	270 26 44.1	25 48.5	152.85	+ 0.28	9.9927935	−10.9	5 55 51.70
23	357	271 27 52.4	26 56.6	152.85	0.39	9.9927680	10.0	5 51 55.78
24	358	272 29 0.7	28 4.7	152.85	0.51	9.9927447	9.1	5 47 59.87
25	359	273 30 9.0	29 12.8	152.85	+ 0.61	9.9927237	− 8.2	5 44 3.96
26	360	274 31 17.4	30 21.0	152.85	0.68	9.9927050	7.2	5 40 8.04
27	361	275 32 25.7	31 29.1	152.85	0.74	9.9926889	6.1	5 36 12.13
28	362	276 33 34.0	32 37.2	152.85	+ 0.76	9.9926756	− 5.0	5 32 16.22
29	363	277 34 42.3	33 45.3	152.85	0.76	9.9926650	3.9	5 28 20.30
30	364	278 35 50.7	34 53.5	152.85	0.72	9.9926571	2.7	5 24 24.39
31	365	279 36 59.0	36 1.6	152.85	0.66	9.9926521	1.5	5 20 28.48
32	366	280 38 7.5	37 9.9	152.85	+ 0.57	9.9926500	− 0.3	5 16 32.57

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0d.0.

Dif. for 1 Hour, − 9s.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month	SEMIDIAMETER. Noon.	SEMIDIAMETER. Midnight.	HORIZONTAL PARALLAX. Noon.	Diff. for 1 Hour.	HORIZONTAL PARALLAX. Midnight.	Diff. for 1 Hour.	UPPER TRANSIT. Meridian of Greenwich.	Diff. for 1 Hour.	AGE. Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 27.2	15 32.0	56 36.2	+1.47	56 53.7	+1.44	11 30.0	2.32	14.8
2	15 36.6	15 41.1	57 10.8	1.40	57 27.3	1.34	12 27.6	2.46	15.8
3	15 45.4	15 49.3	57 42.9	1.25	57 57.3	1.15	13 27.4	2.50	16.8
4	15 52.9	15 56.1	58 10.5	+1.05	58 22.4	+0.93	14 27.0	2.45	17.8
5	15 59.0	16 1.5	58 32.9	0.82	58 42.1	0.71	15 24.3	2.32	18.8
6	16 3.6	16 5.4	58 50.0	0.60	58 56.6	0.50	16 18.2	2.18	19.8
7	16 6.9	16 8.0	59 2.0	+0.40	59 6.2	+0.30	17 9.0	2.06	20.8
8	16 9.0	16 9.4	59 9.1	0.21	59 11.2	+0.13	17 57.4	1.99	21.8
9	16 9.7	16 9.6	59 12.2	+0.03	59 12.0	−0.06	18 44.9	1.98	22.8
10	16 9.3	16 8.6	59 10.7	−0.15	59 8.3	−0.26	19 32.8	2.03	23.8
11	16 7.6	16 6.2	59 4.5	0.37	58 59.5	0.48	20 22.6	2.12	24.8
12	16 4.4	16 2.3	58 53.0	0.60	58 45.1	0.73	21 15.1	2.26	25.8
13	15 59.7	15 56.7	58 35.6	−0.85	58 24.6	−0.98	22 10.8	2.38	26.8
14	15 53.3	15 49.5	58 12.0	1.10	57 58.1	1.22	23 9.0	2.46	27.8
15	15 45.3	15 40.9	57 42.8	1.32	57 26.4	1.41	6		28.8
16	15 36.1	15 31.2	57 9.0	−1.48	56 51.0	−1.52	0 7.9	2.44	0.2
17	15 26.2	15 21.2	56 32.6	1.53	56 14.2	1.53	1 5.4	2.33	1.2
18	15 16.3	15 11.5	55 56.0	1.49	55 38.5	1.42	1 59.4	2.16	2.2
19	15 7.0	15 2.8	55 21.9	−1.33	55 6.5	−1.22	2 49.1	1.98	3.2
20	14 59.0	14 55.7	54 52.6	1.08	54 40.5	0.93	3 34.7	1.82	4.2
21	14 52.9	14 50.8	54 30.3	0.75	54 22.5	0.56	4 17.0	1.70	5.2
22	14 49.3	14 48.5	54 16.9	−0.36	54 13.9	−0.15	4 57.0	1.64	6.2
23	14 48.3	14 48.9	54 13.4	+0.07	54 15.6	+0.29	5 35.9	1.62	7.2
24	14 50.2	14 52.3	54 20.4	0.51	54 27.9	0.73	6 15.0	1.65	8.2
25	14 55.0	14 58.4	54 38.0	+0.94	54 50.5	+1.14	6 55.4	1.73	9.2
26	15 2.4	15 7.1	55 5.3	1.32	55 22.2	1.49	7 38.5	1.86	10.2
27	15 12.2	15 17.7	55 41.0	1.63	56 1.3	1.75	8 25.2	2.04	11.2
28	15 23.6	15 29.7	56 22.9	+1.83	56 45.3	+1.87	9 16.7	2.24	12.2
29	15 35.9	15 42.1	57 8.1	1.90	57 30.8	1.87	10 12.8	2.43	13.2
30	15 48.1	15 53.9	57 53.0	1.81	58 14.2	1.71	11 12.6	2.54	14.2
31	15 59.3	16 4.1	58 34.0	1.57	58 51.9	1.40	12 13.8	2.54	15.2
32	16 8.4	16 12.0	59 7.6	+1.21	59 20.9	+1.00	13 13.9	2.45	16.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 1.			
	h m s	s	° ′ ″	″
0	3 45 4.64	2.3985	N.24 54 35.3	7.636
1	3 47 24.44	2.3933	25 2 9.6	7.507
2	3 49 44.64	2.3881	25 9 36.1	7.376
3	3 52 5.25	2.3829	25 16 54.7	7.243
4	3 54 26.27	2.3777	25 24 5.3	7.109
5	3 56 47.69	2.3724	25 31 7.8	6.973
6	3 59 9.52	2.3671	25 38 2.1	6.837
7	4 1 31.74	2.3736	25 44 48.2	6.696
8	4 3 54.35	2.3801	25 51 25.9	6.558
9	4 6 17.35	2.3866	25 57 55.2	6.417
10	4 8 40.74	2.3930	26 4 16.0	6.276
11	4 11 4.51	2.3995	26 10 28.3	6.133
12	4 13 28.65	2.4054	26 16 31.9	5.987
13	4 15 53.16	2.4116	26 22 26.8	5.841
14	4 18 18.05	2.4178	26 28 12.8	5.693
15	4 20 43.30	2.4238	26 33 49.9	5.544
16	4 23 8.91	2.4297	26 39 18.1	5.394
17	4 25 34.87	2.4356	26 44 37.2	5.243
18	4 28 1.18	2.4413	26 49 47.2	5.091
19	4 30 27.83	2.4470	26 54 48.1	4.936
20	4 32 54.82	2.4525	26 59 39.6	4.780
21	4 35 22.13	2.4579	27 4 21.7	4.623
22	4 37 49.77	2.4633	27 8 54.4	4.466
23	4 40 17.73	2.4686	N.27 13 17.7	4.306
	MONDAY 2.			
0	4 42 46.00	2.4737	N.27 17 31.4	4.148
1	4 45 14.57	2.4787	27 21 35.5	3.987
2	4 47 43.44	2.4837	27 25 29.9	3.826
3	4 50 12.61	2.4885	27 29 14.6	3.663
4	4 52 42.06	2.4932	27 32 49.5	3.499
5	4 55 11.79	2.4977	27 36 14.5	3.333
6	4 57 41.79	2.5022	27 39 29.5	3.167
7	5 0 12.05	2.5065	27 42 34.5	3.000
8	5 2 42.57	2.5107	27 45 29.5	2.833
9	5 5 13.34	2.5147	27 48 14.5	2.665
10	5 7 44.34	2.5186	27 50 49.3	2.495
11	5 10 15.57	2.5224	27 53 13.9	2.324
12	5 12 47.03	2.5261	27 55 28.2	2.153
13	5 15 18.70	2.5295	27 57 32.2	1.981
14	5 17 50.57	2.5329	27 59 25.9	1.808
15	5 20 22.65	2.5362	28 1 9.2	1.634
16	5 22 54.92	2.5392	28 2 42.0	1.460
17	5 25 27.36	2.5421	28 4 4.4	1.286
18	5 27 59.97	2.5448	28 5 16.3	1.111
19	5 30 32.74	2.5475	28 6 17.7	0.934
20	5 33 5.67	2.5500	28 7 8.4	0.757
21	5 35 38.74	2.5522	28 7 48.5	0.580
22	5 38 11.94	2.5544	28 8 18.0	0.402
23	5 40 45.27	2.5565	28 8 36.8	0.225
24	5 43 18.72	2.5583	N.28 8 45.0	+ 0.047
	TUESDAY 3.			
0	5 43 18.72	2.5583	N.28 8 45.0	+ 0.047
1	5 45 52.27	2.5600	28 8 42.5	− 0.132
2	5 48 25.92	2.5616	28 8 29.2	0.312
3	5 50 59.66	2.5630	28 8 5.1	0.492
4	5 53 33.48	2.5642	28 7 30.2	0.671
5	5 56 7.36	2.5652	28 6 44.6	0.850
6	5 58 41.30	2.5661	28 5 48.2	1.030
7	6 1 15.29	2.5669	28 4 41.0	1.211
8	6 3 49.33	2.5676	28 3 22.9	1.392
9	6 6 23.40	2.5680	28 1 54.0	1.572
10	6 8 57.49	2.5682	28 0 14.3	1.752
11	6 11 31.59	2.5683	27 58 23.8	1.932
12	6 14 5.69	2.5683	27 56 22.4	2.113
13	6 16 39.79	2.5682	27 54 10.2	2.293
14	6 19 13.87	2.5678	27 51 47.2	2.473
15	6 21 47.92	2.5673	27 49 13.4	2.654
16	6 24 21.94	2.5667	27 46 28.7	2.834
17	6 26 55.92	2.5658	27 43 33.3	3.013
18	6 29 29.84	2.5648	27 40 27.1	3.193
19	6 32 3.70	2.5637	27 37 10.1	3.373
20	6 34 37.49	2.5625	27 33 42.4	3.552
21	6 37 11.20	2.5611	27 30 3.9	3.731
22	6 39 44.82	2.5596	27 26 14.7	3.908
23	6 42 18.35	2.5579	N.27 22 14.9	4.085
	WEDNESDAY 4.			
0	6 44 51.77	2.5561	N.27 18 4.5	4.262
1	6 47 25.08	2.5541	27 13 43.5	4.439
2	6 49 58.26	2.5519	27 9 11.8	4.616
3	6 52 31.31	2.5497	27 4 29.5	4.792
4	6 55 4.22	2.5473	26 59 36.7	4.967
5	6 57 36.98	2.5448	26 54 33.5	5.141
6	7 0 9.59	2.5422	26 49 19.8	5.315
7	7 2 42.04	2.5394	26 43 55.7	5.487
8	7 5 14.32	2.5364	26 38 21.3	5.659
9	7 7 46.41	2.5333	26 32 36.6	5.831
10	7 10 18.32	2.5302	26 26 41.6	6.002
11	7 12 50.04	2.5270	26 20 36.4	6.172
12	7 15 21.56	2.5236	26 14 21.0	6.341
13	7 17 52.87	2.5201	26 7 55.5	6.509
14	7 20 23.97	2.5166	26 1 19.9	6.676
15	7 22 54.86	2.5129	25 54 34.4	6.842
16	7 25 25.52	2.5091	25 47 38.9	7.008
17	7 27 55.95	2.5052	25 40 33.5	7.173
18	7 30 26.14	2.5011	25 33 18.2	7.337
19	7 32 56.08	2.4970	25 25 53.1	7.498
20	7 35 25.78	2.4929	25 18 18.4	7.658
21	7 37 55.23	2.4887	25 10 34.1	7.818
22	7 40 24.42	2.4843	25 2 40.2	7.978
23	7 42 53.34	2.4798	24 54 36.7	8.137
24	7 45 21.99	2.4753	N.24 46 23.8	8.293

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 5.					**SATURDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 45 21.99	2.4753	N.24 46 23.8	8.893	0	9 38 15.22	2.2273	N.15 33 25.4	14.188
1	7 47 50.37	2.4767	24 38 1.6	8.446	1	9 40 28.72	2.2236	15 19 11.9	14.208
2	7 50 18.47	2.4660	24 29 30.0	8.883	2	9 42 41.93	2.2178	15 4 53.2	14.362
3	7 52 46.29	2.4613	24 20 49.2	8.757	3	9 44 54.86	2.2139	14 50 29.6	14.434
4	7 55 13.83	2.4566	24 11 59.2	8.906	4	9 47 7.52	2.2067	14 36 1.1	14.515
5	7 57 41.08	2.4517	24 3 0.2	9.056	5	9 49 19.91	2.2042	14 21 27.8	14.595
6	8 0 8.03	2.4467	23 53 52.2	9.207	6	9 51 32.03	2.1997	14 6 49.7	14.673
7	8 2 34.69	2.4418	23 44 35.3	9.356	7	9 53 43.88	2.1954	13 52 7.0	14.749
8	8 5 1.05	2.4368	23 35 9.5	9.503	8	9 55 55.48	2.1911	13 37 19.8	14.824
9	8 7 27.11	2.4317	23 25 34.9	9.649	9	9 58 6.82	2.1868	13 22 28.1	14.896
10	8 9 52.86	2.4266	23 15 51.6	9.793	10	10 0 17.90	2.1827	13 7 32.0	14.970
11	8 12 18.30	2.4214	23 5 59.7	9.936	11	10 2 28.74	2.1786	12 52 31.7	15.040
12	8 14 43.43	2.4162	22 55 59.3	10.077	12	10 4 39.33	2.1745	12 37 27.2	15.109
13	8 17 8.25	2.4110	22 45 50.4	10.217	13	10 6 49.68	2.1706	12 22 18.6	15.177
14	8 19 32.75	2.4057	22 35 33.2	10.356	14	10 8 59.80	2.1667	12 7 6.0	15.242
15	8 21 56.94	2.4005	22 25 7.7	10.493	15	10 11 9.68	2.1628	11 51 49.6	15.305
16	8 24 20.81	2.3952	22 14 34.0	10.629	16	10 13 19.33	2.1589	11 36 29.4	15.366
17	8 26 44.36	2.3898	22 3 52.2	10.763	17	10 15 28.76	2.1554	11 21 5.4	15.430
18	8 29 7.59	2.3845	21 53 2.5	10.895	18	10 17 37.98	2.1518	11 5 37.8	15.489
19	8 31 30.50	2.3791	21 42 4.8	11.027	19	10 19 46.98	2.1482	10 50 6.7	15.547
20	8 33 53.08	2.3737	21 30 59.2	11.157	20	10 21 55.77	2.1447	10 34 32.1	15.605
21	8 36 15.34	2.3682	21 19 45.9	11.286	21	10 24 4.35	2.1413	10 18 54.1	15.661
22	8 38 37.27	2.3626	21 8 24.9	11.413	22	10 26 12.73	2.1381	10 3 12.8	15.714
23	8 40 58.88	2.3574	N.20 56 56.3	11.536	23	10 28 20.92	2.1349	N. 9 47 28.4	15.768
	FRIDAY 6.					**SUNDAY 8.**			
0	8 43 20.16	2.3520	N.20 45 20.3	11.662	0	10 30 28.92	2.1316	N. 9 31 40.9	15.817
1	8 45 41.12	2.3466	20 33 36.9	11.785	1	10 32 36.73	2.1287	9 15 50.4	15.866
2	8 48 1.75	2.3411	20 21 46.1	11.907	2	10 34 44.36	2.1257	8 59 57.0	15.914
3	8 50 22.05	2.3357	20 9 48.1	12.026	3	10 36 51.81	2.1226	8 44 0.7	15.961
4	8 52 42.03	2.3303	19 57 43.0	12.143	4	10 38 59.09	2.1200	8 28 1.7	16.006
5	8 55 1.69	2.3249	19 45 30.9	12.260	5	10 41 6.21	2.1172	8 12 0.0	16.049
6	8 57 21.02	2.3195	19 33 11.8	12.376	6	10 43 13.16	2.1145	7 55 55.8	16.091
7	8 59 40.03	2.3141	19 20 45.8	12.489	7	10 45 19.95	2.1120	7 39 49.1	16.130
8	9 1 58.72	2.3087	19 8 13.1	12.601	8	10 47 26.60	2.1093	7 23 40.0	16.170
9	9 4 17.08	2.3033	18 55 33.7	12.712	9	10 49 33.10	2.1070	7 7 28.7	16.207
10	9 6 35.12	2.2980	18 42 47.7	12.820	10	10 51 39.46	2.1049	6 51 15.2	16.243
11	9 8 52.84	2.2927	18 29 55.3	12.927	11	10 53 45.69	2.1027	6 34 59.5	16.279
12	9 11 10.25	2.2875	18 16 56.5	13.032	12	10 55 51.78	2.1005	6 18 41.7	16.312
13	9 13 27.34	2.2823	18 3 51.4	13.137	13	10 57 57.75	2.0985	6 2 22.0	16.344
14	9 15 44.12	2.2771	17 50 40.1	13.240	14	11 0 3.60	2.0965	5 46 0.4	16.374
15	9 18 0.59	2.2719	17 37 22.6	13.342	15	11 2 9.33	2.0946	5 29 37.1	16.402
16	9 20 16.75	2.2668	17 23 59.1	13.441	16	11 4 14.95	2.0926	5 13 12.1	16.430
17	9 22 32.61	2.2617	17 10 29.7	13.539	17	11 6 20.47	2.0912	4 56 45.5	16.457
18	9 24 48.16	2.2567	16 56 54.4	13.636	18	11 8 25.90	2.0896	4 40 17.3	16.482
19	9 27 3.41	2.2517	16 43 13.4	13.731	19	11 10 31.23	2.0881	4 23 47.7	16.504
20	9 29 18.36	2.2467	16 29 26.7	13.824	20	11 12 36.47	2.0867	4 7 16.8	16.526
21	9 31 33.01	2.2418	16 15 34.5	13.916	21	11 14 41.63	2.0854	3 50 44.6	16.547
22	9 33 47.37	2.2369	16 1 36.8	14.007	22	11 16 46.72	2.0842	3 34 11.2	16.566
23	9 36 1.44	2.2321	15 47 33.7	14.095	23	11 18 51.73	2.0829	3 17 36.7	16.582
24	9 38 15.22	2.2273	N.15 33 25.4	14.182	24	11 20 56.67	2.0818	N. 3 1 1.3	16.597

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 20 56.67	2.0018	N. 3 1 1.3	16.897
1	11 23 1.55	2.0020	2 44 25.0	16.819
2	11 25 6.38	2.0021	2 27 47.8	16.827
3	11 27 11.16	2.0019	2 11 9.8	16.830
4	11 29 15.90	2.0016	1 54 31.1	16.840
5	11 31 20.60	2.0012	1 37 51.9	16.837
6	11 33 25.26	2.0007	1 21 12.2	16.836
7	11 35 29.90	2.0001	1 4 32.1	16.871
8	11 37 34.51	1.9995	0 47 51.7	16.876
9	11 39 39.11	1.9986	0 31 11.0	16.879
10	11 41 43.70	1.9976	N. 0 14 30.2	16.881
11	11 43 48.29	1.9964	S. 0 2 10.7	16.881
12	11 45 52.87	1.9954	0 18 51.5	16.879
13	11 47 57.46	1.9946	0 35 32.2	16.877
14	11 50 2.06	1.9936	0 52 12.8	16.874
15	11 52 6.66	1.9771	1 8 53.1	16.869
16	11 54 11.32	1.9775	1 25 33.0	16.862
17	11 56 15.98	1.9769	1 42 12.5	16.853
18	11 58 20.68	1.9767	1 58 51.4	16.843
19	12 0 25.42	1.9764	2 15 29.7	16.832
20	12 2 30.20	1.9761	2 32 7.3	16.820
21	12 4 35.03	1.9759	2 48 44.1	16.806
22	12 6 39.91	1.9819	3 5 20.0	16.791
23	12 8 44.86	1.9859	S. 3 21 55.0	16.775

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 10 49.87	1.9841	S. 3 38 29.0	16.697
1	12 12 54.95	1.9838	3 55 1.8	16.677
2	12 15 0.11	1.9837	4 11 33.4	16.616
3	12 17 5.35	1.9831	4 28 3.7	16.492
4	12 19 10.66	1.9826	4 44 32.6	16.469
5	12 21 16.10	1.9819	5 1 0.0	16.443
6	12 23 21.62	1.9809	5 17 25.8	16.417
7	12 25 27.24	1.9846	5 33 50.0	16.388
8	12 27 32.97	1.9864	5 50 12.4	16.356
9	12 29 38.81	1.9863	6 6 33.0	16.327
10	12 31 44.77	1.1004	6 22 51.7	16.288
11	12 33 50.86	1.1008	6 39 8.4	16.251
12	12 35 57.07	1.1046	6 55 23.0	16.205
13	12 38 3.41	1.1089	7 11 35.4	16.167
14	12 40 9.90	1.1092	7 27 45.5	16.149
15	12 42 16.53	1.1117	7 43 53.3	16.110
16	12 44 23.31	1.1149	7 59 58.7	16.068
17	12 46 30.24	1.1186	8 16 1.5	16.025
18	12 48 37.33	1.1196	8 32 1.7	15.981
19	12 50 44.59	1.1223	8 47 59.2	15.925
20	12 52 52.01	1.1251	9 3 53.9	15.887
21	12 54 59.60	1.1289	9 19 45.7	15.838
22	12 57 7.37	1.1310	9 35 34.5	15.788
23	12 59 15.32	1.1341	9 51 20.3	15.737
24	13 1 23.46	1.1379	S. 10 7 2.9	15.683

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 1 23.46	2.1379	S. 10 7 2.9	15.683
1	13 3 31.79	2.1423	10 22 42.3	15.629
2	13 5 40.32	2.1459	10 38 18.3	15.573
3	13 7 49.05	2.1478	10 53 50.9	15.514
4	13 9 57.99	2.1507	11 9 20.0	15.455
5	13 12 7.13	2.1541	11 24 45.5	15.394
6	13 14 16.48	2.1577	11 40 7.3	15.330
7	13 16 26.05	2.1614	11 55 25.3	15.266
8	13 18 35.85	2.1652	12 10 39.4	15.203
9	13 20 45.87	2.1689	12 25 49.6	15.136
10	13 22 56.12	2.1727	12 40 55.7	15.067
11	13 25 6.60	2.1767	12 55 57.6	14.997
12	13 27 17.32	2.1807	13 10 55.3	14.926
13	13 29 28.28	2.1847	13 25 48.7	14.850
14	13 31 39.49	2.1888	13 40 37.6	14.770
15	13 33 50.94	2.1929	13 55 22.0	14.700
16	13 36 2.64	2.1970	14 10 1.8	14.624
17	13 38 14.60	2.2015	14 24 36.9	14.545
18	13 40 26.82	2.2056	14 39 7.2	14.464
19	13 42 39.30	2.2100	14 53 32.6	14.382
20	13 44 52.04	2.2146	15 7 53.0	14.296
21	13 47 5.05	2.2191	15 22 8.4	14.213
22	13 49 18.33	2.2237	15 36 18.6	14.129
23	13 51 31.89	2.2283	S. 15 50 23.5	14.037

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 53 45.72	2.2330	S. 16 4 23.0	13.946
1	13 55 59.83	2.2375	16 18 17.0	13.856
2	13 58 14.22	2.2419	16 32 5.6	13.763
3	14 0 28.89	2.2469	16 45 48.6	13.669
4	14 2 43.85	2.2517	16 59 25.9	13.570
5	14 4 59.10	2.2566	17 12 57.3	13.474
6	14 7 14.64	2.2614	17 26 22.8	13.375
7	14 9 30.47	2.2663	17 39 42.3	13.274
8	14 11 46.60	2.2713	17 52 55.7	13.172
9	14 14 3.02	2.2763	18 6 2.9	13.069
10	14 16 19.74	2.2812	18 19 3.9	12.963
11	14 18 36.76	2.2861	18 31 58.5	12.856
12	14 20 54.07	2.2910	18 44 46.6	12.747
13	14 23 11.68	2.2961	18 57 28.2	12.637
14	14 25 29.60	2.3012	19 10 3.1	12.526
15	14 27 47.82	2.3063	19 22 31.3	12.413
16	14 30 6.35	2.3113	19 34 52.7	12.299
17	14 32 25.18	2.3163	19 47 7.2	12.183
18	14 34 44.31	2.3214	19 59 14.7	12.066
19	14 37 3.75	2.3266	20 11 15.1	11.947
20	14 39 23.49	2.3316	20 23 8.3	11.827
21	14 41 43.54	2.3367	20 34 54.3	11.705
22	14 44 3.89	2.3417	20 46 32.9	11.582
23	14 46 24.54	2.3467	20 58 4.1	11.458
24	14 48 45.50	2.3518	S. 21 9 27.8	11.332

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 48 45.50	2.3518	S.21 9 27.8	11.330
1	14 51 6.76	2.3568	21 20 48.9	11.204
2	14 53 28.32	2.3618	21 31 52.3	11.074
3	14 55 50.18	2.3668	21 42 52.8	10.943
4	14 58 12.34	2.3718	21 53 45.4	10.812
5	15 0 34.80	2.3768	22 4 30.2	10.680
6	15 2 57.56	2.3817	22 15 7.0	10.545
7	15 5 20.61	2.3866	22 25 35.6	10.409
8	15 7 43.95	2.3914	22 35 56.0	10.270
9	15 10 7.58	2.3963	22 46 8.2	10.129
10	15 12 31.50	2.4011	22 56 12.0	9.990
11	15 14 55.71	2.4059	23 6 7.3	9.851
12	15 17 20.20	2.4106	23 15 54.1	9.708
13	15 19 44.97	2.4153	23 25 32.3	9.566
14	15 22 10.02	2.4197	23 35 1.9	9.420
15	15 24 35.34	2.4243	23 44 22.7	9.273
16	15 27 0.93	2.4287	23 53 34.7	9.126
17	15 29 26.79	2.4330	24 2 37.8	8.977
18	15 31 52.92	2.4377	24 11 32.0	8.826
19	15 34 19.31	2.4419	24 20 17.2	8.676
20	15 36 45.95	2.4461	24 28 53.2	8.523
21	15 39 12.84	2.4503	24 37 20.0	8.370
22	15 41 39.98	2.4543	24 45 37.6	8.217
23	15 44 7.36	2.4586	S.24 53 46.0	8.061

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 46 34.98	2.4626	S.25 1 45.0	7.904
1	15 49 2.83	2.4667	25 9 34.5	7.747
2	15 51 30.91	2.4696	25 17 14.6	7.588
3	15 53 59.21	2.4735	25 24 45.1	7.428
4	15 56 27.73	2.4771	25 32 6.0	7.267
5	15 58 56.46	2.4806	25 39 17.2	7.106
6	16 1 25.39	2.4839	25 46 18.7	6.944
7	16 3 54.52	2.4871	25 53 10.5	6.781
8	16 6 23.84	2.4902	25 59 52.4	6.616
9	16 8 53.35	2.4932	26 6 24.4	6.451
10	16 11 23.04	2.4962	26 12 46.5	6.286
11	16 13 52.90	2.4991	26 18 58.7	6.120
12	16 16 22.93	2.5018	26 25 0.9	5.953
13	16 18 53.12	2.5044	26 30 53.0	5.784
14	16 21 23.46	2.5068	26 36 35.0	5.616
15	16 23 53.94	2.5090	26 42 6.9	5.447
16	16 26 24.56	2.5110	26 47 28.6	5.277
17	16 28 55.32	2.5127	26 52 40.1	5.106
18	16 31 26.20	2.5146	26 57 41.3	4.935
19	16 33 57.19	2.5174	27 2 32.3	4.764
20	16 36 28.29	2.5190	27 7 13.0	4.592
21	16 38 59.49	2.5207	27 11 43.3	4.419
22	16 41 30.78	2.5222	27 16 3.2	4.246
23	16 44 2.16	2.5236	27 20 12.8	4.073
24	16 46 33.61	2.5247	S.27 24 12.0	3.900

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 46 33.61	2.5247	S.27 24 12.0	3.900
1	16 49 5.18	2.5257	27 28 0.8	3.726
2	16 51 36.70	2.5266	27 31 39.1	3.551
3	16 54 8.32	2.5274	27 35 6.9	3.376
4	16 56 39.99	2.5281	27 38 24.2	3.200
5	16 59 11.69	2.5285	27 41 31.1	3.027
6	17 1 43.41	2.5288	27 44 27.5	2.850
7	17 4 15.15	2.5291	27 47 13.4	2.677
8	17 6 46.90	2.5291	27 49 48.8	2.502
9	17 9 18.64	2.5290	27 52 13.6	2.326
10	17 11 50.37	2.5287	27 54 27.9	2.151
11	17 14 22.08	2.5283	27 56 31.7	1.976
12	17 16 53.76	2.5277	27 58 25.0	1.801
13	17 19 25.40	2.5270	28 0 7.8	1.626
14	17 21 57.00	2.5260	28 1 40.1	1.451
15	17 24 28.54	2.5251	28 3 1.9	1.276
16	17 27 0.01	2.5239	28 4 13.2	1.101
17	17 29 31.41	2.5227	28 5 14.0	0.927
18	17 32 2.73	2.5212	28 6 4.4	0.752
19	17 34 33.95	2.5196	28 6 44.4	0.579
20	17 37 5.07	2.5178	28 7 13.9	0.405
21	17 39 36.09	2.5160	28 7 33.0	0.230
22	17 42 6.99	2.5139	28 7 41.7	− [illegible]
23	17 44 37.76	2.5117	S.28 7 40.1	+ 0.113

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 47 8.39	2.5093	S.28 7 28.2	0.286
1	17 49 38.88	2.5069	28 7 6.0	0.456
2	17 52 9.22	2.5042	28 6 33.5	0.627
3	17 54 39.39	2.5014	28 5 50.8	0.797
4	17 57 9.39	2.4985	28 4 57.9	0.967
5	17 59 39.22	2.4957	28 3 54.8	1.136
6	18 2 8.87	2.4926	28 2 41.6	1.304
7	18 4 38.32	2.4893	28 1 18.3	1.470
8	18 7 7.57	2.4857	27 59 45.0	1.636
9	18 9 36.60	2.4820	27 58 1.7	1.804
10	18 12 5.41	2.4783	27 56 8.5	1.969
11	18 14 34.00	2.4746	27 54 5.4	2.134
12	18 17 2.36	2.4707	27 51 52.4	2.298
13	18 19 30.48	2.4666	27 49 29.6	2.461
14	18 21 58.35	2.4623	27 46 57.0	2.623
15	18 24 25.96	2.4580	27 44 14.8	2.784
16	18 26 53.31	2.4536	27 41 22.9	2.945
17	18 29 20.39	2.4491	27 38 21.4	3.105
18	18 31 47.20	2.4445	27 35 10.3	3.264
19	18 34 13.73	2.4397	27 31 49.7	3.421
20	18 36 39.96	2.4348	27 28 19.8	3.576
21	18 39 5.90	2.4298	27 24 40.6	3.731
22	18 41 31.54	2.4247	27 20 52.1	3.886
23	18 43 56.87	2.4196	27 16 54.3	4.040
24	18 46 21.89	2.4143	S.27 12 47.3	4.193

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 17.			
	h m s	s	° ′ ″	″
0	18 46 21.89	2.4143	S. 27 12 47.3	4.196
1	18 48 46.59	2.4069	27 8 31.2	4.343
2	18 51 10.96	2.4034	27 4 6.1	4.492
3	18 53 35.00	2.3979	26 59 32.1	4.641
4	18 55 58.71	2.3923	26 54 49.2	4.789
5	18 58 22.08	2.3866	26 49 57.4	4.936
6	19 0 45.10	2.3808	26 44 56.9	5.081
7	19 3 7.77	2.3749	26 39 47.7	5.225
8	19 5 30.09	2.3690	26 34 29.9	5.367
9	19 7 52.05	2.3629	26 29 3.6	5.509
10	19 10 13.64	2.3568	26 23 28.8	5.650
11	19 12 34.86	2.3507	26 17 45.6	5.789
12	19 14 55.72	2.3445	26 11 54.1	5.927
13	19 17 16.20	2.3382	26 5 54.3	6.064
14	19 19 36.30	2.3318	25 59 46.4	6.198
15	19 21 56.02	2.3255	25 53 30.5	6.330
16	19 24 15.36	2.3191	25 47 6.6	6.465
17	19 26 34.31	2.3126	25 40 34.7	6.597
18	19 28 52.87	2.3061	25 33 55.0	6.727
19	19 31 11.04	2.2995	25 27 7.5	6.856
20	19 33 28.81	2.2929	25 20 12.3	6.982
21	19 35 46.19	2.2863	25 13 9.6	7.106
22	19 38 3.17	2.2796	25 5 59.3	7.234
23	19 40 19.74	2.2729	S. 24 58 41.5	7.357
	WEDNESDAY 18.			
0	19 42 35.91	2.2660	S. 24 51 16.4	7.479
1	19 44 51.68	2.2594	24 43 44.0	7.600
2	19 47 7.04	2.2526	24 36 4.4	7.720
3	19 49 21.99	2.2457	24 28 17.6	7.836
4	19 51 36.53	2.2389	24 20 23.8	7.954
5	19 53 50.66	2.2321	24 12 23.1	8.069
6	19 56 4.39	2.2253	24 4 15.5	8.183
7	19 58 17.70	2.2184	23 56 1.1	8.296
8	20 0 30.60	2.2116	23 47 40.0	8.407
9	20 2 43.09	2.2047	23 39 12.2	8.517
10	20 4 55.17	2.1978	23 30 37.9	8.626
11	20 7 6.83	2.1909	23 21 57.1	8.733
12	20 9 18.08	2.1841	23 13 9.9	8.840
13	20 11 28.92	2.1772	23 4 16.3	8.944
14	20 13 39.35	2.1703	22 55 16.6	9.046
15	20 15 49.36	2.1634	22 46 10.8	9.148
16	20 17 58.96	2.1567	22 36 58.9	9.249
17	20 20 8.16	2.1499	22 27 40.9	9.349
18	20 22 16.95	2.1431	22 18 17.0	9.447
19	20 24 25.33	2.1363	22 8 47.3	9.543
20	20 26 33.30	2.1294	21 59 11.8	9.638
21	20 28 40.86	2.1227	21 49 30.7	9.732
22	20 30 48.02	2.1160	21 39 44.0	9.825
23	20 32 54.78	2.1092	21 29 51.7	9.917
24	20 35 1.13	2.1025	S. 21 19 54.0	10.006

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 19.			
	h m s	s	° ′ ″	″
0	20 35 1.13	2.1025	S. 21 19 54.0	10.006
1	20 37 7.08	2.0959	21 9 51.0	10.095
2	20 39 12.64	2.0893	20 59 42.6	10.183
3	20 41 17.80	2.0827	20 49 29.0	10.269
4	20 43 22.57	2.0762	20 39 10.3	10.354
5	20 45 26.94	2.0696	20 28 46.5	10.436
6	20 47 30.92	2.0631	20 18 17.7	10.521
7	20 49 34.51	2.0567	20 7 44.0	10.599
8	20 51 37.72	2.0503	19 57 5.5	10.682
9	20 53 40.55	2.0440	19 46 22.2	10.761
10	20 55 43.00	2.0377	19 35 34.2	10.836
11	20 57 45.07	2.0314	19 24 41.6	10.914
12	20 59 46.76	2.0251	19 13 44.5	10.989
13	21 1 48.08	2.0189	19 2 42.9	11.063
14	21 3 49.03	2.0128	18 51 36.9	11.137
15	21 5 49.62	2.0067	18 40 26.5	11.208
16	21 7 49.84	2.0007	18 29 11.9	11.279
17	21 9 49.70	1.9948	18 17 53.0	11.349
18	21 11 49.21	1.9889	18 6 30.0	11.417
19	21 13 48.37	1.9830	17 55 3.0	11.484
20	21 15 47.17	1.9770	17 43 32.0	11.550
21	21 17 45.61	1.9712	17 31 57.0	11.615
22	21 19 43.71	1.9656	17 20 18.2	11.679
23	21 21 41.48	1.9600	S. 17 8 35.6	11.742
	FRIDAY 20.			
0	21 23 38.91	1.9543	S. 16 56 49.2	11.804
1	21 25 36.00	1.9488	16 44 59.1	11.864
2	21 27 32.77	1.9434	16 33 5.5	11.923
3	21 29 29.21	1.9379	16 21 8.4	11.981
4	21 31 25.32	1.9326	16 9 7.8	12.039
5	21 33 21.12	1.9273	15 57 3.7	12.096
6	21 35 16.60	1.9221	15 44 56.3	12.151
7	21 37 11.77	1.9169	15 32 45.6	12.205
8	21 39 6.63	1.9118	15 20 31.7	12.256
9	21 41 1.19	1.9068	15 8 14.6	12.311
10	21 42 55.45	1.9018	14 55 54.4	12.360
11	21 44 49.41	1.8969	14 43 31.1	12.413
12	21 46 43.08	1.8921	14 31 4.8	12.466
13	21 48 36.46	1.8873	14 18 35.6	12.511
14	21 50 29.56	1.8827	14 6 3.5	12.556
15	21 52 22.38	1.8781	13 53 28.6	12.605
16	21 54 14.93	1.8735	13 40 50.9	12.651
17	21 56 7.20	1.8689	13 28 10.5	12.696
18	21 57 59.20	1.8645	13 15 27.4	12.740
19	21 59 50.94	1.8600	13 2 41.7	12.782
20	22 1 42.43	1.8560	12 49 53.5	12.824
21	22 3 33.66	1.8518	12 37 2.8	12.866
22	22 5 24.64	1.8477	12 24 9.6	12.906
23	22 7 15.38	1.8437	12 11 14.1	12.944
24	22 9 5.88	1.8397	S. 11 58 16.3	12.983

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 21.			
	h m s	s	° ′ ″	″
0	22 9 5.88	1.8997	S. 11 56 16.3	13.963
1	22 10 56.14	1.8997	11 45 16.2	13.961
2	22 12 46.17	1.8918	11 32 13.8	13.958
3	22 14 35.97	1.8981	11 19 9.2	13.955
4	22 16 25.54	1.8944	11 6 2.4	13.126
5	22 18 14.90	1.8906	10 52 53.6	13.164
6	22 20 4.04	1.8179	10 39 42.8	13.197
7	22 21 52.97	1.8137	10 26 30.0	13.930
8	22 23 41.69	1.8104	10 13 15.2	13.960
9	22 25 30.22	1.8070	9 59 58.5	13.894
10	22 27 18.55	1.8039	9 46 39.9	13.384
11	22 29 6.68	1.8007	9 33 19.6	13.353
12	22 30 54.63	1.7977	9 19 57.5	13.388
13	22 32 42.40	1.7947	9 6 33.7	13.410
14	22 34 29.99	1.7917	8 53 8.3	13.437
15	22 36 17.40	1.7887	8 39 41.2	13.464
16	22 38 4.64	1.7860	8 26 12.6	13.490
17	22 39 51.72	1.7833	8 12 42.4	13.516
18	22 41 38.64	1.7807	7 59 10.7	13.540
19	22 43 25.40	1.7780	7 45 37.6	13.563
20	22 45 12.02	1.7757	7 32 3.1	13.586
21	22 46 58.49	1.7733	7 18 27.3	13.606
22	22 48 44.82	1.7710	7 4 50.1	13.630
23	22 50 31.01	1.7687	S. 6 51 11.7	13.651
	SUNDAY 22.			
0	22 52 17.06	1.7666	S. 6 37 32.0	13.671
1	22 54 2.99	1.7646	6 23 51.2	13.690
2	22 55 48.80	1.7625	6 10 9.2	13.709
3	22 57 34.49	1.7606	5 56 26.1	13.728
4	22 59 20.06	1.7587	5 42 41.9	13.745
5	23 1 5.53	1.7569	5 28 56.7	13.761
6	23 2 50.89	1.7550	5 15 10.6	13.776
7	23 4 36.15	1.7536	5 1 23.6	13.799
8	23 6 21 32	1.7526	4 47 35.6	13.807
9	23 8 6.39	1.7505	4 33 46.7	13.821
10	23 9 51.38	1.7492	4 19 57.0	13.834
11	23 11 36.29	1.7479	4 6 6.6	13.847
12	23 13 21.13	1.7467	3 52 15.4	13.859
13	23 15 5.89	1.7455	3 38 23.5	13.870
14	23 16 50.59	1.7445	3 24 31.0	13.881
15	23 18 35.23	1.7436	3 10 37.8	13.892
16	23 20 19.81	1.7426	2 56 44.0	13.901
17	23 22 4.33	1.7417	2 42 49.7	13.909
18	23 23 48.81	1.7410	2 28 54.9	13.917
19	23 25 33.25	1.7403	2 14 59.6	13.925
20	23 27 17.65	1.7397	2 1 3.9	13.932
21	23 29 2.01	1.7391	1 47 7.7	13.939
22	23 30 46.34	1.7386	1 33 11.2	13.944
23	23 32 30.66	1.7383	1 19 14.4	13.949
24	23 34 14.96	1.7380	S. 1 5 17.3	13.954
	MONDAY 23.			
0	23 34 14.96	1.7380	S. 1 5 17.3	13.954
1	23 35 59.24	1.7379	0 51 19.9	13.957
2	23 37 43.51	1.7378	0 37 22.4	13.960
3	23 39 27.78	1.7378	0 23 24.7	13.963
4	23 41 12.05	1.7378	S. 0 9 26.8	13.965
5	23 42 56.32	1.7379	N. 0 4 31.1	13.966
6	23 44 40.60	1.7381	0 18 29.1	13.967
7	23 46 24.89	1.7384	0 32 27.1	13.967
8	23 48 9.21	1.7388	0 46 25.1	13.966
9	23 49 53.55	1.7392	1 0 23.0	13.964
10	23 51 37.92	1.7397	1 14 20.8	13.963
11	23 53 22.32	1.7403	1 28 18.5	13.961
12	23 55 6.76	1.7410	1 42 16.1	13.957
13	23 56 51.24	1.7417	1 56 13.4	13.953
14	23 58 35.77	1.7426	2 10 10.5	13.949
15	0 0 20.35	1.7435	2 24 7.3	13.944
16	0 2 4.99	1.7446	2 38 3.8	13.938
17	0 3 49.70	1.7457	2 51 59.9	13.930
18	0 5 34.47	1.7469	3 5 55.6	13.925
19	0 7 19.31	1.7480	3 19 50.9	13.917
20	0 9 4.23	1.7494	3 33 45.7	13.909
21	0 10 49.24	1.7508	3 47 40.0	13.900
22	0 12 34.33	1.7523	4 1 33.7	13.890
23	0 14 19.51	1.7537	N. 4 15 26.8	13.880
	TUESDAY 24.			
0	0 16 4.78	1.7553	N. 4 29 19.3	13.869
1	0 17 50.15	1.7571	4 43 11.1	13.857
2	0 19 35.63	1.7589	4 57 2.2	13.845
3	0 21 21.23	1.7609	5 10 52.5	13.832
4	0 23 6.94	1.7628	5 24 42.0	13.818
5	0 24 52.77	1.7648	5 38 30.7	13.805
6	0 26 38.72	1.7669	5 52 18.6	13.791
7	0 28 24.80	1.7692	6 6 5.6	13.776
8	0 30 11.02	1.7715	6 19 51.6	13.758
9	0 31 57.38	1.7738	6 33 36.5	13.740
10	0 33 43.88	1.7760	6 47 20.4	13.722
11	0 35 30.53	1.7786	7 1 3.2	13.704
12	0 37 17.34	1.7815	7 14 44.9	13.686
13	0 39 4.31	1.7840	7 28 25.5	13.666
14	0 40 51.44	1.7869	7 42 4.8	13.644
15	0 42 38.73	1.7897	7 55 42.8	13.622
16	0 44 26.20	1.7927	8 9 19.5	13.601
17	0 46 13.85	1.7958	8 22 54.9	13.578
18	0 48 1.69	1.7989	8 36 28.9	13.555
19	0 49 49.72	1.8020	8 50 1.5	13.531
20	0 51 37.93	1.8050	9 3 32.6	13.506
21	0 53 26.34	1.8085	9 17 2.1	13.478
22	0 55 14.96	1.8121	9 30 30.0	13.450
23	0 57 3.79	1.8155	9 43 56.3	13.425
24	0 58 52.82	1.8190	N. 9 57 21.0	13.397

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 25.			
	h m s	s	° ′ ″	″
0	0 58 52.82	1.8190	N. 9 57 21.0	13.397
1	1 0 42.07	1.8227	10 10 44.0	13.367
2	1 2 31.55	1.8265	10 24 5.1	13.337
3	1 4 21.25	1.8303	10 37 24.4	13.306
4	1 6 11.18	1.8342	10 50 41.8	13.275
5	1 8 1.35	1.8382	11 3 57.4	13.243
6	1 9 51.76	1.8422	11 17 11.0	13.209
7	1 11 42.41	1.8464	11 30 22.5	13.175
8	1 13 33.32	1.8506	11 43 32.0	13.141
9	1 15 24.48	1.8548	11 56 39.4	13.105
10	1 17 15.90	1.8592	12 9 44.6	13.068
11	1 19 7.58	1.8636	12 22 47.6	13.030
12	1 20 59.53	1.8681	12 35 48.2	12.991
13	1 22 51.75	1.8727	12 48 46.5	12.952
14	1 24 44.26	1.8775	13 1 42.4	12.912
15	1 26 37.05	1.8823	13 14 35.9	12.871
16	1 28 30.13	1.8871	13 27 26.9	12.828
17	1 30 23.50	1.8919	13 40 15.3	12.785
18	1 32 17.16	1.8968	13 53 1.1	12.741
19	1 34 11.12	1.9019	14 5 44.2	12.696
20	1 36 5.39	1.9072	14 18 24.6	12.650
21	1 37 59.98	1.9124	14 31 2.2	12.602
22	1 39 54.88	1.9177	14 43 36.9	12.554
23	1 41 50.10	1.9230	N.14 56 8.7	12.506
	THURSDAY 26.			
0	1 43 45.64	1.9284	N.15 8 37.6	12.456
1	1 45 41.51	1.9339	15 21 3.4	12.404
2	1 47 37.71	1.9395	15 33 26.1	12.352
3	1 49 34.25	1.9452	15 45 45.6	12.298
4	1 51 31.13	1.9509	15 58 1.9	12.244
5	1 53 28.36	1.9567	16 10 14.9	12.188
6	1 55 25.93	1.9625	16 22 24.5	12.132
7	1 57 23.86	1.9685	16 34 30.7	12.074
8	1 59 22.15	1.9744	16 46 33.4	12.016
9	2 1 20.79	1.9804	16 58 32.6	11.956
10	2 3 19.80	1.9866	17 10 28.1	11.894
11	2 5 19.18	1.9928	17 22 19.9	11.832
12	2 7 18.93	1.9990	17 34 8.0	11.769
13	2 9 19.06	2.0053	17 45 52.2	11.704
14	2 11 19.57	2.0117	17 57 32.5	11.639
15	2 13 20.47	2.0182	18 9 8.9	11.572
16	2 15 21.76	2.0248	18 20 41.2	11.503
17	2 17 23.44	2.0313	18 32 9.3	11.433
18	2 19 25.51	2.0379	18 43 33.2	11.360
19	2 21 27.98	2.0446	18 54 52.8	11.291
20	2 23 30.86	2.0513	19 6 8.1	11.218
21	2 25 34.14	2.0581	19 17 19.0	11.144
22	2 27 37.83	2.0650	19 28 25.4	11.068
23	2 29 41.94	2.0719	19 39 27.2	10.991
24	2 31 46.46	2.0788	N.19 50 24.3	10.912

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 27.			
	h m s	s	° ′ ″	″
0	2 31 46.46	2.0788	N.19 50 24.3	10.912
1	2 33 51.40	2.0858	20 1 16.7	10.833
2	2 35 56.76	2.0928	20 12 4.3	10.752
3	2 38 2.54	2.0999	20 22 47.0	10.670
4	2 40 8.75	2.1071	20 33 24.7	10.587
5	2 42 15.39	2.1143	20 43 57.4	10.502
6	2 44 22.47	2.1216	20 54 24.9	10.415
7	2 46 29.98	2.1288	21 4 47.2	10.327
8	2 48 37.93	2.1361	21 15 4.2	10.238
9	2 50 46.31	2.1434	21 25 15.8	10.148
10	2 52 55.14	2.1508	21 35 21.9	10.056
11	2 55 4.41	2.1582	21 45 22.5	9.962
12	2 57 14.13	2.1657	21 55 17.4	9.867
13	2 59 24.30	2.1732	22 5 6.6	9.772
14	3 1 34.91	2.1806	22 14 50.0	9.675
15	3 3 45.97	2.1882	22 24 27.6	9.576
16	3 5 57.49	2.1957	22 33 59.1	9.474
17	3 8 9.46	2.2032	22 43 24.5	9.372
18	3 10 21.88	2.2108	22 52 43.8	9.269
19	3 12 34.76	2.2184	23 1 56.8	9.164
20	3 14 48.09	2.2260	23 11 3.5	9.057
21	3 17 1.88	2.2336	23 20 3.7	8.949
22	3 19 16.13	2.2412	23 28 57.4	8.840
23	3 21 30.83	2.2488	N.23 37 44.5	8.730
	SATURDAY 28.			
0	3 23 45.99	2.2565	N.23 46 25.0	8.618
1	3 26 1.61	2.2642	23 54 58.7	8.504
2	3 28 17.69	2.2717	24 3 25.5	8.388
3	3 30 34.22	2.2793	24 11 45.2	8.270
4	3 32 51.21	2.2870	24 19 57.9	8.152
5	3 35 8.66	2.2946	24 28 3.5	8.032
6	3 37 26.57	2.3022	24 36 1.8	7.911
7	3 39 44.93	2.3097	24 43 52.8	7.788
8	3 42 3.74	2.3173	24 51 36.4	7.663
9	3 44 23.01	2.3249	24 59 12.4	7.537
10	3 46 42.73	2.3324	25 6 40.8	7.410
11	3 49 2.90	2.3396	25 14 1.6	7.281
12	3 51 23.51	2.3472	25 21 14.5	7.149
13	3 53 44.57	2.3547	25 28 19.5	7.017
14	3 56 6.07	2.3621	25 35 16.6	6.884
15	3 58 28.02	2.3694	25 42 5.6	6.749
16	4 0 50.40	2.3766	25 48 46.5	6.613
17	4 3 13.21	2.3839	25 55 19.1	6.474
18	4 5 36.46	2.3911	26 1 43.4	6.335
19	4 8 0.14	2.3982	26 7 59.3	6.194
20	4 10 24.24	2.4052	26 14 6.7	6.051
21	4 12 48.76	2.4122	26 20 5.4	5.906
22	4 15 13.70	2.4192	26 25 55.4	5.761
23	4 17 39.06	2.4260	26 31 36.7	5.615
24	4 20 4.82	2.4327	N.26 37 9.2	5.467

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 29.			
	h m s	s	° ′ ″	″
0	4 20 4.82	2.4387	N.26 37 9.2	5.467
1	4 22 30.99	2.4395	26 42 32.7	5.317
2	4 24 57.56	2.4402	26 47 47.2	5.166
3	4 27 24.53	2.4407	26 52 52.6	5.013
4	4 29 51.89	2.4409	26 57 48.8	4.859
5	4 32 19.64	2.4406	27 2 35.7	4.703
6	4 34 47.76	2.4719	27 7 13.2	4.547
7	4 37 16.26	2.4781	27 11 41.3	4.389
8	4 39 45.13	2.4842	27 15 59.9	4.230
9	4 42 14.36	2.4901	27 20 8.9	4.069
10	4 44 43.94	2.4960	27 24 8.2	3.907
11	4 47 13.88	2.5018	27 27 57.8	3.744
12	4 49 44.16	2.5074	27 31 37.5	3.579
13	4 52 14.77	2.5130	27 35 7.3	3.414
14	4 54 45.72	2.5185	27 38 27.2	3.247
15	4 57 16.99	2.5237	27 41 37.0	3.079
16	4 59 48.57	2.5289	27 44 36.7	2.911
17	5 2 20.46	2.5340	27 47 26.3	2.741
18	5 4 52.65	2.5389	27 50 5.6	2.569
19	5 7 25.13	2.5437	27 52 34.6	2.397
20	5 9 57.90	2.5484	27 54 53.3	2.224
21	5 12 30.94	2.5528	27 57 1.5	2.049
22	5 15 4.24	2.5570	27 58 59.2	1.874
23	5 17 37.81	2.5610	N.28 0 46.4	1.699
	MONDAY 30.			
0	5 20 11.63	2.5647	N.28 2 23.1	1.522
1	5 22 45.69	2.5680	28 3 49.1	1.343
2	5 25 19.98	2.5710	28 5 4.3	1.164
3	5 27 54.49	2.5739	28 6 8.8	0.985
4	5 30 29.21	2.5764	28 7 2.5	0.805
5	5 33 4.14	2.5787	28 7 45.4	0.624
6	5 35 39.26	2.5809	28 8 17.4	0.442
7	5 38 14.56	2.5826	28 8 38.5	0.260
8	5 40 50.04	2.5837	28 8 48.6	+ 0.077
9	5 43 25.69	2.5844	28 8 47.7	− 0.107
10	5 46 1.49	2.5879	28 8 35.8	0.291
11	5 48 37.44	2.5863	28 8 12.8	0.476
12	5 51 13.53	2.5895	28 7 38.7	0.661
13	5 53 49.74	2.5845	28 6 53.5	0.847
14	5 56 26.07	2.5863	28 5 57.1	1.032
15	5 59 2.50	2.5869	28 4 49.6	1.218
16	6 1 39.03	2.5865	28 3 30.9	1.405
17	6 4 15.64	2.5166	28 2 1.0	1.592
18	6 6 52.33	2.5139	28 0 19.8	1.780
19	6 9 29.08	2.5130	27 58 27.4	1.967
20	6 12 5.89	2.5138	27 56 23.8	2.154
21	6 14 42.74	2.5145	27 54 8.9	2.342
22	6 17 19.63	2.5150	27 51 42.8	2.529
23	6 19 56.54	2.5152	27 49 5.4	2.717
24	6 22 33.46	2.5153	N.27 46 16.7	2.905

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 31.			
	h m s	s	° ′ ″	″
0	6 22 33.46	2.5153	N.27 46 16.7	2.905
1	6 25 10.38	2.5153	27 43 16.8	3.092
2	6 27 47.30	2.5150	27 40 5.6	3.280
3	6 30 24.20	2.5146	27 36 43.2	3.467
4	6 33 1.07	2.5143	27 33 9.6	3.654
5	6 35 37.91	2.5138	27 29 24.7	3.841
6	6 38 14.70	2.5127	27 25 28.6	4.028
7	6 40 51.43	2.5117	27 21 21.3	4.214
8	6 43 28.10	2.5105	27 17 2.9	4.400
9	6 46 4.69	2.5091	27 12 33.3	4.585
10	6 48 41.19	2.5076	27 7 52.6	4.771
11	6 51 17.60	2.5059	27 3 0.8	4.955
12	6 53 53.90	2.5041	26 57 58.0	5.139
13	6 56 30.09	2.5021	26 52 44.2	5.323
14	6 59 6.15	2.5000	26 47 19.3	5.507
15	7 1 42.08	2.4977	26 41 43.4	5.689
16	7 4 17.87	2.4953	26 35 56.6	5.870
17	7 6 53.51	2.4926	26 29 59.0	6.051
18	7 9 29.00	2.4901	26 23 50.5	6.230
19	7 12 4.32	2.4873	26 17 31.2	6.411
20	7 14 39.46	2.4842	26 11 1.2	6.589
21	7 17 14.42	2.4811	26 4 20.6	6.766
22	7 19 49.19	2.4778	25 57 29.3	6.943
23	7 22 23.76	2.4744	N.25 50 27.4	7.119
	WEDNESDAY, JANUARY 1, 1896.			
0	7 24 58.12	2.4709	N.25 43 15.0	7.293

PHASES OF THE MOON.

		d	h	m
○	Full Moon . . Dec.	1	18	38.4
☾	Last Quarter	8	19	9.2
●	New Moon	15	18	29.8
☽	First Quarter	23	17	21.5
○	Full Moon	31	8	30.8

		d	h
☾	Perigee . . . . Dec.	9	4.0
☾	Apogee	22	20.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Fomalhaut	W.	89° 12′ 53″	2934	90° 44′ 29″	2923	92° 16′ 19″	2912	93° 48′ 23″	2902
	α Pegasi	W.	67 14 48	2960	68 46 56	2948	70 19 25	2875	71 52 16	2859
	Pollux	E.	51 53 22	2859	50 15 47	2846	48 37 57	2838	46 59 53	2826
	Jupiter	E.	69 29 17	2846	67 51 24	2834	66 13 15	2822	64 34 50	2811
	Regulus	E.	88 42 55	2846	87 5 7	2836	85 27 3	2826	83 48 43	2815
2	α Pegasi	W.	79 41 25	2788	81 16 9	2775	82 51 9	2763	84 26 25	2753
	α Arietis	W.	36 38 17	2819	38 16 46	2804	39 55 35	2591	41 34 43	2577
	Pollux	E.	38 45 59	2577	37 6 32	2566	35 26 53	2550	33 47 2	2551
	Jupiter	E.	56 18 57	2556	54 39 2	2545	52 58 52	2536	51 18 29	2526
	Regulus	E.	75 33 18	2561	73 53 29	2550	72 13 25	2540	70 33 7	2530
3	α Pegasi	W.	92 26 12	2764	94 2 46	2697	95 39 30	2669	97 16 24	2653
	α Arietis	W.	49 54 40	2519	51 35 27	2568	53 16 28	2489	54 57 43	2489
	Jupiter	E.	42 53 12	2489	41 11 31	2478	39 29 38	2463	37 47 33	2456
	Regulus	E.	62 8 16	2484	60 26 40	2475	58 44 51	2468	57 2 50	2458
4	α Arietis	W.	63 27 8	2447	65 9 36	2439	66 52 15	2439	68 35 4	2426
	Aldebaran	W.	33 3 24	2666	34 40 50	2630	36 18 52	2615	37 57 27	2593
	Regulus	E.	48 30 0	2481	46 46 55	2415	45 3 41	2408	43 20 17	2401
	Spica	E.	102 31 9	2492	100 48 6	2415	99 4 53	2409	97 21 31	2403
	Venus	E.	105 13 41	2789	103 38 59	2782	102 4 7	2775	100 29 6	2769
5	α Arietis	W.	77 11 24	2396	78 55 5	2391	80 38 53	2386	82 22 48	2381
	Aldebaran	W.	46 16 55	2512	47 57 52	2500	49 39 5	2489	51 20 34	2478
	Spica	E.	88 42 34	2375	86 58 23	2371	85 14 6	2366	83 29 42	2361
	Venus	E.	92 32 3	2741	90 56 17	2736	89 20 25	2731	87 44 26	2727
	Saturn	E.	109 50 23	2442	108 7 48	2436	106 25 5	2431	104 42 15	2426
6	α Arietis	W.	91 3 58	2360	92 48 28	2358	94 33 3	2355	96 17 42	2352
	Aldebaran	W.	59 51 18	2437	61 34 0	2431	63 16 51	2425	64 59 50	2419
	Spica	E.	74 46 9	2342	73 1 10	2339	71 16 7	2336	69 31 0	2333
	Venus	E.	79 43 15	2710	78 6 48	2707	76 30 17	2704	74 53 42	2702
	Saturn	E.	96 6 26	2405	94 22 59	2402	92 39 27	2398	90 55 50	2396
	Sun	E.	126 22 54	2693	124 46 5	2689	123 9 11	2685	121 32 11	2681
7	Aldebaran	W.	73 36 31	2398	75 20 9	2395	77 3 51	2391	78 47 38	2389
	Pollux	W.	30 19 50	2342	32 4 48	2337	33 49 53	2334	35 35 3	2331
	Spica	E.	60 44 24	2321	58 58 55	2319	57 13 23	2317	55 27 48	2315
	Venus	E.	66 50 12	2695	65 13 25	2693	63 36 36	2692	61 59 46	2692
	Saturn	E.	82 16 48	2384	80 32 50	2382	78 48 50	2380	77 4 47	2380
	Mars	E.	94 57 59	2559	93 18 7	2556	91 38 11	2553	89 58 12	2550
	Sun	E.	113 25 59	2695	111 48 32	2692	110 11 1	2689	108 33 27	2687
8	Aldebaran	W.	87 27 22	2380	89 11 26	2378	90 55 32	2377	92 39 40	2377
	Pollux	W.	44 21 57	2318	46 7 30	2317	47 53 5	2315	49 38 43	2313
	Jupiter	W.	26 53 58	2303	28 39 53	2301	30 25 51	2299	32 11 52	2298
	Spica	E.	46 39 21	2300	44 53 34	2298	43 7 46	2297	41 21 57	2297
	Venus	E.	53 55 38	2686	52 18 51	2686	50 42 6	2686	49 5 23	2689
	Saturn	E.	68 24 12	2375	66 40 2	2375	64 55 52	2375	63 11 42	2376
	Mars	E.	81 37 45	2545	79 57 35	2544	78 17 23	2543	76 37 10	2543
	Sun	E.	100 24 55	2649	98 47 6	2647	97 9 15	2646	95 31 23	2645

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Dif.	XV^h.	P. L. of Dif.	XVIII^h.	P. L. of Dif.	XXI^h.	P. L. of Dif.
1	Fomalhaut	W.	95° 20′ 29″	9999	96° 53′ 8″	9999	98° 25′ 48″	9975	99° 58′ 39″	9999
	α Pegasi	W.	73 25 27	9944	74 58 58	9995	76 32 49	9915	78 6 58	9901
	Pollux	E.	45 21 34	9916	43 43 1	9966	42 4 14	9996	40 25 13	9546
	Jupiter	E.	62 56 10	9993	61 17 15	9993	59 38 4	9577	57 58 38	9566
	Regulus	E.	82 10 8	9994	80 31 18	9993	78 52 13	9992	77 12 53	9571
2	α Pegasi	W.	86 1 55	9741	87 37 40	9738	89 13 38	9789	90 49 49	9713
	α Arietis	W.	43 14 9	9995	44 53 52	9993	46 33 52	9941	48 14 8	9539
	Pollux	E.	32 6 59	9943	30 26 45	9936	28 46 22	9930	27 5 50	9595
	Jupiter	E.	49 37 52	9917	47 57 2	9997	46 15 58	9497	44 34 41	9489
	Regulus	E.	68 52 35	9998	67 11 50	9910	65 30 51	9992	63 49 40	9498
3	α Pegasi	W.	98 53 27	9977	100 30 38	9978	102 7 55	9998	103 45 18	9993
	α Arietis	W.	56 39 11	9496	58 20 52	9471	60 2 46	9493	61 44 51	9455
	Jupiter	E.	36 5 18	9448	34 22 52	9441	32 40 16	9434	30 57 30	9498
	Regulus	E.	55 20 38	9450	53 38 14	9443	51 55 40	9435	50 12 55	9436
4	α Arietis	W.	70 18 2	9419	72 1 10	9413	73 44 26	9497	75 27 51	9491
	Aldebaran	W.	39 36 32	9974	41 16 3	9956	42 55 59	9940	44 36 17	9985
	Regulus	E.	41 36 44	9936	39 53 3	9989	38 9 13	9984	36 25 15	9979
	Spica	E.	95 38 0	9997	93 54 21	9991	92 10 33	9985	90 26 37	9989
	Venus	E.	98 53 57	9763	97 18 40	9756	95 43 15	9750	94 7 42	9746
5	α Arietis	W.	84 6 50	9976	85 50 59	9973	87 35 13	9988	89 19 33	9988
	Aldebaran	W.	53 2 18	9459	54 44 15	9459	56 26 25	9458	58 8 46	9444
	Spica	E.	81 45 11	9957	80 0 34	9953	78 15 51	9949	76 31 3	9945
	Venus	E.	86 8 22	9789	84 32 12	9719	82 55 58	9716	81 19 39	9719
	Saturn	E.	102 59 18	9489	101 16 14	9417	99 33 4	9413	97 49 48	9499
6	α Arietis	W.	98 2 26	9990	99 47 13	9947	101 32 4	9946	103 16 58	9944
	Aldebaran	W.	66 42 57	9415	68 26 11	9410	70 9 32	9405	71 52 59	9402
	Spica	E.	67 45 48	9990	66 0 32	9988	64 15 13	9985	62 29 50	9983
	Venus	E.	73 17 5	9799	71 40 25	9999	70 3 43	9996	68 26 58	9995
	Saturn	E.	89 12 9	9993	87 28 24	9999	85 44 35	9999	84 0 43	9996
	Sun	E.	119 55 6	9978	118 17 56	9974	116 40 41	9971	115 3 22	9968
7	Aldebaran	W.	80 31 28	9987	82 15 22	9984	83 59 19	9980	85 43 19	9980
	Pollux	W.	37 20 18	9948	39 5 37	9945	40 51 0	9939	42 36 27	9990
	Spica	E.	53 42 11	9914	51 56 32	9912	50 10 50	9911	48 25 6	9910
	Venus	E.	60 22 56	9990	58 46 6	9988	57 9 16	9992	55 32 26	9994
	Saturn	E.	75 20 43	9978	73 36 37	9978	71 52 30	9976	70 8 21	9976
	Mars	E.	88 18 11	9961	86 38 8	9949	84 58 2	9947	83 17 54	9946
	Sun	E.	106 55 50	9956	105 18 10	9953	103 40 27	9950	102 2 42	9950
8	Aldebaran	W.	94 23 48	9977	96 7 56	9976	97 52 5	9976	99 36 14	9977
	Pollux	W.	51 24 23	9912	53 10 5	9911	54 55 48	9910	56 41 33	9909
	Jupiter	W.	33 57 55	9990	35 44 1	9996	37 30 8	9994	39 16 17	9992
	Spica	E.	39 36 7	9996	37 50 16	9998	36 4 25	9996	34 18 34	9998
	Venus	E.	47 28 42	9769	45 52 5	9765	44 15 32	9769	42 39 4	9773
	Saturn	E.	61 27 33	9976	59 43 24	9978	57 59 17	9978	56 15 11	9949
	Mars	E.	74 56 56	9943	73 16 42	9949	71 36 27	9949	69 56 12	9941
	Sun	E.	93 53 29	9944	92 15 34	9943	90 37 38	9943	88 59 41	9943

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Pollux	W.	58 27 19	2300	60 13 6	2300	61 58 55	2300	63 44 41	2307
	Jupiter	W.	41 2 28	2291	42 48 40	2291	44 34 53	2290	46 21 7	2290
	Venus	E.	41 2 41	2717	39 26 24	2723	37 50 15	2729	36 14 14	2737
	Saturn	E.	54 31 7	2361	52 47 5	2364	51 3 7	2366	49 19 12	2369
	Mars	E.	68 15 57	2542	66 35 42	2543	64 55 28	2543	63 15 14	2543
	Sun	E.	87 21 44	2642	85 43 46	2642	84 5 48	2642	82 27 50	2642
10	Pollux	W.	72 33 43	2309	74 19 30	2309	76 5 16	2310	77 51 1	2311
	Jupiter	W.	55 12 20	2290	56 58 34	2291	58 44 47	2291	60 31 0	2292
	Regulus	W.	35 38 34	2302	37 24 30	2302	39 10 26	2304	40 56 20	2304
	Mars	E.	54 54 24	2550	53 14 20	2551	51 34 18	2553	49 54 19	2556
	Sun	E.	74 18 6	2645	72 40 12	2646	71 2 19	2647	69 24 28	2649
11	Pollux	W.	86 39 21	2318	88 24 54	2320	90 10 24	2320	91 55 51	2324
	Jupiter	W.	69 21 39	2298	71 7 41	2300	72 53 40	2302	74 39 36	2304
	Regulus	W.	49 45 25	2312	51 31 7	2314	53 16 46	2316	55 2 22	2318
	Sun	E.	61 15 49	2660	59 38 15	2662	58 0 44	2665	56 23 17	2669
12	Pollux	W.	100 42 8	2340	102 27 9	2344	104 12 5	2347	105 56 56	2352
	Jupiter	W.	83 28 23	2318	85 13 56	2322	86 59 23	2326	88 44 45	2330
	Regulus	W.	63 49 25	2333	65 34 36	2337	67 19 42	2341	69 4 42	2345
	Sun	E.	48 17 20	2690	46 40 27	2695	45 3 41	2701	43 27 3	2708
13	Jupiter	W.	97 30 2	2353	99 14 44	2359	100 59 18	2364	102 43 44	2371
	Regulus	W.	77 48 6	2369	79 32 25	2375	81 16 36	2380	83 0 39	2387
	Sun	E.	35 26 15	2748	33 50 39	2759	32 15 17	2769	30 40 9	2782
17	Sun	W.	15 31 58	3929	16 57 33	3913	18 23 27	3903	19 49 33	3197
	Fomalhaut	E.	53 16 10	3153	51 49 4	3186	50 22 38	3933	48 56 56	3969
	α Pegasi	E.	74 16 52	2909	72 44 45	2926	71 12 59	2942	69 41 34	2961
18	Sun	W.	27 0 38	3906	28 26 38	3915	29 52 29	3923	31 18 11	3929
	Fomalhaut	E.	42 0 57	3506	40 40 39	3567	39 21 29	3635	38 3 32	3709
	α Pegasi	E.	62 10 17	3057	60 41 15	3079	59 12 40	3101	57 44 32	3124
19	Sun	W.	38 23 55	3981	39 48 29	3991	41 12 51	3301	42 37 1	3311
	α Pegasi	E.	50 31 8	3953	49 6 2	3984	47 41 32	3316	46 17 39	3349
	α Arietis	E.	90 56 14	2889	89 23 41	2901	87 51 23	2919	86 19 19	2934
20	Sun	W.	49 34 57	3361	50 57 58	3370	52 20 49	3379	53 43 29	3387
	α Arietis	E.	78 42 26	2975	77 11 42	2985	75 41 11	2994	74 10 51	3004
	Aldebaran	E.	110 6 43	3038	108 37 17	3045	107 8 0	3053	105 38 53	3060
21	Sun	W.	60 34 28	3427	61 56 14	3434	63 17 52	3440	64 39 23	3446
	α Aquilæ	W.	41 8 49	5060	42 2 26	5137	42 57 35	5025	43 54 11	4922
	α Arietis	E.	66 41 56	3045	65 12 39	3052	63 43 31	3059	62 14 31	3065
	Aldebaran	E.	98 15 33	3096	96 47 18	3102	95 19 11	3108	93 51 11	3114
22	Sun	W.	71 25 28	3469	72 46 27	3472	74 7 22	3474	75 28 15	3477
	α Aquilæ	W.	48 55 41	4530	49 59 7	4468	51 3 27	4414	52 8 36	4369
	α Arietis	E.	54 51 22	3092	53 23 3	3097	51 54 50	3101	50 26 41	3105
	Aldebaran	E.	86 32 44	3136	85 5 18	3140	83 37 57	3143	82 10 39	3146

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Pollux	W.	65° 30′ 30″	2307	67° 16′ 19″	2306	69° 2′ 7″	2306	70° 47′ 55″	2306
	Jupiter	W.	48 7 21	2269	49 53 36	2269	51 39 51	2269	53 26 6	2290
	Venus	E.	34 38 23	2746	33 2 44	2755	31 27 17	2766	29 52 5	2779
	Saturn	E.	47 35 22	2392	45 51 36	2396	44 7 56	2401	42 24 22	2405
	Mars	E.	61 35 1	2544	59 54 49	2545	58 14 39	2546	56 31 30	2548
	Sun	E.	80 49 52	2643	79 11 55	2643	77 33 58	2643	75 56 2	2643
10	Pollux	W.	79 36 45	2312	81 22 27	2313	83 8 7	2315	84 53 45	2316
	Jupiter	W.	62 17 11	2293	64 3 21	2294	65 49 29	2296	67 35 35	2297
	Regulus	W.	42 42 13	2306	44 28 4	2307	46 13 53	2309	47 59 40	2310
	Mars	E.	48 14 24	2550	46 34 33	2562	44 54 46	2566	43 15 4	2570
	Sun	E.	67 46 39	2650	66 8 52	2652	64 31 8	2656	62 53 27	2657
11	Pollux	W.	93 41 15	2327	95 26 35	2331	97 11 50	2333	98 57 1	2336
	Jupiter	W.	76 25 29	2307	78 11 18	2309	79 57 4	2313	81 42 45	2315
	Regulus	W.	56 47 55	2301	58 33 24	2304	60 18 49	2307	62 4 9	2330
	Sun	E.	54 45 55	2672	53 8 38	2676	51 31 26	2681	49 54 20	2685
12	Pollux	W.	107 41 40	2326	109 26 18	2331	111 10 49	2336	112 55 13	2371
	Jupiter	W.	90 30 1	2334	92 15 11	2338	94 0 15	2343	95 45 12	2346
	Regulus	W.	70 49 36	2349	72 34 24	2354	74 19 5	2359	76 3 39	2364
	Sun	E.	41 50 34	2718	40 14 14	2722	38 38 3	2730	37 2 3	2730
13	Jupiter	W.	104 28 1	2377	106 12 9	2383	107 56 8	2389	109 39 57	2396
	Regulus	W.	84 44 33	2394	86 28 17	2400	88 11 52	2407	89 55 17	2414
	Sun	E.	29 5 17	2786	27 30 42	2810	25 56 27	2827	24 22 34	2847
17	Sun	W.	21 15 46	3194	22 42 2	3194	24 8 18	3197	25 34 31	3202
	Fomalhaut	E.	47 32 0	3394	46 7 53	3349	44 44 38	3397	43 22 18	3449
	α Pegasi	E.	68 10 32	3978	66 39 52	3997	65 9 36	3917	63 39 44	3837
18	Sun	W.	32 43 42	3941	34 9 3	3951	35 34 12	3961	36 59 9	3979
	Fomalhaut	E.	36 46 54	3799	35 31 41	3879	34 18 0	3979	33 6 0	4091
	α Pegasi	E.	56 16 51	3148	54 49 40	3173	53 22 58	3196	51 56 47	3235
19	Sun	W.	44 1 0	3388	45 24 46	3388	46 48 21	3341	48 11 45	3351
	α Pegasi	E.	44 54 24	3365	43 31 50	3423	42 9 59	3463	40 48 53	3506
	α Arietis	E.	84 47 30	3934	83 15 54	3946	81 44 32	3956	80 13 23	3965
20	Sun	W.	55 6 0	3396	56 28 21	3406	57 50 32	3413	59 12 34	3429
	α Arietis	E.	72 40 43	3013	71 10 46	3001	69 40 59	3030	68 11 23	3037
	Aldebaran	E.	104 9 55	3069	102 41 7	3075	101 12 27	3068	99 43 56	3069
21	Sun	W.	66 0 47	3452	67 22 5	3456	68 43 18	3462	70 4 25	3465
	α Aquilæ	W.	44 52 8	4630	45 51 20	4744	46 51 43	4865	47 53 12	4595
	α Arietis	E.	60 45 39	3071	59 16 54	3078	57 48 17	3082	56 19 46	3088
	Aldebaran	E.	92 23 18	3119	90 55 31	3134	89 27 50	3138	88 0 14	3133
22	Sun	W.	76 49 5	3479	78 9 53	3480	79 30 40	3480	80 51 27	3489
	α Aquilæ	W.	53 14 32	4514	54 21 12	4669	55 28 33	4826	56 36 33	4189
	α Arietis	E.	48 58 37	3196	47 30 37	3110	46 2 40	3114	44 34 47	3116
	Aldebaran	E.	80 43 25	3148	79 16 14	3150	77 49 5	3158	76 21 58	3159

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Sun	W.	82° 12′ 13″	3480	83° 32′ 59″	3479	84° 53′ 47″	3478	86° 14′ 36″	3475
	α Aquilæ	W.	57 45 9	4153	58 54 20	4118	60 4 4	4086	61 14 19	4056
	α Arietis	E.	43 6 57	3118	41 39 9	3190	40 11 24	3191	38 43 40	3194
	Aldebaran	E.	74 54 52	3153	73 27 47	3154	72 0 43	3154	70 33 39	3154
24	Sun	W.	92 59 28	3457	94 20 40	3453	95 41 57	3446	97 3 21	3440
	α Aquilæ	W.	67 12 29	3995	68 25 23	3904	69 38 39	3892	70 52 17	3860
	Fomalhaut	W.	40 5 30	3811	41 20 21	3762	42 36 3	3718	43 52 31	3677
	Aldebaran	E.	63 18 7	3148	61 50 56	3146	60 23 42	3144	58 56 26	3141
	Pollux	E.	105 52 51	3060	104 23 52	3056	102 54 48	3051	101 25 38	3044
25	Sun	W.	103 52 18	3401	105 14 33	3393	106 36 58	3383	107 59 34	3372
	α Aquilæ	W.	77 5 34	3768	78 21 10	3751	79 37 3	3734	80 53 14	3719
	Fomalhaut	W.	50 25 2	3506	51 45 20	3477	53 6 10	3449	54 27 31	3422
	Aldebaran	E.	51 39 13	3127	50 11 36	3124	48 43 55	3120	47 16 10	3119
	Pollux	E.	93 57 46	3009	92 27 44	3000	90 57 31	2991	89 27 7	2982
	Jupiter	E.	110 15 11	2971	108 44 22	2963	107 13 23	2954	105 42 12	2944
26	Sun	W.	114 55 38	3316	116 19 31	3304	117 43 38	3291	119 8 0	3277
	Fomalhaut	W.	61 21 30	3309	62 45 39	3281	64 10 13	3259	65 35 12	3238
	α Pegasi	W.	39 36 40	3480	40 57 27	3435	42 19 4	3393	43 41 29	3353
	Aldebaran	E.	39 56 53	3113	38 28 59	3114	37 1 7	3118	35 33 19	3122
	Pollux	E.	81 52 2	2939	80 20 20	2917	78 48 23	2905	77 16 11	2893
	Jupiter	E.	98 3 8	2891	96 30 38	2879	94 57 52	2867	93 24 51	2855
27	Fomalhaut	W.	72 46 14	3138	74 13 38	3119	75 41 24	3101	77 9 33	3082
	α Pegasi	W.	50 44 11	3184	52 10 39	3155	53 37 42	3127	55 5 19	3100
	Pollux	E.	69 31 6	2828	67 57 14	2813	66 23 3	2799	64 48 34	2785
	Jupiter	E.	85 35 38	2788	84 0 55	2774	82 25 53	2760	80 50 33	2745
	Regulus	E.	106 23 20	2890	104 49 18	2805	103 14 57	2792	101 40 18	2777
28	Fomalhaut	W.	84 35 47	2995	86 6 6	2979	87 36 45	2963	89 7 44	2947
	α Pegasi	W.	62 31 24	2976	64 2 7	2953	65 33 19	2931	67 4 59	2909
	Pollux	E.	56 51 23	2719	55 14 59	2696	53 38 14	2681	52 1 9	2666
	Jupiter	E.	72 48 58	2671	71 11 39	2655	69 33 59	2640	67 55 58	2625
	Regulus	E.	93 42 11	2701	92 5 33	2687	90 28 35	2671	88 51 16	2656
29	Fomalhaut	W.	96 47 27	2976	98 20 17	2962	99 53 24	2951	101 26 46	2939
	α Pegasi	W.	74 50 2	2808	76 24 19	2789	77 59 1	2779	79 34 6	2754
	α Arietis	W.	31 36 21	2649	33 14 9	2698	34 52 26	2608	36 31 10	2588
	Pollux	E.	43 50 43	2593	42 11 38	2578	40 32 13	2564	38 52 29	2550
	Jupiter	E.	59 40 41	2548	58 0 35	2533	56 20 7	2517	54 39 18	2503
	Regulus	E.	80 39 30	2579	79 0 6	2563	77 20 20	2548	75 40 13	2533
30	α Pegasi	W.	87 35 5	2975	89 12 19	2960	90 49 52	2946	92 27 44	2934
	α Arietis	W.	44 51 22	2499	46 32 37	2483	48 14 14	2467	49 56 14	2458
	Jupiter	E.	46 10 6	2431	44 27 15	2417	42 44 4	2403	41 0 34	2391
	Regulus	E.	67 14 27	2460	65 32 17	2445	63 49 47	2438	62 6 58	2418
31	α Arietis	W.	58 31 22	2382	60 15 22	2371	61 59 39	2368	63 44 14	2347
	Jupiter	E.	32 18 33	2331	30 33 18	2320	28 47 47	2309	27 2 1	2300
	Regulus	E.	53 28 11	2355	51 43 32	2344	49 58 37	2333	48 13 26	2322

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XV^h.	P.L. of Diff.	XVIII^h.	P.L. of Diff.	XXI^h.	P.L. of Diff.
23	Sun	W.	87° 35′ 28″	3473	88° 56′ 22″	3470	90° 17′ 20″	3466	91° 38′ 22″	3463
	α Aquilæ	W.	62 25 3	4036	63 36 15	4001	64 47 54	3974	65 59 59	3949
	α Arietis	E.	37 15 59	3194	35 48 19	3197	34 20 42	3199	32 53 6	3139
	Aldebaran	E.	69 6 35	3153	67 39 30	3153	66 12 24	3151	64 45 16	3150
24	Sun	W.	98 24 52	3433	99 46 31	3426	101 8 18	3419	102 30 13	3410
	α Aquilæ	W.	72 6 17	3041	73 20 37	3031	74 35 17	3023	75 50 16	3785
	Fomalhaut	W.	45 9 43	3637	46 27 37	3602	47 46 9	3568	49 5 18	3536
	Aldebaran	E.	57 29 6	3138	56 1 43	3136	54 34 17	3133	53 6 47	3129
	Pollux	E.	99 56 20	3030	98 26 55	3031	96 57 21	3034	95 27 38	3017
25	Sun	W.	109 22 22	3388	110 45 22	3351	112 8 34	3340	113 31 59	3398
	α Aquilæ	W.	82 9 41	3704	83 26 24	3689	84 43 23	3675	86 0 37	3661
	Fomalhaut	W.	55 49 23	3397	57 11 43	3378	58 34 32	3346	59 57 48	3325
	Aldebaran	E.	45 48 23	3116	44 29 33	3114	42 52 41	3113	41 24 47	3113
	Pollux	E.	87 56 32	3078	86 25 44	3068	84 54 44	3061	83 23 30	3040
	Jupiter	E.	104 10 49	3035	102 39 14	3004	101 7 26	2913	99 35 24	2908
26	Sun	W.	120 32 38	3365	121 57 31	3350	123 22 41	3336	124 48 7	3322
	Fomalhaut	W.	67 0 36	3218	68 26 24	3197	69 52 37	3177	71 19 14	3158
	α Pegasi	W.	45 4 39	3216	46 28 32	3201	47 53 6	3247	49 18 20	3215
	Aldebaran	E.	34 5 36	3190	32 38 1	3138	31 10 38	3151	29 43 30	3169
	Pollux	E.	75 43 43	3068	74 10 59	3057	72 37 58	3056	71 4 41	3041
	Jupiter	E.	91 51 34	3008	90 18 1	3009	88 44 11	3015	87 10 3	2992
27	Fomalhaut	W.	78 38 4	3064	80 6 58	3047	81 36 13	3039	83 5 50	3013
	α Pegasi	W.	56 33 29	3073	58 2 11	3047	59 31 25	3022	61 1 10	2999
	Pollux	E.	63 13 46	2770	61 38 39	2756	60 3 13	2741	58 27 28	2726
	Jupiter	E.	79 14 53	2731	77 38 54	2716	76 2 35	2701	74 25 57	2686
	Regulus	E.	100 5 20	2768	98 30 2	2747	96 54 25	2739	95 18 28	2717
28	Fomalhaut	W.	90 39 3	3030	92 10 41	3017	93 42 38	3009	95 14 54	3000
	α Pegasi	W.	68 37 7	3067	70 9 42	3067	71 42 43	3047	73 16 10	3026
	Pollux	E.	50 23 44	3050	48 45 59	3037	47 7 54	3021	45 29 28	3007
	Jupiter	E.	66 17 37	2810	64 38 55	2793	62 59 51	2778	61 20 26	2764
	Regulus	E.	87 13 37	2840	85 35 37	2826	83 57 16	2810	82 18 34	2793
29	Fomalhaut	W.	103 0 23	3026	104 34 14	3019	106 8 17	3009	107 42 33	3001
	α Pegasi	W.	81 9 34	2737	82 45 25	2721	84 21 37	2704	85 58 11	2689
	α Arietis	W.	38 10 22	2560	39 50 0	2551	41 30 3	2533	43 10 31	2516
	Pollux	E.	37 12 25	2537	35 32 3	2523	33 51 22	2510	32 10 23	2499
	Jupiter	E.	52 58 9	2466	51 16 39	2473	49 34 48	2460	47 52 37	2445
	Regulus	E.	73 59 45	2517	72 18 56	2503	70 37 47	2488	68 56 17	2474
30	α Pegasi	W.	94 5 53	2821	95 44 19	2810	97 23 0	2800	99 1 56	2586
	α Arietis	W.	51 38 35	2437	53 21 17	2423	55 4 19	2409	56 47 41	2396
	Jupiter	E.	39 16 46	2378	37 32 39	2365	35 48 14	2353	34 3 32	2342
	Regulus	E.	60 23 49	2405	58 40 22	2392	56 56 36	2380	55 12 32	2368
31	α Arietis	W.	65 29 5	2336	67 14 12	2325	68 59 35	2315	70 45 12	2306
	Jupiter	E.	25 16 2	2291	23 29 50	2283	21 43 26	2277	19 56 52	2270
	Regulus	E.	46 27 59	2319	44 42 17	2302	42 56 21	2293	41 10 11	2283

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	18 25 22.77	+17.466	−24 43 20.6	− 1.84	23 44.8
2	18 32 22.22	17.397	24 43 21.6	+ 1.65	23 47.9
3	18 39 21.09	17.363	24 42 1.0	5.19	23 51.0
4	18 46 25.29	17.415	24 39 13.6	8.77	23 54.1
5	18 53 28.53	17.492	24 34 59.8	12.30	23 57.3
6	19 0 32.93	+17.704	−24 29 18.4	+ 16.06	
7	19 7 38.29	17.748	24 22 8.6	19.76	0 0.4
8	19 14 44.50	17.775	24 13 29.5	23.50	0 3.6
9	19 21 51.43	17.802	24 3 20.2	27 28	0 6.8
10	19 28 58.95	17.894	23 51 39.8	31.09	0 10.0
11	19 36 6.92	+17.849	−23 38 27.6	+ 34.93	0 13.2
12	19 43 15.21	17.859	23 23 42.9	38.89	0 16.4
13	19 50 23.66	17.854	23 7 25.0	42.69	0 19.6
14	19 57 32.12	17.850	22 49 36.6	46.69	0 22.8
15	20 4 40.46	17.839	22 30 8.2	50.58	0 26.0
16	20 11 48.33	+17.839	−22 9 8.5	+ 54.46	0 29.2
17	20 18 55.72	17.769	21 46 34.2	58.40	0 32.4
18	20 26 2.38	17.756	21 22 25.5	62.32	0 35.5
19	20 33 7.91	17.707	20 56 42.7	66.24	0 38.7
20	20 40 12.18	17.647	20 29 26.2	70.13	0 41.8
21	20 47 14.84	+17.573	−20 0 36.8	+ 73.98	0 44.9
22	20 54 15.56	17.484	19 30 15.6	77.78	0 48.0
23	21 1 13.92	17.377	18 58 24.0	81.50	0 51.1
24	21 8 9.49	17.250	18 25 4.4	85.12	0 54.1
25	21 15 1.77	17.101	17 50 19.2	88.62	0 57.0
26	21 21 50.15	+16.935	−17 14 11.6	+ 91.98	0 59.8
27	21 28 33.94	16.719	16 36 45.5	95.15	1 2.6
28	21 35 12.40	16.489	15 58 6.0	98.10	1 5.3
29	21 41 44.66	16.201	15 18 19.0	100.77	1 7.9
30	21 48 9.69	15.876	14 37 31.7	103.12	1 1 .4
31	21 54 26.33	+15.502	−13 55 52.5	+105.08	1 1 .7
32	22 0 33.31	+15.089	−13 13 31.5	+106.59	1 14.0

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	2.3	2.3	2.3	2.4	2.5	2.6	2.8
Hor. Parallax . .	6.2	6.2	6.2	6.3	6.6	6.9	7.5

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	22 0 33.31	+15.089	−13 13 31.5	+106.59	1 14.9
2	22 6 29.14	14.572	12 30 40.3	107.58	1 16.9
3	22 12 12.19	14.033	11 47 32.2	107.98	1 18.7
4	22 17 40.64	13.354	11 4 22.8	107.69	1 20.2
5	22 22 52.50	12.619	10 21 29.0	106.65	1 21.4
6	22 27 45.63	+11.792	− 9 39 10.2	+104.77	1 22.3
7	22 32 17.76	10.888	8 57 47.3	101.98	1 22.9
8	22 36 26.52	9.944	8 17 43.1	98.30	1 23.1
9	22 40 9.45	8.717	7 39 21.7	93.49	1 22.8
10	22 43 24.15	7.488	7 3 8.4	87.53	1 22.1
11	22 46 8.29	+ 6.172	− 6 29 28.8	+ 80.58	1 20.9
12	22 48 19.73	4.788	5 58 46.8	72.57	1 19.1
13	22 49 56.57	3.322	5 31 33.4	63.54	1 16.7
14	22 50 57.34	1.765	5 8 6.2	53.57	1 13.8
15	22 51 21.05	+ 0.129	4 48 48.5	42.78	1 10.2
16	22 51 7.34	− 1.549	− 4 33 58.0	+ 31.32	1 6.0
17	22 50 16.57	3.275	4 23 49.1	19.37	1 1.2
18	22 48 49.89	4.935	4 18 30.0	+ 7.18	0 55.8
19	22 46 49.31	6.502	4 18 3.8	− 4.98	0 49.9
20	22 44 17.76	6.910	4 22 26.3	16.82	0 43.4
21	22 41 18.99	− 7.955	− 4 31 26.6	− 28.67	0 36.5
22	22 37 57.56	8.735	4 44 46.6	38.41	0 29.3
23	22 34 18.64	9.469	5 2 1.0	47.56	0 21.7
24	22 30 27.84	9.783	5 22 39.4	55.36	0 13.9
25	22 26 30.99	9.913	5 46 6.1	61.69	{0 6.1 / 23 58.2}
26	22 22 33.91	− 9.895	− 6 11 43.1	− 66.20	23 50.5
27	22 18 42.12	9.476	6 38 50.7	69.17	23 42.9
28	22 15 0.67	8.947	7 6 50.7	70.57	23 35.5
29	22 11 34.02	8.948	7 35 6.4	70.51	23 28.5
30	22 8 25.86	7.411	8 3 5.0	69.17	23 21.8
31	22 5 39.13	− 6.469	− 8 30 17.5	− 66.71	23 15.5
32	22 3 15.99	− 5.451	− 8 56 19.6	− 63.34	23 9.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter	3.1	3.6	4.2	4.9	5.3
Hor. Parallax	8.3	9.5	11.2	12.9	13.9

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	22 11 34.02	− 8.963	− 7 35 6.4	−76.51	23 28.5
2	22 8 25.86	7.411	8 3 5.0	69.17	23 21.8
3	22 5 39.13	6.468	8 30 17.5	66.71	23 15.5
4	22 3 15.99	5.451	8 56 19.6	63.34	23 9.5
5	22 1 17.88	4.366	9 20 51.9	59.94	23 4.1
6	21 59 45.63	− 3.300	− 9 43 38.8	−54.59	22 59.1
7	21 58 39.49	2.213	10 4 29.0	49.54	22 54.4
8	21 57 59.27	1.144	10 23 14.7	44.99	22 50.2
9	21 57 44.38	− 0.108	10 39 50.5	39.74	22 46.4
10	21 57 54.06	+ 0.908	10 54 13.4	33.17	22 43.0
11	21 58 27.29	+ 1.886	−11 6 22.4	−27.30	22 40.0
12	21 59 22.88	2.767	11 16 18.0	20.65	22 37.4
13	22 0 39.69	3.624	11 24 1.3	13.57	22 35.0
14	22 2 16.44	4.430	11 29 34.2	11.19	22 32.9
15	22 4 11.90	5.189	11 32 59.4	5.89	22 31.2
16	22 6 24.63	+ 5.886	−11 34 19.9	− 0.79	22 29.8
17	22 8 54.06	6.542	11 33 38.5	+ 4.29	22 28.6
18	22 11 38.48	7.159	11 30 58.6	9.66	22 27.6
19	22 14 37.01	7.719	11 26 23.3	13.63	22 26.8
20	22 17 48.66	8.246	11 19 55.8	18.45	22 26.2
21	22 21 12.49	+ 8.735	−11 11 39.0	+23.94	22 25.9
22	22 24 47.65	9.190	11 1 35.9	27.30	22 25.7
23	22 28 33.34	9.612	10 49 49.4	31.56	22 25.7
24	22 32 28.82	10.006	10 36 22.3	35.69	22 25.8
25	22 36 33.42	10.373	10 21 17.1	39.79	22 26.0
26	22 40 46.54	+10.715	−10 4 36.3	+43.65	22 26.4
27	22 45 7.66	11.040	9 46 22.5	47.46	22 26.9
28	22 49 36.28	11.349	9 26 37.7	51.23	22 27.6
29	22 54 11.93	11.636	9 5 24.0	54.87	22 28.4
30	22 58 54.23	11.895	8 42 43.7	58.46	22 29.2
31	23 3 42.82	+12.151	− 8 18 38.5	+61.96	22 30.2
32	23 8 37.41	+12.396	− 7 53 10.3	+65.36	23 31.2

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 8 37.41	+12.396	− 7 53 10.3	+ 65.36	23 31.2
2	23 13 37.74	12.630	7 26 20.9	63.72	23 32.4
3	23 18 43.59	12.856	6 58 12.0	72.01	23 33.6
4	23 23 54.76	13.074	6 28 45.2	75.22	23 35.0
5	23 29 11.09	13.286	5 58 2.1	78.36	23 36.4
6	23 34 32.47	+13.490	− 5 26 4.2	+ 81.45	23 37.9
7	23 39 58.81	13.709	4 52 53.1	84.47	23 39.5
8	23 45 30.05	13.900	4 18 30.3	87.43	23 41.1
9	23 51 6.16	14.106	3 42 57.1	90.33	23 42.8
10	23 56 47.13	14.309	3 6 15.2	93.16	23 44.6
11	0 2 33.00	+14.512	− 2 28 25.9	+ 95.94	23 46.5
12	0 8 23.79	14.709	1 49 30.8	98.65	23 48.5
13	0 14 19.59	14.901	1 9 31.5	101.29	23 50.6
14	0 20 20.49	15.105	− 0 28 29.5	103.88	23 52.8
15	0 26 26.61	15.295	+ 0 13 33.1	106.35	23 55.1
16	0 32 38.06	+15.500	+ 0 56 34.8	+108.78	23 57.4
17	0 38 55.07	15.695	1 40 33.7	111.11	23 59.8
18	0 45 17.74	15.905	2 25 27.4	113.34	24 2.3
19	0 51 46.29	16.315	3 11 13.7	115.48	24 5.0
20	0 58 20.92	16.573	3 57 50.0	117.58	24 7.7
21	1 5 1.85	+16.949	+ 4 45 13.5	+119.49	24 10.5
22	1 11 49.30	17.116	5 33 21.0	121.18	24 13.5
23	1 18 43.50	17.499	6 22 8.8	122.79	24 16.6
24	1 25 44.66	17.697	7 11 33.2	124.22	24 19.8
25	1 32 53.02	18.081	8 1 29.5	125.45	24 23.1
26	1 40 8.76	+18.312	+ 8 51 52.6	+126.45	24 26.6
27	1 47 32.05	18.630	9 42 36.9	127.20	24 30.2
28	1 55 3.04	18.950	10 33 35.9	127.67	24 33.9
29	2 2 41.79	19.277	11 24 42.3	127.88	24 37.7
30	2 10 28.34	19.602	12 15 48.3	127.82	24 41.7
31	2 18 22.64	+19.932	+13 6 45.0	+127.63	24 45.8
32	2 26 24.58	+20.263	+13 57 22.5	+127.08	24 50.0

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . .	5.3	5.0	4.6	4.2	3.8	3.5
Hor. Parallax . .	14.0	13.2	12.1	11.1	10.1	9.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter. .	3.3	3.1	2.9	2.8	2.6	2.6
Hor. Parallax . .	8.7	8.1	7.7	7.3	7.0	6.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declina-

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	2 18 28.64	+19.992	+13 6 45.0	+127.89	23 45.8
2	2 26 24.52	20.220	13 57 22.5	128.68	23 50.0
3	2 34 33.74	20.532	14 47 30.4	124.56	23 54.3
4	2 42 49.93	20.813	15 36 57.7	120.69	23 58.7
5	2 51 12.58	21.070	16 25 32.4	120.18	
6	2 59 41.06	+21.292	+17 13 9.2	+117.22	0 3.3
7	3 8 14.58	21.480	17 59 14.7	113.73	0 8.0
8	3 16 52.26	21.642	18 43 57.3	109.73	0 12.7
9	3 25 33.05	21.780	19 26 58.0	105.24	0 17.4
10	3 34 15.85	21.898	20 8 5.4	100.30	0 22.2
11	3 42 59.45	+21.995	+20 47 8.9	+ 94.94	0 27.0
12	3 51 42.57	21.769	21 23 59.3	89.22	0 31.8
13	4 0 23.96	21.670	21 58 28.9	83.20	0 36.6
14	4 9 2.32	21.548	22 30 31.2	76.95	0 41.3
15	4 17 36.42	21.315	23 0 1.4	70.54	0 45.9
16	4 26 5.05	+21.062	+23 26 56.6	+ 64.04	0 50.5
17	4 34 27.06	20.765	23 51 15.3	57.52	0 54.9
18	4 42 41.42	20.425	24 12 57.5	51.09	0 59.2
19	4 50 47.15	20.046	24 32 4.6	44.80	1 3.4
20	4 58 43.36	19.630	24 48 38.9	38.29	1 7.4
21	5 6 29.26	+19.183	+25 2 43.6	+ 32.14	1 11.2
22	5 14 4.13	18.714	25 14 23.0	26.18	1 14.8
23	5 21 27.31	18.214	25 23 42.1	20.44	1 18.2
24	5 28 38.21	17.691	25 30 46.1	14.93	1 21.5
25	5 35 36.30	17.147	25 35 40.8	9.67	1 24.5
26	5 42 21.10	+16.583	+25 38 32.2	+ 4.66	1 27.3
27	5 48 52.16	16.002	25 39 26.6	— 0.06	1 29.9
28	5 55 9.08	15.405	25 38 30.3	4.57	1 32.2
29	6 1 11.47	14.792	25 35 49.5	8.79	1 34.3
30	6 6 58.96	14.164	25 31 30.7	12.74	1 36.1
31	6 12 31.90	+13.520	+25 25 40.2	— 16.42	1 37.7
32	6 17 47.83	+12.863	+25 18 24.4	— 19.85	1 39.0

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	6 17 47.83	+12.863	+25 18 24.4	—19.85	1 39.0
2	6 23 48.52	12.193	25 9 49.4	23.02	1 40.1
3	6 27 32.93	11.507	25 0 1.4	25.93	1 40.8
4	6 33 0.73	10.807	24 49 6.6	28.59	1 41.3
5	6 36 11.57	10.094	24 37 11.0	31.00	1 41.5
6	6 40 5.11	+ 9.368	+24 24 20.6	—33.16	1 41.5
7	6 43 41.00	8.633	24 10 41.3	35.06	1 41.2
8	6 46 58.92	7.892	23 56 18.7	36.76	1 40.5
9	6 49 58.56	7.099	23 41 18.7	38.22	1 39.5
10	6 52 39.56	6.346	23 25 47.0	39.41	1 38.2
11	6 55 1.62	+ 5.621	+23 9 49.1	—40.38	1 36.6
12	6 57 4.48	4.715	22 53 30.7	41.12	1 34.7
13	6 58 47.89	3.999	22 36 57.3	41.69	1 32.5
14	7 0 11.64	3.276	22 20 14.6	41.99	1 29.9
15	7 1 15.61	2.550	22 3 27.8	41.96	1 27.0
16	7 1 59.71	+ 1.825	+21 46 42.5	—41.76	1 23.8
17	7 2 24.02	+ 0.099	21 30 4.2	41.38	1 20.3
18	7 2 28.65	— 0.213	21 13 38.3	40.75	1 16.4
19	7 2 13.90	1.014	20 57 30.2	39.89	1 12.2
20	7 1 40.17	1.799	20 41 45.3	38.81	1 7.7
21	7 0 48.10	— 2.541	+20 26 29.0	—37.51	1 2.9
22	6 59 38.50	3.252	20 11 46.7	35.98	0 57.8
23	6 58 12.36	3.918	19 57 43.6	34.24	0 52.4
24	6 56 30.89	4.527	19 44 24.8	32.29	0 46.8
25	6 54 35.61	5.066	19 31 55.4	30.13	0 40.9
26	6 52 28.19	— 5.538	+19 20 20.3	—27.77	0 34.9
27	6 50 10.55	5.918	19 9 44.2	25.22	0 28.7
28	6 47 44.81	6.210	19 0 11.4	22.49	0 22.3
29	6 45 13.24	6.404	18 51 46.1	19.59	0 15.9
30	6 42 38.27	6.493	18 44 32.0	16.56	0 9.4
31	6 40 2.44	— 6.475	+18 38 32.2	—13.48	0 3.1 / 23 56.8
32	6 37 28.31	— 6.351	+18 33 49.5	—10.15	23 50.0

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	2.5	2.5	2.6	2.8	3.0	3.3	3.7
Hor. Parallax . .	6.7	6.7	6.9	7.4	8.0	8.8	9.8

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	4.1	4.6	5.1	5.5	5.9	6.0
Hor. Parallax . .	10.9	12.2	13.5	14.7	15.5	15.7

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	6 40 2.44	− 6.475	+18 36 32.2	−13.49	{ 0 2.9 / 23 54.4
2	6 37 28.31	6.384	18 33 49.5	16.15	23 50.0
3	6 34 58.43	6.189	18 30 25.6	6.63	23 43.7
4	6 32 35.36	5.765	18 26 21.8	3.48	23 37.5
5	6 30 21.53	5.208	18 27 38.8	− 0.12	23 31.5
6	6 28 19.20	− 4.580	+18 28 16.1	+ 3.28	23 25.8
7	6 26 30.50	4.216	18 30 12.7	6.49	23 20.3
8	6 24 57.42	3.530	18 33 26.7	9.65	23 15.2
9	6 23 41.62	2.777	18 37 54.8	12.67	23 10.3
10	6 22 44.60	1.995	18 43 33.8	15.53	23 5.7
11	6 22 7.68	− 1.186	+18 50 18.8	+18.19	23 1.5
12	6 21 51.90	− 0.364	18 58 5.2	22.69	22 57.7
13	6 21 58.16	+ 0.730	19 6 46.7	22.79	22 54.2
14	6 22 27.17	1.691	19 16 16.9	24.68	22 51.1
15	6 23 19.47	2.670	19 26 28.6	26.25	22 48.4
16	6 24 35.45	+ 3.653	+19 37 14.2	+27.49	22 46.1
17	6 26 15.38	4.625	19 48 25.5	28.39	22 44.2
18	6 28 19.43	5.571	19 59 53.9	28.91	22 42.7
19	6 30 47.65	6.478	20 11 30.1	29.04	22 41.7
20	6 33 40.03	7.335	20 23 4.4	28.75	22 41.0
21	6 36 56.51	+ 8.137	+20 34 26.9	+28.05	22 40.7
22	6 40 36.92	8.879	20 45 27.2	26.91	22 40.8
23	6 44 41.00	9.559	20 55 54.6	25.30	22 41.3
24	6 49 8.45	10.176	21 5 37.8	23.22	22 42.1
25	6 53 58.90	10.729	21 14 25.5	20.66	22 43.4
26	6 59 11.85	+11.220	+21 22 5.9	+17.62	22 45.0
27	7 4 46.69	11.650	21 28 27.4	14.09	22 47.0
28	7 10 42.72	12.025	21 33 18.4	10.07	22 49.3
29	7 16 59.10	12.350	21 36 27.1	5.57	22 51.9
30	7 23 34.81	12.630	21 37 42.3	+ 0.62	22 54.9
31	7 30 28.72	+12.867	+21 36 53.7	− 4.74	22 58.1
32	7 37 39.50	+13.061	+21 33 51.6	−10.48	23 1.6

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	7 37 39.50	+13.061	+21 33 51.6	− 10.49	23 1.6
2	7 45 5.69	13.209	21 28 27.4	16.56	23 5.3
3	7 52 45.63	13.327	21 20 31.9	22.32	23 9.3
4	8 0 37.58	13.389	21 10 5.8	28.45	23 13.4
5	8 8 39.70	13.374	20 56 59.3	34.11	23 17.6
6	8 16 50.06	+13.276	+20 41 12.5	− 42.79	23 22.0
7	8 25 6.71	13.093	20 22 46.0	49.49	23 26.4
8	8 33 27.74	12.841	20 1 42.1	55.89	23 30.9
9	8 41 51.27	12.526	19 38 4.8	62.18	23 35.3
10	8 50 15.58	12.166	19 11 59.8	68.19	23 39.8
11	8 58 39.05	+11.749	+18 43 34.2	− 73.88	23 44.2
12	9 7 0.25	11.313	18 12 56.2	79.21	23 48.6
13	9 15 17.90	10.846	17 40 14.9	84.16	23 52.9
14	9 23 30.92	10.353	17 5 39.9	88.69	23 57.1
15	9 31 38.41	9.837	16 29 21.0	92.80	
16	9 39 39.66	+9.314	+15 51 28.0	− 96.53	0 1.2
17	9 47 34.10	8.781	15 12 10.7	99.85	0 5.2
18	9 55 21.34	8.244	14 31 38.4	102.76	0 9.0
19	10 3 1.06	7.707	13 50 0.1	105.25	0 12.7
20	10 10 33.16	7.176	13 7 24.1	107.50	0 16.3
21	10 17 57.53	+6.654	+12 23 58.7	−109.49	0 19.8
22	10 25 14.18	6.134	11 39 50.8	111.10	0 23.1
23	10 32 23.19	5.718	10 55 7.7	112.44	0 26.3
24	10 39 24.67	5.197	10 9 55.5	113.53	0 29.4
25	10 46 18.79	4.784	9 24 20.0	114.39	0 32.4
26	10 53 5.74	+4.380	+ 8 38 26.5	−115.09	0 35.2
27	10 59 45.75	3.985	7 52 20.0	115.46	0 37.9
28	11 6 19.04	3.600	7 6 4.9	115.75	0 40.6
29	11 12 45.84	3.225	6 19 45.2	115.86	0 43.1
30	11 19 6.40	2.859	5 33 24.6	115.88	0 45.5
31	11 25 20.97	+2.503	+ 4 47 6.6	−115.85	0 47.8
32	11 31 29.79	+2.157	+ 4 0 54.3	−115.26	0 50.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	5″.7	5″.3	4″.7	4″.1	3″.6	3″.2
Hor. Parallax . .	15.2	14.0	12.4	10.9	9.5	8.4

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	2″.8	2″.6	2″.5	2″.5	2″.5	2″.5
Hor. Parallax . .	7.5	7.0	6.6	6.5	6.5	6.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	11 31 29.79	+15.951	+ 4 0 54.3	−115.35	0 50.0
2	11 37 33.08	15.095	3 14 50.5	114 93	0 52.1
3	11 43 31.05	14.809	2 28 58.1	114.41	0 54.1
4	11 49 23.98	14.602	1 43 19.5	113.79	0 56.0
5	11 55 12.03	14.403	0 57 56.8	113.08	0 57.9
6	12 0 55.40	+14.212	+ 0 12 52.4	−112.28	0 59.7
7	12 6 34.27	14.028	− 0 31 51.7	111.39	1 1.4
8	12 12 8.81	13.851	1 16 13.5	110.42	1 3.0
9	12 17 39.17	13.680	2 0 11.2	109.38	1 4.6
10	12 23 5.47	13.514	2 43 43.0	108.26	1 6.1
11	12 28 27.86	+13.352	− 3 26 47.0	−107.07	1 7.5
12	12 33 46.42	13.195	4 9 21.6	105.80	1 8.9
13	12 39 1.23	13.040	4 51 25.0	104.47	1 10.2
14	12 44 12.34	12.887	5 32 55.6	103.07	1 11.4
15	12 49 19.80	12.736	6 13 51.6	101.59	1 12.6
16	12 54 23.65	+12.584	− 6 54 11.4	−100.04	1 13.7
17	12 59 23.83	12.431	7 33 52.9	98.41	1 14.8
18	13 4 20.32	12.276	8 12 54.3	96.70	1 15.9
19	13 9 13.07	12.118	8 51 14.0	94.91	1 16.8
20	13 14 1.97	11.956	9 28 49.7	93.04	1 17.6
21	13 18 46.88	+11.787	−10 5 39.2	− 91.08	1 18.4
22	13 23 27.68	11.610	10 41 40.6	89.02	1 19.1
23	13 28 4.12	11.425	11 16 51.4	86.86	1 19.8
24	13 32 35.97	11.228	11 51 9.1	84.59	1 20.4
25	13 37 2.98	11.017	12 24 31.0	82.21	1 20.9
26	13 41 24.66	+10.791	−12 56 54.1	− 79.70	1 21.3
27	13 45 40.75	10.547	13 28 15.3	77.05	1 21.6
28	13 49 50.73	10.281	13 58 31.1	74.25	1 21.8
29	13 53 54.05	9.992	14 27 37.8	71.29	1 21.9
30	13 57 50.13	9.676	14 55 31.5	68.15	1 21.9
31	14 1 38.25	+ 9.336	−15 22 7.5	− 64.82	1 21.8
32	14 5 17.62	+ 8.946	−15 47 21.1	− 61.27	1 21.5

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	14 1 38.25	+ 9.336	−15 22 7.5	− 64.82	1 21.8
2	14 5 17.62	8.946	15 47 21.1	61.27	1 21.5
3	14 8 47.36	8.535	16 11 6.7	57.48	1 21.0
4	14 12 6.48	8.080	16 33 18.0	53.42	1 20.4
5	14 15 13.86	7.546	16 53 48.4	49.06	1 19.6
6	14 18 8.26	+ 6.978	−17 12 30.5	− 44.36	1 18.5
7	14 20 48.31	6.350	17 29 16.0	39.34	1 17.2
8	14 23 12.52	5.657	17 43 55.5	33.88	1 15.7
9	14 25 19.29	4.894	17 56 18.8	27.98	1 13.8
10	14 27 6.84	4.055	18 6 14.6	21.59	1 11.6
11	14 28 33.29	+ 3.139	−18 13 30.1	− 14.69	1 9.1
12	14 29 36.73	2.137	18 17 51.9	− 7.06	1 6.2
13	14 30 15.23	+ 1.056	18 19 5.1	+ 1.09	1 2.9
14	14 30 26.82	− 0.104	18 16 54.3	9.93	0 59.2
15	14 30 9.70	1.336	18 11 3.3	19.43	0 54.9
16	14 29 22.29	− 2.695	−18 1 16.4	+ 29.58	0 50.2
17	14 28 3.41	3.983	17 47 18.9	40.31	0 44.9
18	14 26 12.48	5.293	17 28 58.3	51.46	0 39.1
19	14 23 49.63	6.605	17 6 6.4	62.87	0 32.8
20	14 20 56.04	7.846	16 38 41.1	74.20	0 26.1
21	14 17 34.00	− 8.966	−16 6 48.6	+ 85.06	0 18.8
22	14 13 47.15	9.906	15 30 45.9	94.96	0 11.1
23	14 9 40.49	10.606	14 51 2.5	103.36	{ 0 3.1 / 23 54.6
24	14 5 20.26	11.095	14 8 21.3	109.68	23 46.5
25	14 0 53.87	11.117	13 23 38.6	113.41	23 38.2
26	13 56 29.37	−10.865	−12 38 1.3	+114.17	23 30.0
27	13 52 15.06	10.369	11 52 43.1	111.78	23 22.2
28	13 48 19.00	9.351	11 9 0.5	106.25	23 14.8
29	13 44 48.43	8.152	10 28 6.1	97.69	23 7.9
30	13 41 49.50	6.726	9 51 4.8	86.92	23 1.6
31	13 39 26.87	− 5.138	− 9 18 48.7	+ 74.14	22 55.9
32	13 37 43.64	− 3.454	− 8 51 55.8	+ 60.10	22 50.9

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	2.5	2.6	2.7	2.8	3.0	3.2
Hor. Parallax . . .	6.7	6.9	7.1	7.5	7.9	8.4

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	3.5	3.8	4.2	4.7	5.0	4.8
Hor. Parallax	9.2	10.1	11.2	12.4	13.2	12.8

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 37 43.64	− 3.454	− 8 51 55.8	+60.10	22 50.9
2	13 36 41.38	1.733	8 30 49.1	45.40	22 46.6
3	13 36 20.33	− 0.028	8 15 37.7	30.58	22 42.9
4	13 36 39.60	+ 1.689	8 6 18.3	16.13	22 39.9
5	13 37 37.36	3.178	8 2 37.8	+ 2.20	22 37.5
6	13 39 11.90	+ 4 694	− 8 4 15.9	−10.39	22 35.7
7	13 41 18.32	5.946	8 10 47.6	22.05	22 34.3
8	13 43 55.72	7.149	8 21 44.7	33.50	22 33.4
9	13 47 0.33	8.219	8 36 38.1	41.74	22 32.9
10	13 50 29.25	9.172	8 54 59.0	49.80	22 32.8
11	13 54 19.66	+10.012	− 9 16 19.4	−56.78	22 33.0
12	13 58 28.99	10.750	9 40 12.9	59.57	22 33.5
13	14 2 54.91	11.396	10 6 15.0	67.45	22 34.2
14	14 7 35.35	11.961	10 34 3.4	71.45	22 35.1
15	14 12 28.45	12 453	11 3 18.0	74.65	22 36.2
16	14 17 32.59	+12 882	−11 33 40.8	−77.15	22 37.5
17	14 22 46.38	13.256	12 4 56.1	79.03	22 38.9
18	14 28 8.61	13.588	12 36 49.6	80.35	22 40.5
19	14 33 38.25	13.877	13 9 8.8	81.17	22 42.2
20	14 39 14.43	14.123	13 41 42.4	81.57	22 43.9
21	14 44 56.41	+14.361	−14 14 21.1	−81.69	22 45.7
22	14 50 43.55	14.564	14 46 56.4	81.99	22 47.7
23	14 56 35.30	14.747	15 19 20.7	80.66	22 49.7
24	15 2 31.27	14.914	15 51 27.5	79.83	22 51.7
25	15 8 31.07	15.067	16 23 10.9	78.75	22 53.8
26	15 14 34.39	+15.208	−16 54 25.9	−77.47	22 56.0
27	15 20 40.98	15.339	17 25 7.8	76.00	22 58.2
28	15 26 50.62	15.463	17 55 12.6	74.37	23 0.5
29	15 33 3.15	15.580	18 24 36.5	72.60	23 2.8
30	15 39 18.44	15.693	18 53 16.3	70.76	23 5.2
31	15 45 36.37	+15.801	−19 21 9.1	−68.68	23 7.6
32	15 51 56.85	+15.905	−19 48 12.1	−66.55	23 10.0

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 45 36.37	+15.801	−19 21 9.1	−66.68	23 7.6
2	15 51 56.85	15.905	19 48 12.1	66.55	23 10.0
3	15 58 19.80	16.007	20 14 22.7	64.28	23 12.5
4	16 4 45.15	16.106	20 39 38.6	61.90	23 15.0
5	16 11 12.86	16.203	21 3 57.7	59.58	23 17.6
6	16 17 42.88	+16.296	−21 27 17.9	−57.06	23 20.2
7	16 24 15.17	16.386	21 49 37.2	54.51	23 22.8
8	16 30 49.70	16.475	22 10 53.9	51.87	23 25.5
9	16 37 26.44	16.576	22 31 6.3	49.15	23 28.2
10	16 44 5.34	16.665	22 50 12.5	46.36	23 31.0
11	16 50 46.36	+16.753	−23 8 11.0	−43.50	23 33.8
12	16 57 29.47	16.840	23 25 0.2	40.58	23 36.6
13	17 4 14.65	16.925	23 40 38.6	37.60	23 39.4
14	17 11 1.84	17.007	23 55 4.7	34.56	23 42.3
15	17 17 50.98	17.088	24 8 17.0	31.46	23 45.2
16	17 24 42.02	+17.166	−24 20 14.0	−28.29	23 48.1
17	17 31 34.91	17.241	24 30 54.4	25.07	23 51.1
18	17 38 29.57	17.314	24 40 16.9	21.79	23 54.1
19	17 45 25.94	17.383	24 48 20.0	18.46	23 57.1
20	17 52 23.91	17.448	24 55 2.5	15.07	
21	17 59 23.42	+17.510	−25 0 22.9	−11.62	0 0.2
22	18 6 24.36	17.567	25 4 20.1	8.13	0 3.3
23	18 13 26.61	17.620	25 6 52.9	4.59	0 6.4
24	18 20 30.08	17.668	25 7 59.9	− 0.98	0 9.5
25	18 27 34.62	17.710	25 7 40.1	+ 2.65	0 12.6
26	18 34 40.11	+17.746	−25 5 52.3	+ 6.34	0 15.8
27	18 41 46.39	17.776	25 2 35.5	10.07	0 18.9
28	18 48 53.31	17.799	24 57 48.6	13.85	0 22.1
29	18 56 0.68	17.814	24 51 30.6	17.68	0 25.3
30	19 3 8.32	17.821	24 43 40.6	21.51	0 28.5
31	19 10 16.02	+17.819	−24 34 18.0	+25.38	0 31.7
32	19 17 23.55	+17.807	−24 23 22.0	+29.28	0 34.9

Day of the Month.	1st.	7th.	13th.	17th.	23d.	27th
Semidiameter	″ 4.3	″ 3.7	″ 3.2	″ 2.9	″ 2.7	″ 2.5
Hor. Parallax	11.4	9.8	8.6	7.7	7.1	6.7

Day of the Month.	1st.	7th.	13th.	17th.	23d.	27th	31st.
Semidiameter . .	″ 2.4	″ 2.4	″ 2.3	″ 2.3	″ 2.3	″ 2.4	″ 2.4
Hor. Parallax . .	6.4	6.2	6.2	6.1	6.1	6.2	6.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	19 20 51.00	+13.586	−23 9 51.1	+21.45	0 37.3
2	19 26 16.70	13.554	23 0 55.0	23.23	0 38.8
3	19 31 41.61	13.520	22 51 16.7	24.98	0 40.3
4	19 37 5.66	13.483	22 40 56.5	26.71	0 41 8
5	19 42 28.81	13.445	22 29 55.0	28.42	0 43.2
6	19 47 51.02	+13.405	−22 18 12.6	+30.11	0 44.6
7	19 53 12.25	13.363	22 5 49.8	31.78	0 46.0
8	19 58 32.45	13.320	21 52 47.1	33.43	0 47.4
9	20 3 51.60	13.275	21 39 5.0	35.06	0 48.8
10	20 9 9.66	13.229	21 24 44.1	36.67	0 50.1
11	20 14 26.59	+13.181	−21 9 45.1	+38.25	0 51.4
12	20 19 42.36	13.133	20 54 8.4	39.80	0 52.8
13	20 24 56.97	13.084	20 37 54.7	41.33	0 54.1
14	20 30 10.37	13.033	20 21 4.7	42.83	0 55.4
15	20 35 22.55	12.982	20 3.38.9	44.31	0 56.7
16	20 40 33.50	+12 930	−19 45 38.1	+45.75	0 57.9
17	20 45 43.20	12.878	19 27 2.9	47.17	0 59.1
18	20 50 51.64	12.825	19 7 54.0	48 56	1 0.3
19	20 55 58.81	12.772	18 48 12.0	49 92	1 1.5
20	21 1 4.70	12.719	18 27 57.8	51.25	1 2.7
21	21 6 9.30	+12 666	−18 7 12.1	+52.55	1 3.9
22	21 11 12.61	12.612	17 45 55.5	53.82	1 5.0
23	21 16 14.64	12.558	17 24 8.8	55.06	1 6.1
24	21 21 15.37	12.504	17 1 52.9	56.26	1 7.1
25	21 26 14.81	12.450	16 39 8.5	57.43	1 8.1
26	21 31 12.98	+12.397	−16 15 56.3	+58.57	1 9.1
27	21 36 9 87	12.344	15 52 17.2	59.68	1 10.1
28	21 41 5.50	12.291	15 28 11.9	60.75	1 11.1
29	21 45 59.86	12.239	15 3 41.2	61.79	1 12.1
30	21 50 52.99	12.188	14 38 46.0	62 80	1 13.0
31	21 55 44.89	+12.137	−14 13 27.0	+63.77	1 14.0
32	22 0 35.58	+12.087	−13 47 45.1	+64.71	1 14.9

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	22 0 35.58	+12.087	−13 47 45.1	+64.71	1 14.9
2	22 5 25.07	12.038	13 21 41.0	65.62	1 15.8
3	22 10 13.40	11.990	12 55 15.5	66.50	1 16.7
4	22 15 0.59	11.943	12 28 29.4	67.34	1 17.5
5	22 19 46.66	11.897	12 1 23.5	68.14	1 18.3
6	22 24 31.64	+11.852	−11 33 58.7	+68.92	1 19.1
7	22 29 15.56	11.808	11 6 15.6	69.67	1 19.9
8	22 33 58.46	11.766	10 38 15.0	70.36	1 20.7
9	22 38 40.35	11.725	10 9 57.8	71.05	1 21.4
10	22 43 21.28	11.686	9 41 24.6	71.70	1 22.2
11	22 48 1.28	+11.648	− 9 12 36.3	+72.31	1 22.9
12	22 52 40.39	11.612	8 43 33.6	72.90	1 23.6
13	22 57 18.65	11.577	8 14 17.3	73.45	1 24.3
14	23 1 56.11	11.544	7 44 48.0	73.98	1 25.0
15	23 6 32.78	11.512	7 15 6.7	74.47	1 25.6
16	23 11 8.70	+11.480	− 6 45 14.0	+74.93	1 26.3
17	23 15 43.93	11.454	6 15 10.7	75.36	1 26.9
18	23 20 18.50	11.427	5 44 57.5	75.75	1 27.6
19	23 24 52.45	11.402	5 14 35.1	76.11	1 28.2
20	23 29 25.82	11.379	4 44 4.4	76.44	1 28.8
21	23 33 58.65	+11.357	− 4 13 26.1	+76.74	1 29.4
22	23 38 30.98	11.337	3 42 40.9	77.01	1 30.0
23	23 43 2.85	11.319	3 11 49.7	77.25	1 30.6
24	23 47 34.30	11.302	2 40 53.2	77.45	1 31.2
25	23 52 5.37	11.287	2 9 52.1	77.63	1 31.8
26	23 56 36.10	+11.274	− 1 38 47.3	+77.77	1 32.4
27	0 1 6.53	11.263	1 7 39.4	77.88	1 32.9
28	0 5 36.70	11.252	0 36 29.3	77.96	1 33.5
29	0 10 6.65	11.244	− 0 5 17.6	78.00	1 34.0
30	0 14 36.42	11.237	+ 0 25 54.8	78.02	1 34.6
31	0 19 6.04	+11.232	+ 0 57 7.2	+78.01	1 35.1
32	0 23 35.56	+11.229	+ 1 28 18.9	+77.96	1 35.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	5.1	5.1	5.1	5.1	5.2	5.2	5.2
Hor. Parallax . .	5.2	5.3	5.3	5.3	5.3	5.4	5.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter	5.3	5.3	5.4	5.4	5.5
Hor. Parallax	5.5	5.5	5.5	5.6	5.7

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	0 10 6.65	+11.944	− 0 5 17.6	+78.00	1 34.0
2	0 14 36.42	11.937	+ 0 25 54.8	78.02	1 34.6
3	0 19 6.04	11.928	0 57 7.2	78.01	1 35.1
4	0 23 35.56	11.919	1 28 18.9	77.96	1 35.7
5	0 28 5.03	11.908	1 59 29.0	77.88	1 36.2
6	0 32 34.49	+11.896	+ 2 30 36.9	+77.77	1 36.8
7	0 37 3.98	11.880	3 1 41.9	77.64	1 37.3
8	0 41 33.54	11.864	3 32 43.4	77.47	1 37.9
9	0 46 3.20	11.839	4 3 40.4	77.27	1 38.4
10	0 50 33.02	11.846	4 34 32.1	77.04	1 39.0
11	0 55 3.03	+11.825	+ 5 5 17.9	+76.78	1 39.5
12	0 59 33.28	11.806	5 35 57.2	76.49	1 40.1
13	1 4 3.81	11.779	6 6 29.3	76.18	1 40.7
14	1 8 34.67	11.753	6 36 53.5	75.83	1 41.3
15	1 13 5.89	11.709	7 7 9.0	75.45	1 41.8
16	1 17 37.51	+11.686	+ 7 37 15.0	+75.04	1 42.4
17	1 22 9.58	11.646	8 7 10.8	74.61	1 42.9
18	1 26 42.12	11.607	8 36 55.7	74.14	1 43.5
19	1 31 15.19	11.569	9 6 29.1	73.64	1 44.1
20	1 35 48.81	11.513	9 35 50.1	73.11	1 44.7
21	1 40 23.02	+11.458	+10 4 58.1	+72.55	1 45.4
22	1 44 57.86	11.405	10 33 52.3	71.96	1 46.0
23	1 49 33.37	11.403	11 2 31.8	71.34	1 46.7
24	1 54 9.55	11.352	11 30 56.0	70.68	1 47.3
25	1 58 46.45	11.353	11 59 4.1	70.00	1 48.0
26	2 3 24.10	+11.305	+12 26 55.5	+69.28	1 48.7
27	2 8 2.53	11.618	12 54 29.2	68.53	1 49.4
28	2 12 41.75	11.651	13 21 44.5	67.75	1 50.1
29	2 17 21.79	11.686	13 48 40.8	66.93	1 50.9
30	2 22 2.66	11.721	14 15 17.2	66.09	1 51.6
31	2 26 44.40	+11.757	+14 41 33.0	+65.21	1 52.4
32	2 31 27.01	+11.794	+15 7 27.4	+64.31	1 53.1

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	2 31 27.01	+11.794	+15 7 27.4	+64.31	1 53.1
2	2 36 10.53	11.832	15 32 59.7	63.38	1 53.9
3	2 40 54.96	11.871	15 58 9.2	62.41	1 54.7
4	2 45 40.32	11.910	16 22 55.1	61.41	1 55.5
5	2 50 26.61	11.949	16 47 16.6	60.38	1 56.3
6	2 55 13.85	+11.989	+17 11 13.1	+59.32	1 57.2
7	3 0 2.06	12.029	17 34 44.0	58.24	1 58.1
8	3 4 51.24	12.069	17 57 48.5	57.12	1 59.0
9	3 9 41.39	12.110	18 20 25.8	55.98	1 59.9
10	3 14 32.53	12.151	18 42 35.3	54.80	2 0.8
11	3 19 24.65	+12.192	+19 4 16.2	+53.60	2 1.7
12	3 24 17.76	12.233	19 25 28.0	52.37	2 2.7
13	3 29 11.85	12.274	19 46 10.1	51.12	2 3.6
14	3 34 6.92	12.315	20 6 21.6	49.83	2 4.6
15	3 39 2.98	12.356	20 26 1.9	48.52	2 5.6
16	3 44 0.00	+12.396	+20 45 10.5	+47.18	2 6.6
17	3 48 57.98	12.436	21 3 46.6	45.82	2 7.6
18	3 53 56.90	12.475	21 21 49.7	44.43	2 8.6
19	3 58 56.75	12.513	21 39 19.3	43.02	2 9.6
20	4 3 57.51	12.550	21 56 14.5	41.58	2 10.7
21	4 8 59.13	+12.586	+22 12 34.7	+40.11	2 11.8
22	4 14 1.60	12.621	22 28 19.5	38.60	2 12.9
23	4 19 4.90	12.654	22 43 28.4	37.11	2 14.0
24	4 24 8.99	12.686	22 58 0.7	35.58	2 15.2
25	4 29 13.82	12.716	23 11 56.0	34.02	2 16.3
26	4 34 19.37	+12.745	+23 25 13.7	+32.44	2 17.5
27	4 39 25.58	12.772	23 37 53.4	30.85	2 18.6
28	4 44 32.42	12.797	23 49 54.5	29.24	2 19.8
29	4 49 39.83	12.820	24 1 16.7	27.61	2 21.0
30	4 54 47.76	12.840	24 11 59.6	25.96	2 22.2
31	4 59 56.15	+12.858	+24 22 2.8	+24.30	2 23.4
32	5 5 4.95	+12.874	+24 31 26.0	+22.63	2 24.6

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . .	″5.5	″5.6	″5.7	″5.8	″5.9	″6.0
Hor. Parallax . .	5.7	5.8	5.9	6.0	6.1	6.2

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . .	″6.1	″6.2	″6.3	″6.4	″6.6	″6.7
Hor. Parallax . .	6.3	6.4	6.5	6.7	6.8	7.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	4 59 56.15	+12.858	+24 22 2.8	+24.39	2 23.4
2	5 5 4.95	12.874	24 31 26.0	22.63	2 24.6
3	5 10 14.11	12.888	24 40 8.9	20.94	2 25.8
4	5 15 23.57	12.899	24 48 11.1	19.24	2 27.0
5	5 20 33.27	12.906	24 55 32.4	17.53	2 28.2
6	5 25 43.14	+12.914	+25 2 12.6	+15.81	2 29.4
7	5 30 53.12	12.917	25 8 11.4	14.09	2 30.6
8	5 36 3.15	12.918	25 13 28.8	12.36	2 31.9
9	5 41 13.17	12.917	25 18 4.6	10.62	2 33.1
10	5 46 23.13	12.913	25 21 58.6	8.88	2 34.3
11	5 51 32.96	+12.906	+25 25 10.8	+ 7.14	2 35.5
12	5 56 42.59	12.896	25 27 41.1	5.39	2 36.8
13	6 1 51.96	12.884	25 29 29.7	3.65	2 38.0
14	6 7 1.00	12.869	25 30 36.5	1.91	2 39.2
15	6 12 9.64	12.851	25 31 1.4	+ 0.17	2 40.4
16	6 17 17.83	+12.830	+25 30 44.6	− 1.57	2 41.6
17	6 22 25.49	12.807	25 29 46.2	3.30	2 42.8
18	6 27 32.56	12.781	25 28 6.3	5.02	2 44.0
19	6 32 38.98	12.753	25 25 45.0	6.74	2 45.2
20	6 37 44.67	12.721	25 22 42.6	8.45	2 46.3
21	6 42 49.58	+12.687	+25 18 59.3	−10.15	2 47.5
22	6 47 53.63	12.650	25 14 35.3	11.84	2 48.6
23	6 52 56.77	12.610	25 9 31.0	13.52	2 49.7
24	6 57 58.91	12.568	25 3 46.5	15.18	2 50.8
25	7 2 59.99	12.523	24 57 22.3	16.83	2 51.9
26	7 7 59.96	+12.475	+24 50 18.8	−18.46	2 52.9
27	7 12 58.74	12.424	24 42 36.4	20.07	2 54.0
28	7 17 56.28	12.371	24 34 15.5	21.66	2 55.0
29	7 22 52.52	12.315	24 25 16.6	23.24	2 56.0
30	7 27 47.40	12.257	24 15 40.1	24.80	2 57.0
31	7 32 40.87	+12.197	+24 5 26.6	−26.33	2 57.9
32	7 37 32.85	+12.135	+23 54 36.6	−27.84	2 58.8

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	7 37 32.85	+12.135	+23 54 36.6	−27.34	2 58.8
2	7 42 23.30	12.070	23 43 10.7	29.39	2 59.7
3	7 47 12.18	12.003	23 31 9.4	30.78	3 0.5
4	7 51 59.45	11.935	23 18 33.1	32.22	3 1.4
5	7 56 45.05	11.865	23 5 22.8	33.63	3 2.2
6	8 1 28.95	+11.793	+22 51 39.1	−35.01	3 3.0
7	8 6 11.10	11.720	22 37 22.4	36.37	3 3.8
8	8 10 51.49	11.645	22 22 33.4	37.70	3 4.5
9	8 15 30.07	11.569	22 7 12.8	39.00	3 5.2
10	8 20 6.80	11.490	21 51 21.3	40.28	3 5.9
11	8 24 41.67	+11.413	+21 34 59.4	−41.53	3 6.5
12	8 29 14.65	11.334	21 18 7.8	42.75	3 7.1
13	8 33 45.71	11.254	21 0 47.3	43.94	3 7.7
14	8 38 14.83	11.173	20 42 58.5	45.11	3 8.3
15	8 42 41.99	11.091	20 24 42.2	46.24	3 8.8
16	8 47 7.18	+11.008	+20 5 59.1	−47.35	3 9.3
17	8 51 30.37	10.924	19 46 49.7	48.42	3 9.7
18	8 55 51.55	10.840	19 27 14.9	49.47	3 10.1
19	9 0 10.69	10.755	19 7 15.3	50.49	3 10.4
20	9 4 27.78	10.669	18 46 51.8	51.47	3 10.7
21	9 8 42.80	+10.582	+18 26 5.0	−52.42	3 11.0
22	9 12 55.73	10.495	18 4 55.7	53.34	3 11.3
23	9 17 6.56	10.407	17 43 24.7	54.23	3 11.5
24	9 21 15.26	10.318	17 21 32.8	55.09	3 11.7
25	9 25 21.82	10.228	16 59 20.7	55.92	3 11.9
26	9 29 26.23	+10.138	+16 36 49.1	−56.71	3 12.0
27	9 33 28.46	10.047	16 13 59.0	57.47	3 12.1
28	9 37 28.48	9.955	15 50 51.2	58.19	3 12.1
29	9 41 26.29	9.862	15 27 26.3	58.88	3 12.1
30	9 45 21.88	9.769	15 3 45.2	59.54	3 12.0
31	9 49 15.22	+ 9.675	+14 39 48.7	−60.16	3 12.0
32	9 53 6.28	+ 9.580	+14 15 37.6	−60.75	3 11.9

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	″ 6.9	″ 7.1	″ 7.3	″ 7.5	″ 7.8	″ 8.0	″ 8.3
Hor. Parallax . .	7.2	7.4	7.6	7.8	8.1	8.3	8.6

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	″ 8.7	″ 9.0	″ 9.4	″ 9.8	″ 10.3	″ 10.9
Hor. Parallax . .	9.0	9.3	9.8	10.2	10.7	11.2

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 49 15.22	+9.675	+14 39 48.7	−60.16	3 12.0
2	9 53 6.28	9.589	14 15 37.6	60.75	3 11.9
3	9 56 55.06	9.495	13 51 12.7	61.31	3 11.8
4	10 0 41.55	9.389	13 26 34.7	61.84	3 11.7
5	10 4 25.73	9.282	13 1 44.4	62.34	3 11.5
6	10 8 7.57	+9.165	+12 36 42.6	−62.80	3 11.3
7	10 11 47.07	9.036	12 11 30.1	63.23	3 11.0
8	10 15 24.19	8.897	11 46 7.7	63.63	3 10.7
9	10 18 58.94	8.697	11 20 36.1	64.00	3 10.3
10	10 22 31.28	8.797	10 54 56.0	64.34	3 9.8
11	10 26 1.21	+8.636	+10 29 8.2	−64.64	3 9.3
12	10 29 28.70	8.594	10 3 13.5	64.91	3 8.8
13	10 32 53.73	8.491	9 37 12.5	65.16	3 8.3
14	10 36 16.27	8.387	9 11 6.0	65.36	3 7.7
15	10 39 36.30	8.281	8 44 54.8	65.56	3 7.1
16	10 42 53.77	+8.174	+ 8 18 39.6	−65.70	3 6.5
17	10 46 8.67	8.066	7 52 21.3	65.82	3 5.8
18	10 49 20.95	7.956	7 26 0.7	65.90	3 5.1
19	10 52 30.57	7.845	6 59 38.5	65.95	3 4.3
20	10 55 37.48	7.731	6 33 15.7	65.96	3 3.5
21	10 58 41.64	+7.615	+ 6 6 52.8	−65.94	3 2.6
22	11 1 42.98	7.496	5 40 30.8	65.88	3 1.7
23	11 4 41.44	7.375	5 14 10.6	65.78	3 0.7
24	11 7 36.96	7.251	4 47 53.2	65.65	2 59.7
25	11 10 29.46	7.124	4 21 39.5	65.48	2 58.6
26	11 13 18.86	+6.993	+ 3 55 30.5	−65.27	2 57.4
27	11 16 5.10	6.860	3 29 27.0	65.02	2 56.2
28	11 18 48.08	6.722	3 3 30.1	64.73	2 55.0
29	11 21 27.71	6.580	2 37 40.8	64.36	2 53.7
30	11 24 3.89	6.434	2 12 0.2	64.00	2 52.4
31	11 26 36.49	+6.283	+ 1 46 29.2	−63.57	2 51.0
32	11 29 5.42	+6.128	+ 1 21 9.0	−63.10	2 49.5

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	11 29 5.42	+6.128	+1 21 9.0	−63.10	2 49.5
2	11 31 30.59	5.968	0 56 0.8	62.58	2 48.0
3	11 33 51.88	5.804	0 31 5.6	62.01	2 46.4
4	11 36 9.15	5.636	+0 6 24.6	61.40	2 44.8
5	11 38 22.29	5.460	−0 18 1.2	60.74	2 43.1
6	11 40 31.17	+5.280	−0 42 10.5	−60.03	2 41.3
7	11 42 35.66	5.093	1 6 2.2	59.26	2 39.4
8	11 44 35.60	4.901	1 29 34.8	58.44	2 37.4
9	11 46 30.86	4.702	1 52 47.2	57.57	2 35.4
10	11 48 21.28	4.497	2 15 37.9	56.64	2 33.3
11	11 50 6.71	+4.286	−2 38 5.6	−55.65	2 31.1
12	11 51 46.98	4.068	3 0 8.8	54.60	2 28.8
13	11 53 21.92	3.842	3 21 45.9	53.46	2 26.4
14	11 54 51.35	3.609	3 42 55.4	52.30	2 23.9
15	11 56 15.09	3.368	4 3 35.6	51.04	2 21.4
16	11 57 32.97	+3.119	−4 23 44.6	−49.71	2 18.8
17	11 58 44.78	2.862	4 43 20.6	48.29	2 16.1
18	11 59 50.30	2.597	5 2 21.8	46.79	2 13.2
19	12 0 49.36	2.323	5 20 45.9	45.22	2 10.2
20	12 1 41.75	2.041	5 38 30.9	43.59	2 7.1
21	12 2 27.26	+1.750	−5 55 34.4	−41.74	2 3.9
22	12 3 5.70	1.450	6 11 54.0	39.86	2 0.7
23	12 3 36.84	1.142	6 27 27.3	37.86	1 57.3
24	12 4 0.47	0.825	6 42 11.6	35.79	1 53.7
25	12 4 16.40	0.502	6 56 4.2	33.56	1 50.0
26	12 4 24.50	+0.172	−7 9 2.7	−31.26	1 46.2
27	12 4 24.59	−0.165	7 21 4.2	28.89	1 42.3
28	12 4 16.56	0.507	7 32 6.0	26.36	1 38.2
29	12 4 0.28	0.858	7 42 5.1	23.61	1 34.0
30	12 3 35.67	1.200	7 50 58.6	20.68	1 29.6
31	12 3 2.67	−1.550	−7 58 43.6	−17.96	1 25.1
32	12 2 21.29	−1.900	−8 5 17.8	−14.90	1 20.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	11″.5	12″.1	12″.8	13″.7	14″.6	15″.6
Hor. Parallax . .	11.9	12.5	13.3	14.2	15.1	16.2

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	16″.8	18″.1	19″.6	21″.3	23″.0	24″.9
Hor. Parallax . .	17.4	18.8	20.3	22.0	23.9	25.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 2 21.29	−1.900	−8 5 17.8	−14.90	1 20.5
2	12 1 31.54	2.247	8 10 38.4	11.79	1 15.7
3	12 0 33.51	2.586	8 14 43.1	8.58	1 10.8
4	11 59 27.37	2.922	8 17 29.4	5.26	1 5.8
5	11 58 13.31	3.248	8 18 55.8	− 1.91	1 0.6
6	11 56 51.57	−3.561	−8 19 0.4	+ 1.53	0 55.3
7	11 55 22.46	3.859	8 17 42.0	5.01	0 49.9
8	11 53 46.40	4.141	8 14 59.6	8.52	0 44.4
9	11 52 3.81	4.403	8 10 53.1	12.03	0 38.8
10	11 50 15.23	4.642	8 5 22.5	15.52	0 33.1
11	11 48 21.18	−4.855	−7 58 28.3	+18.98	0 27.3
12	11 46 22.34	5.042	7 50 11.8	22.38	0 21.4
13	11 44 19.33	5.200	7 40 34.8	25.68	0 15.4
14	11 42 12.93	5.328	7 29 39.8	28.87	0 9.3
15	11 40 3.91	5.419	7 17 30.0	31.91	{ 0 3.2 { 23 57.1
16	11 37 53.08	−5.478	−7 4 9.1	+34.78	23 51.0
17	11 35 41.21	5.503	6 49 41.6	37.46	23 44.9
18	11 33 29.15	5.492	6 34 12.5	39.93	23 38.8
19	11 31 17.81	5.446	6 17 46.9	42.18	23 32.7
20	11 29 8.00	5.364	6 0 30.0	44.16	23 26.7
21	11 27 0.57	−5.248	−5 42 28.5	+45.86	23 20.7
22	11 24 56.30	5.099	5 23 50.1	47.28	23 14.8
23	11 22 56.02	4.917	5 4 40.8	48.41	23 9.0
24	11 21 0.45	4.706	4 45 8.0	49.25	23 3.2
25	11 19 10.31	4.466	4 25 18.5	49.79	22 57.5
26	11 17 26.24	−4.201	−4 5 19.7	+50.04	22 52.0
27	11 15 48.83	3.910	3 45 18.1	50.01	22 46.6
28	11 14 16.62	3.601	3 25 20.6	49.70	22 41.3
29	11 12 56 09	3.272	3 5 34.0	49.13	22 36.1
30	11 11 41.65	2.927	2 46 4.3	48.30	22 31.0
31	11 10 35.66	−2.569	−2 26 57.2	+47.24	22 26.1
32	11 9 38.40	−2.201	−2 8 18.2	+45.97	22 21.4

Day of the Month.	3d.	8th.	13th.	18th	23d.	28th.
Semidiameter. .	26.8″	28.4″	29.7″	30.3″	30.1″	29.3″
Hor. Parallax . .	27.7	29.4	30.7	31.3	31.2	30.3

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 10 35.66	−2.569	−2 26 57.2	+47.24	22 26.1
2	11 9 38.40	2.201	2 8 18.2	45.97	22 21.4
3	11 8 50.07	1.826	1 50 12.1	44.50	22 16.8
4	11 8 10.82	1.444	1 32 43.5	42.85	22 12.4
5	11 7 40.77	1.060	1 15 56.2	41.05	22 8.1
6	11 7 19.95	−0.674	−0 59 53.7	+39.12	22 3.9
7	11 7 8.40	−0.569	0 44 39.2	37.07	21 59.9
8	11 7 6.07	+0.093	0 30 15.0	34.92	21 56.1
9	11 7 12.85	0.470	0 16 43.3	32.70	21 52.4
10	11 7 28.62	0.842	−0 4 5.7	30.42	21 48.9
11	11 7 53.25	+1.207	+0 7 36.6	+28.09	21 45.5
12	11 8 26.55	1.565	0 18 22.2	25.72	21 42.2
13	11 9 8.32	1.914	0 28 10.8	23.33	21 39.1
14	11 9 58.34	2.253	0 37 2.1	20.94	21 36.1
15	11 10 56.40	2.582	0 44 55.8	18.55	21 33.2
16	11 12 2.25	+2.902	+0 51 52.3	+16.16	21 30.5
17	11 13 15.64	3.211	0 57 51.5	13.78	21 27.9
18	11 14 36.31	3.510	1 2 54.0	11.43	21 25.5
19	11 16 4.02	3.796	1 7 0.4	9.11	21 23.2
20	11 17 38.52	4.076	1 10 11.5	6.82	21 21.0
21	11 19 19.58	+4.344	+1 12 27.8	+ 4.56	21 18.8
22	11 21 6.95	4.602	1 13 50.3	2.34	21 16.7
23	11 23 0.39	4.850	1 14 19.9	+ 0.15	21 14.8
24	11 24 59.66	5.088	1 13 57.6	− 2.00	21 12.9
25	11 27 4.54	5.317	1 12 44.2	4.11	21 11.1
26	11 29 14.80	+5.537	+1 10 40.8	− 6.17	21 9.4
27	11 31 30.27	5.750	1 7 48.4	8.19	21 7.8
28	11 33 50.74	5.954	1 4 8.1	10.17	21 6.2
29	11 36 16.00	6.150	0 59 40.8	12.10	21 4.7
30	11 38 45.87	6.338	0 54 27.6	13.99	21 3.4
31	11 41 20.16	+6.519	+0 48 29.6	−15.83	21 2.1
32	11 43 58.71	+6.692	+0 41 48.0	−17.63	21 0.8

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	27.9″	26.1″	24.3″	22.5″	20.8″	19.3″
Hor. Parallax . .	28.9	27.1	25.2	23.3	21.6	20.0

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	11 43 58.71	+6.698	+0 41 48.0	−17.63	21 0.8
2	11 46 41.35	6.859	0 34 23.9	19.38	20 59.6
3	11 49 27.92	7.020	0 26 18.3	21.06	20 58.5
4	11 52 18.27	7.174	0 17 32.5	22.73	20 57.4
5	11 55 12.25	7.322	+0 8 7.8	24.33	20 56.4
6	11 58 9.71	+7.464	−0 1 54.9	−25.89	20 55.5
7	12 1 10.52	7.601	0 12 34.3	27.39	20 54.6
8	12 4 14.53	7.732	0 23 49.1	28.84	20 53.8
9	12 7 21.63	7.856	0 35 38.2	30.24	20 53.0
10	12 10 31.69	7.979	0 48 0.4	31.68	20 52.3
11	12 13 44.60	+8.096	−1 0 54.6	−32.98	20 51.6
12	12 17 0.25	8.206	1 14 19.4	34.15	20 51.0
13	12 20 18.53	8.315	1 28 13.6	35.30	20 50.4
14	12 23 39.34	8.418	1 42 36.1	36.51	20 49.8
15	12 27 2.58	8.518	1 57 25.8	37.68	20 49.3
16	12 30 28.17	+8.614	−2 12 41.5	−38.68	20 48.8
17	12 33 56.02	8.707	2 28 22.0	39.68	20 48.4
18	12 37 26.07	8.797	2 44 26.2	40.65	20 48.0
19	12 40 58.26	8.884	3 0 53.0	41.57	20 47.6
20	12 44 32.50	8.969	3 17 41.4	42.49	20 47.3
21	12 48 8.74	+9.051	−3 34 50.3	−43.28	20 47.0
22	12 51 46.92	9.131	3 52 18.6	44.07	20 46.7
23	12 55 26.99	9.209	4 10 5.3	44.81	20 46.5
24	12 59 8.92	9.285	4 28 9.4	45.51	20 46.3
25	13 2 52.67	9.360	4 46 29.9	46.18	20 46.1
26	13 6 38.20	+9.434	−5 5 5.9	−46.81	20 45.9
27	13 10 25.48	9.506	5 23 56.4	47.39	20 45.8
28	13 14 14.47	9.577	5 43 0.3	47.93	20 45.7
29	13 18 5.16	9.647	6 2 16.7	48.43	20 45.6
30	13 21 57.52	9.716	6 21 44.6	48.88	20 45.6
31	13 25 51.54	+9.785	−6 41 23.0	−49.28	20 45.5
32	13 29 47.19	+9.853	−7 1 11.0	−49.63	20 45.5

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . .	17″.9	16″.7	15″.5	14″.6	13″.7	12″.9
Hor. Parallax . .	18.5	17.2	16.1	15.1	14.2	13.4

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 25 51.54	+ 9.785	− 6 41 23.0	−49.28	20 45.5
2	13 29 47.19	9.853	7 1 11.0	49.63	20 45.5
3	13 33 44.45	9.920	7 21 7.6	50.02	20 45.5
4	13 37 43.31	9.986	7 41 11.8	50.38	20 45.6
5	13 41 43.76	10.050	8 1 22.6	50.58	20 45.7
6	13 45 45.78	+10.117	− 8 21 39.1	−50.79	20 45.8
7	13 49 49.36	10.181	8 42 0.3	50.96	20 46.0
8	13 53 54.47	10.245	9 2 25.0	51.09	20 46.1
9	13 58 1.11	10.309	9 22 52.3	51.18	20 46.3
10	14 2 9.28	10.372	9 43 21.2	51.23	20 46.5
11	14 6 18.96	+10.434	−10 3 50.8	−51.23	20 46.7
12	14 10 30.13	10.496	10 24 20.1	51.20	20 46.9
13	14 14 42.79	10.556	10 44 48.0	51.12	20 47.2
14	14 18 56.93	10.620	11 5 13.6	51.00	20 47.5
15	14 23 12.54	10.681	11 25 35.9	50.84	20 47.9
16	14 27 29.60	+10.742	−11 45 53.9	−50.64	20 48.3
17	14 31 48.11	10.802	12 6 6.7	50.41	20 48.7
18	14 36 8.08	10.859	12 26 13.4	50.14	20 49.1
19	14 40 29.50	10.920	12 46 13.1	49.83	20 49.5
20	14 44 52.36	10.982	13 6 4.8	49.49	20 49.9
21	14 49 16.66	+11.042	−13 25 47.7	−49.09	20 50.4
22	14 53 42.39	11.102	13 45 20.9	48.66	20 50.9
23	14 58 9.56	11.162	14 4 43.4	48.20	20 51.5
24	15 2 38.17	11.222	14 23 54.4	47.70	20 52.1
25	15 7 8.20	11.282	14 42 52.9	47.17	20 52.7
26	15 11 39.68	+11.342	−15 1 38.2	−46.60	20 53.3
27	15 16 12.60	11.402	15 20 9.5	45.99	20 53.9
28	15 20 46.96	11.462	15 38 25.7	45.35	20 54.5
29	15 25 22.75	11.521	15 56 26.1	44.67	20 55.2
30	15 29 59.98	11.581	16 14 9.7	43.96	20 55.9
31	15 34 38.63	+11.640	−16 31 35.8	−43.21	20 56.6
32	15 39 18.71	+11.699	−16 48 43.5	−42.42	20 57.3

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter . .	12″.2	11″.6	11″.0	10″.5	10″.0	9″.6	9″.2
Hor. Parallax . .	12.6	12.0	11.4	10.9	10.4	10.0	9.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	1 51 49.07	+3.675	+12 37 43.6	+23.65	7 7.5
2	1 53 18.02	3.736	12 46 58.8	23.21	7 5.1
3	1 54 48.41	3.796	12 56 17.7	23.36	7 2.7
4	1 56 20.21	3.854	13 5 40.1	23.50	7 0.3
5	1 57 53.38	3.911	13 15 5.6	23.63	6 57.9
6	1 59 27.90	+3.966	+13 24 33.9	+23.74	6 55.5
7	2 1 3.73	4.020	13 34 4.9	23.84	6 53.2
8	2 2 40.85	4.073	13 43 38.4	23.93	6 50.9
9	2 4 19.22	4.125	13 53 14.0	24.01	6 48.6
10	2 5 58.83	4.176	14 2 51.5	24.09	6 46.3
11	2 7 39.64	+4.225	+14 12 30.7	+24.16	6 44.1
12	2 9 21.63	4.273	14 22 11.3	24.22	6 41.8
13	2 11 4.77	4.321	14 31 53.3	24.27	6 39.6
14	2 12 49.05	4.368	14 41 36.3	24.31	6 37.4
15	2 14 34.45	4.414	14 51 20.2	24.34	6 35.2
16	2 16 20.94	+4.460	+15 1 4.7	+24.37	6 33.1
17	2 18 8.51	4.505	15 10 49.8	24.39	6 30.9
18	2 19 57.15	4.549	15 20 35.2	24.40	6 28.8
19	2 21 46.84	4.593	15 30 20.8	24.40	6 26.7
20	2 23 37.58	4.636	15 40 6.4	24.39	6 24.6
21	2 25 29.34	+4.678	+15 49 51.8	+24.38	6 22.5
22	2 27 22.11	4.719	15 59 36.8	24.36	6 20.5
23	2 29 15.88	4.760	16 9 21.3	24.33	6 18.4
24	2 31 10.63	4.801	16 19 5.2	24.30	6 16.4
25	2 33 6.35	4.841	16 28 48.1	24.26	6 14.4
26	2 35 3.03	+4.881	+16 38 30.0	+24.22	6 12.4
27	2 37 0.64	4.920	16 48 10.6	24.17	6 10.4
28	2 38 59.17	4.958	16 57 49.8	24.11	6 8.5
29	2 40 58.62	4.995	17 7 27.4	24.04	6 6.5
30	2 42 58.97	5.032	17 17 3.1	23.96	6 4.6
31	2 45 0.18	+5.068	+17 26 36.8	+23.86	6 2.7
32	2 47 2.24	+5.103	+17 36 8.2	+23.76	6 0.8

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	2 47 2.24	+5.103	+17 36 8.2	+23.76	6 0.8
2	2 49 5.16	5.138	17 45 37.3	23.65	5 58.9
3	2 51 8.90	5.172	17 55 3.8	23.54	5 57.0
4	2 53 13.44	5.205	18 4 27.4	23.42	5 55.2
5	2 55 18.77	5.238	18 13 48.1	23.30	5 53.3
6	2 57 24.89	+5.270	+18 23 5.6	+23.17	5 51.5
7	2 59 31.77	5.302	18 32 19.9	23.03	5 49.7
8	3 1 39.40	5.333	18 41 30.7	22.88	5 47.9
9	3 3 47.77	5.364	18 50 37.8	22.72	5 46.1
10	3 5 56.87	5.394	18 59 41.2	22.56	5 44.3
11	3 8 6.69	+5.424	+19 8 40.7	+22.39	5 42.5
12	3 10 17.19	5.453	19 17 36.0	22.21	5 40.7
13	3 12 28.40	5.482	19 26 27.0	22.03	5 39.0
14	3 14 40.31	5.511	19 35 13.8	21.85	5 37.2
15	3 16 52.90	5.539	19 43 56.1	21.67	5 35.5
16	3 19 6.17	+5.567	+19 52 33.9	+21.48	5 33.8
17	3 21 20.12	5.595	20 1 6.9	21.28	5 32.1
18	3 23 34.74	5.623	20 9 35.1	21.08	5 30.4
19	3 25 50.01	5.650	20 17 58.3	20.87	5 28.7
20	3 28 5.93	5.677	20 26 16.4	20.65	5 27.0
21	3 30 22.50	+5.704	+20 34 29.3	+20.42	5 25.4
22	3 32 39.72	5.730	20 42 36.8	20.19	5 23.7
23	3 34 57.54	5.756	20 50 38.8	19.96	5 22.1
24	3 37 16.00	5.782	20 58 35.1	19.73	5 20.4
25	3 39 35.07	5.807	21 6 25.7	19.49	5 18.8
26	3 41 54.74	+5.832	+21 14 10.4	+19.24	5 17.2
27	3 44 15.01	5.856	21 21 49.0	18.98	5 15.6
28	3 46 35.87	5.880	21 29 21.5	18.72	5 14.0
29	3 48 57.29	5.904	21 36 47.6	18.45	5 12.4
30	3 51 19.27	5.927	21 44 7.2	18.18	5 10.9
31	3 53 41.79	+5.949	+21 51 20.2	+17.90	5 9.3
32	3 56 4.84	+5.971	+21 58 26.5	+17.61	5 7.8

Day of the Month.	0.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	″5.8	″5.5	″5.3	″5.0	″4.8	″4.6	″4.4
Hor. Parallax . .	10.2	9.7	9.2	8.8	8.4	8.0	7.7

Day of the Month.	4th.	9th.	14th.	19th.	24th.
Semidiameter	″4.2	″4.0	″3.8	″3.7	″3.6
Hor. Parallax	7.4	7.1	6.8	6.6	6.3

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	3 48 57.29	+6.994	+21 36 47.6	+18.45	5 12.4
2	3 51 19 27	6.987	21 44 7.2	18.18	5 10.9
3	3 53 41.79	6.949	21 51 20.2	17.90	5 9.3
4	3 56 4.84	6.971	21 58 26.5	17.61	5 7.8
5	3 58 28.42	6.963	22 5 26.0	17.32	5 6.2
6	4 0 52.50	+6.914	+22 12 18.5	+17.03	5 4.7
7	4 3 17.09	6.935	22 19 3.9	16.74	5 3.1
8	4 5 42.16	6.955	22 25 42.1	16.44	5 1.6
9	4 8 7.72	6.975	22 32 13.1	16.14	5 0.1
10	4 10 33.74	6.994	22 38 36.6	15.83	4 58.6
11	4 13 0.24	+6.113	+22 44 52.6	+15.51	4 57.1
12	4 15 27.19	6.132	22 51 1.0	15.19	4 55.6
13	4 17 54.58	6.151	22 57 1.7	14.86	4 54.1
14	4 20 22.41	6.169	23 2 54.6	14.53	4 52.7
15	4 22 50.68	6.187	23 8 39.7	14.20	4 51.2
16	4 25 19.38	+6.205	+23 14 16.8	+13.87	4 49.7
17	4 27 48.50	6.222	23 19 45.9	13.54	4 48.3
18	4 30 18.03	6.239	23 25 6.8	13.20	4 46.8
19	4 32 47.98	6.256	23 30 19.5	12.85	4 45.4
20	4 35 18.33	6.273	23 35 23.9	12.50	4 43.9
21	4 37 49.08	+6.290	+23 40 19.9	+12.15	4 42.5
22	4 40 20.22	6.306	23 45 7.5	11.80	4 41.1
23	4 42 51.75	6.322	23 49 46.5	11.45	4 39.7
24	4 45 23.65	6.337	23 54 16.9	11.09	4 38.3
25	4 47 55.92	6.352	23 58 38.5	10.73	4 36.9
26	4 50 28.55	+6.367	+24 2 51.3	+10.36	4 35.5
27	4 53 1.53	6.381	24 6 55.3	9.98	4 34.1
28	4 55 34.85	6.395	24 10 50.3	9.60	4 32.7
29	4 58 8.49	6.408	24 14 36.3	9.22	4 31.3
30	5 0 42.44	6.421	24 18 13.2	8.84	4 30.0
31	5 3 16.70	+6.434	+24 21 40.9	+ 8.46	4 28.6
32	5 5 51.24	+6.447	+24 24 59.4	+ 8.08	4 27.2

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	5 5 51.24	+6.447	+24 24 59.4	+8.08	4 27.2
2	5 8 26.07	6.459	24 28 8.5	7.69	4 25.9
3	5 11 1.17	6.470	24 31 8.3	7.30	4 24.5
4	5 13 36.52	6.480	24 33 58.6	6.89	4 23.2
5	5 16 12.12	6.490	24 36 39.5	6.50	4 21.8
6	5 18 47.95	+6.498	+24 39 10.8	+6.10	4 20.4
7	5 21 24.00	6.507	24 41 32.5	5.70	4 19.1
8	5 24 0.27	6.516	24 43 44.6	5.30	4 17.7
9	5 26 36.75	6.524	24 45 47.0	4.90	4 16.4
10	5 29 13.42	6.532	24 47 39.7	4.50	4 15.1
11	5 31 50.28	+6.540	+24 49 22.7	+4.09	4 13.7
12	5 34 27,32	6.547	24 50 55.9	3.69	4 12.4
13	5 37 4.55	6.554	24 52 19.3	3.27	4 11.1
14	5 39 41.94	6.561	24 53 32.8	2.86	4 9.8
15	5 42 19.49	6.566	24 54 36.5	2.45	4 8.5
16	5 44 57.19	+6.574	+24 55 30.2	+2.04	4 7.2
17	5 47 35.05	6.580	24 56 14.0	1.62	4 5.9
18	5 50 13.05	6.586	24 56 47.8	1.21	4 4.6
19	5 52 51.18	6.592	24 57 11.7	0.79	4 3.3
20	5 55 29.44	6.597	24 57 25.5	+0.37	4 2.0
21	5 58 7.82	+6.602	+24 57 29.3	−0.05	4 0.7
22	6 0 46.32	6.606	24 57 23.0	0.47	3 59.4
23	6 3 24.92	6.610	24 57 6.6	0.89	3 58.1
24	6 6 3.61	6.614	24 56 40.2	1.31	3 56.8
25	6 8 42.38	6.617	24 56 3.6	1.73	3 55.5
26	6 11 21.22	+6.620	+24 55 16.9	−2.15	3 54.2
27	6 14 0.12	6.622	24 54 20.0	2.58	3 52.9
28	6 16 39.07	6.624	24 53 13.0	3.00	3 51.6
29	6 19 18.06	6.625	24 51 55.8	3.42	3 50.3
30	6 21 57.08	6.626	24 50 28.5	3.85	3 49.0
31	6 24 36.12	+6.627	+24 48 51.1	−4.27	3 47.7
32	6 27 15.17	+6.627	+24 47 3.5	−4.69	3 46.4

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	″5.5	″5.4	″5.3	″5.2	″5.1	″5.0	″4.9
Hor. Parallax . .	6.1	5.9	5.7	5.5	5.4	5.2	5.1

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	″4.8	″4.8	″4.7	″4.6	″4.6	″4.5
Hor. Parallax	4.9	4.8	4.7	4.6	4.5	4.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	6 24 36.12	+6.627	+24 48 51.1	− 4.27	3 47.7
2	6 27 15.17	6.627	24 47 3.5	4.69	3 46.4
3	6 29 54.21	6.627	24 45 5.8	5.12	3 45.1
4	6 32 33.23	6.626	24 42 57.9	5.54	3 43.8
5	6 35 12.23	6.625	24 40 40.0	5.96	3 42.6
6	6 37 51.21	+6.623	+24 38 12.0	− 6.38	3 41.3
7	6 40 30.14	6.621	24 35 33.9	6.80	3 40.0
8	6 43 9.03	6.619	24 32 45.7	7.22	3 38.7
9	6 45 47.87	6.617	24 29 47.5	7.64	3 37.4
10	6 48 26.65	6.615	24 26 39.3	8.06	3 36.1
11	6 51 5.37	+6.613	+24 23 21.1	− 8.47	3 34.8
12	6 53 44.02	6.610	24 19 52.9	8.88	3 33.5
13	6 56 22.58	6.607	24 16 14.9	9.30	3 32.2
14	6 59 1.07	6.603	24 12 26.9	9.71	3 30.9
15	7 1 39.48	6.599	24 8 28.9	10.12	3 29.6
16	7 4 17.80	+6.595	+24 4 21.1	−10.53	3 28.3
17	7 6 56.03	6.591	24 0 3.4	10.94	3 27.0
18	7 9 34.15	6.587	23 55 35.9	11.35	3 25.7
19	7 12 12.17	6.582	23 50 58.6	11.76	3 24.4
20	7 14 50.09	6.577	23 46 11.6	12.16	3 23.1
21	7 17 27.89	+6.572	+23 41 14.8	−12.57	3 21.8
22	7 20 5.56	6.567	23 36 8.4	12.97	3 20.5
23	7 22 43.11	6.562	23 30 52.3	13.37	3 19.2
24	7 25 20.53	6.556	23 25 26.6	13.77	3 17.9
25	7 27 57.80	6.550	23 19 51.3	14.17	3 16.5
26	7 30 34.92	+6.544	+23 14 6.5	−14.57	3 15.2
27	7 33 11.89	6.537	23 8 12.2	14.96	3 13.9
28	7 35 48.70	6.530	23 2 8.5	15.35	3 12.6
29	7 38 25.33	6.523	22 55 55.4	15.74	3 11.3
30	7 41 1.79	6.515	22 49 33.1	16.13	3 9.9
31	7 43 38.06	+6.507	+22 43 1.5	−16.51	3 8.6
32	7 46 14.14	+6.499	+22 36 20.7	−16.89	3 7.3

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	7 46 14.14	+6.499	+22 36 20.7	−16.89	3 7.3
2	7 48 50.03	6.491	22 29 30.8	17.27	3 5.9
3	7 51 25.73	6.483	22 22 31.8	17.65	3 4.6
4	7 54 1.22	6.475	22 15 23.9	18.02	3 3.2
5	7 56 36.50	6.466	22 8 7.0	18.39	3 1.9
6	7 59 11.57	+6.457	+22 0 41.2	−18.76	3 0.5
7	8 1 46.43	6.448	21 53 6.5	19.13	2 59.1
8	8 4 21.08	6.439	21 45 23.1	19.49	2 57.8
9	8 6 55.52	6.430	21 37 31.1	19.85	2 56.4
10	8 9 29.73	6.421	21 29 30.4	20.21	2 55.1
11	8 12 3.74	+6.412	+21 21 21.1	−20.57	2 53.7
12	8 14 37.53	6.403	21 13 3.2	20.92	2 52.3
13	8 17 11.10	6.394	21 4 36.9	21.27	2 50.9
14	8 19 44.45	6.385	20 56 2.2	21.62	2 49.5
15	8 22 17.58	6.376	20 47 19.2	21.97	2 48.1
16	8 24 50.50	+6.367	+20 38 27.8	−22.31	2 46.7
17	8 27 23.19	6.358	20 29 28.2	22.65	2 45.3
18	8 29 55.66	6.349	20 20 20.4	22.99	2 43.9
19	8 32 27.91	6.340	20 11 4.5	23.33	2 42.5
20	8 34 59.94	6.330	20 1 40.6	23.66	2 41.1
21	8 37 31.75	+6.321	+19 52 8.7	−23.99	2 39.7
22	8 40 3.33	6.311	19 42 29.0	24.32	2 38.3
23	8 42 34.67	6.302	19 32 41.4	24.64	2 36.9
24	8 45 5.79	6.292	19 22 46.1	24.96	2 35.4
25	8 47 36.68	6.282	19 12 43.2	25.28	2 34.0
26	8 50 7.33	+6.272	+19 2 32.7	−25.59	2 32.6
27	8 52 37.74	6.262	18 52 14.7	25.90	2 31.2
28	8 55 7.91	6.252	18 41 49.3	26.21	2 29.7
29	8 57 37.85	6.242	18 31 16.7	26.51	2 28.2
30	9 0 7.54	6.232	18 20 36.8	26.81	2 26.8
31	9 2 37.00	+6.222	+18 9 49.8	−27.11	2 25.4
32	9 5 6.22	+6.212	+17 58 55.7	−27.40	2 23.9

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	″2.5	″2.4	″2.4	″2.4	″2.3	″2.3
Hor. Parallax . .	4.3	4.3	4.2	4.1	4.1	4.0

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	″2.2	″2.2	″2.2	″2.2	″2.1	″2.1
Hor. Parallax . .	3.9	3.9	3.8	3.8	3.8	3.7

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 2 37.00	+6.832	+18 9 49.8	−27.11	2 25.4
2	9 5 6.22	6.812	17 58 55.7	27.49	2 23.9
3	9 7 35.20	6.792	17 47 54.7	27.89	2 22.4
4	9 10 3.94	6.192	17 36 46.8	27.28	2 20.9
5	9 12 32.44	6.183	17 25 32.0	26.68	2 19.5
6	9 15 0.71	+6.173	+17 14 10.5	−26.54	2 18.1
7	9 17 28.75	6.164	17 2 42.3	26.61	2 16.6
8	9 19 56.56	6.154	16 51 7.5	26.68	2 15.1
9	9 22 24.15	6.144	16 39 26.2	26.25	2 13.6
10	9 24 51.51	6.135	16 27 38.4	26.62	2 12.1
11	9 27 18.65	+6.128	+16 15 44.3	−26.62	2 10.6
12	9 29 45.58	6.117	16 3 43.8	26.14	2 9.1
13	9 32 12.30	6.106	15 51 37.1	26.42	2 7.6
14	9 34 38.82	6.100	15 39 24.2	26.68	2 6.1
15	9 37 5.13	6.092	15 27 5.2	26.92	2 4.6
16	9 39 31.24	+6.084	+15 14 40.1	−27.17	2 3.1
17	9 41 57.16	6.076	15 2 9.0	27.42	2 1.6
18	9 44 22.89	6.068	14 49 32.1	27.68	2 0.1
19	9 46 48.42	6.060	14 36 49.5	27.92	1 58.6
20	9 49 13.76	6.052	14 24 1.1	28.13	1 57.1
21	9 51 38.92	+6.044	+14 11 7.1	−28.36	1 55.5
22	9 54 3.90	6.036	13 58 7.6	28.59	1 54.0
23	9 56 28.69	6.028	13 45 2.6	28.82	1 52.4
24	9 58 53.30	6.021	13 31 52.3	29.05	1 50.9
25	10 1 17.73	6.014	13 18 36.7	29.28	1 49.4
26	10 3 41.98	+6.007	+13 5 15.9	−29.50	1 47.8
27	10 6 6.06	6.000	12 51 50.1	29.71	1 46.3
28	10 8 29.96	5.990	12 38 19.3	29.91	1 44.7
29	10 10 53.70	5.986	12 24 43.6	30.10	1 43.2
30	10 13 17.28	5.979	12 11 3.1	30.29	1 41.7
31	10 15 40.69	+5.972	+11 57 18.0	−30.49	1 40.1
32	10 18 3.95	+5.965	+11 43 28.2	−30.67	1 38.6

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	10 18 3.95	+5.965	+11 43 28.2	−30.67	1 38.6
2	10 20 27.05	5.956	11 29 33.9	30.86	1 37.0
3	10 22 50.01	5.953	11 15 35.1	31.04	1 35.5
4	10 25 12.81	5.947	11 1 32.0	31.20	1 33.9
5	10 27 35.49	5.943	10 47 24.5	31.40	1 32.4
6	10 29 58.03	+5.937	+10 33 12.8	−31.57	1 30.8
7	10 32 20.45	5.933	10 18 56.9	31.74	1 29.3
8	10 34 42.76	5.927	10 4 37.0	31.91	1 27.7
9	10 37 4.95	5.923	9 50 13.0	32.08	1 26.2
10	10 39 27.03	5.918	9 35 45.0	32.24	1 24.6
11	10 41 49.02	+5.914	+ 9 21 13.2	−32.40	1 23.0
12	10 44 10.91	5.910	9 6 37.6	32.56	1 21.4
13	10 46 32.71	5.906	8 51 58.3	32.71	1 19.8
14	10 48 54.43	5.903	8 37 15.4	32.86	1 18.3
15	10 51 16.07	5.900	8 22 28.8	37.01	1 16.7
16	10 53 37.65	+5.897	+ 8 7 38.8	−37.16	1 15.1
17	10 55 59.16	5.894	7 52 45.5	37.32	1 13.5
18	10 58 20.61	5.892	7 37 48.9	37.43	1 11.9
19	11 0 42.00	5.890	7 22 49.1	37.56	1 10.3
20	11 3 3.35	5.888	7 7 46.1	37.67	1 8.7
21	11 5 24.65	+5.886	+ 6 52 40.1	−37.77	1 7.1
22	11 7 45.90	5.884	6 37 31.2	37.87	1 5.5
23	11 10 7.12	5.883	6 22 19.4	37.97	1 3.9
24	11 12 28.30	5.880	6 7 4.8	38.07	1 2.4
25	11 14 49.45	5.881	5 51 47.8	38.16	1 0.8
26	11 17 10.59	+5.880	+ 5 36 28.4	−38.26	0 59.2
27	11 19 31.70	5.880	5 21 6.4	38.36	0 57.6
28	11 21 52.79	5.879	5 5 42.1	38.46	0 56.0
29	11 24 13.88	5.879	4 50 15.5	38.56	0 54.4
30	11 26 34.96	5.879	4 34 46.8	38.65	0 52.8
31	11 28 56.05	+5.879	+ 4 19 16.0	−38.74	0 51.2
32	11 31 17.13	+5.880	+ 4 3 43.2	−38.83	0 49.6

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	2.1	2.1	2.0	2.0	2.0	2.0
Hor. Parallax	3.6	3.6	3.5	3.5	3.5	3.5

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	2.0	2.0	2.0	2.0	1.9	1.9
Hor. Parallax . . .	3.5	3.5	3.4	3.4	3.4	3.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 31 17.13	+0.000	+4 3 43.2	−0.02	0 49.6
2	11 33 38.24	0.000	3 48 8.5	0.00	0 48.0
3	11 35 59.38	0.000	3 32 32.9	0.00	0 46.4
4	11 38 20.55	0.000	3 16 53.7	0.00	0 44.8
5	11 40 41.76	0.000	3 1 13.7	0.00	0 43.2
6	11 43 3.02	+0.000	+2 45 32.1	−0.00	0 41.6
7	11 45 24.33	0.000	2 29 49.8	0.00	0 40.1
8	11 47 45.71	0.000	2 14 4.5	0.00	0 38.5
9	11 50 7.16	0.000	1 58 18.6	0.00	0 36.9
10	11 52 28.69	0.000	1 42 31.4	0.00	0 35.3
11	11 54 50.30	+0.000	+1 26 43.0	−0.00	0 33.7
12	11 57 12.01	0.000	1 10 53.5	0.00	0 32.2
13	11 59 33.82	0.000	0 55 3.1	0.00	0 30.6
14	12 1 55.73	0.000	0 39 11.7	0.00	0 29.0
15	12 4 17.76	0.000	0 23 19.5	0.00	0 27.4
16	12 6 39.91	+0.000	+0 7 26.6	−0.00	0 25.8
17	12 9 2.18	0.000	−0 8 27.0	0.00	0 24.3
18	12 11 24.58	0.000	0 24 21.1	0.00	0 22.7
19	12 13 47.11	0.000	0 40 15.5	0.00	0 21.2
20	12 16 9.79	0.000	0 56 10.3	0.00	0 19.6
21	12 18 32.61	+0.000	−1 12 5.2	−0.00	0 18.1
22	12 20 55.59	0.000	1 28 0.2	0.00	0 16.5
23	12 23 18.71	0.000	1 43 55.1	0.00	0 15.0
24	12 25 42.00	0.000	1 59 49.9	0.00	0 13.4
25	12 28 5.46	0.000	2 15 44.4	0.00	0 11.9
26	12 30 29.09	+0.000	−2 31 38.6	−0.00	0 10.3
27	12 32 52.91	0.000	2 47 32.4	0.00	0 8.8
28	12 35 16.91	0.000	3 3 25.6	0.00	0 7.3
29	12 37 41.11	0.000	3 19 18.2	0.00	0 5.7
30	12 40 5.51	0.000	3 35 10.1	0.00	0 4.2

Day of the Month.	1st.	7th.	13th.	19th.	25th.	31st.
Semidiameter	1.9	1.9	1.9	1.9	1.9	1.9
Hor. Parallax	3.4	3.4	3.4	3.4	3.4	3.4

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 42 38.12	+0.000	−3 51 1.1	−0.00	0 2.6
2	12 44 54.95	0.000	4 6 51.2	0.00	23 [illegible]
3	12 47 10.81	0.000	4 22 40.2	0.00	23 [illegible]
4	12 49 25.70	0.000	4 38 28.2	0.00	23 56.5
5	12 51 39.63	0.000	4 54 14.9	0.00	23 55.0
6	12 53 52.61	+0.000	−5 10 0.3	−0.00	23 53.5
7	12 56 4.65	0.000	5 25 44.4	0.00	23 52.0
8	12 58 15.77	0.000	5 41 27.0	0.00	23 50.5
9	13 1 25.95	0.000	5 57 7.9	0.00	23 49.0
10	13 4 22.42	0.000	6 12 47.2	0.00	23 47.5
11	13 6 49.56	+0.000	−6 28 24.7	−0.00	23 46.1
12	13 9 17.04	0.000	6 44 0.3	0.00	23 44.6
13	13 11 44.89	0.000	6 59 33.9	0.00	23 43.1
14	13 14 12.87	0.000	7 15 5.1	0.00	23 41.6
15	13 16 41.25	0.000	7 30 34.2	0.00	23 40.1
16	13 19 9.96	+0.000	−7 46 0.9	−0.00	23 38.7
17	13 21 38.99	0.000	8 1 25.0	0.00	23 37.3
18	13 24 8.36	0.000	8 16 46.5	0.00	23 35.8
19	13 26 38.06	0.000	8 32 5.2	0.00	23 34.4
20	13 29 8.11	0.000	8 47 21.0	0.00	23 32.9
21	13 31 38.50	+0.000	−9 2 33.5	−0.00	23 31.5
22	13 34 9.24	0.000	9 17 43.4	0.00	23 30.1
23	13 36 40.34	0.000	9 32 49.8	0.00	23 28.7
24	13 39 11.80	0.000	9 47 52.7	0.00	23 27.3
25	13 41 43.63	0.000	10 2 52.1	0.00	23 25.9
26	13 44 15.83	+0.000	−10 17 47.8	−0.00	23 24.5
27	13 46 48.42	0.000	10 32 39.8	0.00	23 23.1
28	13 49 21.39	0.000	10 47 27.9	0.00	23 21.7
29	13 51 54.75	0.000	11 2 11.9	0.00	23 20.3
30	13 54 28.52	0.000	11 16 51.8	0.00	23 18.9
31	13 57 2.70	+0.000	−11 31 27.5	−0.00	23 17.6
32	13 59 37.28	+0.000	−11 45 58.8	−0.00	23 16.2

Day of the Month.	1st.	7th.	13th.	19th.	25th.	31st.
Semidiameter	1.9	1.9	1.9	1.9	2.0	2.0
Hor. Parallax	3.4	3.4	3.4	3.4	3.4	3.4

Note.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	13 59 37.28	+6.450	−11 45 58.8	−30.21	23 16.2
2	14 2 12.29	6.468	12 0 25.6	30.02	23 14.8
3	14 4 47.73	6.486	12 14 47.9	29.82	23 13.5
4	14 7 23.60	6.504	12 29 5.4	29.62	23 12.1
5	14 9 59.91	6.522	12 43 18.1	29.42	23 10.8
6	14 12 36.67	+6.541	−12 57 25.8	−29.21	23 9.5
7	14 15 13.89	6.560	13 11 28.5	29.00	23 8.2
8	14 17 51.57	6.579	13 25 25.9	28.78	23 6.9
9	14 20 29.72	6.599	13 39 18.0	28.55	23 5.6
10	14 23 8.34	6.619	13 53 4.6	28.32	23 4.3
11	14 25 47.44	+6.639	−14 6 45.5	−28.08	23 3.0
12	14 28 27.01	6.659	14 20 20.6	27.84	23 1.7
13	14 31 7.07	6.679	14 33 49.8	27.59	23 0.5
14	14 33 47.61	6.699	14 47 12.9	27.33	22 59.2
15	14 36 28.64	6.719	15 0 29.8	27.07	22 58.0
16	14 39 10.17	+6.740	−15 13 40.4	−26.80	22 56.7
17	14 41 52.19	6.761	15 26 44.4	26.53	22 55.5
18	14 44 34.70	6.782	15 39 41.8	26.25	22 54.3
19	14 47 17.72	6.803	15 52 32.3	25.96	22 53.1
20	14 50 1.24	6.824	16 5 15.9	25.67	22 51.9
21	14 52 45.26	+6.845	−16 17 52.4	−25.37	22 50.7
22	14 55 29.78	6.866	16 30 21.7	25.07	22 49.5
23	14 58 14.81	6.887	16 42 43.6	24.76	22 48.3
24	15 1 0.35	6.908	16 54 57.9	24.44	22 47.1
25	15 3 46.40	6.929	17 7 4.5	24.11	22 46.0
26	15 6 32.96	+6.951	−17 19 3.4	−23.78	22 44.9
27	15 9 20.03	6.973	17 30 54.3	23.45	22 43.7
28	15 12 7.63	6.994	17 42 37.2	23.11	22 42.6
29	15 14 55.75	7.016	17 54 11.8	22.77	22 41.4
30	15 17 44.40	7.038	18 5 38.1	22.42	22 40.3
31	15 20 33.58	+7.060	−18 16 55.9	−22.06	22 39.2
32	15 23 23.28	+7.082	−18 28 5.1	−21.70	22 38.1

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . .	″2.0	″2.0	″2.0	″2.0	″2.0	″2.0
Hor. Parallax . .	3.4	3.5	3.5	3.5	3.5	3.5

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	15 20 33.58	+7.060	−18 16 55.9	−20.06	22 39.2
2	15 23 23.28	7.068	18 28 5.1	27.70	22 38.1
3	15 26 13.52	7.104	18 39 5.5	27.33	22 37.0
4	15 29 4.29	7.126	18 49 57.0	26.96	22 35.9
5	15 31 55.60	7.148	19 0 39.4	26.58	22 34.8
6	15 34 47.45	+7.171	−19 11 12.7	−26.19	22 33.7
7	15 37 39.84	7.194	19 21 36.6	25.80	22 32.7
8	15 40 32.77	7.217	19 31 51.1	25.40	22 31.6
9	15 43 26.24	7.239	19 41 56.0	24.99	22 30.6
10	15 46 20.24	7.262	19 51 51.0	24.56	22 29.5
11	15 49 14.77	+7.284	−20 1 36.1	−24.17	22 28.5
12	15 52 9.84	7.306	20 11 11.2	23.75	22 27.5
13	15 55 5.44	7.328	20 20 36.1	23.32	22 26.5
14	15 58 1.56	7.349	20 29 50.6	22.88	22 25.5
15	16 0 58.21	7.370	20 38 54.6	22.44	22 24.5
16	16 3 55.37	+7.391	−20 47 47.9	−21.99	22 23.5
17	16 6 53.04	7.412	20 56 30.4	21.54	22 22.5
18	16 9 51.22	7.433	21 5 2.0	21.08	22 21.6
19	16 12 49.90	7.454	21 13 22.5	20.62	22 20.6
20	16 15 49.07	7.475	21 21 31.8	20.15	22 19.7
21	16 18 48.73	+7.496	−21 29 29.7	−19.68	22 18.8
22	16 21 48.88	7.516	21 37 16.2	19.20	22 17.8
23	16 24 49.51	7.536	21 44 51.1	18.71	22 16.9
24	16 27 50.61	7.556	21 52 14.2	18.22	22 15.9
25	16 30 52.18	7.575	21 59 25.5	17.72	22 15.0
26	16 33 54.22	+7.594	−22 6 24.9	−17.22	22 14.1
27	16 36 56.71	7.613	22 13 12.1	16.71	22 13.2
28	16 39 59.65	7.632	22 19 47.1	16.20	22 12.3
29	16 43 3.05	7.651	22 26 9.8	15.68	22 11.4
30	16 46 6.89	7.669	22 32 20.1	15.16	22 10.6
31	16 49 11.17	+7.687	−22 38 17.8	−14.64	22 9.7
32	16 52 15.89	+7.705	−22 44 2.9	−14.11	22 8.9

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	″2.0	″2.1	″2.1	″2.1	″2.1	″2.1	″2.2
Hor. Parallax . .	3.6	3.6	3.6	3.7	3.7	3.7	3.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasi-

GREENWICH MEAN TIME.

JANUARY.

Day of the Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	5 59 59.87	−1.488	+23 15 8.5	+0.26	11 18.1
2	5 59 35.59	1.485	23 15 12.4	0.26	11 13.3
3	5 59 [illegible]	1.480	23 15 [illegible]	1.24	11 [illegible]
4	5 58 [illegible]	1.280	23 15 [illegible]	1.24	11 [illegible]
5	5 57 [illegible]	1.208	23 15 [illegible]	0.23	11 [illegible]
6	5 57 [illegible]	−1.287	+23 15 [illegible]	+0.23	11 [illegible]
7	5 56 [illegible]	1.241	23 15 [illegible]	0.22	11 [illegible]
8	5 56 [illegible]	1.2[illegible]	23 15 [illegible]	0.21	11 [illegible]
9	5 55 [illegible]	1.2[illegible]	23 16 [illegible]	0.21	11 [illegible]
10	5 55 [illegible]	1.2[illegible]	23 16 [illegible]	0.20	11 [illegible]
11	5 54 [illegible]	−1.1[illegible]	+23 16 [illegible]	+0.20	11 [illegible]
12	5 54 [illegible]	1.1[illegible]	23 16 [illegible]	0.20	11 [illegible]
13	5 53 [illegible]	1.1[illegible]	23 16 [illegible]	0.19	10 [illegible]
14	5 53 [illegible]	1.1[illegible]	23 16 [illegible]	0.19	10 [illegible]
15	5 52 [illegible]	1.1[illegible]	23 16 [illegible]	0.18	10 [illegible]
16	5 52 [illegible]	−1.1[illegible]	+23 16 [illegible]	+0.18	10 [illegible]
17	5 51 [illegible]	1.0[illegible]	23 16 [illegible]	0.17	10 [illegible]
18	5 51 [illegible]	1.0[illegible]	23 16 [illegible]	0.16	9 [illegible]
19	5 50 [illegible]	1.0[illegible]	23 16 [illegible]	0.16	9 54.5
20	5 50 [illegible]	1.0[illegible]	23 16 [illegible]	0.15	9 50.2
21	5 49 59.17	−1.018	+23 16 59.2	+0.15	9 45.5
22	5 49 35.16	0.999	23 17 2.7	0.14	9 41.5
23	5 49 [illegible]	0.980	23 17 6.2	0.14	9 37.2
24	5 48 [illegible]	0.960	23 17 9.7	0.14	9 32.9
25	5 48 [illegible]	0.940	23 17 13.1	0.15	9 28.6
26	5 48 [illegible]	−0.920	+23 17 16.6	+0.15	9 24.3
27	5 47 [illegible]	0.896	23 17 20.1	0.15	9 20.1
28	5 47 2[illegible]	0.880	23 17 23.7	0.15	9 15.9
29	5 47 [illegible]	0.7[illegible]	23 17 27.3	0.16	9 11.6
30	5 46 [illegible]	0.7[illegible]	23 17 31.0	0.16	9 7.4
31	5 46 31.51	−0.7[illegible]	+23 17 34.8	+0.16	9 2.1
32	5 46 15.03	−0.[illegible]	+23 17 38.7	+0.17	8 58.9

FEBRUARY.

Day of the Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	5 46 15.03	−0.[illegible]	+23 17 38.7	+0.17	8 58.9
2	5 45 59.59	0.6[illegible]	23 17 42.3	0.18	8 54.7
3	5 45 44.37	0.6[illegible]	23 17 46.1	0.18	8 50.6
4	5 45 30.39	0.5[illegible]	23 17 50.4	0.19	8 46.4
5	5 45 17.[illegible]	0.5[illegible]	23 17 55.9	[illegible]	8 42.3
6	5 45 5.13	−0.485	+23 18 0.7	+0.2[illegible]	8 38.1
7	5 44 53.67	0.4[illegible]	23 18 5.6	0.2[illegible]	8 34.0
8	5 44 43.06	0.4[illegible]	23 18 11.4	0.2[illegible]	8 29.9
9	5 44 33.31	0.3[illegible]	23 18 16.3	0.2[illegible]	8 25.8
10	5 44 24.42	0.3[illegible]	23 18 21.9	0.2[illegible]	8 21.8
11	5 44 16.39	−0.3[illegible]	+23 18 27.5	+0.25	8 17.7
12	5 44 9.23	0.2[illegible]	23 18 34.0	0.26	8 13.7
13	5 44 2.93	0.2[illegible]	23 18 40.4	0.27	8 9.6
14	5 43 57.50	0.2[illegible]	23 18 47.1	0.2[illegible]	8 5.6
15	5 43 52.94	0.1[illegible]	23 18 54.1	0.29	8 1.6
16	5 43 49.25	−0.1[illegible]	+23 19 1.3	+0.30	7 57.6
17	5 43 46.43	0.1[illegible]	23 19 8.9	0.32	7 53.6
18	5 43 44.49	0.0[illegible]	23 19 16.5	0.32	7 49.7
19	5 43 43.43	−0.0[illegible]	23 19 24.9	0.3[illegible]	7 45.7
20	5 43 43.23	+0.0[illegible]	23 19 33.4	0.35	7 41.8
21	5 43 43.91	+0.0[illegible]	+23 19 42.2	+0.3[illegible]	7 37.9
22	5 43 45.47	0.0[illegible]	23 19 51.2	0.3[illegible]	7 34.0
23	5 43 47.89	0.1[illegible]	23 20 0.6	0.39	7 30.1
24	5 43 51.19	0.1[illegible]	23 20 10.3	0.40	7 26.2
25	5 43 55.35	0.1[illegible]	23 20 20.2	0.42	7 22.3
26	5 44 0.39	+0.1[illegible]	+23 20 30.4	+0.43	7 18.5
27	5 44 6.28	0.2[illegible]	23 20 40.9	0.44	7 14.7
28	5 44 13.03	0.2[illegible]	23 20 51.7	0.45	7 10.9
29	5 44 20.63	0.3[illegible]	23 21 2.7	0.46	7 7.1
30	5 44 29.03	0.3[illegible]	23 21 13.9	0.47	7 3.3
31	5 44 38.38	+0.4[illegible]	+23 21 25.3	+0.48	6 59.5
32	5 44 48.50	+0.4[illegible]	+23 21 36.9	+0.49	6 55.8

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	22.6	22.4	22.1	21.7
Horizontal Parallax . .	2.1	2.1	2.1	2.0

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	21.3	20.8	20.3	19.8
Horizontal Parallax . .	2.0	2.0	1.9	1.8

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	5 44 20.63	+0.335	+23 21 2.7	+0.49	7 7.1
2	5 44 29.08	0.370	23 21 13.9	0.47	7 3.3
3	5 44 38.38	0.405	23 21 25.3	0.49	6 59.5
4	5 44 48.50	0.440	23 21 36.9	0.49	6 55.8
5	5 44 59.46	0.474	23 21 48.8	0.50	6 52.0
6	5 45 11.25	+0.508	+23 22 0.9	+0.51	6 48.3
7	5 45 23.84	0.542	23 22 13.1	0.52	6 44.6
8	5 45 37.25	0.576	23 22 25.5	0.52	6 40.9
9	5 45 51.47	0.609	23 22 38.0	0.53	6 37.1
10	5 46 6.47	0.642	23 22 50.7	0.53	6 33.5
11	5 46 22.27	+0.675	+23 23 3.5	+0.54	6 29.8
12	5 46 38.85	0.707	23 23 16.4	0.54	6 26.2
13	5 46 56.21	0.739	23 23 29.4	0.54	6 22.5
14	5 47 14.33	0.771	23 23 42.4	0.55	6 18.9
15	5 47 33.22	0.803	23 23 55.5	0.55	6 15.3
16	5 47 52.87	+0.834	+23 24 8.6	+0.55	6 11.7
17	5 48 13.27	0.865	23 24 21.8	0.55	6 8.1
18	5 48 34.41	0.896	23 24 34.9	0.55	6 4.5
19	5 48 56.28	0.927	23 24 48.1	0.55	6 1.0
20	5 49 18.89	0.957	23 25 1.1	0.54	5 57.4
21	5 49 42.22	+0.987	+23 25 14.1	+0.54	5 53.8
22	5 50 6.28	1.017	23 25 27.1	0.53	5 50.3
23	5 50 31.04	1.047	23 25 39.9	0.53	5 46.8
24	5 50 56.51	1.076	23 25 52.5	0.52	5 43.3
25	5 51 22.67	1.105	23 26 5.1	0.52	5 39.8
26	5 51 49.52	+1.130	+23 26 17.3	+0.51	5 36.3
27	5 52 17.04	1.161	23 26 29.4	0.50	5 32.8
28	5 52 45.24	1.189	23 26 41.3	0.49	5 29.4
29	5 53 14.10	1.216	23 26 53.0	0.48	5 25.9
30	5 53 43.61	1.243	23 27 4.4	0.47	5 22.5
31	5 54 13.77	+1.270	+23 27 15.4	+0.46	5 19.1
32	5 54 44.57	+1.296	+23 27 26.1	+0.45	5 15.6

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	5 54 44.57	+1.296	+23 27 26.1	+0.45	5 15.6
2	5 55 15.99	1.322	23 27 36.5	0.43	5 12.2
3	5 55 48.03	1.348	23 27 46.5	0.41	5 8.8
4	5 56 20.68	1.373	23 27 56.0	0.38	5 5.4
5	5 56 53.92	1.398	23 28 5.2	0.37	5 2.0
6	5 57 27.76	+1.422	+23 28 13.9	+0.35	4 58.7
7	5 58 2.18	1.446	23 28 22.2	0.34	4 55.3
8	5 58 37.17	1.470	23 28 30.0	0.32	4 52.0
9	5 59 12.73	1.493	23 28 37.2	0.30	4 48.6
10	5 59 48.84	1.516	23 28 44.0	0.28	4 45.3
11	6 0 25.50	+1.539	+23 28 50.2	+0.25	4 42.0
12	6 1 2.70	1.561	23 28 55.7	0.23	4 38.7
13	6 1 40.44	1.583	23 29 0.7	0.20	4 35.4
14	6 2 18.71	1.605	23 29 5.1	0.17	4 32.1
15	6 2 57.49	1.627	23 29 8.8	0.14	4 28.8
16	6 3 36.79	+1.648	+23 29 11.8	+0.11	4 25.5
17	6 4 16.60	1.669	23 29 14.2	0.08	4 22.2
18	6 4 56.90	1.690	23 29 15.8	0.05	4 19.0
19	6 5 37.69	1.710	23 29 16.7	+0.02	4 15.7
20	6 6 18.97	1.730	23 29 16.8	−0.02	4 12.5
21	6 7 0.73	+1.750	+23 29 16.2	−0.05	4 9.2
22	6 7 42.95	1.769	23 29 14.8	0.08	4 6.0
23	6 8 25.63	1.788	23 29 12.5	0.11	4 2.7
24	6 9 8.77	1.807	23 29 9.3	0.14	3 59.5
25	6 9 52.36	1.825	23 29 5.3	0.18	3 56.3
26	6 10 36.38	+1.843	+23 29 0.4	−0.22	3 53.1
27	6 11 20.83	1.861	23 28 54.6	0.25	3 49.9
28	6 12 5.70	1.878	23 28 47.8	0.29	3 46.7
29	6 12 50.99	1.895	23 28 40.1	0.34	3 43.5
30	6 13 36.68	1.912	23 28 31.4	0.39	3 40.4
31	6 14 22.75	+1.926	+23 28 21.7	−0.42	3 37.2
32	6 15 9.22	+1.944	+23 28 11.0	−0.47	3 34.1

Day of the Month.	5th.	13th.	21st.	29th.
Polar Semidiameter . .	19″.3	18″.8	18″.3	17″.9
Horizontal Parallax . .	1.8	1.8	1.7	1.7

Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	17″.5	17″.1	16″.7	16″.4
Horizontal Parallax . .	1.6	1.6	1.6	1.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declina-

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	6 14 22.75	+1.939	+23 28 21.7	−0.42	3 37.2
2	6 15 9.22	1.944	23 28 11.0	0.47	3 34.1
3	6 15 56.07	1.949	23 27 59.3	0.51	3 30.9
4	6 16 43.28	1.975	23 27 46.6	0.55	3 27.8
5	6 17 30.86	1.980	23 27 32.8	0.60	3 24.6
6	6 18 18.80	+2.005	+23 27 17.9	−0.64	3 21.5
7	6 19 7.09	2.019	23 27 1.8	0.69	3 18.4
8	6 19 55.71	2.032	23 26 44.7	0.74	3 15.3
9	6 20 44.67	2.047	23 26 26.5	0.78	3 12.1
10	6 21 33.96	2.061	23 26 7.1	0.83	3 9.0
11	6 22 23.58	+2.074	+23 25 46.6	−0.88	3 5.9
12	6 23 13.51	2.087	23 25 25.0	0.93	3 2.8
13	6 24 3.75	2.100	23 25 2.2	0.98	2 59.7
14	6 24 54.30	2.112	23 24 38.1	1.03	2 56.6
15	6 25 45.14	2.124	23 24 12.9	1.08	2 53.5
16	6 26 36.28	+2.136	+23 23 46.4	−1.13	2 50.4
17	6 27 27.70	2.148	23 23 18.7	1.18	2 47.3
18	6 28 19.40	2.158	23 22 49.7	1.23	2 44.3
19	6 29 11.38	2.171	23 22 19.5	1.28	2 41.2
20	6 30 3.63	2.180	23 21 48.0	1.34	2 38.2
21	6 30 56.14	+2.193	+23 21 15.2	−1.39	2 35.1
22	6 31 48.90	2.204	23 20 41.1	1.44	2 32.1
23	6 32 41.91	2.214	23 20 5.7	1.50	2 29.0
24	6 33 35.16	2.224	23 19 29.0	1.55	2 26.0
25	6 34 28.65	2.233	23 18 50.9	1.61	2 23.0
26	6 35 22.36	+2.242	+23 18 11.5	−1.67	2 19.9
27	6 36 16.29	2.251	23 17 30.7	1.72	2 16.9
28	6 37 10.43	2.260	23 16 48.6	1.78	2 13.8
29	6 38 4.78	2.269	23 16 5.2	1.84	2 10.8
30	6 38 59.32	2.277	23 15 20.3	1.89	2 7.8
31	6 39 54.06	+2.285	+23 14 34.1	−1.95	2 4.7
32	6 40 48.99	+2.292	+23 13 46.5	−2.01	2 1.7

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	6 40 48.99	+2.292	+23 13 46.5	−2.01	2 1.7
2	6 41 44.09	2.299	23 12 57.6	2.06	1 58.7
3	6 42 39.37	2.307	23 12 7.3	2.12	1 55.7
4	6 43 34.81	2.314	23 11 15.5	2.18	1 52.6
5	6 44 30.41	2.321	23 10 22.4	2.24	1 49.6
6	6 45 26.17	+2.327	+23 9 27.9	−2.30	1 46.6
7	6 46 22.08	2.333	23 8 32.0	2.36	1 43.6
8	6 47 18.14	2.339	23 7 34.7	2.41	1 40.6
9	6 48 14.34	2.345	23 6 36.0	2.47	1 37.6
10	6 49 10.67	2.350	23 5 35.9	2.53	1 34.6
11	6 50 7.13	+2.355	+23 4 34.4	−2.59	1 31.6
12	6 51 3.72	2.360	23 3 31.4	2.65	1 28.7
13	6 52 0.43	2.365	23 2 27.0	2.72	1 25.7
14	6 52 57.26	2.370	23 1 21.2	2.78	1 22.7
15	6 53 54.20	2.375	23 0 14.0	2.84	1 19.7
16	6 54 51.24	+2.379	+22 59 5.4	−2.89	1 16.7
17	6 55 48.39	2.383	22 57 55.4	2.95	1 13.7
18	6 56 45.63	2.387	22 56 43.9	3.01	1 10.7
19	6 57 42.96	2.390	22 55 31.1	3.07	1 7.8
20	6 58 40.37	2.394	22 54 16.8	3.13	1 4.8
21	6 59 37.85	+2.397	+22 53 1.1	−3.19	1 1.8
22	7 0 35.41	2.400	22 51 44.0	3.24	0 58.8
23	7 1 33.03	2.403	22 50 25.5	3.30	0 55.9
24	7 2 30.71	2.405	22 49 5.6	3.36	0 52.9
25	7 3 28.45	2.407	22 47 44.2	3.42	0 49.9
26	7 4 26.24	+2.409	+22 46 21.5	−3.48	0 46.9
27	7 5 24.06	2.411	22 44 57.4	3.54	0 44.0
28	7 6 21.92	2.412	22 43 32.0	3.59	0 41.0
29	7 7 19.80	2.413	22 42 5.2	3.65	0 38.0
30	7 8 17.71	2.414	22 40 37.1	3.71	0 35.0
31	7 9 15.64	+2.414	+22 39 7.6	−3.76	0 32.1
32	7 10 13.58	+2.414	+22 37 36.8	−3.82	0 29.1

Day of the Month.	8th.	16th.	24th.
Polar Semidiameter	16″.1	15″.9	15″.7
Horizontal Parallax	1.5	1.5	1.5

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter	15″.5	15″.4	15″.3	15″.2
Horizontal Parallax	1.5	1.4	1.4	1.4

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	7 9 15.64	+2.414	+22 39 7.6	−3.76	0 32.1
2	7 10 13.58	2.414	22 37 36.8	3.80	0 29.1
3	7 11 11.53	2.415	22 36 4.6	3.87	0 26.1
4	7 12 9.49	2.415	22 34 31.1	3.92	0 23.1
5	7 13 7.45	2.415	22 32 56.4	3.98	0 20.1
6	7 14 5.40	+2.414	+22 31 20.3	−4.03	0 17.2
7	7 15 3.34	2.414	22 29 42.9	4.08	0 14.2
8	7 16 1.27	2.413	22 28 4.3	4.14	0 11.2
9	7 16 59.17	2.412	22 26 24.4	4.19	0 8.3
10	7 17 57.05	2.411	22 24 43.2	4.24	0 5.3
11	7 18 54.90	+2.410	+22 23 0.8	−4.30	23 2.3
12	7 19 52.73	2.409	22 21 17.1	4.35	23 56.4
13	7 20 50.52	2.407	22 19 32.2	4.40	23 53.4
14	7 21 48.27	2.405	22 17 46.1	4.45	23 50.4
15	7 22 45.97	2.403	22 15 58.7	4.50	23 47.4
16	7 23 43.63	+2.401	+22 14 10.2	−4.55	23 44.4
17	7 24 41.23	2.399	22 12 20.5	4.60	23 41.5
18	7 25 38.76	2.396	22 10 29.6	4.65	23 38.5
19	7 26 36.23	2.393	22 8 37.6	4.69	23 35.5
20	7 27 33.63	2.390	22 6 44.4	4.74	23 32.5
21	7 28 30.95	+2.387	+22 4 50.1	−4.79	23 29.6
22	7 29 28.18	2.383	22 2 54.8	4.83	23 26.6
23	7 30 25.32	2.379	22 0 58.4	4.88	23 23.6
24	7 31 22.36	2.375	21 59 0.9	4.92	23 20.6
25	7 32 19.31	2.370	21 57 2.4	4.96	23 17.6
26	7 33 16.15	+2.366	+21 55 2.8	−5.00	23 14.6
27	7 34 12.87	2.361	21 53 2.3	5.04	23 11.6
28	7 35 9.48	2.356	21 51 0.8	5.08	23 8.6
29	7 36 5.97	2.351	21 48 58.4	5.12	23 5.6
30	7 37 2.33	2.346	21 46 55.0	5.16	23 2.6
31	7 37 58.55	+2.340	+21 44 50.7	−5.20	22 59.6
32	7 38 54.64	+2.334	+21 42 45.6	−5.24	22 56.6

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	7 38 54.64	+2.334	+21 42 45.6	−5.24	22 56.6
2	7 39 50.58	2.328	21 40 39.6	5.27	22 53.6
3	7 40 46.38	2.322	21 38 32.8	5.30	22 50.6
4	7 41 42.03	2.316	21 36 25.2	5.34	22 47.6
5	7 42 37.53	2.309	21 34 16.7	5.37	22 44.6
6	7 43 32.87	+2.302	+21 32 7.5	−5.40	22 41.6
7	7 44 28.04	2.295	21 29 57.5	5.43	22 38.6
8	7 45 23.04	2.288	21 27 46.8	5.46	22 35.6
9	7 46 17.87	2.281	21 25 35.3	5.49	22 32.6
10	7 47 12.53	2.274	21 23 23.2	5.52	22 29.5
11	7 48 7.00	+2.266	+21 21 10.4	−5.55	22 26.5
12	7 49 1.28	2.258	21 18 57.0	5.57	22 23.5
13	7 49 55.38	2.250	21 16 42.8	5.60	22 20.4
14	7 50 49.28	2.242	21 14 28.2	5.62	22 17.4
15	7 51 42.97	2.233	21 12 13.0	5.64	22 14.3
16	7 52 36.45	+2.224	+21 9 57.3	−5.66	22 11.3
17	7 53 29.72	2.215	21 7 41.0	5.68	22 8.2
18	7 54 22.76	2.205	21 5 24.3	5.70	22 5.2
19	7 55 15.58	2.196	21 3 7.2	5.72	22 2.1
20	7 56 8.17	2.186	21 0 49.7	5.74	21 59.0
21	7 57 0.51	+2.176	+20 58 31.8	−5.75	21 55.9
22	7 57 52.61	2.166	20 56 13.6	5.77	21 52.8
23	7 58 44.46	2.155	20 53 55.1	5.78	21 49.8
24	7 59 36.05	2.144	20 51 36.3	5.79	21 46.7
25	8 0 27.37	2.133	20 49 17.2	5.80	21 43.6
26	8 1 18.43	+2.122	+20 46 58.0	−5.80	21 40.5
27	8 2 9.21	2.110	20 44 38.7	5.81	21 37.5
28	8 2 59.71	2.099	20 42 19.2	5.81	21 34.4
29	8 3 49.93	2.086	20 39 59.5	5.80	21 31.3
30	8 4 39.86	2.074	20 37 39.9	5.80	21 28.2
31	8 5 29.49	+2.062	+20 35 20.2	−5.80	21 25.1
32	8 6 18.83	+2.049	+20 33 0.5	−5.80	21 22.0

Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	15″.1	15″.1	15″.1	15″.2
Horizontal Parallax . .	1.4	1.4	1.4	1.4

Day of the Month.	4th.	12th.	20th.	28th.
Polar Semidiameter . .	15″.2	15″.3	15″.5	15″.7
Horizontal Parallax . .	1.4	1.4	1.5	1.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	8 6 18.83	+2.049	+20 33 0.5	−5.82	21 22.0
2	8 7 7.85	2.036	20 30 40.8	5.82	21 18.9
3	8 7 56.57	2.023	20 28 21.2	5.81	21 15.8
4	8 8 44.98	2.010	20 26 1.7	5.81	21 12.6
5	8 9 33.07	1.997	20 23 42.3	5.81	21 9.5
6	8 10 20.83	+1.983	+20 21 23.0	−5.80	21 6.3
7	8 11 8.26	1.969	20 19 4.0	5.79	21 3.2
8	8 11 55.35	1.955	20 16 45.2	5.78	21 0.0
9	8 12 42.10	1.941	20 14 26.7	5.77	20 56.9
10	8 13 28.51	1.926	20 12 8.5	5.75	20 53.7
11	8 14 14.56	+1.911	+20 9 50.7	−5.73	20 50.5
12	8 15 0.25	1.896	20 7 33.3	5.72	20 47.3
13	8 15 45.57	1.881	20 5 16.2	5.70	20 44.1
14	8 16 30.52	1.865	20 2 59.7	5.68	20 40.9
15	8 17 15.09	1.849	20 0 43.7	5.66	20 37.7
16	8 17 59.26	+1.833	+19 58 28.3	−5.64	20 34.5
17	8 18 43.03	1.816	19 56 13.4	5.61	20 31.3
18	8 19 26.42	1.799	19 53 59.2	5.58	20 28.1
19	8 20 9.39	1.782	19 51 45.7	5.55	20 24.9
20	8 20 51.94	1.764	19 49 33.0	5 51	20 21.6
21	8 21 34.07	+1.746	+19 47 21.0	−5.48	20 18.4
22	8 22 15.77	1.728	19 45 9.9	5.45	20 15.2
23	8 22 57.03	1.710	19 42 59.7	5.41	20 11.9
24	8 23 37.85	1.691	19 40 50.4	5.37	20 8.6
25	8 24 18.22	1.672	19 38 42.1	5.33	20 5.4
26	8 24 58.13	+1.653	+19 36 34.7	−5.28	20 2.1
27	8 25 37.58	1.634	19 34 28.5	5.24	19 58.8
28	8 26 16.57	1.615	19 32 23.3	5.19	19 55.5
29	8 26 55.09	1.595	19 30 19.3	5.14	19 52.2
30	8 27 33.12	1.575	19 28 16.4	5.09	19 48.9
31	8 28 10.67	+1.555	+19 26 14.7	−5.04	19 45.6
32	8 28 47.74	+1.534	+19 24 14.3	−4.99	19 42.3

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	8 28 10.67	+1.555	+19 26 14.7	−5.04	19 45.6
2	8 28 47.74	1.534	19 24 14.3	4.99	19 42.3
3	8 29 24.30	1.513	19 22 15.3	4.94	19 38.9
4	8 30 0.37	1.492	19 20 17.5	4.88	19 35.6
5	8 30 35.92	1.471	19 18 21.1	4.82	19 32.2
6	8 31 10.96	+1.448	+19 16 26.1	−4.76	19 28.9
7	8 31 45.47	1.427	19 14 32.7	4.70	19 25.5
8	8 32 19.46	1.405	19 12 40.7	4.63	19 22.1
9	8 32 52.91	1.382	19 10 50.3	4.57	19 18.7
10	8 33 25.82	1.359	19 9 1.5	4.50	19 15.3
11	8 33 58.17	+1.336	+19 7 14.4	−4.43	19 11.9
12	8 34 29.96	1.313	19 5 29.0	4.36	19 8.5
13	8 35 1.18	1.289	19 3 45.4	4.28	19 5.1
14	8 35 31.83	1.265	19 2 3.5	4.20	19 1.7
15	8 36 1.89	1.241	49 0 23.6	4.12	18 58.2
16	8 36 31.37	+1.216	+18 58 45.5	−4.04	18 54.8
17	8 37 0.25	1.191	18 57 9.4	3.96	18 51.3
18	8 37 28.52	1.165	18 55 35.3	3.88	18 47.9
19	8 37 56.17	1.139	18 54 3.3	3.79	18 44.4
20	8 38 23.21	1.113	18 52 33.4	3.70	18 40.9
21	8 38 49.62	+1.087	+18 51 5.6	−3.61	18 37.4
22	8 39 15.39	1.061	18 49 40.0	3.52	18 33.9
23	8 39 40.52	1.034	18 48 16.6	3.42	18 30.3
24	8 40 5.01	1.007	18 46 55.6	3.33	18 26.8
25	8 40 28.84	0.980	18 45 36.9	3.23	18 23.2
26	8 40 52.02	+0.952	+18 44 20.5	−3.13	18 19.7
27	8 41 14.53	0.924	18 43 6.4	3.03	18 16.1
28	8 41 36.37	0.896	18 41 54.8	2.93	18 12.6
29	8 41 57.53	0.868	18 40 45.7	2.83	18 9.0
30	8 42 18.02	0.840	18 39 39.0	2.73	18 5.4
31	8 42 37.81	+0.811	+18 38 34.9	−2.62	18 1.8
32	8 42 56.92	+0.782	+18 37 33.3	−2.51	17 58.1

Day of the Month.	5th.	13th.	21st.	29th.
Polar Semidiameter . .	15″.9	16″.1	16″.4	16″.6
Horizontal Parallax .	1.5	1.5	1.5	1.6

Day of the Month.	7th.	15th.	23d.	31st.
Polar Semidiameter	17″.0	17″.4	17″.8	18″.2
Horizontal Parallax .	1.6	1.6	1.7	1.7

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	8 42 56.92	+0.760	+18 37 33.3	−2.51	17 58.1
2	8 43 15.33	0.753	18 36 34.4	2.49	17 54.5
3	8 43 33.03	0.725	18 35 38.1	2.36	17 50.9
4	8 43 50.02	0.680	18 34 44.5	2.18	17 47.2
5	8 44 6.29	0.623	18 33 53.6	2.07	17 43.5
6	8 44 21.84	+0.559	+18 33 5.4	−1.95	17 39.8
7	8 44 36.66	0.488	18 32 20.1	1.89	17 36.2
8	8 44 50.75	0.571	18 31 37.6	1.71	17 32.4
9	8 45 4.09	0.540	18 30 57.9	1.58	17 28.7
10	8 45 16.68	0.509	18 30 21.1	1.47	17 25.0
11	8 45 28.52	+0.477	+18 29 47.3	−1.36	17 21.2
12	8 45 39.59	0.445	18 29 16.4	1.23	17 17.5
13	8 45 49.90	0.413	18 28 48.5	1.10	17 13.7
14	8 45 59.43	0.381	18 28 23.6	0.98	17 9.9
15	8 46 8.19	0.349	18 28 1.8	0.85	17 6.1
16	8 46 16.16	+0.316	+18 27 43.0	−0.72	17 2.3
17	8 46 23.35	0.283	18 27 27.4	0.59	16 58.5
18	8 46 29.76	0.250	18 27 14.8	0.46	16 54.7
19	8 46 35.37	0.217	18 27 5.4	0.33	16 50.8
20	8 46 40.19	0.184	18 26 59.1	0.20	16 46.9
21	8 46 44.21	+0.151	+18 26 56.0	−0.06	16 43.1
22	8 46 47.43	0.117	18 26 56.0	+0.07	16 39.2
23	8 46 49.85	0.084	18 26 59.2	0.20	16 35.3
24	8 46 51.47	0.051	18 27 5.6	0.33	16 31.4
25	8 46 52.29	+0.017	18 27 15.1	0.46	16 27.4
26	8 46 52.31	−0.016	+18 27 27.8	+0.60	16 23.5
27	8 46 51.52	0.050	18 27 43.6	0.73	16 19.6
28	8 46 49.94	0.083	18 28 2.6	0.86	16 15.6
29	8 46 47.54	0.117	18 28 24.8	0.99	16 11.6
30	8 46 44.35	0.150	18 28 50.1	1.12	16 7.6
31	8 46 40.36	−0.183	+18 29 18.5	+1.25	16 3.6
32	8 46 35.56	−0.217	+18 29 50.0	+1.39	15 59.6

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	8 46 40.36	−0.183	+18 29 18.5	+1.25	16 3.6
2	8 46 35.56	0.217	18 29 50.0	1.39	15 59.6
3	8 46 29.96	0.250	18 30 24.7	1.51	15 55.5
4	8 46 23.56	0.283	18 31 2.5	1.64	15 51.5
5	8 46 16.37	0.317	18 31 43.4	1.77	15 47.5
6	8 46 8.38	−0.350	+18 32 27.3	+1.89	15 43.4
7	8 45 59.59	0.383	18 33 14.3	2.00	15 39.3
8	8 45 50.00	0.416	18 34 4.4	2.15	15 35.2
9	8 45 39.63	0.448	18 34 57.4	2.27	15 31.1
10	8 45 28.47	0.481	18 35 53.5	2.40	15 26.9
11	8 45 16.53	−0.514	+18 36 52.5	+2.52	15 22.8
12	8 45 3.81	0.546	18 37 54.5	2.64	15 18.6
13	8 44 50.32	0.578	18 38 59.4	2.76	15 14.5
14	8 44 36.06	0.610	18 40 7.1	2.88	15 10.3
15	8 44 21.04	0.641	18 41 17.7	3.00	15 6.1
16	8 44 5.27	−0.672	+18 42 31.0	+3.11	15 1.9
17	8 43 48.76	0.703	18 43 47.1	3.22	14 57.7
18	8 43 31.52	0.733	18 45 5.7	3.33	14 53.5
19	8 43 13.56	0.763	18 46 27.1	3.44	14 49.2
20	8 42 54.88	0.792	18 47 50.9	3.55	14 45.0
21	8 42 35.50	−0.821	+18 49 17.3	+3.65	14 40.7
22	8 42 15.44	0.850	18 50 46.0	3.75	14 36.5
23	8 41 54.70	0.878	18 52 17.0	3.85	14 32.2
24	8 41 33.30	0.905	18 53 50.4	3.94	14 27.9
25	8 41 11.25	0.932	18 55 25.9	4.03	14 23.6
26	8 40 48.57	−0.958	+18 57 3.6	+4.12	14 19.3
27	8 40 25.27	0.983	18 58 43.3	4.20	14 14.9
28	8 40 1.36	1.006	19 0 24.9	4.28	14 10.6
29	8 39 36.86	1.029	19 2 8.5	4.36	14 6.3
30	8 39 11.79	1.050	19 3 53.9	4.43	14 1.9
31	8 38 46.15	−1.070	+19 5 41.0	+4.50	13 57.6
32	8 38 19.97	−1.101	+19 7 29.7	+4.56	13 53.2

Day of the Month.	8th.	16th.	24th.
Polar Semidiameter	18″.7	19″.1	19″.6
Horizontal Parallax	1.8	1.8	1.8

Day of the Month.	2d.	10th.	18th.	26th.	34th.
Polar Semidiameter . .	20″.1	20″.5	20″.9	21″.3	21″.6
Horizontal Parallax . .	1.9	1.9	2.0	2.0	2.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	14 16 22.23	+0.703	−11 8 56.7	−3.07	19 29.8
2	14 16 38.95	0.690	11 10 9.4	2.99	19 26.2
3	14 16 55.35	0.677	11 11 20.3	2.92	19 22.5
4	14 17 11.44	0.664	11 12 29.4	2.84	19 18.9
5	14 17 27.21	0.651	11 13 36.7	2.77	19 15.2
6	14 17 42.65	+0.637	−11 14 42.1	−2.69	19 11.5
7	14 17 57.77	0.623	11 15 45.6	2.61	19 7.8
8	14 18 12.56	0.609	11 16 47.2	2.53	19 4.1
9	14 18 27.01	0.595	11 17 47.0	2.45	19 0.4
10	14 18 41.13	0.581	11 18 44.9	2.37	18 56.7
11	14 18 54.91	+0.567	−11 19 40.9	−2.29	18 53.0
12	14 19 8.34	0.553	11 20 34.9	2.21	18 49.3
13	14 19 21.43	0.539	11 21 27.1	2.13	18 45.6
14	14 19 34.17	0.524	11 22 17.3	2.05	18 41.9
15	14 19 46.56	0.509	11 23 5.6	1.97	18 38.1
16	14 19 58.59	+0.494	−11 23 51.9	−1.89	18 34.4
17	14 20 10.26	0.479	11 24 36.3	1.81	18 30.6
18	14 20 21.57	0.464	11 25 18.7	1.72	18 26.9
19	14 20 32.51	0.449	11 25 59.0	1.64	18 23.1
20	14 20 43.08	0.433	11 26 37.4	1.55	18 19.4
21	14 20 53.28	+0.417	−11 27 13.8	−1.47	18 15.6
22	14 21 3.10	0.401	11 27 48.2	1.39	18 11.9
23	14 21 12.54	0.385	11 28 20.6	1.30	18 8.1
24	14 21 21.61	0.369	11 28 50.9	1.22	18 4.3
25	14-21 30.28	0.353	11 29 19.2	1.13	18 0.5
26	14 21 38.57	+0.337	−11 29 45.5	−1.05	17 56.7
27	14 21 46.47	0.321	11 30 9.7	0.97	17 52.9
28	14 21 53.98	0.305	11 30 31.9	0.88	17 49.1
29	14 22 1.09	0.289	11 30 52.1	0.80	17 45.3
30	14 22 7.81	0.272	11 31 10.2	0.71	17 41.5
31	14 22 14.13	+0.255	−11 31 26.2	−0.63	17 37.6
32	14 22 20.06	+0.239	−11 31 40.2	−0.55	17 33.7

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	14 22 20.06	+0.239	−11 31 40.2	−0.55	17 33.7
2	14 22 25.58	0.222	11 31 52.2	0.48	17 29.9
3	14 22 30.71	0.206	11 32 2.2	0.38	17 26.0
4	14 22 35.44	0.189	11 32 10.1	0.29	17 22.2
5	14 22 39.76	0.172	11 32 16.0	0.20	17 18.3
6	14 22 43.69	+0.156	−11 32 19.8	−0.12	17 14.4
7	14 22 47.21	0.139	11 32 21.7	−0.03	17 10.6
8	14 22 50.33	0.122	11 32 21.5	+0.05	17 6.7
9	14 22 53.04	0.105	11 32 19.3	0.14	17 2.8
10	14 22 55.35	0.088	11 32 15.1	0.22	16 58.9
11	14 22 57.26	+0.072	−11 32 8.9	+0.30	16 55.0
12	14 22 58.76	0.055	11 32 0.7	0.39	16 51.1
13	14 22 59.86	0.038	11 31 50.5	0.47	16 47.2
14	14 23 0.55	0.021	11 31 38.3	0.55	16 43.2
15	14 23 0.84	+0.004	11 31 24.1	0.63	16 39.3
16	14 23 0.73	−0.013	−11 31 7.9	+0.71	16 35.4
17	14 23 0.21	0.030	11 30 49.8	0.80	16 31.4
18	14 22 59.28	0.047	11 30 29.6	0.88	16 27.5
19	14 22 57.95	0.064	11 30 7.5	0.96	16 23.5
20	14 22 56.22	0.081	11 29 43.4	1.04	16 19.6
21	14 22 54.08	−0.098	−11 29 17.4	+1.12	16 15.6
22	14 22 51.54	0.115	11 28 49.4	1.20	16 11.6
23	14 22 48.60	0.132	11 28 19.6	1.28	16 7.6
24	14 22 45.27	0.148	11 27 47.8	1.36	16 3.6
25	14 22 41.54	0.164	11 27 14.1	1.44	15 59.6
26	14 22 37.42	−0.180	−11 26 38.5	+1.52	15 55.6
27	14 22 32.90	0.196	11 26 1.1	1.60	15 51.6
28	14 22 28.00	0.212	11 25 21.9	1.67	15 47.6
29	14 22 22.71	0.228	11 24 40.9	1.75	15 43.6
30	14 22 17.04	0.244	11 23 58.1	1.82	15 39.5
31	14 22 10.99	−0.260	−11 23 13.5	+1.90	15 35.5
32	14 22 4.57	−0.276	−11 22 27.2	+1.97	15 31.5

Day of the Month.	0	8th.	16th.	24th.
Polar Semidiameter . .	7″.7	7″.8	7″.9	8″.0
Horizontal Parallax . .	0.9	0.9	0.9	0.9

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	8″.1	8″.2	8″.3	8″.4
Horizontal Parallax . .	0.9	0.9	0.9	1.0

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	14 22 22.71	−0.286	−11 24 40.9	+1.75	15 43.6
2	14 22 17.04	0.244	11 23 58.1	1.88	15 39.5
3	14 22 10.99	0.202	11 23 13.5	1.90	15 35.5
4	14 22 4.57	0.276	11 22 27.2	1.97	15 31.5
5	14 21 57.78	0.291	11 21 39.1	2.04	15 27.4
6	14 21 50.62	−0.306	−11 20 49.3	+2.11	15 23.4
7	14 21 43.10	0.321	11 19 57.9	2.18	15 19.3
8	14 21 35.22	0.336	11 19 4.9	2.25	15 15.2
9	14 21 26.99	0.351	11 18 10.2	2.32	15 11.1
10	14 21 18.41	0.365	11 17 13.9	2.38	15 7.1
11	14 21 9.48	−0.379	−11 16 16.1	+2.45	15 3.0
12	14 21 0.21	0.393	11 15 16.7	2.51	14 58.9
13	14 20 50.60	0.407	11 14 15.8	2.57	14 54.8
14	14 20 40.66	0.421	11 13 13.3	2.63	14 50.7
15	14 20 30.39	0.435	11 12 9.3	2.69	14 46.6
16	14 20 19.81	−0.448	−11 11 3.9	+2.75	14 42.5
17	14 20 8.90	0.461	11 9 57.0	2.81	14 38.4
18	14 19 57.68	0.474	11 8 48.8	2.87	14 34.2
19	14 19 46.15	0.487	11 7 39.2	2.93	14 30.1
20	14 19 34.32	0.496	11 6 28.3	2.99	14 26.0
21	14 19 22.20	−0.511	−11 5 16.1	+3.04	14 21.9
22	14 19 9.78	0.523	11 4 2.6	3.09	14 17.7
23	14 18 57.08	0.534	11 2 47.9	3.14	14 13.6
24	14 18 44.11	0.545	11 1 32.1	3.19	14 9.4
25	14 18 30.87	0.556	11 0 15.0	3.23	14 5.3
26	14 18 17.37	−0.567	−10 58 56.8	+3.28	14 1.1
27	14 18 3.61	0.578	10 57 37.6	3.32	13 56.9
28	14 17 49.60	0.589	10 56 17.4	3.36	13 52.8
29	14 17 35.36	0.599	10 54 56.2	3.40	13 48.6
30	14 17 20.89	0.607	10 53 34.0	3.44	13 44.4
31	14 17 6.20	−0.619	−10 52 11.0	+3.48	13 40.2
32	14 16 51.29	−0.625	−10 50 47.1	+3.51	13 36.1

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	14 16 51.29	−0.625	−10 50 47.1	+3.51	13 36.1
2	14 16 36.17	0.633	10 49 22.3	3.54	13 31.9
3	14 16 20.86	0.641	10 47 56.8	3.57	13 27.7
4	14 16 5.36	0.649	10 46 30.7	3.60	13 23.5
5	14 15 49.68	0.657	10 45 3.8	3.63	13 19.3
6	14 15 33.83	−0.664	−10 43 36.2	+3.66	13 15.1
7	14 15 17.82	0.671	10 42 8.1	3.68	13 10.9
8	14 15 1.65	0.677	10 40 39.5	3.70	13 6.7
9	14 14 45.33	0.683	10 39 10.4	3.72	13 2.5
10	14 14 28.86	0.689	10 37 40.7	3.74	12 58.3
11	14 14 12.27	−0.694	−10 36 10.6	+3.76	12 54.1
12	14 13 55.56	0.699	10 34 40.2	3.77	12 49.9
13	14 13 38.73	0.703	10 33 9.5	3.78	12 45.7
14	14 13 21.79	0.707	10 31 38.4	3.79	12 41.5
15	14 13 4.76	0.711	10 30 7.1	3.80	12 37.3
16	14 12 47.64	−0.715	−10 28 35.6	+3.81	12 33.1
17	14 12 30.44	0.718	10 27 4.0	3.81	12 28.9
18	14 12 13.17	0.721	10 25 32.2	3.81	12 24.7
19	14 11 55.84	0.723	10 24 0.4	3.82	12 20.4
20	14 11 38.46	0.725	10 22 28.6	3.82	12 16.2
21	14 11 21.03	−0.727	−10 20 56.9	+3.82	12 12.0
22	14 11 3.57	0.728	10 19 25.2	3.81	12 7.8
23	14 10 46.08	0.728	10 17 53.7	3.80	12 3.5
24	14 10 28.58	0.728	10 16 22.4	3.79	11 59.3
25	14 10 11.08	0.729	10 14 51.4	3.78	11 55.1
26	14 9 53.59	−0.729	−10 13 20.6	+3.77	11 50.9
27	14 9 36.11	0.728	10 11 50.2	3.75	11 46.6
28	14 9 18.65	0.727	10 10 20.2	3.73	11 42.4
29	14 9 1.23	0.725	10 8 50.7	3.71	11 38.2
30	14 8 43.85	0.723	10 7 21.7	3.69	11 34.0
31	14 8 26.52	−0.721	−10 5 53.2	+3.67	11 29.8
32	14 8 9.26	−0.718	−10 4 25.4	+3.64	11 25.5

Day of the Month.	5th.	13th.	21st.	29th.
Polar Semidiameter . .	8″.6	8″.6	8″.7	8″.8
Horizontal Parallax . .	1.0	1.0	1.0	1.0

Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	8″.8	8″.9	8″.9	8″.9
Horizontal Parallax . .	1.0	1.0	1.0	1.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	14 8 26.52	−0.721	−10 5 53.2	+3.67	11 29.8
2	14 8 9.26	0.718	10 4 25.4	3.64	11 25.5
3	14 7 52.07	0.715	10 2 58.2	3.61	11 21.3
4	14 7 34.96	0.711	10 1 31.6	3.58	11 17.1
5	14 7 17.93	0.707	10 0 5.8	3.55	11 12.9
6	14 7 1.00	−0.703	− 9 58 40.8	+3.52	11 8.7
7	14 6 44.18	0.698	9 57 16.6	3.49	11 4.5
8	14 6 27.47	0.693	9 55 53.3	3.45	11 0.3
9	14 6 10.88	0.688	9 54 30.8	3.41	10 56.1
10	14 5 54.42	0.683	9 53 9.3	3.37	10 51.9
11	14 5 38.09	−0.677	− 9 51 48.8	+3.33	10 47.6
12	14 5 21.91	0.671	9 50 29.3	3.29	10 43.4
13	14 5 5.88	0.664	9 49 10.8	3.25	10 39.3
14	14 4 50.01	0.657	9 47 53.5	3.20	10 35.1
15	14 4 34.31	0.650	9 46 37.3	3.15	10 30.9
16	14 4 18.78	−0.643	− 9 45 22.2	+3.10	10 26.7
17	14 4 3.43	0.635	9 44 8.4	3.05	10 22.5
18	14 3 48.27	0.627	9 42 55.9	3.00	10 18.3
19	14 3 33.31	0.619	9 41 44.7	2.94	10 14.1
20	14 3 18.56	0.611	9 40 34.7	2.88	10 10.0
21	14 3 4.02	−0.602	− 9 39 26.2	+2.82	10 5.8
22	14 2 49.70	0.593	9 38 19.1	2.76	10 1.6
23	14 2 35.61	0.583	9 37 13.5	2.70	9 57.5
24	14 2 21.75	0.573	9 36 9.4	2.64	9 53.3
25	14 2 8.14	0.563	9 35 6.7	2.58	9 49.2
26	14 1 54.77	−0.552	− 9 34 5.7	+2.51	9 45.0
27	14 1 41.66	0.541	9 33 6.2	2.44	9 40.9
28	14 1 28.81	0.530	9 32 8.4	2.37	9 36.7
29	14 1 16.22	0.519	9 31 12.2	2.30	9 32.6
30	14 1 3.91	0.508	9 30 17.8	2.23	9 28.4
31	14 0 51.87	−0.496	− 9 29 25.1	+2.16	9 24.3
32	14 0 40.12	−0.484	− 9 28 34.0	+2.09	9 20.2

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	14 0 40.12	−0.484	−9 28 34.0	+2.09	9 20.2
2	14 0 28.66	0.472	9 27 44.7	2.02	9 16.1
3	14 0 17.49	0.460	9 26 57.2	1.95	9 12.0
4	14 0 6.62	0.447	9 26 11.5	1.87	9 7.8
5	13 59 56.05	0.434	9 25 27.7	1.79	9 3.7
6	13 59 45.79	−0.421	−9 24 45.6	+1.72	8 59.6
7	13 59 35.84	0.408	9 24 5.4	1.64	8 55.5
8	13 59 26.20	0.395	9 23 27.1	1.56	8 51.5
9	13 59 16.88	0.382	9 22 50.7	1.48	8 47.4
10	13 59 7.88	0.368	9 22 16.2	1.40	8 43.3
11	13 58 59.20	−0.355	−9 21 43.6	+1.32	8 39.2
12	13 58 50.85	0.341	9 21 12.9	1.24	8 35.2
13	13 58 42.84	0.327	9 20 44.2	1.16	8 31.1
14	13 58 35.16	0.313	9 20 17.4	1.08	8 27.0
15	13 58 27.82	0.299	9 19 52.7	0.99	8 23.0
16	13 58 20.82	−0.285	−9 19 30.0	+0.91	8 18.9
17	13 58 14.17	0.271	9 19 9.3	0.82	8 14.9
18	13 58 7.87	0.256	9 18 50.6	0.74	8 10.9
19	13 58 1.92	0.241	9 18 34.0	0.65	8 6.8
20	13 57 56.33	0.226	9 18 19.4	0.56	8 2.8
21	13 57 51.09	−0.211	−9 18 6.9	+0.48	7 58.8
22	13 57 46.21	0.196	9 17 56.5	0.39	7 54.8
23	13 57 41.70	0.181	9 17 48.2	0.31	7 50.8
24	13 57 37.55	0.166	9 17 41.9	0.22	7 46.8
25	13 57 33.77	0.150	9 17 37.8	0.13	7 42.8
26	13 57 30.35	−0.135	−9 17 35.8	+0.05	7 38.8
27	13 57 27.31	0.120	9 17 35.9	−0.04	7 34.8
28	13 57 24.64	0.104	9 17 38.0	0.13	7 30.8
29	13 57 22.34	0.089	9 17 42.3	0.22	7 26.9
30	13 57 20.41	0.073	9 17 48.7	0.31	7 22.9
31	13 57 18.85	−0.058	−9 17 57.1	−0.39	7 18.9
32	13 57 17.66	−0.042	−9 18 7.7	−0.48	7 15.0

Day of the Month.	8th.	16th.	24th.
Polar Semidiameter . . .	″8.9	″8.8	″8.7
Horizontal Parallax	1.0	1.0	1.0

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	″8.7	″8.6	″8.5	″8.4
Horizontal Parallax . .	1.0	1.0	1.0	1.0

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 57 18.85	−0.058	−9 17 57.1	−0.39	7 18.9
2	13 57 17.66	0.042	9 18 7.7	0.48	7 15.0
3	13 57 16.84	0.026	9 18 20.3	0.57	7 11.0
4	13 57 16.40	−0.011	9 18 35.0	0.65	7 7.1
5	13 57 16.34	+0.005	9 18 51.8	0.74	7 3.2
6	13 57 16.65	+0.031	−9 19 10.7	−0.82	6 59.3
7	13 57 17.32	0.056	9 19 31.6	0.91	6 55.3
8	13 57 18.37	0.082	9 19 54.6	1.00	6 51.4
9	13 57 19.79	0.087	9 20 19.6	1.08	6 47.5
10	13 57 21.59	0.083	9 20 46.7	1.17	6 43.6
11	13 57 23.75	+0.099	−9 21 15.9	−1.25	6 39.7
12	13 57 26.29	0.114	9 21 47.0	1.34	6 35.8
13	13 57 29.20	0.130	9 22 20.2	1.42	6 32.0
14	13 57 32.48	0.145	9 22 55.4	1.51	6 28.1
15	13 57 36.13	0.160	9 23 32.7	1.59	6 24.2
16	13 57 40.16	+0.176	−9 24 12.0	−1.67	6 20.3
17	13 57 44.55	0.191	9 24 53.2	1.76	6 16.5
18	13 57 49.31	0.207	9 25 36.5	1.84	6 12.6
19	13 57 54.44	0.222	9 26 21.7	1.93	6 8.8
20	13 57 59.94	0.237	9 27 8.9	2.01	6 5.0
21	13 58 5.81	+0.253	−9 27 58.1	−2.09	6 1.1
22	13 58 12.04	0.268	9 28 49.2	2.17	5 57.3
23	13 58 18.64	0.283	9 29 42.2	2.25	5 53.5
24	13 58 25.61	0.298	9 30 37.2	2.33	5 49.7
25	13 58 32.93	0.313	9 31 34.1	2.41	5 45.9
26	13 58 40.62	+0.328	−9 32 32.9	−2.49	5 42.1
27	13 58 48.66	0.343	9 33 33.5	2.56	5 38.3
28	13 58 57.06	0.358	9 34 36.0	2.64	5 34.5
29	13 59 5.81	0.372	9 35 40.3	2.72	5 30.7
30	13 59 14.90	0.386	9 36 46.4	2.79	5 26.9
31	13 59 24.35	+0.401	−9 37 54.3	−2.87	5 23.1
32	13 59 34.15	+0.416	−9 39 4.0	−2.94	5 19.4

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 59 34.15	+0.416	− 9 39 4.0	−2.94	5 19.4
2	13 59 44.28	0.430	9 40 15.4	3.01	5 15.6
3	13 59 54.76	0.444	9 41 28.6	3.08	5 11.8
4	14 0 5.58	0.458	9 42 43.5	3.15	5 8.1
5	14 0 16.73	0.472	9 44 0.0	3.22	5 4.3
6	14 0 28.21	+0.486	− 9 45 18.2	−3.29	5 0.6
7	14 0 40.03	0.500	9 46 38.1	3.36	4 56.9
8	14 0 52.17	0.513	9 47 59.6	3.43	4 53.2
9	14 1 4.65	0.526	9 49 22.8	3.50	4 49.4
10	14 1 17.44	0.540	9 50 47.5	3.57	4 45.7
11	14 1 30.56	+0.554	− 9 52 13.9	−3.63	4 42.0
12	14 1 44.00	0.567	9 53 41.8	3.70	4 38.3
13	14 1 57.76	0.580	9 55 11.3	3.76	4 34.6
14	14 2 11.83	0.593	9 56 42.2	3.82	4 30.9
15	14 2 26.21	0.606	9 58 14.7	3.89	4 27.2
16	14 2 40.90	+0.619	− 9 59 48.7	−3.95	4 23.5
17	14 2 55.91	0.632	10 1 24.2	4.01	4 19.8
18	14 3 11.22	0.645	10 3 1.2	4.07	4 16.1
19	14 3 26.83	0.657	10 4 39.5	4.13	4 12.4
20	14 3 42.74	0.670	10 6 19.3	4.19	4 8.8
21	14 3 58.95	+0.682	−10 8 0.4	−4.25	4 5.1
22	14 4 15.45	0.694	10 9 42.9	4.30	4 1.5
23	14 4 32.24	0.706	10 11 26.7	4.36	3 57.8
24	14 4 49.32	0.718	10 13 11.9	4.41	3 54.2
25	14 5 6.68	0.730	10 14 58.3	4.46	3 50.5
26	14 5 24.32	+0.742	−10 16 46.0	−4.51	3 46.9
27	14 5 42.24	0.753	10 18 34.9	4.56	3 43.2
28	14 6 0.43	0.764	10 20 25.0	4.61	3 39.6
29	14 6 18.89	0.775	10 22 16.3	4.66	3 35.9
30	14 6 37.61	0.786	10 24 8.7	4.71	3 32.3
31	14 6 56.59	+0.797	−10 26 2.2	−4.76	3 28.7
32	14 7 15.83	+0.808	−10 27 56.9	−4.80	3 25.1

Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	8″.3	8″.2	8″.1	8″.0
Horizontal Parallax . .	0″.9	0″.9	0″.9	0″.9

Day of the Month.	4th.	12th.	20th.	28th.
Polar Semidiameter . .	7″.8	7″.7	7″.7	7″.6
Horizontal Parallax . .	0″.9	0″.9	0″.9	0″.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declina-

GREENWICH MEAN TIME.

Day of Month.	SEPTEMBER. Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	OCTOBER. Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	14 7 16.23	[illegible]	−10 27 54.9	[illegible]	3 25.1	1	14 18 36.39	[illegible]	−11 31 55.4	−5.71	1 38.5
2	14 7 36.32	[illegible]	10 29 52.6	4.85	3 21.5	2	14 19 1.91	[illegible]	11 34 12.5	5.73	1 35.0
3	14 7 56.46	[illegible]	10 31 49.4	4.90	3 17.9	3	14 19 27.58	[illegible]	11 36 30.0	5.74	1 31.5
4	14 8 15.86	[illegible]	10 33 47.2	4.90	3 14.3	4	14 19 53.38	[illegible]	11 38 47.8	5.75	1 28.0
5	14 8 35.35	[illegible]	10 35 46.1	4.95	3 10.7	5	14 20 19.32	[illegible]	11 41 5.9	5.76	1 24.5
6	14 8 56.79	[illegible]	−10 37 45.9	−5.01	3 7.1	6	14 20 45.35	[illegible]	−11 43 24.3	−5.77	1 21.0
7	14 9 16.56	[illegible]	10 39 46.7	5.05	3 3.5	7	14 21 11.58	[illegible]	11 45 42.9	5.78	1 17.5
8	14 9 37.45	0.878	10 41 48.4	5.09	2 59.9	8	14 21 37.90	[illegible]	11 48 1.7	5.79	1 14.0
9	14 9 58.64	0.888	10 43 51.1	5.13	2 56.4	9	14 22 4.34	[illegible]	11 50 20.7	5.80	1 10.5
10	14 10 20.05	[illegible]	10 45 54.7	5.17	2 52.9	10	14 22 30.90	[illegible]	11 52 39.9	5.80	1 7.0
11	14 10 41.60	+0.897	−10 47 59.2	−5.20	2 49.2	11	14 22 57.57	+1.114	−11 54 59.3	−5.81	1 3.5
12	14 11 3.36	0.896	10 50 4.5	5.24	2 45.6	12	14 23 24.35	1.118	11 57 18.8	5.81	1 0.0
13	14 11 25.44	0.905	10 52 10.7	5.27	2 42.1	13	14 23 51.22	1.122	11 59 38.4	5.82	0 56.5
14	14 11 47.24	0.924	10 54 17.7	5.31	2 38.5	14	14 24 18.20	1.126	12 1 58.1	5.82	0 53.0
15	14 12 10.45	0.943	10 56 25.4	5.34	2 35.0	15	14 24 45.26	1.130	12 4 17.8	5.82	0 49.6
16	14 12 33.17	+0.962	−10 58 33.9	−5.37	2 31.4	16	14 25 12.46	+1.134	−12 6 37.6	−5.82	0 46.1
17	14 12 56.10	0.960	11 0 43.2	5.40	2 27.9	17	14 25 39.72	1.138	12 8 57.3	5.82	0 42.6
18	14 13 19.23	0.965	11 2 53.2	5.43	2 24.3	18	14 26 7.06	1.141	12 11 17.0	5.82	0 39.1
19	14 13 42.56	0.974	11 5 3.8	5.46	2 20.8	19	14 26 34.48	1.144	12 13 36.7	5.82	0 35.7
20	14 14 6.05	0.984	11 7 15.1	5.49	2 17.2	20	14 27 1.98	1.147	12 15 56.4	5.81	0 32.2
21	14 14 29.79	+0.992	−11 9 27.1	−5.51	2 13.7	21	14 27 29.54	+1.150	−12 18 15.9	−5.81	0 28.7
22	14 14 53.60	1.000	11 11 39.7	5.54	2 10.1	22	14 27 57.17	1.153	12 20 35.3	5.80	0 25.2
23	14 15 17.76	1.007	11 13 52.8	5.56	2 6.6	23	14 28 24.87	1.155	12 22 54.6	5.80	0 21.8
24	14 15 42.01	1.014	11 16 6.4	5.58	2 3.1	24	14 28 52.62	1.157	12 25 13.7	5.79	0 18.3
25	14 16 6.44	1.021	11 18 20.6	5.60	1 59.6	25	14 29 20.41	1.159	12 27 32.6	5.78	0 14.8
26	14 16 31.03	+1.029	−11 20 35.3	−5.62	1 56.0	26	14 29 48.26	+1.161	−12 29 51.2	−5.77	0 11.3
27	14 16 55.79	1.035	11 22 50.5	5.64	1 52.5	27	14 30 16.15	1.163	12 32 9.7	5.76	0 7.9
28	14 17 20.71	1.042	11 25 6.1	5.66	1 49.0	28	14 30 44.08	1.164	12 34 27.9	5.75	0 4.5
29	14 17 45.79	1.048	11 27 22.1	5.68	1 45.5	29	14 31 12.04	1.165	12 36 45.8	5.74	0 1.0 / 23 57.5
30	14 18 11.02	1.054	11 29 38.6	5.70	1 42.0	30	14 31 40.03	1.166	12 39 3.4	5.73	23 54.0
31	14 18 36.39	+1.060	−11 31 55.4	−5.71	1 38.5	31	14 32 8.05	+1.167	−12 41 20.7	−5.71	23 50.6
32	14 19 1.91	+1.066	−11 34 12.5	−5.73	1 35.0	32	14 32 36.10	+1.168	−12 43 37.6	−5.70	23 47.1

Day of the Month.	5th.	13th.	21st.	29th.	Day of the Month.	7th.	15th.	23d.	31st.
Polar Semidiameter . .	7″.5	7″.4	7″.4	7″.3	Polar Semidiameter . .	7″.3	7″.2	7″.2	7″.2
Horizontal Parallax . .	0.8	0.8	0.8	0.8	Horizontal Parallax . .	0.8	0.8	0.8	0.8

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	14 32 36.10	+1.168	−12 43 37.6	−5.70	23 47.1
2	14 33 4.15	1.169	12 45 54.2	5.69	23 43.6
3	14 33 32.22	1.169	12 48 10.3	5.67	23 40.1
4	14 34 0.30	1.169	12 50 26.1	5.65	23 36.7
5	14 34 28.39	1.170	12 52 41.5	5.63	23 33.2
6	14 34 56.48	+1.170	−12 54 56.4	−5.61	23 29.8
7	14 35 24.57	1.170	12 57 10.9	5.59	23 26.3
8	14 35 52.65	1.170	12 59 24.9	5.57	23 22.9
9	14 36 20.73	1.169	13 1 38.4	5.55	23 19.4
10	14 36 48.78	1.169	13 3 51.4	5.53	23 15.9
11	14 37 16.82	+1.168	−13 6 3.8	−5.51	23 12.4
12	14 37 44.83	1.167	13 8 15.6	5.48	23 9.0
13	14 38 12.82	1.166	13 10 26.9	5.46	23 5.5
14	14 38 40.77	1.164	13 12 37.5	5.43	23 2.0
15	14 39 8.68	1.163	13 14 47.5	5.41	22 58.5
16	14 39 36.55	+1.160	−13 16 56.9	−5.38	22 55.1
17	14 40 4.37	1.158	13 19 5.6	5.35	22 51.6
18	14 40 32.14	1.156	13 21 13.5	5.32	22 48.1
19	14 40 59.84	1.153	13 23 20.7	5.29	22 44.6
20	14 41 27.49	1.150	13 25 27.2	5.26	22 41.2
21	14 41 55.07	+1.147	−13 27 32.9	−5.23	22 37.7
22	14 42 22.57	1.144	13 29 37.8	5.19	22 34.2
23	14 42 49.99	1.141	13 31 41.9	5.16	22 30.7
24	14 43 17.34	1.138	13 33 45.2	5.12	22 27.3
25	14 43 44.59	1.134	13 35 47.6	5.09	22 23.8
26	14 44 11.75	+1.130	−13 37 49.2	−5.05	22 20.3
27	14 44 38.82	1.126	13 39 49.9	5.01	22 16.8
28	14 45 5.78	1.122	13 41 49.7	4.98	22 13.4
29	14 45 32.65	1.118	13 43 48.6	4.94	22 9.9
30	14 45 59.40	1.113	13 45 46.6	4.90	22 6.4
31	14 46 26.03	+1.108	−13 47 43.6	−4.86	22 2.9
32	14 46 52.55	+1.103	−13 49 39.6	−4.82	21 59.4

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	14 46 26.03	+1.108	−13 47 43.6	−4.86	22 2.9
2	14 46 52.55	1.103	13 49 39.6	4.82	21 59.4
3	14 47 18.95	1.098	13 51 34.7	4.78	21 55.9
4	14 47 45.22	1.093	13 53 28.8	4.74	21 52.4
5	14 48 11.36	1.087	13 55 21.9	4.69	21 48.9
6	14 48 37.36	+1.081	−13 57 14.0	−4.65	21 45.4
7	14 49 3.23	1.075	13 59 5.0	4.60	21 41.9
8	14 49 28.94	1.069	14 0 54.9	4.56	21 38.4
9	14 49 54.51	1.063	14 2 43.8	4.51	21 34.8
10	14 50 19.93	1.056	14 4 31.6	4.47	21 31.3
11	14 50 45.18	+1.049	−14 6 18.3	−4.42	21 27.8
12	14 51 10.27	1.042	14 8 3.8	4.37	21 24.3
13	14 51 35.19	1.035	14 9 48.2	4.33	21 20.8
14	14 51 59.94	1.028	14 11 31.4	4.27	21 17.3
15	14 52 24.51	1.020	14 13 13.5	4.22	21 13.8
16	14 52 48.88	+1.012	−14 14 54.3	−4.17	21 10.3
17	14 53 13.07	1.004	14 16 33.9	4.12	21 6.7
18	14 53 37.06	0.996	14 18 12.2	4.07	21 3.2
19	14 54 0.85	0.987	14 19 49.3	4.02	20 59.6
20	14 54 24.43	0.978	14 21 25.2	3.97	20 56.1
21	14 54 47.80	+0.969	−14 22 59.7	−3.92	20 52.5
22	14 55 10.97	0.960	14 24 33.0	3.89	20 49.0
23	14 55 33.91	0.951	14 26 4.9	3.81	20 45.4
24	14 55 56.62	0.942	14 27 35.5	3.75	20 41.9
25	14 56 19.10	0.932	14 29 4.8	3.70	20 38.3
26	14 56 41.36	+0.932	−14 30 32.7	−3.64	20 34.8
27	14 57 3.38	0.912	14 31 59.3	3.58	20 31.2
28	14 57 25.15	0.902	14 33 24.6	3.53	20 27.6
29	14 57 46.68	0.892	14 34 48.4	3.47	20 24.0
30	14 58 7.96	0.882	14 36 10.9	3.41	20 20.4
31	14 58 28.99	+0.871	−14 37 31.9	−3.35	20 16.8
32	14 58 49.75	+0.860	−14 38 51.6	−3.29	20 13.2

Day of the Month.	8th.	16th.	24th.
Polar Semidiameter	″.2	″.2	″.3
Horizontal Parallax	0.8	0.8	0.8

Day of the Month.	2d.	10th.	18th.	26th.	34th.
Semidiameter	″.3	″.3	″.4	″.5	″.5
Hor. Parallax	0.8	0.8	0.8	0.8	0.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
Jan. 0	4 50 9.60	−6.349	+20 57 5.1	− 8.85	10 8.9	July 3	5 1 53.84	+8.871	+21 21 45.1	+11.66	22 13.3
4	4 49 44.84	6.034	20 56 31.1	8.15	9 52.7	7	5 2 28.89	8.646	21 22 30.6	11.06	21 58.2
8	4 49 21.38	5.686	20 55 59.9	7.42	9 36.6	11	5 3 2.98	8.395	21 23 13.6	10.44	21 43.0
12	4 48 59.38	5.309	20 55 31.7	6.66	9 20.5	15	5 3 36.01	8.114	21 23 54.1	9.79	21 27.8
16	4 48 38.95	4.900	20 55 6.6	5.84	9 4.5	19	5 4 7.86	7.805	21 24 31.9	9.11	21 12.6
20	4 48 20.22	−4.459	+20 54 45.0	− 4.94	8 48.4	23	5 4 38.41	+7.463	+21 25 7.0	+ 8.42	20 57.4
24	4 48 3.32	3.985	20 54 27.1	3.99	8 32.4	27	5 5 7.53	7.095	21 25 39.3	7.71	20 42.1
28	4 47 48.38	3.479	20 54 13.1	3.02	8 16.4	31	5 5 35.15	6.704	21 26 8.7	7.00	20 26.9
Feb. 1	4 47 35.50	2.958	20 54 3.1	2.00	8 0.5	Aug. 4	5 6 1.13	6.289	21 26 35.3	6.27	20 11.6
5	4 47 24.74	2.419	20 53 57.1	− 0.99	7 44.6	8	5 6 25.42	5.858	21 26 58.9	5.52	19 56.3
9	4 47 16.17	−1.863	+20 53 55.2	+ 0.06	7 28.8	12	5 6 47.92	+5.394	+21 27 19.5	+ 4.77	19 40.9
13	4 47 9.85	1.296	20 53 57.5	1.11	7 12.9	16	5 7 8.54	4.913	21 27 37.1	4.02	19 25.5
17	4 47 5.81	0.723	20 54 4.1	2.16	6 57.1	20	5 7 27.20	4.413	21 27 51.7	3.27	19 10.1
21	4 47 4.08	−0.139	20 54 14.9	3.24	6 41.3	24	5 7 43.82	3.895	21 28 3.3	2.51	18 54.6
25	4 47 4.71	+0.451	20 54 30.0	4.29	6 25.6	28	5 7 58.32	3.359	21 28 11.8	1.76	18 39.1
Mar. 1	4 47 7.69	+1.041	+20 54 49.2	+ 5.31	6 10.0	Sept. 1	5 8 10.68	+2.817	+21 28 17.4	+ 1.02	18 23.6
5	4 47 13.03	1.624	20 55 12.5	6.31	5 54.3	5	5 8 20.84	2.263	21 28 20.0	+ 0.27	18 8.0
9	4 47 20.67	2.197	20 55 39.7	7.27	5 38.7	9	5 8 28.77	1.709	21 28 19.6	− 0.46	17 52.4
13	4 47 30.59	2.763	20 56 10.7	8.21	5 23.2	13	5 8 34.43	1.139	21 28 16.3	1.19	17 36.8
17	4 47 42.76	3.320	20 56 45.4	9.11	5 7.6	17	5 8 37.80	+0.554	21 28 10.1	1.90	17 21.1
21	4 47 57.13	+3.864	+20 57 23.6	+ 9.97	4 52.2	21	5 8 38.86	−0.032	+21 28 1.1	− 2.60	17 5.4
25	4 48 13.65	4.393	20 58 5.2	10.79	4 36.7	25	5 8 37.62	0.589	21 27 49.3	3.29	16 49.6
29	4 48 32.25	4.904	20 58 49.9	11.54	4 21.3	29	5 8 34.08	1.167	21 27 34.8	3.94	16 33.8
Apr. 2	4 48 52.86	5.397	20 59 37.5	12.22	4 5.9	Oct. 3	5 8 28.30	1.722	21 27 17.8	4.57	16 18.0
6	4 49 15.39	5.866	21 0 27.7	12.85	3 50.6	7	5 8 20.31	2.272	21 26 58.2	5.20	16 2.1
10	4 49 39.74	+6.303	+21 1 20.3	+13.42	3 35.2	11	5 8 10.14	−2.810	+21 26 36.2	− 5.80	15 46.2
14	4 50 5.82	6.722	21 2 15.1	13.95	3 20.0	15	5 7 57.85	3.333	21 26 11.8	6.36	15 30.3
18	4 50 33.53	7.106	21 3 11.9	14.40	3 4.7	19	5 7 43.51	3.834	21 25 45.3	6.89	15 14.3
22	4 51 2.79	7.457	21 4 10.3	14.79	2 49.4	23	5 7 27.21	4.312	21 25 16.7	7.37	14 58.3
26	4 51 33.47	7.830	21 5 10.2	15.10	2 34.2	27	5 7 9.05	4.761	21 24 46.3	7.81	14 42.3
30	4 52 5.46	+8.151	+21 6 11.1	+15.34	2 19.0	31	5 6 49.16	−5.179	+21 24 14.2	− 8.24	14 26.2
May 4	4 52 38.64	8.433	21 7 12.9	15.52	2 3.8	Nov. 4	5 6 27.66	5.585	21 23 40.4	8.62	14 10.1
8	4 53 12.88	8.681	21 8 15.3	15.65	1 48.7	8	5 6 4.68	5.982	21 23 5.2	8.97	13 54.0
12	4 53 48.05	8.902	21 9 18.1	15.72	1 33.5	12	5 5 40.33	6.363	21 22 28.6	9.27	13 37.9
16	4 54 24.06	9.095	21 10 21.1	15.72	1 18.4	16	5 5 14.79	6.723	21 21 51.0	9.47	13 21.7
20	4 55 0.77	+9.256	+21 11 23.9	+15.66	1 3.3	20	5 4 48.20	−6.760	+21 21 12.8	− 9.62	13 5.6
24	4 55 38.06	9.383	21 12 26.4	15.55	0 48.2	24	5 4 20.76	6.951	21 20 34.0	9.75	12 49.4
28	4 56 15.79	9.477	21 13 28.3	15.36	0 33.1	28	5 3 52.65	7.095	21 19 54.8	9.80	12 33.2
June 1	4 56 53.83	9.537	21 14 29.3	15.12	0 18.0	Dec. 2	5 3 24.06	7.195	21 19 15.6	9.77	12 17.0
5	4 57 32.05	9.565	21 15 29.3	14.85	{0 m 23 m.1	6	5 2 55.15	7.253	21 18 36.6	9.71	12 0.8
9	4 58 10.31	+9.560	+21 16 28.1	+14.51	23 44.0	10	5 2 26.10	−7.263	+21 17 57.9	− 9.59	11 44.6
13	4 58 48.49	9.526	21 17 25.5	14.14	23 28.9	14	5 1 57.11	7.234	21 17 19.9	9.37	11 28.4
17	4 59 26.48	9.463	21 18 21.2	13.73	23 13.8	18	5 1 28.37	7.139	21 16 42.9	9.09	11 12.2
21	5 0 4.15	9.364	21 19 15.3	13.26	22 58.7	22	5 1 0.08	6.999	21 16 7.2	8.75	10 56.0
25	5 0 41.35	9.238	21 20 7.3	12.77	22 43.6	26	5 0 32.44	6.814	21 15 32.9	8.35	10 39.8
29	5 1 17.96	+9.086	+21 20 57.3	+12.22	22 28.5	30	5 0 5.61	−6.589	+21 15 0.4	− 7.87	10 23.6
July 3	5 1 53.84	+8.871	+21 21 45.1	+11.66	22 13.3	34	4 59 39.78	−6.321	+21 14 29.9	− 7.35	10 7.5

Greatest semidiameter, December 5, 1″.33. Greatest horizontal parallax, December 5, 0″.31.
Least semidiameter, June 7, 1″.25. Least horizontal parallax, June 7, 0″.29.

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. 0	262 8 19.8	2 45 27.4	+12 7.2	−4 2 9.4	−16 33.3	9.6683070	0.1563603	0.1569386
2	267 40 40.8	2 47 2.0	12 43.7	4 34 12.6	15 28.8	9.6665540	0.1573501	0.1575948
4	273 17 1.3	2 49 26.8	12 51.4	5 4 0.3	14 17.6	9.6637543	0.1576717	0.1575794
6	278 59 3.3	2 52 44.1	12 29.2	5 31 17.7	12 58.3	9.6599019	0.1573162	0.1568797
8	284 48 34.2	2 56 56.4	11 36.1	5 55 46.7	11 28.9	9.6549885	0.1562665	0.1554727
10	290 47 27.7	3 2 7.4	+10 12.1	−6 17 5.3	− 9 47.4	9.6490066	0.1544939	0.1533250
12	296 57 45.6	3 8 21.4	8 17.5	6 34 46.7	7 51.2	9.6419508	0.1519603	0.1503933
14	303 21 38.5	3 15 43.2	5 54.8	6 48 18.6	5 37.4	9.6338209	0.1486148	0.1466162
16	310 1 27.7	3 24 18.8	3 7.7	6 57 2.2	3 2.3	9.6246258	0.1443894	0.1419236
18	316 59 46.3	3 34 13.3	+ 0 2.3	7 0 11.3	− 0 2.4	9.6143899	0.1392066	0.1362252
20	324 19 17.3	3 45 38.3	− 3 12.3	−6 56 52.4	+ 3 26.2	9.6031598	0.1329652	0.1294116
22	332 2 54.6	3 58 19.8	6 24.1	6 46 4.3	7 27.3	9.5910163	0.1255483	0.1213572
24	340 13 36.6	4 12 37.2	9 16.7	6 26 40.3	12 2.6	9.5780871	0.1168176	0.1119105
26	348 54 21.4	4 28 21.4	11 30.7	5 57 31.4	17 11.7	9.5645652	0.1066136	0.1009042
28	358 7 53.4	4 45 21.7	12 44.5	5 17 34.3	22 49.5	9.5507257	0.0947595	0.0881547
30	7 56 25.3	5 3 17.0	−12 36.7	−4 26 2.7	+28 43.3	9.5369458	0.0810662	0.0734708
Feb. 1	18 21 14.7	5 21 31.6	10 52.4	3 22 45.1	34 30.9	9.5237162	0.0653472	0.0566755
3	29 22 9.5	5 39 12.5	7 29.0	2 8 26.0	39 36.3	9.5116375	0.0474406	0.0376310
5	40 56 56.0	5 55 10.2	− 2 44.8	−0 45 7.6	43 22.2	9.5013871	0.0272434	0.0162826
7	53 0 46.5	6 8 2.5	+ 2 39.3	+0 43 37.2	44 57.6	9.4936536	0.0047621	9.9927088
9	65 26 7.5	6 16 27.7	+ 7 43.0	+2 12 53.5	+43 49.6	9.4890327	9.9801637	9.9671828
11	78 2 55.2	6 19 20.6	11 22.3	3 36 59.2	39 46.2	9.4879150	9.9538382	9.9402203
13	90 39 28.9	6 16 12.8	12 51.4	4 50 23.5	33 14.8	9.4903991	9.9264376	9.9126157
15	103 3 56.3	6 7 20.8	11 55.1	5 48 49.2	24 59.5	9.4962683	9.8988953	9.8854314
17	115 5 40.9	5 53 42.8	8 54.8	6 29 53.6	16 3.7	9.5050405	9.8723900	9.8599426
19	126 36 33.1	5 36 43.7	+ 4 35.2	+6 53 15.3	+ 7 24.8	9.5160713	9.8489614	9.8375133
21	137 31 22.4	5 17 54.6	− 0 11.7	7 0 10.6	− 0 17.6	9.5286662	9.8278515	9.8194105
23	147 47 51.5	4 58 35.2	4 41.1	6 52 56.2	6 43.2	9.5421708	9.8122986	9.8065915
25	157 26 4.1	4 39 46.4	8 22.1	6 34 12.0	11 47.7	9.5560250	9.8023308	9.7995221
27	166 27 44.4	4 22 7.8	10 59.1	6 6 35.6	15 37.0	9.5697817	9.7981359	9.7981112
Mar. 1	174 55 37.2	4 6 1.7	−12 27.5	+5 32 26.8	−18 22.1	9.5831048	9.7993620	9.8017825
3	182 52 59.7	3 51 26.0	12 51.9	4 53 42.0	20 15.0	9.5957524	9.8052536	9.8096508
5	190 23 17.7	3 38 57.0	12 20.7	4 11 54.0	21 27.0	9.6075593	9.8148472	9.8207209
7	197 29 53.9	3 27 55.2	11 4.4	3 28 14.8	22 7.8	9.6184173	9.8271564	9.8340472
9	204 15 59.9	3 18 25.6	9 13.5	2 43 38.7	22 25.0	9.6282596	9.8412974	9.8468220
11	210 44 32.8	3 10 20.9	− 6 58.4	+1 58 46.6	−22 24.6	9.6370496	9.8565466	9.8644075
13	216 58 15.3	3 3 34.0	4 27.9	1 14 8.8	22 11.3	9.6447697	9.8723496	9.8803277
15	222 59 36.0	2 57 58.0	− 1 50.3	+0 30 7.9	21 46.2	9.6514149	9.8883027	9.8962444
17	228 50 50.4	2 53 26.7	+ 0 47.6	−0 12 59.2	21 17.8	9.6569880	9.9041265	9.9119287
19	234 34 2.9	2 49 55.4	3 20.1	0 54 59.2	20 41.6	9.6614952	9.9196344	9.9272313
21	240 11 9.5	2 47 20.0	+ 5 42.2	−1 35 41.6	−20 0.2	9.6649446	9.9347101	9.9420632
23	245 43 58.3	2 45 37.4	7 49.5	2 14 57.5	19 14.6	9.6673436	9.9492855	9.9563738
25	251 14 12.8	2 44 45.4	9 38.1	2 52 38.3	18 25.2	9.6686984	9.9633263	9.9701422
27	256 43 32.7	2 44 49.6	11 5.1	3 28 35.5	17 31.2	9.6690121	9.9768213	9.9833644
29	262 13 35.6	2 45 38.6	12 7.9	4 2 39.9	16 38.4	9.6682855	9.9897729	9.9960483
31	267 45 59.8	2 47 3.9	+12 43.9	−4 34 41.2	−15 27.8	9.6665168	0.0021921	0.0089066
33	273 22 24.7	2 49 29.5	+12 51.3	−5 4 26.7	−14 16.5	9.6637015	0.0140934	0.0198545

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Apr. 2	273 22 24.7	2 49 29.5	+12 51.3	−5 4 26.7	−14 10.5	9.6637015	0.0140934	0.0198545
4	279 4 32.8	2 38 47.6	12 28.6	5 31 41.7	12 57.0	9.6598331	0.0254914	0.0310053
6	284 54 11.6	2 27 0.7	11 35.0	5 56 7.9	11 27.4	9.6549036	0.0363981	0.0416700
8	290 53 14.7	2 2 19.5	10 10.4	6 17 23.4	9 45.8	9.6489055	0.0468218	0.0518531
10	297 3 43.8	2 8 27.6	8 15.5	6 35 1.2	7 49.4	9.6418337	0.0567640	0.0615534
12	303 27 50.3	2 15 50.6	+ 5 52.4	−6 48 29.0	− 5 35.2	9.6336876	0.0662191	0.0707590
14	310 7 55.2	2 24 27.0	+ 3 4.9	6 57 7.7	− 2 39.8	9.6244765	0.0751703	0.0794491
16	317 6 31.2	2 34 22.9	− 0 0.6	7 0 11.4	+ 0 0.6	9.6142251	0.0835905	0.0875888
18	324 26 23.0	2 45 43.5	3 15.3	6 56 46.0	2 29.8	9.6029803	0.0914375	0.0951290
20	332 10 24.0	2 58 32.3	6 26.9	6 45 50.6	7 31.2	9.5906238	0.0986544	0.1020036
22	340 21 32.2	4 12 50.9	− 9 19.1	−6 26 18.0	+12 7.1	9.5778840	0.1051650	0.1081257
24	349 2 45.6	4 28 36.4	11 32.3	5 56 59.6	17 16.6	9.5643551	0.1108719	0.1133878
26	358 16 48.5	4 46 37.8	12 45.0	5 16 52.2	22 54.8	9.5505134	0.1156559	0.1176578
28	8 5 53.3	5 3 23.6	12 35.8	4 25 9.8	28 48.7	9.5367380	0.1193734	0.1207819
30	18 31 15.8	5 21 46.2	10 49.9	3 21 41.6	34 35.9	9.5235214	0.1218609	0.1225878
May 2	29 32 43.2	5 39 26.2	− 7 25.2	−2 7 13.1	+39 42.5	9.5114654	0.1229397	0.1228944
4	41 7 58.9	5 55 23.6	− 2 40.0	−0 43 47.9	43 24.8	9.5012487	0.1224297	0.1215257
6	53 12 13.0	6 8 12.0	+ 2 44.3	+0 44 59.8	44 57.8	9.4935586	0.1201652	0.1183332
8	65 37 49.4	6 16 32.7	7 47.1	2 14 14.0	43 47.1	9.4889891	0.1160194	0.1132171
10	78 14 41.7	6 19 28.5	11 25.1	3 38 12.2	39 42.8	9.4879367	0.1099243	0.1061440
12	90 51 10.1	6 16 7.4	+12 51.6	+4 51 24.4	+33 7.6	9.4904651	0.1018842	0.0971568
14	103 15 21.4	6 7 16.3	11 53.2	5 49 35.0	24 51.2	9.4963830	0.0919777	0.0863664
16	115 16 41.1	5 53 28.5	8 51.2	6 30 23.0	15 55.5	9.5051948	0.0803452	0.0739377
18	126 47 2.2	5 36 27.1	+ 4 30.9	6 53 28.8	+ 7 17.1	9.5162548	0.0671691	0.0600648
20	137 41 17.2	5 17 37.0	− 0 16.1	7 0 10.0	− 0 24.2	9.5286684	0.0526505	0.0449513
22	147 57 11.2	4 58 17.8	− 4 44.9	+6 52 43.7	− 6 48.4	9.5423821	0.0369914	0.0287939
24	157 34 49.5	4 39 29.8	8 25.0	6 33 50.2	11 51 8	9.5562377	0.0203812	0.0117739
26	166 35 57.8	4 21 58.4	11 0.9	6 6 6.7	15 40.0	9.5699901	0.0029916	9.9940534
28	175 3 21.2	4 5 47.0	12 28.3	5 31 52.9	18 24.2	9.5833044	9.9849762	9.9757770
30	183 0 17.5	3 51 25.6	12 51.9	4 53 4.5	20 16.4	9.5959401	9.9664722	9.9570773
June 1	190 30 12.5	3 38 46.4	−12 19.9	+4 11 14.4	−21 27.9	9.6077332	9.9476073	9.9380789
3	197 36 28.8	3 27 45.8	11 2.9	3 27 33.8	22 8.2	9.6185758	9.9285069	9.9189070
5	204 22 17.2	3 18 17.6	9 11.5	2 42 57.2	22 25.1	9.6284024	9.9092961	9.8996918
7	210 50 35.6	3 10 14.2	6 56.1	1 58 5.1	22 24.6	9.6371763	9.8901128	9.8805793
9	217 4 5.8	3 3 26.3	4 25.5	1 13 27.6	22 11.0	9.6448799	9.8711124	9.8617357
11	223 5 16.1	2 57 53.3	− 1 47.8	+0 29 27.4	−21 47.8	9.6515067	9.8524750	9.8433576
13	228 56 22.1	2 53 23.0	+ 0 50.0	−0 13 38.7	21 17.2	9.6570657	9.8344142	9.8256777
15	234 39 28.2	2 49 58.0	3 22.4	0 55 37.6	20 40.0	9.6615569	9.8171838	9.8089710
17	240 16 29.7	2 47 18.0	5 44.2	1 36 18.8	19 59.6	9.6649904	9.8010812	9.7935587
19	245 49 15.3	2 45 36.2	7 51.2	2 15 33.1	19 14.1	9.6673737	9.7864503	9.7798039
21	251 19 28.1	2 44 44.8	+ 9 39.6	−2 53 12.4	−18 24.4	9.6687128	9.7736705	9.7681020
23	256 48 47.5	2 44 42.8	11 6.3	3 29 7.9	17 30.4	9.6690108	9.7631495	9.7588640
25	262 18 51.7	2 45 29.7	12 8.7	4 3 10.5	16 31.4	9.6682686	9.7552940	9.7524853
27	267 51 18.9	2 47 5.7	12 44.3	4 35 9.8	15 28.8	9.6664840	9.7504780	9.7493040
29	273 27 48.0	2 49 32.0	12 51.2	5 4 53.1	14 15.3	9.6636527	9.7490922	9.7495809
31	279 10 9.1	2 52 51.0	+12 28.0	−5 32 5.6	−12 55.7	9.6597681	9.7510557	9.7534284
23	284 59 48.5	2 57 5.0	+11 33.9	−5 56 29.1	−11 26.0	9.6548222	9.7566914	9.7608283

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 1	279 10 2.1	2 58 51.0	+12 28.0	−5 32 5.6	−12 55.7	9.6597681	9.7510557	9.7534284
3	284 59 48.5	2 57 5.0	11 33.9	5 56 29.1	11 26.0	9.6548222	9.7566914	9.7608283
5	290 59 1.0	3 2 17.8	10 9.0	6 17 41.4	9 44.1	9.6488075	9.7658127	9.7716112
7	297 9 41.6	3 0 38.7	8 13.5	6 35 15.6	7 47.4	9.6417190	9.7781841	9.7854849
9	303 34 1.3	3 15 57.8	5 50.0	6 48 39.2	5 33.0	9.6335561	9.7934828	9.8020637
11	310 14 21.9	3 24 25.6	+ 3 2.2	−6 57 13.2	− 2 57.2	9.6243284	9.8112319	9.8209099
13	317 13 16.6	3 34 28.0	− 0 3.6	7 0 11.3	+ 0 3.6	9.6140608	9.8310403	9.8415668
15	324 33 28.9	3 45 54.3	3 18.4	6 56 39.6	3 23.4	9.6028008	9.8524337	9.8635873
17	332 17 53.0	3 58 44.6	6 29.8	6 45 36.7	7 35.4	9.5906304	9.8749755	9.8865477
19	340 29 27.1	4 13 4.6	9 21.5	6 25 55.7	12 11.9	9.5776794	9.8989567	9.9100556
21	349 11 9.5	4 28 51.5	−11 34.0	−5 56 27.8	+17 22.1	9.5641424	9.9218995	9.9337451
23	358 25 43.8	4 45 54.6	12 45.6	5 16 10.1	23 1.2	9.5502978	9.9455499	9.9572725
25	8 15 21.7	5 3 59.6	12 35.0	4 24 16.8	28 54.9	9.5365962	9.9688727	9.9803104
27	18 41 18.2	5 22 5.1	10 47.6	3 20 37.9	34 41.7	9.5233220	9.9915453	0.0025384
29	29 43 18.5	5 39 44.0	7 21.4	2 5 59.9	39 48.7	9.5112886	0.0132510	0.0236452
31	41 19 3.7	5 55 37.4	− 2 34.8	−0 42 27.9	+43 28.6	9.5011051	0.0336844	0.0433334
Aug. 2	53 23 42.6	6 8 22.9	+ 2 49.2	+0 46 22.8	44 56.5	9.4934587	0.0525604	0.0613358
4	65 49 35.0	6 16 26.4	7 51.2	2 15 34.8	43 42.7	9.4889406	0.0696335	0.0774332
6	78 26 33.7	6 19 29.9	11 27.5	3 39 25.6	39 26.2	9.4879336	0.0847187	0.0914795
8	91 2 57.0	6 16 1.7	12 51.8	4 52 25.7	33 59.9	9.4906982	0.0977103	0.1034122
10	103 26 51.6	6 7 0.1	+11 51.3	+5 50 21.4	+24 43.4	9.4964934	0.1086901	0.1132547
12	115 27 47.9	5 53 15.0	8 47.6	6 30 52.5	15 48.4	9.5053456	0.1174200	0.1211065
14	126 57 38.4	5 36 10.5	+ 4 26.4	6 53 42.3	+ 7 10.5	9.5164353	0.1243310	0.1271167
16	137 51 18.8	5 17 19.5	− 0 20.5	7 0 9.1	− 0 26.7	9.5290679	0.1294863	0.1314630
18	148 6 37.8	4 58 0.2	4 48.8	6 52 31.0	6 53.2	9.5425917	0.1330705	0.1343309
20	157 43 41.3	4 39 13.5	− 8 27.9	+6 33 28.0	−11 55.6	9.5564494	0.1352659	0.1358964
22	166 44 16.8	4 21 36.8	11 2.8	6 5 37.4	15 43.0	9.5701980	0.1362418	0.1363185
24	175 11 10.9	4 5 33.9	12 29.2	5 31 18.4	18 26.4	9.5835039	0.1361445	0.1357345
26	183 7 40.8	3 51 13.2	12 51.8	4 52 26.6	20 17.9	9.5961285	0.1351018	0.1342593
28	190 37 12.5	3 38 35.4	12 19.0	4 10 34.1	21 26.6	9.6079080	0.1332174	0.1319857
30	197 43 8.3	3 27 36.3	−11 1.4	+3 26 52.3	−22 8.7	9.6187359	0.1305734	0.1289674
Sept. 1	204 28 39.3	3 18 9.4	9 9.7	2 42 15.2	22 25.3	9.6285469	0.1272344	0.1253197
3	210 56 42.7	3 10 7.3	6 53.9	1 57 23.0	22 24.5	9.6373045	0.1232479	0.1210230
5	217 10 0.2	3 3 22.6	4 23.1	1 12 46.0	22 10.8	9.6449919	0.1186476	0.1161239
7	223 11 0.1	2 57 46.6	− 1 45.3	+0 28 46.4	21 47.4	9.6516044	0.1134533	0.1106368
9	229 1 57.8	2 53 19.4	+ 0 52.5	−0 14 18.7	−21 16.7	9.6571449	0.1076749	0.1045665
11	234 44 57.3	2 49 49.7	3 24.8	0 56 16.4	20 46.2	9.6616197	0.1013112	0.0979073
13	240 21 53.9	2 47 15.9	5 46.3	1 36 56.3	19 58.9	9.6650371	0.0943531	0.0906457
15	245 54 36.2	2 45 35.0	7 53.1	2 16 9.2	19 13.2	9.6674042	0.0867824	0.0827595
17	251 24 47.4	2 44 44.4	9 41.2	2 53 46.9	18 33.6	9.6687273	0.0785743	0.0742812
19	256 54 6.8	2 44 43.1	+11 7.5	−3 29 40.7	−17 29.5	9.6690090	0.0696965	0.0649955
21	262 24 12.3	2 45 39.6	12 9.4	4 3 41.5	16 30.5	9.6682504	0.0601124	0.0550418
23	267 56 42.2	2 47 7.5	12 44.6	4 35 38.7	15 35.7	9.6664497	0.0497779	0.0443149
25	273 33 15.9	2 49 34.8	12 51.1	5 5 19.8	14 14.2	9.6636020	0.0386468	0.0327671
27	279 15 36.1	2 52 54.4	12 27.4	5 32 29.8	12 54.3	9.6597010	0.0266696	0.0203481
29	285 5 30.4	2 57 9.3	+11 32.8	−5 56 50.5	−11 24.5	9.6547384	0.0137965	0.0070093
31	291 4 52.6	3 2 23.0	+10 7.5	−6 17 59.6	− 9 42.4	9.6487069	9.9999920	9.9927102

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Oct. 1	291 4 52.6	3 2 23.0	+10 7.5	−6 17 59.6	− 9 42.4	9.6487069	9.9999820	9.9927102
3	297 15 44.9	3 8 48.1	8 11.4	6 35 30.2	7 45.5	9.6416014	9.9851909	9.9774232
5	303 40 18.7	3 10 5.5	5 47.6	6 48 49.6	5 28.7	9.6334219	9.9694079	9.9611486
7	310 20 55.9	3 24 44.2	+ 2 59.4	6 57 18.7	− 2 54.6	9.6241776	9.9526527	9.9439326
9	317 20 9.0	3 34 42.6	− 0 6.5	7 0 11.2	+ 0 6.6	9.6138941	9.9350058	9.9258973
11	324 40 42.9	3 49 5.8	− 3 21.4	−6 56 32.9	+ 3 38.9	9.6026191	9.9166405	9.9072801
13	332 25 31.1	3 58 57.4	6 32.6	6 45 22.4	7 32.5	9.5904353	9.8978738	9.8884933
15	340 37 32.4	4 13 18.9	9 23.9	6 25 32.8	12 16.5	9.5774733	9.8792292	9.8701911
17	349 19 44.5	4 29 7.0	11 35.6	5 55 55.2	17 27.2	9.5639290	9.8615094	9.8533360
19	358 34 50.8	4 45 16.4	12 46.0	5 15 26.8	22 6.0	9.5500893	9.8458443	9.8392257
21	8 25 2.5	5 4 7.8	−12 34.1	−4 23 22.5	+25 0.5	9.5363154	9.8336815	9.8294168
23	18 51 33.6	5 23 28.0	10 45.1	3 19 32.7	24 46.9	9.5231244	9.8266348	9.8254739
25	29 54 6.6	5 39 50.9	7 17.4	2 4 45.2	23 50.9	9.5111141	9.8260930	9.8285548
27	41 30 22.1	5 56 51.2	− 2 30.2	−0 41 6.3	23 23.2	9.5009645	9.8329677	9.8389737
29	53 35 24.7	6 8 32.9	+ 2 54.3	+0 47 47.1	24 56.8	9.4933694	9.8467447	9.8560042
31	66 1 32.8	6 16 43.8	+ 7 55.5	+2 16 56.9	+23 49.2	9.4888966	9.8665322	9.8780844
Nov. 2	78 38 36.9	6 19 29.7	11 29.9	3 40 40.0	22 31.0	9.4879455	9.8904109	9.9032689
4	91 14 54.0	6 15 56.8	12 51.9	4 53 27.6	20 22.7	9.4905929	9.9164343	9.9297084
6	103 38 32.6	6 6 49.1	11 49.2	5 51 7.3	24 33.8	9.4966090	9.9429296	9.9559377
8	115 39 1.8	5 56 59.7	8 44.0	6 31 22.0	15 39.9	9.5055013	9.9686447	9.9809595
10	127 8 20.1	5 35 53.6	+ 4 22.1	+6 53 55.6	+ 7 3.0	9.5166206	9.9928931	0.0041946
12	138 1 25.5	5 17 1.3	− 0 25.0	7 0 8.1	− 6 26.4	9.5292723	0.0150496	0.0253784
14	148 16 7.8	4 57 48.4	4 52.7	6 52 17.9	6 58.5	9.5428056	0.0351786	0.0444559
16	157 52 36.1	4 38 55.7	8 30.9	6 33 5.5	11 59.6	9.5566650	0.0532229	0.0614950
18	166 52 38.5	4 21 21.1	11 4.7	6 5 8.0	15 45.9	9.5704093	0.0692900	0.0766282
20	175 19 2.2	4 5 19.6	−12 30.0	+5 30 44.0	−18 28.6	9.5837066	0.0835298	0.0900156
22	183 15 5.2	3 51 0.5	12 51.7	4 51 48.5	20 19.4	9.5963193	0.0961052	0.1018192
24	190 44 12.9	3 38 24.2	12 18.1	4 9 53.8	21 29.7	9.6080648	0.1071759	0.1121934
26	197 49 48.1	3 27 28.9	10 59.9	3 26 10.8	22 9.1	9.6188973	0.1168892	0.1212788
28	204 35 1.4	3 18 1.2	9 7.8	2 41 33.1	22 25.4	9.6288919	0.1253769	0.1291975
30	211 2 49.5	3 10 0.4	− 6 51.7	+1 56 41.0	−22 24.4	9.6374399	0.1327533	0.1360559
Dec. 2	217 15 54.4	3 3 16.8	4 20.7	1 12 4.4	22 10.5	9.6451034	0.1391162	0.1419439
4	223 16 43.9	2 57 44.0	− 1 42.9	+0 28 5.7	21 47.0	9.6516990	0.1445481	0.1469370
6	229 7 33.3	2 53 15.7	+ 0 54.9	−0 14 58.5	21 16.2	9.6572227	0.1491178	0.1510970
8	234 50 26.3	2 49 46.9	3 27.0	0 56 55.2	20 33.8	9.6616807	0.1528807	0.1544740
10	240 27 18.3	2 47 14.0	+ 5 48.4	−1 37 33.8	−19 53.2	9.6650816	0.1558815	0.1571070
12	245 59 57.5	2 45 33.7	7 54.9	2 16 45.3	19 12.6	9.6674391	0.1581540	0.1590253
14	251 30 6.9	2 44 44.0	9 42.8	2 54 21.4	18 32.0	9.6687384	0.1597232	0.1602495
16	256 59 26.4	2 44 43.6	11 8.7	3 30 13.6	17 52.0	9.6690038	0.1606051	0.1607910
18	262 29 33.7	2 45 31.9	12 10.1	4 4 12.5	16 59.4	9.6682988	0.1608071	0.1606535
20	268 2 6.8	2 47 9.5	+12 44.8	−4 36 7.7	−15 24.7	9.6664117	0.1603289	0.1598321
22	273 38 45.2	2 49 37.5	12 50.9	5 5 46.6	14 13.0	9.6635476	0.1591612	0.1583135
24	279 21 11.8	2 52 58.0	12 26.8	5 32 54.1	12 53.0	9.6596301	0.1572862	0.1560754
26	285 11 14.3	2 57 13.9	11 31.7	5 57 11.9	11 23.0	9.6546510	0.1546768	0.1530854
28	291 10 46.6	3 2 23.6	10 5.8	6 18 17.2	9 45.7	9.6486032	0.1512954	0.1493004
30	297 21 50.8	3 8 48.6	+ 8 9.4	−6 35 44.8	− 7 43.5	9.6414813	0.1470929	0.1446651
32	303 46 38.4	3 18 13.0	+ 5 45.1	−6 49 0.0	− 5 29.4	9.6332863	0.1420075	0.1391102

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude. Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. 0	297 19 22.3	1 34 53.2	+2 59.7	−2 15 14.1	−4 12.0	9.8622265	0.2283352	0.2276756
4	303 38 55.6	1 34 54.2	3 0.0	2 31 10.6	3 45.0	9.8622781	0.2269753	0.2262343
8	309 58 22.5	1 34 55.9	2 51.6	2 45 16.7	3 16.9	9.8622565	0.2254588	0.2246313
12	316 17 58.5	1 34 56.3	2 34.9	2 57 22.2	2 45.5	9.8622767	0.2237685	0.2228675
16	322 37 45.9	1 34 58.5	2 10.6	3 7 18.4	2 12.2	9.8622219	0.2219365	0.2209097
20	328 57 47.3	1 35 2.4	+1 39.9	−3 14 57.8	−1 37.3	9.8621314	0.2199174	0.2188413
24	335 18 4.9	1 35 6.6	1 4.4	3 20 14.9	1 1.1	9.8620066	0.2177256	0.2165642
28	341 38 40.4	1 35 11.2	+0 25.7	3 23 5.2	−0 24.1	9.8619088	0.2153565	0.2141019
Feb. 1	347 59 35.4	1 35 16.3	−0 14.2	3 23 27.6	+0 13.3	9.8616589	0.2127988	0.2114504
5	354 20 51.1	1 35 21.6	0 53.4	3 21 19.3	0 50.6	9.8614422	0.2100538	0.2085976
9	0 42 28.7	1 35 27.2	−1 30.2	−3 16 43.0	+1 27.4	9.8611981	0.2071143	0.2055722
13	7 4 25.5	1 35 32.9	2 2.6	3 9 41.2	2 3.3	9.8609307	0.2039810	0.2023392
17	13 26 52.1	1 35 38.8	2 29.9	3 0 18.4	2 37.8	9.8606431	0.2006455	0.1988964
21	19 49 30.4	1 35 44.9	2 47.9	2 48 41.3	3 10.4	9.8603389	0.1970965	0.1952385
25	26 12 51.4	1 35 51.1	2 56.7	2 34 57.7	3 40.9	9.8600218	0.1933386	0.1913476
Mar. 1	32 36 25.4	1 35 57.5	−3 0.5	−2 19 17.6	+4 8.7	9.8596967	0.1893122	0.1872155
5	39 0 31.5	1 36 4.1	2 53.5	2 1 51.9	4 33.6	9.8593645	0.1850568	0.1828350
9	45 25 1.3	1 36 10.8	2 37.8	1 42 53.3	4 56.1	9.8590325	0.1805517	0.1782034
13	51 49 58.3	1 36 17.7	2 14.2	1 22 35.8	5 13.0	9.8587039	0.1757965	0.1733116
17	58 15 23.2	1 36 24.7	1 43.8	1 1 14.3	5 27.0	9.8583826	0.1707658	0.1681497
21	64 41 16.4	1 36 31.9	−1 8.1	−0 39 4.8	+5 37.0	9.8580729	0.1654630	0.1627030
25	71 7 36.6	1 36 39.2	−0 29.0	−0 16 23.8	5 42.8	9.8577786	0.1598677	0.1569559
29	77 34 29.8	1 36 46.4	+0 11.6	+0 6 31.4	5 44.1	9.8575037	0.1539633	0.1509306
Apr. 2	84 1 49.8	1 36 53.6	0 51.6	0 29 23.2	5 41.1	9.8572517	0.1477367	0.1444996
6	90 29 38.0	1 37 0.5	1 29.2	0 51 54.4	5 33.7	9.8570258	0.1411783	0.1377722
10	96 57 53.4	1 37 7.1	+2 2.2	+1 13 46.9	+5 21.0	9.8568290	0.1342804	0.1307016
14	103 26 34.5	1 37 13.3	2 29.0	1 34 44.2	5 6.0	9.8566638	0.1270336	0.1232756
18	109 55 39.0	1 37 18.9	2 48.3	1 54 29.7	4 46.1	9.8565326	0.1194254	0.1154798
22	116 25 4.5	1 37 23.7	2 58.9	2 12 47.9	4 22.4	9.8564369	0.1114365	0.1072932
26	122 54 47.4	1 37 27.6	3 0.4	2 29 24.3	3 55.3	9.8563780	0.1030477	0.0986971
30	129 24 43.7	1 37 30.4	+2 52.7	+2 44 5.9	+3 25.1	9.8563568	0.0942404	0.0896751
May 4	135 54 49.3	1 37 32.2	2 36.1	2 56 41.1	2 52.2	9.8563735	0.0850005	0.0802146
8	142 24 59.0	1 37 32.5	2 11.5	3 7 0.1	2 17.0	9.8564279	0.0753162	0.0703046
12	148 55 7.5	1 37 31.6	1 40.2	3 14 54.9	1 40.1	9.8565192	0.0651782	0.0599341
16	155 25 9.5	1 37 29.2	+1 3.7	3 20 19.2	1 1.9	9.8566461	0.0545706	0.0490850
20	161 54 59.1	1 37 25.4	+0 24.1	+3 23 9.4	+0 22.1	9.8568071	0.0434740	0.0377345
24	168 24 30.9	1 37 20.3	−0 16.8	3 23 23.4	−0 16.0	9.8570001	0.0318631	0.0256566
28	174 53 39.6	1 37 13.8	0 56.8	3 21 1.4	0 54.8	9.8572222	0.0197118	0.0134259
June 1	181 22 19.9	1 37 6.2	1 33.8	3 16 5.8	1 32.8	9.8574709	0.0069975	0.0004239
5	187 50 27.6	1 36 57.5	2 6.1	3 8 41.0	2 9.4	9.8577427	9.9937022	9.9868314
9	194 17 58.6	1 36 47.9	−2 31.9	+2 58 53.2	−2 44.2	9.8580343	9.9798091	9.9726326
13	200 44 49.8	1 36 37.6	2 49.9	2 46 50.6	3 16.7	9.8583417	9.9652991	9.9578046
17	207 10 59.1	1 36 26.9	2 59.5	2 32 42.9	3 46.6	9.8586610	9.9501458	9.9423172
21	213 36 24.9	1 36 16.0	3 0.0	2 16 41.4	4 13.6	9.8589883	9.9343150	9.9261334
25	220 1 6.7	1 36 4.9	2 51.6	1 58 58.8	4 37.2	9.8593194	9.9177681	9.9092146
29	226 25 4.6	1 35 54.1	−2 34.6	+1 39 48.5	−4 57.2	9.8596502	9.9004685	9.8915257
33	232 48 20.1	1 35 43.7	−2 10.0	+1 19 26.0	−5 13.5	9.8599765	9.8823836	9.8730383

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 3	232 48 20.1	1 25 49.7	−2 10.0	+1 19 26.0	−5 13.5	9.8599765	9.8823836	9.8730383
7	239 10 55.0	1 25 33.9	1 39.0	0 58 6.2	5 25.8	9.8602945	9.8634873	9.8537270
11	245 32 52.1	1 25 24.8	1 3.1	0 36 5.1	5 34.1	9.8606000	9.8437542	9.8335646
15	251 54 14.8	1 25 16.7	−0 24.2	+0 13 39.2	5 36.2	9.8608895	9.8231543	9.8125182
19	258 15 6.8	1 25 9.5	+0 15.8	−0 8 55.0	5 30.2	9.8611593	9.8016510	9.7905481
23	264 35 32.3	1 25 3.4	+0 55.1	−0 31 21.1	−5 24.1	9.8614063	9.7792053	9.7676188
27	270 55 35.9	1 24 58.5	1 31.5	0 53 22.8	5 25.0	9.8616275	9.7557866	9.7437078
31	277 15 22.2	1 24 54.8	2 3.5	1 14 44.1	5 14.0	9.8618202	9.7313847	9.7188214
Aug. 4	283 34 56.0	1 24 52.2	2 29.4	1 35 9.8	4 58.2	9.8619823	9.7060240	9.6930021
8	289 54 21.6	1 24 50.8	2 48.2	1 54 25.3	4 38.9	9.8621118	9.6797679	9.6663370
12	296 13 43.7	1 24 50.4	+2 58.7	−2 12 16.7	−4 16.2	9.8622072	9.6527278	9.6389644
16	302 33 6.2	1 24 51.0	3 0.6	2 28 31.2	3 50.5	9.8622673	9.6250751	9.6110951
20	308 52 33.2	1 24 52.6	2 53.6	2 42 57.3	3 22.1	9.8622915	9.5970698	9.5830539
24	315 12 7.9	1 24 54.9	2 38.3	2 55 24.5	2 51.2	9.8622795	9.5691133	9.5553293
28	321 31 53.4	1 24 58.0	2 15.3	3 5 43.8	2 18.2	9.8622315	9.5418002	9.5286399
Sept. 1	327 51 52.6	1 25 1.7	+1 45.6	−3 13 47.6	−1 43.5	9.8621481	9.5159777	9.5039589
5	334 12 7.5	1 25 5.8	1 10.8	3 19 29.8	1 7.5	9.8620301	9.4927414	9.4824904
9	340 32 39.8	1 25 10.4	+0 32.7	3 23 46.1	−0 39.6	9.8618789	9.4733745	9.4655557
13	346 53 31.5	1 25 15.4	−0 7.2	3 23 33.8	+0 6.8	9.8616966	9.4591862	9.4543922
17	353 14 43.6	1 25 20.7	0 46.8	3 21 52.0	0 44.1	9.8614852	9.4512787	9.4499107
21	359 36 17.0	1 25 26.1	−1 24.1	−3 17 41.4	+1 21.1	9.8612472	9.4503157	9.4524792
25	5 58 12.7	1 25 31.8	1 57.3	3 11 4.6	1 57.2	9.8609855	9.4563466	9.4618273
29	12 20 31.4	1 25 37.6	2 24.8	3 2 6.0	2 31.2	9.8607031	9.4687994	9.4771149
Oct. 3	18 43 13.6	1 25 43.0	2 45.2	2 50 51.7	3 4.9	9.8604037	9.4866145	9.4971280
7	25 6 20.1	1 25 49.7	2 57.4	2 37 29.6	3 35.8	9.8600906	9.5084880	9.5205340
11	31 29 51.4	1 25 56.0	−3 0.8	−2 22 9.0	+4 4.1	9.8597679	9.5331167	9.5461014
15	37 53 48.5	1 26 2.5	2 55.4	2 5 0.8	4 29.5	9.8594393	9.5593723	9.5729270
19	44 18 11.7	1 26 9.2	2 41.1	1 46 17.6	4 51.6	9.8591090	9.5863815	9.5999646
23	50 43 1.9	1 26 16.0	2 18.8	1 26 12.9	5 10.1	9.8587811	9.6135907	9.6270021
27	57 8 19.7	1 26 22.0	1 49.5	1 5 1.6	5 24.8	9.8584597	9.6403714	9.6535970
31	63 34 5.8	1 26 30.1	−1 14.7	−0 42 59.4	+5 35.5	9.8581488	9.6666537	9.6795215
Nov. 4	70 0 20.4	1 26 37.3	−0 36.0	−0 20 22.8	5 42.0	9.8578524	9.6921825	9.7046244
8	76 27 4.0	1 26 44.5	+0 4.4	+0 2 31.1	5 44.2	9.8575745	9.7168370	9.7288133
12	82 54 16.3	1 26 51.7	0 44.8	0 25 24.6	5 41.9	9.8573185	9.7405490	9.7520428
16	89 21 57.1	1 26 58.7	1 22.8	0 48 0.4	5 35.3	9.8570876	9.7632949	9.7743084
20	95 50 5.2	1 27 5.4	+1 56.8	+1 10 0.9	+5 24.3	9.8568850	9.7850870	9.7956350
24	102 18 39.4	1 27 11.7	2 24.8	1 31 9.0	5 9.1	9.8567134	9.8059581	9.8160618
28	108 47 37.7	1 27 17.4	2 45.7	1 51 8.0	4 49.0	9.8565749	9.8259502	9.8356282
Dec. 2	115 16 57.3	1 27 22.4	2 57.7	2 9 42.5	4 26.6	9.8564717	9.8450995	9.8543680
6	121 46 35.3	1 27 26.5	3 0.8	2 26 37.6	4 0.2	9.8564047	9.8634368	9.8723096
10	128 16 27.7	1 27 29.6	+2 54.7	+2 41 40.2	+3 30.5	9.8563750	9.8809696	9.8894813
14	134 46 30.2	1 27 31.5	2 39.6	2 54 38.3	2 58.1	9.8563828	9.8977894	9.9059185
18	141 16 38.0	1 27 32.2	2 16.4	3 5 21.8	2 23.3	9.8564284	9.9138736	9.9216606
22	147 46 46.1	1 27 31.5	1 46.0	3 13 42.3	1 46.7	9.8565108	9.9292849	9.9367517
26	154 16 48.5	1 27 29.4	1 10.5	3 19 33.4	1 8.7	9.8566291	9.9440664	9.9512320
30	160 46 40.0	1 27 26.0	+0 31.2	+3 22 50.9	+0 29.9	9.8567815	9.9582533	9.9651335
34	167 16 15.0	1 27 21.2	−0 9.6	+3 23 39.3	−0 9.2	9.8569663	9.9716753	9.9784815

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 0	67 28 47.2	31 29.81	+32.8	+0 35 40.8	+57.80	0.1814994	9.9379190	9.9468929
4	69 34 20.8	31 16.97	35.8	0 39 29.8	56.65	0.1829848	9.9557608	9.9645200
8	71 39 3.2	31 4.27	38.6	0 43 14.0	55.49	0.1844600	9.9731688	9.9817075
12	73 42 55.4	30 51.85	41.3	0 46 53.4	54.21	0.1859231	9.9901366	9.9984562
16	75 45 58.3	30 39.59	43.6	0 50 27.7	52.91	0.1873727	0.0066670	0.0147702
20	77 48 12.4	30 27.53	+45.9	+0 53 56.7	+51.59	0.1888069	0.0227658	0.0306539
24	79 49 38.9	30 15.75	47.7	0 57 20.4	50.22	0.1902242	0.0384340	0.0461055
28	81 50 18.7	30 4.17	49.3	1 0 38.5	48.81	0.1916229	0.0536690	0.0611226
Feb. 1	83 50 12.5	29 52.75	50.6	1 3 50.9	47.36	0.1930017	0.0684677	0.0757040
5	85 49 21.1	29 41.62	51.8	1 6 57.4	45.89	0.1943593	0.0828332	0.0898558
9	87 47 45.9	29 30.79	+52.8	+1 9 58.0	+44.40	0.1956943	0.0967741	0.1035891
13	89 45 27.8	29 20.19	53.4	1 12 52.6	42.87	0.1970053	0.1103050	0.1169215
17	91 42 27.8	29 9.89	53.8	1 15 41.0	41.34	0.1982914	0.1234400	0.1296619
21	93 38 47.3	28 59.82	53.9	1 18 23.3	39.79	0.1995511	0.1361583	0.1424187
25	95 34 26.8	28 50.04	53.8	1 20 59.3	38.21	0.2007837	0.1485546	0.1545948
Mar. 1	97 29 28.0	28 40.56	+53.5	+1 23 29.0	+36.62	0.2019876	0.1605409	0.1663932
5	99 23 51.7	28 31.34	52.9	1 25 52.3	35.02	0.2031623	0.1721532	0.1778213
9	101 17 39.1	28 22.39	51.9	1 28 9.2	33.42	0.2043068	0.1834003	0.1888914
13	103 10 51.2	28 13.74	50.9	1 30 19.7	31.80	0.2054202	0.1942964	0.1996172
17	105 3 29.4	28 5.35	49.6	1 32 23.6	30.17	0.2065017	0.2048545	0.2100101
21	106 55 34.4	27 57.26	+48.3	+1 34 21.0	+28.54	0.2075502	0.2150844	0.2200780
25	108 47 7.9	27 49.54	46.7	1 36 11.9	26.91	0.2085655	0.2249910	0.2298239
29	110 38 11.2	27 42.07	44.8	1 37 56.3	25.27	0.2095466	0.2345772	0.2392510
Apr. 2	112 28 44.9	27 34.89	42.8	1 39 34.1	23.64	0.2104929	0.2438465	0.2483648
6	114 18 50.7	27 27.99	40.5	1 41 5.4	22.00	0.2114037	0.2528067	0.2571749
10	116 8 29.2	27 21.40	+38.3	+1 42 30.1	+20.36	0.2122787	0.2614694	0.2656924
14	117 57 42.3	27 15.12	35.8	1 43 48.3	18.72	0.2131169	0.2698449	0.2739278
18	119 46 30.6	27 9.14	33.2	1 44 59.9	17.09	0.2139183	0.2779424	0.2818881
22	121 34 55.8	27 3.46	30.4	1 46 5.0	15.46	0.2146822	0.2857657	0.2895752
26	123 22 58.7	26 58.05	27.5	1 47 3.6	13.84	0.2154082	0.2933170	0.2969913
30	125 10 40.6	26 52.97	+24.6	+1 47 55.7	+12.21	0.2160957	0.3005989	0.3041399
May 4	126 58 2.9	26 48.19	21.5	1 48 41.3	10.59	0.2167445	0.3076162	0.3110282
8	128 45 6.5	26 43.70	18.4	1 49 20.4	8.97	0.2173542	0.3143778	0.3176653
12	130 31 52.9	26 39.47	15.2	1 49 53.1	7.39	0.2179246	0.3208929	0.3240602
16	132 18 22.7	26 35.59	12.0	1 50 19.5	5.80	0.2184554	0.3271686	0.3302182
20	134 4 38.0	26 32.01	+ 8.7	+1 50 39.5	+ 4.16	0.2189462	0.3332086	0.3361404
24	135 50 39.2	26 28.67	5.4	1 50 52.8	2.56	0.2193966	0.3390136	0.3418285
28	137 36 27.8	26 25.67	+ 2.2	1 51 0.0	+ 1.02	0.2198067	0.3445853	0.3472842
June 1	139 22 5.0	26 22.99	− 1.2	1 51 1.0	− 0.55	0.2201761	0.3499263	0.3525126
5	141 7 32.1	26 20.61	4.5	1 50 55.6	2.12	0.2205047	0.3550433	0.3575205
9	142 52 50.3	26 18.50	− 7.8	+1 50 44.0	− 3.67	0.2207924	0.3599442	0.3623153
13	144 38 0.5	26 16.66	11.0	1 50 26.2	5.22	0.2210390	0.3646345	0.3669016
17	146 23 4.0	26 15.16	14.1	1 50 2.2	6.76	0.2212443	0.3691171	0.3712810
21	148 8 2.2	26 13.97	17.3	1 49 32.1	8.30	0.2214082	0.3733928	0.3754525
25	149 52 56.2	26 13.09	20.3	1 48 55.9	9.80	0.2215309	0.3774608	0.3794175
29	151 37 47.3	26 12.49	−23.4	+1 48 13.7	−11.31	0.2216121	0.3813234	0.3831787
July 3	153 22 36.5	26 12.16	−26.3	+1 47 25.4	−12.81	0.2216518	0.3849847	0.3867418

MARS.

GREENWICH MEAN NOON.

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	° ′ ″	′ ″	″	° ′ ″	″			
July 3	153 22 36.5	26 12.16	−26.3	+1 47 25.4	−12.81	0.2216518	0.3849847	0.3867418
7	155 7 25.0	26 12.12	29.2	1 46 31.2	14.30	0.2216499	0.3884510	0.3901125
11	156 52 13.9	26 12.40	31.9	1 45 31.0	15.79	0.2216064	0.3917271	0.3932948
15	158 37 4.6	26 12.99	34.4	1 44 24.9	17.26	0.2215213	0.3948157	0.3962901
19	160 21 58.2	26 13.86	36.8	1 43 12.9	16.71	0.2213951	0.3977171	0.3990970
23	162 6 55.9	26 15.05	−39.2	+1 41 55.2	−20.09	0.2212273	0.4004295	0.4017150
27	163 51 59.0	26 16.54	41.4	1 40 31.6	21.49	0.2210182	0.4029537	0.4041459
31	165 37 8.6	26 18.36	43.4	1 39 2.3	22.97	0.2207680	0.4052921	0.4063933
Aug. 4	167 22 26.0	26 20.40	45.4	1 37 27.4	24.44	0.2204764	0.4074499	0.4084626
8	169 7 52.2	26 22.76	47.0	1 35 46.8	25.84	0.2201439	0.4094315	0.4103570
12	170 53 28.5	26 25.42	−48.5	+1 34 0.7	−27.22	0.2197705	0.4112392	0.4120777
16	172 39 16.0	26 28.39	49.9	1 32 9.0	28.61	0.2193565	0.4128724	0.4136232
20	174 25 16.0	26 31.67	51.0	1 30 11.8	29.96	0.2189019	0.4143298	0.4149921
24	176 11 29.8	26 35.29	52.0	1 28 9.3	31.31	0.2184072	0.4156100	0.4161843
28	177 57 58.7	26 39.15	52.9	1 26 1.3	32.65	0.2178725	0.4167152	0.4172035
Sept. 1	179 44 43.4	26 43.30	−53.4	+1 23 48.1	−33.96	0.2172978	0.4176494	0.4180534
5	181 31 45.7	26 47.82	53.8	1 21 29.6	35.26	0.2166840	0.4184161	0.4187375
9	183 19 6.4	26 52.66	53.9	1 19 6.0	36.54	0.2160308	0.4190175	0.4192569
13	185 6 46.9	26 57.70	53.8	1 16 37.3	37.79	0.2153390	0.4194546	0.4196103
17	186 54 48.4	27 3.10	53.6	1 14 3.7	39.02	0.2146088	0.4197240	0.4197953
21	188 43 12.1	27 8.79	−53.1	+1 11 25.0	−40.27	0.2138406	0.4198246	0.4198116
25	190 31 59.1	27 14.77	52.4	1 8 41.5	41.47	0.2130347	0.4197572	0.4196615
29	192 21 10.7	27 21.09	51.5	1 5 53.2	42.66	0.2121917	0.4195253	0.4193487
Oct. 3	194 10 48.2	27 27.70	50.3	1 3 0.2	43.81	0.2113122	0.4191327	0.4188773
7	196 0 52.7	27 34.60	49.0	1 0 2.7	44.94	0.2103965	0.4185823	0.4182477
11	197 51 25.4	27 41.82	−47.5	+0 57 0.7	−46.05	0.2094454	0.4178740	0.4174602
15	199 42 27.7	27 49.34	45.9	0 53 54.3	47.14	0.2084597	0.4170060	0.4165116
19	201 34 0.5	27 57.16	43.8	0 50 43.6	48.19	0.2074395	0.4159766	0.4154011
23	203 26 5.4	28 5.26	41.7	0 47 28.8	49.20	0.2063858	0.4147860	0.4141314
27	205 18 43.0	28 13.67	39.3	0 44 10.0	50.19	0.2052992	0.4134376	0.4127057
31	207 11 55.2	28 22.39	−36.9	+0 40 47.3	−51.14	0.2041809	0.4119357	0.4111283
Nov. 4	209 5 42.5	28 31.36	34.1	0 37 20.9	52.05	0.2030313	0.4102837	0.4094019
8	211 0 6.5	28 40.67	31.3	0 33 50.9	52.92	0.2018515	0.4084825	0.4075256
12	212 55 8.2	28 50.22	28.3	0 30 17.5	53.76	0.2006422	0.4065308	0.4054981
16	214 50 48.6	29 0.05	25.3	0 26 40.8	54.56	0.1994044	0.4044272	0.4033183
20	216 47 9.0	29 10.20	−21.9	+0 23 1.0	−55.31	0.1981394	0.4021721	0.4009887
24	218 44 10.6	29 20.62	18.4	0 19 18.3	56.00	0.1968480	0.3997688	0.3985135
28	220 41 54.4	29 31.30	14.9	0 15 33.0	56.65	0.1955319	0.3972228	0.3958976
Dec. 2	222 40 21.4	29 42.27	11.2	0 11 45.1	57.25	0.1941918	0.3945383	0.3931448
6	224 39 32.9	29 53.50	7.7	0 7 55.0	57.79	0.1928289	0.3917174	0.3902559
10	226 39 29.7	30 4.98	− 4.0	+0 4 2.9	−58.25	0.1914447	0.3887602	0.3872304
14	228 40 12.6	30 16.69	− 0.2	+0 0 9.0	58.67	0.1900407	0.3856659	0.3840677
18	230 41 43.0	30 28.62	+ 3.7	−0 3 46.5	59.04	0.1886183	0.3824356	0.3807704
22	232 44 1.8	30 40.80	7.5	0 7 43.3	59.31	0.1871791	0.3790730	0.3773437
26	234 47 9.6	30 53.19	11.2	0 11 41.0	59.58	0.1857247	0.3755834	0.3737934
30	236 51 7.3	31 5.80	+15.0	−0 15 39.5	−59.66	0.1842566	0.3719739	0.3701251
34	238 55 55.6	31 18.46	+18.7	−0 19 38.3	−59.71	0.1827766		

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 0	91 58 43.4	5 5.65	−6.9	−0 10 2.9	+6.93	0.7113180	0.6203838	0.6210906
4	92 19 5.7	5 5.46	6.6	0 9 35.2	6.93	0.7114404	0.6219246	0.6226837
8	92 39 27.3	5 5.21	6.3	0 9 7.4	6.93	0.7115629	0.6239647	0.6251650
12	92 59 48.2	5 5.14	5.9	0 8 39.8	6.93	0.7116855	0.6264811	0.6279099
16	93 20 8.4	5 4.96	5.6	0 8 12.0	6.93	0.7118081	0.6294478	0.6310916
20	93 40 27.9	5 4.79	−5.3	−0 7 44.3	+6.93	0.7119309	0.6328371	0.6346607
24	94 0 46.7	5 4.62	5.0	0 7 16.6	6.93	0.7120537	0.6366176	0.6386434
28	94 21 4.8	5 4.44	4.7	0 6 48.9	6.93	0.7121766	0.6407532	0.6429421
Feb. 1	94 41 22.2	5 4.27	4.4	0 6 21.2	6.93	0.7122995	0.6452051	0.6475371
5	95 1 39.0	5 4.10	4.1	0 5 53.5	6.93	0.7124226	0.6499332	0.6523880
9	95 21 55.0	5 3.92	−3.8	−0 5 25.7	+6.93	0.7125457	0.6548973	0.6574564
13	95 42 10.4	5 3.75	3.4	0 4 58.0	6.93	0.7126688	0.6600609	0.6627064
17	96 2 25.1	5 3.58	3.1	0 4 30.3	6.93	0.7127919	0.6653886	0.6681034
21	96 22 39.0	5 3.41	2.8	0 4 2.6	6.92	0.7129151	0.6708465	0.6736133
25	96 42 52.3	5 3.24	2.5	0 3 35.0	6.92	0.7130383	0.6763998	0.6792016
Mar. 1	97 3 4.9	5 3.09	−2.2	−0 3 7.3	+6.92	0.7131616	0.6820149	0.6848353
5	97 23 16.8	5 2.89	1.8	0 2 39.6	6.91	0.7132849	0.6876596	0.6904840
9	97 43 28.0	5 2.72	1.5	0 2 12.0	6.91	0.7134083	0.6933056	0.6961211
13	98 3 38.5	5 2.54	1.2	0 1 44.3	6.91	0.7135317	0.6989280	0.7017235
17	98 23 48.3	5 2.37	0.9	0 1 16.7	6.91	0.7136551	0.7045052	0.7072704
21	98 43 57.5	5 2.20	−0.6	−0 0 49.0	+6.90	0.7137787	0.7100167	0.7127417
25	99 4 5.9	5 2.03	−0.2	−0 0 21.4	6.90	0.7139022	0.7154430	0.7181179
29	99 24 13.7	5 1.85	+0.1	+0 0 6.2	6.89	0.7140257	0.7207644	0.7233803
Apr. 2	99 44 20.7	5 1.68	0.4	0 0 33.7	6.89	0.7141493	0.7259640	0.7285135
6	100 4 27.1	5 1.51	0.7	0 1 1.3	6.89	0.7142728	0.7310273	0.7335043
10	100 24 32.8	5 1.34	+1.0	+0 1 28.8	+6.88	0.7143963	0.7359432	0.7383429
14	100 44 37.8	5 1.17	1.3	0 1 56.4	6.88	0.7145199	0.7407023	0.7430204
18	101 4 42.1	5 0.99	1.7	0 2 23.9	6.87	0.7146434	0.7452959	0.7475278
22	101 24 45.8	5 0.82	2.0	0 2 51.4	6.87	0.7147669	0.7497149	0.7518560
26	101 44 48.7	5 0.65	2.3	0 3 18.8	6.86	0.7148904	0.7539502	0.7559966
30	102 4 51.0	5 0.48	+2.6	+0 3 46.3	+6.86	0.7150138	0.7579945	0.7599429
May 4	102 24 52.6	5 0.31	2.9	0 4 13.7	6.86	0.7151371	0.7618415	0.7636899
8	102 44 53.5	5 0.14	3.2	0 4 41.1	6.85	0.7152604	0.7654877	0.7672347
12	103 4 53.7	4 59.97	3.5	0 5 8.5	6.84	0.7153836	0.7689305	0.7705749
16	103 24 53.2	4 59.80	3.9	0 5 35.8	6.84	0.7155068	0.7721672	0.7737072
20	103 44 52.1	4 59.63	+4.2	+0 6 3.1	+6.83	0.7156299	0.7751943	0.7766278
24	104 4 50.2	4 59.46	4.5	0 6 30.4	6.82	0.7157530	0.7780074	0.7793326
28	104 24 47.7	4 59.29	4.8	0 6 57.7	6.81	0.7158760	0.7806033	0.7818191
June 1	104 44 44.5	4 59.12	5.1	0 7 24.9	6.80	0.7159990	0.7829801	0.7840863
5	105 4 40.7	4 58.95	5.4	0 7 52.1	6.80	0.7161220	0.7851377	0.7861341
9	105 24 36.1	4 58.78	+5.7	+0 8 19.3	+6.79	0.7162450	0.7870757	0.7879625
13	105 44 30.9	4 58.61	6.0	0 8 46.4	6.78	0.7163679	0.7887943	0.7895707
17	106 4 25.0	4 58.44	6.3	0 9 13.5	6.77	0.7164907	0.7902915	0.7909565
21	106 24 18.4	4 58.27	6.6	0 9 40.5	6.76	0.7166134	0.7915655	0.7921180
25	106 44 11.2	4 58.11	6.9	0 10 7.6	6.75	0.7167360	0.7926143	0.7930542
29	107 4 3.3	4 57.94	+7.2	+0 10 34.6	+6.74	0.7168586	0.7934379	0.7937653
July 3	107 23 54.7	4 57.77	+7.5	+0 11 1.5	+6.73	0.7169810	0.7940367	0.7942524

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 3	107 23 54.7	4 57.77	+ 7.5	+0 11 1.5	+6.73	0.7169810	0.7940367	0.7942524
7	107 43 45.4	4 57.60	7.8	0 11 28.4	6.72	0.7171034	0.7944124	0.7945165
11	108 3 35.5	4 57.43	8.1	0 11 55.3	6.72	0.7172257	0.7945648	0.7945574
15	108 23 24.9	4 57.27	8.4	0 12 22.2	6.71	0.7173479	0.7944939	0.7943741
19	108 43 13.6	4 57.10	8.7	0 12 49.0	6.70	0.7174699	0.7941980	0.7939653
23	109 3 1.7	4 56.93	+ 9.0	+0 13 15.7	+6.69	0.7175918	0.7936762	0.7933306
27	109 22 49.1	4 56.76	9.3	0 13 42.4	6.67	0.7177135	0.7929288	0.7924710
31	109 42 35.8	4 56.60	9.6	0 14 9.1	6.66	0.7178351	0.7919573	0.7913881
Aug. 4	110 2 21.9	4 56.43	9.9	0 14 35.7	6.65	0.7179566	0.7907634	0.7900838
8	110 22 7.3	4 56.27	10.2	0 15 2.3	6.64	0.7180779	0.7893490	0.7885591
12	110 41 52.0	4 56.10	+10.5	+0 15 28.9	+6.63	0.7181992	0.7877140	0.7868135
16	111 1 36.1	4 55.93	10.8	0 15 55.4	6.62	0.7183202	0.7858577	0.7848466
20	111 21 19.5	4 55.77	11.0	0 16 21.8	6.61	0.7184412	0.7837806	0.7826595
24	111 41 2.3	4 55.60	11.3	0 16 48.3	6.60	0.7185620	0.7814839	0.7802542
28	112 0 44.3	4 55.44	11.6	0 17 14.6	6.58	0.7186827	0.7789710	0.7776347
Sept. 1	112 20 25.8	4 55.27	+11.9	+0 17 40.9	+6.57	0.7188032	0.7762457	0.7748042
5	112 40 6.6	4 55.11	12.2	0 18 7.2	6.56	0.7189235	0.7733106	0.7717654
9	112 59 46.7	4 54.95	12.4	0 18 33.4	6.55	0.7190437	0.7701688	0.7685208
13	113 19 26.2	4 54.79	12.7	0 18 59.6	6.53	0.7191638	0.7668219	0.7650725
17	113 39 5.0	4 54.63	13.0	0 19 25.7	6.52	0.7192836	0.7632732	0.7614246
21	113 58 43.2	4 54.46	+13.3	+0 19 51.7	+6.51	0.7194033	0.7595278	0.7575834
25	114 18 20.7	4 54.30	13.5	0 20 17.7	6.50	0.7195229	0.7555927	0.7535567
29	114 37 57.6	4 54.13	13.8	0 20 43.7	6.48	0.7196423	0.7514762	0.7493522
Oct. 3	114 57 33.8	4 53.97	14.1	0 21 9.6	6.47	0.7197615	0.7471858	0.7449779
7	115 17 9.3	4 53.81	14.3	0 21 35.4	6.45	0.7198806	0.7427297	0.7404421
11	115 36 44.3	4 53.65	+14.6	+0 22 1.2	+6.44	0.7199994	0.7381163	0.7357534
15	115 56 18.6	4 53.49	14.8	0 22 27.0	6.43	0.7201181	0.7333553	0.7309233
19	116 15 52.2	4 53.33	15.1	0 22 52.6	6.41	0.7202366	0.7284506	0.7259659
23	116 35 25.3	4 53.17	15.4	0 23 18.2	6.40	0.7203549	0.7234446	0.7208980
27	116 54 57.6	4 53.02	15.6	0 23 43.8	6.38	0.7204730	0.7183282	0.7157374
31	117 14 29.4	4 52.86	+15.9	+0 24 9.3	+6.37	0.7205909	0.7131980	0.7106022
Nov. 4	117 34 0.5	4 52.70	16.1	0 24 34.7	6.35	0.7207086	0.7078625	0.7052114
8	117 53 31.0	4 52.54	16.4	0 25 0.1	6.34	0.7208261	0.7025516	0.6998857
12	118 13 0.8	4 52.38	16.6	0 25 25.4	6.32	0.7209434	0.6972173	0.6945495
16	118 32 30.0	4 52.22	16.9	0 25 50.7	6.30	0.7210606	0.6918862	0.6892310
20	118 51 58.6	4 52.06	+17.1	+0 26 15.9	+6.29	0.7211775	0.6865877	0.6839602
24	119 11 26.6	4 51.91	17.3	0 26 41.0	6.27	0.7212942	0.6813525	0.6787689
28	119 30 53.9	4 51.75	17.6	0 27 6.0	6.25	0.7214107	0.6762132	0.6736894
Dec. 2	119 50 20.6	4 51.60	17.8	0 27 31.0	6.24	0.7215269	0.6712017	0.6687541
6	120 9 46.7	4 51.45	18.0	0 27 55.9	6.22	0.7216429	0.6663510	0.6639967
10	120 29 12.2	4 51.30	+18.3	+0 28 20.8	+6.20	0.7217586	0.6616960	0.6594538
14	120 48 37.1	4 51.14	18.5	0 28 45.6	6.19	0.7218741	0.6572749	0.6551644
18	121 8 1.3	4 50.98	18.7	0 29 10.3	6.17	0.7219894	0.6531269	0.6511675
22	121 27 24.9	4 50.83	18.9	0 29 34.9	6.15	0.7221044	0.6492905	0.6475005
26	121 46 47.9	4 50.68	19.1	0 29 59.5	6.14	0.7222190	0.6458013	0.6441972
30	122 6 10.3	4 50.52	+19.3	+0 30 24.0	+6.12	0.7223334	0.6426919	0.6412891
34	122 25 32.1	4 50.37	+19.5	+0 30 48.4	+6.10	0.7224475		

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 0	210 18 38.8	1 54.91	−25.5	+2 28 11.3	−0.66	0.9898602	1.0066522	1.0053572
4	210 26 18.4	1 54.88	25.9	2 28 8.7	0.67	0.9899081	1.0040394	1.0027001
8	210 33 57.9	1 54.86	26.3	2 28 6.0	0.68	0.9899559	1.0013406	0.9999620
12	210 41 37.2	1 54.83	26.7	2 28 3.3	0.69	0.9900036	0.9985656	0.9971527
16	210 49 16.5	1 54.81	27.2	2 28 0.5	0.70	0.9900512	0.9957247	0.9942828
20	210 56 55.7	1 54.78	−27.6	+2 27 57.7	−0.71	0.9900988	0.9928286	0.9913637
24	211 4 34.8	1 54.76	28.0	2 27 54.8	0.72	0.9901463	0.9898897	0.9884082
28	211 12 13.8	1 54.73	28.4	2 27 51.9	0.73	0.9901938	0.9869211	0.9854304
Feb. 1	211 19 52.7	1 54.71	28.8	2 27 49.0	0.74	0.9902412	0.9839379	0.9824455
5	211 27 31.5	1 54.69	29.2	2 27 46.0	0.75	0.9902885	0.9809548	0.9794676
9	211 35 10.2	1 54.66	−29.7	+2 27 42.9	−0.77	0.9903358	0.9779857	0.9765110
13	211 42 48.8	1 54.64	30.1	2 27 39.8	0.78	0.9903830	0.9750454	0.9735908
17	211 50 27.3	1 54.61	30.5	2 27 36.7	0.79	0.9904301	0.9721490	0.9707220
21	211 58 5.7	1 54.59	30.9	2 27 33.5	0.80	0.9904772	0.9693119	0.9679210
25	212 5 44.0	1 54.56	31.3	2 27 30.3	0.81	0.9905242	0.9665513	0.9652050
Mar. 1	212 13 22.2	1 54.54	−31.7	+2 27 27.1	−0.82	0.9905712	0.9638842	0.9625910
5	212 21 0.3	1 54.51	32.1	2 27 23.8	0.83	0.9906181	0.9613275	0.9600952
9	212 28 38.3	1 54.49	32.5	2 27 20.5	0.84	0.9906649	0.9588961	0.9577322
13	212 36 16.2	1 54.47	32.9	2 27 17.1	0.85	0.9907117	0.9566052	0.9555167
17	212 43 54.1	1 54.45	33.3	2 27 13.7	0.86	0.9907584	0.9544685	0.9534623
21	212 51 31.8	1 54.43	−33.7	+2 27 10.2	−0.87	0.9908050	0.9525001	0.9515839
25	212 59 9.5	1 54.40	34.2	2 27 6.7	0.88	0.9908515	0.9507151	0.9498956
29	213 6 47.0	1 54.37	34.6	2 27 3.1	0.89	0.9908980	0.9491266	0.9484096
Apr. 2	213 14 24.5	1 54.35	35.0	2 26 59.5	0.90	0.9909444	0.9477457	0.9471361
6	213 22 1.8	1 54.33	35.4	2 26 55.9	0.91	0.9909908	0.9465815	0.9460830
10	213 29 39.1	1 54.30	−35.8	+2 26 52.2	−0.93	0.9910371	0.9456413	0.9452571
14	213 37 16.2	1 54.28	36.2	2 26 48.5	0.94	0.9910834	0.9449310	0.9446637
18	213 44 53.3	1 54.25	36.6	2 26 44.7	0.95	0.9911296	0.9444557	0.9443076
22	213 52 30.3	1 54.23	37.0	2 26 40.9	0.96	0.9911757	0.9442195	0.9441920
26	214 0 7.1	1 54.21	37.4	2 26 37.1	0.97	0.9912217	0.9442249	0.9443183
30	214 7 43.9	1 54.18	−37.8	+2 26 33.2	−0.98	0.9912676	0.9444715	0.9446840
May 4	214 15 20.6	1 54.15	38.2	2 26 29.3	0.99	0.9913135	0.9449553	0.9452849
8	214 22 57.2	1 54.13	38.6	2 26 25.3	1.00	0.9913593	0.9456720	0.9461158
12	214 30 33.7	1 54.11	39.0	2 26 21.3	1.01	0.9914051	0.9466152	0.9471696
16	214 38 10.2	1 54.09	39.4	2 26 17.2	1.02	0.9914508	0.9477779	0.9484394
20	214 45 46.5	1 54.07	−39.8	+2 26 13.1	−1.03	0.9914964	0.9491528	0.9499168
24	214 53 22.7	1 54.04	40.2	2 26 9.0	1.04	0.9915419	0.9507301	0.9515914
28	215 0 58.9	1 54.02	40.5	2 26 4.8	1.05	0.9915874	0.9524988	0.9534506
June 1	215 8 34.9	1 53.99	40.9	2 26 0.6	1.06	0.9916328	0.9544451	0.9554808
5	215 16 10.8	1 53.97	41.3	2 25 56.3	1.07	0.9916781	0.9565557	0.9576679
9	215 23 46.7	1 53.95	−41.7	+2 25 52.0	−1.08	0.9917234	0.9588159	0.9599981
13	215 31 22.5	1 53.92	42.1	2 25 47.6	1.09	0.9917686	0.9612126	0.9624579
17	215 38 58.1	1 53.90	42.5	2 25 43.2	1.10	0.9918137	0.9637321	0.9650333
21	215 46 33.7	1 53.88	42.9	2 25 38.8	1.11	0.9918588	0.9663598	0.9677097
25	215 54 9.2	1 53.86	43.3	2 25 34.3	1.12	0.9919038	0.9690809	0.9704713
29	216 1 44.6	1 53.84	−43.7	+2 25 29.8	−1.13	0.9919488	0.9718790	0.9733022
July 3	216 9 19.9	1 53.81	−44.0	+2 25 25.3	−1.14	0.9919937	0.9747391	0.9761877

SATURN.

GREENWICH MEAN NOON.

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							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 3	216 9 19.9	1 53.81	− 44.0	+2 25 25.3	−1.14	0.9919937	0.9747391	0.9761877
7	216 16 55.1	1 53.79	44.4	2 25 20.7	1.15	0.9920385	0.9776464	0.9791133
11	216 24 30.2	1 53.77	44.8	2 25 16.0	1.16	0.9920832	0.9805870	0.9820662
15	216 32 5.3	1 53.75	45.2	2 25 11.3	1.17	0.9921279	0.9835490	0.9850337
19	216 39 40.2	1 53.72	45.6	2 25 6.6	1.18	0.9921725	0.9865187	0.9880024
23	216 47 15.1	1 53.70	− 46.0	+2 25 1.8	−1.19	0.9922170	0.9894832	0.9909592
27	216 54 49.8	1 53.67	46.3	2 24 57.0	1.21	0.9922614	0.9924289	0.9938908
31	217 2 24.5	1 53.65	46.7	2 24 52.2	1.22	0.9923058	0.9953435	0.9967856
Aug. 4	217 9 59.0	1 53.63	47.1	2 24 47.3	1.23	0.9923501	0.9982159	0.9996333
8	217 17 33.5	1 53.60	47.5	2 24 42.3	1.24	0.9923944	1.0010365	1.0024242
12	217 25 7.9	1 53.58	− 47.9	+2 24 37.4	−1.25	0.9924386	1.0037954	1.0051491
16	217 32 42.2	1 53.56	48.2	2 24 32.4	1.26	0.9924827	1.0064840	1.0077987
20	217 40 16.4	1 53.54	48.6	2 24 27.3	1.27	0.9925267	1.0090921	1.0103631
24	217 47 50.5	1 53.51	49.0	2 24 22.2	1.28	0.9925706	1.0116107	1.0128339
28	217 55 24.5	1 53.49	49.3	2 24 17.1	1.29	0.9926144	1.0140317	1.0152030
Sept. 1	218 2 58.5	1 53.47	− 49.7	+2 24 11.9	−1.30	0.9926581	1.0163472	1.0174637
5	218 10 32.3	1 53.45	50.1	2 24 6.7	1.31	0.9927018	1.0185517	1.0196105
9	218 18 6.1	1 53.43	50.4	2 24 1.4	1.32	0.9927454	1.0206393	1.0216375
13	218 25 39.7	1 53.40	50.8	2 23 56.1	1.33	0.9927889	1.0226042	1.0235389
17	218 33 13.3	1 53.38	51.2	2 23 50.8	1.34	0.9928324	1.0244406	1.0253086
21	218 40 46.8	1 53.36	− 51.5	+2 23 45.4	−1.35	0.9928758	1.0261422	1.0269407
25	218 48 20.2	1 53.34	51.9	2 23 40.0	1.36	0.9929191	1.0277038	1.0284310
29	218 55 53.5	1 53.32	52.3	2 23 34.5	1.37	0.9929624	1.0291220	1.0297763
Oct. 3	219 3 26.7	1 53.29	52.6	2 23 29.0	1.38	0.9930056	1.0303935	1.0309739
7	219 10 59.8	1 53.27	53.0	2 23 23.5	1.39	0.9930487	1.0315151	1.0320192
11	219 18 32.9	1 53.25	− 53.3	+2 23 17.9	−1.40	0.9930917	1.0324847	1.0329111
15	219 26 5.8	1 53.23	53.7	2 23 12.3	1.41	0.9931347	1.0332982	1.0336456
19	219 33 38.7	1 53.21	54.0	2 23 6.6	1.42	0.9931776	1.0339529	1.0342198
23	219 41 11.5	1 53.19	54.4	2 23 0.9	1.43	0.9932204	1.0344463	1.0346321
27	219 48 44.2	1 53.16	54.8	2 22 55.2	1.44	0.9932631	1.0347772	1.0348816
31	219 56 16.8	1 53.14	− 55.1	+2 22 49.4	−1.45	0.9933058	1.0349453	1.0349682
Nov. 4	220 3 49.3	1 53.12	55.5	2 22 43.5	1.46	0.9933484	1.0349504	1.0348918
8	220 11 21.8	1 53.10	55.8	2 22 37.7	1.47	0.9933910	1.0347923	1.0346517
12	220 18 54.1	1 53.08	56.2	2 22 31.8	1.48	0.9934335	1.0344701	1.0342472
16	220 26 26.4	1 53.06	56.5	2 22 25.8	1.49	0.9934759	1.0339832	1.0336781
20	220 33 58.5	1 53.03	− 56.9	+2 22 19.8	−1.50	0.9935183	1.0333322	1.0329458
24	220 41 30.6	1 53.01	57.2	2 22 13.8	1.51	0.9935606	1.0325192	1.0320524
28	220 49 2.6	1 52.99	57.6	2 22 7.7	1.52	0.9936028	1.0315460	1.0310006
Dec. 2	220 56 34.6	1 52.97	57.9	2 22 1.6	1.53	0.9936449	1.0304163	1.0297932
6	221 4 6.4	1 52.95	58.3	2 21 55.5	1.54	0.9936868	1.0291318	1.0284325
10	221 11 38.2	1 52.93	− 58.6	+2 21 49.3	−1.55	0.9937287	1.0276955	1.0269211
14	221 19 9.9	1 52.90	58.9	2 21 43.1	1.56	0.9937705	1.0261100	1.0252625
18	221 26 41.5	1 52.88	59.3	2 21 36.8	1.57	0.9938123	1.0243794	1.0234613
22	221 34 13.0	1 52.86	59.6	2 21 30.5	1.58	0.9938540	1.0225090	1.0215234
26	221 41 44.4	1 52.84	1 0.0	2 21 24.2	1.59	0.9938957	1.0205053	1.0194553
30	221 49 15.7	1 52.82	−1 0.3	+2 21 17.8	−1.60	0.9939373	1.0183744	1.0172633
34	221 56 46.9	1 52.80	−1 0.6	+2 21 11.4	−1.61	0.9939788		

URANUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 4	226 22 44.6	44.66	−7.6	+0 21 9.5	−0.53	1.2711732	1.2836769	1.2823803
12	226 28 41.9	44.65	7.6	0 21 5.2	0.54	1.2712033	1.2810260	1.2796194
20	226 34 39.1	44.65	7.6	0 21 0.9	0.54	1.2712333	1.2781657	1.2766713
28	226 40 36.2	44.64	7.5	0 20 56.6	0.54	1.2712634	1.2751431	1.2735883
Feb. 5	226 46 33.3	44.64	7.5	0 20 52.3	0.54	1.2712936	1.2720146	1.2704294
13	226 52 30.4	44.63	−7.5	+0 20 48.0	−0.54	1.2713238	1.2688399	1.2672531
21	226 58 27.4	44.63	7.5	0 20 43.7	0 54	1.2713540	1.2656768	1.2641194
Mar. 1	227 4 24.4	44.62	7.5	0 20 39.4	0.54	1.2713843	1.2625894	1.2610950
9	227 10 21.4	44.61	7.4	0 20 35.1	0.54	1.2714146	1.2596438	1.2582432
17	227 16 18.3	44.61	7.4	0 20 30.8	0.54	1.2714449	1.2569003	1.2556223
25	227 22 15.1	44.60	−7.4	+0 20 26.5	−0.54	1.2714753	1.2544166	1.2532907
Apr. 2	227 28 11.9	44.60	7.4	0 20 22.2	0.54	1.2715057	1.2522510	1.2513031
10	227 34 8.7	44.59	7.4	0 20 17.9	0.54	1.2715361	1.2504518	1.2497016
18	227 40 5.4	44.59	7.3	0 20 13.6	0.54	1.2715666	1.2490562	1.2485206
26	227 46 2.1	44.58	7.3	0 20 9.2	0.54	1.2715971	1.2480980	1.2477904
May 4	227 51 58.7	44.58	−7.3	+0 20 4.9	−0.54	1.2716277	1.2475995	1.2475255
12	227 57 55.3	44.57	7.3	0 20 0.6	0.54	1.2716583	1.2475683	1.2477277
20	228 3 51.8	44.57	7.3	0 19 56.3	0.54	1.2716889	1.2480030	1.2483925
28	228 9 48.3	44.56	7.2	0 19 51.9	0.54	1.2717195	1.2488940	1.2495040
June 5	228 15 44.8	44.55	7.2	0 19 47.6	0.54	1.2717502	1.2502180	1.2510319
13	228 21 41.2	44.55	−7.2	+0 19 43.2	−0.54	1.2717809	1.2519407	1.2529401
21	228 27 37.5	44.54	7.2	0 19 38.9	0.54	1.2718116	1.2540246	1.2551885
29	228 33 33.9	44.54	7.2	0 19 34.6	0.54	1.2718424	1.2564245	1.2577260
July 7	228 39 30.1	44.53	7.1	0 19 30.2	0.54	1.2718732	1.2590859	1.2604975
15	228 45 26.4	44.53	7.1	0 19 25.9	0.54	1.2719040	1.2619541	1.2634490
23	228 51 22.6	44.52	−7.1	+0 19 21.5	−0.54	1.2719349	1.2649747	1.2665241
31	228 57 18.7	44.52	7.1	0 19 17.1	0.54	1.2719658	1.2680891	1.2696612
Aug. 8	229 3 14.8	44.51	7.1	0 19 12.7	0.55	1.2719967	1.2712354	1.2728050
16	229 9 10.9	44.50	7.0	0 19 8.4	0.55	1.2720276	1.2743639	1.2759034
24	229 15 6.9	44.50	7.0	0 19 4.1	0.55	1.2720586	1.2774185	1.2789019
Sept. 1	229 21 2.8	44.49	−7.0	+0 18 59.7	−0.55	1.2720896	1.2803477	1.2817506
9	229 26 58.8	44.49	7.0	0 18 55.3	0.55	1.2721206	1.2831051	1.2844064
17	229 32 54.6	44.48	7.0	0 18 50.9	0.55	1.2721516	1.2856492	1.2868284
25	229 38 50.5	44.48	6.9	0 18 46.6	0.55	1.2721827	1.2879389	1.2889770
Oct. 3	229 44 46.2	44.47	6.9	0 18 42.2	0.55	1.2722138	1.2899388	1.2908210
11	229 50 42.0	44.47	−6.9	+0 18 37.8	−0.55	1.2722449	1.2916211	1.2923351
19	229 56 37.7	44.46	6.9	0 18 33.4	0.55	1.2722760	1.2929603	1.2934936
27	230 2 33.3	44.45	6.8	0 18 29.0	0.55	1.2723072	1.2939334	1.2942782
Nov. 4	230 8 28.9	44.45	6.8	0 18 24.6	0.55	1.2723384	1.2945269	1.2946791
12	230 14 24.5	44.44	6.8	0 18 20.2	0.55	1.2723697	1.2947330	1.2946879
20	230 20 20.0	44.44	−6.8	+0 18 15.8	−0.55	1.2724009	1.2945433	1.2943004
28	230 26 15.5	44.43	6.8	0 18 11.5	0.55	1.2724322	1.2939597	1.2935229
Dec. 6	230 32 10.9	44.43	6.7	0 18 7.0	0.55	1.2724636	1.2929913	1.2923662
14	230 38 6.3	44.42	6.7	0 18 2.6	0.55	1.2724949	1.2916495	1.2908433
22	230 44 1.7	44.42	6.7	0 17 58.2	0.55	1.2725263	1.2899511	1.2889765
30	230 49 57.0	44.41	−6.7	+0 17 53.8	−0.55	1.2725577	1.2879234	1.2867961
38	230 55 52.2	44.40	−6.6	+0 17 49.4	−0.55	1.2725892		

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 4	74 34 24.9	22.03	−46.1	−1 28 34.7	+0.38	1.4749796	1.4623946	1.4629517
12	74 37 21.1	22.03	46.1	1 28 31.7	0.38	1.4749909	1.4635689	1.4642431
20	74 40 17.4	22.03	46.2	1 28 28.6	0.38	1.4749923	1.4649702	1.4657464
28	74 43 13.6	22.03	46.2	1 28 25.5	0.38	1.4749936	1.4665671	1.4674282
Feb. 5	74 46 9.9	22.03	46.2	1 28 22.5	0.38	1.4749949	1.4683244	1.4692504
13	74 49 6.1	22.03	−46.3	−1 28 19.4	+0.38	1.4749962	1.4702016	1.4711736
21	74 52 2.3	22.03	46.3	1 28 16.4	0.38	1.4749975	1.4721611	1.4731593
Mar. 1	74 54 58.6	22.03	46.3	1 28 13.3	0.38	1.4749988	1.4741629	1.4751666
9	74 57 54.8	22.03	46.4	1 28 10.2	0.38	1.4749901	1.4761659	1.4771559
17	75 0 51.0	22.03	46.4	1 28 7.1	0.38	1.4749913	1.4781326	1.4790916
25	75 3 47.2	22.03	−46.4	−1 28 4.1	+0.39	1.4749926	1.4800287	1.4809396
Apr. 2	75 6 43.4	22.03	46.5	1 28 1.0	0.39	1.4749939	1.4818203	1.4826663
10	75 9 39.7	22.03	46.5	1 27 57.9	0.39	1.4749952	1.4834752	1.4842441
18	75 12 35.9	22.03	46.5	1 27 54.8	0.39	1.4749964	1.4849701	1.4856499
26	75 15 32.1	22.03	46.5	1 27 51.7	0.39	1.4749977	1.4862812	1.4868610
May 4	75 18 28.3	22.03	−46.6	−1 27 48.6	+0.39	1.4749989	1.4873877	1.4878593
12	75 21 24.5	22.02	46.6	1 27 45.5	0.39	1.4750002	1.4882744	1.4886319
20	75 24 20.7	22.02	46.6	1 27 42.4	0.39	1.4750014	1.4889305	1.4891686
28	75 27 16.9	22.02	46.7	1 27 39.3	0.39	1.4750027	1.4893457	1.4894612
June 5	75 30 13.0	22.02	46.7	1 27 36.2	0.39	1.4750039	1.4895154	1.4895078
13	75 33 9.2	22.02	−46.7	−1 27 33.0	+0.39	1.4750051	1.4894389	1.4893086
21	75 36 5.4	22.02	46.8	1 27 29.9	0.39	1.4750064	1.4891177	1.4888662
29	75 39 1.6	22.02	46.8	1 27 26.8	0.39	1.4750076	1.4885556	1.4881871
July 7	75 41 57.8	22.02	46.8	1 27 23.7	0.39	1.4750088	1.4877624	1.4872928
15	75 44 53.9	22.02	46.8	1 27 20.5	0.39	1.4750100	1.4867501	1.4861656
23	75 47 50.1	22.02	−46.9	−1 27 17.4	+0.39	1.4750112	1.4855320	1.4848513
31	75 50 46.3	22.02	46.9	1 27 14.2	0.39	1.4750124	1.4841265	1.4833605
Aug. 8	75 53 42.4	22.02	46.9	1 27 11.1	0.39	1.4750135	1.4825564	1.4817168
16	75 56 38.6	22.02	46.9	1 27 8.0	0.39	1.4750147	1.4808454	1.4799448
24	75 59 34.7	22.02	47.0	1 27 4.8	0.39	1.4750159	1.4790195	1.4780734
Sept. 1	76 2 30.9	22.02	−47.0	−1 27 1.7	+0.39	1.4750171	1.4771107	1.4761355
9	76 5 27.0	22.02	47.0	1 26 58.5	0.39	1.4750183	1.4751520	1.4741638
17	76 8 23.1	22.02	47.1	1 26 55.3	0.40	1.4750194	1.4731761	1.4721935
25	76 11 19.3	22.02	47.1	1 26 52.2	0.40	1.4750206	1.4712209	1.4702634
Oct. 3	76 14 15.4	22.02	47.1	1 26 49.0	0.40	1.4750218	1.4693254	1.4684116
11	76 17 11.5	22.02	−47.1	−1 26 45.8	+0.40	1.4750229	1.4675865	1.4666746
19	76 20 7.6	22.02	47.2	1 26 42.6	0.40	1.4750241	1.4659607	1.4650900
27	76 23 3.8	22.01	47.2	1 26 39.5	0.40	1.4750252	1.4643663	1.4636942
Nov. 4	76 25 59.9	22.01	47.2	1 26 36.3	0.40	1.4750264	1.4630767	1.4625173
12	76 28 56.0	22.01	47.2	1 26 33.1	0.40	1.4750275	1.4620194	1.4615870
20	76 31 52.1	22.01	−47.3	−1 26 29.9	+0.40	1.4750286	1.4612222	1.4609279
28	76 34 48.2	22.01	47.3	1 26 26.7	0.40	1.4750297	1.4607051	1.4605556
Dec. 6	76 37 44.3	22.01	47.3	1 26 23.5	0.40	1.4750308	1.4604799	1.4604791
14	76 40 40.4	22.01	47.3	1 26 20.3	0.40	1.4750319	1.4605531	1.4607026
22	76 43 36.5	22.01	47.4	1 26 17.1	0.40	1.4750331	1.4609257	1.4612218
30	76 46 32.5	22.01	−47.4	−1 26 13.9	+0.40	1.4750342	1.4615883	1.4620235
38	76 49 28.6	22.01	−47.4	−1 26 10.7	+0.40	1.4750353		

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Jan. 0	+0.1684069	+0.1770187	− 77	−0.8887194	−0.8873051	−174	−0.3856029	−0.3849888	+367
1	0.1856164	0.1941995	86	0.8858214	0.8842684	176	0.3843447	0.3836706	365
2	0.2027663	0.2113175	95	0.8826471	0.8809568	179	0.3829669	0.3822332	362
3	0.2198519	0.2283690	104	0.8791981	0.8773711	182	0.3814697	0.3806768	360
4	0.2368679	0.2453475	112	0.8754760	0.8735128	185	0.3798543	0.3790022	357
5	+0.2538076	+0.2622482	−120	−0.8714817	−0.8693829	−188	−0.3781206	−0.3772098	+354
6	0.2706681	0.2790662	128	0.8672167	0.8649833	192	0.3762698	0.3753006	350
7	0.2874423	0.2957958	136	0.8626830	0.8603163	196	0.3743024	0.3732754	347
8	0.3041262	0.3124332	144	0.8578829	0.8553830	200	0.3722195	0.3711349	343
9	0.3207158	0.3289731	152	0.8528168	0.8501844	204	0.3700215	0.3688794	339
10	+0.3372048	+0.3454106	−159	−0.8474861	−0.8447221	−209	−0.3677088	−0.3665096	+335
11	0.3535897	0.3617413	166	0.8418928	0.8389987	214	0.3652832	0.3640268	331
12	0.3698649	0.3779600	173	0.8360398	0.8330160	219	0.3627432	0.3614315	327
13	0.3860260	0.3940624	180	0.8299278	0.8267754	224	0.3600918	0.3587243	322
14	0.4020686	0.4100438	186	0.8235589	0.8202783	229	0.3573290	0.3559060	317
15	+0.4179875	+0.4258991	−193	−0.8169340	−0.8135263	−234	−0.3544554	−0.3529773	+312
16	0.4337780	0.4416237	199	0.8100555	0.8065220	240	0.3514719	0.3499392	307
17	0.4494356	0.4572129	205	0.8029259	0.7992671	245	0.3483792	0.3467920	302
18	0.4649551	0.4726614	211	0.7955461	0.7917630	251	0.3451778	0.3435367	296
19	0.4803313	0.4879646	216	0.7879183	0.7840122	257	0.3418688	0.3401743	290
20	+0.4955603	+0.5031176	−221	−0.7800450	−0.7760170	−263	−0.3384532	−0.3367057	+284
21	0.5106359	0.5181148	226	0.7719284	0.7677796	269	0.3349319	0.3331319	278
22	0.5255537	0.5329520	231	0.7635709	0.7593026	276	0.3313058	0.3294538	271
23	0.5403090	0.5476239	235	0.7549749	0.7505887	282	0.3275761	0.3256729	265
24	0.5548963	0.5621259	239	0.7461440	0.7416406	289	0.3237442	0.3217901	258
25	+0.5693117	+0.5764527	−243	−0.7370793	−0.7324609	−295	−0.3198110	−0.3178071	+251
26	0.5835487	0.5905994	246	0.7277855	0.7230534	302	0.3157784	0.3137250	244
27	0.5976041	0.6045625	249	0.7182652	0.7134214	309	0.3116471	0.3095451	237
28	0.6114738	0.6183375	251	0.7085222	0.7035675	316	0.3074190	0.3052689	230
29	0.6251529	0.6319191	254	0.6985583	0.6934953	323	0.3030953	0.3008982	223
30	+0.6386369	+0.6453031	−256	−0.6883788	−0.6832089	−330	−0.2986778	−0.2964344	+215
31	0.6519200	0.6584864	258	0.6779862	0.6727110	337	0.2941681	0.2918790	207
Feb. 1	0.6650015	0.6714644	259	0.6673841	0.6620061	345	0.2895675	0.2872338	199
2	0.6778751	0.6842335	260	0.6565772	0.6510976	353	0.2848780	0.2825003	191
3	0.6905389	0.6967906	261	0.6455680	0.6399890	360	0.2801009	0.2776801	183
4	+0.7029884	+0.7091317	−262	−0.6343609	−0.6286843	−367	−0.2752382	−0.2727751	+175
5	0.7152202	0.7212535	262	0.6229595	0.6171870	374	0.2702912	0.2677866	166
6	0.7272313	0.7331531	262	0.6113672	0.6055006	381	0.2652616	0.2627164	158
7	0.7390185	0.7448270	262	0.5995877	0.5936292	388	0.2601511	0.2575660	149
8	0.7505783	0.7562722	262	0.5876254	0.5815765	395	0.2549613	0.2523370	140
9	+0.7619081	+0.7674856	−261	−0.5754830	−0.5693455	−402	−0.2496934	−0.2470309	+131
10	0.7730045	0.7784644	260	0.5631644	0.5569403	409	0.2443492	0.2416489	122
11	0.7838647	0.7892050	258	0.5506734	0.5443642	416	0.2389300	0.2361929	113
12	0.7944850	0.7997045	256	0.5380131	0.5316208	423	0.2334377	0.2306645	104
13	0.8048635	0.8099605	254	0.5251876	0.5187139	430	0.2278736	0.2250652	95
14	+0.8149958	+0.8199691	−251	−0.5122003	−0.5056474	−437	−0.2222394	−0.2193965	+ 86
15	+0.8248798	+0.8297274	−248	−0.4990555	−0.4924252	−443	−0.2165366	−0.2136600	+ 76

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Feb. 15	+0.8248798	+0.8297274	−248	−0.4990555	−0.4924252	−443	−0.2165366	−0.2136600	+ 76
16	0.8345117	0.8392325	245	0.4857569	0.4790513	450	0.2107669	0.2078577	67
17	0.8439892	0.8484814	241	0.4723087	0.4655293	456	0.2049323	0.2019908	57
18	0.8530068	0.8574711	237	0.4587138	0.4518631	463	0.1990337	0.1960613	47
19	0.8618678	0.8661986	233	0.4449775	0.4380574	469	0.1930737	0.1900711	37
20	+0.8704632	+0.8746610	−229	−0.4311034	−0.4241162	−475	−0.1870538	−0.1840220	+ 27
21	0.8787918	0.8828552	224	0.4170963	0.4100441	481	0.1809760	0.1779160	17
22	0.8868510	0.8907791	219	0.4029603	0.3958456	487	0.1748422	0.1717549	+ 7
23	0.8946390	0.8984301	214	0.3887004	0.3815253	493	0.1686544	0.1655409	− 3
24	0.9021523	0.9058056	209	0.3743208	0.3670876	499	0.1624146	0.1592759	13
25	+0.9093894	+0.9129033	−203	−0.3598264	−0.3525379	−504	−0.1561251	−0.1529623	− 23
26	0.9163473	0.9197216	197	0.3452225	0.3378807	510	0.1497879	0.1466020	33
27	0.9230255	0.9262585	191	0.3305131	0.3231205	515	0.1434049	0.1401970	43
28	0.9294206	0.9325118	185	0.3157034	0.3082626	520	0.1369786	0.1337499	53
Mar. 1	0.9355319	0.9384807	178	0.3007986	0.2933123	525	0.1305111	0.1272626	63
2	+0.9413580	+0.9441634	−171	−0.2858039	−0.2782738	−530	−0.1240046	−0.1207373	− 73
3	0.9468970	0.9496588	164	0.2707230	0.2631522	535	0.1174610	0.1141760	83
4	0.9521485	0.9546657	156	0.2555619	0.2479526	540	0.1108826	0.1075810	93
5	0.9571107	0.9594837	148	0.2403249	0.2326791	544	0.1042715	0.1009542	104
6	0.9617839	0.9640113	140	0.2250159	0.2173361	548	0.0976294	0.0942974	115
7	+0.9661659	+0.9682477	−131	−0.2096403	−0.2019290	−552	−0.0909585	−0.0876128	−125
8	0.9702566	0.9721927	123	0.1942028	0.1864621	556	0.0842607	0.0809024	135
9	0.9740557	0.9758453	114	0.1787075	0.1709396	560	0.0775382	0.0741681	145
10	0.9775616	0.9792047	105	0.1631591	0.1553665	564	0.0707925	0.0674117	156
11	0.9807745	0.9822707	96	0.1475622	0.1397466	567	0.0640258	0.0606351	165
12	+0.9836934	+0.9850426	− 87	−0.1319206	−0.1240848	−571	−0.0572398	−0.0538402	−175
13	0.9863180	0.9875193	77	0.1162397	0.1083857	574	0.0504366	0.0470291	185
14	0.9886466	0.9897000	67	0.1005232	0.0926526	577	0.0436180	0.0402033	196
15	0.9906795	0.9915849	57	0.0847748	0.0768907	580	0.0367854	0.0333648	206
16	0.9924161	0.9931731	47	0.0690006	0.0611049	583	0.0299415	0.0265157	216
17	+0.9938557	+0.9944639	− 37	−0.0532042	−0.0452992	−586	−0.0230878	−0.0196579	−226
18	0.9949977	0.9954569	26	0.0373904	0.0294786	589	0.0162264	0.0127935	236
19	0.9958416	0.9961519	15	0.0215643	−0.0136477	591	0.0093595	−0.0059245	246
20	0.9963873	0.9965481	− 4	−0.0057298	+0.0021885	593	−0.0024889	+0.0009471	256
21	0.9966342	0.9966452	+ 7	+0.0101070	0.0180252	595	+0.0043831	0.0078190	265
22	+0.9965816	+0.9964436	+ 18	+0.0259424	+0.0338580	−597	+0.0112544	+0.0146892	−275
23	0.9962309	0.9959436	30	0.0417713	0.0496813	598	0.0181231	0.0215555	284
24	0.9955814	0.9951448	42	0.0575878	0.0654902	599	0.0249864	0.0284155	293
25	0.9946337	0.9940481	54	0.0733878	0.0812799	600	0.0318425	0.0352673	302
26	0.9933880	0.9926536	66	0.0891659	0.0970453	601	0.0386891	0.0421083	311
27	+0.9918448	+0.9909622	+ 78	+0.1049176	+0.1127815	−601	+0.0455243	+0.0489367	−320
28	0.9900055	0.9889749	90	0.1206369	0.1284834	602	0.0523453	0.0557500	329
29	0.9878707	0.9866928	103	0.1363201	0.1441460	602	0.0591505	0.0625462	337
30	0.9854414	0.9841167	116	0.1519607	0.1597636	602	0.0659371	0.0693230	346
31	0.9827189	0.9812484	129	0.1675515	0.1753333	602	0.0727035	0.0760785	354
32	+0.9797052	+0.9780895	+142	+0.1830989	+0.1908504	−602	+0.0794477	+0.0828110	−363
33	+0.9764016	+0.9746415	+155	+0.1985873	+0.2063091	−602	+0.0861679	+0.0895181	−371

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Apr. 1	+0.9797052	+0.9780895	+142	+0.1830989	+0.1908504	−602	+0.0794477	+0.0828110	−363
2	0.9764016	0.9746415	155	0.1985873	0.2063091	602	0.0861679	0.0895181	371
3	0.9728095	0.9709056	168	0.2140154	0.2217058	602	0.0928616	0.0961982	379
4	0.9689302	0.9668837	182	0.2293794	0.2370355	601	0.0995275	0.1028490	387
5	0.9647662	0.9625778	195	0.2446737	0.2522938	600	0.1061627	0.1094686	395
6	+0.9603187	+0.9579891	+209	+0.2598951	+0.2674773	−599	+0.1127665	+0.1160561	−403
7	0.9555893	0.9531197	223	0.2750398	0.2825818	598	0.1193371	0.1226091	411
8	0.9505802	0.9479710	237	0.2901030	0.2976028	597	0.1258721	0.1291258	418
9	0.9452926	0.9425453	251	0.3050808	0.3125365	596	0.1323701	0.1356047	425
10	0.9397291	0.9368441	266	0.3199694	0.3273788	594	0.1388295	0.1420441	432
11	+0.9338906	+0.9308690	+280	+0.3347645	+0.3421260	−592	+0.1452484	+0.1484423	−439
12	0.9277794	0.9246219	295	0.3494627	0.3567739	590	0.1516254	0.1547975	446
13	0.9213968	0.9181044	310	0.3640592	0.3713184	588	0.1579584	0.1611080	453
14	0.9147449	0.9113187	325	0.3785507	0.3857556	585	0.1642460	0.1673722	459
15	0.9078258	0.9042663	340	0.3929326	0.4000809	582	0.1704862	0.1735878	466
16	+0.9006406	+0.8969489	+355	+0.4072002	+0.4142904	−579	+0.1766769	+0.1797535	−472
17	0.8931915	0.8893686	370	0.4213510	0.4283816	576	0.1828172	0.1858677	478
18	0.8854804	0.8815276	385	0.4353810	0.4423480	573	0.1889047	0.1919280	484
19	0.8775102	0.8734285	400	0.4492829	0.4561856	570	0.1949375	0.1979329	490
20	0.8692828	0.8650729	416	0.4630553	0.4698917	566	0.2009139	0.2038805	495
21	+0.8607996	+0.8564638	+431	+0.4766940	+0.4834613	−562	+0.2068322	+0.2097688	−500
22	0.8520653	0.8476044	447	0.4901934	0.4968898	558	0.2126901	0.2155958	505
23	0.8430814	0.8384966	463	0.5035500	0.5101735	554	0.2184858	0.2213600	510
24	0.8338506	0.8291437	479	0.5167598	0.5233086	549	0.2242181	0.2270597	514
25	0.8243763	0.8195488	495	0.5298191	0.5362906	545	0.2298847	0.2326928	519
26	+0.8146617	+0.8097152	+511	+0.5427230	+0.5491161	−540	+0.2354838	+0.2382577	−523
27	0.8047098	0.7996461	527	0.5554690	0.5617810	535	0.2410142	0.2437529	527
28	0.7945244	0.7893452	543	0.5680519	0.5742816	530	0.2464737	0.2491766	530
29	0.7841089	0.7788157	559	0.5804695	0.5866150	525	0.2518614	0.2545277	534
30	0.7734664	0.7680615	576	0.5927176	0.5987770	519	0.2571754	0.2598043	537
May 1	+0.7626014	+0.7570864	+592	+0.6047928	+0.6107646	−513	+0.2624140	+0.2650045	−540
2	0.7515170	0.7458938	609	0.6166922	0.6225751	507	0.2675764	0.2701285	543
3	0.7402171	0.7344872	625	0.6284130	0.6342054	500	0.2726611	0.2751740	546
4	0.7287046	0.7228699	642	0.6399519	0.6456518	493	0.2776669	0.2801397	548
5	0.7169836	0.7110460	658	0.6513052	0.6569121	486	0.2825922	0.2850246	550
6	+0.7050576	+0.6990192	+675	+0.6624716	+0.6679830	−478	+0.2874365	+0.2898274	−552
7	0.6929310	0.6867929	691	0.6734462	0.6788622	471	0.2921976	0.2945471	554
8	0.6806058	0.6743703	708	0.6842295	0.6895474	463	0.2968756	0.2991827	555
9	0.6680865	0.6617552	725	0.6948160	0.7000351	455	0.3014684	0.3037328	556
10	0.6553764	0.6489505	742	0.7052043	0.7103232	447	0.3059756	0.3081964	557
11	+0.6424782	+0.6359600	+759	+0.7153916	+0.7204092	−439	+0.3103954	+0.3125735	−558
12	0.6293967	0.6227879	776	0.7253756	0.7302901	430	0.3147274	0.3168597	559
13	0.6161344	0.6094369	793	0.7351525	0.7399626	421	0.3189695	0.3210566	560
14	0.6026956	0.5959108	810	0.7447201	0.7494247	412	0.3231210	0.3251625	560
15	0.5890831	0.5822130	827	0.7540760	0.7586736	403	0.3271809	0.3291760	560
16	+0.5753011	+0.5683479	+843	+0.7632172	+0.7677063	−393	+0.3311476	+0.3330956	−559
17	+0.5613537	+0.5543188	+860	+0.7721407	+0.7765205	−383	+0.3350200	+0.3369207	−559

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
May 17	+0.5613537	+0.5543188	+ 860	+0.7721407	+0.7765205	−383	+0.3350200	+0.3369207	−559
18	0.5472440	0.5401298	876	0.7808450	0.7851133	372	0.3387973	0.3406496	558
19	0.5329767	0.5257849	893	0.7893256	0.7934817	361	0.3424775	0.3442811	557
20	0.5185552	0.5112880	909	0.7975812	0.8016236	350	0.3460601	0.3478143	555
21	0.5039840	0.4966443	926	0.8056088	0.8095364	339	0.3495436	0.3512479	553
22	+0.4892689	+0.4818577	+ 942	+0.8134060	+0.8172173	−327	+0.3529271	+0.3545809	−551
23	0.4744118	0.4669323	958	0.8209701	0.8246645	315	0.3562094	0.3578124	549
24	0.4594194	0.4518737	974	0.8282999	0.8318759	303	0.3593898	0.3609413	546
25	0.4442957	0.4366861	990	0.8353924	0.8388490	291	0.3624670	0.3639667	543
26	0.4290455	0.4213744	1006	0.8422457	0.8455823	278	0.3654403	0.3668879	540
27	+0.4136734	+0.4059430	+1022	+0.8488585	+0.8520740	−265	+0.3683092	+0.3697040	−537
28	0.3981839	0.3903966	1038	0.8552284	0.8583217	252	0.3710723	0.3724142	534
29	0.3825819	0.3747403	1054	0.8613536	0.8643246	239	0.3737295	0.3750181	530
30	0.3668725	0.3589789	1070	0.8672332	0.8700807	225	0.3762800	0.3775151	526
31	0.3510603	0.3431175	1086	0.8728663	0.8755895	211	0.3787233	0.3799045	522
June 1	+0.3351508	+0.3271606	+1101	+0.8782505	+0.8808497	−196	+0.3810587	+0.3821861	−518
2	0.3191474	0.3111117	1116	0.8833867	0.8858610	181	0.3832863	0.3843596	513
3	0.3030544	0.2949762	1131	0.8882726	0.8906210	166	0.3854057	0.3864243	508
4	0.2868776	0.2787588	1146	0.8929065	0.8951292	151	0.3874156	0.3883796	503
5	0.2706206	0.2624634	1160	0.8972887	0.8993847	135	0.3893163	0.3902256	498
6	+0.2542880	+0.2460949	+1174	+0.9014174	+0.9033870	−119	+0.3911075	+0.3919619	−493
7	0.2378847	0.2296578	1188	0.9052931	0.9071355	102	0.3927888	0.3935881	487
8	0.2214146	0.2131656	1202	0.9089141	0.9106285	85	0.3943598	0.3951037	481
9	0.2048815	0.1965930	1216	0.9122788	0.9138651	68	0.3958199	0.3965083	475
10	0.1882906	0.1799745	1229	0.9153873	0.9168452	51	0.3971689	0.3978017	468
11	+0.1716455	+0.1633044	+1242	+0.9182386	+0.9195673	− 33	+0.3984065	+0.3989833	−461
12	0.1549515	0.1465870	1255	0.9208314	0.9220307	− 15	0.3995321	0.4000527	454
13	0.1382119	0.1298269	1268	0.9231652	0.9242347	+ 4	0.4005452	0.4010096	447
14	0.1214325	0.1130290	1281	0.9252391	0.9261781	22	0.4014457	0.4018535	440
15	0.1046171	0.0961975	1293	0.9270518	0.9278602	41	0.4022330	0.4025841	432
16	+0.0877707	+0.0793372	+1305	+0.9286031	+0.9292806	+ 60	+0.4029067	+0.4032009	−424
17	0.0708976	0.0624528	1316	0.9298924	0.9304384	80	0.4034666	0.4037038	416
18	0.0540032	0.0455493	1327	0.9309187	0.9313334	100	0.4039124	0.4040925	408
19	0.0370920	0.0286320	1337	0.9316821	0.9319646	120	0.4042440	0.4043667	399
20	0.0201699	+0.0117059	1347	0.9321811	0.9323316	140	0.4044608	0.4045262	391
21	+0.0032409	−0.0052242	+1357	+0.9324161	+0.9324345	+161	+0.4045629	+0.4045708	−382
22	−0.0136889	0.0221528	1366	0.9323868	0.9322731	182	0.4045499	0.4045004	373
23	0.0306151	0.0390749	1375	0.9320933	0.9318476	203	0.4044223	0.4043155	363
24	0.0475318	0.0559854	1384	0.9315359	0.9311582	224	0.4041801	0.4040160	354
25	0.0644348	0.0728794	1392	0.9307146	0.9302053	246	0.4038232	0.4036019	344
26	−0.0813187	−0.0897520	+1400	+0.9296303	+0.9289894	+268	+0.4033521	+0.4030737	−334
27	0.0981786	0.1065978	1407	0.9282828	0.9275109	290	0.4027669	0.4024316	324
28	0.1150091	0.1234119	1414	0.9266737	0.9257710	312	0.4020679	0.4016759	314
29	0.1318057	0.1401898	1421	0.9248031	0.9237699	335	0.4012556	0.4008070	304
30	0.1485636	0.1569265	1427	0.9226717	0.9215087	358	0.4003302	0.3998253	293
31	−0.1652781	−0.1736176	+1433	+0.9202811	+0.9189889	+381	+0.3992924	+0.3987315	−282
32	−0.1819446	−0.1902585	+1438	+0.9176322	+0.9162113	+404	+0.3981427	+0.3975260	−271

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
July 1	−0.1652781	−0.1736176	+1433	+0.9202811	+0.9189889	+ 381	+0.3992924	+0.3987315	−382
2	0.1819446	0.1902585	1438	0.9176322	0.9162113	404	0.3981427	0.3975260	271
3	0.1985587	0.2068450	1443	0.9147262	0.9131770	427	0.3968815	0.3962091	260
4	0.2151164	0.2233721	1447	0.9115633	0.9098859	450	0.3955090	0.3947812	249
5	0.2316120	0.2398358	1451	0.9081449	0.9063405	474	0.3940259	0.3932430	237
6	−0.2480429	−0.2562326	+1454	+0.9044726	+0.9025413	+ 497	+0.3924326	+0.3915948	−225
7	0.2644043	0.2725572	1457	0.9005468	0.8984893	521	0.3907296	0.3898378	213
8	0.2806910	0.2888055	1459	0.8963689	0.8941858	545	0.3889175	0.3879705	201
9	0.2968999	0.3049735	1461	0.8919400	0.8896314	569	0.3869963	0.3859950	188
10	0.3130260	0.3210569	1462	0.8872605	0.8848275	593	0.3849667	0.3839114	176
11	−0.3290655	−0.3370513	+1462	+0.8823323	+0.8797751	+ 617	+0.3828291	+0.3817199	−163
12	0.3450138	0.3529522	1462	0.8771559	0.8744750	641	0.3805839	0.3794211	151
13	0.3608662	0.3687552	1461	0.8717324	0.8689284	665	0.3782316	0.3770153	138
14	0.3766186	0.3844561	1460	0.8660632	0.8631369	689	0.3757724	0.3745030	125
15	0.3922668	0.4000500	1458	0.8601496	0.8571015	714	0.3732072	0.3718850	112
16	−0.4078053	−0.4155323	+1456	+0.8539927	+0.8508236	+ 738	+0.3705364	+0.3691615	− 99
17	0.4232303	0.4308988	1453	0.8475942	0.8443045	763	0.3677604	0.3663332	86
18	0.4385370	0.4461443	1450	0.8409550	0.8375460	787	0.3648800	0.3634009	73
19	0.4537200	0.4612636	1446	0.8340777	0.8305503	812	0.3618960	0.3603654	59
20	0.4687746	0.4762526	1441	0.8269639	0.8233188	837	0.3588092	0.3572275	45
21	−0.4836971	−0.4911075	+1436	+0.8196153	+0.8158534	+ 861	+0.3556204	+0.3539880	− 31
22	0.4984830	0.5058229	1430	0.8120336	0.8081564	886	0.3523305	0.3506479	17
23	0.5131268	0.5203944	1424	0.8042219	0.8002299	910	0.3489405	0.3472081	− 3
24	0.5276249	0.5348176	1417	0.7961813	0.7920768	935	0.3454512	0.3436700	+ 11
25	0.5419720	0.5490878	1410	0.7879162	0.7836996	959	0.3418645	0.3400346	25
26	−0.5561645	−0.5632018	+1402	+0.7794276	+0.7751005	+ 983	+0.3381807	+0.3363029	+ 39
27	0.5701988	0.5771548	1393	0.7707186	0.7662821	1007	0.3344014	0.3324763	54
28	0.5840696	0.5909430	1383	0.7617916	0.7572475	1031	0.3305277	0.3285558	68
29	0.5977744	0.6045628	1373	0.7526501	0.7479998	1054	0.3265608	0.3245430	82
30	0.6113082	0.6180103	1362	0.7432969	0.7385414	1078	0.3225023	0.3204389	96
31	−0.6246684	−0.6312820	+1350	+0.7337339	+0.7288747	+1101	+0.3183529	+0.3162446	+111
Aug. 1	0.6378507	0.6443744	1338	0.7239641	0.7190025	1124	0.3141140	0.3119613	125
2	0.6508525	0.6572844	1325	0.7139905	0.7089287	1147	0.3097867	0.3075906	140
3	0.6636697	0.6700079	1312	0.7038171	0.6986556	1170	0.3053730	0.3031338	154
4	0.6762986	0.6825416	1298	0.6934448	0.6881854	1193	0.3008732	0.2985916	169
5	−0.6887365	−0.6948828	+1284	+0.6828776	+0.6775217	+1216	+0.2962889	+0.2939654	+184
6	0.7009802	0.7070282	1269	0.6721180	0.6666666	1238	0.2916211	0.2892562	199
7	0.7130264	0.7189741	1254	0.6611680	0.6556227	1261	0.2868708	0.2844652	214
8	0.7248712	0.7307173	1239	0.6500310	0.6443935	1283	0.2820395	0.2795938	228
9	0.7365119	0.7422544	1223	0.6387103	0.6329814	1305	0.2771283	0.2746430	243
10	−0.7479445	−0.7535820	+1206	+0.6272074	+0.6213886	+1327	+0.2721381	+0.2696138	+257
11	0.7591663	0.7646969	1189	0.6155255	0.6096188	1349	0.2670702	0.2645076	272
12	0.7701734	0.7755954	1171	0.6036686	0.5976750	1370	0.2619260	0.2593257	286
13	0.7809625	0.7862742	1152	0.5916387	0.5855601	1391	0.2567068	0.2540695	301
14	0.7915300	0.7967296	1133	0.5794395	0.5732770	1412	0.2514139	0.2487401	315
15	−0.8018726	−0.8069585	+1113	+0.5670733	+0.5606268	+1432	+0.2460484	+0.2433391	+329
16	−0.8119869	−0.8169572	+1093	+0.5545441	+0.5482196	+1452	+0.2406122	+0.2378679	+344

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Aug. 16	−0.8119869	−0.8169672	+1093	+0.5545441	+0.5482196	+1452	+0.2406122	+0.2378679	+344
17	0.8218692	0.8267223	1072	0.5418557	0.5354527	1471	0.2351065	0.2323281	359
18	0.8315163	0.8362510	1050	0.5290111	0.5225314	1490	0.2296330	0.2267213	373
19	0.8409257	0.8455398	1028	0.5160141	0.5094596	1509	0.2238932	0.2210490	388
20	0.8500931	0.8545857	1006	0.5028684	0.4962410	1527	0.2181888	0.2153129	402
21	−0.8590167	−0.8633855	+983	+0.4895779	+0.4828797	+1545	+0.2124216	+0.2095151	+417
22	0.8676920	0.8719363	959	0.4761469	0.4693798	1562	0.2065935	0.2036570	431
23	0.8761178	0.8802362	935	0.4625791	0.4557455	1579	0.2007060	0.1977407	445
24	0.8842910	0.8882819	910	0.4488794	0.4419813	1595	0.1947614	0.1917681	459
25	0.8922088	0.8960714	885	0.4350512	0.4280901	1611	0.1887610	0.1857405	473
26	−0.8998696	−0.9036028	+859	+0.4210986	+0.4140775	+1626	+0.1827067	+0.1796602	+487
27	0.9072709	0.9108737	833	0.4070270	0.3999472	1641	0.1766010	0.1735292	501
28	0.9144109	0.9178820	807	0.3928390	0.3857031	1656	0.1704451	0.1673490	514
29	0.9212869	0.9246250	780	0.3785399	0.3713495	1670	0.1642410	0.1611214	528
30	0.9278985	0.9311042	753	0.3641328	0.3568904	1684	0.1579903	0.1548481	541
31	−0.9342428	−0.9373142	+725	+0.3496226	+0.3423300	+1697	+0.1516949	+0.1485311	+554
Sept. 1	0.9403183	0.9432551	697	0.3350131	0.3276721	1710	0.1453566	0.1421717	567
2	0.9461241	0.9489249	668	0.3203077	0.3129207	1722	0.1389766	0.1357719	580
3	0.9516576	0.9543221	639	0.3055114	0.2980804	1734	0.1325575	0.1293337	593
4	0.9569182	0.9594456	610	0.2906281	0.2831546	1746	0.1261005	0.1228583	606
5	−0.9619040	−0.9642932	+580	+0.2756605	+0.2681466	+1757	+0.1196071	+0.1163472	+618
6	0.9666131	0.9688633	550	0.2606134	0.2530615	1768	0.1130789	0.1098026	631
7	0.9710438	0.9731544	520	0.2454912	0.2379028	1778	0.1065183	0.1032260	643
8	0.9751949	0.9771653	489	0.2302970	0.2226744	1787	0.0999261	0.0966190	655
9	0.9790652	0.9808942	458	0.2150355	0.2073807	1796	0.0933047	0.0899835	667
10	−0.9826523	−0.9843393	+427	+0.1997105	+0.1920252	+1805	+0.0866555	+0.0833210	+679
11	0.9859550	0.9874991	395	0.1843257	0.1766127	1813	0.0799803	0.0766337	690
12	0.9889716	0.9903724	363	0.1688866	0.1611477	1820	0.0732814	0.0699235	702
13	0.9917011	0.9929576	331	0.1533967	0.1456341	1827	0.0665603	0.0631920	713
14	0.9941416	0.9952529	298	0.1378606	0.1300770	1833	0.0598189	0.0564414	724
15	−0.9962914	−0.9972572	+265	+0.1222836	+0.1144608	+1839	+0.0530596	+0.0496738	+735
16	0.9981500	0.9989699	232	0.1066693	0.0988498	1844	0.0462842	0.0428911	746
17	0.9997166	1.0003898	198	0.0910230	0.0831895	1849	0.0394947	0.0360956	756
18	1.0009896	1.0015160	164	0.0753499	0.0675047	1853	0.0326938	0.0292895	766
19	1.0019688	1.0023480	130	0.0596545	0.0517997	1857	0.0258830	0.0224747	776
20	−1.0026536	−1.0028853	+ 96	+0.0439412	+0.0360797	+1860	+0.0190647	+0.0156534	+786
21	1.0030432	1.0031271	62	0.0282158	0.0203500	1863	0.0122410	0.0088280	796
22	1.0031372	1.0030737	+ 28	+0.0124829	+0.0046149	1865	+0.0054144	+0.0020004	806
23	1.0029365	1.0027254	− 7	−0.0032532	−0.0111207	1867	−0.0014136	−0.0048273	815
24	1.0024404	1.0020818	42	0.0189871	0.0268517	1868	0.0082404	0.0116526	824
25	−1.0016494	−1.0011433	− 77	−0.0347139	−0.0425733	+1868	−0.0150639	−0.0184739	+832
26	1.0005636	0.9999103	112	0.0504493	0.0582812	1868	0.0218824	0.0252893	840
27	0.9991836	0.9983835	148	0.0661285	0.0739708	1867	0.0286937	0.0320961	848
28	0.9975102	0.9965636	183	0.0818072	0.0896369	1866	0.0354959	0.0388927	856
29	0.9955439	0.9944510	219	0.0974597	0.1052753	1864	0.0422866	0.0456774	863
30	−0.9932850	−0.9920460	−255	−0.1130829	−0.1208818	+1862	−0.0490647	−0.0524481	+870
31	−0.9907341	−0.9893495	−291	−0.1286717	−0.1364522	+1859	−0.0558378	−0.0592032	+877

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Oct. 1	−0.9907341	−0.9893495	−291	−0.1286717	−0.1364522	+1859	−0.0558278	−0.0592032	+877
2	0.9878923	0.9863625	327	0.1442225	0.1519817	1855	0.0625742	0.0659405	884
3	0.9847602	0.9830855	363	0.1597296	0.1674661	1851	0.0693019	0.0726584	890
4	0.9813384	0.9795191	399	0.1751906	0.1828917	1846	0.0760096	0.0793551	896
5	0.9776275	0.9756638	435	0.1905993	0.1982830	1841	0.0826948	0.0860285	902
6	−0.9736280	−0.9715204	−471	−0.2059523	−0.2136064	+1835	−0.0893559	−0.0926768	+908
7	0.9693409	0.9670897	508	0.2212450	0.2288677	1829	0.0959909	0.0992982	913
8	0.9647669	0.9623726	544	0.2364737	0.2440624	1823	0.1025993	0.1058805	918
9	0.9599069	0.9573697	581	0.2516333	0.2591858	1816	0.1091760	0.1124530	923
10	0.9547613	0.9520818	618	0.2667193	0.2742335	1809	0.1157217	0.1189922	928
11	−0.9493313	−0.9465101	−655	−0.2817276	−0.2892008	+1801	−0.1222341	−0.1254768	+932
12	0.9436183	0.9406558	692	0.2966528	0.3040834	1793	0.1287104	0.1319347	936
13	0.9376228	0.9345194	729	0.3114917	0.3188766	1784	0.1351494	0.1383539	939
14	0.9313459	0.9281025	766	0.3262379	0.3335751	1774	0.1415482	0.1447321	942
15	0.9247894	0.9214069	802	0.3408876	0.3481748	1764	0.1479052	0.1510674	945
16	−0.9179552	−0.9144344	−838	−0.3554360	−0.3626705	+1753	−0.1542183	−0.1573576	+948
17	0.9108448	0.9071865	874	0.3698779	0.3770579	1741	0.1604848	0.1636004	950
18	0.9034598	0.8996650	910	0.3842095	0.3913317	1728	0.1667037	0.1697941	952
19	0.8958023	0.8918722	946	0.3984244	0.4054875	1715	0.1728717	0.1759364	953
20	0.8878749	0.8838107	982	0.4125200	0.4195209	1701	0.1789877	0.1820253	954
21	−0.8796800	−0.8754831	−1018	−0.4264899	−0.4334268	+1687	−0.1850491	−0.1880590	+955
22	0.8712202	0.8668915	1054	0.4403310	0.4472017	1672	0.1910545	0.1940354	955
23	0.8624976	0.8580389	1089	0.4540383	0.4608399	1656	0.1970014	0.1999524	955
24	0.8535157	0.8489282	1125	0.4676065	0.4743380	1641	0.2028882	0.2058086	955
25	0.8442769	0.8395624	1161	0.4810336	0.4876925	1625	0.2087134	0.2116023	954
26	−0.8347848	−0.8299442	−1197	−0.4943142	−0.5008980	+1608	−0.2144751	−0.2173314	+953
27	0.8250413	0.8200765	1232	0.5074438	0.5139514	1591	0.2201712	0.2229944	951
28	0.8150502	0.8099627	1267	0.5204200	0.5268490	1573	0.2258006	0.2285896	949
29	0.8048144	0.7996055	1302	0.5332380	0.5395867	1555	0.2313612	0.2341154	947
30	0.7943365	0.7890077	1337	0.5458946	0.5521612	1536	0.2368520	0.2395706	945
31	−0.7836196	−0.7781728	−1372	−0.5583860	−0.5645686	+1517	−0.2422712	−0.2449534	+942
Nov. 1	0.7726675	0.7671041	1407	0.5707085	0.5768052	1497	0.2476172	0.2502622	939
2	0.7614828	0.7558039	1441	0.5828583	0.5888676	1477	0.2528884	0.2554956	936
3	0.7500678	0.7442751	1475	0.5948327	0.6007530	1456	0.2580835	0.2606520	932
4	0.7384260	0.7325209	1509	0.6066280	0.6124570	1435	0.2632010	0.2657302	928
5	−0.7265603	−0.7205447	−1543	−0.6182398	−0.6239759	+1413	−0.2682393	−0.2707281	+924
6	0.7144744	0.7083497	1576	0.6296649	0.6353061	1391	0.2731965	0.2756444	919
7	0.7021710	0.6959386	1609	0.6408997	0.6464451	1368	0.2780716	0.2804778	914
8	0.6896530	0.6833148	1642	0.6519414	0.6573880	1344	0.2828627	0.2852261	908
9	0.6769243	0.6704819	1675	0.6627851	0.6681320	1320	0.2875679	0.2898881	902
10	−0.6639880	−0.6574429	−1708	−0.6734281	−0.6786727	+1296	−0.2921864	−0.2944623	+896
11	0.6508472	0.6442018	1740	0.6838661	0.6890077	1271	0.2967159	0.2989470	889
12	0.6375068	0.6307625	1772	0.6940966	0.6991322	1245	0.3011553	0.3033405	882
13	0.6239696	0.6171287	1804	0.7041144	0.7090429	1219	0.3055024	0.3076410	875
14	0.6102401	0.6033043	1835	0.7139172	0.7187367	1193	0.3097561	0.3118474	867
15	−0.5963219	−0.5892936	−1866	−0.7235010	−0.7282096	+1166	−0.3139147	−0.3159578	+859
16	−0.5822200	−0.5751017	−1896	−0.7328623	−0.7374586	+1138	−0.3179766	−0.3199709	+850

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Nov. 16	−0.5822200	−0.5751017	−1896	−0.7328623	−0.7374586	+1138	−0.3179766	−0.3199709	+850
17	0.5679391	0.5607324	1926	0.7419981	0.7464805	1110	0.3219406	0.3238854	841
18	0.5534824	0.5461899	1956	0.7509053	0.7552723	1081	0.3258052	0.3276998	832
19	0.5388554	0.5314797	1985	0.7595810	0.7638310	1052	0.3295690	0.3314130	823
20	0.5240633	0.5166066	2014	0.7680221	0.7721540	1022	0.3332311	0.3350236	813
21	−0.5091103	−0.5015749	−2043	−0.7762261	−0.7802379	+991	−0.3367901	−0.3385305	+803
22	0.4940011	0.4863898	2071	0.7841894	0.7880805	960	0.3402447	0.3419326	793
23	0.4787413	0.4710563	2099	0.7919108	0.7956797	929	0.3435941	0.3452289	782
24	0.4633353	0.4556786	2126	0.7993873	0.8030333	897	0.3468371	0.3484186	771
25	0.4477874	0.4399628	2153	0.8066173	0.8101391	865	0.3499733	0.3515009	760
26	−0.4321049	−0.4242136	−2179	−0.8135985	−0.8169952	+832	−0.3530015	−0.3544750	+748
27	0.4162899	0.4083345	2205	0.8203289	0.8235993	799	0.3559211	0.3573398	736
28	0.4003481	0.3923312	2230	0.8268062	0.8299496	766	0.3587309	0.3600945	724
29	0.3842844	0.3762083	2255	0.8330291	0.8360447	732	0.3614304	0.3627386	711
30	0.3681035	0.3599706	2279	0.8389959	0.8418825	698	0.3640190	0.3652713	698
Dec. 1	−0.3518100	−0.3436221	−2302	−0.8447044	−0.8474616	+663	−0.3664956	−0.3676918	+685
2	0.3354077	0.3271677	2325	0.8501537	0.8527800	627	0.3688597	0.3699993	671
3	0.3189026	0.3106128	2348	0.8553408	0.8578362	591	0.3711106	0.3721934	657
4	0.3022990	0.2939615	2370	0.8602656	0.8626286	554	0.3732476	0.3742730	643
5	0.2856012	0.2772189	2391	0.8649252	0.8671552	517	0.3752697	0.3762375	629
6	−0.2688149	−0.2603896	−2412	−0.8693185	−0.8714147	+480	−0.3771763	−0.3780861	+614
7	0.2519439	0.2434784	2432	0.8734437	0.8754052	442	0.3789668	0.3798182	599
8	0.2349936	0.2264901	2452	0.8772990	0.8791251	404	0.3806402	0.3814327	584
9	0.2179685	0.2094298	2471	0.8808832	0.8825732	365	0.3821958	0.3829294	568
10	0.2008746	0.1923036	2490	0.8841948	0.8857478	326	0.3836334	0.3843075	552
11	−0.1837172	−0.1751160	−2507	−0.8872321	−0.8886476	+287	−0.3849517	−0.3855661	+536
12	0.1665008	0.1578723	2524	0.8899940	0.8912711	247	0.3861505	0.3867047	520
13	0.1492312	0.1405780	2540	0.8924788	0.8936170	207	0.3872287	0.3877227	503
14	0.1319137	0.1232392	2556	0.8946856	0.8956847	166	0.3881865	0.3886200	486
15	0.1145549	0.1058614	2570	0.8966139	0.8974728	125	0.3890231	0.3893957	469
16	−0.0971596	−0.0884503	−2584	−0.8982617	−0.8989808	+ 84	−0.3897379	−0.3900497	+451
17	0.0797341	0.0710116	2597	0.8996297	0.9002082	43	0.3903311	0.3905819	433
18	0.0622837	0.0535509	2610	0.9007163	0.9011543	+ 1	0.3908022	0.3909920	415
19	0.0448142	0.0360745	2622	0.9015219	0.9018189	− 41	0.3911512	0.3912797	397
20	0.0273323	0.0185879	2633	0.9020456	0.9022022	84	0.3913777	0.3914453	378
21	−0.0098423	−0.0010966	−2643	−0.9022884	−0.9023043	−127	−0.3914823	−0.3914888	+359
22	+0.0076488	+0.0163934	2653	0.9022497	0.9021244	170	0.3914647	0.3914101	340
23	0.0251364	0.0338769	2661	0.9019293	0.9016642	213	0.3913251	0.3912097	321
24	0.0426143	0.0513479	2669	0.9013289	0.9009227	257	0.3910639	0.3908876	301
25	0.0600771	0.0688014	2676	0.9004474	0.8999017	301	0.3906809	0.3904440	282
26	+0.0775200	+0.0862321	−2682	−0.8992864	−0.8986013	−345	−0.3901768	−0.3898794	+262
27	0.0949371	0.1036345	2687	0.8978465	0.8970221	389	0.3895518	0.3891941	242
28	0.1123236	0.1210037	2691	0.8961281	0.8951647	433	0.3888062	0.3883882	222
29	0.1296743	0.1383348	2694	0.8941320	0.8930301	477	0.3879401	0.3874620	202
30	0.1469845	0.1556224	2696	0.8918590	0.8906190	522	0.3869539	0.3864160	181
31	+0.1642482	+0.1728616	−2697	−0.8893099	−0.8879318	−567	−0.3858483	−0.3852506	+160
32	+0.1814617	+0.1900477	−2697	−0.8864848	−0.8849693	−612	−0.3846230	−0.3839658	+139

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY. True Longitude.	JANUARY. Latitude.	Day of Month.	FEBRUARY. True Longitude.	FEBRUARY. Latitude.	Day of Month.	MARCH. True Longitude.	MARCH. Latitude.
1.0	339° 36′ 53.6″	−1° 19′ 0.6″	1.0	24° 44′ 1.2″	+2° 46′ 34.6″	1.0	34° 13′ 11.2″	+3° 34′ 6.8″
1.5	345 32 44.3	0 48 14.8	1.5	31 0 18.0	3 14 22.9	1.5	40 32 47.1	3 58 38.7
2.0	351 30 30.9	−0 16 45.5	2.0	37 21 41.1	3 40 10.5	2.0	46 56 32.6	4 20 26.9
2.5	357 30 51.8	+0 15 10.0	2.5	43 48 43.4	4 3 34.3	2.5	53 24 49.3	4 39 12.6
3.0	3 34 27.5	0 47 13.4	3.0	50 21 54.9	4 24 10.3	3.0	59 57 57.8	4 54 35.1
3.5	9 41 58.6	+1 19 5.5	3.5	57 1 41.9	+4 41 34.2	3.5	66 36 17.0	+5 6 14.9
4.0	15 54 6.3	1 50 25.6	4.0	63 48 25.0	4 55 21.6	4.0	73 20 3.1	5 13 53.7
4.5	22 11 30.5	2 20 52.0	4.5	70 42 17.9	5 5 9.1	4.5	80 9 28.5	5 17 15.5
5.0	28 34 49.3	2 50 0.8	5.0	77 43 25.2	5 10 35.0	5.0	87 4 40.8	5 16 6.1
5.5	35 4 37.3	3 17 27.1	5.5	84 51 41.1	5 11 20.1	5.5	94 5 41.5	5 10 15.0
6.0	41 41 24.1	+3 42 44.2	6.0	92 6 48.1	+5 7 9.5	6.0	101 12 24.8	+4 59 35.8
6.5	48 25 32.4	4 5 23.9	6.5	99 28 16.3	4 57 53.7	6.5	108 24 36.8	4 44 7.2
7.0	55 17 16.6	4 24 57.4	7.0	106 55 22.7	4 43 30.0	7.0	115 41 54.8	4 23 53.9
7.5	62 16 40.5	4 40 56.2	7.5	114 27 12.5	4 24 3.9	7.5	123 3 46.9	3 59 7.4
8.0	69 23 36.2	4 52 52.6	8.0	122 2 40.0	3 59 49.5	8.0	130 29 31.9	3 30 6.9
8.5	76 37 42.3	+5 0 21.4	8.5	129 40 31.2	+3 31 10.3	8.5	137 58 20.2	+2 57 19.1
9.0	83 58 23.5	5 3 1.6	9.0	137 19 26.3	2 58 38.2	9.0	145 29 14.9	2 21 17.7
9.5	91 24 51.3	5 0 37.8	9.5	144 58 4.1	2 22 52.8	9.5	153 1 13.5	1 42 42.9
10.0	98 56 3.8	4 53 1.6	10.0	152 35 4.7	1 44 39.3	10.0	160 33 9.8	1 2 20.2
10.5	106 30 49.2	4 40 13.3	10.5	160 9 13.0	1 4 46.7	10.5	168 3 56.8	+0 20 58.3
11.0	114 7 47.8	+4 22 22.4	11.0	167 39 21.5	+0 24 5.1	11.0	175 32 28.6	−0 20 33.4
11.5	121 45 36.0	3 59 47.0	11.5	175 4 32.6	−0 16 36.6	11.5	182 57 43.6	1 1 25.9
12.0	129 22 50.8	3 32 54.6	12.0	182 24 0.4	0 56 32.2	12.0	190 18 45.9	1 40 53.5
12.5	136 58 12.0	3 2 19.9	12.5	189 37 10.1	1 35 0.2	12.5	197 34 47.1	2 18 15.2
13.0	144 30 27.3	2 28 42.9	13.0	196 43 39.6	2 11 24.7	13.0	204 45 8.0	2 52 55.5
13.5	151 58 33.9	+1 52 47.4	13.5	203 43 17.2	−2 45 15.6	13.5	211 49 19.0	−3 24 25.6
14.0	159 21 41.3	1 15 18.6	14.0	210 36 1.4	3 16 9.0	14.0	218 47 0.4	3 52 23.2
14.5	166 39 10.9	+0 37 1.0	14.5	217 21 59.3	3 43 46.3	14.5	225 38 2.0	4 16 32.4
15.0	173 50 36.9	−0 1 22.9	15.0	224 1 25.2	4 7 54.1	15.0	232 22 22.9	4 36 43.1
15.5	180 55 45.0	0 39 14.0	15.5	230 34 39.1	4 28 23.5	15.5	239 0 9.9	4 52 50.4
16.0	187 54 31.4	−1 15 57.1	16.0	237 2 5.2	−4 45 9.1	16.0	245 31 37.4	−5 4 53.4
16.5	194 47 1.2	1 51 1.5	16.5	243 24 10.9	4 58 8.7	16.5	251 57 5.4	5 12 54.6
17.0	201 33 26.3	2 24 0.7	17.0	249 41 25.2	5 7 22.4	17.0	258 16 58.8	5 16 59.2
17.5	208 14 4.3	2 54 33.0	17.5	255 54 18.2	5 12 52.3	17.5	264 31 46.4	5 17 14.5
18.0	214 49 16.5	3 22 20.2	18.0	262 3 20.5	5 14 42.3	18.0	270 41 59.7	5 13 48.9
18.5	221 19 26.7	−3 47 7.6	18.5	268 9 2.0	−5 12 57.5	18.5	276 48 11.8	−5 6 52.0
19.0	227 44 59.8	4 8 43.7	19.0	274 11 51.7	5 7 44.0	19.0	282 50 57.0	4 56 34.1
19.5	234 6 21.0	4 26 59.8	19.5	280 12 17.4	4 59 9.1	19.5	288 50 50.2	4 43 6.1
20.0	240 23 54.7	4 41 49.8	20.0	286 10 45.4	4 47 21.2	20.0	294 48 25.8	4 26 39.4
20.5	246 38 4.4	4 53 9.4	20.5	292 7 40.2	4 32 29.6	20.5	300 44 17.8	4 7 25.9
21.0	252 49 12.8	−5 0 56.6	21.0	298 3 24.6	−4 14 44.6	21.0	306 38 58.8	−3 45 37.8
21.5	258 57 39.7	5 5 11.1	21.5	303 58 19.6	3 54 17.5	21.5	312 33 0.0	3 21 28.2
22.0	265 3 42.7	5 5 54.7	22.0	309 52 44.7	3 31 20.9	22.0	318 26 51.0	2 55 10.7
22.5	271 7 38.5	5 3 10.3	22.5	315 46 58.2	3 6 8.4	22.5	324 20 59.4	2 27 0.0
23.0	277 9 41.4	4 57 2.8	23.0	321 41 16.5	2 38 54.7	23.0	330 15 51.0	1 57 11.5
23.5	283 10 4.8	−4 47 38.7	23.5	327 35 55.8	−2 9 55.7	23.5	336 11 49.2	−1 26 1.8
24.0	289 9 0.4	4 35 6.0	24.0	333 31 11.1	1 39 28.3	24.0	342 9 15.3	0 53 48.7
24.5	295 6 39.6	4 19 34.4	24.5	339 27 17.1	1 7 50.6	24.5	348 8 28.5	−0 20 51.2
25.0	301 3 13.2	4 1 14.7	25.0	345 24 28.4	0 35 21.3	25.0	354 9 45.8	+0 12 30.8
25.5	306 58 52.2	3 40 19.1	25.5	351 22 59.8	−0 2 20.3	25.5	0 13 22.2	0 45 56.1
26.0	312 53 48.2	−3 17 1.4	26.0	357 23 6.6	+0 30 52.1	26.0	6 19 30.6	+1 19 2.8
26.5	318 48 13.9	2 51 36.1	26.5	3 25 4.8	1 3 54.8	26.5	12 28 22.5	1 51 28.0
27.0	324 42 23.0	2 24 18.6	27.0	9 29 11.1	1 36 26.7	27.0	18 40 7.6	2 22 48.3
27.5	330 36 31.2	1 55 25.4	27.5	15 35 43.3	2 8 5.9	27.5	24 54 54.2	2 52 40.2
28.0	336 30 56.1	1 25 13.7	28.0	21 45 0.6	2 38 30.6	28.0	31 12 49.6	3 20 40.2
28.5	342 25 57.6	0 54 1.0	28.5	27 57 23.0	3 7 18.8	28.5	37 34 0.0	3 46 25.2
29.0	348 21 57.5	−0 22 5.4	29.0	34 13 11.2	+3 34 8.8	29.0	43 58 31.0	+4 9 32.7
29.5	354 19 20.6	+0 10 14.4	29.5	40 32 47.1	3 58 38.7	29.5	50 26 28.0	4 29 41.4
30.0	0 18 33.8	0 42 39.5	30.0	46 56 32.6	4 20 26.9	30.0	56 57 55.5	4 46 31.2
30.5	6 20 6.3	1 14 50.3	30.5	53 24 49.3	4 39 12.6	30.5	63 32 58.0	4 59 44.0
31.0	12 24 29.8	1 46 26.8	31.0	59 57 57.8	4 54 35.1	31.0	70 11 39.8	5 9 3.6
31.5	18 32 16.7	+2 17 8.6	31.5	66 36 17.0	+5 6 14.9	31.5	76 54 4.4	+5 14 16.3

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL. True Longitude.	APRIL. Latitude.	Day of Month.	MAY. True Longitude.	MAY. Latitude.	Day of Month.	JUNE. True Longitude.	JUNE. Latitude.
1.0	83° 40′ 14.8″	+5° 15′ 11.0″	1.0	122° 13′ 46.6″	+3° 50′ 25.9″	1.0	175° 31′ 47.9″	−0° 38′ 52.5″
1.5	90 30 12.8	5 11 39.9	1.5	129 16 36.4	3 23 36.2	1.5	182 30 41.1	1 15 8.3
2.0	97 23 58.7	5 3 38.7	2.0	136 20 36.3	2 53 35.3	2.0	189 27 56.1	1 50 6.9
2.5	104 21 31.0	4 51 6.5	2.5	143 25 36.5	2 20 50.2	2.5	196 23 27.5	2 23 17.3
3.0	111 22 45.4	4 34 7.6	3.0	150 31 26.9	1 45 51.0	3.0	203 17 8.1	2 54 10.8
3.5	118 27 34.4	+4 12 50.7	3.5	157 37 56.2	+1 9 10.7	3.5	210 8 48.8	−3 22 21.6
4.0	125 35 46.6	3 47 29.4	4.0	164 44 51.0	+0 31 24.7	4.0	216 58 18.8	3 47 27.2
4.5	132 47 6.0	3 18 22.7	4.5	171 51 54.9	−0 6 49.9	4.5	223 45 25.3	4 9 8.5
5.0	140 1 11.8	2 45 55.2	5.0	178 58 49.0	0 44 55.4	5.0	230 29 53.9	4 27 10.6
5.5	147 17 37.7	2 10 36.6	5.5	186 5 11.4	1 22 13.7	5.5	237 11 29.6	4 41 22.5
6.0	154 35 52.3	+1 33 2.1	6.0	193 10 36.8	−1 58 8.0	6.0	243 49 57.3	−4 51 37.3
6.5	161 55 18.8	0 53 50.2	6.5	200 14 37.0	2 32 3.2	6.5	250 25 2.8	4 57 52.3
7.0	169 15 16.0	+0 13 43.5	7.0	207 16 42.4	3 3 27.2	7.0	256 56 33.3	5 0 8.7
7.5	176 34 58.9	−0 26 34.2	7.5	214 16 22.1	3 31 51.7	7.5	263 24 18.8	4 58 31.2
8.0	183 53 39.8	1 6 18.1	8.0	221 13 4.9	3 56 52.9	8.0	269 48 12.5	4 53 7.9
8.5	191 10 30.0	−1 44 44.9	8.5	228 6 21.2	−4 18 11.9	8.5	276 8 11.2	−4 44 9.2
9.0	198 24 41.6	2 21 14.3	9.0	234 55 43.8	4 35 34.9	9.0	282 24 16.0	4 31 48.1
9.5	205 35 29.0	2 55 9.6	9.5	241 40 49.1	4 48 53.7	9.5	288 36 33.0	4 16 19.4
10.0	212 42 10.1	3 25 59.6	10.0	248 21 18.0	4 58 4.5	10.0	294 45 12.5	3 57 58.7
10.5	219 44 8.2	3 53 19.0	10.5	254 56 57.1	5 3 8.6	10.5	300 50 29.5	3 37 2.7
11.0	226 40 53.1	−4 16 48.8	11.0	261 27 38.8	−5 4 11.0	11.0	306 52 43.5	−3 13 48.6
11.5	233 32 2.1	4 36 15.9	11.5	267 53 21.9	5 1 19.8	11.5	312 52 18.2	2 48 33.6
12.0	240 17 20.2	4 51 33.1	12.0	274 14 11.3	4 54 46.0	12.0	318 49 41.0	2 21 35.0
12.5	246 56 40.4	5 2 38.3	12.5	280 30 18.2	4 44 42.7	12.5	324 45 22.8	1 53 9.8
13.0	253 30 3.1	5 9 33.8	13.0	286 41 59.3	4 31 24.0	13.0	330 39 57.8	1 23 35.1
13.5	259 57 36.6	−5 12 25.4	13.5	292 49 36.5	−4 15 5.2	13.5	336 34 2.3	−0 53 7.6
14.0	266 19 35.5	5 11 21.8	14.0	298 53 36.5	3 56 1.6	14.0	342 28 15.0	−0 22 4.0
14.5	272 36 20.4	5 6 33.5	14.5	304 54 29.7	3 34 29.3	14.5	348 23 15.6	+0 9 18.8
15.0	278 48 16.9	4 58 12.5	15.0	310 52 49.8	3 10 43.9	15.0	354 19 45.4	0 40 43.8
15.5	284 55 54.4	4 46 31.8	15.5	316 49 13.3	2 45 1.4	15.5	0 18 25.3	1 11 53.2
16.0	290 59 45.9	−4 31 44.8	16.0	322 44 18.7	−2 17 37.1	16.0	6 19 56.5	+1 42 28.8
16.5	297 0 26.6	4 14 5.2	16.5	328 38 45.5	1 48 46.9	16.5	12 24 58.6	2 12 11.6
17.0	302 58 33.4	3 53 46.9	17.0	334 33 14.5	1 18 46.5	17.0	18 34 9.5	2 40 41.6
17.5	308 54 44.4	3 31 3.9	17.5	340 28 25.9	0 47 51.9	17.5	24 48 4.2	3 7 37.6
18.0	314 49 37.7	3 6 10.4	18.0	346 25 0.4	−0 16 19.7	18.0	31 7 13.9	3 32 37.5
18.5	320 43 51.6	−2 39 20.6	18.5	352 23 37.0	+0 15 32.9	18.5	37 32 4.7	+3 55 18.3
19.0	326 38 3.4	2 10 49.4	19.0	358 24 53.1	0 47 27.6	19.0	44 2 56.5	4 15 16.4
19.5	332 32 49.3	1 40 52.3	19.5	4 29 23.7	1 19 5.2	19.5	50 40 2.2	4 32 8.2
20.0	338 28 44.0	1 9 45.1	20.0	10 37 40.6	1 50 5.3	20.0	57 23 26.4	4 45 30.3
20.5	344 26 19.7	0 37 44.7	20.5	16 50 12.0	2 20 6.3	20.5	64 13 4.6	4 55 1.2
21.0	350 26 6.5	−0 5 9.4	21.0	23 7 21.7	+2 48 45.3	21.0	71 8 43.1	+5 0 21.6
21.5	356 28 31.3	+0 27 41.4	21.5	29 29 27.3	3 15 38.4	21.5	78 9 58.3	5 1 15.6
22.0	2 33 57.9	1 0 27.5	22.0	35 56 41.2	3 40 21.1	22.0	85 16 17.9	4 57 32.0
22.5	8 42 46.3	1 32 47.2	22.5	42 29 9.1	4 2 28.7	22.5	92 27 1.0	4 49 5.2
23.0	14 55 12.9	2 4 17.5	23.0	49 6 49.5	4 21 36.7	23.0	99 41 20.2	4 35 56.1
23.5	21 11 29.9	+2 34 34.7	23.5	55 49 34.1	+4 37 21.8	23.5	106 58 23.5	+4 18 12.5
24.0	27 31 45.1	3 3 14.4	24.0	62 37 7.6	4 49 22.7	24.0	114 17 16.4	3 56 9.2
24.5	33 56 2.8	3 29 51.8	24.5	69 29 8.6	4 57 20.7	24.5	121 37 3.6	3 30 7.8
25.0	40 24 22.1	3 54 2.5	25.0	76 25 9.6	5 1 1.1	25.0	128 56 52.7	3 0 35.7
25.5	46 56 38.8	4 15 22.6	25.5	83 24 38.6	5 0 13.6	25.5	136 15 54.8	2 28 5.8
26.0	53 32 45.2	+4 33 29.9	26.0	90 27 0.6	+4 54 52.9	26.0	143 33 26.9	+1 53 14.3
26.5	60 12 30.5	4 48 3.9	26.5	97 31 39.0	4 44 59.2	26.5	150 48 52.5	1 16 30.9
27.0	66 55 41.5	4 58 47.0	27.0	104 37 56.8	4 30 38.8	27.0	158 1 42.5	0 39 2.4
27.5	73 42 3.2	5 5 24.4	27.5	111 45 18.6	4 12 3.4	27.5	165 11 34.9	+0 1 1.3
28.0	80 31 19.7	5 7 45.0	28.0	118 53 11.8	3 49 29.8	28.0	172 18 14.3	−0 36 45.0
28.5	87 23 14.6	5 5 41.8	28.5	126 1 7.2	3 23 19.9	28.5	179 21 31.3	1 13 40.4
29.0	94 17 32.3	+4 59 12.0	29.0	133 8 40.0	+2 53 59.6	29.0	186 21 21.2	−1 49 11.2
29.5	101 13 57.6	4 48 17.2	29.5	140 15 29.9	2 21 58.5	29.5	193 17 43.4	2 22 47.0
30.0	108 12 16.6	4 33 3.5	30.0	147 21 21.3	1 47 48.5	30.0	200 10 39.7	2 54 0.6
30.5	115 12 16.6	4 13 41.4	30.5	154 26 2.2	1 12 3.4	30.5	207 0 14.0	3 22 28.4
31.0	122 13 46.6	3 50 25.9	31.0	161 29 24.1	+0 35 18.0	31.0	213 46 30.6	3 47 50.3
31.5	129 16 36.4	+3 23 36.2	31.5	168 31 20.8	−0 1 52.3	31.5	220 29 33.8	−4 9 49.4

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY. True Longitude.	JULY. Latitude.	Day of Month.	AUGUST. True Longitude.	AUGUST. Latitude.	Day of Month.	SEPTEMBER. True Longitude.	SEPTEMBER. Latitude.
1.0	213° 46′ 30″.6	−3° 47′ 50″.3	1.0	263° 0′ 38″.9	−5° 7′ 6″.4	1.0	308° 56′ 35″.8	−2° 57′ 29″.0
1.5	220 29 33.8	4 9 49.4	1.5	269 16 44.7	4 59 35.5	1.5	314 53 12.7	2 29 13.7
2.0	227 9 27.6	4 28 12.8	2.0	275 29 47.4	4 48 35.2	2.0	320 48 40.7	1 59 26.7
2.5	233 46 15.1	4 42 50.8	2.5	281 39 59.6	4 34 17.1	2.5	326 43 18.5	1 28 26.4
3.0	240 19 58.5	4 53 37.0	3.0	287 47 33.4	4 16 54.7	3.0	332 37 24.2	0 56 31.5
3.5	246 50 38.3	−5 0 28.3	3.5	293 52 40.7	−3 56 42.9	3.5	338 31 15.1	−0 24 1.3
4.0	253 18 14.9	5 3 24.9	4.0	299 55 33.2	3 33 57.2	4.0	344 25 8.1	+0 8 44.7
4.5	259 42 47.9	5 2 30.0	4.5	305 56 23.1	3 8 54.6	4.5	350 19 20.1	0 41 26.9
5.0	266 4 16.7	4 57 49.3	5.0	311 55 22.8	2 41 52.8	5.0	356 14 8.0	1 13 45.5
5.5	272 22 41.3	4 49 31.4	5.5	317 52 45.7	2 13 10.0	5.5	2 9 49.0	1 45 20.9
6.0	278 38 2.6	−4 37 47.3	6.0	323 48 46.6	−1 43 5.0	6.0	8 6 41.0	+2 15 53.7
6.5	284 50 22.8	4 22 49.8	6.5	329 43 40.8	1 11 56.8	6.5	14 5 2.2	2 45 4.5
7.0	290 59 46.0	4 4 53.3	7.0	335 37 46.1	0 40 4.5	7.0	20 5 12.4	3 12 34.5
7.5	297 6 18.6	3 44 14.0	7.5	341 31 21.7	−0 7 47.3	7.5	26 7 31.7	3 38 5.4
8.0	303 10 9.8	3 21 8.8	8.0	347 24 48.5	+0 24 35.8	8.0	32 12 21.6	4 1 19.0
8.5	309 11 31.3	−2 55 55.3	8.5	353 18 29.6	+0 56 46.0	8.5	38 20 4.6	+4 21 57.9
9.0	315 10 38.4	2 28 51.8	9.0	359 12 49.9	1 28 24.3	9.0	44 31 3.9	4 39 45.2
9.5	321 7 49.2	2 0 16.6	9.5	5 8 16.4	1 59 12.5	9.5	50 45 43.6	4 54 24.9
10.0	327 3 24.9	1 30 27.8	10.0	11 5 18.0	2 28 52.1	10.0	57 4 28.0	5 5 41.4
10.5	332 57 50.0	0 59 44.0	10.5	17 4 25.2	2 57 4.9	10.5	63 27 41.4	5 13 20.3
11.0	338 51 31.8	−0 28 23.2	11.0	23 6 10.1	+3 23 32.6	11.0	69 55 47.3	+5 17 8.3
11.5	344 45 0.4	+0 3 16.8	11.5	29 11 5.8	3 47 57.0	11.5	76 29 7.5	5 16 53.4
12.0	350 38 48.7	0 34 58.3	12.0	35 19 45.7	4 9 59.8	12.0	83 8 1.8	5 12 25.9
12.5	356 33 31.2	1 6 23.5	12.5	41 32 43.9	4 29 22.5	12.5	89 52 46.7	5 3 38.0
13.0	2 29 44.7	1 37 14.7	13.0	47 50 33.1	4 45 46.6	13.0	96 43 34.4	4 50 25.4
13.5	8 28 7.8	+2 7 14.0	13.5	54 13 44.7	+4 58 53.6	13.5	103 40 31.3	+4 32 47.6
14.0	14 29 19.1	2 36 3.1	14.0	60 42 47.4	5 8 25.6	14.0	110 43 37.3	4 10 48.5
14.5	20 33 57.6	3 3 23.2	14.5	67 18 6.6	5 14 5.1	14.5	117 52 44.4	3 44 37.8
15.0	26 42 42.4	3 28 54.7	15.0	74 0 1.7	5 15 36.1	15.0	125 7 35.9	3 14 31.5
15.5	32 56 10.9	3 52 18.2	15.5	80 48 47.4	5 12 44.5	15.5	132 27 45.7	2 40 52.2
16.0	39 14 58.2	+4 13 12.3	16.0	87 44 28.9	+5 5 18.8	16.0	139 52 37.8	+2 4 9.7
16.5	45 39 36.0	4 31 15.8	16.5	94 47 3.7	4 53 11.9	16.5	147 21 26.6	1 25 0.4
17.0	52 10 31.1	4 46 7.7	17.0	101 56 18.8	4 36 21.8	17.0	154 53 17.9	0 44 7.0
17.5	58 48 4.7	4 57 26.7	17.5	109 11 50.8	4 14 52.1	17.5	162 27 10.1	+0 2 16.7
18.0	65 32 30.5	5 4 51.6	18.0	116 33 5.0	3 48 54.0	18.0	170 1 56.0	−0 39 40.0
18.5	72 23 53.3	+5 8 4.0	18.5	123 59 16.1	+3 18 46.7	18.5	177 36 25.2	−1 20 52.2
19.0	79 22 8.5	5 6 48.1	19.0	131 29 29.4	2 44 57.0	19.0	185 9 26.7	2 0 29.9
19.5	86 27 0.6	5 0 51.5	19.5	139 2 42.1	2 7 59.6	19.5	192 39 51.8	2 37 47.1
20.0	93 38 3.1	4 50 7.0	20.0	146 37 45.5	1 28 36.5	20.0	200 6 36.4	3 12 3.2
20.5	100 54 38.7	4 34 33.8	20.5	154 13 27.7	0 47 34.1	20.5	207 28 43.5	3 42 44.2
21.0	108 16 0.2	+4 14 18.5	21.0	161 48 36.1	+0 5 43.0	21.0	214 45 25.0	−4 9 23.9
21.5	115 41 11.7	3 49 34.9	21.5	169 22 0.9	−0 36 5.9	21.5	221 56 2.7	4 31 43.9
22.0	123 9 11.1	3 20 45.7	22.0	176 52 36.8	1 17 2.3	22.0	229 0 9.0	4 49 33.0
22.5	130 38 51.9	2 48 20.1	22.5	184 19 25.5	1 56 19.6	22.5	235 57 27.2	5 2 47.1
23.0	138 9 6.9	2 12 54.9	23.0	191 41 37.6	2 33 15.9	23.0	242 47 50.7	5 11 27.6
23.5	145 38 50.2	+1 35 11.6	23.5	198 58 33.0	−3 7 15.6	23.5	249 31 22.2	−5 15 40.8
24.0	153 7 0.1	0 55 55.2	24.0	206 9 41.7	3 37 49.7	24.0	256 8 12.5	5 15 36.5
24.5	160 32 40.9	+0 15 52.2	24.5	213 14 43.7	4 4 36.4	24.5	262 38 39.5	5 11 27.4
25.0	167 55 4.8	−0 24 11.4	25.0	220 13 28.3	4 27 20.0	25.0	269 3 6.4	5 3 27.7
25.5	175 13 32.5	1 3 31.5	25.5	227 5 53.2	4 45 50.6	25.5	275 22 1.1	4 51 53.0
26.0	182 27 33.9	−1 41 27.4	26.0	233 52 3.4	−5 0 4.0	26.0	281 35 54.4	−4 36 59.7
26.5	189 36 47.3	2 17 23.1	26.5	240 32 10.2	5 10 0.5	26.5	287 45 19.1	4 19 4.5
27.0	196 40 59.7	2 50 47.2	27.0	247 6 29.8	5 15 43.2	27.0	293 50 49.4	3 58 24.2
27.5	203 40 4.7	3 21 13.4	27.5	253 35 21.9	5 17 18.5	27.5	299 53 0.0	3 35 15.6
28.0	210 34 2.4	3 48 20.6	28.0	259 59 9.1	5 14 55.3	28.0	305 52 25.2	3 9 55.8
28.5	217 22 57.9	4 11 52.6	28.5	266 18 15.9	5 8 43.9	28.5	311 49 38.7	2 42 41.7
29.0	224 6 59.7	−4 31 37.6	29.0	272 33 7.7	−4 58 56.2	29.0	317 45 12.5	−2 13 50.3
29.5	230 46 19.4	4 47 27.6	29.5	278 44 10.2	4 45 45.1	29.5	323 39 37.3	1 43 39.1
30.0	237 21 10.4	4 59 18.3	30.0	284 51 49.3	4 29 24.3	30.0	329 33 22.3	1 12 25.8
30.5	243 51 47.0	5 7 8.7	30.5	290 56 29.7	4 10 8.7	30.5	335 26 54.2	0 40 28.4
31.0	250 18 24.1	5 11 0.4	31.0	296 58 35.6	3 48 13.4	31.0	341 20 37.6	−0 8 5.2
31.5	256 41 16.6	−5 10 57.5	31.5	302 58 30.4	−3 23 54.6	31.5	347 14 55.5	+0 24 24.6

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER. True Longitude.	Latitude.	Day of Month.	NOVEMBER. True Longitude.	Latitude.	Day of Month.	DECEMBER. True Longitude.	Latitude.
1.0	341° 20′ 37″.6	−0° 8′ 5″.2	1.0	25° 50′ 5″.3	+3° 33′ 48″.1	1.0	59° 38′ 4″.8	+4° 56′ 33″.7
1.5	347 14 55.5	+0 24 24.6	1.5	32 0 48.2	3 55 56.1	1.5	66 12 20.3	4 59 42.1
2.0	353 10 8.1	0 56 41.9	2.0	38 14 46.3	4 15 25.0	2.0	72 50 42.1	4 58 49.4
2.5	359 6 33.9	1 28 27.0	2.5	44 32 3.0	4 31 56.9	2.5	79 32 53.4	4 53 49.3
3.0	5 4 29.7	1 59 20.0	3.0	50 52 39.1	4 45 15.2	3.0	86 18 33.8	4 44 39.4
3.5	11 4 10.1	+2 29 1.0	3.5	57 16 31.7	+4 55 5.2	3.5	93 7 20.3	+4 31 21.9
4.0	17 5 48.5	2 57 10.0	4.0	63 43 37.3	5 1 14.2	4.0	99 58 49.3	4 14 3.2
4.5	23 9 36.6	3 23 27.4	4.5	70 13 50.4	5 3 32.2	4.5	106 52 36.5	3 52 54.9
5.0	29 15 45.4	3 47 34.0	5.0	76 47 4.9	5 1 52.1	5.0	113 48 18.7	3 28 13.3
5.5	35 24 25.3	4 9 11.5	5.5	83 23 14.7	4 56 10.1	5.5	120 45 34.9	3 0 18.3
6.0	41 35 45.5	+4 28 2.3	6.0	90 2 14.0	+4 46 25.6	6.0	127 44 6.7	+2 29 34.3
6.5	47 49 55.9	4 43 50.2	6.5	96 43 58.3	4 32 41.5	6.5	134 43 38.3	1 56 28.8
7.0	54 7 6.1	4 56 20.2	7.0	103 28 24.2	4 15 4.4	7.0	141 43 57.4	1 21 31.9
7.5	60 27 25.9	5 5 19.0	7.5	110 15 30.0	3 53 44.6	7.5	148 44 54.8	0 45 15.9
8.0	66 51 5.9	5 10 35.1	8.0	117 5 15.0	3 28 56.0	8.0	155 46 23.6	+0 8 14.6
8.5	73 18 17.2	+5 11 58.8	8.5	123 57 40.0	+3 0 55.9	8.5	162 48 18.6	−0 28 57.3
9.0	79 49 10.9	5 9 22.8	9.0	130 52 46.2	2 30 5.1	9.0	169 50 35.7	1 5 44.8
9.5	86 23 59.3	5 2 42.2	9.5	137 50 34.5	1 56 48.0	9.5	176 53 10.5	1 41 33.4
10.0	93 2 53.6	4 51 54.7	10.0	144 51 5.5	1 21 32.3	10.0	183 55 57.6	2 15 49.1
10.5	99 46 4.7	4 37 0.8	10.5	151 54 17.5	0 44 49.0	10.5	190 58 49.8	2 47 59.7
11.0	106 33 43.1	+4 18 4.8	11.0	159 0 5.6	+0 7 11.2	11.0	198 1 36.8	−3 17 34.7
11.5	113 25 56.9	3 55 14.6	11.5	166 8 21.2	−0 30 45.0	11.5	205 4 5.2	3 44 6.3
12.0	120 22 51.1	3 28 42.2	12.0	173 18 50.3	1 8 21.9	12.0	212 5 57.6	4 7 10.2
12.5	127 24 27.3	2 58 44.0	12.5	180 31 13.8	1 45 1.0	12.5	219 6 53.1	4 26 25.5
13.0	134 30 41.9	2 25 41.8	13.0	187 45 5.8	2 20 3.8	13.0	226 6 27.5	4 41 36.1
13.5	141 41 25.8	+1 50 2.0	13.5	194 59 54.1	−2 52 52.6	13.5	233 4 13.6	−4 52 30.4
14.0	148 56 22.5	1 12 16.0	14.0	202 15 0.4	3 22 52.1	14.0	239 59 42.2	4 59 1.9
14.5	156 15 8.3	+0 33 0.7	14.5	209 29 41.6	3 49 30.9	14.5	246 52 25.2	5 1 9.0
15.0	163 37 10.7	−0 7 3.3	15.0	216 43 11.1	4 12 22.0	15.0	253 41 52.6	4 58 55.6
15.5	171 1 49.7	0 47 12.3	15.5	223 54 39.4	4 31 3.9	15.5	260 27 38.5	4 52 30.0
16.0	178 28 17.1	−1 26 40.2	16.0	231 3 18.4	−4 45 21.6	16.0	267 9 19.2	−4 42 4.6
16.5	185 55 38.3	2 4 41.4	16.5	238 8 21.2	4 55 6.4	16.5	273 46 36.0	4 27 55.6
17.0	193 22 53.5	2 40 31.3	17.0	245 9 5.0	5 0 16.3	17.0	280 19 15.4	4 10 22.0
17.5	200 49 0.1	3 13 29.2	17.5	252 4 54.0	5 0 55.0	17.5	286 47 9.6	3 49 44.8
18.0	208 12 54.5	3 42 59.3	18.0	258 55 18.6	4 57 12.1	18.0	293 10 17.0	3 26 26.4
18.5	215 33 35.5	−4 8 32.5	18.5	265 39 58.2	−4 49 21.2	18.5	299 28 42.1	−3 0 49.8
19.0	222 50 6.5	4 29 46.8	19.0	272 18 40.8	4 37 39.4	19.0	305 42 35.6	2 33 18.1
19.5	230 1 37.3	4 46 27.7	19.5	278 51 23.1	4 22 26.6	19.5	311 52 13.9	2 4 14.1
20.0	237 7 26.3	4 58 28.1	20.0	285 18 10.7	4 4 3.7	20.0	317 57 58.9	1 33 59.8
20.5	244 7 1.7	5 5 48.2	20.5	291 39 16.6	3 42 52.9	20.5	324 0 16.7	1 2 56.3
21.0	251 0 2.2	−5 8 33.9	21.0	297 55 1.0	−3 19 16.0	21.0	329 59 38.0	−0 31 23.6
21.5	257 46 17.0	5 6 55.7	21.5	304 5 50.1	2 53 34.7	21.5	335 56 36.5	+0 0 19.1
22.0	264 25 45.1	5 1 8.0	22.0	310 12 15.1	2 26 9.9	22.0	341 51 49.2	0 31 53.9
22.5	270 58 34.8	4 51 27.8	22.5	316 14 51.2	1 57 21.7	22.5	347 45 54.8	1 3 3.4
23.0	277 25 2.4	4 38 13.5	23.0	322 14 16.6	1 27 29.4	23.0	353 39 33.7	1 33 30.7
23.5	283 45 31.2	−4 21 44.6	23.5	328 11 11.9	−0 56 51.4	23.5	359 33 27.8	+2 2 59.7
24.0	290 0 30.1	4 2 21.0	24.0	334 6 18.7	−0 25 45.5	24.0	5 28 18.6	2 31 14.1
24.5	296 10 32.3	3 40 22.2	24.5	340 0 19.3	+0 5 31.2	24.5	11 24 47.4	2 57 57.8
25.0	302 16 14.1	3 16 7.3	25.0	345 53 56.5	0 36 41.7	25.0	17 23 35.4	3 22 54.4
25.5	308 18 13.8	2 49 55.2	25.5	351 47 51.6	1 7 29.2	25.5	23 25 21.2	3 45 47.3
26.0	314 17 11.5	−2 22 3.9	26.0	357 42 45.1	+1 37 36.6	26.0	29 30 41.6	+4 6 19.7
26.5	320 13 47.3	1 52 51.2	26.5	3 39 15.4	2 6 46.9	26.5	35 40 9.9	4 24 14.5
27.0	326 8 41.1	1 22 34.6	27.0	9 37 58.5	2 34 42.6	27.0	41 54 15.6	4 39 14.4
27.5	332 2 31.9	0 51 31.4	27.5	15 39 27.2	3 1 5.6	27.5	48 13 23.4	4 51 2.3
28.0	337 55 57.4	−0 19 58.8	28.0	21 44 10.8	3 25 37.3	28.0	54 37 52.3	4 59 21.7
28.5	343 49 33.2	+0 11 45.9	28.5	27 52 34.1	3 47 59.1	28.5	61 7 54.8	5 3 57.3
29.0	349 43 52.9	+0 43 24.7	29.0	34 4 57.1	+4 7 52.1	29.0	67 43 36.1	+5 4 35.4
29.5	355 39 26.8	1 14 39.4	29.5	40 21 35.1	4 24 57.5	29.5	74 24 54.1	5 1 5.3
30.0	1 36 42.8	1 45 11.8	30.0	46 42 37.5	4 38 57.3	30.0	81 11 38.8	4 53 19.3
30.5	7 36 5.7	2 14 42.2	30.5	53 8 8.0	4 49 34.5	30.5	88 3 32.6	4 41 14.1
31.0	13 37 56.0	2 42 51.7	31.0	59 38 4.8	4 56 33.7	31.0	95 0 10.6	4 24 51.5
31.5	19 42 31.3	+3 9 20.2	31.5	66 12 20.3	+4 59 42.1	31.5	102 1 1	+4 4 18.9

FOR GREENWICH MEAN NOON.

Date.	THE MOON'S EQUATOR.				Mean Solar Days.	Motion of ☾
	i Inclination to the Earth's Equator.	Δ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	Ω' Ascend'g Node on Earth's Equator.	☾ Mean Longitude of the Moon.		
	° ′	° ′	° ′	° ′		° ′
Jan. 0	21 58.7	175 36.8	0 17.1	330 20.4	0.1	1 19.06
10	21 58.8	175 3.0	0 19.3	102 6.2	0.2	2 38.12
20	21 58.8	174 29.2	0 21.5	233 52.1	0.3	3 57.18
30	21 58.9	173 55.5	0 23.6	5 37.9	0.4	5 16.23
Feb. 9	21 59.0	173 21.8	0 25.8	137 23.7	0.5	6 35.29
					0.6	7 54.35
19	21 59.1	172 47.9	0 28.0	269 9.6	0.7	9 13.41
Mar. 1	21 59.2	172 14.1	0 30.2	40 55.5	0.8	10 32.47
11	21 59.3	171 40.3	0 32.4	172 41.3	0.9	11 51.53
21	21 59.4	171 6.6	0 34.5	304 27.1		
31	21 59.6	170 32.8	0 36.7	76 13.0	1.0	13 10.58
					2.0	26 21.17
Apr. 10	21 59.7	169 59.0	0 38.8	207 58.8	3.0	39 31.75
20	21 59.8	169 25 3	0 40.9	339 44.6	4.0	52 42.33
30	22 0.0	168 51.5	0 43.1	111 30.4	5.0	65 52.92
May 10	22 0.1	168 17 8	0 45.3	243 16.2	6.0	79 3.50
20	22 0.3	167 44.0	0 47.4	15 2.1	7.0	92 14.09
					8.0	105 24.67
30	22 0.5	167 10.2	0 49.5	146 47.9	9.0	118 35.25
June 9	22 0.7	166 36.5	0 51.6	278 33.7	10.0	131 45.84
19	22 0.9	166 2.7	0 53.8	50 19.6	Hours.	
29	22 1.1	165 29.0	0 55.9	182 5.4	1	0 32.94
July 9	22 1.3	164 55.2	0 58.0	313 51.2	2	1 5.88
					3	1 38.82
19	22 1.5	164 21.5	1 0.1	85 37.1	4	2 11.76
29	22 1.7	163 47.8	1 2.3	217 22.9	5	2 44.70
Aug. 8	22 2.0	163 14.1	1 4.4	349 8.8	6	3 17.65
18	22 2.2	162 40.4	1 6.5	120 54.6	7	3 50.59
28	22 2.5	162 6.7	1 8.6	252 40.4	8	4 23.53
					9	4 56.47
Sept. 7	22 2.7	161 33.0	1 10.6	24 26.3	10	5 29.41
17	22 3.0	160 59.3	1 12.7	156 12.1	11	6 2.35
27	22 3.2	160 25.7	1 14.7	287 57.9	12	6 35.29
Oct. 7	22 3.5	159 52.0	1 16.8	59 43.8	13	7 8.23
17	22 3.8	159 18.4	1 18.9	191 29.6	14	7 41.17
					15	8 14.11
27	22 4.1	158 44.7	1 20.9	323 15.4	16	8 47.06
Nov. 6	22 4.4	158 11.1	1 23.0	95 1.2	17	9 20.00
16	22 4.7	157 37.5	1 25.0	226 47.0	18	9 52.94
26	22 5.1	157 3.9	1 27 0	358 32.9	19	10 25.88
Dec. 6	22 5.4	156 30.2	1 29.0	130 18.7	20	10 58.82
					21	11 31.76
16	22 5.7	155 56.6	1 31 0	262 4.5	22	12 4.70
26	22 6.0	155 23.0	1 33.0	33 50.4	23	12 37.64
36	22 6.4	154 49.4	1 35.0	165 36.2		

TABLE FOR THE LIBRATION OF THE MOON.

Argument, $(\Omega - \lambda)$ or $(\Omega - \lambda - 180°)$.

$\Omega-\lambda$	$\Delta\lambda$	$\frac{1}{\rho}$	B		$\Omega-\lambda$	$\Delta\lambda$	$\frac{1}{\rho}$	B	
°	′		° ′	°	°	′		° ′	°
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					
	$\Delta\lambda$	$\frac{1}{\rho}$	B	$\Omega-\lambda$		$\Delta\lambda$	$\frac{1}{\rho}$	B	$\Omega-\lambda$

$\Delta\lambda$ has the sign of tan $(\lambda - \Omega)$
ρ has the sign of cos $(\Omega - \lambda)$
B has the sign of sin $(\Omega - \lambda)$

FOR GREENWICH MEAN NOON.

Date.	Apparent Obliquity of the Ecliptic. (Hansen.)	Equation of Equinoxes		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Par.	
	° ′ ″	″	s	″	″	″	° ′
Jan. 0	23 27 19.00	+ 1.64	+ 0.100	0.00	− 20.80	9.00	355 52.8
10	19.08	2.18	0.133	1.38	20.79	9.00	355 20.7
20	19.21	2.61	0.160	2.75	20.77	8.99	354 48.9
30	19.37	2.91	0.178	4.13	20.75	8.98	354 17.2
Feb. 9	19.54	3.07	0.188	5.50	20.72	8.97	353 45.4
19	23 27 19.69	+ 3.06	+ 0.187	6.88	− 20.67	8.95	353 13.6
Mar. 1	19.80	2.93	0.179	8.26	20.62	8.93	352 41.8
11	19.88	2.71	0.166	9.63	20.57	8.90	352 10.1
21	19.89	2.45	0.150	11.01	20.51	8.88	351 38.3
31	19.82	2.17	0.133	12.38	20.45	8.85	351 6.5
Apr. 10	23 27 19.69	+ 1.97	+ 0.120	13.76	− 20.40	8.83	350 34.8
20	19.52	1.86	0.114	15.14	20.34	8.80	350 3.0
30	19.33	1.88	0.115	16.51	20.29	8.78	349 31.2
May 10	19.11	2.02	0.123	17.89	20.24	8.76	348 59.4
20	18.93	2.30	0.141	19.26	20.20	8.74	348 27.7
30	23 27 18.75	+ 2.70	+ 0.165	20.64	− 20.16	8.73	347 55.9
June 9	18.62	3.21	0.196	22.02	20.14	8.71	347 24.1
19	18.54	3.76	0.230	23.39	20.12	8.71	346 52.3
29	18.53	4.32	0.264	24.77	20.11	8.70	346 20.6
July 9	18.58	4.84	0.296	26.14	20.11	8.70	345 48.8
19	23 27 18.66	+ 5.29	+ 0.323	27.52	− 20.12	8.71	345 17.0
29	18.78	5.63	0.344	28.90	20.14	8.72	344 45.3
Aug. 8	18.93	5.84	0.357	30.27	20.17	8.73	344 13.5
18	19.08	5.92	0.362	31.65	20.20	8.74	343 41.7
28	19.20	5.85	0.358	33.02	20.25	8.76	343 9.9
Sept. 7	23 27 19.26	+ 5.68	+ 0.347	34.40	− 20.30	8.78	342 38.2
17	19.30	5.45	0.333	35.78	20.35	8.81	342 6.4
27	19.26	5.17	0.316	37.15	20.41	8.83	341 34.6
Oct. 7	19.15	4.92	0.301	38.53	20.47	8.86	341 2.8
17	19.01	4.72	0.289	39.90	20.53	8.88	340 31.1
27	23 27 18.80	+ 4.63	+ 0.283	41.28	− 20.58	8.91	339 59.3
Nov. 6	18.58	4.70	0.287	42.66	20.63	8.93	339 27.5
16	18.36	4.92	0.301	44.03	20.68	8.95	338 55.8
26	18.15	5.26	0.322	45.41	20.72	8.97	338 24.0
Dec. 6	17.98	5.73	0.350	46.78	20.76	8.98	337 52.2
16	23 27 17.88	+ 6.28	+ 0.384	48.16	− 20.78	8.99	337 20.4
26	17.81	6.89	0.421	49.54	20.79	9.00	336 48.7
36	23 27 17.82	+ 7.47	+ 0.457	50.91	− 20.79	9.00	336 16.9

Mean Obliquity, 1895.0, 23° 27′ 10″.36 (Hansen).
Mean Obliquity, 1895.0, 23° 27′ 10″.08 (Peters).

Precession for 1895	50″.2626	log =	1.70124
Precession in a Solar Day	0″.1377	log =	9.13895
Precession in a Sidereal Day	0″.1373	log =	9.13776
Sun's Mean Equatorial Horizontal Parallax .	8″.848	log =	0.94685

Daily Motion of Ω
−3′.177

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF PETERS AND STRUVE.

NOTATION.

τ, the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1894, December $30^d.891$, = 1895, January $0^d.0$—$0^d.109$, Washington mean time),

α_o, δ_o, the star's mean right ascension and declination at the beginning of the fictitious year,

α, δ, the star's apparent right ascension and declination at the time τ,

μ, μ', the annual proper motion in right ascension and declination,

$\odot$, the sun's true longitude,

Ω, the longitude of the moon's ascending node,

ω, the obliquity of the ecliptic,

Γ, the longitude of the sun's perigee,

Γ', the longitude of the moon's perigee,

$\mathbb{C}$, the moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$
\begin{aligned}
A = \tau &- 0.34249 \sin \Omega && - 0.00011 \sin (3\odot - \Gamma) \\
&+ 0.00410 \sin 2\Omega && - 0.00005 \sin 2(\odot - \Omega) \\
&- 0.02521 \sin 2\odot && + 0.00010 \sin 2(\odot - \Gamma') \\
&+ 0.00293 \sin (\odot + 82^\circ\ 4') && + 0.00009 \sin (2\Gamma' - \Omega) \\
&+ 0.00025 \sin (2\odot - \Omega) && + 0.00005 \cos \Gamma' \\
&- 0.00405 \sin 2\mathbb{C} && + 0.00004 \sin 2\Gamma' \\
&+ 0.00135 \sin (\mathbb{C} - \Gamma') &&
\end{aligned}
$$

$$
\begin{aligned}
B = &- 9''.2239 \cos \Omega && - 0''.0027 \cos (3\odot - \Gamma) \\
&+ 0.0895 \cos 2\Omega && + 0.0067 \cos (2\odot - \Omega) \\
&- 0.5506 \cos 2\odot && + 0.0024 \cos (2\Gamma' - \Omega) \\
&- 0.0092 \cos (\odot + 281^\circ\ 3') && - 0.0023 \sin \Gamma' \\
&- 0.0086 \cos 2\mathbb{C} && + 0.0008 \cos 2\Gamma'
\end{aligned}
$$

$$C = -20''.4451 \cos \omega \cos \odot$$

$$D = -20''.4451 \sin \odot$$

$$E = - 0.0461 \sin \Omega + 0''.0014 \sin 2\Omega - 0''.0033 \sin 2\odot$$

BESSEL'S *Star-Constants.*

$a = 3^s.07263 + 1^s.33683 \sin \alpha_o \tan \delta_o$ = precession in right ascension

$b = \frac{1}{15} \cos \alpha_o \tan \delta_o$

$c = \frac{1}{15} \cos \alpha_o \sec \delta_o$

$d = \frac{1}{15} \sin \alpha_o \sec \delta_o$

$a' = 20''.0525 \cos \alpha_o$ = precession in declination

$b' = - \sin \alpha_o$

$c' = \tan \omega \cos \delta_o - \sin \alpha_o \sin \delta_o$

$d' = \cos \alpha_o \sin \delta_o$

Reduction to Apparent Position.

$$\alpha = \alpha_o + \tau\mu + Aa + Bb + Cc + Dd + \tfrac{1}{15} E \quad \text{(in time)}$$

$$\delta = \delta_o + \tau\mu' + Aa' + Bb' + Cc' + Dd' \quad \text{(in arc)}$$

INDEPENDENT STAR-NUMBERS.

$$f = 46''.0894\ A + E \text{ (in arc)} = 3^s.07261\ A + \tfrac{1}{15} E \text{ (in time)}$$

$$g \sin G = B \qquad h \sin H = C \qquad i = C \tan \omega$$

$$g \cos G = 20''.0525\ A \qquad h \cos H = D$$

Reduction to Apparent Position.

$$\alpha = \alpha_o + f + \tau\mu + \tfrac{1}{15} g \sin (G + \alpha_o) \tan \delta_o + \tfrac{1}{15} h \sin (H + \alpha_o) \sec \delta_o \quad \text{(in time)}$$

$$\delta = \delta_o + \tau\mu' + g \cos (G + \alpha_o) + h \cos (H + \alpha_o) \sin \delta_o + i \cos \delta_o \quad \text{(in arc)}$$

NOTES.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, a, b, c, d, a', b', c', d', must be changed to c, d, a, b, $-c'$, $-d'$, $-a'$, $-b'$, respectively.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		Log *A.*	Log *B.*	Log *C.*	Log *D.*	Solar Day. (Sid. Hour.)		Log *A.*	Log *B.*	Log *C.*	Log *D.*
Jan.	0	+8.5697	−0.9373	−0.5373	+1.3031	Feb.	15	+9.2751	−0.9684	−1.1982	+1.0430
	1	8.5931	0.9386	0.5768	1.3016		16	9.2822	0.9674	1.2030	1.0307
	2	8.6133	0.9390	0.6128	1.3000		17	9.2907	0.9667	1.2076	1.0181
h	3	8.6349	0.9385	0.6459	1.2962		18	9.3000	0.9668	1.2121	1.0050
(7.0)	4	8.6608	0.9374	0.6765	1.2962	(10.0)	19	9.3091	0.9676	1.2164	0.9914
	5	+8.6927	−0.9359	−0.7051	+1.2941		20	+9.3174	−0.9693	−1.2205	+0.9772
	6	8.7294	0.9344	0.7317	1.2919		21	9.3242	0.9716	1.2244	0.9623
	7	8.7694	0.9334	0.7565	1.2895		22	9.3292	0.9741	1.2281	0.9467
	8	8.8098	0.9332	0.7801	1.2869		23	9.3325	0.9765	1.2317	0.9303
	9	8.8475	0.9339	0.8022	1.2842		24	9.3342	0.9784	1.2351	0.9132
	10	+8.8811	−0.9355	−0.8231	+1.2813		25	+9.3351	−0.9795	−1.2384	+0.8954
	11	8.9091	0.9378	0.8430	1.2783		26	9.3359	0.9798	1.2415	0.8766
	12	8.9312	0.9405	0.8618	1.2751		27	9.3374	0.9793	1.2444	0.8569
	13	8.9485	0.9431	0.8796	1.2718		28	9.3402	0.9783	1.2472	0.8361
	14	8.9611	0.9451	0.8967	1.2683	Mar.	1	9.3447	0.9769	1.2498	0.8142
	15	+8.9713	−0.9465	−0.9130	+1.2647		2	+9.3509	−0.9757	−1.2523	+0.7909
	16	8.9805	0.9469	0.9286	1.2609		3	9.3583	0.9750	1.2547	0.7663
	17	8.9904	0.9466	0.9435	1.2569		4	9.3663	0.9750	1.2569	0.7399
	18	9.0021	0.9456	0.9578	1.2527	h	5	9.3744	0.9758	1.2589	0.7117
	19	9.0172	0.9445	0.9715	1.2483	(11.0)	6	9.3817	0.9773	1.2608	0.6815
h											
(3.0)	20	+9.0343	−0.9436	−0.9846	+1.2438		7	+9.3876	−0.9794	−1.2625	+0.6490
	21	9.0531	0.9430	0.9971	1.2391		8	9.3920	0.9815	1.2641	0.6136
	22	9.0722	0.9433	1.0092	1.2342		9	9.3950	0.9834	1.2656	0.5748
	23	9.0909	0.9446	1.0209	1.2291		10	9.3967	0.9847	1.2670	0.5324
	24	9.1060	0.9467	1.0321	1.2238		11	9.3979	0.9852	1.2682	0.4853
	25	+9.1189	−0.9493	−1.0429	+1.2183		12	+9.3990	−0.9849	−1.2692	+0.4320
	26	9.1288	0.9522	1.0534	1.2126		13	9.4007	0.9838	1.2701	0.3712
	27	9.1357	0.9548	1.0635	1.2067		14	9.4036	0.9822	1.2709	0.2995
	28	9.1404	0.9568	1.0732	1.2006		15	9.4077	0.9805	1.2716	0.2160
	29	9.1442	0.9580	1.0824	1.1942		16	9.4130	0.9790	1.2722	0.1108
	30	+9.1482	−0.9584	−1.0912	+1.1876		17	+9.4191	−0.9781	−1.2726	+0.9716
	31	9.1535	0.9579	1.0997	1.1808		18	9.4254	0.9780	1.2729	9.7653
Feb.	1	9.1609	0.9570	1.1080	1.1737		19	9.4313	0.9787	1.2731	+9.3579
	2	9.1708	0.9560	1.1161	1.1663		20	9.4363	0.9800	1.2731	−9.0966
	3	9.1838	0.9553	1.1239	1.1587		21	9.4401	0.9817	1.2730	9.6811
h						h					
(9.0)	4	+9.1962	−0.9551	−1.1315	+1.1508	(12.0)	22	+9.4424	−0.9834	−1.2728	−9.9210
	5	9.2101	0.9559	1.1388	1.1426		23	9.4436	0.9847	1.2725	0.0751
	6	9.2232	0.9575	1.1458	1.1341		24	9.4441	0.9854	1.2720	0.1878
	7	9.2347	0.9598	1.1525	1.1253		25	9.4442	0.9852	1.2713	0.2769
	8	9.2442	0.9625	1.1590	1.1163		26	9.4439	0.9841	1.2705	0.3509
	9	+9.2513	−0.9653	−1.1652	+1.1070		27	+9.4432	−0.9824	−1.2696	−0.4139
	10	9.2563	0.9676	1.1712	1.0973		28	9.4420	0.9804	1.2686	0.4687
	11	9.2597	0.9693	1.1770	1.0872		29	9.4532	0.9783	1.2674	0.5172
	12	9.2625	0.9702	1.1826	1.0767		30	9.4585	0.9766	1.2661	0.5607
	13	9.2656	0.9702	1.1880	1.0659		31	9.4647	0.9755	1.2647	0.6002
	14	+9.2696	−0.9695	−1.1932	+1.0547	Apr.	1	+9.4710	−0.9752	−1.2631	−0.6362
	15	+9.2751	−0.9684	−1.1982	+1.0430		2	+9.4770	−0.9758	−1.2614	−0.6693

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day (Sid. Hours)		Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hours.)		Log A.	Log B.	Log C.	Log D.
Apr.	1	+9.6734	−0.9532	−1.2631	−0.6362	May	17	+9.6888	−0.9455	−1.0090	−1.2343
	2	9.6774	0.9524	1.2614	0.6693		18	9.6931	0.9451	0.9975	1.2390
	3	9.6821	0.9519	1.2596	0.6999		19	9.6985	0.9439	0.9857	1.2434
	4	9.6861	0.9512	1.2577	0.7283		20	9.6312	0.9419	0.9736	1.2476
	5	9.6899	0.9505	1.2556	0.7549	h (16.0)	21	9.6337	0.9392	0.9610	1.2517
h (12.0)	6	+9.6941	−0.9502	−1.2534	−0.7799		22	+9.6370	−0.9364	−0.9478	−1.2556
	7	9.6979	0.9492	1.2511	0.8033		23	9.6413	0.9337	0.9340	1.2594
	8	9.7023	0.9483	1.2486	0.8254		24	9.6462	0.9315	0.9194	1.2631
	9	9.7063	0.9477	1.2459	0.8463		25	9.6515	0.9283	0.9042	1.2667
	10	9.7105	0.9454	1.2431	0.8660		26	9.6569	0.9260	0.8885	1.2701
	11	+9.7146	−0.9430	−1.2402	−0.8845		27	+9.6618	−0.9235	−0.8720	−1.2733
	12	9.7041	0.9406	1.2371	0.9022		28	9.6669	0.9216	0.8547	1.2764
	13	9.7092	0.9367	1.2339	0.9193		29	9.6697	0.9189	0.8364	1.2793
	14	9.7147	0.9375	1.2305	0.9358		30	9.6725	0.9140	0.8176	1.2821
	15	9.7200	0.9372	1.2270	0.9518		31	9.6748	0.9345	0.7981	1.2847
	16	+9.7249	−0.9377	−1.2233	−0.9670	June	1	+9.6767	−0.9341	−0.7771	−1.2872
	17	9.7297	0.9366	1.2194	0.9814		2	9.6787	0.9338	0.7550	1.2896
	18	9.7315	0.9337	1.2154	0.9951		3	9.6809	0.9308	0.7314	1.2919
	19	9.7322	0.9705	1.2112	1.0081		4	9.6836	0.9282	0.7064	1.2940
	20	9.7342	0.9705	1.2068	1.0204		5	9.6874	0.9256	0.6799	1.2960
h (16.0)	21	+9.7349	−0.9702	−1.2022	−1.0323	h (17.0)	6	+9.6916	−0.9233	−0.6515	−1.2978
	22	9.7354	0.9695	1.1975	1.0439		7	9.6962	0.9217	0.6210	1.2995
	23	9.7373	0.9646	1.1927	1.0552		8	9.7010	0.9211	0.5879	1.3011
	24	9.7394	0.9640	1.1878	1.0661		9	9.7055	0.9215	0.5521	1.3026
	25	9.7435	0.9611	1.1827	1.0767		10	9.7096	0.9226	0.5130	1.3039
	26	+9.7492	−0.9587	−1.1774	−1.0869		11	+9.7129	−0.9243	−0.4698	−1.3051
	27	9.7537	0.9567	1.1719	1.0967		12	9.7155	0.9259	0.4217	1.3062
	28	9.7565	0.9557	1.1661	1.1061		13	9.7175	0.9272	0.3675	1.3072
	29	9.7603	0.9555	1.1600	1.1151		14	9.7190	0.9278	0.3054	1.3080
	30	9.7701	0.9560	1.1537	1.1237		15	9.7204	0.9275	0.2338	1.3087
May	1	+9.7746	−0.9565	−1.1472	−1.1321		16	+9.7220	−0.9263	−0.1455	−1.3093
	2	9.7779	0.9578	1.1405	1.1402		17	9.7242	0.9244	0.0359	1.3098
	3	9.7803	0.9584	1.1336	1.1481		18	9.7270	0.9221	9.8890	1.3102
	4	9.7821	0.9583	1.1266	1.1558		19	9.7304	0.9199	9.6648	1.3105
	5	9.7835	0.9573	1.1194	1.1633		20	9.7346	0.9183	−9.1749	1.3106
h (15.0)	6	+9.7856	−0.9555	−1.1119	−1.1705	h (18.0)	21	+9.7391	−0.9174	+9.2079	−1.3106
	7	9.7879	0.9530	1.1041	1.1774		22	9.7437	0.9175	9.6758	1.3105
	8	9.7911	0.9501	1.0961	1.1840		23	9.7481	0.9186	9.8954	1.3102
	9	9.7951	0.9472	1.0878	1.1903		24	9.7519	0.9204	0.0406	1.3098
	10	9.7999	0.9447	1.0792	1.1963		25	9.7552	0.9225	0.1491	1.3093
	11	+9.6051	−0.9430	−1.0703	−1.2022		26	+9.7579	−0.9245	+0.2349	−1.3087
	12	9.6103	0.9422	1.0610	1.2079		27	9.7600	0.9260	0.3079	1.3080
	13	9.6151	0.9423	1.0513	1.2135		28	9.7617	0.9267	0.3696	1.3072
	14	9.6193	0.9430	1.0413	1.2190		29	9.7634	0.9265	0.4234	1.3062
	15	9.6226	0.9441	1.0309	1.2243		30	9.7653	0.9256	0.4713	1.3051
	16	+9.6250	−0.9450	−1.0201	−1.2294	July	1	+9.7676	−0.9238	+0.5142	−1.3039
	17	+9.6268	−0.9455	−1.0090	−1.2343		2	+9.7704	−0.9220	+0.5539	−1.3026

E = 0".00

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*	Solar Day. (Sid. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*
July 1	+9.7676	−0.9238	+0.5142	−1.3039	Aug. 16	+9.8704	−0.9483	+1.1812	−1.0795
2	9.7704	0.9290	0.5532	1.3026	17	9.8730	0.9503	1.1864	1.0693
3	9.7737	0.9203	0.5887	1.3011	18	9.8751	0.9528	1.1914	1.0588
4	9.7776	0.9193	0.6215	1.2995	19	9.8767	0.9555	1.1963	1.0478
5	9.7814	0.9192	0.6520	1.2978	20	9.8779	0.9578	1.2010	1.0364
h (19.0) 6	+9.7852	−0.9201	+0.6803	−1.2959	h (22.0) 21	+9.8787	−0.9596	+1.2055	−1.0245
7	9.7886	0.9218	0.7068	1.2939	22	9.8793	0.9605	1.2098	1.0121
8	9.7916	0.9241	0.7316	1.2918	23	9.8799	0.9605	1.2140	0.9993
9	9.7939	0.9267	0.7550	1.2896	24	9.8808	0.9597	1.2181	0.9861
10	9.7956	0.9289	0.7771	1.2873	25	9.8820	0.9585	1.2220	0.9724
11	+9.7969	−0.9305	+0.7980	−1.2848	26	+9.8836	−0.9572	+1.2257	−0.9582
12	9.7979	0.9313	0.8178	1.2822	27	9.8856	0.9562	1.2292	0.9434
13	9.7990	0.9311	0.8367	1.2794	28	9.8879	0.9558	1.2325	0.9277
14	9.8005	0.9302	0.8546	1.2764	29	9.8902	0.9562	1.2357	0.9111
15	9.8024	0.9289	0.8717	1.2733	30	9.8924	0.9575	1.2388	0.8936
16	+9.8050	−0.9274	+0.8881	−1.2701	31	+9.8943	−0.9595	+1.2418	−0.8751
17	9.8081	0.9263	0.9038	1.2668	Sept. 1	9.8957	0.9618	1.2446	0.8557
18	9.8116	0.9258	0.9188	1.2633	2	9.8966	0.9641	1.2473	0.8354
19	9.8152	0.9264	0.9330	1.2597	3	9.8971	0.9660	1.2499	0.8142
20	9.8188	0.9279	0.9467	1.2559	4	9.8973	0.9672	1.2523	0.7919
h (20.0) 21	+9.8220	−0.9301	+0.9599	−1.2520	h (23.0) 5	+9.8974	−0.9675	+1.2546	−0.7679
22	9.8247	0.9328	0.9727	1.2479	6	9.8976	0.9670	1.2567	0.7425
23	9.8268	0.9355	0.9851	1.2436	7	9.8982	0.9658	1.2587	0.7155
24	9.8284	0.9378	0.9970	1.2391	8	9.8992	0.9642	1.2605	0.6863
25	9.8297	0.9394	1.0085	1.2344	9	9.9006	0.9626	1.2622	0.6550
26	+9.8308	−0.9401	+1.0195	−1.2296	10	+9.9026	−0.9615	+1.2638	−0.6210
27	9.8320	0.9398	1.0301	1.2247	11	9.9048	0.9611	1.2653	0.5842
28	9.8335	0.9390	1.0403	1.2196	12	9.9071	0.9615	1.2666	0.5437
29	9.8355	0.9378	1.0501	1.2144	13	9.9091	0.9627	1.2678	0.4988
30	9.8379	0.9366	1.0596	1.2090	14	9.9109	0.9644	1.2689	0.4485
31	+9.8407	−0.9359	+1.0688	−1.2033	15	+9.9123	−0.9664	+1.2699	−0.3916
Aug. 1	9.8437	0.9360	1.0777	1.1974	16	9.9133	0.9682	1.2708	0.3258
2	9.8467	0.9370	1.0863	1.1912	17	9.9139	0.9696	1.2715	0.2481
3	9.8495	0.9389	1.0947	1.1847	18	9.9142	0.9700	1.2721	0.1532
4	9.8518	0.9414	1.1028	1.1781	19	9.9146	0.9697	1.2725	0.0312
h (21.0) 5	+9.8536	−0.9442	+1.1106	−1.1713	h (24.0) 20	+9.9151	−0.9685	+1.2728	−9.8616
6	9.8548	0.9468	1.1181	1.1643	21	9.9158	0.9667	1.2731	9.5777
7	9.8557	0.9489	1.1253	1.1571	22	9.9171	0.9647	1.2731	−8.3759
8	9.8562	0.9503	1.1322	1.1497	23	9.9186	0.9629	1.2730	+9.5046
9	9.8567	0.9507	1.1390	1.1420	24	9.9205	0.9615	1.2728	9.8257
10	+9.8575	−0.9503	+1.1456	−1.1340	25	+9.9225	−0.9610	+1.2725	+0.0084
11	9.8586	0.9493	1.1520	1.1257	26	9.9245	0.9612	1.2721	0.1365
12	9.8602	0.9481	1.1583	1.1171	27	9.9263	0.9622	1.2716	0.2152
13	9.8624	0.9471	1.1644	1.1082	28	9.9276	0.9637	1.2710	0.3156
14	9.8649	0.9466	1.1702	1.0990	29	9.9285	0.9653	1.2701	0.3834
15	+9.8677	−0.9470	+1.1758	−1.0894	30	+9.9290	−0.9665	+1.2691	+0.4418
16	+9.8704	−0.9483	+1.1812	−1.0795	Oct. 1	+9.9292	−0.9672	+1.2680	+0.4932

E = 0".00

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)		Log A.	Log B.	Log C.	Log D.
Oct.	1	+9.9292	−0.9672	+1.2888	+0.4932	Nov.	16	+9.9888	−0.9159	+1.2356	+1.2280
	2	9.9293	0.9670	1.2888	0.5393		17	9.9888	0.9170	1.2367	1.2273
	3	9.9294	0.9659	1.2655	0.5886		18	9.9911	0.9149	1.2133	1.2324
	4	9.9297	0.9641	1.2640	0.6182		19	9.9934	0.9137	1.2014	1.2373
h (1.0)	5	9.9304	0.9618	1.2894	0.6588	h (4.0)	20	9.9956	0.9126	0.9990	1.2421
	6	+9.9317	−0.9594	+1.2896	+0.6848		21	+9.9975	−0.9141	+0.9761	+1.2467
	7	9.9334	0.9572	1.2567	0.7144		22	9.9991	0.9152	0.9627	1.2511
	8	9.9354	0.9557	1.2567	0.7421		23	0.0003	0.9162	0.9487	1.2554
	9	9.9375	0.9549	1.2546	0.7680		24	0.0012	0.9168	0.9341	1.2595
	10	9.9396	0.9551	1.2523	0.7923		25	0.0019	0.9167	0.9189	1.2634
	11	+9.9414	−0.9559	+1.2496	+0.8152		26	+0.0026	−0.9156	+0.9031	+1.2670
	12	9.9429	0.9571	1.2471	0.8368		27	0.0033	0.9137	0.8867	1.2705
	13	9.9441	0.9583	1.2443	0.8574		28	0.0044	0.9110	0.8693	1.2739
	14	9.9448	0.9599	1.2414	0.8770		29	0.0058	0.9079	0.8509	1.2771
	15	9.9453	0.9599	1.2383	0.8956		30	0.0075	0.9050	0.8315	1.2802
	16	+9.9458	−0.9582	+1.2351	+0.9132	Dec.	1	+0.0097	−0.9035	+0.8111	+1.2831
	17	9.9463	0.9564	1.2318	0.9298		2	0.0120	0.9010	0.7896	1.2857
	18	9.9471	0.9540	1.2283	0.9456		3	0.0144	0.9005	0.7687	1.2882
	19	9.9483	0.9512	1.2246	0.9612		4	0.0167	0.9050	0.7485	1.2906
	20	9.9498	0.9484	1.2207	0.9760	h (5.0)	5	0.0188	0.9080	0.7167	1.2930
h (2.0)	21	+9.9517	−0.9469	+1.2167	+0.9902		6	+0.0205	−0.9035	+0.6892	+1.2953
	22	9.9536	0.9444	1.2125	1.0038		7	0.0219	0.9040	0.6596	1.2975
	23	9.9559	0.9437	1.2080	1.0169		8	0.0230	0.9050	0.6277	1.2994
	24	9.9576	0.9436	1.2034	1.0295		9	0.0240	0.9055	0.5931	1.3011
	25	9.9594	0.9445	1.1987	1.0416		10	0.0250	0.9045	0.5553	1.3026
	26	+9.9607	−0.9456	+1.1938	+1.0532		11	+0.0261	−0.9036	+0.5141	+1.3039
	27	9.9615	0.9464	1.1888	1.0643		12	0.0275	0.9031	0.4689	1.3051
	28	9.9620	0.9466	1.1835	1.0750		13	0.0292	0.8974	0.4164	1.3062
	29	9.9623	0.9461	1.1780	1.0854		14	0.0312	0.8950	0.3575	1.3072
	30	9.9627	0.9446	1.1723	1.0955		15	0.0334	0.8932	0.2894	1.3081
	31	+9.9632	−0.9424	+1.1664	+1.1052		16	+0.0356	−0.8935	+0.2083	+1.3090
Nov.	1	9.9641	0.9395	1.1602	1.1146		17	0.0379	0.8927	0.1082	1.3097
	2	9.9654	0.9363	1.1538	1.1236		18	0.0400	0.8939	9.9778	1.3102
	3	9.9671	0.9334	1.1471	1.1323		19	0.0417	0.8958	9.7903	1.3105
	4	9.9692	0.9311	1.1402	1.1407		20	0.0431	0.8977	+0.4927	1.3106
h (2.0)	5	+9.9715	−0.9295	+1.1331	+1.1488	h (6.0)	21	+0.0442	−0.8994	−0.6882	+1.3106
	6	9.9737	0.9290	1.1256	1.1567		22	0.0450	0.9005	9.5830	1.3105
	7	9.9759	0.9292	1.1192	1.1643		23	0.0457	0.9006	9.8551	1.3103
	8	9.9777	0.9299	1.1103	1.1716		24	0.0465	0.8997	0.9210	1.3099
	9	9.9792	0.9309	1.1021	1.1787		25	0.0474	0.8981	0.1487	1.3094
	10	+9.9803	−0.9315	+1.0936	+1.1856		26	+0.0487	−0.8959	−0.2343	+1.3088
	11	9.9812	0.9315	1.0848	1.1922		27	0.0503	0.8936	0.3111	1.3080
	12	9.9820	0.9316	1.0756	1.1986		28	0.0522	0.8921	0.3763	1.3071
	13	9.9824	0.9315	1.0661	1.2048		29	0.0543	0.8911	0.4329	1.3060
	14	9.9830	0.9302	1.0563	1.2108		30	0.0565	0.8912	0.4837	1.3048
	15	+9.9851	−0.9231	+1.0461	+1.2165		31	+0.0587	−0.8923	−0.5274	+1.3035
	16	+9.9888	−0.9159	+1.0356	+1.2220		32	+0.0607	−0.8943	−0.5677	+1.3020

E = 0".00

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Jan.	0	0.0017	+1.71	+0.114	274 55	18 19.7	350 14	23 20.9	+0.9389	+1.3094	−1.50	−0.1745
	1	0.0044	1.81	0.121	275 10	18 20.7	349 18	23 17.2	0.9404	1.3092	1.64	0.2141
	2	0.0072	1.89	0.126	275 25	18 21.7	348 22	23 13.5	0.9409	1.3089	1.78	0.2502
	3	0.0099	1.99	0.133	275 41	18 22.7	347 26	23 9.7	0.9407	1.3086	1.92	0.2833
h (7.0)	4	0.0127	2.11	0.141	276 3	18 24.2	346 30	23 6.0	0.9398	1.3083	2.06	0.3139
	5	0.0154	+2.27	+0.151	276 32	18 26.1	345 34	23 2.3	+0.9387	+1.3080	−2.20	−0.3424
	6	0.0181	2.47	0.165	277 8	18 28.5	344 37	22 58.5	0.9378	1.3077	2.34	0.3690
	7	0.0209	2.71	0.181	277 50	18 31.3	343 40	22 54.7	0.9375	1.3074	2.48	0.3940
	8	0.0236	2.97	0.198	278 35	18 34.3	342 43	22 50.9	0.9381	1.3070	2.62	0.4175
	9	0.0264	3.25	0.217	279 19	18 37.3	341 46	22 47.1	0.9397	1.3066	2.75	0.4397
	10	0.0291	+3.50	+0.233	280 2	18 40.1	340 49	22 43.3	+0.9422	+1.3062	−2.88	−0.4605
	11	0.0318	3.74	0.249	280 38	18 42.5	339 52	22 39.5	0.9453	1.3058	3.02	0.4804
	12	0.0346	3.93	0.262	281 6	18 44.4	338 54	22 35.6	0.9487	1.3054	3.15	0.4993
	13	0.0373	4.08	0.272	281 29	18 45.9	337 56	22 31.7	0.9519	1.3049	3.29	0.5172
	14	0.0400	4.21	0.281	281 45	18 47.0	336 58	22 27.9	0.9543	1.3044	3.42	0.5342
	15	0.0427	+4.31	+0.287	281 59	18 47.9	336 0	22 24.0	+0.9561	+1.3039	−3.55	−0.5505
	16	0.0454	4.41	0.294	282 13	18 48.9	335 2	22 20.1	0.9569	1.3034	3.68	0.5662
	17	0.0482	4.51	0.301	282 30	18 50.0	334 4	22 16.2	0.9570	1.3029	3.81	0.5812
	18	0.0509	4.63	0.309	282 52	18 51.5	333 6	22 12.4	0.9566	1.3024	3.94	0.5955
	19	0.0537	4.80	0.320	283 20	18 53.3	332 8	22 8.5	0.9564	1.3019	4.07	0.6091
h (8.0)	20	0.0564	+4.99	+0.333	283 53	18 55.5	331 10	22 4.7	+0.9564	+1.3013	−4.19	−0.6220
	21	0.0591	5.21	0.347	284 29	18 57.9	330 12	22 0.8	0.9571	1.3007	4.31	0.6345
	22	0.0619	5.44	0.363	285 6	19 0.4	329 13	21 56.9	0.9586	1.3001	4.43	0.6466
	23	0.0646	5.67	0.378	285 40	19 2.7	328 14	21 52.9	0.9610	1.2995	4.55	0.6583
	24	0.0674	5.88	0.392	286 8	19 4.5	327 15	21 49.0	0.9642	1.2989	4.67	0.6696
	25	0.0701	+6.06	+0.404	286 30	19 6.0	326 16	21 45.1	+0.9676	+1.2983	−4.79	−0.6804
	26	0.0728	6.20	0.413	286 46	19 7.1	325 16	21 41.1	0.9711	1.2977	4.91	0.6909
	27	0.0755	6.30	0.420	286 56	19 7.7	324 17	21 37.1	0.9740	1.2971	5.03	0.7010
	28	0.0783	6.37	0.425	287 1	19 8.1	323 17	21 33.1	0.9762	1.2965	5.14	0.7107
	29	0.0810	6.42	0.428	287 7	19 8.5	322 18	21 29.2	0.9777	1.2958	5.25	0.7200
	30	0.0838	+6.49	+0.433	287 15	19 9.0	321 18	21 25.2	+0.9784	+1.2952	−5.36	−0.7289
	31	0.0865	6.56	0.437	287 28	19 9.9	320 18	21 21.2	0.9784	1.2945	5.47	0.7375
Feb.	1	0.0893	6.67	0.445	287 47	19 11.1	319 18	21 17.2	0.9783	1.2939	5.58	0.7458
	2	0.0920	6.83	0.455	288 12	19 12.8	318 17	21 13.1	0.9783	1.2932	5.68	0.7538
	3	0.0948	7.02	0.468	288 42	19 14.8	317 17	21 9.1	0.9789	1.2926	5.78	0.7616
h (9.0)	4	0.0975	+7.24	+0.483	289 15	19 17.0	316 17	21 5.1	+0.9801	+1.2919	−5.88	−0.7691
	5	0.1002	7.47	0.498	289 48	19 19.2	315 16	21 1.1	0.9824	1.2912	5.98	0.7763
	6	0.1030	7.70	0.513	290 17	19 21.1	314 15	20 57.0	0.9853	1.2906	6.08	0.7832
	7	0.1057	7.91	0.527	290 41	19 22.7	313 14	20 52.9	0.9888	1.2899	6.17	0.7899
	8	0.1085	8.09	0.539	290 59	19 23.9	312 13	20 48.9	0.9923	1.2893	6.26	0.7964
	9	0.1112	+8.22	+0.548	291 11	19 24.7	311 11	20 44.7	+0.9957	+1.2886	−6.35	−0.8027
	10	0.1139	8.32	0.555	291 18	19 25.2	310 9	20 40.6	0.9983	1.2879	6.44	0.8087
	11	0.1166	8.38	0.559	291 22	19 25.5	309 7	20 36.5	1.0002	1.2873	6.53	0.8145
	12	0.1194	8.43	0.562	291 28	19 25.9	308 5	20 32.3	1.0014	1.2866	6.61	0.8201
	13	0.1221	8.49	0.566	291 36	19 26.4	307 3	20 28.2	1.0018	1.2860	6.69	0.8255
	14	0.1248	+8.57	+0.571	291 49	19 27.3	306 1	20 24.1	+1.0018	+1.2853	−6.77	−0.8307
	15	0.1275	+8.68	+0.579	292 7	19 28.5	304 59	20 19.9	+1.0016	+1.2847	−6.85	−0.8357

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Feb.	15	0.1275	+ 8.68	+0.579	292 7	19 28.5	304 59	20 19.9	+1.0016	+1.2847	−6.85	−0.8357
	16	0.1303	8.83	0.589	292 29	19 29.9	303 56	20 15.7	1.0018	1.2841	6.93	0.8405
	17	0.1330	9.00	0.600	292 55	19 31.7	302 53	20 11.5	1.0024	1.2835	7.00	0.8451
	18	0.1356	9.19	0.612	293 22	19 33.5	301 50	20 7.3	1.0040	1.2829	7.07	0.8496
h (10.0)	19	0.1382	9.39	0.625	293 46	19 35.1	300 47	20 3.1	1.0061	1.2823	7.14	0.8539
	20	0.1413	+ 9.57	+0.638	294 5	19 36.3	299 44	19 56.9	+1.0089	+1.2817	−7.21	−0.8580
	21	0.1441	9.72	0.648	294 18	19 37.2	298 41	19 54.7	1.0119	1.2811	7.27	0.8619
	22	0.1468	9.84	0.656	294 26	19 37.7	297 38	19 50.5	1.0148	1.2806	7.33	0.8657
	23	0.1496	9.91	0.661	294 29	19 37.9	296 34	19 46.3	1.0174	1.2801	7.39	0.8693
	24	0.1523	9.95	0.663	294 28	19 37.9	295 30	19 42.0	1.0193	1.2796	7.45	0.8727
	25	0.1550	+ 9.97	+0.665	294 27	19 37.8	294 26	19 37.7	+1.0203	+1.2791	−7.51	−0.8760
	26	0.1577	9.99	0.666	294 29	19 37.9	293 22	19 33.5	1.0207	1.2786	7.56	0.8791
	27	0.1605	10.02	0.668	294 35	19 38.3	292 18	19 29.2	1.0206	1.2781	7.61	0.8820
	28	0.1632	10.09	0.673	294 46	19 39.1	291 14	19 24.9	1.0202	1.2776	7.66	0.8848
Mar.	1	0.1659	10.21	0.681	295 4	19 40.3	290 9	19 20.6	1.0199	1.2772	7.71	0.8874
	2	0.1686	+10.34	+0.689	295 26	19 41.7	289 5	19 16.3	+1.0200	+1.2768	−7.75	−0.8898
	3	0.1714	10.52	0.701	295 51	19 43.4	288 1	19 12.1	1.0208	1.2764	7.79	0.8921
	4	0.1741	10.72	0.715	296 16	19 45.1	286 57	19 7.8	1.0224	1.2760	7.83	0.8943
h	5	0.1769	10.91	0.727	296 40	19 46.7	285 52	19 3.5	1.0246	1.2756	7.87	0.8964
(11.0)	6	0.1796	11.10	0.740	296 58	19 47.9	284 47	18 59.1	1.0273	1.2753	7.91	0.8983
	7	0.1823	+11.26	+0.751	297 10	19 48.7	283 42	18 54.8	+1.0302	+1.2750	−7.94	−0.9000
	8	0.1851	11.36	0.757	297 18	19 49.2	282 37	18 50.5	1.0330	1.2747	7.97	0.9016
	9	0.1878	11.44	0.763	297 21	19 49.4	281 32	18 46.1	1.0349	1.2744	8.00	0.9031
	10	0.1906	11.49	0.766	297 22	19 49.5	280 27	18 41.8	1.0363	1.2742	8.02	0.9045
	11	0.1933	11.52	0.768	297 25	19 49.7	279 22	18 37.5	1.0369	1.2740	8.04	0.9057
	12	0.1960	+11.55	+0.770	297 29	19 49.9	278 17	18 33.1	+1.0369	+1.2738	−8.06	−0.9069
	13	0.1988	11.60	0.773	297 38	19 50.5	277 12	18 28.8	1.0364	1.2736	8.08	0.9079
	14	0.2015	11.68	0.779	297 53	19 51.5	276 7	18 24.5	1.0358	1.2735	8.10	0.9087
	15	0.2043	11.79	0.786	298 12	19 52.8	275 2	18 20.1	1.0354	1.2734	8.11	0.9093
	16	0.2070	11.93	0.795	298 35	19 54.3	273 57	18 15.8	1.0354	1.2733	8.12	0.9097
	17	0.2097	+12.10	+0.807	298 58	19 55.9	272 52	18 11.5	+1.0361	+1.2732	−8.12	−0.9100
	18	0.2125	12.27	0.818	299 20	19 57.3	271 46	18 7.1	1.0376	1.2732	8.13	0.9104
	19	0.2152	12.45	0.830	299 37	19 58.5	270 41	18 2.7	1.0395	1.2731	8.13	0.9106
	20	0.2180	12.59	0.839	299 50	19 59.3	269 36	17 58.4	1.0417	1.2731	8.13	0.9106
	21	0.2207	12.70	0.847	299 57	19 59.8	268 31	17 54.1	1.0440	1.2731	8.13	0.9105
h												
(12.0)	22	0.2234	+12.76	+0.851	299 59	19 59.9	267 26	17 49.7	+1.0458	+1.2732	−8.12	−0.9103
	23	0.2262	12.80	0.853	299 59	19 59.9	266 21	17 45.4	1.0471	1.2733	8.12	0.9100
	24	0.2289	12.81	0.854	299 58	19 59.9	265 16	17 41.1	1.0477	1.2734	8.11	0.9095
	25	0.2317	12.81	0.854	299 59	19 59.9	264 12	17 36.8	1.0476	1.2735	8.10	0.9088
	26	0.2344	12.83	0.855	300 5	20 0.3	263 8	17 32.5	1.0469	1.2736	8.09	0.9080
	27	0.2371	+12.87	+0.858	300 16	20 1.1	262 4	17 28.3	+1.0460	+1.2738	−8.07	−0.9071
	28	0.2399	12.96	0.864	300 32	20 2.1	261 0	17 24.0	1.0452	1.2740	8.05	0.9061
	29	0.2426	13.08	0.872	300 54	20 3.6	259 56	17 19.7	1.0448	1.2742	8.03	0.9050
	30	0.2454	13.24	0.883	301 19	20 5.3	258 52	17 15.5	1.0450	1.2744	8.01	0.9037
	31	0.2481	13.44	0.896	301 45	20 7.0	257 48	17 11.2	1.0459	1.2747	7.98	0.9023
Apr.	1	0.2508	+13.63	+0.909	302 8	20 8.5	256 44	17 6.9	+1.0474	+1.2750	−7.95	−0.9008
	2	0.2536	+13.82	+0.921	302 27	20 9.8	255 40	17 2.7	+1.0495	+1.2753	−7.92	−0.8991

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	δ	Log δ.
			In Arc.	In Time.	In Arc.	In Time	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Apr.	1	0.2508	+13.63	+0.909	302 8	20 8.5	256 44	17 6.9	+1.0474	+1.2750	−7.95	−0.9008
	2	0.2536	13.82	0.921	302 27	20 9.8	256 40	17 2.7	1.0495	1.2753	7.92	0.8991
	3	0.2563	13.98	0.932	302 41	20 10.7	254 36	16 58.4	1.0518	1.2756	7.89	0.8973
	4	0.2591	14.11	0.941	302 51	20 11.4	253 32	16 54.1	1.0539	1.2759	7.86	0.8953
	5	0.2618	14.21	0.947	302 57	20 11.8	252 29	16 49.9	1.0557	1.2763	7.82	0.8932
h (12.0)	6	0.2645	+14.27	+0.951	303 0	20 12.0	251 26	16 45.7	+1.0566	+1.2767	−7.78	−0.8910
	7	0.2673	14.30	0.953	303 5	20 12.3	250 23	16 41.5	1.0570	1.2771	7.74	0.8886
	8	0.2700	14.34	0.956	303 12	20 12.8	249 20	16 37.3	1.0567	1.2775	7.69	0.8861
	9	0.2728	14.39	0.959	303 23	20 13.5	248 17	16 33.1	1.0560	1.2780	7.64	0.8834
	10	0.2755	14.45	0.963	303 39	20 14.6	247 15	16 29.0	1.0551	1.2785	7.59	0.8806
	11	0.2782	+14.57	+0.971	304 0	20 16.0	246 12	16 24.8	+1.0544	+1.2789	−7.54	−0.8777
	12	0.2810	14.71	0.981	304 25	20 17.7	245 10	16 20.7	1.0542	1.2794	7.49	0.8746
	13	0.2837	14.88	0.992	304 51	20 19.4	244 7	16 16.5	1.0545	1.2799	7.43	0.8714
	14	0.2865	15.08	1.005	305 16	20 21.1	243 5	16 12.3	1.0555	1.2804	7.37	0.8680
	15	0.2892	15.26	1.017	305 36	20 22.4	242 3	16 8.2	1.0571	1.2809	7.32	0.8645
	16	0.2919	+15.44	+1.029	305 53	20 23.5	241 1	16 4.1	+1.0591	+1.2814	−7.26	−0.8608
	17	0.2946	15.57	1.038	306 4	20 24.3	240 0	16 0.0	1.0610	1.2820	7.20	0.8570
	18	0.2974	15.67	1.045	306 10	20 24.7	238 59	15 55.9	1.0627	1.2826	7.13	0.8530
	19	0.3001	15.73	1.049	306 14	20 24.9	237 58	15 51.9	1.0638	1.2832	7.06	0.8488
	20	0.3028	15.77	1.051	306 16	20 25.1	236 57	15 47.8	1.0643	1.2838	6.99	0.8444
h (14.0)	21	0.3055	+15.80	+1.053	306 21	20 25.4	235 57	15 43.8	+1.0642	+1.2844	−6.92	−0.8399
	22	0.3083	15.82	1.055	306 30	20 26.0	234 56	15 39.7	1.0636	1.2850	6.85	0.8352
	23	0.3110	15.89	1.059	306 44	20 26.9	233 56	15 35.7	1.0627	1.2856	6.77	0.8304
	24	0.3138	15.97	1.065	307 3	20 28.2	232 55	15 31.6	1.0620	1.2862	6.69	0.8254
	25	0.3165	16.11	1.074	307 29	20 29.9	231 55	15 27.7	1.0615	1.2868	6.61	0.8202
	26	0.3192	+16.28	+1.085	307 56	20 31.7	230 56	15 23.7	+1.0618	+1.2874	−6.53	−0.8148
	27	0.3220	16.49	1.099	308 25	20 33.7	229 56	15 19.7	1.0626	1.2880	6.45	0.8092
	28	0.3247	16.71	1.114	308 51	20 35.4	228 57	15 15.8	1.0643	1.2886	6.36	0.8034
	29	0.3275	16.94	1.129	309 14	20 36.9	227 58	15 11.9	1.0665	1.2892	6.27	0.7974
	30	0.3302	17.14	1.143	309 32	20 38.1	226 59	15 7.9	1.0688	1.2899	6.18	0.7913
May	1	0.3329	+17.32	+1.155	309 45	20 39.0	226 0	15 4.0	+1.0710	+1.2905	−6.09	−0.7849
	2	0.3357	17.44	1.163	309 54	20 39.6	225 1	15 0.1	1.0729	1.2912	6.00	0.7783
	3	0.3384	17.54	1.169	310 1	20 40.1	224 3	14 56.2	1.0743	1.2918	5.91	0.7715
	4	0.3412	17.61	1.174	310 9	20 40.6	223 5	14 52.3	1.0750	1.2925	5.82	0.7644
	5	0.3439	17.68	1.179	310 19	20 41.3	222 7	14 48.5	1.0751	1.2931	5.72	0.7571
h (15.0)	6	0.3466	+17.75	+1.183	310 33	20 42.2	221 9	14 44.6	+1.0748	+1.2938	−5.62	−0.7495
	7	0.3494	17.84	1.189	310 52	20 43.5	220 12	14 40.8	1.0743	1.2944	5.52	0.7417
	8	0.3521	17.98	1.199	311 16	20 45.1	219 15	14 37.0	1.0741	1.2950	5.42	0.7336
	9	0.3549	18.14	1.209	311 43	20 46.9	218 18	14 33.2	1.0742	1.2956	5.32	0.7252
	10	0.3576	18.34	1.223	312 12	20 48.8	217 21	14 29.4	1.0750	1.2962	5.21	0.7166
	11	0.3603	+18.57	+1.238	312 39	20 50.6	216 24	14 25.6	+1.0764	+1.2968	−5.10	−0.7077
	12	0.3631	18.79	1.253	313 3	20 52.2	215 27	14 21.8	1.0784	1.2973	4.99	0.6985
	13	0.3658	19.00	1.267	313 21	20 53.4	214 31	14 18.1	1.0807	1.2979	4.88	0.6889
	14	0.3686	19.19	1.279	313 35	20 54.3	213 35	14 14.3	1.0830	1.2985	4.77	0.6789
	15	0.3713	19.33	1.289	313 44	20 54.9	212 39	14 10.6	1.0852	1.2991	4.66	0.6687
	16	0.3740	+19.44	+1.296	313 50	20 55.3	211 43	14 6.9	+1.0868	+1.2997	−4.55	−0.6583
	17	0.3768	+19.52	+1.301	313 55	20 55.7	210 47	14 3.1	+1.0879	+1.3002	−4.44	−0.6474

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		r	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	"	s	° ′	h m	° ′	h m			"	
May	17	0.3768	+19.52	+1.301	313 55	20 55.7	210 47	14 3.1	+1.0879	+1.3002	−4.44	−0.6474
	18	0.3795	19.57	1.305	314 1	20 56.1	209 52	13 59.5	1.0883	1.3008	4.32	0.6359
	19	0.3823	19.63	1.309	314 12	20 56.8	208 57	13 55.8	1.0884	1.3014	4.20	0.6239
	20	0.3850	19.71	1.314	314 26	20 57.7	208 2	13 52.1	1.0882	1.3019	4.08	0.6114
h (16.0)	21	0.3877	19.83	1.322	314 47	20 59.1	207 7	13 48.5	1.0881	1.3024	3.96	0.5985
	22	0.3905	+19.98	+1.332	315 11	21 0.7	206 12	13 44.8	+1.0883	+1.3029	−3.84	−0.5851
	23	0.3932	20.18	1.345	315 39	21 2.6	205 17	13 41.1	1.0891	1.3034	3.72	0.5712
	24	0.3960	20.41	1.361	316 7	21 4.5	204 23	13 37.5	1.0906	1.3039	3.60	0.5567
	25	0.3987	20.65	1.377	316 33	21 6.2	203 29	13 33.9	1.0928	1.3043	3.48	0.5417
	26	0.4014	20.89	1.393	316 55	21 7.7	202 35	13 30.3	1.0956	1.3048	3.36	0.5261
	27	0.4042	+21.15	+1.410	317 12	21 8.8	201 41	13 26.7	+1.0984	+1.3052	−3.24	−0.5098
	28	0.4069	21.36	1.424	317 25	21 9.7	200 47	13 23.1	1.1012	1.3056	3.11	0.4926
	29	0.4097	21.54	1.436	317 34	21 10.3	199 53	13 19.5	1.1038	1.3060	2.98	0.4745
	30	0.4124	21.68	1.445	317 41	21 10.7	198 59	13 15.9	1.1058	1.3064	2.85	0.4554
	31	0.4151	21.80	1.453	317 48	21 11.2	198 5	13 12.3	1.1073	1.3066	2.72	0.4354
June	1	0.4178	+21.90	+1.460	317 57	21 11.8	197 11	13 8.7	+1.1082	+1.3072	−2.59	−0.4145
	2	0.4206	22.00	1.467	318 10	21 12.7	196 17	13 5.1	1.1087	1.3075	2.46	0.3923
	3	0.4233	22.09	1.473	318 26	21 13.7	195 23	13 1.5	1.1090	1.3078	2.33	0.3689
	4	0.4260	22.25	1.483	318 48	21 15.2	194 30	12 58.0	1.1095	1.3081	2.20	0.3438
	5	0.4287	22.44	1.496	319 12	21 16.8	193 36	12 54.4	1.1105	1.3084	2.07	0.3172
h (17.0)	6	0.4315	+22.66	+1.511	319 38	21 18.5	192 43	12 50.9	+1.1119	+1.3087	−1.94	−0.2888
	7	0.4342	22.90	1.527	320 2	21 20.1	191 50	12 47.3	1.1139	1.3090	1.81	0.2583
	8	0.4370	23.15	1.543	320 23	21 21.5	190 57	12 43.8	1.1165	1.3092	1.68	0.2252
	9	0.4397	23.40	1.560	320 39	21 22.6	190 4	12 40.3	1.1194	1.3094	1.54	0.1893
	10	0.4424	23.61	1.574	320 51	21 23.4	189 11	12 36.7	1.1222	1.3096	1.41	0.1500
	11	0.4452	+23.80	+1.587	320 57	21 23.8	188 19	12 33.3	+1.1249	+1.3098	−1.27	−0.1069
	12	0.4479	23.94	1.596	321 1	21 24.1	187 26	12 29.7	1.1271	1.3100	1.14	0.0586
	13	0.4507	24.05	1.603	321 3	21 24.2	186 34	12 26.3	1.1289	1.3101	1.00	0.0051
	14	0.4534	24.13	1.609	321 7	21 24.5	185 41	12 22.7	1.1301	1.3102	0.87	9.9427
	15	0.4561	24.21	1.614	321 13	21 24.9	184 48	12 19.2	1.1308	1.3103	0.74	9.8705
	16	0.4589	+24.30	+1.620	321 24	21 25.6	183 56	12 15.7	+1.1313	+1.3104	−0.60	−9.7889
	17	0.4616	24.42	1.628	321 40	21 26.7	183 3	12 12.2	1.1319	1.3105	0.47	9.6736
	18	0.4644	24.58	1.639	322 0	21 28.0	182 11	12 8.7	1.1327	1.3105	0.33	9.5367
	19	0.4671	24.77	1.651	322 21	21 29.4	181 18	12 5.2	1.1340	1.3106	0.20	9.3027
	20	0.4698	25.01	1.667	322 43	21 30.9	180 25	12 1.7	1.1361	1.3106	−0.07	−8.8142
h (18.0)	21	0.4726	+25.27	+1.685	323 4	21 32.3	179 32	11 58.1	+1.1386	+1.3106	+0.07	+8.8463
	22	0.4753	25.55	1.703	323 21	21 33.4	178 40	11 54.7	1.1416	1.3106	0.20	9.3135
	23	0.4780	25.80	1.720	323 33	21 34.2	177 47	11 51.1	1.1448	1.3105	0.34	9.5331
	24	0.4808	26.03	1.735	323 41	21 34.7	176 55	11 47.7	1.1479	1.3105	0.47	9.6778
	25	0.4835	26.23	1.749	323 46	21 35.1	176 2	11 44.1	1.1508	1.3104	0.61	9.7863
	26	0.4863	+26.39	+1.759	323 48	21 35.2	175 9	11 40.6	+1.1532	+1.3103	+0.74	+9.8727
	27	0.4890	26.53	1.769	323 50	21 35.3	174 17	11 37.1	1.1551	1.3101	0.88	9.9452
	28	0.4918	26.63	1.775	323 54	21 35.6	173 25	11 33.7	1.1565	1.3099	1.01	0.0062
	29	0.4945	26.73	1.782	324 1	21 36.1	172 32	11 30.1	1.1575	1.3098	1.15	0.0601
	30	0.4972	26.84	1.789	324 12	21 36.8	171 39	11 26.6	1.1584	1.3096	1.28	0.1083
July	1	0.5000	+26.99	+1.799	324 27	21 37.8	170 47	11 23.1	+1.1594	+1.3094	+1.42	+0.1518
	2	0.5027	+27.16	+1.811	324 46	21 39.1	169 54	11 19.6	+1.1606	+1.3092	+1.55	+0.1903

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		g		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
July	1	0.5000	+26.99	+1.799	324 27	21 37.8	170 47	11 23.1	+1.1594	+1.3094	+1.42	+0.1519
	2	0.5027	27.16	1.811	324 46	21 39.1	169 54	11 19.6	1.1606	1.3092	1.55	0.1903
	3	0.5055	27.37	1.825	325 3	21 40.2	169 2	11 16.1	1.1623	1.3090	1.69	0.2260
	4	0.5082	27.62	1.841	325 21	21 41.4	168 9	11 12.6	1.1645	1.3087	1.82	0.2588
	5	0.5109	27.86	1.858	325 36	21 42.4	167 16	11 9.1	1.1671	1.3085	1.95	0.2892
h (19.0)	6	0.5137	+28.11	+1.874	325 46	21 43.1	166 23	11 5.5	+1.1700	+1.3082	+2.08	+0.3177
	7	0.5164	28.32	1.888	325 53	21 43.5	165 30	11 2.0	1.1730	1.3079	2.21	0.3443
	8	0.5192	28.52	1.901	325 55	21 43.7	164 37	10 58.5	1.1756	1.3076	2.34	0.3691
	9	0.5219	28.67	1.911	325 54	21 43.6	163 44	10 54.9	1.1780	1.3073	2.47	0.3925
	10	0.5246	28.78	1.919	325 52	21 43.5	162 50	10 51.3	1.1799	1.3069	2.60	0.4146
	11	0.5274	+28.87	+1.925	325 51	21 43.4	161 57	10 47.8	+1.1813	+1.3065	+2.73	+0.4354
	12	0.5301	28.94	1.929	325 52	21 43.5	161 4	10 44.3	1.1822	1.3061	2.86	0.4553
	13	0.5329	29.01	1.934	325 57	21 43.8	160 10	10 40.7	1.1829	1.3057	2.99	0.4741
	14	0.5356	29.12	1.941	326 5	21 44.3	159 16	10 37.1	1.1837	1.3053	3.11	0.4921
	15	0.5383	29.24	1.949	326 17	21 45.1	158 22	10 33.5	1.1846	1.3049	3.24	0.5094
	16	0.5411	+29.42	+1.961	326 32	21 46.1	157 28	10 29.9	+1.1859	+1.3045	+3.36	+0.5259
	17	0.5438	29.63	1.975	326 48	21 47.2	156 34	10 26.3	1.1878	1.3040	3.48	0.5416
	18	0.5466	29.86	1.991	327 2	21 48.1	155 40	10 22.7	1.1900	1.3035	3.60	0.5565
	19	0.5493	30.12	2.008	327 13	21 48.9	154 46	10 19.1	1.1928	1.3031	3.72	0.5706
	20	0.5520	30.37	2.025	327 20	21 49.3	153 52	10 15.5	1.1958	1.3026	3.84	0.5841
h (20.0)	21	0.5547	+30.59	+2.039	327 24	21 49.6	152 57	10 11.8	+1.1987	+1.3021	+3.96	+0.5973
	22	0.5575	30.78	2.052	327 24	21 49.6	152 2	10 8.1	1.2014	1.3016	4.08	0.6101
	23	0.5602	30.93	2.062	327 22	21 49.5	151 7	10 4.5	1.2036	1.3010	4.20	0.6225
	24	0.5629	31.05	2.070	327 19	21 49.3	150 12	10 0.8	1.2054	1.3005	4.31	0.6345
	25	0.5656	31.14	2.076	327 18	21 49.2	149 17	9 57.1	1.2068	1.3000	4.43	0.6461
	26	0.5684	+31.22	+2.081	327 20	21 49.3	148 21	9 53.4	+1.2078	+1.2994	+4.54	+0.6572
	27	0.5711	31.30	2.087	327 25	21 49.7	147 26	9 49.7	1.2086	1.2988	4.65	0.6678
	28	0.5739	31.42	2.095	327 33	21 50.2	146 31	9 46.1	1.2094	1.2982	4.76	0.6780
	29	0.5766	31.56	2.104	327 45	21 51.1	145 35	9 42.3	1.2105	1.2976	4.87	0.6877
	30	0.5793	31.74	2.116	327 57	21 54.8	144 39	9 38.6	1.2119	1.2971	4.98	0.6971
	31	0.5821	+31.94	+2.129	328 10	21 52.7	143 43	9 34.9	+1.2137	+1.2965	+5.09	+0.7062
Aug.	1	0.5848	32.16	2.144	328 20	21 53.3	142 47	9 31.1	1.2159	1.2959	5.20	0.7151
	2	0.5876	32.38	2.159	328 27	21 53.8	141 51	9 27.4	1.2184	1.2953	5.30	0.7238
	3	0.5903	32.59	2.173	328 30	21 54.0	140 54	9 23.6	1.2209	1.2947	5.40	0.7323
	4	0.5930	32.76	2.184	328 30	21 54.0	139 57	9 19.8	1.2233	1.2941	5.50	0.7405
h (21.0)	5	0.5958	+32.91	+2.194	328 26	21 53.7	139 0	9 16.0	+1.2253	+1.2935	+5.60	+0.7484
	6	0.5985	32.99	2.199	328 21	21 53.4	138 3	9 12.2	1.2269	1.2929	5.70	0.7559
	7	0.6013	33.06	2.205	328 17	21 53.1	137 6	9 8.4	1.2281	1.2923	5.80	0.7631
	8	0.6040	33.10	2.207	328 14	21 52.9	136 8	9 4.5	1.2289	1.2916	5.89	0.7700
	9	0.6067	33.13	2.209	328 14	21 52.9	135 10	9 0.7	1.2294	1.2910	5.98	0.7767
	10	0.6095	+33.20	+2.213	328 18	21 53.2	134 12	8 56.8	+1.2299	+1.2903	+6.07	+0.7832
	11	0.6122	33.29	2.219	328 26	21 53.7	133 14	8 52.9	1.2304	1.2897	6.16	0.7896
	12	0.6150	33.40	2.227	328 36	21 54.4	132 16	8 49.1	1.2312	1.2890	6.25	0.7958
	13	0.6177	33.57	2.238	328 47	21 55.1	131 17	8 45.1	1.2325	1.2884	6.34	0.8019
	14	0.6204	33.77	2.251	328 57	21 55.8	130 18	8 41.2	1.2343	1.2878	6.42	0.8077
	15	0.6232	+33.98	+2.265	329 6	21 56.4	129 19	8 37.3	+1.2364	+1.2872	+6.50	+0.8133
	16	0.6260	+34.20	+2.280	329 11	21 56.7	128 21	8 33.4	+1.2387	+1.2866	+6.58	+0.8187

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Std. Hour.)		τ	f		G		H		Log g.	Log h.		Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Aug.	16	0.6260	+34.20	+2.280	329 11	21 56.7	128 21	8 33.4	+1.2387	+1.2866	+6.58	+0.8187
	17	0.6287	34.41	2.294	329 13	21 56.9	127 22	8 29.5	1.2412	1.2859	6.66	0.8239
	18	0.6314	34.57	2.305	329 11	21 56.7	126 23	8 25.5	1.2434	1.2853	6.74	0.8289
	19	0.6341	34.69	2.313	329 8	21 56.5	125 23	8 21.5	1.2453	1.2847	6.82	0.8337
	20	0.6369	34.79	2.319	329 4	21 56.3	124 23	8 17.5	1.2467	1.2842	6.89	0.8383
h (22.0)	21	0.6396	+34.85	+2.323	329 0	21 56.0	123 23	8 13.5	+1.2478	+1.2836	+6.96	+0.8428
	22	0.6424	34.90	2.327	328 59	21 55.9	122 23	8 9.5	1.2485	1.2830	7.03	0.8472
	23	0.6451	34.95	2.330	329 1	21 56.1	121 23	8 5.5	1.2489	1.2825	7.10	0.8515
	24	0.6478	35.03	2.335	329 7	21 56.5	120 22	8 1.5	1.2494	1.2819	7.17	0.8556
	25	0.6506	35.12	2.341	329 16	21 57.1	119 22	7 57.4	1.2500	1.2814	7.23	0.8595
	26	0.6533	+35.26	+2.351	329 26	21 57.7	118 21	7 53.4	+1.2508	+1.2809	+7.29	+0.8632
	27	0.6561	35.42	2.361	329 36	21 58.4	117 20	7 49.3	1.2520	1.2804	7.35	0.8667
	28	0.6588	35.60	2.373	329 45	21 59.0	116 19	7 45.3	1.2537	1.2799	7.41	0.8701
	29	0.6615	35.79	2.386	329 52	21 59.5	115 18	7 41.2	1.2555	1.2794	7.47	0.8734
	30	0.6643	35.97	2.398	329 55	21 59.7	114 17	7 37.1	1.2574	1.2789	7.52	0.8766
	31	0.6670	+36.13	+2.409	329 55	21 59.7	113 16	7 33.0	+1.2594	+1.2784	+7.57	+0.8795
Sept.	1	0.6698	36.24	2.416	329 51	21 59.4	112 14	7 28.9	1.2610	1.2780	7.62	0.8822
	2	0.6725	36.33	2.422	329 47	21 59.1	111 12	7 24.8	1.2622	1.2776	7.67	0.8848
	3	0.6752	36.37	2.425	329 42	21 58.8	110 10	7 20.7	1.2631	1.2772	7.71	0.8873
	4	0.6780	36.38	2.425	329 38	21 58.5	109 8	7 16.5	1.2636	1.2768	7.75	0.8897
h (23.0)	5	0.6807	+36.39	+2.426	329 38	21 58.5	108 6	7 12.4	+1.2637	+1.2764	+7.79	+0.8920
	6	0.6835	36.41	2.427	329 40	21 58.7	107 3	7 8.2	1.2637	1.2760	7.83	0.8941
	7	0.6862	36.46	2.431	329 46	21 59.1	106 0	7 4.0	1.2639	1.2757	7.87	0.8961
	8	0.6889	36.54	2.436	329 55	21 59.7	104 57	6 59.8	1.2642	1.2754	7.90	0.8980
	9	0.6916	36.66	2.444	330 6	22 0.4	103 54	6 55.6	1.2648	1.2751	7.93	0.8998
	10	0.6944	+36.83	+2.455	330 16	22 1.1	102 51	6 51.4	+1.2661	+1.2748	+7.96	+0.9014
	11	0.6971	37.01	2.467	330 25	22 1.7	101 47	6 47.1	1.2677	1.2745	7.99	0.9029
	12	0.6998	37.21	2.481	330 32	22 2.1	100 43	6 42.9	1.2695	1.2743	8.02	0.9043
	13	0.7025	37.38	2.492	330 34	22 2.3	99 40	6 38.7	1.2713	1.2741	8.04	0.9056
	14	0.7053	37.54	2.503	330 35	22 2.3	98 36	6 34.4	1.2731	1.2739	8.06	0.9067
	15	0.7080	+37.66	+2.511	330 32	22 2.1	97 33	6 30.2	+1.2747	+1.2737	+8.08	+0.9077
	16	0.7108	37.75	2.517	330 30	22 2.0	96 29	6 25.9	1.2758	1.2735	8.10	0.9085
	17	0.7135	37.80	2.520	330 27	22 1.8	95 25	6 21.7	1.2766	1.2734	8.11	0.9091
	18	0.7162	37.82	2.521	330 27	22 1.8	94 21	6 17.4	1.2769	1.2733	8.12	0.9096
	19	0.7190	37.86	2.524	330 29	22 1.9	93 17	6 13.1	1.2772	1.2733	8.12	0.9100
h (24.0)	20	0.7217	+37.90	+2.527	330 35	22 2.3	92 13	6 8.9	+1.2773	+1.2732	+8.13	+0.9103
	21	0.7245	37.96	2.531	330 43	22 2.9	91 9	6 4.6	1.2774	1.2731	8.13	0.9105
	22	0.7272	38.08	2.539	330 54	22 3.6	90 5	6 0.3	1.2779	1.2731	8.14	0.9106
	23	0.7299	38.21	2.547	331 5	22 4.3	89 1	5 56.1	1.2786	1.2731	8.13	0.9105
	24	0.7327	38.38	2.559	331 17	22 5.1	87 57	5 51.8	1.2797	1.2732	8.13	0.9103
	25	0.7354	+38.56	+2.571	331 25	22 5.7	86 53	5 47.5	+1.2812	+1.2732	+8.12	+0.9100
	26	0.7382	38.74	2.583	331 31	22 6.1	85 49	5 43.3	1.2827	1.2733	8.12	0.9096
	27	0.7409	38.89	2.593	331 34	22 6.3	84 45	5 39.0	1.2844	1.2733	8.11	0.9091
	28	0.7436	39.01	2.601	331 33	22 6.2	83 41	5 34.7	1.2857	1.2735	8.10	0.9084
	29	0.7464	39.09	2.606	331 31	22 6.1	82 37	5 30.5	1.2867	1.2737	8.08	0.9076
	30	0.7491	+39.13	+2.609	331 28	22 5.9	81 33	5 26.2	+1.2874	+1.2739	+8.06	+0.9067
Oct.	1	0.7519	+39.15	+2.610	331 27	22 5.8	80 28	5 21.9	+1.2877	+1.2741	+8.04	+0.9056

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Oct.	1	0.7519	+39.15	+2.610	331 27	22 5.8	80 28	5 21.9	+1.2877	+1.2741	+8.04	+0.9056
	2	0.7546	39.16	2.611	331 28	22 5.9	79 24	5 17.6	1.2878	1.2743	8.02	0.9044
	3	0.7573	39.17	2.611	331 32	22 6.1	78 20	5 13.3	1.2876	1.2746	7.99	0.9031
	4	0.7601	39.20	2.613	331 38	22 6.5	77 16	5 9.1	1.2874	1.2749	7.96	0.9015
h (1.0)	5	0.7628	39.26	2.617	331 49	22 7.3	76 12	5 4.8	1.2874	1.2752	7.93	0.8998
	6	0.7656	+39.39	+2.626	332 1	22 8.1	75 8	5 0.5	+1.2879	+1.2755	+7.90	+0.8980
	7	0.7683	39.54	2.637	332 13	22 8.9	74 4	4 56.3	1.2888	1.2758	7.87	0.8961
	8	0.7710	39.72	2.648	332 25	22 9.7	73 0	4 52.0	1.2900	1.2762	7.83	0.8941
	9	0.7738	39.91	2.661	332 34	22 10.3	71 56	4 47.7	1.2915	1.2766	7.79	0.8919
	10	0.7765	40.11	2.674	332 40	22 10.7	70 52	4 43.5	1.2932	1.2770	7.75	0.8896
	11	0.7793	+40.27	+2.685	332 43	22 10.9	69 48	4 39.2	+1.2948	+1.2774	+7.71	+0.8871
	12	0.7820	40.41	2.694	332 44	22 10.9	68 45	4 35.0	1.2962	1.2778	7.66	0.8845
	13	0.7847	40.52	2.701	332 44	22 10.9	67 41	4 30.7	1.2974	1.2783	7.61	0.8818
	14	0.7875	40.59	2.706	332 44	22 10.9	66 38	4 26.5	1.2981	1.2788	7.56	0.8789
	15	0.7902	40.63	2.709	332 46	22 11.1	65 35	4 22.3	1.2985	1.2793	7.51	0.8759
	16	0.7930	+40.68	+2.712	332 50	22 11.3	64 32	4 18.1	+1.2988	+1.2798	+7.46	+0.8727
	17	0.7957	40.73	2.715	332 58	22 11.9	63 29	4 13.9	1.2988	1.2803	7.40	0.8694
	18	0.7984	40.81	2.721	333 8	22 12.5	62 26	4 9.7	1.2989	1.2808	7.34	0.8659
	19	0.8012	40.91	2.727	333 21	22 13.4	61 23	4 5.5	1.2993	1.2813	7.28	0.8622
	20	0.8039	41.06	2.737	333 34	22 14.3	60 21	4 1.4	1.2999	1.2818	7.22	0.8583
h (1.0)	21	0.8067	+41.24	+2.749	333 48	22 15.2	59 18	3 57.2	+1.3010	+1.2823	+7.15	+0.8542
	22	0.8094	41.44	2.763	333 59	22 15.9	58 16	3 53.1	1.3024	1.2829	7.08	0.8500
	23	0.8121	41.64	2.776	334 8	22 16.5	57 14	3 48.9	1.3040	1.2835	7.01	0.8456
	24	0.8148	41.82	2.788	334 14	22 16.9	56 12	3 44.8	1.3055	1.2841	6.94	0.8410
	25	0.8176	41.98	2.799	334 16	22 17.1	55 10	3 40.7	1.3070	1.2847	6.86	0.8363
	26	0.8203	+42.10	+2.807	334 17	22 17.1	54 8	3 36.5	+1.3082	+1.2853	+6.78	+0.8314
	27	0.8230	42.18	2.812	334 17	22 17.1	53 6	3 32.4	1.3090	1.2860	6.70	0.8263
	28	0.8257	42.22	2.815	334 18	22 17.2	52 5	3 28.3	1.3094	1.2866	6.62	0.8210
	29	0.8285	42.26	2.817	334 20	22 17.3	51 3	3 24.2	1.3096	1.2872	6.54	0.8155
	30	0.8312	42.30	2.820	334 26	22 17.7	50 2	3 20.1	1.3096	1.2879	6.45	0.8098
	31	0.8340	+42.36	+2.824	334 35	22 18.3	49 1	3 16.1	+1.3096	+1.2885	+6.36	+0.8039
Nov.	1	0.8367	42.43	2.829	334 46	22 19.1	48 0	3 12.0	1.3098	1.2892	6.27	0.7977
	2	0.8394	42.56	2.837	335 0	22 20.0	46 59	3 7.9	1.3103	1.2898	6.18	0.7913
	3	0.8422	42.73	2.849	335 14	22 20.9	45 59	3 3.9	1.3112	1.2905	6.09	0.7847
	4	0.8449	42.93	2.862	335 27	22 21.8	44 58	2 59.9	1.3126	1.2911	6.00	0.7778
h (2.0)	5	0.8477	+43.16	+2.877	335 39	22 22.6	43 58	2 55.9	+1.3142	+1.2917	+5.90	+0.7707
	6	0.8504	43.38	2.892	335 47	22 23.1	42 58	2 51.9	1.3159	1.2924	5.80	0.7634
	7	0.8531	43.60	2.907	335 53	22 23.5	41 58	2 47.9	1.3178	1.2930	5.70	0.7558
	8	0.8559	43.78	2.919	335 56	22 23.7	40 58	2 43.9	1.3194	1.2937	5.60	0.7479
	9	0.8586	43.93	2.929	335 57	22 23.8	39 58	2 39.9	1.3208	1.2944	5.49	0.7397
	10	0.8614	+44.05	+2.937	335 59	22 23.9	38 59	2 35.9	+1.3218	+1.2950	+5.38	+0.7311
	11	0.8641	44.14	2.943	336 1	22 24.1	37 59	2 31.9	1.3226	1.2957	5.27	0.7222
	12	0.8668	44.22	2.948	336 6	22 24.4	37 0	2 28.0	1.3231	1.2963	5.16	0.7130
	13	0.8696	44.30	2.953	336 14	22 24.9	36 1	2 24.1	1.3235	1.2970	5.05	0.7035
	14	0.8723	44.40	2.960	336 25	22 25.6	35 2	2 20.1	1.3239	1.2976	4.94	0.6937
	15	0.8751	+44.54	+2.969	336 37	22 26.5	34 3	2 16.2	+1.3245	+1.2982	+4.83	+0.6836
	16	0.8778	+44.71	+2.981	336 51	22 27.4	33 5	2 12.3	+1.3255	+1.2988	+4.71	+0.6731

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		θ		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Nov.	16	0.8778	+44.71	+2.981	336 51	22 27.4	33 5	2 12.3	+1.3255	+1.2988	+4.71	+0.6731
	17	0.8805	44.91	2.994	337 5	22 28.3	32 6	2 8.4	1.3267	1.2993	4.59	0.6623
	18	0.8833	45.16	3.011	337 18	22 29.2	31 7	2 4.5	1.3283	1.2999	4.47	0.6509
	19	0.8860	45.39	3.026	337 28	22 29.9	30 9	2 0.6	1.3302	1.3005	4.35	0.6390
h (4.0)	20	0.8888	45.62	3.041	337 34	22 30.3	29 11	1 56.7	1.3320	1.3011	4.23	0.6266
	21	0.8915	+45.82	+3.055	337 38	22 30.5	28 13	1 52.9	+1.3337	+1.3017	+4.11	+0.6137
	22	0.8942	46.00	3.067	337 39	22 30.6	27 15	1 49.0	1.3352	1.3022	3.99	0.6003
	23	0.8970	46.12	3.075	337 40	22 30.7	26 17	1 45.1	1.3364	1.3028	3.86	0.5863
	24	0.8997	46.22	3.081	337 41	22 30.7	25 19	1 41.3	1.3372	1.3033	3.73	0.5717
	25	0.9025	46.29	3.086	337 43	22 30.9	24 21	1 37.4	1.3378	1.3038	3.60	0.5565
	26	0.9052	+46.36	+3.091	337 48	22 31.2	23 24	1 33.7	+1.3383	+1.3043	+3.47	+0.5407
	27	0.9079	46.43	3.095	337 55	22 31.7	22 26	1 29.8	1.3386	1.3048	3.34	0.5242
	28	0.9107	46.56	3.104	338 5	22 32.3	21 29	1 25.9	1.3392	1.3053	3.21	0.5067
	29	0.9134	46.71	3.114	338 18	22 33.2	20 32	1 22.1	1.3399	1.3057	3.08	0.4883
	30	0.9162	46.89	3.126	338 30	22 34.0	19 35	1 18.3	1.3410	1.3061	2.95	0.4689
Dec.	1	0.9189	+47.13	+3.142	338 43	22 34.9	18 38	1 14.5	+1.3426	+1.3065	+2.81	+0.4485
	2	0.9217	47.38	3.159	338 53	22 35.5	17 41	1 10.7	1.3444	1.3069	2.68	0.4270
	3	0.9244	47.64	3.176	339 1	22 36.1	16 44	1 6.9	1.3464	1.3073	2.54	0.4042
h	4	0.9272	47.89	3.193	339 6	22 36.4	15 47	1 3.1	1.3485	1.3077	2.40	0.3800
(5.0)	5	0.9299	48.12	3.208	339 8	22 36.5	14 50	0 59.3	1.3504	1.3080	2.26	0.3540
	6	0.9326	+48.32	+3.221	339 9	22 36.6	13 54	0 55.6	+1.3521	+1.3083	+2.12	+0.3265
	7	0.9353	48.47	3.231	339 9	22 36.6	12 57	0 51.8	1.3535	1.3086	1.98	0.2969
	8	0.9381	48.59	3.239	339 10	22 36.7	12 1	0 48.0	1.3546	1.3089	1.84	0.2650
	9	0.9408	48.71	3.247	339 13	22 36.9	11 4	0 44.3	1.3554	1.3092	1.70	0.2303
	10	0.9436	48.81	3.254	339 18	22 37.2	10 8	0 40.5	1.3562	1.3094	1.56	0.1926
	11	0.9463	+48.94	+3.263	339 26	22 37.7	9 12	0 36.8	+1.3568	+1.3096	+1.42	+0.1510
	12	0.9490	49.10	3.273	339 36	22 38.4	8 15	0 33.0	1.3578	1.3098	1.28	0.1050
	13	0.9517	49.28	3.285	339 47	22 39.1	7 19	0 29.3	1.3590	1.3100	1.13	0.0538
	14	0.9545	49.53	3.302	339 59	22 39.9	6 23	0 25.5	1.3605	1.3101	0.99	9.9948
	15	0.9572	49.77	3.319	340 9	22 40.6	5 27	0 21.8	1.3622	1.3102	0.84	9.9259
	16	0.9599	+50.02	+3.335	340 16	22 41.1	4 31	0 18.1	+1.3641	+1.3103	+0.70	+9.8456
	17	0.9626	50.29	3.353	340 21	22 41.4	3 35	0 14.3	1.3662	1.3104	0.56	9.7456
	18	0.9654	50.53	3.369	340 24	22 41.6	2 39	0 10.6	1.3682	1.3105	0.41	9.6152
	19	0.9681	50.73	3.382	340 23	22 41.5	1 43	0 6.9	1.3699	1.3105	0.27	9.4278
	20	0.9709	50.89	3.393	340 22	22 41.5	0 47	0 3.1	1.3713	1.3106	+0.12	+9.0906
h												
(8.0)	21	0.9736	+51.03	+3.402	340 20	22 41.3	359 52	23 59.4	+1.3725	+1.3106	−0.02	−8.3345
	22	0.9763	51.11	3.407	340 20	22 41.3	358 56	23 55.7	1.3733	1.3106	0.16	9.2209
	23	0.9791	51.20	3.413	340 21	22 41.4	358 0	23 52.0	1.3740	1.3105	0.31	9.4928
	24	0.9818	51.30	3.420	340 25	22 41.7	357 4	23 48.3	1.3746	1.3105	0.45	9.6586
	25	0.9846	51.40	3.427	340 32	22 42.1	356 8	23 44.5	1.3752	1.3104	0.60	9.7760
	26	0.9873	+51.55	+3.437	340 40	22 42.7	355 12	23 40.8	+1.3761	+1.3103	−0.74	−9.8717
	27	0.9900	51.75	3.450	340 49	22 43.3	354 16	23 37.1	1.3773	1.3102	0.88	9.9485
	28	0.9928	51.98	3.465	340 58	22 43.9	353 19	23 33.3	1.3788	1.3101	1.03	0.0137
	29	0.9955	52.23	3.482	341 6	22 44.4	352 23	23 29.5	1.3806	1.3099	1.17	0.0699
	30	0.9983	52.49	3.499	341 11	22 44.7	351 26	23 25.7	1.3826	1.3097	1.32	0.1198
	31	1.0010	+52.75	+3.517	341 14	22 44.9	350 30	23 22.0	+1.3846	+1.3095	−1.46	−0.1646
	32	1.0037	+53.00	+3.533	341 14	22 44.9	349 34	23 18.3	+1.3866	+1.3093	−1.60	−0.2049

MEAN PLACES FOR 1895.0. (January 0d.0—0d.109, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
α Andromedæ . .	2.1	0 2 57.575	+ 3.0925	+ 28 30 38.50	+ 19.884
• β Cassiopeiæ . .	2.4	0 3 34.475	3.1771	+ 58 34 13.07	19.851
• 22 Andromedæ . .	4.9	0 4 51.795	3.1051	+ 45 29 15.86	20.035
4 Draconis (H.) . S. P.	5.1	0 7 17.202	2.6792	+101 48 1.13	20.021
γ Pegasi (*Algenib*) .	2.8	0 7 49.708	3.0643	+ 14 35 59.16	20.022
• σ Andromedæ . .	4.4	0 12 50.537	+ 3.1243	+ 36 12 10.86	+ 19.981
• ι Ceti	3.6	0 14 4.492	3.0527	— 9 24 22.72	19.955
• 6 Ursæ Minoris . S. P.	6.2	0 14 21.315	0.2110	+ 91 43 4.29	19.940
• 44 Piscium . . .	5.8	0 20 1.175	3.0734	+ 1 21 29.38	19.950
β Hydri . . .	2.8	0 20 13.678	3.9229	— 77 50 44.38	20.282
12 Ceti	6.0	0 24 40.794	+ 3.0611	— 4 32 14.79	+ 19.935
κ Draconis . . S. P.	3.8	0 29 0.176	2.5889	+109 37 59.00	19.887
• π Andromedæ . .	4.4	0 31 16.292	3.1919	+ 33 8 28.49	19.868
α Cassiopeiæ (*var.*) .	2.3	0 34 32.928	3.3769	+ 55 57 40.96	19.784
β Ceti	2.2	0 38 19.163	3.0140	— 18 33 47.12	19.797
21 Cassiopeiæ . .	5.7	0 38 42.533	+ 3.8667	+ 74 24 50.81	+ 19.746
• ο Cassiopeiæ . .	4.7	0 38 52.346	3.3215	+ 47 42 34.50	19.750
• δ Piscium . . .	4.8	0 43 14.028	3.1078	+ 7 0 48.71	19.644
32[2] Camelop. (H.) . S. P.	5.2	0 48 21.455	0.4046	+ 96 0 59.21	19.595
• γ Cassiopeiæ . .	2.3	0 50 22.186	3.5830	+ 60 8 52.76	19.557
• μ Andromedæ . .	4.0	0 50 55.416	+ 3.3128	+ 37 55 47.56	+ 19.611
• 43 Cephei (H.) . .	4.6	0 54 24.584	7.3115	+ 85 41 37.49	19.490
ε Piscium . . .	4.3	0 57 29.585	3.1096	+ 7 19 29.13	19.448
β Andromedæ . .	2.2	1 3 51.152	3.3459	+ 35 3 49.52	19.157
• κ Tucanæ . . .	4.9	1 12 12.684	2.0541	— 69 26 1.31	19.165
• f Piscium . . .	5.1	1 12 22.911	+ 3.0902	+ 3 3 41.25	+ 19.026
θ[1] Ceti	3.6	1 18 46.475	2.9972	— 8 43 30.84	18.660
α Ursæ Minoris (*Polaris*)	2.2	1 20 30.074	24.2555	+ 88 44 52.68	18.827
38 Cassiopeiæ . .	5.9	1 23 24.839	4.3859	+ 69 43 26.62	18.664
• κ Octantis . . S. P.	5.4	1 23 59.580	6.7997	— 94 45 8.71	18.723
η Piscium . . .	3.7	1 25 51.839	+ 3.2033	+ 14 48 16.09	+ 18.654
• υ Andromedæ . .	4.2	1 30 38.051	3.5058	+ 40 52 49 26	18.135
• τ Piscium . . .	5.5	1 31 31.913	3.1748	+ 11 36 16.26	18.522
α Eridani (*Achernar*) .	0.4	1 33 47.855	2.2317	— 57 46 13.05	18.349
• ν Piscium . . .	4.6	1 35 58.001	3.1184	+ 4 57 22.24	18.319
ο Piscium . . .	4.4	1 39 50.908	+ 3.1628	+ 8 37 44.33	+ 18.206
• ζ Ceti	3.6	1 46 16.656	2.9619	— 10 51 17.86	17.811
β Arietis . . .	2.8	1 48 50.309	3.3046	+ 20 17 40.70	17.716
50 Cassiopeiæ . .	4.1	1 54 27.926	5.0216	+ 71 54 47.08	17.626
• γ Andromedæ . .	2.2	1 57 27.155	3.6626	+ 41 49 32.58	17.428
α Arietis . . .	2.1	2 1 15.206	+ 3.3721	+ 22 57 56.86	+ 17.159
α Draconis . . S. P.	3.7	2 1 32.850	1.6240	+115 7 20.77	17.292
• β Trianguli . . .	3.1	2 3 17.708	3.5563	+ 34 29 25.84	17.189
ξ[1] Ceti	4.5	2 7 26.059	+ 3.1747	+ 8 21 14.37	17.017
• 4 Ursæ Minoris . S. P.	4.9	2 9 15.431	— 0.3142	+101 57 32.47	16.905
• γ Trianguli . . .	4.3	2 11 4.266	+ 3.5526	+ 33 21 41.37	+ 16.829
• 67 Ceti	5.6	2 11 44.716	2.9896	— 6 54 22.53	16.790
• δ Hydri . . .	4.2	2 19 52.893	1.0564	— 69 8 13.71	16.445
ι Cassiopeiæ . .	4.6	2 20 24.482	4.8695	+ 66 55 48.30	16.410
ξ[2] Ceti	4.5	2 22 34.559	+ 3.1844	+ 7 59 21.17	+ 16.279

*Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1895.0. (January $0^d.0$—$0^d.109$, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
5 Ursæ Minoris . S. P.	4.5	2 27 44.866	− 0.1836	+103 50 14.21	+ 16.012
• μ Hydri . . .	5.3	2 33 53.404	− 1.4209	− 79 34 1.82	15.688
• δ Ceti	4.1	2 34 6.034	+ 3.0732	− 0 7 29.20	15.681
• θ Persei . . .	4.2	2 37 1.624	4.0726	+ 48 47 2.66	15.437
γ Ceti	3.6	2 37 51.544	3.1038	+ 2 47 35.21	15.323
• σ Arietis . . .	5.5	2 45 41.685	+ 3.3053	+ 14 38 56.77	+ 14.991
β Ursæ Minoris . S. P.	2.2	2 51 0.686	− 0.2254	+105 24 55.55	14.790
• 47 Cephei (H.) . .	5.7	2 52 7.508	+ 7.7472	+ 79 0 11.56	14.654
• ε Arietis . . .	4.6	2 53 12.436	3.4220	+ 20 55 13.09	14.567
α Ceti	2.6	2 56 47.393	3.1309	+ 3 40 39.34	14.291
• β Persei (*Algol*) (*var.*) .	2.3	3 1 20.118	+ 3.8857	+ 40 33 2.85	+ 14.098
48 Cephei (H.) . .	5.5	3 6 59.787	7.4267	+ 77 20 54.52	13.687
ζ Arietis . . .	4.8	3 8 51.914	3.4403	+ 20 39 18.33	13.536
α Persei . . .	1.9	3 16 49.556	+ 4.2602	+ 49 29 13.73	13.067
• ι Hydri . . .	5.7	3 18 34.707	− 1.5874	− 77 46 18.26	13.035
• ρ Octantis . . S. P.	5.7	3 19 5.969	+13.0552	− 95 53 8.19	+ 12.907
γ^2 Ursæ Minoris . S. P.	3.2	3 20 53.754	− 0.1295	+107 47 32.60	12.812
• f Tauri	4.3	3 25 4.490	+ 3.3057	+ 12 34 36.18	12.543
ε Eridani . . .	3.7	3 27 58.979	2.8239	− 9 48 49.08	12.376
δ Persei . . .	3.1	3 35 26.907	4.2523	+ 47 27 5.15	11.783
• γ Camelopardalis (H.) .	4.6	3 39 16.337	+ 6.2473	+ 71 0 29.63	+ 11.504
η Tauri	3.1	3 41 14.497	3.5578	+ 23 46 48.50	11.357
ζ Persei	3.0	3 47 31.859	+ 3.7614	+ 31 34 16.98	10.995
ξ Ursæ Minoris . S. P.	4.6	3 47 48.715	− 2.2403	+101 52 57.42	10.936
• γ Hydri . . .	3.3	3 48 51.788	− 0.9907	− 74 33 38.32	10.988
• ε Persei . . .	3.0	3 50 48.346	+ 4.0115	+ 39 42 22.09	+ 10.695
γ Eridani . . .	3.0	3 53 7.864	2.7988	− 13 48 26.77	10.427
• A^1 Tauri	4.6	3 58 29.238	3.5408	+ 21 47 40.18	10.059
• c Persei . . .	4.3	4 1 2.260	4.3391	+ 47 25 54.37	9.910
Groombr. 2320 . S. P.	5.5	4 6 1.888	0.1420	+111 54 47.35	9.497
• o^1 Eridani . . .	4.2	4 6 44.386	+ 2.9271	− 7 6 41.98	+ 9.596
γ Tauri	3.8	4 13 49.055	+ 3.4096	+ 15 22 25.81	8.934
• η Ursæ Minoris . S. P.	5.0	4 20 34.408	− 1.8101	+104 0 9.87	8.175
ε Tauri	3.6	4 22 29.078	+ 3.4981	+ 18 56 50.03	8.233
η Draconis . . S. P.	2.0	4 22 34.290	+ 0.8074	+118 14 53.42	8.216
• δ Mensæ . . .	5.6	4 25 4.850	− 4.2085	− 80 27 36.95	+ 8.075
• m Persei . . .	6.0	4 26 1.602	+ 4.2116	+ 42 50 20.75	7.974
A Draconis . . S. P.	5.0	4 28 11.507	− 0.1327	+111 0 17.66	7.799
α Tauri (*Aldebaran*) .	1.0	4 29 53.702	+ 3.4380	+ 16 17 52.53	7.491
• τ Tauri	4.5	4 35 56.537	3.5960	+ 22 45 18.54	7.159
α Camelopardalis . .	4.4	4 43 36.452	+ 5.9288	+ 66 9 49.55	+ 6.559
• i Tauri	5.2	4 45 13.875	3.5059	+ 18 39 38.71	6.381
ι Aurigæ . . .	2.8	4 50 9.321	3.9014	+ 32 59 58.28	5.996
• ζ Aurigæ . . .	3.9	4 55 8.271	+ 4.1861	+ 40 55 20.11	5.594
ε Ursæ Minoris . S. P.	4.5	4 56 44.000	− 6.3142	+ 97 47 25.10	5.468
11 Orionis . . .	4.7	4 58 34.102	+ 3.4248	+ 15 15 27.11	+ 5.272
• β Eridani . . .	2.9	5 2 41.258	2.9487	− 5 13 20.48	4.904
α Aurigæ (*Capella*) .	0.1	5 8 55.916	4.4256	+ 45 53 26.76	3.997
β Orionis (*Rigel*) . .	0.3	5 9 29.484	2.8816	− 8 19 23.48	4.373
τ Orionis . . .	3.8	5 12 30.471	+ 2.9129	− 6 57 29.80	+ 4.114

• Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1895.0. (January 0d.0—0d.109, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
β Tauri	1.8	5 19 39.243	+ 3.7897	+ 28 31 6.21	+ 3.339
Groombridge 966	6.4	5 25 41.570	8.0047	+ 74 58 24.91	3.010
• χ Aurigæ	5 0	5 25 53.704	3.9054	+ 32 6 51.76	2.993
δ Orionis (*var.*)	2.3	5 26 38.527	3.0636	− 0 22 37.75	2.904
α Leporis	2.7	5 28 5.942	2.6449	− 17 53 51.66	2.782
• Groombridge 944	6.4	5 28 21.697	+ 18.6860	+ 85 8 36.75	+ 2.773
ε Orionis	1.8	5 30 53.105	3.0425	− 1 16 9.24	2.541
α Columbæ	2.7	5 35 50.876	+ 2.1729	− 34 7 49.30	2.064
ω Draconis S. P.	4.9	5 37 34.035	− 0.3532	+ 111 11 36.87	1.636
• κ Orionis	2.3	5 42 46.565	+ 2.8450	− 9 42 25.86	1.509
ψ¹ Draconis S. P.	4.8	5 43 48.285	− 1.0780	+ 107 47 59.22	+ 1.689
• ν Aurigæ	4.1	5 44 12.691	+ 4.1546	+ 39 7 2.64	1.416
• δ Doradus	4.4	5 44 35.279	0.1052	− 65 46 29.57	1.327
α Orionis (*var.*)	0.9	5 49 29.220	3.2472	+ 7 23 13.82	0.927
• β Aurigæ	2.0	5 51 49.620	4.4019	+ 44 56 10.58	0.705
• θ Aurigæ	2.9	5 52 33.716	+ 4.0922	+ 37 12 17.54	+ 0.562
ν Orionis	4.5	6 1 34.681	+ 3.4275	+ 14 46 50.36	− 0.168
δ Ursæ Minoris S. P.	4.4	6 6 10.278	− 19.4780	+ 93 23 14.93	0.591
22 Camelopardalis (H.)	4.7	6 7 16.289	+ 6.6169	+ 69 21 21.93	0.754
• η Geminorum	3.5	6 8 32.413	3.6228	+ 22 32 12.99	0.764
μ Geminorum	3.2	6 16 36.531	+ 3.6314	+ 22 34 1.50	− 1.574
• ψ¹ Aurigæ	5.1	6 16 48.748	4.6262	+ 49 20 27.79	1.481
α Argûs (*Canopus*)	−0.8	6 21 37.339	1.3305	− 52 38 18.05	1.880
• ν Geminorum	4.2	6 22 43.705	+ 3.5630	+ 20 16 41.67	2.008
• χ Draconis S. P.	5.3	6 22 56.936	− 1.0801	+ 107 18 46.37	1.630
γ Geminorum	2.0	6 31 38.778	+ 3.4672	+ 16 29 18.93	− 2.808
• ε Geminorum	3.2	6 37 28.313	3.6932	+ 25 14 5.26	3.278
• ψ⁵ Aurigæ	5.4	6 39 10.220	4.3285	+ 43 40 53.50	3.263
† α Canis Majoris (*Sirius*)	−1.4	6 40 31.276	2.6436	− 16 34 20.34	4.734
• θ Geminorum	3.7	6 45 52.173	+ 3.9601	+ 34 5 15.54	4.019
• ζ Mensæ	5.6	6 48 47.027	− 4.9109	− 80 42 10.29	− 4.155
50 Draconis S. P.	5.6	6 49 45.509	− 1.9111	+ 104 41 23.90	4.394
51 Cephei (H.)	5.3	6 51 14.440	+ 29.7665	+ 87 12 43.18	4.484
ε Canis Majoris	1.5	6 54 29.978	2.3578	− 28 49 46.20	4.736
• ζ Geminorum (*var.*)	4.0	6 57 52.934	3.5621	+ 20 43 26.13	5.029
δ Canis Majoris	1.9	7 4 7.308	+ 2.4386	− 26 13 35.69	− 5.528
• 63 Aurigæ	5.2	7 4 26.044	4.1358	+ 39 29 29.98	5.545
• 25 Camelopardalis	5.3	7 8 59.373	+ 12.9314	+ 82 36 46.78	5.978
• γ³ Volantis (*var.*)	3.9	7 9 38.116	− 0.4954	− 70 19 43.88	6.021
δ Draconis S. P.	3.1	7 12 31.883	+ 0.0282	+ 112 31 23.43	6.327
δ Geminorum	3.5	7 13 51.159	+ 3.5875	+ 22 10 31.25	− 6.366
τ Draconis S. P.	4.5	7 17 34.427	− 1.1202	+ 106 50 22.29	6.767
Piazzi vii, 67	5.7	7 19 57.469	+ 6.2939	+ 68 40 46.98	6.892
• β Canis Minoris	3.1	7 21 27.452	3.2595	+ 8 30 2.06	7.015
α² Geminorum (*Castor*)	1.9	7 27 54.122	+ 3.8377	+ 32 7 7.30	7.581
λ Ursæ Minoris S. P.	6.5	7 28 6.432	− 66.4580	+ 91 1 20.69	− 7.529
† α Canis Min. (*Procyon*)	0.5	7 33 48.338	+ 3.1432	+ 5 29 37.73	9.016
β Geminorum (*Pollux*)	1.2	7 38 53.491	3.6785	+ 28 16 46.29	8.443
• 36 Lyncis	5.8	7 47 4.035	4.3864	+ 47 50 10.80	9.061
φ Geminorum	5.0	7 47 4.321	+ 3.6792	+ 27 2 14.57	− 9.055

• Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1895.0. (January 0d.0—0d.109, Washington.)

	Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
				h m s	s	° ′ ″	″
*	Groombridge 1374	.	5.6	7 47 37.397	+ 7.2757	+ 74 11 52.34	— 9.168
	ε Draconis	S. P.	3.9	7 48 31.552	— 0.1817	+109 59 58.12	9.172
*	ω¹ Cancri	.	6.0	7 54 34.736	+ 3.6365	+ 25 40 48.43	9.804
	3 Ursæ Majoris (H.)	.	5.5	8 2 22.059	6.0423	+ 68 46 57.65	10.303
	15 Argûs (ρ)	.	3.1	8 3 4.342	2.5545	— 24 0 6.34	10.212
*	ζ¹ Cancri	.	4.8	8 6 11.428	+ 3.4459	+ 17 57 49.06	— 10.627
*	β Cancri	.	3.8	8 10 49.272	+ 3.2581	+ 9 30 31.74	10.679
	κ Cephei (*pr.*)	S. P.	4.4	8 12 25.316	— 1.9324	+102 36 17.48	10.980
*	30 Monocerotis	.	3.9	8 20 24.822	+ 2.9998	— 3 33 50.31	11.526
*	θ Chamæleontis	.	4.6	8 23 47.042	— 1.7194	— 77 8 44.26	11.749
	η Cancri	.	5.4	8 26 38.284	+ 3.4776	+ 29 47 51.39	— 12.026
	Groombr. 3241	S. P.	6.5	8 30 27.551	— 0.2237	+107 49 26.56	12.219
*	σ Hydræ	.	4.5	8 33 16.316	+ 3.1455	+ 3 42 35.38	12.454
*	γ Cancri	.	4.9	8 37 12.632	3.4797	+ 21 50 45.06	12.746
	ε Hydræ	.	3.5	8 41 12.977	3.1814	+ 6 48 13.80	13.024
*	σ² Cancri (*mean*)	.	5.5	8 47 50.344	+ 3.6722	+ 30 58 36.62	— 13.429
	ι Ursæ Majoris	.	3.3	8 52 1.126	+ 4.1309	+ 48 27 13.16	13.928
	12 Year Cat. 1879	S. P.	5.3	8 52 20.857	— 2.5666	+ 99 50 29.78	13.668
	σ² Ursæ Majoris	.	5.0	9 1 9.266	+ 5.3474	+ 67 33 38 30	14.306
	κ Cancri	.	5.1	9 2 3.668	3.2553	+ 11 5 26.37	14.309
*	θ Hydræ	.	4.0	9 8 54.139	+ 3.1258	+ 2 45 25.27	— 15.035
*	β Argûs	.	2.0	9 12 2.796	0.6758	— 69 17 4.87	14.809
	ι Argûs	.	2.6	9 14 16.580	1.6010	— 58 50 3.60	15.006
*	α Lyncis	.	3.3	9 14 39.491	3.6676	+ 34 50 10.29	15.046
	α Cephei	S. P.	2.6	9 16 4.438	1.4362	+117 51 33.66	15.182
	1 Draconis (H.)	.	4.5	9 22 6.642	+ 8.9558	+ 81 47 24.54	— 15.498
	α Hydræ	.	2.1	9 22 25.670	2.9490	— 8 12 13.10	15.466
	d Ursæ Majoris	.	4.8	9 25 11.702	5.3915	+ 70 17 29.44	15.589
	θ Ursæ Majoris	.	3.2	9 25 49.994	4.0381	+ 52 9 20.18	16.238
	β Cephei (*pr.*)	S. P.	3.4	9 27 18.270	0.7922	+109 54 1.13	15.760
*	10 Leonis Minoris	.	4.7	9 27 47.538	+ 3.6924	+ 36 51 49.06	— 15.801
*	o Leonis	.	3.8	9 35 32.816	+ 3.2064	+ 10 22 11.45	16.239
*	ζ Chamæleontis	.	5.2	9 36 58.520	— 1.5785	— 80 28 10.39	16.279
	ε Leonis	.	3.2	9 39 53.504	+ 3.4141	+ 24 15 27.12	16.442
	11 Cephei	S. P.	4.8	9 40 23.134	0.8995	+109 10 19.25	16.543
	μ Leonis	.	4.0	9 46 47.548	+ 3.4211	+ 26 30 4.91	— 16.812
*	19 Leonis Minoris	.	5.2	9 51 15.276	3.6933	+ 41 33 20.00	16.978
	79 Draconis	S. P.	6.6	9 51 33.275	0.7265	+106 47 39.87	17.016
*	π Leonis	.	5.0	9 54 39.899	3.1739	+ 8 32 52.30	17.154
	α Leonis (*Regulus*)	.	1.3	10 2 46.830	3.2000	+ 12 28 48.96	17.487
	32 Ursæ Majoris	.	5.7	10 10 24.533	+ 4.4144	+ 65 37 54.61	— 17.828
*	λ Ursæ Majoris	.	3.6	10 10 45.874	3.6375	+ 43 26 17.77	17.887
	γ¹ Leonis	.	2.5	10 14 11.042	3.3140	+ 20 22 21.30	18.098
*	μ Hydræ	.	4.1	10 21 0.775	2.9009	— 16 18 2.58	18.320
*	β Leonis Minoris	.	4.3	10 21 48.748	3.4849	+ 37 14 42.79	18.327
*	α Antliæ	.	4.5	10 22 20.774	+ 2.7397	— 30 32 0.92	— 18.227
	9 Draconis (H.)	.	5.0	10 26 10.537	5.2475	+ 76 15 13.09	18.412
	ρ Leonis	.	4.0	10 27 17.004	3.1637	+ 9 50 48.37	18.443
	226 Cephei (B.)	S. P.	5.7	10 30 25.918	1.0755	+104 18 52.99	18.532
*	β Octantis	S. P.	4.4	10 35 18.812	+ 6.4485	— 98 4 6.14	— 18.701

*Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1895.0. (January $0^d.0-0^d.109$, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
• 41 Leonis Minoris	5.1	10 37 42.435	+ 3.2699	+ 23 44 16.98	— 18.748
η Argûs (*var.*)	1–6	10 40 59.161	2.3147	— 59 7 57.07	18.876
1 Leonis	5.3	10 43 44.336	3.1581	+ 11 6 2.54	18.981
• δ^2 Chamæleontis	4.7	10 44 48.063	0.6326	— 79 59 11.93	18.983
ε Cephei S. P.	3.6	10 45 56.414	2.1231	+114 21 6.96	18.882
• 46 Leonis Minoris	3.9	10 47 26.403	+ 3.3681	+ 34 46 51.99	— 19.304
• Groombridge 1706	6.3	10 51 33.145	4.9522	+ 78 19 57.53	19.163
α Ursæ Majoris	2.0	10 57 14.865	+ 3.7430	+ 62 19 4.15	19.378
• η Octantis	6.1	11 0 3.818	— 0.2311	— 84 1 44.65	19.371
• p^3 Leonis	6.2	11 1 32.759	+ 3.0619	+ 2 31 31.58	19.494
• φ Ursæ Majoris	3.2	11 3 45.634	+ 3.3913	+ 45 4 4.07	— 19.511
δ Leonis	2.7	11 8 31.490	3.1975	+ 21 5 55.97	19.691
• ν Ursæ Majoris	3.7	11 12 48.639	3.2564	+ 33 40 2.19	19.578
δ Crateris	3.9	11 14 5.476	2.9967	— 14 12 37.93	19.469
ο Cephei S. P.	5.1	11 14 18.893	2.4463	+112 27 46.41	19.673
τ Leonis	5.1	11 22 32.244	+ 3.0660	+ 3 26 3 95	— 19.807
λ Draconis	4.0	11 25 10.088	3.6153	+ 69 54 37.94	19.842
• ξ Hydræ	3.8	11 27 50.199	2.9439	— 31 16 36.39	19.889
υ Leonis	4.4	11 31 34.359	3.0713	— 0 14 38.91	19.863
γ Cephei S. P.	3.5	11 35 2.053	2.4196	+102 57 13.65	20.077
• χ Ursæ Majoris	3.9	11 40 30.424	+ 3.1884	+ 48 21 41.45	— 19.964
β Leonis	2.2	11 43 42.250	3.0636	+ 15 9 32.25	20.121
γ Ursæ Majoris	2.4	11 48 18.566	3.1794	+ 54 16 42.32	20.028
Groombr. 4163 S. P.	7.0	11 49 43.549	2.8702	+106 10 26.52	20.023
• π Virginis	4.6	11 55 29.504	3.0750	+ 7 11 58.65	20.088
ο Virginis	4.3	11 59 51.627	+ 3.0574	+ 9 18 58.06	— 20.015
• ε Corvi	3.2	12 4 43.450	3.0837	— 22 2 8.81	20.049
4 Draconis (H.)	5.1	12 7 17.202	2.8792	+ 78 11 58.87	20.021
γ Corvi	2.7	12 10 24.366	3.0802	— 16 57 32.28	20.016
• 2 Canum Venaticorum	6.0	12 10 51.931	3.0208	+ 41 14 41.13	20.064
β Chamæleontis	4.5	12 12 11.311	+ 3.4103	— 78 43 44.38	— 20.001
• 6 Ursæ Minoris	6.2	12 14 21.315	0.2110	+ 88 16 55.71	19.940
η Virginis	4.0	12 14 32.043	3.0688	— 0 5 0.12	20.040
α^1 Crucis	0.9	12 20 45 508	3.2990	— 62 31 1.74	20.011
• δ^2 Corvi	3.1	12 24 26.004	3.1032	— 15 55 50.42	20.082
• β Canum Venaticorum	4.4	12 28 45.412	+ 2.8584	+ 41 55 40.62	— 19.612
β Corvi	2.8	12 28 52.258	3.1425	— 22 48 58.07	19.960
ε Draconis	3.8	12 29 0.176	2.5889	+ 70 22 1.00	19.887
• γ Virginis (*mean*)	2.9	12 36 20.402	3.0385	— 0 52 25.45	19.807
21 Cassiopeiæ S. P.	5.7	12 38 42.533	3.8667	+105 35 9.19	19.746
• 31 Comæ Berenices	5.1	12 46 35.175	+ 2.9296	+ 28 6 42.98	— 19.656
32^2 Camelopardalis (H.)	5.2	12 48 21.455	0.4046	+ 83 59 0.79	19.595
• γ Cassiopeiæ S. P.	2.3	12 50 22.186	3.5830	+119 51 7.24	19.557
α Canum Venaticorum	3.2	12 51 7.035	2.8147	+ 38 53 7.37	19.507
• 43 Cephei (H.) S. P.	4.6	12 54 24.584	7.3115	+ 94 18 22.51	19.490
• δ Muscæ	3.8	12 55 3.938	+ 4.1920	— 70 58 55.48	— 19.468
• ε Virginis	3.1	12 56 57.043	2.9880	+ 11 31 24.55	19.411
θ Virginis	4.6	13 4 30.756	3.1016	— 4 58 42.46	19.305
• 20 Canum Venaticorum	4.7	13 12 50.080	2.6950	+ 41 7 31.34	19.028
α Virginis (*Spica*)	1.1	13 19 39.637	+ 3.1543	— 10 36 47.83	— 18.891

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MEAN PLACES FOR 1895.0. (January 0d.0—0d.109, Washington.)

	Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
				h m s	s	° ′ ″	″
	α Urs. Min. (*Polaris*)	S. P.	2.2	13 20 30.074	+24.2555	+ 91 15 7.32	— 18.82
	38 Cassiopeiæ	S. P.	5.9	13 23 24.839	4.3859	+110 16 33.38	18.664
*	κ Octantis		5.4	13 23 59.588	6.8298	— 85 14 51.29	18.723
	ζ Virginis		3.6	13 29 20.542	3.0535	— 0 3 32.48	18.58
*	B. A. C. 4536		5.0	13 30 6.479	2.6818	+ 37 43 13.13	18.530
*	88 Virginis		5.4	13 36 6.035	+ 3.1438	— 8 10 22.98	— 18.279
	η Ursæ Majoris		1.9	13 43 24.266	2.3707	+ 49 50 14.07	18.070
	η Bootis		2.8	13 49 41.121	2.8567	+ 18 55 26.81	18.160
	50 Cassiopeiæ	S. P.	4.1	13 54 27.926	5.0216	+108 5 12.92	17.636
*	θ Apodis		Var.	13 55 6.253	5.6909	— 76 17 21.40	17.570
	β Centauri		0.7	13 56 24.554	+ 4.1824	— 59 51 59.22	— 17.574
*	π Hydræ		3.6	14 0 23.417	3.4021	— 26 10 32.15	17.349
	α Draconis		3.7	14 1 32.850	1.6240	+ 64 52 39.23	17.292
*	d Bootis		4.8	14 5 36.668	2.7386	+ 25 35 20.53	17.186
*	κ Virginis		4.2	14 7 17.658	+ 3.1945	— 9 47 5.90	16.914
*	4 Ursæ Minoris		4.9	14 9 15.431	— 0.3142	+ 78 2 27.53	— 16.905
*	δ Octantis		5.0	14 10 6.386	+ 9.0335	— 83 11 10.72	16.916
	α Bootis (*Arcturus*)		0.2	14 10 52.329	2.7351	+ 19 43 44.71	18.872
*	λ Bootis		4.3	14 12 23.521	2.2825	+ 46 34 13.55	16.650
*	λ Virginis		4.7	14 13 25.659	3.2387	— 12 53 15.98	16.715
	ι Cassiopeiæ	S. P.	4.6	14 20 24.482	+ 4.8695	+113 4 11.70	— 16.410
	θ Bootis		4.1	14 21 37.405	2.0441	+ 52 20 9.72	16.752
	ρ Bootis		3.6	14 27 18.363	+ 2.5876	+ 30 49 56.21	15.948
	5 Ursæ Minoris		4.5	14 27 44.866	— 0.1836	+ 76 9 45.79	16.012
	α Centauri (*mean*)		-0.1	14 32 28.053	+ 4.0385	— 60 24 6.66	15.038
*	μ Hydri	S. P.	5.3	14 33 53.404	— 1.4209	—100 25 58.18	— 15.688
*	α Apodis		4.1	14 34 49.712	+ 7.2178	— 78 35 55.61	15.649
*	33 Bootis		5.3	14 34 55.779	2.2342	+ 44 51 26.90	15.700
	ε Bootis		2.6	14 40 24.149	2.6214	+ 27 31 0.77	15.398
	α^2 Libræ		2.9	14 45 4.113	+ 3.3104	— 15 36 19.33	15.151
	β Ursæ Minoris		2.2	14 51 0.686	— 0.2254	+ 74 35 4.45	— 14.720
*	47 Cephei (H.)	S. P.	5.7	14 52 7.508	+ 7.7472	+100 59 48.44	14.654
*	γ Scorpii		3.4	14 57 55.410	3.5032	— 24 52 8.95	14.337
	β Bootis		3.7	14 57 59.478	2.2601	+ 40 48 16.83	14.348
	48 Cephei (H.)	S. P.	5.5	15 6 59.787	7.4267	+102 39 5.48	13.687
*	δ Bootis		3.5	15 11 16.231	+ 2.4209	+ 33 42 24.33	— 13.570
	β Libræ		2.9	15 11 21.365	3.2224	— 8 59 43.51	13.490
*	ρ Octantis		5.7	15 19 5.977	13.0552	— 84 6 51.81	12.907
	μ^1 Bootis		4.5	15 20 31.449	+ 2.2663	+ 37 44 43.88	12.766
	γ^2 Ursæ Minoris		3.2	15 20 53.754	— 0.1295	+ 72 12 27.40	12.812
*	β Coronæ Borealis		3.9	15 23 30.033	+ 2.4752	+ 29 28 3.20	— 12.580
	α Coronæ Borealis		2.3	15 30 14.552	2.5394	+ 27 4 5.15	12.290
	α Serpentis		2.7	15 39 5.746	2.9520	+ 6 45 21.52	11.532
*	γ Camelop. (H.)	S. P.	4.6	15 39 16.337	6.2473	+108 59 30.37	11.504
	ε Serpentis		3.7	15 45 34.905	+ 2.9875	+ 4 47 38.29	11.030
	ζ Ursæ Minoris		4.6	15 47 48.715	— 2.2403	+ 78 7 2.58	— 10.936
	ε Coronæ Borealis		4.1	15 53 14.492	+ 2.4834	+ 27 10 55.22	10.596
	δ Scorpii		2.6	15 54 7.459	3.5396	— 22 19 21.62	10.505
	β^1 Scorpii		2.9	15 59 19.878	3.4816	— 19 31 4.55	10.116
*	δ^1 Apodis		4.9	16 4 39.655	+ 8.7933	— 78 25 49.14	— 9.671

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MEAN PLACES FOR 1895.0. (January 0^d.0—0^d.109, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
• φ Herculis	4.2	16 5 27.440	+ 1.8816	+ 45 12 36.88	— 9.569
Groombridge 2320	5.5	16 6 1.888	0.1420	+ 68 5 12.65	9.497
δ Ophiuchi	2.8	16 8 50.562	3.1401	— 3 25 25.64	9.492
• σ Coronæ Borealis (*mean*)	5.3	16 10 44.717	2.2449	+ 34 7 29.90	9.241
τ Herculis	3.9	16 16 35.094	1.8013	+ 46 33 47.87	8.722
• γ Apodis	4.0	16 17 21.582	+ 9.0819	— 78 39 38.74	— 8.684
• η Ursæ Minoris	5.0	16 20 34.408	— 1.8101	+ 75 59 50.13	8.175
η Draconis	2.8	16 22 34.290	+ 0.8074	+ 61 45 6.58	8.216
α Scorpii (*Antares*)	1.2	16 22 58.120	3.6710	— 26 11 55.66	8.276
β Herculis	2.8	16 25 42.364	+ 2.5777	+ 21 43 6.76	8.038
A Draconis	5.0	16 28 11.507	— 0.1327	+ 68 59 42.34	— 7.799
ζ Ophiuchi	2.8	16 31 22.599	+ 3.2995	— 10 21 15.28	7.541
α Trianguli Australis	2.2	16 37 32.908	6.3086	— 68 50 3.32	7.109
η Herculis	3.7	16 39 17.734	2.0540	+ 39 7 19.20	7.006
α Camelopardalis. S. P.	4.4	16 43 36.452	5.9288	+113 50 10.45	6.559
κ Ophiuchi	3.4	16 52 41.893	+ 2.8377	+ 9 32 18.45	— 5.810
ϵ Ursæ Minoris	4.5	16 56 44.000	— 6.3142	+ 82 12 34.90	5.468
d Herculis	5.3	16 57 43.741	+ 2.2115	+ 33 43 13.53	5.380
• η Ophiuchi	2.5	17 4 21.320	3.4374	— 15 35 41.15	4.712
α^1 Herculis (*var.*)	3.1	17 9 51.573	2.7337	+ 14 30 36.47	4.325
• π Herculis	3.4	17 11 23.419	+ 2.0893	+ 36 55 39.17	— 4.213
• θ Ophiuchi	3.3	17 15 33.620	3.6796	— 24 53 40.68	3.915
b Ophiuchi (*var.*)	4.4	17 19 57.437	3.6594	— 24 4 42.44	3.617
• δ Aræ	3.8	17 21 37.305	5.4030	— 60 35 45.92	3.483
Groombr. 966 S. P.	6.4	17 25 41.570	8.0047	+105 1 35.09	3.010
β Draconis	3.0	17 28 3.638	+ 1.3537	+ 52 22 44.45	— 2.786
• Groombr. 944 S. P.	6.4	17 28 21.697	18.6860	+ 94 51 23.25	2.773
α Ophiuchi	2.2	17 30 3.614	2.7830	+ 12 38 11.65	2.849
• ι Herculis	4.0	17 36 30.183	+ 1.6968	+ 46 3 43.88	2.054
ω Draconis	4.9	17 37 34.035	— 0.3532	+ 68 48 23.13	1.636
μ Herculis	3.5	17 42 20.971	+ 2.3466	+ 27 46 55.44	— 2.303
ψ^1 Draconis	4.8	17 43 48.285	— 1.0780	+ 72 12 0.78	1.669
• θ Herculis	3.9	17 52 39.085	+ 2.0553	+ 37 15 52.29	0.624
γ Draconis	2.5	17 54 10.072	1.3917	+ 51 30 4.24	0.540
γ^2 Sagittarii	2.9	17 59 3.744	3.8517	— 30 25 30.67	— 0.300
• o Herculis	3.9	18 3 26.803	+ 2.3395	+ 28 44 53.06	+ 0.304
δ Ursæ Minoris	4.4	18 6 10.278	— 19.4780	+ 86 36 45.07	0.591
22 Camelop. (H.) S. P.	4.7	18 7 16.289	+ 6.6169	+110 38 38.07	0.754
μ^1 Sagittarii	4.1	18 7 29.031	3.5867	— 21 5 9.79	0.642
η Serpentis	3.5	18 15 52.588	3.1024	— 2 55 32.14	0.713
• λ Sagittarii	2.9	18 21 29.431	+ 3.7026	— 25 28 47.03	+ 1.668
• χ Draconis	5.3	18 22 56.936	— 1.0801	+ 72 41 13.63	1.630
1 Aquilæ	4.0	18 29 29.595	+ 3.2645	— 8 19 2.68	2.244
• ζ Pavonis	4.2	18 30 45.820	7.0270	— 71 31 0.80	2.543
α Lyræ (*Vega*)	0.2	18 33 23.022	2.0314	+ 38 41 9.24	3.183
β Lyræ (*var.*)	3.6	18 46 12.208	+ 2.2143	+ 33 14 26.54	+ 3.997
σ Sagittarii	2.3	18 48 45.277	+ 3.7213	— 26 25 36.96	4.156
50 Draconis	5.6	18 49 45.509	— 1.9111	+ 75 18 36.10	4.394
ϵ Octantis	5.6	18 51 8.993	+104.3640	— 89 15 40.92	4.420
51 Cephei (H.) S. P.	5.3	18 51 14.440	+29.7665	+ 92 47 16.82	+ 4.484

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MEAN PLACES FOR 1895.0. (January 0d.0—0d.109, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
* γ Lyræ	3.3	18 55 0.967	+ 2.2444	+ 32 32 44.30	+ 4.779
ζ Aquilæ	3.1	19 0 35.050	2.7569	+ 13 42 26.96	5.135
* ι Lyræ	5.2	19 3 23.231	2.1413	+ 35 56 8.41	5.479
*25 Camelopardalis. S. P.	5.3	19 8 59.373	12.9314	+ 97 23 13.22	5.979
d Sagittarii	5.0	19 11 29.486	3.5119	— 19 8 22.34	6.136
δ Draconis	3.1	19 12 31.883	+ 0.0282	+ 67 28 36.57	+ 6.327
* θ Lyræ	4.4	19 12 43.345	+ 2.0791	+ 37 56 47.97	6.258
τ Draconis	4.5	19 17 34.427	— 1.1202	+ 73 9 37.71	6.767
Piazzi vii, 67 S. P.	5.7	19 19 57.469	+ 6.2939	+111 19 13.02	6.892
δ Aquilæ	3.5	19 20 12.254	3.0251	+ 2 54 20.01	6.952
* β Cygni	3.1	19 26 29.220	+ 2.4194	+ 27 44 21.05	+ 7.381
λ Ursæ Minoris	6.5	19 28 6.432	— 66.4580	+ 88 58 39.31	7.589
κ Aquilæ	5.0	19 31 14.548	+ 3.2286	— 7 15 38.44	7.774
* β Sagittæ	4.5	19 36 19.993	2.6955	+ 17 13 57.83	8.155
γ Aquilæ	2.8	19 41 16.071	2.8522	+ 10 21 26.89	8.567
* δ Cygni	2.9	19 41 41.629	+ 1.8761	+ 44 52 27.92	+ 8.645
α Aquilæ (*Altair*)	0.9	19 45 39.625	2.9275	+ 8 35 27.82	9.292
* Groombr. 1374 S. P.	5.6	19 47 37.397	7.2757	+105 48 7.66	9.108
* ε Pavonis	4.1	19 48 26.353	+ 7.0104	— 73 11 10.61	9.138
ε Draconis	3.9	19 48 31.552	— 0.1817	+ 70 0 1.88	9.172
β Aquilæ	3.9	19 50 9.337	+ 2.9470	+ 6 8 40.31	+ 8.786
* γ Sagittæ	3.6	19 54 5.262	2.6678	+ 19 12 25.70	9.613
* σ Sagittarii	4.5	19 56 12.142	3.6941	— 28 0 5.15	9.756
τ Aquilæ	5.7	19 59 0.695	2.9329	+ 6 58 54.01	9.959
3 Ursæ Majoris (H.) S. P.	5.5	20 2 22.059	6.0423	+111 13 2.35	10.203
* θ Aquilæ	3.3	20 5 53.206	+ 3.0970	— 1 7 58.37	+ 10.478
*31 Cygni	3.9	20 10 19.532	1.8893	+ 46 25 22.31	10.801
a^2 Capricorni	3.7	20 12 13.742	+ 3.3316	— 12 52 12.47	10.938
ε Cephei (*pr.*)	4.4	20 12 25.316	— 1.9324	+ 77 23 42.52	10.980
α Pavonis	2.1	20 17 20.892	+ 4.7808	— 57 4 15.87	11.220
γ Cygni	2.3	20 18 27.706	+ 2.1538	+ 39 55 13.99	+ 11.383
π Capricorni	5.1	20 21 18.708	3.4390	— 18 33 20.90	11.578
ε Delphini	4.0	20 28 11.827	+ 2.8671	+ 10 56 47.70	12.060
Groombridge 3241	6.5	20 30 27.551	— 0.2237	+ 72 10 33.44	12.219
* α Delphini	3.9	20 34 45.665	+ 2.7878	+ 15 32 30.00	12.538
* β Pavonis	3.4	20 35 29.805	+ 5.4676	— 66 34 47.95	+ 12.563
α Cygni	1.4	20 37 51.161	2.0445	+ 44 54 18.25	12.736
* ψ Capricorni	4.3	20 39 52.747	3.5576	— 25 38 53.03	12.711
* ε Cygni	2.6	20 41 57.778	2.4279	+ 33 34 36.79	13.354
μ Aquarii	4.8	20 46 59.453	+ 3.2393	— 9 22 38.16	13.308
12 Year Catalogue, 1879	5.3	20 52 20.857	— 2.5666	+ 80 9 30.22	+ 13.668
ν Cygni	4.1	20 53 15.506	+ 2.2344	+ 40 45 46.49	13.738
σ^3 Ursæ Majoris	5.0	21 1 9.266	5.3474	+112 26 21.70	14.306
61[1] Cygni	5.4	21 2 11.379	2.6835	+ 38 13 58.83	17.548
ζ Cygni	3.3	21 8 27.994	2.5499	+ 29 47 46.25	14.696
* τ Cygni	3.8	21 10 35.998	+ 2.3937	+ 37 35 50.09	+ 15.277
α Cephei	2.6	21 16 4.438	1.4362	+ 62 8 26.34	15.188
1 Pegasi	4.3	21 17 13.794	2.7723	+ 19 21 18.94	15.255
* ζ Capricorni	3.8	21 20 40.396	3.4317	— 22 51 58.04	15.419
1 Draconis (H.) S. P.	4.5	21 22 6.642	+ 8.9558	+ 98 12 35.46	+ 15.498

*Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1895.0. (January $0^d.0 - 0^d.109$, Washington.)

Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
d Ursæ Majoris	S. P.	4.8	21 25 11.702	+ 5.3915	+109 42 30.56	+ 15.589
β Aquarii		2.9	21 26 1.908	3.1613	− 6 1 59.07	15.678
β Cephei (*pr.*)		3.4	21 27 18.270	0.7922	+ 70 5 58.87	15.760
ξ Aquarii		4.8	21 32 9.780	3.1975	− 8 19 30.18	15.988
* 74 Cygni		5.0	21 32 44.420	2.4019	+ 39 56 29.94	16.063
* λ^1 Octantis		5.4	21 34 47.039	+ 9.7266	− 83 12 5.85	+ 16.092
* ζ Chamæleontis	S. P.	5.2	21 36 58.520	− 1.5785	− 99 31 49.61	16.279
ϵ Pegasi		2.4	21 39 1.759	+ 2.9467	+ 9 23 37.09	16.371
11 Cephei		4.8	21 40 23.134	0.8995	+ 70 49 40.75	16.543
* π^3 Cygni		4.5	21 42 54.848	2.2137	+ 48 49 25.49	16.554
μ Capricorni		5.2	21 47 34.306	+ 3.2754	− 14 2 45.64	+ 16.794
* 16 Pegasi		5.1	21 48 17.060	2.7281	+ 25 25 52.06	16.831
79 Draconis		6.6	21 51 33.275	0.7265	+ 73 12 20.13	17.016
α Aquarii		3.0	22 0 23.461	3.0825	− 0 49 47.73	17.369
α Gruis		1.9	22 1 36.914	3.8035	− 47 28 9.42	17.363
* π Pegasi		4.3	22 5 19.437	+ 2.6605	+ 32 39 47.29	+ 17.591
32 Ursæ Majoris	S. P.	5.7	22 10 24.533	4.4144	+114 22 5.39	17.828
θ Aquarii		4.4	22 11 17.596	3.1687	− 8 18 21.92	17.814
* υ Octantis		6.2	22 11 30.294	12.9854	− 86 30 2.59	17.936
* γ Aquarii		4.0	22 16 13.965	3.1006	− 1 54 59.11	18.051
π Aquarii		4.6	22 19 54.901	+ 3.0646	+ 0 50 40.59	+ 18.166
* σ Aquarii		4.9	22 25 5.406	3.1753	− 11 12 54.68	18.329
9 Draconis	S. P.	5.0	22 26 10.537	5.2475	+103 44 46.91	18.412
* α Lacertæ		3.9	22 26 57.887	2.4631	+ 49 44 33.28	18.424
η Aquarii		4.2	22 29 57.649	3.0835	− 0 39 31.19	18.467
286 Cephei (B.)		5.7	22 30 25.918	+ 1.0755	+ 75 41 7.01	+ 18.532
* 10 Lacertæ		5.0	22 34 32.970	2.6873	+ 38 30 13.62	18.678
* β Octantis		4.4	22 35 18.812	6.4485	− 81 55 53.86	18.701
ζ Pegasi		3.5	22 36 13.522	2.9911	+ 10 16 59.77	18.715
* λ Pegasi		4.1	22 41 28.385	2.8856	+ 23 0 47.21	18.882
ι Cephei		3.6	22 45 56.414	+ 2.1231	+ 65 38 53.04	+ 18.882
λ Aquarii		3.8	22 47 8.234	3.1324	− 8 8 17.70	19.083
* Groombr. 1706	S. P.	6.3	22 51 33.145	4.9522	+101 40 2.47	19.163
α Pis. Aus. (*Fomalhaut*)		1.3	22 51 50.903	3.3236	− 30 10 43.32	19.001
* υ Andromedæ		3.8	22 57 5.348	2.7509	+ 41 45 41.45	19.293
α Ursæ Majoris	S. P.	2.0	22 57 14.865	+ 3.7430	+117 40 55.85	+ 19.372
α Pegasi (*Markab*)		2.5	22 59 31.821	2.9853	+ 14 38 24.96	19.308
* φ Aquarii		4.3	23 8 53.102	3.1086	− 6 36 53.88	19.364
o Cephei		5.1	23 14 18.893	2.4463	+ 67 32 13.59	19.673
* τ Pegasi		4.6	23 15 26.363	2.9641	+ 23 9 55.66	19.661
θ Piscium		4.3	23 22 38.488	+ 3.0413	+ 5 48 7.50	+ 19.731
λ Draconis	S. P.	4.0	23 25 10.088	3.6153	+110 5 22.06	19.842
* λ Andromedæ		3.8	23 32 25.480	2.9237	+ 45 53 20.35	19.475
ι Piscium		4.3	23 34 32.976	3.0843	+ 5 3 25.82	19.486
γ Cephei		3.5	23 35 2.053	2.4196	+ 77 2 46.35	20.077
* δ^1 Aquarii		5.2	23 38 45.384	+ 3.1164	− 18 51 34.65	+ 19.961
* δ Sculptoris		4.6	23 43 27.438	3.1316	− 28 42 38.63	19.858
* γ^1 Octantis		5.2	23 45 55.766	3.6715	− 82 36 8.62	19.994
Groombridge 4163		6.6	23 49 43.549	2.8702	+ 73 49 33.48	20.023
ω Piscium		4.2	23 53 55.164	3.0787	+ 6 16 55.08	19.931
* 33 Piscium		4.7	23 59 57.666	+ 3.0708	− 6 17 41.41	+ 20.143

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
Jan.	h m 1 19	° ′ +88 45	Jan.	h m 6 51	° ′ +87 12	Jan.	h m 18 5	° ′ +86 36	Jan.	h m 19 26	° ′ +88 58
	s	″		s	″		s	″		s	″
0.3	77.54	16.4	0.5	46.08	50.3	0.9	46.55	33.3	0.0	37.69	36.0
1.3	76.50	16.5	1.5	46.17	50.6	1.9	46.58	32.9	1.0	37.26	35.7
2.3	75.50	16.5	2.5	46.22	50.9	2.9	46.63	32.6	2.0	36.91	35.3
3.3	74.55	16.6	3.5	46.26	51.3	3.9	46.67	32.3	3.0	36.61	35.0
4.3	73.67	16.7	4.5	46.32	51.6	4.9	46.72	32.0	4.0	36.32	34.7
5.3	72.81	16.7	5.5	46.39	51.8	5.9	46.76	31.7	5.0	36.03	34.4
6.3	71.97	16.8	6.5	46.47	52.1	6.9	46.77	31.4	6.0	35.71	34.1
7.3	71.13	16.9	7.5	46.57	52.4	7.9	46.77	31.0	7.0	35.35	33.8
8.3	70.26	17.0	8.5	46.69	52.7	8.9	46.78	30.7	8.0	34.95	33.6
9.3	69.32	17.1	9.5	46.80	53.0	9.9	46.79	30.4	9.0	34.54	33.3
10.2	68.35	17.2	10.5	46.89	53.4	10.9	46.82	30.0	10.0	34.12	32.9
11.2	67.31	17.3	11.5	46.97	53.7	11.9	46.87	29.7	11.0	33.73	32.6
12.2	66.24	17.4	12.5	47.03	54.1	12.9	46.94	29.3	12.0	33.39	32.3
13.2	65.14	17.5	13.5	47.06	54.4	13.9	47.03	28.9	13.0	33.13	31.9
14.2	64.05	17.5	14.5	47.03	54.8	14.9	47.14	28.6	13.9	32.96	31.5
15.2	62.99	17.5	15.5	47.00	55.1	15.9	47.28	28.3	14.9	32.87	31.2
16.2	61.98	17.5	16.5	46.93	55.4	16.9	47.40	28.0	15.9	32.85	30.8
17.2	61.00	17.5	17.5	46.86	55.7	17.9	47.54	27.7	16.9	32.87	30.5
18.2	60.09	17.5	18.5	46.80	56.0	18.9	47.67	27.4	17.9	32.91	30.2
19.2	59.21	17.4	19.5	46.76	56.3	19.9	47.78	27.1	18.9	32.95	29.9
20.2	58.35	17.4	20.4	46.71	56.6	20.9	47.89	26.8	19.9	32.96	29.6
21.2	57.48	17.4	21.4	46.68	56.8	21.9	48.00	26.5	20.9	32.93	29.3
22.2	56.58	17.4	22.4	46.67	57.1	22.9	48.12	26.2	21.9	32.89	29.0
23.2	55.64	17.5	23.4	46.64	57.4	23.9	48.24	25.9	22.9	32.82	28.7
24.2	54.63	17.5	24.4	46.60	57.8	24.9	48.39	25.6	23.9	32.77	28.4
25.2	53.60	17.4	25.4	46.53	58.1	25.9	48.54	25.2	24.9	32.77	28.1
26.2	52.52	17.4	26.4	46.44	58.4	26.9	48.73	24.9	25.9	32.81	27.7
27.2	51.43	17.3	27.4	46.31	58.8	27.9	48.95	24.6	26.9	32.96	27.3
28.2	50.37	17.3	28.4	46.15	59.1	28.9	49.16	24.3	27.9	33.18	27.0
29.2	49.33	17.2	29.4	45.96	59.4	29.9	49.40	24.0	28.9	33.48	26.6
30.2	48.34	17.1	30.4	45.77	59.7	30.9	49.63	23.7	29.9	33.82	26.3
31.2	47.44	17.0	31.4	45.57	60.0	31.9	49.86	23.5	30.9	34.23	26.0
32.2	46.58	16.8	32.4	45.38	60.3	32.9	50.08	23.3	31.9	34.62	25.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Feb.	h m 1 19	° ′ +88 45	Feb.	h m 6 51	° ′ +87 13	Feb.	h m 18 5	° ′ +86 36	Feb.	h m 19 26	° ′ +88 58
	s	″		s	″		s	″		s	″
1.2	46.58	16.8	1.4	45.38	0.3	1.9	50.08	23.3	1.9	34.99	25.4
2.2	45.76	16.7	2.4	45.22	0.5	2.9	50.28	23.0	2.9	35.31	25.2
3.2	44.97	16.7	3.4	45.07	0.8	3.9	50.48	22.8	3.9	35.61	24.9
4.2	44.16	16.6	4.4	44.95	1.0	4.9	50.66	22.6	4.9	35.85	24.6
5.2	43.32	16.5	5.4	44.81	1.3	5.9	50.86	22.3	5.9	36.11	24.3
6.2	42.43	16.4	6.4	44.67	1.5	6.9	51.07	22.0	6.9	36.35	24.0
7.2	41.50	16.4	7.4	44.54	1.8	7.9	51.29	21.8	7.9	36.63	23.7
8.2	40.53	16.3	8.4	44.37	2.2	8.9	51.51	21.5	8.9	37.00	23.4
9.2	39.55	16.2	9.4	44.15	2.5	9.9	51.77	21.2	9.9	37.44	23.0
10.2	38.57	16.0	10.4	43.92	2.8	10.9	52.04	20.9	10.9	37.96	22.7
11.2	37.61	15.9	11.4	43.65	3.0	11.9	52.34	20.7	11.9	38.56	22.4
12.2	36.71	15.7	12.4	43.35	3.3	12.9	52.64	20.5	12.9	39.19	22.1
13.2	35.88	15.5	13.4	43.08	3.6	13.9	52.93	20.3	13.9	39.81	21.8
14.2	35.10	15.3	14.4	42.77	3.8	14.9	53.23	20.1	14.9	40.54	21.6
15.1	34.38	15.1	15.4	42.50	4.0	15.9	53.50	20.0	15.9	41.20	21.3
16.1	33.68	14.9	16.4	42.25	4.2	16.8	53.76	19.8	16.9	41.82	21.1
17.1	33.00	14.8	17.4	42.00	4.4	17.8	54.04	19.6	17.9	42.39	20.9
18.1	32.31	14.6	18.4	41.75	4.6	18.8	54.29	19.5	18.9	42.95	20.6
19.1	31.57	14.4	19.4	41.52	4.8	19.8	54.56	19.3	19.9	43.51	20.4
20.1	30.80	14.3	20.4	41.26	5.0	20.8	54.83	19.1	20.9	44.10	20.1
21.1	29.98	14.1	21.4	41.01	5.3	21.8	55.13	18.8	21.9	44.73	19.8
22.1	29.16	13.9	22.4	40.71	5.5	22.8	55.44	18.6	22.9	45.43	19.5
23.1	28.31	13.7	23.4	40.39	5.8	23.8	55.78	18.4	23.9	46.20	19.3
24.1	27.46	13.5	24.3	40.03	6.0	24.8	56.14	18.3	24.9	47.07	19.0
25.1	26.67	13.3	25.3	39.65	6.2	25.8	56.48	18.1	25.9	47.98	18.7
26.1	25.94	13.0	26.3	39.25	6.4	26.8	56.85	18.0	26.9	48.92	18.5
27.1	25.27	12.7	27.3	38.87	6.6	27.8	57.20	17.9	27.9	49.87	18.3
28.1	24.67	12.5	28.3	38.47	6.8	28.8	57.56	17.8	28.9	50.80	18.1
29.1	24.13	12.2	29.3	38.12	6.9	29.8	57.89	17.7	29.9	51.70	17.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*) Right Ascension.	α Ursæ Minoris. (*Polaris.*) Declination *North.*	Mean Solar Date.	51 Cephei (Hev.) Right Ascension.	51 Cephei (Hev.) Declination *North.*	Mean Solar Date.	δ Ursæ Minoris. Right Ascension.	δ Ursæ Minoris. Declination *North.*	Mean Solar Date.	λ Ursæ Minoris. Right Ascension.	λ Ursæ Minoris. Declination *North.*
Mar.	h m 1 19	° ′ +88 45	Mar.	h m 6 51	° ′ +87 13	Mar.	h m 18 5	° ′ +86 36	Mar.	h m 19 26	° ′ +88 58
	s	″		s	″		s	″		s	″
1.1	24.13	12.2	1.3	38.12	6.9	1.8	57.89	17.7	1.9	51.70	17.9
2.1	23.62	12.0	2.3	37.77	7.0	2.8	58.20	17.6	2.9	52.55	17.8
3.1	23.12	11.8	3.3	37.45	7.2	3.8	58.51	17.5	3.9	53.33	17.6
4.1	22.63	11.6	4.3	37.16	7.3	4.8	58.80	17.4	4.9	54.11	17.4
5.1	22.10	11.4	5.3	36.85	7.5	5.8	59.12	17.3	5.9	54.88	17.2
6.1	21.52	11.2	6.3	36.54	7.6	6.8	59.43	17.2	6.9	55.64	17.0
7.1	20.91	10.9	7.3	36.22	7.8	7.8	59.75	17.0	7.9	56.47	16.8
8.1	20.27	10.7	8.3	35.87	8.0	8.8	60.09	16.9	8.9	57.37	16.6
9.1	19.65	10.5	9.3	35.49	8.2	9.8	60.45	16.8	9.8	58.34	16.3
10.1	19.05	10.2	10.3	35.09	8.3	10.8	60.83	16.7	10.8	59.39	16.1
11.1	18.50	9.9	11.3	34.65	8.5	11.8	61.20	16.6	11.8	60.49	16.0
12.1	18.01	9.6	12.3	34.21	8.6	12.8	61.59	16.6	12.8	61.61	15.8
13.1	17.61	9.3	13.3	33.78	8.7	13.8	61.95	16.6	13.8	62.73	15.7
14.1	17.25	9.0	14.3	33.36	8.7	14.8	62.31	16.6	14.8	63.84	15.6
15.1	16.95	8.7	15.3	32.95	8.8	15.8	62.66	16.6	15.8	64.89	15.5
16.1	16.68	8.4	16.3	32.57	8.8	16.8	62.99	16.6	16.8	65.91	15.4
17.1	16.41	8.1	17.3	32.20	8.9	17.8	63.32	16.6	17.8	66.87	15.2
18.1	16.11	7.9	18.3	31.84	9.0	18.8	63.65	16.6	18.8	67.82	15.2
19.1	15.79	7.6	19.3	31.49	9.0	19.8	63.98	16.5	19.8	68.78	15.0
20.1	15.42	7.4	20.3	31.13	9.1	20.8	64.32	16.5	20.8	69.75	14.9
21.1	15.04	7.1	21.3	30.74	9.2	21.8	64.66	16.5	21.8	70.79	14.8
22.0	14.63	6.8	22.3	30.32	9.3	22.7	65.03	16.4	22.8	71.90	14.6
23.0	14.24	6.5	23.3	29.88	9.4	23.7	65.44	16.4	23.8	73.08	14.5
24.0	13.88	6.2	24.3	29.41	9.5	24.7	65.82	16.4	24.8	74.27	14.4
25.0	13.59	5.9	25.3	28.94	9.5	25.7	66.21	16.5	25.8	75.52	14.3
26.0	13.36	5.5	26.3	28.46	9.6	26.7	66.61	16.5	26.8	76.77	14.2
27.0	13.21	5.2	27.3	28.00	9.6	27.7	66.98	16.6	27.8	78.01	14.1
28.0	13.12	4.8	28.3	27.55	9.6	28.7	67.33	16.6	28.8	79.20	14.1
29.0	13.08	4.5	29.3	27.13	9.5	29.7	67.68	16.7	29.8	80.34	14.1
30.0	13.06	4.2	30.3	26.73	9.5	30.7	68.00	16.8	30.8	81.41	14.1
31.0	13.06	3.9	31.3	26.38	9.5	31.7	68.31	16.9	31.8	82.44	14.1
32.0	13.02	3.7	32.2	26.01	9.5	32.7	68.62	17.0	32.8	83.42	14.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Apr.	h m 1 19	+ 88° 44′	Apr.	h m 6 51	+ 87° 13′	Apr.	h m 18 6	+ 86° 36′	Apr.	h m 19 27	+ 88° 58′
	s	″		s	″		s	″		s	″
1.0	13.02	63.7	1.2	26.01	9.5	1.7	8.62	17.0	1.8	23.42	14.0
2.0	12.95	63.4	2.2	25.65	9.5	2.7	8.93	17.0	2.8	24.42	14.0
3.0	12.84	63.1	3.2	25.30	9.5	3.7	9.24	17.1	3.8	25.45	13.9
4.0	12.71	62.9	4.2	24.92	9.5	4.7	9.56	17.1	4.8	26.52	13.9
5.0	12.58	62.6	5.2	24.50	9.5	5.7	9.92	17.2	5.8	27.64	13.8
6.0	12.47	62.3	6.2	24.07	9.5	6.7	10.27	17.2	6.8	28.83	13.8
7.0	12.38	61.9	7.2	23.63	9.5	7.7	10.65	17.3	7.8	30.06	13.8
8.0	12.37	61.6	8.2	23.16	9.5	8.7	11.00	17.4	8.8	31.33	13.8
9.0	12.41	61.3	9.2	22.71	9.4	9.7	11.36	17.6	9.8	32.59	13.8
10.0	12.57	60.9	10.2	22.27	9.3	10.7	11.69	17.7	10.8	33.84	13.8
10.9	12.77	60.6	11.2	21.86	9.2	11.7	12.01	17.9	11.8	35.04	13.9
11.9	12.99	60.3	12.2	21.45	9.1	12.7	12.31	18.1	12.8	36.15	13.9
12.9	13.23	60.0	13.2	21.09	9.0	13.7	12.60	18.2	13.8	37.22	14.0
13.9	13.47	59.7	14.2	20.73	8.9	14.7	12.88	18.4	14.8	38.23	14.1
14.9	13.65	59.5	15.2	20.40	8.8	15.7	13.16	18.5	15.8	39.24	14.1
15.9	13.83	59.2	16.2	20.04	8.7	16.7	13.43	18.7	16.8	40.27	14.2
16.9	13.96	58.9	17.2	19.70	8.6	17.7	13.73	18.8	17.7	41.31	14.2
17.9	14.06	58.6	18.2	19.31	8.6	18.7	14.04	18.9	18.7	42.42	14.2
18.9	14.16	58.3	19.2	18.91	8.5	19.7	14.36	19.1	19.7	43.57	14.3
19.9	14.29	58.0	20.2	18.49	8.4	20.7	14.70	19.2	20.7	44.78	14.3
20.9	14.48	57.7	21.2	18.06	8.3	21.7	15.02	19.4	21.7	46.02	14.4
21.9	14.73	57.4	22.2	17.61	8.2	22.7	15.35	19.6	22.7	47.26	14.4
22.9	15.06	57.1	23.2	17.20	8.0	23.7	15.66	19.8	23.7	48.47	14.5
23.9	15.45	56.7	24.2	16.79	7.9	24.7	15.95	20.0	24.7	49.63	14.7
24.9	15.90	56.4	25.2	16.41	7.7	25.7	16.22	20.3	25.7	50.73	14.8
25.9	16.37	56.1	26.2	16.07	7.5	26.7	16.46	20.5	26.7	51.76	15.0
26.9	16.86	55.9	27.2	15.76	7.3	27.7	16.70	20.7	27.7	52.72	15.1
27.9	17.34	55.6	28.2	15.46	7.2	28.7	16.91	21.0	28.7	53.63	15.2
28.9	17.79	55.4	29.2	15.17	7.0	29.6	17.13	21.2	29.7	54.53	15.4
29.9	18.19	55.2	30.2	14.90	6.8	30.6	17.36	21.4	30.7	55.41	15.5
30.9	18.57	54.9	31.2	14.62	6.7	31.6	17.58	21.5	31.7	56.34	15.6
31.9	18.92	54.7									

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*) Right Ascension.	α Ursæ Minoris. (*Polaris.*) Declination *North*.	Mean Solar Date.	51 Cephei (Hev.) Right Ascension.	51 Cephei (Hev.) Declination *North*.	Mean Solar Date.	δ Ursæ Minoris. Right Ascension.	δ Ursæ Minoris. Declination *North*.	Mean Solar Date.	λ Ursæ Minoris. Right Ascension.	λ Ursæ Minoris. Declination *North*.
May	h m 1 19	° +88 44	May	h m 6 51	° +87 12	May	h m 18 6	° +86 36	May	h m 19 27	° +86 58
	s	″		s	″		s	″		s	″
1.9	18.92	54.7	1.2	14.62	66.7	1.6	17.58	21.5	1.7	56.34	15.6
2.9	19.27	54.5	2.2	14.30	66.6	2.6	17.82	21.7	2.7	57.30	15.7
3.9	19.67	54.2	3.2	13.98	66.4	3.6	18.06	21.9	3.7	58.32	15.8
4.9	20.11	53.9	4.2	13.63	66.3	4.6	18.33	22.1	4.7	59.38	15.9
5.9	20.62	53.6	5.2	13.26	66.1	5.6	18.57	22.4	5.7	60.47	16.1
6.9	21.20	53.3	6.2	12.91	65.9	6.6	18.82	22.7	6.7	61.54	16.2
7.9	21.84	53.1	7.1	12.56	65.7	7.6	19.04	23.0	7.7	62.60	16.4
8.9	22.52	52.8	8.1	12.24	65.5	8.6	19.26	23.2	8.6	63.61	16.6
9.9	23.23	52.6	9.1	11.95	65.2	9.6	19.45	23.5	9.6	64.55	16.9
10.9	23.93	52.3	10.1	11.68	65.0	10.6	19.61	23.8	10.6	65.41	17.1
11.9	24.60	52.2	11.1	11.43	64.7	11.6	19.77	24.1	11.6	66.23	17.3
12.9	25.23	52.0	12.1	11.21	64.5	12.6	19.94	24.4	12.6	67.01	17.5
13.9	25.82	51.8	13.1	11.00	64.3	13.6	20.09	24.6	13.6	67.78	17.7
14.9	26.39	51.6	14.1	10.78	64.1	14.6	20.25	24.9	14.6	68.54	17.9
15.9	26.92	51.4	15.1	10.54	63.9	15.6	20.43	25.1	15.6	69.39	18.0
16.9	27.47	51.1	16.1	10.28	63.7	16.6	20.61	25.3	16.6	70.21	18.2
17.9	28.06	50.9	17.1	10.01	63.5	17.6	20.80	25.6	17.6	71.11	18.4
18.9	28.72	50.7	18.1	9.71	63.2	18.6	21.00	25.9	18.6	72.04	18.6
19.9	29.43	50.4	19.1	9.42	63.0	19.6	21.19	26.2	19.6	72.98	18.8
20.9	30.21	50.2	20.1	9.14	62.7	20.6	21.36	26.5	20.6	73.89	19.0
21.9	31.06	50.0	21.1	8.87	62.5	21.6	21.52	26.8	21.6	74.76	19.3
22.9	31.93	49.8	22.1	8.65	62.2	22.6	21.65	27.2	22.6	75.55	19.6
23.9	32.81	49.6	23.1	8.44	61.9	23.6	21.75	27.5	23.6	76.27	19.9
24.9	33.70	49.5	24.1	8.27	61.6	24.6	21.84	27.8	24.6	76.91	20.3
25.9	34.53	49.3	25.1	8.15	61.3	25.6	21.91	28.1	25.6	77.49	20.4
26.9	35.32	49.2	26.1	8.02	61.0	26.6	21.97	28.4	26.6	78.01	20.7
27.9	36.08	49.1	27.1	7.89	60.8	27.6	22.04	28.7	27.6	78.53	20.9
28.9	36.79	48.9	28.1	7.78	60.5	28.6	22.10	29.0	28.6	79.04	21.2
29.9	37.51	48.8	29.1	7.65	60.3	29.6	22.17	29.2	29.6	79.61	21.4
30.9	38.24	48.7	30.1	7.50	60.0	30.6	22.27	29.5	30.6	80.21	21.6
31.9	39.01	48.5	31.1	7.32	59.8	31.6	22.36	29.8	31.6	80.86	21.9
32.9	39.83	48.3	32.1	7.15	59.5	32.6	22.46	30.1	32.6	81.52	22.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
June	h m 1 19	+ 88° 44′	June	h m 6 51	+ 87° 12′	June	h m 18 6	+ 86° 36′	June	h m 19 28	+ 88° 58′
	s	″		s	″		s	″		s	″
1.9	39.83	48.3	1.1	7.15	59.5	1.6	22.46	30.1	1.6	21.52	22.1
2.9	40.73	48.2	2.1	6.97	59.2	2.6	22.54	30.4	2.6	22.20	22.4
3.8	41.67	48.0	3.1	6.81	58.9	3.5	22.62	30.8	3.6	22.84	22.7
4.8	42.67	47.9	4.1	6.65	58.6	4.5	22.66	31.1	4.6	23.45	23.0
5.8	43.68	47.8	5.1	6.54	58.3	5.5	22.69	31.5	5.6	23.98	23.3
6.8	44.69	47.7	6.1	6.46	57.9	6.5	22.70	31.8	6.6	24.44	23.6
7.8	45.68	47.6	7.1	6.40	57.6	7.5	22.69	32.2	7.6	24.83	24.0
8.8	46.64	47.5	8.1	6.35	57.3	8.5	22.68	32.5	8.6	25.17	24.3
9.8	47.53	47.5	9.1	6.33	57.0	9.5	22.66	32.8	9.6	25.47	24.6
10.8	48.40	47.4	10.1	6.31	56.7	10.5	22.64	33.1	10.6	25.78	24.9
11.8	49.21	47.3	11.1	6.28	56.4	11.5	22.63	33.4	11.6	26.09	25.1
12.8	50.04	47.2	12.1	6.22	56.1	12.5	22.64	33.7	12.6	26.46	25.4
13.8	50.87	47.1	13.0	6.16	55.9	13.5	22.65	34.0	13.6	26.85	25.7
14.8	51.75	47.0	14.0	6.07	55.6	14.5	22.68	34.3	14.6	27.30	25.9
15.8	52.67	46.9	15.0	5.98	55.3	15.5	22.69	34.6	15.6	27.74	26.2
16.8	53.67	46.8	16.0	5.88	55.0	16.5	22.71	35.0	16.6	28.19	26.5
17.8	54.72	46.7	17.0	5.82	54.7	17.5	22.70	35.3	17.6	28.57	26.9
18.8	55.80	46.7	18.0	5.77	54.3	18.5	22.67	35.7	18.6	28.90	27.2
19.8	56.90	46.6	19.0	5.77	54.0	19.5	22.61	36.0	19.6	29.13	27.6
20.8	57.99	46.6	20.0	5.80	53.6	20.5	22.53	36.4	20.6	29.30	28.0
21.8	59.05	46.6	21.0	5.85	53.3	21.5	22.43	36.7	21.6	29.37	28.3
22.8	60.07	46.6	22.0	5.93	52.9	22.5	22.33	37.1	22.6	29.42	28.6
23.8	61.02	46.6	23.0	6.02	52.6	23.5	22.22	37.4	23.6	29.40	29.0
24.8	61.94	46.7	24.0	6.11	52.3	24.5	22.12	37.6	24.6	29.40	29.3
25.8	62.83	46.7	25.0	6.20	52.1	25.5	22.01	37.9	25.6	29.41	29.5
26.8	63.72	46.7	26.0	6.26	51.8	26.5	21.92	38.2	26.6	29.47	29.9
27.8	64.64	46.7	27.0	6.32	51.5	27.5	21.85	38.5	27.6	29.57	30.1
28.8	65.61	46.6	28.0	6.35	51.2	28.5	21.78	38.8	28.6	29.70	30.4
29.8	66.63	46.6	29.0	6.38	50.9	29.5	21.69	39.1	29.5	29.83	30.8
30.8	67.70	46.6	30.0	6.41	50.6	30.5	21.59	39.4	30.5	29.94	31.1
31.8	68.82	46.6	31.0	6.45	50.2	31.5	21.47	39.8	31.5	30.02	31.5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
July	h m 1 20	° ′ +88 44	July	h m 6 51	° ′ +87 12	July	h m 18 6	° ′ +86 36	July	h m 19 28	° ′ +88 58
	s	″		s	″		s	″		s	″
1.8	8.82	46.6	1.0	6.45	50.2	1.5	21.47	39.8	1.5	30.02	31.5
2.8	9.95	46.6	2.0	6.55	49.9	2.5	21.33	40.1	2.5	30.05	31.8
3.8	11.09	46.7	3.0	6.66	49.5	3.5	21.16	40.5	3.5	29.97	32.2
4.8	12.21	46.7	3.9	6.80	49.2	4.5	21.00	40.8	4.5	29.83	32.6
5.8	13.28	46.8	4.9	6.95	48.8	5.5	20.80	41.2	5.5	29.63	32.9
6.8	14.30	46.9	5.9	7.15	48.5	6.5	20.62	41.4	6.5	29.39	33.3
7.8	15.26	47.0	6.9	7.33	48.2	7.5	20.43	41.7	7.5	29.13	33.6
8.8	16.18	47.1	7.9	7.51	47.9	8.5	20.24	42.0	8.5	28.89	33.9
9.8	17.07	47.1	8.9	7.67	47.7	9.5	20.07	42.3	9.5	28.68	34.2
10.7	17.97	47.2	9.9	7.82	47.4	10.5	19.91	42.5	10.5	28.50	34.5
11.7	18.88	47.2	10.9	7.95	47.1	11.5	19.77	42.8	11.5	28.37	34.8
12.7	19.86	47.3	11.9	8.07	46.8	12.4	19.62	43.1	12.5	28.26	35.1
13.7	20.87	47.3	12.9	8.18	46.5	13.4	19.46	43.4	13.5	28.15	35.5
14.7	21.94	47.4	13.9	8.32	46.2	14.4	19.29	43.7	14.5	28.00	35.8
15.7	23.04	47.5	14.9	8.46	45.8	15.4	19.10	44.0	15.5	27.80	36.2
16.7	24.18	47.6	15.9	8.64	45.5	16.4	18.89	44.4	16.5	27.51	36.5
17.7	25.29	47.7	16.9	8.86	45.2	17.4	18.65	44.7	17.5	27.15	36.9
18.7	26.39	47.8	17.9	9.11	44.8	18.4	18.40	45.0	18.5	26.71	37.3
19.7	27.44	48.0	18.9	9.39	44.5	19.4	18.12	45.3	19.5	26.20	37.6
20.7	28.43	48.2	19.9	9.68	44.2	20.4	17.85	45.5	20.5	25.65	38.0
21.7	29.35	48.3	20.9	9.97	43.9	21.4	17.57	45.8	21.5	25.08	38.3
22.7	30.24	48.5	21.9	10.27	43.6	22.4	17.31	46.0	22.5	24.52	38.6
23.7	31.12	48.7	22.9	10.54	43.4	23.4	17.06	46.2	23.5	23.98	38.9
24.7	32.01	48.8	23.9	10.78	43.1	24.4	16.81	46.5	24.5	23.50	39.2
25.7	32.92	48.9	24.9	11.03	42.9	25.4	16.57	46.7	25.5	23.03	39.5
26.7	33.88	49.1	25.9	11.26	42.6	26.4	16.33	47.0	26.5	22.65	39.8
27.7	34.89	49.2	26.9	11.48	42.3	27.4	16.09	47.2	27.5	22.23	40.1
28.7	35.94	49.3	27.9	11.72	42.0	28.4	15.83	47.5	28.5	21.78	40.4
29.7	37.03	49.5	28.9	11.98	41.7	29.4	15.55	47.8	29.5	21.28	40.8
30.7	38.11	49.7	29.9	12.28	41.3	30.4	15.26	48.1	30.5	20.70	41.1
31.7	39.17	49.9	30.9	12.60	41.0	31.4	14.94	48.4	31.5	20.06	41.5
32.7	40.20	50.1	31.9	12.95	40.7	32.4	14.61	48.6	32.5	19.35	41.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Aug.	h m 1 20	° ′ +88 44	Aug.	h m 6 51	° ′ +87 12	Aug.	h m 18 6	° ′ +86 36	Aug.	h m 19 27	° ′ +88 58
	s	″		s	″		s	″		s	″
1.7	40.20	50.1	1.9	13.31	40.4	1.4	14.61	48.6	1.5	79.35	41.8
2.7	41.16	50.3	2.9	13.68	40.2	2.4	14.28	48.9	2.4	78.57	42.2
3.7	42.05	50.5	3.9	14.05	39.9	3.4	13.94	49.1	3.4	77.78	42.5
4.7	42.90	50.7	4.9	14.41	39.7	4.4	13.62	49.3	4.4	76.99	42.8
5.7	43.70	50.9	5.9	14.74	39.5	5.4	13.31	49.5	5.4	76.22	43.0
6.7	44.51	51.2	6.9	15.06	39.2	6.4	12.99	49.7	6.4	75.51	43.3
7.7	45.30	51.3	7.9	15.37	39.0	7.4	12.71	49.8	7.4	74.85	43.6
8.7	46.14	51.5	8.9	15.66	38.7	8.4	12.42	50.0	8.4	74.19	43.8
9.7	47.03	51.7	9.9	15.95	38.5	9.4	12.11	50.3	9.4	73.56	44.1
10.7	47.96	51.9	10.9	16.27	38.2	10.4	11.83	50.5	10.4	72.91	44.5
11.7	48.92	52.1	11.9	16.61	37.9	11.4	11.50	50.7	11.4	72.22	44.8
12.7	49.91	52.3	12.9	16.99	37.6	12.4	11.17	51.0	12.4	71.45	45.1
13.7	50.90	52.6	13.9	17.39	37.4	13.4	10.82	51.2	13.4	70.63	45.4
14.7	51.87	52.9	14.9	17.84	37.1	14.4	10.43	51.4	14.4	69.70	45.8
15.6	52.78	53.1	15.9	18.29	36.9	15.4	10.04	51.6	15.4	68.72	46.1
16.6	53.64	53.4	16.9	18.74	36.6	16.3	9.64	51.8	16.4	67.69	46.4
17.6	54.43	53.7	17.9	19.20	36.4	17.3	9.24	52.0	17.4	66.64	46.6
18.6	55.17	54.0	18.9	19.66	36.2	18.3	8.85	52.1	18.4	65.59	46.9
19.6	55.88	54.3	19.9	20.06	36.0	19.3	8.47	52.2	19.4	64.56	47.1
20.6	56.58	54.5	20.9	20.47	35.9	20.3	8.11	52.4	20.4	63.59	47.4
21.6	57.30	54.8	21.9	20.85	35.7	21.3	7.76	52.5	21.4	62.66	47.6
22.6	58.05	55.1	22.9	21.23	35.5	22.3	7.41	52.7	22.4	61.76	47.9
23.6	58.83	55.3	23.9	21.61	35.2	23.3	7.06	52.8	23.4	60.87	48.1
24.6	59.68	55.6	24.8	22.01	35.0	24.3	6.69	53.0	24.4	59.96	48.4
25.6	60.55	55.8	25.8	22.44	34.7	25.3	6.32	53.2	25.4	59.09	48.7
26.6	61.44	56.1	26.8	22.89	34.5	26.3	5.92	53.4	26.4	58.01	49.0
27.6	62.30	56.4	27.8	23.37	34.3	27.3	5.51	53.5	27.4	56.94	49.3
28.6	63.13	56.7	28.8	23.87	34.1	28.3	5.08	53.7	28.4	55.79	49.5
29.6	63.89	57.1	29.8	24.39	33.9	29.3	4.65	53.9	29.4	54.59	49.8
30.6	64.60	57.4	30.8	24.88	33.7	30.3	4.22	54.0	30.4	53.37	50.1
31.6	65.24	57.8	31.8	25.39	33.5	31.3	3.79	54.1	31.4	52.14	50.3
32.6	65.82	58.1	32.8	25.86	33.4	32.3	3.37	54.1	32.4	50.92	50.5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Sept.	h m 1 21	° +88 44′	Sept.	h m 6 51	° +87 12′	Sept.	h m 18 5	° +86 36′	Sept.	h m 19 27	° +88 58′
	s	″		s	″		s	″		s	″
1.6	5.82	58.1	1.8	25.86	33.4	1.3	63.37	54.1	1.4	50.92	50.5
2.6	6.37	58.4	2.8	26.32	33.3	2.3	62.99	54.2	2.4	49.78	50.7
3.6	6.94	58.7	3.8	26.75	33.1	3.3	62.59	54.3	3.4	48.66	50.9
4.6	7.51	59.0	4.8	27.17	33.0	4.3	62.21	54.4	4.4	47.59	51.1
5.6	8.11	59.3	5.8	27.59	32.8	5.3	61.85	54.5	5.4	46.56	51.3
6.6	8.77	59.6	6.8	28.04	32.6	6.3	61.46	54.6	6.4	45.51	51.5
7.6	9.46	59.9	7.8	28.48	32.4	7.3	61.08	54.7	7.4	44.44	51.7
8.6	10.16	60.2	8.8	28.96	32.3	8.3	60.67	54.8	8.4	43.32	52.0
9.6	10.88	60.5	9.8	29.48	32.1	9.3	60.25	54.9	9.4	42.11	52.2
10.6	11.58	60.8	10.8	30.02	31.9	10.3	59.80	55.0	10.3	40.85	52.4
11.6	12.24	61.2	11.8	30.58	31.7	11.3	59.35	55.1	11.3	39.52	52.7
12.6	12.83	61.6	12.8	31.13	31.6	12.3	58.88	55.2	12.3	38.12	52.9
13.6	13.37	62.0	13.8	31.70	31.5	13.3	58.42	55.2	13.3	36.71	53.1
14.6	13.83	62.4	14.8	32.27	31.4	14.3	57.96	55.3	14.3	35.30	53.2
15.6	14.25	62.7	15.8	32.79	31.3	15.3	57.53	55.3	15.3	33.91	53.4
16.6	14.66	63.1	16.8	33.29	31.2	16.3	57.09	55.3	16.3	32.57	53.5
17.6	15.05	63.4	17.8	33.79	31.1	17.3	56.66	55.3	17.3	31.27	53.7
18.6	15.48	63.8	18.8	34.25	31.0	18.3	56.26	55.3	18.3	30.03	53.8
19.6	15.94	64.1	19.8	34.72	30.9	19.3	55.86	55.3	19.3	28.81	53.9
20.6	16.45	64.4	20.8	35.20	30.8	20.3	55.45	55.4	20.3	27.59	54.1
21.5	17.00	64.8	21.8	35.70	30.7	21.3	55.03	55.5	21.3	26.35	54.3
22.5	17.56	65.1	22.8	36.23	30.6	22.2	54.60	55.5	22.3	25.06	54.5
23.5	18.10	65.5	23.8	36.77	30.4	23.2	54.15	55.6	23.3	23.71	54.7
24.5	18.62	65.9	24.8	37.35	30.3	24.2	53.68	55.6	24.3	22.29	54.8
25.5	19.08	66.3	25.8	37.92	30.2	25.2	53.21	55.6	25.3	20.84	55.0
26.5	19.47	66.7	26.8	38.52	30.2	26.2	52.75	55.6	26.3	19.33	55.1
27.5	19.79	67.1	27.8	39.08	30.1	27.2	52.28	55.6	27.3	17.82	55.3
28.5	20.06	67.5	28.8	39.65	30.1	28.2	51.84	55.5	28.3	16.35	55.4
29.5	20.27	67.9	29.8	40.18	30.1	29.2	51.39	55.5	29.3	14.89	55.5
30.5	20.46	68.2	30.8	40.69	30.1	30.2	50.97	55.4	30.3	13.51	55.5
31.5	20.68	68.6	31.7	41.17	30.0	31.2	50.58	55.4	31.3	12.20	55.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Oct.	h m s 1 21	° ′ ″ +88 45	Oct.	h m s 6 51	° ′ ″ +87 12	Oct.	h m s 18 5	° ′ ″ +86 36	Oct.	h m s 19 26	° ′ ″ +88 58
	s	″		s	″		s	″		s	″
1.5	20.68	8.6	1.7	41.17	30.0	1.2	50.58	55.4	1.3	72.20	55.6
2.5	20.91	8.9	2.7	41.65	30.0	2.2	50.18	55.3	2.3	70.92	55.7
3.5	21.19	9.3	3.7	42.12	29.9	3.2	49.79	55.3	3.3	69.65	55.8
4.5	21.50	9.6	4.7	42.63	29.9	4.2	49.39	55.3	4.3	68.37	55.9
5.5	21.85	10.0	5.7	43.14	29.8	5.2	48.99	55.3	5.3	67.05	56.0
6.5	22.21	10.3	6.7	43.68	29.8	6.2	48.55	55.3	6.3	65.68	56.1
7.5	22.54	10.7	7.7	44.25	29.7	7.2	48.09	55.2	7.3	64.23	56.2
8.5	22.85	11.1	8.7	44.85	29.7	8.2	47.64	55.2	8.3	62.73	56.4
9.5	23.08	11.6	9.7	45.46	29.6	9.2	47.16	55.1	9.3	61.18	56.4
10.5	23.28	12.0	10.7	46.05	29.7	10.2	46.70	55.0	10.3	59.58	56.5
11.5	23.38	12.4	11.7	46.64	29.7	11.2	46.25	54.9	11.3	58.00	56.6
12.5	23.42	12.8	12.7	47.21	29.7	12.2	45.80	54.8	12.3	56.43	56.6
13.5	23.44	13.2	13.7	47.76	29.8	13.2	45.36	54.7	13.3	54.91	56.6
14.5	23.46	13.6	14.7	48.26	29.8	14.2	44.97	54.6	14.3	53.46	56.6
15.5	23.48	14.0	15.7	48.77	29.8	15.2	44.56	54.5	15.3	52.06	56.6
16.5	23.54	14.3	16.7	49.26	29.9	16.2	44.19	54.3	16.2	50.69	56.6
17.5	23.63	14.7	17.7	49.75	29.9	17.2	43.79	54.2	17.2	49.36	56.7
18.5	23.76	15.1	18.7	50.26	29.9	18.2	43.41	54.2	18.2	48.02	56.7
19.5	23.90	15.4	19.7	50.79	29.9	19.2	42.99	54.1	19.2	46.64	56.7
20.5	24.05	15.8	20.7	51.34	29.9	20.2	42.58	54.0	20.2	45.23	56.8
21.5	24.18	16.2	21.7	51.90	29.9	21.2	42.15	53.9	21.2	43.77	56.9
22.5	24.25	16.6	22.7	52.49	29.9	22.2	41.72	53.8	22.2	42.24	56.9
23.5	24.26	17.0	23.7	53.06	30.0	23.2	41.28	53.7	23.2	40.69	56.9
24.5	24.19	17.5	24.7	53.65	30.1	24.2	40.86	53.5	24.2	39.13	56.9
25.5	24.07	17.9	25.7	54.19	30.1	25.2	40.44	53.3	25.2	37.57	56.9
26.5	23.88	18.3	26.7	54.72.	30.3	26.2	40.05	53.1	26.2	36.08	56.8
27.5	23.68	18.6	27.7	55.22	30.4	27.2	39.66	52.9	27.2	34.64	56.8
28.4	23.46	19.0	28.7	55.70	30.5	28.1	39.31	52.7	28.2	33.26	56.7
29.4	23.26	19.3	29.7	56.15	30.6	29.1	38.96	52.6	29.2	31.94	56.7
30.4	23.11	19.7	30.7	56.59	30.7	30.1	38.63	52.4	30.2	30.66	56.6
31.4	22.99	20.0	31.7	57.06	30.8	31.1	38.29	52.2	31.2	29.41	56.5
32.4	22.90	20.4	32.7	57.53	30.9	32.1	37.94	52.1	32.2	28.11	56.5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*) Right Ascension.	α Ursæ Minoris. (*Polaris.*) Declination *North*.	Mean Solar Date.	51 Cephei (Hev.) Right Ascension.	51 Cephei (Hev.) Declination *North*.	Mean Solar Date.	δ Ursæ Minoris. Right Ascension.	δ Ursæ Minoris. Declination *North*.	Mean Solar Date.	λ Ursæ Minoris. Right Ascension.	λ Ursæ Minoris. Declination *North*.
Nov.	h m 1 21	° +88 45′	Nov.	h m 6 51	° +87 12′	Nov.	h m 18 5	° +86 36′	Nov.	h m 19 25	° +88 58′
	s	″		s	″		s	″		s	″
1.4	22.90	20.4	1.7	57.53	30.9	1.1	37.94	52.1	1.2	88.11	56.5
2.4	22.83	20.7	2.7	58.02	30.9	2.1	37.58	51.9	2.2	86.80	56.5
3.4	22.75	21.1	3.7	58.55	31.0	3.1	37.21	51.8	3.2	85.40	56.5
4.4	22.64	21.5	4.7	59.09	31.1	4.1	36.82	51.6	4.2	83.97	56.4
5.4	22.48	21.9	5.7	59.64	31.2	5.1	36.43	51.5	5.2	82.47	56.4
6.4	22.25	22.3	6.6	60.19	31.3	6.1	36.03	51.3	6.2	80.95	56.3
7.4	21.95	22.7	7.6	60.73	31.5	7.1	35.64	51.0	7.2	79.42	56.2
8.4	21.60	23.1	8.6	61.27	31.7	8.1	35.28	50.8	8.2	77.94	56.1
9.4	21.19	23.5	9.6	61.76	31.8	9.1	34.92	50.5	9.2	76.49	56.0
10.4	20.77	23.8	10.6	62.23	32.0	10.1	34.57	50.3	10.2	75.10	55.9
11.4	20.36	24.2	11.6	62.67	32.2	11.1	34.27	50.0	11.2	73.79	55.7
12.4	19.97	24.5	12.6	63.10	32.3	12.1	33.96	49.8	12.2	72.54	55.6
13.4	19.62	24.8	13.6	63.52	32.5	13.1	33.66	49.5	13.2	71.32	55.5
14.4	19.31	25.1	14.6	63.94	32.6	14.1	33.38	49.3	14.2	70.12	55.4
15.4	19.02	25.5	15.6	64.38	32.8	15.1	33.07	49.1	15.2	68.92	55.3
16.4	18.74	25.8	16.6	64.85	32.9	16.1	32.76	48.9	16.2	67.66	55.2
17.4	18.44	26.1	17.6	65.32	33.0	17.1	32.43	48.7	17.2	66.37	55.1
18.4	18.11	26.5	18.6	65.81	33.2	18.1	32.11	48.5	18.2	65.03	55.0
19.4	17.72	26.9	19.6	66.30	33.4	19.1	31.78	48.2	19.2	63.68	54.9
20.4	17.25	27.2	20.6	66.78	33.6	20.1	31.46	48.0	20.1	62.30	54.7
21.4	16.71	27.6	21.6	67.24	33.8	21.1	31.16	47.7	21.1	60.94	54.6
22.4	16.13	27.9	22.6	67.69	34.0	22.1	30.86	47.4	22.1	59.64	54.4
23.4	15.49	28.2	23.6	68.09	34.3	23.1	30.60	47.1	23.1	58.37	54.2
24.4	14.85	28.5	24.6	68.47	34.5	24.1	30.37	46.8	24.1	57.19	54.0
25.4	14.21	28.8	25.6	68.82	34.7	25.1	30.13	46.5	25.1	56.11	53.8
26.4	13.61	29.1	26.6	69.16	35.0	26.1	29.91	46.2	26.1	55.06	53.6
27.4	13.06	29.4	27.6	69.49	35.2	27.1	29.70	45.9	27.1	54.05	53.4
28.4	12.53	29.6	28.6	69.83	35.4	28.1	29.49	45.7	28.1	53.04	53.2
29.4	12.03	29.9	29.6	70.19	35.5	29.1	29.27	45.4	29.1	52.00	53.1
30.4	11.55	30.2	30.6	70.57	35.7	30.1	29.04	45.2	30.1	50.94	52.9
31.4	11.04	30.5	31.6	70.98	35.9	31.1	28.80	44.9	31.1	49.81	52.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*) Right Ascension.	α Ursæ Minoris. (*Polaris.*) Declination *North.*	Mean Solar Date.	51 Cephei (Hev.) Right Ascension.	51 Cephei (Hev.) Declination *North.*	Mean Solar Date.	δ Ursæ Minoris. Right Ascension.	δ Ursæ Minoris. Declination *North.*	Mean Solar Date.	λ Ursæ Minoris. Right Ascension.	λ Ursæ Minoris. Declination *North.*
Dec.	h m 1 20	° +88 45′	Dec.	h m 6 52	° +87 12′	Dec.	h m 18 5	° +86 36′	Dec.	h m 19 25	° +88 58′
	s	″		s	″		s	″		s	″
1.4	71.04	30.5	1.6	10.98	35.9	1.1	28.80	44.9	1.1	49.81	52.7
2.4	70.50	30.8	2.6	11.40	36.2	2.1	28.54	44.6	2.1	48.65	52.6
3.3	69.90	31.3	3.6	11.82	36.4	3.1	28.28	44.3	3.1	47.46	52.4
4.3	69.23	31.4	4.6	12.22	36.7	4.0	28.04	44.0	4.1	46.26	52.2
5.3	68.48	31.8	5.6	12.61	36.9	5.0	27.80	43.7	5.1	45.08	51.9
6.3	67.69	32.0	6.6	12.97	37.2	6.0	27.59	43.3	6.1	43.96	51.7
7.3	66.88	32.3	7.6	13.30	37.5	7.0	27.41	43.0	7.1	42.89	51.4
8.3	66.06	32.6	8.6	13.60	37.8	8.0	27.24	42.6	8.1	41.91	51.2
9.3	65.27	32.8	9.6	13.87	38.1	9.0	27.10	42.3	9.1	41.01	50.9
10.3	64.52	33.0	10.6	14.13	38.4	10.0	26.95	42.0	10.1	40.17	50.6
11.3	63.80	33.2	11.6	14.38	38.6	11.0	26.83	41.7	11.1	39.35	50.4
12.3	63.14	33.4	12.5	14.66	38.8	12.0	26.68	41.4	12.1	38.54	50.2
13.3	62.48	33.6	13.5	14.93	39.1	13.0	26.55	41.1	13.1	37.71	50.0
14.3	61.83	33.9	14.5	15.23	39.3	14.0	26.39	40.8	14.1	36.86	49.7
15.3	61.14	34.1	15.5	15.54	39.6	15.0	26.24	40.5	15.1	35.95	49.5
16.3	60.43	34.4	16.5	15.85	39.8	16.0	26.08	40.2	16.1	35.05	49.3
17.3	59.62	34.6	17.5	16.15	40.1	17.0	25.92	39.9	17.1	34.11	49.0
18.3	58.76	34.8	18.5	16.46	40.4	18.0	25.79	39.5	18.1	33.20	48.8
19.3	57.85	35.1	19.5	16.71	40.8	19.0	25.67	39.2	19.1	32.32	48.5
20.3	56.89	35.3	20.5	16.94	41.1	20.0	25.55	38.8	20.1	31.51	48.2
21.3	55.92	35.4	21.5	17.13	41.4	21.0	25.49	38.4	21.1	30.79	47.8
22.3	54.95	35.6	22.5	17.29	41.7	22.0	25.44	38.0	22.1	30.15	47.5
23.3	54.01	35.7	23.5	17.45	42.0	23.0	25.38	37.7	23.1	29.57	47.2
24.3	53.12	35.9	24.5	17.57	42.3	24.0	25.36	37.4	24.1	29.07	46.9
25.3	52.26	36.0	25.5	17.71	42.6	25.0	25.33	37.0	25.1	28.57	46.6
26.3	51.47	36.1	26.5	17.86	42.9	26.0	25.30	36.7	26.0	28.07	46.4
27.3	50.67	36.3	27.5	18.02	43.1	27.0	25.26	36.4	27.0	27.54	46.1
28.3	49.89	36.4	28.5	18.20	43.4	28.0	25.21	36.2	28.0	26.97	45.8
29.3	49.06	36.6	29.5	18.41	43.7	29.0	25.14	35.9	29.0	26.35	45.6
30.3	48.22	36.7	30.5	18.59	44.0	30.0	25.08	35.5	30.0	25.74	45.3
31.3	47.30	36.9	31.5	18.79	44.3	31.0	25.02	35.2	31.0	25.08	45.0
32.3	46.32	37.1	32.5	18.97	44.7	32.0	24.98	34.8	32.0	24.46	44.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.				γ Pegasi. (*Algenib.*)				β Hydri.				12 Ceti.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination South.	
	h m 0 2		° ′ +28 30		h m 0 7		° ′ +14 25		h m 0 20		° ′ −77 50		h m 0 24		° ′ − 4 31	
	s		″		s		″		s		″		s		″	
(Dec. 30.2)	57.15	−.13	47.7	−0.7	49.49	−.11	63.9	−0.7	16.01	−.22	63.2	+0.8	40.88	−.10	76.2	−0.6
Jan. 9.2	57.02	.13	46.9	1.0	49.38	.10	63.1	0.8	15.11	.87	62.1	1.4	40.77	.10	76.8	0.5
19.2	56.90	.12	45.7	1.2	49.28	.09	62.2	0.9	14.27	.80	60.4	2.0	40.67	.09	77.2	0.4
29.2	56.79	.10	44.4	1.4	49.19	.08	61.3	1.0	13.51	.71	58.2	2.5	40.58	.08	77.6	0.3
Feb. 8.1	56.69	.08	42.9	1.5	49.12	.06	60.3	1.0	12.86	.60	55.5	2.9	40.51	.07	77.8	−0.1
18.1	56.63	−.05	41.4	−1.5	49.06	−.04	59.4	−0.9	12.32	−.47	52.4	+3.3	40.44	−.05	77.8	+0.1
28.1	56.59	−.02	39.8	1.5	49.04	−.01	58.5	0.8	11.92	.33	49.0	3.6	40.41	−.02	77.6	0.2
Mar. 10.0	56.59	+.02	38.3	1.4	49.04	+.02	57.7	0.7	11.66	.18	45.3	3.8	40.40	+.01	77.3	0.3
20.0	56.63	.06	37.0	1.2	49.06	.06	57.1	0.5	11.55	−.03	41.5	3.9	40.42	.04	76.7	0.7
30.0	56.72	.11	35.8	1.0	49.16	.10	56.8	−0.2	11.60	+.13	37.6	3.9	40.48	.08	75.9	0.9
Apr. 9.0	56.85	+.16	35.0	−0.7	49.28	+.14	56.8	+0.1	11.81	+.28	33.7	+3.8	40.58	+.12	74.8	+1.2
18.9	57.03	.20	34.4	−0.4	49.44	.18	57.0	0.4	12.17	.43	29.9	3.7	40.72	.16	73.5	1.4
28.9	57.25	.24	34.3	0.0	49.64	.22	57.5	0.7	12.68	.58	26.2	3.5	40.90	.20	72.0	1.5
May 8.9	57.52	.28	34.5	+0.4	49.88	.26	58.4	1.0	13.33	.72	22.8	3.2	41.11	.24	70.2	1.8
18.8	57.81	.31	35.1	0.8	50.15	.29	59.6	1.3	14.11	.84	19.8	2.9	41.37	.27	68.3	2.0
28.8	58.14	+.33	36.1	+1.2	50.45	+.31	61.0	+1.6	15.01	+.94	17.1	+2.5	41.65	+.29	66.3	+2.1
June 7.8	58.48	.35	37.5	1.5	50.77	.32	62.7	1.9	15.99	1.02	14.9	2.0	41.95	.31	64.2	2.1
17.8	58.83	.35	39.2	1.8	51.10	.33	64.6	2.0	17.05	1.07	13.1	1.5	42.27	.32	62.1	2.1
27.7	59.19	.35	41.1	2.1	51.43	.33	66.7	2.1	18.14	1.10	11.9	0.9	42.59	.32	59.9	2.1
July 7.7	59.53	.34	43.3	2.3	51.76	.32	68.9	2.2	19.25	1.10	11.2	+0.4	42.91	.32	57.9	2.0
17.7	59.86	+.32	45.7	+2.4	52.07	+.30	71.1	+2.2	20.34	+1.07	11.1	−0.2	43.22	+.31	56.0	+1.8
27.7	60.17	.29	48.2	2.5	52.36	.28	73.3	2.2	21.38	1.01	11.6	0.8	43.52	.29	54.2	1.8
Aug. 6.6	60.44	.26	50.8	2.6	52.63	.25	75.5	2.1	22.35	.91	12.7	1.3	43.79	.26	52.7	1.4
16.6	60.68	.22	53.4	2.6	52.86	.22	77.6	2.0	23.20	.79	14.2	1.8	44.03	.22	51.4	1.3
26.6	60.89	.18	55.9	2.5	53.06	.18	79.5	1.9	23.92	.64	16.2	2.2	44.24	.19	50.4	0.9
Sept. 5.5	61.05	+.14	58.3	+2.4	53.22	+.14	81.2	+1.7	24.49	+.48	18.7	−2.6	44.42	+.16	49.6	+0.6
15.5	61.17	.10	60.6	2.2	53.34	.10	82.8	1.5	24.87	.30	21.4	2.8	44.55	.12	49.2	0.3
25.5	61.25	.06	62.8	2.0	53.42	.06	84.2	1.2	25.07	+.11	24.3	3.0	44.65	.08	49.0	+0.1
Oct. 5.5	61.29	+.03	64.7	1.8	53.47	+.03	85.3	1.0	25.09	−.08	27.3	3.0	44.72	.05	49.0	−0.1
15.4	61.29	−.01	66.4	1.6	53.48	.00	86.2	0.8	24.91	.27	30.3	2.9	44.75	+.02	49.2	0.3
25.4	61.27	−.04	67.8	+1.3	53.47	−.03	86.9	+0.6	24.55	−.44	33.1	−2.7	44.74	−.01	49.7	−0.5
Nov. 4.4	61.22	.06	69.0	1.0	53.43	.05	87.3	0.3	24.03	.59	35.7	2.4	44.72	.04	50.2	0.6
14.4	61.14	.08	69.8	0.7	53.37	.07	87.6	+0.1	23.37	.72	37.8	1.9	44.67	.06	50.9	0.7
24.3	61.04	.10	70.4	0.4	53.29	.08	87.6	−0.1	22.59	.89	39.5	1.4	44.60	.08	51.6	0.7
Dec. 4.3	60.93	.11	70.6	+0.1	53.20	.09	87.4	0.3	21.72	.89	40.7	0.8	44.52	.09	52.3	0.7
14.3	60.81	−.12	70.6	−0.2	53.10	−.10	87.1	−0.5	20.81	−.93	41.2	−0.2	44.43	−.09	53.0	−0.7
24.2	60.68	.13	70.2	0.5	52.99	.11	86.5	0.6	19.87	.93	41.2	+0.4	44.33	.10	53.7	0.7
34.2	60.55	−.13	69.5	−0.8	52.89	−.11	85.8	−0.7	18.94	−.90	40.5	+1.0	44.23	−.10	54.4	−0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cassiopeæ.		β Ceti.		21 Cassiopeæ.		ε Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 0 34	° ′ +55 57	h m 0 38	° ′ −18 33	h m 0 38	° ′ +74 24	h m 0 57	° ′ + 7 19
	s	″	s	″	s	″	s	″
(Dec. 30.3)	32.20 −.27	59.0 −0.1	19.47 −.11	52.8 −0.6	40.73 −.69	72.2 +0.4	29.75 −.10	33.1 −0.6
Jan. 9.2	31.93 .27	58.7 0.6	19.35 .11	53.3 −0.2	40.03 .70	72.2 −0.2	29.64 .11	32.5 0.6
19.2	31.65 .27	57.8 1.1	19.24 .11	53.5 0.0	39.34 .69	71.7 0.8	29.53 .11	31.9 0.6
29.2	31.39 .26	56.5 1.5	19.13 .10	53.4 +0.2	38.68 .63	70.5 1.4	29.43 .10	31.3 0.6
Feb. 8.1	31.16 .22	54.8 1.9	19.04 .09	53.0 0.5	38.07 .56	68.9 1.9	29.33 .09	30.6 0.6
18.1	30.96 −.18	52.8 −2.2	18.96 −.07	52.4 +0.8	37.55 −.46	66.8 −2.3	29.24 −.08	30.1 −0.5
28.1	30.81 .12	50.5 2.4	18.90 .04	51.5 1.0	37.15 .35	64.3 2.6	29.17 .06	29.7 0.4
Mar. 10.1	30.71 −.06	48.0 2.5	18.88 −.01	50.3 1.3	36.86 .21	61.5 2.8	29.13 −.03	29.4 −0.2
20.1	30.69 +.01	45.5 2.4	18.88 +.02	48.9 1.5	36.72 −.06	58.6 2.9	29.12 +.01	29.3 0.0
30.0	30.74 .06	43.1 2.3	18.93 .06	47.3 1.8	36.74 +.09	55.7 2.9	29.15 .05	29.4 +0.2
Apr. 9.0	30.86 +.16	40.9 −2.1	19.01 +.10	45.4 +2.0	36.91 +.24	52.9 −2.7	29.22 +.09	29.7 +0.4
19.0	31.06 .23	38.9 1.8	19.13 .15	43.3 2.2	37.23 .39	50.3 2.4	29.33 .13	30.3 0.7
29.0	31.32 .30	37.3 1.4	19.30 .19	41.1 2.3	37.70 .53	48.0 2.1	29.48 .17	31.1 1.0
May 8.9	31.66 .36	36.1 1.0	19.51 .23	38.8 2.4	38.29 .65	46.1 1.7	29.67 .21	32.2 1.2
18.9	32.05 .41	35.3 −0.5	19.76 .26	36.3 2.4	38.99 .75	44.6 1.2	29.91 .25	33.5 1.4
28.9	32.48 +.45	35.0 0.0	20.03 +.29	33.9 +2.4	39.79 +.82	43.7 −0.7	30.17 +.28	35.1 +1.6
June 7.8	32.95 .48	35.2 +0.5	20.33 .31	31.5 2.4	40.64 .86	43.3 −0.1	30.47 .30	36.8 1.8
17.8	33.44 .49	36.0 1.0	20.66 .32	29.2 2.3	41.54 .91	43.5 +0.4	30.78 .32	38.7 1.9
27.8	33.94 .49	37.2 1.4	20.99 .33	27.0 2.1	42.46 .91	44.2 1.0	31.10 .32	40.7 2.0
July 7.8	34.43 .48	38.8 1.8	21.32 .33	25.0 1.8	43.36 .89	45.4 1.5	31.43 .32	42.8 2.0
17.7	34.90 +.46	40.9 +2.2	21.65 +.32	23.3 +1.5	44.24 +.85	47.2 +2.0	31.75 +.31	44.8 +2.0
27.7	35.35 .43	43.3 2.5	21.96 .30	21.9 1.2	45.07 .79	49.4 2.4	32.05 .30	46.8 1.9
Aug. 6.7	35.77 .39	46.0 2.8	22.25 .27	20.9 0.9	45.83 .72	52.0 2.6	32.34 .28	48.6 1.8
16.6	36.13 .34	49.0 3.0	22.51 .24	20.1 0.6	46.51 .64	54.9 2.1	32.61 .25	50.4 1.6
26.6	36.45 .29	52.1 3.2	22.74 .21	19.8 +0.2	47.10 .54	58.2 3.3	32.84 .22	51.9 1.4
Sept. 5.6	36.72 +.24	55.4 +3.3	22.93 +.17	19.8 −0.2	47.58 +.43	61.6 +3.5	33.04 +.18	53.3 +1.2
15.6	36.92 .18	58.6 3.3	23.08 .13	20.1 0.5	47.96 .32	65.3 3.7	33.21 .15	54.4 1.0
25.5	37.07 .12	61.9 3.2	23.20 .09	20.7 0.7	48.22 .20	69.0 3.7	33.34 .12	55.3 0.8
Oct. 5.5	37.17 .06	65.1 3.1	23.27 .06	21.5 0.9	48.36 +.06	72.7 3.7	33.44 .08	55.9 0.6
15.5	37.20 +.01	68.2 3.0	23.31 +.02	22.6 1.1	48.38 −.03	76.4 3.6	33.51 .05	56.4 0.3
25.5	37.19 −.04	71.1 +2.8	23.31 −.01	23.8 −1.2	48.29 −.15	79.9 +3.4	33.54 +.02	56.6 +0.1
Nov. 4.4	37.12 .09	73.7 2.5	23.29 .04	25.1 1.3	48.08 .26	83.2 3.1	33.55 −.01	56.7 −0.1
14.4	37.01 .14	76.0 2.1	23.24 .06	26.4 1.3	47.76 .37	86.2 2.8	33.53 .03	56.6 0.2
24.4	36.85 .18	77.9 1.7	23.17 .08	27.6 1.2	47.34 .46	88.8 2.4	33.49 .05	56.3 0.3
Dec. 4.3	36.65 .21	79.3 1.2	23.08 .09	28.8 1.1	46.84 .54	90.9 1.9	33.43 .07	55.9 0.4
14.3	36.43 −.24	80.3 +0.7	22.98 −.10	29.8 −0.9	46.25 −.61	92.6 +1.3	33.36 −.08	55.5 −0.5
24.3	36.18 .26	80.8 +0.2	22.87 .11	30.6 0.7	45.61 .66	93.6 0.7	33.27 .09	54.9 0.6
34.3	35.91 −.27	80.8 −0.3	22.75 −.11	31.2 −0.5	44.93 −.70	94.1 +0.1	33.17 −.10	54.3 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.				θ¹ Ceti.				38 Cassiopeæ.				ψ Piscium.			
	Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m 1 3		° ′ +35 3		h m 1 18		° ′ − 8 43		h m 1 23		° ′ +69 43		h m 1 25		° ′ +14 48	
	s		″		s		″		s		″		s		″	
(Dec. 30.3)	51.08	−.14	63.0	−0.2	46.91	−.10	31.7	−0.7	24.36	−.47	48.5	+0.3	52.11	−.10	23.6	−0.4
Jan. 9.3	50.93	.15	62.7	0.5	46.81	.11	32.4	0.6	23.87	.50	49.0	+0.3	52.00	.11	23.1	0.5
19.2	50.78	.15	62.0	0.8	46.69	.12	32.9	0.4	23.36	.51	49.0	−0.3	51.89	.12	22.5	0.6
29.2	50.63	.15	61.0	1.1	46.58	.11	33.2	−0.2	22.85	.50	48.4	0.9	51.77	.12	21.8	0.7
Feb. 8.2	50.48	.14	59.8	1.3	46.46	.10	33.3	0.0	22.36	.47	47.2	1.4	51.65	.11	21.1	0.7
18.1	50.35	−.12	58.4	−1.5	46.36	−.09	33.2	+0.2	21.91	−.42	45.6	−1.8	51.54	−.10	20.3	−0.7
28.1	50.25	.09	56.8	1.6	46.28	.07	32.9	0.4	21.53	.34	43.5	2.2	51.44	.08	19.6	0.7
Mar. 10.1	50.18	.06	55.2	1.6	46.21	.05	32.4	0.6	21.23	.25	41.1	2.5	51.38	.05	19.0	0.6
20.1	50.15	−.01	53.6	1.5	46.18	−.02	31.6	0.9	21.03	.14	38.5	2.7	51.34	−.03	18.5	0.4
30.0	50.17	+.04	52.1	1.4	46.18	+.02	30.6	1.2	20.94	−.03	35.8	2.7	51.34	+.02	18.2	−0.2
Apr. 9.0	50.23	+.09	50.8	−1.2	46.23	+.06	29.3	+1.4	20.97	+.09	33.1	−2.7	51.38	+.06	18.0	0.0
19.0	50.36	.15	49.8	0.9	46.31	.10	27.8	1.6	21.12	.21	30.4	2.5	51.47	.11	18.1	+0.2
29.0	50.53	.20	49.0	0.6	46.44	.15	26.1	1.8	21.40	.33	28.0	2.2	51.60	.16	18.4	0.5
May 8.9	50.76	.25	48.6	−0.2	46.61	.19	24.2	2.0	21.79	.44	26.0	1.9	51.77	.20	19.0	0.7
18.9	51.02	.29	48.5	+0.2	46.82	.23	22.2	2.1	22.28	.53	24.2	1.5	51.99	.24	19.9	1.0
28.9	51.33	+.32	48.9	+0.5	47.06	+.26	20.0	+2.2	22.85	+.61	23.0	−1.0	52.25	+.27	21.0	+1.3
June 7.8	51.67	.35	49.6	0.9	47.34	.29	17.8	2.2	23.50	.67	22.2	−0.5	52.53	.30	22.4	1.5
17.8	52.03	.37	50.6	1.2	47.64	.31	15.6	2.2	24.20	.72	21.9	0.0	52.84	.32	24.0	1.7
27.8	52.41	.37	52.0	1.5	47.95	.32	13.4	2.1	24.94	.74	22.1	+0.5	53.16	.33	25.7	1.8
July 7.8	52.78	.37	53.7	1.8	48.27	.32	11.3	2.0	25.69	.75	22.9	1.0	53.50	.33	27.6	1.9
17.7	53.16	+.36	55.7	+2.0	48.59	+.32	9.4	+1.8	26.43	+.74	24.1	+1.5	53.83	+.32	29.5	+2.0
27.7	53.51	.34	57.8	2.2	48.91	.31	7.6	1.6	27.16	.71	25.8	1.9	54.15	.31	31.5	2.0
Aug. 6.7	53.84	.32	60.2	2.4	49.20	.29	6.2	1.3	27.85	.67	27.9	2.3	54.46	.29	33.4	1.9
16.6	54.15	.29	62.6	2.5	49.48	.26	5.0	1.0	28.49	.61	30.4	2.6	54.74	.27	35.3	1.8
26.6	54.43	.26	65.1	2.5	49.73	.23	4.1	0.7	29.08	.55	33.2	2.9	55.00	.24	37.1	1.7
Sept. 5.6	54.66	+.22	67.5	+2.5	49.95	+.20	3.5	+0.4	29.59	+.48	36.3	+3.2	55.23	+.21	38.7	+1.5
15.6	54.86	.18	70.0	2.4	50.13	.17	3.2	+0.1	30.03	.49	39.6	3.4	55.43	.18	40.1	1.3
25.5	55.02	.14	72.3	2.3	50.28	.13	3.3	−0.2	30.38	.31	43.0	3.5	55.59	.15	41.4	1.2
Oct. 5.5	55.14	.10	74.6	2.2	50.40	.10	3.6	0.4	30.65	.22	46.5	3.5	55.72	.11	42.5	1.0
15.5	55.22	.06	76.6	2.0	50.48	.07	4.2	0.6	30.83	.13	50.0	3.5	55.82	.08	43.3	0.8
25.5	55.27	+.03	78.5	+1.8	50.53	+.04	4.9	−0.8	30.92	+.04	53.4	+3.4	55.89	+.06	44.0	+0.6
Nov. 4.4	55.28	.00	80.2	1.5	50.55	+.01	5.8	0.9	30.92	−.05	56.7	3.2	55.93	+.02	44.5	0.4
14.4	55.26	−.03	81.6	1.3	50.54	−.02	6.8	1.0	30.82	.14	59.8	2.9	55.94	.00	44.8	+0.2
24.4	55.21	.06	82.7	1.0	50.51	.04	7.9	1.0	30.64	.22	62.5	2.6	55.92	−.03	44.9	0.0
Dec. 4.3	55.13	.09	83.5	0.7	50.46	.06	8.9	1.0	30.37	.30	64.9	2.2	55.88	.05	44.8	−0.1
14.3	55.03	−.11	84.0	+0.3	50.39	−.08	9.9	−0.9	30.03	−.37	66.9	+1.7	55.82	−.07	44.6	−0.2
24.3	54.91	.13	84.2	0.0	50.30	.10	10.7	0.8	29.62	.43	68.3	1.2	55.74	.09	44.3	0.4
34.3	54.77	−.15	84.0	−0.3	50.19	−.11	11.5	−0.7	29.17	−.48	69.2	+0.6	55.64	−.11	43.8	−0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Eridani. (*Achernar.*)		o Piscium.		β Arietis.		50 Cassiopeæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 33	−57° 45′	h m 1 39	+8° 37′	h m 1 48	+20° 17′	h m 1 54	+71° 54′
	s	″	s	″	s	″	s	″
(Dec. 30.3)	49.41 −.32	86.5 −0.7	51.31 −.10	50.1 −0.6	50.68 −.10	50.6 −0.2	28.04 −.49	69.5 +1.3
Jan. 9.3	49.09 .32	86.9 −0.1	51.21 .11	49.6 0.6	50.58 .12	50.3 0.4	27.52 .54	70.5 0.7
19.2	48.76 .32	86.7 +0.5	51.10 .12	49.0 0.6	50.45 .13	49.8 0.6	26.96 .56	71.0 +0.1
29.2	48.44 .31	85.9 1.0	50.98 .12	48.4 0.6	50.32 .13	49.2 0.7	26.37 .59	70.8 −0.5
Feb. 8.2	48.13 .30	84.7 1.5	50.86 .12	47.9 0.5	50.19 .13	48.4 0.8	25.79 .57	70.1 1.0
18.1	47.85 −.27	83.9 +2.0	50.75 −.11	47.3 −0.5	50.06 −.12	47.6 −0.8	25.24 −.53	68.8 −1.5
28.1	47.60 .23	80.6 2.4	50.65 .09	46.9 0.4	49.95 .10	46.8 0.8	24.74 .46	67.0 1.9
Mar. 10.1	47.39 .18	78.0 2.8	50.57 .06	46.6 0.2	49.86 .07	46.0 0.8	24.33 .36	64.9 2.3
20.1	47.24 .13	75.0 3.1	50.52 −.03	46.4 −0.1	49.80 −.04	45.2 0.7	24.02 .25	62.5 2.5
30.0	47.14 −.07	71.7 3.4	50.51 +.01	46.4 +0.1	49.78 .00	44.6 0.6	23.83 −.13	59.8 2.7
Apr. 9.0	47.10 .00	68.3 +3.5	50.54 +.06	46.6 +0.3	49.79 +.04	44.1 −0.4	23.77 .00	57.1 −2.7
19.0	47.14 +.07	64.7 3.6	50.61 .09	47.1 0.5	49.86 .09	43.8 −0.2	23.84 +.14	54.4 2.6
29.0	47.24 .14	61.0 3.6	50.72 .14	47.7 0.8	49.97 .14	43.7 +0.1	24.05 .28	51.8 2.4
May 8.9	47.42 .21	57.4 3.6	50.88 .18	48.7 1.0	50.13 .18	44.0 0.4	24.40 .40	49.4 2.2
18.9	47.66 .27	53.8 3.4	51.08 .22	49.8 1.3	50.34 .22	44.5 0.6	24.86 .52	47.4 1.8
28.9	47.97 +.33	50.5 +3.2	51.32 +.25	51.2 +1.5	50.58 +.26	45.2 +0.9	25.43 +.62	45.8 −1.4
June 7.8	48.33 .36	47.4 2.9	51.59 .28	52.8 1.7	50.86 .29	46.2 1.2	26.10 .70	44.5 1.0
17.8	48.74 .43	44.6 2.6	51.89 .30	54.5 1.8	51.17 .32	47.5 1.4	26.84 .76	43.8 −0.5
27.8	49.18 .46	42.2 2.2	52.20 .32	56.3 1.9	51.50 .33	49.0 1.6	27.63 .80	43.6 0.0
July 7.8	49.65 .48	40.3 1.7	52.52 .32	58.2 1.9	51.83 .34	50.6 1.7	28.45 .83	43.8 +0.5
17.7	50.14 +.48	38.9 +1.2	52.85 +.33	60.2 +1.9	52.17 +.34	52.4 +1.8	29.28 +.83	44.6 +1.0
27.7	50.62 .47	38.0 +0.6	53.17 .31	62.1 1.8	52.51 .33	54.3 1.9	30.11 .82	45.8 1.5
Aug. 6.7	51.09 .45	37.7 0.0	53.47 .30	63.9 1.7	52.83 .31	56.2 1.9	30.92 .79	47.5 1.9
16.6	51.53 .43	37.9 −0.6	53.76 .28	65.5 1.6	53.14 .29	58.0 1.9	31.68 .74	49.6 2.3
26.6	51.93 .38	38.8 1.1	54.02 .25	67.1 1.4	53.42 .27	59.9 1.8	32.40 .68	52.0 2.6
Sept. 5.6	52.29 +.33	40.1 −1.6	54.26 +.22	68.4 +1.2	53.67 +.24	61.6 +1.7	33.04 +.61	54.8 +2.9
15.6	52.58 .27	42.0 2.0	54.47 .19	69.5 1.0	53.89 .21	63.2 1.6	33.62 .53	57.9 3.2
25.5	52.82 .20	44.2 2.4	54.64 .16	70.4 0.8	54.09 .18	64.7 1.4	34.11 .45	61.1 3.3
Oct. 5.5	52.98 .13	46.8 2.7	54.78 .13	71.1 0.6	54.25 .14	66.0 1.2	34.51 .35	64.5 3.4
15.5	53.07 +.06	49.6 2.8	54.89 .10	71.6 0.4	54.37 .11	67.2 1.0	34.81 .25	67.9 3.4
25.4	53.10 −.01	52.5 −2.9	54.97 +.07	71.8 +0.2	54.47 +.08	68.1 +0.9	35.01 +.15	71.4 +3.4
Nov. 4.4	53.05 .08	55.3 2.8	55.02 .04	71.9 0.0	54.53 .05	68.9 0.7	35.11 +.04	74.8 3.3
14.4	52.94 .14	58.1 2.6	55.04 +.01	71.8 −0.1	54.57 +.02	69.5 0.5	35.10 −.06	78.0 3.1
24.4	52.78 .19	60.6 2.3	55.04 −.02	71.6 0.3	54.57 −.01	69.9 0.3	34.98 .17	81.0 2.8
Dec. 4.3	52.56 .24	62.8 2.0	55.01 .04	71.3 0.4	54.55 .04	70.2 +0.2	34.75 .27	83.7 2.5
14.3	52.30 −.27	64.6 −1.5	54.96 −.06	70.9 −0.5	54.50 −.06	70.2 0.0	34.44 −.36	86.0 +2.1
24.3	52.01 .30	65.9 1.0	54.88 .08	70.4 0.5	54.42 .08	70.1 −0.2	34.03 .44	87.9 1.6
34.3	51.70 −.32	66.6 −0.5	54.79 −.10	69.8 −0.6	54.33 −.11	69.8 −0.3	33.56 −.50	89.2 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		ξ² Ceti.		ι Cassiopeæ.		ξ² Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 2 1	° ′ +22 58	h m 2 7	° + 8 21	h m 2 20	° +66 55	h m 2 22	° + 7 59
	s	″	s	″	s	″	s	″
(Dec. 30.3)	15.65 −.18	7.9 −0.2	26.63 −.02	20.8 −0.5	25.08 −.34	70.0 +1.6	35.21 −.07	27.9 −0.6
Jan. 9.3	15.54 .12	7.6 0.3	26.53 .10	20.3 0.5	24.72 .39	71.2 0.9	35.12 .10	27.3 0.5
19.2	15.41 .13	7.2 0.5	26.42 .12	19.8 0.5	24.31 .42	71.8 +0.4	35.02 .12	26.8 0.5
29.2	15.28 .14	6.7 0.6	26.30 .12	19.2 0.5	23.89 .44	71.9 −0.2	34.89 .13	26.3 0.5
Feb. 8.2	15.14 .14	6.0 0.7	26.17 .13	18.7 0.5	23.43 .46	71.4 0.7	34.76 .13	25.8 0.5
18.2	15.00 −.13	5.1 −0.8	26.04 −.13	18.2 −0.4	22.99 −.42	70.5 −1.2	34.63 −.13	25.3 −0.4
28.2	14.88 .11	4.3 0.9	25.93 .11	17.8 0.3	22.58 .38	69.0 1.6	34.51 .12	25.0 0.3
Mar. 10.1	14.78 .09	3.4 0.9	25.83 .09	17.5 0.3	22.23 .33	67.1 2.0	34.40 .10	24.7 −0.3
20.1	14.70 .08	2.5 0.8	25.76 .08	17.4 −0.1	21.95 .24	65.0 2.1	34.31 .07	24.6 0.1
30.1	14.67 −.01	1.8 0.7	25.72 −.03	17.4 +0.1	21.76 .14	62.6 2.5	34.26 −.03	24.5 +0.1
Apr. 9.1	14.67 +.03	1.1 −0.6	25.72 +.03	17.6 +0.3	21.67 −.06	60.0 −0.5	34.24 +.01	24.8 +0.3
19.0	14.73 .06	0.7 0.4	25.76 .06	18.0 0.5	21.68 +.07	57.5 2.5	34.29 .05	25.3 0.5
29.0	14.83 .13	0.4 −0.1	25.85 .11	18.7 0.7	21.83 .18	55.1 2.4	34.35 .10	25.9 0.7
May 9.0	14.98 .18	0.5 +0.3	25.98 .16	19.5 1.0	22.04 .28	52.8 2.3	34.47 .14	26.7 0.9
19.0	15.18 .22	0.7 0.4	26.16 .20	20.6 1.3	22.37 .38	50.5 1.9	34.63 .19	27.8 1.3
28.9	15.42 +.26	1.3 +0.7	26.39 +.26	21.9 +1.4	22.80 +.47	49.1 −1.5	34.84 +.26	29.1 +1.4
June 7.9	15.70 .30	2.1 1.6	26.63 .28	23.4 1.6	23.31 .54	47.8 1.1	35.08 .26	30.5 1.5
17.9	16.00 .32	3.2 1.8	26.91 .30	25.1 1.7	23.89 .62	46.9 0.6	35.35 .28	32.1 1.6
27.8	16.33 .32	4.5 1.4	27.21 .31	26.8 1.6	24.52 .65	46.5 −0.2	35.64 .30	33.9 1.7
July 7.8	16.67 .34	6.1 1.6	27.53 .32	28.6 1.8	25.19 .69	46.5 +0.3	35.96 .32	35.6 1.8
17.8	17.01 +.34	7.7 +1.7	27.85 +.32	30.5 +1.9	25.87 +.68	47.1 +0.6	36.28 +.32	37.4 +1.8
27.7	17.35 .34	9.5 1.8	28.17 .32	32.3 1.8	26.56 .69	48.0 1.2	36.60 .32	39.2 1.8
Aug. 6.7	17.69 .33	11.3 1.8	28.49 .31	34.0 1.7	27.24 .67	49.4 1.6	36.91 .31	40.9 1.8
16.7	18.00 .30	13.2 1.8	28.78 .29	35.6 1.5	27.90 .64	51.2 2.0	37.22 .29	42.4 1.5
26.7	18.29 .28	15.0 1.8	29.06 .27	37.1 1.5	28.52 .62	53.3 2.3	37.50 .27	43.8 1.5
Sept. 5.6	18.56 +.25	16.8 +1.7	29.32 +.24	38.3 +1.1	29.10 +.55	55.7 +2.5	37.76 +.25	45.0 +1.1
15.6	18.80 .22	18.4 1.6	29.55 .21	39.4 0.9	29.62 .49	58.5 2.8	38.00 .23	46.0 0.9
25.6	19.01 .19	20.0 1.5	29.74 .18	40.2 0.7	30.08 .43	61.4 3.0	38.22 .20	46.8 0.7
Oct. 5.6	19.18 .16	21.4 1.3	29.91 .15	40.8 0.5	30.48 .36	64.5 3.1	38.40 .17	47.4 0.6
15.5	19.32 .13	22.7 1.2	30.05 .12	41.2 0.3	30.80 .28	67.6 3.0	38.55 .14	47.7 +0.3
25.5	19.44 +.10	23.8 +1.0	30.16 +.09	41.4 +0.1	31.04 +.22	70.8 +3.2	38.67 +.11	47.8 0.1
Nov. 4.5	19.52 .06	24.7 0.8	30.24 .06	41.4 −0.1	31.21 .13	74.0 3.1	38.77 .08	47.8 −0.1
14.4	19.56 +.03	25.5 0.7	30.29 .03	41.3 0.2	31.29 +.04	77.1 3.0	38.83 .05	47.6 0.3
24.4	19.58 .00	26.0 0.5	30.31 +.01	41.0 0.3	31.28 −.05	80.0 2.8	38.86 +.02	47.3 0.3
Dec. 4.4	19.57 −.03	26.4 0.3	30.30 −.02	40.6 0.4	31.19 .13	82.6 2.5	38.87 −.01	46.9 0.4
14.4	19.53 −.05	26.6 +0.1	30.26 −.05	40.2 −0.5	31.02 −.21	84.9 +2.1	38.85 −.04	46.4 −0.5
24.3	19.46 .08	26.7 −0.1	30.20 .07	39.7 0.5	30.77 .28	86.9 1.7	38.80 .06	45.9 0.5
34.3	19.37 −.10	26.5 −0.2	30.12 −.09	39.1 −0.5	30.45 −.35	88.3 +1.2	38.72 −.08	45.3 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.				α Ceti.				48 Cephei (H.)				ζ Arietis.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m 2 37		+ 2° 47′		h m 2 56		+ 3° 40′		h m 3 6		+77° 20′		h m 3 8		+20° 39′	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
(Dec. 30.3)	52.32	−.07	40.7	−0.7	48.25	−.06	45.5	−0.7	62.10	−.52	76.6	+2.2	52.78	−.06	29.4	−0.1
Jan. 9.3	52.23	.09	40.0	0.6	48.18	.09	44.8	0.6	61.50	.66	78.5	1.7	52.71	.09	29.3	0.2
19.2	52.12	.11	39.4	0.6	48.08	.11	44.2	0.6	60.78	.76	80.0	1.2	52.61	.11	29.1	0.3
29.2	52.00	.13	38.8	0.5	47.96	.13	43.7	0.5	59.97	.84	80.9	+0.6	52.48	.13	28.8	0.4
Feb. 8.2	51.87	.14	38.4	0.4	47.82	.14	43.2	0.4	59.11	.86	81.2	0.2	52.34	.15	28.4	0.4
18.2	51.73	−.13	38.1	−0.3	47.68	−.14	42.9	−0.3	58.23	−.86	80.9	−0.6	52.18	−.15	27.9	−0.5
28.2	51.60	.12	37.8	−0.1	47.54	.13	42.6	−0.2	57.38	.88	80.0	1.1	52.03	.15	27.4	0.5
Mar. 10.1	51.48	.10	37.8	0.0	47.41	.12	42.5	0.0	56.60	.73	78.6	1.6	51.89	.13	26.8	0.5
20.1	51.39	.08	37.9	+0.2	47.31	.09	42.6	+0.2	55.92	.62	76.7	2.0	51.77	.11	26.2	0.5
30.1	51.32	.06	38.2	0.4	47.22	.06	42.8	0.3	55.37	.47	74.5	2.4	51.67	.08	25.7	0.5
Apr. 9.1	51.29	−.01	38.7	+0.6	47.18	−.03	43.2	+0.5	54.98	−.30	72.0	−2.6	51.61	−.04	25.3	−0.4
19.0	51.30	+.03	39.4	0.8	47.17	+.02	43.8	0.7	54.77	−.12	69.3	2.7	51.60	+.01	24.9	0.3
29.0	51.36	.06	40.3	1.0	47.21	.06	44.7	0.9	54.75	+.07	66.5	2.8	51.63	.06	24.7	−0.1
May 9.0	51.46	.12	41.4	1.2	47.29	.10	45.7	1.1	54.91	.26	63.7	2.7	51.71	.11	24.7	+0.1
19.0	51.60	.17	42.7	1.4	47.42	.15	46.9	1.3	55.27	.44	61.1	2.5	51.84	.16	24.9	0.3
28.9	51.79	+.21	44.2	+1.6	47.59	+.19	48.3	+1.5	55.80	+.61	58.8	−2.2	52.02	+.20	25.3	+0.5
June 7.9	52.01	.24	45.8	1.7	47.80	.23	49.9	1.6	56.50	.77	56.7	1.9	52.24	.24	25.9	0.7
17.9	52.27	.27	47.6	1.8	48.05	.26	51.5	1.7	57.34	.90	54.9	1.5	52.50	.27	26.7	0.9
27.8	52.55	.29	49.4	1.8	48.32	.28	53.3	1.8	58.29	1.00	53.6	1.1	52.79	.30	27.7	1.1
July 7.8	52.86	.31	51.3	1.8	48.62	.30	55.1	1.8	59.35	1.06	52.7	0.7	53.10	.32	28.9	1.2
17.8	53.17	+.31	53.1	+1.8	48.92	+.31	56.9	+1.7	60.47	+1.14	52.3	−0.2	53.43	+.33	30.1	+1.2
27.7	53.49	.31	54.9	1.7	49.24	.31	58.5	1.6	61.63	1.17	52.3	+0.2	53.76	.33	31.5	1.4
Aug. 6.7	53.80	.31	56.5	1.5	49.55	.31	60.1	1.5	62.82	1.18	52.9	0.8	54.10	.33	32.9	1.4
16.7	54.10	.30	58.0	1.3	49.86	.30	61.6	1.3	63.99	1.17	53.9	1.2	54.43	.33	34.3	1.4
26.7	54.39	.28	59.2	1.1	50.16	.29	62.8	1.1	65.15	1.13	55.3	1.6	54.74	.31	35.7	1.4
Sept. 5.6	54.66	+.26	60.2	+0.9	50.43	+.27	63.8	+0.9	66.26	+1.07	57.1	+2.0	55.05	+.30	37.1	+1.3
15.6	54.91	.23	61.0	0.8	50.69	.25	64.6	0.6	67.30	1.00	59.3	2.4	55.33	.27	38.3	1.2
25.6	55.13	.20	61.5	0.4	50.93	.22	65.1	0.4	68.25	.91	61.9	2.7	55.59	.25	39.4	1.1
Oct. 5.6	55.32	.18	61.7	+0.1	51.14	.20	65.3	+0.1	69.11	.80	64.7	2.9	55.83	.23	40.4	1.0
15.5	55.48	.15	61.7	−0.1	51.32	.17	65.3	−0.1	69.85	.67	67.8	3.1	56.04	.20	41.3	0.8
25.5	55.62	+.12	61.5	−0.3	51.47	+.14	65.1	−0.3	70.46	+.53	71.0	+3.3	56.22	+.17	42.1	+0.7
Nov. 4.5	55.73	.09	61.1	0.5	51.60	.11	64.7	0.5	70.92	.38	74.3	3.4	56.37	.14	42.7	0.6
14.4	55.80	.06	60.6	0.6	51.69	.08	64.2	0.6	71.23	.23	77.7	3.3	56.49	.10	43.1	0.4
24.4	55.84	+.03	59.9	0.7	51.76	.05	63.5	0.7	71.37	+.06	81.0	3.2	56.58	.07	43.5	0.3
Dec. 4.4	55.86	.00	59.2	0.7	51.79	+.02	62.8	0.7	71.35	−.11	84.2	3.0	56.63	+.04	43.8	0.2
14.4	55.84	−.03	58.4	−0.7	51.79	−.01	62.1	−0.7	71.15	−.28	87.2	+2.8	56.65	.00	43.9	+0.1
24.3	55.80	.06	57.7	0.7	51.76	.04	61.3	0.7	70.79	.44	89.8	2.4	56.64	−.03	44.0	0.0
34.3	55.73	−.08	57.0	−0.7	51.71	−.07	60.6	−0.7	70.28	−.59	92.0	+2.0	56.59	−.07	43.9	−0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Persei.		ε Eridani.		δ Persei.		γ Tauri.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 3 16	+ 49° 29′	h m 3 27	− 9° 48′	h m 3 35	+ 47° 27′	h m 3 41	+ 23° 46′
	s	″	s	″	s	″	s	″
(Dec. 30.4)	50.61 −.10	31.6 +1.1	60.08 −.06	45.8 −1.2	28.10 −.06	22.1 +1.3	15.54 −.04	60.3 +0.2
Jan. 9.3	50.48 .15	32.6 0.9	60.00 .09	46.9 1.0	28.00 .12	23.2 1.0	15.49 .07	60.4 +0.1
19.3	50.31 .19	33.3 0.6	59.90 .11	47.9 0.8	27.85 .16	24.0 0.7	15.40 .10	60.4 −0.1
29.3	50.11 .22	33.7 +0.2	59.78 .13	48.7 0.6	27.67 .20	24.5 +0.3	15.29 .13	60.3 0.2
Feb. 8.2	49.87 .24	33.7 −0.2	59.63 .15	49.2 0.4	27.45 .22	24.6 −0.1	15.14 .15	60.1 0.3
18.2	49.63 −.24	33.3 −0.6	59.48 −.16	49.5 −0.1	27.22 −.24	24.4 −0.4	14.98 −.16	59.7 −0.4
28.2	49.38 .23	32.5 0.9	59.32 .16	49.5 +0.2	26.98 .23	23.8 0.7	14.82 .16	59.3 0.5
Mar. 10.2	49.15 .21	31.4 1.2	59.17 .15	49.2 0.4	26.75 .21	22.9 1.0	14.66 .15	58.8 0.5
20.1	48.95 .18	30.0 1.5	59.03 .13	48.7 0.6	26.55 .19	21.7 1.3	14.51 .13	58.2 0.6
30.1	48.79 .13	28.5 1.6	58.91 .10	48.0 0.9	26.38 .14	20.4 1.5	14.39 .10	57.6 0.6
Apr. 9.1	48.69 −.07	26.8 −1.7	58.83 −.06	47.0 +1.1	26.26 −.09	18.8 −1.6	14.31 −.06	57.1 −0.5
19.1	48.65 −.01	25.0 1.7	58.78 −.02	45.7 1.4	26.20 −.03	17.2 1.6	14.26 −.02	56.6 0.4
29.0	48.67 +.06	23.3 1.7	58.78 +.02	44.2 1.6	26.20 +.03	15.6 1.6	14.27 +.03	56.2 0.3
May 9.0	48.76 .13	21.6 1.6	58.82 .06	42.5 1.8	26.26 .10	14.0 1.5	14.32 .08	56.0 −0.2
19.0	48.92 .19	20.2 1.4	58.91 .11	40.6 2.0	26.39 .16	12.6 1.3	14.42 .13	55.9 0.0
28.9	49.14 +.25	18.9 −1.1	59.04 +.15	38.6 +2.1	26.59 +.22	11.4 −1.1	14.57 +.17	56.0 +0.2
June 7.9	49.43 .31	17.9 0.8	59.22 .19	36.4 2.2	26.84 .28	10.4 0.9	14.77 .21	56.3 0.4
17.9	49.76 .36	17.2 0.5	59.43 .23	34.2 2.2	27.15 .33	9.7 0.6	15.00 .25	56.7 0.5
27.9	50.14 .40	16.9 −0.2	59.67 .26	32.0 2.2	27.50 .37	9.2 −0.3	15.27 .28	57.4 0.6
July 7.8	50.56 .42	16.8 +0.1	59.94 .28	29.9 2.1	27.89 .40	9.1 0.0	15.57 .31	58.2 0.9
17.8	50.99 +.44	17.1 +0.4	60.23 +.29	27.9 +1.9	28.30 +.42	9.2 +0.3	15.89 +.33	59.2 +1.0
27.8	51.44 .45	17.7 0.7	60.53 .30	26.0 1.7	28.73 .43	9.7 0.6	16.22 .34	60.2 1.1
Aug. 6.8	51.90 .45	18.6 1.0	60.84 .31	24.4 1.5	29.17 .44	10.4 0.9	16.56 .34	61.4 1.2
16.7	52.35 .44	19.8 1.3	61.14 .30	23.0 1.2	29.61 .44	11.4 1.1	16.90 .34	62.5 1.2
26.7	52.79 .43	21.2 1.5	61.44 .29	22.0 0.9	30.05 .43	12.6 1.3	17.24 .33	63.7 1.2
Sept. 5.7	53.22 +.41	22.9 +1.7	61.73 +.28	21.3 +0.5	30.46 +.41	14.0 +1.5	17.56 +.32	64.9 +1.1
15.6	53.61 .38	24.7 1.9	62.00 .26	21.0 +0.1	30.86 .39	15.5 1.7	17.87 .30	66.0 1.1
25.6	53.98 .35	26.7 2.0	62.25 .24	21.1 −0.2	31.24 .36	17.3 1.8	18.16 .28	67.1 1.0
Oct. 5.6	54.32 .32	28.8 2.1	62.48 .21	21.5 0.5	31.59 .33	19.1 1.9	18.43 .26	68.0 0.9
15.6	54.62 .28	30.9 2.2	62.68 .19	22.2 0.9	31.90 .30	21.0 2.0	18.67 .23	68.9 0.8
25.5	54.88 +.24	33.1 +2.2	62.85 +.16	23.2 −1.1	32.18 +.26	23.0 +2.0	18.89 +.20	69.6 +0.7
Nov. 4.5	55.10 .19	35.3 2.2	63.00 .13	24.4 1.3	32.42 .22	25.0 2.0	19.08 .17	70.3 0.6
14.5	55.27 .14	37.4 2.1	63.11 .10	25.8 1.4	32.61 .17	26.9 1.9	19.24 .14	70.8 0.5
24.5	55.39 .09	39.5 2.0	63.20 .07	27.3 1.5	32.76 .12	28.8 1.9	19.36 .11	71.3 0.5
Dec. 4.4	55.45 +.04	41.4 1.8	63.24 +.03	28.9 1.5	32.85 .07	30.7 1.8	19.45 .07	71.7 0.4
14.4	55.47 −.02	43.2 +1.6	63.26 .00	30.4 −1.4	32.89 +.01	32.3 +1.6	19.50 +.03	72.0 +0.3
24.4	55.43 .07	44.7 1.4	63.24 −.03	31.8 1.3	32.88 −.04	33.8 1.4	19.52 −.01	72.3 0.3
34.4	55.33 −.12	46.0 +1.1	63.19 −.07	33.1 −1.2	32.81 −.09	35.1 +1.1	19.49 −.05	72.4 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.				γ Eridani.				γ Tauri.				ε Tauri.			
	Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m 3 47		° ′ +31 34		h m 3 53		° ′ −13 47		h m 4 13		° ′ +15 22		h m 4 22		° ′ +18 56	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
(Dec. 30.4)	32.97	−.03	30.5	+0.5	9.09	−.04	83.6	−1.5	50.24	.09	35.6	−0.2	30.31	.09	60.4	−0.1
Jan. 9.3	32.92	.07	30.9	0.4	9.03	.06	85.0	1.3	50.22	−.04	35.3	0.2	30.29	−.04	60.3	0.1
19.3	32.83	.11	31.2	+0.2	8.94	.11	86.2	1.1	50.15	.08	35.1	0.2	30.23	.08	60.2	0.1
29.3	32.70	.14	31.4	0.0	8.82	.13	87.1	0.8	50.06	.11	34.8	0.3	30.14	.11	60.1	0.2
Feb. 8.3	32.54	.16	31.3	−0.2	8.67	.15	87.8	0.5	49.93	.14	34.5	0.3	30.02	.14	59.9	0.2
18.2	32.37	−.18	31.0	−0.4	8.51	−.16	88.2	−0.2	49.78	−.15	34.2	−0.3	29.87	−.16	59.7	−0.2
28.2	32.19	.18	30.6	0.5	8.34	.17	88.3	+0.1	49.62	.16	33.9	0.3	29.70	.16	59.4	0.3
Mar. 10.2	32.01	.17	30.0	0.7	8.18	.16	88.0	0.4	49.46	.15	33.6	0.3	29.54	.16	59.1	0.3
20.2	31.85	.15	29.2	0.8	8.03	.14	87.5	0.7	49.31	.14	33.4	0.2	29.38	.15	58.8	0.3
30.1	31.72	.12	28.4	0.8	7.89	.12	86.7	0.9	49.18	.12	33.2	0.2	29.24	.13	58.5	0.3
Apr. 9.1	31.62	−.09	27.6	−0.9	7.78	−.09	85.6	+1.2	49.07	−.09	33.0	−0.1	29.13	−.10	58.3	−0.2
19.1	31.57	−.03	26.7	0.8	7.71	.06	84.3	1.5	49.00	.06	33.0	0.0	29.05	.06	58.1	0.2
29.0	31.56	+.02	25.9	0.7	7.68	−.01	82.7	1.7	48.98	−.01	33.0	+0.1	29.02	−.01	57.9	−0.1
May 9.0	31.61	.07	25.2	0.6	7.70	+.04	80.9	1.9	48.99	+.04	33.2	0.3	29.03	+.04	57.9	+0.1
19.0	31.71	.13	24.6	0.5	7.76	.09	78.9	2.1	49.06	.09	33.6	0.4	29.09	.09	58.0	0.2
29.0	31.86	+.18	24.3	−0.3	7.87	+.13	76.7	+2.2	49.17	+.13	34.1	+0.6	29.19	+.13	58.3	+0.3
June 7.9	32.06	.22	24.1	−0.1	8.02	.17	74.4	2.3	49.33	.18	34.7	0.7	29.34	.17	58.7	0.5
17.9	32.31	.26	24.1	+0.1	8.21	.21	72.1	2.3	49.53	.22	35.5	0.9	29.54	.21	59.2	0.6
27.9	32.59	.29	24.3	0.2	8.44	.24	69.8	2.3	49.76	.25	36.4	1.0	29.77	.25	59.9	0.7
July 7.9	32.91	.33	24.7	0.5	8.69	.27	67.5	2.2	50.02	.27	37.4	1.1	30.03	.26	60.7	0.8
17.8	33.24	+.35	25.4	+0.7	8.96	+.29	65.4	+2.0	50.30	+.29	38.5	+1.1	30.32	+.30	61.6	+0.9
27.8	33.60	.36	26.2	0.9	9.26	.30	63.5	1.8	50.61	.31	39.6	1.1	30.62	.31	62.5	0.9
Aug. 6.8	33.96	.36	27.1	1.0	9.56	.30	61.8	1.5	50.92	.32	40.7	1.1	30.94	.32	63.5	1.0
16.7	34.32	.36	28.1	1.1	9.87	.30	60.4	1.2	51.24	.32	41.8	1.0	31.27	.32	64.4	0.9
26.7	34.67	.35	29.3	1.2	10.17	.30	59.4	0.8	51.56	.32	42.8	0.9	31.59	.32	65.4	0.9
Sept. 5.7	35.02	+.34	30.5	+1.2	10.47	+.29	58.7	+0.4	51.88	+.31	43.7	+0.8	31.91	+.32	66.2	+0.8
15.7	35.35	.32	31.7	1.2	10.75	.28	58.5	0.0	52.18	.30	44.4	0.7	32.23	.31	67.0	0.7
25.6	35.67	.30	32.9	1.2	11.02	.26	58.6	−0.4	52.47	.29	45.1	0.5	32.53	.30	67.6	0.6
Oct. 5.6	35.96	.26	34.1	1.2	11.27	.24	59.2	0.7	52.75	.27	45.5	0.4	32.82	.29	68.1	0.5
15.6	36.23	.25	35.2	1.1	11.49	.21	60.1	1.0	53.01	.25	45.8	0.2	33.09	.26	68.5	0.4
25.6	36.47	+.23	36.3	+1.1	11.69	+.18	61.3	−1.3	53.24	+.22	46.0	+0.1	33.33	+.24	68.8	+0.2
Nov. 4.5	36.68	.19	37.4	1.0	11.86	.15	62.8	1.6	53.45	.20	46.0	0.0	33.56	.21	69.0	0.1
14.5	36.86	.16	38.4	1.0	12.00	.12	64.5	1.7	53.64	.17	45.9	−0.1	33.75	.18	69.1	+0.1
24.5	37.00	.12	39.4	0.9	12.11	.09	66.3	1.8	53.79	.13	45.8	0.2	33.92	.15	69.1	0.0
Dec. 4.4	37.10	.08	40.2	0.8	12.18	.05	68.1	1.8	53.90	.10	45.6	0.2	34.05	.11	69.1	0.0
14.4	37.16	+.04	41.0	+0.7	12.21	+.02	69.9	−1.8	53.98	+.06	45.3	−0.3	34.14	+.07	69.1	0.0
24.4	37.18	−.01	41.7	0.6	12.21	−.02	71.6	1.7	54.02	+.02	45.0	0.3	34.19	+.03	69.0	−0.1
34.4	37.15	−.05	42.2	+0.5	12.17	−.06	73.2	−1.5	54.02	−.02	44.8	−0.2	34.19	−.01	68.9	−0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	[illegible] Right Ascension.	[illegible] Declination South.	[illegible] Right Ascension.	[illegible] Declination South.	[illegible] Right Ascension.	[illegible] Declination South.	[illegible] Right Ascension.	[illegible] Declination North.
	+ .9	[illegible]	+ .3	−66 [illegible]	+ .50	−32 59	+ .58	−15 15
Dec. 20.4	[illegible]	[illegible]	[illegible]	[illegible]	.72	7.4	35.45	[illegible]
Jan. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.72	7.1	35.47	[illegible]
9.4	[illegible]	[illegible]	[illegible]	[illegible]	.71	7.7	35.44	[illegible]
19.4	[illegible]	[illegible]	[illegible]	[illegible]	.65	[illegible]	35.38	[illegible]
Feb. [illegible]	54.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	35.25	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.36	[illegible]	35.12	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.96	[illegible]
Mar. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.63	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.52	[illegible]	34.46	[illegible]
Apr. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.35	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.25	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.18	[illegible]
May [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.16	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.18	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.25	[illegible]
June [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.37	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.52	6.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.72	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.96	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	36.71	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ. (*Capella.*)		β Orionis. (*Rigel.*)		β Tauri.		Groombridge 966.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m s	° ′ ″	h m s	° ′ ″	h m s	° ′ ″	h m s	° ′ ″
	5 8	+45 53	5 9	− 8 19	5 19	+28 31	5 25	+74 58
	s	″	s	″	s	″	s	″
(Dec. 30.4)	57.74 +.05	39.7 +1.4	30.87 +.02	17.5 −1.6	40.77 +.06	16.7 +0.4	46.51 +.03	39.0 +2.9
Jan. 9.4	57.76 −.01	41.1 1.3	30.88 −.02	19.0 1.5	40.81 +.01	17.2 0.4	46.46 −.13	41.8 2.7
19.4	57.71 .07	42.3 1.2	30.84 .06	20.4 1.3	40.79 −.04	17.6 0.4	46.25 .39	44.4 2.4
29.4	57.61 .13	43.4 1.0	30.76 .10	21.6 1.1	40.73 .08	17.9 0.3	45.88 .43	46.6 2.1
Feb. 8.3	57.45 .17	44.2 0.7	30.65 .13	22.5 0.8	40.62 .12	18.2 0.2	45.38 .55	48.5 1.7
18.3	57.26 −.21	44.8 +0.4	30.51 −.15	23.2 −0.6	40.48 −.15	18.4 +0.1	44.78 −.64	49.9 +1.2
28.3	57.03 .23	45.0 +0.1	30.35 .17	23.6 0.3	40.31 .17	18.5 0.0	44.09 .70	50.8 0.6
Mar. 10.2	56.80 .24	45.0 −0.2	30.17 .17	23.8 −0.1	40.13 .18	18.4 −0.1	43.37 .73	51.2 +0.1
20.2	56.56 .23	44.7 0.5	30.00 .17	23.8 +0.2	39.95 .18	18.2 0.2	42.64 .73	51.0 −0.4
30.2	56.33 .21	44.0 0.7	29.84 .15	23.4 0.5	39.77 .16	17.9 0.3	41.94 .67	50.3 0.9
Apr. 9.2	56.14 −.18	43.2 −1.0	29.69 −.13	22.8 +0.7	39.62 −.14	17.5 −0.4	41.30 −.60	49.1 −1.4
19.1	55.98 .13	42.1 1.2	29.58 .10	22.0 0.9	39.49 .10	17.1 0.5	40.74 .49	47.4 1.8
29.1	55.88 .09	40.8 1.3	29.49 .06	21.0 1.2	39.41 .09	16.6 0.5	40.31 .37	45.4 2.2
May 9.1	55.83 −.03	39.5 1.4	29.45 −.02	19.7 1.4	39.37 −.02	16.1 0.5	40.01 .23	43.1 2.4
19.1	55.84 +.04	38.1 1.4	29.44 +.03	18.3 1.6	39.37 +.03	15.6 0.5	39.86 −.07	40.6 2.6
29.0	55.91 +.10	36.7 −1.3	29.49 +.06	16.6 +1.7	39.43 +.06	15.2 −0.4	39.86 +.06	37.9 −2.7
June 8.0	56.04 .16	35.4 1.3	29.57 .10	14.8 1.8	39.53 .12	14.9 0.3	40.02 .22	35.3 2.6
18.0	56.24 .22	34.2 1.2	29.69 .14	13.0 1.9	39.69 .17	14.6 0.2	40.33 .36	32.7 2.5
27.9	56.48 .27	33.1 1.0	29.86 .18	11.0 1.9	39.88 .21	14.5 −0.1	40.78 .50	30.2 2.4
July 7.9	56.77 .31	32.2 0.8	30.05 .21	9.1 1.9	40.11 .25	14.4 0.0	41.37 .64	27.9 2.2
17.9	57.10 +.35	31.5 −0.6	30.28 +.24	7.2 +1.8	40.38 +.28	14.5 +0.1	42.07 +.75	25.8 −1.9
27.9	57.47 .38	31.0 0.4	30.53 .26	5.5 1.7	40.67 .30	14.7 0.2	42.88 .85	24.0 1.6
Aug. 6.8	57.86 .40	30.7 −0.2	30.80 .28	3.9 1.5	40.98 .32	14.9 0.3	43.77 .93	22.5 1.3
16.8	58.27 .42	30.5 0.0	31.08 .29	2.5 1.2	41.31 .33	15.2 0.3	44.73 .99	21.5 0.9
26.8	58.69 .43	30.6 +0.2	31.38 .29	1.4 0.9	41.65 .34	15.5 0.3	45.74 1.03	20.7 0.5
Sept. 5.8	59.12 +.43	30.9 +0.3	31.67 +.30	0.7 +0.6	41.99 +.34	15.9 +0.3	46.79 +1.05	20.4 −0.1
15.7	59.55 .43	31.3 0.5	31.97 .30	0.3 +0.2	42.34 .35	16.2 0.3	47.85 1.06	20.5 +0.3
25.7	59.97 .42	31.8 0.7	32.26 .29	0.3 −0.2	42.68 .34	16.5 0.3	48.91 1.06	20.9 0.7
Oct. 5.7	60.39 .41	32.6 0.8	32.55 .28	0.6 0.5	43.02 .33	16.9 0.3	49.96 1.05	21.8 1.1
15.6	60.78 .39	33.5 0.9	32.82 .27	1.3 0.8	43.34 .32	17.2 0.3	50.96 .99	23.0 1.4
25.6	61.16 +.38	34.5 +1.1	33.08 +.25	2.3 −1.1	43.66 +.30	17.5 +0.3	51.91 +.91	24.7 +1.8
Nov. 4.6	61.51 .33	35.6 1.2	33.31 .23	3.6 1.4	43.95 .28	17.8 0.3	52.79 .83	26.6 2.1
14.6	61.82 .30	36.9 1.3	33.53 .20	5.2 1.6	44.22 .25	18.1 0.3	53.57 .73	28.9 2.4
24.5	62.10 .25	38.2 1.4	33.71 .17	6.9 1.7	44.46 .22	18.4 0.3	54.23 .59	31.4 2.6
Dec. 4.5	62.33 .20	39.7 1.4	33.86 .13	8.7 1.8	44.66 .18	18.7 0.4	54.76 .46	34.1 2.8
14.5	62.50 +.15	41.1 +1.5	33.97 +.09	10.5 −1.8	44.82 +.14	19.1 +0.4	55.14 +.30	37.0 +2.9
24.5	62.62 .09	42.6 1.4	34.05 .05	12.2 1.7	44.93 .09	19.5 0.4	55.36 +.14	39.9 2.9
34.4	62.67 +.03	44.0 +1.4	34.08 +.01	13.9 −1.6	45.00 +.04	19.9 +0.4	55.42 −.03	42.7 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.				ε Leporis.				ε Orionis.				α Columbæ.			
	Right Ascension.		Declination South.		Right Ascension.		Declination South.		Right Ascension.		Declination South.		Right Ascension.		Declination South.	
	h m		° ′		h m		° ′		h m		° ′		h m		° ′	
	5 26		− 0 22		5 28		−17 53		5 30		− 1 15		5 35		−34 7	
	s		″		s		″		s		″		s		″	
(Dec. 30.4)	39.92	+.05	30.6	−1.3	7.42	+.03	46.2	−2.2	54.51	+.05	62.1	−1.3	52.57	+.01	44.7	−0.3
Jan. 9.4	39.95	.09	31.8	1.2	7.43	−.03	48.3	2.0	54.54	+.01	63.4	1.2	52.56	−.04	47.5	2.4
19.4	39.93	−.04	32.9	1.0	7.39	.03	50.1	1.7	54.53	−.03	64.5	1.1	52.49	.09	49.9	2.3
29.4	39.87	.08	33.8	0.8	7.31	.10	51.7	1.4	54.47	.07	65.5	0.9	52.38	.13	52.1	1.3
Feb. 8.3	39.78	.11	34.5	0.6	7.19	.13	53.0	1.1	54.37	.11	66.3	0.7	52.22	.17	53.8	1.3
18.3	39.65	−.14	35.1	−0.5	7.04	−.16	54.0	−0.8	54.25	−.14	66.9	−0.5	52.03	−.20	55.1	−1.1
28.3	39.50	.16	35.5	0.3	6.87	.18	54.6	0.3	54.10	.16	67.3	0.3	51.81	.22	56.0	0.7
Mar. 10.3	39.34	.17	35.7	−0.1	6.69	.19	54.9	−0.1	53.93	.17	67.6	−0.1	51.58	.23	56.4	−0.3
20.2	39.17	.16	35.7	+0.1	6.50	.18	54.9	+0.2	53.76	.17	67.6	+0.1	51.34	.23	56.4	+0.3
30.2	39.01	.15	35.6	0.3	6.31	.17	54.5	0.5	53.60	.16	67.4	0.3	51.11	.22	55.9	0.7
Apr. 9.2	38.86	−.13	35.3	+0.4	6.15	−.15	53.8	+0.8	53.45	−.14	67.1	+0.4	50.90	−.20	55.0	+1.1
19.1	38.74	.10	34.8	0.6	6.01	.12	52.8	1.1	53.33	.11	66.6	0.6	50.71	.17	53.7	1.5
29.1	38.65	.07	34.1	0.8	5.90	.09	51.5	1.4	53.24	.07	65.9	0.8	50.55	.14	52.1	1.9
May 9.1	38.60	−.03	33.2	1.0	5.82	.05	49.9	1.7	53.19	−.03	65.0	1.0	50.44	.10	50.0	2.1
19.1	38.59	+.01	32.2	1.1	5.79	−.01	48.1	1.9	53.17	+.01	63.9	1.1	50.37	−.05	47.7	2.3
29.0	38.63	+.05	31.0	+1.2	5.81	+.03	46.1	+2.1	53.20	+.05	62.7	+1.3	50.34	.01	45.1	+2.7
June 8.0	38.70	.09	29.7	1.3	5.86	.08	44.0	2.2	53.27	.09	61.4	1.4	50.37	+.05	42.4	2.7
18.0	38.82	.13	28.3	1.4	5.96	.12	41.7	2.3	53.38	.13	60.0	1.5	50.44	.10	39.5	2.9
28.0	38.97	.17	26.8	1.5	6.10	.16	39.4	2.3	53.53	.17	58.5	1.5	50.56	.14	36.6	2.9
July 7.9	39.16	.20	25.3	1.5	6.28	.19	37.0	2.3	53.72	.20	56.9	1.5	50.72	.18	33.7	2.9
17.9	39.38	+.23	23.8	+1.4	6.46	+.22	34.8	+2.2	53.93	+.23	55.4	+1.5	50.92	+.22	31.0	+2.7
27.9	39.62	.25	22.4	1.3	6.72	.25	32.7	2.0	54.17	.25	54.0	1.4	51.15	.25	28.4	2.6
Aug. 6.8	39.88	.27	21.1	1.2	6.98	.27	30.9	1.7	54.43	.27	52.6	1.3	51.42	.28	26.1	2.3
16.8	40.16	.28	20.0	1.0	7.25	.28	29.3	1.4	54.71	.28	51.5	1.0	51.71	.29	24.2	1.9
26.8	40.45	.29	19.1	0.8	7.54	.29	28.0	1.0	54.99	.28	50.6	0.8	52.01	.31	22.7	1.5
Sept. 5.8	40.75	+.30	18.4	+0.5	7.84	+.30	27.2	+0.6	55.29	+.30	49.9	+0.5	52.33	+.32	21.7	+1.0
15.7	41.05	.30	18.0	+0.2	8.14	.30	26.8	+0.2	55.58	.30	49.5	+0.2	52.66	.33	21.2	+0.5
25.7	41.34	.29	18.0	−0.1	8.44	.30	26.8	−0.2	55.88	.30	49.4	−0.1	52.98	.32	21.3	−0.1
Oct. 5.7	41.63	.29	18.2	0.3	8.73	.29	27.3	0.7	56.17	.29	49.7	0.4	53.30	.32	21.9	0.7
15.7	41.92	.29	18.7	0.6	9.02	.29	28.2	1.1	56.46	.29	50.2	0.7	53.61	.31	23.1	1.4
25.6	42.19	+.27	19.4	−0.9	9.29	+.27	29.6	−1.5	56.73	+.27	51.0	−0.9	53.91	+.30	24.8	−1.9
Nov. 4.6	42.44	.24	20.5	1.1	9.54	.24	31.2	1.8	56.99	.24	52.1	1.1	54.18	.27	27.0	2.3
14.6	42.67	.23	21.7	1.3	9.76	.21	33.2	2.1	57.22	.23	53.3	1.3	54.42	.24	29.5	2.7
24.5	42.88	.19	23.0	1.4	9.96	.18	35.4	2.2	57.43	.19	54.7	1.4	54.63	.18	32.3	2.9
Dec. 4.5	43.05	.16	24.4	1.4	10.12	.14	37.7	2.3	57.60	.16	56.2	1.5	54.78	.14	35.3	3.0
14.5	43.19	+.12	25.8	−1.4	10.24	+.10	40.1	−2.3	57.74	+.12	57.7	−1.5	54.90	+.10	38.3	−3.0
24.5	43.28	.08	27.2	1.3	10.32	.06	42.4	2.2	57.84	.08	59.1	1.4	54.96	+.04	41.3	2.9
34.4	43.34	+.03	28.5	−1.2	10.36	+.02	44.5	−2.0	57.90	+.04	60.5	−1.3	54.98	−.02	44.2	−2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		ν Orionis.		22 Camelop. (H.)		μ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 5 49	° ′ + 7 23	h m 6 1	° ′ +14 46	h m 6 7	° ′ +69 21	h m 6 16	° ′ +22 34
	s	″	s	″	s	″	s	″
Dec. 30.5)	30.66 +.06	21.6 −0.9	36.18 +.09	58.4 −0.5	20.37 +.17	32.3 +2.6	38.13 +.11	9.4 0.0
Jan. 9.5	30.72 +.03	20.8 0.8	36.25 +.05	58.0 0.4	20.48 +.04	34.9 2.5	38.22 .06	9.4 +0.1
19.4	30.72 −.03	20.0 0.7	36.27 .00	57.6 0.3	20.45 −.09	37.4 2.4	38.26 +.01	9.5 0.1
29.4	30.69 .06	19.4 0.6	36.25 −.05	57.3 0.2	20.30 .21	39.8 2.2	38.25 −.04	9.6 0.1
Feb. 8.4	30.61 .10	18.9 0.4	36.18 .09	57.1 0.2	20.04 .31	41.8 1.9	38.19 .06	9.8 0.2
18.4	30.49 −.13	18.5 −0.3	36.07 −.12	57.0 −0.1	19.68 −.40	43.6 +1.8	38.09 −.12	9.9 +0.2
28.3	30.35 .15	18.2 0.2	35.94 .15	56.9 −0.1	19.24 .47	44.9 1.1	37.95 .15	10.1 0.1
Mar. 10.3	30.20 .16	18.1 −0.1	35.78 .16	56.9 0.0	18.75 .51	45.7 0.8	37.79 .17	10.2 0.1
20.3	30.03 .16	18.0 0.0	35.61 .17	56.8 0.0	18.23 .52	46.0 +0.1	37.62 .17	10.3 +0.1
30.3	29.86 .16	18.0 +0.1	35.44 .16	56.8 0.0	17.71 .51	45.8 −0.4	37.45 .17	10.3 0.0
Apr. 9.2	29.71 −.14	18.2 +0.2	35.29 −.14	56.9 0.0	17.21 −.47	45.2 −0.9	37.28 −.15	10.3 0.0
19.2	29.59 .11	18.4 0.3	35.15 .13	56.9 +0.1	16.77 .41	44.0 1.2	37.14 .13	10.2 −0.1
29.2	29.49 .08	18.8 0.4	35.05 .09	57.0 0.1	16.40 .33	42.5 1.7	37.02 .10	10.1 0.1
May 9.2	29.43 −.04	19.3 0.5	34.98 .05	57.2 0.2	16.11 .23	40.7 2.0	36.94 .06	10.0 0.1
19.1	29.40 .00	19.9 0.6	34.95 −.01	57.4 0.2	15.93 .13	38.5 2.2	36.89 −.03	9.8 0.1
29.1	29.42 +.04	20.6 +0.7	34.96 +.03	57.7 +0.3	15.85 −.03	36.2 −2.4	36.90 +.03	9.7 −0.1
June 8.1	29.48 .08	21.4 0.8	35.02 .08	58.1 0.4	15.89 +.09	33.7 2.5	36.94 .07	9.6 −0.1
18.0	29.59 .12	22.3 0.9	35.12 .12	58.5 0.5	16.04 .20	31.3 2.5	37.03 .11	9.6 0.0
28.0	29.73 .16	23.3 1.0	35.25 .16	59.0 0.5	16.29 .31	28.8 2.4	37.16 .15	9.5 0.0
July 8.0	29.90 .19	24.3 1.0	35.42 .19	59.6 0.6	16.65 .41	26.4 2.3	37.33 .19	9.6 +0.1
18.0	30.11 +.22	25.3 +1.0	35.63 +.22	60.1 +0.6	17.10 +.49	24.1 −2.1	37.54 +.22	9.6 +0.1
27.9	30.35 .24	26.3 1.0	35.86 .23	60.7 0.6	17.63 .57	22.1 1.9	37.77 .23	9.7 0.1
Aug. 6.9	30.60 .25	27.2 0.9	36.12 .27	61.2 0.5	18.24 .64	20.3 1.7	38.03 .27	9.8 0.1
16.9	30.87 .28	28.0 0.8	36.40 .28	61.7 0.4	18.91 .69	18.8 1.4	38.31 .28	9.9 +0.1
26.8	31.16 .29	28.6 0.6	36.69 .30	62.1 0.3	19.63 .74	17.5 1.1	38.61 .31	9.9 0.0
Sept. 5.8	31.46 +.30	29.1 +0.4	36.99 +.31	62.4 +0.2	20.38 +.77	16.6 −0.8	38.92 +.32	9.9 0.0
15.8	31.76 .30	29.4 +0.2	37.30 .31	62.6 +0.1	21.17 .79	16.1 −0.4	39.24 .33	9.8 −0.1
25.8	32.06 .30	29.5 −0.1	37.61 .31	62.5 −0.1	21.97 .80	15.9 0.0	39.57 .33	9.7 0.2
Oct. 5.7	32.37 .30	29.3 0.3	37.93 .31	62.4 0.2	22.77 .80	16.0 +0.3	39.90 .33	9.5 0.2
15.7	32.66 .29	28.9 0.5	38.24 .31	62.1 0.4	23.56 .78	16.5 0.7	40.23 .33	9.2 0.3
25.7	32.95 +.29	28.3 −0.7	38.54 +.30	61.6 −0.5	24.33 +.75	17.4 +1.1	40.56 +.32	8.9 −0.3
Nov. 4.7	33.23 .28	27.5 0.8	38.84 .28	61.1 0.6	25.06 .70	18.6 1.4	40.87 .31	8.5 0.4
14.6	33.48 .24	26.6 0.9	39.11 .26	60.4 0.6	25.74 .64	20.2 1.7	41.17 .29	8.1 0.4
24.6	33.71 .22	25.6 1.0	39.36 .24	59.8 0.7	26.34 .56	22.1 2.0	41.45 .26	7.7 0.3
Dec. 4.6	33.91 .19	24.6 1.0	39.58 .21	59.1 0.7	26.86 .47	24.3 2.3	41.70 .23	7.4 0.3
14.5	34.08 +.15	23.5 −1.0	39.77 +.17	58.4 −0.6	27.28 +.36	26.7 +2.5	41.91 +.19	7.2 −0.2
24.5	34.21 .11	22.5 1.0	39.91 .12	57.8 0.6	27.58 .24	29.2 2.6	42.08 .15	7.0 −0.1
34.5	34.29 +.06	21.6 −0.9	40.02 +.08	57.3 −0.5	27.76 +.13	31.7 +2.6	42.20 +.10	6.9 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Argûs. (*Canopus.*)		γ Geminorum.		α Canis Majoris. (*Sirius.*)		ε Canis Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 6 21	° ′ −52 37	h m 6 31	° ′ +16 29	h m 6 40	° ′ −16 34	h m 6 54	° ′ −28 49
	s	″	s	″	s	″	s	″
(Dec. 30.5)	39.55 +.09	71.3 −3.6	40.33 +.13	26.1 −0.5	32.87 +.10	11.9 −2.4	31.52 +.11	38.4 −3.0
Jan. 9.5	39.53 −.05	74.8 3.3	40.43 .08	25.7 0.4	32.94 +.05	14.2 2.3	31.60 +.05	41.3 2.8
19.4	39.44 .12	78.0 3.0	40.48 +.03	25.4 0.3	32.97 .00	16.4 2.1	31.63 .00	44.1 2.6
29.4	39.29 .18	80.9 2.7	40.48 −.02	25.2 0.2	32.95 −.04	18.4 1.8	31.61 −.05	46.6 2.3
Feb. 8.4	39.07 .94	83.4 2.3	40.44 .07	25.1 −0.1	32.89 .09	20.1 1.6	31.53 .10	48.8 2.0
18.4	38.81 −.99	85.5 −1.8	40.35 −.11	25.0 0.0	32.78 −.12	21.6 −1.3	31.41 −.14	50.7 −1.7
28.3	38.50 .32	87.1 1.3	40.22 .14	25.0 0.0	32.64 .15	22.7 0.9	31.25 .17	52.2 1.3
Mar. 10.3	38.16 .35	88.2 0.8	40.08 .16	25.1 0.0	32.48 .17	23.4 0.6	31.07 .19	53.4 0.9
20.3	37.81 .36	88.8 −0.3	39.91 .17	25.1 +0.1	32.29 .18	23.9 −0.3	30.86 .21	54.1 0.5
30.3	37.45 .35	88.8 +0.2	39.74 .16	25.2 0.1	32.11 .18	24.0 0.0	30.65 .21	54.4 −0.1
Apr. 9.2	37.10 −.33	88.4 +0.7	39.58 −.15	25.3 +0.1	31.93 −.17	23.8 +0.3	30.44 −.20	54.3 +0.3
19.2	36.78 .31	87.4 1.2	39.44 .13	25.4 0.1	31.76 .16	23.3 0.6	30.24 .19	53.8 0.7
29.2	36.49 .27	86.0 1.7	39.32 .10	25.5 0.1	31.61 .13	22.5 0.9	30.06 .16	52.9 1.1
May 9.2	36.23 .23	84.1 2.1	39.23 .07	25.6 0.1	31.50 .10	21.5 1.2	29.91 .13	51.6 1.4
19.1	36.03 .18	81.8 2.4	39.18 −.03	25.7 0.1	31.41 .06	20.1 1.4	29.80 .10	50.1 1.7
29.1	35.88 −.12	79.2 +2.7	39.16 +.01	25.9 +0.2	31.37 −.03	18.6 +1.6	29.72 −.06	48.2 +2.0
June 8.1	35.79 −.06	76.3 3.0	39.19 .05	26.1 0.2	31.36 +.01	16.8 1.8	29.68 −.02	46.1 2.2
18.0	35.76 .00	73.2 3.2	39.27 .09	26.4 0.3	31.39 .05	14.9 2.0	29.68 +.02	43.7 2.4
28.0	35.79 +.06	70.0 3.2	39.38 .13	26.7 0.3	31.46 .09	12.9 2.0	29.72 .06	41.3 2.5
July 8.0	35.88 .12	66.8 3.2	39.52 .17	27.0 0.3	31.57 .12	10.9 2.0	29.80 .10	38.7 2.5
18.0	36.03 +.18	63.6 +3.1	39.70 +.20	27.4 +0.3	31.71 +.16	8.8 +2.0	29.92 +.14	36.2 +2.5
27.9	36.24 .23	60.6 2.9	39.92 .23	27.7 0.3	31.88 .19	6.9 1.9	30.08 .18	33.8 2.4
Aug. 6.9	36.49 .28	57.8 2.6	40.15 .25	28.0 0.3	32.09 .22	5.1 1.7	30.28 .21	31.5 2.2
16.9	36.79 .32	55.3 2.2	40.41 .27	28.2 0.2	32.31 .24	3.5 1.4	30.50 .24	29.4 1.9
26.8	37.13 .35	53.3 1.8	40.69 .29	28.4 +0.1	32.56 .26	2.2 1.1	30.75 .26	27.7 1.5
Sept. 5.8	37.50 +.38	51.8 +1.2	40.98 +.30	28.5 0.0	32.83 +.28	1.3 +0.7	31.02 +.28	26.4 +1.1
15.8	37.89 .40	50.9 +0.6	41.29 .31	28.4 −0.1	33.11 .29	0.8 +0.3	31.31 .30	25.5 0.6
25.8	38.30 .41	50.6 0.0	41.60 .32	28.2 0.2	33.41 .30	0.6 −0.1	31.62 .31	25.2 +0.1
Oct. 5.7	38.72 .41	50.9 −0.6	41.92 .32	27.9 0.4	33.71 .30	1.0 0.5	31.93 .32	25.4 −0.4
15.7	39.12 .40	51.9 1.3	42.24 .32	27.4 0.5	34.01 .30	1.7 1.0	32.25 .32	26.1 0.9
25.7	39.52 +.38	53.5 −1.9	42.56 +.31	26.8 −0.6	34.31 +.30	2.9 −1.4	32.58 +.31	27.3 −1.4
Nov. 4.7	39.89 .35	55.7 2.4	42.87 .30	26.2 0.7	34.60 .29	4.5 1.8	32.89 .30	29.0 1.9
14.6	40.22 .31	58.3 2.8	43.16 .29	25.4 0.7	34.88 .27	6.5 2.1	33.19 .28	31.2 2.3
24.6	40.50 .26	61.4 3.2	43.44 .26	24.7 0.7	35.14 .24	8.6 2.3	33.46 .26	33.7 2.6
Dec. 4.6	40.74 .20	64.8 3.4	43.69 .23	23.9 0.7	35.36 .21	11.0 2.4	33.70 .22	36.5 2.9
14.5	40.90 +.13	68.3 −3.6	43.91 +.20	23.2 −0.6	35.56 +.17	13.5 −2.5	33.91 +.18	39.4 −3.0
24.5	41.00 +.06	71.9 3.6	44.08 .15	22.6 0.5	35.71 .13	16.0 2.5	34.07 .14	42.4 3.0
34.5	41.03 −.01	75.5 −3.5	44.22 +.11	22.1 −0.4	35.82 +.09	18.5 −2.4	34.18 +.09	45.5 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzi vii. 67.		α^2 Geminorum. (*Castor.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 4	−26° 13′	h m 7 13	+22° 10′	h m 7 19	+68° 40′	h m 7 27	+32° 7′
	s	″	s	″	s	″	s	″
(Dec. 30.5)	8.81 +.12	27.7 −2.9	52.79 +.17	36.6 −0.2	61.84 +.35	50.7 +2.4	55.94 +.39	11.4 +0.3
Jan. 9.5	8.91 .07	30.5 2.8	52.94 .12	36.5 −0.1	62.13 .23	53.1 2.5	56.12 .15	11.8 0.5
19.5	8.95 +.02	33.3 2.8	53.04 .07	36.4 0.0	62.30 +.10	55.6 2.5	56.24 .09	12.3 0.6
29.5	8.94 −.03	35.8 2.3	53.09 +.03	36.5 +0.1	62.33 −.03	58.1 2.5	56.30 +.03	13.0 0.7
Feb. 8.4	8.88 .06	38.0 2.0	53.07 −.03	36.7 0.2	62.24 .15	60.6 2.4	56.31 −.03	13.7 0.8
18.4	8.77 −.12	39.8 −1.7	53.02 −.06	36.9 +0.3	62.04 −.26	62.9 +2.1	56.25 −.06	14.5 +0.8
28.4	8.62 .16	41.3 1.3	52.92 .12	37.2 0.3	61.73 .35	64.8 1.8	56.15 .12	15.2 0.7
Mar. 10.3	8.45 .18	42.5 1.0	52.79 .15	37.5 0.3	61.34 .42	66.4 1.4	56.01 .15	15.9 0.6
20.3	8.26 .20	43.2 0.6	52.63 .16	37.8 0.3	60.89 .47	67.6 1.0	55.85 .17	16.5 0.5
30.3	8.06 .20	43.6 −0.2	52.46 .17	38.1 0.2	60.40 .49	68.3 +0.5	55.67 .18	17.0 0.4
Apr. 9.3	7.85 −.20	43.6 +0.2	52.29 −.16	38.3 +0.2	59.90 −.49	68.6 0.0	55.49 −.18	17.3 +0.2
19.2	7.66 .19	43.1 0.6	52.13 .15	38.4 +0.1	59.42 .46	68.3 −0.5	55.31 .17	17.4 +0.1
29.2	7.49 .16	42.4 1.0	52.00 .13	38.5 0.0	58.98 .41	67.6 1.0	55.15 .15	17.4 −0.1
May 9.2	7.34 .13	41.2 1.3	51.88 .10	38.5 0.0	58.59 .35	66.4 1.4	55.01 .12	17.2 0.3
19.1	7.23 .10	39.8 1.6	51.80 .06	38.5 −0.1	58.28 .27	64.8 1.7	54.91 .08	16.8 0.4
29.1	7.15 −.06	38.0 +1.9	51.76 −.02	38.4 −0.1	58.05 −.18	62.9 −2.0	54.85 −.04	16.4 −0.5
June 8.1	7.10 −.02	36.0 2.1	51.75 +.02	38.3 0.1	57.91 −.06	60.7 2.3	54.83 .00	15.8 0.6
18.1	7.10 +.02	33.8 2.3	51.78 .06	38.2 0.1	57.88 +.02	58.3 2.5	54.85 +.04	15.2 0.7
28.0	7.14 .06	31.5 2.4	51.86 .09	38.0 0.1	57.94 .12	55.8 2.6	54.92 .08	14.5 0.7
July 8.0	7.22 .10	29.1 2.4	51.97 .13	37.9 0.1	58.11 .21	53.2 2.6	55.02 .12	13.7 0.8
18.0	7.33 +.13	26.7 +2.4	52.12 +.16	37.8 −0.2	58.37 +.30	50.5 −2.6	55.16 +.16	12.9 −0.8
28.0	7.48 .17	24.4 2.3	52.30 .19	37.6 0.2	58.72 .39	48.0 2.5	55.34 .20	12.1 0.8
Aug. 6.9	7.66 .20	22.2 2.1	52.50 .22	37.4 0.2	59.15 .47	45.5 2.4	55.56 .23	11.3 0.8
16.9	7.87 .23	20.2 1.8	52.74 .25	37.1 0.3	59.66 .54	43.1 2.2	55.80 .26	10.4 0.8
26.9	8.11 .25	18.6 1.5	53.00 .27	36.8 0.3	60.24 .61	41.0 2.0	56.07 .28	9.6 0.9
Sept. 5.9	8.38 +.27	17.3 +1.1	53.28 +.29	36.4 −0.4	60.87 +.66	39.1 −1.8	56.36 +.30	8.7 −0.9
15.8	8.66 .29	16.4 0.6	53.57 .31	35.9 0.5	61.56 .71	37.4 1.5	56.68 .32	7.8 0.9
25.8	8.96 .30	16.1 +0.1	53.89 .32	35.4 0.6	62.29 .74	36.1 1.2	57.01 .34	6.9 0.9
Oct. 5.8	9.27 .31	16.2 −0.4	54.21 .33	34.7 0.7	63.05 .77	35.1 0.8	57.36 .35	6.1 0.9
15.7	9.59 .32	16.9 0.9	54.55 .34	34.0 0.7	63.83 .78	34.4 −0.4	57.72 .36	5.2 0.9
25.7	9.91 +.32	18.0 −1.4	54.88 +.34	33.2 −0.8	64.61 +.78	34.2 0.0	58.09 +.37	4.4 −0.8
Nov. 4.7	10.22 .31	19.7 1.8	55.22 .33	32.4 0.8	65.39 .76	34.2 +0.4	58.46 .37	3.7 0.7
14.7	10.53 .30	21.8 2.2	55.55 .32	31.6 0.8	66.14 .73	34.9 0.8	58.82 .36	3.1 0.6
24.6	10.80 .26	24.2 2.5	55.87 .30	30.8 0.7	66.84 .66	35.8 1.2	59.17 .34	2.6 0.4
Dec. 4.6	11.05 .23	26.9 2.8	56.16 .28	30.2 0.6	67.49 .61	37.2 1.6	59.50 .31	2.3 −0.2
14.6	11.27 +.19	29.7 −2.9	56.42 +.24	29.6 −0.5	68.06 +.53	38.9 +1.9	59.80 +.28	2.2 0.0
24.6	11.44 .15	32.7 2.9	56.65 .20	29.1 0.4	68.54 .42	40.9 2.2	60.05 .23	2.2 +0.2
34.5	11.57 +.10	35.6 −2.9	56.83 +.16	28.8 −0.2	68.90 +.31	43.2 +2.4	60.26 +.19	2.4 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (*Procyon.*)				β Geminorum. (*Pollux.*)				φ Geminorum.				3 Ursæ Majoris (H.)			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m 7 33		° ′ + 5 29		h m 7 38		° ′ +28 16		h m 7 47		° ′ +27 2		h m 8 2		° ′ +68 46	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
(Dec. 20.5)	49.85	+.17	43.6	−1.4	55.22	+.21	50.0	0.0	6.02	+.21	17.9	−0.1	26.49	+.45	57.2	+2.6
Jan. 9.5	50.00	.13	42.3	1.3	55.40	.16	50.1	+0.2	6.21	.16	17.9	+0.1	26.89	.34	59.4	2.3
19.5	50.11	.09	41.1	1.1	55.53	.10	50.3	0.2	6.35	.11	18.0	0.2	27.16	.21	61.8	2.5
29.5	50.16	+.06	40.1	0.9	55.60	+.04	50.8	0.5	6.43	+.05	18.4	0.4	27.31	+.08	64.3	2.5
Feb. 8.4	50.16	−.00	39.3	0.7	55.62	−.01	51.3	0.5	6.45	.00	18.8	0.5	27.32	−.05	66.9	2.5
18.4	50.12	−.03	38.6	−0.5	55.58	−.03	51.9	+0.6	6.42	−.05	19.4	+0.6	27.21	−.17	69.4	+2.4
28.4	50.03	.10	38.2	0.4	55.49	.11	52.5	0.6	6.35	.10	19.9	0.5	26.99	.27	71.7	2.2
Mar. 10.3	49.92	.12	37.9	0.3	55.37	.14	53.1	0.6	6.23	.13	20.5	0.6	26.67	.36	73.7	1.8
20.3	49.78	.15	37.7	−0.1	55.22	.16	53.7	0.5	6.09	.15	21.1	0.5	26.27	.43	75.3	1.4
30.3	49.62	.16	37.7	0.0	55.05	.17	54.1	0.4	5.92	.17	21.6	0.4	25.81	.47	76.5	1.0
Apr. 9.3	49.46	−.15	37.8	+0.1	54.87	−.17	54.4	+0.3	5.75	−.17	21.9	+0.3	25.33	−.49	77.3	+0.5
19.2	49.31	.14	38.0	0.2	54.70	.16	54.7	+0.3	5.58	.16	22.2	0.3	24.84	.49	77.5	0.0
29.2	49.17	.13	38.4	0.3	54.54	.14	54.7	0.0	5.43	.14	22.3	+0.1	24.37	.45	77.3	−0.5
May 9.2	49.05	.10	38.8	0.4	54.41	.12	54.7	−0.1	5.30	.12	22.3	0.0	23.93	.41	76.6	0.9
19.2	48.96	.07	39.2	0.5	54.31	.09	54.5	0.2	5.19	.09	22.2	−0.1	23.55	.34	75.4	1.3
29.1	48.91	−.04	39.8	+0.6	54.24	−.05	54.2	−0.3	5.12	−.06	22.0	−0.2	23.24	−.27	73.8	−1.7
June 8.1	48.88	−.01	40.4	0.6	54.21	−.01	53.9	0.4	5.09	−.01	21.7	0.3	23.02	.18	71.9	2.1
18.1	48.89	+.02	41.1	0.7	54.22	+.03	53.4	0.5	5.09	+.02	21.4	0.4	22.88	−.09	69.6	2.3
28.0	48.93	.06	41.8	0.7	54.27	.07	52.9	0.5	5.14	.06	20.9	0.5	22.84	+.01	67.2	2.5
July 8.0	49.01	.10	42.6	0.7	54.36	.11	52.4	0.6	5.22	.10	20.4	0.5	22.89	.10	64.6	2.7
18.0	49.12	+.13	43.3	+0.7	54.49	+.14	51.8	−0.6	5.33	+.14	19.9	−0.6	23.04	+.19	61.8	−2.7
28.0	49.27	.16	44.0	0.6	54.65	.18	51.2	0.6	5.49	.18	19.3	0.6	23.28	.28	59.0	2.8
Aug. 6.9	49.44	.18	44.6	0.5	54.84	.21	50.5	0.7	5.67	.20	18.7	0.7	23.60	.37	56.3	2.7
16.9	49.63	.21	45.1	0.4	55.06	.23	49.8	0.7	5.88	.23	18.0	0.7	24.01	.45	53.6	2.6
26.9	49.85	.23	45.4	+0.2	55.31	.26	49.0	0.8	6.12	.25	17.2	0.8	24.50	.52	51.0	2.5
Sept. 5.9	50.09	+.25	45.5	0.0	55.59	+.28	48.2	−0.8	6.39	+.28	16.4	−0.8	25.05	+.59	48.6	−2.3
15.8	50.35	.27	45.4	−0.2	55.88	.30	47.4	0.9	6.68	.30	15.6	0.9	25.67	.65	46.4	2.1
25.8	50.63	.29	45.1	0.4	56.19	.32	46.5	0.9	6.98	.32	14.6	0.9	26.34	.69	44.4	1.8
Oct. 5.8	50.93	.30	44.5	0.7	56.53	.34	45.6	0.9	7.31	.33	13.7	1.0	27.06	.73	42.8	1.5
15.7	51.23	.31	43.7	0.9	56.87	.35	44.6	0.9	7.65	.34	12.7	1.0	27.81	.76	41.5	1.1
25.7	51.54	+.31	42.7	−1.1	57.23	+.36	43.7	−0.9	8.00	+.35	11.7	−1.0	28.59	+.78	40.6	−0.7
Nov. 4.7	51.86	.31	41.4	1.3	57.58	.36	42.8	0.9	8.36	.35	10.7	1.0	29.37	.78	40.0	−0.3
14.7	52.17	.30	40.0	1.5	57.94	.36	42.0	0.8	8.71	.35	9.8	0.9	30.15	.76	40.0	+0.1
24.6	52.47	.29	38.5	1.6	58.28	.33	41.3	0.6	9.06	.34	8.9	0.8	30.91	.73	40.3	0.6
Dec. 4.6	52.75	.27	36.9	1.6	58.60	.31	40.7	0.5	9.38	.31	8.2	0.6	31.62	.67	41.1	1.0
14.6	53.01	+.24	35.3	−1.6	58.90	+.28	40.3	−0.3	9.68	+.28	7.7	−0.4	32.26	+.60	42.4	+1.4
24.6	53.23	.20	33.8	1.5	59.16	.23	40.1	−0.1	9.95	.24	7.3	−0.2	32.83	.51	44.0	1.8
34.5	53.40	+.16	32.4	−1.4	59.37	+.19	40.0	+0.1	10.17	+.20	7.2	0.0	33.29	+.41	46.0	+2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argûs (ρ)				η Cancri.				ϵ Hydræ.				ι Ursæ Majoris.			
	Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
	h m		° ′		h m		° ′		h m		° ′		h m		° ′	
	8 3		−23 59		8 26		+20 47		8 41		+ 6 48		8 52		+48 26	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
(Dec. 30.6)	5.67	+.18	57.4	−2.9	39.81	+.24	53.2	−0.7	14.29	+.24	17.3	−1.5	3.40	+.35	69.5	+0.7
Jan. 9.5	5.83	.13	60.3	2.8	40.03	.19	52.7	0.5	14.51	.19	15.9	1.4	3.71	.29	70.4	1.0
19.5	5.94	.09	63.2	2.7	40.20	.14	52.3	0.3	14.68	.14	14.6	1.2	3.97	.22	71.5	1.3
29.5	6.00	+.03	65.8	2.5	40.32	.09	52.1	−0.1	14.80	.09	13.5	0.9	4.15	.15	73.0	1.5
Feb. 8.5	6.00	−.02	68.2	2.3	40.38	+.04	52.2	+0.1	14.87	+.04	12.7	0.7	4.26	+.07	74.6	1.7
18.4	5.95	−.07	70.4	−2.0	40.39	−.01	52.4	+0.3	14.89	−.01	12.0	−0.5	4.29	.00	76.3	+1.7
28.4	5.86	.11	72.2	1.6	40.35	.06	52.7	0.4	14.86	.05	11.6	0.3	4.26	−.06	78.1	1.7
Mar. 10.4	5.73	.14	73.7	1.3	40.27	.10	53.1	0.4	14.79	.08	11.3	−0.2	4.16	.12	79.8	1.6
20.4	5.58	.16	74.8	1.0	40.16	.13	53.6	0.5	14.69	.11	11.2	0.0	4.01	.17	81.4	1.5
30.3	5.41	.18	75.6	0.8	40.02	.14	54.1	0.5	14.57	.13	11.3	+0.1	3.82	.20	82.7	1.3
Apr. 9.3	5.22	−.19	76.0	−0.2	39.87	−.15	54.5	+0.4	14.43	−.14	11.5	+0.2	3.61	−.22	83.8	+1.0
19.3	5.04	.18	76.1	+0.2	39.72	.15	55.0	0.4	14.29	.14	11.7	0.2	3.38	.23	84.7	0.7
29.3	4.87	.17	75.8	0.5	39.57	.14	55.3	0.3	14.15	.13	12.0	0.4	3.15	.23	85.1	+0.3
May 9.2	4.71	.15	75.1	0.8	39.44	.12	55.6	0.2	14.02	.12	12.4	0.4	2.93	.21	85.3	0.2
19.2	4.57	.12	74.2	1.1	39.32	.10	55.8	0.2	13.91	.10	12.9	0.5	2.73	.18	85.0	−0.4
29.2	4.46	−.09	72.9	+1.4	39.23	−.07	55.9	+0.1	13.82	−.08	13.4	+0.5	2.56	−.15	84.5	−0.7
June 8.1	4.39	.06	71.4	1.7	39.16	.04	55.9	0.0	13.76	.05	13.9	0.5	2.43	.11	83.6	1.0
18.1	4.34	−.03	69.6	1.9	39.15	−.01	55.8	−0.1	13.72	−.02	14.4	0.5	2.34	.07	82.5	1.3
28.1	4.33	+.01	67.6	2.0	39.15	+.03	55.7	0.1	13.72	+.01	15.0	0.5	2.29	−.02	81.1	1.5
July 8.1	4.35	.04	65.6	2.1	39.19	.06	55.6	0.2	13.74	.04	15.5	0.5	2.29	+.02	79.4	1.7
18.0	4.41	+.08	63.4	+2.1	39.27	+.08	55.3	−0.3	13.79	+.07	16.0	+0.5	2.34	+.07	77.7	−1.9
28.0	4.51	.11	61.3	2.1	39.37	.12	55.0	0.4	13.87	.10	16.5	0.4	2.43	.11	75.7	2.0
Aug. 7.0	4.63	.14	59.2	2.0	39.51	.15	54.6	0.5	13.98	.12	16.8	0.3	2.56	.16	73.7	2.1
17.0	4.79	.17	57.3	1.8	39.67	.18	54.0	0.6	14.12	.15	17.1	+0.2	2.74	.22	71.5	2.2
26.9	4.98	.20	55.7	1.5	39.86	.21	53.4	0.7	14.28	.18	17.2	0.0	2.96	.24	69.3	2.2
Sept. 5.9	5.19	+.23	54.3	+1.2	40.08	+.23	52.6	−0.8	14.47	+.21	17.1	−0.2	3.22	+.26	67.1	−2.2
15.9	5.44	.26	53.3	0.8	40.33	.26	51.8	0.9	14.69	.23	16.8	0.4	3.52	.30	65.0	2.2
25.8	5.71	.28	52.8	+0.3	40.60	.28	50.8	1.0	14.93	.25	16.2	0.6	3.86	.36	62.8	2.1
Oct. 5.8	6.00	.30	52.7	−0.2	40.89	.30	49.6	1.1	15.20	.28	15.5	0.9	4.23	.39	60.8	2.0
15.8	6.31	.31	53.1	0.7	41.20	.32	48.4	1.2	15.49	.30	14.5	1.2	4.64	.42	58.9	1.8
25.8	6.63	+.32	54.0	−1.2	41.53	+.34	47.1	−1.3	15.79	+.31	13.2	−1.3	5.06	+.44	57.2	−1.6
Nov. 4.7	6.96	.33	55.4	1.6	41.87	.34	45.8	1.3	16.11	.32	11.8	1.5	5.51	.45	55.8	1.3
14.7	7.28	.32	57.2	2.0	42.22	.35	44.4	1.3	16.44	.33	10.2	1.6	5.96	.46	54.6	1.0
24.7	7.60	.32	59.4	2.3	42.57	.34	43.1	1.3	16.77	.32	8.5	1.7	6.41	.46	53.7	0.7
Dec. 4.7	7.90	.30	61.9	2.6	42.90	.33	41.9	1.2	17.09	.31	6.8	1.7	6.89	.44	53.2	−0.3
14.6	8.16	+.26	64.7	−2.8	43.21	+.30	40.8	−1.0	17.39	+.29	5.0	−1.7	7.33	+.41	53.0	0.0
24.6	8.40	.21	67.6	2.9	43.50	.27	39.8	0.8	17.66	.26	3.3	1.6	7.72	.37	53.3	+0.4
34.6	8.59	+.17	70.5	−2.9	43.75	+.23	39.1	−0.6	17.90	+.22	1.8	−1.5	8.07	+.33	53.9	+0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ^3 Ursæ Majoris.				κ Cancri.				ι Argûs.				1 Draconis (H.)			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination North.	
	h m	s	° ′	″	h m	s	° ′	″	h m	s	° ′	″	h m	s	° ′	″
	9 1		+67 33		9 2		+11 5		9 14		−58 49		9 22		+81 46	
(Dec. 30.6)		13.29		32.2		4.96		28.3		17.95		48.0		17.10		75.9
			+.55		+1.4		+.26		−1.4		+.39		−3.5		+1.36		+1.6
Jan. 9.6		13.79		33.8		5.20		27.0		18.23		51.6		18.37		77.9
			.45		1.9		.22		1.2		.25		3.7		1.14		2.2
19.6		14.19		35.9		5.40		25.9		18.44		55.4		19.38		80.3
			.34		2.2		.17		1.0		.17		3.8		.87		2.5
29.5		14.47		38.2		5.54		25.0		18.56		59.3		20.10		83.0
			.22		2.4		.12		0.7		+.08		3.8		.58		2.6
Feb. 8.5		14.63		40.7		5.63		24.4		18.60		63.1		20.53		85.9
			+.10		2.5		.07		0.5		.00		3.7		+.97		3.0
18.5		14.67		43.3		5.68		23.9		18.56		66.8		20.64		88.9
			−.08		+2.6		+.09		−0.3		−.08		−3.5		−.04		+3.0
28.4		14.59		45.8		5.67		23.7		18.45		70.3		20.44		91.9
			.13		2.5		−.03		−0.1		.15		3.3		.34		2.9
Mar. 10.4		14.40		48.2		5.62		23.7		18.26		73.4		19.95		94.7
			.23		2.3		.07		+0.1		.21		3.0		.62		2.7
20.4		14.12		50.4		5.54		23.8		18.02		76.2		19.20		97.2
			.31		2.0		.10		0.2		.26		2.6		.85		2.3
30.4		13.77		52.2		5.43		24.0		17.74		78.6		18.24		99.3
			.38		1.6		.12		0.3		.30		2.1		1.05		1.9
Apr. 9.3		13.36		53.6		5.30		24.3		17.41		80.5		17.11		101.0
			−.42		+1.2		−.13		+0.3		−.33		−1.7		−1.20		+1.4
19.3		12.92		54.5		5.17		24.7		17.07		81.9		15.85		102.2
			.44		0.7		.14		0.4		.35		1.2		1.28		0.9
29.3		12.47		55.0		5.03		25.1		16.71		82.9		14.54		102.8
			.44		+0.2		.13		0.4		.36		0.7		1.32		+0.3
May 9.3		12.03		55.0		4.90		25.5		16.35		83.3		13.21		102.8
			.42		−0.3		.12		0.4		.35		−0.2		1.31		−0.2
19.2		11.62		54.5		4.78		25.9		16.00		83.2		11.92		102.3
			.39		0.7		.10		0.4		.34		+0.3		1.25		0.8
29.2		11.25		53.5		4.69		26.3		15.67		82.6		10.71		101.3
			−.34		−1.2		−.08		+0.4		−.32		+0.8		−1.14		−1.3
June 8.2		10.94		52.1		4.62		26.7		15.36		81.5		9.63		99.7
			.28		1.6		.06		0.4		.29		1.3		1.01		1.8
18.1		10.70		50.3		4.57		27.1		15.09		79.9		8.70		97.6
			.20		2.0		.04		0.4		.25		1.7		.84		2.2
28.1		10.53		48.2		4.55		27.4		14.87		78.0		7.96		95.2
			.13		2.3		−.01		0.3		.20		2.1		.64		2.6
July 8.1		10.45		45.8		4.55		27.7		14.69		75.7		7.41		92.4
			−.05		2.5		+.02		0.3		.15		2.4		.43		2.9
18.1		10.44		43.1		4.59		27.9		14.56		73.1		7.09		89.3
			+.03		−2.7		+.05		+0.2		−.10		+2.7		−.21		−3.2
28.0		10.51		40.3		4.65		28.1		14.49		70.3		6.99		86.0
			.12		2.9		.08		+0.1		−.04		2.9		+.01		3.3
Aug. 7.0		10.67		37.4		4.74		28.2		14.48		67.3		7.11		82.6
			.20		2.9		.11		0.0		+.03		2.9		.24		3.4
17.0		10.91		34.4		4.86		28.1		14.54		64.4		7.46		79.1
			.28		3.0		.13		−0.1		.09		2.9		.46		3.5
27.0		11.23		31.4		5.01		27.9		14.67		61.5		8.04		75.7
			.36		3.0		.16		0.3		.16		2.8		.68		3.4
Sept. 5.9		11.62		28.5		5.19		27.5		14.86		58.8		8.83		72.3
			+.43		−2.9		+.19		−0.5		+.23		+2.5		+.89		−3.3
15.9		12.08		25.7		5.39		26.9		15.12		56.5		9.83		69.0
			.49		2.7		.22		0.7		.29		2.2		1.09		3.1
25.9		12.61		23.0		5.63		26.2		15.45		54.5		11.01		65.9
			.56		2.5		.24		0.9		.35		1.7		1.27		2.9
Oct. 5.8		13.20		20.6		5.88		25.2		15.83		53.0		12.37		63.2
			.62		2.3		.27		1.1		.40		1.2		1.43		2.6
15.8		13.85		18.4		6.16		24.0		16.26		52.1		13.88		60.7
			.66		2.0		.29		1.3		.45		+0.6		1.57		2.2
25.8		14.53		16.6		6.47		22.6		16.73		51.8		15.52		58.7
			+.70		−1.6		+.31		−1.4		+.48		0.0		+1.68		−1.8
Nov. 4.8		15.26		15.2		6.79		21.1		17.22		52.2		17.25		57.1
			.73		1.2		.33		1.6		.50		−0.7		1.76		1.5
14.7		15.99		14.2		7.12		19.5		17.73		53.1		19.04		56.0
			.74		0.8		.33		1.7		.51		1.3		1.89		0.8
24.7		16.73		13.6		7.46		17.8		18.24		54.8		20.84		55.5
			.73		−0.3		.33		1.7		.49		1.9		1.79		−0.3
Dec. 4.7		17.46		13.6		7.79		16.0		18.72		57.0		22.62		55.5
			.71		+0.2		.32		1.7		.47		2.5		1.74		+0.3
14.7		18.15		14.1		8.11		14.4		19.17		59.8		24.32		56.1
			+.66		+0.7		+.31		−1.6		+.42		−2.9		+1.63		+0.9
24.6		18.78		15.0		8.40		12.8		19.56		62.9		25.89		57.2
			.59		1.2		.28		1.5		.37		3.3		1.48		1.4
34.6		19.34		16.4		8.66		11.4		19.90		66.4		27.27		58.9
			+.52		+1.6		+.25		−1.3		+.30		−3.7		+1.37		+1.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydræ.		δ Ursæ Majoris.		θ Ursæ Majoris.		ε Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 22	° ′ − 8 12	h m 9 25	° ′ +70 17	h m 9 25	° ′ +52 8	h m 9 39	° ′ +24 15
	s	″	s	″	s	″	s	″
(Dec. 30.6)	26.73 +.26	7.6 −2.4	16.10 +.65	20.9 +1.3	52.33 +.40	73.3 +0.4	54.86 +.31	24.2 −0.9
Jan. 9.6	26.97 .22	9.9 2.3	16.70 .55	22.5 1.7	52.71 .34	74.0 0.9	55.15 .27	23.5 0.6
19.6	27.16 .17	12.1 2.1	17.19 .43	24.4 2.1	53.02 .27	75.2 1.3	55.39 .22	23.0 −0.3
29.5	27.32 .13	14.1 1.9	17.56 .30	26.7 2.4	53.26 .20	76.6 1.6	55.59 .17	22.8 0.0
Feb. 8.5	27.42 .08	16.0 1.7	17.80 .17	29.3 2.6	53.42 .12	78.3 1.8	55.73 .12	22.9 +0.2
18.5	27.47 +.03	17.6 −1.5	17.90 +.03	32.0 +2.7	53.50 +.04	80.2 +1.9	55.82 +.06	23.2 +0.4
28.4	27.47 −.02	19.0 1.2	17.86 −.10	34.6 2.6	53.51 −.03	82.2 2.0	55.85 +.01	23.7 0.6
Mar. 10.4	27.44 .06	20.1 1.0	17.70 .22	37.2 2.5	53.44 .10	84.2 1.9	55.84 −.03	24.4 0.8
20.4	27.36 .09	20.9 0.7	17.43 .32	39.6 2.3	53.32 .15	86.1 1.8	55.78 .07	25.2 0.8
30.4	27.26 .11	21.5 0.5	17.06 .40	41.7 1.9	53.14 .19	87.8 1.6	55.69 .10	26.1 0.8
Apr. 9.3	27.14 −.12	21.9 −0.9	16.62 −.46	43.4 +1.5	52.93 −.23	89.3 +1.3	55.57 −.12	26.9 +0.8
19.3	27.01 .13	22.0 0.0	16.14 .50	44.6 1.0	52.69 .24	90.4 1.0	55.44 .13	27.7 0.7
29.3	26.88 .13	21.9 +0.2	15.63 .51	45.4 +0.5	52.44 .25	91.2 0.6	55.30 .14	28.4 0.6
May 9.3	26.75 .13	21.6 0.4	15.11 .50	45.6 0.0	52.19 .24	91.7 +0.2	55.16 .13	29.0 0.5
19.2	26.63 .12	21.2 0.6	14.62 .47	45.4 −0.5	51.96 .22	91.7 −0.2	55.03 .12	29.4 0.4
29.2	26.52 −.10	20.5 +0.7	14.17 −.43	44.6 −1.0	51.75 −.19	91.3 −0.5	54.91 −.11	29.7 +0.2
June 8.2	26.43 .08	19.7 0.9	13.76 .37	43.4 1.4	51.57 .16	90.6 0.9	54.82 .09	29.8 +0.1
18.1	26.37 .06	18.8 1.0	13.43 .30	41.7 1.9	51.43 .12	89.5 1.2	54.74 .07	29.8 −0.1
28.1	26.32 .03	17.8 1.1	13.17 .22	39.6 2.2	51.33 .08	88.1 1.5	54.69 .04	29.6 0.2
July 8.1	26.30 −.01	16.7 1.1	12.99 .13	37.2 2.5	51.27 −.03	86.5 1.8	54.66 −.01	29.3 0.4
18.1	26.31 +.02	15.5 +1.1	12.90 −.04	34.6 −2.8	51.26 +.01	84.5 −2.0	54.67 +.01	28.8 −0.5
28.0	26.34 .05	14.4 1.1	12.91 +.05	31.7 3.0	51.29 .06	82.4 2.2	54.70 .04	28.2 0.7
Aug. 7.0	26.40 .07	13.3 1.0	13.00 .14	28.6 3.1	51.38 .11	80.1 2.4	54.76 .07	27.4 0.8
17.0	26.49 .10	12.3 0.9	13.18 .23	25.4 3.2	51.51 .15	77.7 2.5	54.85 .10	26.5 1.0
27.0	26.61 .13	11.4 0.7	13.46 .32	22.3 3.2	51.68 .20	75.1 2.5	54.97 .13	25.4 1.2
Sept. 5.9	26.76 +.16	10.8 +0.5	13.83 +.41	19.1 −3.1	51.91 +.24	72.6 −2.5	55.12 +.16	24.2 −1.3
15.9	26.94 .19	10.4 +0.2	14.27 .49	16.0 3.0	52.18 .29	70.0 2.5	55.30 .20	22.8 1.4
25.9	27.14 .22	10.3 −0.1	14.80 .57	13.1 2.8	52.49 .33	67.5 2.5	55.51 .23	21.3 1.6
Oct. 5.8	27.38 .25	10.6 0.4	15.41 .64	10.3 2.8	52.84 .37	65.0 2.4	55.76 .26	19.6 1.7
15.8	27.65 .28	11.2 0.8	16.08 .70	7.8 2.3	53.24 .41	62.7 2.2	56.04 .29	17.9 1.8
25.8	27.93 +.30	12.1 −1.1	16.81 +.75	5.7 −1.9	53.67 +.45	60.6 −2.0	56.34 +.32	16.1 −1.8
Nov. 4.8	28.24 .32	13.4 1.5	17.59 .79	3.9 1.5	54.13 .47	58.7 1.7	56.67 .34	14.2 1.8
14.7	28.57 .33	15.1 1.8	18.40 .82	2.6 1.1	54.61 .49	57.1 1.4	57.02 .35	12.4 1.8
24.7	28.90 .33	17.0 2.0	19.22 .82	1.8 −0.6	55.10 .49	55.9 1.0	57.38 .36	10.6 1.7
Dec. 4.7	29.23 .33	19.1 2.2	20.04 .80	1.5 0.0	55.60 .48	55.1 0.6	57.74 .36	8.9 1.6
14.7	29.54 +.30	21.4 −2.3	20.82 +.76	1.7 +0.5	56.07 +.46	54.6 −0.2	58.10 +.35	7.5 −1.4
24.6	29.84 .28	23.7 2.3	21.56 .70	2.4 1.0	56.52 .43	54.7 +0.2	58.43 .32	6.2 1.1
34.6	30.10 +.25	26.1 −2.3	22.21 +.63	3.7 +1.5	56.92 +.38	55.1 +0.7	58.74 +.29	5.3 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.				α Leonis. (*Regulus.*)				32 Ursæ Majoris.				γ^1 Leonis.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m 9 46		° ′ +26 29		h m 10 2		° ′ +12 28		h m 10 10		° ′ +65 37		h m 10 14		° ′ +20 21	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
(Dec. 30.6)	48.92	+.32	61.1	−0.9	47.90	+.30	47.8	−1.6	27.75	+.61	42.4	+0.7	12.18	+.30	77.5	−1.3
Jan. 9.6	49.21	.28	60.4	0.5	48.19	.27	46.3	1.3	28.32	.54	43.3	1.1	12.48	.29	76.3	1.0
19.6	49.47	.23	60.0	−0.2	48.44	.23	45.1	1.1	28.82	.45	44.7	1.3	12.75	.24	75.4	0.7
29.6	49.67	.18	59.9	+0.1	48.64	.18	44.1	0.8	29.23	.35	46.5	2.0	12.97	.20	74.9	0.4
Feb. 8.5	49.82	.12	60.1	0.3	48.80	.13	43.4	0.6	29.53	.26	48.7	2.3	13.15	.15	74.6	−0.1
18.5	49.92	+.07	60.6	+0.5	48.90	+.08	43.0	−0.3	29.73	+.14	51.1	+2.5	13.27	+.10	74.6	+0.1
28.5	49.96	+.03	61.3	0.7	48.95	+.03	42.8	−0.1	29.81	+.03	53.7	2.6	13.34	+.05	74.9	0.2
Mar. 10.5	49.95	−.02	62.1	0.9	48.96	−.01	42.8	+0.1	29.78	−.08	56.3	2.6	13.36	.00	75.4	0.5
20.4	49.90	.07	63.0	0.8	48.93	.05	43.0	0.3	29.66	.17	58.8	2.4	13.34	−.04	76.0	0.7
30.4	49.81	.10	64.0	0.9	48.86	.08	43.4	0.4	29.45	.25	61.2	2.3	13.28	.07	76.8	0.8
Apr. 9.4	49.70	−.12	64.9	+0.9	48.77	−.10	43.8	+0.5	29.16	−.31	63.2	+1.9	13.19	−.10	77.6	+0.8
19.3	49.56	.14	65.8	0.8	48.66	.11	44.3	0.5	28.83	.35	65.0	1.5	13.09	.11	78.4	0.8
29.3	49.42	.14	66.5	0.7	48.55	.12	44.9	0.5	28.45	.38	66.3	1.1	12.97	.12	79.1	0.7
May 9.3	49.28	.14	67.1	0.6	48.43	.12	45.4	0.5	28.06	.39	67.1	0.8	12.84	.13	79.8	0.6
19.3	49.15	.13	67.6	0.4	48.31	.11	45.9	0.5	27.66	.39	67.5	+0.1	12.72	.12	80.4	0.5
29.2	49.03	−.11	67.9	+0.2	48.20	−.10	46.4	+0.5	27.28	−.37	67.3	−0.4	12.61	−.11	80.9	+0.4
June 8.2	48.92	.09	68.0	0.0	48.11	.08	46.9	0.4	26.93	.34	66.7	0.9	12.50	.10	81.3	0.3
18.2	48.84	.07	68.0	−0.1	48.03	.07	47.2	0.3	26.61	.29	65.6	1.3	12.42	.08	81.4	+0.1
28.2	48.78	.04	67.7	0.3	47.97	.05	47.5	0.3	26.34	.24	64.1	1.7	12.35	.06	81.5	0.0
July 8.1	48.75	−.02	67.3	0.5	47.93	−.03	47.7	0.2	26.13	.18	62.2	2.1	12.30	.04	81.4	−0.2
18.1	48.75	+.01	66.7	−0.7	47.92	.00	47.8	+0.1	25.97	−.12	59.9	−2.4	12.28	−.01	81.1	−0.3
28.1	48.77	.04	66.0	0.8	47.92	+.02	47.8	−0.1	25.89	−.05	57.3	2.7	12.28	+.01	80.7	0.5
Aug. 7.0	48.82	.07	65.1	1.0	47.96	.05	47.7	0.2	25.87	+.01	54.5	2.9	12.30	.04	80.2	0.7
17.0	48.90	.10	64.0	1.1	48.02	.07	47.4	0.3	25.91	.09	51.5	3.1	12.35	.07	79.4	0.8
27.0	49.02	.13	62.7	1.3	48.11	.10	47.0	0.5	26.04	.16	48.3	3.2	12.43	.10	78.5	1.0
Sept. 6.0	49.16	+.16	61.4	−1.5	48.22	+.13	46.4	−0.7	26.23	+.23	45.0	−3.2	12.54	+.13	77.4	−1.2
15.9	49.34	.19	59.8	1.6	48.37	.16	45.6	0.9	26.50	.30	41.8	3.2	12.69	.16	76.1	1.4
25.9	49.55	.23	58.2	1.7	48.55	.19	44.6	1.1	26.83	.37	38.5	3.2	12.86	.19	74.6	1.5
Oct. 5.9	49.79	.26	56.4	1.8	48.76	.23	43.4	1.3	27.24	.44	35.4	3.0	13.07	.23	73.0	1.7
15.9	50.07	.29	54.5	1.9	49.01	.26	41.9	1.5	27.72	.51	32.5	2.8	13.32	.26	71.2	1.8
25.8	50.37	+.32	52.6	−1.9	49.28	+.29	40.3	−1.7	28.26	+.57	29.7	−2.5	13.59	+.29	69.3	−1.9
Nov. 4.8	50.70	.34	50.7	1.9	49.58	.31	38.6	1.8	28.85	.61	27.3	2.2	13.90	.32	67.3	2.0
14.8	51.05	.36	48.8	1.8	49.91	.33	36.7	1.9	29.49	.65	25.3	1.8	14.23	.34	65.3	2.0
24.7	51.42	.37	47.0	1.7	50.24	.34	34.7	1.9	30.15	.67	23.8	1.3	14.57	.35	63.3	2.0
Dec. 4.7	51.78	.37	45.4	1.5	50.59	.34	32.8	1.9	30.84	.68	22.7	0.8	14.93	.36	61.4	1.9
14.7	52.15	+.36	43.9	−1.3	50.93	+.33	30.9	−1.8	31.51	+.66	22.1	−0.5	15.29	+.35	59.6	−1.7
24.7	52.49	.33	42.7	1.1	51.26	.32	29.1	1.7	32.17	.63	22.1	+0.0	15.63	.33	58.0	1.5
34.6	52.81	+.30	41.8	−0.7	51.56	+.29	27.5	−1.5	32.77	+.59	22.6	+0.8	15.96	+.31	56.6	−1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	9 Draconis (H.)				ρ Leonis.				q Argûs.				l Leonis.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination North.	
	h m 10 26		° ′ +76 14		h m 10 27		° ′ + 9 50		h m 10 40		° ′ −59 7		h m 10 43		° ′ +11 5	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
(Dec. 30.6)	15.92	+1.01	58.9	+0.8	17.93	+.32	46.9	−1.8	59.61	+.46	40.1	−2.9	45.19	+.33	59.9	−1.8
Jan. 9.6	16.87	.89	59.9	1.3	18.23	.98	45.2	1.6	60.04	.49	43.2	3.2	45.50	.39	58.2	1.6
19.6	17.70	.76	61.5	1.8	18.49	.94	43.7	1.3	60.41	.33	46.6	3.5	45.78	.98	56.8	1.3
29.6	18.38	.61	63.6	2.3	18.71	.99	42.5	1.1	60.71	.96	50.3	3.7	46.02	.99	55.6	1.0
Feb. 8.5	18.91	.43	66.0	2.9	18.89	.15	41.6	0.8	60.93	.18	54.1	3.8	46.21	.17	54.7	0.7
18.5	19.25	+.25	68.7	+2.8	19.02	+.10	40.9	−0.5	61.08	+.11	57.9	−3.8	46.35	+.12	54.1	−0.5
28.5	19.40	+.06	71.6	2.9	19.10	.05	40.5	−0.3	61.15	+.03	61.6	3.7	46.45	.07	53.7	−0.3
Mar. 10.5	19.37	−.12	74.5	2.9	19.13	+.01	40.4	0.0	61.14	−.04	65.2	3.5	46.50	+.03	53.7	0.0
20.4	19.16	.28	77.4	2.7	19.12	−.03	40.4	+0.2	61.07	.16	68.6	3.2	46.51	−.01	53.8	+0.2
30.4	18.80	.43	80.0	2.5	19.08	.06	40.7	0.3	60.93	.16	71.7	2.9	46.48	.04	54.1	0.4
Apr. 9.4	18.30	−.55	82.3	+2.1	19.01	−.08	41.0	+0.4	60.75	−.21	74.5	−2.6	46.42	−.07	54.5	+0.5
19.4	17.70	.64	84.2	1.7	18.92	.10	41.5	0.5	60.52	.25	76.9	2.2	46.34	.09	55.1	0.6
29.3	17.01	.71	85.7	1.3	18.81	.11	42.0	0.5	60.25	.28	78.8	1.7	46.25	.10	55.7	0.6
May 9.3	16.27	.74	86.6	0.7	18.70	.11	42.6	0.5	59.97	.29	80.3	1.3	46.14	.11	56.3	0.6
19.3	15.52	.75	87.0	+0.1	18.59	.11	43.2	0.5	59.66	.31	81.3	0.8	46.03	.10	56.9	0.6
29.3	14.77	−.73	86.9	−0.4	18.49	−.10	43.7	+0.5	59.35	−.31	81.8	−0.3	45.93	−.10	57.5	+0.6
June 8.2	14.05	.69	86.2	0.9	18.39	.09	44.2	0.5	59.04	.30	81.8	+0.2	45.83	.09	58.0	0.5
18.2	13.39	.65	85.0	1.4	18.30	.08	44.6	0.4	58.74	.29	81.3	0.7	45.74	.08	58.5	0.4
28.2	12.81	.54	83.3	1.9	18.23	.06	45.0	0.4	58.45	.27	80.4	1.2	45.66	.07	58.9	0.3
July 8.1	12.31	.45	81.1	2.3	18.18	.04	45.4	0.3	58.19	.24	79.0	1.6	45.60	.05	59.1	0.2
18.1	11.91	−.34	78.6	−2.7	18.15	−.02	45.6	+0.2	57.96	−.21	77.1	+2.0	45.56	−.03	59.3	+0.1
28.1	11.63	.22	75.7	3.0	18.14	.00	45.7	+0.1	57.77	.16	74.9	2.3	45.53	−.01	59.4	0.0
Aug. 7.1	11.46	−.16	72.6	3.2	18.15	+.02	45.7	−0.1	57.63	.11	72.5	2.5	45.53	+.01	59.3	−0.1
17.0	11.42	+.02	69.2	3.4	18.18	.05	45.6	0.2	57.55	−.05	69.8	2.7	45.55	.03	59.1	0.3
27.0	11.51	.15	65.7	3.5	18.25	.08	45.3	0.4	57.53	+.01	67.1	2.8	45.59	.06	58.7	0.5
Sept. 6.0	11.72	+.28	62.2	−3.6	18.34	+.11	44.8	−0.6	57.58	+.06	64.3	+2.7	45.67	+.09	58.1	−0.7
16.0	12.07	.41	58.6	3.6	18.46	.14	44.1	0.8	57.70	.16	61.7	2.5	45.78	.12	57.3	0.9
25.9	12.54	.54	55.0	3.5	18.62	.17	43.1	1.0	57.89	.23	59.2	2.3	45.91	.15	56.3	1.1
Oct. 5.9	13.14	.66	51.6	3.3	18.80	.21	42.0	1.3	58.16	.30	57.1	1.9	46.09	.19	55.0	1.4
15.9	13.86	.77	48.4	3.0	19.03	.24	40.6	1.5	58.50	.37	55.4	1.4	46.30	.23	53.6	1.6
25.8	14.69	+.88	45.5	−2.7	19.28	+.27	39.0	−1.7	58.90	+.43	54.2	+0.9	46.54	+.26	51.9	−1.8
Nov. 4.8	15.61	.96	43.0	2.3	19.57	.30	37.3	1.8	59.35	.48	53.6	+0.3	46.82	.30	50.1	1.9
14.8	16.61	1.03	40.9	1.9	19.88	.32	35.3	2.0	59.85	.51	53.5	−0.3	47.13	.32	48.1	2.0
24.8	17.67	1.07	39.3	1.4	20.22	.34	33.3	2.0	60.38	.53	54.1	0.9	47.46	.34	46.0	2.1
Dec. 4.7	18.77	1.09	38.2	0.8	20.56	.34	31.3	2.0	60.92	.53	55.4	1.5	47.80	.34	43.9	2.1
14.7	19.86	+1.08	37.7	−0.2	20.90	+.34	29.2	−2.0	61.45	+.53	57.2	−2.1	48.15	+.34	41.8	−2.0
24.7	20.92	1.03	37.8	+0.4	21.23	.33	27.3	1.9	61.95	.49	59.6	2.6	48.48	.33	39.8	1.9
34.6	21.92	+.96	38.5	+1.0	21.55	+.30	25.5	−1.7	62.42	+.45	62.5	−3.1	48.81	+.31	38.0	−1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Majoris.				δ Leonis.				δ Crateris.				τ Leonis.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination North.	
	h m	s	° ′	″	h m	s	° ′	″	h m	s	° ′	″	h m	s	° ′	″
	10 57		+62 18		11 8		+21 5		11 14		−14 12		11 22		+ 3 25	
(Dec. 20.7)		17.26		48.8		32.35		49.2		5.92		33.5		32.81		62.2
		+.59		−0.1		+.25		−1.6		+.33		−2.5		+.23		−2.1
Jan. 9.7		17.82		49.0		32.68		47.7		6.24		36.0		33.13		60.1
		.54		+0.5		.22		1.3		.30		2.5		.31		2.0
19.6		18.33		49.7		32.99		46.6		6.53		38.4		33.42		58.2
		.48		1.0		.29		1.0		.27		2.4		.28		1.8
29.6		18.77		51.0		33.26		45.8		6.78		40.8		33.68		56.6
		.40		1.5		.25		0.6		.23		2.3		.24		1.5
Feb. 8.6		19.13		52.7		33.48		45.4		6.99		43.1		33.90		55.2
		.31		1.9		.29		−0.2		.19		2.2		.29		1.3
18.5		19.40		54.8		33.66		45.3		7.16		45.2		34.08		54.0
		+.22		+2.2		+.15		+0.1		+.14		−2.0		+.15		−1.0
28.5		19.57		57.2		33.78		45.5		7.28		47.1		34.21		53.2
		.12		2.5		.10		0.4		.10		1.8		.11		0.7
Mar. 10.5		19.65		59.7		33.86		46.0		7.35		48.7		34.30		52.6
		+.03		2.6		.05		0.6		.06		1.5		.07		0.5
20.5		19.63		62.3		33.90		46.9		7.39		50.1		34.35		52.3
		−.06		2.6		+.01		0.8		+.02		1.3		+.03		−0.2
30.4		19.53		64.9		33.89		47.6		7.39		51.2		34.36		52.1
		.14		2.5		−.02		0.9		−.02		1.0		.00		0.8
Apr. 9.4		19.36		67.3		33.85		48.6		7.35		52.1		34.33		52.2
		−.20		+2.3		−.05		+1.0		−.05		−0.8		−.03		+0.2
19.4		19.13		69.4		33.78		49.7		7.29		52.8		34.29		52.5
		.26		2.0		.06		1.0		.07		0.5		.06		0.3
29.3		18.84		71.2		33.69		50.7		7.22		53.2		34.22		52.8
		.30		1.6		.10		1.0		.08		0.3		.07		0.4
May 9.3		18.53		72.5		33.59		51.6		7.13		53.4		34.14		53.3
		.22		1.2		.11		0.9		.06		−0.1		.08		0.5
19.3		18.20		73.5		33.48		52.5		7.03		53.3		34.05		53.8
		.23		0.7		.11		0.8		.10		+0.1		.09		0.5
29.3		17.87		74.0		33.37		53.2		6.93		53.1		33.96		54.4
		−.23		+0.2		−.11		+0.7		−.10		+0.3		−.09		+0.6
June 8.2		17.54		73.9		33.26		53.7		6.83		52.7		33.86		54.9
		.32		−0.3		.10		0.5		.10		0.5		.09		0.6
18.2		17.23		73.4		33.15		54.1		6.73		52.1		33.77		55.5
		.30		0.7		.10		0.3		.10		0.7		.09		0.5
28.2		16.95		72.5		33.06		54.4		6.64		51.3		33.68		56.0
		.27		1.2		.09		+0.1		.09		0.8		.08		0.5
July 8.2		16.70		71.1		32.98		54.4		6.55		50.5		33.61		56.6
		.23		1.6		.07		−0.1		.06		0.9		.07		0.5
18.1		16.49		69.3		32.91		54.2		6.48		49.5		33.54		57.0
		−.18		−2.0		−.06		−0.3		−.07		+1.0		−.06		+0.4
28.1		16.33		67.1		32.87		53.9		6.42		48.4		33.49		57.4
		.13		2.3		.04		0.5		.05		1.1		.04		0.3
Aug. 7.1		16.23		64.5		32.84		53.3		6.38		47.4		33.45		57.7
		.08		2.7		−.02		0.7		.03		1.1		−.02		0.2
17.0		16.17		61.7		32.84		52.5		6.36		46.3		33.44		57.9
		−.02		2.9		+.01		0.9		−.01		1.0		.00		+0.1
27.0		16.18		58.7		32.86		51.5		6.37		45.3		33.44		57.9
		+.04		3.1		.04		1.1		+.02		0.9		+.02		−0.1
Sept. 6.0		16.25		55.5		32.91		50.3		6.41		44.5		33.48		57.7
		+.10		−3.3		+.07		−1.3		+.05		+0.8		+.05		−0.2
15.9		16.38		52.1		32.99		48.8		6.48		43.8		33.54		57.4
		.17		3.4		.10		1.5		.09		0.6		.06		0.5
25.9		16.59		48.7		33.11		47.2		6.59		43.3		33.64		56.7
		.24		3.4		.14		1.7		.13		+0.3		.12		0.7
Oct. 5.9		16.86		45.4		33.27		45.4		6.73		43.2		33.78		55.9
		.30		3.3		.18		1.9		.17		0.0		.15		1.0
15.9		17.19		42.1		33.46		43.4		6.92		43.3		33.95		54.8
		.37		2.9		.21		2.1		.21		−0.3		.19		1.2
25.9		17.60		38.9		33.69		41.3		7.14		43.8		34.16		53.4
		+.43		−3.0		+.25		−2.2		+.24		−0.7		+.23		−1.5
Nov. 4.8		18.06		36.0		33.96		39.1		7.40		44.7		34.41		51.8
		.49		2.8		.29		2.3		.28		1.0		.27		1.7
14.8		18.58		33.4		34.26		36.8		7.70		45.9		34.70		50.0
		.54		2.4		.32		2.3		.31		1.4		.30		1.9
24.8		19.15		31.1		34.59		34.5		8.02		47.4		35.01		48.0
		.56		2.0		.34		2.3		.33		1.7		.32		2.2
Dec. 4.7		19.74		29.3		34.94		32.2		8.36		49.3		35.34		45.8
		.60		1.5		.35		2.2		.34		2.0		.34		2.2
14.7		20.35		28.1		35.30		30.1		8.70		51.4		35.68		43.6
		+.61		−1.0		+.36		−2.0		+.35		−2.2		+.34		−2.2
24.7		20.96		27.3		35.66		28.2		9.05		53.8		36.02		41.4
		.59		−0.5		.36		1.8		.34		2.4		.34		2.2
34.7		21.54		27.1		36.01		26.6		9.38		56.2		36.35		39.3
		+.57		+0.1		+.34		−1.5		+.32		−2.5		+.33		−2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconis.				υ Leonis.				β Leonis.				γ Ursæ Majoris.			
	Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m		° ′		h m		° ′		h m		° ′		h m		° ′	
	11 25		+69 53		11 31		− 0 14		11 43		+15 9		11 48		+54 16	
	s		″		s		″		s		″		s		″	
(Dec. 30.7)	12.95	+.77	79.9	−0.2	34.83	+.34	39.8	−2.2	42.82	+.35	25.7	−1.9	19.94	+.51	25.1	−1.0
Jan. 9.7	13.70	.72	80.0	+0.4	35.16	.31	41.9	2.1	43.16	.33	23.9	1.7	20.43	.46	24.4	−0.4
19.6	14.39	.65	80.7	1.0	35.45	.28	44.0	1.9	43.47	.30	22.4	1.4	20.90	.44	24.3	+0.2
29.6	15.00	.56	81.9	1.5	35.72	.24	45.8	1.7	43.76	.26	21.1	1.0	21.32	.39	24.7	0.7
Feb. 8.6	15.52	.46	83.7	2.0	35.95	.20	47.4	1.5	44.00	.22	20.3	0.7	21.68	.33	25.7	1.2
18.5	15.92	+.34	85.9	+2.4	36.13	+.16	48.8	−1.2	44.20	+.18	19.8	−0.3	21.98	+.26	27.2	+1.6
28.5	16.20	.22	88.5	2.6	36.27	.12	49.9	0.9	44.36	.14	19.6	0.0	22.21	.19	29.0	2.0
Mar. 10.5	16.36	+.09	91.2	2.8	36.37	.08	50.7	0.7	44.47	.09	19.7	+0.2	22.37	.12	31.2	2.3
20.5	16.39	−.03	94.0	2.8	36.42	+.04	51.2	0.5	44.54	.05	20.1	0.5	22.45	+.05	33.5	2.4
30.4	16.30	.14	96.9	2.7	36.44	.00	51.6	−0.2	44.57	+.01	20.6	0.7	22.46	−.02	36.0	2.5
Apr. 9.4	16.10	−.24	99.5	+2.6	36.43	−.03	51.7	0.0	44.56	−.02	21.4	+0.8	22.41	−.08	38.5	+2.4
19.4	15.81	.33	101.9	2.3	36.39	.05	51.6	+0.1	44.53	.05	22.2	0.9	22.30	.13	40.8	2.2
29.4	15.45	.39	104.0	1.9	36.33	.07	51.4	0.3	44.47	.07	23.1	0.9	22.15	.17	42.9	2.0
May 9.3	15.02	.44	105.7	1.5	36.26	.08	51.1	0.4	44.39	.08	24.1	0.9	21.96	.20	44.8	1.7
19.3	14.56	.47	106.9	1.0	36.17	.09	50.7	0.5	44.31	.09	24.9	0.8	21.74	.22	46.3	1.3
29.3	14.08	−.49	107.7	+0.5	36.08	−.09	50.2	+0.5	44.21	−.10	25.7	+0.7	21.51	−.23	47.4	+0.9
June 8.3	13.59	.48	107.8	−0.1	35.99	.09	49.6	0.6	44.11	.10	26.4	0.6	21.27	.24	48.1	+0.5
18.2	13.11	.47	107.5	0.6	35.90	.09	49.1	0.6	44.01	.10	27.0	0.5	21.03	.24	48.4	0.0
28.2	12.65	.44	106.7	1.1	35.81	.08	48.5	0.6	43.91	.09	27.5	0.4	20.79	.23	48.2	−0.4
July 8.2	12.23	.40	105.3	1.6	35.73	.07	47.9	0.6	43.82	.08	27.7	+0.2	20.58	.21	47.5	0.9
18.1	11.86	−.35	103.5	−2.0	35.66	−.06	47.3	+0.5	43.74	−.07	27.9	0.0	20.38	−.19	46.4	−1.3
28.1	11.54	.29	101.3	2.4	35.60	.05	46.8	0.5	43.67	.06	27.8	−0.1	20.20	.16	44.9	1.7
Aug. 7.1	11.29	.23	98.6	2.8	35.55	.03	46.4	0.4	43.62	.05	27.6	0.3	20.05	.13	43.0	2.1
17.1	11.11	.14	95.7	3.1	35.53	−.01	46.0	0.3	43.58	−.03	27.2	0.5	19.94	.09	40.8	2.4
27.0	11.01	−.06	92.5	3.3	35.53	+.01	45.8	+0.1	43.57	.00	26.5	0.7	19.87	−.05	38.2	2.7
Sept. 6.0	10.99	+.02	89.0	−3.5	35.55	+.04	45.8	−0.1	43.58	+.03	25.7	−1.0	19.85	.00	35.4	−2.9
16.0	11.05	.12	85.5	3.6	35.61	.07	45.9	0.3	43.62	.06	24.6	1.2	19.87	+.05	32.3	3.1
26.0	11.22	.21	81.8	3.7	35.70	.11	46.3	0.5	43.70	.09	23.3	1.4	19.95	.11	29.0	3.3
Oct. 5.9	11.47	.30	78.1	3.6	35.82	.15	47.0	0.8	43.81	.13	21.7	1.6	20.09	.17	25.7	3.4
15.9	11.82	.39	74.5	3.5	35.99	.19	47.9	1.0	43.97	.17	20.0	1.8	20.28	.22	22.3	3.4
25.9	12.26	+.49	71.1	−3.3	36.19	+.22	49.0	−1.3	44.16	+.21	18.0	−2.0	20.54	+.28	18.9	−3.3
Nov. 4.8	12.79	.57	67.9	3.0	36.44	.26	50.5	1.6	44.40	.25	15.9	2.2	20.85	.34	15.6	3.2
14.8	13.41	.64	65.0	2.7	36.71	.29	52.2	1.8	44.67	.29	13.7	2.3	21.22	.39	12.5	3.0
24.8	14.09	.70	62.5	2.3	37.02	.32	54.1	2.0	44.97	.32	11.3	2.3	21.64	.44	9.7	2.7
Dec. 4.8	14.82	.75	60.4	1.8	37.35	.33	56.2	2.1	45.30	.34	9.0	2.3	22.10	.47	7.2	2.3
14.7	15.58	+.77	59.0	−1.2	37.69	+.34	58.4	−2.2	45.65	+.35	6.7	−2.2	22.59	+.49	5.2	−1.8
24.7	16.36	.77	58.0	−0.6	38.03	.34	60.6	2.2	46.00	.35	4.6	2.1	23.09	.50	3.6	1.3
34.7	17.12	+.75	57.7	0.0	38.36	+.33	62.8	−2.2	46.34	+.34	2.6	−1.9	23.59	+.50	2.5	−0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	o Virginis.				4 Draconis (H.)				γ Corvi.				β Chamæleontis.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination South.	
	h m 11 59		° ′ + 9 18		h m 12 7		° ′ +78 11		h m 12 10		° ′ −16 57		h m 12 12		° ′ −78 43	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
(Dec. 30.7)	52.04	+.34	52.8	−2.1	20.86	+1.22	37.9	−0.5	24.45	+.35	28.7	−2.3	9.28	+1.22	25.9	−1.5
Jan. 9.7	52.37	.33	50.8	1.9	22.06	1.17	37.6	+0.1	24.79	.33	31.1	2.4	10.49	1.17	27.6	2.1
19.7	52.69	.30	49.0	1.6	23.21	1.10	38.0	0.7	25.12	.31	33.5	2.4	11.62	1.07	30.0	2.6
29.6	52.98	.27	47.5	1.3	24.26	1.00	39.0	1.3	25.41	.28	35.8	2.3	12.63	.95	32.8	3.0
Feb. 8.6	53.23	.23	46.3	1.0	25.19	.85	40.6	1.8	25.67	.24	38.1	2.2	13.51	.80	36.0	3.4
18.6	53.44	+.19	45.5	−0.7	25.97	+.68	42.8	+2.3	25.89	+.20	40.3	−2.1	14.24	+.64	39.5	−3.5
28.6	53.61	.15	44.9	0.4	26.56	.49	45.3	2.7	26.07	.16	42.3	1.9	14.80	.48	43.3	3.8
Mar. 10.5	53.74	.11	44.7	−0.1	26.96	.29	48.1	2.9	26.21	.12	44.1	1.7	15.19	.31	47.1	3.8
20.5	53.82	.07	44.7	+0.1	27.15	+.09	51.1	3.0	26.31	.08	45.7	1.5	15.41	+.14	51.0	3.9
30.5	53.87	+.03	44.9	0.3	27.14	−.11	54.1	3.0	26.37	.04	47.0	1.2	15.47	−.03	54.9	3.8
Apr. 9.5	53.88	.00	45.4	+0.5	26.93	−.39	57.0	+2.8	26.39	+.01	48.1	−1.0	15.36	−.19	58.6	−3.6
19.4	53.86	−.03	46.0	0.6	26.54	.46	59.8	2.6	26.39	−.02	49.0	0.7	15.09	.34	62.1	3.4
29.4	53.82	.05	46.7	0.7	26.01	.60	62.2	2.3	26.36	.04	49.6	0.5	14.68	.47	65.4	3.1
May 9.4	53.76	.07	47.4	0.7	25.34	.72	64.3	1.9	26.31	.06	50.0	0.3	14.14	.60	68.3	2.7
19.3	53.69	.08	48.2	0.8	24.56	.81	66.0	1.4	26.24	.07	50.3	−0.1	13.49	.70	70.8	2.3
29.3	53.60	−.09	48.9	+0.7	23.72	−.87	67.1	+0.9	26.16	−.08	50.3	+0.1	12.74	−.79	72.9	−1.9
June 8.3	53.51	.09	49.6	0.7	22.82	.90	67.7	+0.3	26.07	.09	50.1	0.3	11.90	.86	74.5	1.4
18.3	53.42	.09	50.2	0.6	21.91	.90	67.7	−0.2	25.98	.10	49.7	0.4	11.01	.91	75.6	0.8
28.2	53.33	.09	50.8	0.5	21.00	.89	67.2	0.8	25.88	.10	49.2	0.6	10.08	.93	76.1	−0.2
July 8.2	53.24	.09	51.2	0.4	20.13	.85	66.1	1.3	25.78	.10	48.5	0.7	9.14	.93	76.1	+0.3
18.2	53.15	−.08	51.5	+0.3	19.30	−.79	64.6	−1.8	25.68	−.09	47.7	+0.8	8.22	−.90	75.6	+0.8
28.1	53.08	.07	51.7	+0.1	18.55	.70	62.5	2.3	25.59	.08	46.8	0.9	7.35	.84	74.5	1.3
Aug. 7.1	53.01	.06	51.8	0.0	17.90	.60	60.0	2.7	25.51	.07	45.9	1.0	6.55	.75	72.9	1.8
17.1	52.97	.04	51.7	−0.2	17.34	.49	57.1	3.1	25.45	.05	44.9	1.0	5.86	.68	70.8	2.2
27.1	52.94	−.02	51.3	0.4	16.91	.37	53.9	3.4	25.40	−.03	43.9	0.9	5.30	.48	68.4	2.6
Sept. 6.0	52.94	+.01	50.8	−0.6	16.61	−.23	50.4	−3.6	25.39	.00	43.0	+0.8	4.91	−.30	65.7	+2.8
16.0	52.96	.04	50.1	0.8	16.45	−.08	46.7	3.8	25.40	+.03	42.2	0.7	4.69	−.11	62.8	2.9
26.0	53.02	.08	49.1	1.1	16.44	+.07	42.9	3.9	25.45	.07	41.6	0.5	4.68	+.09	59.8	2.9
Oct. 6.0	53.12	.12	47.9	1.3	16.59	.24	39.0	3.9	25.54	.11	41.2	+0.3	4.88	.30	56.9	2.8
15.9	53.26	.16	46.5	1.6	16.91	.40	35.2	3.8	25.67	.16	41.1	0.0	5.28	.51	54.1	2.6
25.9	53.44	+.20	44.8	−1.8	17.38	+.56	31.4	−3.6	25.85	+.20	41.3	−0.4	5.89	+.71	51.6	+2.3
Nov. 4.9	53.65	.24	42.9	2.0	18.02	.71	27.9	3.4	26.07	.24	41.8	0.7	6.70	.88	49.5	1.9
14.8	53.91	.28	40.9	2.1	18.81	.86	24.6	3.1	26.34	.28	42.7	1.1	7.66	1.03	47.8	1.4
24.8	54.20	.31	38.7	2.2	19.74	.98	21.8	2.7	26.64	.31	44.0	1.4	8.77	1.15	46.7	0.8
Dec. 4.8	54.52	.33	36.4	2.3	20.78	1.08	19.3	2.2	26.96	.34	45.6	1.7	9.97	1.23	46.2	+0.1
14.8	54.86	+.34	34.1	−2.2	21.90	+1.15	17.5	−1.6	27.31	+.35	47.4	−2.0	11.23	+1.27	46.4	−0.5
24.7	55.21	.34	31.9	2.2	23.08	1.19	16.2	1.0	27.66	.35	49.5	2.2	12.51	1.27	47.2	1.1
34.7	55.55	+.34	29.8	−2.0	24.28	+1.19	15.5	−0.3	28.01	+.35	51.8	−2.3	13.76	+1.22	48.6	−1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Virginis.		α¹ Crucis.		β Corvi.		ε Draconis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 12 14	° ′ − 0 5	h m 12 20	° ′ −62 30	h m 12 28	° ′ −22 48	h m 12 29	° ′ +70 21
	s	″	s	″	s	″	s	″
(Dec. 30.7)	32.27 +.34	2.7 −2.9	44.72 +.69	45.7 −1.7	52.17 +.36	53.2 −2.9	1.98 +.77	39.6 −1.1
Jan. 9.7	32.60 .33	4.8 2.1	45.31 .57	47.7 2.9	52.52 .35	55.4 2.3	2.75 .76	38.9 −0.4
19.7	32.92 .31	6.9 2.0	45.86 .53	50.2 2.7	52.87 .33	57.8 2.4	3.50 .73	38.7 +0.2
29.6	33.22 .30	8.8 1.8	46.37 .47	53.1 3.0	53.18 .30	60.3 2.4	4.21 .67	39.3 0.8
Feb. 8.6	33.48 .24	10.4 1.5	46.81 .41	56.2 3.3	53.46 .26	62.7 2.4	4.84 .59	40.4 1.4
18.6	33.70 +.20	11.8 −1.2	47.19 +.34	59.6 −3.5	53.70 +.22	65.1 −2.3	5.39 +.49	42.1 +1.9
28.6	33.88 .16	12.9 0.9	47.49 .27	63.2 3.6	53.90 .18	67.3 2.2	5.83 .36	44.3 2.3
Mar. 10.5	34.02 .12	13.7 0.7	47.72 .19	66.8 3.6	54.06 .14	69.4 2.0	6.15 .28	46.8 2.6
20.5	34.12 .08	14.2 0.4	47.87 .12	70.4 3.5	54.18 .10	71.3 1.8	6.35 .14	49.6 2.8
30.5	34.18 .04	14.6 −0.2	47.95 +.05	73.9 3.4	54.26 .06	73.0 1.6	6.43 +.06	52.5 2.9
Apr. 9.5	34.21 +.01	14.7 0.0	47.96 −.02	77.2 −3.2	54.31 +.03	74.4 −1.3	6.38 −.09	55.5 +2.8
19.4	34.21 −.01	14.6 +0.2	47.91 .06	80.3 3.0	54.32 .06	75.6 1.1	6.23 .20	58.3 2.7
29.4	34.18 .03	14.3 0.3	47.80 .13	83.1 2.7	54.31 −.03	76.6 0.9	5.98 .29	60.9 2.5
May 9.4	34.14 .05	14.0 0.4	47.64 .18	85.6 2.3	54.27 .05	77.3 0.8	5.65 .37	63.2 2.1
19.3	34.08 .07	13.5 0.5	47.43 .23	87.7 1.9	54.22 .07	77.9 0.4	5.25 .43	65.2 1.7
29.3	34.01 −.08	13.0 +0.5	47.18 −.28	89.4 −1.5	54.15 −.08	78.1 −0.2	4.80 −.47	66.6 +1.2
June 8.3	33.93 .08	12.4 0.6	46.90 .29	90.7 1.0	54.06 .09	78.2 +0.1	4.31 .50	67.6 0.7
18.3	33.84 .09	11.8 0.6	46.60 .31	91.4 −0.5	53.96 .10	78.0 0.3	3.80 .51	68.1 +0.2
28.2	33.75 .09	11.2 0.6	46.27 .33	91.7 0.0	53.86 .11	77.6 0.5	3.28 .51	68.1 −0.3
July 8.2	33.66 .09	10.7 0.6	45.94 .33	91.5 +0.5	53.75 .11	77.1 0.7	2.77 .50	67.5 0.8
18.2	33.57 −.09	10.1 +0.5	45.62 −.32	90.8 +0.9	53.64 −.11	76.3 +0.9	2.28 −.47	66.4 −1.3
28.2	33.49 .07	9.7 0.4	45.30 .32	89.6 1.4	53.53 .10	75.4 1.0	1.82 .44	64.8 1.8
Aug. 7.1	33.41 .08	9.3 0.3	45.01 .27	88.0 1.8	53.44 .09	74.3 1.1	1.41 .38	62.7 2.3
17.1	33.36 .05	9.0 0.2	44.76 .23	86.0 2.1	53.35 .07	73.2 1.2	1.05 .33	60.2 2.7
27.1	33.32 −.03	8.8 +0.1	44.56 .17	83.8 2.4	53.29 .05	72.0 1.1	0.76 .26	57.3 3.0
Sept. 6.0	33.30 .02	8.8 −0.1	44.42 −.10	81.3 +2.6	53.25 −.03	70.9 +1.1	0.53 −.18	54.2 −3.2
16.0	33.31 +.03	8.9 0.3	44.35 −.03	78.7 2.6	53.25 +.01	69.8 1.0	0.39 −.08	50.7 3.5
26.0	33.36 .06	9.3 0.5	44.37 +.06	76.0 2.6	53.28 .05	68.9 0.8	0.34 .09	47.1 3.7
Oct. 6.0	33.44 .10	10.0 0.8	44.47 .15	73.4 2.5	53.35 .10	68.2 0.6	0.39 +.10	43.3 3.8
15.9	33.57 .14	10.9 1.0	44.67 .24	71.0 2.3	53.47 .14	67.7 +0.3	0.53 .20	39.4 3.8
25.9	33.73 +.19	12.0 −1.3	44.96 +.33	69.0 +1.9	53.64 +.19	67.5 0.0	0.79 +.31	35.6 −3.7
Nov. 4.9	33.94 .23	13.4 1.5	45.33 .41	67.3 1.5	53.85 .24	67.6 −0.3	1.15 .41	31.9 3.8
14.9	34.19 .27	15.1 1.8	45.78 .48	66.1 1.0	54.11 .28	68.2 0.7	1.60 .50	28.5 3.3
24.8	34.48 .30	17.0 2.0	46.29 .54	65.4 +0.4	54.40 .31	69.1 1.1	2.16 .59	25.3 3.0
Dec. 4.8	34.79 .32	19.1 2.1	46.86 .58	65.3 −0.2	54.73 .34	70.4 1.5	2.79 .67	22.5 2.5
14.8	35.12 +.34	21.2 −2.2	47.46 +.60	65.8 −0.8	55.08 +.36	72.0 −1.8	3.49 +.72	20.2 −2.0
24.7	35.46 .34	23.4 2.2	48.07 .61	66.9 1.4	55.45 .36	73.9 2.0	4.24 .75	18.4 1.4
34.7	35.80 +.34	25.7 −2.3	48.68 +.59	68.6 −1.9	55.81 +.36	76.0 −2.2	5.01 +.77	17.3 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	22¹ Camelop. (H.)		α Can. Venaticorum.		θ Virginis.		α Virginis. (Spica.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 12 48	° ′ +83 58	h m 12 51	° ′ +38 52	h m 13 4	° ′ — 4 56	h m 13 19	° ′ —10 36
	s	″	s	″	s	″	s	″
(Dec. 20.7)	26.09+2.17	37.9 −1.0	7.46 +.49	51.0 −2.0	30.64 +.34	45.1 −2.2	39.38 +.34	49.0 −2.0
Jan. 9.7	28.26 2.18	37.3 −0.3	7.86 .39	49.2 1.5	30.98 .34	47.2 2.1	39.73 .34	51.1 2.1
19.7	30.45 2.13	37.3 +0.3	8.25 .38	48.0 1.0	31.32 .33	49.3 2.0	40.07 .33	53.2 2.1
29.7	32.54 2.09	37.9 0.9	8.62 .35	47.3 −0.5	31.63 .30	51.3 1.9	40.39 .31	55.3 2.0
Feb. 8.6	34.45 1.79	39.2 1.5	8.96 .38	47.1 +0.1	31.92 .27	53.1 1.7	40.69 .28	57.2 1.9
18.6	36.12+1.52	41.0 +2.0	9.26 +.38	47.5 +0.6	32.18 +.34	54.7 −1.5	40.97 +.25	59.0 −1.7
28.6	37.49 1.29	43.3 2.5	9.51 .33	48.3 1.0	32.41 .21	56.1 1.2	41.20 .23	60.5 1.5
Mar. 10.6	38.51 0.84	46.0 2.8	9.71 .18	49.5 1.4	32.60 .17	57.1 0.9	41.41 .19	61.9 1.2
20.5	39.17 0.46	48.9 3.0	9.86 .13	51.1 1.7	32.75 .13	58.0 0.7	41.57 .15	63.0 1.0
30.5	39.43+0.07	52.0 3.1	9.96 .08	53.0 2.0	32.86 .10	58.6 0.5	41.71 .11	63.9 0.9
Apr. 9.5	39.31−0.31	55.0 +3.0	10.02 +.03	55.1 +2.1	32.94 +.08	58.9 −0.2	41.80 +.08	64.7 −0.6
19.4	38.81 0.67	58.0 2.8	10.03 −.01	57.2 2.1	32.99 .03	59.1 0.0	41.87 .05	65.1 0.4
29.4	37.96 1.00	60.7 2.6	10.00 .05	59.3 2.1	33.01 +.01	59.0 +0.1	41.91 +.03	65.4 −0.3
May 9.4	36.80 1.29	63.1 2.9	9.93 .08	61.3 1.9	33.01 −.01	58.9 0.2	41.92 .00	65.5 0.0
19.4	35.39 1.52	65.1 1.8	9.84 .10	63.2 1.7	32.99 .03	58.6 0.3	41.91 −.02	65.4 +0.1
29.3	33.76−1.71	66.7 +1.3	9.72 −.12	64.8 +1.5	32.94 −.06	58.2 +0.4	41.88 −.04	65.3 +0.2
June 8.3	31.98 1.83	67.7 0.7	9.59 .14	66.1 1.9	32.88 .07	57.7 0.5	41.83 .06	65.0 0.3
18.3	30.09 1.91	68.1 +0.2	9.44 .15	67.1 0.8	32.81 .08	57.2 0.5	41.76 .07	64.7 0.4
28.3	28.15 1.94	68.0 −0.4	9.29 .16	67.8 0.5	32.73 .09	56.6 0.6	41.68 .09	64.2 0.5
July 8.2	26.22 1.91	67.4 0.9	9.13 .16	68.1 +0.1	32.63 .10	56.1 0.6	41.59 .10	63.7 0.5
18.2	24.33−1.84	66.2 −1.4	8.97 −.16	68.0 −0.3	32.54 −.10	55.5 +0.6	41.49 −.10	63.2 +0.6
28.2	22.53 1.73	64.5 1.9	8.82 .15	67.5 0.7	32.43 .10	55.0 0.5	41.38 .11	62.6 0.6
Aug. 7.1	20.86 1.56	62.3 2.4	8.67 .14	66.6 1.0	32.34 .09	54.5 0.5	41.28 .10	62.0 0.6
17.1	19.37 1.39	59.7 2.8	8.54 .12	65.4 1.4	32.25 .08	54.0 0.4	41.18 .09	61.4 0.6
27.1	18.08 1.18	56.7 3.2	8.43 .10	63.8 1.7	32.17 .07	53.7 0.3	41.09 .08	60.8 0.5
Sept. 6.1	17.02− .93	53.4 −3.5	8.35 −.07	61.9 −2.1	32.11 −.05	53.4 +0.2	41.01 −.06	60.3 +0.4
16.0	16.22 .66	49.8 3.7	8.30 −.03	59.7 2.4	32.07 −.03	53.3 0.0	40.96 −.03	60.0 0.3
26.0	15.70 .36	46.0 3.8	8.29 +.01	57.2 2.6	32.07 +.02	53.4 −0.2	40.95 .00	59.7 +0.1
Oct. 6.0	15.49− .06	42.1 3.9	8.32 .06	54.4 2.8	32.11 .06	53.7 0.4	40.97 +.04	59.7 −0.1
16.0	15.59+ .27	38.2 3.9	8.40 .11	51.5 3.0	32.18 .10	54.3 0.7	41.03 .09	59.9 0.3
25.9	16.02+ .59	34.3 −3.8	8.53 +.16	48.4 −3.1	32.30 +.14	55.1 −0.9	41.14 +.13	60.3 −0.6
Nov. 4.9	16.77 .91	30.5 3.6	8.71 .21	45.2 3.2	32.47 .19	56.2 1.2	41.29 .18	61.0 0.8
14.9	17.85 1.22	27.0 3.3	8.95 .26	42.0 3.1	32.68 .23	57.5 1.5	41.49 .22	62.0 1.1
24.8	19.22 1.51	23.9 3.0	9.23 .30	38.9 3.0	32.93 .27	59.1 1.7	41.74 .26	63.3 1.4
Dec. 4.8	20.86 1.76	21.1 2.5	9.55 .34	35.9 2.9	33.22 .30	60.9 1.9	42.02 .30	64.8 1.7
14.8	22.73+1.96	18.8 −2.0	9.92 +.37	33.2 −2.6	33.54 +.33	62.9 −2.0	42.34 +.32	66.6 −1.9
24.8	24.77 2.09	17.1 1.4	10.30 .39	30.8 2.2	33.87 .34	65.0 2.1	42.67 .34	68.5 2.0
34.7	26.91+2.16	16.0 −0.7	10.70 +.40	28.8 −1.8	34.21 +.34	67.1 −2.2	43.02 +.35	70.5 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginis.		η Ursæ Majoris.		η Bootis.		β Centauri.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	13 29	− 0 3	13 43	+49 49	13 49	+18 54	13 56	−59 51
	s	″	s	″	s	″	s	″
(Dec. 30.8)	20.33 +.34	37.7 −2.2	24.34 +.43	53.9 −2.3	40.93 +.34	74.7 −2.4	22.90 +.58	48.1 −0.5
Jan. 9.8	20.67 .34	39.8 2.1	24.78 .44	51.9 1.8	41.28 .34	72.4 2.1	23.49 .59	48.9 1.0
19.7	21.01 .33	41.9 2.0	25.23 .44	50.3 1.2	41.62 .34	70.5 1.8	24.07 .58	50.1 1.5
29.7	21.33 .31	43.8 1.8	25.67 .43	49.4 −0.6	41.96 .33	68.9 1.4	24.65 .58	51.8 1.9
Feb. 8.7	21.63 .30	45.4 1.5	26.08 .46	49.1 0.0	42.28 .31	67.6 1.0	25.19 .52	53.9 2.3
18.7	21.90 +.26	46.8 −1.3	26.47 +.36	49.5 +0.6	42.57 +.28	66.9 −0.6	25.69 +.48	56.3 −2.6
28.6	22.15 .23	47.9 1.0	26.81 .31	50.3 1.2	42.84 .25	66.5 −0.1	26.15 .43	59.0 2.8
Mar. 10.6	22.35 .19	48.7 0.7	27.10 .28	51.8 1.6	43.07 .21	66.6 +0.2	26.56 .38	61.9 2.9
20.6	22.53 .15	49.2 0.4	27.34 .21	53.6 2.0	43.26 .18	67.1 0.6	26.91 .36	64.9 3.0
30.5	22.66 .12	49.5 −0.1	27.52 .15	55.8 2.3	43.42 .14	67.9 0.9	27.19 .28	68.0 3.1
Apr. 9.5	22.77 +.09	49.5 +0.1	27.64 +.09	58.3 +2.5	43.54 +.10	68.9 +1.2	27.42 +.20	71.1 −3.1
19.5	22.84 .06	49.3 0.3	27.70 +.04	60.9 2.6	43.62 .07	70.2 1.4	27.58 .14	74.1 3.0
29.5	22.88 .03	49.0 0.4	27.71 −.01	63.6 2.6	43.68 .04	71.6 1.5	27.69 .08	77.0 2.8
May 9.4	22.90 +.01	48.5 0.5	27.67 .06	66.2 2.5	43.70 +.01	73.1 1.5	27.74 +.03	79.7 2.6
19.4	22.89 −.02	47.9 0.6	27.59 .10	68.6 2.3	43.69 −.05	74.6 1.5	27.73 −.04	82.2 2.4
29.4	22.87 −.04	47.3 +0.6	27.47 −.14	70.8 +2.0	43.66 −.04	76.1 +1.4	27.66 −.09	84.5 −2.1
June 8.3	22.82 .06	46.6 0.7	27.32 .17	72.7 1.7	43.61 .06	77.4 1.3	27.55 .14	86.4 1.7
18.3	22.76 .07	46.0 0.7	27.13 .19	74.2 1.3	43.54 .09	78.6 1.1	27.38 .19	88.0 1.4
28.3	22.68 .08	45.3 0.6	26.93 .21	75.4 0.9	43.45 .10	79.6 0.9	27.17 .23	89.2 1.0
July 8.3	22.59 .09	44.7 0.6	26.71 .22	76.1 +0.5	43.35 .11	80.5 0.7	26.93 .26	90.0 0.6
18.2	22.49 −.10	44.2 +0.5	26.48 −.23	76.3 +0.0	43.23 −.12	81.0 +0.4	26.65 −.28	90.3 −0.1
28.2	22.38 .11	43.7 0.4	26.24 .24	76.1 −0.5	43.11 .13	81.3 +0.2	26.36 .30	90.2 +0.2
Aug. 7.2	22.27 .11	43.3 0.3	26.00 .23	75.4 0.9	42.98 .13	81.4 −0.1	26.05 .32	89.7 0.5
17.2	22.17 .10	43.0 0.2	25.77 .22	74.2 1.4	42.85 .13	81.2 0.3	25.75 .29	88.7 1.0
27.1	22.08 .09	42.9 +0.1	25.56 .20	72.7 1.8	42.73 .11	80.7 0.6	25.47 .27	87.3 1.6
Sept. 6.1	22.00 −.07	42.9 −0.1	25.38 −.17	70.7 −2.2	42.63 −.09	79.9 −0.9	25.22 −.23	85.5 +1.9
16.1	21.94 .04	43.0 0.3	25.22 .13	68.3 2.6	42.54 .07	78.9 1.2	25.02 .17	83.5 2.1
26.0	21.91 −.01	43.4 0.5	25.11 .09	65.6 2.9	42.49 −.04	77.5 1.5	24.88 .10	81.3 2.3
Oct. 6.0	21.92 +.03	44.0 0.7	25.04 −.04	62.5 3.2	42.47 .00	75.9 1.8	24.81 −.03	78.9 2.4
16.0	21.97 .07	44.8 0.9	25.03 +.02	59.3 3.4	42.48 +.04	74.0 2.0	24.82 +.06	76.5 2.3
26.0	22.06 +.12	45.8 −1.2	25.08 +.08	55.8 −3.5	42.55 +.09	71.9 −2.2	24.92 +.15	74.2 +2.2
Nov. 4.9	22.20 .16	47.1 1.4	25.19 .15	52.2 3.6	42.66 .14	69.5 2.4	25.11 .24	72.1 2.0
14.9	22.39 .21	48.7 1.7	25.37 .21	48.6 3.6	42.82 .18	67.0 2.6	25.40 .32	70.2 1.7
24.9	22.62 .25	50.4 1.9	25.61 .27	45.1 3.5	43.03 .23	64.4 2.7	25.76 .40	68.7 1.3
Dec. 4.8	22.89 .28	52.4 2.0	25.91 .33	41.7 3.2	43.28 .27	61.7 2.7	26.20 .47	67.7 0.6
14.8	23.19 +.31	54.5 −2.1	26.27 +.38	38.5 −3.0	43.56 +.30	59.0 −2.6	26.71 +.53	67.1 +0.3
24.8	23.51 .33	56.6 2.1	26.66 .41	35.7 2.6	43.88 .33	56.4 2.5	27.26 .56	67.0 −0.2
34.8	23.85 +.34	58.8 −2.2	27.09 +.43	33.4 −2.1	44.22 +.34	54.0 −2.3	27.83 +.58	67.5 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		α Bootis. (*Arcturus.*)		β Bootis.		ρ Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 14 1	° ′ +64 51	h m 14 10	° ′ +19 43	h m 14 21	° ′ +52 19	h m 14 27	° ′ +30 49
	s	″	s	″	s	″	s	″
(Dec. 30.8)	32.79 +.56	76.5 −2.4	52.01 +.33	31.9 −2.5	37.09 +.41	48.9 −2.7	17.98 +.23	40.2 −2.8
Jan. 9.8	33.37 .59	74.5 1.8	52.35 .34	29.5 2.2	37.52 .44	46.5 2.2	18.33 .35	37.6 2.3
19.8	33.98 .61	73.0 1.1	52.69 .34	27.4 1.9	37.97 .45	44.6 1.6	18.69 .36	35.5 1.8
29.7	34.59 .60	72.3 −0.4	53.03 .33	25.7 1.5	38.42 .45	43.3 1.0	19.04 .35	33.9 1.4
Feb. 8.7	35.18 .57	72.2 +0.2	53.35 .31	24.4 1.1	38.87 .43	42.7 −0.3	19.39 .34	32.8 0.9
18.7	35.73 +.52	72.7 +0.8	53.66 +.29	23.5 −0.7	39.29 +.40	42.7 +0.3	19.73 +.32	32.2 −0.3
28.7	36.23 .46	73.9 1.4	53.93 .26	23.1 −0.2	39.67 .36	43.3 0.9	20.03 .29	32.1 +0.2
Mar. 10.6	36.66 .39	75.6 1.9	54.18 .23	23.1 +0.2	40.02 .32	44.5 1.5	20.30 .25	32.6 0.7
20.6	37.02 .31	77.8 2.4	54.39 .19	23.5 0.6	40.31 .27	46.2 1.9	20.54 .22	33.5 1.1
30.6	37.28 .22	80.4 2.7	54.56 .16	24.3 0.9	40.54 .21	48.3 2.3	20.74 .18	34.8 1.5
Apr. 9.5	37.46 +.13	83.2 +2.9	54.70 +.12	25.3 +1.1	40.72 +.15	50.8 +2.6	20.90 +.14	36.5 +1.9
19.5	37.55 +.05	86.2 3.0	54.80 .09	26.7 1.4	40.84 .09	53.5 2.7	21.02 .10	38.4 2.9
29.5	37.55 −.04	89.2 3.0	54.87 .06	28.2 1.5	40.90 +.03	56.3 2.8	21.10 .07	40.4 2.1
May 9.5	37.47 .12	92.1 2.8	54.91 +.03	29.7 1.6	40.91 −.09	59.1 2.8	21.15 +.06	42.6 2.1
19.4	37.32 .19	94.8 2.6	54.93 .00	31.3 1.5	40.86 .07	61.8 2.6	21.17 .00	44.7 2.1
29.4	37.09 −.25	97.3 +2.3	54.91 −.03	32.8 +1.5	40.77 −.12	64.3 +2.4	21.15 −.03	46.8 +2.0
June 8.4	36.81 .31	99.4 1.9	54.87 .05	34.2 1.4	40.63 .16	66.5 2.1	21.10 .06	48.7 1.8
18.4	36.48 .35	101.1 1.5	54.80 .07	35.5 1.2	40.46 .19	68.5 1.7	21.02 .09	50.4 1.6
28.3	36.11 .38	102.4 1.0	54.72 .09	36.6 1.0	40.25 .22	70.0 1.3	20.92 .11	51.9 1.3
July 8.3	35.71 .41	103.1 +0.5	54.62 .11	37.5 0.8	40.02 .24	71.1 0.9	20.80 .13	53.0 1.0
18.3	35.29 −.42	103.3 0.0	54.50 −.12	38.1 +0.5	39.77 −.26	71.7 +0.4	20.66 −.15	53.9 +0.7
28.2	34.87 .43	103.0 −0.6	54.37 .13	38.5 +0.3	39.50 .27	71.9 −0.1	20.50 .16	54.4 +0.3
Aug. 7.2	34.44 .43	102.2 1.1	54.23 .14	38.6 0.0	39.22 .28	71.6 0.5	20.34 .17	54.5 −0.1
17.2	34.02 .40	100.9 1.5	54.09 .14	38.5 −0.3	38.95 .27	70.8 1.0	20.17 .17	54.2 0.4
27.2	33.63 .38	99.1 2.0	53.96 .13	38.0 0.6	38.68 .26	69.6 1.5	20.01 .16	53.6 0.8
Sept. 6.1	33.27 −.35	96.9 −2.5	53.83 −.11	37.2 −0.9	38.43 −.24	67.8 −1.9	19.85 −.14	52.6 −1.2
16.1	32.96 .29	94.2 2.9	53.73 .09	36.2 1.2	38.21 .20	65.7 2.3	19.71 .12	51.3 1.5
26.1	32.71 .22	91.2 3.2	53.65 .06	34.8 1.5	38.03 .16	63.2 2.7	19.60 .09	49.6 1.9
Oct. 6.1	32.52 .15	87.8 3.5	53.60 −.03	33.2 1.8	37.89 .11	60.3 3.0	19.52 .05	47.5 2.2
16.0	32.41 −.07	84.2 3.7	53.59 +.01	31.3 2.0	37.80 −.05	57.1 3.3	19.49 −.01	45.2 2.5
26.0	32.39 +.02	80.5 −3.8	53.63 +.06	29.1 −2.3	37.78 +.01	53.6 −3.5	19.50 +.04	42.5 −2.7
Nov. 5.0	32.46 .12	76.6 3.9	53.72 .11	26.7 2.5	37.82 .07	50.0 3.7	19.56 .09	39.7 2.9
14.9	32.62 .21	72.8 3.8	53.86 .16	24.1 2.6	37.93 .14	46.3 3.7	19.67 .14	36.7 3.0
24.9	32.88 .30	69.0 3.7	54.04 .21	21.4 2.7	38.11 .21	42.6 3.6	19.84 .19	33.6 3.1
Dec. 4.9	33.23 .39	65.4 3.4	54.27 .25	18.6 2.8	38.35 .28	39.0 3.5	20.06 .24	30.5 3.1
14.9	33.66 +.47	62.1 −3.1	54.54 +.28	15.9 −2.7	38.66 +.33	35.6 −3.2	20.32 +.28	27.4 −3.0
24.8	34.17 .53	59.2 2.7	54.84 .31	13.2 2.6	39.02 .38	32.5 2.9	20.63 .32	24.5 2.8
34.8	34.72 +.58	56.9 −2.1	55.17 +.33	10.6 −2.4	39.43 +.42	29.8 −2.5	20.96 +.34	21.9 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α^1 Centauri (mean.)		ϵ Bootis.		α^1 Libræ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 14 27	° ′ +76 9	h m 14 32	° ′ −60 23	h m 14 40	° ′ +27 30	h m 14 45	° ′ −15 36
	s	″	s	″	s	″	s	″
(Dec. 30.8)	44.06 +.63	22.3 −2.4	26.67 +.56	57.6 0.0	23.67 +.32	45.4 −2.6	3.35 +.33	22.2 −1.5
Jan. 9.8	44.95 .92	20.1 1.9	26.64 .58	57.9 −0.5	24.00 .34	42.9 2.3	3.68 .34	23.8 1.6
19.8	45.90 .97	18.5 1.9	27.23 .59	58.6 1.0	24.35 .35	40.8 1.9	4.03 .36	25.5 1.7
29.7	46.88 .98	17.7 −0.5	27.81 .58	59.8 1.4	24.70 .33	39.0 1.5	4.38 .34	27.2 1.7
Feb. 8.7	47.86 .98	17.5 +0.1	28.38 .55	61.4 1.8	25.04 .34	37.7 1.0	4.71 .33	28.8 1.6
18.7	48.81 +.91	17.9 +0.8	28.92 +.52	63.3 −2.1	25.37 +.32	37.0 −0.5	5.03 +.31	30.4 −1.5
28.7	49.68 .89	19.0 1.4	29.42 .48	65.6 2.4	25.68 .29	36.7 0.0	5.33 .29	31.8 1.3
Mar. 10.6	50.45 .71	20.8 1.9	29.88 .43	68.1 2.6	25.95 .26	37.0 +0.5	5.61 .29	33.1 1.2
20.6	51.10 .58	22.9 2.4	30.29 .38	70.7 2.7	26.19 .23	37.7 0.9	5.85 .23	34.3 1.0
30.6	51.60 .43	25.5 2.8	30.64 .32	73.5 2.8	26.40 .19	38.9 1.3	6.07 .20	35.2 0.8
Apr. 9.6	51.95 +.27	28.5 +3.0	30.93 +.26	76.4 −2.8	26.58 +.15	40.4 +1.6	6.26 +.17	36.0 −0.7
19.5	52.14 +.11	31.5 3.1	31.16 .20	79.2 2.8	26.71 .12	42.1 1.9	6.41 .14	36.6 0.5
29.5	52.17 −.05	34.6 3.1	31.33 .14	82.1 2.7	26.81 .08	44.1 2.0	6.54 .11	37.0 0.4
May 9.5	52.04 .20	37.7 3.0	31.44 .06	84.8 2.6	26.88 .05	46.1 2.1	6.64 .08	37.3 0.2
19.4	51.76 .34	40.6 2.8	31.49 +.02	87.4 2.5	26.91 +.02	48.2 2.0	6.71 .05	37.4 −0.1
29.4	51.35 −.47	43.3 +2.5	31.48 −.04	89.7 −2.3	26.91 −.01	50.2 +1.9	6.75 +.03	37.5 0.0
June 8.4	50.82 .59	45.5 2.1	31.41 .10	91.9 2.2	26.88 .04	52.1 1.8	6.77 .03	37.4 +0.1
18.4	50.18 .68	47.4 1.7	31.28 .15	93.7 1.7	26.82 .07	53.8 1.6	6.75 −.03	37.3 0.2
28.3	49.46 .76	48.9 1.9	31.10 .20	95.2 1.3	26.73 .10	55.3 1.3	6.71 .05	37.1 0.2
July 8.3	48.67 .81	49.8 0.7	30.87 .25	96.3 0.9	26.62 .12	56.5 1.1	6.65 .06	36.9 0.2
18.3	47.83 −.85	50.2 +0.1	30.60 −.29	97.0 −0.5	26.49 −.14	57.4 +0.8	6.56 −.10	36.5 +0.4
28.3	46.97 .87	50.1 −0.4	30.30 .32	97.3 −0.1	26.35 .15	58.0 0.4	6.45 .12	36.1 0.4
Aug. 7.2	46.10 .88	49.4 0.9	29.98 .33	97.1 +0.4	26.19 .16	58.3 +0.1	6.32 .13	35.7 0.5
17.2	45.24 .84	48.2 1.4	29.65 .33	96.5 0.8	26.03 .16	58.2 −0.2	6.19 .13	35.2 0.5
27.2	44.41 .80	46.5 1.9	29.32 .31	95.5 1.2	25.86 .16	57.8 0.6	6.06 .13	34.7 0.5
Sept. 6.1	43.64 −.74	44.3 −2.4	29.02 −.28	94.0 +1.6	25.71 −.15	57.0 −1.0	5.93 −.12	34.2 +0.5
16.1	42.94 .65	41.7 2.8	28.75 .24	92.3 1.9	25.57 .13	55.8 1.3	5.81 .10	33.7 0.4
26.1	42.33 .55	38.8 3.1	28.54 .18	90.2 2.1	25.45 .10	54.3 1.6	5.72 .07	33.3 0.3
Oct. 6.1	41.83 .43	35.5 3.4	28.40 .10	88.0 2.3	25.37 .06	52.5 2.0	5.66 −.04	33.0 0.2
16.0	41.46 .30	31.9 3.7	28.33 −.02	85.6 2.4	25.32 −.03	50.4 2.3	5.64 .00	32.9 +0.1
26.0	41.24 −.15	28.1 −3.8	28.35 +.07	83.3 +2.3	25.32 +.03	48.0 −2.5	5.67 +.05	32.9 −0.1
Nov. 5.0	41.16 +.01	24.2 3.9	28.47 .16	81.0 2.2	25.37 .08	45.3 2.7	5.74 .10	33.1 0.3
15.0	41.25 .17	20.3 3.8	28.68 .25	78.9 2.0	25.47 .13	42.5 2.9	5.87 .15	33.5 0.6
24.9	41.51 .33	16.5 3.7	28.98 .34	77.1 1.6	25.62 .18	39.5 3.0	6.04 .26	34.2 0.9
Dec. 4.9	41.93 .49	12.8 3.5	29.36 .46	75.7 1.2	25.83 .23	36.5 3.0	6.27 .24	35.1 1.1
14.9	42.50 +.65	9.5 −3.2	29.82 +.49	74.7 +0.8	26.08 +.27	33.5 −2.9	6.53 +.28	36.2 −1.2
24.8	43.20 .78	6.5 2.8	30.33 .54	74.1 +0.3	26.37 .30	30.6 2.8	6.83 .31	37.6 1.4
34.8	44.03 +.88	4.0 −2.2	30.89 +.57	74.0 −0.1	26.68 +.33	27.9 −2.5	7.16 +.34	39.1 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 14 50	+74° 34′	h m 14 57	+40° 47′	h m 15 11	− 8° 59′	h m 15 20	+37° 44′
	s	″	s	″	s	″	s	″
(Dec. 30.8)	59.37 +.71	41.4 −2.7	58.86 +.34	58.4 −2.9	20.55 +.36	49.2 −1.6	30.68 +.30	26.3 −3.0
Jan. 9.8	60.13 .69	39.0 2.1	59.22 .36	55.7 2.5	20.86 .32	50.9 1.7	31.00 .34	23.5 2.5
19.8	60.96 .65	37.1 1.5	59.59 .36	53.4 2.0	21.19 .33	52.6 1.7	31.35 .36	21.1 2.2
29.8	61.84 .68	35.9 0.9	59.97 .38	51.7 1.5	21.53 .34	54.2 1.6	31.72 .37	19.2 1.7
Feb. 8.7	62.73 .68	35.3 −0.2	60.35 .37	50.5 0.9	21.86 .33	55.8 1.5	32.08 .36	17.8 1.1
18.7	63.60 +.65	35.5 +0.5	60.72 +.36	49.9 −0.3	22.18 +.31	57.2 −1.3	32.44 +.35	16.9 −0.5
28.7	64.42 .78	36.3 1.1	61.07 .33	49.9 +0.3	22.48 .29	58.4 1.1	32.79 .33	16.7 +0.1
Mar. 10.7	65.17 .70	37.7 1.7	61.39 .30	50.5 0.8	22.77 .27	59.4 0.9	33.11 .31	17.0 0.5
20.6	65.82 .59	39.7 2.2	61.67 .26	51.6 1.3	23.02 .25	60.1 0.7	33.40 .29	17.9 1.1
30.6	66.34 .46	42.1 2.6	61.91 .22	53.2 1.7	23.26 .22	60.7 0.4	33.66 .24	19.3 1.6
Apr. 9.6	66.74 +.32	44.9 +2.9	62.12 +.18	55.1 +2.1	23.46 +.19	61.0 −0.2	33.88 +.20	21.1 +2.0
19.5	66.99 .18	47.9 3.1	62.28 .14	57.4 2.4	23.64 .16	61.1 0.0	34.06 .16	23.2 2.3
29.5	67.10 +.04	51.0 3.1	62.39 .09	59.9 2.5	23.79 .13	61.1 +0.1	34.20 .12	25.6 2.5
May 9.5	67.07 −.10	54.1 3.1	62.46 .05	62.5 2.6	23.91 .10	60.9 0.2	34.30 .08	28.1 2.5
19.5	66.90 .23	57.2 2.9	62.49 +.01	65.1 2.6	24.00 .08	60.6 0.3	34.36 +.04	30.7 2.6
29.4	66.60 −.35	60.0 +2.7	62.48 −.03	67.6 +2.4	24.06 +.05	60.2 +0.4	34.38 .00	33.3 +2.5
June 8.4	66.19 .46	62.5 2.4	62.43 .07	70.0 2.2	24.09 +.02	59.8 0.4	34.37 −.04	35.7 2.3
18.4	65.67 .56	64.7 2.0	62.35 .10	72.1 2.0	24.10 −.01	59.3 0.5	34.31 .07	38.0 2.1
28.4	65.07 .64	66.4 1.5	62.23 .13	74.0 1.7	24.07 .04	58.9 0.5	34.22 .11	39.9 1.8
July 8.3	64.39 .70	67.7 1.0	62.08 .16	75.5 1.3	24.02 .06	58.4 0.5	34.10 .14	41.6 1.5
18.3	63.66 −.75	68.5 +0.5	61.91 −.18	76.6 +0.9	23.94 −.09	57.9 +0.5	33.95 −.17	42.9 +1.1
28.3	62.89 .78	68.7 0.0	61.72 .20	77.3 0.5	23.85 .11	57.5 0.5	33.77 .19	43.9 0.7
Aug. 7.3	62.09 .79	68.4 −0.5	61.51 .21	77.6 +0.1	23.73 .12	57.0 0.4	33.58 .20	44.4 +0.3
17.2	61.30 .79	67.6 1.1	61.29 .22	77.4 −0.4	23.60 .13	56.6 0.4	33.37 .21	44.6 −0.1
27.2	60.52 .76	66.2 1.6	61.07 .21	76.8 0.8	23.46 .14	56.3 0.3	33.15 .21	44.3 0.5
Sept. 6.2	59.78 −.71	64.4 −2.1	60.86 −.20	75.8 −1.2	23.32 −.13	56.0 +0.2	32.94 −.20	43.6 −0.9
16.1	59.09 .65	62.1 2.5	60.67 .18	74.4 1.6	23.19 .12	55.8 +0.1	32.74 .19	42.4 1.4
26.1	58.48 .57	59.4 2.9	60.49 .15	72.5 2.0	23.09 .09	55.6 0.0	32.56 .17	40.8 1.8
Oct. 6.1	57.96 .47	56.3 3.2	60.36 .12	70.3 2.4	23.01 .06	55.7 −0.1	32.41 .13	38.9 2.2
16.1	57.54 .35	52.9 3.5	60.26 .07	67.7 2.7	22.96 −.02	55.8 0.3	32.29 .09	36.6 2.5
26.0	57.25 −.22	49.3 −3.7	60.21 −.02	64.8 −3.0	22.96 +.02	56.2 −0.5	32.23 −.04	33.9 −2.8
Nov. 5.0	57.10 −.08	45.5 3.8	60.22 +.04	61.6 3.2	23.00 .07	56.8 0.7	32.21 +.01	31.0 2.9
15.0	57.10 +.07	41.6 3.9	60.29 .10	58.3 3.4	23.10 .12	57.5 0.9	32.25 .07	27.8 3.2
24.9	57.25 .22	37.7 3.8	60.42 .16	54.9 3.4	23.24 .17	58.5 1.1	32.35 .13	24.5 3.3
Dec. 4.9	57.55 .37	34.0 3.6	60.61 .22	51.4 3.4	23.43 .21	59.7 1.3	32.51 .19	21.2 3.3
14.9	58.00 +.51	30.5 −3.3	60.85 +.27	48.1 −3.3	23.67 +.25	61.1 −1.5	32.73 +.24	17.8 −3.3
24.9	58.58 .64	27.3 2.9	61.14 .31	44.9 3.1	23.94 .28	62.5 1.6	32.99 .28	14.6 3.1
34.8	59.27 +.75	24.6 −2.5	61.47 +.35	42.0 −2.7	24.25 +.31	64.3 −1.7	33.29 +.32	11.6 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ϵ Serpentis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 15 20	° ′ +72 11	h m 15 30	° ′ +27 3	h m 15 39	° ′ + 6 44	h m 15 45	° ′ + 4 47
	s	″	s	″	s	″	s	″
(Dec. 30.9)	51.97 +.56	65.3 −3.0	13.76 +.29	49.9 −2.8	4.90 +.26	71.0 −2.1	34.03 +.27	26.2 −2.1
Jan. 9.8	52.58 .65	62.6 2.5	14.06 .31	47.3 2.5	5.19 .30	68.9 2.0	34.31 .30	26.1 2.0
19.8	53.27 .72	60.3 1.9	14.39 .33	44.9 2.2	5.50 .31	66.9 1.9	34.62 .31	24.2 1.9
29.8	54.02 .76	58.7 1.3	14.72 .34	42.9 1.8	5.82 .32	65.1 1.7	34.94 .32	22.4 1.7
Feb. 8.8	54.79 .77	57.7 −0.6	15.06 .34	41.3 1.3	6.14 .32	63.5 1.4	35.26 .32	20.9 1.4
18.7	55.57 +.76	57.4 +0.1	15.40 +.33	40.3 −0.8	6.46 +.31	62.3 −1.1	35.58 +.31	19.6 −1.1
28.7	56.32 .72	57.8 0.7	15.72 .31	39.8 −0.3	6.76 .30	61.4 0.7	35.88 .30	18.7 0.7
Mar. 10.7	57.01 .66	58.8 1.3	16.02 .29	39.7 +0.2	7.05 .28	60.9 −0.4	36.17 .28	18.2 0.4
20.7	57.64 .58	60.5 1.9	16.30 .26	40.2 0.7	7.32 .26	60.7 0.0	36.44 .26	17.9 −0.1
30.6	58.18 .46	62.6 2.4	16.55 .23	41.2 1.2	7.57 .23	60.9 +0.3	36.69 .24	18.0 +0.2
Apr. 9.6	58.61 +.37	65.2 +2.7	16.77 +.20	42.6 +1.5	7.78 +.21	61.4 +0.6	36.92 +.21	18.5 +0.5
19.6	58.92 .25	68.1 3.0	16.95 .17	44.3 1.8	7.98 .18	62.1 0.9	37.12 .19	19.2 0.8
29.5	59.12 .13	71.2 3.1	17.10 .13	46.2 2.0	8.14 .15	63.1 1.1	37.29 .16	20.0 1.0
May 9.5	59.19 +.01	74.3 3.2	17.22 .10	48.4 2.1	8.28 .12	64.3 1.2	37.43 .13	21.1 1.1
19.5	59.14 −.11	77.5 3.1	17.30 .06	50.6 2.2	8.39 .09	65.5 1.2	37.55 .10	22.3 1.2
29.5	58.98 −.22	80.5 +2.9	17.35 +.03	52.8 +2.2	8.46 +.06	66.8 +1.3	37.63 +.07	23.5 +1.2
June 8.4	58.70 .36	83.3 2.6	17.36 .00	54.9 2.1	8.51 +.03	68.2 1.3	37.68 .04	24.7 1.2
18.4	58.33 .49	85.8 2.3	17.34 −.04	57.0 1.9	8.53 .00	69.4 1.2	37.71 +.01	25.9 1.2
28.4	57.87 .59	87.9 1.9	17.29 .07	58.8 1.7	8.51 −.03	70.6 1.1	37.70 −.00	27.1 1.1
July 8.4	57.33 .67	89.6 1.4	17.21 .10	60.3 1.4	8.46 .06	71.7 1.0	37.66 .05	28.1 1.0
18.3	56.73 −.69	90.8 +1.0	17.09 −.13	61.6 +1.1	8.39 −.09	72.6 +0.9	37.59 −.08	29.0 +0.8
28.3	56.08 .67	91.5 +0.5	16.96 .15	62.6 0.8	8.29 .11	73.4 0.7	37.50 .11	29.8 0.7
Aug. 7.3	55.39 .69	91.7 −0.1	16.80 .16	63.3 0.5	8.17 .13	74.1 0.5	37.38 .13	30.4 0.5
17.2	54.69 .70	91.4 0.6	16.63 .17	63.6 +0.1	8.03 .14	74.5 0.3	37.24 .14	30.8 0.3
27.2	53.99 .66	90.5 1.1	16.45 .18	63.6 −0.2	7.89 .15	74.7 +0.1	37.10 .15	31.1 +0.2
Sept. 6.2	53.30 −.67	89.2 −1.6	16.27 −.17	63.1 −0.6	7.74 −.15	74.7 −0.1	36.95 −.15	31.2 0.0
16.2	52.65 .63	87.3 2.1	16.10 .16	62.3 1.0	7.59 .14	74.5 0.3	36.80 .14	31.1 −0.2
26.1	52.05 .56	85.0 2.5	15.94 .14	61.2 1.3	7.47 .12	74.1 0.6	36.67 .12	30.7 0.5
Oct. 6.1	51.52 .46	82.3 2.9	15.81 .11	59.7 1.7	7.36 .09	73.4 0.8	36.56 .09	30.1 0.7
16.1	51.08 .39	79.2 3.3	15.71 .07	57.8 2.0	7.28 .06	72.5 1.0	36.48 .06	29.3 0.9
26.1	50.74 −.28	75.8 −3.5	15.66 −.03	55.7 −2.3	7.25 −.02	71.4 −1.3	36.44 −.02	28.3 −1.2
Nov. 5.0	50.52 .16	72.1 3.7	15.65 +.02	53.2 2.6	7.25 +.03	70.0 1.5	36.44 +.02	27.0 1.4
15.0	50.43 −.03	68.3 3.8	15.70 .07	50.5 2.8	7.31 .06	68.3 1.7	36.49 .06	25.5 1.6
25.0	50.47 +.11	64.5 3.8	15.80 .12	47.6 2.9	7.41 .12	66.5 1.9	36.59 .12	23.8 1.8
Dec. 4.9	50.65 .24	60.7 3.7	15.95 .17	44.6 3.0	7.57 .18	64.5 2.1	36.74 .17	22.0 1.9
14.9	50.96 +.37	57.0 −3.5	16.15 +.22	41.6 −3.0	7.77 +.23	62.4 −2.2	36.94 +.21	20.0 −2.0
24.9	51.40 .49	53.6 3.2	16.39 .26	38.7 2.9	8.01 .26	60.2 2.2	37.17 .25	17.9 2.1
34.9	51.94 +.60	50.6 −2.8	16.67 +.30	35.8 −2.7	8.28 +.27	58.0 −2.1	37.44 +.29	15.8 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris. Right Ascension.	ζ Ursæ Minoris. Declination North.	ε Coronæ Borealis. Right Ascension.	ε Coronæ Borealis. Declination North.	δ Scorpii. Right Ascension.	δ Scorpii. Declination South.	β Scorpii. Right Ascension.	β Scorpii. Declination South.
	h m 15 47	° ' +78 6	h m 15 53	° ' +27 10	h m 15 54	° ' −22 19	h m 15 59	° ' −19 31
	s	"	s	"	s	"	s	"
(Dec. 30.9)	45.23+ .86	41.3 −3.2	13.57 +.27	40.3 −2.9	6.38 +.30	35.5 −0.8	18.77 +.30	9.3 −0.8
Jan. 9.9	45.38 .88	38.4 2.7	13.85 .30	37.5 2.8	6.65 .30	35.3 1.0	19.08 .31	10.3 1.0
19.8	46.28 .94	35.9 2.2	14.16 .30	35.0 2.3	6.90 .31	35.5 1.1	19.40 .30	11.4 1.1
29.8	47.85 1.03	34.1 1.5	14.49 .33	32.9 1.9	7.23 .35	34.6 1.0	19.74 .34	12.6 1.2
Feb. 8.8	48.94 1.09	32.3 0.9	14.82 .35	31.2 1.6	7.58 .35	33.8 1.0	20.09 .34	13.8 1.3
18.7	50.05+1.20	32.3 −0.2	15.16 +.33	30.1 −0.9	8.03 +.35	34.0 −1.1	20.43 +.34	14.9 −1.1
28.7	51.13 1.06	32.4 +0.4	15.49 .32	29.4 −0.4	8.37 .32	33.1 1.0	20.76 .32	16.0 1.0
Mar. 10.7	52.17 1.00	33.2 1.1	15.79 .30	29.3 +0.1	8.69 .32	33.2 1.0	21.08 .31	17.0 0.9
20.7	53.13 .90	34.6 1.7	16.08 .29	29.7 0.6	8.99 .30	34.1 0.9	21.38 .30	17.8 0.8
30.6	53.97 .77	36.6 2.2	16.35 .25	30.6 1.1	9.27 .27	35.0 0.8	21.65 .27	18.6 0.7
Apr. 9.6	54.67+ .62	39.0 +2.6	16.58 +.22	31.9 +1.5	9.53 +.26	35.7 −0.7	21.92 +.25	19.1 −0.5
19.6	55.29 .45	41.7 2.9	16.79 .19	33.6 1.8	9.76 .22	36.4 0.6	22.15 .20	19.6 0.4
29.6	55.56 .25	44.6 3.1	16.96 .16	35.6 2.1	9.97 .19	36.9 0.5	22.36 .18	20.0 0.3
May 9.5	55.73+ .09	47.9 3.2	17.10 .12	37.7 2.2	10.15 .16	37.4 0.4	22.53 .16	20.3 0.3
19.5	55.72− .10	51.1 3.2	17.21 .09	40.0 2.3	10.29 .13	37.8 0.3	22.68 .13	20.5 0.2
29.5	55.50− .28	54.3 +3.0	17.28 +.05	42.3 +2.3	10.41 +.10	38.1 −0.2	22.80 +.10	20.6 −0.1
June 8.4	55.16 .46	57.2 2.8	17.32 +.02	44.6 2.2	10.49 .07	38.3 0.2	22.88 .07	20.7 0.0
18.4	54.64 .60	59.9 2.5	17.31 −.02	46.7 2.1	10.53 +.03	38.5 0.2	22.93 +.03	20.7 0.0
28.4	53.96 .74	62.2 2.1	17.28 .05	48.7 1.9	10.54 −.01	38.7 −0.1	22.94 .00	20.7 0.0
July 8.4	53.16 .85	64.1 1.7	17.21 .08	50.4 1.6	10.51 .04	38.7 0.0	22.92 −.04	20.7 +0.1
18.3	52.26− .95	65.6 +1.2	17.11 −.11	51.9 +1.3	10.46 −.07	38.7 +0.1	22.87 −.07	20.6 +0.1
28.3	51.26 1.03	66.7 0.8	16.98 .14	53.1 1.0	10.37 .10	38.6 0.1	22.78 .10	20.4 0.2
Aug. 7.3	50.20 1.08	67.2 +0.3	16.82 .16	54.0 0.7	10.25 .13	38.5 0.2	22.67 .12	20.2 0.2
17.3	49.10 1.11	67.2 −0.2	16.65 .18	54.4 +0.3	10.11 .15	38.2 0.3	22.54 .14	19.9 0.3
27.2	47.98 1.11	66.6 0.8	16.46 .19	54.6 0.0	9.96 .16	37.9 0.3	22.39 .15	19.6 0.3
Sept. 6.2	46.87−1.09	65.6 −1.3	16.28 −.19	54.4 −0.4	9.80 −.16	37.5 +0.4	22.23 −.15	19.3 +0.4
16.2	45.80 1.04	64.1 1.8	16.09 .18	53.7 0.8	9.65 .15	37.1 0.5	22.08 .15	18.9 0.4
26.1	44.79 .96	62.1 2.2	15.92 .16	52.8 1.2	9.51 .13	36.6 0.5	21.94 .13	18.5 0.4
Oct. 6.1	43.87 .85	59.6 2.6	15.77 .13	51.4 1.5	9.39 .10	36.1 0.5	21.82 .10	18.2 0.4
16.1	43.06 .73	56.8 3.0	15.65 .10	49.7 1.9	9.31 .06	35.6 0.4	21.74 .06	17.8 0.3
26.1	42.40− .58	53.6 −3.3	15.57 −.06	47.7 −2.2	9.27 −.02	35.2 +0.3	21.69 −.02	17.6 +0.2
Nov. 5.0	41.90 .41	50.1 3.6	15.54 −.01	45.3 2.5	9.28 +.03	34.9 0.2	21.69 +.03	17.4 +0.1
15.0	41.57 .23	46.5 3.7	15.56 +.04	42.7 2.7	9.34 .09	34.8 +0.1	21.75 .08	17.5 −0.1
25.0	41.44− .03	42.7 3.8	15.63 .10	39.9 2.9	9.45 .14	34.6 −0.1	21.85 .13	17.7 0.2
Dec. 5.0	41.51+ .17	39.0 3.7	15.76 .15	36.9 3.0	9.62 .19	35.1 0.3	22.01 .18	18.0 0.4
14.9	41.78+ .37	35.3 −3.6	15.93 +.20	33.9 −3.0	9.83 +.24	35.5 −0.5	22.22 +.23	18.6 −0.6
24.9	42.24 .56	31.8 3.3	16.15 .24	30.9 2.9	10.09 .28	36.1 0.7	22.47 .27	19.4 0.8
34.9	42.89+ .73	28.7 −2.9	16.42 +.28	28.1 −2.8	10.39 +.31	36.9 −0.9	22.76 +.30	20.3 −1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2330.				δ Ophiuchi.				τ Herculis.				η Draconis.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
	h m		° ′		h m		° ′		h m		° ′		h m		° ′	
	16 5		+68 4		16 8		− 3 25		16 16		+46 33		16 22		+61 44	
	s		″		s		″		s		″		s		″	
(Dec. 30.9)	59.69	+.38	52.7	−3.3	49.56	+.36	34.2	−1.7	33.80	+.27	30.4	−3.3	32.36	+.30	47.9	−3.5
Jan. 9.9	60.12	.46	49.5	2.9	49.84	.29	35.9	1.7	34.09	.31	27.2	3.0	32.70	.37	44.6	3.1
19.8	60.64	.55	46.8	2.5	50.14	.31	37.6	1.6	34.42	.35	24.4	2.6	33.11	.43	41.7	2.6
29.8	61.21	.60	44.6	1.9	50.45	.32	39.1	1.5	34.78	.37	22.0	2.1	33.57	.48	39.3	2.1
Feb. 8.8	61.83	.63	43.0	1.3	50.77	.32	40.5	1.3	35.16	.39	20.2	1.5	34.07	.51	37.5	1.5
18.8	62.48	+.64	42.1	−0.6	51.09	+.32	41.7	−1.1	35.56	+.39	19.0	−0.9	34.59	+.52	36.3	−0.8
28.7	63.12	.63	41.9	+0.1	51.40	.31	42.7	0.8	35.95	.38	18.4	−0.3	35.11	.52	35.8	−0.2
Mar. 10.7	63.74	.60	42.3	0.8	51.70	.29	43.4	0.5	36.32	.37	18.4	+0.4	35.63	.50	35.9	+0.5
20.7	64.31	.55	43.4	1.4	51.99	.27	43.8	−0.3	36.68	.34	19.1	1.0	36.11	.47	36.8	1.1
30.7	64.84	.49	45.1	1.9	52.25	.26	44.0	0.0	37.01	.31	20.3	1.5	36.56	.42	38.2	1.7
Apr. 9.6	65.29	+.42	47.3	+2.4	52.50	+.23	43.9	+0.2	37.31	+.28	22.1	+2.0	36.96	+.37	40.2	+2.2
19.6	65.66	.33	49.9	2.8	52.72	.21	43.5	0.4	37.57	.24	24.3	2.4	37.29	.30	42.7	2.6
29.6	65.94	.23	52.8	3.0	52.91	.16	43.0	0.6	37.78	.19	26.9	2.7	37.56	.24	45.5	2.9
May 9.5	66.12	.14	56.0	3.2	53.06	.16	42.4	0.7	37.95	.14	29.7	2.9	37.77	.16	48.5	3.1
19.5	66.21	+.04	59.2	3.2	53.23	.13	41.6	0.8	38.07	.10	32.6	3.0	37.89	.09	51.7	3.2
29.5	66.20	−.06	62.4	+3.1	53.34	+.10	40.8	+0.9	38.14	+.05	35.6	+3.0	37.94	+.01	55.0	+3.2
June 8.5	66.10	.15	65.5	3.0	53.42	.06	39.9	0.9	38.16	.00	38.6	2.9	37.92	−.06	58.1	3.1
18.4	65.90	.24	68.4	2.8	53.47	+.03	39.0	0.8	38.14	−.05	41.4	2.7	37.82	.13	61.1	2.9
28.4	65.62	.32	71.0	2.5	53.48	.00	38.2	0.8	38.06	.10	43.9	2.4	37.65	.20	63.9	2.6
July 8.4	65.26	.39	73.3	2.1	53.46	−.03	37.4	0.7	37.94	.14	46.2	2.1	37.42	.26	66.4	2.3
18.4	64.83	−.46	75.2	+1.6	53.41	−.06	36.7	+0.7	37.78	−.18	48.2	+1.8	37.13	−.32	68.5	+1.9
28.3	64.35	.51	76.6	1.1	53.33	.09	36.1	0.6	37.58	.21	49.8	1.4	36.78	.37	70.1	1.4
Aug. 7.3	63.82	.55	77.5	0.6	53.23	.12	35.5	0.5	37.35	.24	50.9	0.9	36.40	.42	71.3	1.0
17.3	63.25	.57	77.9	+0.1	53.10	.14	35.1	0.4	37.09	.27	51.6	+0.5	35.97	.43	72.0	+0.5
27.2	62.67	.59	77.8	−0.4	52.96	.15	34.8	0.3	36.82	.28	51.9	0.0	35.53	.45	72.2	−0.1
Sept. 6.2	62.08	−.59	77.1	−0.9	52.80	−.15	34.6	+0.1	36.53	−.28	51.6	−0.5	35.08	−.45	71.9	−0.6
16.2	61.50	.57	76.0	1.4	52.66	.14	34.5	0.0	36.25	.27	50.9	1.0	34.62	.44	71.0	1.1
26.2	60.95	.53	74.3	1.9	52.52	.13	34.6	−0.1	35.98	.26	49.7	1.4	34.19	.42	69.7	1.6
Oct. 6.1	60.44	.48	72.2	2.4	52.40	.11	34.8	0.3	35.74	.23	48.0	1.9	33.79	.38	67.9	2.1
16.1	59.99	.41	69.6	2.8	52.30	.07	35.2	0.5	35.53	.19	45.9	2.3	33.43	.33	65.6	2.5
26.1	59.62	−.33	66.7	−3.1	52.24	−.03	35.8	−0.7	35.36	−.14	43.4	−2.7	33.13	−.27	62.8	−2.9
Nov. 5.1	59.34	.23	63.4	3.4	52.23	+.01	36.5	0.9	35.25	.08	40.5	3.0	32.90	.19	59.8	3.2
15.0	59.16	.12	59.8	3.6	52.27	.06	37.5	1.1	35.19	−.02	37.4	3.3	32.75	.11	56.4	3.5
25.0	59.09	−.01	56.1	3.7	52.35	.11	38.7	1.2	35.20	+.04	34.0	3.5	32.69	−.02	52.8	3.7
Dec. 5.0	59.14	+.10	52.3	3.8	52.49	.16	40.0	1.4	35.28	.11	30.5	3.5	32.71	+.07	49.0	3.7
14.9	59.30	+.21	48.5	−3.7	52.67	+.20	41.5	−1.5	35.42	+.17	27.0	−3.5	32.83	+.16	45.3	−3.7
24.9	59.57	.32	44.9	3.5	52.89	.24	43.1	1.6	35.62	.23	23.5	3.4	33.05	.25	41.6	3.6
34.9	59.94	+.42	41.6	−3.2	53.15	+.27	44.7	−1.7	35.88	+.28	20.1	−3.2	33.34	+.33	38.2	−3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Scorpii. (Antares.)				3 Herculis.				A Draconis.				ζ Ophiuchi.			
	Right Ascension.		Declination South.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.	
	h m s		° ′ ″		h m s		° ′ ″		h m s		° ′ ″		h m s		° ′ ″	
	16 22		−26 12		16 25		+21 42		16 28		+69 59		16 31		−10 21	
(Dec. 31.0)	50.26	+.20	6.1	−0.5	51.31	+.26	51.2	−2.7	4.27	+.22	23.5	−2.5	27.69	+.25	23.0	−1.9
Jan. 9.9	37.16	.21	6.6	0.6	51.35	.27	50.6	3.5	9.26	.06	20.2	3.1	21.76	.28	24.2	1.3
19.9	37.49	.22	1.3	0.7	51.35	.29	48.1	2.3	9.75	.22	17.3	2.6	22.05	.28	25.5	1.3
29.8	37.84	.25	2.1	0.8	52.15	.31	45.8	2.3	10.32	.25	14.9	2.1	22.36	.31	26.8	1.3
Feb. 8.8	38.19	.28	2.9	0.8	52.47	.32	44.2	1.6	10.93	.42	13.1	1.5	22.68	.32	28.0	1.1
18.8	38.55	+.31	3.8	−0.9	52.79	+.32	42.9	−1.1	11.58	+.65	11.9	−0.8	23.00	+.32	29.0	−1.0
28.7	38.90	.36	4.7	0.9	53.11	.32	42.1	0.8	12.26	.68	11.4	−0.5	23.32	.32	29.9	0.9
Mar. 10.7	39.24	.33	5.6	0.9	53.42	.31	41.8	−0.3	12.89	.63	11.6	+0.2	23.64	.32	30.6	0.6
20.7	39.57	.33	6.4	0.8	53.71	.29	41.9	+0.4	13.51	.62	12.4	1.1	23.94	.30	31.1	0.4
30.7	39.87	.30	7.2	0.7	53.99	.27	42.5	0.8	14.09	.54	13.9	1.7	24.22	.27	31.4	−0.3
Apr. 9.6	40.16	+.29	7.9	−0.7	54.24	+.24	43.6	+1.2	14.59	+.47	15.9	+2.2	24.48	+.25	31.4	0.0
19.6	40.43	.25	8.6	0.6	54.45	.22	45.0	1.6	15.02	.38	18.4	2.6	24.73	.23	31.4	+0.3
29.6	40.67	.22	9.2	0.6	54.62	.19	46.7	1.8	15.36	.29	21.2	3.0	24.95	.21	31.1	0.3
May 9.6	40.88	.20	9.7	0.5	54.75	.16	48.7	2.0	15.60	.19	24.3	3.2	25.15	.18	30.7	0.4
19.5	41.06	.17	10.2	0.5	54.89	.12	50.8	2.1	15.74	+.09	27.5	3.3	25.32	.15	30.3	0.5
29.5	41.20	+.13	10.6	−0.4	55.10	+.09	52.9	+2.2	15.79	−.01	30.8	+3.3	25.46	+.12	29.8	+0.5
June 8.5	41.32	.09	11.0	0.4	55.17	.05	55.1	2.2	15.72	.11	34.0	3.1	25.57	.09	29.2	0.5
18.4	41.39	.05	11.4	0.4	55.21	+.02	57.2	2.0	15.56	.21	37.1	2.9	25.64	.05	28.7	0.5
28.4	41.43	+.02	11.8	0.3	55.21	−.02	59.2	1.9	15.30	.30	39.9	2.7	25.68	+.02	28.1	0.5
July 8.4	41.43	−.02	12.0	0.2	55.17	.05	61.0	1.7	14.96	.38	42.4	2.5	25.68	−.02	27.6	0.5
18.4	41.38	−.05	12.2	−0.2	55.10	−.09	62.6	+1.5	14.54	−.45	44.5	+1.9	25.64	−.05	27.1	+0.4
28.3	41.31	.09	12.4	−0.1	55.00	.12	63.9	1.2	14.06	.52	46.2	1.5	25.58	.08	26.7	0.4
Aug. 7.3	41.20	.12	12.4	0.0	54.87	.14	64.9	0.9	13.51	.57	47.4	1.0	25.48	.11	26.3	0.4
17.3	41.05	.15	12.3	+0.1	54.71	.16	65.7	0.6	12.92	.60	48.1	+0.5	25.36	.13	26.0	0.3
27.3	40.90	.16	12.1	0.2	54.54	.17	66.1	+0.2	12.31	.62	48.3	0.0	25.22	.15	25.7	0.3
Sept. 6.2	40.74	−.17	11.9	+0.2	54.36	−.18	66.2	−0.1	11.68	−.63	48.0	−0.6	25.07	−.15	25.5	+0.2
16.2	40.57	.16	11.5	0.4	54.17	.19	65.9	0.4	11.05	.63	47.2	1.1	24.91	.15	25.3	0.1
26.2	40.41	.15	11.0	0.5	54.00	.17	65.3	0.8	10.45	.59	45.9	1.6	24.76	.14	25.2	+0.1
Oct. 6.1	40.27	.13	10.5	0.5	53.84	.14	64.3	1.1	9.88	.54	44.0	2.1	24.63	.12	25.1	0.0
16.1	40.17	.09	9.9	0.5	53.71	.11	63.0	1.5	9.37	.47	41.7	2.5	24.52	.09	25.2	−0.1
26.1	40.10	−.05	9.4	+0.5	53.61	−.08	61.4	−1.8	8.93	−.39	39.0	−2.9	24.45	−.05	25.4	−0.3
Nov. 5.1	40.08	.00	8.9	0.4	53.56	−.03	59.4	2.1	8.58	.30	35.9	3.2	24.42	−.01	25.8	0.4
15.0	40.11	+.06	8.5	0.3	53.55	+.02	57.2	2.3	8.33	.20	32.5	3.5	24.44	+.04	26.3	0.5
25.0	40.19	.11	8.2	+0.2	53.59	.07	54.8	2.5	8.19	−.08	28.9	3.7	24.51	.09	27.0	0.8
Dec. 5.0	40.34	.17	8.1	0.0	53.69	.12	52.1	2.7	8.17	+.04	25.2	3.8	24.62	.14	27.8	0.9
15.0	40.53	+.22	8.2	−0.1	53.83	+.17	49.4	−2.8	8.27	+.16	21.4	−3.7	24.79	+.19	28.8	−1.1
24.9	40.77	.26	8.4	0.3	54.02	.21	46.6	2.7	8.48	.27	17.8	3.6	25.00	.23	29.9	1.2
34.9	41.05	+.30	8.8	−0.5	54.25	+.25	43.9	−2.6	8.81	+.39	14.3	−3.3	25.25	+.26	31.1	−1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		η Herculis.		κ Ophiuchi.		ε Ursæ Minoris.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 16 37	° ′ −68 49	h m 16 39	° ′ +39 6	h m 16 52	° ′ + 9 31	h m 16 56	° ′ +82 12
	s	″	s	″	s	″	s	″
(Dec. 30.9)	29.33 +.56	62.6 +1.8	16.43 +.23	63.5 −3.2	40.78 +.21	67.2 −2.1	35.84+ .47	17.7 −3.3
Jan. 9.9	29.94 .65	61.0 1.4	16.69 .27	60.4 3.0	41.01 .25	65.0 2.0	36.49 .78	14.4 3.1
19.8	30.62 .71	59.6 1.0	16.98 .31	57.5 2.6	41.27 .27	63.0 1.9	37.41 1.04	11.5 2.7
29.8	31.36 .76	58.9 0.6	17.30 .33	55.1 2.2	41.56 .29	61.1 1.7	38.57 1.26	9.0 2.3
Feb. 8.8	32.13 .79	58.5 +0.2	17.64 .35	53.1 1.7	41.86 .30	59.5 1.4	39.93 1.43	7.0 1.7
18.8	32.93 +.80	58.5 −0.2	17.99 +.35	51.7 −1.1	42.16 +.31	58.3 −1.1	41.43+1.54	5.6 −1.1
28.7	33.73 .79	58.9 0.6	18.35 .35	50.8 −0.5	42.47 .30	57.4 0.7	43.01 1.59	4.8 −0.4
Mar. 10.7	34.52 .77	59.7 1.0	18.70 .34	50.6 +0.1	42.77 .30	56.8 −0.3	44.62 1.59	4.7 +0.2
20.7	35.28 .74	60.8 1.3	19.04 .33	50.9 0.6	43.07 .29	56.7 +0.1	46.18 1.56	5.3 0.9
30.7	36.01 .70	62.3 1.6	19.36 .30	51.9 1.2	43.35 .27	57.0 0.4	47.65 1.49	6.4 1.5
Apr. 9.6	36.68 +.65	64.1 −1.9	19.65 +.26	53.3 +1.7	43.62 +.26	57.6 +0.8	48.98+1.33	8.2 +2.0
19.6	37.31 .59	66.1 2.1	19.91 .25	55.2 2.1	43.87 .24	58.6 1.1	50.11 1.09	10.4 2.4
29.6	37.86 .52	68.4 2.3	20.14 .21	57.5 2.4	44.09 .21	59.8 1.3	51.01 .78	13.0 2.8
May 9.5	38.34 .44	70.8 2.5	20.33 .17	60.1 2.7	44.29 .18	61.2 1.5	51.66 .51	16.0 3.0
19.5	38.74 .35	73.3 2.6	20.48 .13	62.8 2.8	44.46 .16	62.8 1.6	52.04+ .24	19.1 3.1
29.5	39.05 +.26	75.9 −2.6	20.58 +.09	65.7 +2.8	44.60 +.13	64.5 +1.7	52.13− .05	22.3 +3.2
June 8.5	39.26 .16	78.5 2.6	20.65 +.04	68.5 2.8	44.71 .09	66.2 1.7	51.94 .33	25.5 3.1
18.4	39.38 +.06	81.1 2.5	20.67 .00	71.3 2.7	44.79 .06	67.8 1.6	51.48 .59	28.6 3.0
28.4	39.39 −.04	83.6 2.4	20.64 −.05	73.9 2.5	44.83 +.02	69.4 1.5	50.76 .85	31.5 2.8
July 8.4	39.31 .13	85.8 2.2	20.57 .08	76.2 2.2	44.83 −.02	70.9 1.4	49.79 1.08	34.2 2.5
18.4	39.13 −.22	87.8 −1.9	20.46 −.13	78.3 +1.9	44.79 −.05	72.2 +1.3	48.60−1.28	36.5 +2.1
28.3	38.86 .31	89.6 1.5	20.32 .16	80.1 1.5	44.72 .08	73.4 1.1	47.22 1.49	38.4 1.7
Aug. 7.3	38.51 .38	90.9 1.2	20.14 .20	81.4 1.1	44.62 .11	74.4 0.9	45.68 1.68	39.9 1.3
17.3	38.10 .44	91.9 0.7	19.93 .22	82.4 0.7	44.50 .14	75.1 0.8	44.02 1.71	40.9 0.8
27.2	37.64 .47	92.3 −0.2	19.70 .24	82.9 +0.3	44.35 .16	75.6 0.4	42.26 1.76	41.4 +0.3
Sept. 6.2	37.15 −.49	92.3 +0.2	19.45 −.24	83.0 −0.1	44.18 −.17	75.9 +0.1	40.45−1.82	41.5 −0.2
16.2	36.66 .48	91.8 0.7	19.21 .24	82.6 0.6	44.02 .17	75.9 −0.1	38.62 1.81	41.0 0.7
26.2	36.20 .45	90.9 1.2	18.97 .23	81.8 1.0	43.85 .16	75.7 0.4	36.83 1.76	40.0 1.2
Oct. 6.1	35.77 .39	89.5 1.6	18.75 .21	80.5 1.5	43.70 .14	75.2 0.6	35.11 1.67	38.6 1.7
16.1	35.42 .31	87.7 1.9	18.55 .18	78.8 1.9	43.57 .11	74.4 0.9	33.50 1.53	36.6 2.1
26.1	35.15 −.21	85.6 +2.2	18.40 −.14	76.7 −2.3	43.47 −.08	73.4 −1.1	32.04−1.36	34.3 −2.6
Nov. 5.1	34.99 −.10	83.2 2.4	18.28 .09	74.3 2.6	43.41 −.04	72.1 1.4	30.78 1.13	31.5 3.0
15.0	34.94 +.02	80.7 2.5	18.22 −.03	71.5 2.9	43.39 +.01	70.6 1.6	29.75 .89	28.5 3.2
25.0	35.03 .15	78.2 2.5	18.22 +.03	68.4 3.1	43.42 .05	68.9 1.8	28.99 .62	25.1 3.4
Dec. 5.0	35.24 .27	75.6 2.4	18.28 .09	65.2 3.3	43.50 .10	66.9 2.0	28.51 .39	21.6 3.5
14.9	35.58 +.39	73.2 +2.3	18.39 +.15	61.8 −3.4	43.62 +.15	64.9 −2.1	28.35− .01	18.0 −3.6
24.9	36.03 .50	71.1 2.0	18.57 .20	58.5 3.3	43.80 .19	62.7 2.2	28.50+ .39	14.5 3.5
34.9	36.59 +.60	69.2 +1.7	18.79 +.24	55.2 −3.1	44.01 +.23	60.6 −2.1	28.95+ .81	11.1 −3.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*d* Herculis.		*a*¹ Herculis.		*b* Ophiuchi.		*β* Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 16 57	° ′ +33 42	h m 17 9	° ′ +14 30	h m 17 19	° ′ −24 4	h m 17 28	° ′ +52 22
	s	″	s	″	s	″	s	″
(Dec. 30.9)	42.43 +.20	59.2 −3.1	50.39 +.20	24.7 −2.4	56.11 +.23	49.6 −0.2	1.66 +.17	30.2 −3.4
Jan. 9.9	42.66 .25	56.1 2.9	50.61 .23	22.3 2.3	56.35 .27	49.8 0.3	1.86 .23	26.7 3.3
19.9	42.93 .28	53.3 2.6	50.86 .26	20.2 2.1	56.64 .30	50.2 0.4	2.13 .29	23.5 3.1
29.8	43.22 .31	50.9 2.2	51.13 .28	18.1 1.9	56.94 .32	50.6 0.4	2.44 .34	20.6 2.7
Feb. 8.8	43.54 .39	48.9 1.8	51.42 .30	16.4 1.6	57.27 .33	51.1 0.5	2.80 .37	18.2 2.1
18.8	43.87 +.33	47.3 −1.3	51.72 +.31	15.1 −1.2	57.61 +.34	51.5 −0.5	3.18 +.40	16.4 −1.6
28.8	44.21 .34	46.3 0.7	52.03 .31	14.1 0.8	57.95 .34	52.0 0.4	3.59 .41	15.1 0.9
Mar. 10.7	44.54 .33	45.9 −0.1	52.34 .30	13.6 −0.3	58.29 .34	52.4 0.4	4.01 .42	14.5 −0.3
20.7	44.87 .33	46.1 +0.4	52.64 .29	13.5 +0.1	58.63 .33	52.8 0.3	4.42 .41	14.5 +0.4
30.7	45.18 .30	46.8 1.0	52.93 .28	13.8 0.5	58.95 .32	53.0 0.3	4.83 .39	15.2 1.0
Apr. 9.6	45.47 +.28	48.0 +1.5	53.21 +.27	14.6 +0.9	59.27 +.31	53.3 −0.2	5.21 +.37	16.5 +1.6
19.6	45.74 .25	49.7 1.9	53.46 .25	15.7 1.3	59.57 .29	53.4 0.1	5.56 .33	18.4 2.1
29.6	45.98 .22	51.8 2.2	53.70 .23	17.1 1.6	59.85 .27	53.6 0.1	5.87 .29	20.7 2.5
May 9.6	46.18 .19	54.2 2.5	53.91 .20	18.8 1.8	60.11 .25	53.6 0.1	6.14 .25	23.4 2.8
19.5	46.35 .15	56.8 2.6	54.10 .17	20.6 1.9	60.34 .22	53.7 0.1	6.36 .19	26.4 3.1
29.5	46.49 +.11	59.5 +2.7	54.25 +.14	22.6 +2.0	60.54 +.18	53.8 −0.1	6.53 +.14	29.6 +3.2
June 8.5	46.58 .07	62.2 2.7	54.37 .10	24.6 2.0	60.71 .15	53.9 0.1	6.64 .08	32.8 3.2
18.5	46.63 +.03	64.9 2.6	54.46 .07	26.6 1.9	60.84 .11	54.1 0.1	6.69 +.02	36.1 3.2
28.4	46.63 −.02	67.5 2.5	54.51 +.03	28.4 1.8	60.93 .07	54.2 0.1	6.68 −.04	39.2 3.1
July 8.4	46.60 .06	69.8 2.3	54.52 −.01	30.2 1.7	60.98 +.03	54.3 0.2	6.61 .10	42.2 2.8
18.4	46.52 −.10	72.0 +2.0	54.49 −.05	31.8 +1.5	60.99 −.02	54.5 −0.2	6.48 −.15	44.9 +2.5
28.3	46.41 .13	73.8 1.6	54.43 .08	33.2 1.3	60.95 .06	54.7 0.1	6.30 .20	47.3 2.2
Aug. 7.3	46.25 .16	75.3 1.3	54.33 .11	34.4 1.0	60.87 .09	54.8 0.1	6.07 .25	49.3 1.8
17.3	46.07 .19	76.4 0.9	54.20 .14	35.3 0.8	60.76 .12	54.9 −0.1	5.80 .29	50.8 1.4
27.3	45.87 .21	77.1 0.5	54.05 .16	36.0 0.5	60.62 .15	54.9 0.0	5.49 .32	52.0 0.9
Sept. 6.2	45.65 −.22	77.4 +0.1	53.88 −.17	36.3 +0.2	60.47 −.16	54.9 +0.1	5.16 −.34	52.6 +0.4
16.2	45.43 .22	77.3 −0.3	53.71 .18	36.4 −0.1	60.29 .17	54.8 0.1	4.81 .35	52.8 −0.1
26.2	45.20 .22	76.7 0.8	53.53 .17	36.2 0.4	60.12 .16	54.6 0.2	4.46 .34	52.5 0.6
Oct. 6.2	44.99 .20	75.7 1.2	53.37 .15	35.7 0.7	59.96 .15	54.3 0.3	4.12 .33	51.6 1.1
16.1	44.81 .17	74.3 1.6	53.22 .13	34.9 1.0	59.82 .13	54.0 0.3	3.81 .30	50.3 1.6
26.1	44.65 −.13	72.6 −2.0	53.10 −.10	33.7 −1.3	59.71 −.09	53.7 +0.3	3.53 −.26	48.4 −2.1
Nov. 5.1	44.54 .09	70.4 2.3	53.02 .06	32.3 1.5	59.64 −.05	53.4 0.3	3.29 .21	46.1 2.5
15.0	44.48 −.04	67.9 2.6	52.98 −.02	30.7 1.8	59.62 .00	53.1 0.3	3.11 .15	43.4 2.9
25.0	44.46 +.02	65.1 2.9	52.99 +.03	28.7 2.0	59.64 +.05	52.8 0.2	2.99 .08	40.4 3.2
Dec. 5.0	44.51 .07	62.1 3.1	53.05 .08	26.6 2.2	59.72 .11	52.7 +0.1	2.94 −.01	37.1 3.4
15.0	44.61 +.13	59.0 −3.1	53.15 +.13	24.4 −2.3	59.85 +.16	52.7 0.0	2.96 +.06	33.6 −3.5
24.9	44.76 .18	55.8 3.1	53.31 .17	22.0 2.4	60.04 .20	52.8 −0.1	3.06 .13	30.0 3.5
34.9	44.96 +.22	52.7 −3.0	53.50 +.21	19.7 −2.4	60.26 +.24	52.9 −0.2	3.22 +.19	26.5 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		ω Draconis.		μ Herculis.		ψ¹ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 17 30	+ 12° 37′	h m 17 37	+ 68° 47′	h m 17 42	+ 27° 46′	h m 17 43	+ 72° 11′
	s	″	s	″	s	″	s	″
Dec. 30.9	2.39 +.18	60.4 −2.2	30.53 +.16	69.1 −3.6	19.58 +.16	43.3 −2.9	44.04 +.15	47.3 −3.6
Jan. 9.9	2.59 .22	58.2 2.2	30.75 .27	65.6 3.4	19.76 .20	40.5 2.8	44.26 .28	43.7 3.4
19.9	2.82 .25	56.0 2.0	31.06 .37	62.3 3.1	19.98 .24	37.8 2.6	44.60 .40	40.4 3.2
29.9	3.08 .27	54.1 1.8	31.50 .46	59.3 2.7	20.23 .27	35.3 2.3	45.07 .51	37.4 2.8
Feb. 8.8	3.36 .29	52.4 1.5	32.01 .54	56.8 2.2	20.51 .29	33.2 1.9	45.63 .61	34.8 2.3
18.8	3.65 +.30	51.1 −1.2	32.58 +.59	54.8 −1.6	20.81 +.30	31.5 −1.5	46.28 +.68	32.8 −1.7
28.8	3.96 .30	50.1 0.8	33.19 .63	53.5 1.0	21.12 .31	30.2 1.0	46.98 .72	31.4 1.1
Mar. 10.7	4.26 .30	49.5 −0.3	33.83 .64	52.8 −0.3	21.44 .32	29.5 −0.4	47.72 .74	30.6 −0.4
20.7	4.56 .30	49.4 +0.1	34.48 .64	52.8 +0.3	21.75 .31	29.4 +0.1	48.47 .74	30.5 +0.2
30.7	4.86 .29	49.6 0.5	35.11 .61	53.5 1.0	22.07 .30	29.8 0.8	49.20 .71	31.1 0.9
Apr. 9.7	5.14 +.28	50.3 +0.9	35.70 +.57	54.8 +1.6	22.37 +.29	30.7 +1.1	49.90 +.68	32.3 +1.5
19.6	5.41 .26	51.4 1.2	36.24 .51	56.6 2.1	22.65 .27	32.0 1.6	50.53 .60	34.1 2.0
29.6	5.66 .24	52.7 1.5	36.71 .44	59.0 2.6	22.92 .25	33.8 1.9	51.09 .51	36.4 2.5
May 9.6	5.89 .22	54.3 1.7	37.11 .35	61.8 2.9	23.16 .23	35.9 2.2	51.55 .41	39.1 2.9
19.6	6.10 .19	56.1 1.8	37.42 .26	64.9 3.2	23.37 .20	38.2 2.4	51.91 .30	42.1 3.1
29.5	6.27 +.16	58.0 +1.9	37.63 +.16	68.1 +3.3	23.55 +.16	40.8 +2.5	52.15 +.19	45.3 +3.2
June 8.5	6.41 .12	60.0 2.0	37.74 +.06	71.5 3.4	23.70 .12	43.4 2.6	52.28 +.06	48.7 3.4
18.5	6.52 .09	61.9 1.9	37.75 −.04	74.9 3.3	23.80 .08	46.0 2.6	52.28 −.06	52.1 3.3
28.4	6.59 .05	63.8 1.8	37.65 .15	78.2 3.2	23.86 +.04	48.5 2.5	52.16 .18	55.4 3.2
July 8.4	6.62 +.01	65.6 1.7	37.46 .24	81.3 3.0	23.88 .00	51.0 2.3	51.92 .29	58.5 3.0
18.4	6.61 −.03	67.2 +1.5	37.17 −.33	84.2 +2.7	23.85 −.05	53.2 +2.1	51.57 −.40	61.4 +2.7
28.4	6.56 .07	68.6 1.3	36.79 .42	86.7 2.4	23.78 .08	55.2 1.9	51.12 .50	64.0 2.4
Aug. 7.3	6.48 .10	69.8 1.1	36.33 .49	88.9 2.0	23.68 .12	56.9 1.6	50.57 .59	66.2 2.0
17.3	6.36 .13	70.8 0.8	35.81 .55	90.6 1.5	23.54 .15	58.3 1.2	49.94 .66	68.0 1.6
27.3	6.22 .15	71.5 0.6	35.23 .60	91.9 1.0	23.37 .18	59.3 0.9	49.25 .72	69.3 1.1
Sept. 6.3	6.06 −.17	72.0 +0.3	34.61 −.63	92.7 +0.5	23.18 −.20	60.0 +0.5	48.50 −.76	70.2 +0.6
16.2	5.88 .18	72.2 0.0	33.97 .65	93.0 0.0	22.97 .21	60.3 +0.1	47.73 .78	70.6 +0.1
26.2	5.71 .17	72.0 −0.2	33.32 .64	92.7 −0.5	22.76 .21	60.2 −0.3	46.95 .78	70.4 −0.4
Oct. 6.2	5.54 .16	71.7 0.5	32.69 .63	92.0 1.0	22.55 .20	59.7 0.7	46.18 .75	69.7 1.0
16.1	5.39 .14	71.0 0.8	32.08 .58	90.7 1.5	22.36 .18	58.8 1.1	45.44 .71	68.4 1.5
26.1	5.26 −.11	70.1 −1.1	31.52 −.56	88.9 −2.0	22.20 −.15	57.6 −1.5	44.76 −.65	66.7 −2.0
Nov. 5.1	5.17 .07	68.8 1.4	31.04 .45	86.6 2.5	22.06 .11	55.9 1.8	44.15 .57	64.5 2.4
15.1	5.11 −.03	67.3 1.6	30.63 .36	83.9 2.9	21.97 .07	53.9 2.1	43.63 .46	61.9 2.8
25.0	5.11 +.02	65.6 1.8	30.32 .26	80.8 3.2	21.93 −.02	51.5 2.4	43.22 .34	58.8 3.1
Dec. 5.0	5.15 .06	63.6 2.0	30.11 .15	77.4 3.5	21.93 +.03	49.0 2.7	42.94 .22	55.5 3.4
15.0	5.23 +.10	61.5 −2.1	30.02 −.03	73.9 −3.6	21.99 +.09	46.2 −2.8	42.79 −.08	52.0 −3.6
25.0	5.37 .15	59.3 2.2	30.05 +.09	70.3 3.6	22.09 .13	43.4 2.9	42.78 +.06	48.4 3.6
34.9	5.54 +.20	57.1 −2.2	30.20 +.21	66.7 −3.5	22.25 +.18	40.5 −2.8	42.91 +.20	44.8 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.				γ² Sagittarii.				μ Sagittarii.				η Serpentis.			
	Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination South.		Right Ascension.		Declination South.	
	h m		° ′		h m		° ′		h m		° ′		h m		° ′	
	17 54		+51 29		17 59		−30 25		18 7		−21 5		18 15		− 2 55	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 0.0	7.99	+.13	51.8	−3.5	2.32	+.20	38.8	+0.3	27.71	+.17	18.7	−0.2	51.34	+.15	42.0	−1.3
9.9	8.15	.19	48.3	3.4	2.54	.24	38.5	0.3	27.91	.21	18.9	0.2	51.51	.19	43.3	1.3
19.9	8.38	.25	45.0	3.1	2.80	.28	38.2	0.2	28.14	.25	19.1	0.2	51.71	.22	44.5	1.2
29.9	8.66	.30	42.0	2.7	3.09	.31	38.0	0.1	28.41	.28	19.4	0.2	51.94	.24	45.7	1.1
Feb. 8.9	8.98	.34	39.5	2.3	3.41	.33	37.9	+0.1	28.70	.30	19.6	0.2	52.20	.26	46.7	0.9
18.8	9.34	+.37	37.4	−1.8	3.74	+.34	37.9	0.0	29.00	+.31	19.8	−0.2	52.47	+.28	47.6	−0.7
28.8	9.73	.40	35.9	1.2	4.09	.35	37.8	0.0	29.32	.32	20.0	−0.1	52.76	.29	48.2	0.5
Mar. 10.8	10.13	.41	35.0	−0.5	4.45	.36	37.8	0.0	29.65	.33	20.1	0.0	53.06	.30	48.6	−0.3
20.8	10.54	.41	34.8	+0.1	4.80	.35	37.8	0.0	29.98	.33	20.0	+0.1	53.36	.30	48.7	+0.1
30.7	10.94	.40	35.2	0.7	5.16	.35	37.9	0.0	30.31	.33	19.9	0.2	53.66	.30	48.5	0.3
Apr. 9.7	11.33	+.38	36.3	+1.3	5.51	+.34	37.9	0.0	30.63	+.32	19.7	+0.2	53.96	+.30	48.0	+0.6
19.7	11.70	.35	37.9	1.9	5.85	.33	37.9	−0.1	30.95	.31	19.4	0.3	54.25	.29	47.3	0.8
29.6	12.04	.32	40.0	2.4	6.17	.31	38.0	0.1	31.25	.30	19.1	0.3	54.53	.27	46.4	1.0
May 9.6	12.34	.28	42.6	2.7	6.47	.29	38.1	0.1	31.54	.28	18.8	0.3	54.80	.26	45.3	1.1
19.6	12.59	.23	45.5	3.0	6.75	.26	38.2	0.2	31.81	.25	18.4	0.3	55.04	.24	44.1	1.2
29.6	12.79	+.18	48.6	+3.2	7.00	+.23	38.5	−0.2	32.04	+.22	18.1	+0.3	55.27	+.21	42.8	+1.3
June 8.5	12.94	.12	51.9	3.3	7.22	.20	38.8	0.3	32.25	.19	17.8	0.3	55.46	.18	41.5	1.3
18.5	13.03	+.06	55.2	3.3	7.40	.16	39.1	0.4	32.43	.15	17.6	0.2	55.62	.14	40.3	1.2
28.5	13.06	.00	58.4	3.2	7.53	.11	39.5	0.4	32.56	.11	17.4	0.1	55.74	.10	39.0	1.2
July 8.4	13.03	−.06	61.6	3.0	7.62	.07	40.0	0.5	32.65	.07	17.3	+0.1	55.83	.06	37.9	1.1
18.4	12.94	−.12	64.4	+2.7	7.66	+.02	40.5	−0.5	32.70	+.02	17.3	0.0	55.87	+.02	36.9	+1.0
28.4	12.79	.17	67.1	2.4	7.66	−.03	41.0	0.5	32.70	−.02	17.3	0.0	55.87	−.02	36.0	0.8
Aug. 7.4	12.59	.22	69.3	2.1	7.61	.07	41.5	0.4	32.66	.06	17.4	−0.1	55.83	.06	35.2	0.7
17.3	12.34	.26	71.2	1.7	7.51	.11	41.9	0.4	32.58	.10	17.4	0.1	55.76	.09	34.6	0.5
27.3	12.06	.30	72.7	1.2	7.38	.14	42.2	0.3	32.47	.13	17.5	0.1	55.65	.12	34.1	0.4
Sept. 6.3	11.74	−.32	73.7	+0.8	7.22	−.17	42.5	−0.2	32.32	−.15	17.6	−0.1	55.51	−.15	33.8	+0.3
16.3	11.41	.34	74.2	+0.3	7.05	.18	42.6	−0.1	32.16	.16	17.6	0.0	55.36	.16	33.6	+0.1
26.2	11.07	.34	74.3	−0.2	6.86	.18	42.6	+0.1	31.99	.17	17.6	0.0	55.19	.17	33.5	0.0
Oct. 6.2	10.73	.33	73.7	0.8	6.68	.17	42.5	0.2	31.82	.16	17.6	0.0	55.03	.16	33.6	−0.2
16.2	10.41	.31	72.7	1.3	6.51	.16	42.2	0.3	31.67	.15	17.5	+0.1	54.87	.14	33.9	0.3
26.2	10.11	−.27	71.2	−1.7	6.37	−.12	41.8	+0.4	31.53	−.12	17.4	+0.1	54.74	−.12	34.2	−0.5
Nov. 5.1	9.86	.23	69.3	2.2	6.26	.08	41.3	0.5	31.43	.08	17.3	0.1	54.63	.09	34.8	0.6
15.1	9.65	.18	66.8	2.6	6.20	−.04	40.8	0.6	31.37	−.04	17.2	0.1	54.56	.05	35.5	0.8
25.1	9.51	.11	64.0	2.9	6.19	+.01	40.2	0.6	31.35	+.01	17.1	+0.1	54.53	−.01	36.3	0.9
Dec. 5.0	9.43	−.05	60.9	3.2	6.23	.07	39.6	0.5	31.38	.06	17.1	0.0	54.54	+.04	37.3	1.0
15.0	9.41	+.02	57.6	−3.4	6.33	+.12	39.1	+0.5	31.46	+.10	17.1	−0.1	54.60	+.08	38.4	−1.1
25.0	9.46	.09	54.1	3.5	6.47	.17	38.6	0.4	31.59	.15	17.2	0.1	54.70	.12	39.6	1.2
35.0	9.59	+.15	50.6	−3.5	6.67	+.22	38.2	+0.3	31.76	+.19	17.4	−0.2	54.84	+.16	40.9	−1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	1 Aquilæ.		α Lyræ. (*Vega*.)		β Lyræ.		σ Sagittarii.	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	h m 18 29	° ′ − 8 19	h m 18 33	° ′ +38 40	h m 18 46	° ′ +33 14	h m 18 48	° ′ −26 25
	s	″	s	″	s	″	s	″
Jan. 0.0	28.34 +.14	12.4 −0.9	21.28 +.00	59.5 −3.1	10.58 +.08	17.5 −2.9	43.94 +.15	47.0 +0.3
10.0	28.50 .16	13.3 0.9	21.40 .14	56.4 3.0	10.69 .13	14.6 2.9	44.11 .16	46.6 0.3
19.9	28.70 .21	14.2 0.9	21.57 .19	53.4 2.9	10.84 .17	11.7 2.8	44.31 .22	46.3 0.3
29.9	28.92 .24	15.0 0.8	21.78 .23	50.5 2.7	11.04 .21	9.0 2.6	44.55 .25	46.0 0.3
Feb. 8.9	29.18 .26	15.8 0.7	22.03 .27	48.0 2.3	11.27 .25	6.6 2.2	44.81 .28	45.7 0.3
18.8	29.45 +.28	16.4 −0.5	22.31 +.30	45.9 −1.9	11.53 +.27	4.5 −1.8	45.10 +.30	45.4 +0.3
28.8	29.74 .29	16.7 0.3	22.61 .32	44.2 1.4	11.81 .29	2.9 1.3	45.41 .32	45.1 0.3
Mar. 10.8	30.03 .29	16.9 −0.1	22.94 .33	43.1 0.8	12.12 .31	1.8 0.8	45.73 .33	44.7 0.4
20.8	30.34 .31	16.9 +0.1	23.28 .34	42.6 −0.2	12.44 .32	1.3 −0.3	46.07 .34	44.3 0.4
30.7	30.65 .31	16.7 0.4	23.63 .34	42.7 +0.4	12.77 .33	1.3 +0.2	46.41 .34	43.9 0.5
Apr. 9.7	30.95 +.30	16.2 +0.6	23.97 +.34	43.4 +1.0	13.09 +.33	1.9 +0.9	46.75 +.34	43.4 +0.5
19.7	31.26 .30	15.6 0.7	24.30 .33	44.7 1.5	13.42 .33	3.0 1.4	47.09 .34	42.9 0.5
29.7	31.55 .29	14.8 0.9	24.62 .31	46.4 2.0	13.73 .30	4.7 1.8	47.43 .33	42.4 0.5
May 9.6	31.83 .27	13.8 1.0	24.92 .28	48.6 2.4	14.03 .28	6.7 2.2	47.75 .31	42.0 0.4
19.6	32.09 .25	12.8 1.1	25.19 .25	51.2 2.7	14.30 .26	9.1 2.5	48.06 .29	41.6 0.4
29.6	32.33 +.22	11.7 +1.1	25.42 +.22	54.0 +2.9	14.54 +.22	11.8 +2.8	48.34 +.27	41.3 +0.3
June 8.5	32.54 .19	10.6 1.1	25.62 .17	57.0 3.0	14.74 .19	14.6 2.9	48.60 .24	41.0 0.2
18.5	32.72 .16	9.6 1.0	25.77 .13	60.1 3.1	14.91 .14	17.5 3.0	48.82 .20	40.9 +0.1
28.5	32.86 .12	8.6 0.9	25.87 .08	63.2 3.1	15.03 .10	20.5 2.9	49.00 .16	40.9 0.0
July 8.5	32.97 .08	7.7 0.8	25.93 +.03	66.2 3.0	15.11 +.06	23.4 2.8	49.13 .11	41.0 −0.1
18.4	33.02 +.04	6.9 +0.7	25.93 −.02	69.1 +2.8	15.14 .00	26.2 +2.7	49.22 +.06	41.2 −0.2
28.4	33.04 .00	6.2 0.6	25.88 .07	71.8 2.5	15.12 −.04	28.8 2.5	49.26 +.02	41.5 0.3
Aug. 7.4	33.02 −.04	5.7 0.5	25.79 .12	74.2 2.2	15.05 .08	31.1 2.2	49.26 −.03	41.9 0.4
17.4	32.95 .08	5.3 0.4	25.65 .16	76.3 1.9	14.94 .13	33.2 1.9	49.20 .07	42.2 0.4
27.3	32.85 .11	4.9 0.3	25.47 .19	78.0 1.5	14.79 .17	34.9 1.5	49.11 .11	42.6 0.4
Sept. 6.3	32.73 −.14	4.7 +0.2	25.26 −.22	79.4 +1.1	14.61 −.19	36.3 +1.2	48.98 −.14	43.0 −0.3
16.3	32.58 .16	4.6 +0.1	25.02 .24	80.3 0.7	14.40 .21	37.3 0.8	48.83 .16	43.3 0.3
26.2	32.41 .16	4.6 0.0	24.77 .25	80.8 +0.2	14.18 .22	37.8 +0.3	48.66 .17	43.5 0.2
Oct. 6.2	32.25 .16	4.7 −0.1	24.52 .25	80.8 −0.2	13.95 .23	37.9 −0.1	48.48 .18	43.6 −0.1
16.2	32.09 .15	4.8 0.2	24.27 .24	80.3 0.7	13.73 .22	37.6 0.5	48.31 .17	43.7 0.0
26.2	31.96 −.12	5.1 −0.3	24.05 −.22	79.4 −1.2	13.52 −.20	36.9 −1.0	48.15 −.14	43.6 +0.1
Nov. 5.1	31.85 .09	5.4 0.4	23.84 .18	78.0 1.6	13.33 .17	35.7 1.4	48.02 .11	43.4 0.2
15.1	31.77 .06	5.9 0.5	23.68 .14	76.2 2.0	13.18 .13	34.1 1.8	47.92 .07	43.2 0.2
25.1	31.73 −.03	6.4 0.6	23.55 .10	74.0 2.4	13.07 .09	32.1 2.1	47.87 −.03	42.9 0.3
Dec. 5.1	31.74 +.03	7.1 0.7	23.48 −.05	71.5 2.7	13.00 −.05	29.8 2.4	47.86 +.00	42.6 0.3
15.0	31.79 +.07	7.8 −0.8	23.46 +.01	68.7 −2.9	12.97 .00	27.2 −2.7	47.90 +.06	42.2 +0.3
25.0	31.88 .12	8.6 0.8	23.49 .06	65.7 3.1	13.00 +.05	24.4 2.8	47.99 .11	41.9 0.3
35.0	32.02 +.16	9.5 −0.9	23.58 +.11	62.6 −3.1	13.08 +.10	21.5 −2.9	48.12 +.16	41.5 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	50 Draconis.				σ Octantis.				ζ Aquilæ.				δ Sagittarii.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*	
	h m		° ′		h		° ′		h m		° ′		h m		° ′	
	s		″		m s		″		s		″		s		″	
Jan. 0.0	39.62	−.10	28.6	−3.5	49 36.6	+3.6	50.5	+3.4	33.71	+.08	18.0	−2.0	28.24	+.11	32.6	−0.1
10.0	39.60	+.07	25.1	3.5	49 42.0	6.9	47.0	3.3	33.82	.13	15.9	2.0	28.37	.15	32.7	−0.1
20.0	39.75	.23	21.6	3.4	49 50.4	9.9	43.7	3.2	33.97	.17	13.9	1.9	28.54	.18	32.8	0.0
29.9	40.06	.39	18.3	3.2	50 1.8	12.6	40.7	2.9	34.16	.20	12.0	1.8	28.74	.22	32.8	0.0
Feb. 8.9	40.53	.53	15.3	2.8	50 15.6	14.9	37.9	2.6	34.37	.23	10.3	1.5	28.97	.25	32.7	+0.1
18.9	41.12	+.65	12.7	−2.4	50 31.5	+16.8	35.5	+2.2	34.61	+.25	8.9	−1.2	29.23	+.27	32.6	+0.2
28.8	41.82	.75	10.5	1.8	50 49.1	18.2	33.5	1.8	34.87	.27	7.9	0.9	29.51	.29	32.4	0.2
Mar. 10.8	42.61	.82	9.0	1.2	51 8.0	19.3	31.9	1.3	35.14	.28	7.2	0.5	29.80	.30	32.1	0.4
20.8	43.46	.86	8.1	−0.6	51 27.7	19.9	30.8	0.9	35.43	.29	6.9	−0.1	30.11	.31	31.6	0.5
30.8	44.34	.88	7.8	+0.1	51 47.8	20.0	30.2	+0.4	35.73	.30	7.0	+0.4	30.43	.32	31.0	0.6
Apr. 9.7	45.22	+.88	8.2	+0.7	52 8.0	+19.9	30.0	−0.1	36.03	+.30	7.6	+0.8	30.75	+.33	30.4	+0.7
19.7	46.06	.83	9.3	1.3	52 27.7	19.3	30.4	0.6	36.33	.30	8.6	1.1	31.08	.33	29.6	0.8
29.7	46.85	.75	10.9	1.9	52 46.7	18.4	31.2	1.1	36.63	.30	9.9	1.5	31.40	.32	28.8	0.8
May 9.7	47.56	.66	13.0	2.4	53 4.5	17.0	32.5	1.5	36.91	.28	11.5	1.8	31.72	.31	28.0	0.8
19.6	48.17	.55	15.7	2.8	53 20.7	15.3	34.2	1.9	37.18	.26	13.4	2.0	32.02	.29	27.2	0.8
29.6	48.65	+.42	18.6	+3.1	53 35.1	+13.3	36.3	−2.2	37.43	+.23	15.5	+2.1	32.31	+.27	26.4	+0.8
June 8.6	49.01	.28	21.8	3.3	53 47.2	10.9	38.7	2.5	37.65	.20	17.7	2.2	32.56	.24	25.6	0.7
18.5	49.22	+.14	25.2	3.4	53 56.9	8.3	41.3	2.8	37.84	.17	19.9	2.2	32.79	.21	25.0	0.6
28.4	49.29	−.01	28.7	3.5	54 3.9	5.6	44.2	2.9	37.99	.13	22.1	2.2	32.99	.17	24.5	0.5
July 8.4	49.21	.15	32.2	3.4	54 8.0	+2.6	47.2	3.0	38.10	.09	24.3	2.1	33.14	.13	24.1	0.4
18.4	48.98	−.30	35.5	+3.3	54 9.2	−0.4	50.2	−3.0	38.17	+.05	26.3	+2.0	33.24	+.09	23.8	+0.2
28.4	48.61	.43	38.7	3.1	54 7.3	3.4	53.2	2.9	38.19	.00	28.2	1.8	33.30	+.04	23.6	+0.1
Aug. 7.3	48.11	.56	41.7	2.8	54 2.4	6.2	56.0	2.7	38.18	−.04	29.9	1.6	33.32	−.01	23.6	0.0
17.3	47.49	.67	44.3	2.4	53 54.8	8.9	58.5	2.4	38.12	.09	31.4	1.3	33.28	.05	23.6	−0.1
27.3	46.76	.77	46.6	2.1	53 44.6	11.3	60.7	2.0	38.02	.11	32.6	1.1	33.21	.08	23.7	0.1
Sept. 6.2	45.95	−.85	48.5	+1.6	53 32.2	−13.2	62.5	−1.5	37.89	−.14	33.6	+0.8	33.10	−.12	23.9	−0.2
16.2	45.06	.91	49.9	1.2	53 18.0	14.7	63.8	1.0	37.74	.16	34.2	0.5	32.97	.15	24.1	0.2
26.2	44.13	.94	50.8	0.7	53 2.7	15.6	64.6	−0.5	37.57	.17	34.6	+0.2	32.81	.16	24.3	0.2
Oct. 6.2	43.18	.95	51.2	+0.1	52 46.8	15.9	64.7	+0.2	37.39	.17	34.7	0.0	32.64	.17	24.5	0.2
16.1	42.23	.94	51.0	−0.4	52 30.9	15.5	64.2	0.8	37.22	.17	34.5	−0.3	32.48	.16	24.6	0.1
26.1	41.30	−.90	50.4	−0.9	52 15.7	−14.5	63.2	+1.3	37.06	−.15	34.0	−0.6	32.32	−.14	24.7	−0.1
Nov. 5.1	40.43	.84	49.1	1.5	52 1.9	12.9	61.6	1.9	36.91	.13	33.2	0.9	32.19	.12	24.8	0.1
15.1	39.63	.75	47.4	2.0	51 50.0	10.7	59.4	2.4	36.80	.10	32.2	1.2	32.09	.09	24.9	0.1
25.1	38.93	.64	45.2	2.4	51 40.5	8.0	56.8	2.8	36.72	.06	30.8	1.4	32.02	.05	25.0	0.1
Dec. 5.1	38.36	.51	42.6	2.8	51 33.9	5.0	53.8	3.1	36.68	−.02	29.2	1.7	31.99	−.01	25.0	0.1
15.1	37.92	−.36	39.6	−3.1	51 30.4	−1.8	50.5	+3.3	36.68	+.03	27.5	−1.8	32.01	+.04	25.1	−0.1
25.0	37.64	.20	36.3	3.3	51 30.3	+1.5	47.1	3.4	36.73	.06	25.6	1.9	32.07	.08	25.1	0.1
35.0	37.52	−.04	32.9	−3.5	51 33.4	+4.8	43.6	+3.5	36.81	+.10	23.6	−2.0	32.18	+.12	25.2	−0.1

APPAREMT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.				τ Draconis.				δ Aquilæ.				α Aquilæ.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.	
	h m 19 12		° ′ +67 28		h m 19 17		° ′ +73 9		h m 19 20		° ′ + 2 54		h m 19 31		° ′ − 7 15	
	s		″		s		″		s		″		s		″	
Jan. 0.0	27.95	−.09	31.0	−3.5	29.14	−.16	32.9	−3.5	11.01	+.08	10.9	−1.4	13.35	+.09	48.1	−0.7
10.0	27.93	+.03	27.5	3.5	29.05	−.08	29.4	3.5	11.11	.12	9.6	1.4	13.45	.12	48.9	0.7
20.0	28.01	.14	24.0	3.4	29.11	+.13	26.0	3.4	11.25	.16	8.2	1.3	13.59	.15	49.6	0.7
29.9	28.21	.24	20.6	3.2	29.31	.27	22.6	3.2	11.42	.19	7.0	1.2	13.76	.18	50.2	0.6
Feb. 8.9	28.50	.34	17.5	3.0	29.64	.40	19.4	3.0	11.62	.21	5.8	1.0	13.95	.21	50.7	0.5
18.9	28.88	+.43	14.7	−2.5	30.10	+.51	16.6	−2.6	11.85	+.24	4.9	−0.8	14.18	+.23	51.1	−0.3
28.9	29.34	.49	12.4	2.0	30.67	.61	14.2	2.1	12.09	.26	4.3	0.5	14.43	.25	51.3	−0.1
Mar. 10.8	29.86	.55	10.6	1.5	31.32	.69	12.4	1.5	12.36	.27	3.9	−0.2	14.69	.27	51.3	+0.1
20.8	30.43	.59	9.5	0.8	32.04	.74	11.1	0.9	12.64	.29	3.9	+0.1	14.98	.29	51.1	0.4
30.8	31.03	.61	9.0	−0.2	32.80	.77	10.5	−0.2	12.94	.30	4.1	0.4	15.27	.30	50.6	0.6
Apr. 9.8	31.64	+.61	9.2	+0.5	33.58	+.77	10.6	+0.3	13.24	+.30	4.7	+0.8	15.58	+.31	49.9	+0.8
19.7	32.24	.59	10.0	1.1	34.35	.75	11.3	1.0	13.54	.30	5.7	1.1	15.89	.31	49.0	1.0
29.7	32.82	.56	11.4	1.7	35.09	.71	12.6	1.6	13.84	.30	6.8	1.3	16.20	.31	47.9	1.2
May 9.7	33.36	.51	13.4	2.2	35.77	.65	14.5	2.2	14.14	.30	8.2	1.5	16.50	.30	46.6	1.3
19.6	33.84	.44	15.9	2.7	36.38	.56	16.9	2.6	14.42	.27	9.9	1.7	16.80	.29	45.3	1.3
29.6	34.25	+.37	18.7	+3.0	36.89	+.46	19.7	+3.0	14.68	+.25	11.6	+1.8	17.08	+.27	43.9	+1.4
June 8.6	34.58	.29	21.9	3.3	37.30	.35	22.8	3.2	14.92	.22	13.4	1.8	17.33	.24	42.5	1.4
18.6	34.82	.19	25.4	3.5	37.59	.23	26.2	3.4	15.14	.19	15.2	1.8	17.56	.21	41.2	1.3
28.5	34.96	+.10	28.9	3.5	37.75	+.10	29.7	3.5	15.31	.16	16.9	1.7	17.76	.18	39.9	1.2
July 8.5	35.01	.03	32.4	3.5	37.79	−.03	33.2	3.5	15.45	.12	18.6	1.6	17.91	.14	38.8	1.1
18.5	34.96	−.10	35.9	+3.4	37.69	−.16	36.8	+3.5	15.55	+.07	20.2	+1.5	18.03	+.09	37.7	+0.9
28.5	34.81	.20	39.3	3.3	37.47	.26	40.2	3.3	15.60	+.03	21.6	1.3	18.10	+.05	36.9	0.8
Aug. 7.4	34.56	.29	42.5	3.0	37.12	.40	43.4	3.1	15.61	−.01	22.8	1.2	18.12	.00	36.1	0.7
17.4	34.23	.37	45.4	2.7	36.66	.51	46.3	2.8	15.58	.05	23.9	1.0	18.11	−.04	35.5	0.5
27.4	33.82	.45	47.9	2.4	36.10	.60	48.9	2.4	15.51	.09	24.8	0.8	18.05	.09	35.1	0.4
Sept. 6.3	33.34	−.50	50.1	+1.9	35.46	−.68	51.2	+2.0	15.40	−.12	25.4	+0.6	17.95	−.11	34.8	+0.2
16.3	32.81	.55	51.8	1.5	34.74	.75	53.0	1.6	15.27	.14	25.9	0.4	17.83	.13	34.7	+0.1
26.3	32.24	.58	53.0	1.0	33.96	.79	54.3	1.1	15.12	.16	26.2	+0.2	17.69	.15	34.6	0.0
Oct. 6.3	31.65	.60	53.7	+0.5	33.16	.81	55.2	0.6	14.96	.16	26.2	0.0	17.53	.16	34.7	−0.1
16.2	31.05	.59	53.9	−0.1	32.34	.81	55.5	+0.1	14.80	.15	26.1	−0.2	17.37	.15	34.9	0.2
26.2	30.46	−.57	53.5	−0.6	31.53	−.79	55.2	−0.5	14.65	−.14	25.8	−0.4	17.22	−.14	35.1	−0.3
Nov. 5.2	29.90	.54	52.6	1.2	30.75	.75	54.4	1.1	14.51	.12	25.2	0.6	17.09	.12	35.5	0.4
15.2	29.39	.48	51.1	1.7	30.03	.68	53.1	1.6	14.40	.09	24.5	0.8	16.98	.09	35.9	0.5
25.1	28.93	.41	49.2	2.2	29.38	.60	51.2	2.1	14.32	.06	23.6	1.0	16.90	.06	36.4	0.6
Dec. 5.1	28.56	.32	46.7	2.6	28.83	.50	48.9	2.5	14.28	−.03	22.6	1.1	16.86	−.03	37.0	0.6
15.1	28.27	−.24	43.9	−3.0	28.39	−.38	46.2	−2.9	14.28	+.03	21.4	−1.2	16.85	+.02	37.7	−0.7
25.0	28.08	.14	40.7	3.3	28.08	.24	43.1	3.2	14.32	.06	20.1	1.3	16.89	.06	38.4	0.7
35.0	27.99	−.04	37.4	−3.5	27.91	−.10	39.8	−3.4	14.40	+.10	18.8	−1.4	16.96	+.10	39.1	−0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.				ε Aquilæ. (*Alitair.*)				ε Draconis.				β Aquilæ.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
	h m		° ′		h m		° ′		h m		° ′		h m		° ′	
	19 41		+10 21		19 45		+ 8 35		19 48		+69 59		19 50		+ 6 8	
	s		″		s		″		s		″		s		″	
Jan. 0.0	14.79	+.06	19.0	−1.7	38.37	+.05	19.9	−1.6	27.04	−.19	59.9	−3.2	8.11	+.05	32.3	−1.5
10.0	14.87	.09	17.3	1.7	38.44	.09	18.3	1.6	26.91	−.08	56.6	3.4	8.18	.09	30.8	1.5
20.0	14.98	.13	15.6	1.6	38.55	.13	16.7	1.5	26.89	+.04	53.2	3.4	8.28	.13	29.3	1.4
30.0	15.13	.16	14.0	1.5	38.70	.16	15.2	1.4	27.00	.16	49.8	3.3	8.42	.16	28.0	1.3
Feb. 8.9	15.30	.19	12.5	1.3	38.87	.19	13.9	1.2	27.22	.27	46.5	3.1	8.60	.19	26.7	1.1
18.9	15.51	+.22	11.3	−1.1	39.07	+.22	12.7	−1.0	27.55	+.38	43.5	−2.8	8.79	+.21	25.7	−0.9
28.9	15.74	.24	10.3	0.8	39.30	.24	11.9	0.7	27.98	.47	40.9	2.4	9.02	.24	24.9	0.6
Mar. 10.9	15.99	.26	9.7	0.4	39.55	.26	11.3	−0.4	28.49	.55	38.8	1.9	9.27	.26	24.4	−0.3
20.8	16.26	.26	9.5	−0.1	39.82	.26	11.1	0.0	29.08	.61	37.2	1.3	9.53	.27	24.3	+0.1
30.8	16.55	.29	9.6	+0.3	40.11	.29	11.3	+0.4	29.71	.65	36.3	−0.6	9.81	.29	24.5	0.4
Apr. 9.8	16.84	+.30	10.1	+0.7	40.40	+.30	11.9	+0.7	30.38	+.67	36.0	0.0	10.11	+.30	25.1	+0.7
19.7	17.15	.30	11.1	1.1	40.71	.30	12.8	1.1	31.05	.67	36.4	+0.7	10.41	.30	26.0	1.1
29.7	17.45	.30	12.3	1.4	41.01	.30	14.1	1.4	31.72	.65	37.3	1.3	10.72	.30	27.2	1.4
May 9.7	17.75	.29	13.9	1.7	41.32	.30	15.6	1.7	32.35	.61	38.9	1.9	11.02	.30	28.7	1.5
19.7	18.04	.28	15.7	1.9	41.61	.29	17.4	1.9	32.93	.55	41.0	2.3	11.32	.29	30.4	1.8
29.6	18.32	+.26	17.6	+2.0	41.89	+.27	19.4	+2.0	33.45	+.48	43.6	+2.8	11.60	+.27	32.3	+1.9
June 8.6	18.57	.24	19.7	2.1	42.15	.24	21.4	2.1	33.89	.39	46.6	3.1	11.85	.25	34.3	2.0
18.6	18.79	.21	21.9	2.2	42.37	.21	23.5	2.1	34.23	.29	49.9	3.4	12.09	.22	36.2	2.0
28.6	18.98	.17	24.1	2.1	42.57	.18	25.6	2.1	34.48	.19	53.3	3.5	12.29	.18	38.2	2.0
July 8.5	19.14	.13	26.2	2.0	42.73	.14	27.7	2.0	34.61	+.08	56.9	3.6	12.45	.14	40.2	1.9
18.5	19.25	+.09	28.2	+1.9	42.84	+.09	29.6	+1.9	34.64	−.03	60.6	+3.6	12.57	+.10	42.0	+1.7
28.5	19.31	+.04	30.1	1.8	42.92	.05	31.4	1.7	34.56	.14	64.1	3.5	12.65	.06	43.6	1.6
Aug. 7.4	19.33	.00	31.8	1.6	42.94	+.01	33.1	1.5	34.36	.24	67.6	3.3	12.68	+.01	45.1	1.4
17.4	19.31	−.04	33.3	1.4	42.93	−.04	34.5	1.3	34.07	.34	70.8	3.1	12.67	−.03	46.4	1.2
27.4	19.25	.08	34.5	1.1	42.87	.08	35.7	1.1	33.68	.43	73.7	2.8	12.62	.07	47.5	1.0
Sept. 6.4	19.15	−.11	35.6	+0.9	42.78	−.11	36.7	+0.9	33.21	−.51	76.3	+2.4	12.53	−.11	48.4	+0.8
16.3	19.02	.14	36.3	0.6	42.66	.13	37.4	0.6	32.66	.57	78.6	2.0	12.42	.13	49.0	0.5
26.3	18.87	.16	36.8	0.4	42.51	.15	37.9	0.4	32.07	.62	80.3	1.5	12.28	.15	49.4	0.3
Oct. 6.3	18.71	.16	37.1	+0.1	42.36	.16	38.2	+0.1	31.43	.65	81.6	1.0	12.12	.16	49.6	+0.1
16.3	18.54	.16	37.1	−0.1	42.19	.16	38.1	−0.1	30.76	.66	82.4	+0.5	11.96	.16	49.6	−0.1
26.2	18.38	−.15	36.8	−0.4	42.04	−.15	37.9	−0.4	30.10	−.66	82.6	−0.1	11.80	−.15	49.3	−0.4
Nov. 5.2	18.24	.14	36.3	0.7	41.89	.13	37.4	0.6	29.45	.63	82.3	0.6	11.66	.13	48.8	0.6
15.2	18.11	.11	35.5	0.9	41.77	.11	36.7	0.8	28.83	.59	81.4	1.2	11.53	.11	48.1	0.8
25.2	18.01	.08	34.5	1.1	41.67	.08	35.7	1.1	28.26	.53	79.9	1.7	11.44	.08	47.2	1.0
Dec. 5.1	17.95	.04	33.2	1.3	41.61	.04	34.6	1.2	27.77	.45	77.9	2.2	11.37	.05	46.2	1.2
15.1	17.92	−.01	31.8	−1.5	41.58	−.01	33.2	−1.4	27.35	−.36	75.5	−2.6	11.35	−.01	44.9	−1.5
25.1	17.93	+.03	30.2	1.6	41.59	+.03	31.8	1.5	27.04	.26	72.6	3.0	11.35	+.03	43.6	1.4
35.0	17.99	+.07	28.5	−1.7	41.64	+.07	30.2	−1.6	26.84	−.15	69.5	−3.2	11.40	+.07	42.1	−1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		a^2 Capricorni.		ε Cephei.		ε Pavonis.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	h m 19 58	° ′ + 6 58	h m 20 12	° −12 52	h m 20 12	° +77 23	h m 20 17	° −57 4
	s	″	s	″	s	″	s	″
Jan. 0.1	59.47 +.04	46.3 −1.5	12.65 +.06	22.5 −0.3	18.15 −.47	43.4 −2.9	19.28 +.03	30.6 +2.2
10.0	59.54 .08	44.8 1.5	12.71 .06	22.8 0.3	17.77 .39	40.3 3.2	19.35 .10	28.3 2.3
20.0	59.63 .11	43.4 1.4	12.81 .12	23.0 0.2	17.57 −.16	37.1 3.2	19.48 .16	25.9 2.4
30.0	59.76 .15	42.0 1.3	12.95 .15	23.2 −0.1	17.57 +.09	33.7 3.3	19.68 .23	23.5 2.5
Feb. 9.0	59.93 .18	40.7 1.1	13.11 .18	23.3 0.0	17.75 .26	30.4 3.2	19.93 .29	21.0 2.4
18.9	60.12 +.22	39.7 −0.9	13.30 +.21	23.2 +0.2	18.12 +.45	27.3 −3.0	20.25 +.34	18.6 +2.4
28.9	60.33 .23	38.9 0.6	13.52 .23	23.0 0.3	18.66 .61	24.5 2.6	20.61 .38	16.3 2.3
Mar. 10.9	60.57 .25	38.4 −0.3	13.77 .26	22.6 0.5	19.35 .75	22.1 2.1	21.02 .43	14.1 2.1
20.8	60.84 .27	38.3 0.0	14.03 .26	22.0 0.7	20.17 .86	20.2 1.6	21.46 .46	12.1 1.9
30.8	61.12 .29	38.5 +0.4	14.32 .29	21.2 0.9	21.06 .94	18.9 1.0	21.94 .49	10.3 1.7
Apr. 9.8	61.41 +.30	39.1 +0.7	14.62 +.31	20.2 +1.0	22.06 +.99	18.3 −0.4	22.45 +.51	8.7 +1.4
19.8	61.71 .30	40.0 1.1	14.93 .32	19.1 1.2	23.07 1.01	18.2 +0.3	22.97 .52	7.4 1.1
29.7	62.02 .31	41.2 1.4	15.25 .32	17.9 1.3	24.07 .99	18.8 0.9	23.50 .53	6.5 0.8
May 9.7	62.32 .30	42.8 1.6	15.57 .32	16.6 1.3	25.05 .94	20.0 1.5	24.03 .53	5.8 0.5
19.7	62.62 .30	44.5 1.8	15.89 .31	15.2 1.4	25.95 .86	21.8 2.0	24.56 .51	5.5 +0.1
29.7	62.90 +.27	46.4 +2.0	16.20 +.30	13.9 +1.3	26.77 +.75	24.1 +2.5	25.06 +.49	5.6 −0.2
June 8.6	63.17 .25	48.4 2.0	16.49 .28	12.5 1.3	27.46 .63	26.8 2.9	25.54 .45	6.0 0.6
18.6	63.41 .22	50.5 2.1	16.75 .25	11.3 1.2	28.02 .49	29.8 3.2	25.97 .41	6.7 0.9
28.6	63.62 .19	52.5 2.0	16.98 .22	10.2 1.1	28.42 .33	33.2 3.4	26.35 .35	7.8 1.2
July 8.5	63.78 .15	54.5 1.9	17.18 .18	9.2 0.9	28.67 +.16	36.7 3.6	26.67 .28	9.1 1.5
18.5	63.91 +.11	56.4 +1.8	17.34 +.14	8.3 +0.8	28.75 −.01	40.3 +3.6	26.93 +.21	10.7 −1.7
28.5	64.00 .08	58.2 1.7	17.45 .09	7.6 0.6	28.66 .17	43.9 3.6	27.10 .14	12.5 1.8
Aug. 7.5	64.04 +.03	59.7 1.5	17.52 +.04	7.1 0.4	28.40 .33	47.5 3.5	27.20 +.09	14.4 1.9
17.4	64.04 −.03	61.1 1.3	17.54 .00	6.8 0.3	27.99 .49	50.9 3.3	27.22 −.03	16.4 2.0
27.4	63.99 .08	62.3 1.1	17.52 −.04	6.6 +0.1	27.42 .69	54.1 3.0	27.16 .09	18.3 1.9
Sept. 6.4	63.91 −.10	63.3 +0.8	17.45 −.08	6.6 0.0	26.72 −.76	57.0 +2.7	27.03 −.16	20.2 −1.8
16.4	63.80 .13	64.0 0.6	17.36 .11	6.6 −0.1	25.90 .87	59.6 2.4	26.84 .22	21.9 1.5
26.3	63.66 .15	64.4 0.4	17.23 .13	6.8 0.2	24.98 .95	61.7 2.0	26.59 .29	23.3 1.2
Oct. 6.3	63.51 .16	64.7 +0.1	17.09 .15	7.0 0.2	23.99 1.02	63.5 1.5	26.31 .29	24.4 0.9
16.3	63.35 .16	64.7 −0.1	16.93 .15	7.3 0.3	22.94 1.06	64.7 1.0	26.00 .31	25.1 0.5
26.2	63.19 −.16	64.5 −0.3	16.78 −.15	7.6 −0.3	21.87−1.07	65.4 +0.4	25.69 −.30	25.4 −0.1
Nov. 5.2	63.05 .14	64.0 0.6	16.64 .13	7.9 0.3	20.80 1.06	65.5 −0.1	25.39 .28	25.3 +0.3
15.2	62.92 .12	63.3 0.8	16.52 .11	8.2 0.3	19.76 1.01	65.1 0.7	25.12 .25	24.8 0.7
25.2	62.82 .09	62.5 0.9	16.42 .08	8.6 0.3	18.77 .94	64.1 1.3	24.89 .21	23.9 1.1
Dec. 5.1	62.75 .06	61.4 1.1	16.35 .06	8.9 0.3	17.68 .84	62.5 1 8	24.71 .15	22.5 1.5
15.1	62.71 −.03	60.2 −1.3	16.31 −.03	9.3 −0.3	17.09 −.71	60.5 −2.3	24.59 −.08	20.9 +1.8
25.1	62.71 +.00	58.9 1.4	16.32 +.02	9.6 0.3	16.45 .56	57.9 2.7	24.54 −.02	18.9 2.1
35.1	62.75 +.06	57.4 −1.5	16.36 +.06	9.9 −0.3	15.97 −.39	55.1 −3 0	24.56 +.05	16.7 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		π Capricorni.		ε Delphini.		Groombridge 3241.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	20 18	+39 54	20 21	−18 33	20 28	+10 56	20 30	+72 10
	s	″	s	″	s	″	s	″
Jan. 0.1	25.90 −.04	71.8 −2.6	17.64 +.04	31.7 0.0	10.63 +.01	41.6 −1.6	22.55 −.34	35.8 −2.8
10.0	25.89 +.01	69.0 2.8	17.70 .06	31.6 +0.1	10.66 .05	40.1 1.6	22.26 .22	32.8 3.1
20.0	25.93 .06	66.2 2.9	17.80 .11	31.5 0.2	10.73 .06	38.5 1.5	22.11 −.09	29.6 3.3
30.0	26.01 .11	63.3 2.8	17.93 .14	31.3 0.3	10.82 .11	36.9 1.4	22.08 +.04	26.2 3.3
Feb. 9.0	26.14 .15	60.6 2.6	18.09 .18	31.0 0.4	10.96 .15	35.5 1.3	22.19 .17	22.9 3.2
18.9	26.32 +.19	58.1 −2.3	18.28 +.21	30.5 +0.5	11.12 +.18	34.3 −1.1	22.43 +.30	19.8 −3.0
28.9	26.53 .23	55.9 2.0	18.50 .23	29.9 0.6	11.31 .20	33.3 0.8	22.79 .42	16.9 2.7
Mar. 10.9	26.79 .27	54.2 1.5	18.74 .26	29.2 0.8	11.53 .23	32.7 0.5	23.26 .58	14.4 2.2
20.9	27.07 .30	52.9 1.0	19.01 .28	28.4 0.9	11.77 .25	32.4 −0.1	23.83 .61	12.4 1.7
30.8	27.39 .33	52.2 −0.4	19.30 .30	27.4 1.0	12.04 .27	32.5 +0.3	24.48 .68	10.9 1.1
Apr. 9.8	27.72 +.34	52.1 +0.1	19.60 +.31	26.3 +1.1	12.32 +.29	33.0 +0.7	25.18 +.73	10.1 −0.5
19.8	28.07 .35	52.5 0.7	19.92 .32	25.1 1.2	12.62 .30	33.8 1.0	25.92 .74	9.9 +0.1
29.7	28.43 .36	53.5 1.3	20.25 .33	23.9 1.3	12.93 .31	35.0 1.4	26.67 .74	10.3 0.5
May 9.7	28.79 .35	55.0 1.8	20.58 .33	22.6 1.3	13.24 .31	36.6 1.7	27.40 .73	11.4 1.4
19.7	29.13 .34	57.0 2.2	20.91 .33	21.3 1.3	13.55 .30	38.4 1.9	28.10 .67	13.1 1.9
29.7	29.46 +.31	59.4 +2.6	21.23 +.31	20.0 +1.2	13.84 +.28	40.4 +2.1	28.75 +.61	15.2 +2.4
June 8.6	29.76 .28	62.2 2.9	21.53 .29	18.9 1.1	14.13 .27	42.5 2.2	29.32 .53	17.9 2.8
18.6	30.03 .24	65.2 3.1	21.81 .26	17.8 1.0	14.39 .24	44.8 2.3	29.80 .43	20.9 3.1
28.6	30.25 .20	68.3 3.2	22.06 .23	16.9 0.8	14.61 .21	47.0 2.3	30.18 .33	24.2 3.4
July 8.6	30.43 .15	71.6 3.3	22.27 .19	16.2 0.6	14.81 .17	49.3 2.2	30.45 .21	27.7 3.5
18.5	30.56 +.10	74.8 +3.2	22.44 +.15	15.7 +0.4	14.96 +.13	51.4 +2.1	30.60 +.09	31.3 +3.7
28.5	30.63 +.05	78.0 3.1	22.57 .10	15.3 0.3	15.07 .09	53.5 2.0	30.62 −.03	35.0 3.7
Aug. 7.5	30.65 −.01	81.1 3.0	22.65 .05	15.1 +0.1	15.13 +.04	55.3 1.8	30.53 .15	38.7 3.6
17.4	30.62 .06	84.0 2.8	22.68 +.01	15.1 0.0	15.15 .00	57.0 1.6	30.32 .27	42.2 3.4
27.4	30.54 .10	86.6 2.5	22.67 −.04	15.2 −0.2	15.13 −.04	58.5 1.3	29.99 .37	45.5 3.2
Sept. 6.4	30.41 −.15	89.0 +2.2	22.61 −.08	15.5 −0.3	15.07 −.08	59.7 +1.1	29.57 −.47	48.6 +2.9
16.4	30.25 .19	90.9 1.8	22.52 .11	15.8 0.3	14.98 .11	60.7 0.8	29.05 .56	51.4 2.5
26.3	30.05 .21	92.5 1.4	22.39 .13	16.1 0.4	14.85 .13	61.4 0.6	28.46 .62	53.7 2.1
Oct. 6.3	29.83 .23	93.7 1.0	22.25 .15	16.5 0.4	14.71 .15	61.8 0.3	27.80 .68	55.6 1.7
16.3	29.59 .24	94.4 +0.5	22.10 .15	16.9 0.4	14.55 .16	62.0 +0.1	27.10 .71	57.1 1.2
26.2	29.35 −.23	94.7 0.0	21.94 −.15	17.3 −0.3	14.39 −.15	62.0 −0.1	26.38 −.73	58.0 +0.6
Nov. 5.2	29.12 .22	94.4 −0.5	21.79 .14	17.6 0.3	14.24 .14	61.6 0.4	25.65 .72	58.3 +0.1
15.2	28.91 .20	93.7 0.9	21.66 .12	17.8 0.2	14.11 .13	61.0 0.7	24.94 .70	58.1 −0.5
25.2	28.71 .18	92.6 1.4	21.56 .09	18.0 0.2	13.99 .10	60.2 0.9	24.25 .65	57.3 1.1
Dec. 5.1	28.55 .14	91.0 1.8	21.48 .06	18.2 0.1	13.90 .07	59.2 1.1	23.63 .59	55.9 1.6
15.1	28.43 −.10	89.0 −2.2	21.44 −.02	18.3 −0.1	13.84 −.04	57.9 −1.3	23.08 −.56	54.0 −2.1
25.1	28.34 .06	86.6 2.5	21.43 +.01	18.3 0.0	13.82 −.01	56.5 1.5	22.62 .41	51.6 2.5
35.1	28.31 −.02	84.0 −2.7	21.47 +.05	18.3 0.0	13.82 +.02	55.0 −1.6	22.27 −.29	48.9 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 20 37	° ′ +44 53	h m 20 46	° ′ − 9 22	h m 20 52	° ′ +80 9	h m 20 53	° ′ +40 45
	s	″	s	″	s	″	s	″
Jan. 0.1	49.21 −.07	78.2 −2.6	58.46 +.01	47.3 −0.5	11.90− .80	35.3 −2.5	13.75 −.07	47.1 −2.5
10.1	49.16 −.09	75.5 2.8	58.49 .05	47.7 0.4	11.20 .80	32.6 2.9	13.70 −.03	44.5 2.6
20.0	49.16 +.03	72.6 2.9	58.55 .06	48.1 0.3	10.71 .37	29.6 3.1	13.70 +.03	41.8 2.7
30.0	49.21 .06	69.7 2.9	58.65 .11	48.4 0.2	10.46− .13	26.3 3.2	13.74 .05	39.0 2.8
Feb. 9.0	49.32 .13	66.8 2.8	58.77 .14	48.6 −0.1	10.45+ .11	23.1 3.2	13.82 .11	36.3 2.5
19.0	49.47 +.18	64.1 −2.5	58.93 +.17	48.6 +0.1	10.68+ .35	19.8 −3.1	13.96 +.16	33.7 −2.4
28.9	49.67 .22	61.7 2.2	59.12 .20	48.4 0.3	11.16 .56	16.8 2.9	14.13 .20	31.4 2.1
Mar. 10.9	49.92 .27	59.7 1.8	59.33 .23	48.0 0.5	11.84 .78	14.1 2.5	14.35 .24	29.5 1.7
20.9	50.20 .30	58.2 1.3	59.57 .25	47.4 0.7	12.72 .96	11.8 2.0	14.61 .26	28.0 1.2
30.8	50.52 .33	57.2 0.7	59.83 .27	46.6 0.9	13.76 1.10	10.1 1.5	14.91 .31	27.0 0.7
Apr. 9.8	50.87 +.36	56.8 −0.1	60.11 +.29	45.6 +1.1	14.92+1.20	8.9 −0.9	15.23 +.33	26.6 −0.2
19.8	51.24 .37	57.0 +0.5	60.41 .31	44.4 1.3	16.16 1.25	8.3 −0.3	15.57 .35	26.8 +0.4
29.8	51.61 .38	57.7 1.1	60.72 .32	43.1 1.4	17.43 1.27	8.3 +0.3	15.94 .36	27.5 1.0
May 9.7	51.99 .38	59.1 1.6	61.04 .32	41.6 1.5	18.69 1.26	9.0 1.0	16.30 .36	28.7 1.5
19.7	52.37 .38	60.9 2.1	61.36 .32	40.0 1.6	19.90 1.17	10.3 1.5	16.66 .35	30.5 2.0
29.7	52.72 +.34	63.2 +2.5	61.67 +.31	38.4 +1.6	21.03+1.07	12.1 +2.0	17.01 +.34	32.6 +2.4
June 8.6	53.05 .31	65.9 2.8	61.97 .30	36.8 1.5	22.04 .93	14.4 2.5	17.34 .32	35.2 2.7
18.6	53.35 .27	68.9 3.1	62.26 .27	35.2 1.4	22.90 .77	17.1 2.9	17.64 .30	38.1 3.0
28.6	53.60 .23	72.1 3.3	62.51 .24	33.8 1.4	23.59 .58	20.2 3.2	17.91 .24	41.2 3.2
July 8.6	53.81 .18	75.4 3.4	62.74 .20	32.5 1.2	24.09 .40	23.6 3.5	18.13 .20	44.4 3.3
18.5	53.96 +.12	78.8 +3.4	62.92 +.16	31.3 +1.0	24.39+ .19	27.1 +3.6	18.30 +.15	47.7 +3.3
28.5	54.05 .07	82.2 3.3	63.06 .12	30.3 0.9	24.48− .08	30.8 3.7	18.42 .09	51.0 3.2
Aug. 7.5	54.09 +.01	85.5 3.2	63.16 .07	29.6 0.7	24.36 .22	34.5 3.6	18.48 +.04	54.2 3.1
17.5	54.07 −.05	88.6 3.0	63.21 +.03	29.0 0.5	24.03 .42	38.1 3.6	18.49 −.02	57.3 3.0
27.4	54.00 .10	91.5 2.8	63.22 −.01	28.6 0.3	23.51 .62	41.6 3.4	18.45 .07	60.1 2.7
Sept. 6.4	53.88 −.15	94.1 +2.5	63.18 −.05	28.3 +0.1	22.80− .79	44.9 +3.2	18.36 −.11	62.7 +2.4
16.4	53.71 .19	96.4 2.1	63.11 .08	28.2 0.0	21.92 .95	48.0 2.9	18.23 .15	65.0 2.1
26.3	53.51 .22	98.3 1.7	63.01 .11	28.3 −0.1	20.90 1.09	50.7 2.5	18.06 .18	66.9 1.7
Oct. 6.3	53.27 .24	99.8 1.3	62.88 .13	28.5 0.2	19.75 1.20	53.0 2.1	17.86 .21	68.4 1.3
16.3	53.02 .25	100.8 0.8	62.74 .14	28.7 0.3	18.50 1.28	54.8 1.6	17.64 .26	69.5 0.9
26.3	52.77 −.26	101.4 +0.3	62.60 −.14	29.0 −0.4	17.19−1.33	56.2 +1.1	17.42 −.22	70.2 +0.5
Nov. 5.2	52.51 .25	101.5 −0.2	62.46 .13	29.4 0.4	15.84 1.35	57.0 +0.5	17.19 .23	70.3 0.0
15.2	52.26 .23	101.0 0.7	62.33 .12	29.9 0.4	14.49 1.34	57.3 0.0	16.97 .21	70.0 −0.5
25.2	52.04 .21	100.1 1.2	62.22 .10	30.3 0.5	13.17 1.32	56.9 −0.6	16.76 .19	69.3 1.0
Dec. 5.2	51.84 .18	98.6 1.6	62.13 .07	30.8 0.5	11.92 1.19	56.0 1.2	16.58 .17	68.0 1.5
15.1	51.68 −.14	96.8 −0.1	62.07 −.04	31.3 −0.5	10.78−1.07	54.5 −1.7	16.43 −.13	66.3 −1.9
25.1	51.56 .10	94.5 2.4	62.05 −.01	31.7 0.5	9.78 .91	52.5 2.2	16.31 .09	64.3 2.0
35.1	51.48 −.05	91.9 −2.7	62.05 +.02	32.2 −0.4	8.96− .72	50.0 −2.7	16.24 −.05	61.9 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61¹ Cygni.				ζ Cygni.				α Cephei.				1 Pegasi.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m	s	° ′	″	h m	s	° ′	″	h m	s	° ′	″	h m	s	° ′	″
	21 2		+38 13		21 8		+29 47		21 16		+62 8		21 17		+19 21	
Jan. 0.1		9.74		59.6		26.60		45.8		1.43		32.1		12.63		16.8
		−.06		−2.8		−.05		−2.0		−.01		−2.4		−.04		−1.5
10.1		9.70		57.3		26.57		43.7		1.22		29.4		12.61		15.1
		−.02		2.4		+.02		2.2		.17		2.8		−.01		1.7
20.0		9.70		54.8		26.57		41.4		1.08		26.5		12.62		13.3
		+.02		2.5		+.02		2.3		.10		3.0		+.03		1.8
30.0		9.74		52.2		26.61		39.1		1.02		23.4		12.66		11.5
		.07		2.5		.03		2.3		−.02		3.1		.00		1.8
Feb. 9.0		9.83		49.7		26.68		36.9		1.03		20.2		12.74		9.7
		.11		2.4		.10		2.2		+.05		3.2		.00		1.7
19.0		9.96		47.3		26.80		34.7		1.13		17.1		12.85		8.1
		+.15		−2.2		+.14		−2.0		+.14		−3.0		+.13		−1.5
29.9		10.13		45.2		26.96		32.9		1.32		14.1		12.99		6.8
		.19		2.0		.17		1.7		.22		2.8		.16		1.3
Mar. 10.9		10.35		43.4		27.15		31.3		1.58		11.5		13.17		5.7
		.23		1.6		.21		1.3		.30		2.4		.19		0.9
20.9		10.61		42.0		27.37		30.2		1.91		9.3		13.38		5.0
		.27		1.1		.24		0.9		.37		2.0		.22		0.5
30.9		10.89		41.2		27.63		29.5		2.31		7.5		13.62		4.7
		.30		0.6		.27		−0.4		.42		1.4		.25		−0.1
Apr. 9.8		11.21		40.8		27.92		29.3		2.76		6.4		13.88		4.8
		+.32		−0.1		+.30		+0.1		+.47		−0.8		+.26		+0.2
19.8		11.55		41.0		28.22		29.6		3.25		5.8		14.17		5.3
		.35		+0.5		.32		0.5		.50		−0.2		.30		0.8
29.8		11.91		41.8		28.55		30.4		3.77		5.9		14.48		6.3
		.36		1.0		.33		1.6		.52		+0.4		.31		1.3
May 9.7		12.28		43.1		28.88		31.6		4.30		6.6		14.80		7.7
		.37		1.5		.34		1.5		.53		1.0		.32		1.5
19.7		12.65		44.9		29.22		33.3		4.83		7.9		15.12		9.4
		.36		2.0		.33		1.9		.52		1.6		.32		1.9
29.7		13.00		47.1		29.55		35.4		5.34		9.7		15.44		11.4
		+.35		+2.4		+.33		+2.2		+.49		+2.1		+.31		+2.1
June 8.7		13.34		49.7		29.87		37.8		5.81		12.1		15.75		13.6
		.33		2.7		.30		2.5		.45		2.5		.30		2.3
18.6		13.66		52.6		30.16		40.5		6.25		14.8		16.04		16.1
		.30		3.0		.28		2.7		.40		2.9		.28		2.5
28.6		13.93		55.7		30.43		43.3		6.62		17.9		16.31		18.7
		.26		3.2		.25		2.9		.34		3.2		.25		2.6
July 8.6		14.17		58.9		30.65		46.2		6.93		21.3		16.54		21.3
		.21		3.3		.21		3.0		.27		3.5		.22		2.6
18.6		14.36		62.3		30.84		49.2		7.18		24.9		16.74		23.9
		+.17		+3.3		+.16		+3.0		+.29		+3.6		+.17		+2.6
28.5		14.50		65.6		30.98		52.2		7.33		28.6		16.89		26.4
		.13		3.3		.12		2.9		.19		3.7		.13		2.5
Aug. 7.5		14.59		68.8		31.07		55.0		7.40		32.3		17.00		28.8
		.08		3.2		.07		2.8		+.04		3.7		.09		2.3
17.5		14.63		71.9		31.12		57.7		7.40		35.9		17.06		31.1
		+.01		3.0		+.03		2.6		−.04		3.6		+.04		2.1
27.4		14.61		74.8		31.11		60.2		7.32		39.4		17.08		33.1
		−.04		2.8		−.03		2.4		.12		3.4		.00		1.9
Sept. 6.4		14.55		77.5		31.07		62.5		7.16		42.7		17.05		34.9
		−.06		+2.5		−.07		+2.1		−.19		+3.2		−.04		+1.7
16.4		14.44		79.8		30.98		64.4		6.94		45.8		16.99		36.4
		.12		2.2		.11		1.8		.26		2.9		.08		1.4
26.4		14.30		81.8		30.86		66.1		6.65		48.5		16.89		37.7
		.16		1.8		.14		1.5		.31		2.5		.11		1.1
Oct. 6.3		14.13		83.4		30.70		67.4		6.31		50.8		16.77		38.7
		.18		1.4		.16		1.1		.36		2.1		.13		0.8
16.3		13.94		84.6		30.54		68.3		5.94		52.7		16.63		39.3
		.20		1.0		.17		0.7		.39		1.6		.15		0.5
26.3		13.74		85.4		30.36		68.8		5.54		54.1		16.48		39.7
		−.20		+0.5		−.18		+0.3		−.41		+1.1		−.15		+0.2
Nov. 5.3		13.53		85.7		30.18		68.9		5.12		54.9		16.32		39.7
		.20		+0.1		.18		−0.1		.42		+0.6		.15		−0.1
15.2		13.33		85.6		30.00		68.7		4.70		55.2		16.17		39.4
		.19		−0.4		.17		0.5		.41		0.0		.14		0.5
25.2		13.15		84.9		29.84		68.0		4.29		55.0		16.03		38.7
		.17		0.8		.15		0.9		.40		−0.6		.13		0.8
Dec. 5.2		12.99		83.9		29.70		66.9		3.90		54.1		15.92		37.8
		.13		1.3		.13		1.2		.37		1.1		.11		1.1
15.1		12.86		82.4		29.58		65.5		3.55		52.7		15.82		36.6
		−.13		−1.7		−.10		−1.6		−.33		−1.8		−.09		−1.2
25.1		12.75		80.6		29.49		63.8		3.25		50.9		15.75		35.2
		.09		2.0		.07		1.9		.28		2.1		.06		1.5
35.1		12.68		78.4		29.43		61.8		3.00		48.4		15.70		33.6
		−.05		−2.3		−.03		−2.1		−.21		−2.6		−.03		−1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei.		ξ Aquarii.		ε Pegasi.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 21 26	° ′ − 6 1	h m 21 27	° ′ +70 5	h m 21 32	° ′ − 8 19	h m 21 39	° ′ + 9 23
	s	″	s	″	s	″	s	″
Jan. 0.1	1.05 −.08	66.8 −0.6	14.11 −.40	66.6 −2.3	8.96 −.08	38.3 −0.5	0.81 −.04	33.6 −1.2
10.1	1.04 +.01	67.3 0.5	13.75 .31	64.1 2.7	8.95 .99	38.7 0.4	0.79 −.01	32.4 1.2
20.1	1.06 .04	67.8 0.4	13.48 .21	61.2 3.0	8.97 +.03	39.0 0.3	0.79 +.00	31.2 1.2
30.0	1.12 .07	68.2 0.3	13.32 −.10	58.1 3.1	9.02 .06	39.3 −0.2	0.82 .05	29.9 1.2
Feb. 9.0	1.20 .10	68.4 −0.2	13.28 +.01	54.9 3.2	9.10 .08	39.4 0.0	0.88 .06	28.8 1.1
19.0	1.32 +.13	68.5 0.0	13.35 +.13	51.7 −3.1	9.21 +.12	39.3 +0.1	0.97 +.11	27.7 −0.9
28.9	1.46 .16	68.5 +0.2	13.53 .94	48.6 2.9	9.35 .15	39.1 0.3	1.10 .14	26.9 0.7
Mar. 10.9	1.64 .19	68.2 0.4	13.84 .35	45.8 2.6	9.52 .18	38.7 0.5	1.26 .17	26.4 0.4
20.9	1.84 .20	67.6 0.7	14.24 .45	43.3 2.2	9.72 .21	38.0 0.8	1.44 .20	26.1 −0.1
30.9	2.07 .24	66.8 0.9	14.74 .53	41.4 1.7	9.95 .24	37.1 1.0	1.66 .23	26.2 +0.3
Apr. 9.8	2.33 +.27	65.8 +1.1	15.31 +.60	39.9 −1.1	10.20 +.27	36.0 +1.2	1.91 +.26	26.7 +0.6
19.8	2.61 .29	64.6 1.3	15.94 .65	39.1 −0.5	10.48 .29	34.7 1.4	2.18 .28	27.5 1.0
29.8	2.91 .31	63.2 1.5	16.61 .68	38.8 +0.1	10.78 .32	33.2 1.6	2.47 .30	28.6 1.3
May 9.8	3.22 .32	61.6 1.7	17.30 .69	39.3 0.7	11.09 .32	31.6 1.7	2.78 .31	30.0 1.6
19.7	3.54 .32	59.8 1.8	17.99 .68	40.3 1.3	11.41 .32	29.8 1.8	3.10 .32	31.7 1.8
29.7	3.86 +.32	58.0 +1.6	18.66 +.64	41.9 +1.9	11.73 +.32	28.0 +1.8	3.42 +.31	33.7 +2.0
June 8.7	4.17 .31	56.2 1.8	19.28 .59	44.0 2.4	12.05 .31	26.2 1.8	3.73 .30	35.8 2.2
18.6	4.47 .29	54.4 1.8	19.85 .53	46.6 2.8	12.36 .29	24.5 1.7	4.03 .29	38.0 2.2
28.6	4.75 .26	52.7 1.7	20.34 .45	49.5 3.1	12.64 .27	22.8 1.6	4.30 .26	40.3 2.3
July 8.6	5.00 .23	51.1 1.5	20.74 .36	52.8 3.4	12.90 .24	21.3 1.4	4.56 .23	42.5 2.2
18.6	5.21 +.19	49.6 +1.4	21.05 +.26	56.4 +3.6	13.12 +.20	19.9 +1.3	4.77 +.20	44.7 +2.1
28.5	5.38 .15	48.3 1.2	21.26 .15	60.1 3.7	13.30 .16	18.8 1.1	4.95 .16	46.8 2.0
Aug. 7.5	5.52 .11	47.3 1.0	21.36 +.05	63.8 3.8	13.44 .12	17.8 0.8	5.08 .11	48.8 1.9
17.5	5.60 .06	46.4 0.8	21.35 −.06	67.6 3.7	13.53 .07	17.1 0.6	5.17 .07	50.5 1.7
27.5	5.65 +.02	45.8 0.5	21.23 .16	71.2 3.6	13.58 +.03	16.5 0.4	5.22 +.03	52.1 1.4
Sept. 6.5	5.64 −.00	45.3 +0.4	21.02 −.26	74.7 +3.4	13.59 −.01	16.2 +0.2	5.22 −.01	53.4 +1.2
16.4	5.61 .03	45.0 +0.2	20.71 .35	78.0 3.1	13.55 .05	16.1 +0.1	5.19 .05	54.5 1.0
26.4	5.53 .09	44.9 0.0	20.32 .43	81.0 2.8	13.48 .08	16.1 −0.1	5.12 .08	55.4 0.7
Oct. 6.3	5.43 .11	45.0 −0.1	19.86 .49	83.6 2.4	13.39 .11	16.2 0.2	5.03 .11	56.0 0.5
16.3	5.31 .13	45.2 0.2	19.33 .55	85.8 1.9	13.27 .12	16.5 0.3	4.91 .12	56.4 +0.3
26.3	5.18 −.13	45.5 −0.3	18.77 −.56	87.5 +1.4	13.14 −.13	16.9 −0.4	4.78 −.13	56.5 0.0
Nov. 5.3	5.05 .13	45.9 0.4	18.17 .60	88.6 0.9	13.01 .13	17.3 0.5	4.65 .13	56.5 −0.2
15.2	4.92 .13	46.3 0.5	17.56 .60	89.2 +0.3	12.88 .13	17.8 0.5	4.52 .13	56.1 0.4
25.2	4.80 .11	46.9 0.5	16.96 .59	89.2 −0.3	12.76 .11	18.3 0.5	4.39 .12	55.6 0.6
Dec. 5.2	4.70 .09	47.4 0.5	16.38 .58	88.6 0.9	12.66 .09	18.8 0.5	4.28 .10	54.9 0.8
15.2	4.62 −.07	48.0 −0.6	15.84 −.51	87.5 −1.4	12.58 −.07	19.3 −0.5	4.19 −.08	54.0 −1.0
25.1	4.57 .04	48.6 0.6	15.35 .45	85.8 2.0	12.52 .04	19.8 0.5	4.12 .06	52.9 1.1
35.1	4.54 −.01	49.1 −0.6	14.94 −.37	83.6 −2.4	12.49 −.01	20.2 −0.4	4.07 −.03	51.8 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Cephei.				μ Capricorni.				79 Draconis.				α Aquarii.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*	
	h m 21 40		° ′ +70 49		h m 21 47		° ′ −14 2		h m 21 51		° ′ +73 12		h m 22 0		° ′ − 0 49	
	s		″		s		″		s		″		s		″	
Jan. 0.1	18.92	−.45	49.7	−2.1	33.59	−.03	54.6	−0.2	28.57	−.54	30.3	−1.9	22.71	−.05	53.1	−0.7
10.1	18.52	.36	47.4	2.5	33.57	−.01	54.9	−0.1	28.08	.45	28.1	2.4	22.68	−.09	53.8	0.7
20.1	18.21	.25	44.6	2.9	33.57	+.02	55.0	+0.1	27.68	.33	25.5	2.8	22.67	.00	54.5	0.7
30.0	18.01	.14	41.6	3.1	33.61	.05	54.8	0.2	27.40	.21	22.6	3.0	22.68	+.03	55.2	0.6
Feb. 9.0	17.93	−.02	38.4	3.2	33.68	.06	54.6	0.3	27.26	−.06	19.4	3.2	22.73	.06	55.7	0.4
19.0	17.96	+.06	35.2	−3.2	33.77	+.11	54.1	+0.5	27.25	+.06	16.3	−3.2	22.81	+.09	56.0	−0.3
Mar. 1.0	18.11	.21	32.1	3.0	33.90	.14	53.5	0.7	27.38	.20	13.1	3.1	22.92	.12	56.2	−0.1
10.9	18.39	.33	29.2	2.7	34.06	.17	52.7	0.9	27.65	.33	10.2	2.8	23.05	.15	56.1	+0.2
20.9	18.78	.44	26.7	2.3	34.25	.21	51.7	1.1	28.04	.46	7.5	2.4	23.23	.19	55.8	0.5
30.9	19.26	.53	24.6	1.8	34.48	.24	50.5	1.3	28.56	.57	5.3	2.1	23.43	.22	55.2	0.7
Apr. 9.9	19.84	+.61	23.0	−1.3	34.72	+.26	49.1	+1.5	29.18	+.66	3.5	−1.5	23.66	+.25	54.4	+1.0
19.8	20.48	.66	22.0	0.7	35.00	.29	47.6	1.6	29.88	.73	2.4	0.9	23.92	.27	53.2	1.2
29.8	21.16	.70	21.6	−0.1	35.30	.31	45.9	1.7	30.64	.78	1.8	−0.3	24.20	.29	51.9	1.5
May 9.8	21.87	.71	21.8	+0.5	35.61	.32	44.2	1.8	31.43	.80	1.8	+0.3	24.50	.31	50.2	1.7
19.7	22.59	.71	22.7	1.1	35.94	.33	42.4	1.8	32.23	.80	2.5	1.0	24.82	.32	48.5	1.8
29.7	23.29	+.68	24.1	+1.7	36.27	+.33	40.6	+1.7	33.02	+.77	3.7	+1.5	25.14	+.32	46.6	+1.9
June 8.7	23.95	.63	26.1	2.2	36.60	.32	38.8	1.7	33.77	.72	5.5	2.0	25.46	.31	44.6	2.0
18.7	24.55	.57	28.6	2.7	36.91	.30	37.2	1.6	34.47	.66	7.8	2.5	25.77	.30	42.6	2.0
28.6	25.09	.49	31.4	3.0	37.21	.28	35.7	1.4	35.08	.57	10.6	2.9	26.06	.28	40.6	1.9
July 8.6	25.54	.40	34.6	3.3	37.48	.26	34.4	1.2	35.61	.47	13.7	3.2	26.33	.25	38.7	1.8
18.6	25.89	+.30	38.1	+3.6	37.72	+.22	33.3	+1.0	36.03	+.36	17.1	+3.5	26.57	+.22	36.9	+1.7
28.6	26.14	.20	41.8	3.7	37.92	.18	32.3	0.8	36.33	.24	20.7	3.7	26.77	.18	35.3	1.5
Aug. 7.5	26.28	+.09	45.5	3.8	38.08	.13	31.7	0.6	36.52	+.12	24.4	3.8	26.93	.14	33.8	1.3
17.5	26.31	−.02	49.3	3.7	38.19	.09	31.2	0.3	36.58	.00	28.2	3.8	27.04	.09	32.6	1.1
27.5	26.23	.13	53.0	3.6	38.26	+.04	31.0	+0.1	36.52	−.12	32.0	3.7	27.11	.05	31.6	0.9
Sept. 6.4	26.05	−.23	56.6	+3.5	38.28	.00	31.0	−0.1	36.34	−.23	35.7	+3.6	27.14	+.01	30.8	+0.7
16.4	25.76	.33	60.0	3.2	38.26	−.04	31.2	0.2	36.05	.34	39.2	3.4	27.14	−.03	30.2	0.5
26.4	25.39	.41	63.1	2.9	38.20	.07	31.5	0.4	35.65	.44	42.4	3.1	27.09	.06	29.8	0.3
Oct. 6.4	24.94	.48	65.9	2.6	38.12	.10	31.9	0.5	35.16	.53	45.3	2.7	27.01	.09	29.6	+0.1
16.3	24.43	.54	68.2	2.1	38.01	.12	32.4	0.5	34.60	.60	47.9	2.3	26.92	.11	29.7	−0.1
26.3	23.86	−.58	70.1	+1.6	37.88	−.13	33.0	−0.5	33.97	−.65	49.9	+1.8	26.80	−.12	29.8	−0.2
Nov. 5.3	23.26	.61	71.5	1.1	37.75	.13	33.5	0.5	33.29	.69	51.5	1.3	26.68	.12	30.1	0.4
15.3	22.64	.62	72.3	+0.5	37.62	.13	34.1	0.5	32.58	.71	52.6	0.7	26.56	.12	30.5	0.5
25.2	22.02	.61	72.5	−0.1	37.50	.12	34.6	0.5	31.87	.71	53.0	+0.1	26.44	.11	31.0	0.6
Dec. 5.2	21.41	.59	72.2	0.7	37.39	.10	35.0	0.4	31.16	.69	52.8	−0.5	26.33	.10	31.6	0.6
15.2	20.84	−.56	71.2	−1.2	37.30	−.08	35.4	−0.3	30.49	−.65	52.1	−1.1	26.24	−.08	32.3	−0.7
25.1	20.32	.48	69.7	1.8	37.24	.05	35.7	0.2	29.87	.59	50.7	1.6	26.16	.06	33.0	0.7
35.1	19.87	−.42	67.6	−2.3	37.20	−.02	35.8	−0.1	29.32	−.50	48.8	−2.1	26.12	−.03	33.8	−0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.				θ Aquarii.				π Aquarii.				ψ Aquarii.			
	Right Ascension.		Declination South.		Right Ascension.		Declination South.		Right Ascension.		Declination North.		Right Ascension.		Declination South.	
	h m 22 1		° ′ −47 27		h m 22 11		° ′ − 8 18		h m 22 19		° ′ + 0 50		h m 22 29		° ′ − 0 39	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 0.1	36.32	−.10	85.7	+1.3	16.96	−.05	29.0	−0.5	54.23	−.06	36.4	−0.7	57.04	−.07	35.5	−0.7
10.1	36.24	.06	84.3	1.6	16.92	−.03	29.4	0.4	54.18	.04	35.6	0.7	56.98	.04	36.2	0.7
20.1	36.21	−.01	82.5	1.9	16.90	.00	29.7	0.2	54.15	−.01	34.9	0.7	56.95	−.03	36.8	0.6
30.1	36.22	+.03	80.5	2.1	16.91	+.03	29.9	−0.1	54.15	+.01	34.2	0.6	56.94	.00	37.4	0.5
Feb. 9.0	36.27	.08	78.2	2.3	16.95	.05	30.0	0.0	54.18	.04	33.6	0.5	56.96	+.03	37.9	0.4
19.0	36.38	+.12	75.8	+2.5	17.02	+.08	29.8	+0.2	54.24	+.07	33.2	−0.3	57.01	+ 06	38.2	−0.2
Mar. 1.0	36.52	.17	73.3	2.6	17.12	.11	29.5	0.4	54.32	.10	33.0	−0.1	57.09	.09	38.3	0.0
11.0	36.71	.21	70.6	2.6	17.25	.15	29.0	0.6	54.44	.14	32.9	+0.1	57.20	.13	38.3	+0.2
20.9	36.95	.26	68.0	2.6	17.42	.18	28.3	0.9	54.59	.17	33.2	0.4	57.34	.16	37.9	0.5
30.9	37.23	.30	65.4	2.6	17.61	.21	27.3	1.1	54.78	.20	33.7	0.7	57.52	.19	37.3	0.7
Apr. 9.9	37.55	+.34	62.8	+2.5	17.84	+.24	26.1	+1.3	54.99	+.23	34.5	+0.9	57.73	+.22	36.4	+1.0
19.8	37.90	.37	60.4	2.3	18.10	.27	24.7	1.5	55.24	.26	35.6	1.2	57.97	.25	35.3	1.3
29.8	38.29	.40	58.2	2.1	18.38	.29	23.1	1.7	55.52	.28	36.9	1.4	58.24	.28	33.9	1.5
May 9.8	38.70	.42	56.1	1.9	18.69	.31	21.3	1.8	55.81	.30	38.5	1.7	58.53	.30	32.3	1.7
19.8	39.13	.43	54.4	1.6	19.00	.32	19.5	1.9	56.12	.31	40.3	1.9	58.84	.31	30.5	1.9
29.7	39.56	+.44	52.9	+1.3	19.32	+.32	17.6	+1.9	56.44	+.32	42.2	+2.0	59.15	+.30	28 6	+2.0
June 8.7	40.00	.43	51.8	0.9	19.64	.32	15.6	1.9	56.76	.32	44.2	2.0	59.48	.32	26.6	2.0
18.7	40.43	.41	51.1	0.5	19.96	.31	13.8	1.8	57.08	.31	46.3	2.1	59.80	.31	24.5	2.0
28.7	40.83	.39	50.8	+0.2	20.27	.29	12.0	1.7	57.38	.29	48.3	2.0	60.10	.29	22.5	2.0
July 8.6	41.20	.35	50.8	−0.2	20.54	.26	10.3	1.6	57.66	.26	50.3	1.9	60.38	.27	20.5	1.9
18.6	41.53	+.30	51.2	−0.6	20.79	+.23	8.8	+1.4	57.91	+.23	52.2	+1.8	60.64	+.24	18.7	+1.8
28.6	41.81	.26	52.0	1.0	21.01	.19	7.6	1.2	58.12	.20	54.0	1.7	60.87	.21	17.0	1.6
Aug. 7.5	42.04	.19	53.2	1.3	21.18	.15	6.5	0.9	58.30	.16	55.5	1.5	61.05	.17	15.5	1.4
17.5	42.20	.13	54.6	1.5	21.31	.11	5.7	0.7	58.43	.11	56.9	1.3	61.20	.12	14.2	1.2
27.5	42.30	+.07	56.2	1.7	21.40	.06	5.1	0.5	58.52	.07	58.1	1.0	61.30	.08	13.1	1.0
Sept. 6.5	42.33	.00	58.0	−1.8	21.44	+.03	4.7	+0.3	58.57	+.03	59.0	+0.8	61.35	+.04	12.2	+0.7
16.4	42.30	−.05	59.8	1.9	21.44	−.02	4.6	+0.1	58.58	−.01	59.7	0.6	61.37	.00	11.6	0.5
26.4	42.22	.11	61.7	1.8	21.41	.05	4.6	−0.1	58.55	.05	60.1	0.4	61.36	−.03	11.2	0.3
Oct. 6.4	42.09	.15	63.4	1.7	21.34	.08	4.8	0.2	58.49	.07	60.4	+0.2	61.30	.06	11.0	+0.1
16.4	41.92	.18	65.0	1.5	21.25	.10	5.1	0.4	58.41	.09	60.5	0.0	61.23	.09	11.0	−0.1
26.3	41.72	−.21	66.4	−1.2	21.14	−.11	5.5	−0.5	58.31	−.11	60.4	−0.2	61.13	−.10	11.2	−0.2
Nov. 5.3	41.51	.22	67.4	0.9	21.02	.12	6.0	0.5	58.19	.12	60.2	0.3	61.03	.11	11.5	0.4
15.3	41.29	.22	68.1	0.5	20.90	.12	6.5	0.5	58.07	.12	59.8	0.4	60.91	.11	11.9	0.5
25.2	41.07	.21	68.4	−0.1	20.78	.11	7.1	0.5	57.96	.11	59.3	0.5	60.80	.11	12.4	0 5
Dec. 5.2	40.87	.19	68.3	+0.3	20.67	.10	7.6	0.5	57.85	.10	58.7	0.6	60.69	.10	13.0	0.6
15.2	40.70	−.16	67.8	+0.7	20.58	−.09	8.2	−0.5	57.75	−.09	58.0	−0.7	60.59	−.09	13.6	−0.7
25.2	40.56	.13	67.0	1.1	20.50	.07	8.7	0.4	57.67	.07	57.3	0.7	60.50	.08	14.3	0.7
35.1	40.46	−.09	65.7	+1.5	20.45	−.04	9.1	−0.4	57.61	−.05	56.5	−0.7	60.44	−.06	15.0	−0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)				ζ Pegasi.				ι Cephei.				λ Aquarii.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination South.	
	h m 22 30		+75° 40′		h m 22 36		+10° 16′		h m 22 45		+65° 38′		h m 22 47		− 8° 7′	
	s	s	″	″	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 0.2	20.98	−.72	80.8	−1.4	12.83	−.68	59.0	−1.0	53.74	−.40	66.8	−1.3	7.78	−.87	83.7	−0.4
10.1	20.30	.63	79.1	1.9	12.76	.85	58.0	1.1	53.37	.25	65.1	1.9	7.72	.85	84.1	0.3
20.1	19.72	.38	76.9	2.4	12.72	.83	56.9	1.1	53.05	.20	63.0	2.3	7.67	.83	84.4	0.2
30.1	19.25	.29	74.3	2.8	12.69	−.81	55.8	1.1	52.79	.22	60.5	2.6	7.65	−.81	84.6	−0.1
Feb. 9.1	18.93	.25	71.4	3.0	12.70	+.69	54.7	1.0	52.61	.14	57.7	2.9	7.66	+.69	84.6	+0.1
19.0	18.75	−.09	68.3	−3.1	12.74	+.05	53.8	−0.9	52.51	−.05	54.8	−3.0	7.69	+.65	84.5	+0.3
Mar. 1.0	18.76	+.08	65.1	3.1	12.80	.08	53.0	0.7	52.51	+.04	51.8	3.0	7.75	.08	84.1	0.5
11.0	18.92	.24	62.0	3.0	12.90	.12	52.4	0.4	52.60	.14	48.8	2.9	7.84	.11	83.5	0.7
20.9	19.24	.40	59.2	2.7	13.04	.15	52.1	−0.1	52.79	.24	46.0	2.6	7.97	.15	82.7	0.9
30.9	19.72	.54	56.6	2.3	13.21	.19	52.1	+0.2	53.07	.33	43.6	2.2	8.14	.18	81.7	1.1
Apr. 9.9	20.33	+.67	54.5	−1.9	13.42	+.22	52.5	+0.5	53.44	+.41	41.6	−1.8	8.33	+.21	80.4	+1.4
19.9	21.06	.77	52.8	1.4	13.65	.25	53.1	0.8	53.88	.48	40.0	1.3	8.56	.24	79.0	1.6
29.8	21.88	.85	51.7	0.8	13.92	.28	54.1	1.2	54.39	.53	39.0	0.7	8.82	.27	77.3	1.7
May 9.8	22.76	.90	51.2	−0.2	14.21	.30	55.4	1.5	54.95	.57	38.6	−0.1	9.11	.30	75.5	1.9
19.8	23.69	.93	51.3	+0.4	14.52	.31	57.0	1.7	55.54	.60	38.7	+0.4	9.41	.31	73.6	2.0
29.8	24.62	+.93	52.0	+1.0	14.84	+.32	58.9	+1.9	56.14	+.60	39.4	+1.0	9.73	+.32	71.6	+2.0
June 8.7	25.53	.89	53.3	1.5	15.17	.32	60.9	2.1	56.75	.59	40.7	1.6	10.06	.33	69.5	2.0
18.7	26.40	.84	55.2	2.1	15.49	.31	63.1	2.2	57.33	.57	42.6	2.1	10.38	.32	67.5	1.9
28.7	27.20	.76	57.5	2.5	15.80	.30	65.4	2.3	57.88	.53	44.9	2.5	10.70	.30	65.6	1.8
July 8.6	27.91	.66	60.2	2.9	16.08	.27	67.7	2.3	58.38	.47	47.6	2.9	11.00	.28	63.9	1.7
18.6	28.52	+.55	63.4	+3.3	16.34	+.24	69.9	+2.2	58.82	+.41	50.7	+3.2	11.27	+.25	62.3	+1.5
28.6	29.01	.42	66.8	3.5	16.57	.21	72.1	2.1	59.19	.33	54.1	3.5	11.51	.22	60.9	1.3
Aug. 7.6	29.37	.29	70.4	3.7	16.75	.17	74.2	2.0	59.49	.25	57.6	3.6	11.71	.18	59.7	1.0
17.5	29.59	.15	74.2	3.8	16.90	.13	76.1	1.8	59.70	.17	61.3	3.7	11.88	.14	58.8	0.8
27.5	29.67	+.02	78.0	3.8	17.01	.08	77.8	1.6	59.82	+.08	65.1	3.7	12.00	.10	58.2	0.5
Sept. 6.5	29.62	−.12	81.8	+3.8	17.07	+.04	79.3	+1.4	59.87	.00	68.8	+3.6	12.07	+.06	57.7	+0.3
16.5	29.43	.25	85.6	3.6	17.09	.00	80.5	1.1	59.83	−.08	72.4	3.5	12.11	+.02	57.6	+0.1
26.4	29.12	.37	89.1	3.4	17.07	−.03	81.6	0.9	59.70	.16	75.9	3.3	12.11	−.03	57.6	−0.1
Oct. 6.4	28.69	.49	92.4	3.2	17.03	.06	82.3	0.6	59.51	.23	79.1	3.0	12.07	.05	57.8	0.3
16.4	28.15	.60	95.4	2.8	16.95	.08	82.9	0.4	59.25	.29	82.0	2.7	12.01	.07	58.1	0.4
26.3	27.52	−.67	98.0	+2.4	16.86	−.10	83.2	+0.2	58.93	−.34	84.5	+2.3	11.92	−.09	58.6	+0.5
Nov. 5.3	26.81	.74	100.2	1.9	16.75	.11	83.3	0.0	58.57	.38	86.5	1.8	11.82	.11	59.1	0.6
15.3	26.04	.79	101.8	1.3	16.63	.12	83.1	−0.2	58.17	.41	88.1	1.3	11.71	.11	59.7	0.6
25.3	25.23	.82	102.9	0.8	16.52	.12	82.8	0.4	57.75	.43	89.1	0.7	11.60	.11	60.4	0.6
Dec. 5.2	24.41	.82	103.3	+0.2	16.40	.11	82.2	0.6	57.31	.44	89.6	+0.2	11.49	.11	61.0	0.6
15.2	23.59	−.82	103.2	−0.5	16.30	−.10	81.5	−0.8	56.87	−.43	89.4	−0.4	11.39	−.10	61.5	−0.5
25.2	22.81	.78	102.4	1.1	16.20	.09	80.7	0.9	56.45	.41	88.7	1.0	11.30	.08	62.1	0.5
35.2	22 08	−.69	101.0	−1.7	16.13	−.07	79.7	−1.0	56.05	−.38	87.4	−1.6	11.22	−.06	62.5	−0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (*Fomalhaut.*)		α Pegasi. (*Markab.*)		ε Cephei.		θ Piscium.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 51	° ′ −30 10	h m 22 59	° ′ +14 38	h m 23 14	° ′ +67 32	h m 23 22	° ′ + 5 48
	s	″	s	″	s	″	s	″
Jan. 0.2	50.63 −.03	55.6 +0.3	31.19 −.00	26.7 −1.0	16.35 −.45	29.6 −0.9	38.09 −.09	7.3 −0.8
10.2	50.55 .07	55.2 0.6	31.11 .07	25.6 1.1	15.91 .41	28.4 1.5	38.01 .08	6.5 0.6
20.1	50.49 .05	54.5 0.9	31.04 .06	24.4 1.2	15.52 .36	26.6 2.0	37.94 .06	5.7 0.6
30.1	50.46 −.02	53.5 1.1	31.00 .03	23.2 1.2	15.19 .30	24.4 2.4	37.88 .04	4.9 0.7
Feb. 9.1	50.45 +.01	52.2 1.3	30.98 −.01	22.0 1.2	14.93 .23	21.9 2.7	37.85 −.02	4.2 0.6
19.0	50.48 +.03	50.8 +1.6	30.99 +.02	20.9 −1.1	14.76 −.13	19.0 −2.9	37.84 +.01	3.6 −0.5
Mar. 1.0	50.54 .06	49.1 1.8	31.03 .05	19.9 0.9	14.68 −.03	16.0 3.0	37.86 .04	3.1 0.4
11.0	50.64 .10	47.2 2.0	31.11 .09	19.0 0.7	14.71 +.03	13.1 2.9	37.92 .07	2.9 −0.2
20.9	50.78 .15	45.1 2.1	31.22 .13	18.5 0.4	14.84 .16	10.2 2.7	38.01 .11	2.8 +0.1
30.9	50.95 .19	42.9 2.2	31.37 .17	18.2 −0.1	15.08 .26	7.6 2.4	38.14 .15	3.1 0.4
Apr. 9.9	51.16 +.23	40.7 +2.3	31.56 +.21	18.3 +0.2	15.41 +.36	5.3 −2.1	38.30 +.18	3.6 +0.7
19.9	51.41 .26	38.3 2.3	31.79 .24	18.7 0.6	15.84 .47	3.4 1.6	38.50 .22	4.4 1.0
29.8	51.69 .29	36.0 2.3	32.04 .27	19.5 0.9	16.35 .54	2.1 1.1	38.73 .25	5.5 1.2
May 9.8	52.01 .30	33.7 2.3	32.33 .30	20.6 1.2	16.92 .59	1.3 −0.5	39.00 .28	6.9 1.5
19.8	52.34 .34	31.5 2.2	32.63 .31	22.0 1.4	17.53 .63	1.1 +0.1	39.29 .30	8.5 1.7
29.8	52.69 +.36	29.4 +2.0	32.95 +.32	23.8 +1.8	18.18 +.65	1.4 +0.6	39.60 +.32	10.3 +1.9
June 8.7	53.05 .36	27.5 1.8	33.28 .33	25.7 2.0	18.83 .65	2.3 1.2	39.92 .32	12.3 2.0
18.7	53.41 .36	25.8 1.5	33.61 .32	27.9 2.2	19.48 .63	3.8 1.7	40.25 .32	14.4 2.1
28.7	53.77 .34	24.5 1.2	33.93 .31	30.1 2.3	20.09 .60	5.8 2.2	40.57 .31	16.6 2.2
July 8.7	54.10 .32	23.4 0.9	34.23 .29	32.5 2.4	20.67 .55	8.2 2.6	40.87 .30	18.8 2.1
18.6	54.41 +.29	22.7 +0.5	34.51 +.26	34.9 +2.4	21.19 +.49	11.0 +3.0	41.16 +.27	20.9 +2.0
28.6	54.68 .25	22.4 +0.2	34.75 .23	37.2 2.3	21.65 .42	14.2 3.3	41.42 .24	22.9 1.9
Aug. 7.6	54.92 .21	22.3 −0.1	34.96 .19	39.5 2.2	22.03 .34	17.6 3.5	41.65 .21	24.7 1.8
17.6	55.10 .16	22.7 0.5	35.13 .15	41.6 2.0	22.33 .25	21.2 3.7	41.84 .17	26.5 1.6
27.5	55.24 .12	23.3 0.8	35.25 .11	43.6 1.8	22.54 .17	24.9 3.7	41.99 .13	27.9 1.4
Sept. 6.5	55.34 +.07	24.2 −1.0	35.34 +.06	45.3 +1.6	22.66 +.09	28.7 +3.7	42.10 +.09	29.2 +1.1
16.5	55.38 +.03	25.2 1.2	35.38 +.02	46.8 1.4	22.69 .00	32.4 3.6	42.16 .05	30.2 0.9
26.4	55.37 −.02	26.5 1.3	35.39 −.01	48.1 1.2	22.64 −.06	36.0 3.5	42.20 +.02	31.0 0.7
Oct. 6.4	55.33 .06	27.8 1.3	35.36 .04	49.2 0.9	22.50 .17	39.4 3.3	42.19 −.01	31.6 0.5
16.4	55.25 .09	29.2 1.3	35.30 .07	50.0 0.7	22.29 .04	42.6 3.0	42.16 .04	32.0 0.3
26.4	55.15 −.12	30.5 −1.2	35.22 −.09	50.5 +0.4	22.01 −.31	45.4 +2.6	42.11 −.07	32.1 +0.1
Nov. 5.3	55.02 .13	31.7 1.1	35.13 .10	50.8 +0.2	21.67 .37	47.8 2.2	42.03 .09	32.1 −0.1
15.3	54.88 .14	32.7 0.9	35.02 .11	50.9 −0.1	21.28 .41	49.8 1.7	41.94 .09	31.9 0.3
25.3	54.74 .14	33.5 0.7	34.91 .11	50.7 0.3	20.85 .44	51.2 1.2	41.84 .10	31.5 0.4
Dec. 5.3	54.60 .13	34.1 0.4	34.79 .11	50.3 0.5	20.40 .46	52.1 +0.6	41.74 .10	31.0 0.5
15.2	54.47 −.12	34.4 −0.1	34.68 −.11	49.7 −0.7	19.93 −.47	52.4 0.0	41.63 −.10	30.4 −0.6
25.2	54.35 .11	34.4 +0.1	34.58 .10	48.9 0.9	19.46 .44	52.1 −0.6	41.53 .10	29.8 0.7
35.2	54.26 −.09	34.2 +0.3	34.48 −.09	47.9 −1.1	19.01 −.44	51.2 −1.1	41.44 −.09	29.0 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Piscium.		γ Cephei.		Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 23 34	° ′ + 5 3	h m 23 34	° ′ +77 2	h m 23 49	° ′ +73 49	h m 23 53	° ′ + 6 16
	s	″	s	″	s	″	s	″
Jan. 0.2	32.66 −.09	25.8 −0.8	58.02 −.86	64.9 −0.5	40.66 −.67	52.5 −0.4	54.94 −.09	56.3 −0.7
10.2	32.57 .08	25.1 0.8	57.17 .82	64.1 1.1	39.99 .65	51.8 1.0	54.85 .09	55.5 0.7
20.2	32.49 .07	24.3 0.7	56.38 .74	62.7 1.7	39.36 .60	50.6 1.5	54.76 .08	54.8 0.7
30.1	32.43 .05	23.6 0.7	55.68 .64	60.7 2.2	38.79 .52	48.8 2.0	54.69 .07	54.1 0.7
Feb. 9.1	32.39 −.03	22.9 0.6	55.11 .51	58.4 2.5	38.31 .42	46.5 2.4	54.63 .05	53.4 0.6
19.1	32.37 .00	22.3 −0.5	54.67 −.35	55.6 −2.8	37.95 −.31	43.9 −2.7	54.59 −.02	52.8 −0.5
Mar. 1.1	32.38 +.03	21.9 0.3	54.40 −.18	52.7 3.0	37.70 .17	41.1 2.9	54.59 +.01	52.4 0.4
11.0	32.43 .06	21.7 −0.1	54.31 .00	49.7 3.0	37.60 −.03	38.1 3.0	54.61 .04	52.1 −0.2
21.0	32.51 .10	21.7 +0.1	54.41 +.18	46.6 2.9	37.64 +.11	35.1 2.9	54.67 .08	52.0 +0.1
30.9	32.62 .13	22.0 0.4	54.68 .36	43.7 2.7	37.83 .26	32.2 2.7	54.76 .11	52.2 0.3
Apr. 9.9	32.78 +.17	22.5 +0.7	55.13 +.53	41.1 −2.4	38.16 +.40	29.6 −2.5	54.90 +.16	52.7 +0.6
19.9	32.97 .21	23.4 1.0	55.74 .68	38.9 2.0	38.62 .53	27.3 2.1	55.07 .20	53.5 0.9
29.9	33.19 .24	24.5 1.2	56.50 .81	37.1 1.5	39.21 .64	25.5 1.6	55.28 .23	54.5 1.2
May 9.9	33.45 .27	25.9 1.5	57.36 .91	35.8 1.0	39.90 .73	24.1 1.1	55.53 .26	55.8 1.4
19.9	33.74 .30	27.5 1.7	58.31 .98	35.1 −0.5	40.67 .80	23.3 −0.6	55.81 .29	57.3 1.7
29.8	34.05 +.31	29.3 +1.9	59.33 +1.03	34.9 +0.1	41.50 +.84	23.0 0.0	56.11 +.31	59.1 +1.9
June 8.8	34.37 .32	31.3 2.0	60.37 1.04	35.3 0.7	42.35 .86	23.3 +0.6	56.43 .32	61.0 2.0
18.7	34.69 .32	33.3 2.1	61.40 1.03	36.3 1.3	43.22 .86	24.2 1.2	56.75 .32	63.1 2.1
28.7	35.02 .33	35.5 2.1	62.41 .98	37.9 1.8	44.07 .83	25.6 1.7	57.08 .33	65.2 2.1
July 8.7	35.33 .30	37.6 2.1	63.36 .91	39.9 2.3	44.89 .79	27.5 2.2	57.39 .31	67.4 2.1
18.7	35.62 +.28	39.7 +2.0	64.23 +.82	42.4 +2.7	45.65 +.72	29.9 +2.6	57.70 +.29	69.5 +2.0
28.6	35.89 .25	41.7 1.9	65.00 .72	45.3 3.1	46.33 .64	32.7 3.0	57.97 .26	71.5 1.9
Aug. 7.6	36.13 .22	43.5 1.7	65.66 .60	48.6 3.4	46.93 .54	35.9 3.3	58.22 .23	73.3 1.8
17.6	36.33 .18	45.1 1.5	66.20 .46	52.1 3.6	47.42 .44	39.3 3.5	58.44 .20	75.1 1.6
27.6	36.49 .14	46.6 1.3	66.59 .32	55.8 3.8	47.81 .33	42.9 3.7	58.62 .16	76.6 1.4
Sept. 6.5	36.61 +.10	47.8 +1.1	66.84 +.18	59.6 +3.8	48.09 +.22	46.6 +3.8	58.76 +.12	77.9 +1.2
16.5	36.69 .06	48.8 0.9	66.95 +.03	63.4 3.8	48.25 +.10	50.4 3.8	58.86 .08	79.0 1.0
26.5	36.74 +.03	49.6 0.6	66.91 −.11	67.3 3.7	48.29 −.01	54.2 3.7	58.92 .05	79.8 0.7
Oct. 6.4	36.75 .00	50.1 0.4	66.73 .25	70.9 3.6	48.22 .13	57.9 3.6	58.95 +.01	80.4 0.5
16.4	36.73 −.03	50.4 +0.2	66.42 .38	74.5 3.4	48.04 .23	61.4 3.4	58.95 −.02	80.8 0.3
26.4	36.68 −.06	50.5 0.0	65.98 −.50	77.7 +3.1	47.75 −.34	64.7 +3.1	58.92 −.04	81.0 +0.1
Nov. 5.4	36.61 .07	50.4 −0.2	65.42 .61	80.6 2.7	47.37 .43	67.6 2.7	58.87 .06	81.0 −0.1
15.3	36.53 .09	50.2 0.3	64.76 .70	83.0 2.2	46.90 .51	70.1 2.3	58.80 .08	80.8 0.2
25.3	36.44 .10	49.8 0.4	64.01 .78	85.0 1.7	46.35 .58	72.1 1.8	58.72 .09	80.5 0.4
Dec. 5.3	36.34 .10	49.3 0.6	63.19 .84	86.4 1.1	45.75 .63	73.6 1.2	58.63 .10	80.1 0.5
15.3	36.24 −.10	48.7 −0.6	62.33 −.87	87.2 +0.5	45.10 −.66	74.6 +0.6	58.53 −.10	79.5 −0.6
25.2	36.14 .10	48.0 0.7	61.46 .87	87.4 −0.1	44.43 .67	74.9 0.0	58.43 .10	78.9 0.7
35.2	36.05 −.09	47.3 −0.8	60.59 −.85	87.0 −0.8	43.75 −.66	74.6 −0.6	58.33 −.09	78.2 −0.7

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cassiop.		22 Androm.		σ Androm.		ι Ceti.		6 Urs. Min., 8. P.		44 Piscium.		π Androm.		ο Cassiop.	
	31° 26′		44° 31′		53° 48′		99° 24′		358° 17′		88° 39′		56° 52′		42° 17′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	0 3		0 4		0 12		0 14		0 13		0 20		0 31		0 38	
	s		s		s		s		s		s		s		s	
(Dec. 30.3)	33.29	−.32	51.07	−.21	50.04	−.15	4.55	−.09	104.31	+7.53	1.14	−.11	16.01	−.16	51.87	−.22
Jan. 9.2	32.98	.30	50.87	.19	49.89	.14	4.46	.09	111.87	7.45	1.04	.09	15.84	.16	51.65	.22
19.2	32.69	.27	50.69	.18	49.75	.14	4.37	.08	119.21	7.09	0.96	.08	15.70	.14	51.43	.21
29.2	32.43	−.24	50.52	−.17	49.61	−.13	4.29	−.08	126.04	+6.43	0.88	−.08	15.56	−.13	51.23	−.19
. .	. . .		. . .		. . .		. . .		. . .		. . .		. . .		. . .	
Aug. 26.6	38.05	+.25	55.14	+.21	53.83	+.20	8.04	+.17	64.87	−3.29	4.60	+.17	19.56	+.22	55.72	+.26
Sept. 5.5	38.27	.18	55.32	.16	54.01	.16	8.20	.14	62.08	2.99	4.76	.15	19.76	.18	55.96	.21
15.5	38.42	.12	55.45	.11	54.15	.11	8.33	.11	60.28	1.98	4.90	.12	19.92	.14	56.15	.16
25.5	38.51	+.06	55.54	.06	54.24	.07	8.42	.07	59.53	−.91	4.99	.08	20.03	.10	56.29	.11
Oct. 5.5	38.54	.00	55.58	+.02	54.29	+.03	8.47	+.03	59.86	+.89	5.05	.04	20.12	.06	56.38	.07
15.4	38.52	−.06	55.58	−.02	54.31	.00	8.48	.00	61.30	+1.98	5.08	+.01	20.16	+.02	56.44	+.03
25.4	38.44	.11	55.54	.06	54.30	−.03	8.47	−.02	63.83	3.07	5.07	−.02	20.16	−.01	56.44	−.02
Nov. 4.4	38.30	.16	55.46	.10	54.25	.06	8.44	.04	67.44	4.12	5.04	.04	20.14	.04	56.40	.06
14.4	38.12	.20	55.34	.13	54.17	.09	8.38	.07	72.07	5.06	4.99	.06	20.08	.07	56.32	.09
24.3	37.89	.24	55.20	.15	54.06	.11	8.30	.09	77.60	5.99	4.92	.08	20.00	.09	56.22	.12
Dec. 4.3	37.65	−.27	55.04	−.17	53.94	−.13	8.21	−.10	83.91	+6.68	4.84	−.09	19.90	−.11	56.07	−.15
14.3	37.36	.29	54.86	.18	53.80	.14	8.11	.11	90.85	7.14	4.75	.09	19.78	.13	55.91	.17
24.2	37.06	.30	54.67	.19	53.65	.15	8.00	.11	98.20	7.43	4.66	.10	19.65	.14	55.72	.19
34.2	36.77	−.30	54.48	−.20	53.50	−.15	7.90	−.11	105.72	+7.48	4.55	−.11	19.50	−.15	55.52	−.20

Mean Solar Date.	δ Piscium.		γ Cassiop.		μ Androm.		43 Cephei.		κ Tucanæ.		f Piscium.		κ Octantis, 8. P.		υ Androm.	
	82° 59′		29° 51′		52° 5′		4° 18′		159° 26′		86° 56′		184° 45′		49° 7′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	0 43		0 50		0 50		0 54		1 12		1 12		1 23		1 30	
	s		s		s		s		s		s		s		s	
(Dec. 30.3)	14.10	−.10	21.50	−.33	55.20	−.15	18.83	−2.77	14.84	−.55	23.20	−.11	49.99	+2.99	38.13	−.15
Jan. 9.2	14.00	.10	21.18	.32	55.04	.16	16.07	2.75	14.30	.54	23.09	.11	52.90	2.92	37.97	.17
19.2	13.89	.10	20.85	.31	54.88	.16	13.32	2.73	13.76	.52	22.98	.11	55.82	2.90	37.79	.19
29.2	13.79	−.09	20.55	−.29	54.71	−.17	10.63	−2.66	13.25	−.50	22.87	−.11	58.62	+2.86	37.58	−.22
. .	. . .		. . .		. . .		. . .		. . .		. . .		. . .		. . .	
Sept. 5.6	17.52	+.15	26.14	+.29	58.94	+.21	36.51	+1.59	18.82	+.40	26.34	+.21	47.86	−1.51	41.59	+.27
15.5	17.67	.13	26.40	.23	59.13	.16	37.90	1.19	19.17	.30	26.53	.17	46.57	1.07	41.84	.22
25.5	17.79	.10	26.60	.16	59.27	.12	38.88	.78	19.43	.20	26.67	.13	45.71	.63	42.04	.18
Oct. 5.5	17.87	.07	26.72	.10	59.38	.08	39.45	+.36	19.57	+.09	26.79	.09	45.31	−.17	42.20	.14
15.5	17.93	.04	26.80	+.04	59.44	.04	39.59	−.06	19.61	−.02	26.86	.06	45.36	+.34	42.33	.10
25.4	17.95	+.01	26.81	−.02	59.48	+.01	39.28	−.59	19.54	−.13	26.91	+.03	45.99	+.84	42.41	+.07
Nov. 4.4	17.94	−.02	26.75	.06	59.47	−.02	38.55	.95	19.36	.23	26.93	.00	47.06	1.32	42.46	+.03
14.4	17.92	.04	26.64	.13	59.43	.05	37.38	1.35	19.09	.38	26.92	−.02	48.64	1.77	42.46	−.01
24.4	17.87	.06	26.48	.18	59.36	.08	35.84	1.74	18.73	.46	26.89	.04	50.61	2.17	42.44	.05
Dec. 4.3	17.80	.08	26.27	.23	59.26	.11	33.91	2.10	18.28	.46	26.84	.06	52.99	2.50	42.37	.08
14.3	17.72	−.09	26.02	−.27	59.15	−.13	31.65	−2.38	17.80	−.50	26.77	−.08	55.62	+2.72	42.28	−.11
24.3	17.62	.10	25.74	.29	59.01	.14	29.15	2.58	17.28	.53	26.68	.09	58.44	2.87	42.15	.13
34.2	17.52	−.11	25.44	−.31	58.86	−.15	26.49	−2.74	16.74	−.55	26.59	−.10	61.37	+2.94	42.01	−.14

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Piscium.	ν Piscium.	ζ Ceti.	γ Androm.	β Trianguli.	4 Urs. Min., S. P.	γ Trianguli.	67 Ceti.
	78° 24′ 1h 31m	85° 3′ 1h 35m	100° 51′ 1h 46m	48° 10′ 1h 57m	55° 31′ 2h 3m	348° 2′ 2h 9m	56° 38′ 2h 11m	96° 54′ 2h 11m
	s	s	s	s	s	s	s	s
(Dec. 30.3)	32.24 −.11	58.45 −.10	17.28 −.11	27.47 −.16	18.10 −.13	15.05 +1.09	4.72 −.11	45.42 −.08
Jan. 9.3	32.13 .11	58.35 .11	17.17 .11	27.31 .17	17.97 .14	16.10 1.08	4.60 .13	45.33 .10
19.2	32.02 .11	58.23 .12	17.05 .12	27.14 .18	17.82 .15	17.20 1.12	4.45 .15	45.22 .12
29.2	31.90 .11	58.11 .12	16.92 .13	26.95 .19	17.66 .16	18.34 1.13	4.29 .16	45.09 .13
Feb. 8.2	31.79 .12	58.00 .11	16.79 .13	26.75 .18	17.49 .17	19.45 1.10	4.14 .16	44.96 .13
18.2	31.67 −.12	57.90 −.10	16.67 −.12	26.58 −.16	17.33 −.16	20.51 +1.06	3.97 −.17	44.83 −.13
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 25.6	35.64 +.16	61.77 + .14	19.39 +.16	31.24 +.21	21.65 +.20	12.32 − .55	8.19 +.22	48.37 +.19
Oct. 5.5	35.78 .12	61.90 .11	19.54 .13	31.44 .18	21.84 .18	11.83 .43	8.39 .18	48.54 .15
15.5	35.88 .08	62.01 .09	19.65 .10	31.61 .14	22.01 .15	11.47 .32	8.56 .14	48.67 .12
25.5	35.95 +.05	62.08 + .06	19.74 +.07	31.73 +.10	22.13 +.11	11.28 − .16	8.69 +.11	48.78 +.09
Nov. 4.5	35.99 +.03	62.13 + .03	19.79 .04	31.81 .06	22.22 .07	11.26 + .02	8.78 .08	48.86 .06
14.4	36.01 .00	62.14 .00	19.81 +.01	31.85 +.03	22.27 +.03	11.44 .16	8.85 .05	48.90 +.03
24.4	35.99 −.02	62.13 − .03	19.80 −.02	31.87 −.01	22.28 .00	11.82 .36	8.87 +.02	48.92 .00
Dec. 4.4	35.96 .05	62.09 .05	19.76 .05	31.83 .05	22.26 −.03	12.35 .53	8.86 −.02	48.91 −.03
14.3	35.90 −.07	62.04 − .07	19.71 −.07	31.76 −.09	22.22 −.06	13.05 + .78	8.83 −.06	48.87 −.06
24.3	35.82 .08	61.96 .09	19.62 .09	31.65 .19	22.14 .10	13.90 .92	8.75 .09	48.79 .09
34.3	35.73 −.09	61.87 − .10	19.52 −.10	31.51 −.15	22.02 −.14	14.89 +1.04	8.64 −.12	48.71 −.09

Mean Solar Date.	δ Hydri.	μ Hydri.	δ Ceti.	θ Persei.	σ Arietis.	47 Cephei.	ε Arietis.	β Persei. (*Algol.*)
	159° 8′ 2h 19m	169° 34′ 2h 33m	90° 7′ 2h 34m	41° 13′ 2h 37m	75° 21′ 2h 45m	11° 0′ 2h 52m	69° 5′ 2h 53m	49° 27′ 3h 1m
	s	s	s	s	s	s	s	s
(Dec. 30.3)	55.86 −.52	59.51 −1.13	6.80 −.08	2.28 −.14	42.44 −.07	9.57 − .71	13.21 −.06	20.95 −.08
Jan. 9.3	55.32 .55	58.34 1.20	6.71 .10	2.12 .18	42.36 .09	8.81 .83	13.13 .09	20.85 .13
19.3	54.75 .57	57.10 1.25	6.61 .12	1.92 .21	42.25 .11	7.94 .93	13.02 .12	20.70 .16
29.2	54.17 .57	55.84 1.24	6.48 .13	1.71 .23	42.13 .13	6.96 .99	12.89 .14	20.53 .18
Feb. 8.2	53.60 .56	54.61 1.22	6.35 .13	1.48 .24	41.99 .14	5.96 1.01	12.75 .15	20.34 .19
18.2	53.05 −.54	53.39 −1.19	6.21 −.14	1.24 −.23	41.85 −.13	4.94 −1.03	12.60 −.14	20.14 −.20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 25.6	58.10 +.35	60.53 + .72	9.61 +.21	6.00 +.30	45.34 +.22	16.72 + .95	16.15 +.21	24.22 +.28
Oct. 5.6	58.41 .27	61.14 .51	9.80 .17	6.28 .26	45.55 .19	17.61 .83	16.36 .20	24.49 .25
15.5	58.63 .17	61.54 .30	9.96 .14	6.53 .22	45.73 .16	18.37 .68	16.56 .19	24.74 .23
25.5	58.74 +.06	61.73 + .08	10.09 +.11	6.72 +.17	45.88 +.13	18.97 + .52	16.74 +.16	24.95 +.19
Nov. 4.5	58.74 −.00	61.69 − .15	10.19 .09	6.87 .12	46.00 .11	19.39 .33	16.87 .12	25.12 .15
14.5	58.63 .17	61.43 .37	10.27 .06	6.97 .08	46.10 .08	19.64 + .17	16.97 .08	25.25 .11
24.4	58.41 .27	60.94 .58	10.30 +.03	7.04 +.03	46.16 .04	19.73 − .02	17.04 .06	25.35 .07
Dec. 4.4	58.10 .26	60.26 .76	10.31 .00	7.04 −.02	46.18 +.01	19.61 .22	17.08 +.02	25.39 +.02
14.4	57.71 −.43	59.41 − .93	10.29 −.03	7.00 −.07	46.18 −.02	19.29 − .42	17.08 −.01	25.39 −.02
24.4	57.24 .49	58.39 1.06	10.25 .06	6.91 .11	46.15 .06	18.77 .58	17.05 .04	25.35 .06
34.2	56.73 −.53	57.28 −1.15	10.18 −.08	6.78 −.15	46.08 −.08	18.11 − .74	16.99 −.07	25.26 −.11

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Hydri.	ρ Octantis, S. P.	f Tauri.	γ Camelop.	γ Hydri.	ε Persei.	A¹ Tauri.	σ Persei.
	167° 46′	185° 53′	77° 25′	19° 0′	164° 34′	50° 18′	68° 12′	42° 34′
	h m 3 18	h m 3 18	h m 3 25	h m 3 39	h m 3 48	h m 3 50	h m 3 58	h m 4 1
	s	s	s	s	s	s	s	s
(Dec.30.4)	40.57 − .87	54.16 +2.22	5.45 − .05	18.57 −.94	56.81 −.69	49.55 −.05	30.37 −.02	3.65 −.05
Jan. 9.3	39.66 .97	56.45 2.35	5.39 .07	18.27 .36	56.16 .70	49.48 .09	30.33 .06	3.58 .10
19.3	38.64 1.05	58.86 2.47	5.31 .09	17.86 .44	55.41 .79	49.38 .12	30.25 .10	3.45 .14
29.3	37.56 1.09	61.39 2.53	5.19 .12	17.39 .50	54.59 .84	49.23 .16	30.14 .13	3.29 .18
Feb. 8.3	36.46 1.10	63.93 2.54	5.06 .14	16.86 .54	53.73 .86	49.05 .19	30.00 .15	3.08 .21
18.3	35.36 −1.09	66.47 +2.48	4.91 − .15	16.30 −.57	52.82 −.91	48.85 −.20	29.85 −.16	2.86 −.23
28.2	34.28 −1.06	68.90 +2.34	4.76 − .15	15.73 −.56	51.91 −.90	48.65 −.19	29.68 −.17	2.61 −.25
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 5.6	40.04 + .63	63.35 −1.04	8.26 + .24	23.59 +.63	55.62 +.62	52.69 +.32	33.10 +.28	6.93 +.24
15.6	40.58 .45	62.47 .70	8.48 .20	24.19 .57	56.16 .46	52.99 .28	33.36 .24	7.27 .29
25.5	40.93 + .26	61.96 − .31	8.66 + .17	24.73 +.48	56.55 +.33	53.26 +.25	33.59 +.21	7.58 +.29
Nov. 4.5	41.10 + .07	61.86 + .13	8.82 .14	25.15 .38	56.82 .20	53.49 .21	33.79 .19	7.85 .25
14.5	41.08 − .12	62.22 .56	8.96 .11	25.49 .28	56.95 +.05	53.68 .17	33.97 .16	8.09 .21
24.5	40.87 .31	62.97 .66	9.06 .08	25.72 .17	56.92 −.10	53.84 .13	34.11 .12	8.27 .16
Dec. 4.4	40.47 .49	64.13 1.36	9.12 .05	25.83 +.06	56.75 .25	53.95 .09	34.21 .08	8.40 .11
14.4	39.89 − .65	65.69 +1.71	9.15 + .01	25.84 −.06	56.43 −.49	54.02 +.04	34.28 +.05	8.49 +.05
24.4	39.17 .79	67.55 2.09	9.15 − .02	25.72 .18	55.95 .53	54.04 −.01	34.31 +.01	8.51 −.01
34.4	38.31 − .92	69.68 +2.23	9.11 − .06	25.48 −.30	55.37 −.63	54.01 −.05	34.30 −.03	8.48 −.06

Mean Solar Date.	o¹ Eridani.	ψ Ura. Min., S. P.	δ Menσæ.	m Persei.	τ Tauri.	ζ Tauri.	ζ Aurigæ.	β Eridani.
	97° 7′	346° 0′	170° 28′	47° 10′	67° 15′	71° 20′	49° 5′	95° 13′
	h m 4 6	h m 4 20	h m 4 25	h m 4 26	h m 4 35	h m 4 45	h m 4 55	h m 5 2
	s	s	s	s	s	s	s	s
(Dec.30.4)	45.61 − .02	30.65 + .42	13.05 − .90	3.08 −.02	57.86 +.01	15.20 +.02	9.89 +.02	42.62 +.02
Jan. 9.4	45.57 .06	31.17 .62	12.06 1.09	3.04 .06	57.85 −.03	15.20 −.02	9.89 −.02	42.62 −.02
19.4	45.49 .09	31.86 .78	10.88 1.25	2.96 .11	57.80 .07	15.16 .06	9.85 .07	42.58 .06
29.3	45.39 .12	32.66 .83	9.57 1.37	2.83 .15	57.70 .11	15.08 .10	9.74 .12	42.50 .10
Feb. 8.3	45.25 .14	33.52 .89	8.15 1.45	2.66 .18	57.58 .14	14.96 .13	9.59 .16	42.38 .13
18.3	45.11 − .16	34.45 + .94	6.67 −1.49	2.46 −.21	57.43 −.16	14.82 −.15	9.41 −.19	42.24 −.15
28.3	44.94 .17	35.40 .94	5.17 1.50	2.24 .22	57.26 .17	14.66 .16	9.20 .21	42.08 .17
Mar.10.2	44.78 − .16	36.33 + .93	3.68 −1.48	2.02 −.21	57.09 −.16	14.49 −.16	8.98 −.23	41.91 −.18
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 15.6	48.02 + .22	29.83 − .75	8.27 + .86	6.38 +.32	60.60 +.28	17.82 +.27	12.91 +.24	44.68 +.24
25.6	48.23 + .20	29.14 − .69	9.04 + .67	6.69 +.30	60.87 +.25	18.08 +.25	13.24 +.32	44.92 +.24
Nov. 4.6	48.42 .17	28.59 .47	9.62 .45	6.98 .27	61.11 .22	18.33 .23	13.55 .29	45.15 .22
14.5	48.58 .14	28.20 .31	9.94 + .21	7.23 .23	61.32 .19	18.55 .20	13.83 .26	45.35 .20
24.5	48.70 .11	27.96 − .15	10.04 − .04	7.44 .18	61.50 .16	18.73 .16	14.08 .22	45.54 .17
Dec. 4.5	48.79 .07	27.89 + .02	9.87 .20	7.60 .13	61.65 .12	18.88 .13	14.27 .17	45.69 .13
14.5	48.84 + .03	27.99 + .19	9.45 − .54	7.71 + .06	61.75 +.08	19.00 +.06	14.43 +.12	45.80 +.09
24.4	48.85 .00	28.27 .37	8.79 .77	7.77 +.03	61.81 .04	19.07 .05	14.52 .07	45.87 .05
34.4	48.83 − .03	28.73 + .55	7.91 − .99	7.77 −.03	61.84 +.01	19.10 +.01	14.56 +.02	45.90 +.01

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Orionis.		χ Aurigæ.		Groombr. 944.		ε Orionis.		ν Aurigæ.		δ Doradus.		β Aurigæ.		θ Aurigæ.	
	96° 57′		57° 53′		4° 51′		99° 42′		50° 53′		155° 46′		45° 4′		52° 48′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	5 12		5 25		5 28		5 42		5 44		5 44		5 51		5 52	
	s		s		s		s		s		s		s		s	
(Dec. 30.5)	31.85	+.02	55.30	+.07	36.68	−.15	48.01	+.06	14.50	+.09	38.60	−.14	51.62	+.10	35.51	+.10
Jan. 9.4	31.86	−.01	55.34	+.02	36.29	.63	48.05	+.01	14.56	+.03	38.42	.29	51.69	+.03	35.58	+.04
19.4	31.83	.05	55.33	−.03	35.42	1.11	48.03	−.04	14.56	−.03	38.15	.31	51.69	−.03	35.59	−.01
29.4	31.76	.09	55.28	.06	34.09	1.52	47.97	.09	14.51	.06	37.79	.49	51.64	.09	35.55	.07
Feb. 8.3	31.64	.13	55.17	.13	32.38	1.87	47.87	.11	14.41	.13	37.35	.47	51.53	.14	35.46	.11
18.3	31.51	−.15	55.02	−.16	30.35	−2.14	47.74	−.14	14.26	−.17	36.86	−.51	51.36	−.18	35.32	−.15
28.3	31.35	.16	54.85	.18	28.10	2.30	47.59	.16	14.07	.19	36.33	.55	51.17	.21	35.15	.18
Mar. 10.3	31.18	.17	54.67	.19	25.75	2.36	47.41	.17	13.87	.20	35.76	.57	50.94	.23	34.95	.20
20.3	31.01	−.17	54.47	−.20	23.38	−2.37	47.24	−.17	13.66	−.21	35.19	−.57	50.71	−.23	34.75	−.20
. .	. . .		. . .		. . .		. . .		. . .		. . .		. . .		. . .	
Oct. 25.6	34.07	+.25	58.23	+.31	48.21	+2.06	49.98	+.27	17.47	+.36	37.43	+.46	54.68	+.49	38.38	+.35
Nov. 4.6	34.31	.23	58.53	.29	50.72	2.34	50.24	.25	17.82	.34	37.86	.49	55.06	.37	38.72	.33
14.6	34.53	.20	58.81	.27	52.88	2.01	50.48	.22	18.14	.31	38.23	.33	55.41	.34	39.04	.31
24.5	34.71	.17	59.06	.24	54.73	1.63	50.69	.19	18.44	.27	38.51	.24	55.75	.30	39.33	.26
Dec. 4.5	34.87	.13	59.29	.20	56.13	1.17	50.87	.16	18.69	.23	38.70	.14	56.02	.25	39.60	.24
14.5	34.98	+.09	59.46	+.15	57.08	+.66	51.02	+.12	18.90	+.18	38.79	+.05	56.25	+.20	39.81	+.19
24.5	35.06	.06	59.58	.10	57.50	+.18	51.12	.06	19.05	.13	38.78	−.06	56.42	.15	39.97	.14
34.4	35.10	+.02	59.66	+.06	57.44	−.39	51.18	+.04	19.15	+.06	38.66	−.18	56.54	+.09	40.08	+.09

Mean Solar Date.	η Geminor.		ψ¹ Aurigæ.		ν Geminor.		χ Draconis, S. P.		ε Geminor.		ψ⁵ Aurigæ.		θ Geminor.		ζ Menæ.	
	67° 28′		40° 40′		69° 43′		342° 41′		64° 46′		46° 19′		55° 55′		170° 42′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	6 8		6 16		6 22		6 22		6 37		6 39		6 45		6 48	
	s		s		s		s		s		s		s		s	
(Dec. 30.5)	34.00	+.10	51.02	+.15	45.30	+.11	52.16	+.04	29.98	+.14	12.33	+.16	54.01	+.15	54.54	−.15
Jan. 9.5	34.08	+.05	51.13	+.07	45.39	.07	52.27	.15	30.09	.09	12.46	.09	54.14	.10	54.26	.41
19.4	34.11	.00	51.17	.00	45.43	+.02	52.48	.28	30.15	+.04	12.52	+.03	54.22	+.05	53.72	.68
29.4	34.08	−.05	51.13	−.06	45.42	−.03	52.83	.43	30.16	−.02	12.52	−.03	54.23	−.01	52.94	.88
Feb. 8.4	34.01	.09	51.04	.12	45.37	.07	53.31	.53	30.11	.07	12.47	.09	54.19	.06	51.96	1.09
18.4	33.91	−.12	50.89	−.17	45.28	−.11	53.88	+.62	30.02	−.11	12.35	−.14	54.11	−.11	50.78	−1.25
28.3	33.77	.15	50.69	.22	45.15	.14	54.54	.70	29.90	.14	12.18	.18	53.97	.15	49.46	1.38
Mar. 10.3	33.61	.17	50.44	.25	44.99	.16	55.28	.74	29.75	.16	11.99	.20	53.80	.18	48.02	1.47
20.3	33.44	.17	50.18	.27	44.82	.17	56.03	.76	29.58	.18	11.78	.22	53.61	.19	46.52	1.52
30.2	33.27	.17	49.91	.25	44.65	.17	56.79	.76	29.40	.17	11.55	.23	53.42	.20	44.98	1.54
Apr. 9.2	33.10	−.16	49.67	−.22	44.48	−.16	57.55	+.75	29.23	−.16	11.32	−.22	53.22	−.20	43.43	−1.52
. .	. . .		. . .		. . .		. . .		. . .		. . .		. . .		. . .	
Nov. 14.6	37.06	+.28	54.85	+.30	48.24	+.30	52.33	−.56	32.97	+.31	15.79	+.37	57.17	+.34	47.13	+.28
24.6	37.33	.25	55.22	.35	48.52	.26	51.81	.46	33.27	.28	16.15	.34	57.50	.31	48.00	.76
Dec. 4.6	37.57	.22	55.56	.30	48.77	.23	51.42	.34	33.54	.25	16.48	.30	57.80	.28	48.64	.53
14.5	37.77	+.18	55.83	+.25	48.98	+.19	51.14	−.22	33.78	+.21	16.77	+.26	58.07	+.24	49.05	+.38
24.5	37.94	.14	56.05	.19	49.16	.15	50.98	−.08	33.97	.17	17.01	.21	58.29	.20	49.20	+.01
34.5	38.05	+.09	56.20	+.12	49.28	+.10	50.99	+.07	34.12	+.13	17.18	+.14	58.46	+.15	49.08	−.36

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Geminor.		63 Aurigæ.		25 Camelop.		γ² Volantis.		β Can. Min.		26 Lyncis.		Groombr. 1374.		ω¹ Canori.	
	69° 17′		50° 30′		7° 23′		160° 20′		81° 30′		42° 10′		15° 48′		64° 19′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	6 57		7 4		7 9		7 9		7 21		7 47		7 47		7 54	
	s		s		s		s		s		s		s		s	
(Dec. 30.5)	54.54	+.15	28.05	+.19	11.57	+ .74	41.62	+ .05	28.93	+.16	6.39	+.29	43.31	+.53	36.41	+.21
Jan. 9.5	54.67	.10	28.21	.13	12.12	.37	41.61	− .07	29.07	.12	6.62	.29	43.75	.35	36.60	.17
19.5	54.75	+.05	28.31	.08	12.31	+ .02	41.48	.19	29.17	.07	6.78	.12	44.01	.19	36.75	.12
29.4	54.78	.00	28.35	+.01	12.18	− .28	41.23	.31	29.21	+.03	6.89	+.05	44.12	+.08	36.83	+.06
Feb. 8.4	54.76	−.05	28.32	−.05	11.67	.65	40.86	.42	29.20	−.00	6.90	−.03	44.06	−.15	36.86	.00
18.4	54.69	−.09	28.24	−.11	10.88	− .83	40.39	− .51	29.15	−.07	6.85	−.08	43.83	−.36	36.83	−.05
28.4	54.57	.12	28.10	.15	9.81	1.18	39.84	.59	29.06	.10	6.74	.14	43.46	.43	36.77	.09
Mar. 10.3	54.44	.14	27.94	.18	8.53	1.36	39.21	.64	28.94	.13	6.57	.18	42.97	.53	36.66	.13
20.3	54.28	.16	27.74	.20	7.10	1.46	38.55	.68	28.80	.15	6.37	.21	42.40	.61	36.51	.15
30.3	54.11	.17	27.53	.21	5.62	1.50	37.86	.69	28.64	.16	6.15	.23	41.75	.66	36.36	.16
Apr. 9.2	53.94	−.16	27.32	−.20	4.09	−1.50	37.17	− .68	28.48	−.16	5.90	−.25	41.07	−.68	36.20	−.16
19.2	53.78	−.15	27.13	−.19	2.60	−1.47	36.50	− .65	28.33	−.15	5.66	−.24	40.39	−.67	36.04	−.15
. .	. . .		. . .		. . .		. . .		. . .		. . .		. . .		. . .	
Nov. 24.6	57.65	+.30	31.60	+.34	21.30	+1.68	40.10	+ .47	31.69	+.28	9.93	+.44	48.63	+.94	39.38	+.34
Dec. 4.6	57.93	.28	31.93	.31	22.88	1.48	40.52	.37	31.96	.26	10.35	.42	49.52	.84	39.71	.31
14.6	58.17	+.22	32.24	+.26	24.25	+1.28	40.84	+ .26	32.22	+.23	10.73	+.36	50.31	+.73	40.01	+.26
24.5	58.38	.18	32.49	.22	25.31	.90	41.05	+ .14	32.43	.19	11.06	.31	50.97	.60	40.28	.25
34.5	58.54	+.14	32.69	+.19	26.05	+ .56	41.12	.06	32.60	+.15	11.34	+.23	51.50	+.47	40.51	+.21

Mean Solar Date.	ζ¹ Canori.		β Canori.		30 Monoceros.		θ Chamæleontis.		σ Hydræ.		γ Canori.		σ² Canori. (mean.)		θ Hydræ.	
	72° 2′		80° 29′		93° 34′		167° 9′		86° 17′		68° 9′		59° 1′		87° 15′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	8 6		8 10		8 20		8 23		8 33		8 37		8 47		9 8	
	s		s		s		s		s		s		s		s	
(Dec. 30.6)	12.96	+.21	50.68	+.21	26.12	+ .21	50.95	+ .33	17.63	+.23	14.15	+.23	52.02	+.27	55.33	+.27
Jan. 9.5	13.15	.17	50.87	.17	26.31	.17	51.20	+ .17	17.83	.18	14.38	.20	52.27	.23	55.57	.21
19.5	13.30	.12	51.02	.12	26.45	.12	51.28	− .01	18.00	.14	14.56	.15	52.48	.18	55.76	.17
29.5	13.40	.07	51.11	.07	26.54	.07	51.17	.20	18.11	.09	14.69	.10	52.62	.12	55.90	.12
Feb. 8.5	13.44	+.03	51.15	+.03	26.58	+ .03	50.88	.26	18.17	+.04	14.76	+.05	52.71	+.06	56.00	.07
18.4	13.43	−.03	51.14	−.03	26.58	− .03	50.42	− .54	18.18	−.01	14.78	.00	52.75	.00	56.04	+.00
28.4	13.37	.08	51.09	.07	26.52	.07	49.80	.09	18.14	.05	14.75	−.05	52.72	−.05	56.03	−.02
Mar. 10.4	13.27	.11	51.00	.10	26.43	.10	49.05	.09	18.07	.08	14.68	.09	52.65	.09	55.99	.09
20.4	13.15	.13	50.88	.12	26.32	.12	48.21	.09	17.97	.11	14.57	.12	52.55	.12	55.91	.09
30.3	13.00	.15	50.74	.14	26.18	.14	47.28	.96	17.84	.13	14.44	.14	52.41	.14	55.81	.11
Apr. 9.3	12.85	−.16	50.60	−.15	26.03	− .15	46.30	−1.06	17.70	−.14	14.29	−.15	52.26	−.16	55.69	−.12
19.3	12.69	.15	50.45	.15	25.88	.14	45.29	1.02	17.56	.14	14.14	.15	52.09	.17	55.56	.13
29.2	12.55	.13	50.30	.13	25.74	.13	44.27	1.01	17.42	.13	13.99	.14	51.93	.15	55.43	.13
May 9.2	12.42	−.11	50.18	−.11	25.61	− .11	43.27	− .98	17.29	−.12	13.85	−.13	51.78	−.13	55.30	−.13

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Argus.	α Lyncis.	10 Leonis Minoris.	o Leonis.	ζ Chamæleontis.	19 Leonis Minoris.	π Leonis.	λ Ursæ Majoris.
	159° 17′	55° 10′	53° 8′	79° 38′	170° 28′	48° 27′	81° 27′	46° 34′
	h m 9 12	h m 9 14	h m 9 27	h m 9 35	h m 9 36	h m 9 51	h m 9 54	h m 10 10
	s	s	s	s	s	s	s	s
(Dec.30.6)	4.67 +.40	41.18 +.39	49.24 +.31	33.99 + .28	61.46 + .66	18.02 + .36	40.96 +.28	47.57 +.28
Jan. 9.6	5.02 .29	41.47 .27	49.54 .28	34.25 .24	62.21 .63	18.36 .32	41.23 .26	47.94 .25
19.6	5.26 .18	41.71 .21	49.81 .24	34.47 .20	62.73 .41	18.66 .27	41.47 .22	48.27 .28
29.5	5.38 +.06	41.90 .15	50.01 .17	34.64 .15	63.02 + .17	18.90 .21	41.66 .17	48.53 .24
Feb. 8.5	5.38 −.06	42.02 .09	50.15 .11	34.77 .10	63.08 − .06	19.07 .14	41.81 .12	48.74 .18
18.5	5.26 −.17	42.08 +.03	50.23 +.05	34.84 + .05	62.89 − .31	19.19 + .08	41.90 +.07	48.88 +.11
28.5	5.03 .27	42.09 −.02	50.26 .00	34.87 .00	62.49 .50	19.24 + .02	41.95 +.02	48.96 +.04
Mar.10.4	4.71 .36	42.04 .07	50.23 −.06	34.85 − .04	61.89 .69	19.23 − .04	41.95 −.02	48.97 −.02
20.4	4.31 .44	41.96 .11	50.14 .10	34.79 .07	61.11 .86	19.16 .09	41.91 .05	48.92 .07
30.4	3.84 .50	41.83 .14	50.02 .13	34.71 .10	60.17 1.01	19.05 .12	41.84 .08	48.82 .12
Apr. 9.3	3.32 −.53	41.68 −.16	49.87 −.15	34.60 − .12	59.10 −1.12	18.91 − .15	41.75 −.10	48.69 −.15
19.3	2.78 .55	41.51 .17	49.71 .17	34.48 .13	57.94 1.20	18.74 .17	41.63 .11	48.53 .17
29.3	2.21 .57	41.34 .17	49.53 .17	34.35 .12	56.70 1.26	18.56 .18	41.52 .12	48.35 .18
May 9.3	1.64 .57	41.17 .16	49.37 .16	34.23 .12	55.43 1.29	18.38 .18	41.40 .12	48.16 .19
19.2	1.07 −.57	41.02 −.14	49.21 −.16	34.11 − .11	54.13 −1.31	18.21 − .17	41.28 −.11	47.98 −.18

Mean Solar Date.	μ Hydræ.	β Leonis Minoris.	α Antliæ.	β Octantis, S. P.	41 Leonis Minoris.	d^2 Chamæleontis.	46 Leonis Minoris.	Groombr. 1706.
	106° 18′	52° 45′	120° 32′	188° 4′	66° 16′	169° 59′	55° 13′	11° 40′
	h m 10 21	h m 10 21	h m 10 22	h m 10 35	h m 10 37	h m 10 44	h m 10 47	h m 10 51
	s	s	s	s	s	s	s	s
Jan. 19.6	2.04 +.24	50.86 +.29	21.98 +.24	16.13 − .68	44.13 + .26	50.56 + .78	28.32 +.31	41.10 +.37
29.6	2.25 .18	51.12 .23	22.19 .18	15.59 .40	44.37 .22	51.24 .57	28.60 .25	41.98 .79
Feb. 8.6	2.41 .12	51.33 .17	22.35 .13	15.29 − .18	44.57 .17	51.71 .37	28.82 .20	42.68 .59
18.5	2.52 .07	51.47 .11	22.46 .08	15.23 + .06	44.72 .12	51.98 + .16	28.99 .15	43.16 .39
28.5	2.58 +.03	51.56 +.05	22.51 +.03	15.40 .29	44.82 .07	52.04 − .04	29.11 .09	43.44 +.17
Mar.10.5	2.59 −.01	51.58 .00	22.51 −.01	15.81 + .53	44.86 + .02	51.90 − .24	29.16 +.03	43.50 −.04
20.4	2.57 .04	51.56 −.05	22.48 .05	16.46 .75	44.86 − .02	51.57 .43	29.17 −.02	43.36 .24
30.4	2.51 .07	51.49 .09	22.41 .08	17.31 .96	44.82 .05	51.05 .60	29.13 .06	43.02 .43
Apr. 9.4	2.43 .09	51.38 .12	22.31 .11	18.37 1.14	44.75 .08	50.38 .74	29.05 .09	42.49 .59
19.4	2.33 .11	51.25 .14	22.19 .13	19.59 1.32	44.66 .10	49.56 .86	28.95 .11	41.84 .71
29.3	2.22 −.12	51.10 −.16	22.05 −.14	20.99 +1.45	44.55 − .12	48.66 − .97	28.82 −.13	41.07 −.81
May 9.3	2.09 .13	50.93 .16	21.91 .15	22.50 1.56	44.42 .13	47.64 1.04	28.68 .14	40.22 .87
19.3	1.97 .12	50.77 .15	21.77 .15	24.11 1.65	44.30 .12	46.58 1.09	28.54 .15	39.32 .93
29.3	1.85 .12	50.62 .14	21.61 .14	25.79 1.68	44.18 .11	45.46 1.13	28.39 .14	38.41 .93
June 8.2	1.74 −.11	50.48 −.12	21.48 −.12	27.46 +1.66	44.07 − .10	44.31 −1.16	28.26 −.12	37.52 −.87

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Octantis.		p³ Leonis.		ψ Urs. Maj.		ν Urs. Maj.		ξ Hydræ.		χ Urs. Maj.		π Virginis.		ε Corvi.	
	174° 2′		87° 28′		44° 56′		56° 20′		121° 17′		41° 38′		82° 48′		112° 2′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	10 59		11 1		11 3		11 12		11 27		11 40		11 55		12 4	
	s		s		s		s		s		s		s		s	
Feb. 8.6	69.18	+ .79	34.46	+ .16	48.42	+.23	50.94	+.23	51.60	+.29	33.21	+.30	31.09	+.24	44.75	+ .25
18.6	69.72	.38	34.61	.13	48.63	.17	51.14	.17	51.79	.16	33.48	.23	31.30	.19	44.97	.19
28.5	69.93	+ .06	34.73	.09	48.78	.11	51.28	.11	51.92	.11	33.68	.16	31.47	.14	45.15	.15
Mar. 10.5	69.81	− .26	34.79	.05	48.86	+.05	51.37	.06	52.01	.06	33.80	.10	31.59	.10	45.28	.11
20.5	69.38	.57	34.82	+ .01	48.88	−.01	51.40	+.01	52.05	+.03	33.87	+.04	31.66	.06	45.37	.07
30.4	68.66	− .86	34.80	− .02	48.84	−.06	51.39	−.03	52.06	−.01	33.88	−.02	31.71	+.03	45.42	+ .04
Apr. 9.4	67.65	1.13	34.77	.05	48.76	.10	51.34	.06	52.03	.04	33.83	.07	31.72	−.01	45.44	+ .01
19.4	66.40	1.37	34.70	.07	48.65	.13	51.26	.09	51.97	.07	33.74	.12	31.70	.03	45.43	− .00
29.4	64.91	1.57	34.62	.09	48.50	.16	51.15	.11	51.89	.09	33.60	.15	31.65	.05	45.40	.05
May 9.3	63.26	1.72	34.53	.10	48.33	.18	51.03	.13	51.79	.11	33.44	.17	31.59	.07	45.34	.07
19.3	61.47	−1.84	34.43	− .10	48.15	−.19	50.89	−.14	51.67	−.12	33.26	−.19	31.52	−.09	45.26	− .08
29.3	59.58	1.92	34.33	.10	47.96	.19	50.76	.15	51.55	.13	33.07	.20	31.44	.10	45.18	.09
June 8.3	57.64	1.94	34.23	.10	47.78	.17	50.61	.14	51.41	.13	32.86	.22	31.34	.09	45.08	.10
18.2	55.71	−1.93	34.14	− .09	47.61	−.16	50.48	−.13	51.28	−.12	32.67	−.18	31.25	−.09	44.98	− .10

Mean Solar Date.	2 Can. Ven.		6 Urs. Min.		δ² Corvi.		β Can. Ven.		γ Virginis, (mean.)		31 Comæ Berenices.		γ Cassiop., S. P.		43 Cephei, S. P.	
	48° 45′		1° 43′		105° 56′		48° 4′		90° 52′		61° 53′		330° 9′		355° 42′	
	h m		h m		h m		h m		h m		h m		h m		h m	
	12 10		12 14		12 24		12 28		12 36		12 46		12 50		12 54	
	s		s		s		s		s		s		s		s	
Feb. 8.6	54.21	+ .29	72.38	+5.65	27.26	+.25	47.58	+.31	21.73	+.28	36.87	+.29	20.26	−.21	8.05	−2.24
18.6	54.48	.24	77.43	4.45	27.49	.21	47.87	.26	21.97	.21	37.14	.25	19.99	.23	5.90	1.25
28.6	54.70	.19	81.27	3.29	27.68	.17	48.10	.21	22.16	.17	37.37	.20	19.81	.16	4.14	1.54
Mar. 10.5	54.85	.13	83.83	1.85	27.83	.13	48.28	.15	22.32	.14	37.55	.16	19.68	.10	2.83	1.06
20.5	54.96	.08	84.96	+ .44	27.95	.09	48.41	.10	22.44	.10	37.69	.12	19.61	−.03	2.02	− .53
30.5	55.01	+ .03	84.71	− .94	28.02	+.05	48.49	+.05	22.53	+.07	37.76	+.06	19.62	+.06	1.76	+ .03
Apr. 9.5	55.02	− .01	83.08	2.97	28.06	+.03	48.51	.00	22.58	+.03	37.84	+.04	19.73	.15	2.08	.56
19.4	54.98	.05	80.16	3.50	28.07	.00	48.49	−.04	22.60	.00	37.85	.00	19.91	.23	2.88	1.07
29.4	54.91	.09	76.07	4.57	28.06	−.02	48.43	.06	22.59	−.02	37.84	−.03	20.18	.31	4.22	1.55
May 9.4	54.79	.12	71.01	5.47	28.02	.05	48.33	.11	22.57	.04	37.79	.06	20.53	.36	5.99	1.97
19.4	54.66	− .14	65.12	−6.17	27.96	−.07	48.21	−.13	22.52	−.06	37.73	−.07	20.94	+.44	8.16	+2.33
29.3	54.52	.15	58.65	6.66	27.89	.08	48.07	.15	22.46	.06	37.64	.09	21.41	.48	10.65	2.60
June 8.3	54.36	.16	51.77	6.96	27.81	.09	47.92	.16	22.39	.06	37.53	.11	21.91	.52	13.37	2.80
18.3	54.20	− .16	44.70	−7.07	27.72	−.09	47.75	−.17	22.30	−.06	37.42	−.12	22.46	+.56	16.25	+2.90

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Mascon.	ε Virginis.	29 Com. Ven.	ε Octantis.	B.A.C. 4536.	m Virginis.	θ Apodis.	w Hydræ.
	160° 59′	76° 29′	46° 52′	175° 15′	52° 17′	98° 10′	166° 17′	116° 11′
	h m 12 55	h m 12 56	h m 13 12	h m 13 24	h m 13 29	h m 13 36	h m 13 55	h m 14 0
	s	s	s	s	s	s	s	s
Mar. 0.5	6.23 +.44	58.88 +.20	52.51 + .25	5.74 +1.83	6.69 +.20	7.56 +.22	8.71 + .23	24.91 +.25
10.5	6.63 .26	59.06 .16	52.74 .20	7.48 1.55	6.94 .23	7.77 .19	9.69 .20	25.05 .21
20.5	6.94 .26	59.21 .19	52.92 .15	8.84 1.19	9.13 .17	7.95 .16	10.15 .20	25.22 .21
30.5	7.15 .16	59.31 .08	53.04 .10	9.85 .89	9.27 .13	8.10 .13	10.68 .45	25.46 .17
Apr. 9.5	7.26 +.08	59.38 .05	53.13 .08	10.44 .52	9.38 .09	8.22 .10	11.07 .30	25.61 .13
19.5	7.27 −.03	59.42 +.03	53.16 + .01	10.68 + .21	9.43 +.05	8.30 +.07	11.34 + .23	25.73 +.10
29.4	7.20 .13	59.42 −.01	53.15 − .03	10.52 − .35	9.44 −.01	8.35 .04	11.48 + .07	25.82 .07
May 9.4	7.04 .20	59.41 .03	53.10 .08	9.97 .74	9.42 .04	8.38 +.01	11.48 − .03	25.87 .04
19.4	6.80 .27	59.36 .06	53.02 .10	9.05 1.06	9.37 .07	8.36 −.03	11.36 .16	25.90 +.03
29.4	6.49 .34	59.30 .07	52.92 .12	7.81 1.28	9.28 .13	8.36 .03	11.11 .29	25.90 −.01
June 8.3	6.12 −.41	59.23 −.08	52.78 − .14	6.29 −1.67	9.17 −.12	8.32 −.05	10.75 − .42	25.88 −.04
18.3	5.67 .47	59.15 .08	52.63 .15	4.47 1.92	9.05 .14	8.27 .07	10.36 .52	25.83 .06
28.3	5.19 .49	59.06 .10	52.47 .16	2.46 2.11	8.90 .15	8.19 .09	9.71 .69	25.76 .08
July 8.3	4.73 −.49	58.95 −.11	52.30 − .17	0.26 −2.20	8.74 −.16	8.10 −.09	9.07 − .69	25.67 −.10

Mean Solar Date.	δ Bootis.	α Virginis.	4 Urs. Min.	δ Octantis.	λ Bootis.	λ Virginis.	μ Hydri, S. P.	ε Apodis.
	64° 25′	99° 47′	11° 58′	173° 11′	42° 26′	102° 53′	190° 26′	168° 36′
	h m 14 5	h m 14 7	h m 14 9	h m 14 10	h m 14 12	h m 14 13	h m 14 33	h m 14 34
	s	s	s	s	s	s	s	s
Mar. 20.6	28.86 +.18	19.51 +.20	23.04 + .20	13.22 +1.25	26.24 +.24	27.48 +.21	50.31 − .24	54.16 +.18
20.6	29.02 .15	19.69 .16	23.54 .41	14.35 1.00	26.45 .18	27.67 .17	49.55 .68	54.97 .74
Apr. 9.5	39.16 .12	19.84 .12	23.85 .22	15.23 .73	26.60 .13	27.82 .14	48.95 .50	55.65 .59
19.5	39.26 .09	19.95 .10	22.98 + .63	15.84 .48	26.71 .08	27.95 .11	48.55 .31	56.16 .46
29.5	39.33 .06	20.04 .07	23.92 − .15	16.16 + .20	26.76 +.03	28.04 .08	48.33 − .12	56.53 .30
May 9.5	39.36 +.01	20.09 +.04	23.68 − .23	16.21 − .08	26.77 −.02	28.11 +.05	48.30 + .06	56.72 +.13
19.4	39.36 −.02	20.13 +.03	23.26 .48	16.00 .35	26.72 .09	28.14 +.02	48.48 .28	56.77 −.04
29.4	39.33 .04	20.13 −.01	22.71 .63	15.52 .61	26.65 .10	28.16 .00	48.85 .46	56.64 .21
June 8.4	39.28 .06	20.11 .03	22.03 .74	14.79 .87	26.53 .13	28.14 −.03	49.40 .64	56.36 .37
18.3	39.20 .08	20.07 .05	21.23 .83	13.82 1.07	26.39 .16	28.11 .05	50.13 .80	55.91 .51
28.3	39.11 −.10	20.01 −.07	20.36 − .91	12.65 −1.25	26.22 −.18	28.05 −.07	50.99 + .93	55.35 −.63
July 8.3	38.99 .12	19.93 .09	19.41 .97	11.32 1.40	26.02 .20	27.97 .09	51.98 1.05	54.66 .74
18.3	38.87 .13	19.83 .10	18.42 1.00	9.85 1.53	25.80 .22	27.87 .10	53.08 1.13	53.88 .83
28.2	38.72 −.14	19.72 −.11	17.41 −1.03	8.26 −1.65	25.58 −.22	27.76 −.11	54.23 +1.17	53.01 −.89

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Bootis.		47 Cephei, S. P.		γ Scorpii.		δ Bootis.		ρ Octantis.		β Cor. Bor.		γ Camelop., S. P.		δ^1 Apodis.	
	45° 9′		349° 0′		114° 52′		56° 18′		174° 7′		60° 32′		341° 0′		168° 26′	
	h m 14 34		h m 14 52		h m 14 57		h m 15 11		h m 15 19		h m 15 23		h m 15 39		h m 16 4	
	s		s		s		s		s		s		s		s	
Mar. 30.6	58.50	+.28	1.75	−.46	57.37	+.28	18.43	+.23	15.35	+1.89	32.08	+.24	14.30	−.49	44.74	+1.13
Apr. 9.6	58.68	.16	1.38	.36	57.58	.19	18.64	.19	17.01	1.56	32.30	.99	13.97	.26	45.81	1.06
19.5	58.81	.11	1.19	−.08	57.76	.16	18.81	.15	18.37	1.22	32.48	.16	13.78	−.19	46.75	.87
29.5	58.90	.06	1.23	+.14	57.92	.13	18.94	.11	19.45	.91	32.63	.12	13.71	.06	47.55	.73
May 9.5	58.94	+.02	1.47	.37	58.03	.10	19.03	.07	20.20	.59	32.73	.08	13.77	+.12	48.20	.57
19.5	58.94	−.03	1.97	+.58	58.12	+.07	19.09	+.04	20.63	+.26	32.81	+.05	13.95	+.25	48.69	+.40
29.4	58.88	.07	2.64	.75	58.19	.04	19.11	+.01	20.72	−.06	32.85	+.02	14.27	.38	49.01	.22
June 8.4	58.80	.10	3.49	.91	58.21	+.01	19.10	−.03	20.48	.41	32.84	−.02	14.71	.50	49.16	+.06
18.4	58.69	.13	4.47	1.06	58.20	−.02	19.04	.07	19.91	.72	32.81	.05	15.26	.59	49.13	−.19
28.3	58.54	.16	5.61	1.16	58.17	.05	18.96	.10	19.04	1.02	32.74	.08	15.89	.67	48.92	.36
July 8.3	58.36	−.19	6.83	+1.24	58.10	−.08	18.84	−.13	17.87	−1.29	32.65	−.11	16.60	+.74	48.53	−.49
18.3	58.15	.21	8.12	1.30	58.01	.10	18.70	.15	16.46	1.53	32.53	.14	17.37	.78	48.01	.59
28.3	57.93	.22	9.44	1.32	57.90	.12	18.55	.17	14.81	1.71	32.38	.16	18.17	.81	47.36	.71
Aug. 7.2	57.70	.23	10.78	1.32	57.76	.14	18.36	.19	13.05	1.80	32.22	.18	19.00	.83	46.59	.82
17.2	57.47	.23	12.09	1.29	57.62	.15	18.17	.20	11.22	1.84	32.03	.19	19.84	.83	45.73	.89
27.2	57.24	−.23	13.37	+1.25	57.47	−.14	17.97	−.19	9.38	−1.85	31.85	−.17	20.66	+.82	44.83	−.91

Mean Solar Date.	ϕ Herculis.		σ Cor. Bor. (*mean.*)		γ Apodis.		η Urs. Min.		η Ophiuchi.		π Herculis.		θ Ophiuchi.		δ Ara.	
	44° 47′		55° 53′		168° 40′		14° 0′		105° 36′		53° 4′		114° 54′		150° 36′	
	h m 16 5		h m 16 10		h m 16 17		h m 16 20		h m 17 4		h m 17 11		h m 17 15		h m 17 21	
	s		s		s		s		s		s		s		s	
Apr. 9.6	29.72	+.26	46.78	+.25	27.82	+1.06	38.73	+.63	23.13	+.29	25.06	+.21	35.48	+.33	40.17	+.55
19.6	29.96	.21	47.01	.21	28.82	.94	39.29	.49	23.41	.27	25.35	.23	35.79	.29	40.70	.51
29.6	30.15	.17	47.20	.17	29.70	.80	39.71	.35	23.66	.24	25.61	.24	36.06	.25	41.19	.46
May 9.6	30.31	.13	47.36	.13	30.41	.64	39.99	.21	23.89	.21	25.82	.20	36.31	.24	41.62	.41
19.5	30.42	.09	47.48	.10	30.97	.48	40.12	+.05	24.09	.19	26.01	.16	36.54	.22	42.01	.36
29.5	30.48	+.04	47.56	+.06	31.36	+.30	40.10	−.10	24.27	+.16	26.15	+.12	36.75	+.19	42.34	+.29
June 8.5	30.49	−.01	47.59	+.02	31.58	+.12	39.92	.25	24.41	.13	26.25	.09	36.91	.15	42.60	.22
18.4	30.46	.06	47.60	−.02	31.60	−.06	39.59	.40	24.52	.09	26.32	+.04	37.04	.11	42.79	.15
28.4	30.38	.11	47.56	.06	31.45	.24	39.12	.53	24.59	.06	26.33	−.01	37.12	.07	42.91	+.08
July 8.4	30.25	.15	47.48	.10	31.12	.41	38.53	.65	24.61	+.01	26.30	.06	37.17	+.03	42.95	.00
18.4	30.09	−.18	47.37	−.13	30.62	−.57	37.83	−.75	24.61	−.03	26.22	−.10	37.17	−.03	42.92	−.06
28.3	29.59	.21	47.22	.16	29.98	.69	37.04	.83	24.56	.07	26.11	.14	37.13	.09	42.80	.15
Aug. 7.3	29.67	.24	47.05	.18	29.23	.81	36.17	.89	24.48	.10	25.94	.17	37.05	.10	42.62	.20
17.3	29.42	.26	46.85	.20	28.36	.90	35.26	.93	24.37	.13	25.76	.20	36.93	.13	42.37	.26
27.3	29.15	.27	46.64	.21	27.44	.93	34.30	.96	24.23	.15	25.55	.22	36.80	.15	42.07	.32
Sept. 6.2	28.88	−.26	46.43	−.22	26.49	−.94	33.33	−.98	24.08	−.16	25.31	−.23	36.64	−.17	41.74	−.34
16.2	28.62	.26	46.21	.22	25.56	.91	32.37	.98	23.91	.17	25.08	.24	36.46	.18	41.40	.35
26.2	28.36	.23	46.00	.22	24.69	.83	31.49	.86	23.75	.15	24.84	.23	36.29	.17	41.05	.34
Oct. 6.1	28.14	−.21	45.77	−.22	23.91	−.74	30.65	−.79	23.61	−.14	24.61	−.22	36.13	−.16	40.73	−.31

[illegible]

[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		Groombridge [illegible]		[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.44	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	35.11	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
July [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	36.10	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Aug. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	41.17	[illegible]	[illegible]	[illegible]
Sept. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	41.55	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.55	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	43.31	[illegible]	44.66	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	45.66	[illegible]	33.60	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	46.66	[illegible]	31.96	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	47.68	[illegible]	31.35	[illegible]

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Sagittæ.	σ Sagittarii.	θ Aquilæ.	31 Cygni.	α Delphini.	β Pavonis.	ψ Capricor.	ε Cygni.
	70° 48′	118° 0′	91° 8′	43° 35′	74° 27′	156° 35′	115° 39′	56° 25′
	h m 19 54	h m 19 56	h m 20 5	h m 20 10	h m 20 34	h m 20 35	h m 20 39	h m 20 41
	s	s	s	s	s	s	s	s
June 18.6	7.85 +.20	15.60 +.27	56.02 +.29	21.86 + .94	48.15 + .94	36.16 +.57	55.96 +.25	60.05 +.26
28.6	8.04 .17	15.85 .22	56.23 .20	22.08 .20	48.37 .21	36.68 .48	56.23 .25	60.29 .22
July 8.5	8.20 .14	16.05 .18	56.42 .16	22.25 .14	48.57 .18	37.11 .39	56.47 .22	60.50 .18
18.5	8.32 .10	16.21 .14	56.56 .12	22.37 .08	48.73 .14	37.46 .30	56.67 .17	60.66 .14
28.5	8.39 +.06	16.32 .09	56.66 .08	22.42 + .02	48.84 .09	37.72 .20	56.82 .12	60.77 .09
Aug. 7.5	8.41 .00	16.38 +.03	56.71 +.03	22.42 − .03	48.91 + .04	37.86 +.10	56.92 +.07	60.83 +.03
17.4	8.39 −.04	16.38 −.02	56.72 −.01	22.36 .09	48.94 .00	37.89 −.01	56.97 +.02	60.83 −.02
27.4	8.33 .08	16.34 .06	56.69 .05	22.25 .14	48.92 − .04	37.84 .11	56.97 −.06	60.80 .06
Sept. 6.4	8.22 .11	16.26 .10	56.61 .06	22.08 .18	48.86 .08	37.68 .21	56.93 .09	60.72 .10
16.4	8.10 .14	16.14 .13	56.51 .12	21.88 .22	48.76 .11	37.42 .22	56.85 .10	60.60 .14
26.3	7.94 −.16	15.99 −.16	56.38 −.14	21.64 − .25	48.63 − .14	37.09 −.36	56.73 −.13	60.43 −.17
Oct. 6.3	7.77 .17	15.83 .17	56.24 .15	21.37 .27	48.49 .16	36.69 .41	56.59 .15	60.26 .19
16.3	7.60 .18	15.65 .18	56.09 .15	21.10 .28	48.33 .16	36.27 .44	56.43 .16	60.06 .20
26.2	7.42 .17	15.48 .16	55.94 .14	20.82 .27	48.17 .15	35.82 .45	56.27 .16	59.87 .20
Nov. 5.2	7.26 .15	15.32 .14	55.79 .13	20.55 .26	48.02 .14	35.37 .43	56.11 .15	59.67 .20
15.2	7.11 −.13	15.19 −.12	55.67 −.11	20.29 − .24	47.88 − .13	34.95 −.40	55.97 −.13	59.48 −.19
25.2	7.01 −.09	15.08 −.10	55.58 −.08	20.06 − .21	47.75 − .11	34.58 −.34	55.84 −.10	59.30 −.17

Mean Solar Date.	τ Cygni.	ζ Capricor.	74 Cygni.	λ¹ Octantis.	ζ Chamæleontis, S.P.	π⁴ Cygni.	16 Pegasi.	π Pegasi.
	52° 24′	112° 52′	50° 4′	173° 12′	189° 32′	41° 11′	64° 34′	57° 20′
	h m 21 10	h m 21 20	h m 21 32	h m 21 34	h m 21 36	h m 21 42	h m 21 48	h m 22 5
	s	s	s	s	s	s	s	s
July 8.6	38.60 +.22	43.80 +.25	46.91 +.25	65.87 +1.42	48.50 − .53	57.24 +.28	19.63 +.25	21.87 +.27
18.6	38.79 .17	44.12 .21	47.13 .20	67.15 1.15	47.76 .66	57.49 .22	19.86 .20	22.12 .22
28.5	38.93 .12	44.31 .16	47.30 .15	68.16 .87	47.19 .45	57.68 .16	20.04 .16	22.32 .18
Aug. 7.5	39.03 .07	44.45 .11	47.43 .09	68.88 .54	46.86 .24	57.81 .10	20.18 .12	22.48 .14
17.5	39.07 +.01	44.54 .06	47.48 +.04	69.23 + .29	46.71 − .03	57.88 +.04	20.28 .07	22.59 .09
27.5	39.05 −.04	44.58 +.02	47.50 −.01	69.28 − .13	46.79 + .21	57.89 −.02	20.32 +.02	22.66 +.04
Sept. 6.4	38.99 .06	44.58 −.02	47.46 .06	68.98 .47	47.14 .45	57.86 .07	20.32 −.02	22.66 −.01
16.4	38.89 .12	44.54 .06	47.38 .10	68.34 .79	47.69 .65	57.75 .12	20.28 .06	22.64 .05
26.4	38.75 .16	44.45 .10	47.25 .14	67.41 1.07	48.43 .85	57.61 .16	20.20 .06	22.57 .06
Oct. 6.4	38.57 .19	44.34 .12	47.09 .17	66.20 1.32	49.39 1.05	57.42 .20	20.09 .12	22.47 .11
16.3	38.38 −.20	44.21 −.14	46.91 −.19	64.77 −1.58	50.53 +1.20	57.21 −.22	19.97 −.14	22.34 −.14
26.3	38.18 .20	44.06 .15	46.71 .20	63.20 1.63	51.79 1.30	56.98 .24	19.82 .15	22.19 .16
Nov. 5.3	37.98 .20	43.91 .14	46.51 .21	61.51 1.69	53.13 1.36	56.73 .25	19.67 .16	22.03 .17
15.2	37.78 .20	43.77 .13	46.29 .22	59.82 1.68	54.52 1.37	56.47 .26	19.51 .15	21.86 .17
25.2	37.58 .18	43.64 .13	46.10 .19	58.15 1.61	55.88 1.33	56.21 .25	19.36 .14	21.69 .16
Dec. 5.2	37.41 −.16	43.53 −.12	45.91 −.18	56.60 −1.48	57.19 +1.29	55.97 −.24	19.23 −.13	21.54 −.14

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ν Octantis.		γ Aquarii.		σ Aquarii.		α Lacertæ.		10 Lacertæ.		β Octantis.		λ Pegasi.		Groomb. 1706, S. P.	
	176° 30′		91° 55′		101° 13′		40° 15′		51° 30′		171° 56′		66° 59′		348° 20′	
	h m 22 11		h m 22 16		h m 22 25		h m 22 26		h m 22 34		h m 22 35		h m 22 41		h m 22 51	
	s		s		s		s		s		s		s		s	
July 8.6	61.67	+3.63	16.89	+.27	8.34	+.27	60.10	+.23	35.24	+.26	32.28	+1.26	30.78	+.29	35.18	−.25
18.6	64.45	2.53	17.14	.22	8.60	.24	60.41	.26	35.52	.26	33.60	1.26	31.05	.25	34.59	.51
28.6	66.73	2.02	17.35	.19	8.83	.21	60.67	.23	35.76	.22	34.78	1.06	31.29	.21	34.15	.38
Aug. 7.6	68.49	1.46	17.52	.15	9.02	.17	60.87	.17	35.96	.17	35.72	.88	31.48	.17	33.83	.26
17.5	69.64	.84	17.66	.11	9.16	.12	61.01	.11	36.11	.12	36.41	.65	31.63	.13	33.62	−.12
27.5	70.16	+.19	17.75	+.07	9.26	+.08	61.09	+.05	36.21	+.07	36.82	+.38	31.74	+.09	33.58	+.03
Sept. 6.5	70.02	−.47	17.79	+.03	9.31	+.04	61.11	.00	36.25	+.03	36.96	−.01	31.81	+.04	33.68	.19
16.4	69.21	1.11	17.79	−.03	9.33	.00	61.08	−.05	36.24	−.03	36.80	.21	31.82	−.01	33.95	.36
26.4	67.80	1.71	17.76	.05	9.31	−.04	61.00	.10	36.20	.06	36.33	.58	31.80	.04	34.39	.51
Oct. 6.4	65.78	2.28	17.70	.07	9.25	.07	60.88	.14	36.12	.10	35.63	.82	31.75	.07	34.97	.64
16.4	63.25	−2.72	17.62	−.09	9.18	−.09	60.71	−.18	36.00	−.13	34.70	−1.03	31.67	−.09	35.67	+.79
26.3	60.34	2.96	17.52	.11	9.07	.11	60.52	.21	35.87	.15	33.56	1.22	31.57	.11	36.55	.93
Nov. 5.3	57.09	3.28	17.40	.12	8.96	.12	60.30	.23	35.71	.17	32.25	1.35	31.45	.12	37.53	1.04
15.3	53.69	3.42	17.28	.11	8.84	.12	60.06	.24	35.53	.18	30.86	1.42	31.33	.13	38.62	1.14
25.3	50.25	3.38	17.17	.11	8.72	.12	59.82	.24	35.36	.18	29.41	1.48	31.19	.14	39.81	1.21
Dec. 5.2	46.89	−3.35	17.06	−.10	8.60	−.11	59.58	−.24	35.18	−.18	28.00	−1.39	31.06	−.13	41.04	+1.24
15.2	43.77	−2.99	16.97	−.08	8.50	−.09	59.34	−.23	35.00	−.17	26.64	−1.29	30.94	−.12	42.29	+1.25

Mean Solar Date.	o Androm.		ϕ Aquarii.		τ Pegasi.		λ Androm.		i^1 Aquarii.		δ Sculptoris.		γ^1 Octantis.		33 Piscium.	
	48° 14′		96° 37′		66° 50′		44° 7′		108° 52′		118° 43′		172° 36′		96° 18′	
	h m 22 57		h m 23 8		h m 23 15		h m 23 32		h m 23 38		h m 23 43		h m 23 46		h m 24 0	
	s		s		s		s		s		s		s		s	
July 28.6	8.06	+.26	56.26	+.24	29.16	+.23	28.12	+.30	48.58	+.28	30.63	+.29	8.98	+1.42	0.58	+.37
Aug. 7.6	8.31	.29	56.48	.20	29.38	.20	28.40	.25	48.84	.24	31.10	.25	10.31	1.24	0.83	.24
17.6	8.49	.15	56.66	.16	29.57	.16	28.63	.20	49.05	.20	31.33	.21	11.46	1.02	1.06	.20
27.5	8.61	.10	56.80	.12	29.71	.12	28.80	.15	49.23	.16	31.52	.17	12.34	.75	1.24	.16
Sept. 6.5	8.69	+.05	56.89	.08	29.81	.08	28.94	.10	49.36	.12	31.66	.12	12.95	.45	1.38	.12
16.5	8.71	.00	56.95	+.04	29.87	+.04	29.01	+.05	49.46	+.08	31.76	+.08	13.24	+.14	1.49	+.09
26.5	8.70	−.04	56.97	.00	29.90	.00	29.04	+.01	49.50	+.03	31.81	+.03	13.24	−.17	1.56	.05
Oct. 6.4	8.64	.08	56.96	−.03	29.88	−.03	29.03	−.03	49.51	−.01	31.82	−.01	12.90	.47	1.59	+.02
16.4	8.54	.11	56.92	.06	29.84	.06	28.97	.07	49.49	.04	31.79	.05	12.29	.75	1.59	−.01
26.4	8.42	.14	56.85	.08	29.76	.08	28.88	.11	49.44	.07	31.73	.08	11.39	1.02	1.57	.04
Nov. 5.3	8.27	−.16	56.76	−.09	29.67	−.10	28.75	−.14	49.36	−.09	31.64	−.10	10.24	−1.26	1.52	−.06
15.3	8.10	.18	56.66	.10	29.56	.11	28.60	.16	49.27	.10	31.54	.11	8.88	1.42	1.45	.08
25.3	7.92	.19	56.56	.11	29.44	.13	28.42	.18	49.16	.11	31.41	.13	7.39	1.53	1.37	.09
Dec. 5.3	7.73	.18	56.45	.10	29.32	.13	28.23	.19	49.04	.12	31.28	.13	5.81	1.60	1.28	.10
15.2	7.55	.17	56.34	.09	29.20	.12	28.04	.20	48.93	.11	31.15	.13	4.18	1.61	1.17	.11
25.2	7.38	−.17	56.25	−.08	29.08	−.11	27.84	−.20	48.82	−.10	31.02	−.13	2.58	−1.56	1.07	−.10
35.2	7.20	−.17	56.18	−.06	28.97	−.10	27.64	−.19	48.72	−.10	30.90	−.12	1.06	−1.45	0.97	−.09

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Jan. 1	18 48 15.50	16.23	−22 59 29.6	28.8	11.698	+12.73	+ 3 52.57	16 18.35	1 11.04	18 44 23.02
2	18 52 40.91	41.01	22 54 10.5	9.5	11.694	13.86	4 20.71	16 18.36	1 11.00	18 48 19.58
3	18 57 4.51	5.40	22 48 24.0	22.8	11.697	15.00	4 48.48	16 18.36	1 10.95	18 52 16.14
4	19 1 28.41	29.38	22 42 10.4	8.9	10.999	16.13	5 15.81	16 18.35	1 10.89	18 56 12.70
5	19 5 51.67	52.91	22 35 29.7	28.1	10.971	17.25	5 42.72	16 18.34	1 10.83	19 0 9.26
6	19 10 14.85	15.97	−22 28 22.4	20.5	10.951	+18.36	+ 6 9.14	16 18.32	1 10.77	19 4 5.81
7	19 14 37.34	38.53	22 20 48.6	46.4	10.939	19.46	6 35.08	16 18.30	1 10.71	19 8 2.37
8	19 18 59.30	60.58	22 12 48.4	46.0	10.937	20.55	7 0.49	16 18.27	1 10.64	19 11 58.93
9	19 23 20.72	22.08	22 4 22.2	19.5	10.934	21.62	7 25.37	16 18.23	1 10.56	19 15 55.49
10	19 27 41.59	43.01	21 55 30.2	27.1	10.930	22.70	7 49.67	16 18.19	1 10.48	19 19 52.05
11	19 32 1.88	3.37	−21 46 12.5	9.3	10.926	+23.76	+ 8 13.41	16 18.15	1 10.40	19 23 48.61
12	19 36 21.57	23.12	21 36 29.6	26.1	10.910	24.81	8 36.54	16 18.09	1 10.32	19 27 45.17
13	19 40 40.64	42.26	21 26 21.7	17.7	10.784	25.85	8 59.06	16 18.03	1 10.24	19 31 41.73
14	19 44 59.08	60.76	21 15 48.9	44.7	10.787	26.88	9 20.94	16 17.97	1 10.15	19 35 38.28
15	19 49 16.87	18.61	21 4 51.7	47.2	10.730	27.88	9 42.17	16 17.89	1 10.06	19 39 34.84
16	19 53 34.00	35.79	−20 53 30.1	25.3	10.702	+28.89	+10 2.75	16 17.81	1 9.97	19 43 31.40
17	19 57 50.45	52.30	20 41 44.9	39.6	10.673	29.89	10 22.64	16 17.73	1 9.87	19 47 27.96
18	20 2 6.20	8.10	20 29 35.8	30.2	10.644	30.86	10 41.83	16 17.64	1 9.77	19 51 24.51
19	20 6 21.25	23.20	20 16 63.5	57.6	10.614	31.82	11 0.32	16 17.55	1 9.67	19 55 21.07
20	20 10 35.57	37.56	20 4 8.4	2.1	10.583	32.77	11 18.07	16 17.45	1 9.57	19 59 17.63
21	20 14 49.15	51.18	−19 50 50.5	43.9	10.550	+33.71	+11 35.10	16 17.34	1 9.46	20 3 14.19
22	20 19 1.98	4.06	19 37 10.4	3.5	10.520	34.63	11 51.37	16 17.24	1 9.36	20 7 10.75
23	20 23 14.04	16.16	19 23 8.5	1.2	10.488	35.53	12 6.87	16 17.13	1 9.25	20 11 7.30
24	20 27 25.32	27.48	19 8 45.0	37.5	10.455	36.42	12 21.58	16 17.01	1 9.14	20 15 3.86
25	20 31 35.82	38.00	18 53 60.5	52.5	10.422	37.28	12 35.52	16 16.89	1 9.03	20 19 0.42
26	20 35 45.51	47.73	−18 38 55.2	46.9	10.388	+38.14	+12 48.65	16 16.77	1 8.92	20 22 56.97
27	20 39 54.39	56.64	18 23 29.5	20.9	10.354	38.98	13 0.96	16 16.65	1 8.81	20 26 53.53
28	20 44 2.44	4.72	18 7 44.0	35.1	10.320	39.80	13 12.45	16 16.53	1 8.69	20 30 50.09
29	20 48 9.66	11.96	17 51 39.0	29.8	10.285	40.60	13 23.12	16 16.40	1 8.58	20 34 46.65
30	20 52 16.05	18.37	17 35 15.0	5.5	10.250	41.38	13 32.94	16 16.27	1 8.47	20 38 43.20
31	20 56 21.61	23.95	−17 18 32.2	22.5	10.215	+42.15	+13 41.93	16 16.13	1 8.35	20 42 39.76
Feb. 1	21 0 26.32	28.67	17 1 31.2	21.2	10.180	42.91	13 50.08	16 15.99	1 8.24	20 46 36.32
2	21 4 30.19	32.55	16 44 12.4	2.2	10.145	43.64	13 57.38	16 15.85	1 8.12	20 50 32.87
3	21 8 33.22	35.59	16 26 36.3	25.9	10.110	44.36	14 3.85	16 15.70	1 8.01	20 54 29.43
4	21 12 35.42	37.79	16 8 43.2	32.5	10.075	45.06	14 9.48	16 15.55	1 7.89	20 58 25.99
5	21 16 36.78	39.16	−15 50 33.4	22.6	10.040	+45.74	+14 14.29	16 15.39	1 7.77	21 2 22.54
6	21 20 37.32	39.70	15 31 67.6	56.5	10.006	46.41	14 18.26	16 15.22	1 7.66	21 6 19.10
7	21 24 37.04	39.43	15 13 26.0	14.6	9.972	47.05	14 21.42	16 15.05	1 7.55	21 10 15.65
8	21 28 35.97	38.35	14 54 29.0	17.4	9.938	47.68	14 23.78	16 14.88	1 7.44	21 14 12.21
9	21 32 34.09	36.47	14 35 17.1	5.4	9.905	48.30	14 25.34	16 14.70	1 7.33	21 18 8.77
10	21 36 31.43	33.81	−14 15 50.6	38.7	9.873	+48.90	+14 26.11	16 14.52	1 7.22	21 22 5.32
11	21 40 28.00	30.37	13 55 69.9	57.8	9.841	49.48	14 26.12	16 14.33	1 7.11	21 26 1.88
12	21 44 23.81	26.17	13 36 15.3	3.2	9.809	50.05	14 25.37	16 14.14	1 7.00	21 29 58.43
13	21 48 18.87	21.22	13 15 67.3	55.1	9.779	50.61	14 23.87	16 13.94	1 6.89	21 33 54.99
14	21 52 13.20	15.54	12 55 46.4	34.1	9.749	51.14	14 21.65	16 13.74	1 6.78	21 37 51.54
15	21 56 6.82	9.14	−12 35 13.0	0.5	9.719	+51.66	+14 18.69	16 13.53	1 6.68	21 41 48.10
16	21 59 59.73	62.03	−12 14 27.1	14.7	9.690	+52.15	+14 15.04	16 13.32	1 6.58	21 45 44.65

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Feb. 16	21 59 59.73	62.83	−12 14 27.1	14.7	9.089	+58.15	+14 15.84	16 13.32	1 6.58	21 45 44.65
17	22 3 51 24	54.23	11 53 29.5	17.9	9.085	58.64	14 10.69	16 13.19	1 6.48	21 49 41.21
18	22 7 43.42	45.75	11 32 29.4	7.8	9.080	59.11	14 5.67	16 12.89	1 6.38	21 53 37.76
19	22 11 34.35	36.59	11 10 69.4	47.8	9.085	59.55	13 59.98	16 12.65	1 6.28	21 57 34.32
20	22 15 24.56	26.73	10 49 29.9	17.3	9.570	59.99	13 53.63	16 12.44	1 6.18	22 1 30.87
21	22 19 14.13	16.33	−10 27 49.1	36.5	9.555	+54.49	+13 46.63	16 12.21	1 6.09	22 5 27.43
22	22 23 3.07	5.24	10 5 58.6	46.1	9.325	54.79	13 39.02	16 11.99	1 6.00	22 9 23.98
23	22 26 51.40	53.53	9 43 58.8	46.3	9.500	55.18	13 30.78	16 11.76	1 5.91	22 13 20.54
24	22 30 39.11	41.21	9 21 50.1	37.7	9.475	55.54	13 21.93	16 11.53	1 5.82	22 17 17.09
25	22 34 26.22	28.30	8 59 33.1	20.7	9.450	55.89	13 12.49	16 11.30	1 5.73	22 21 13.65
26	22 38 12.76	14.81	− 8 36 68.0	56.7	9.426	+56.20	+13 2.47	16 11.07	1 5.65	22 25 10.20
27	22 41 58.74	60.76	8 14 35.3	23.1	9.403	56.50	12 51.89	16 10.83	1 5.57	22 29 6.75
28	22 45 44.16	46.14	7 51 56.6	43.5	9.380	56.79	12 40.74	16 10.60	1 5.50	22 33 3.31
Mar. 1	22 49 29.04	30.99	7 28 69.1	57.1	9.358	57.07	12 29.08	16 10.36	1 5.43	22 36 59.86
2	22 53 13.40	15.31	7 6 16.3	4.5	9.337	57.32	12 16.88	16 10.13	1 5.36	22 40 56.42
3	22 56 57.26	59.14	− 6 43 17.7	6.0	9.316	+57.56	+12 4.18	16 9.89	1 5.29	22 44 52.97
4	23 0 40.64	42.48	6 20 13.6	2.1	9.296	57.77	11 51.00	16 9.64	1 5.22	22 48 49.53
5	23 4 23.54	25.34	5 56 64.3	53.0	9.277	57.96	11 37.35	16 9.40	1 5.16	22 52 46.08
6	23 8 6.01	7.77	5 33 50.3	39.3	9.259	58.17	11 23.26	16 9.15	1 5.10	22 56 42.63
7	23 11 48.05	49.77	5 10 32.0	21.0	9.242	58.34	11 8.75	16 8.90	1 5.04	23 0 39.19
8	23 15 29.68	31.37	− 4 46 69.7	59.0	9.226	+58.50	+10 53.83	16 8.65	1 4.98	23 4 35.74
9	23 19 10.95	12.58	4 23 43.7	33.3	9.210	58.65	10 38.54	16 8.39	1 4.93	23 8 32.29
10	23 22 51.84	53.44	4 0 14.6	4.3	9.196	58.78	10 22.89	16 8.13	1 4.88	23 12 28.85
11	23 26 32.43	33.97	3 36 42.5	32.4	9.182	58.89	10 6.91	16 7.87	1 4.83	23 16 25.40
12	23 30 12.68	14.19	3 12 67.7	57.9	9.170	58.99	9 50.61	16 7.60	1 4.78	23 20 21.96
13	23 33 52.66	54.12	− 2 49 30.8	21.2	9.159	+59.08	+ 9 34.04	16 7.33	1 4.74	23 24 18.51
14	23 37 32.38	33.79	2 25 52.0	42.8	9.148	59.15	9 17.20	16 7.06	1 4.70	23 28 15.06
15	23 41 11.85	13.23	2 2 11.6	2.7	9.139	59.21	9 0.12	16 6.79	1 4.67	23 32 11.62
16	23 44 51.11	52.44	1 38 30.0	21.4	9.130	59.25	8 42.84	16 6.52	1 4.64	23 36 8.17
17	23 48 30.18	31.48	1 14 47.7	39.2	9.123	59.27	8 25.36	16 6.24	1 4.61	23 40 4.73
18	23 52 9.08	10.32	− 0 50 64.8	56.6	9.116	+59.29	+ 8 7.70	16 5.97	1 4.59	23 44 1.28
19	23 55 47.83	49.02	0 27 21.7	13.9	9.110	59.29	7 49.90	16 5.69	1 4.57	23 47 57.83
20	23 59 26.44	27.59	− 0 3 39.0	31.4	9.105	59.26	7 31.96	16 5.41	1 4.55	23 51 54.39
21	0 3 4.95	6.04	+ 0 20 3.2	10.4	9.100	59.23	7 13.92	16 5.13	1 4.53	23 55 50.94
22	0 6 43.36	44.41	0 43 44.3	51.2	9.097	59.19	6 55.78	16 4.85	1 4.51	23 59 47.49
23	0 10 21.70	22.71	+ 1 7 24.2	30.7	9.095	+59.12	+ 6 37.57	16 4.57	1 4.50	0 3 44.05
24	0 13 59.97	60.94	1 31 2.2	8.4	9.093	59.04	6 19.30	16 4.29	1 4.49	0 7 40.60
25	0 17 38.22	39.13	1 54 38.0	44.0	9.091	58.94	6 0.98	16 4.02	1 4.48	0 11 37.15
26	0 21 16.43	17.29	2 18 11.3	17.0	9.090	58.82	5 42.66	16 3.74	1 4.48	0 15 33.71
27	0 24 54.64	55.45	2 41 41.8	47.1	9.090	58.70	5 24.31	16 3.47	1 4.48	0 19 30.26
28	0 28 32.86	33.63	+ 3 5 8.9	13.9	9.091	+58.56	+ 5 5.98	16 3.19	1 4.49	0 23 26.81
29	0 32 11.11	11.82	3 28 32.2	36.9	9.092	58.39	4 47.67	16 2.92	1 4.49	0 27 23.37
30	0 35 49.37	50.06	3 51 51.6	56.0	9.095	58.21	4 29.40	16 2.65	1 4.50	0 31 19.92
31	0 39 27.72	28.35	4 15 6.4	10.6	9.098	58.02	4 11.19	16 2.37	1 4.51	0 35 16.48
32	0 43 6.13	6.72	4 38 16.6	20.4	9.101	57.81	3 53.06	16 2.10	1 4.53	0 39 13.03
33	0 46 44.66	45.20	+ 5 1 21.6	25.1	9.105	+57.59	+ 3 35.03	16 1.83	1 4.55	0 43 9.58
34	0 50 23.29	23.79	+ 5 24 21.1	24.3	9.110	+57.36	+ 3 17.11	16 1.56	1 4.57	0 47 6.14

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0s.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Apr. 1	0 43 6.13	6.72	+ 4 38 16.6	20.4	9.101	+57.81	+3 53.06	16 2.10	1 4.53	0 39 13.03
2	0 46 44.66	45.20	5 1 21.6	25.1	9.105	57.59	3 35.03	16 1.83	1 4.55	0 43 9.58
3	0 50 23.29	23.79	5 24 21.1	24.3	9.110	57.36	3 17.11	16 1.56	1 4.57	0 47 6.14
4	0 54 2.06	2.51	5 47 14.8	17.7	9.116	57.10	2 59.33	16 1.29	1 4.60	0 51 2.69
5	0 57 40.98	41.39	6 10 2.3	5.0	9.124	56.84	2 41.71	16 1.02	1 4.63	0 54 59.25
6	1 1 20.07	20.44	+ 6 32 43.4	45.8	9.132	+56.57	+2 24.24	16 0.75	1 4.66	0 58 55.80
7	1 4 59.36	59.68	6 55 17.7	19.8	9.140	56.28	2 6.98	16 0.48	1 4.69	1 2 52.35
8	1 8 38.87	39.15	7 17 45.0	46.8	9.149	55.97	1 49.94	16 0.21	1 4.72	1 6 48.91
9	1 12 18.61	18.84	7 40 4.8	6.3	9.159	55.66	1 33.13	15 59.94	1 4.76	1 10 45.46
10	1 15 58.62	58.81	8 2 16.8	18.1	9.171	55.34	1 16.58	15 59.67	1 4.79	1 14 42.02
11	1 19 38.90	39.05	+ 8 24 20.9	21.9	9.183	+55.00	+1 0.35	15 59.39	1 4.83	1 18 38.57
12	1 23 19.48	19.59	8 46 16.6	17.3	9.196	54.64	0 44.35	15 59.12	1 4.87	1 22 35.13
13	1 27 0.37	0.45	9 8 3.6	4.0	9.210	54.27	0 28.70	15 58.85	1 4.92	1 26 31.68
14	1 30 41.62	41.66	9 29 41.7	41.7	9.224	53.89	+0 13.38	15 58.57	1 4.97	1 30 28.23
15	1 34 23.21	23.20	9 51 10.5	10.5	9.239	53.49	−0 1.56	15 58.30	1 5.02	1 34 24.79
16	1 38 5.18	5.14	+10 12 29.7	29.4	9.255	+53.09	−0 16.17	15 58.03	1 5.07	1 38 21.34
17	1 41 47.54	47.46	10 33 38.8	38.4	9.272	52.67	0 30.36	15 57.76	1 5.13	1 42 17.90
18	1 45 30.29	30.17	10 54 37.7	37.1	9.289	52.23	0 44.16	15 57.49	1 5.18	1 46 14.45
19	1 49 13.47	13.33	11 15 25.9	25.1	9.307	51.78	0 57.53	15 57.22	1 5.24	1 50 11.01
20	1 52 57.07	56.90	11 36 3.2	2.1	9.325	51.32	1 10.47	15 56.96	1 5.30	1 54 7.56
21	1 56 41.12	40.90	+11 56 29.0	27.9	9.343	+50.84	−1 22.98	15 56.70	1 5.37	1 58 4.12
22	2 0 25.62	25.37	12 16 43.2	41.9	9.362	50.34	1 35.04	15 56.44	1 5.43	2 2 0.67
23	2 4 10.58	10.30	12 36 45.3	43.8	9.382	49.83	1 46.64	15 56.19	1 5.50	2 5 57.23
24	2 7 56.01	55.70	12 56 34.9	33.3	9.401	49.30	1 57.76	15 55.94	1 5.56	2 9 53.78
25	2 11 41.91	41.57	13 16 11.9	10.2	9.421	48.76	2 8.41	15 55.69	1 5.63	2 13 50.34
26	2 15 28.31	27.94	+13 35 35.6	33.8	9.441	+48.21	−2 18.58	15 55.44	1 5.71	2 17 46.89
27	2 19 15.18	14.79	13 54 45.9	44.0	9.462	47.64	2 28.25	15 55.20	1 5.78	2 21 43.45
28	2 23 2.56	2.14	14 13 42.4	40.4	9.483	47.06	2 37.44	15 54.96	1 5.86	2 25 40.01
29	2 26 50.43	49.99	14 32 24.8	22.7	9.504	46.46	2 46.12	15 54.72	1 5.93	2 29 36.56
30	2 30 38.81	38.35	14 50 52.7	50.4	9.526	45.86	2 54.29	15 54.48	1 6.01	2 33 33.12
May 1	2 34 27.71	27.23	+15 9 5.8	3.4	9.548	+45.24	−3 1.95	15 54.25	1 6.09	2 37 29.67
2	2 38 17.14	16.63	15 27 3.8	1.4	9.570	44.60	3 9.07	15 54.02	1 6.17	2 41 26.23
3	2 42 7.09	6.57	15 44 46.4	44.0	9.592	43.95	3 15.68	15 53.80	1 6.25	2 45 22.78
4	2 45 57.56	57.03	16 2 13.3	10.9	9.614	43.29	3 21.76	15 53.58	1 6.33	2 49 19.34
5	2 49 48.60	48.05	16 19 24.3	21.8	9.637	42.61	3 27.29	15 53.35	1 6.41	2 53 15.90
6	2 53 40.17	39.61	+16 36 18.9	16.4	9.660	+41.93	−3 32.27	15 53.13	1 6.49	2 57 12.45
7	2 57 32.31	31.73	16 52 57.0	54.5	9.683	41.24	3 36.69	15 52.91	1 6.57	3 1 9.01
8	3 1 25.00	24.41	17 9 18.2	15.7	9.707	40.53	3 40.55	15 52.70	1 6.65	3 5 5.57
9	3 5 18.27	17.67	17 25 22.3	19.9	9.731	39.80	3 43.83	15 52.48	1 6.73	3 9 2.12
10	3 9 12.12	11.50	17 41 9.0	6.5	9.755	39.07	3 46.56	15 52.27	1 6.81	3 12 58.68
11	3 13 6.55	5.92	+17 56 38.2	35.7	9.779	+38.34	−3 48.70	15 52.06	1 6.90	3 16 55.24
12	3 17 1.55	0.91	18 11 49.3	46.9	9.803	37.59	3 50.24	15 51.84	1 6.98	3 20 51.79
13	3 20 57.13	56.50	18 26 42.1	39.8	9.828	36.81	3 51.21	15 51.64	1 7.06	3 24 48.35
14	3 24 53.32	52.68	18 41 16.5	14.2	9.853	36.03	3 51.59	15 51.43	1 7.14	3 28 44.91
15	3 28 50.08	49.45	18 55 32.1	29.8	9.877	35.25	3 51.37	15 51.23	1 7.22	3 32 41.46
16	3 32 47.45	46.81	+19 9 28.6	26.5	9.902	+34.45	−3 50.58	15 51.03	1 7.30	3 36 38.02
17	3 36 45.39	44.76	+19 23 5.7	3.6	9.926	+33.63	−3 49.19	15 50.83	1 7.38	3 40 34.58

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
May 17	3 36 45.39	44.76	+19 23 5.7	3.6	9.926	+33.63	−3 49.19	15 50.83	1 7.38	3 49 34.58
18	3 40 43.91	43.28	19 36 23.3	21.2	9.950	32.81	3 47.23	15 50.63	1 7.46	3 44 31.13
19	3 44 43.01	42.39	19 49 20.9	18.9	9.974	31.98	3 44.69	15 50.44	1 7.54	3 48 27.69
20	3 48 42.67	42.05	20 1 58.3	56.4	9.998	31.14	3 41.59	15 50.25	1 7.61	3 52 24.25
21	3 52 42.89	42.28	20 14 15.2	13.3	10.021	30.27	3 37.93	15 50.07	1 7.69	3 56 20.81
22	3 56 43.65	43.06	+20 26 11.4	9.6	10.044	+29.40	−3 33.72	15 49.89	1 7.76	4 0 17.37
23	4 0 44.95	44.35	20 37 46.6	45.0	10.065	28.52	3 28.99	15 49.72	1 7.84	4 4 13.92
24	4 4 46.75	46.19	20 48 60.6	59.1	10.086	27.63	3 23.73	15 49.56	1 7.91	4 8 10.48
25	4 8 49.08	48.53	20 59 53.0	51.5	10.107	26.74	3 17.98	15 49.40	1 7.98	4 12 7.04
26	4 12 51.88	51.35	21 10 23.7	22.3	10.127	25.83	3 11.72	15 49.24	1 8.05	4 16 3.60
27	4 16 55.17	54.65	+21 20 32.5	31.1	10.147	+24.90	−3 5.00	15 49.09	1 8.12	4 20 0.15
28	4 20 58.91	58.41	21 30 19.0	17.8	10.166	23.97	2 57.81	15 48.94	1 8.19	4 23 56.71
29	4 25 3.10	2.61	21 39 43.3	42.1	10.184	23.04	2 50.19	15 48.79	1 8.25	4 27 53.27
30	4 29 7.71	7.25	21 48 44.8	43.8	10.202	22.09	2 42.13	15 48.65	1 8.31	4 31 49.83
31	4 33 12.73	12.29	21 57 23.6	22.7	10.218	21.14	2 33.68	15 48.51	1 8.37	4 35 46.39
June 1	4 37 18.15	17.73	+22 5 39.5	38.7	10.234	+20.19	−2 24.81	15 48.38	1 8.42	4 39 42.95
2	4 41 23.94	23.56	22 13 32.3	31.6	10.250	19.21	2 15.58	15 48.25	1 8.47	4 43 39.50
3	4 45 30.09	29.73	22 21 1.8	1.2	10.265	18.24	2 5.98	15 48.13	1 8.52	4 47 36.06
4	4 49 36.60	36.27	22 28 7.9	7.3	10.279	17.26	1 56.04	15 48.01	1 8.57	4 51 32.62
5	4 53 43.45	43.14	22 34 50.5	50.0	10.293	16.28	1 45.75	15 47.89	1 8.62	4 55 29.18
6	4 57 50.60	50.33	+22 41 9.3	9.0	10.306	+15.29	−1 35.15	15 47.78	1 8.67	4 59 25.74
7	5 1 58.06	57.83	22 47 4.5	4.2	10.319	14.30	1 24.24	15 47.67	1 8.72	5 3 22.30
8	5 6 5.81	5.61	22 52 35.6	35.3	10.330	13.30	1 13.05	15 47.56	1 8.76	5 7 18.85
9	5 10 13.83	13.66	22 57 42.8	42.5	10.341	12.29	1 1.58	15 47.45	1 8.79	5 11 15.41
10	5 14 22.11	21.96	23 2 25.7	25.5	10.351	11.28	0 49.87	15 47.35	1 8.82	5 15 11.97
11	5 18 30.63	30.52	+23 6 44.5	44.3	10.361	+10.27	−0 37.91	15 47.25	1 8.85	5 19 8.53
12	5 22 39.35	39.28	23 10 38.7	38.6	10.370	9.25	0 25.74	15 47.15	1 8.88	5 23 5.09
13	5 26 48.28	48.24	23 14 8.6	8.6	10.377	8.23	0 13.36	15 47.05	1 8.90	5 27 1.65
14	5 30 57.39	57.39	23 17 14.0	14.0	10.384	7.21	−0 0.82	15 46.96	1 8.92	5 30 58.21
15	5 35 6.66	6.69	23 19 54.8	54.8	10.390	6.18	+0 11.89	15 46.87	1 8.94	5 34 54.77
16	5 39 16.04	16.12	+23 22 10.8	10.8	10.395	+ 5.15	+0 24.73	15 46.79	1 8.95	5 38 51.33
17	5 43 25.55	25.66	23 24 2.1	2.1	10.399	4.12	0 37.68	15 46.72	1 8.96	5 42 47.88
18	5 47 35.15	35.29	23 25 28.7	28.7	10.402	3.09	0 50.72	15 46.65	1 8.97	5 46 44.44
19	5 51 44.81	44.99	23 26 30.4	30.4	10.404	2.06	1 3.81	15 46.58	1 8.97	5 50 41.00
20	5 55 54.49	54.71	23 27 7.3	7.3	10.405	+ 1.03	1 16.94	15 46.52	1 8.97	5 54 37.56
21	6 0 4.18	4.44	+23 27 19.3	19.3	10.405	− 0.02	+1 30.07	15 46.46	1 8.97	5 58 34.12
22	6 4 13.84	14.13	23 27 6.5	6.4	10.403	1.05	1 43.18	15 46.41	1 8.97	6 2 30.68
23	6 8 23.45	23.79	23 26 28.7	28.6	10.400	2.09	1 56.23	15 46.37	1 8.96	6 6 27.24
24	6 12 32.98	33.34	23 25 26.2	26.1	10.396	3.12	2 9.19	15 46.33	1 8.95	6 10 23.80
25	6 16 42.40	42.81	23 23 58.9	58.7	10.391	4.15	2 22.06	15 46.29	1 8.94	6 14 20.35
26	6 20 51.68	52.12	+23 22 7.0	6.8	10.385	− 5.18	+2 34.79	15 46.27	1 8.92	6 18 16.91
27	6 25 0.81	1.29	23 19 50.2	50.0	10.377	6.21	2 47.36	15 46.25	1 8.89	6 22 13.47
28	6 29 9.75	10.27	23 17 8.9	8.6	10.369	7.23	2 59.74	15 46.23	1 8.86	6 26 10.03
29	6 33 18.48	19.03	23 14 3.2	2.8	10.360	8.25	3 11.92	15 46.22	1 8.83	6 30 6.59
30	6 37 26.97	27.56	23 10 32.9	32.4	10.350	9.27	3 23.86	15 46.21	1 8.80	6 34 3.15
31	6 41 35.22	35.83	+23 6 38.5	38.0	10.338	−10.28	+3 35.54	15 46.20	1 8.77	6 37 59.71
32	6 45 43.18	43.63	+23 2 19.8	19.2	10.326	−11.28	+3 46.94	15 46.20	1 8.74	6 41 56.27

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0s.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
July 1	6 41 35.92	35.83	+23 6 38.5	38.0	10.236	−10.98	+3 35.54	15 46.20	1 8.77	6 37 59.71
2	6 45 43.18	43.83	23 2 19.8	19.2	10.206	11.26	3 46.94	15 46.20	1 8.74	6 41 56.27
3	6 49 50.85	51.53	22 57 37.0	36.2	10.214	12.98	3 58.06	15 46.21	1 8.70	6 45 52.83
4	6 53 58.21	58.91	22 52 30.4	29.4	10.201	13.97	4 8.86	15 46.21	1 8.66	6 49 49.38
5	6 58 5.25	5.99	22 46 59.9	58.8	10.207	14.26	4 19.31	15 46.22	1 8.61	6 53 45.94
6	7 2 11.91	12.68	+22 41 5.6	4.5	10.272	−15.25	+4 29.43	15 46.23	1 8.56	6 57 42.50
7	7 6 18.23	19.02	22 34 47.8	46.5	10.257	16.23	4 39.19	15 46.25	1 8.51	7 1 39.06
8	7 10 24.17	24.99	22 28 6.6	5.3	10.241	17.20	4 48.58	15 46.27	1 8.46	7 5 35.62
9	7 14 29.73	30.58	22 21 2.0	0.6	10.224	18.17	4 57.58	15 46.30	1 8.40	7 9 32.18
10	7 18 34.89	35.76	22 13 34.5	32.9	10.207	19.13	5 6.18	15 46.33	1 8.34	7 13 28.73
11	7 22 39.62	40.52	+22 5 43.8	42.2	10.189	−20.06	+5 14.37	15 46.36	1 8.28	7 17 25.29
12	7 26 43.94	44.85	21 57 30.4	28.6	10.171	21.03	5 22.11	15 46.39	1 8.22	7 21 21.85
13	7 30 47.81	48.73	21 48 54.5	52.5	10.153	21.97	5 29.43	15 46.43	1 8.16	7 25 18.41
14	7 34 51.22	52.16	21 39 56.0	53.8	10.133	22.90	5 36.28	15 46.47	1 8.09	7 29 14.97
15	7 38 54.17	55.12	21 30 35.2	33.0	10.113	23.82	5 42.67	15 46.51	1 8.02	7 33 11.53
16	7 42 56.61	57.58	+21 20 52.4	50.1	10.093	−24.73	+5 48.56	15 46.56	1 7.94	7 37 8.08
17	7 46 58.59	59.58	21 10 47.9	45.4	10.071	25.64	5 53.96	15 46.62	1 7.86	7 41 4.64
18	7 51 0.03	1.03	21 0 21.5	19.0	10.049	26.54	5 58.85	15 46.68	1 7.79	7 45 1.20
19	7 55 0.96	1.97	20 49 34.0	31.3	10.027	27.43	6 3.22	15 46.74	1 7.71	7 48 57.76
20	7 59 1.34	2.37	20 38 25.2	22.4	10.005	28.30	6 7.05	15 46.82	1 7.63	7 52 54.32
21	8 3 1.17	2.21	+20 26 55.6	52.6	9.982	−29.16	+6 10.31	15 46.90	1 7.55	7 56 50.87
22	8 7 0.45	1.48	20 15 5.3	2.3	9.958	30.01	6 13.03	15 46.98	1 7.47	8 0 47.43
23	8 10 59.14	60.18	20 2 54.6	51.4	9.934	30.85	6 15.16	15 47.07	1 7.39	8 4 43.99
24	8 14 57.25	58.28	19 50 23.8	20.5	9.909	31.70	6 16.70	15 47.16	1 7.31	8 8 40.55
25	8 18 54.75	55.79	19 37 33.2	29.9	9.884	32.51	6 17.65	15 47.26	1 7.23	8 12 37.10
26	8 22 51.66	52.69	+19 24 23.1	19.7	9.858	−33.32	+6 18.00	15 47.36	1 7.14	8 16 33.66
27	8 26 47.95	48.98	19 10 53.8	50.3	9.832	34.12	6 17.73	15 47.47	1 7.06	8 20 30.22
28	8 30 43.63	44.66	18 57 5.4	1.8	9.806	34.90	6 16.85	15 47.59	1 6.97	8 24 26.77
29	8 34 38.69	39.71	18 42 58.5	54.9	9.780	35.67	6 15.35	15 47.71	1 6.89	8 28 23.33
30	8 38 33.11	34.13	18 28 33.1	29.4	9.754	36.43	6 13.21	15 47.83	1 6.80	8 32 19.89
31	8 42 26.93	27.93	+18 13 49.6	45.9	9.728	−37.18	+6 10.47	15 47.95	1 6.72	8 36 16.45
Aug. 1	8 46 20.12	21.10	17 58 48.4	44.6	9.702	37.90	6 7.09	15 48.08	1 6.63	8 40 13.00
2	8 50 12.68	13.66	17 43 29.6	25.8	9.676	38.64	6 3.10	15 48.21	1 6.55	8 44 9.56
3	8 54 4.63	5.60	17 27 53.7	49.8	9.651	39.35	5 58.50	15 48.35	1 6.46	8 48 6.12
4	8 57 55.98	56.93	17 11 60.7	56.9	9.626	40.05	5 53.28	15 48.48	1 6.37	8 52 2.67
5	9 1 46.72	47.65	+16 55 50.9	47.0	9.601	−40.75	+5 47.46	15 48.62	1 6.28	8 55 59.23
6	9 5 36.86	37.76	16 39 24.9	21.0	9.576	41.42	5 41.04	15 48.76	1 6.19	8 59 55.79
7	9 9 26.41	27.30	16 22 42.7	38.9	9.552	42.09	5 34.04	15 48.91	1 6.11	9 3 52.34
8	9 13 15.39	16.25	16 5 44.6	40.8	9.528	42.75	5 26.46	15 49.06	1 6.03	9 7 48.90
9	9 17 3.79	4.63	15 48 31.0	27.2	9.504	43.39	5 18.30	15 49.21	1 5.95	9 11 45.46
10	9 20 51.62	52.44	+15 30 62.0	58.2	9.480	−44.03	+5 9.58	15 49.36	1 5.86	9 15 42.01
11	9 24 38.91	39.69	15 13 18.0	14.4	9.457	44.64	5 0.31	15 49.52	1 5.78	9 19 38.57
12	9 28 25.65	26.41	14 55 19.3	15.8	9.434	45.25	4 50.48	15 49.68	1 5.70	9 23 35.12
13	9 32 11.84	12.57	14 37 6.3	2.8	9.412	45.84	4 40.13	15 49.84	1 5.62	9 27 31.68
14	9 35 57.51	58.21	14 18 39.1	35.7	9.391	46.42	4 29.24	15 50.01	1 5.54	9 31 28.23
15	9 39 42.65	43.32	+13 59 58.1	54.8	9.369	−46.99	+4 17.82	15 50.18	1 5.46	9 35 24.79
16	9 43 27.28	27.92	+13 41 3.6	0.4	9.348	−47.55	+4 5.90	15 50.36	1 5.39	9 39 21.35

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.16 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Aug. 16	9 43 27.28	27.92	+13 41 3.6	0.4	9.348	−47.55	+ 4 5.90	15 50.36	1 5.39	9 39 21.35
17	9 47 11.41	12.01	13 21 56.0	52.9	9.327	48.06	3 53.47	15 50.54	1 5.31	9 43 17.90
18	9 50 55.03	55.60	13 2 35.6	32.6	9.306	48 61	3 40.54	15 50.72	1 5.24	9 47 14.46
19	9 54 38.17	38.70	12 42 62.5	59.8	9.286	48.13	3 27.13	15 50.91	1 5.17	9 51 11.01
20	9 58 20.83	21.33	12 23 17.5	14.9	9.266	49.62	3 13.22	15 51.10	1 5.10	9 55 7.57
21	10 2 3.00	3.46	+12 3 20.6	18.2	9.246	−50.11	+ 2 58.86	15 51.30	1 5.03	9 59 4.12
22	10 5 44.73	45.15	11 43 12.2	10.0	9.227	50.58	2 44.02	15 51.50	1 4.96	10 3 0.68
23	10 9 25.99	26.37	11 22 52.8	50.7	9.208	51.03	2 28.73	15 51.70	1 4.90	10 6 57.23
24	10 13 6.81	7.14	11 2 22.5	20.8	9.190	51.47	2 12.99	15 51.91	1 4.84	10 10 53.79
25	10 16 47.19	47.49	10 41 42.0	40.4	9.172	51.90	1 56.82	15 52.13	1 4.78	10 14 50.34
26	10 20 27.15	27.42	+10 20 51.2	49.9	9.155	−52.32	+ 1 40.23	15 52.35	1 4.72	10 18 46.90
27	10 24 6.72	6.93	9 59 50.8	49.6	9.139	52.71	1 23.25	15 52.57	1 4.67	10 22 43.45
28	10 27 45.89	46.06	9 38 40.8	40.0	9.123	53.10	1 5.87	15 52.80	1 4.61	10 26 40.01
29	10 31 24.68	24.80	9 17 21.9	21.2	9.107	53.48	0 48.11	15 53.02	1 4.56	10 30 36.56
30	10 35 3.11	3.19	8 55 54.1	53.8	9.092	53.83	0 30.00	15 53.25	1 4.51	10 34 33.12
31	10 38 41.20	41.23	+ 8 34 17.9	17.8	9.078	−54.18	+ 0 11.53	15 53.48	1 4.46	10 38 29.67
Sept. 1	10 42 18.96	18.96	8 12 33.6	33.9	9.065	54.51	− 0 7.25	15 53.71	1 4.42	10 42 26.22
2	10 45 56.44	56.37	7 50 41.5	41.9	9.053	54.83	0 26.33	15 53.95	1 4.38	10 46 22.78
3	10 49 33.63	33.50	7 28 41.6	42.4	9.042	55.14	0 45.71	15 54.18	1 4.34	10 50 19.33
4	10 53 10.54	10.38	7 6 34.6	35.7	9.032	55.44	1 5.33	15 54.42	1 4.30	10 54 15.89
5	10 56 47.23	47.01	+ 6 44 20.5	22.0	9.022	−55.72	− 1 25.19	15 54.65	1 4.26	10 58 12.44
6	11 0 23.69	23.42	6 21 59.9	61.6	9.013	56.00	1 45.28	15 54.89	1 4.23	11 2 9.00
7	11 3 59.95	59.64	5 59 32.8	34.8	9.006	56.25	2 5.57	15 55.13	1 4.20	11 6 5.55
8	11 7 36.05	35.67	5 36 59.7	62.1	8.999	56.50	2 26.02	15 55.37	1 4.17	11 10 2.10
9	11 11 11.98	11.56	5 14 20.8	23.5	8.993	56.74	2 46.63	15 55.61	1 4.15	11 13 58.66
10	11 14 47.78	47.32	+ 4 51 36.4	39.4	8.988	−56.95	− 3 7.38	15 55.86	1 4.13	11 17 55.21
11	11 18 23.48	22.95	4 28 46.9	50.1	8.983	57.16	3 28.24	15 56.10	1 4.11	11 21 51.77
12	11 21 59.06	58.49	4 5 52.6	56.2	8.979	57.36	3 49.19	15 56.35	1 4.09	11 25 48.32
13	11 25 34.58	33.96	3 42 53.7	57.8	8.977	57.54	4 10.22	15 56.60	1 4.08	11 29 44.87
14	11 29 10.05	9.38	3 19 50.8	55.2	8.975	57.70	4 31.31	15 56.85	1 4.07	11 33 41.43
15	11 32 45.47	44.74	+ 2 56 44.0	48.8	8.974	−57.85	− 4 52.43	15 57.11	1 4.06	11 37 37.98
16	11 36 20.88	20.10	2 33 33.8	39.0	8.973	57.99	5 13.58	15 57.37	1 4.06	11 41 34.53
17	11 39 56.28	55.45	2 10 20.6	26.1	8.973	58.11	5 34.73	15 57.63	1 4.06	11 45 31.09
18	11 43 31.68	30.80	1 47 4.6	10.4	8.974	58.22	5 55.86	15 57.89	1 4.06	11 49 27.64
19	11 47 7.13	6.19	1 23 46.2	52.4	8.975	58.31	6 16.98	15 58.16	1 4.06	11 53 24.19
20	11 50 42.62	41.62	+ 1 0 25.9	32.4	8.978	−58.38	− 6 38.03	15 58.43	1 4.07	11 57 20.75
21	11 54 18.16	17.12	0 37 4.0	10.8	8.981	58.44	6 59.03	15 58.69	1 4.08	12 1 17.30
22	11 57 53.79	52.70	+ 0 13 40.8	48.0	8.985	58.49	7 19.95	15 58.96	1 4.10	12 5 13.86
23	12 1 29.53	28.38	− 0 9 43.2	35.6	8.989	58.51	7 40.76	15 59.24	1 4.12	12 9 10.41
24	12 5 5.38	4.18	0 32 67.9	59.9	8.994	58.53	8 1.46	15 59.51	1 4.15	12 13 6.96
25	12 8 41.36	40.11	− 0 56 32.6	24.3	9.000	−58.53	− 8 22.03	15 59.79	1 4.18	12 17 3.52
26	12 12 17.51	16.20	1 19 57.2	48.6	9.007	58.51	8 42.44	16 0.07	1 4.21	12 21 0.07
27	12 15 53.82	52.45	1 43 21.2	12.4	9.015	58.48	9 2.68	16 0.35	1 4.24	12 24 56.62
28	12 19 30.32	28.91	2 6 44.4	35.1	9.024	58.44	9 22.73	16 0.63	1 4.27	12 28 53.18
29	12 23 7.04	5.58	2 29 66.3	56.8	9.033	58.39	9 42.55	16 0.91	1 4.30	12 32 49.73
30	12 26 44.01	42.50	− 2 53 26.8	17.0	9.043	−58.31	−10 2.14	16 1.19	1 4.34	12 36 46.29
31	12 30 21.24	19.66	− 3 16 45.4	35.3	9.055	−58.23	−10 21.47	16 1.47	1 4.38	12 40 42.84

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0s.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Oct. 1	12 30 21.24	19.66	− 3 16 45.4	35.3	9.055	−58.23	−10 21.47	16 1.47	1 4.38	12 40 42.84
2	12 33 58.75	57.13	3 39 61.7	51.4	9.068	58.13	10 40.51	16 1.75	1 4.43	12 44 39.39
3	12 37 36.57	34.90	4 3 15.6	4.9	9.081	58.01	10 59.24	16 2.03	1 4.48	12 48 35.95
4	12 41 14.72	13.02	4 26 26.7	15.7	9.096	57.89	11 17.63	16 2.30	1 4.53	12 52 32.50
5	12 44 53.23	51.48	4 49 34.4	23.2	9.112	57.75	11 35.68	16 2.58	1 4.58	12 56 29.05
6	12 48 32.12	30.32	− 5 12 38.8	27.4	9.127	−57.60	−11 53.34	16 2.85	1 4.63	13 0 25.61
7	12 52 11.41	9.55	5 35 39.3	27.6	9.144	57.43	12 10.61	16 3.13	1 4.69	13 4 22.16
8	12 55 51.13	49.23	5 58 35.6	23.7	9.162	57.25	12 27.43	16 3.40	1 4.75	13 8 18.71
9	12 59 31.30	29.35	6 21 27.4	15.3	9.181	57.06	12 43.83	16 3 67	1 4.81	13 12 15.27
10	13 3 11.93	9.93	6 44 14.2	1.9	9.201	56.84	12 59.74	16 3.94	1 4.88	13 16 11.82
11	13 6 53.06	51.02	− 7 6 55.7	43.2	9.222	−56.61	−13 15.18	16 4.21	1 4.96	13 20 8.38
12	13 10 34.69	32.61	7 29 31.6	19.0	9.244	56.37	13 30.11	16 4.48	1 5.03	13 24 4.93
13	13 14 16.85	14.72	7 51 61.5	48.6	9.266	56.11	13 44.51	16 4.75	1 5.11	13 28 1.49
14	13 17 59.55	57.38	8 14 24.9	11.8	9.289	55.84	13 58.36	16 5.02	1 5.19	13 31 58.04
15	13 21 42.82	40.61	8 36 41.5	28.2	9.313	55.55	14 11.64	16 5.29	1 5.27	13 35 54.59
16	13 25 26.66	24.41	− 8 58 50.8	37.5	9.337	−55.23	−14 24.37	16 5.56	1 5.35	13 39 51.15
17	13 29 11.08	8.81	9 20 52.4	39.0	9.362	54.90	14 36.49	16 5.83	1 5.43	13 43 47.70
18	13 32 56.12	53.80	9 42 45.9	32.4	9.388	54.55	14 48.02	16 6.10	1 5.52	13 47 44.26
19	13 36 41.77	39.41	10 4 31.0	17.5	9.414	54.19	14 58.93	16 6.38	1 5.61	13 51 40.81
20	13 40 28.05	25.66	10 25 67.0	53.5	9.441	53.81	15 9.22	16 6.65	1 5.71	13 55 37.37
21	13 44 14.97	12.56	−10 47 33.9	20.3	9.468	−53.41	−15 18.85	16 6.92	1 5.80	13 59 33.92
22	13 48 2.54	0.10	11 8 51.0	37.3	9.495	53.00	15 27.83	16 7.19	1 5.90	14 3 30.48
23	13 51 50.79	48.31	11 29 57.8	44.1	9.523	52.57	15 36.15	16 7.46	1 6.00	14 7 27.03
24	13 55 39.72	37.21	11 50 54.2	40.6	9.552	52.12	15 43.80	16 7.73	1 6.10	14 11 23.59
25	13 59 29.32	26.80	12 11 39.6	26.0	9.581	51.66	15 50.75	16 8.00	1 6.20	14 15 20.14
26	14 3 19.64	17.09	−12 32 13.7	0.1	9.610	−51.17	−15 56.99	16 8.27	1 6.30	14 19 16.70
27	14 7 10.68	8.09	12 52 35.9	22.4	9.641	50.67	16 2.52	16 8.54	1 6.41	14 23 13.25
28	14 10 62.44	59.84	13 12 46.0	32.6	9.672	50.16	16 7.32	16 8.80	1 6.52	14 27 9.81
29	14 14 54.95	52.32	13 32 43.6	30.2	9.703	49.63	16 11.38	16 9.06	1 6.63	14 31 6.36
30	14 18 48.21	45.58	13 52 28.4	15.1	9.735	49.09	16 14.67	16 9.32	1 6.74	14 35 2.92
31	14 22 42.24	39.59	−14 11 59.8	46.6	9.767	−48.53	−16 17.21	16 9.57	1 6.85	14 38 59.47
Nov. 1	14 26 37.07	34.40	14 31 17.6	4.6	9.800	47.94	16 18.95	16 9.82	1 6.96	14 42 56.03
2	14 30 32.68	30.01	14 50 21.3	8.4	9.834	47.35	16 19.89	16 10.07	1 7.08	14 46 52.58
3	14 34 29.11	26.42	15 8 70.5	57.8	9.868	46.75	16 20.04	16 10.32	1 7.19	14 50 49.14
4	14 38 26.36	23.66	15 27 45.1	32.5	9.902	46.12	16 19.35	16 10.56	1 7.31	14 54 45.70
5	14 42 24.43	21.73	−15 45 64.3	51.9	9.937	−45.48	−16 17.84	16 10.80	1 7.43	14 58 42.25
6	14 46 23.36	20.66	16 3 67.9	55.8	9.973	44.82	16 15.48	16 11.03	1 7.55	15 2 38.81
7	14 50 23.13	20.42	16 21 55.5	43.7	10.009	44.14	16 12.28	16 11.26	1 7.67	15 6 35.36
8	14 54 23.77	21.06	16 39 26.8	15.2	10.045	43.45	16 8.20	16 11.49	1 7.79	15 10 31.92
9	14 58 25.26	22.56	16 56 41.3	29.8	10.081	42.75	16 3.28	16 11.72	1 7.91	15 14 28.48
10	15 2 27.62	24.93	−17 13 38.5	27.3	10.117	−42.02	−15 57.49	16 11.94	1 8.03	15 18 25.03
11	15 6 30.85	28.17	17 30 18.0	7.2	10.153	41.27	15 50.82	16 12.15	1 8.15	15 22 21.59
12	15 10 34.95	32.28	17 46 39.6	29.0	10.190	40.51	15 43.29	16 12.37	1 8.27	15 26 18.15
13	15 14 39.91	37.27	18 2 42.6	32.4	10.226	39.73	15 34.88	16 12.58	1 8.39	15 30 14.70
14	15 18 45.75	43.11	18 18 26.8	16.8	10.263	38.94	15 25.63	16 12.79	1 8.50	15 34 11.26
15	15 22 52.44	49.82	−18 33 51.7	42.0	10.297	−38.12	−15 15.49	16 13.00	1 8.62	15 38 7.82
16	15 26 59.97	57.38	−18 48 56.9	47.5	10.332	−37.30	−15 4.52	16 13.21	1 8.73	15 42 4.38

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0s.18 from the sidereal interval.

[illegible] MOON.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17 [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 57.19
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 54.65
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	−11 [illegible]	16 [illegible]	1 10.[illegible]	16 [illegible]
[illegible]	[illegible]	11 [illegible]	16 16.13	1 10.[illegible]	16 45 [illegible]
[illegible]	[illegible]	[illegible]	16 16.[illegible]	1 10.[illegible]	16 49 [illegible]
[illegible]	[illegible]	[illegible]	16 16.[illegible]	1 10.5[illegible]	16 53 2.42
[illegible]	[illegible]	[illegible] 10.37	16 16.55	1 10.61	16 56 58.97
[illegible]	[illegible]	− [illegible]	16 16.[illegible]	1 10.6[illegible]	17 0 55.53
[illegible]	[illegible]	[illegible] 19.17	16 16.79	1 10.75	17 4 52.09
[illegible]	[illegible]	7 [illegible]	16 16.90	1 10.81	17 8 48.65
[illegible]	[illegible]	7 [illegible]	16 17.01	1 10.87	17 12 45.21
[illegible]	[illegible]	[illegible]	16 17.12	1 10.93	17 16 41.77
[illegible]	[illegible]	− [illegible] 31.07	16 17.23	1 10.98	17 20 38.33
[illegible]	[illegible]	[illegible]	16 17.33	1 11.03	17 24 34.89
[illegible]	[illegible]	[illegible] 34	16 17.42	1 11.08	17 28 31.44
[illegible]	[illegible]	[illegible] 5.77	16 17.51	1 11.12	17 32 28.0[illegible]
[illegible]	[illegible]	4 [illegible]	16 17.[illegible]	1 11.15	17 36 24.5[illegible]
[illegible]	[illegible]	− 4 7.39	16 17.[illegible]	1 11.18	17 40 21.1[illegible]
[illegible]	[illegible]	3 [illegible]	16 17.77	1 11.20	17 44 17.[illegible]
[illegible]	[illegible]	3 8.17	16 17.84	1 11.22	17 48 14.[illegible]
[illegible]	9.[illegible]	2 38.34	16 17.91	1 11.24	17 52 10.[illegible]
[illegible]	1.[illegible]	2 8.41	16 17.96	1 11.25	17 56 7.[illegible]
11.110	− 0.4[illegible]	− 1 38.41	16 18.05	1 11.26	18 0 3.9
11.111	+ 0.78	1 8.38	16 18.11	1 11.27	18 4 0.[illegible]
11.109	1.94	0 38.38	16 18.17	1 11.27	18 7 57.[illegible]
11.106	3.10	− 0 8.41	16 18.22	1 11.27	18 11 53.[illegible]
11.102	4.30	+ 0 21.45	16 18.27	1 11.26	18 15 50.1[illegible]
11.097	+ 5.47	+ 0 51.21	16 18.31	1 11.24	18 19 46.7[illegible]
11.090	6.64	1 20.83	16 18.34	1 11.22	18 23 43.[illegible]
11.080	7.81	1 50.26	16 18.37	1 11.19	18 27 39.[illegible]
11.073	8.97	2 19.50	16 18.39	1 11.16	18 31 36.[illegible]
11.062	10.13	2 48.48	16 18.40	1 11.13	18 35 32.[illegible]
11.050	+11.[illegible]	+ 3 17.20	16 18.41	1 11.10	18 39 [illegible]
11.0[illegible]	+12.[illegible]	+ 3 45.64	16 18.42	1 11.06	18 43 [illegible]

[illegible] passing meridian, subtract 0s.19 from the sidereal interval.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Jan. 1	4 18.42	1.654	23 3 30.49	109.31	− 7 2 5.0	+853.6	61.67	14 51.1	54 23.3	I. S.
2	4 57.97	1.686	23 47 6.77	109.94	− 1 12 48.1	868.7	61.70	14 58.1	54 49.1	I. S.
3	5 38.13	1.704	0 31 19.58	110.39	+ 4 45 32.8	883.4	62.63	15 7.9	55 25.3	I. S.
4	6 20.24	1.815	1 17 20.39	119.06	10 41 58.7	877.7	64.51	15 20.4	56 11.2	I. S.
5	7 5.73	1.986	2 7 3.25	129.40	16 22 20.5	815.8	67.32	15 35.1	57 5.3	I. S.
6	7 56.06	2.215	3 1 27.41	143.69	+21 27 2.7	+696.6	70.86	15 51.4	58 5.0	I. S.
7	8 52.26	2.470	4 1 45.56	158.42	25 29 28.9	503.1	74.63	16 7.9	59 5.8	I. S.
8	9 54.33	2.689	5 7 56.13	171.65	27 57 39.5	+235.7	77.69	16 23.1	60 1.7	I. N.
9	11 0.40	2.791	6 18 7.92	177.79	28 22 8.0	−109.7	79.12	16 35.2	60 46.1	I. N.
10	12 7.00	2.738	7 28 51.68	174.30	26 29 13.1	−450.1	78.28	16 42.4	61 13.1	I. N.
11	13 10.62	2.584	8 36 35.42	163.53	+22 29 20.9	−735.0	75.75	16 44.2	61 18.6	II. N. s.
12	14 9.31	2.357	9 39 23.15	150.45	16 53 9.1	−939.7	72.57	16 39.8	61 3.1	II. S.
13	15 3.02	2.147	10 37 10.98	139.08	10 17 22.4	−1034.0	69.71	16 30.7	60 29.4	II. S.
14	15 52.82	2.014	11 31 4.25	131.08	+ 3 16 26.9	−1059.9	67.68	16 18.0	59 43.1	II. S.
15	16 40.24	1.947	12 22 33.23	126.99	− 3 41 59.3	−1094.0	66.65	16 3.7	58 50.1	II. S.
16	17 26.75	1.938	13 13 8.19	126.49	−10 16 34.4	−941.8	66.55	15 48.9	57 55.5	II. S.
17	18 13.67	1.978	14 4 7.86	128.89	−16 10 16.4	−699.8	67.20	15 34.7	57 3.8	II. S.
18	19 1.99	2.069	14 56 31.49	133.98	−21 8 29.1	−664.0	68.33	15 22.0	56 17.3	II. S.
19	19 52.21	2.133	15 50 49.57	138.18	−24 58 3.3	−476.2	69.58	15 11.2	55 37.4	II. S.
20	20 44.21	2.193	16 46 54.34	141.86	−27 27 44.4	−267.0	70.46	15 2.3	55 4.7	II. S.
21	21 37.15	2.208	17 43 56.30	142.74	−28 29 56.6	− 43.3	70.61	14 55.3	54 38.9	II. N.
22	22 29.73	2.164	18 40 36.45	140.05	−28 2 53.4	+176.4	69.84	14 50.0	54 19.4	II. N.
23	23 20.60	2.069	19 35 33.59	134.38	−26 11 33.3	375.8	68.32	14 46.5	54 6.1	II. N.
25	0 8.83	1.948	20 27 51.56	127.05	−23 6 31.2	543.5	66.35	14 44.2	53 58.2	II. N.
26	0 54.11	1.897	21 17 11.99	119.76	−19 1 24.1	676.0	64.38	14 43.5	53 55.7	I. N. S.
27	1 36.69	1.796	22 3 51.03	113.76	−14 10 21.7	+773.6	62.72	14 44.3	53 58.6	I. S.
28	2 17.27	1.661	22 48 28.88	109.78	− 8 46 36.2	839.9	61.64	14 46.8	54 7.6	I. S.
29	2 56.74	1.637	23 32 0.13	108.98	− 3 1 57.9	878.6	61.26	14 50.9	54 23.4	I. S.
30	3 36.16	1.657	0 15 28.60	109.60	+ 2 52 41.1	899.4	61.72	14 57.4	54 46.8	I. S.
31	4 16.72	1.730	1 0 5.16	113.99	8 46 28.9	873.7	63.06	15 6.1	55 18.7	I. S.
Feb. 1	4 59.69	1.859	1 47 7.01	121.74	+14 27 8.4	+803.3	65.27	15 17.1	55 58.9	I. S.
2	5 46.42	2.043	2 37 54.71	132.77	19 39 10.1	708.4	68.26	15 30.2	56 47.3	I. S.
3	6 38.10	2.269	3 33 40.87	146.36	24 2 7.8	575.5	71.81	15 45.3	57 42.6	I. S.
4	7 35.39	2.501	4 35 4.13	160.23	27 10 2.8	359.1	75.25	16 1.4	58 41.6	I. S.
5	8 37.70	2.676	5 41 29.57	170.80	28 34 25.7	+ 99.2	77.69	16 17.1	59 39.8	I. N.
6	9 42.82	2.736	6 50 44.07	173.98	+27 52 39.9	−271.6	78.36	16 31.1	60 31.4	I. N.
7	10 47.52	2.644	7 59 33.00	168.93	24 58 46.9	−589.7	77.12	16 41.4	61 9.2	I. N.
8	11 49.04	2.475	9 5 10.92	158.74	20 8 13.6	−848.4	74.62	16 46.5	61 27.4	I. N.
9	12 46.20	2.291	10 6 26.70	147.73	13 52 6.1	−1016.7	71.89	16 45.5	61 24.0	I. N. s.
10	13 39.32	2.144	11 3 38.98	138.63	+ 6 47 1.5	−1094.0	69.61	16 38.6	60 58.5	II. S.
11	14 29.53	2.059	11 57 56.52	133.98	− 0 32 31.7	−1091.7	68.22	16 26.8	60 15.4	II. S.
12	15 18.24	2.017	12 50 43.57	131.22	− 7 37 37.3	−1094.5	67.75	16 11.9	59 20.5	II. S.
13	16 6.77	2.034	13 43 19.72	132.03	−14 5 11.1	−998.1	68.08	15 55.5	58 20.4	II. S.
14	16 56.16	2.067	14 36 48.16	135.41	−19 36 56.3	−746.7	68.98	15 39.4	57 20.7	II. S.
15	17 47.04	2.153	15 31 45.67	139.41	−23 58 14.8	−555.1	70.05	15 24.3	56 25.7	II. S.
16	18 39.41	2.207	16 28 13.34	142.64	−26 57 48.3	−339.6	70.88	15 11.5	55 38.4	II. S.
17	19 32.65	2.229	17 25 32.74	143.51	−28 28 24.4	−112.4	71.06	15 1.1	55 0.1	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limb.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Feb. 16	18 39.41	2.207	16 28 13.34	142.64	−26 57 48.3	−339.6	70.88	15 11.5	55 38.4	II. S
17	19 32.65	2.229	17 25 32.74	143.51	−28 28 24.4	−112.4	71.06	15 1.1	55 0.1	II. S
18	20 25.60	2.184	18 22 35.37	141.18	−28 28 16.3	+111.4	70.41	14 53.2	54 31.4	II. N.
19	21 17.03	2.096	19 18 5.74	135.95	−27 1 39.2	317.5	68.95	14 47.9	54 11.6	II. N.
20	22 5.98	1.981	20 11 7.20	129.01	−24 18 0.0	495.4	67.05	14 44.9	54 0.3	II. N.
21	22 52.06	1.860	21 1 16.41	121.85	−20 29 51.1	+639 6	65.01	14 43.6	53 56.3	II. N.
22	23 35.44	1.757	21 48 42.91	115.63	−15 50 46.1	750.2	63.25	14 44.3	53 58.6	II. N.
24	0 16.67	1.663	22 34 0.24	111.16	−10 33 58.2	898.6	61.98	14 46.5	54 6.6	I. N.
25	0 56.57	1.647	23 17 56.99	108.96	− 4 51 52.2	877.1	61.36	14 50.0	54 19.8	I. S.
26	1 36.07	1.652	0 1 30.44	109.96	+ 1 3 43.8	896.2	61.48	14 54.9	54 37.5	I. S.
27	2 16.25	1.702	0 45 43.91	112.36	+ 7 1 3.0	+885.1	62.41	15 1.1	55 0.4	I. S.
28	2 58.21	1.801	1 31 45.40	118.29	12 47 24.9	840.6	64.18	15 8.9	55 28.6	I. S.
Mar. 1	3 43.15	1.948	2 20 45.27	127.15	18 8 9.6	755.8	66.67	15 18.1	56 3.0	I. S.
2	4 32.13	2.134	3 13 48.95	138.47	22 45 24.6	621.3	69.74	15 29.0	56 42.9	I. S.
3	5 25.89	2.341	4 11 40.00	150.74	26 17 32.4	498.9	72.93	15 41.3	57 28.0	I. S.
4	6 24.33	2.518	5 14 12.41	161.36	+28 20 29.2	+176.3	75.55	15 54.6	58 17.1	I. S.
5	7 26.11	2.613	6 20 6.18	167.05	28 32 32.6	−121.6	76.91	16 8.4	59 7.3	I. N.
6	8 28.84	2.596	7 26 56.58	166.03	26 41 52.3	−430.1	76.59	16 21.1	59 54.4	I. N.
7	9 29.97	2 487	8 32 10.90	159.49	22 52 22.1	−708.6	74.93	16 31.6	60 33.0	I. N.
8	10 27.90	2.339	9 34 13.03	150.61	17 23 19.2	−933.9	72.66	16 38.4	60 57.8	I. N.
9	11 22.36	2.204	10 32 45.87	142.45	+10 43 48.9	−1059.6	70.56	16 40.4	61 4.7	I. N.
10	12 14.04	2.110	11 28 31.82	136.87	+ 3 26 29.9	−1113.6	69.10	16 36.8	60 51.6	II. N. S.
11	13 4.13	2.073	12 22 42.12	134.51	− 3 56 47.3	−1090.9	68.48	16 28.1	60 20.0	II. S.
12	13 53.90	2.084	13 16 33.15	135.22	−10 57 17.8	−1001.4	68.72	16 15.4	59 33.4	II. S.
13	14 44.44	2.134	14 11 10.42	138.21	−17 10 20.6	−855.5	69.57	16 0.2	58 37.6	II. S.
14	15 36.44	2.200	15 7 15.58	142.25	−22 15 41.2	−664.7	70.69	15 44.1	57 38.5	II. S.
15	16 30.00	2.258	16 4 54.41	145.70	−25 57 55.8	−442.3	71.65	15 28.7	56 41.4	II. S.
16	17 24.52	2.276	17 3 30.73	146.81	−28 7 25.3	−203.9	71.97	15 14.7	55 50.4	II. S.
17	18 18.81	2.240	18 1 54.08	144.55	−28 41 20.4	+ 39.7	71.39	15 3.2	55 8.2	II. N. s.
18	19 11.56	2.149	18 58 43.96	139.15	−27 43 53.4	250.4	69.99	14 54.6	54 36.5	II. N.
19	20 1.72	2.027	19 52 58.25	131.86	−25 24 51.8	+438.9	68.02	14 49.0	54 15.3	II. N.
20	20 48.84	1.900	20 44 10.02	124.17	−21 57 6.5	594.0	65.87	14 45.9	54 4.4	II. N.
21	21 33.07	1.789	21 32 27.36	117.49	−17 34 8.8	715.5	63.95	14 45.5	54 2.8	II. N.
22	22 14.95	1.706	22 18 23.88	112.57	−12 28 52.8	805.7	62.48	14 47.3	54 9.4	II. N.
23	22 55.31	1.663	23 2 48.33	109.87	− 6 53 18.3	867.1	61.66	14 50.8	54 22.6	II. N.
24	23 35.08	1.659	23 46 37.73	109.68	− 0 58 58.5	+899.5	61.56	14 56.0	54 41.3	II. N.
26	0 15.29	1.698	0 30 53.92	112.12	+ 5 2 15.4	901.2	62.25	15 2.1	55 4.1	I. S.
27	0 57.04	1.787	1 16 42.08	117.34	10 57 21.1	868.0	63.75	15 9.2	55 29.9	I. S.
28	1 41.41	1.918	2 5 8.32	125.98	16 31 9.9	793.7	65.98	15 16.9	55 58.4	I. S.
29	2 29.42	2.087	2 57 13.15	135.44	21 25 41.6	670.5	68.76	15 25.3	56 29.1	I. S.
30	3 21.74	2.279	3 53 37.46	146.59	+25 19 56.6	+491.3	71.73	15 34.2	57 1.9	I. S.
31	4 18.34	2.437	4 54 19.52	156.46	27 51 20.4	+256.9	74.23	15 43.6	57 36.5	I. S.
Apr. 1	5 18.15	2.531	5 58 14.10	162.19	28 39 40.3	− 20.4	75.70	15 53.4	58 12.5	I. S.
2	6 19.09	2.529	7 3 17.46	162.08	27 32 59.7	−312.6	75.68	16 3.1	58 48.2	I. N.
3	7 18.89	2.442	8 7 11.65	156.73	24 32 14.3	−585.4	74.36	16 12.3	59 21.7	I. N.
4	8 15.95	2.310	9 8 20.99	148.85	+19 51 6.9	−810.5	72.34	16 20.0	59 50.0	I. N.
5	9 9.82	2.183	10 6 18.73	141.19	+13 52 1.1	−973.5	70.30	16 25.2	60 9.7	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Apr. 4	8 15.05	2.310	9 8 20.99	148.85	+19 51 6.9	−810.5	72.34	16 20.0	59 50.0	I. N.
5	9 9.82	2.183	10 6 18.73	141.19	13 52 1.1	−973.5	70.30	16 25.2	60 9.7	I. N.
6	10 1.03	2.093	11 1 36.38	135.74	+ 7 1 25.9	−1067.7	68.86	16 27.4	60 17.5	I. N.
7	10 50.66	2.052	11 55 18.84	133.33	− 0 12 56.5	−1098.6	68.14	16 25.6	60 11.1	I. N.
8	11 39.97	2.066	12 48 42.07	134.10	− 7 23 34.3	−1049.4	68.31	16 19.7	59 49.4	I. N. s.
9	12 30.15	2.122	13 42 57.62	137.54	−14 3 53.4	−942.0	69.23	16 10.2	59 14.5	II. S.
10	13 22.08	2.207	14 38 58.31	142.63	−19 49 14.9	−776.0	70.57	15 57.9	58 29.4	II. S.
11	14 16.06	2.289	15 37 2.96	147.56	−24 18 22.4	−563 0	71.91	15 44.2	57 38.4	II. S.
12	15 11.65	2.334	16 36 43.78	150.30	−27 15 33.4	−319.8	72.66	15 30.0	56 46.5	II. S.
13	16 7.61	2.316	17 36 46.98	149.26	−28 33 4.6	− 68.6	72.46	15 16.7	55 58.1	II. S.
14	17 2.34	2.235	18 35 36.30	144.26	−28 12 26.9	+167.6	71.24	15 5.4	55 16.5	II. N.
15	17 54.46	2.105	19 31 48.69	136.50	−26 23 5.8	372.9	69.26	14 56.7	54 44.3	II. N.
16	18 43.25	1.961	20 24 40.96	127.69	−23 18 59.2	541.2	66.96	14 50.8	54 22.7	II. N.
17	19 28.73	1.839	21 14 13.43	120.06	−19 15 4.2	672.7	64.80	14 48.0	54 12.1	II. N.
18	20 11.42	1.739	22 0 58.82	114.07	−14 25 5.3	772.2	63.06	14 48.0	54 12.2	II. N.
19	20 52.20	1.673	22 45 48.72	110.50	− 9 1 4.3	+843.5	61.97	14 50.7	54 22.0	II. N.
20	21 32.07	1.656	23 29 43.90	109.57	− 3 13 52.7	888.9	61.63	14 55.7	54 40.3	II. N.
21	22 12.12	1.687	0 13 49.95	111.42	+ 2 45 42.0	904.8	62.10	15 2.5	55 5.3	II. N.
22	22 53.49	1.767	0 59 15.42	116.18	8 45 40.8	888.8	63.40	15 10.6	55 35.1	II. N.
23	23 37.33	1.894	1 47 10.09	123.83	14 31 35.3	833.0	65.49	15 19.4	56 7.6	II. S.
25	0 24.75	2.063	2 38 39.36	133.93	+19 45 26.1	+727.0	68.21	15 28.4	56 40.7	I. S.
26	1 16.52	2.252	3 34 30.81	145.37	24 5 23.9	569.6	71.20	15 37.2	57 12.8	I. S.
27	2 12.76	2.427	4 34 50.63	156.83	27 7 18.7	337.5	73.87	15 45.3	57 42.8	I. S.
28	3 12.46	2.533	5 38 39.09	162.97	28 28 52.6	+ 64.5	75.51	15 52.7	58 10.0	I. S.
29	4 13.53	2.538	6 43 50.29	163.58	27 56 15.7	−227.4	75.64	15 59.1	58 33.8	I. N. s.
30	5 13.51	2.448	7 47 55.34	157.09	+25 29 14.6	−501.6	74.35	16 4.7	58 54.0	I. N.
May 1	6 10.57	2.304	8 49 4.99	148.50	21 21 0.8	−730.0	72.24	16 9.3	59 10.4	I. N.
2	7 4.11	2.161	9 46 42.71	139.86	15 53 6.9	−899.4	70.03	16 12.3	59 22.1	I. N.
3	7 54.50	2.053	10 41 15.94	133.36	9 29 58.6	−1006.5	68.27	16 13.9	59 27.9	I. N.
4	8 43.07	1.996	11 33 49.74	129.99	+ 2 35 56.7	−1053.8	67.33	16 13.6	59 26.8	I. N.
5	9 30.90	1.997	12 25 43.86	130.06	− 4 25 18.3	−1042.8	67.26	16 10.9	59 17.1	I. N.
6	10 19.39	2.051	13 18 17.81	133.94	−11 10 21.1	−979.7	68.06	16 5.8	58 58.3	I. N.
7	11 9.66	2.143	14 12 38.74	138.76	−17 15 44.1	−844.4	69.48	15 58.3	58 30.5	I. N. s.
8	12 2.38	2.250	15 9 26.90	145.23	−22 18 35.5	−661.1	71.11	15 48.6	57 55.1	II. S.
9	12 57.48	2.335	16 8 38.54	150.34	−25 58 42.9	−433 5	72.44	15 37.6	57 14.4	II. S.
10	13 53.99	2.360	17 9 15.12	151.95	−28 1 57.4	−180.8	72.90	15 26.1	56 31.9	II. S.
11	14 50.23	2.311	18 9 35.12	148.93	−28 23 38.0	+ 70.2	72.19	15 14.8	55 50.6	II. S.
12	15 44.40	2.193	19 7 50.80	141.86	−27 9 23.0	295.4	70.48	15 5.0	55 14.4	II. N.
13	16 35.28	2.043	20 2 48.38	132.77	−24 32 30.3	481.8	68.17	14 57.1	54 45.1	II. N.
14	17 22.49	1.894	20 54 5.29	123.79	−20 49 22.5	627.0	65.79	14 51.7	54 25.5	II. N.
15	18 6.39	1.770	21 42 3.05	116.37	−16 15 44.0	+735.3	63.72	14 49.0	54 16.1	II. N.
16	18 47.78	1.686	22 27 30.34	111.35	−11 5 1.9	813.3	62.29	14 49.5	54 17.8	II. N.
17	19 27.72	1.651	23 11 29.63	109.08	− 5 28 28.8	865.3	61.61	14 52.9	54 30.1	II. N.
18	20 7.34	1.661	23 55 9.86	109 78	+ 0 23 54.1	892.4	61.76	14 59.0	54 52.4	II. N.
19	20 47.85	1.723	0 39 43.70	113.67	6 21 48.4	891.9	62.79	15 7.4	55 23.2	II. N.
20	21 30.51	1.840	1 26 26.91	120.56	+12 12 59.8	+857.5	64.67	15 17.4	56 0.3	II. N.
21	22 16.57	2.006	2 16 34.74	130.54	+17 41 34.8	+777.0	67.32	15 28.5	56 41.1	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
May 20	21 30.51	1.849	1 26 26.91	139.56	+12 12 59.8	+857.5	64.67	15 17.4	56 0.3	II. N.
21	22 16.57	2.006	2 16 34.74	139 54	17 41 34.8	777.0	67.32	15 28.5	56 41.1	II. N.
22	23 7.11	2.209	3 11 11.68	142.76	22 26 49.8	638.6	70.48	15 39.8	57 22.6	II. S.
24	0 2.63	2.414	4 10 48.45	155.67	26 3 26.5	433.9	73.55	15 50.3	58 1.3	I. S.
25	1 2.54	2.564	5 14 49.76	164.17	28 5 9.0	+186.9	75.79	15 59.3	58 34.5	I. S.
26	2 4.87	2.606	6 21 16.58	166.89	+28 11 34.3	−135.6	76.47	16 6.3	58 59.7	I. S.
27	3 6.80	2.532	7 27 18.14	162.98	26 17 30.6	−429.5	75.46	16 10.8	59 16.6	I. N.
28	4 5.83	2.379	8 30 26.71	152.98	22 34 14.4	−677.0	73.23	16 13.0	59 24.6	I. N.
29	5 0.85	2.208	9 29 33.72	142.71	17 24 49.7	−858 5	70.70	16 13.1	59 24.8	I. N.
30	5 52.06	2.067	10 24 51.21	134.19	11 16 10.7	−974.0	68.49	16 11.4	59 18.6	I. N.
31	6 40.48	1.979	11 17 21.19	128.92	+ 4 33 58.0	−1038.6	67.06	16 8.1	59 7.1	I. N.
June 1	7 27.50	1.950	12 8 26.67	127.16	− 2 18 46.0	−1037.6	66.58	16 3.9	58 50.9	I. N.
2	8 14.55	1.979	12 59 33.55	128.92	− 9 0 55.4	−975.2	67.01	15 58.4	58 30.8	I. N.
3	9 2.90	2.056	13 51 59.54	133.64	−15 12 3.8	−871.9	68.19	15 51.8	58 6.7	I. N.
4	9 53.55	2.165	14 46 42.91	140.12	−20 31 42.6	−718.0	69.84	15 44.3	57 39.0	I. N.
5	10 46.85	2.272	15 44 6.71	146.65	−24 39 53.8	−515.9	71.45	15 35.8	57 8.0	I. N. S.
6	11 42.36	2.341	16 43 42.54	150.74	−27 19 38.5	−278.8	72.46	15 26.8	56 34.9	I. S.
7	12 38.68	2.338	17 44 7.81	150.53	−28 30 47.8	− 27.5	72.41	15 17.6	56 1.1	II. S.
8	13 33.95	2.255	18 43 29.81	145.57	−27 43 8.9	+231.3	71.90	15 8.7	55 28.6	II. S.
9	14 26.52	2.118	19 40 9.02	137.98	−25 36 14.0	416.7	69.14	15 0.9	54 59.6	II. N.
10	15 15.50	1.964	20 33 12.16	127.93	−22 15 38.9	+579.3	66.73	14 54.6	54 36.1	II. N.
11	16 0.85	1.821	21 22 37.52	119.43	−17 58 29.3	700.0	64.46	14 50.2	54 20.3	II. N.
12	16 43.18	1.712	22 9 0.97	112.94	−13 0 13.2	785.4	62.69	14 48.4	54 13.4	II. N.
13	17 23.44	1.650	22 53 19.50	109.13	− 7 33 40.2	842.6	61.61	14 49.2	54 16.7	II. N.
14	18 2.73	1.634	23 36 40.13	108.14	− 1 49 27.2	874.8	61.35	14 53.0	54 30.5	II. N.
15	18 42.27	1.670	0 20 15.31	110.33	+ 4 2 47.3	+882.5	61.96	14 59.7	54 55.1	II. N.
16	19 23.32	1.769	1 5 21.87	115.74	9 52 47.9	862.8	63.49	15 9.0	55 29.5	II. N.
17	20 7.23	1.906	1 53 19.91	124.59	15 27 49.8	805.6	65.88	15 20.6	56 12.1	II. N.
18	20 55.28	2.105	2 45 27.52	136.44	20 30 44.4	699.2	68.98	15 33.8	57 0.4	II. N.
19	21 48.47	2.330	3 42 44.43	150.62	24 38 43.6	529.1	72.40	15 47.6	57 51.3	II. N.
20	22 46.97	2.534	4 45 20.39	162.44	+27 24 22.7	+287.9	75.40	16 0.8	58 39.3	II. S.
21	23 49.51	2.655	5 51 59.51	169.63	28 21 11.2	− 10.8	77.10	16 12.0	59 20.8	II. S.
23	0 53.38	2.644	6 59 58.69	168.93	27 13 21.7	−307.0	76.92	16 20.2	59 51.1	I. S.
24	1 55.47	2.515	8 6 10.81	161.16	24 3 49.4	−611.4	75.12	16 24.8	60 7.9	I. N.
25	2 53.69	2.333	9 8 30.16	150.22	19 13 12.2	−898.7	72.47	16 25.4	60 10.2	I. N.
26	3 47.55	2.161	10 6 27.04	139.86	+13 11 18.5	−967.8	69.89	16 22.5	59 59.4	I. N.
27	4 37.76	2.034	11 0 44.97	132.25	+ 6 28 33.4	−1034.6	67.95	16 16.9	59 38.4	I. N.
28	5 25.66	1.968	11 52 43.31	128.27	− 0 28 12.1	−1039.7	66.92	16 9.2	59 10.3	I. N.
29	6 12.72	1.969	12 43 50.78	127.95	− 7 16 11.4	−999.0	66.81	16 0.2	58 38.1	I. N.
30	7 0.32	2.019	13 35 31.23	130.90	−13 35 28.3	−896.7	67.61	15 51.1	58 4.0	I. N.
July 1	7 49.61	2.101	14 28 53.19	136.23	−19 7 28.9	−755.7	69.00	15 41.8	57 29.9	I. N.
2	8 41.26	2 204	15 24 37.55	142.45	−23 34 22.7	−571.7	70.53	15 32.8	56 56.4	I. N.
3	9 35.25	2.287	16 22 42.27	147.53	−26 39 57.7	−351.3	71.76	15 24.0	56 24.3	I. N.
4	10 30.66	2.317	17 22 12.84	149.32	−28 12 22.1	−109.0	72.14	15 15.7	55 53.9	I. S.
5	11 25.90	2.272	18 21 32.84	146.59	−28 7 24.5	+131.6	71.43	15 8.0	55 25.4	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
July 6	12 19.24	2.163	19 18 58.17	139.99	−26 30 12.7	+348.8	69.73	15 1.0	54 59.8	II. S.
7	13 9.44	2.018	20 13 15.03	131.96	−23 33 29.2	597.7	67.47	14 55.1	54 38.0	II. N. S.
8	13 56.08	1.871	21 3 57.92	122.46	−19 33 41.9	664.2	65.14	14 50.4	54 20.8	II. N.
9	14 39.46	1.747	21 51 24.32	115.07	−14 47 20.2	761.5	63.14	14 47.4	54 9.7	II. N.
10	15 20.32	1.664	22 36 19.34	109.94	− 9 28 55.4	895.5	61.73	14 46.4	54 6.2	II. N.
11	15 59.66	1.694	23 19 42.63	107.47	− 3 50 34.6	+861.9	61.06	14 47.7	54 11.3	II. N.
12	16 38.59	1.631	0 2 41.28	107.90	+ 1 57 20.2	673.6	61.26	14 51.7	54 26.0	II. N.
13	17 18.31	1.668	0 46 27.36	111.46	7 45 0.7	899.3	62.32	14 58.5	54 50.6	II. N.
14	18 0.08	1.801	1 32 17.45	118.98	13 21 38.5	817.2	64.26	15 8.0	55 25.6	II. N.
15	18 45.24	1.970	2 21 30.83	128.38	18 33 36.7	725.0	67.01	15 20.1	56 10.2	II. N.
16	19 35.00	2.183	3 15 20.83	141.16	+23 2 40.8	+600.5	70.33	15 34.2	57 2.1	II. N.
17	20 30.12	2.409	4 14 33.70	154.83	26 25 7.6	460.2	73.74	15 49.7	57 58.7	II. N.
18	21 30.33	2.595	5 18 53.26	166.03	28 13 47.6	+139.7	76.39	16 5.0	58 55.4	II. S.
19	22 33.86	2.677	6 26 31.82	170.86	28 5 2.1	−181.0	77.48	16 19.0	59 46.8	II. S.
20	23 37.73	2.696	7 34 30.95	167.78	25 48 52.9	−495.4	76.72	16 29.8	60 26.5	II. S.
22	0 39.09	2.478	8 39 59.27	158.94	+21 36 6.0	−761.9	74.56	16 36.3	60 50.1	I. N. S.
23	1 36.43	2.300	9 41 25.76	148.31	15 49 47.6	−950.1	71.97	16 37.5	60 54.9	I. N.
24	2 29.76	2.150	10 38 50.75	139.22	9 6 13.0	−1053.7	69.70	16 33.9	60 41.4	I. N.
25	3 20.06	2.052	11 33 13.69	133.98	+ 1 57 0.2	−1089.3	68.21	16 26.1	60 12.6	I. N.
26	4 8.72	2.013	12 25 57.98	131.09	− 5 9 27.0	−1042.9	67.66	16 15.3	59 32.9	I. N.
27	4 57.16	2.032	13 18 26.69	132.08	−11 49 24.9	−949.5	67.99	16 2.9	58 47.2	I. N.
28	5 46.59	2.093	14 11 59.17	135.82	−17 42 48.3	−810.1	68.99	15 50.0	57 59.7	I. N.
29	6 37.84	2.179	15 7 19.19	140.96	−22 32 4.5	−629.7	70.32	15 37.5	57 14.0	I. N.
30	7 31.13	2.258	16 4 41.72	145.70	−26 2 3.8	−415.3	71.49	15 26.1	56 32.0	I. N.
31	8 25.89	2.296	17 3 32.66	148.01	−28 1 23.2	−179.1	72.02	15 15.9	55 54.8	I. N.
Aug. 1	9 20.83	2.271	18 2 34.98	146.49	−28 24 49.9	+ 69.8	71.57	15 7.3	55 22.8	I. S.
2	10 14.39	2.183	19 0 13.66	141.16	−27 15 8.2	283.4	70.14	15 0.0	54 56.1	I. S.
3	11 5.25	2.051	19 55 10.62	133.29	−24 42 26.9	473.6	68.04	14 54.1	54 34.6	I. S.
4	11 52.80	1.910	20 46 47.59	124.81	−21 1 20.8	624.1	65.74	14 49.6	54 18.1	I. S.
5	12 37.07	1.782	21 35 7.96	117.14	−16 28 15.4	735.2	63.63	14 46.5	54 6.4	II. N. S.
6	13 18.64	1.686	22 20 45.34	111.35	−11 17 59.9	+810.5	62.01	14 44.9	54 0.5	II. N.
7	13 58.34	1.630	23 4 30.64	107.66	− 5 43 58.4	854.6	61.05	14 44.8	54 0.6	II. N.
8	14 37.18	1.615	23 47 23.71	107.09	+ 0 2 15.5	871.9	60.88	14 46.8	54 7.7	II. N.
9	15 16.92	1.647	0 30 29.46	108.92	5 50 8.3	863.1	61.51	14 50.9	54 22.6	II. N.
10	15 56.63	1.727	1 14 56.81	113.89	11 29 4.3	826.5	62.97	14 57.3	54 46.3	II. N.
11	16 39.58	1.859	2 1 57.86	121.76	+16 47 1.2	+756.9	65.23	15 6.2	55 19.1	II. N.
12	17 26.98	2.038	2 52 43.59	133.46	21 29 0.6	645.9	68.17	15 17.7	56 1.3	II. N.
13	18 17.66	2.247	3 48 11.44	145.04	25 15 54.4	479.8	71.43	15 31.5	56 51.7	II. N.
14	19 14.06	2.449	4 48 41.13	157.13	27 44 32.1	+263.2	74.43	15 46.8	57 48.5	II. N.
15	20 14.67	2.588	5 53 24.46	165.57	28 30 58.6	− 26.8	76.41	16 2.9	58 47.7	II. S.
16	21 17.41	2.690	7 0 15.95	167.51	+27 17 47.6	−338.6	76.84	16 18.6	59 44.9	II. S.
17	22 19.59	2.544	8 6 33.18	162.94	24 2 3.0	−633.7	75.65	16 31.6	60 33.1	II. S.
18	23 19.07	2.406	9 10 8.25	154.69	18 58 11.4	−873.7	73.57	16 40.8	61 6.5	II. S.
20	0 15.04	2.261	10 10 12.50	145.94	12 33 46.2	−1034.4	71.39	16 44.5	61 20.1	I. N. S.
21	1 7.91	2.152	11 7 9.94	139.35	+ 5 22 9.4	−1109.7	69.71	16 42.3	61 12.5	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Aug. 20	0 15.04	2.261	10 10 12.50	145.94	+12 33 46.2	−1034.4	71.39	16 44.5	61 19.9	I. N. S.
21	1 7.91	2.152	11 7 9.94	139.35	+ 5 22 9.4	−1109.7	69.71	16 42.3	61 12.4	I. N.
22	1 58.77	2.095	12 2 6.36	135.94	− 2 3 21.3	−1105.3	68.87	16 34.8	60 44.9	I. N.
23	2 48.94	2.093	12 56 21.19	135 80	− 9 12 42.6	−1030.7	68.90	16 23.2	60 2.1	I. N.
24	3 39.64	2.138	13 51 8.27	138.43	−15 40 11.8	−897.6	69.67	16 8.9	59 9.4	I. N.
25	4 31.77	2.208	14 47 21.44	142.76	−21 4 24.7	−716.1	70.82	15 53.6	58 13.1	I. N.
26	5 25.67	2.279	15 45 20.43	146.98	−25 8 13.0	−497.7	71.94	15 38.6	57 17.7	I. N.
27	6 20.90	2.315	16 44 40.12	149.18	−27 39 32.0	−256.8	72.48	15 24.7	56 27.2	I. N.
28	7 16.35	2.294	17 44 12.45	147.89	−28 32 54.6	− 11.5	72.12	15 12.8	55 43.5	I. N. S.
29	8 10.52	2.211	18 42 28.18	142.85	−27 50 39.1	+218.5	70.80	15 3.1	55 7.6	I. S.
30	9 2.13	2.085	19 38 9.69	135.98	−25 42 8.2	+418.1	68.75	14 55.6	54 39.8	I. S.
31	9 50.47	1.944	20 30 35.02	126.83	−22 21 16.0	579.8	66.42	14 50.1	54 19.7	I. S.
Sept. 1	10 35.53	1.813	21 19 42.27	119.00	−18 3 29.8	702.8	64.21	14 46.4	54 6.5	I. S.
2	11 17.76	1.710	22 5 59.98	112.81	−13 3 43.7	790.3	62.44	14 44.6	53 59.6	I. S.
3	11 57.96	1.645	22 50 14.63	108.81	− 7 35 26.4	846.0	61.27	14 44.3	53 58.3	I. N. S.
4	12 37.03	1.620	23 33 21.76	107.22	− 1 50 45.6	+872.7	60.82	14 45.4	54 2.7	II. N.
5	13 15.97	1.635	0 16 21.36	108.18	+ 3 59 2.1	871.9	61.13	14 48.1	54 12.6	II. N.
6	13 55.83	1.694	1 0 16.12	111.85	9 42 43.2	841.8	62.24	14 52.5	54 28.6	II. N.
7	14 37.68	1.799	1 46 10.61	118.16	15 8 12.1	779.8	64.10	14 58.6	54 51.1	II. N.
8	15 22.57	1.947	2 35 8.13	127.02	20 1 28.4	679.6	66.60	15 6.6	55 20.7	II. N.
9	16 11.41	2.126	3 28 2.62	137.73	+24 5 45.6	+533.6	69.50	15 16.7	55 57.6	II. N.
10	17 4.64	2.307	4 25 22.06	148.75	27 1 23.4	335.7	72.38	15 28.8	56 41.8	II. N.
11	18 1.94	2.457	5 26 45.83	157.64	28 27 31.2	+ 87.4	74.61	15 42.6	57 32.4	II. N.
12	19 1.92	2.526	6 30 51.15	161.88	28 6 34.2	−195.8	75.61	15 57.4	58 26.9	II. S.
13	20 2.47	2.504	7 35 30.61	160.52	25 50 9.6	−484.2	75.22	16 12.2	59 21.8	II. S.
14	21 1.56	2.412	8 38 42.18	154.96	+21 43 7.4	−743.5	73.78	16 25.8	60 11.6	II. S.
15	21 58.04	2.295	9 39 16.80	147.90	16 2 56.0	−946.3	71.95	16 36.5	60 50.5	II. S.
16	22 51.86	2.195	10 37 11.26	141.96	9 15 48.7	−1076.4	70.39	16 42.5	61 13.2	II. S.
17	23 43.77	2.140	11 33 11.42	138.57	+ 1 52 24.7	−1127.2	69.48	16 43.4	61 15.7	II. N. S.
19	0 34.96	2.135	12 28 27.53	138.31	− 5 35 26.8	−1099.1	69.44	16 38.4	60 57.2	I. N.
20	1 26.63	2.178	13 24 12.87	140.90	−12 37 4.6	−997.3	70.15	16 28.2	60 20.2	I. N.
21	2 19.77	2.253	14 21 26.33	145.43	−18 44 40.0	−830.8	71.38	16 14.4	59 29.6	I. N.
22	3 14.81	2.331	15 20 34.76	150.14	−23 34 51.6	−613.0	72.65	15 58.6	58 31.5	I. N.
23	4 11.44	2.378	16 21 18.17	152.95	−26 50 38.6	−362.2	73.42	15 42.4	57 32.0	I. N.
24	5 8.50	2.363	17 22 27.36	152.11	−28 23 26.1	−102.1	73.22	15 27.1	56 36.0	I. N.
25	6 4.36	2.280	18 22 25.03	147.06	−28 14 17.3	+143.6	71.97	15 13.8	55 46.8	I. N. S.
26	6 57.57	2.148	19 19 42.65	139.04	−26 32 47.6	357.3	69.88	15 2.9	55 7.0	I. S.
27	7 47.28	1.994	20 13 30.04	129.88	−23 33 43.4	531.3	67.42	14 54.7	54 36.8	I. S.
28	8 33.41	1.852	21 3 42.00	121.33	−19 33 18.0	664.6	65.02	14 49.1	54 16.3	I. S.
29	9 16.44	1.738	21 50 47.33	114.46	−14 46 44.6	762.5	63.04	14 46.1	54 4.8	I. S.
30	9 57.17	1.662	22 35 34.37	109.84	− 9 27 28.0	+829.0	61.64	14 45.1	54 1.4	I. S.
Oct. 1	10 36.55	1.628	23 19 0.20	107.73	− 3 47 20.8	867.0	60.97	14 46.1	54 4.9	I. S.
2	11 15.58	1.634	0 2 5.36	108.15	+ 2 2 28.7	877.4	61.06	14 48.6	54 14.3	I. S.
3	11 55.31	1.683	0 45 51.83	111.16	7 50 44.0	858.6	61.92	14 52.6	54 29.0	II. N. S.
4	12 36.75	1.776	1 31 21.83	116.76	+13 25 4.2	+807.0	63.52	14 57.7	54 48.1	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Oct. 3	11 55.31	1.683	0 45 51.83	111.16	+ 7 50 44.0	+856.6	61.92	14 52.6	54 29.0	II. N. S.
4	12 36.75	1.776	1 31 21.83	116.76	13 25 4.2	807.0	63.52	14 57.7	54 48.1	II. N.
5	13 20.91	1.908	2 19 35.26	124.72	18 31 15.7	716.9	65.77	15 4.1	55 11.3	II. N.
6	14 8.62	2.070	3 11 22.33	134.41	22 52 39.9	582.3	68.42	15 11.6	55 38.7	II. N.
7	15 0.33	2.238	4 7 9.85	144.45	26 10 24.9	396.3	71.09	15 20.2	56 10.6	II. N.
8	15 55.78	2.373	5 6 42.51	152.77	+28 5 5.9	+168.0	73.26	15 30.1	56 46.8	II. N.
9	16 53.82	2.448	6 8 50.88	157.12	28 20 22.7	− 95.2	74.39	15 41.1	57 27.1	II. N. S.
10	17 52.60	2.437	7 11 44.12	156.48	26 47 37.5	−307.4	74.25	15 52.8	58 10.5	II. S.
11	18 50.28	2.359	8 13 30.62	151.86	23 28 57.4	−499.8	73.09	16 4.9	58 54.6	II. S.
12	19 45.68	2.255	9 13 0.56	145.56	18 36 43.6	−639.2	71.45	16 16.2	59 36.4	II. S.
13	20 38.63	2.161	10 10 2.79	139.90	+12 30 34.8	−988.4	69.94	16 25.8	60 11.7	II. S.
14	21 29.75	2.107	11 5 14.76	136.56	+ 5 34 31.1	−1089.6	69.00	16 32.4	60 36.0	II. S.
15	22 20.13	2.101	11 59 42.41	136.29	− 1 44 45.5	−1103.8	68.87	16 35.0	60 45.1	II. S.
16	23 11.03	2.149	12 54 41.71	139.15	− 8 58 43.1	−1054.0	69.58	16 32.6	60 36.6	II. S.
18	0 3.62	2.239	13 51 22.07	144.59	−15 37 56.3	−930.4	70.96	16 25.5	60 10.6	I. N.
19	0 58.62	2.343	14 50 27.69	150.99	−21 13 57.5	−739.4	72.59	16 14.4	59 29.6	I. N.
20	1 56.00	2.430	15 51 56.43	156.09	−25 22 15.4	−495.4	73.93	16 0.4	58 38.3	I. N.
21	2 54.72	2.459	16 54 45.97	157.39	−27 46 22.5	−223.3	74.31	15 45.2	57 42.1	I. N.
22	3 52.96	2.387	17 57 6.14	153.53	−28 21 25.8	+ 44.7	73.47	15 30.1	56 46.5	I. N.
23	4 48.77	2.253	18 57 0.59	145.46	−27 14 32.8	289.6	71.48	15 16.3	55 56.1	I. S.
24	5 40.87	2.066	19 53 11.54	135.35	−24 41 13.5	+475.8	68.89	15 4.9	55 14.1	I. S.
25	6 28.89	1.919	20 45 17.44	125.36	−20 59 53.7	633.3	66.22	14 56.1	54 41.9	I. S.
26	7 13.25	1.782	21 33 42.66	117.11	−16 27 52.0	730.6	63.91	14 50.3	54 20.5	I. S.
27	7 54.78	1.685	22 19 18.16	111.28	−11 19 42.6	805.1	62.20	14 47.4	54 9.8	I. S.
28	8 34.53	1.635	23 3 6.32	108.18	− 5 47 27.3	851.8	61.24	14 47.1	54 8.8	I. S.
29	9 13.60	1.630	23 46 13.06	107.88	− 0 1 38.6	+872.9	61.05	14 49.1	54 16.6	I. S.
30	9 53.08	1.669	0 29 45.04	110.36	+ 5 47 21.8	867.4	61.70	14 53.4	54 32.0	I. S.
31	10 34.08	1.754	1 14 48.72	115.47	11 28 5.1	830.6	63.12	14 59.1	54 52.8	I. S.
Nov. 1	11 17.68	1.883	2 2 28.18	123.21	16 46 48.4	756.2	65.24	15 5.9	55 17.9	I. N. S.
2	12 4.79	2.043	2 53 38.81	133.99	21 26 47.7	635.6	67.84	15 13.4	55 45.7	II. N.
3	12 55.95	2.217	3 48 53.58	143.95	+25 8 23.9	+463.5	70.55	15 21.4	56 15.1	II. N.
4	13 51.01	2.362	4 48 2.91	152.04	27 30 51.5	+240.9	72.83	15 29.6	56 45.0	II. N.
5	14 48.85	2.443	5 49 59.38	156.89	28 16 19.2	− 18.1	74.09	15 37.9	57 15.2	II. N.
6	15 47.55	2.434	6 52 47.29	156.98	27 15 3.0	−287.7	74.02	15 46.0	57 45.3	II. S.
7	16 45.06	2.349	7 54 24.29	151.93	24 28 45.0	−538.7	72.81	15 54.0	58 14.8	II. S.
8	17 40.05	2.231	8 53 29.31	144.06	+20 9 38.5	−748.9	71.04	16 1.8	58 43.3	II. S.
9	18 32.20	2.119	9 49 43.30	137.34	14 36 24.2	−908.0	69.30	16 8.9	59 9.4	II. S.
10	19 22.07	2.044	10 43 40.21	132.86	8 10 36.7	−1012.3	68.08	16 14.9	59 31.5	II. S.
11	20 10.76	2.021	11 36 26.07	131.51	+ 1 14 6.5	−1059.6	67.67	16 19.1	59 46.9	II. S.
12	20 59.60	2.057	12 29 21.03	133.61	− 5 49 17.6	−1046.9	68.16	16 20.8	59 53.1	II. S.
13	21 49.93	2.144	13 23 45.40	138.86	−12 34 51.1	−969.5	69.47	16 19.3	59 47.9	II. S.
14	22 42.83	2.266	14 20 44.64	146.30	−18 35 58.9	−804.6	71.33	16 14.4	59 30.0	II. S.
15	23 38.80	2.394	15 20 48.69	153.86	−23 25 52.9	−615.0	73.20	16 6.2	58 59.7	II. N.
17	0 37.35	2.473	16 23 28.26	158.74	−26 41 18.9	−356.1	74.42	15 55.3	58 19.6	I. N.
18	1 36.89	2.470	17 27 6.69	158.46	−28 8 8.2	− 77.7	74.40	15 42.7	57 33.2	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Nov. 17	0 37.35	2.475	16 23 28.24	158.74	−26 41 18.9	−356.1	74.42	15 55.3	58 19.6	I. N.
18	1 36.89	2.470	17 27 6.69	158.49	−28 8 8.2	− 78.0	74.40	15 42.7	57 33.2	I. N.
19	2 35.14	2.368	18 29 27.94	152.46	−27 45 31.8	+185.2	73.00	15 29.6	56 44.8	I. N.
20	3 30.13	2.205	19 28 32.73	142.51	−25 45 24.4	406 6	70.56	15 17.1	55 58.7	I. S.
21	4 20 84	2.021	20 23 20.41	131.48	−22 26 57.0	576.9	67.74	15 6.0	55 18.4	I. S.
22	5 7.31	1.856	21 13 52.65	121.55	−18 10 20.9	+698.8	65.09	14 57.4	54 46.8	I. S.
23	5 50.25	1.729	22 0 52.75	113.95	−13 13 4.1	781.8	62.98	14 51.5	54 25.2	I. S.
24	6 30.72	1.652	22 45 24.12	109.19	− 7 48 59.5	834.1	61.61	14 48.6	54 14.7	I. S.
25	7 9.88	1.623	23 28 37.08	107.41	− 2 9 5.7	861.3	61.06	14 48.8	54 15.2	I. S.
26	7 48.94	1.642	0 11 43.57	108.64	+ 3 36 54.7	864.8	61.37	14 51.8	54 26.2	I. S.
27	8 29.10	1.712	0 55 55.93	112.99	+ 9 19 9.9	+841.7	62.52	14 57.3	54 46.5	I. S.
28	9 11.54	1.832	1 42 26.00	120.08	14 45 55.4	786.0	64.47	15 5.0	55 14.4	I. S.
29	9 57.39	1.994	2 32 20.90	129.86	19 42 10.3	687.5	67.06	15 14.1	55 48.0	I. S.
30	10 47.48	2.183	3 26 31.53	141.16	23 48 52.4	536.6	69.96	15 24.0	56 24.1	I. N.
Dec. 1	11 42.05	2.358	4 25 11.13	151.81	26 43 45.9	338.5	72.64	15 33.8	57 0.5	I. N.
2	12 40.27	2.478	5 27 30.64	158.95	+28 5 3.3	+ 71.6	74.41	15 43.2	57 35.0	II. N.
3	13 40.22	2.499	6 31 34.02	160.25	27 37 49.0	−308.5	74.77	15 51.3	58 4.9	II. N.
4	14 39.47	2.424	7 34 55.03	155.67	25 19 52.6	−476 0	73.71	15 58.0	58 29.4	II. S.
5	15 36.09	2.290	8 35 38.12	147.63	21 22 43.0	−700.9	71.77	16 3.0	58 47.9	II. S.
6	16 29.32	2.149	9 32 57.05	139.15	16 6 51.3	−868.2	69.67	16 6.6	59 0.9	II. S.
7	17 19.48	2.038	10 27 11.90	132.54	+ 9 55 57.4	−976.5	67.99	16 8.9	59 8.9	II. S.
8	18 7.62	1.962	11 19 24.68	129.08	+ 3 13 14.3	−1028.0	67.07	16 9.7	59 12.2	II. S.
9	18 55.08	1.963	12 10 56.71	129.17	− 3 39 23.3	−1026.1	67.07	16 9.3	59 10.7	II. S.
10	19 43.29	2.043	13 3 13.58	132.77	−10 20 29.3	−970.0	67.98	16 7.5	59 4.2	II. S.
11	20 33.54	2.151	13 57 33.29	139.92	−16 27 54.0	−856.9	69.61	16 4.1	58 52.0	II. S.
12	21 26.74	2.284	14 54 50.99	147.30	−21 38 17.9	−685.1	71.69	15 59.1	58 33.4	II. S.
13	22 23.08	2 403	15 55 16.60	154.48	−25 28 36.1	−458.5	73.34	15 52.2	58 8.2	II. N. S.
14	23 21.62	2.461	16 57 55.38	157.99	−27 39 58.4	−194.5	74.15	15 43.7	57 36.7	II. N.
16	0 20.44	2.424	18 0 56.67	155.68	−28 3 21.1	+ 76.9	73.60	15 33.9	57 0.9	I. N.
17	1 17.26	2.298	19 1 45.67	148.16	−26 42 46.8	339.2	71.76	15 23.5	56 22.8	I. N.
18	2 10.39	2.125	19 58 58.91	137.09	−23 53 26.6	+517.5	69.15	15 13.4	55 45.3	I. S.
19	2 59.21	1.947	20 51 52.91	126.09	−19 55 46.3	669.5	66.38	15 4.2	55 11.4	I. S.
20	3 44.04	1.794	21 40 46.38	117.82	−15 9 50.2	760.3	63.95	14 56.6	54 43.6	I. S.
21	4 25.73	1.687	22 26 31.51	111.99	− 9 52 27.1	821.1	62.17	14 51.3	54 24.0	I. S.
22	5 5.41	1.629	23 10 15.18	107.73	− 4 16 46.7	852.7	61.18	14 48.6	54 14.3	I. S.
23	5 44.26	1.620	23 53 9.20	107.22	+ 1 26 33.2	+860.2	61.04	14 48.8	54 15.3	I. S.
24	6 23.51	1.661	0 36 26.95	109.77	7 8 17.5	844.4	61.77	14 52.2	54 27.6	I. S.
25	7 4.39	1.754	1 21 23.05	115.49	12 38 31.6	801.8	63.35	14 58.5	54 50.6	I. S.
26	7 48.14	1.899	2 9 11.72	124.11	17 45 9.3	724.7	65.71	15 7.5	55 23.5	I. S.
27	8 35.87	2.084	3 1 0.18	135.94	22 12 15.7	602.5	68.63	15 18.6	56 4.3	I. S.
28	9 28.32	2.285	3 57 32.42	147.41	+25 39 26.5	+423.7	71.67	15 31.0	56 50.2	I. S.
29	10 25 38	2.459	4 58 41.78	157.89	27 43 18.8	+186.5	74.20	15 43.9	57 37.5	I. N.
30	11 25.70	2.549	6 3 7.50	163.27	28 2 41.5	− 94.6	75.48	15 55.9	58 21.8	I. N.
31	12 26.87	2.528	7 8 24.41	162.03	+26 26 25.0	−384.9	75.17	16 6.1	58 59.4	II. N.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem Pass Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	23 42.4	18 26 47.31	−24 43 27.7	6.2	2.3	0.17	Feb. 16	1 5.1	22 50 57.71	− 4 30 52.6	11.5	4.3	0.29
1	23 45.5	18 33 47.95	24 43 13.1	6.2	2.3	0.17	17	1 0.1	22 49 57.75	4 21 59.7	11.9	4.5	0.30
2	23 48.5	18 40 49.96	24 41 33.5	6.2	2.3	0.17	18	0 54.6	22 48 22.59	4 17 55.9	12.2	4.6	0.30
3	23 51.6	18 47 53.27	24 38 27.9	6.2	2.3	0.17	19	0 48.6	22 46 14.52	4 18 42.3	12.6	4.8	0.31
4	23 54.8	18 54 57.75	24 33 55.3	6.2	2.3	0.17	20	0 42.0	22 43 36.63	4 24 12.8	12.9	4.9	0.32
5	23 58.0	19 2 3.29	−24 27 54.5	6.2	2.3	0.17	21	0 35.0	22 40 32.85	− 4 34 14.7	13 2	5.0	0.32
7	0 1.1	19 9 9.77	24 20 24.7	6.2	2.3	0.17	22	0 27.7	22 37 7.86	4 48 28.1	13.4	5.1	0.33
8	0 4.3	19 16 17.09	24 11 25.6	6.2	2.3	0.17	23	0 20.1	22 33 26.87	5 6 26.6	13.6	5.1	0.34
9	0 7.5	19 23 25.11	24 0 54.5	6.2	2.3	0.17	24	0 12.2	22 29 35.45	5 27 39.3	13.8	5.2	0.34
10	0 10.7	19 30 33.68	23 48 52.3	6.2	2.3	0.17	25	0 4.4	22 25 39.34	5 51 30.2	14.0	5.3	0.35
11	0 13.9	19 37 42.68	−23 35 17.7	6.2	2.3	0.17	25	23 56.5	22 21 44.23	− 6 17 21.3	14.1	5.3	0.35
12	0 17.1	19 44 51.97	23 20 10.1	6.2	2.3	0.17	26	23 48.9	22 17 55.44	6 44 34.2	14.2	5.3	0.36
13	0 20.3	19 52 1.39	23 3 28.8	6.2	2.4	0.17	27	23 41.3	22 14 17.81	7 12 31.5	14.2	5.3	0.36
14	0 23.5	19 59 10.78	22 45 13.5	6.3	2.4	0.17	28	23 34.0	22 10 55.58	7 40 37.8	14.1	5.3	0.35
15	0 26.7	20 6 19.95	22 25 23.7	6.3	2.4	0.17	Mar. 1	23 27.0	22 7 52.26	8 8 21.4	14.0	5.3	0.35
16	0 29.9	20 13 28.72	−22 3 59.1	6.3	2.4	0.17	2	23 20.4	22 5 10.60	− 8 35 15.0	13.9	5.2	0.35
17	0 33.1	20 20 36.89	21 40 59.5	6.4	2.4	0.17	3	23 14.2	22 2 52.58	9 0 55.1	13.7	5.2	0.35
18	0 36.2	20 27 44.22	21 16 25.1	6.4	2.4	0.17	4	23 8.3	22 0 59.54	9 25 3.7	13.5	5.1	0.34
19	0 39.4	20 34 50.44	20 50 16.3	6.5	2.5	0.18	5	23 3.0	21 59 32.92	9 47 25.8	13.3	5.1	0.34
20	0 42.5	20 41 55.26	20 22 33.6	6.5	2.5	0.18	6	22 58.1	21 58 30.80	10 7 50.8	13.1	5.0	0.34
21	0 45.6	20 48 58.39	−19 53 17.9	6.6	2.5	0.18	7	22 53.4	21 57 55.03	−10 26 11.2	12.9	4.9	0.33
22	0 48.7	20 55 59.47	19 22 30.3	6.6	2.5	0.18	8	22 49.3	21 57 44.33	10 42 22.3	12.7	4.9	0.33
23	0 51.7	21 2 58.96	18 50 12.5	6.7	2.5	0.18	9	22 45.6	21 57 57.89	10 56 21.2	12.5	4.8	0.32
24	0 54.7	21 9 53.71	18 16 26.9	6.8	2.6	0.18	10	22 42.3	21 58 34.72	11 8 7.1	12.3	4.7	0.32
25	0 57.6	21 16 45.90	17 41 16.2	6.8	2.6	0.18	11	22 39.4	21 59 33.64	11 17 40.4	12.1	4.6	0.31
26	1 0.4	21 23 33.99	−17 4 43.9	6.9	2.6	0.18	12	22 36.9	22 0 53.52	−11 25 2.3	11.9	4.5	0.31
27	1 3.2	21 30 17.95	16 26 54.1	7.0	2.7	0.18	13	22 34.6	22 2 33.11	11 30 14.7	11.6	4.4	0.30
28	1 5.9	21 36 54.93	15 47 52.1	7.1	2.7	0.18	14	22 32.5	22 4 31.18	11 33 20.2	11.4	4.4	0.29
29	1 8.4	21 43 26.19	15 7 44.4	7.2	2.7	0.19	15	22 30.9	22 6 46.50	11 34 21.8	11.2	4.3	0.29
30	1 10.9	21 49 49.72	14 26 38.4	7.4	2.8	0.19	16	22 29.5	22 9 17.97	11 33 22.3	11.0	4.2	0.28
31	1 13.2	21 56 4.53	−13 44 43.1	7.5	2.8	0.19	17	22 28.4	22 12 4.46	−11 30 25.0	10.8	4.1	0.28
Feb. 1	1 15.3	22 2 9.24	13 2 9.2	7.7	2.9	0.19	18	22 27.4	22 15 4.90	11 25 38.9	10.6	4.0	0.27
2	1 17.2	22 8 2.30	12 19 8.6	7.8	2.9	0.20	19	22 26.6	22 18 18.33	11 18 49.1	10.5	4.0	0.27
3	1 19.0	22 13 49.09	11 35 55.3	8.0	3.0	0.20	20	22 26.1	22 21 43.89	11 10 16.4	10.3	3.9	0.26
4	1 20.5	22 19 6.53	10 52 45.7	8.2	3.1	0.21	21	22 25.8	22 25 20.54	10 59 57.8	10.1	3.8	0.26
5	1 21.6	22 24 13.80	−10 9 57.5	8.4	3.2	0.21	22	22 25.7	22 29 7.71	−10 47 56.2	10.0	3.7	0.26
6	1 22.5	22 29 1.64	9 27 59.3	8.6	3.3	0.22	23	22 25.7	22 33 4.59	10 34 14.4	9.8	3.7	0.25
7	1 23.0	22 33 27.76	8 46 45.5	8.9	3.4	0.22	24	22 25.8	22 37 10.52	10 18 54.8	9.7	3.6	0.25
8	1 23.1	22 37 29.77	8 7 6.5	9.1	3.4	0.23	25	22 26.1	22 41 24.90	10 1 59.8	9.5	3.6	0.24
9	1 22.7	22 41 5.21	7 29 18.0	9.4	3.5	0.23	26	22 26.5	22 45 47.24	9 43 31.9	9.3	3.5	0.24
10	1 21.9	22 44 11.73	− 6 53 45.0	9.6	3.6	0.24	27	22 27.0	22 50 17.05	− 9 23 33.2	9.2	3.5	0.24
11	1 20.6	22 46 47.09	6 20 53.3	9.9	3.7	0.25	28	22 27.7	22 54 53.86	9 2 5.9	9.0	3.4	0.23
12	1 18.7	22 48 49.22	5 51 8.3	10.2	3.8	0.25	29	22 28.6	22 59 37.28	8 39 11.9	8.9	3.4	0.23
13	1 16.2	22 50 16.37	5 24 54.5	10.5	4.0	0.26	30	22 29.5	23 4 26.97	8 14 53.1	8.8	3.3	0.22
14	1 13.1	22 51 7.26	5 2 34.5	10.9	4.1	0.27	31	22 30.4	23 9 22.64	7 49 11.4	8.7	3.3	0.22
15	1 9.4	22 51 21.08	− 4 44 28.4	11.2	4.2	0.28	32	22 31.5	23 14 24.05	− 7 22 8.6	8.6	3.3	0.22
16	1 5.1	22 50 57.71	− 4 30 52.6	11.5	4.3	0.29	33	22 32.7	23 19 30.98	− 6 53 46.3	8.5	3.2	0.21

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	M.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	22 31.5	23 14 24.05	− 7 22 8.6	8.6	3.3	0.22	May 18	1 0.1	4 44 46.52	+24 18 5.6	7.6	2.9	0.21
2	22 32.7	23 19 30.96	6 53 46.3	8.5	3.2	0.21	19	1 4.3	4 52 51.26	24 36 36.3	7.8	2.9	0.21
3	22 34.0	23 24 43.22	6 24 6.1	8.3	3.2	0.21	20	1 8.2	5 0 46.17	24 52 33.9	7.9	3.0	0.22
4	22 35.3	23 30 0.63	5 53 9.7	8.2	3.2	0.21	21	1 12.0	5 8 30.46	25 6 2.1	8.0	3.0	0.22
5	22 36.7	23 35 23.11	5 20 58.3	8.1	3.1	0.21	22	1 15.5	5 16 3.42	25 17 5.4	8.2	3.0	0.22
6	22 38.2	23 40 50.57	− 4 47 33.7	8.0	3.0	0.20	23	1 18.9	5 23 24.41	+25 25 49.1	8.3	3.1	0.23
7	22 39.8	23 46 22.95	4 12 57.4	7.9	3.0	0.20	24	1 22.2	5 30 32.85	25 32 18.6	8.5	3.1	0.24
8	22 41.5	23 52 0.22	3 37 10.7	7.9	3.0	0.20	25	1 25.1	5 37 28.22	25 36 39.7	8.6	3.2	0.24
9	22 43.2	23 57 42.39	3 0 15.2	7.8	2.9	0.19	26	1 27.9	5 44 10.06	25 38 58.6	8.8	3.3	0.25
10	22 45.0	0 3 29.48	2 22 12.3	7.7	2.9	0.19	27	1 30.4	5 50 37.93	25 39 21.8	9.0	3.4	0.25
11	22 46.9	0 9 21.56	− 1 43 3.5	7.6	2.9	0.19	28	1 32.7	5 56 51.44	+25 37 55.7	9.2	3.4	0.26
12	22 48.9	0 15 18.69	1 2 50.4	7.5	2.9	0.19	29	1 34.7	6 2 50.22	25 34 46.6	9.4	3.5	0.26
13	22 51.1	0 21 20.97	− 0 21 34.7	7.5	2.8	0.19	30	1 36.5	6 8 33.90	25 30 1.1	9.6	3.6	0.27
14	22 53.3	0 27 28.53	+ 0 20 41.7	7.4	2.8	0.18	31	1 38.0	6 14 2.13	25 23 45.6	9.8	3.7	0.27
15	22 55.6	0 33 41.50	1 3 57.2	7.3	2.8	0.18	June 1	1 39.3	6 19 14.55	25 16 6.5	10.0	3.8	0.27
16	22 57.9	0 40 0.06	+ 1 48 10.0	7.2	2.7	0.18	2	1 40.2	6 24 10.86	+25 7 9.8	10.3	3.9	0.28
17	23 0.3	0 46 24.37	2 33 17.6	7.2	2.7	0.18	3	1 40.9	6 28 50.73	24 57 1.8	10.5	3.9	0.28
18	23 2.9	0 52 54.65	3 19 17.7	7.1	2.7	0.18	4	1 41.4	6 33 13.82	24 45 48.9	10.8	4.0	0.29
19	23 5.6	0 59 31.10	4 6 7.6	7.1	2.6	0.18	5	1 41.5	6 37 19.80	24 33 37.1	11.1	4.1	0.30
20	23 8.3	1 6 13.95	4 53 44.6	7.0	2.6	0.18	6	1 41.5	6 41 8.33	24 20 32.3	11.4	4.2	0.30
21	23 11.1	1 13 3.41	+ 5 42 5.5	7.0	2.6	0.18	7	1 41.1	6 44 39.09	+24 6 40.4	11.6	4.3	0.31
22	23 14.2	1 19 59.71	6 31 6.4	6.9	2.6	0.18	8	1 40.3	6 47 51.76	23 52 7.0	11.8	4.4	0.32
23	23 17.3	1 27 3.08	7 20 43.4	6.9	2.6	0.17	9	1 39.3	6 50 46.03	23 36 58.0	12.0	4.5	0.32
24	23 20.5	1 34 13.76	8 10 51.8	6.8	2.6	0.17	10	1 37.9	6 53 21.56	23 21 19.2	12.2	4.6	0.33
25	23 23.8	1 41 31.93	9 1 26.3	6.8	2.6	0.17	11	1 36.2	6 55 38.07	23 5 16.1	12.5	4.7	0.34
26	23 27.4	1 48 57.75	+ 9 52 21.2	6.8	2.5	0.17	12	1 34.3	6 57 35.34	+22 48 54.3	12.7	4.8	0.35
27	23 31.0	1 56 31.37	10 43 29.9	6.8	2.5	0.17	13	1 32.0	6 59 13.14	22 32 19.3	13.0	4.9	0.35
28	23 34.7	2 4 12.83	11 34 44.8	6.7	2.5	0.17	14	1 29.3	7 0 31.27	22 15 36.8	13.2	5.0	0.36
29	23 38.5	2 12 2.17	12 25 58.0	6.7	2.5	0.17	15	1 26.4	7 1 29.65	21 58 52.0	13.5	5.1	0.37
30	23 42.6	2 19 59.33	13 17 0.2	6.7	2.5	0.17	16	1 23.1	7 2 8.26	21 42 10.4	13.7	5.2	0.37
May 1	23 46.7	2 28 4.11	+14 7 41.1	6.7	2.5	0.17	17	1 19.5	7 2 27.19	+21 25 37.4	14.0	5.3	0.38
2	23 50.9	2 36 16.24	14 57 50.5	6.7	2.5	0.17	18	1 15.5	7 2 26.60	21 9 18.4	14.2	5.4	0.38
3	23 55.2	2 44 35.34	15 47 16.8	6.7	2.5	0.18	19	1 11.3	7 2 6.82	20 53 18.8	14.5	5.5	0.39
4	23 59.7	2 53 0.85	16 35 47.6	6.7	2.5	0.18	20	1 6.7	7 1 28.34	20 37 43.8	14.7	5.6	0.39
6	0 4.3	3 1 32.10	17 23 10.9	6.7	2.5	0.18	21	1 1.8	7 0 31.84	20 22 38.9	14.9	5.6	0.40
7	0 9.0	3 10 8.28	+18 9 13.7	6.8	2.5	0.18	22	0 56.9	6 59 18.19	+20 8 9.2	15.1	5.7	0.40
8	0 13.7	3 18 48.45	18 53 43.5	6.8	2.5	0.18	23	0 51.2	6 57 48.42	19 54 19.9	15.3	5.8	0.41
9	0 18.4	3 27 31.51	19 36 28.1	6.8	2.6	0.19	24	0 45.5	6 56 3.79	19 41 15.9	15.4	5.8	0.41
10	0 23.2	3 36 16.34	20 17 16.1	6.9	2.6	0.19	25	0 39.6	6 54 5.87	19 29 2.3	15.6	5.9	0.42
11	0 28.0	3 45 1.69	20 55 57.2	6.9	2.6	0.19	26	0 33.7	6 51 56.37	19 17 43.8	15.7	5.9	0.42
12	0 32.8	3 53 46.25	+21 32 22.5	7.0	2.7	0.19	27	0 27.3	6 49 37.24	+19 7 24.9	15.8	5.9	0.42
13	0 37.6	4 2 28.74	22 6 24.1	7.1	2.7	0.19	28	0 20.9	6 47 10.59	18 58 9.7	15.8	6.0	0.42
14	0 42.3	4 11 7.87	22 37 56.1	7.2	2.7	0.20	29	0 14.5	6 44 38.71	18 50 2.5	15.7	6.0	0.42
15	0 46.9	4 19 42.39	23 6 54.2	7.3	2.8	0.20	30	0 8.0	6 42 4.03	18 43 6.6	15.7	5.9	0.42
16	0 51.5	4 28 11.09	23 33 15.7	7.4	2.8	0.20	31	0 1.5	6 39 29.07	18 37 24.9	15.6	5.9	0.42
17	0 55.8	4 36 32 81	+23 56 59.3	7.5	2.8	0.20	31	23 55.0	6 36 56.32	+18 33 0.0	15.5	5.9	0.41
18	1 0.1	4 44 46.52	+24 18 5.6	7.6	2.9	0.21	32	23 48.7	6 34 28.31	+18 29 53.5	15.4	5.8	0.41

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	0 1.5	6 39 29.07	+18 37 24.9	15.6	5.9	0.42	Aug. 16	0 2.1	9 41 22.46	+15 43 6.9	6.6	2.5	0.17
1	23 55.0	6 36 56.32	18 33 0.0	15.5	5.9	0.41	17	0 6.0	9 49 16.67	15 3 26.1	6.5	2.5	0.17
2	23 48.7	6 34 28.31	18 29 53.5	15.4	5.8	0.41	18	0 9.8	9 57 3.52	14 22 32.1	6.5	2.5	0.17
3	23 42.4	6 32 7.54	18 28 6.6	15.3	5.8	0.40	19	0 13.5	10 4 42.75	13 40 33.8	6.5	2.5	0.17
4	23 36.2	6 29 56.38	18 27 39.8	15.1	5.7	0.40	20	0 17.1	10 12 14.22	12 57 39.6	6.5	2.5	0.17
5	23 30.2	6 27 57.05	+18 28 32.5	14.9	5.6	0.39	21	0 20.5	10 19 37.89	+12 13 57.5	6.5	2.5	0.17
6	23 24.6	6 26 11.61	18 30 43.6	14.6	5.5	0.39	22	0 23.8	10 26 53.78	11 29 35.0	6.5	2.5	0.17
7	23 19.2	6 24 41.97	18 34 11.0	14.4	5.5	0.38	23	0 27.0	10 34 1.98	10 44 38.7	6.5	2.5	0.17
8	23 14.1	6 23 29.79	18 38 51.5	14.1	5.4	0.38	24	0 30.1	10 41 2.61	9 59 14.8	6.5	2.5	0.17
9	23 9.3	6 22 36.51	18 44 41.4	13.9	5.3	0.37	25	0 33.0	10 47 55.86	9 13 29.0	6.5	2.5	0.17
10	23 4.8	6 22 3.36	+18 51 36.5	13.6	5.2	0.36	26	0 35.8	10 54 41.93	+ 8 27 26.6	6.5	2.5	0.17
11	23 0.8	6 21 51.39	18 59 31.6	13.3	5.1	0.36	27	0 38.5	11 1 21.05	7 41 12.5	6.5	2.5	0.17
12	22 56.9	6 22 1.48	19 8 20.6	13.0	4.9	0.35	28	0 41.2	11 7 53.45	6 54 50.9	6.5	2.5	0.17
13	22 53.5	6 22 34.32	19 17 56.9	12.7	4.8	0.34	29	0 43.6	11 14 19.38	6 8 25.8	6.5	2.5	0.17
14	22 50.5	6 23 30.43	19 28 13.5	12.4	4.7	0.33	30	0 46.0	11 20 39.08	5 22 0.9	6.5	2.5	0.17
15	22 47.9	6 24 50.19	+19 39 2.7	12.1	4.6	0.32	31	0 48.3	11 26 52.80	+ 4 35 39.7	6.6	2.5	0.17
16	22 45.7	6 26 33.89	19 50 16.4	11.8	4.5	0.31	Sept. 1	0 50.4	11 33 0.78	3 49 25.1	6.6	2.5	0.17
17	22 43.9	6 28 41.69	20 1 45.8	11.5	4.3	0.31	2	0 52.5	11 39 3.25	3 3 19.9	6.7	2.5	0.17
18	22 42.4	6 31 13.64	20 13 21.7	11.2	4.2	0.30	3	0 54.5	11 45 0.44	2 17 26.8	6.7	2.5	0.17
19	22 41.5	6 34 9.75	20 24 54.3	10.9	4.1	0.29	4	0 56.4	11 50 52.57	1 31 48.3	6.7	2.5	0.17
20	22 40.9	6 37 29.97	+20 36 13.6	10.6	4.0	0.29	5	0 58.3	11 56 39.86	+ 0 46 26.6	6.8	2.5	0.17
21	22 40.7	6 41 14.13	20 47 9.4	10.3	3.9	0.28	6	1 0.1	12 2 22.48	+ 0 1 24.0	6.8	2.6	0.17
22	22 40.9	6 45 21.98	20 57 30.7	10.1	3.8	0.27	7	1 1.8	12 8 0.61	− 0 43 17.7	6.9	2.6	0.17
23	22 41.4	6 49 53.23	21 7 6.0	9.8	3.7	0.27	8	1 3.4	12 13 34.43	1 27 36.5	6.9	2.6	0.17
24	22 42.3	6 54 47.50	21 15 44.0	9.5	3.6	0.26	9	1 4.9	12 19 4.09	2 11 30.5	6.9	2.6	0.17
25	22 43.7	7 0 4.30	+21 23 13.0	9.3	3.5	0.26	10	1 6.4	12 24 29.71	− 2 54 58.0	7.0	2.6	0.18
26	22 45.4	7 5 43.01	21 29 21.1	9.0	3.4	0.25	11	1 7.8	12 29 51.41	3 37 57.0	7.0	2.7	0.18
27	22 47.5	7 11 42.92	21 33 56.6	8.8	3.4	0.24	12	1 9.2	12 35 9.28	4 20 26.0	7.1	2.7	0.18
28	22 49.8	7 18 3.19	21 36 47.7	8.5	3.3	0.24	13	1 10.5	12 40 23.39	5 2 23.1	7.1	2.7	0.18
29	22 52.5	7 24 42.76	21 37 43.1	8.3	3.2	0.23	14	1 11.7	12 45 33.80	5 43 46.9	7.2	2.7	0.18
30	22 55.6	7 31 40.48	+21 36 32.6	8.1	3.1	0.22	15	1 12.8	12 50 40.55	− 6 24 35.5	7.2	2.7	0.18
31	22 58.8	7 38 54.99	21 33 6.3	8.0	3.0	0.22	16	1 13.9	12 55 43.66	7 4 47.2	7.3	2.8	0.19
Aug. 1	23 2.4	7 46 24.78	21 27 15.9	7.8	3.0	0.21	17	1 15.0	13 0 43.09	7 44 20.0	7.4	2.8	0.19
2	23 6.1	7 54 8.17	21 18 54.4	7.6	2.9	0.21	18	1 16.0	13 5 38.79	8 23 12.1	7.5	2.8	0.19
3	23 10.2	8 2 3.38	21 7 56.5	7.5	2.8	0.20	19	1 17.0	13 10 30.71	9 1 21.7	7.6	2.9	0.19
4	23 14.3	8 10 8.51	+20 54 18.7	7.4	2.8	0.20	20	1 17.8	13 15 18.73	− 9 38 46.5	7.7	2.9	0.19
5	23 18.5	8 18 21.63	20 37 59.5	7.3	2.7	0.20	21	1 18.5	13 20 2.72	10 15 24.4	7.7	2.9	0.20
6	23 22.9	8 26 40.77	20 18 59.9	7.2	2.7	0.19	22	1 19.2	13 24 42.50	10 51 13.5	7.8	3.0	0.20
7	23 27.4	8 35 3.97	19 57 22.7	7.1	2.6	0.19	23	1 19.9	13 29 17.85	11 26 11.3	7.9	3.0	0.20
8	23 31.9	8 43 29.33	19 33 12.0	7.0	2.6	0.19	24	1 20.5	13 33 48.52	12 0 15.1	8.0	3.0	0.20
9	23 36.3	8 51 55.15	+19 6 33.8	6.9	2.6	0.18	25	1 21.0	13 38 14.19	−12 33 22.1	8.1	3.1	0.21
10	23 40.8	9 0 19.84	18 37 35.7	6.8	2.6	0.18	26	1 21.4	13 42 34.51	13 5 29.3	8.3	3.1	0.21
11	23 45.1	9 8 41.95	18 6 26.3	6.8	2.5	0.18	27	1 21.6	13 46 49.05	13 36 33.6	8.4	3.2	0.22
12	23 49.5	9 17 0.23	17 33 14.9	6.7	2.5	0.18	28	1 21.8	13 50 57.32	14 6 31.3	8.5	3.2	0.22
13	23 53.8	9 25 13.63	16 58 11.3	6.6	2.5	0.17	29	1 21.9	13 54 58.76	14 35 18.8	8.6	3.3	0.22
14	23 58.0	9 33 21.27	+16 21 25.3	6.6	2.5	0.17	30	1 21.9	13 58 52.75	−15 2 51.8	8.8	3.3	0.23
16	0 2.1	9 41 22.46	+15 43 6.9	6.6	2.5	0.17	31	1 21.8	14 2 38.56	−15 29 5.7	8.9	3.4	0.23

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	1 21.8	14 2 38.56	−15 29 5.7	8.9	3.4	0.23	Nov. 15	22 36.5	14 18 20.94	−11 38 30.4	7.8	2.9	0.20
2	1 21.5	14 6 15.36	15 53 55.6	9.0	3.4	0.24	16	22 37.8	14 23 36.42	12 9 54.3	7.7	2.9	0.20
3	1 20.9	14 9 42.26	16 17 16.0	9.2	3.5	0.24	17	22 39.2	14 29 0.21	12 41 54.6	7.6	2.9	0.20
4	1 20.3	14 12 58.23	16 39 0.2	9.4	3.5	0.24	18	22 40.9	14 34 31.31	13 14 18.9	7.4	2.8	0.19
5	1 19.4	14 16 2.12	16 59 1.4	9.6	3.6	0.25	19	22 42.6	14 40 8.86	13 46 56.1	7.2	2.8	0.19
6	1 18.3	14 18 52.68	−17 17 12.2	9.7	3.7	0.25	20	22 44.3	14 45 52.13	−14 19 37.2	7.2	2.7	0.19
7	1 16.9	14 21 28.50	17 33 24.0	9.9	3.7	0.26	21	22 46.1	14 51 40.49	14 52 13.8	7.1	2.7	0.18
8	1 15.3	14 23 48.06	17 47 27.2	10.1	3.8	0.27	22	22 48.1	14 57 33.43	15 24 38.3	7.0	2.7	0.18
9	1 13.4	14 25 49.73	17 59 11.5	10.3	3.8	0.27	23	22 50.1	15 3 30.55	15 56 44.3	6.9	2.6	0.18
10	1 11.1	14 27 31.73	18 8 25.4	10.5	3.9	0.28	24	22 52.1	15 9 31.47	16 28 26.1	6.9	2.6	0.18
11	1 8.5	14 28 52.19	−18 14 56.0	10.8	4.0	0.28	25	22 54.3	15 15 35.89	−16 59 38.6	6.8	2.5	0.18
12	1 5.5	14 29 49.19	18 18 29.6	11.0	4.1	0.29	26	22 56.5	15 21 43.58	17 30 17.3	6.7	2.5	0.18
13	1 2.1	14 30 20.86	18 18 51.6	11.2	4.2	0.30	27	22 58.7	15 27 54.29	18 0 18.1	6.6	2.5	0.18
14	0 58.4	14 30 25.25	18 15 46.4	11.4	4.3	0.30	28	23 1.0	15 34 7.90	18 29 37.4	6.6	2.5	0.18
15	0 53.9	14 30 0.68	18 8 58.4	11.7	4.4	0.31	29	23 3.3	15 40 24.26	18 58 12.0	6.5	2.4	0.17
16	0 49.1	14 29 5.68	−17 58 12.4	11.9	4.5	0.32	30	23 5.7	15 46 43.27	−19 25 58.9	6.5	2.4	0.17
17	0 43.7	14 27 39.26	17 43 14.5	12.2	4.6	0.32	Dec. 1	23 8.1	15 53 4.83	19 52 55.5	6.4	2.4	0.17
18	0 37.8	14 25 41.03	17 23 53.6	12.4	4.7	0.33	2	23 10.5	15 59 28.86	20 18 59.2	6.4	2.4	0.17
19	0 31.4	14 23 11.39	17 0 3.0	12.6	4.8	0.33	3	23 13.0	16 5 55.31	20 44 7.6	6.4	2.4	0.17
20	0 24.6	14 20 11.76	16 31 42.5	12.7	4.8	0.33	4	23 15.5	16 12 24.12	21 8 18.7	6.3	2.4	0.17
21	0 17.2	14 16 44.76	−15 59 1.0	12.9	4.9	0.34	5	23 18.1	16 18 55.25	−21 31 30.3	6.3	2.4	0.17
22	0 9.4	14 12 54.25	15 22 17.9	13.1	4.9	0.34	6	23 20.8	16 25 28.67	21 53 40.4	6.2	2.4	0.17
23	0 1.4	14 8 45.46	14 42 5.3	13.2	5.0	0.34	7	23 23.4	16 32 4.35	22 14 47.5	6.2	2.4	0.17
23	23 53.0	14 4 24.77	13 59 8.1	13.3	5.0	0.34	8	23 26.1	16 38 42.25	22 34 49.7	6.2	2.3	0.17
24	23 44.7	13 59 59.64	13 14 23.8	13.2	5.0	0.34	9	23 28.8	16 45 22.31	22 53 45.2	6.2	2.3	0.17
25	23 36.4	13 55 38.03	−12 29 0.1	13.1	5.0	0.33	10	23 31.6	16 52 4.50	−23 11 32.5	6.2	2.3	0.17
26	23 28.3	13 51 28.07	11 44 9.8	12.9	4.9	0.33	11	23 34.4	16 58 48.80	23 28 10.0	6.1	2.3	0.17
27	23 20.6	13 47 37.57	11 1 7.6	12.8	4.9	0.33	12	23 37.2	17 5 35.17	23 43 36.0	6.1	2.3	0.17
28	23 13.3	13 44 13.45	10 21 3.9	12.6	4.8	0.32	13	23 40.0	17 12 23.56	23 57 49.2	6.1	2.3	0.17
29	23 6.5	13 41 21.53	9 45 0.4	12.3	4.7	0.32	14	23 42.9	17 19 13.91	24 10 48.0	6.1	2.3	0.17
30	23 0.3	13 39 6.19	− 9 13 46.5	12.0	4.6	0.31	15	23 45.8	17 26 6 17	−24 22 31.0	6.1	2.3	0.17
31	22 54.7	13 37 30.24	8 47 57.3	11.6	4.5	0.30	16	23 48.7	17 33 0.27	24 32 56.8	6.1	2.3	0.17
Nov. 1	22 49.9	13 36 35.06	8 27 53.7	11.3	4.3	0.29	17	23 51.7	17 39 56.15	24 42 4.2	6.1	2.3	0.17
2	22 45.7	13 36 20.77	8 13 43.1	11.0	4.2	0.28	18	23 54.7	17 46 53.73	24 49 51.5	6.1	2.3	0.17
3	22 42.2	13 36 46.32	8 5 20.7	10.7	4.1	0.27	19	23 57.8	17 53 52.92	24 56 17.5	6.1	2.3	0.17
4	22 39.3	13 37 49.86	− 8 2 32.7	10.4	3.9	0.27	21	0 0.9	18 0 53.64	−25 1 20.8	6.1	2.3	0.17
5	22 37.1	13 39 28.96	8 4 58.5	10.1	3.8	0.26	22	0 4.0	18 7 55.78	25 5 0.4	6.1	2.3	0.17
6	22 35.4	13 41 40.83	8 12 13.0	9.8	3.7	0.25	23	0 7.1	18 14 59.21	25 7 15.0	6.1	2.3	0.17
7	22 34.1	13 44 22.50	8 23 47.9	9.6	3.6	0.24	24	0 10.2	18 22 3.85	25 8 3.1	6.2	2.3	0.17
8	22 33.3	13 47 30.95	8 39 14.6	9.3	3.5	0.24	25	0 13.3	18 29 9.54	25 7 23.7	6.2	2.3	0.17
9	22 32.8	13 51 3.30	− 8 58 4.6	9.1	3.4	0.23	26	0 16.5	18 36 16.15	−25 5 15.7	6.2	2.3	0.17
10	22 32.8	13 54 56.78	9 19 50.1	8.8	3.3	0.23	27	0 19.6	18 43 23.53	25 1 38.1	6.2	2.3	0.17
11	22 33.1	13 59 8.83	9 44 5.2	8.5	3.2	0.22	28	0 22.8	18 50 31.51	24 56 29.8	6.3	2.4	0.17
12	22 33.6	14 3 37.20	10 10 25.7	8.3	3.1	0.22	29	0 26.0	18 57 39.90	24 49 49.8	6.3	2.4	0.17
13	22 34.4	14 8 19.86	10 38 29.6	8.1	3.1	0.21	30	0 29.2	19 4 48.52	24 41 37.2	6.3	2.4	0.18
14	22 35.3	14 13 14.97	−11 7 57.0	8.0	3.0	0.21	31	0 32.4	19 11 57.15	−24 31 51.4	6.4	2.4	0.18
15	22 36.5	14 18 20.94	−11 38 30.4	7.8	2.9	0.20	32	0 35.6	19 19 5.56	−24 20 31.6	6.4	2.4	0.18

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	0 36.1	19 16 42.67	−23 16 10.5	5.2	5.1	0.37	Feb. 15	1 25.7	23 7 48.36	− 7 6 57.4	5.5	5.4	0.36
1	0 37.6	19 22 9.29	23 7 46.2	5.2	5.1	0.37	16	1 26.4	23 12 24.21	6 37 0.9	5.6	5.4	0.36
2	0 39.1	19 27 35.14	22 58 39.3	5.2	5.1	0.37	17	1 27.0	23 16 59.37	6 6 54.0	5.6	5.4	0.36
3	0 40.6	19 33 0.19	22 48 50.3	5.2	5.1	0.37	18	1 27.7	23 21 33.80	5 36 37.4	5.6	5.4	0.36
4	0 42.1	19 38 24.35	22 38 19.4	5.3	5.1	0.37	19	1 28.3	23 26 7.79	5 6 11.8	5.6	5.4	0.36
5	0 43.5	19 43 47.60	−22 27 7.2	5.3	5.1	0.37	20	1 28.9	23 30 41.12	− 4 35 38.1	5.6	5.4	0.36
6	0 44.9	19 49 9.89	22 15 14.1	5.3	5.1	0.37	21	1 29.5	23 35 13.92	4 4 57.1	5.6	5.4	0.36
7	0 46.3	19 54 31.19	22 2 40.7	5.3	5.1	0.37	22	1 30.1	23 39 46.23	3 34 9.4	5.6	5.4	0.36
8	0 47.7	19 59 51.45	21 49 27.5	5.3	5.1	0.37	23	1 30.7	23 44 18.06	3 3 15.9	5.6	5.5	0.36
9	0 49.1	20 5 10.63	21 35 35.0	5.3	5.1	0.37	24	1 31.3	23 48 49.53	2 32 17.3	5.7	5.5	0.36
10	0 50.4	20 10 28.71	−21 21 3.7	5.3	5.1	0.37	25	1 31.9	23 53 20.61	− 2 1 14.3	5.7	5.5	0.36
11	0 51.7	20 15 45.65	21 5 54.4	5.3	5.1	0.36	26	1 32.5	23 57 51.37	1 30 7.8	5.7	5.5	0.37
12	0 53.1	20 21 1.42	20 50 7.5	5.3	5.1	0.36	27	1 33.0	0 2 21.83	0 58 58.5	5.7	5.5	0.37
13	0 54.4	20 26 16.01	20 33 43.8	5.3	5.1	0.36	28	1 33.6	0 6 52.04	− 0 27 47.2	5.7	5.5	0.37
14	0 55.7	20 31 29.38	20 16 43.8	5.3	5.1	0.36	Mar. 1	1 34.1	0 11 22.03	+ 0 3 25.5	5.7	5.5	0.37
15	0 56.9	20 36 41.51	−19 59 8.1	5.3	5.1	0.36	2	1 34.7	0 15 51.86	+ 0 34 38.7	5.7	5.5	0.37
16	0 58.1	20 41 52.41	19 40 57.6	5.3	5.1	0.36	3	1 35.2	0 20 21.55	1 5 51.6	5.7	5.6	0.37
17	0 59.3	20 47 2.05	19 22 12.8	5.3	5.1	0.36	4	1 35.8	0 24 51.15	1 37 3.6	5.8	5.6	0.37
18	1 0.5	20 52 10.42	19 2 54.4	5.3	5.1	0.36	5	1 36.3	0 29 20.72	2 8 13.9	5.8	5.6	0.37
19	1 1.7	20 57 17.51	18 43 3.1	5.3	5.2	0.36	6	1 36.9	0 33 50.29	2 39 21.8	5.8	5.6	0.37
20	1 2.9	21 2 23.32	−18 22 39.7	5.3	5.2	0.36	7	1 37.4	0 38 19.90	+ 3 10 26.6	5.8	5.6	0.37
21	1 4.1	21 7 27.83	18 1 45.0	5.3	5.2	0.36	8	1 38.0	0 42 49.59	3 41 27.6	5.8	5.6	0.38
22	1 5.2	21 12 31.04	17 40 19.5	5.3	5.2	0.36	9	1 38.5	0 47 19.39	4 12 23.9	5.8	5.6	0.38
23	1 6.3	21 17 32.96	17 18 24.2	5.4	5.2	0.36	10	1 39.1	0 51 49.36	4 43 14.7	5.9	5.7	0.38
24	1 7.3	21 22 33.58	16 55 59.8	5.4	5.2	0.36	11	1 39.6	0 56 19.54	5 13 59.4	5.9	5.7	0.38
25	1 8.3	21 27 32.90	−16 33 7.1	5.4	5.2	0.36	12	1 40.2	1 0 49.97	+ 5 44 37.4	5.9	5.7	0.38
26	1 9.3	21 32 30.95	16 9 46.8	5.4	5.2	0.36	13	1 40.8	1 5 20.69	6 15 8.1	5.9	5.7	0.38
27	1 10.3	21 37 27.72	15 45 59.8	5.4	5.2	0.36	14	1 41.4	1 9 51.76	6 45 30.6	5.9	5.7	0.38
28	1 11.3	21 42 23.22	15 21 46.7	5.4	5.2	0.36	15	1 41.9	1 14 23.20	7 15 44.3	5.9	5.7	0.39
29	1 12.3	21 47 17.45	14 57 8.5	5.4	5.2	0.36	16	1 42.5	1 18 55.05	7 45 48.2	6.0	5.8	0.39
30	1 13.2	21 52 10.44	−14 32 5.9	5.4	5.2	0.36	17	1 43.0	1 23 27.37	+ 8 15 41.8	6.0	5.8	0.39
31	1 14.2	21 57 2.20	14 6 39.7	5.4	5.2	0.36	18	1 43.6	1 28 0.17	8 45 24.3	6.0	5.8	0.39
Feb. 1	1 15.1	22 1 52.75	13 40 51.0	5.4	5.2	0.36	19	1 44.2	1 32 33.51	9 14 55.0	6.0	5.8	0.39
2	1 16.0	22 6 42.10	13 14 40.2	5.4	5.2	0.36	20	1 44.8	1 37 7.42	9 44 13.1	6.0	5.8	0.39
3	1 16.9	22 11 30.29	12 48 8.2	5.4	5.3	0.36	21	1 45.5	1 41 41.93	10 13 17.9	6.0	5.8	0.40
4	1 17.7	22 16 17.34	−12 21 15.7	5.4	5.3	0.36	22	1 46.1	1 46 17.08	+10 42 8.8	6.1	5.9	0.40
5	1 18.5	22 21 3.28	11 54 3.7	5.5	5.3	0.36	23	1 46.8	1 50 52.90	11 10 44.7	6.1	5.9	0.40
6	1 19.3	22 25 48.13	11 26 33.0	5.5	5.3	0.36	24	1 47.4	1 55 29.41	11 39 5.1	6.1	5.9	0.40
7	1 20.1	22 30 31.93	10 58 44.2	5.5	5.3	0.36	25	1 48.1	2 0 6.65	12 7 9.2	6.1	5.9	0.40
8	1 20.9	22 35 14.71	10 30 38.1	5.5	5.3	0.36	26	1 48.8	2 4 44.66	12 34 56.4	6.1	5.9	0.41
9	1 21.6	22 39 56.49	−10 2 15.6	5.5	5.3	0.36	27	1 49.6	2 9 23.45	+13 2 25.6	6.2	6.0	0.41
10	1 22.3	22 44 37.31	9 33 37.3	5.5	5.3	0.36	28	1 50.3	2 14 3.05	13 29 36.2	6.2	6.0	0.41
11	1 23.0	22 49 17.20	9 4 44.1	5.5	5.3	0.36	29	1 51.1	2 18 43.47	13 56 27.6	6.2	6.0	0.41
12	1 23.7	22 53 56.22	8 35 36.9	5.5	5.3	0.36	30	1 51.8	2 23 24.74	14 22 58.9	6.2	6.0	0.41
13	1 24.4	22 58 34.40	8 6 16.1	5.5	5.3	0.36	31	1 52.6	2 28 6.88	14 49 9.3	6.2	6.0	0.42
14	1 25.1	23 3 11.77	− 7 36 42.6	5.5	5.3	0.36	32	1 53.3	2 32 49.90	+15 14 58.2	6.2	6.1	0.42
15	1 25.7	23 7 48.36	− 7 6 57.4	5.5	5.4	0.36	33	1 54.1	2 37 33.84	+15 40 24.7	6.3	6.1	0.42

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	1 53.3	2 32 49.90	+15 14 58.2	6.2	6.1	0.42	May 17	2 43.0	6 24 6.05	+25 29 18.0	7.9	7.6	0.56
2	1 54.1	2 37 33.84	15 40 24.7	6.3	6.1	0.42	18	2 44.2	6 29 13.17	25 27 24.4	7.9	7.7	0.56
3	1 54.9	2 42 18.70	16 5 28.2	6.3	6.1	0.42	19	2 45.4	6 34 19.61	25 24 49.4	8.0	7.7	0.57
4	1 55.7	2 47 4.49	16 30 7.9	6.3	6.1	0.42	20	2 46.5	6 39 25.29	25 21 33.4	8.0	7.8	0.57
5	1 56.5	2 51 51.23	16 54 23.0	6.4	6.2	0.43	21	2 47.7	6 44 30.16	25 17 36.5	8.1	7.8	0.57
6	1 57.4	2 56 38.93	+17 18 12.8	6.4	6.2	0.43	22	2 48.8	6 49 34.15	+25 12 58.9	8.1	7.9	0.58
7	1 58.3	3 1 27.61	17 41 36.8	6.4	6.2	0.43	23	2 49.9	6 54 37.20	25 7 41.1	8.2	7.9	0.58
8	1 59.2	3 6 17.26	18 4 34.2	6.5	6.2	0.43	24	2 51.0	6 59 39.23	25 1 43.1	8.2	8.0	0.59
9	2 0.1	3 11 7.89	18 27 4.2	6.5	6.3	0.44	25	2 52.1	7 4 40.17	24 55 5.4	8.3	8.0	0.59
10	2 1.0	3 15 59.50	18 49 6.1	6.5	6.3	0.44	26	2 53.1	7 9 39.97	24 47 48.5	8.4	8.1	0.59
11	2 1.9	3 20 52.10	+19 10 39.2	6.5	6.3	0.44	27	2 54.2	7 14 38.56	+24 39 52.8	8.4	8.2	0.60
12	2 2.9	3 25 45.70	19 31 43.0	6.6	6.3	0.45	28	2 55.2	7 19 35.88	24 31 18.7	8.5	8.2	0.60
13	2 3.8	3 30 40.28	19 52 16.9	6.6	6.4	0.45	29	2 56.2	7 24 31.87	24 22 6.8	8.5	8.3	0.60
14	2 4.8	3 35 35.84	20 12 19.9	6.6	6.4	0.45	30	2 57.2	7 29 26.47	24 12 17.4	8.6	8.3	0.61
15	2 5.8	3 40 32.39	20 31 51.5	6.6	6.4	0.46	31	2 58.1	7 34 19.63	24 1 51.2	8.7	8.4	0.61
16	2 6.8	3 45 29.91	+20 50 51.1	6.7	6.4	0.46	June 1	2 59.0	7 39 11.29	+23 50 48.6	8.7	8.4	0.61
17	2 7.8	3 50 28.38	21 9 18.1	6.7	6.5	0.46	2	2 59.9	7 44 1.39	23 39 10.3	8.8	8.5	0.62
18	2 8.8	3 55 27.80	21 27 11.8	6.7	6.5	0.46	3	3 0.7	7 48 49.90	23 26 56.7	8.8	8.5	0.62
19	2 9.8	4 0 28.15	21 44 31.8	6.8	6.5	0.47	4	3 1.6	7 53 36.77	23 14 8.3	8.9	8.6	0.63
20	2 10.9	4 5 29.41	22 1 17.2	6.8	6.6	0.47	5	3 2.4	7 58 21.96	23 0 46.0	9.0	8.7	0.63
21	2 12.0	4 10 31.53	+22 17 27.4	6.8	6.6	0.47	6	3 3.2	8 3 5.43	+22 46 50.5	9.1	8.7	0.63
22	2 13.1	4 15 34.49	22 33 1.9	6.9	6.6	0.48	7	3 3.9	8 7 47.14	22 32 22.2	9.2	8.8	0.64
23	2 14.2	4 20 38.27	22 48 0.3	6.9	6.7	0.48	8	3 4.6	8 12 27.07	22 17 21.9	9.2	8.9	0.64
24	2 15.4	4 25 42.83	23 2 22.0	6.9	6.7	0.48	9	3 5.3	8 17 5.16	22 1 50.2	9.3	8.9	0.65
25	2 16.5	4 30 48.12	23 16 6.4	7.0	6.7	0.49	10	3 6.0	8 21 41.38	21 45 47.8	9.4	9.0	0.65
26	2 17.7	4 35 54.12	+23 29 13.0	7.0	6.8	0.49	11	3 6.6	8 26 15.72	+21 29 15.2	9.5	9.1	0.65
27	2 18.8	4 41 0.78	23 41 41.5	7.0	6.8	0.49	12	3 7.2	8 30 48.15	21 12 13.1	9.5	9.1	0.66
28	2 20.0	4 46 8.05	23 53 31.1	7.1	6.8	0.50	13	3 7.8	8 35 18.63	20 54 42.4	9.6	9.2	0.66
29	2 21.2	4 51 15.88	24 4 41.6	7.1	6.9	0.50	14	3 8.4	8 39 47.17	20 36 43.6	9.7	9.3	0.67
30	2 22.4	4 56 24.22	24 15 12.7	7.1	6.9	0.50	15	3 8.9	8 44 13.75	20 18 17.6	9.8	9.4	0.67
May 1	2 23.6	5 1 33.00	+24 25 3.9	7.2	6.9	0.51	16	3 9.4	8 48 38.34	+19 59 25.0	9.9	9.5	0.68
2	2 24.8	5 6 42.18	24 34 14.9	7.2	7.0	0.51	17	3 9.8	8 53 0.91	19 40 6.4	9.9	9.6	0.68
3	2 26.0	5 11 51.71	24 42 45.5	7.2	7.0	0.51	18	3 10.2	8 57 21.46	19 20 22.6	10.0	9.7	0.69
4	2 27.2	5 17 1.51	24 50 35.2	7.3	7.0	0.52	19	3 10.5	9 1 39.95	19 0 14.3	10.1	9.8	0.69
5	2 28.4	5 22 11.53	24 57 43.9	7.3	7.1	0.52	20	3 10.8	9 5 56.38	18 39 42.4	10.2	9.9	0.70
6	2 29.6	5 27 21.71	+25 4 11.3	7.4	7.1	0.52	21	3 11.1	9 10 10.73	+18 18 47.4	10.3	10.0	0.70
7	2 30.8	5 32 31.98	25 9 57.2	7.4	7.1	0.53	22	3 11.3	9 14 22.98	17 57 30.3	10.4	10.1	0.70
8	2 32.1	5 37 42.27	25 15 1.5	7.4	7.2	0.53	23	3 11.5	9 18 33.11	17 35 51.7	10.5	10.2	0.71
9	2 33.3	5 42 52.54	25 19 24.1	7.5	7.2	0.53	24	3 11.7	9 22 41.10	17 13 52.6	10.6	10.3	0.71
10	2 34.5	5 48 2.72	25 23 4.9	7.5	7.3	0.54	25	3 11.9	9 26 46.94	16 51 33.5	10.7	10.4	0.72
11	2 35.7	5 53 12.76	+25 26 3.7	7.6	7.3	0.54	26	3 12.0	9 30 50.62	+16 28 55.2	10.8	10.5	0.72
12	2 37.0	5 58 22.57	25 28 20.6	7.6	7.4	0.54	27	3 12.1	9 34 52.10	16 5 58.8	11.0	10.6	0.73
13	2 38.2	6 3 32.10	25 29 55.7	7.7	7.4	0.55	28	3 12.1	9 38 51.36	15 42 45.0	11.1	10.7	0.73
14	2 39.4	6 8 41.28	25 30 49.0	7.7	7.5	0.55	29	3 12.1	9 42 48.40	15 19 14.4	11.2	10.8	0.74
15	2 40.6	6 13 50.04	25 31 0.3	7.8	7.5	0.55	30	3 12.0	9 46 43.21	14 55 27.9	11.3	10.9	0.75
16	2 41.8	6 18 58.32	+25 30 30.0	7.8	7.6	0.56	31	3 12.0	9 50 35.75	+14 31 26.3	11.4	11.0	0.76
17	2 43.0	6 24 6.05	+25 29 18.0	7.9	7.6	0.56	32	3 11.9	9 54 26.00	+14 7 10.4	11.5	11.1	0.76

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	3 12.0	9 50 35.75	+14 31 26.3	11.4	11.0	0.76	Aug. 16	2 18.3	11 57 55.89	−4 29 52.7	21.1	20.3	1.36
2	3 11.9	9 54 26.00	14 7 10.4	11.5	11.1	0.76	17	2 15.5	11 59 5.65	4 49 15.8	21.4	20.7	1.39
3	3 11.8	9 58 13.97	13 42 41.1	11.6	11.2	0.77	18	2 12.6	12 0 9.08	5 8 3.6	21.8	21.0	1.41
4	3 11.7	10 1 59.64	13 17 59.0	11.8	11.4	0.78	19	2 9.6	12 1 6.01	5 26 13.8	22.1	21.4	1.43
5	3 11.6	10 5 42.98	12 53 4.8	11.9	11.5	0.78	20	2 6.5	12 1 56.24	5 43 44.2	22.5	21.7	1.45
6	3 11.2	10 9 23.97	+12 27 59.4	12.0	11.6	0.79	21	2 3.2	12 2 39.55	−6 0 32.6	22.8	22.1	1.48
7	3 10.9	10 13 2.60	12 2 43.6	12.1	11.8	0.80	22	2 0.0	12 3 15.75	6 16 36.4	23.2	22.4	1.50
8	3 10.6	10 16 38.84	11 37 18.2	12.3	11.9	0.80	23	1 56.6	12 3 44.62	6 31 53.3	23.6	22.8	1.53
9	3 10.2	10 20 12.70	11 11 44.0	12.4	12.0	0.81	24	1 53.0	12 4 5.94	6 46 20.6	24.0	23.2	1.55
10	3 9.7	10 23 44.14	10 46 1.6	12.6	12.1	0.82	25	1 49.2	12 4 19.56	6 59 55.6	24.4	23.5	1.58
11	3 9.2	10 27 13.16	+10 20 11.8	12.7	12.3	0.83	26	1 45.4	12 4 25.34	−7 12 35.9	24.8	23.9	1.60
12	3 8.7	10 30 39.72	9 54 15.5	12.9	12.4	0.84	27	1 41.5	12 4 23.13	7 24 18.6	25.1	24.3	1.63
13	3 8.2	10 34 3.81	9 28 13.1	13.0	12.6	0.85	28	1 37.3	12 4 12.82	7 35 1.1	25.5	24.6	1.65
14	3 7.6	10 37 25.39	9 2 5.5	13.2	12.7	0.86	29	1 33.1	12 3 54.27	7 44 40.4	25.9	25.0	1.68
15	3 7.0	10 40 44.46	8 35 53.6	13.3	12.9	0.87	30	1 28.7	12 3 27.43	7 53 13.7	26.3	25.4	1.70
16	3 6.3	10 44 0.96	+ 8 9 37.9	13.5	13.1	0.88	31	1 24.2	12 2 52.24	−8 0 38.0	26.6	25.7	1.73
17	3 5.6	10 47 14.87	7 43 19.5	13.7	13.2	0.89	Sept. 1	1 19.5	12 2 8.74	8 6 51.3	27.0	26.1	1.75
18	3 4.9	10 50 26.15	7 16 59.1	13.8	13.4	0.90	2	1 14.7	12 1 16.94	8 11 50.9	27.4	26.5	1.78
19	3 4.1	10 53 34.75	6 50 37.5	14.0	13.5	0.91	3	1 9.8	12 0 16.96	8 15 34.5	27.8	26.9	1.81
20	3 3.3	10 56 40.62	6 24 15.5	14.2	13.7	0.92	4	1 4.7	11 59 8.97	8 17 59.7	28.1	27.2	1.83
21	3 2.4	10 59 43.72	+ 5 57 53.8	14.4	13.9	0.93	5	0 59.5	11 57 53.19	−8 19 5.0	28.5	27.6	1.86
22	3 1.5	11 2 43.98	5 31 33.3	14.6	14.1	0.94	6	0 54.2	11 56 29.86	8 18 48.7	28.8	27.9	1.88
23	3 0.5	11 5 41.33	5 5 15.0	14.8	14.3	0.95	7	0 48.8	11 54 59.31	8 17 9.8	29.2	28.2	1.90
24	2 59.5	11 8 35.71	4 38 59.9	15.0	14.5	0.96	8	0 43.2	11 53 21.97	8 14 7.4	29.5	28.5	1.92
25	2 58.4	11 11 27.05	4 12 48.9	15.2	14.7	0.98	9	0 37.6	11 51 38.28	8 9 41.5	29.8	28.8	1.94
26	2 57.2	11 14 15.25	+ 3 46 42.9	15.4	14.9	0.99	10	0 31.9	11 49 48.79	−8 3 52.3	30.0	29.0	1.95
27	2 55.9	11 17 0.27	3 20 42.8	15.6	15.1	1.01	11	0 26.1	11 47 54.02	7 56 40.4	30.3	29.3	1.97
28	2 54.7	11 19 42.00	2 54 49.7	15.9	15.3	1.02	12	0 20.2	11 45 54.66	7 48 7.4	30.6	29.5	1.99
29	2 53.4	11 22 20.34	2 29 4.6	16.1	15.5	1.04	13	0 14.1	11 43 51.33	7 38 15.1	30.8	29.7	2.00
30	2 52.1	11 24 55.20	2 3 28.5	16.3	15.7	1.05	14	0 8.0	11 41 44.81	7 27 6.2	31.0	29.9	2.01
31	2 50.7	11 27 26.44	+ 1 38 2.4	16.6	15.9	1.07	15	0 1.9	11 39 35.87	−7 14 43.8	31.1	30.0	2.02
Aug. 1	2 49.2	11 29 53.98	1 12 47.6	16.8	16.2	1.08	15	23 55.8	11 37 25.31	7 1 11.7	31.2	30.1	2.02
2	2 47.7	11 32 17.72	0 47 45.3	17.0	16.4	1.10	16	23 49.7	11 35 13.88	6 46 34.6	31.3	30.2	2.03
3	2 46.1	11 34 37.54	+ 0 22 56.3	17.3	16.7	1.11	17	23 43.6	11 33 2.45	6 30 57.3	31.3	30.3	2.03
4	2 44.4	11 36 53.31	− 0 1 38.1	17.5	16.9	1.13	18	23 37.6	11 30 51.90	6 14 25.2	31.3	30.3	2.03
5	2 42.7	11 39 4.91	− 0 25 56.9	17.8	17.1	1.14	19	23 31.5	11 28 43.03	−5 57 3.5	31.3	30.2	2.03
6	2 40.8	11 41 12.21	0 49 58.7	18.0	17.4	1.16	20	23 25.5	11 26 36.69	5 38 59.0	31.2	30.2	2.02
7	2 38.9	11 43 15.08	1 13 42.5	18.3	17.6	1.18	21	23 19.5	11 24 33.62	5 20 18.6	31.2	30.1	2.02
8	2 36.9	11 45 13.35	1 37 6.8	18.6	17.9	1.20	22	23 13.6	11 22 34.64	5 1 9.1	31.2	30.1	2.02
9	2 34.9	11 47 6.91	2 0 10.4	18.9	18.2	1.22	23	23 7.8	11 20 40.45	4 41 37.6	31.1	30.0	2.01
10	2 32.8	11 48 55.58	− 2 22 51.8	19.2	18.5	1.24	24	23 2.1	11 18 51.77	−4 21 50.7	30.9	29.8	2.00
11	2 30.6	11 50 39.22	2 45 9.8	19.5	18.8	1.26	25	22 56.4	11 17 9.20	4 1 55.6	30.7	29.6	1.99
12	2 28.3	11 52 17.66	3 7 2.8	19.8	19.1	1.28	26	22 50.9	11 15 33.33	3 41 58.7	30.5	29.4	1.97
13	2 25.9	11 53 50.72	3 28 29.3	20.1	19.4	1.30	27	22 45.5	11 14 4.67	3 22 7.0	30.3	29.2	1.95
14	2 23.4	11 55 18.24	3 49 27.6	20.4	19.7	1.32	28	22 40.3	11 12 43.72	3 2 27.1	30.1	28.9	1.93
15	2 20.9	11 56 40.02	− 4 9 56.0	20.7	20.0	1.34	29	22 35.1	11 11 30.84	−2 43 4.6	29.8	28.7	1.91
16	2 18.3	11 57 55.89	− 4 29 52.7	21.1	20.3	1.36	30	22 30.0	11 10 26.39	−2 24 5.4	29.5	28.4	1.89

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	22 25.2	11 9 30.65	−2 5 34.8	29.2	28.1	1.87	Nov. 16	20 48.7	12 34 13.00	− 2 29 39.5	15.0	14.5	0.97
2	22 20.5	11 8 43.80	1 47 37.6	28.8	27.8	1.85	17	20 48.3	12 37 43.16	2 45 45.3	14.8	14.3	0.96
3	22 15.9	11 8 5.99	1 30 18.1	28.5	27.4	1.83	18	20 47.9	12 41 15.46	3 2 13.6	14.6	14.1	0.96
4	22 11.5	11 7 37.32	1 13 39.9	28.1	27.1	1.80	19	20 47.5	12 44 49.81	3 19 3.4	14.4	13.9	0.93
5	22 7.3	11 7 17.83	0 57 46.6	27.8	26.7	1.78	20	20 47.2	12 48 26.16	3 36 13.7	14.2	13.8	0.92
6	22 3.1	11 7 7.55	−0 42 41.4	27.4	26.4	1.76	21	20 47.0	12 52 4.45	− 3 53 43.3	14.1	13.7	0.91
7	21 59.1	11 7 6.42	0 28 26.3	27.0	26.1	1.74	22	20 46.7	12 55 44.63	4 11 31.2	13.9	13.5	0.90
8	21 55.3	11 7 14.36	0 15 3.5	26.6	25.7	1.72	23	20 46.5	12 59 26.67	4 29 36.5	13.8	13.4	0.89
9	21 51.7	11 7 31.22	−0 2 34.8	26.3	25.4	1.69	24	20 46.3	13 3 10.53	4 47 58.1	13.6	13.2	0.88
10	21 48.2	11 7 56.86	+0 8 58.6	25.9	25.0	1.67	25	20 46.1	13 6 56.18	5 6 35.1	13.5	13.1	0.87
11	21 44.8	11 8 31.12	+0 19 36.0	25.5	24.7	1.64	26	20 45.9	13 10 43.57	− 5 25 26.5	13.3	12.9	0.86
12	21 41.6	11 9 13.79	0 29 16.5	25.1	24.3	1.62	27	20 45.8	13 14 32.67	5 44 31.3	13.2	12.8	0.85
13	21 38.5	11 10 4.65	0 38 0.0	24.8	24.0	1.59	28	20 45.7	13 18 23.48	6 3 48.6	13.0	12.6	0.84
14	21 35.5	11 11 3.50	0 45 46.2	24.4	23.6	1.57	29	20 45.6	13 22 15.96	6 23 17.3	12.9	12.5	0.84
15	21 32.6	11 12 10.08	0 52 35.4	24.1	23.3	1.54	30	20 45.6	13 26 10.10	6 42 56.5	12.7	12.3	0.83
16	21 29.9	11 13 24.15	+0 58 27.6	23.7	22.9	1.52	Dec. 1	20 45.5	13 30 5.88	− 7 2 45.2	12.6	12.2	0.82
17	21 27.4	11 14 45.45	1 3 23.4	23.3	22.5	1.50	2	20 45.5	13 34 3.27	7 22 42.5	12.5	12.1	0.81
18	21 25.0	11 16 13.75	1 7 23.4	23.0	22.2	1.48	3	20 45.5	13 38 2.26	7 42 47.3	12.3	12.0	0.80
19	21 22.8	11 17 48.81	1 10 28.3	22.6	21.8	1.45	4	20 45.6	13 42 2.84	8 2 58.6	12.2	11.8	0.79
20	21 20.5	11 19 30.39	1 12 38.8	22.2	21.5	1.43	5	20 45.7	13 46 5.00	8 23 15.6	12.1	11.7	0.79
21	21 18.4	11 21 18.24	+1 13 55.7	21.9	21.1	1.40	6	20 45.8	13 50 8.72	− 8 43 37.2	12.0	11.6	0.78
22	21 16.3	11 23 12.13	1 14 20.0	21.5	20.8	1.38	7	20 46.0	13 54 13.97	9 4 2.3	11.9	11.5	0.77
23	21 14.4	11 25 11.80	1 13 52.6	21.2	20.5	1.36	8	20 46.1	13 58 20.76	9 24 29.9	11.8	11.4	0.77
24	21 12.5	11 27 17.05	1 12 34.4	20.8	20.1	1.34	9	20 46.3	14 2 29.08	9 44 59.0	11.6	11.2	0.76
25	21 10.7	11 29 27.67	1 10 26.4	20.5	19.8	1.32	10	20 46.5	14 6 38.92	10 5 28.8	11.5	11.1	0.76
26	21 9.1	11 31 43.47	+1 7 29.6	20.2	19.5	1.30	11	20 46.7	14 10 50.25	−10 25 58.2	11.4	11.0	0.75
27	21 7.5	11 34 4.24	1 3 45.0	19.9	19.2	1.28	12	20 47.0	14 15 3.07	10 46 26.2	11.3	10.9	0.74
28	21 5.9	11 36 29.79	0 59 13.6	19.6	18.9	1.26	13	20 47.3	14 19 17.38	11 6 51.8	11.2	10.8	0.74
29	21 4.4	11 38 59.92	0 53 56.5	19.3	18.6	1.24	14	20 47.6	14 23 33.16	11 27 14.1	11.1	10.7	0.73
30	21 3.1	11 41 34.46	0 47 54.8	19.0	18.4	1.23	15	20 48.0	14 27 50.40	11 47 32.9	11.0	10.6	0.73
31	21 1.8	11 44 13.24	+0 41 9.7	18.7	18.1	1.21	16	20 48.4	14 32 9.10	−12 7 44.7	10.9	10.5	0.72
Nov. 1	21 0.5	11 46 56.10	0 33 42.2	18.5	17.8	1.19	17	20 48.8	14 36 29.26	12 27 51.2	10.8	10.4	0.71
2	20 59.4	11 49 42.88	0 25 33.3	18.2	17.5	1.17	18	20 49.2	14 40 50.87	12 47 50.7	10.7	10.3	0.71
3	20 58.3	11 52 33.42	0 16 44.4	18.0	17.3	1.16	19	20 49.6	14 45 13.93	13 7 42.1	10.6	10.2	0.70
4	20 57.2	11 55 27.58	+0 7 16.8	17.7	17.0	1.14	20	20 50.0	14 49 38.43	13 27 24.6	10.5	10.1	0.70
5	20 56.2	11 58 25.21	−0 2 46.7	17.5	16.8	1.13	21	20 50.5	14 54 4.37	−13 46 57.3	10.4	10.0	0.69
6	20 55.3	12 1 26.18	0 13 30.8	17.2	16.6	1.11	22	20 51.0	14 58 31.76	14 6 19.3	10.3	9.9	0.69
7	20 54.4	12 4 30.35	0 24 48.2	17.0	16.4	1.09	23	20 51.6	15 3 0.59	14 25 29.7	10.2	9.8	0.68
8	20 53.6	12 7 37.60	0 36 39.7	16.7	16.1	1.08	24	20 52.2	15 7 30.85	14 44 27.6	10.2	9.8	0.68
9	20 52.9	12 10 47.81	0 49 4.3	16.5	15.9	1.06	25	20 52.8	15 12 2.57	15 3 12.2	10.1	9.7	0.67
10	20 52.2	12 14 0.86	−1 2 0.7	16.3	15.7	1.04	26	20 53.4	15 16 35.73	−15 21 42.7	10.0	9.6	0.67
11	20 51.5	12 17 16.64	1 15 27.7	16.1	15.5	1.03	27	20 54.0	15 21 10.34	15 39 58.1	9.9	9.5	0.66
12	20 50.9	12 20 35.05	1 29 23.9	15.9	15.3	1.02	28	20 54.6	15 25 46.38	15 57 57.6	9.8	9.4	0.66
13	20 50.3	12 23 55.98	1 43 48.4	15.6	15.1	1.00	29	20 55.3	15 30 23.86	16 15 40.2	9.8	9.4	0.65
14	20 49.7	12 27 19.34	1 58 39.9	15.4	14.9	0.99	30	20 56.0	15 35 2.77	16 33 5.3	9.7	9.3	0.65
15	20 49.2	12 30 45.04	−2 13 57.4	15.2	14.7	0.98	31	20 56.7	15 39 43.11	−16 50 11.9	9.6	9.2	0.64
16	20 48.7	12 34 13.00	−2 29 39.5	15.0	14.5	0.97	32	20 57.5	15 44 24.86	−17 6 59.2	9.5	9.2	0.64

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	7 9.5	1 51 6.22	+12 33 14.3	10.2	5.8	0.69	Feb. 15	5 35.1	3 17 52.36	+19 47 48.0	6.8	3.8	0.48
1	7 7.1	1 52 34.30	12 42 26.6	10.1	5.8	0.69	16	5 33.4	3 20 5.77	19 56 23.0	6.7	3.8	0.48
2	7 4.6	1 54 3.84	12 51 42.8	10.0	5.7	0.68	17	5 31.7	3 22 19.85	20 4 53.3	6.7	3.7	0.47
3	7 2.2	1 55 34.79	13 1 2.6	9.9	5.7	0.67	18	5 30.0	3 24 34.60	20 13 18.7	6.6	3.7	0.47
4	6 59.7	1 57 7.13	13 10 25.6	9.8	5.6	0.66	19	5 28.3	3 26 50.01	20 21 39.0	6.6	3.7	0.47
5	6 57.4	1 58 40.84	+13 19 51.6	9.7	5.6	0.66	20	5 26.7	3 29 6.06	+20 29 54.3	6.5	3.7	0.47
6	6 55.0	2 0 15.87	13 29 20.3	9.6	5.5	0.65	21	5 25.0	3 31 22.75	20 38 4.2	6.5	3.7	0.46
7	6 52.7	2 1 52.19	13 38 51.8	9.5	5.5	0.65	22	5 23.4	3 33 40.07	20 46 8.8	6.4	3.6	0.46
8	6 50.4	2 3 29.78	13 48 25.3	9.4	5.4	0.64	23	5 21.7	3 35 58.02	20 54 7.8	6.4	3.6	0.46
9	6 48.1	2 5 8.62	13 58 1.0	9.3	5.4	0.64	24	5 20.1	3 38 16.60	21 2 1.1	6.3	3.6	0.45
10	6 45.8	2 6 48.66	+14 7 38.5	9.2	5.3	0.63	25	5 18.5	3 40 35.77	+21 9 48.6	6.3	3.6	0.45
11	6 43.6	2 8 29.90	14 17 17.5	9.1	5.3	0.63	26	5 16.9	3 42 55.55	21 17 30.2	6.2	3.6	0.45
12	6 41.4	2 10 12.30	14 26 57.8	9.0	5.2	0.62	27	5 15.3	3 45 15.90	21 25 5.7	6.2	3.5	0.44
13	6 39.2	2 11 55.85	14 36 39.5	8.9	5.2	0.62	28	5 13.7	3 47 36.85	21 32 34.9	6.1	3.5	0.44
14	6 37.0	2 13 40.52	14 46 22.1	8.8	5.1	0.61	Mar. 1	5 12.1	3 49 58.35	21 39 57.7	6.1	3.5	0.44
15	6 34.8	2 15 26.30	+14 56 5.5	8.7	5.1	0.61	2	5 10.5	3 52 20.42	+21 47 14.0	6.1	3.5	0.43
16	6 32.6	2 17 13.16	15 5 49.4	8.7	5.0	0.60	3	5 9.0	3 54 43.02	21 54 23.7	6.0	3.5	0.43
17	6 30.5	2 19 1.09	15 15 33.8	8.6	5.0	0.60	4	5 7.4	3 57 6.14	22 1 26.6	6.0	3.4	0.43
18	6 28.4	2 20 50.08	15 25 18.5	8.5	4.9	0.59	5	5 5.9	3 59 29.78	22 8 22.6	5.9	3.4	0.43
19	6 26.3	2 22 40.11	15 35 3.3	8.4	4.9	0.59	6	5 4.3	4 1 53.93	22 15 11.7	5.9	3.4	0.42
20	6 24.2	2 24 31.18	+15 44 47.9	8.4	4.8	0.58	7	5 2.8	4 4 18.56	+22 21 53.8	5.8	3.4	0.42
21	6 22.1	2 26 23.27	15 54 32.3	8.3	4.8	0.58	8	5 1.3	4 6 43.69	22 28 28.5	5.8	3.4	0.42
22	6 20.0	2 28 16.35	16 4 16.2	8.2	4.7	0.57	9	4 59.8	4 9 9.31	22 34 55.9	5.8	3.3	0.42
23	6 18.0	2 30 10.43	16 13 59.6	8.1	4.7	0.57	10	4 58.3	4 11 35.38	22 41 15.8	5.7	3.3	0.41
24	6 16.0	2 32 5.48	16 23 42.2	8.1	4.6	0.56	11	4 56.8	4 14 1.93	22 47 28.2	5.7	3.3	0.41
25	6 14.0	2 34 1.50	+16 33 23.8	8.0	4.6	0.56	12	4 55.3	4 16 28.90	+22 53 33.0	5.7	3.3	0.41
26	6 12.0	2 35 58.45	16 43 4.3	7.9	4.6	0.55	13	4 53.8	4 18 56.32	22 59 30.1	5.6	3.3	0.41
27	6 10.0	2 37 56.34	16 52 43.5	7.9	4.5	0.55	14	4 52.3	4 21 24.19	23 5 19.5	5.6	3.2	0.40
28	6 8.1	2 39 55.16	17 2 21.2	7.8	4.5	0.55	15	4 50.9	4 23 52.47	23 11 1.0	5.6	3.2	0.40
29	6 6.1	2 41 54.86	17 11 57.2	7.7	4.4	0.54	16	4 49.4	4 26 21.19	23 16 34.4	5.5	3.2	0.40
30	6 4.2	2 43 55.45	+17 21 31.2	7.7	4.4	0.54	17	4 48.0	4 28 50.34	+23 21 59.7	5.5	3.2	0.40
31	6 2.3	2 45 56.90	17 31 3.0	7.6	4.4	0.54	18	4 46.5	4 31 19.90	23 27 16.9	5.5	3.2	0.40
Feb. 1	6 0.4	2 47 59.20	17 40 32.7	7.6	4.3	0.53	19	4 45.1	4 33 49.87	23 32 25.9	5.4	3.1	0.39
2	5 58.5	2 50 2.34	17 49 59.8	7.5	4.3	0.53	20	4 43.6	4 36 20.24	23 37 26.5	5.4	3.1	0.39
3	5 56.6	2 52 6.29	17 59 24.3	7.4	4.2	0.52	21	4 42.2	4 38 51.00	23 42 18.8	5.4	3.1	0.39
4	5 54.8	2 54 11.03	+18 8 45.8	7.4	4.2	0.52	22	4 40.8	4 41 22.14	+23 47 2.6	5.4	3.1	0.39
5	5 52.9	2 56 16.56	18 18 4.3	7.3	4.2	0.51	23	4 39.4	4 43 53.68	23 51 37.8	5.3	3.0	0.39
6	5 51.1	2 58 22.88	18 27 19.6	7.2	4.1	0.51	24	4 38.0	4 46 25.59	23 56 4.5	5.3	3.0	0.38
7	5 49.3	3 0 29.96	18 36 31.7	7.2	4.1	0.51	25	4 36.6	4 48 57.85	24 0 22.3	5.3	3.0	0.38
8	5 47.5	3 2 37.76	18 45 40.2	7.1	4.0	0.50	26	4 35.2	4 51 30.48	24 4 31.3	5.2	3.0	0.38
9	5 45.7	3 4 46.29	+18 54 44.9	7.1	4.0	0.50	27	4 33.8	4 54 3.45	+24 8 31.4	5.2	3.0	0.38
10	5 43.9	3 6 55.55	19 3 45.9	7.0	4.0	0.50	28	4 32.4	4 56 36.75	24 12 22.5	5.2	2.9	0.38
11	5 42.1	3 9 5.52	19 12 42.8	7.0	3.9	0.49	29	4 31.0	4 59 10.38	24 16 4.6	5.1	2.9	0.37
12	5 40.4	3 11 16.18	19 21 35.6	6.9	3.9	0.49	30	4 29.7	5 1 44.31	24 19 37.6	5.1	2.9	0.37
13	5 38.6	3 13 27.56	19 30 24.1	6.9	3.9	0.49	31	4 28.3	5 4 18.53	24 23 1.4	5.1	2.9	0.37
14	5 36.9	3 15 39.62	+19 39 8.3	6.8	3.8	0.48	Apr. 1	4 26.9	5 6 53.03	+24 26 16.0	5.1	2.9	0.37
15	5 35.1	3 17 52.36	+19 47 48.0	6.8	3.8	0.48	2	4 25.6	5 9 27.83	+24 29 21.2	5.0	2.9	0.37

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	11 17.9	6 0 10.47	+23 15 1.6	2.1	22.6	1.75	Feb. 14	8 4.8	5 43 54.88	+23 18 50.9	1.9	20.5	1.58
1	11 13.4	5 59 36.41	23 15 10.7	2.1	22.6	1.75	15	8 0.8	5 43 50.81	23 18 58.0	1.9	20.4	1.58
2	11 8.9	5 59 2.61	23 15 19.3	2.1	22.6	1.74	16	7 56.8	5 43 47.61	23 19 5.4	1.9	20.3	1.58
3	11 4.4	5 58 29.12	23 15 27.5	2.1	22.5	1.74	17	7 52.8	5 43 45.27	23 19 13.1	1.9	20.3	1.57
4	10 50.9	5 57 55.97	23 15 35.2	2.1	22.5	1.74	18	7 48.8	5 43 43.80	23 19 21.1	1.9	20.2	1.57
5	10 55.4	5 57 23.17	+23 15 42.6	2.1	22.5	1.73	19	7 44.9	5 43 43.20	+23 19 29.4	1.9	20.2	1.56
6	10 51.0	5 56 50.74	23 15 49.6	2.1	22.4	1.73	20	7 41.0	5 43 43.47	23 19 38.0	1.9	20.1	1.56
7	10 46.5	5 56 18.72	23 15 56.2	2.1	22.4	1.73	21	7 37.1	5 43 44.62	23 19 46.9	1.9	20.0	1.55
8	10 42.0	5 55 47.13	23 16 2.5	2.1	22.4	1.73	22	7 33.2	5 43 46.64	23 19 56.1	1.9	20.0	1.55
9	10 37.6	5 55 15.98	23 16 8.5	2.1	22.4	1.73	23	7 29.3	5 43 49.52	23 20 5.7	1.9	19.9	1.54
10	10 33.1	5 54 45.29	+23 16 14.1	2.1	22.4	1.72	24	7 25.4	5 43 53.25	+23 20 15.4	1.9	19.9	1.54
11	10 28.7	5 54 15.08	23 16 19.5	2.1	22.3	1.72	25	7 21.5	5 43 57.86	23 20 25.5	1.9	19.8	1.53
12	10 24.3	5 53 45.39	23 16 24.5	2.1	22.3	1.72	26	7 17.7	5 44 3.33	23 20 35.8	1.9	19.8	1.53
13	10 19.9	5 53 16.23	23 16 29.3	2.1	22.3	1.72	27	7 13.9	5 44 9.65	23 20 46.4	1.9	19.7	1.52
14	10 15.5	5 52 47.61	23 16 33.9	2.1	22.2	1.71	28	7 10.1	5 44 16.82	23 20 57.3	1.9	19.6	1.52
15	10 11.1	5 52 19.56	+23 16 38.2	2.1	22.2	1.71	Mar. 1	7 6.3	5 44 24.84	+23 21 8.4	1.8	19.6	1.51
16	10 6.7	5 51 52.09	23 16 42.5	2.1	22.1	1.71	2	7 2.5	5 44 33.70	23 21 19.6	1.8	19.5	1.51
17	10 2.3	5 51 25.23	23 16 46.5	2.1	22.0	1.71	3	6 58.7	5 44 43.39	23 21 31.1	1.8	19.4	1.50
18	9 57.9	5 50 58.98	23 16 50.5	2.1	22.0	1.70	4	6 54.9	5 44 53.91	23 21 42.8	1.8	19.4	1.50
19	9 53.6	5 50 33.37	23 16 54.2	2.1	21.9	1.70	5	6 51.2	5 45 5.25	23 21 54.7	1.8	19.3	1.49
20	9 49.2	5 50 8.42	+23 16 57.9	2.1	21.9	1.69	6	6 47.5	5 45 17.41	+23 22 6.8	1.8	19.3	1.49
21	9 44.9	5 49 44.15	23 17 1.5	2.1	21.8	1.69	7	6 43.8	5 45 30.37	23 22 19.1	1.8	19.2	1.48
22	9 40.6	5 49 20.56	23 17 5.0	2.1	21.8	1.69	8	6 40.1	5 45 44.14	23 22 31.6	1.8	19.2	1.48
23	9 36.3	5 48 57.68	23 17 8.4	2.1	21.7	1.68	9	6 36.4	5 45 58.71	23 22 44.2	1.8	19.1	1.47
24	9 32.0	5 48 35.52	23 17 11.8	2.0	21.7	1.68	10	6 32.7	5 46 14.06	23 22 56.9	1.8	19.0	1.47
25	9 27.7	5 48 14.09	+23 17 15.3	2.0	21.6	1.68	11	6 29.0	5 46 30.20	+23 23 9.7	1.8	19.0	1.46
26	9 23.4	5 47 53.41	23 17 18.7	2.0	21.6	1.67	12	6 25.4	5 46 47.11	23 23 22.6	1.8	18.9	1.46
27	9 19.2	5 47 33.50	23 17 22.2	2.0	21.5	1.67	13	6 21.7	5 47 4.79	23 23 35.6	1.8	18.8	1.46
28	9 14.9	5 47 14.36	23 17 25.8	2.0	21.5	1.66	14	6 18.1	5 47 23.24	23 23 48.6	1.8	18.7	1.45
29	9 10.7	5 46 56.00	23 17 29.4	2.0	21.4	1.66	15	6 14.5	5 47 42.44	23 24 1.7	1.8	18.7	1.44
30	9 6.5	5 46 38.44	+23 17 33.2	2.0	21.4	1.66	16	6 10.9	5 48 2.39	+23 24 14.8	1.8	18.6	1.44
31	9 2.2	5 46 21.68	23 17 37.0	2.0	21.3	1.65	17	6 7.3	5 48 23.09	23 24 27.9	1.7	18.5	1.43
Feb. 1	8 58.0	5 46 5.74	23 17 41.0	2.0	21.3	1.65	18	6 3.7	5 48 44.52	23 24 41.1	1.7	18.5	1.43
2	8 53.9	5 45 50.62	23 17 45.2	2.0	21.2	1.65	19	6 0.2	5 49 6.69	23 24 54.2	1.7	18.4	1.42
3	8 49.7	5 45 36.32	23 17 49.5	2.0	21.1	1.64	20	5 56.6	5 49 29.57	23 25 7.2	1.7	18.3	1.42
4	8 45.5	5 45 22.86	+23 17 53.9	2.0	21.1	1.64	21	5 53.1	5 49 53.18	+23 25 20.2	1.7	18.3	1.42
5	8 41.4	5 45 10.23	23 17 58.6	2.0	21.0	1.63	22	5 49.6	5 50 17.50	23 25 33.0	1.7	18.2	1.41
6	8 37.3	5 44 58.45	23 18 3.5	2.0	20.9	1.63	23	5 46.0	5 50 42.52	23 25 45.7	1.7	18.2	1.41
7	8 33.2	5 44 47.51	23 18 8.6	2.0	20.9	1.62	24	5 42.5	5 51 8.24	23 25 58.3	1.7	18.1	1.40
8	8 29.1	5 44 37.42	23 18 13.9	2.0	20.8	1.62	25	5 39.0	5 51 34.65	23 26 10.6	1.7	18.1	1.40
9	8 25.0	5 44 28.18	+23 18 19.4	2.0	20.8	1.61	26	5 35.6	5 52 1.73	+23 26 22.7	1.7	18.0	1.39
10	8 20.9	5 44 19.80	23 18 25.2	2.0	20.7	1.60	27	5 32.1	5 52 29.49	23 26 34.7	1.7	18.0	1.39
11	8 16.8	5 44 12.28	23 18 31.2	1.9	20.7	1.60	28	5 28.6	5 52 57.91	23 26 46.6	1.7	17.9	1.38
12	8 12.8	5 44 5.61	23 18 37.5	1.9	20.6	1.59	29	5 25.2	5 53 27.00	23 26 58.0	1.7	17.9	1.38
13	8 8.8	5 43 59.81	23 18 44.0	1.9	20.5	1.59	30	5 21.7	5 53 56.73	23 27 9.2	1.7	17.8	1.37
14	8 4.8	5 43 54.88	+23 18 50.9	1.9	20.5	1.58	31	5 18.3	5 54 27.10	+23 27 20.0	1.7	17.8	1.37
15	8 0.8	5 43 50.81	+23 18 58.0	1.9	20.4	1.58	Apr. 1	5 14.9	5 54 58.10	+23 27 30.6	1.7	17.7	1.36

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	19 44.8	8 28 49.09	+19 24 9.9	1.6	16.7	1.26	Nov. 16	17 1.5	8 46 22.83	+18 27 28.4	1.8	19.1	1.43
2	19 41.5	8 29 25.56	19 22 11.2	1.6	16.8	1.26	17	16 57.7	8 46 29.28	18 27 15.7	1.8	19.1	1.44
3	19 38.2	8 30 1.52	19 20 13.7	1.6	16.8	1.26	18	16 53.8	8 46 34.94	18 27 6.0	1.8	19.2	1.44
4	19 34.9	8 30 36.98	19 18 17.6	1.6	16.9	1.27	19	16 50.0	8 46 39.81	18 26 59.5	1.8	19.3	1.45
5	19 31.5	8 31 11.92	19 16 23.0	1.6	16.9	1.27	20	16 46.1	8 46 43.89	18 26 56.1	1.8	19.3	1.45
6	19 28.1	8 31 46.34	+19 14 29.8	1.6	16.9	1.27	21	16 42.2	8 46 47.17	+18 26 55.9	1.8	19.4	1.46
7	19 24.8	8 32 20.24	19 12 38.2	1.6	17.0	1.28	22	16 38.4	8 46 49.65	18 26 58.8	1.8	19.5	1.46
8	19 21.4	8 32 53.60	19 10 48.1	1.6	17.0	1.28	23	16 34.5	8 46 51.35	18 27 4.9	1.8	19.5	1.47
9	19 18.0	8 33 26.42	19 8 59.6	1.6	17.1	1.28	24	16 30.5	8 46 52.24	18 27 14.1	1.8	19.6	1.47
10	19 14.6	8 33 58.68	19 7 12.7	1.6	17.1	1.29	25	16 26.6	8 46 52.34	18 27 26.4	1.8	19.6	1.47
11	19 11.2	8 34 30.39	+19 5 27.6	1.6	17.2	1.29	26	16 22.7	8 46 51.64	+18 27 41.8	1.8	19.7	1.48
12	19 7.8	8 35 1.53	19 3 44.2	1.6	17.2	1.30	27	16 18.7	8 46 50.14	18 28 0.4	1.8	19.8	1.48
13	19 4.4	8 35 32.10	19 2 2.6	1.6	17.3	1.30	28	16 14.7	8 46 47.85	18 28 22.2	1.9	19.8	1.48
14	19 0.9	8 36 2.08	19 0 23.0	1.6	17.3	1.31	29	16 10.7	8 46 44.75	18 28 47.1	1.9	19.9	1.49
15	18 57.5	8 36 31.48	18 58 45.2	1.6	17.4	1.31	30	16 6.8	8 46 40.86	18 29 15.1	1.9	20.0	1.49
16	18 54.0	8 37 0.28	+18 57 9.3	1.6	17.4	1.31	Dec. 1	16 2.8	8 46 36.16	+18 29 46.2	1.9	20.0	1.50
17	18 50.6	8 37 28.49	18 55 35.4	1.6	17.5	1.31	2	15 58.7	8 46 30.67	18 30 20.4	1.9	20.1	1.50
18	18 47.1	8 37 56.08	18 54 3.6	1.7	17.5	1.32	3	15 54.7	8 46 24.39	18 30 57.7	1.9	20.1	1.50
19	18 43.6	8 38 23.06	18 52 33.9	1.7	17.6	1.32	4	15 50.6	8 46 17.32	18 31 38.0	1.9	20.2	1.51
20	18 40.1	8 38 49.41	18 51 6.3	1.7	17.6	1.33	5	15 46.6	8 46 9.45	18 32 21.4	1.9	20.2	1.51
21	18 36.6	8 39 15.12	+18 49 40.9	1.7	17.7	1.33	6	15 42.5	8 46 0.79	+18 33 8.0	1.9	20.3	1.52
22	18 33.1	8 39 40.20	18 48 17.7	1.7	17.7	1.33	7	15 38.4	8 45 51.34	18 33 57.5	1.9	20.3	1.52
23	18 29.6	8 40 4.63	18 46 56.8	1.7	17.8	1.33	8	15 34.3	8 45 41.10	18 34 50.0	1.9	20.4	1.53
24	18 26.0	8 40 28.42	18 45 38.2	1.7	17.8	1.34	9	15 30.2	8 45 30.08	18 35 45.4	1.9	20.4	1.53
25	18 22.5	8 40 51.55	18 44 22.0	1.7	17.9	1.34	10	15 26.0	8 45 18.28	18 36 43.9	1.9	20.5	1.54
26	18 18.9	8 41 14.02	+18 43 8.1	1.7	17.9	1.34	11	15 21.9	8 45 5.71	+18 37 45.3	1.9	20.5	1.54
27	18 15.4	8 41 35.82	18 41 56.6	1.7	18.0	1.35	12	15 17.8	8 44 52.37	18 38 49.6	1.9	20.6	1.55
28	18 11.8	8 41 56.95	18 40 47.5	1.7	18.0	1.35	13	15 13.6	8 44 38.27	18 39 56.7	1.9	20.6	1.55
29	18 8.2	8 42 17.41	18 39 41.0	1.7	18.1	1.36	14	15 9.4	8 44 23.41	18 41 6.6	2.0	20.7	1.56
30	18 4.6	8 42 37.17	18 38 36.9	1.7	18.1	1.36	15	15 5.2	8 44 7.80	18 42 19.3	2.0	20.7	1.56
31	18 1.0	8 42 56.25	+18 37 35.4	1.7	18.2	1.37	16	15 1.0	8 43 51.46	+18 43 34.7	2.0	20.8	1.56
Nov. 1	17 57.3	8 43 14.64	18 36 36.5	1.7	18.2	1.37	17	14 56.8	8 43 34.39	18 44 52.7	2.0	20.8	1.57
2	17 53.7	8 43 32.33	18 35 40.3	1.7	18.3	1.38	18	14 52.6	8 43 16.59	18 46 13.4	2.0	20.9	1.57
3	17 50.1	8 43 49.31	18 34 46.7	1.7	18.4	1.38	19	14 48.3	8 42 58.08	18 47 36.6	2.0	20.9	1.57
4	17 46.4	8 44 5.57	18 33 55.8	1.8	18.4	1.38	20	14 44.0	8 42 38.88	18 49 2.2	2.0	21.0	1.58
5	17 42.7	8 44 21.12	+18 33 7.7	1.8	18.5	1.39	21	14 39.8	8 42 19.00	+18 50 30.3	2.0	21.0	1.58
6	17 39.0	8 44 35.93	18 32 22.3	1.8	18.6	1.39	22	14 35.5	8 41 58.44	18 52 0.7	2.0	21.1	1.59
7	17 35.4	8 44 50.02	18 31 39.7	1.8	18.6	1.40	23	14 31.3	8 41 37.22	18 53 33.3	2.0	21.1	1.59
8	17 31.6	8 45 3.36	18 31 0.0	1.8	18.7	1.40	24	14 27.0	8 41 15.35	18 55 8.2	2.0	21.2	1.59
9	17 27.9	8 45 15.96	18 30 23.2	1.8	18.7	1.40	25	14 22.7	8 40 52.86	18 56 45.2	2.0	21.2	1.60
10	17 24.2	8 45 27.81	+18 29 49.3	1.8	18.8	1.41	26	14 18.3	8 40 29.74	+18 58 24.2	2.0	21.3	1.60
11	17 20.4	8 45 38.91	18 29 18.3	1.8	18.8	1.41	27	14 14.0	8 40 6.01	19 0 5.2	2.0	21.3	1.60
12	17 16.7	8 45 49.24	18 28 50.3	1.8	18.9	1.42	28	14 9.7	8 39 41.70	19 1 48.1	2.0	21.4	1.60
13	17 12.9	8 45 58.80	18 28 25.2	1.8	18.9	1.42	29	14 5.4	8 39 16.82	19 3 32.8	2.0	21.4	1.61
14	17 9.1	8 46 7.59	18 28 3.2	1.8	19.0	1.42	30	14 1.0	8 38 51.37	19 5 19.2	2.0	21.4	1.61
15	17 5.3	8 46 15.60	+18 27 44.3	1.8	19.0	1.43	31	13 56.6	8 38 25.38	+19 7 7.3	2.0	21.5	1.62
16	17 1.5	8 46 22.83	+18 27 28.4	1.8	19.1	1.43	32	13 52.3	8 37 58.86	+19 8 57.0	2.0	21.5	1.62

FOR TRANSIT AT WASHIN

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	D	at ...sion ...5 ...ansit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m s	° ′ ″	″	″	s
Jan. 0	11 17.9	6 0 10.47	+23 15 1.6	2.1	22.6			14 19 59.68	−11 9 0.9	1.0	8.6	0.63
1	11 13.4	5 59 36.41	23 15 10.7	2.1	22			...3.4 14 19 48.24	11 7 51.8	1.0	8.7	0.63
2	11 8.9	5 59 2.61	23 15 19.3	2.1				...29.3 14 19 36.50	11 6 41.3	1.0	8.7	0.63
3	11 4.4	5 58 29.12	23 15 27.5					14 25.2 14 19 24.46	11 5 29.6	1.0	8.7	0.63
4	10 59.9	5 57 55.97	23 15 35.2				21	14 21.0 14 19 12.14	11 4 16.5	1.0	8.7	0.63
						.60	22	14 16.8 14 18 59.53	−11 3 2.3	1.0	8.7	0.63
5	10 55.4	5 57 23.17	+23 15		8.2	0.60	23	14 12.7 14 18 46.64	11 1 46.9	1.0	8.7	0.63
6	10 51.0	5 56 50.74	23		8.2	0.60	24	14 8.5 14 18 33.49	11 0 30.3	1.0	8.7	0.64
7	10 46.5	5 56 18.72		1.0	8.2	0.60	25	14 4.4 14 18 20.08	10 59 12.5	1.0	8.7	0.64
8	10 42.0	5 55 47.1		1.0	8.2	0.60	26	14 0.2 14 18 6.41	10 57 53.8	1.0	8.7	0.64
9	10 37.6	5 55 1		1.0	8.2	0.60						
10	10 33.1	5 5	1.5	1.0	8.2	0.60	27	13 56.1 14 17 52.50	−10 56 34.0	1.0	8.8	0.64
11	10 28.7		11 31 51.4	1.0	8.2	0.60	28	13 51.9 14 17 38.35	10 55 13.2	1.0	8.8	0.64
12	10 24.3		11 31 39.4	1.0	8.3	0.60	29	13 47.7 14 17 23.97	10 53 51.4	1.0	8.8	0.64
13	10 1		11 31 25.4	1.0	8.3	0.61	30	13 43.6 14 17 9.36	10 52 28.8	1.0	8.8	0.64
14	1		11 31 9.5	1.0	8.3	0.61	31	13 39.4 14 16 54.54	10 51 5.3	1.0	8.8	0.64
15			−11 30 51.6	1.0	8.3	0.61	Apr. 1	13 35.2 14 16 39.52	−10 49 41.0	1.0	8.8	0.64
			11 30 31.7	1.0	8.3	0.61	2	13 31.0 14 16 24.29	10 48 16.0	1.0	8.8	0.64
			11 30 9.8	1.0	8.3	0.61	3	13 26.8 14 16 8.88	10 46 50.2	1.0	8.8	0.64
			11 29 46.0	1.0	8.3	0.61	4	13 22.6 14 15 53.28	10 45 23.7	1.0	8.8	0.64
			11 29 20.3	1.0	8.4	0.61	5	13 18.4 14 15 37.52	10 43 56.6	1.0	8.8	0.64
			−11 28 52.6	1.0	8.4	0.61	6	13 14.2 14 15 21.59	−10 42 28.8	1.0	8.8	0.64
			11 28 23.0	1.0	8.4	0.61	7	13 10.0 14 15 5.50	10 41 0.6	1.0	8.8	0.64
			11 27 51.6	1.0	8.4	0.61	8	13 5.8 14 14 49.26	10 39 31.9	1.0	8.8	0.64
			11 27 18.2	1.0	8.4	0.61	9	13 1.6 14 14 32.88	10 38 2.6	1.0	8.8	0.64
			11 26 42.9	1.0	8.4	0.61	10	12 57.4 14 14 16.37	10 36 32.9	1.0	8.9	0.64
			−11 26 5.9	1.0	8.5	0.61	11	12 53.2 14 13 59.73	−10 35 2.8	1.0	8.9	0.64
			11 25 27.0	1.0	8.5	0.61	12	12 49.0 14 13 42.98	10 33 32.4	1.0	8.9	0.64
			11 24 46.3	1.0	8.5	0.62	13	12 44.8 14 13 26.12	10 32 1.6	1.0	8.9	0.64
			11 24 3.8	1.0	8.5	0.62	14	12 40.6 14 13 9.16	10 30 30.6	1.0	8.9	0.64
			11 23 19.6	1.0	8.5	0.62	15	12 36.4 14 12 52.11	10 28 59.5	1.0	8.9	0.64
			−11 22 33.6	1.0	8.5	0.62	16	12 32.2 14 12 34.98	−10 27 28.1	1.0	8.9	0.64
			11 21 45.9	1.0	8.5	0.62	17	12 28.0 14 12 17.78	10 25 56.7	1.0	8.9	0.64
			11 20 56.5	1.0	8.5	0.62	18	12 23.8 14 12 0.52	10 24 25.1	1.0	8.9	0.64
			11 20 5.5	1.0	8.6	0.62	19	12 19.5 14 11 43.20	10 22 53.6	1.0	8.9	0.64
			11 19 12.9	1.0	8.6	0.62	20	12 15.3 14 11 25.83	10 21 22.1	1.0	8.9	0.64
			−11 18 18.6	1.0	8.6	0.62	21	12 11.1 14 11 8.43	−10 19 50.7	1.0	8.9	0.64
			11 17 22.7	1.0	8.6	0.63	22	12 6.9 14 10 51.00	10 18 19.4	1.0	8.9	0.64
			11 16 25.3	1.0	8.6	0.63	23	12 2.6 14 10 33.56	10 16 48.3	1.0	8.9	0.64
			11 15 26.3	1.0	8.6	0.63	24	11 58.4 14 10 16.11	10 15 17.5	1.0	8.9	0.64
			11 14 25.8	1.0	8.6	0.63	25	11 54.2 14 9 58.66	10 13 46.8	1.0	8.9	0.64
			11 13 23.7	1.0	8.6	0.63	26	11 49.9 14 9 41.22	−10 12 16.5	1.0	8.9	0.64
			11 12 20.2	1.0	8.6	0.63	27	11 45.7 14 9 23.81	10 10 46.7	1.0	8.9	0.64
			11 11 15.2	1.0	8.6	0.63	28	11 41.5 14 9 6.43	10 9 17.3	1.0	8.9	0.64
			11 10 8.7	1.0	8.6	0.63	29	11 37.3 14 8 49.09	10 7 48.4	1.0	8.9	0.64
			11 9 0.9	1.0	8.6	0.63	30	11 33.1 14 8 31.80	10 6 20.0	1.0	8.9	0.64
			11 7 51.8	1.0	8.7	0.63	May 1	11 28.9 14 8 14.56	−10 4 52.3	1.0	8.9	0.64
			11 6 41.3	1.0	8.7	0.63	2	11 24.6 14 7 57.40	−10 3 25.1	1.0	8.9	0.64

FOR TRANSIT AT WASHINGTON.

			Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
			° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
			4 52.3	1.0	8.9	0.64	June 16	8 18.1	13 58 17.06	−9 19 18.1	1.0	8.5	0.61
			3 25.1	1.0	8.9	0.64	17	8 14.0	13 58 10.62	9 18 58.6	1.0	8.5	0.61
			58.6	1.0	8.9	0.64	18	8 10.0	13 58 4.53	9 18 41.1	1.0	8.5	0.61
			2.8	1.0	8.9	0.64	19	8 6.0	13 57 58.79	9 18 25.6	1.0	8.5	0.61
			9 59 7.8	1.0	8.9	0.64	20	8 1.9	13 57 53.41	9 18 12.2	1.0	8.5	0.61
		6 49.58	− 9 57 43.6	1.0	8.9	0.64	21	7 57.9	13 57 48.38	−9 18 0.9	1.0	8.5	0.61
	3.6	14 6 32.88	9 56 20.2	1.0	8.9	0.64	22	7 53.9	13 57 43.72	9 17 51.7	1.0	8.4	0.61
8	10 59.4	14 6 16.30	9 54 57.7	1.0	8.8	0.64	23	7 49.9	13 57 39.41	9 17 44.5	1.0	8.4	0.61
9	10 55.2	14 5 59.84	9 53 36.1	1.0	8.8	0.64	24	7 45.9	13 57 35.47	9 17 39.5	1.0	8.4	0.61
10	10 51.0	14 5 43.52	9 52 15.5	1.0	8.8	0.64	25	7 41.9	13 57 31.90	9 17 36.5	1.0	8.4	0.61
11	10 46.8	14 5 27.34	− 9 50 55.9	1.0	8.8	0.64	26	7 37.9	13 57 28.69	−9 17 35.6	1.0	8.4	0.61
12	10 42.6	14 5 11.30	9 49 37.3	1.0	8.8	0.64	27	7 34.0	13 57 25.85	9 17 36.8	0.9	8.4	0.61
13	10 38.4	14 4 55.42	9 48 19.8	1.0	8.8	0.64	28	7 30.0	13 57 23.38	9 17 40.0	0.9	8.4	0.61
14	10 34.2	14 4 39.71	9 47 3.5	1.0	8.8	0.64	29	7 26.0	13 57 21.28	9 17 45.4	0.9	8.3	0.60
15	10 30.0	14 4 24.16	9 45 48.3	1.0	8.8	0.64	30	7 22.1	13 57 19.55	9 17 52.8	0.9	8.3	0.60
16	10 25.8	14 4 8.80	− 9 44 34.2	1.0	8.8	0.64	July 1	7 18.1	13 57 18.18	−9 18 2.3	0.9	8.3	0.60
17	10 21.6	14 3 53.62	9 43 21.4	1.0	8.8	0.64	2	7 14.2	13 57 17.19	9 18 13.0	0.9	8.3	0.60
18	10 17.4	14 3 38.64	9 42 9.9	1.0	8.8	0.64	3	7 10.2	13 57 16.57	9 18 27.6	0.9	8.3	0.60
19	10 13.3	14 3 23.85	9 40 59.7	1.0	8.8	0.64	4	7 6.3	13 57 16.33	9 18 43.4	0.9	8.3	0.60
20	10 9.1	14 3 9.28	9 39 50.9	1.0	8.8	0.63	5	7 2.3	13 57 16.45	9 19 1.2	0.9	8.3	0.60
21	10 4.9	14 2 54.92	− 9 38 43.5	1.0	8.8	0.63	6	6 58.4	13 57 16.94	−9 19 21.0	0.9	8.3	0.60
22	10 0.7	14 2 40.78	9 37 37.5	1.0	8.8	0.63	7	6 54.5	13 57 17.80	9 19 42.9	0.9	8.3	0.59
23	9 56.6	14 2 26.87	9 36 32.9	1.0	8.8	0.63	8	6 50.6	13 57 19.03	9 20 6.9	0.9	8.2	0.59
24	9 52.4	14 2 13.21	9 35 29.9	1.0	8.7	0.63	9	6 46.7	13 57 20.63	9 20 32.9	0.9	8.2	0.59
25	9 48.3	14 1 59.79	9 34 28.5	1.0	8.7	0.63	10	6 42.8	13 57 22.60	9 21 0.9	0.9	8.2	0.59
26	9 44.1	14 1 46.62	− 9 33 28.6	1.0	8.7	0.63	11	6 38.9	13 57 24.94	−9 21 30.9	0.9	8.2	0.59
27	9 40.0	14 1 33.70	9 32 30.4	1.0	8.7	0.63	12	6 35.0	13 57 27.66	9 22 3.0	0.9	8.2	0.59
28	9 35.8	14 1 21.05	9 31 33.8	1.0	8.7	0.63	13	6 31.1	13 57 30.74	9 22 37.1	0.9	8.2	0.59
29	9 31.7	14 1 8.67	9 30 38.8	1.0	8.7	0.63	14	6 27.3	13 57 34.20	9 23 13.2	0.9	8.2	0.59
30	9 27.6	14 0 56.56	9 29 45.5	1.0	8.7	0.63	15	6 23.4	13 57 38.02	9 23 51.3	0.9	8.2	0.59
31	9 23.4	14 0 44.73	− 9 28 53.9	1.0	8.7	0.63	16	6 19.5	13 57 42.21	−9 24 31.5	0.9	8.1	0.58
June 1	9 19.3	14 0 33.19	9 28 4.1	1.0	8.7	0.63	17	6 15.7	13 57 46.77	9 25 13.6	0.9	8.1	0.58
2	9 15.2	14 0 21.93	9 27 16.0	1.0	8.7	0.63	18	6 11.8	13 57 51.69	9 25 57.6	0.9	8.1	0.58
3	9 11.1	14 0 10.97	9 26 29.7	1.0	8.7	0.63	19	6 8.0	13 57 56.98	9 26 43.6	0.9	8.1	0.58
4	9 7.0	14 0 0.31	9 25 45.3	1.0	8.7	0.63	20	6 4.1	13 58 2.63	9 27 31.6	0.9	8.1	0.58
5	9 2.9	13 59 49.95	− 9 25 2.6	1.0	8.6	0.62	21	6 0.3	13 58 8.65	−9 28 21.6	0.9	8.1	0.58
6	8 58.8	13 59 39.90	9 24 21.8	1.0	8.6	0.62	22	5 56.5	13 58 15.04	9 29 13.5	0.9	8.1	0.58
7	8 54.7	13 59 30.16	9 23 42.8	1.0	8.6	0.62	23	5 52.7	13 58 21.79	9 30 7.3	0.9	8.0	0.58
8	8 50.6	13 59 20.73	9 23 5.7	1.0	8.6	0.62	24	5 48.8	13 58 28.90	9 31 3.0	0.9	8.0	0.58
9	8 46.5	13 59 11.62	9 22 30.5	1.0	8.6	0.62	25	5 45.0	13 58 36.37	9 32 0.6	0.9	8.0	0.58
10	8 42.4	13 59 2.83	− 9 21 57.1	1.0	8.6	0.62	26	5 41.2	13 58 44.20	−9 33 0.1	0.9	8.0	0.58
11	8 38.3	13 58 54.37	9 21 25.7	1.0	8.6	0.62	27	5 37.4	13 58 52.38	9 34 1.4	0.9	8.0	0.58
12	8 34.3	13 58 46.23	9 20 56.2	1.0	8.6	0.62	28	5 33.7	13 59 0.91	9 35 4.5	0.9	8.0	0.58
13	8 30.2	13 58 38.43	9 20 28.7	1.0	8.6	0.62	29	5 29.9	13 59 9.79	9 36 9.5	0.9	7.9	0.58
14	8 26.2	13 58 30.97	9 20 3.2	1.0	8.5	0.61	30	5 26.1	13 59 19.02	9 37 16.2	0.9	7.9	0.57
15	8 22.1	13 58 23.84	− 9 19 39.7	1.0	8.5	0.61	31	5 22.3	13 59 28.60	−9 38 24.7	0.9	7.9	0.57
16	8 18.1	13 58 17.06	− 9 19 18.1	1.0	8.5	0.61	Aug. 1	5 18.6	13 59 38.51	−9 39 35.0	0.9	7.9	0.57

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Feb. 1	17 32.9	14 22 25.29	−11 31 51.6	1.0	8.1	0.59	Mar. 17	14 37.5	14 19 59.68	−11 9 0.9	1.0	8.6	0.63
2	17 29.1	14 22 30.43	11 32 1.7	1.0	8.1	0.59	18	14 33.4	14 19 48.24	11 7 51.8	1.0	8.7	0.63
3	17 25.2	14 22 35.16	11 32 9.7	1.0	8.1	0.59	19	14 29.3	14 19 36.50	11 6 41.3	1.0	8.7	0.63
4	17 21.4	14 22 39.50	11 32 15.7	1.0	8.1	0.59	20	14 25.2	14 19 24.46	11 5 29.6	1.0	8.7	0.63
5	17 17.5	14 22 43.44	11 32 19.6	1.0	8.2	0.59	21	14 21.0	14 19 12.14	11 4 16.5	1.0	8.7	0.63
6	17 13.6	14 22 46.98	−11 32 21.6	1.0	8.2	0.60	22	14 16.8	14 18 59.53	−11 3 2.3	1.0	8.7	0.63
7	17 9.7	14 22 50.12	11 32 21.6	1.0	8.2	0.60	23	14 12.7	14 18 46.64	11 1 46.9	1.0	8.7	0.63
8	17 5.9	14 22 52.86	11 32 19.5	1.0	8.2	0.60	24	14 8.5	14 18 33.49	11 0 30.3	1.0	8.7	0.64
9	17 2.0	14 22 55.19	11 32 15.5	1.0	8.2	0.60	25	14 4.4	14 18 20.08	10 59 12.5	1.0	8.7	0.64
10	16 58.2	14 22 57.12	11 32 9.5	1.0	8.2	0.60	26	14 0.2	14 18 6.41	10 57 53.8	1.0	8.7	0.64
11	16 54.2	14 22 58.65	−11 32 1.5	1.0	8.2	0.60	27	13 56.1	14 17 52.50	−10 56 34.0	1.0	8.8	0.64
12	16 50.3	14 22 59.78	11 31 51.4	1.0	8.2	0.60	28	13 51.9	14 17 38.35	10 55 13.2	1.0	8.8	0.64
13	16 46.3	14 23 0.51	11 31 39.4	1.0	8.3	0.60	29	13 47.7	14 17 23.97	10 53 51.4	1.0	8.8	0.64
14	16 42.4	14 23 0.83	11 31 25.4	1.0	8.3	0.61	30	13 43.6	14 17 9.36	10 52 28.8	1.0	8.8	0.64
15	16 38.5	14 23 0.76	11 31 9.5	1.0	8.3	0.61	31	13 39.4	14 16 54.54	10 51 5.3	1.0	8.8	0.64
16	16 34.5	14 23 0.28	−11 30 51.6	1.0	8.3	0.61	Apr. 1	13 35.2	14 16 39.52	−10 49 41.0	1.0	8.8	0.64
17	16 30.6	14 22 59.39	11 30 31.7	1.0	8.3	0.61	2	13 31.0	14 16 24.29	10 48 16.0	1.0	8.8	0.64
18	16 26.6	14 22 58.11	11 30 9.8	1.0	8.3	0.61	3	13 26.8	14 16 8.88	10 46 50.2	1.0	8.8	0.64
19	16 22.7	14 22 56.42	11 29 46.0	1.0	8.3	0.61	4	13 22.6	14 15 53.28	10 45 23.7	1.0	8.8	0.64
20	16 18.7	14 22 54.33	11 29 20.3	1.0	8.4	0.61	5	13 18.4	14 15 37.52	10 43 56.6	1.0	8.8	0.64
21	16 14.7	14 22 51.84	−11 28 52.6	1.0	8.4	0.61	6	13 14.2	14 15 21.59	−10 42 28.8	1.0	8.8	0.64
22	16 10.7	14 22 48.95	11 28 23.0	1.0	8.4	0.61	7	13 10.0	14 15 5.50	10 41 0.6	1.0	8.8	0.64
23	16 6.8	14 22 45.67	11 27 51.6	1.0	8.4	0.61	8	13 5.8	14 14 49.26	10 39 31.9	1.0	8.8	0.64
24	16 2.8	14 22 42.00	11 27 18.2	1.0	8.4	0.61	9	13 1.6	14 14 32.88	10 38 2.6	1.0	8.8	0.64
25	15 58.8	14 22 37.93	11 26 42.9	1.0	8.4	0.61	10	12 57.4	14 14 16.37	10 36 32.9	1.0	8.9	0.64
26	15 54.8	14 22 33.48	−11 26 5.9	1.0	8.5	0.61	11	12 53.2	14 13 59.73	−10 35 2.8	1.0	8.9	0.64
27	15 50.7	14 22 28.64	11 25 27.0	1.0	8.5	0.61	12	12 49.0	14 13 42.98	10 33 32.4	1.0	8.9	0.64
28	15 46.7	14 22 23.41	11 24 46.3	1.0	8.5	0.62	13	12 44.8	14 13 26.12	10 32 1.6	1.0	8.9	0.64
Mar. 1	15 42.7	14 22 17.80	11 24 3.8	1.0	8.5	0.62	14	12 40.6	14 13 9.16	10 30 30.6	1.0	8.9	0.64
2	15 38.7	14 22 11.82	11 23 19.6	1.0	8.5	0.62	15	12 36.4	14 12 52.11	10 28 59.5	1.0	8.9	0.64
3	15 34.6	14 22 5.47	−11 22 33.6	1.0	8.5	0.62	16	12 32.2	14 12 34.98	−10 27 28.1	1.0	8.9	0.64
4	15 30.6	14 21 58.75	11 21 45.9	1.0	8.5	0.62	17	12 28.0	14 12 17.78	10 25 56.7	1.0	8.9	0.64
5	15 26.5	14 21 51.66	11 20 56.5	1.0	8.5	0.62	18	12 23.8	14 12 0.52	10 24 25.1	1.0	8.9	0.64
6	15 22.5	14 21 44.22	11 20 5.5	1.0	8.6	0.62	19	12 19.5	14 11 43.20	10 22 53.6	1.0	8.9	0.64
7	15 18.4	14 21 36.42	11 19 12.9	1.0	8.6	0.62	20	12 15.3	14 11 25.83	10 21 22.1	1.0	8.9	0.64
8	15 14.4	14 21 28.26	−11 18 18.6	1.0	8.6	0.62	21	12 11.1	14 11 8.43	−10 19 50.7	1.0	8.9	0.64
9	15 10.3	14 21 19.75	11 17 22.7	1.0	8.6	0.63	22	12 6.9	14 10 51.00	10 18 19.4	1.0	8.9	0.64
10	15 6.2	14 21 10.91	11 16 25.3	1.0	8.6	0.63	23	12 2.6	14 10 33.56	10 16 48.3	1.0	8.9	0.64
11	15 2.1	14 21 1.72	11 15 26.3	1.0	8.6	0.63	24	11 58.4	14 10 16.11	10 15 17.5	1.0	8.9	0.64
12	14 58.0	14 20 52.19	11 14 25.8	1.0	8.6	0.63	25	11 54.2	14 9 58.66	10 13 46.8	1.0	8.9	0.64
13	14 53.9	14 20 42.33	−11 13 23.7	1.0	8.6	0.63	26	11 49.9	14 9 41.22	−10 12 16.5	1.0	8.9	0.64
14	14 49.8	14 20 32.14	11 12 20.2	1.0	8.6	0.63	27	11 45.7	14 9 23.81	10 10 46.7	1.0	8.9	0.64
15	14 45.7	14 20 21.64	11 11 15.2	1.0	8.6	0.63	28	11 41.5	14 9 6.43	10 9 17.3	1.0	8.9	0.64
16	14 41.6	14 20 10.81	11 10 8.7	1.0	8.6	0.63	29	11 37.3	14 8 49.09	10 7 48.4	1.0	8.9	0.64
17	14 37.5	14 19 59.68	11 9 0.9	1.0	8.6	0.63	30	11 33.1	14 8 31.80	10 6 20.0	1.0	8.9	0.64
18	14 33.4	14 19 48.24	−11 7 51.8	1.0	8.7	0.63	May 1	11 28.9	14 8 14.56	−10 4 52.3	1.0	8.9	0.64
19	14 29.3	14 19 36.50	−11 6 41.3	1.0	8.7	0.63	2	11 24.6	14 7 57.40	−10 3 25.1	1.0	8.9	0.64

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
May 1	11 28.9	14 8 14.56	−10 4 52.3	1.0	8.9	0.64	June 16	8 18.1	13 58 17.06	−9 19 18.1	1.0	8.5	0.61
2	11 24.6	14 7 57.40	10 3 25.1	1.0	8.9	0.64	17	8 14.0	13 58 10.62	9 18 58.6	1.0	8.5	0.61
3	11 20.4	14 7 40.31	10 1 58.6	1.0	8.9	0.64	18	8 10.0	13 58 4.53	9 18 41.1	1.0	8.5	0.61
4	11 16.2	14 7 23.30	10 0 32.8	1.0	8.9	0.64	19	8 6.0	13 57 58.79	9 18 25.6	1.0	8.5	0.61
5	11 12.0	14 7 6.39	9 59 7.8	1.0	8.9	0.64	20	8 1.9	13 57 53.41	9 18 12.2	1.0	8.5	0.61
6	11 7.8	14 6 49.58	− 9 57 43.6	1.0	8.9	0.64	21	7 57.9	13 57 48.38	−9 18 0.9	1.0	8.5	0.61
7	11 3.6	14 6 32.88	9 56 20.2	1.0	8.9	0.64	22	7 53.9	13 57 43.72	9 17 51.7	1.0	8.4	0.61
8	10 59.4	14 6 16.30	9 54 57.7	1.0	8.8	0.64	23	7 49.9	13 57 39.41	9 17 44.5	1.0	8.4	0.61
9	10 55.2	14 5 59.84	9 53 36.1	1.0	8.8	0.64	24	7 45.9	13 57 35.47	9 17 39.5	1.0	8.4	0.61
10	10 51.0	14 5 43.52	9 52 15.5	1.0	8.8	0.64	25	7 41.9	13 57 31.90	9 17 36.5	1.0	8.4	0.61
11	10 46.8	14 5 27.34	− 9 50 55.9	1.0	8.8	0.64	26	7 37.9	13 57 28.69	−9 17 35.6	1.0	8.4	0.61
12	10 42.6	14 5 11.30	9 49 37.3	1.0	8.8	0.64	27	7 34.0	13 57 25.85	9 17 36.8	0.9	8.4	0.61
13	10 38.4	14 4 55.42	9 48 19.8	1.0	8.8	0.64	28	7 30.0	13 57 23.38	9 17 40.0	0.9	8.4	0.61
14	10 34.2	14 4 39.71	9 47 3.5	1.0	8.8	0.64	29	7 26.0	13 57 21.28	9 17 45.4	0.9	8.3	0.60
15	10 30.0	14 4 24.16	9 45 48.3	1.0	8.8	0.64	30	7 22.1	13 57 19.55	9 17 52.8	0.9	8.3	0.60
16	10 25.8	14 4 8.80	− 9 44 34.2	1.0	8.8	0.64	July 1	7 18.1	13 57 18.18	−9 18 2.3	0.9	8.3	0.60
17	10 21.6	14 3 53.62	9 43 21.4	1.0	8.8	0.64	2	7 14.2	13 57 17.19	9 18 13.9	0.9	8.3	0.60
18	10 17.4	14 3 38.64	9 42 9.9	1.0	8.8	0.64	3	7 10.2	13 57 16.57	9 18 27.6	0.9	8.3	0.60
19	10 13.3	14 3 23.85	9 40 59.7	1.0	8.8	0.64	4	7 6.3	13 57 16.33	9 18 43.4	0.9	8.3	0.60
20	10 9.1	14 3 9.28	9 39 50.9	1.0	8.8	0.63	5	7 2.3	13 57 16.45	9 19 1.2	0.9	8.3	0.60
21	10 4.9	14 2 54.92	− 9 38 43.5	1.0	8.8	0.63	6	6 58.4	13 57 16.94	−9 19 21.0	0.9	8.3	0.60
22	10 0.7	14 2 40.78	9 37 37.5	1.0	8.8	0.63	7	6 54.5	13 57 17.80	9 19 42.9	0.9	8.3	0.59
23	9 56.6	14 2 26.87	9 36 32.9	1.0	8.8	0.63	8	6 50.6	13 57 19.03	9 20 6.9	0.9	8.2	0.59
24	9 52.4	14 2 13.21	9 35 29.9	1.0	8.7	0.63	9	6 46.7	13 57 20.63	9 20 32.9	0.9	8.2	0.59
25	9 48.3	14 1 59.79	9 34 28.5	1.0	8.7	0.63	10	6 42.8	13 57 22.60	9 21 0.9	0.9	8.2	0.59
26	9 44.1	14 1 46.62	− 9 33 28.6	1.0	8.7	0.63	11	6 38.9	13 57 24.94	−9 21 30.9	0.9	8.2	0.59
27	9 40.0	14 1 33.70	9 32 30.4	1.0	8.7	0.63	12	6 35.0	13 57 27.66	9 22 3.0	0.9	8.2	0.59
28	9 35.8	14 1 21.05	9 31 33.8	1.0	8.7	0.63	13	6 31.1	13 57 30.74	9 22 37.1	0.9	8.2	0.59
29	9 31.7	14 1 8.67	9 30 38.8	1.0	8.7	0.63	14	6 27.3	13 57 34.20	9 23 13.2	0.9	8.2	0.59
30	9 27.6	14 0 56.56	9 29 45.5	1.0	8.7	0.63	15	6 23.4	13 57 38.02	9 23 51.3	0.9	8.2	0.59
31	9 23.4	14 0 44.73	− 9 28 53.9	1.0	8.7	0.63	16	6 19.5	13 57 42.21	−9 24 31.5	0.9	8.1	0.58
June 1	9 19.3	14 0 33.19	9 28 4.1	1.0	8.7	0.63	17	6 15.7	13 57 46.77	9 25 13.6	0.9	8.1	0.58
2	9 15.2	14 0 21.93	9 27 16.0	1.0	8.7	0.63	18	6 11.8	13 57 51.69	9 25 57.6	0.9	8.1	0.58
3	9 11.1	14 0 10.97	9 26 29.7	1.0	8.7	0.63	19	6 8.0	13 57 56.98	9 26 43.6	0.9	8.1	0.58
4	9 7.0	14 0 0.31	9 25 45.3	1.0	8.7	0.63	20	6 4.1	13 58 2.63	9 27 31.6	0.9	8.1	0.58
5	9 2.9	13 59 49.95	− 9 25 2.6	1.0	8.6	0.62	21	6 0.3	13 58 8.65	−9 28 21.6	0.9	8.1	0.58
6	8 58.8	13 59 39.90	9 24 21.8	1.0	8.6	0.62	22	5 56.5	13 58 15.04	9 29 13.5	0.9	8.1	0.58
7	8 54.7	13 59 30.16	9 23 42.8	1.0	8.6	0.62	23	5 52.7	13 58 21.79	9 30 7.3	0.9	8.0	0.58
8	8 50.6	13 59 20.73	9 23 5.7	1.0	8.6	0.62	24	5 48.8	13 58 28.90	9 31 3.0	0.9	8.0	0.58
9	8 46.5	13 59 11.62	9 22 30.5	1.0	8.6	0.62	25	5 45.0	13 58 36.37	9 32 0.6	0.9	8.0	0.58
10	8 42.4	13 59 2.83	− 9 21 57.1	1.0	8.6	0.62	26	5 41.2	13 58 44.20	−9 33 0.1	0.9	8.0	0.58
11	8 38.3	13 58 54.37	9 21 25.7	1.0	8.6	0.62	27	5 37.4	13 58 52.38	9 34 1.4	0.9	8.0	0.58
12	8 34.3	13 58 46.23	9 20 56.2	1.0	8.6	0.62	28	5 33.7	13 59 0.91	9 35 4.5	0.9	8.0	0.58
13	8 30.2	13 58 38.43	9 20 28.7	1.0	8.6	0.62	29	5 29.9	13 59 9.79	9 36 9.5	0.9	7.9	0.58
14	8 26.2	13 58 30.97	9 20 3.2	1.0	8.5	0.61	30	5 26.1	13 59 19.02	9 37 16.2	0.9	7.9	0.57
15	8 22.1	13 58 23.84	− 9 19 39.7	1.0	8.5	0.61	31	5 22.3	13 59 28.60	−9 38 24.7	0.9	7.9	0.57
16	8 18.1	13 58 17.06	− 9 19 18.1	1.0	8.5	0.61	Aug. 1	5 18.6	13 59 38.51	−9 39 35.0	0.9	7.9	0.57

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Feb. 1	18 19.9	15 9 33.92	−17 21 0.7	0.5	1.8	0.12	Mar. 17	15 26.8	15 9 23.18	−17 19 52.5	0.5	1.9	0.13
2	18 16.1	15 9 38.34	17 21 17.8	0.5	1.8	0.12	18	15 22.7	15 9 18.26	17 19 32.3	0.5	1.9	0.13
3	18 12.2	15 9 42.55	17 21 34.0	0.5	1.8	0.12	19	15 18.7	15 9 13.16	17 19 11.4	0.5	1.9	0.13
4	18 8.3	15 9 46.54	17 21 49.4	0.5	1.8	0.13	20	15 14.7	15 9 7.66	17 18 49.8	0.5	1.9	0.13
5	18 4.5	15 9 50.32	17 22 3.9	0.5	1.8	0.13	21	15 10.7	15 9 2.39	17 18 27.4	0.5	1.9	0.13
6	18 0.6	15 9 53.88	−17 22 17.5	0.5	1.8	0.13	22	15 6.7	15 8 56.74	−17 18 4.3	0.5	1.9	0.13
7	17 56.7	15 9 57.22	17 22 30.3	0.5	1.8	0.13	23	15 2.6	15 8 50.91	17 17 40.5	0.5	1.9	0.13
8	17 52.8	15 10 0.35	17 22 42.2	0.5	1.8	0.13	24	14 58.6	15 8 44.91	17 17 16.0	0.5	1.9	0.13
9	17 49.0	15 10 3.26	17 22 53.2	0.5	1.8	0.13	25	14 54.6	15 8 38.74	17 16 50.8	0.5	1.9	0.13
10	17 45.1	15 10 5.95	17 23 3.3	0.5	1.8	0.13	26	14 50.5	15 8 32.40	17 16 25.0	0.5	1.9	0.13
11	17 41.2	15 10 8.42	−17 23 12.5	0.5	1.8	0.13	27	14 46.5	15 8 25.89	−17 15 58.5	0.5	1.9	0.13
12	17 37.3	15 10 10.67	17 23 20.9	0.5	1.8	0.13	28	14 42.5	15 8 19.22	17 15 31.3	0.5	1.9	0.13
13	17 33.4	15 10 12.70	17 23 28.4	0.5	1.8	0.13	29	14 38.4	15 8 12.39	17 15 3.5	0.5	1.9	0.13
14	17 29.5	15 10 14.51	17 23 35.0	0.5	1.8	0.13	30	14 34.4	15 8 5.42	17 14 35.1	0.5	1.9	0.13
15	17 25.6	15 10 16.10	17 23 40.7	0.5	1.8	0.13	31	14 30.3	15 7 58.29	17 14 6.1	0.5	1.9	0.13
16	17 21.7	15 10 17.46	−17 23 45.5	0.5	1.8	0.13	Apr. 1	14 26.3	15 7 51.01	−17 13 36.4	0.5	1.9	0.13
17	17 17.8	15 10 18.61	17 23 49.4	0.5	1.8	0.13	2	14 22.2	15 7 43.58	17 13 6.2	0.5	1.9	0.13
18	17 13.9	15 10 19.53	17 23 52.5	0.5	1.8	0.13	3	14 18.1	15 7 36.02	17 12 35.4	0.5	1.9	0.13
19	17 9.9	15 10 20.23	17 23 54.7	0.5	1.8	0.13	4	14 14.1	15 7 28.32	17 12 4.0	0.5	1.9	0.13
20	17 6.0	15 10 20.72	17 23 56.0	0.5	1.8	0.13	5	14 10.0	15 7 20.48	17 11 32.1	0.5	1.9	0.13
21	17 2.1	15 10 20.98	−17 23 56.4	0.5	1.8	0.13	6	14 6.0	15 7 12.51	−17 10 59.7	0.5	1.9	0.13
22	16 58.2	15 10 21.02	17 23 55.9	0.5	1.8	0.13	7	14 1.9	15 7 4.42	17 10 26.7	0.5	1.9	0.13
23	16 54.2	15 10 20.84	17 23 54.6	0.5	1.8	0.13	8	13 57.8	15 6 56.20	17 9 53.2	0.5	1.9	0.13
24	16 50.3	15 10 20.43	17 23 52.4	0.5	1.8	0.13	9	13 53.8	15 6 47.86	17 9 19.3	0.5	1.9	0.13
25	16 46.3	15 10 19.81	17 23 49.3	0.5	1.8	0.13	10	13 49.7	15 6 39.40	17 8 44.8	0.5	1.9	0.13
26	16 42.4	15 10 18.97	−17 23 45.3	0.5	1.8	0.13	11	13 45.6	15 6 30.82	−17 8 9.9	0.5	1.9	0.13
27	16 38.4	15 10 17.91	17 23 40.5	0.5	1.8	0.13	12	13 41.5	15 6 22.14	17 7 34.5	0.5	1.9	0.13
28	16 34.5	15 10 16.63	17 23 34.8	0.5	1.8	0.13	13	13 37.4	15 6 13.36	17 6 58.7	0.5	1.9	0.13
Mar. 1	16 30.5	15 10 15.14	17 23 28.3	0.5	1.8	0.13	14	13 33.4	15 6 4.47	17 6 22.5	0.5	1.9	0.13
2	16 26.6	15 10 13.43	17 23 20.9	0.5	1.8	0.13	15	13 29.3	15 5 55.48	17 5 45.8	0.5	1.9	0.13
3	16 22.6	15 10 11.52	−17 23 12.7	0.5	1.8	0.13	16	13 25.2	15 5 46.39	−17 5 8.8	0.5	1.9	0.13
4	16 18.6	15 10 9.39	17 23 3.6	0.5	1.8	0.13	17	13 21.1	15 5 37.21	17 4 31.3	0.5	1.9	0.13
5	16 14.7	15 10 7.05	17 22 53.7	0.5	1.8	0.13	18	13 17.0	15 5 27.94	17 3 53.5	0.5	1.9	0.13
6	16 10.7	15 10 4.50	17 22 43.0	0.5	1.8	0.13	19	13 12.9	15 5 18.60	17 3 15.3	0.5	1.9	0.13
7	16 6.7	15 10 1.75	17 22 31.5	0.5	1.8	0.13	20	13 8.8	15 5 9.17	17 2 36.8	0.5	1.9	0.13
8	16 2.7	15 9 58.79	−17 22 19.2	0.5	1.8	0.13	21	13 4.8	15 4 59.66	−17 1 57.9	0.5	1.9	0.13
9	15 58.8	15 9 55.63	17 22 6.0	0.5	1.8	0.13	22	13 0.7	15 4 50.08	17 1 18.8	0.5	1.9	0.13
10	15 54.8	15 9 52.26	17 21 52.1	0.5	1.8	0.13	23	12 56.6	15 4 40.44	17 0 39.4	0.5	1.9	0.13
11	15 50.8	15 9 48.70	17 21 37.4	0.5	1.8	0.13	24	12 52.5	15 4 30.74	16 59 59.7	0.5	1.9	0.13
12	15 46.8	15 9 44.93	17 21 21.8	0.5	1.8	0.13	25	12 48.4	15 4 20.98	16 59 19.7	0.5	1.9	0.13
13	15 42.8	15 9 40.97	−17 21 5.5	0.5	1.9	0.13	26	12 44.3	15 4 11.16	−16 58 39.5	0.5	1.9	0.13
14	15 38.8	15 9 36.82	17 20 48.4	0.5	1.9	0.13	27	12 40.2	15 4 1.29	16 57 59.1	0.5	1.9	0.13
15	15 34.8	15 9 32.47	17 20 30.5	0.5	1.9	0.13	28	12 36.1	15 3 51.39	16 57 18.5	0.5	1.9	0.13
16	15 30.8	15 9 27.92	17 20 11.9	0.5	1.9	0.13	29	12 32.0	15 3 41.44	16 56 37.8	0.5	1.9	0.13
17	15 26.8	15 9 23.18	17 19 52.5	0.5	1.9	0.13	30	12 27.9	15 3 31.45	16 55 56.9	0.5	1.9	0.13
18	15 22.7	15 9 18.26	−17 19 32.3	0.5	1.9	0.13	May 1	12 23.8	15 3 21.43	−16 55 15.8	0.5	1.9	0.13
19	15 18.7	15 9 13.16	−17 19 11.4	0.5	1.9	0.13	2	12 19.7	15 3 11.39	−16 54 34.6	0.5	1.9	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
May 1	12 23.8	15 3 21.43	−16 55 15.8	0.5	1.9	0.13	June 15	9 20.0	14 56 25.14	−16 26 40.7	0.5	1.9	0.13
2	12 19.7	15 3 11.39	16 54 34.6	0.5	1.9	0.13	16	9 15.9	14 56 18.04	16 26 11.5	0.5	1.9	0.13
3	12 15.6	15 3 1.33	16 53 53.3	0.5	1.9	0.13	17	9 11.9	14 56 11.08	16 25 43.0	0.5	1.9	0.13
4	12 11.5	15 2 51.24	16 53 11.9	0.5	1.9	0.13	18	9 7.8	14 56 4.28	16 25 15.1	0.5	1.9	0.13
5	12 7.4	15 2 41.15	16 52 30.5	0.5	1.9	0.13	19	9 3.8	14 55 57.63	16 24 47.9	0.5	1.9	0.13
6	12 3.3	15 2 31.04	−16 51 49.0	0.5	1.9	0.13	20	8 59.7	14 55 51.13	−16 24 21.3	0.5	1.9	0.13
7	11 59.2	15 2 20.92	16 51 7.5	0.5	1.9	0.13	21	8 55.7	14 55 44.79	16 23 55.4	0.5	1.9	0.13
8	11 55.1	15 2 10.81	16 50 25.9	0.5	1.9	0.13	22	8 51.7	14 55 38.61	16 23 30.2	0.5	1.9	0.13
9	11 51.0	15 2 0.70	16 49 44.3	0.5	1.9	0.13	23	8 47.6	14 55 32.59	16 23 5.7	0.5	1.9	0.13
10	11 46.9	15 1 50.60	16 49 2.7	0.5	1.9	0.13	24	8 43.6	14 55 26.73	16 22 41.9	0.5	1.9	0.13
11	11 42.8	15 1 40.50	−16 48 21.2	0.5	1.9	0.13	25	8 39.6	14 55 21.05	−16 22 18.8	0.5	1.9	0.13
12	11 38.7	15 1 30.41	16 47 39.7	0.5	1.9	0.13	26	8 35.6	14 55 15.53	16 21 56.5	0.5	1.9	0.13
13	11 34.6	15 1 20.35	16 46 58.3	0.5	1.9	0.13	27	8 31.6	14 55 10.19	16 21 34.9	0.5	1.9	0.13
14	11 30.5	15 1 10.31	16 46 16.9	0.5	1.9	0.13	28	8 27.5	14 55 5.02	16 21 14.1	0.5	1.9	0.13
15	11 26.4	15 1 0.29	16 45 35.6	0.5	1.9	0.13	29	8 23.5	14 55 0.03	16 20 54.0	0.5	1.9	0.13
16	11 22.3	15 0 50.31	−16 44 54.4	0.5	1.9	0.13	30	8 19.5	14 54 55.21	−16 20 34.7	0.5	1.9	0.13
17	11 18.2	15 0 40.36	16 44 13.4	0.5	1.9	0.13	July 1	8 15.5	14 54 50.58	16 20 16.2	0.5	1.9	0.13
18	11 14.1	15 0 30.45	16 43 32.6	0.5	1.9	0.13	2	8 11.5	14 54 46.12	16 19 58.5	0.5	1.9	0.13
19	11 10.0	15 0 20.58	16 42 51.9	0.5	1.9	0.13	3	8 7.5	14 54 41.85	16 19 41.5	0.5	1.9	0.13
20	11 5.9	15 0 10.76	16 42 11.3	0.5	1.9	0.13	4	8 3.5	14 54 37.76	16 19 25.4	0.5	1.9	0.13
21	11 1.8	15 0 0.99	−16 41 31.0	0.5	1.9	0.13	5	7 59.5	14 54 33.86	−16 19 10.1	0.5	1.9	0.13
22	10 57.8	14 59 51.28	16 40 51.0	0.5	1.9	0.13	6	7 55.5	14 54 30.14	16 18 55.6	0.5	1.8	0.13
23	10 53.7	14 59 41.63	16 40 11.1	0.5	1.9	0.13	7	7 51.5	14 54 26.62	16 18 41.8	0.5	1.8	0.13
24	10 49.6	14 59 32.04	16 39 31.5	0.5	1.9	0.13	8	7 47.5	14 54 23.28	16 18 28.9	0.5	1.8	0.13
25	10 45.5	14 59 22.53	16 38 52.3	0.5	1.9	0.13	9	7 43.5	14 54 20.13	16 18 16.9	0.5	1.8	0.13
26	10 41.4	14 59 13.09	−16 38 13.3	0.5	1.9	0.13	10	7 39.6	14 54 17.18	−16 18 5.7	0.5	1.8	0.13
27	10 37.3	14 59 3.72	16 37 34.6	0.5	1.9	0.13	11	7 35.6	14 54 14.42	16 17 55.3	0.5	1.8	0.13
28	10 33.2	14 58 54.43	16 36 56.2	0.5	1.9	0.13	12	7 31.6	14 54 11.85	16 17 45.8	0.5	1.8	0.13
29	10 29.1	14 58 45.23	16 36 18.2	0.5	1.9	0.13	13	7 27.6	14 54 9.48	16 17 37.1	0.5	1.8	0.13
30	10 25.1	14 58 36.12	16 35 40.6	0.5	1.9	0.13	14	7 23.7	14 54 7.31	16 17 29.3	0.5	1.8	0.13
31	10 21.0	14 58 27.10	−16 35 3.4	0.5	1.9	0.13	15	7 19.7	14 54 5.34	−16 17 22.4	0.5	1.8	0.13
June 1	10 16.9	14 58 18.18	16 34 26.6	0.5	1.9	0.13	16	7 15.7	14 54 3.56	16 17 16.4	0.5	1.8	0.13
2	10 12.8	14 58 9.36	16 33 50.2	0.5	1.9	0.13	17	7 11.8	14 54 1.99	16 17 11.2	0.5	1.8	0.13
3	10 8.7	14 58 0.64	16 33 14.2	0.5	1.9	0.13	18	7 7.8	14 54 0.62	16 17 6.8	0.5	1.8	0.13
4	10 4.7	14 57 52.02	16 32 38.6	0.5	1.9	0.13	19	7 3.9	14 53 59.45	16 17 3.4	0.5	1.8	0.13
5	10 0.6	14 57 43.52	−16 32 3.5	0.5	1.9	0.13	20	6 59.9	14 53 58.49	−16 17 0.9	0.5	1.8	0.13
6	9 56.5	14 57 35.13	16 31 28.9	0.5	1.9	0.13	21	6 56.0	14 53 57.73	16 16 59.2	0.5	1.8	0.13
7	9 52.5	14 57 26.85	16 30 54.7	0.5	1.9	0.13	22	6 52.0	14 53 57.17	16 16 58.5	0.5	1.8	0.13
8	9 48.4	14 57 18.69	16 30 21.1	0.5	1.9	0.13	23	6 48.1	14 53 56.82	16 16 58.6	0.5	1.8	0.13
9	9 44.3	14 57 10.65	16 29 47.9	0.5	1.9	0.13	24	6 44.2	14 53 56.68	16 16 59.7	0.5	1.8	0.13
10	9 40.3	14 57 2.74	−16 29 15.3	0.5	1.9	0.13	25	6 40.2	14 53 56.75	−16 17 1.7	0.5	1.8	0.13
11	9 36.2	14 56 54.95	16 28 43.3	0.5	1.9	0.13	26	6 36.3	14 53 57.02	16 17 4.5	0.5	1.8	0.13
12	9 32.2	14 56 47.30	16 28 11.7	0.5	1.9	0.13	27	6 32.4	14 53 57.50	16 17 8.2	0.5	1.8	0.13
13	9 28.1	14 56 39.77	16 27 40.8	0.5	1.9	0.13	28	6 28.5	14 53 58.19	16 17 12.9	0.5	1.8	0.13
14	9 24.1	14 56 32.39	16 27 10.4	0.5	1.9	0.13	29	6 24.5	14 53 59.08	16 17 18.5	0.5	1.8	0.13
15	9 20.0	14 56 25.14	−16 26 40.7	0.5	1.9	0.13	30	6 20.6	14 54 0.18	−16 17 24.9	0.5	1.8	0.13
16	9 15.9	14 56 18.04	−16 26 11.5	0.5	1.9	0.13	31	6 16.7	14 54 1.48	−16 17 32.3	0.5	1.8	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	10 8.0	4 50 5.59	+20 56 59.6	0.3	1.3	0.09	Feb. 14	7 8.1	4 47 8.05	+20 53 59.6	0.3	1.3	0.09
1	10 3.9	4 49 59.35	20 56 51.0	0.3	1.3	0.09	15	7 4.2	4 47 7.04	20 54 1.2	0.3	1.3	0.09
2	9 59.9	4 49 53.18	20 56 42.5	0.3	1.3	0.09	16	7 0.2	4 47 6.18	20 54 3.1	0.3	1.3	0.09
3	9 55.9	4 49 47.08	20 56 34.2	0.3	1.3	0.09	17	6 56.3	4 47 5.47	20 54 5.3	0.3	1.3	0.09
4	9 51.8	4 49 41.07	20 56 26.1	0.3	1.3	0.09	18	6 52.4	4 47 4.89	20 54 7.8	0.3	1.3	0.09
5	9 47.8	4 49 35.15	+20 56 18.1	0.3	1.3	0.09	19	6 48.4	4 47 4.46	+20 54 10.4	0.3	1.3	0.09
6	9 43.8	4 49 29.32	20 56 10.4	0.3	1.3	0.09	20	6 44.5	4 47 4.17	20 54 13.4	0.3	1.3	0.09
7	9 39.8	4 49 23.57	20 56 2.8	0.3	1.3	0.09	21	6 40.5	4 47 4.04	20 54 16.6	0.3	1.3	0.09
8	9 35.7	4 49 17.92	20 55 55.4	0.3	1.3	0.09	22	6 36.6	4 47 4.05	20 54 20.1	0.3	1.3	0.09
9	9 31.7	4 49 12.35	20 55 48.2	0.3	1.3	0.09	23	6 32.6	4 47 4.20	20 54 23.9	0.3	1.3	0.09
10	9 27.7	4 49 6.87	+20 55 41.2	0.3	1.3	0.09	24	6 28.7	4 47 4.51	+20 54 27.9	0.3	1.3	0.09
11	9 23.7	4 49 1.48	20 55 34.3	0.3	1.3	0.09	25	6 24.8	4 47 4.95	20 54 32.2	0.3	1.3	0.09
12	9 19.6	4 48 56.19	20 55 27.7	0.3	1.3	0.09	26	6 20.9	4 47 5.54	20 54 36.7	0.3	1.3	0.09
13	9 15.6	4 48 51.00	20 55 21.3	0.3	1.3	0.09	27	6 17.0	4 47 6.28	20 54 41.5	0.3	1.3	0.09
14	9 11.6	4 48 45.92	20 55 15.0	0.3	1.3	0.09	28	6 13.1	4 47 7.17	+20 54 46.5	0.3	1.3	0.09
15	9 7.6	4 48 40.94	+20 55 9.0	0.3	1.3	0.09	Sept. 1	18 22.8	5 8 13.37	+21 28 18.3	0.3	1.3	0.09
16	9 3.6	4 48 36.07	20 55 3.2	0.3	1.3	0.09	2	18 18.9	5 8 15.97	21 28 19.0	0.3	1.3	0.09
17	8 59.6	4 48 31.30	20 54 57.6	0.3	1.3	0.09	3	18 15.0	5 8 18.44	21 28 19.6	0.3	1.3	0.09
18	8 55.6	4 48 26.64	20 54 52.2	0.3	1.3	0.09	4	18 11.1	5 8 20.77	21 28 19.9	0.3	1.3	0.09
19	8 51.6	4 48 22.08	20 54 47.1	0.3	1.3	0.09	5	18 7.2	5 8 22.96	21 28 20.1	0.3	1.3	0.09
20	8 47.5	4 48 17.64	+20 54 42.2	0.3	1.3	0.09	6	18 3.3	5 8 25.01	+21 28 20.1	0.3	1.3	0.09
21	8 43.5	4 48 13.32	20 54 37.5	0.3	1.3	0.09	7	17 59.4	5 8 26.93	21 28 19.9	0.3	1.3	0.09
22	8 39.5	4 48 9.12	20 54 33.1	0.3	1.3	0.09	8	17 55.5	5 8 28.70	21 28 19.6	0.3	1.3	0.09
23	8 35.5	4 48 5.04	20 54 28.9	0.3	1.3	0.09	9	17 51.6	5 8 30.33	21 28 19.0	0.3	1.3	0.09
24	8 31.5	4 48 1.08	20 54 24.9	0.3	1.3	0.09	10	17 47.7	5 8 31.82	21 28 18.3	0.3	1.3	0.09
25	8 27.6	4 47 57.24	+20 54 21.2	0.3	1.3	0.09	11	17 43.8	5 8 33.17	+21 28 17.4	0.3	1.3	0.09
26	8 23.6	4 47 53.52	20 54 17.7	0.3	1.3	0.09	12	17 39.9	5 8 34.37	21 28 16.3	0.3	1.3	0.09
27	8 19.6	4 47 49.92	20 54 14.5	0.3	1.3	0.09	13	17 35.9	5 8 35.43	21 28 15.1	0.3	1.3	0.09
28	8 15.6	4 47 46.45	20 54 11.5	0.3	1.3	0.09	14	17 32.0	5 8 36.35	21 28 13.6	0.3	1.3	0.09
29	8 11.6	4 47 43.11	20 54 8.8	0.3	1.3	0.09	15	17 28.1	5 8 37.13	21 28 12.0	0.3	1.3	0.09
30	8 7.6	4 47 39.91	+20 54 6.3	0.3	1.3	0.09	16	17 24.2	5 8 37.77	+21 28 10.2	0.3	1.3	0.09
31	8 3.6	4 47 36.84	20 54 4.1	0.3	1.3	0.09	17	17 20.3	5 8 38.26	21 28 8.2	0.3	1.3	0.09
Feb. 1	7 59.7	4 47 33.90	20 54 2.1	0.3	1.3	0.09	18	17 16.4	5 8 38.60	21 28 6.1	0.3	1.3	0.09
2	7 55.7	4 47 31.09	20 54 0.3	0.3	1.3	0.09	19	17 12.4	5 8 38.80	21 28 3.8	0.3	1.3	0.09
3	7 51.7	4 47 28.41	20 53 58.8	0.3	1.3	0.09	20	17 8.5	5 8 38.86	21 28 1.3	0.3	1.3	0.09
4	7 47.7	4 47 25.86	+20 53 57.6	0.3	1.3	0.09	21	17 4.5	5 8 38.78	+21 27 58.6	0.3	1.3	0.09
5	7 43.8	4 47 23.46	20 53 56.6	0.3	1.3	0.09	22	17 0.6	5 8 38.55	21 27 55.8	0.3	1.3	0.09
6	7 39.8	4 47 21.19	20 53 55.9	0.3	1.3	0.09	23	16 56.7	5 8 38.18	21 27 52.8	0.3	1.3	0.09
7	7 35.8	4 47 19.06	20 53 55.4	0.3	1.3	0.09	24	16 52.7	5 8 37.66	21 27 49.5	0.3	1.3	0.09
8	7 31.9	4 47 17.07	20 53 55.2	0.3	1.3	0.09	25	16 48.8	5 8 37.01	21 27 46.2	0.3	1.3	0.09
9	7 27.9	4 47 15.22	+20 53 55.3	0.3	1.3	0.09	26	16 44.8	5 8 36.21	+21 27 42.7	0.3	1.3	0.09
10	7 23.9	4 47 13.51	20 53 55.6	0.3	1.3	0.09	27	16 40.9	5 8 35.27	21 27 39.0	0.3	1.3	0.09
11	7 20.0	4 47 11.93	20 53 56.1	0.3	1.3	0.09	28	16 36.9	5 8 34.19	21 27 35.2	0.3	1.3	0.09
12	7 16.0	4 47 10.49	20 53 57.1	0.3	1.3	0.09	29	16 33.0	5 8 32.98	21 27 31.2	0.3	1.3	0.09
13	7 12.1	4 47 9.20	20 53 58.2	0.3	1.3	0.09	30	16 29.0	5 8 31.62	21 27 27.1	0.3	1.3	0.09
14	7 8.1	4 47 8.05	+20 53 59.6	0.3	1.3	0.09	Oct. 1	16 25.1	5 8 30.12	+21 27 22.8	0.3	1.3	0.09
15	7 4.2	4 47 7.04	+20 54 1.2	0.3	1.3	0.09	2	16 21.1	5 8 28.48	+21 27 18.2	0.3	1.3	0.09

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	16 25.1	5 8 30.12	+21 27 22.8	0.3	1.3	0.09	Nov. 16	13 20.9	5 5 9.76	+21 21 43.7	0.3	1.3	0.10
2	16 21.1	5 8 28.48	21 27 18.2	0.3	1.3	0.09	17	13 16.9	5 5 3.18	21 21 34.2	0.3	1.3	0.10
3	16 17.2	5 8 26.71	21 27 13.6	0.3	1.3	0.09	18	13 12.8	5 4 56.53	21 21 24.6	0.3	1.3	0.10
4	16 13.2	5 8 24.79	21 27 8.8	0.3	1.3	0.09	19	13 8.8	5 4 49.82	21 21 15.1	0.3	1.3	0.10
5	16 9.2	5 8 22.75	21 27 3.9	0.3	1.3	0.09	20	13 4.7	5 4 43.05	21 21 5.4	0.3	1.3	0.10
6	16 5.3	5 8 20.57	+21 26 58.8	0.3	1.3	0.09	21	13 0.7	5 4 36.24	+21 20 55.8	0.3	1.3	0.10
7	16 1.3	5 8 18.25	21 26 53.6	0.3	1.3	0.09	22	12 56.6	5 4 29.39	21 20 46.1	0.3	1.3	0.10
8	15 57.3	5 8 15.80	21 26 48.2	0.3	1.3	0.09	23	12 52.6	5 4 22.50	21 20 36.4	0.3	1.3	0.10
9	15 53.3	5 8 13.22	21 26 42.6	0.3	1.3	0.09	24	12 48.5	5 4 15.56	21 20 26.7	0.3	1.3	0.10
10	15 49.4	5 8 10.49	21 26 36.9	0.3	1.3	0.09	25	12 44.5	5 4 8.58	21 20 16.9	0.3	1.3	0.10
11	15 45.4	5 8 7.64	+21 26 31.1	0.3	1.3	0.09	26	12 40.4	5 4 1.55	+21 20 7.2	0.3	1.3	0.10
12	15 41.4	5 8 4.66	21 26 25.1	0.3	1.3	0.09	27	12 36.4	5 3 54.50	21 19 57.4	0.3	1.3	0.10
13	15 37.4	5 8 1.55	21 26 19.0	0.3	1.3	0.09	28	12 32.3	5 3 47.41	21 19 47.6	0.3	1.3	0.10
14	15 33.4	5 7 58.31	21 26 12.7	0.3	1.3	0.09	29	12 28.3	5 3 40.30	21 19 37.8	0.3	1.3	0.10
15	15 29.4	5 7 54.94	21 26 6.3	0.3	1.3	0.09	30	12 24.2	5 3 33.17	21 19 28.0	0.3	1.3	0.10
16	15 25.4	5 7 51.45	+21 25 59.8	0.3	1.3	0.09	Dec. 1	12 20.2	5 3 26.02	+21 19 18.3	0.3	1.3	0.10
17	15 21.5	5 7 47.83	21 25 53.1	0.3	1.3	0.09	2	12 16.1	5 3 18.84	21 19 8.5	0.3	1.3	0.10
18	15 17.5	5 7 44.08	21 25 46.3	0.3	1.3	0.09	3	12 12.1	5 3 11.65	21 18 58.8	0.3	1.3	0.10
19	15 13.5	5 7 40.21	21 25 39.4	0.3	1.3	0.09	4	12 8.0	5 3 4.44	21 18 49.0	0.3	1.3	0.10
20	15 9.5	5 7 36.22	21 25 32.4	0.3	1.3	0.09	5	12 4.0	5 2 57.21	21 18 39.3	0.3	1.3	0.10
21	15 5.5	5 7 32.11	+21 25 25.2	0.3	1.3	0.09	6	11 59.9	5 2 49.96	+21 18 29.6	0.3	1.3	0.10
22	15 1.5	5 7 27.90	21 25 17.9	0.3	1.3	0.09	7	11 55.9	5 2 42.72	21 18 20.0	0.3	1.3	0.10
23	14 57.4	5 7 23.56	21 25 10.5	0.3	1.3	0.09	8	11 51.8	5 2 35.48	21 18 10.3	0.3	1.3	0.10
24	14 53.4	5 7 19.11	21 25 3.0	0.3	1.3	0.09	9	11 47.8	5 2 28.24	21 18 0.7	0.3	1.3	0.10
25	14 49.4	5 7 14.55	21 24 55.3	0.3	1.3	0.09	10	11 43.7	5 2 21.00	21 17 51.2	0.3	1.3	0.10
26	14 45.4	5 7 9.87	+21 24 47.6	0.3	1.3	0.09	11	11 39.7	5 2 13.77	+21 17 41.7	0.3	1.3	0.10
27	14 41.4	5 7 5.08	21 24 39.8	0.3	1.3	0.09	12	11 35.6	5 2 6.54	21 17 32.3	0.3	1.3	0.10
28	14 37.4	5 7 0.19	21 24 31.9	0.3	1.3	0.09	13	11 31.6	5 1 59.32	21 17 22.8	0.3	1.3	0.10
29	14 33.4	5 6 55.20	21 24 23.8	0.3	1.3	0.09	14	11 27.5	5 1 52.11	21 17 13.4	0.3	1.3	0.10
30	14 29.4	5 6 50.11	21 24 15.7	0.3	1.3	0.09	15	11 23.5	5 1 44.92	21 17 4.2	0.3	1.3	0.10
31	14 25.4	5 6 44.91	+21 24 7.4	0.3	1.3	0.09	16	11 19.4	5 1 37.76	+21 16 55.0	0.3	1.3	0.10
Nov. 1	14 21.3	5 6 39.62	21 23 59.1	0.3	1.3	0.09	17	11 15.4	5 1 30.63	21 16 45.9	0.3	1.3	0.10
2	14 17.3	5 6 34.23	21 23 50.6	0.3	1.3	0.09	18	11 11.3	5 1 23.53	21 16 36.8	0.3	1.3	0.10
3	14 13.3	5 6 28.74	21 23 42.0	0.3	1.3	0.09	19	11 7.3	5 1 16.45	21 16 27.8	0.3	1.3	0.10
4	14 9.3	5 6 23.15	21 23 33.4	0.3	1.3	0.09	20	11 3.2	5 1 9.40	21 16 19.0	0.3	1.3	0.10
5	14 5.3	5 6 17.48	+21 23 24.7	0.3	1.3	0.09	21	10 59.2	5 1 2.38	+21 16 10.1	0.3	1.3	0.10
6	14 1.2	5 6 11.72	21 23 15.9	0.3	1.3	0.09	22	10 55.1	5 0 55.39	21 16 1.3	0.3	1.3	0.10
7	13 57.2	5 6 5.88	21 23 7.0	0.3	1.3	0.09	23	10 51.1	5 0 48.46	21 15 52.7	0.3	1.3	0.10
8	13 53.2	5 5 59.96	21 22 58.1	0.3	1.3	0.10	24	10 47.0	5 0 41.57	21 15 44.2	0.3	1.3	0.10
9	13 49.1	5 5 53.95	21 22 49.0	0.3	1.3	0.10	25	10 43.0	5 0 34.74	21 15 35.8	0.3	1.3	0.10
10	13 45.1	5 5 47.86	+21 22 39.8	0.3	1.3	0.10	26	10 38.9	5 0 27.97	+21 15 27.4	0.3	1.3	0.10
11	13 41.1	5 5 41.68	21 22 30.6	0.3	1.3	0.10	27	10 34.9	5 0 21.24	21 15 19.2	0.3	1.3	0.10
12	13 37.1	5 5 35.42	21 22 21.3	0.3	1.3	0.10	28	10 30.8	5 0 14.56	21 15 11.2	0.3	1.3	0.10
13	13 33.0	5 5 29.10	21 22 12.0	0.3	1.3	0.10	29	10 26.8	5 0 7.92	21 15 3.2	0.3	1.3	0.10
14	13 29.0	5 5 22.72	21 22 2.6	0.3	1.3	0.10	30	10 22.8	5 0 1.36	21 14 55.4	0.3	1.3	0.10
15	13 24.9	5 5 16.27	+21 21 53.2	0.3	1.3	0.10	31	10 18.7	4 59 54.86	+21 14 47.7	0.3	1.3	0.10
16	13 20.9	5 5 9.76	+21 21 43.7	0.3	1.3	0.10	32	10 14.7	4 59 48.43	+21 14 40.1	0.3	1.3	0.10

PART III

PHENOMENA

ECLIPSES IN 1895.

In the year 1895 there will be five eclipses: three of the sun and two of the moon.

I.—*A Total Eclipse of the Moon*, 1895, March 10, visible at Washington and visible generally; the beginning, in the western portion of Asia, in Europe, Africa, North and South America; and the ending, in the western portions of Europe and Africa, North and South America, and the Pacific Ocean.

ELEMENTS OF THE ELIPSE.

Greenwich mean time of ☍ in right ascension, March ^{d} 10 ^{h} 15 ^{m} 31 ^{s} 25.6

Sun's right ascension	23 ^{h} 24 ^{m} 27.35	Hourly motion	9.19 ^{s}
Moon's right ascension	11 24 27.35	Hourly motion	132.52
Sun's declination	3° 50′ 3.″7 S.	Hourly motion	0′ 58.″8 N.
Moon's declination	3 59 35.3 N.	Hourly motion	17 54.3 S.
Sun's equa. hor. parallax	8.6	Sun's true semidiameter	16 5.8
Moon's equa. hor. parallax	60 53.2	Moon's true semidiameter	16 34.7

TIMES OF THE PHASES.

Moon enters penumbra	March	10 ^{d} 12 ^{h} 57.1 ^{m}	Greenwich Mean Time.
Moon enters shadow		10 13 53.7	
Total eclipse begins		10 14 51.5	
Middle of the eclipse		10 15 39.3	
Total eclipse ends		10 16 27.0	
Moon leaves shadow		10 17 24.8	
Moon leaves penumbra		10 18 21.2	

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from the north point.	The moon being in the zenith in longitude from Greenwich.	and in latitude.
First	126° to E.	26° 6′ W.	4° 29′ N.
Last	69 to W.	77 40 W.	3 26 N.

Magnitude of the eclipse = 1.627, (moon's diameter = 1).

II.—*A Partial Eclipse of the Sun*, 1895, March 25, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, March ^{d} 25 ^{h} 23 ^{m} 36 ^{s} 49.8

Sun and moon's R. A.	0 ^{h} 20 ^{m} 26.22 ^{s}	Hourly motions	9.09 ^{s} and 108.26 ^{s}
Sun's declination	2° 12′ 46.″4 N.	Hourly motion	0′ 58.″9 N.
Moon's declination	3 37 43.4 N.	Hourly motion	14 39.1 N.
Sun's equa. hor. parallax	8.6	Sun's true semidiameter	16 1.6
Moon's equa. hor. parallax	54 58.4	Moon's true semidiameter	14 58.1

CIRCUMSTANCES OF THE ECLIPSE.

			Longitude from Greenwich.	Latitude.
Eclipse begins	March	25 ^{d} 20 ^{h} 38.9 ^{m}	39° 34.′8 W.	31° 21.′7 N.
Greatest eclipse		25 22 9.7	64 56.9 W.	61 14.0 N.
Eclipse ends		25 23 39.8	166 21.6 E.	87 39.4 N.

Magnitude of greatest eclipse = 0.353, (sun's diameter = 1).

III.—*A Partial Eclipse of the Sun*, 1895, August 20, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, August 20 d 0 h 1 m 12.3 s

Sun and moon's R. A.	9 h 57 m 33.40 s	Hourly motions	9.27 s and 142.25 s
Sun's declination	12° 27′ 31.″1 N.	Hourly motion	0′ 49.″5 S.
Moon's declination	14 1 45.5 N.	Hourly motion	16 9.8 S.
Sun's equa. hor. parallax	8.5	Sun's true semidiameter	15 48.9
Moon's equa. hor. parallax	61 19.0	Moon's true semidiameter	16 41.7

CIRCUMSTANCES OF THE ECLIPSE.

			Longitude from Greenwich.	Latitude.
Eclipse begins	August	20 d 0 h 4.2 m	175° 18′.2 E.	77° 30′.5 N.
Greatest eclipse		20 1 9.3	97 59.1 E.	61 55.5 N.
Eclipse ends		20 2 14.9	67 21.2 E.	38 56.5 N.

Magnitude of the eclipse = 0.267, (sun's diameter = 1.0).

IV.—*A Total Eclipse of the Moon*, 1895, September 3, visible at Washington and generally: the beginning, in the western portions of Europe and Africa, in the Atlantic Ocean, North and South America, and the Eastern Pacific Ocean; and the ending, in the Western Atlantic Ocean, North and South America, and the Pacific Ocean.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☍ in right ascension, September 3 d 17 h 47 m 46.6 s

Sun's right ascension	10 h 51 m 28.07 s	Hourly motion	9.04 s
Moon's right ascension	22 51 28.07	Hourly motion	105.82
Sun's declination	7° 17′ 2.″5 N.	Hourly motion	0′ 55.″3 S.
Moon's declination	7 25 54.8 S.	Hourly motion	13 44.6 N.
Sun's equa. hor. parallax	8.5	Sun's true semidiameter	15 52.1
Moon's equa. hor. parallax	53 58.4	Moon's true semidiameter	14 41.8

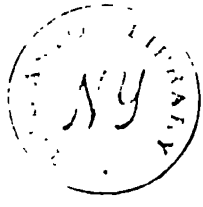
TIMES OF THE PHASES.

		d h m	
Moon enters penumbra	September	3 14 47.9	Greenwich Mean Time.
Moon enters shadow		3 15 59.9	
Total eclipse begins		3 16 6.4	
Middle of the eclipse		3 17 57.0	
Total eclipse ends		3 18 47.5	
Moon leaves shadow		3 19 53.9	
Moon leaves penumbra		3 21 6.1	

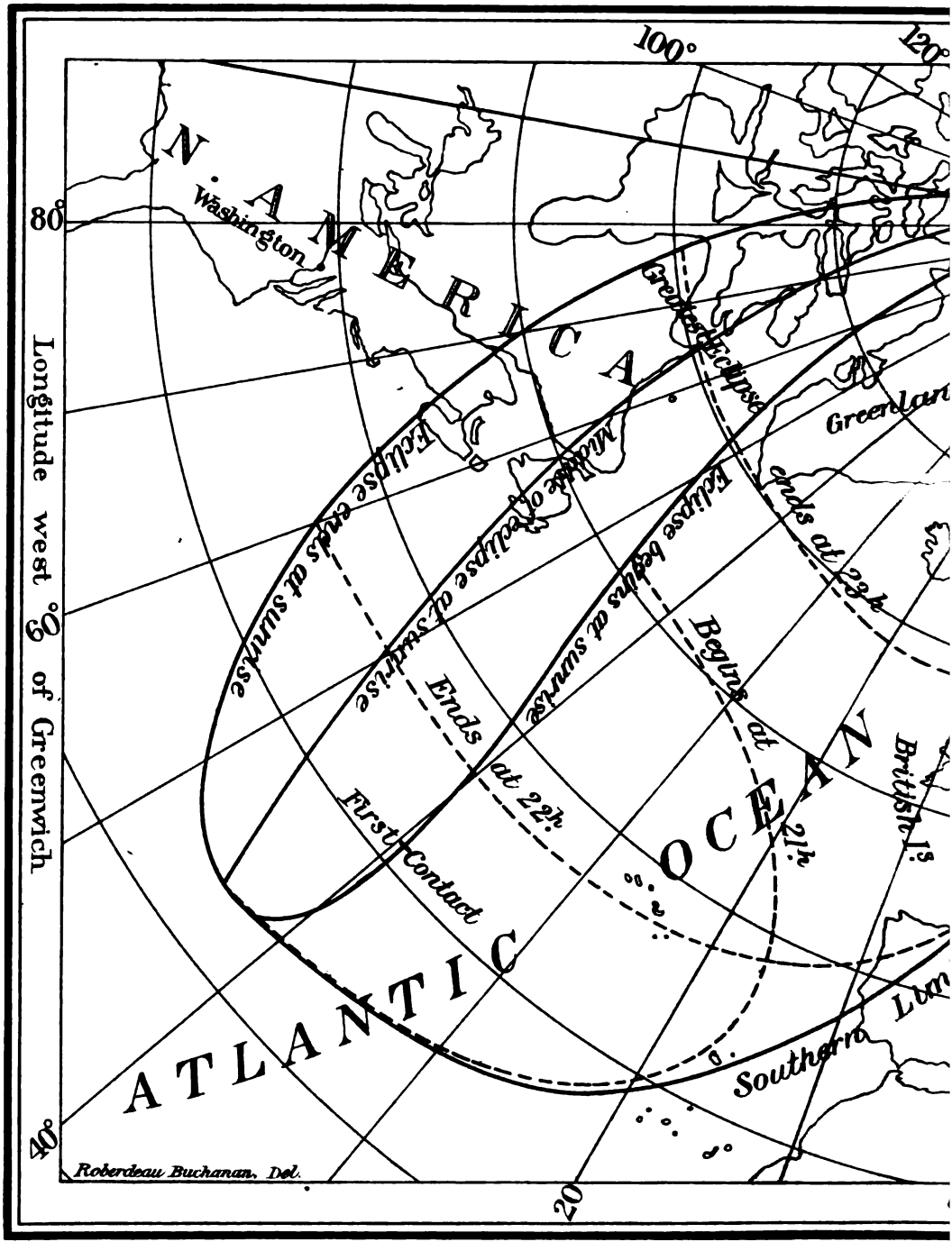
CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from the north point.	The moon being in the zenith in longitude from Greenwich.	and in latitude.
First	54° to E.	60° 56′ W.	7° 51′ S.
Last	110 to W.	117 52 W.	6 57 S.

Magnitude of the eclipse = 1.557, (moon's diameter = 1.0).

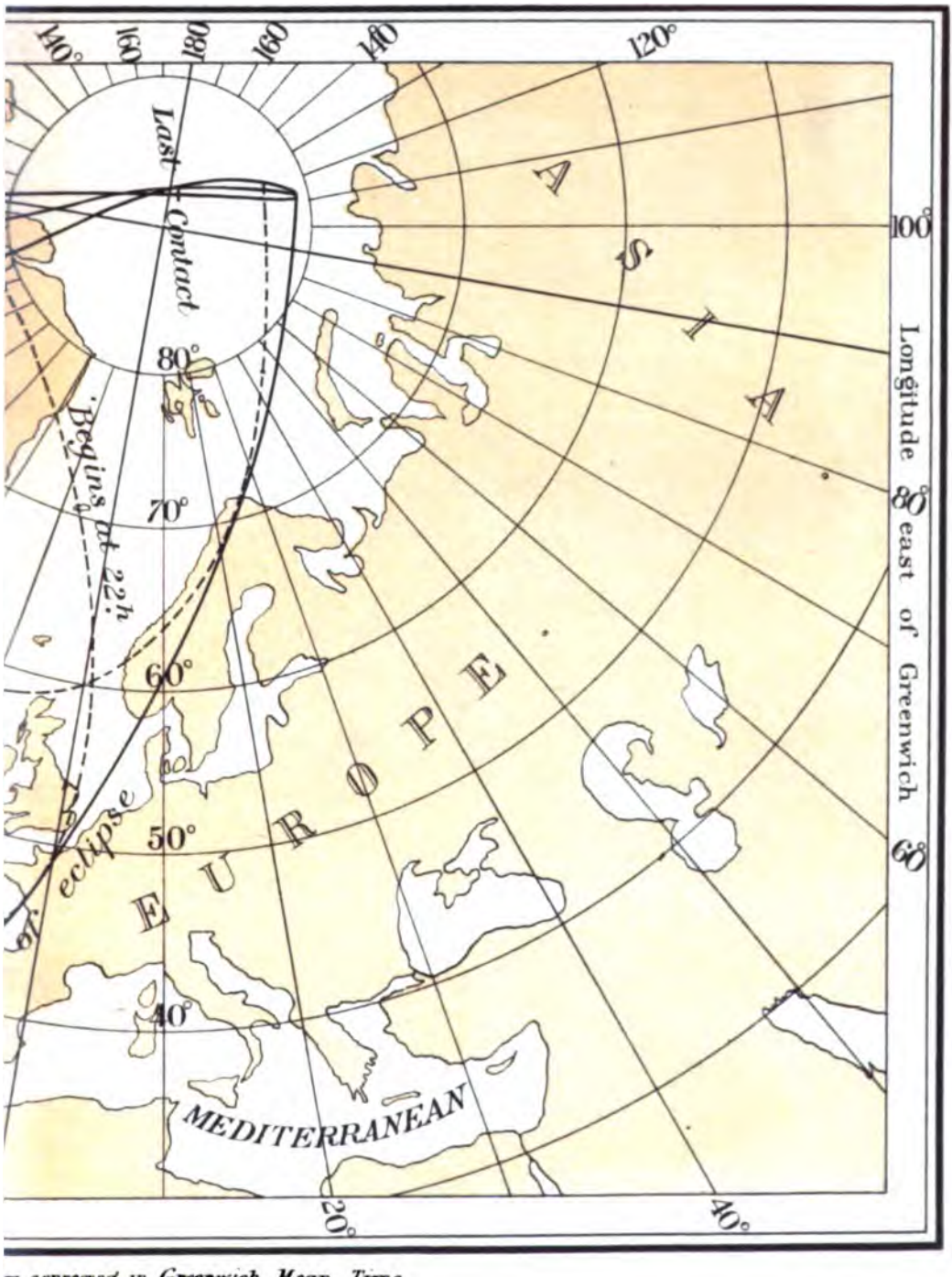


PARTIAL ECLIPSE



Note - *The hours of beginning and ending*

MARCH 25TH 1895.



re expressed in Greenwich Mean Time.


NY

V.—*A Partial Eclipse of the Sun*, 1895, September 18, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, September				d 18	h m s 9 49 19.2
Sun and moon's R. A.	h m s 11 44 13.75		Hourly motions	s 8.98 and	s 133.51
Sun's declination	° ′ ″ 1 42 31.8 N.		Hourly motion		′ ″ 0 58.2 S.
Moon's declination	22 27.7 N.		Hourly motion		18 9.1 S.
Sun's equa. hor. parallax	8.5		Sun's true semidiameter		15 55.7
Moon's equa. hor. parallax	61 13.6		Moon's true semidiameter		16 40.2

CIRCUMSTANCES OF THE ECLIPSE.

		d h m	Longitude from Greenwich.	Latitude.
Eclipse begins	September	18 6 59.2	° ′ 167 4.8 W.	° ′ 19 38.6 S.
Greatest eclipse		18 8 44.0	169 13.9 E.	61 13.4 S.
Eclipse ends		18 10 28.8	47 42.8 W.	77 20.2 S.

Magnitude of the eclipse = 0.736, (sun's diameter = 1.0).

The regions within which the eclipses of the sun are visible, are laid down on the accompanying charts; from which, by means of the dotted lines, the Greenwich times of beginning and ending may be found within a few minutes.

BESSELIAN ELEMENTS OF THE PARTIAL ECLIPSE OF THE SUN, 1895, MARCH 25.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra on Fundamental Plane.
	x	y	Log sin d	Log cos d	μ	l
h m					° ′	
20 30	−1.40489	+0.77395	+8.57625	+9.99969	306 2.5	+0.56547
40	1.32972	0 81548	8.57678	9.99969	308 32.5	0.56546
50	1.25455	0.85700	8.57731	9.99969	311 2.6	0.56545
21 0	−1.17938	+0.89852	+8.57783	+9.99969	313 32.6	+0.56544
10	1.10420	0.94004	8.57836	9.99969	316 2.6	0.56543
20	1.02902	0.98155	8.57888	9.99969	318 32.7	0.56542
30	0.95383	1.02306	8.57941	9.99968	321 2.7	0.56540
40	0.87864	1.06457	8.57993	9.99968	323 32.8	0.56539
50	0.80344	1.10607	8.58045	9.99968	326 2.8	0.56537
22 0	−0.72824	+1.14757	+8.58097	+9.99968	328 32.8	+0.56536
10	0.65303	1.18906	8.58149	9.99968	331 2.9	0.56535
20	0.57782	1.23055	8.58201	9.99968	333 32.9	0.56533
30	0.50261	1.27204	8.58253	9.99968	336 3.0	0.56531
40	0.42740	1.31352	8.58305	9.99968	338 33.0	0.56530
50	0.35219	1.35500	8.58357	9.99968	341 3.1	0.56528
23 0	−0.27698	+1.39648	+8.58409	+9.99968	343 33.1	+0.56527
10	0.20177	1.43796	8.58461	9.99968	346 3.1	0.56525
20	0.12656	1.47943	8.58513	9.99968	348 33.2	0.56523
30	−0.05135	1.52090	8.58565	9.99968	351 3.2	0.56521
40	+0.02386	+1.56237	+8.58617	+9.99968	353 33.3	+0.56519

Greenwich Mean Time.	Log Δx for 1 Minute.	Log Δy for 1 Minute.	Log $\Delta \mu$ for 1 Minute.	Log Tangent of Angle of Cone—
				Penumbra.
h m				
20 0	+7.8759	+7.6184	+1.1762	+7.67078
21 0	7.8761	7.6182	1.1762	7.67077
22 0	7.8762	7.6180	1.1762	7.67077
23 0	7.8763	7.6178	1.1762	7.67076
24 0	+7.8763	+7.6176	+1.1762	+7.67075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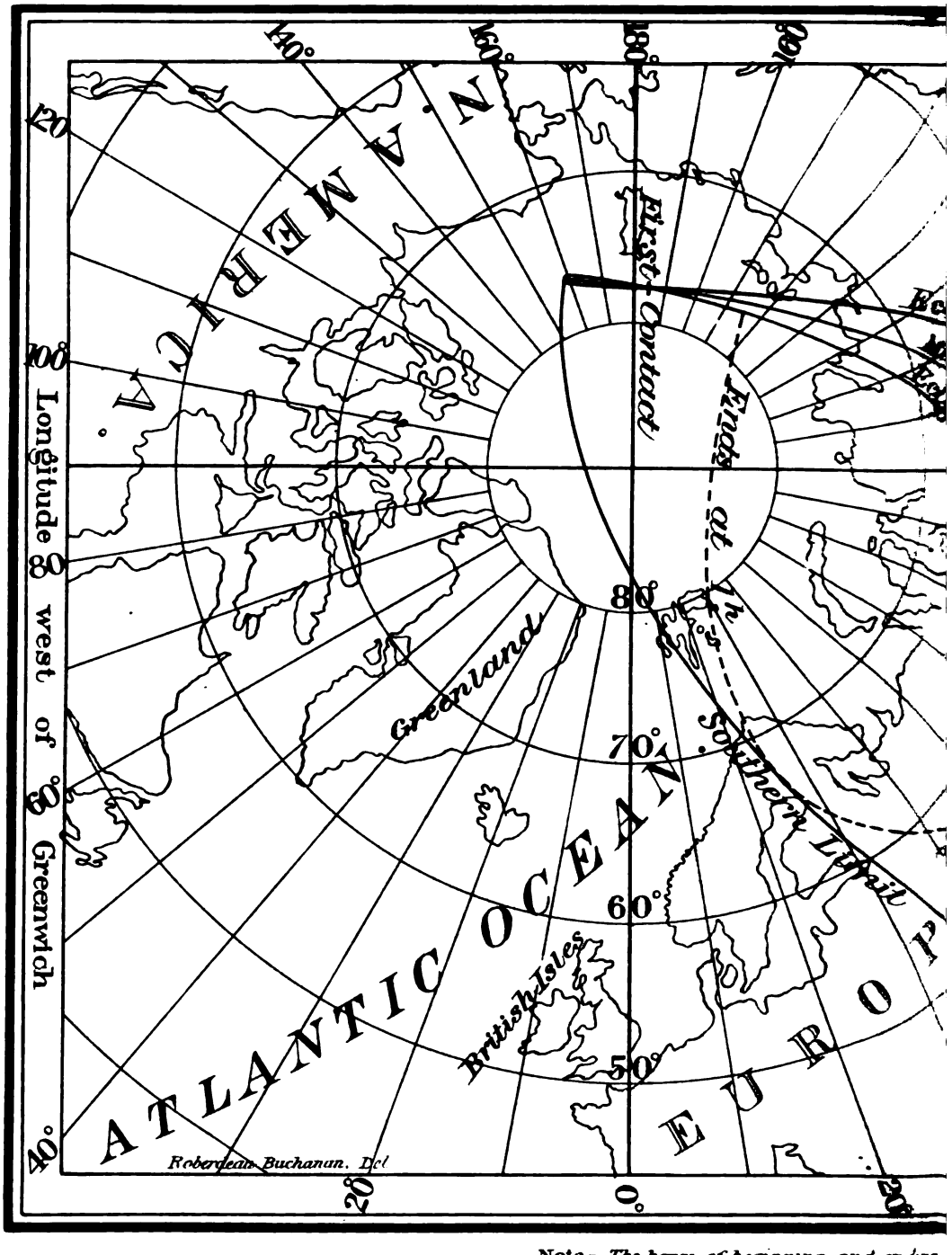
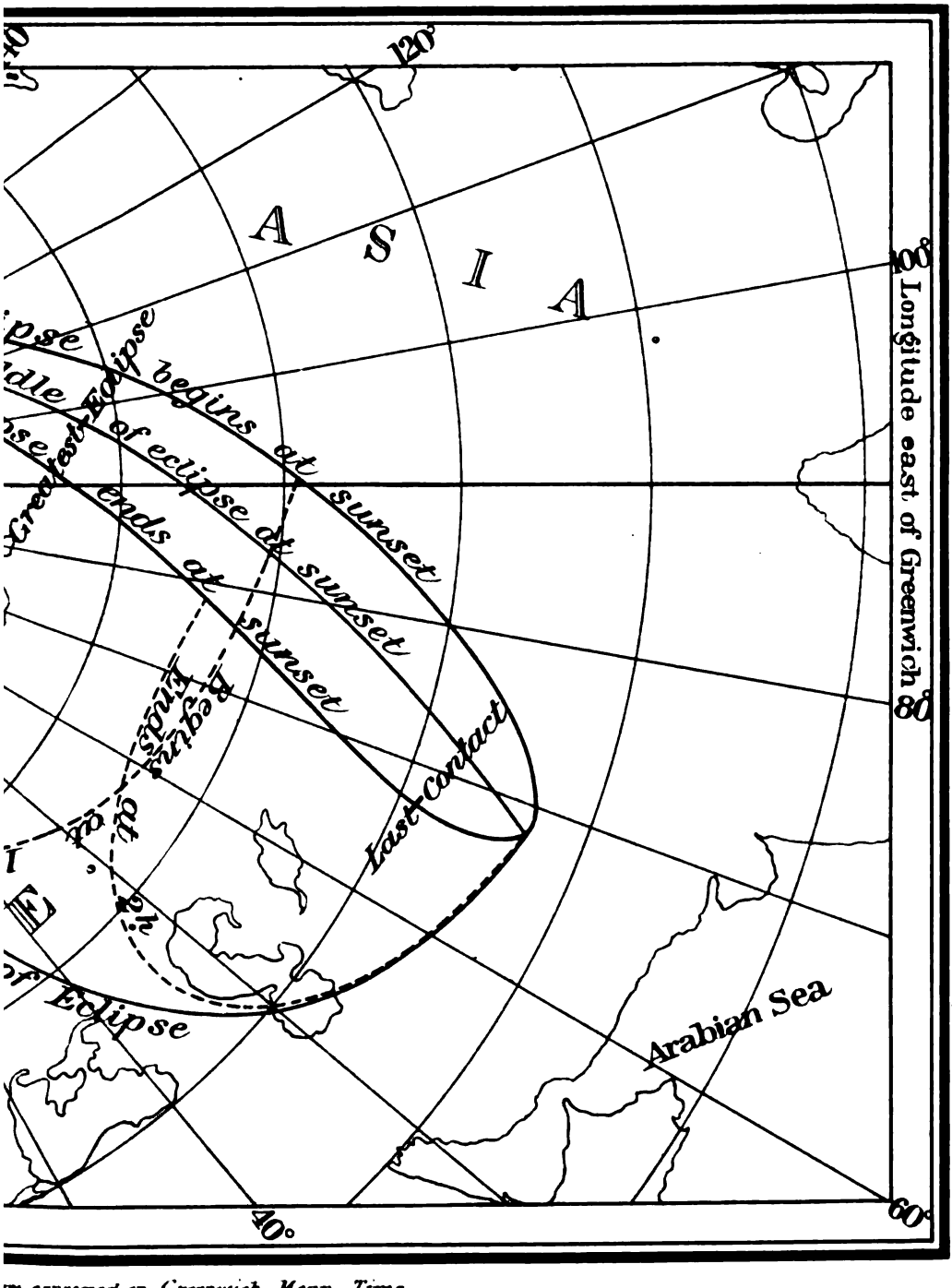
PARTIAL ECLIPSE o



Note - *The hours of beginning and ending*

AUGUST 20TH 1895.



are expressed in Greenwich Mean Time.

BESSELIAN ELEMENTS OF THE PARTIAL ECLIPSE OF THE SUN, 1895, AUGUST 20.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra on Fundamental Plane.
	x	y	Log sin d	Log cos d	μ	l
h m					° ′	
0 0	−0.01058	+1.54542	+9.33380	+9.98966	359 10.9	+0.53139
10	+0.07729	1.50362	9.33372	9.98966	1 41.0	0.53139
20	0.16516	1.46181	9.33365	9.98967	4 11.0	0.53139
30	0.25303	1.41999	9.33357	9.98967	6 41.0	0.53139
40	0 34089	1.37816	9.33350	9.98967	9 11.1	0.53139
50	0.42875	1.33632	9.33342	9.98968	11 41.1	0.53139
1 0	+0.51661	+1.29448	+9.33335	+9.98968	14 11.2	+0.53139
10	0.60447	1.25263	9.33327	9.98968	16 41.2	0.53138
20	0.69233	1.21077	9.33320	9.98969	19 11.2	0.53138
30	0.78018	1.16890	9.33312	9.98969	.21 41.3	0 53137
40	0.86803	1.12703	9.33305	9.98969	24 11.3	0.53137
50	0.95587	1.08515	9.33297	9.98970	26 41.3	0.53136
2 0	+1.04371	+1.04326	+9.33290	+9.98970	29 11.4	+0.53136
10	1.13154	1.00136	9.33282	9.98970	31 41.4	0.53135
20	+1.21936	+0.95945	+9.33275	+9.98971	34 11.4	+0.53135

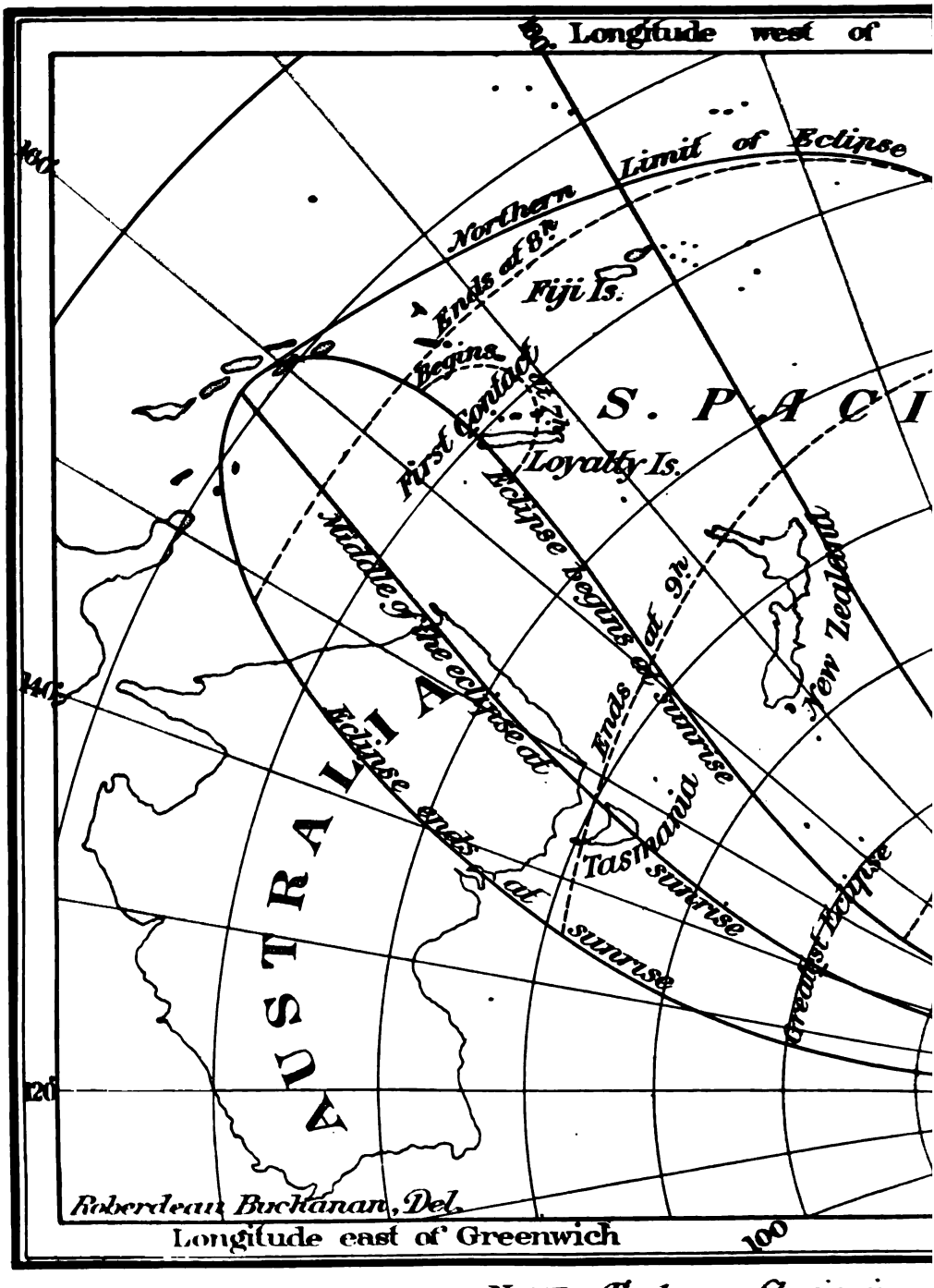
Greenwich Mean Time.	Log Δ x for 1 Minute.	Log Δ y for 1 Minute.	Log Δ μ for 1 Minute.	Log Tangent of Angle of Cone— Penumbra.
h m				
0 0	+7.9439	−7.6212	+1.1762	+7.66484
1 0	7.9438	7.6217	1.1762	7.66485
2 0	7.9437	7.6222	1.1762	7.66485
3 0	+7.9435	−7.6227	+1.1762	+7.66485

BESSELIAN ELEMENTS OF THE PARTIAL ECLIPSE OF THE SUN, 1895, SEPTEMBER 18.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra on Fundamental Plane.
	x	y	Log sin d	Log cos d	μ	l
h m					° ′	
7 0	−1.43828	−0.51625	+8.48626	+9.99980	77 54.2	+0.53350
10	1.35335	0.56319	8.48562	9.99980	80 24.2	0.53352
20	1.26842	0.61013	8.48498	9.99980	82 54.3	0.53353
30	1.18349	0.65706	8.48434	9.99980	85 24.3	0.53354
40	1.09856	0.70399	8.48370	9.99980	87 54.4	0.53355
50	1.01362	0.75092	8.48306	9.99980	90 24.4	0.53356
8 0	−0.92868	−0.79785	+8.48241	+9.99980	92 54.5	+0.53357
10	0.84374	0.84478	8.48177	9.99980	95 24.5	0.53358
20	0.75879	0.89171	8.48112	9.99980	97 54.6	0.53359
30	0.67384	0.93864	8.48047	9.99980	100 24.6	0.53359
40	0.58889	0.98556	8.47982	9.99980	102 54.7	0.53360
50	0.50394	1.03248	8.47917	9.99980	105 24.7	0.53361
9 0	−0.41899	−1.07940	+8.47852	+9.99980	107 54.8	+0.53361
10	0.33404	1.12631	8.47787	9.99980	110 24.8	0.53361
20	0.24909	1.17322	8.47722	9.99980	112 54.9	0.53362
30	0.16413	1.22013	8.47656	9.99981	115 24.9	0.53362
40	−0.07918	1.26704	8.47591	9.99981	117 55.0	0.53362
50	+0.00578	1.31394	8.47526	9.99981	120 25.0	0.53363
10 0	+0.09073	−1.36084	+8.47460	+9.99981	122 55.1	+0.53363
10	0.17568	1.40774	8.47394	9.99981	125 25.1	0.53363
20	0.26063	1.45463	8.47328	9.99981	127 55.2	0.53363
30	+0.34557	−1.50152	+8.47262	+9.99981	130 25.2	+0.53363

Greenwich Mean Time.	Log Δ x for 1 Minute.	Log Δ y for 1 Minute.	Log Δ μ for 1 Minute.	Log Tangent of Angle of Cone— Penumbra.
h m				
7 0	+7.9290	−7.6715	+1.1762	+7.66797
8 0	7.9291	7.6714	1.1762	7.66797
9 0	7.9292	7.6713	1.1762	7.66798
10 0	7.9292	7.6712	1.1762	7.66798
11 0	+7.9291	−7.6710	+1.1762	+7.66798

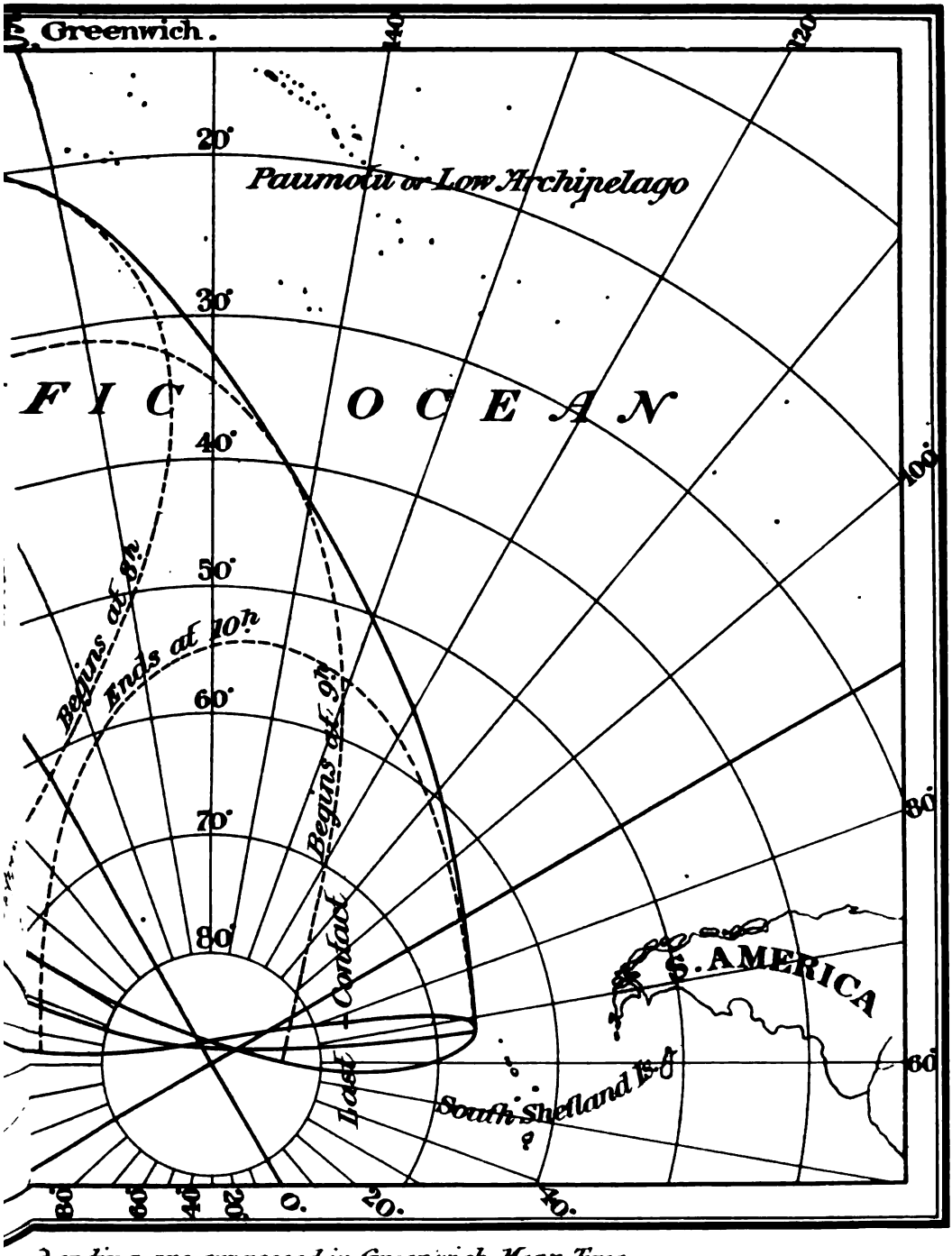
PARTIAL ECLIPSE OF S



NOTE: *The hours of beginning*

This Chart is to replac

EPTEMBER 18TH 1895.



...d ending are expressed in Greenwich Mean Time.

...the one given in the Volume for 1895. (1st Ed. only).

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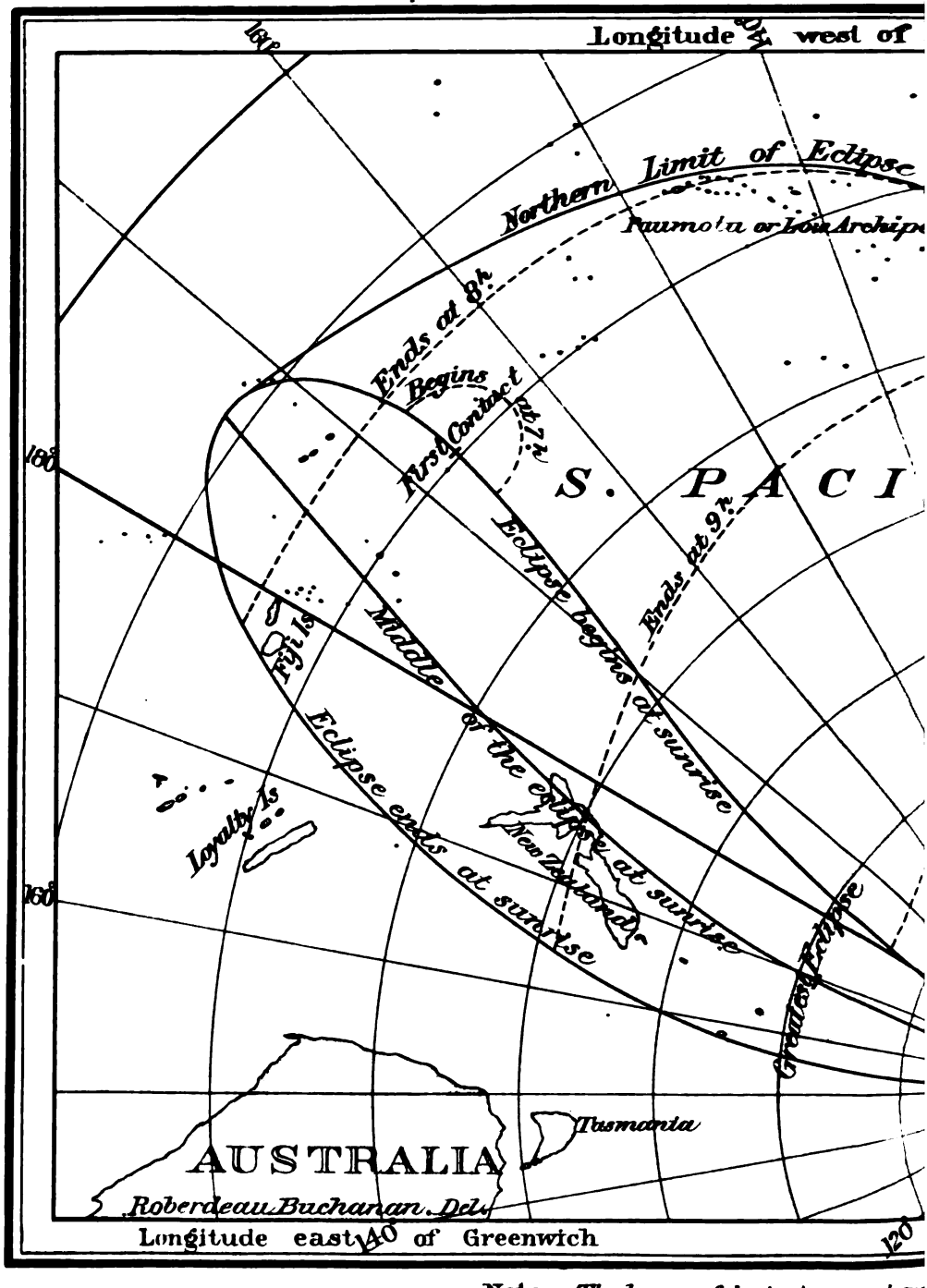
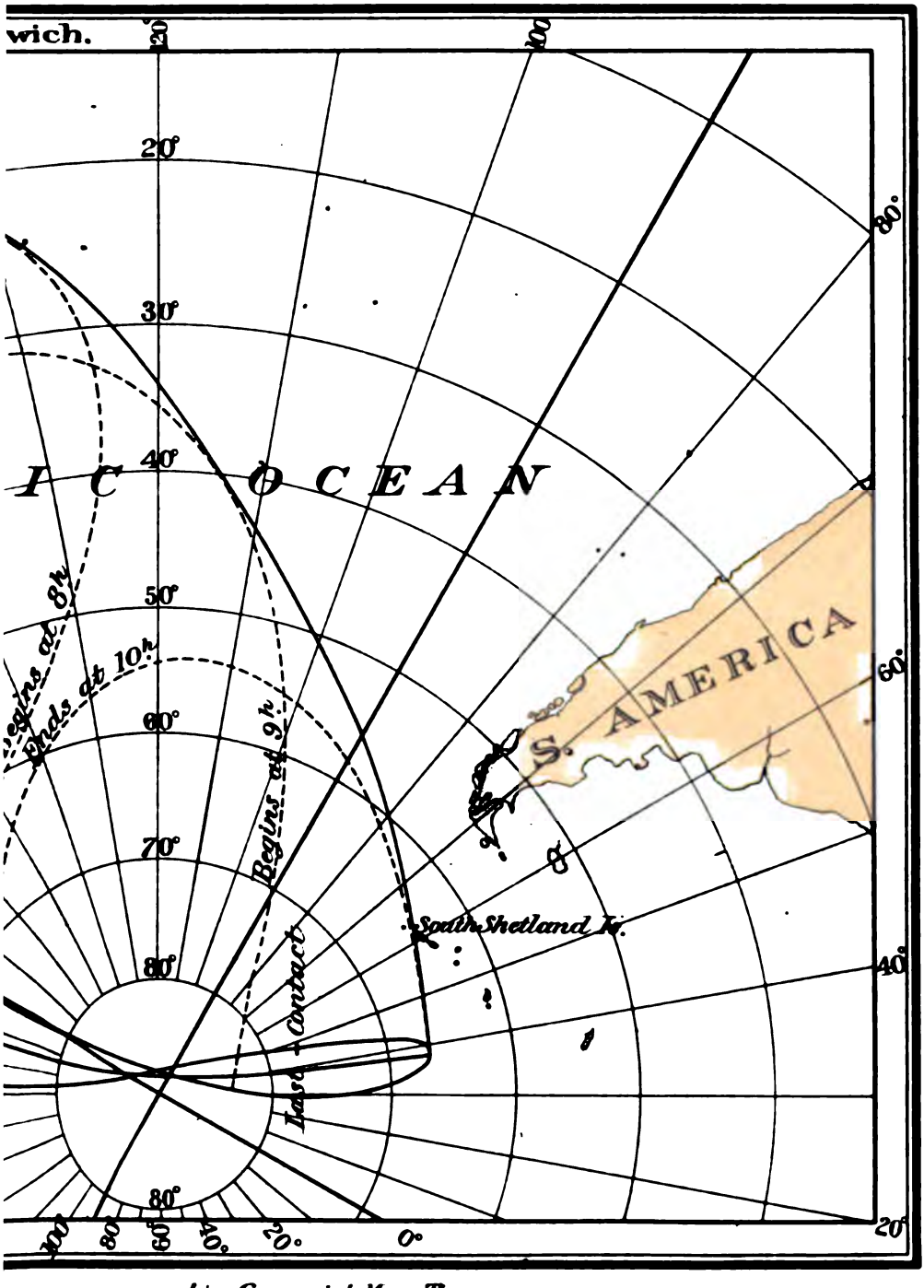


Note *The hours of beginning and en*

EPTEMBER 18TH 1895.



ng are expressed in Greenwich Mean Time.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WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.	d	h	m	First Quarter.	d	h	m	Full Moon.	d	h	m	Last Quarter.	d	h	m
				January	3	14	44.0	January	10	13	41.6				
January	25	4	17.7	February	2	7	7.9	February	9	0	14.8	January	17	5	47.0
February	23	23	35.4	March	3	19	32.1	March	10	10	29.7	February	15	20	0.6
March	25	17	16.8	April	2	4	19.7	April	8	20	35.2	March	17	12	23.4
April	24	8	2.9	May	1	10	35.8	May	8	6	50.7	April	16	6	14.1
May	23	19	38.0	May	30	15	40.2	June	6	17	51.8	May	16	0	35.7
June	22	4	42.6	June	28	20	52.5	July	6	6	20.6	June	14	18	19.6
July	21	12	23.6	July	28	3	27.5	August	4	20	43.0	July	14	10	22.8
August	19	19	47.5	August	26	12	35.1	September	3	12	47.1	August	13	0	10.3
September	18	3	47.2	September	25	1	14.6	October	3	5	39.3	September	11	11	42.6
October	17	13	1.7	October	24	17	56.8	November	1	22	10.1	October	10	21	26.9
November	16	0	3.3	November	23	14	10.5	December	1	13	30.2	November	9	5	58.3
December	15	13	21.6	December	23	12	13.3	December	31	3	22.6	December	8	14	1.0

PERIGEE, APOGEE AND GREATEST LIBRATION.

Perigee.	d	h	Apogee.	d	h	Greatest Libration.	d	h	m		Greatest Libration.	d	h	m	
January	11	7.1	January	26	0.0	January	5	9	39	E.	January	17	12	29	W.
February	8	20.1	February	22	1.7	February	2	17	19	E.	February	14	18	55	W.
March	9	7.5	March	21	13.5	March	2	20	8	E.	March	15	2	30	W.
April	6	11.4	April	18	7.6	March	30	5	19	E.	April	12	5	16	W.
May	3	16.7	May	16	2.7	April	25	11	44	E.	May	9	21	18	W.
May	28	17.1	June	12	21.0	May	22	7	34	E.	June	5	18	38	W.
June	24	18.3	July	10	14.0	June	18	22	3	E.	July	2	1	42	W.
July	22	19.4	August	7	2.2	July	16	22	8	E.	July	29	7	19	W.
August	20	3.8	September	3	4.5	August	14	3	5	E.	August	26	6	33	W.
September	17	14.1	September	30	9.1	September	11	8	2	E.	September	23	11	38	W.
October	15	23.1	October	27	22.7	October	9	5	54	E.	October	21	16	48	W.
November	12	22.6	November	24	17.8	November	5	2	24	E.	November	18	16	38	W.
December	8	22.9	December	22	15.1	December	1	7	14	E.	December	16	2	48	W.
						December	28	14	30	E.					

FORMULÆ FOR THE LIBRATION OF THE MOON.

Put I, the inclination of the moon's equator to the ecliptic ($= 1^\circ\ 2^{\prime}.8$),

Ω, the mean longitude of the moon's ascending node, (see page 278), or the mean longitude of the descending node of the moon's equator,

C, the angle at the centre of the moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

λ, β, α', δ', the apparent longitude, latitude, right ascension, and declination of the moon, corrected for parallax,

λ', the selenocentric longitude of the earth, counted on the moon's equator from its descending node, Ω,

i, Δ, Ω', $\mathbb{C}$, the quantities defined on page 276, where their values for the year are given.

The moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 276 and 277:—

$$\left.\begin{aligned} \Delta\lambda &= -0^{\prime}.57 \sin 2(\Omega - \lambda) \\ a &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\} \text{ See table, page 277.}$$

The libration in latitude $= b = B - \beta$

The libration in longitude $= l = \lambda' - \mathbb{C}$

$$\sin C = \sin i \frac{\cos(\lambda' + \Delta - \Omega)}{\cos\delta'} = -\sin i \frac{\cos(\alpha' - \Omega')}{\cos b}$$

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels	
Name.	Mag.	Red'n from 1900.0		Apparent Declination	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ		d h m	h m				°	°
81 Aquarii	6.6	−0.41	− 5.6	− 7 37.6	1 0 2.3	− 4 9.2	−0.4289	0.4859	+0.2524	+21	−69
82 Aquarii	6.4	0.41	5.4	7 8.4	0 41.3	− 3 31.3	−0.3026	0.4851	0.2527	+ 2	−90
λ^1 Aquarii	5.4	0.40	5.7	8 15.7	2 9.0	− 2 5.9	+0.8076	0.4856	0.2535	+70	− 2
λ^2 Aquarii	7.4	0.39	5.7	8 19.4	2 14.3	− 2 0.7	+0.8978	0.4856	0.2535	+82	+ 3
λ^3 Aquarii	7.0	0.38	5.8	8 30.3	2 33.5	− 1 42.1	+1.1600	0.4856	0.2537	+81	+22
λ^4 Aquarii	8.0	−0.38	− 5.6	− 8 15.7	3 18.4	− 0 58.4	+1.1600	0.4854	+0.2540	+82	+16
ϕ Aquarii	4.1	0.35	4.9	6 37.0	7 20.3	+ 2 57.0	+0.3123	0.4848	0.2561	+69	−22
96 Aquarii	5.6	0.34	4.5	5 42.0	10 12.3	+ 5 44.4	+0.0396	0.4845	0.2574	+46	−42
Lalande 47041	7.1	−0.17	− 1.4	− 0 51.8	2 9 4.4	+ 3 59.8	+0.6976	0.4823	0.2635	+89	− 9
60 Piscium	6.2	0.00	+ 2.8	+ 6 10.2	2 11 26.7	+ 5 38.9	0.0000	0.4940	0.2614	+44	−43
62 Piscium	6.0	0.00	+ 3.0	+ 6 43.7	11 55.3	+ 6 6.8	−0.4630	0.4940	+0.2611	+20	−71
70 Piscium	8.0	+0.06	3.7	7 22.6	19 21.6	−10 39.6	+0.7541	0.4979	0.2584	+90	− 4
ϵ Piscium	4.2	0.06	3.7	7 19.6	19 48.6	−10 13.3	+0.9941	0.4985	0.2582	+90	+ 6
100 Piscium	6.8	0.23	6.1	12 1.4	4 12 24.4	+ 5 53.3	+0.1099	0.5099	0.2466	+50	−35
π Piscium	5.7	0.26	6.4	11 36.4	13 33.3	+ 7 0.3	+0.8381	0.5106	0.2477	+90	+ 3
B. A. C. 490	7.5	+0.26	+ 6.4	+11 32.6	13 50.3	+ 7 16.7	+0.9761	0.5109	+0.2475	+90	+11
104 Piscium	7.5	0.25	7.2	13 45.3	14 37.2	+ 8 2.2	−1.1810	0.5116	0.2468	−23	−76
26 Arietis	6.0	0.53	10.0	19 23.5	5 15 26.7	+ 8 4.6	−1.2790	0.5346	0.2198	−36	−71
27 Arietis	6.3	0.55	9.4	17 14.6	15 36.0	+ 8 13.7	+0.9997	0.5346	0.2197	+90	+18
B. A. C. 762	7.0	0.55	9.8	18 25.2	16 49.7	+ 9 25.0	+0.0419	0.5362	0.2179	+47	−34
μ Arietis	6.0	+0.61	+10.1	+19 34.0	20 49.1	−10 43.7	−0.2968	0.5405	+0.2118	+28	−50
47 Arietis	6.0	0.70	10.5	20 15.0	6 3 49.6	− 3 57.8	+0.4369	0.5480	0.2003	+71	−11
B. A. C. 920	7.0	0.70	10.8	21 12.2	4 10.5	− 3 37.6	−0.4816	0.5484	0.1995	+18	−59
ϵ Arietis	4.3	0.71	10.7	20 55.4	4 19.6	− 3 28.8	−0.1605	0.5486	0.1994	+35	−41
66 Arietis	6.0	0.86	11.3	22 26.7	16 50.5	+ 8 35.1	+0.6125	0.5630	0.1747	+87	+ 1
7 Tauri	6.0	+0.91	+11.7	+24 6.9	19 18.8	+10 57.9	−0.6747	0.5657	+0.1692	+ 7	−65
9 Tauri	7.0	0.93	11.6	22 52.0	20 22.6	+11 59.2	+0.7816	0.5671	0.1669	+90	+11
11 Tauri	6.7	0.95	12.2	24 59.6	21 54.4	−10 32.4	−1.1420	0.5687	0.1633	−26	−65
g Pleiadum	6.3	0.98	11.9	23 57.7	23 34.2	− 8 56.4	+0.1840	0.5709	0.1594	+55	−19
17 Tauri	4.3	0.98	11.8	23 47.2	23 36.2	− 8 54.4	+0.3679	0.5709	0.1594	+67	− 9
18 Tauri	6.3	+0.98	+12.0	+24 30.8	23 42.5	− 8 48.4	−0.3576	0.5709	+0.1592	+25	−47
19 Tauri	5.0	0.98	11.9	24 8.4	23 44.0	− 8 47.0	+0.0272	0.5709	0.1592	+46	−27
20 Tauri	5.0	0.98	11.9	24 2.6	23 59.2	− 8 32.4	+0.1651	0.5711	0.1585	+54	−20
21 Tauri	7.0	0.98	11.9	24 13.8	7 0 1.0	− 8 30.7	−0.0204	0.5711	0.1583	+43	−29
22 Tauri	7.0	0.98	11.9	24 12.2	0 4.5	− 8 27.3	+0.0170	0.5712	0.1583	+45	−27
23 Tauri	4.7	+0.98	+11.8	+23 37.5	0 11.8	− 8 20.3	+0.6265	0.5714	+0.1580	+89	+ 4
24 Tauri	8.0	0.99	11.8	23 47.7	0 36.5	− 7 56.5	+0.5156	0.5720	0.1569	+78	− 2
η Tauri	3.0	1.00	11.8	23 47.0	0 39.8	− 7 53.3	+0.5378	0.5723	0.1570	+90	− 1
B. A. C. 1171	6.3	1.01	11.8	24 1.6	1 4.3	− 7 29.7	+0.3580	0.5725	0.1558	+66	−10
26 Tauri	7.0	1.01	11.7	23 32.3	1 15.6	− 7 18.9	+0.8794	0.5728	0.1555	+90	+18
27 Tauri	4.0	+1.01	+11.8	+23 44.1	1 20.6	− 7 14.1	+0.6923	0.5728	+0.1551	+90	+ 7
28 Tauri	6.2	1.01	11.8	23 49.1	1 21.1	− 7 13.6	+0.6088	0.5728	0.1551	+87	+ 3
B. A. C. 1192	6.0	1.02	12.2	25 15.9	1 46.9	− 6 48.8	−0.8009	0.5732	0.1540	− 1	−65
p Tauri	6.0	1.14	12.2	26 12.6	9 55.9	+ 1 1.1	−0.5868	0.5822	0.1330	+12	−58
ϕ Tauri	5.3	1.20	12.3	27 6.2	13 37.4	+ 4 33.7	−1.0160	0.5862	0.1229	−17	−63
χ Tauri	5.7	+1.21	+11.9	+25 23.1	14 30.7	+ 5 24.9	+0.8294	0.5872	+0.1203	+90	+19
W. iv, 1421	6.0	1.47	11.3	27 54.1	8 8 9.5	− 1 40.3	−0.0500	0.6030	0.0659	+41	−22
22 Aurigæ	7.0	1.55	11.0	28 50.6	13 6.9	+ 3 4.4	−0.7063	0.6064	0.0496	+ 4	−60
β Tauri	2.0	1.56	10.9	28 31.3	14 10.4	+ 4 5.0	−0.3357	0.6070	0.0455	+25	−36
B. A. C. 1772	6.3	1.63	10.4	29 9.5	18 50.9	+ 8 33.4	−0.7909	0.6098	0.0293	− 2	−61
136 Tauri	5.3	+1.66	+ 9.6	+27 35.4	23 53.3	−10 37.5	+0.8662	0 6120	+0.0114	+90	+31
49 Aurigæ	5.7	1.80	7.8	28 6.3	9 14 42.5	+ 3 32.2	+0.1298	0.6152	−0.0422	+52	−11
53 Aurigæ	6.0	1.83	7.7	29 4.5	15 49.0	+ 4 35.8	−0.8772	0.6153	0.0463	− 5	−61
54 Aurigæ	6.0	1.82	7.5	28 21.4	16 14.5	+ 5 0.2	−0.1888	0.6151	0.0478	+33	−28
25 Geminorum	6.5	1.83	7.4	28 17.7	16 52.7	+ 5 36.7	−0.1576	0.6151	0.0499	+35	−26
28 Geminorum	6.0	+1.85	+ 7.4	+29 4.7	18 4.1	+ 6 44.9	−0.9913	0.6151	−0.0543	−16	−61

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
W. vi, 1656	8.2	+1.85	+6.2	+26 59.5	10 0 51.5	−10 45.8	+0.6092	0.6139	−0.0786	+9	+11
47 Geminorum	6.0	1.87	5.9	27 1.8	3 33.0	− 8 11.4	+0.3485	0.6131	0.0880	+66	− 4
53 Geminorum	6.3	1.87	5.6	28 4.9	5 9.3	− 6 39.4	−0.8312	0.6127	0.0936	− 4	−62
59 Geminorum	6.9	1.90	5.1	27 50.5	8 14.4	− 3 42.3	−0.8991	0.6110	0.1041	− 9	−62
ι Geminorum	4.0	1.91	5.1	28 0.5	8 39.7	− 3 18.2	−1.1070	0.6110	0.1056	−25	−62
ν Geminorum	4.3	+1.91	+4.5	+27 7.8	12 20.5	+ 0 12.9	−0.6583	0.6091	−0.1180	+ 7	−60
ε Geminorum	6.0	1.88	3.8	26 2.1	15 19.4	+ 3 4.1	+0.0490	0.6075	0.1276	+47	−22
ω¹ Cancri	6.0	1.89	2.8	25 40.8	21 28.1	+ 8 56.9	−0.4470	0.6036	0.1472	+20	−50
ω² Cancri	6.3	1.88	2.8	25 22.7	21 46.1	+ 9 14.2	−0.1957	0.6034	0.1483	+33	−37
ψ² Cancri	5.7	1.90	2.2	25 49.5	11 0 59.1	−11 41.0	−1.1270	0.6010	0.1579	−25	−65
λ Cancri	5.7	+1.87	+1.7	+24 21.1	4 45.8	− 8 3.9	−0.3016	0.5980	−0.1688	+28	−44
ψ¹ Cancri	6.0	1.88	1.3	24 52.7	7 3.4	− 5 52.0	−1.2120	0.5964	0.1753	−33	−65
ψ³ Cancri	5.8	1.87	1.2	24 29.6	7 47.9	− 5 9.4	−0.9656	0.5956	0.1774	−12	−66
ψ⁵ Cancri	6.0	1.87	1.0	24 26.1	8 53.8	− 4 6.2	−1.1060	0.5947	0.1803	−22	−66
ψ⁴ Cancri	5.7	1.87	0.9	24 26.5	9 27.7	− 3 34.7	−1.2120	0.5941	0.1818	−33	−66
γ Cancri	4.3	+1.81	+0.3	+21 50.8	13 25.5	+ 0 14.3	+0.5838	0.5906	−0.1923	+84	− 2
26 Leonis	7.7	1.54	−3.2	15 43.2	19 19 38.5	+ 5 17.2	−0.2197	0.5615	0.2527	+33	−50
34 Leonis	6.3	1.47	3.7	13 52.3	13 1 23.4	+10 49.3	+0.1233	0.5572	0.2608	+51	−33
37 Leonis	5.7	1.46	4.0	14 15.0	3 33.9	−11 4.8	−0.8193	0.5551	0.2635	+ 1	−76
σ Leonis	4.1	1.10	5.4	6 36.2	14 8 40.6	− 6 58.1	−1.2790	0.5338	0.2845	−30	−83
82 Leonis	6.9	+1.06	−4.9	+ 3 32.7	10 47.9	− 4 55.2	+0.8448	0.5326	−0.2852	+90	0
80 Leonis	6.5	1.06	5.0	4 26.2	10 52.9	− 4 50.1	+0.2621	0.5326	0.2852	+58	−31
83 Leonis	6.5	1.05	4.8	3 35.0	11 21.0	− 4 22.9	+0.9837	0.5323	0.2852	+90	+ 8
τ Leonis	5.3	1.04	4.8	3 26.0	11 51.9	− 3 53.0	+0.9872	0.5319	0.2853	+90	+ 8
89 Leonis	6.2	1.01	5.2	3 38.5	14 54.3	− 0 56.7	−0.0904	0.5306	0.2859	+40	−49
β Virginis	3.7	+0.92	−5.5	+ 2 21.3	22 37.4	+ 6 31.5	−1.0050	0.5269	−0.2861	− 9	−88
B. A. C. 4134	6.3	0.73	4.9	− 3 22.3	15 11 54.7	− 4 36.5	+1.0070	0.5224	0.2830	+87	+ 9
f Virginis	6.0	0.60	4.9	5 15.3	20 59.2	+ 4 10.8	+0.3818	0.5208	0.2787	+65	−25
28 Virginis	7.0	0.56	4.6	6 55.5	23 30.4	+ 6 37.4	+1.3900	0.5204	0.2772	+83	+44
g Virginis	5.9	0.40	4.4	10 10.8	16 12 11.1	− 5 5.8	+1.2920	0.5201	0.2675	+80	+32
B. A. C. 4394	6.0	+0.41	−5.1	− 8 25.4	12 30.9	− 4 46.6	−0.6092	0.5201	−0.2671	+11	−83
50 Virginis	6.3	0.40	4.7	9 46.2	13 6.0	− 4 12.6	+0.6253	0.5202	0.2668	+78	−12
56 Virginis	7.0	0.37	4.8	9 48.9	15 32.6	− 1 50.7	+0.0241	0.5202	0.2643	+42	−43
58 Virginis	7.0	0.36	4.9	9 59.7	16 52.2	− 0 33.5	−0.1397	0.5202	0.2629	+35	−52
62 Virginis	7.0	0.34	4.7	10 45.3	18 16.2	+ 0 47.9	+0.2797	0.5202	0.2616	+56	−30
α Virginis	1.5	+0.31	−4.9	−10 36.9	20 38.5	+ 3 5.7	−0.4826	0.5205	−0.2593	+17	−73
ι Virginis	5.7	0.29	4.5	12 9.8	21 22.8	+ 3 48.6	+0.9326	0.5205	0.2583	+78	+ 5
B. A. C. 4700	5.6	0.05	4.5	15 48.5	17 18 41.8	+ 0 27.3	−0.4908	0.5253	0.2314	+13	−75
B. A. C. 4722	5.8	+0.02	4.0	17 42.7	20 51.7	+ 2 33.0	+1.0150	0.5260	0.2282	+72	+12
B. A. C. 4923	7.3	−0.21	4.3	20 56.5	18 16 35.0	− 3 23.2	+0.2590	0.5328	0.1950	+47	−30
42 Libræ	5.7	−0.42	−4.8	−23 28.7	19 12 17.8	− 7 18.6	−0.4909	0.5408	−0.1552	+ 4	−76
B. A. C. 5197	6.0	0.45	4.7	24 23.3	14 47.2	− 4 54.6	+0.1076	0.5418	0.1497	+34	−38
δ Scorpii	5.3	0.48	4.6	25 26.0	17 5.3	− 2 41.2	+0.8060	0.5428	0.1447	+65	+ 7
A² Scorpii	5.2	0.48	4.8	25 0.9	18 16.9	− 1 32.0	+0.2731	0.5430	0.1419	+41	−29
B. A. C. 5253	5.8	0.48	5.0	24 13.3	18 25.5	− 1 23.7	−0.6001	0.5431	0.1416	− 3	−87
B. A. C. 5254	5.8	−0.47	−5.2	−23 40.0	18 27.1	− 1 22.2	−1.2030	0.5431	−0.1416	−44	−89
B. A. C. 5255	6.0	0.48	4.8	25 6.0	18 33.0	− 1 16.5	+0.3288	0.5431	0.1414	+44	−26
3 Scorpii	6.7	0.49	4.9	24 56.0	18 45.3	− 1 4.6	+0.1186	0.5433	0.1409	+33	−38
4 Scorpii	6.3	0.50	4.6	25 57.5	19 7.1	− 0 43.6	+1.1730	0.5433	0.1400	+64	+30
π Scorpii	3.4	0.51	4.7	26 48.8	20 37.1	+ 0 43.4	+0.8110	0.5439	0.1367	+64	+ 2
B. A. C. 5314	5.7	−0.52	−4.9	−25 34.4	22 38.2	+ 2 40.3	+0.2808	0.5446	−0.1319	+41	−89
B. A. C. 5347	6.0	0.54	5.0	26 2.7	20 0 45.2	+ 4 42.9	+0.5170	0.5455	0.1270	+54	−16
σ Scorpii	3.4	0.58	5.6	25 20.5	6 34.6	+10 20.2	−0.9462	0.5473	0.1132	−26	−90
α Scorpii	1.4	0.61	5.6	26 12.0	10 11.8	−10 10.2	−0.4088	0.5484	0.1043	+ 3	−71
τ Scorpii	3.2	0.65	5.3	28 0.0	13 0.7	− 7 27.2	+1.2600	0.5493	0.0974	+62	+46
B. A. C. 5800	7.5	−0.75	−6.8	−26 51.6	21 5 49.4	+ 8 45.9	−1.2620	0.5529	−0.0644	−59	−73

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	At Conjunction in R. A. Washington Mean Time.	Hour Angle H	Y	x'	y'	Limiting Parallels. N.	S.
		s	″	° ′	d h m	h m				°	°
43 Ophiuchi	5.8	−0.78	− 6.7	−28 2.6	21 9 46.1	−11 25.8	−0.1623	0.5531	−0.0441	+10	−54
3 Sagittarii	4-6	0.82	7.5	27 47.5	20 18.7	− 1 15.8	−0.7573	0.5535	−0.0163	−24	−90
γ^1 Sagittarii	5-6.5	0.87	7.6	29 35.1	22 3 53.1	+ 6 2.6	+1.1660	0.5530	+0.0038	+60	+34
B. A. C. 6127	5.1	0.86	7.8	28 28.2	5 14.9	+ 7 21.6	−0.0513	0.5527	0.0075	+12	−47
ϕ Sagittarii	3.7	0.89	9.0	27 6.0	21 49.1	− 0 39.2	−1.0820	0.5491	0.0504	−42	−90
τ Sagittarii	3.6	−0.90	− 9.2	−27 49.6	23 7 19.1	+ 8 31.0	+0.3061	0.5459	+0.0743	+37	−27
B. A. C. 6628	5.9	0.90	9.5	28 4.3	15 15.9	− 7 48.5	+1.2510	0.5424	0.0932	+62	+44
B. A. C. 6666	5.8	0.90	9.6	27 12.2	17 44.2	− 5 25.2	+0.5282	0.5412	0.0992	+52	−14
				NEW	*MOON.*						
δ Capricorni	2.8	−0.70	− 9.6	−16 36.4	26 13 28.7	−11 47.4	−0.0334	0.5025	+0.2190	+36	−46
ι Aquarii	4.4	0.67	9.0	14 22.9	23 56.1	− 1 37.9	−0.1556	0.4972	0.2305	+31	−53
39 Aquarii	6.4	0.65	8.9	14 42.7	27 3 11.4	+ 1 32.2	+0.9670	0.4960	0.2337	+75	+ 8
42 Aquarii	5.8	0.64	8.7	13 21.4	5 35.6	+ 3 52.2	+0.0234	0.4945	0.2358	+41	−43
45 Aquarii	6.3	0.64	8.7	13 49.9	6 47.9	+ 5 2.5	+0.8389	0.4944	0.2371	+76	0
54 Aquarii	7.0	−0.63	− 8.2	−11 45.8	11 3.0	+ 9 10.6	−0.4443	0.4926	+0.2408	+18	−70
σ Aquarii	5.1	0.62	8.1	11 13.0	13 14.5	+11 18.5	−0.5201	0.4918	0.2427	+15	−76
58 Aquarii	6.7	0.61	8.1	11 26.7	13 48.8	+11 51.9	−0.1295	0.4915	0.2430	+35	−51
64 Aquarii	6.9	0.60	7.6	10 34.6	18 2.5	− 8 1.3	−0.0573	0.4900	0.2461	+39	−47
65 Aquarii	7.0	0.59	7.6	10 39.3	20 8.0	− 5 59.3	+0.5455	0.4893	0.2478	+73	−16
λ Aquarii	3.6	−0.57	− 6.9	− 8 8.4	28 1 31.6	− 0 44.4	−0.8980	0.4879	+0.2513	− 4	−90
78 Aquarii	6.4	0.57	6.8	7 45.9	2 37.8	+ 0 19.9	−1.0360	0.4876	0.2520	−13	−90
81 Aquarii	6.6	0.55	6.5	7 37.6	6 28.8	+ 4 4.8	−0.2141	0.4863	0.2540	+32	−56
82 Aquarii	6.4	0.55	6.4	7 8.4	7 7.9	+ 4 42.8	−0.5870	0.4863	0.2540	+13	−81
A^1 Aquarii	5.4	0.53	6.5	8 15.7	8 35.8	+ 6 8.3	+1.0280	0.4862	0.2551	+82	+11
A^2 Aquarii	7.4	−0.53	− 6.5	− 8 19.4	8 41.2	+ 6 13.6	+1.1260	0.4861	+0.2553	+82	+18
A^3 Aquarii	7.0	0.52	6.6	8 30.3	9 0.4	+ 6 32.3	+1.4030	0.4861	0.2555	+81	+47
A^4 Aquarii	8.0	0.52	6.5	8 15.7	9 45.3	+ 7 16.0	+1.3250	0.4860	0.2558	+82	+35
ϕ Aquarii	4.1	0.51	5.9	6 37.0	13 48.1	+11 12.3	+0.5371	0.4851	0.2575	+75	−17
96 Aquarii	5.6	0.50	5.6	5 42.0	16 40.7	− 9 59.8	+0.2709	0.4845	0.2589	+58	−30
Lalande 47041	7.1	−0.39	− 2.5	− 0 51.8	29 15 41.0	−11 36.0	+0.9620	0.4844	+0.2638	+ 6	−89
60 Piscium	6.2	0.28	+ 0.9	+ 6 10.1	30 18 22.0	− 9 42.2	+0.2777	0.4907	0.2602	+60	−29
62 Piscium	6.0	0.28	1.1	6 43.6	18 51.1	− 9 13.8	−0.2069	0.4908	0.2601	+34	−55
70 Piscium	8.0	0.21	1.9	7 22.5	31 2 24.8	− 1 53.8	+1.0400	0.4939	0.2567	+90	+13
ϵ Piscium	4.2	0.21	1.9	7 19.5	2 52.2	− 1 26.1	+1.2120	0.4942	0.2565	+90	+26
100 Piscium	6.8	−0.09	+ 4.7	+12 1.4	19 48.5	− 8 58.8	+0.3877	0.5042	+0.2458	+67	−21
π Piscium	5.7	0.06	4.7	11 36.4	20 58.8	− 7 50.6	+1.1250	0.5048	0.2448	+90	+21
B. A. C. 490	7.5	0.06	4.7	11 32.6	21 16.3	− 7 33.6	+1.2650	0 5049	0.2446	+90	+34
104 Piscium	7 5	−0.05	+ 5.4	+13 45.3	22 4.2	− 6 47.1	−0.9215	0.5058	+0.2440	− 5	−76

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26 Arietis	6.0	+0.20	+ 8.9	+19 23.4	1 23 23.3	− 6 1.0	−1.0400	0.5262	+0.2158	−14	−71
27 Arietis	6.3	0.22	8.2	17 14.5	23 42.8	− 5 51.8	+1.2750	0.5265	0.2156	+90	+40
B. A. C. 782	7.0	0.23	8.7	18 25.1	2 0 58.7	− 4 38.3	+0.2985	0.5277	0.2139	+62	−21
μ Arietis	6.0	0.28	9.3	19 33.9	5 5.4	− 0 39.6	−0.0476	0.5315	0.2079	+42	−37
47 Arietis	6.0	0.37	9.8	20 14.9	12 18.9	+ 6 19.3	+0.6892	0.5387	0.1961	+90	+ 2
B. A. C. 920	7.0	+0.38	+10.2	+21 12.1	12 40.5	+ 6 40.2	−0.2437	0.5393	+0.1954	+31	−46
ϵ Arietis	4.3	0.38	10.1	20 55.3	12 49.8	+ 6 49.2	+0.0806	0.5395	0.1951	+49	−29
66 Arietis	6.0	0.57	10.6	22 26.7	3 1 45.3	− 4 42.2	+0.8674	0.5530	0.1705	+90	+16
7 Tauri	6.0	0.61	11.6	24 6.9	4 18.5	− 2 14.5	−0.4616	0.5552	0.1652	+19	−54
9 Tauri	7.0	0.64	11.2	22 52.0	5 24.4	− 1 11.0	+1.0180	0.5568	0.1629	+90	+26
11 Tauri	6.7	+0.66	+12.0	+24 59.6	6 59.3	+ 0 20.4	−0.9391	0.5584	+0.1593	−10	−65
g Pleiadum	6.3	0.69	11.7	23 57.7	8 42.4	+ 1 59.7	+0.4032	0.5604	0.1553	+70	− 8
17 Tauri	4.3	0.69	11.6	23 47.2	8 44.5	+ 2 1.8	+0.5902	0.5604	0.1553	+85	+ 2
18 Tauri	6.3	0.69	11.9	24 30.8	8 50.9	+ 2 8.0	−0.1471	0.5604	0.1551	+36	−36
19 Tauri	5.0	0.69	11.8	24 8.4	8 52.5	+ 2 9.5	+0.2440	0.5604	0.1551	+59	−16
20 Tauri	5.0	+0.69	+11.7	+24 2.6	9 8.2	+ 2 24.6	+0.3841	0.5607	+0.1545	+68	− 9

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m				°	°
21 Tauri	7.0	+0.69	+11.8	+24 13.8	3 9 10.0	+ 2 26.3	+0.1954	0.5607	+0.1545	+56	-18
22 Tauri	7.0	0.70	11.8	24 12.2	9 13.7	+ 2 29.9	+0.2335	0.5608	0.1543	+58	-16
23 Tauri	4.7	0.70	11.6	23 37.5	9 21.4	+ 2 37.3	+0.8527	0.5610	0.1539	+90	+17
24 Tauri	8.0	0.71	11.6	23 47.7	9 46.8	+ 3 1.8	+0.7418	0.5613	0.1531	+90	+10
η Tauri	3.0	0.71	11.6	23 47.0	9 50.2	+ 3 5.1	+0.7626	0.5614	0.1529	+90	+11
B. A. C. 1171	7.8	+0.71	+11.7	+24 1.6	10 15.5	+ 3 29.5	+0.5740	0.5619	+0.1519	+84	+ 1
26 Tauri	7.0	0.72	11.5	23 32.3	10 27.2	+ 3 40.7	+1.1080	0.5620	0.1515	+90	+34
27 Tauri	4.0	0.72	11.6	23 44.1	10 32.4	+ 3 45.7	+0.9196	0.5623	0.1512	+90	+21
28 Tauri	6.2	0.72	11.6	23 49.1	10 32.9	+ 3 46.2	+0.8332	0.5623	0.1512	+90	+16
B. A. C. 1192	6.0	0.72	12.1	25 15.9	10 59.6	+ 4 11.9	-0.6012	0.5626	0.1502	+11	-60
p Tauri	6.0	+0.87	+12.4	+26 12.6	19 25.0	-11 41.7	-0.3952	0.5716	+0.1293	+22	-47
φ Tauri	5.3	0.94	12.7	27 6.2	23 13.9	- 8 1.7	-0.8379	0.5751	0.1192	- 4	-63
χ Tauri	5.7	0.95	12.1	25 23.1	4 0 9.1	- 7 8.7	+1.0380	0.5762	0.1168	+90	+33
W. iv, 1421	6.0	1.29	12.1	27 54.1	18 22.0	+10 20.3	+0.1100	0.5926	0.0631	+51	-13
22 Aurigæ	7.0	1.39	12.0	28 50.6	23 28.5	- 8 45.9	-0.5614	0.5965	0.0467	+12	-50
β Tauri	2.0	+1.41	+11.8	+28 31.3	5 0 33.9	- 7 43.3	-0.1870	0.5970	+0.0431	+34	-27
B. A. C. 1772	6.3	1.51	11.5	29 9.5	5 22.5	- 3 6.8	-0.6600	0.5999	0.0270	+ 6	-56
136 Tauri	5.3	1.58	10.6	27 35.4	10 33.3	+ 1 50.7	+1.0130	0.6027	+0.0094	+90	+40
49 Aurigæ	5.7	1.82	9.0	28 6.4	6 1 44.4	- 7 37.6	+0.2323	0.6071	-0.0436	+58	- 6
53 Aurigæ	6.0	1.86	8.9	29 4.6	2 52.3	- 6 32.6	-0.7643	0.6074	0.0476	- 1	-61
54 Aurigæ	6.0	+1.85	+ 8.7	+28 21.5	3 18.4	- 6 7.7	-0.0912	0.6074	-0.0491	+39	-23
25 Geminorum	6.5	1.86	8.6	28 17.8	3 57.4	- 5 30.4	-0.0630	0.6074	0.0514	+41	-21
28 Geminorum	6.0	1.89	8.6	29 4.8	5 10.4	- 4 20.6	-0.9057	0.6074	0.0556	-10	-61
W. vi, 1656	8.2	1.94	7.2	26 59.6	12 5.6	+ 2 16.6	+0.6947	0.6073	0.0800	+90	+15
47 Geminorum	6.0	1.98	6.8	27 1.9	14 49.8	+ 4 53.7	+0.4252	0.6071	0.0892	+72	0
53 Geminorum	6.3	+1.99	+ 6.4	+28 5.0	16 27.8	+ 6 27.4	-0.7642	0.6063	-0.0949	+ 1	-62
59 Geminorum	6.9	2.05	6.2	27 50.6	19 35.4	+ 9 26.9	-0.8387	0.6057	0.1054	- 4	-62
ι Geminorum	4.0	2.06	6.1	28 0.6	20 1.1	+ 9 51.5	-1.0490	0.6057	0.1069	-20	-62
υ Geminorum	4.3	2.08	5.5	27 7.8	23 44.8	-10 34.5	-0.6026	0.6046	0.1192	+11	-57
ϵ Geminorum	6.0	2.09	4.6	26 2.1	7 2 45.7	- 7 41.2	+0.1016	0.6013	0.1290	+50	-20
ω^1 Cancri	6.0	+2.14	+ 3.5	+25 40.9	8 57.9	- 1 44.9	-0.4125	0.6006	-0.1487	+22	-49
ω^2 Cancri	6.3	2.14	3.4	25 22.8	9 16.0	- 1 27.6	-0.1619	0.6002	0.1496	+35	-35
ψ^2 Cancri	5.7	2.17	2.8	25 49.5	12 30.4	+ 1 38.7	-1.0980	0.5987	0.1595	-23	-64
λ Cancri	5.7	2.16	2.1	24 21.1	16 18.1	+ 5 16.8	-0.2808	0.5964	0.1706	+29	-43
υ^1 Cancri	6.0	2.19	1.8	24 52.7	18 36.3	+ 7 29.3	-1.1960	0.5948	0.1772	-31	-65
υ^2 Cancri	5.8	+2.18	+ 1.6	+24 29.6	19 20.8	+ 8 11.9	-0.9510	0.5943	-0.1792	-10	-66
υ^3 Cancri	6.0	2.19	1.4	24 26.1	20 26.9	+ 9 15.3	-1.0920	0.5936	0.1824	-21	-66
υ^4 Cancri	5.7	2.19	1.3	24 26.5	21 0.9	+ 9 47.9	-1.2010	0.5932	0.1840	-32	-66
γ Cancri	4.3	2.15	+ 0.1	21 50.8	8 0 58.8	-10 24.0	+0.5849	0.5905	0.1945	+84	- 2
26 Leonis	7.7	2.05	- 5.1	15 43.2	6 56.7	- 5 36.6	-0.2848	0.5670	0.2573	+30	-53
34 Leonis	6.3	+2.02	- 5.9	+13 52.3	12 35.7	- 0 10.1	+0.0440	0.5626	-0.2657	+47	-38
37 Leonis	5.7	2.02	6.2	14 15.0	14 43.7	+ 1 53.4	-0.8960	0.5611	0.2696	- 3	-76
σ Leonis	4.1	1.77	9.2	6 36.2	10 19 6.1	+ 5 15.6	-1.4020	0.5426	0.2912	-46	-83
82 Leonis	6.9	1.73	9.1	3 52.6	21 9.6	+ 7 14.9	+0.6860	0.5417	0.2917	+90	- 9
80 Leonis	6.5	1.73	9.2	4 26.1	21 14.4	+ 7 19.6	+0.1119	0.5416	0.2917	+50	-38
83 Leonis	6.5	+1.72	- 9.1	+ 3 34.9	21 41.8	+ 7 46.1	+0.8228	0.5416	-0.2918	+90	- 1
τ Leonis	5.3	1.72	9.1	3 25.9	22 11.8	+ 8 15.0	+0.8245	0.5412	0.2918	+90	- 1
89 Leonis	6.2	1.70	9.4	3 38.5	11 1 8.3	+11 5.5	-0.2423	0.5398	0.2925	+32	-57
β Virginis	3.7	1.64	10.1	+ 2 21.3	8 36.2	- 5 41.6	-1.1560	0.5367	0.2928	-19	-88
B. A. C. 4134	6.3	1.48	10.1	- 3 22.3	21 26.0	+ 6 42.7	+0.8065	0.5326	0.2897	+72	- 3
f Virginis	6.0	+1.38	-10.1	- 5 15.4	12 6 10.9	- 8 49.5	+0.1826	0.5311	-0.2851	+54	-35
28 Virginis	7.0	1.35	9.8	6 55.6	8 36.6	- 7 28.6	+1.1730	0.5307	0.2844	+83	+21
g Virginis	5.9	1.23	9.8	10 10.9	20 49.8	+ 5 20.8	+1.0640	0.5302	0.2732	+80	+13
B. A. C. 4394	6.0	1.24	10.4	8 25.5	21 8.9	+ 5 39.3	-0.8054	0.5302	0.2729	+ 1	-90
50 Virginis	6.3	1.23	10.0	9 46.3	21 42.6	+ 6 11.9	+0.4097	0.5302	0.2724	+65	-24
56 Virginis	7.0	+1.21	-10.2	- 9 49.0	13 0 4.0	+ 8 28.7	-0.1831	0.5302	-0.2701	+33	-54

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'n from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ′	d h m	h m				°	°
58 Virginis	7.0	+1.20	-10.2	- 9 59.8	13 1 20.7	+ 9 42.8	-0.3443	0.5301	-0.2685	+25	-64
62 Virginis	7.0	1.18	10.1	10 45.4	2 41.8	+11 1.3	+0.0662	0.5302	0.2671	+45	-41
α Virginis	1.5	1.16	10.2	10 37.0	4 59.0	-10 46.0	-0.6855	0.5302	0.2644	+ 7	-90
ι Virginis	5.7	1.14	9.8	12 9.9	5 41.8	-10 4.6	+0.7078	0.5302	0.2637	+78	- 8
B. A. C. 4700	5.6	0.97	9.6	15 48.6	14 2 17.9	+ 9 51.1	-0.6974	0.5337	0.2352	+ 2	-90
B. A. C. 4722	5.8	+0.93	- 9.1	-17 42.8	4 23.8	+11 52.6	+0.7866	0.5340	-0.2317	+66	- 2
B. A. C. 4923	7.3	0.74	8.3	20 56.5	23 33.2	+ 6 23.7	+0.0455	0.5393	0.1971	+35	-42
42 Librae	5.7	0.55	8.3	23 28.7	15 18 49.1	+ 0 59.9	-0.6863	0.5450	0.1559	- 6	-90
B. A. C. 5197	6.0	0.52	8.0	24 23.3	21 15.7	+ 2 21.4	-0.0924	0.5458	0.1503	+23	-50
b Scorpii	5.3	0.50	7.7	25 26.0	23 31.3	+ 5 32.3	+0.6882	0.5466	0.1451	+64	- 6
A^2 Scorpii	5.2	+0.49	- 7.9	-25 0.9	16 0 41.8	+ 6 40.3	+0.0730	0.5468	-0.1423	+31	-40
B. A. C. 5253	5.8	0.49	8.2	24 13.3	0 50.0	+ 6 48.2	-0.7938	0.5468	0.1419	-14	-90
B. A. C. 5255	6.0	0.49	7.9	25 6.0	0 57.3	+ 6 55.3	+0.1281	0.5469	0.1417	+34	-37
3 Scorpii	6.7	0.49	7.9	24 56.0	1 9.4	+ 7 6.9	-0.0783	0.5469	0.1411	+23	-49
4 Scorpii	6.3	0.48	7.6	25 57.5	1 30.8	+ 7 27.5	+0.9668	0.5469	0.1403	+64	+12
π Scorpii	3.4	+0.47	- 7.7	-25 48.8	2 59.3	+ 8 53.0	+0.6057	0.5473	-0.1369	+59	-11
B. A. C. 5314	5.7	0.45	7.8	25 34.4	4 58.4	+10 47.9	+0.0838	0.5478	0.1320	+30	-40
B. A. C. 5347	6.0	0.43	7.8	26 2.7	7 3.4	-11 11.4	+0.3198	0.5486	0.1272	+42	-27
σ Scorpii	3.4	0.38	8.2	25 20.5	12 47.8	- 5 39.2	-1.1260	0.5489	0.1127	-39	-90
α Scorpii	1.4	0.34	8.0	26 12.0	16 21.8	- 2 12.8	-0.5907	0.5504	0.1040	- 6	-87
τ Scorpii	3.2	+0.31	- 7.4	-26 0.0	19 9.0	+ 0 28.5	+1.0720	0.5512	-0.0969	+62	+22
43 Ophiuchi	5.8	0.13	7.5	28 2.6	17 15 43.9	- 3 40.6	-0.3249	0.5530	0.0430	+ 2	-65
3 Sagittarii	4-6	+0.05	7.6	27 47.5	18 2 13.8	+ 6 26.8	-0.9059	0.5525	-0.0151	-33	-90
γ^1 Sagittarii	5-6.5	-0.01	7.1	29 35.1	9 47.3	-10 15.8	+1.0200	0.5516	+0.0049	+60	+19
B. A. C. 6127	5.1	0.01	7.5	28 28.2	11 9.0	- 8 57.0	-0.1938	0.5513	0.0086	+ 5	-56
ϕ Sagittarii	3.7	-0.13	- 8.2	-27 6.0	19 3 43 6	+ 7 2.7	-1.2040	0.5468	+0.0515	-52	-90
τ Sagittarii	3.6	0.18	8.0	27 49.5	13 14.9	- 7 45.7	+0.2008	0.5434	0.0752	+32	-33
B. A. C. 6628	5.9	0.23	7.9	28 4.2	21 13.2	- 0 3.7	+1.1480	0.5400	0.0943	+62	+30
B. A. C. 6666	5.8	0.24	8.1	27 12.1	23 41.8	+ 2 19.9	+0.4283	0.5386	0.1001	+46	-20
ω Sagittarii	5.1	0.29	8.2	26 34.7	20 11 46.9	- 9 59.1	+1.1100	0.5325	0.1269	+63	+24
A Sagittarii	5.3	-0.30	- 8.2	-26 28.9	13 15.9	- 8 33.0	+1.1880	0.5319	+0.1299	+64	+32
B. A. C. 7049	6.5	0.35	8.6	22 44.5	21 4 1.1	+ 5 43.9	-0.8189	0.5234	0.1593	-13	-90
17 Capricorni	6.0	0.38	8.6	21 53.8	12 13.8	-10 18.8	-0.3929	0.5189	0.1742	+12	-69
η Capricorni	5.1	0.41	8.6	20 16.3	21 24.7	- 1 24.7	-0.5284	0.5137	0.1895	+ 7	-78
B. A. C. 7325	6.9	0.41	8.5	20 36.1	22 34.8	- 0 16.7	+0.0612	0.5133	0.1914	+37	-41
26 Capricorni	7.0	-0.41	- 8.5	-20 37.2	23 52.9	+ 0 59.0	+0.3319	0.5125	+0.1932	+51	-27
27 Capricorni	6.5	0.41	8.4	20 58.8	22 0 1.3	+ 1 7.2	+0.7602	0.5124	0.1936	+67	- 3
30 Capricorni	5.5	0.43	8.6	18 25.6	4 22.7	+ 5 20.7	-1.2240	0.5101	0.2001	-37	-90
γ Capricorni	3.7	0.45	8.4	-17 8.3	15 55.7	- 7 26.6	-0.2521	0.5041	0.2157	+24	-59
				NEW	*MOON.*						
60 Piscium	6.2	-0.48	- 0.4	+ 6 10.1	27 0 11.6	- 2 1.3	+0.3838	0.4918	+0.2616	+66	-24
62 Piscium	6.0	0.49	- 0.2	6 43.6	0 40.6	- 1 33.0	-0.1000	0.4921	0.2615	+39	-31
70 Piscium	8.0	0.45	+ 0.5	7 22.5	8 14.1	+ 5 47.9	+1.1580	0.4951	0.2580	+90	+21
ϵ Piscium	4.2	0.45	0.5	7 19.5	8 41.6	+ 6 14.6	+1.3300	0.4952	0.2578	+86	+37
100 Piscium	6.8	0.38	2.8	12 1.4	28 1 40.3	- 1 15.6	+0.5102	0.5039	0.2461	+75	-15
π Piscium	5.7	-0.35	+ 3.0	+11 36.4	2 51.0	- 0 6.9	+1.2510	0.5044	+0.2453	+90	+32
B. A. C. 490	7.5	0.35	3.1	11 32.6	3 8.5	+ 0 10.0	+1.3890	0.5048	0.2450	+74	+50
104 Piscium	7.5	-0.37	+ 3.7	+13 45.3	3 56.7	+ 0 56.8	-0.8056	0.5054	+0.2443	+ 2	-64

MARCH.

26 Arietis	6.0	-0.18	+ 7.1	+19 23.4	1 5 39.5	+ 1 52.6	-0.9215	0.5236	+0.2150	- 6	-71
B. A. C. 782	7.0	0.16	6.9	18 25.1	7 6.1	+ 3 16.6	+0.4258	0.5236	0.2128	+70	-14
μ Arietis	6.0	0.11	7.6	19 33.9	11 16.2	+ 7 18.7	+0.0747	0.5283	0.2066	+49	-31
47 Arietis	6.0	0.03	8.3	20 14.9	18 36.9	- 9 35.1	+0.8255	0.5347	0.1945	+90	+10
B. A. C. 920	7.0	0.03	8.6	21 12.1	18 58.8	- 9 14.0	-0.1226	0.5348	0.1940	+38	-39
ϵ Arietis	4.3	-0.03	+ 8.5	+20 55.3	19 8.3	- 9 4.8	+0.2055	0.5351	+0.1936	+56	-23

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′ ″	d h m	h m				°	°
66 Arietis	6.0	+0.14	+ 9.7	+22 26.7	2 8 19.3	+ 3 39.3	+0.9819	0.5469	+0.1688	+90	+22
7 Tauri	6.0	0.18	10.4	24 6.9	10 55.9	+ 6 10.4	−0.3479	0.5493	0.1632	+25	−47
9 Tauri	7.0	0.19	10.1	22 52.0	12 3.5	+ 7 15.6	+1.1500	0.5496	0.1609	+90	+36
11 Tauri	6.7	0.23	10.9	24 59.6	13 40.6	+ 8 49.2	−0.8318	0.5521	0.1574	− 2	−65
g Pleiadum	6.3	0.25	10.6	23 57.7	15 26.4	+10 31.2	+0.5277	0.5534	0.1534	+80	− 2
17 Tauri	4.3	+0.25	+10.6	+23 47.2	15 28.4	+10 33.2	+0.7171	0.5534	+0.1534	+90	+ 9
18 Tauri	6.3	0.26	10.8	24 30.8	15 35.0	+10 39.6	−0.0298	0.5537	0.1531	+43	−30
19 Tauri	5.0	0.26	10.7	24 8.4	15 36.6	+10 41.1	+0.3664	0.5537	0.1531	+67	− 9
20 Tauri	5.0	0.26	10.7	24 2.6	15 52.7	+10 56.6	+0.5084	0.5538	0.1525	+78	− 2
21 Tauri	7.0	0.26	10.8	24 13.8	15 54.6	+10 58.4	+0.3173	0.5538	0.1525	+64	−12
22 Tauri	7.0	+0.26	+10.7	+24 12.2	15 58.3	+11 2.0	+0.3541	0.5543	+0.1524	+66	−10
23 Tauri	4.7	0.26	10.5	23 37.5	16 6.0	+11 9.4	+0.9831	0.5543	0.1519	+90	+25
24 Tauri	8.0	0.27	10.6	23 47.7	16 32.3	+11 34.8	+0.8710	0.5546	0.1511	+90	+18
y Tauri	3.0	0.27	10.6	23 47.0	16 35.7	+11 38.1	+0.8921	0.5546	0.1507	+90	+19
B. A. C. 1171	7.8	0.28	10.7	24 1.6	17 1.7	−11 56.8	+0.7006	0.5547	0.1499	+90	+ 8
26 Tauri	7.0	+0.28	+10.5	+23 32.3	17 13.6	−11 45.4	+1.2440	0.5551	+0.1494	+90	+47
27 Tauri	4.0	0.28	10.6	23 44.1	17 19.0	−11 40.2	+1.0510	0.5552	0.1492	+90	+30
28 Tauri	6.2	0.28	10.6	23 49.1	17 19.5	−11 39.7	+0.9634	0.5552	0.1492	+90	+24
B. A. C. 1192	6.0	0.28	11.1	25 15.9	17 46.8	−11 13.4	−0.4887	0.5556	0.1481	+18	−54
p Tauri	6.0	0.42	11.7	26 12.6	3 2 45.8	− 2 53.3	−0.2823	0.5632	0.1274	+29	−40
ϕ Tauri	5.3	+0.49	+12.0	+27 6.2	6 21.3	+ 0 53.3	−0.7374	0.5667	+0.1174	+ 3	−62
χ Tauri	5.7	0.51	11.5	25 23.1	7 18.1	+ 1 48.0	+1.1650	0.5675	0.1149	+90	+43
B. A. C. 1444	5.7	0.65	12.6	28 24.9	14 51.0	+ 9 3.5	−1.1980	0.5736	0.0943	−36	−62
W. iv, 1421	6.0	0.86	12.2	27 54.1	4 2 6.2	− 4 7.8	+0.2167	0.5820	0.0616	+58	− 8
22 Aurigæ	7.0	0.97	12.3	28 50.6	7 23.3	+ 0 56.6	−0.4715	0.5852	0.0453	+18	−44
β Tauri	2.0	+0.99	+12.2	+28 31.3	8 31.0	+ 2 1.5	−0.0691	0.5860	+0.0418	+39	−22
B. A. C. 1772	6.3	1.12	12.1	29 9.5	13 30.0	+ 6 48.4	−0.5741	0.5884	0.0260	+12	−49
136 Tauri	5.3	1.21	11.3	27 35.4	18 52.2	+11 57.4	+1.1270	0.5928	+0.0067	+90	+49
49 Aurigæ	5.7	1.50	10.1	28 6.4	5 10 37.4	+ 3 3.3	+0.3191	0.5951	−0.0434	+64	− 1
53 Aurigæ	6.0	1.54	10.2	29 4.6	11 47.8	+ 4 10.8	−0.7158	0.5963	0.0472	+ 3	−60
54 Aurigæ	6.0	+1.54	+ 9.9	+28 21.5	12 14.8	+ 4 36.7	−0.0101	0.5951	−0.0487	+44	−18
25 Geminorum	6.5	1.55	9.8	28 17.8	12 55.2	+ 5 5.4	+0.0185	0.5955	0.0511	+46	−17
28 Geminorum	6.0	1.59	9.9	29 4.8	14 10.9	+ 6 27.9	−0.8392	0.5954	0.0553	− 5	−61
W. vi, 1656	8.2	1.67	8.4	26 59.5	21 21.7	−10 39.3	+0.7856	0.5954	0.0780	+90	+20
47 Geminorum	6.0	1.72	8.5	27 1.8	6 0 11.9	− 7 56.3	+0.5079	0.5951	0.0892	+79	+ 4
53 Geminorum	6.3	+1.74	+ 7.7	+28 4.9	1 53.7	− 6 18.7	−0.7034	0.5947	−0.0938	+ 4	−61
59 Geminorum	6.9	1.81	7.6	27 50.5	5 8.1	− 3 12.4	−0.7809	0.5940	0.1042	0	−62
ι Geminorum	4.0	1.82	7.8	28 0.5	5 34.8	− 2 46.8	−0.9947	0.5940	0.1056	−15	−62
υ Geminorum	4.3	1.85	6.6	27 7.8	9 26.3	+ 0 55.3	−0.5441	0.5932	0 1179	+14	−54
ϵ Geminorum	6.0	1.89	5.8	26 2.1	12 33.7	+ 3 54.8	+0.1683	0.5921	0.1275	+54	−16
ϕ Geminorum	5.0	+1.96	+ 5.6	+27 2.3	16 6.8	+ 7 19.0	−1.3050	0.5907	−0.1384	−58	−63
ω^1 Cancri	6.0	1.98	4.8	25 40.9	18 58.5	+10 3.7	−0.3588	0.5895	0.1469	+25	−46
ω^2 Cancri	6.3	1.97	4.8	25 22.8	19 17.3	+10 21.8	−0.1047	0.5895	0.1478	+39	−32
ψ^2 Cancri	5.7	2.03	4.3	25 49.6	22 38.0	−10 25.7	−1.0580	0.5880	0.1576	−19	−64
λ Cancri	5.7	2.05	3.3	24 21.2	7 2 33.0	− 6 40.2	−0.2318	0.5862	0.1686	+32	−41
ψ^1 Cancri	6.0	+2.08	+ 3.0	+24 52.7	4 55.4	− 4 23.5	−1.1600	0.5851	−0.1752	−27	−65
ψ^2 Cancri	5.8	2.09	2.8	24 29.6	5 41.4	− 3 39.4	−0.9128	0.5845	0.1772	− 8	−66
ψ^3 Cancri	6.0	2.10	2.7	24 26.1	6 49.4	− 2 34.1	−1.0580	0.5841	0.1802	+18	−66
ψ^4 Cancri	5.7	2.10	2.5	24 26.5	7 24.4	− 2 0.5	−1.1700	0.5835	0.1818	−28	−66
γ Cancri	4.3	2.10	+ 1.1	21 50.8	11 29.3	+ 1 54.7	+0.6387	0.5813	0.1924	+90	+ 1
8 Leonis	5.7	+2.16	− 3.6	+16 54.4	8 9 15.3	− 1 9.8	+0.7679	0.5679	−0.2408	+90	+ 3
26 Leonis	7.7	2.19	5.2	15 43.2	18 6.5	+ 7 21.6	−0.2686	0.5624	0.2563	+30	−52
34 Leonis	6.3	2.18	6.2	13 52.3	23 49.9	−11 7.6	+0.0557	0.5594	0.2668	+47	−37
37 Leonis	5.7	2.20	6.5	14 15.0	9 1 59.5	− 9 2.7	−0.8906	0.5576	0.2678	− 4	−76
χ Leonis	4.8	2.12	10.0	7 54.0	23 14.0	+11 26.7	−0.5893	0.5470	0.2886	+14	−78
82 Leonis	6.9	+2.07	−11.2	+ 3 52.6	10 8 30.4	− 3 36.0	+0.6697	0.5434	−0.2935	+88	−10

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
80 Leonis	6.5	+2.08	−11.2	+ 4 26.1	10 8 35.2	− 3 31.3	+0.0936	0.5434	−0.2935	+49	−39
83 Leonis	6.5	2.06	11.3	3 34.9	9 2.8	− 3 4.6	+0.7997	0.5431	0.2936	+90	− 3
τ Leonis	5.3	2.06	11.4	3 25.9	9 32.1	− 2 36.3	+0.8044	0.5429	0.2937	+90	− 3
89 Leonis	6.2	2.06	11.8	3 38.4	12 27.5	+ 0 13.0	−0.2612	0.5420	0.2945	+31	−58
β Virginis	3.7	2.04	12.5	+ 2 21.2	19 51.3	+ 7 21.9	−1.1770	0.5401	0.2955	−21	−88
B. A. C. 4134	6.3	+1.95	−13.3	− 3 22.4	11 8 30.2	− 4 24.8	+0.7643	0.5380	−0.2934	+80	− 6
f Virginis	6.0	1.90	13.8	5 15.4	17 5.4	+ 3 53.2	+0.1378	0.5374	0.2891	+51	−37
28 Virginis	7.0	1.87	13.7	6 55.6	19 28.1	+ 6 11.2	+1.1170	0.5374	0.2876	+83	+16
g Virginis	5.9	1.82	14.0	10 10.9	12 7 24.0	− 6 16.8	+1.0020	0.5378	0.2777	+80	+ 9
B. A. C. 4394	6.0	1.83	14.3	8 25.5	7 42.6	− 5 58.8	−0.8467	0.5378	0.2774	− 2	−90
50 Virginis	6.3	+1.82	−14.1	− 9 46.3	8 15.6	− 5 26.9	+0.3531	0.5379	−0.2768	+61	−26
56 Virginis	7.0	1.81	14.3	9 49.0	10 33.3	− 3 13.8	−0.2329	0.5380	0.2745	+30	−57
58 Virginis	7.0	1.80	14.3	9 59.8	11 47.9	− 2 1.8	−0.3923	0.5380	0.2732	+22	−67
62 Virginis	7.0	1.79	14.1	10 45.4	13 6.9	− 0 25.3	+0.0117	0.5384	0.2717	+42	−44
α Virginis	1.5	1.78	14.2	10 37.0	15 20.0	+ 1 23.2	−0.7276	0.5388	0.2690	+ 4	−90
i Virginis	5.7	+1.78	−14.0	−12 9.9	16 1.9	+ 2 3.7	+0.6451	0.5388	−0.2682	+77	−11
B. A. C. 4700	5.6	1.68	13.9	15 48.6	13 12 1.3	− 2 37.5	−0.7474	0.5430	0.2394	0	−90
B. A. C. 4722	5.8	1.67	13.5	17 42.8	14 3.1	− 0 39.9	+0.7129	0.5438	0.2360	+72	− 6
B. A. C. 4923	7.3	1.56	12.8	20 56.6	14 8 36.2	− 6 45.4	−0.0173	0.5486	0.2006	+32	−46
42 Libræ	5.7	1.44	11.7	23 29.1	15 3 16.1	+11 45.4	−0.7293	0.5542	0.1584	− 9	−90
B. A. C. 5197	6.0	+1.42	−11.4	−24 23.4	5 58.3	−10 28.2	−0.1489	0.5544	−0.1525	+21	−53
b Scorpii	5.3	1.41	11.0	25 26.1	7 49.9	− 8 21.3	+0.6210	0.5551	0.1472	+61	−10
A^2 Scorpii	5.2	1.40	11.1	25 1.0	8 58.2	− 7 15.4	+0.0140	0.5551	0.1445	+28	−44
B. A. C. 5253	5.8	1.40	11.4	24 13.4	9 6.4	− 7 7.7	−0.8409	0.5552	0.1441	−17	−90
B. A. C. 5255	6.0	1.40	11.1	25 6.1	9 13.5	− 7 0.7	+0.0638	0.5554	0.1437	+31	−40
3 Scorpii	6.7	+1.40	−11.1	−24 56.1	9 25.2	− 6 49.5	−0.1370	0.5554	−0.1432	+20	−52
4 Scorpii	6.3	1.39	10.8	25 57.6	9 45.9	− 6 29.5	+0.8937	0.5555	0.1424	+64	+ 7
π Scorpii	3.4	1.38	10.8	25 48.9	11 11.9	− 5 6.6	+0.5419	0.5556	0.1389	+56	−14
B. A. C. 5314	5.7	1.37	18.8	25 34.5	13 7.6	− 3 15.0	+0.0246	0.5560	0.1340	+27	−43
B. A. C. 5347	6.0	1.36	10.7	26 2.8	15 9.0	− 1 18.0	+0.2573	0.5565	0.1288	+39	−30
σ Scorpii	3.4	+1.31	−10.7	−25 20.6	20 44.0	+ 4 4.8	−1.1690	0.5573	−0.1142	−43	−90
a Scorpii	1.4	1.29	10.4	26 12.1	16 0 12.5	+ 7 25.6	−0.6381	0.5580	0.1052	− 9	−90
τ Scorpii	3.2	1.27	9.6	28 0.1	2 55.2	+10 2.5	+1.0010	0.5581	0.0980	+62	+16
43 Ophiuchi	5.8	1.11	8.8	28 2.6	23 2.1	+ 5 25.2	−0.3736	0.5580	0.0431	− 1	−62
3 Sagittarii	4-6	1.01	8.3	27 47.5	17 9 20.3	− 8 38.1	−0.9475	0.5560	−0.0148	−36	−90
γ^1 Sagittarii	5-6.5	+0.95	− 7.4	−29 35.1	16 46.6	− 1 28.8	+0.9642	0.5549	+0.0053	+60	+14
B. A. C. 6127	5.1	0.94	7.7	28 28.2	18 7.1	− 0 11.2	−0.2412	0.5544	0.0089	+ 3	−59
φ Sagittarii	3.7	0.77	7.4	27 6.0	18 10 29.7	− 8 23.7	−1.2380	0.5482	0.0520	−56	−90
τ Sagittarii	3.6	0.69	6.6	27 49.5	19 56.1	+ 0 43.0	+0.1575	0.5441	0.0756	+29	−35
B. A. C. 6628	5.9	0.62	6.1	28 4.2	19 3 51.3	+ 8 21.9	+1.1050	0.5400	0.0946	+62	+25
B. A. C. 6666	5.8	+0.60	− 6.2	−27 12.1	6 19.3	+10 44.9	+0.3877	0.5388	+0.1003	+44	−23
ω Sagittarii	5.1	0.48	5.8	26 34.7	18 21.7	− 1 36.7	+1.0730	0.5319	0.1270	+63	+21
A Sagittarii	5.3	0.47	5.8	26 28.9	19 50.2	− 0 11.1	+1.1550	0.5308	0.1301	+64	+29
B. A. C. 7049	6.5	0.33	6.0	22 44.5	20 10 34.2	− 9 55.6	−0.6500	0.5224	0.1593	−15	−90
17 Capricorni	6.0	0.27	5.9	21 53.8	18 47.0	− 1 58.1	−0.4198	0.5174	0.1740	+11	−70
η Capricorni	5.1	+0.19	− 5.9	−20 16.3	21 3 58.3	+ 6 56.4	−0.5531	0.5122	+0.1891	+ 6	−81
B. A. C. 7325	6.9	0.18	5.7	20 36.1	5 8.6	+ 8 4.5	+0.0370	0.5117	0.1909	+36	−42
χ Capricorni	5.4	0.19	5.4	21 37.0	6 4.4	+ 8 58.7	+1.3420	0.5112	0.1924	+68	+50
26 Capricorni	7.0	0.18	5.6	20 37.2	6 26.7	+ 9 20.3	+0.3072	0.5110	0.1930	+50	−28
27 Capricorni	6.5	0.18	5.5	20 58.8	6 35.0	+ 9 28.4	+0.7345	0.5107	0.1932	+68	− 5
30 Capricorni	5.5	+0 13	− 6.0	−18 25.6	10 56.8	−10 17.7	−1.2440	0.5084	+0.1996	−38	−90
γ Capricorni	3.7	0.04	5.7	17 8.3	22 30.5	+ 0 55.7	−0.2719	0.5049	0.2155	+23	−60
B. A. C. 7558	8.0	0.03	5.7	16 27.2	22 0 45.8	+ 3 7.2	−0.5439	0.5018	0.2183	+10	−79
δ Capricorni	2.8	+0.02	5.6	16 36.3	2 11.8	+ 4 30.8	−0.0610	0.5012	0.2200	+34	−48
ι Aquarii	4.4	−0.05	5.3	14 22.8	12 39.0	− 9 19.9	−0.1663	0.4965	0.2317	+31	−54
39 Aquarii	6.4	−0.07	− 5.1	−14 42.7	15 54.0	− 6 10.4	+0.9610	0.4955	+0.2353	+75	+ 8

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	y	x'	y'	N.	S.
		s	″	° ′ ″	d h m	h m				°	°
42 Aquarii	5.8	−0.09	− 5.2	−13 21.4	23 18 18.1	− 3 50.3	+0.0240	0.4944	+0.2375	+41	−43
45 Aquarii	6.3	0.09	5.0	13 49.9	19 30.1	− 2 40.3	+0.8366	0.4941	0.2386	+76	0
54 Aquarii	7.0	0.12	5.1	11 45.8	23 44.4	+ 1 27.0	−0.4338	0.4930	0.2425	+19	−70
σ Aquarii	5.1	0.14	5.0	11 13.0	23 1 55.5	+ 3 34.4	−0.5094	0.4920	0.2443	+16	−75
58 Aquarii	6.7	0.14	4.9	11 26.7	2 29.7	+ 4 7.7	−0.1162	0.4919	0.2448	+35	−51
Mercury				−10 44.5	4 43.0	+ 6 17.3	−0.3487	0.4479	+0.2370	+25	−65
64 Aquarii	6.9	−0.17	− 4.9	10 34.6	6 42.2	+ 8 13.3	−0.0387	0.4908	0.2482	+40	−47
65 Aquarii	7.0	0.17	4.8	10 39.3	8 47.1	+10 14.7	+0.5641	0.4905	0.2503	+74	−16
λ Aquarii	3.6	0.22	4.8	8 8.4	14 9.1	− 8 32.0	−0.8638	0.4894	0.2525	− 2	−90
78 Aquarii	6.4	0.22	4.8	7 45.9	15 14.8	− 7 28.1	−1.0020	0.4891	0.2541	−11	−90
81 Aquarii	6.6	−0.24	− 4.5	− 7 37.6	19 4.2	− 3 44.9	−0.1767	0.4885	+0.2565	+34	−54
82 Aquarii	6.4	0.24	4.5	7 8.4	19 42.9	− 3 7.3	−0.5501	0.4883	0.2568	+15	−78
h^1 Aquarii	5.4	0.24	4.3	7 15.7	21 10.2	− 1 42.3	+1.0640	0.4883	0.2577	+82	+13
h^2 Aquarii	7.4	0.24	4.3	8 19.4	21 15.6	− 1 37.0	+1.1550	0.4881	0.2577	+82	+20
h^3 Aquarii	7.0	0.23	4.2	8 30.3	21 34.6	− 1 18.6	+1.4360	0.4881	0.2578	+81	+57
h^4 Aquarii	8.0	−0.24	− 4.2	− 8 15.7	22 19.2	− 0 35.1	+1.3590	0.4879	+0.2582	+82	+39
φ Aquarii	4.1	0.27	4.1	6 37.0	24 2 20.0	+ 3 19.2	+0.5861	0.4875	0.2602	+78	−15
96 Aquarii	5.6	0.29	− 4.0	− 5 42.0	5 11.1	+ 6 5.7	+0.3196	0.4873	0.2615	+61	−28
				NEW	*MOON.*						
100 Piscium	6.8	−0.49	+ 1.8	+12 1.3	27 7 31.2	+ 6 22.6	+0.4998	0.5076	+0.2479	+75	−15
π Piscium	5.7	0.48	2.1	11 36.3	8 41.1	+ 7 30.5	+1.2330	0.5086	0.2469	+90	+30
B. A. C. 490	7.5	0.48	2.1	11 32.5	8 58.5	+ 7 47.4	+1.3710	0.5086	0.2467	+90	+47
104 Piscium	7.5	0.50	2.4	13 45.2	9 46.2	+ 8 33.7	−0.8175	0.5091	0.2460	+ 1	−76
26 Arietis	6.0	0.42	6.0	19 23.4	28 11 14.8	+ 9 15.2	−0.9417	0.5270	0.2161	− 8	−71
B. A. C. 782	6.3	−0.40	+ 5.9	+18 25.1	12 40.7	+10 38.5	+0.4039	0.5281	+0.2139	+69	−15
μ Arietis	6.0	0.38	6.0	19 33.9	16 49.2	− 9 21.0	+0.0533	0.5315	0.2075	+48	−32
47 Arietis	6.0	0.32	6.7	20 14.9	30 0 7.3	− 2 17.4	+0.7956	0.5373	0.1953	+90	+ 8
B. A. C. 920	7.0	0.33	6.9	21 12.1	0 29.1	− 1 56.3	−0.1471	0.5378	0.1947	+36	−40
ε Arietis	4.3	0.33	6.9	20 55.3	0 38.6	− 1 47.1	+0.1825	0.5378	0.1944	+55	−24
66 Arietis	6.0	−0.20	+ 8.2	+22 26.6	13 47.2	+10 53.6	+0.9590	0.5487	+0.1690	+90	+21
7 Tauri	6.0	0.19	8.7	24 6.8	16 23.7	−10 34.4	−0.3734	0.5509	0.1634	+24	−49
9 Tauri	7.0	0.15	8.6	22 51.9	17 31.2	− 9 29.3	+1.1280	0.5517	0.1611	+90	+35
11 Tauri	6.7	0.15	9.2	24 59.5	19 8.3	− 7 55.7	−0.8584	0.5529	0.1574	− 4	−65
g Pleiadum	6.3	0.12	9.1	23 57.6	20 54.1	− 6 13.7	+0.5027	0.5546	0.1535	+78	− 3
17 Tauri	4.3	−0.12	+ 9.0	+23 47.1	20 56.2	− 6 11.6	+0.6924	0.5546	+0.1535	+90	+ 7
18 Tauri	6.3	0.12	9.2	24 30.7	21 3.1	− 6 4.9	−0.0562	0.5547	0.1531	+41	−31
19 Tauri	5.0	0.12	9.1	24 8.3	21 4.4	− 6 3.7	+0.3410	0.5547	0.1531	+65	−11
20 Tauri	5.0	0.11	9.1	24 2.5	21 20.5	− 5 48.2	+0.4852	0.5549	0.1526	+76	− 4
21 Tauri	7.0	0.12	9.2	24 13.7	21 22.4	− 5 46.4	+0.2918	0.5549	0.1524	+62	−13
22 Tauri	7.0	−0.12	+ 9.2	+24 12.1	21 26.2	− 5 42.7	+0.3286	0.5549	+0.1522	+65	−12
23 Tauri	4.7	0.11	9.0	23 37.4	21 33.9	− 5 35.3	+0.9579	0.5549	0.1520	+90	+23
24 Tauri	8.0	0.10	9.1	23 47.6	22 0.2	− 5 9.9	+0.8450	0.5552	0.1509	+90	+16
η Tauri	3.0	0.10	9.1	23 46.9	22 3.6	− 5 6.6	+0.9662	0.5555	0.1508	+90	+18
B. A. C. 1171	7.8	0.10	9.2	24 1.6	22 29.6	− 4 41.5	+0.6730	0.5555	0.1498	+90	+ 6
26 Tauri	7.0	−0.09	+ 9.1	+23 32.3	22 41.6	− 4 30.0	+1.2190	0.5558	+0.1493	+90	+45
27 Tauri	4.0	0.09	9.1	23 44.1	22 46.9	− 4 24.9	+1.0240	0.5560	0.1491	+90	+28
28 Tauri	6.2	0.09	9.2	23 49.1	22 47.5	− 4 24.3	+0.9380	0.5560	0.1491	+90	+22
B. A. C. 1192	6.0	0.10	9.6	25 15.9	23 14.8	− 3 58.0	−0.5198	0.5564	0.1480	+16	−55
p Tauri	6.0	−0.03	10.3	26 12.6	30 7 5.5	+ 4 23.7	−0.3167	0.5631	0.1271	+27	−42
φ Tauri	5.3	+0.06	+10.7	+27 6.2	11 52.3	+ 8 11.7	−0.7707	0.5671	+0.1169	0	−63
χ Tauri	5.7	0.09	10.2	25 23.1	12 49.4	+ 9 6.5	+1.1390	0.5669	0.1144	+90	+41
W. iv, 1421	6.0	0.38	11.4	27 54.1	31 7 48.7	+ 3 22.2	+0.1838	0.5788	0.0610	+56	−10
22 Aurigæ	7.0	0.48	11.7	28 50.6	13 10.5	+ 8 31.3	−0.5102	0.5813	0.0450	+16	−46
β Tauri	2.0	0.50	11.6	28 31.3	14 19.3	+ 9 37.3	−0.1262	0.5820	0.0413	+37	−24
B. A. C. 1772	6.3	+0.61	+11.8	+29 9.5	19 23.5	− 9 30.6	−0.6158	0.5837	+0.0255	+ 9	−52

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
136 Tauri	5.3	+0.70	+11.1	+27 35.4	1 0 51.8	− 4 15.6	+1.1000	0.5855	+0.0084	+90	+47
49 Aurigæ	5.7	1.00	10.5	28 6.4	16 58.8	+11 12.2	+0.2855	0.5875	−0.0429	+62	− 3
53 Aurigæ	6.0	1.04	10.8	29 4.6	18 11.0	−11 38.5	−0.7640	0.5876	0.0468	0	−61
54 Aurigæ	6.0	1.04	10.5	28 21.5	18 38.8	−11 11.8	−0.0476	0.5876	0.0482	+42	−21
25 Geminorum	6.5	1.05	10.4	28 17.8	19 20.3	−10 32.0	−0.0188	0.5876	0.0504	+43	−19
28 Geminorum	6.0	+1.09	+10.6	+29 4.8	20 38.1	− 9 17.4	−0.8894	0.5876	−0.0546	− 8	−61
W. vi, 1656	8.2	1.20	9.2	26 59.6	2 4 0.9	− 2 12.5	+0.7558	0.5866	0.0778	+90	+19
47 Geminorum	6.0	1.25	9.0	27 1.9	6 56.2	+ 0 35.6	+0.4744	0.5861	0.0869	+76	+ 3
53 Geminorum	6.3	1.28	8.7	28 4.9	8 41.0	+ 2 16.2	−0.7511	0.5856	0.0923	+ 1	−62
59 Geminorum	6.9	1.35	8.8	27 50.5	12 1.5	+ 5 28.7	−0.8316	0.5848	0.1025	− 4	−62
ϵ Geminorum	4.0	+1.36	+ 8.8	+28 0.5	12 28.9	+ 5 55.0	−1.0480	0.5845	−0.1039	−20	−62
ν Geminorum	4.3	1.42	8.1	27 7.8	16 28.0	+ 9 44.4	−0.5928	0.5834	0.1158	+11	−57
c Geminorum	6.0	1.46	7.1	26 2.1	19 41.4	−11 9.9	+0.1320	0.5825	0.1254	+52	−18
ω^1 Cancri	6.0	1.57	6.2	25 40.9	3 2 19.3	− 4 47.8	−0.4033	0.5793	0.1443	+22	−48
ω^2 Cancri	6.3	1.57	6.1	25 22.8	2 38.7	− 4 29.2	−0.1452	0.5793	0.1451	+36	−34
ψ^2 Cancri	5.7	+1.63	+ 5.7	+25 49.6	6 6.3	− 1 9.7	−1.1140	0.5776	−0.1545	−24	−64
λ Cancri	5.7	1.67	4.8	24 21.2	10 9.7	+ 2 44.2	−0.2743	0.5755	0.1654	+29	−43
υ^1 Cancri	6.0	1.72	4.6	24 52.8	12 37.2	+ 5 6.0	−1.2190	0.5741	0.1718	−34	−65
υ^2 Cancri	5.8	1.72	4.4	24 29.7	13 24.7	+ 5 51.6	−0.9683	0.5737	0.1738	−12	−66
υ^3 Cancri	6.0	1.74	4.2	24 26.2	14 35.2	+ 6 59.4	−1.1160	0.5733	0.1768	−23	−66
υ^4 Cancri	5.7	+1.75	+ 4.2	+24 26.6	15 11.8	+ 7 34.6	−1.2300	0.5729	−0.1784	−35	−66
γ Cancri	4.3	1.77	+ 2.6	21 50.8	19 25.1	+11 38.2	+0.6106	0.5706	0.1888	+87	0
8 Leonis	5.7	1.94	− 2.4	16 54.5	4 17 57.9	+ 9 20.6	+0.7496	0.5610	0.2375	+90	+ 2
26 Leonis	7.7	2.02	3.9	15 43.2	5 3 7.5	− 5 49.5	−0.3045	0.5527	0.2514	+29	−55
34 Leonis	6.3	2.04	5.2	13 52.3	9 2.2	− 0 7.3	+0.0283	0.5496	0.2601	+46	−38
37 Leonis	5.7	+2.09	− 5.4	+14 15.0	11 16.0	+ 2 1.9	−0.9322	0.5487	−0.2630	− 6	−76
χ Leonis	4.8	2.09	9.8	7 54.0	6 9 7.0	− 0 52.2	−0.6153	0.5400	0.2846	+11	−79
82 Leonis	6.9	2.10	11.5	3 52.6	18 36.3	+ 8 18.0	+0.6619	0.5375	0.2898	+87	−10
80 Leonis	6.5	2.11	11.5	4 26.1	18 41.2	+ 8 22.8	+0.0829	0.5375	0.2898	+49	−40
83 Leonis	6.5	2.10	11.6	3 34.9	19 8.9	+ 8 49.5	+0.7980	0.5375	0.2899	+90	− 3
τ Leonis	5.3	+2.10	−11.7	+ 3 25.9	19 39.3	+ 9 18.9	+0.7997	0.5375	−0.2901	+90	− 3
89 Leonis	6.2	2.12	12.0	3 38.4	22 38.3	−11 48.1	−0.2755	0.5369	0.2911	+30	−59
β Virginis	3.7	2.13	13.1	+ 2 21.2	7 6 10.1	− 4 31.2	−1.1920	0.5359	0.2926	−22	−88
B. A. C. 4134	6.3	2.12	14.7	− 3 22.4	18 59.3	+ 7 52.5	+0.7720	0.5353	0.2912	+79	− 5
f Virginis	6.0	2.13	15.5	5 15.5	8 3 38.8	− 7 45.2	+0.1451	0.5362	0.2877	+52	−37
28 Virginis	7.0	+2.12	−15.7	− 6 55.7	6 2.4	− 5 26.3	+1.1340	0.5364	−0.2864	+83	+18
g Virginis	5.9	2.13	16.4	10 11.0	18 0.3	+ 6 7.7	+1.0290	0.5386	0.2774	+80	+11
B. A. C. 4394	6.0	2.13	16.5	8 25.6	18 18.9	+ 6 25.6	−0.8243	0.5388	0.2771	0	−90
50 Virginis	6.3	2.13	16.5	9 46.4	18 51.8	+ 6 57.4	+0.3770	0.5388	0.2767	+63	−25
56 Virginis	7.0	2.13	16.6	9 49.1	21 9.4	+ 9 10.5	−0.2096	0.5393	0.2744	+31	−56
58 Virginis	7.0	+2.13	−16.6	− 9 59.9	22 24.0	+10 22.5	−0.3692	0.5398	−0.2730	+23	−66
62 Virginis	7.0	2.13	16.7	10 45.5	23 42.8	+11 38.7	+0.0396	0.5399	0.2717	+44	−42
a Virginis	1.5	2.14	16.8	10 37.1	9 1 55.8	−10 12.8	−0.7023	0.5405	0.2694	+ 6	−90
i Virginis	5.7	2.13	16.7	12 10.0	2 37.2	− 9 32.8	+0.6739	0.5408	0.2685	+78	−10
B. A. C. 4700	5.6	2.17	16.8	15 48.7	22 27.2	+ 9 36.6	−0.7004	0.5474	0.2406	+ 2	−90
B. A. C. 4722	5.8	+2.17	−16.7	−17 42.9	10 0 27.6	+11 32.8	+0.7571	0.5483	−0.2373	+70	− 4
B. A. C. 4923	7.3	2.17	16.3	20 56.7	18 43.8	+ 5 10.3	+0.0412	0.5554	0.2022	+35	−42
42 Libræ	5.7	2.16	14.4	23 28.8	11 13 1.6	− 1 11.8	−0.6622	0.5615	0.1599	− 5	−90
B. A. C. 5197	6.0	2.16	14.0	24 23.4	15 20.7	+ 1 2.2	−0.0799	0.5622	0.1542	+24	−49
b Scorpii	5.3	2.16	13.7	25 26.1	17 29.4	+ 3 6.2	+0.6848	0.5628	0.1488	+64	− 6
A^2 Scorpii	5.2	+2.16	−13.7	−25 1.0	18 36.3	+ 4 10.7	+0.0859	0.5631	−0.1455	+32	−40
B. A. C. 5253	5.8	2.15	14.0	24 13.4	18 44.1	+ 4 18.2	−0.7619	0.5631	0.1454	−12	−90
B. A. C. 5255	6.0	2.16	13.6	25 6.1	18 51.1	+ 4 24.9	+0.1374	0.5631	0.1451	+34	−37
3 Scorpii	6.7	2.16	13.7	24 56.1	19 2.5	+ 4 35.8	−0.0644	0.5631	0.1444	+24	−48
4 Scorpii	6.3	2.16	13.5	25 57.6	19 22.9	+ 4 55.5	+0.9572	0.5633	0.1440	+64	+12
π Scorpii	3.4	+2.16	−13.4	−25 48.9	20 46.8	+ 6 16.3	+0.6078	0.5635	−0.1402	+60	−11

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0. Δα	Red'ns from 1895.0. Δδ	Apparent Declination	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′ ″	d h m	h m				″	″
B. A. C. 5314	5.7	+2.15	-13.3	-25 34.5	11 22 40.0	+ 8 5.3	+0.0959	0.5640	-0.1353	+31	-39
B. A. C. 5347	6.0	2.15	13.0	26 2.8	12 0 38.7	+ 9 59.7	+0.3292	0.5644	0.1299	+43	-26
σ Scorpii	3.4	2.12	12.8	25 20.6	6 6.0	- 8 45.2	-1.0810	0.5654	0.1158	-36	-90
α Scorpii	1.4	2.11	12.3	26 12.1	9 29.8	- 5 29.0	-0.5546	0.5657	0.1062	- 5	-83
τ Scorpii	3.2	2.12	11.7	28 0.1	12 8.8	- 2 55.9	+1.0710	0.5661	0.0988	+62	+22
43 Ophiuchi	5.8	+2.01	- 9.8	-28 2.7	13 7 48.1	- 8 0.9	-0.2792	0.5656	-0.0432	+ 3	-62
3 Sagittarii	4-6	1.93	8.7	27 47.5	17 52.8	+ 1 41.2	-0.8459	0.5635	-0.0147	-29	-90
γ¹ Sagittarii	5-6.5	1.90	7.4	29 35.1	14 1 10.0	+ 8 42.4	+1.0510	0.5611	+0.0057	+60	+22
B. A. C. 6127	5.1	1.87	7.6	28 28.2	2 29.8	+ 9 58.4	-0.1581	0.5607	0.0093	+ 7	-54
φ Sagittarii	3.7	1.71	6.3	27 6.0	18 33.6	+ 1 28.0	-1.1260	0.5535	0.0527	-45	-90
τ Sagittarii	3.6	+1.64	- 5.0	-27 49.5	15 3 51.1	+10 25.7	+0.2635	0.5483	+0.0763	+35	-29
B. A. C. 6628	5.9	1.57	4.1	28 4.2	11 39.7	- 6 2.0	+1.2030	0.5434	0.0954	+62	+36
B. A. C. 6666	5.8	1.53	4.1	27 12.1	14 5.9	- 3 40.8	+0.4926	0.5420	0.1011	+50	-17
A Sagittarii	5.3	1.37	3.0	26 28.9	16 3 28.2	+ 9 14.6	+1.2590	0.5331	0.1306	+64	+42
B. A. C. 7049	6.5	1.18	2.9	22 44.0	18 5.4	- 0 36.6	-0.7353	0.5231	0.1594	- 8	-90
17 Capricorni	6.0	+1.10	- 2.4	-21 53.7	17 2 15.7	+ 7 18.3	-0.3075	0.5181	+0.1740	+16	-63
π Capricorni	5.1	0.98	2.2	20 16.2	11 25.1	- 7 49.1	-0.4443	0.5121	0.1888	+11	-72
B. A. C. 7325	6.9	0.97	2.0	20 36.0	12 35.2	- 6 41.1	+0.1438	0.5116	0.1906	+41	-36
26 Capricorni	7.0	0.96	1.9	20 37.1	13 53.1	- 5 25.6	+0.4131	0.5105	0.1926	+56	-22
27 Capricorni	6.5	0.96	1.8	20 58.7	14 1.5	- 5 17.4	+0.8392	0.5105	0.1928	+69	+ 2
30 Capricorni	5.5	+0.89	- 2.2	-18 25.5	18 22.6	- 1 4.2	-1.1360	0.5081	+0.1993	-29	-90
γ Capricorni	3.7	0.76	1.8	17 8.2	18 5 55.9	+10 8.8	-0.1680	0.5017	0.2146	+28	-54
B. A. C. 7558	8.0	0.73	1.8	16 27.1	8 11.2	-11 39.8	-0.4412	0.5005	0.2174	+15	-71
δ Capricorni	2.8	0.73	1.7	16 36.2	9 37.1	-10 16.3	+0.0406	0.4999	0.2191	+40	-42
ι Aquarii	4.4	0.61	1.4	14 32.7	20 4.8	- 0 6.5	-0.0701	0.4952	0.2306	+36	-48
39 Aquarii	6.4	+0.58	- 1.0	-14 42.6	23 20.1	+ 3 3.3	+1.0530	0.4942	+0.2339	+75	+14
40 Aquarii	7.0	0.55	0.7	12 26.7	23 55.0	+ 3 37.3	-1.3170	0.4940	0.2344	-40	-85
42 Aquarii	5.8	0.55	1.2	13 21.3	19 1 44.3	+ 5 23.6	+0.1199	0.4933	0.2362	+46	-38
45 Aquarii	6.3	0.54	1.0	13 49.8	2 56.4	+ 6 33.7	+0.9294	0.4930	0.2373	+76	+ 6
54 Aquarii	7.0	0.49	1.3	11 45.7	7 11.1	+10 41.4	-0.3429	0.4917	0.2411	+24	-64
σ Aquarii	5.1	+0.46	- 1.2	-11 12.9	9 22.4	-11 11.0	-0.4183	0.4906	+0.2431	+20	-69
58 Aquarii	6.7	0.46	1.1	11 26.6	9 56.5	-10 37.8	-0.0276	0.4908	0.2434	+40	-46
64 Aquarii	6.9	0.42	1.2	10 34.5	14 9.4	- 6 31.8	+0.0460	0.4896	0.2468	+44	-42
65 Aquarii	7.0	0.40	1.0	10 39.2	16 14.6	- 4 30.0	+0.6498	0.4893	0.2484	+78	-11
λ Aquarii	3.6	0.34	1.3	8 8.3	21 36.7	+ 0 43.4	-0.7836	0.4882	0.2520	+ 3	-90
78 Aquarii	6.4	+0.33	- 1.3	- 7 45.8	22 42.6	+ 1 47.4	-0.9194	0.4879	+0.2528	- 6	-90
81 Aquarii	6.6	0.29	1.0	7 37.5	20 2 32.1	+ 5 30.7	-0.1010	0.4873	0.2550	+38	-50
82 Aquarii	6.4	0.29	1.1	7 8.3	3 11.0	+ 5 8.5	-0.4722	0.4873	0.2550	+19	-72
h¹ Aquarii	5.4	0.29	0.7	8 15.6	4 38.4	+ 7 33.6	+1.1340	0.4872	0.2562	+82	+18
h² Aquarii	7.4	0.29	0.7	8 19.3	4 43.7	+ 7 38.8	+1.2270	0.4871	0.2564	+82	+26
h⁴ Aquarii	8.0	+0.28	- 0.6	- 8 15.6	5 47.5	+ 8 40.8	+1.4320	0.4868	+0.2568	+82	+55
φ Aquarii	4.1	0.23	0.7	6 36.9	9 48.3	-11 24.9	+0.6549	0.4868	0.2589	+82	-11
96 Aquarii	5.6	+0.20	0.7	5 41.9	12 39.4	- 8 38.4	+0.3868	0.4865	0.2601	+65	-25
Lalande 47041	7.1	-0.01	- 0.1	- 0 51.8	21 11 22.9	-10 31.5	+1.0750	0.4860	0.2662	+89	+13
60 Piscium	6.2	0.18	+ 0.8	+ 6 10.1	22 13 36.6	- 9 1.2	+0.3809	0.4972	0.2630	+66	-24
62 Piscium	6.0	-0.18	+ 0.8	+ 6 43.6	14 5.2	- 8 33.3	-0.0974	0.4973	+0.2628	+39	-48
70 Piscium	8.0	0.23	1.3	7 22.5	21 30.2	- 1 21.0	+1.1380	0.4977	0.2598	+90	+20
ε Piscium	4.2	0.23	1.4	7 19.5	21 57.0	- 0 54.9	+1.3060	0.4977	0.2593	+90	+35
				NEW	*MOON.*						
66 Arietis	6.0	-0.30	+ 6.9	+22 26.6	25 20 0.2	- 5 5.0	+0.8670	0.5546	+0.1697	+90	+16
7 Tauri	6.0	0.30	7.1	24 6.8	22 34.1	- 2 36.6	-0.4619	0.5610	0.1640	+19	-54
9 Tauri	7.0	0.26	7.4	22 51.9	23 40.5	- 1 32.6	+1.0300	0.5576	0.1615	+90	+27
11 Tauri	6.7	0.27	7.7	24 59.5	26 1 16.0	- 0 0.5	-0.9473	0.5588	0.1580	-10	-65
g Pleiadum	6.3	0.26	7.7	23 57.6	3 0.1	+ 1 39.8	+0.4052	0.5604	0.1539	+69	- 8
17 Tauri	4.3	-0.26	+ 7.7	+23 47.1	3 2.2	+ 1 41.9	+0.5967	0.5604	+0.1539	+86	+ 2

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
18 Tauri	6.3	−0.26	+ 7.8	+24 30.7	26 3 8.7	+ 1 48.1	−0.1502	0.5606	+0.1537	+36	−36
19 Tauri	5.0	0.26	7.7	24 8.3	3 10 2	+ 1 49.5	+0.2445	0.5606	0.1535	+59	−16
20 Tauri	5.0	0.26	7.8	24 2.5	3 26.2	+ 2 5.0	+0.3879	0.5608	0.1530	+69	− 9
21 Tauri	7.0	0.26	7.8	24 13.7	3 28.1	+ 2 6.8	+0.1956	0.5608	0.1530	+56	−18
22 Tauri	7.0	0.26	7.8	24 12.1	3 31.8	+ 2 10.4	+0.2341	0.5610	0.1529	+58	−17
23 Tauri	4.7	−0.25	+ 7.7	+23 37.4	3 39.4	+ 2 17.7	+0.8592	0.5618	+0.1525	+90	+17
24 Tauri	8.0	0.25	7.8	23 47.6	4 5.3	+ 2 42.7	+0.7474	0.5611	0.1514	+90	+11
η Tauri	3.0	0.25	7.8	23 46.9	4 8.7	+ 2 46.0	+0.7665	0.5611	0.1512	+90	+12
B. A. C. 1171	7.8	0.25	7.8	24 1.5	4 34.1	+ 3 10.5	+0.5761	0.5618	0.1503	+84	+ 1
26 Tauri	7.0	0.24	7.8	23 32.2	4 45.9	+ 3 21.8	+1.1170	0.5619	0.1497	+90	+35
27 Tauri	4.0	−0.24	+ 7.8	+23 44.0	4 51.2	+ 3 26.9	+0.9234	0.5619	+0.1496	+90	+21
28 Tauri	6.2	0.24	7.8	23 49.0	4 51.7	+ 3 27.4	+0.8379	0.5619	0.1496	+90	+16
B. A. C. 1192	6.0	0.26	8.0	25 15.8	5 18.6	+ 3 53.3	−0.6108	0.5623	0.1486	+11	−4.1
p Tauri	6.0	0.19	8.7	26 12.5	13 51.0	−11 53.4	−0.4177	0.5692	0.1274	+21	−4
φ Tauri	5.3	0.16	9.1	27 6.1	17 44.2	− 8 9.0	−0.8758	0.5720	0.1171	− 7	−63
χ Tauri	5.0	−0.13	+ 8.8	+25 23.0	18 40.5	− 7 14.8	+1.0270	0.5724	+0.1147	+90	+32
W. iv, 1421	6.0	+0.08	10.1	27 54.1	27 13 25.1	+10 45.9	+0.0570	0.5835	0.0606	+48	−16
22 Aurigæ	7.0	0.15	10.4	28 50.6	18 43.6	− 8 8.3	−0.6395	0.5857	0.0558	+ 8	−55
β Tauri	2.0	0.16	10.4	28 31.3	19 51.7	− 7 3.0	−0.2566	0.5861	0.0408	+30	−31
B. A. C. 1772	6.3	0.25	10.7	29 9.5	28 0 53.2	− 2 13.6	−0.7484	0.5878	0.0251	+ 1	−61
136 Tauri	5.3	+0.33	+10.3	+27 35.4	6 19.1	+ 2 59.1	+0.9585	0.5888	+0.0077	+90	+37
49 Aurigæ	5.7	0.59	10.0	28 6.4	22 22.4	− 5 36.8	+0.1351	0.5892	−0.0436	+53	−11
53 Aurigæ	6.0	0.62	10.3	29 4.6	23 32.8	− 4 29.3	−0.9111	0.5889	0.0474	−10	−61
54 Aurigæ	6.0	0.63	10.0	28 21.5	23 58.5	− 4 4.8	−0.1949	0.5889	0.0487	+33	−2
25 Geminorum	6.5	0.64	10.0	28 17.8	29 0 43.8	− 3 21.2	−0.1709	0.5889	0.0511	+34	−27
28 Geminorum	6.5	+0.66	+10.2	+29 4.8	2 1.5	− 2 6.7	−1.0420	0.5886	−0.0552	−20	−61
W. vi, 1656	8.2	0.77	9.1	26 59.6	9 25.1	+ 4 58 9	+0.6002	0.5866	0.0783	+88	−10
47 Geminorum	6.0	0.82	9.0	27 1.9	12 21.0	+ 7 47.7	+0.3187	0.5859	0.0873	+64	− 5
53 Geminorum	6.3	0.85	8.8	28 4.9	14 6.3	+ 9 28.8	−0.9114	0.5853	0.0927	−10	−62
59 Geminorum	6.9	0.91	8.9	27 50.5	17 27.9	−11 17.6	−0.9940	0.5839	0.1027	−16	−62
ι Geminorum	4.0	+0.92	+ 8.9	+28 0.5	17 55.5	−10 51.2	−1.2120	0.5837	−0.1040	−38	−62
υ Geminorum	4.3	0.98	8.3	27 7.8	21 56.2	− 7 0.1	−0.7550	0.5820	0.1158	+ 1	−63
c Geminorum	6.0	1.03	7.6	26 2.1	30 1 11.2	− 3 52.7	−0.0306	0.5805	0.1250	+42	−26
ω^1 Cancri	6.0	1.13	6.9	25 40.9	7 53.1	+ 2 33.4	−0.5702	0.5769	0.1437	+13	−58
ω^2 Cancri	6.3	1.13	6.8	25 22.8	8 12.8	+ 2 52.3	−0.3106	0.5766	0.1445	+27	−43
λ Cancri	5.7	+1.24	+ 5.8	+24 21.2	15 49.6	+10 11.5	−0.4422	0.5719	−0.1644	+20	−52
υ^2 Cancri	5.8	1.29	5.4	24 29.7	19 7.6	−10 38.1	−1.1430	0.5701	0.1726	−26	−65
υ^3 Cancri	6.0	+1.31	+ 5.3	+24 26.2	20 19.2	− 9 29.2	−1.2900	0.5693	−0.1756	−44	−66

MAY.

γ Cancri	4.3	+1.35	+ 3.8	+21 50.9	1 1 13.9	− 4 45.6	+0.4466	0.5659	−0.1871	+72	− 9
83 Cancri	5.7	1.51	+ 0.7	18 9.0	16 23.7	+ 9 50.8	+1.1100	0.5559	0.2182	+90	+27
8 Leonis	5.7	1.59	− 0.8	16 54.5	2 0 15 6	− 6 34.2	+0.5883	0.5508	0.2330	+83	− 7
26 Leonis	7.7	1.69	2.3	15 43.3	9 39.3	+ 2 29.8	−0.4699	0.5451	0.2474	+20	−64
34 Leonis	6.3	1.73	3.6	13 52.3	15 43.6	+ 8 21.6	−0.1279	0.5420	0.2557	+38	−46
37 Leonis	5.7	+1.77	− 3.7	+14 15.0	18 1.2	+10 34.6	−1.1010	0.5411	−0.2584	−17	−76
c Leonis	5.3	1.86	8.6	6 39.8	3 14 29.1	+ 6 21.6	+1.0520	0.5323	0.2777	+90	+15
χ Leonis	4.8	1.90	8.5	7 54.1	16 30.3	+ 8 18.8	−0.7615	0.5318	0.2791	+ 5	−78
82 Leonis	6.9	1.94	10.6	3 52.6	4 2 16.5	− 6 14.1	+0.5466	0.5297	0.2841	+78	−16
80 Leonis	6.5	1.95	10.5	4 26.1	2 21.6	− 6 9.1	−0.0404	0.5297	0.2841	+42	−46
83 Leonis	6.5	+1.94	−10.6	+ 3 34.9	2 50.2	− 5 41.4	+0.6861	0.5295	−0.2842	+90	− 9
τ Leonis	5.3	1.95	10.8	3 25.9	3 21.4	− 5 11.2	+0.6895	0.5294	0.2844	+90	− 9
89 Leonis	6.2	1.97	11.0	3 38.4	6 25.7	− 2 12.9	−0.3970	0.5290	0.2854	+24	−66
β Virginis	3.7	2.04	12.3	+ 2 21.2	13 9.5	+ 4 15.8	−1.3140	0.5282	0.2867	−34	−88
B. A. C. 4134	6.3	2.08	14.7	− 3 22.4	5 2 20.7	− 6 58.4	+0.6960	0.5284	0.2860	+87	− 9
f Virginis	6.0	+2.12	−15.3	− 5 15.5	12 13.3	+ 2 37.2	+0.0810	0.5297	−0.2825	+48	−40

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'		N.	S.
		$\Delta\alpha$	$\Delta\delta$									
		s	″	° ′ ″	d h m	h m					°	°
28 Virginis	7.0	+2.13	−16.2	− 6 55.7	5 14 40.3	+ 4 59.5	+1.0820	0.5301	−0.2813	+83	+14	
g Virginis	5.9	2.20	17.3	10 11.0	6 2 54.1	− 7 10.6	+0.9936	0.5333	0.2729	+80	+ 9	
B. A. C. 4394	6.0	2.21	17.0	8 25.6	3 13.0	− 6 52.4	−0.8768	0.5334	0.2727	− 3	−90	
50 Virginis	6.3	2.21	17.3	9 46.4	3 46.5	− 5 20.0	+0.3386	0.5335	0.2720	+61	−27	
56 Virginis	7.0	2.23	17.3	9 49.1	6 6.9	− 4 4.1	−0.2491	0.5343	0.2701	+29	−58	
58 Virginis	7.0	+2.24	−17.4	− 9 59.9	7 22.8	− 2 50.8	−0.4067	0.5348	−0.2687	+21	−68	
62 Virginis	7.0	2.24	17.5	10 45.5	8 43.1	− 1 33.1	+0.0068	0.5353	0.2675	+42	−44	
α Virginis	1.5	2.26	17.6	10 37.1	10 58.6	+ 0 37.9	−0.7377	0.5360	0.2651	+ 4	−90	
i Virginis	5.7	2.26	17.8	12 10.0	11 40.7	+ 1 18.6	+0.6531	0.5364	0.2643	+77	−10	
B. A. C. 4700	5.6	2.41	18.4	15 48.7	7 7 47.6	− 3 15.0	−0.6929	0.5437	0.2371	+ 2	−90	
B. A. C. 4722	5.8	+2.43	−18.5	−17 42.9	9 49.2	− 1 17.6	+0.7773	0.5462	−0.2344	+68	− 3	
B. A. C. 4923	7.3	2.56	18.3	20 56.7	8 3 13.0	− 7 32.5	+0.0912	0.5552	0.2003	+38	−39	
42 Libræ	5.7	2.67	16.4	23 28.9	22 31.6	+10 6.3	−0.5794	0.5635	0.1588	− 1	−84	
B. A. C. 5197	6.0	2.69	16.1	24 23.5	9 0 50.5	−11 40.0	+0.0069	0.5644	0.1530	+28	−44	
b Scorpii	5.3	2.71	15.8	25 26.2	2 58.8	− 9 36.4	+0.7754	0.5649	0.1476	+65	− 1	
A Scorpii (2d star)	5.2	+2.71	−15.8	−25 1.1	4 5.4	− 8 32.2	+0.1757	0.5654	−0.1447	+36	−32	
B. A. C. 5253	5.8	2.70	15.8	24 13.5	4 13.4	− 8 24.5	−0.6714	0.5656	0.1444	− 7	−90	
B. A. C. 5255	6.0	2.71	15.7	25 6.2	4 20.3	− 8 17.7	+0.2296	0.5656	0.1441	+39	−32	
3 Scorpii	6.7	2.71	15.7	24 56.2	4 31.7	− 8 7.0	+0.0296	0.5657	0.1435	+29	−42	
4 Scorpii	6.3	2.73	15.6	25 57.7	4 51.9	− 7 47.5	+1.0510	0.5658	0.1427	+64	+19	
π Scorpii	3.4	+2.73	−15.5	−25 49.0	6 15.6	− 6 26.9	+0.7018	0.5661	−0.1391	+64	− 5	
B. A. C. 5314	5.7	2.73	15.3	25 34.6	8 7.8	− 4 38.9	+0.1952	0.5669	0.1342	+36	−33	
B. A. C. 5347	6.0	2.74	15.0	26 2.9	10 6.3	− 2 44.7	+0.4308	0.5674	0.1291	+49	−20	
σ Scorpii	3.4	2.74	14.5	25 20.6	15 31.7	+ 2 28.5	−0.9692	0.5690	0.1146	−28	−90	
α Scorpii	1 4	2.76	12.9	26 12.1	18 54.1	+ 5 43.2	−0.4397	0.5696	0.1053	+ 1	−73	
τ Scorpii	3.2	+2.79	−13.5	−28 0.1	21 31.8	+ 8 15.0	+1.1880	0.5701	−0.0979	+62	+34	
B. A. C. 5800	7.5	2.77	11.5	26 51.7	10 13 16.9	− 0 35.6	−1.2080	0.5707	0.0531	−53	−84	
43 Ophiuchi	5.8	2.79	10.7	28 2.7	16 59.8	+ 2 58.8	−0.1311	0.5705	0.0423	+11	−52	
3 Sagittarii	4-6	2.76	9.0	27 47.5	11 2 57.5	−11 26.0	−0.6837	0.5685	−0.0135	−20	−90	
γ¹ Sagittarii	5-6.5	2.76	7.5	29 35.1	10 9.3	− 4 30.4	+1.2140	0.5665	+0.0070	+60	+41	
B. A. C. 6127	5.1	+2.74	− 7.6	−28 28.2	11 27.1	− 3 15.5	+0.0304	0.5661	+0.0105	+16	−42	
ϕ Sagittarii	3.7	2.61	5.2	27 6.0	12 3 19.4	−11 58.3	−0.9270	0.5585	0.0542	−32	−90	
τ Sagittarii	3.6	2.56	3.7	27 49.5	12 29.9	− 3 7.5	+0.4592	0.5533	0.0779	+46	−18	
B. A. C. 6666	5.8	2 47	− 2.4	27 12.0	22 37.3	+ 6 38.5	+0.6971	0.5463	0.1026	+63	− 5	
B. A. C. 7049	6.5	2.11	+ 0.5	22 44.4	14 2 20.3	+ 9 26.0	−0.4997	0.5257	0.1605	+ 5	−77	
17 Capricorni	6.0	+1.92	+ 1.4	−21 53.7	10 27.1	− 6 42.6	−0.0679	0.5200	+0.1749	+28	−48	
η Capricorni	5.1	1.88	1.9	20 16.2	19 33.4	+ 2 6.9	−0.2004	0.5139	0.1895	+23	−56	
B. A. C. 7325	6.9	1.87	2.2	20 36.0	20 43.1	+ 3 14.5	+0.3861	0.5128	0.1912	+54	−24	
26 Capricorni	7.0	1.86	2.3	20 37.1	22 0.8	+ 5 29.8	+0.6545	0.5119	0.1932	+68	− 9	
27 Capricorni	6.5	1.86	2.4	20 58.7	22 9.0	+ 5 37.8	+1.0770	0.5118	0.1934	+69	+18	
30 Capricorni	5.5	+1.77	+ 2.1	−18 25.5	15 2 29.2	+ 8 50.2	−0.8869	0.5093	+0.1996	−12	−90	
γ Capricorni	3.7	1.63	2.9	17 8.1	14 0.6	− 3 58.7	+0.0755	0.5021	0.2146	+41	−40	
B. A. C. 7558	8.0	1.59	2.9	16 27.0	16 15.9	− 1 47.2	−0.1953	0.5007	0.2172	+27	−55	
δ Capricorni	2.8	1.58	3.0	16 36.1	17 41.6	− 0 24.0	+0.2856	0.5002	0.2190	+52	−29	
ι Aquarii	4.4	1.44	3.4	14 22.8	16 4 9.3	+ 9 45.8	+0.1733	0.4950	0.2300	+48	−35	
39 Aquarii	6.4	+1.42	+ 3.9	−14 42.5	7 24.8	−11 4.2	+1.2950	0.4935	+0.2331	+75	+35	
40 Aquarii	7.0	1.38	3.2	12 26.6	7 59.8	−10 30.1	−1.0730	0.4932	0.2337	−18	−90	
42 Aquarii	5.8	1.38	3.8	13 21.2	9 49.2	− 8 43.8	+0.3612	0.4926	0.2353	+59	−26	
45 Aquarii	6.3	1.37	4.0	13 49.7	11 1.5	− 7 33.5	+1.1710	0.4919	0.2364	+76	+23	
54 Aquarii	7.0	1.30	3.7	11 45.6	15 16.7	− 3 25.3	−0.1031	0.4906	0.2401	+36	−50	
σ Aquarii	5.1	+1.27	+ 3.8	−11 12.8	17 28.3	− 1 17.3	−0.1768	0.4897	+0.2418	+32	−54	
58 Aquarii	6.7	1.27	4.0	11 26.5	18 2.6	− 0 43.9	+0.2136	0.4897	0.2422	+52	−33	
64 Aquarii	6.9	1.21	3.8	10 34.4	22 16.2	+ 3 22.8	+0.2835	0.4882	0.2454	+57	−30	
65 Aquarii	7 0	1.17	4.0	10 39.1	17 0 21.8	+ 5 25.0	+0.8853	0.4877	0.2468	+79	+ 2	
λ Aquarii	3.6	1.11	3.6	8 8.2	5 45.7	+10 40.2	−0.5481	0.4866	0.2503	+15	−78	
78 Aquarii	6.4	+1.10	+ 3.6	− 7 45.7	6 51.2	+11 43.8	−0.6879	0.4864	+0.2511	+ 8	−90	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's Name.	Mag.	Red'n from 1895.0. Δα	Red'n from 1895.0. Δδ	Apparent Declination.	At Conjunction in R. A. Washington Mean Time.	Hour Angle H	Y	x'	y'	Limiting Parallels. N.	Limiting Parallels. S.
		s	″	° ′	d h m	h m				°	°
81 Aquarii	6.6	+1.06	+ 3.9	− 7 37.4	17 10 41.7	− 8 31.8	+0.1286	0.4857	+0.2524	+50	−38
82 Aquarii	6.4	1.04	3.8	7 8.2	11 20.7	− 7 53.9	−0.2425	0.4855	0.2536	+31	−58
h^1 Aquarii	5.4	1.04	4.3	8 15.5	12 48.5	− 6 28.5	+1.3630	0.4854	0.2545	+82	+41
ϕ Aquarii	4.1	0.98	4.2	6 36.8	17 59.8	− 1 25.5	+0.8774	0.4849	0.2569	+83	+ 2
96 Aquarii	5.6	0.94	4.1	5 41.8	20 51.7	+ 1 21.7	+0.6053	0.4848	0.2580	+80	−13
Lalande 47041	7.1	+0.69	+ 4.2	− 0 51.7	18 19 42.0	− 0 24.7	+1.2670	0.4866	+0.2637	+89	+29
60 Piscium	6.2	0.39	4.2	+ 6 10.2	19 22 0.9	+ 1 11.0	+0.5254	0.4958	0.2605	+76	−17
62 Piscium	6.0	0.39	4.1	6 43.7	22 29.4	+ 1 38.8	+0.0469	0.4962	0.2603	+47	−41
70 Piscium	8.0	0.33	4.5	7 22.6	20 5 55.0	+ 8 51.7	+1.2680	0.5000	0.2573	+90	+31
100 Piscium	6.8	0.19	4.5	12 1.4	22 57.6	+ 1 24.5	+0.5637	0.5112	0.2463	+79	−12
π Piscium	5.7	+0.20	+ 4.8	+11 36.4	21 0 6.5	+ 2 31.3	+1.2930	0.5123	+0.2454	+89	+37
104 Piscium	7.5	0.17	4.4	13 45.3	1 10.5	+ 3 33.4	−0.7433	0.5135	0.2445	+75	+ 5
26 Arietis	6.0	0.03	5.3	19 23.4	22 2 7.8	+ 3 43.6	−0.9506	0.5344	0.2155	− 9	−71
B. A. C. 782	7.0	0.03	5.5	18 25.1	3 32.0	+ 5 5.2	+0.3747	0.5358	0.2136	+67	−16
μ Arietis	6.0	+0.01	5.8	19 33.9	7 33.7	+ 8 58.8	+0.0123	0.5395	0.2072	+45	−34
47 Arietis	6.0	−0.01	+ 6.2	+20 14.9	14 39.8	− 8 9.6	+0.7209	0.5463	+0.1951	+90	+ 4
B. A. C. 920	7.0	0.02	6.1	21 12.1	15 0.8	− 7 49.3	−0.2099	0.5467	0.1945	+33	−44
ϵ Arietis	4.3	−0.02	6.1	20 55.3	15 10.3	− 7 40.1	+0.1137	0.5468	0.1942	+50	−27
				NEW MOON.							
β Tauri	2.0	+0.15	9.1	28 31.3	25 2 52.8	+ 1 45.7	−0.3702	0.5937	0.0394	+23	−38
B. A. C. 1772	6.3	+0.20	+ 9.3	+29 9.5	7 47.8	+ 6 28.6	−0.8650	0.5953	+0.0235	− 7	−61
136 Tauri	5.3	0.25	9.1	27 35.4	13 6.8	+11 34.4	+0.8147	0.5967	+0.0061	+90	+28
49 Aurigæ	5.7	0.42	9.0	28 6.3	26 4 49.8	+ 2 38.1	−0.0237	0.5968	−0.0459	+43	−19
53 Aurigæ	6.0	0.45	9.2	29 4.5	6 0.5	+ 3 45.9	−1.0650	0.5964	0.0496	−22	−61
54 Aurigæ	6.0	0.45	9.1	28 21.4	6 27.7	+ 4 12.0	−0.3590	0.5964	0.0511	+24	−38
25 Geminorum	6.5	+0.46	+ 9.1	+28 17.7	7 8.3	+ 4 50.9	−0.3318	0.5962	−0.0533	+25	−36
28 Geminorum	6.0	0.48	9.2	29 4.7	8 24.5	+ 6 3.9	−1.1990	0.5960	0.0575	−37	−61
W. vi, 1656	8.2	0.56	8.5	26 59.5	15 39.3	−10 59.3	+0.4192	0.5940	0.0806	+72	0
47 Geminorum	6.0	0.60	8.4	27 1.8	18 31.9	− 8 13.8	+0.1368	0.5926	0.0897	+52	−15
53 Geminorum	6.3	0.62	8.2	28 4.9	20 15.3	− 6 34.7	−1.0890	0.5920	0.0951	−24	−62
59 Geminorum	6.9	+0.66	+ 8.3	+27 50.5	23 33.2	− 3 24.8	−1.1770	0.5905	−0.1052	−33	−62
ν Geminorum	4.3	0.72	7.9	27 7.8	27 3 56.8	+ 0 47.9	−0.9462	0.5882	0.1182	−12	−63
ϵ Geminorum	6.0	0.76	7.4	26 2.1	7 8.7	+ 3 52.2	−0.2310	0.5862	0.1277	+31	−37
κ Geminorum	3.7	0.75	7.0	24 38.9	7 18.0	+ 4 1.1	+1.1520	0.5862	0.1281	+90	+41
ω^1 Cancri	6.0	0.84	6.9	25 40.9	13 44.4	+10 12.1	−0.7766	0.5822	0.1461	0	−64
ω^2 Cancri	6.3	+0.85	+ 6.8	+25 22.8	14 3.7	+10 30.6	−0.5189	0.5819	−0.1471	+16	−55
λ Cancri	5.7	0.94	5.9	24 21.2	21 34.3	− 6 16.5	−0.6600	0.5765	0.1666	+ 8	−64
γ Cancri	4.3	1.04	4.4	21 50.9	28 6 52.3	+ 2 40.1	+0.2137	0.5697	0.1890	+57	−21
80 Cancri	6.8	1.15	2.1	18 28.5	18 54.7	− 9 44.4	+1.1880	0.5603	0.2144	+90	+34
83 Cancri	5.7	1.19	1.6	18 9.1	21 55.4	− 6 50.2	+0.8600	0.5581	0.2200	+90	+10
8 Leonis	5.7	+1.27	+ 0.3	+16 54.5	29 5 45.6	+ 0 43.2	+0.3367	0.5524	−0.2336	+64	−20
26 Leonis	7.7	1.37	− 1.0	15 43.3	15 9.0	+ 9 46.9	−0.7257	0.5453	0.2474	+ 6	−74
34 Leonis	6.3	1.42	2.2	13 52.4	21 14.1	− 8 20.5	−0.3876	0.5416	0.2553	+24	−61
37 Leonis	5.7	1.45	2.3	14 15.1	23 32.0	− 6 7.2	−1.3600	0.5401	0.2580	−44	−76
c Leonis	5.3	1.59	7.1	6 39.8	30 20 9.1	−10 11.1	+0.8005	0.5295	0.2755	+90	− 2
χ Leonis	4.8	+1.62	− 6.9	+ 7 54.1	22 11.6	− 8 12.6	−1.0190	0.5287	−0.2768	−10	−82
82 Leonis	6.9	1.69	9.1	3 52.7	31 8 5.3	+ 1 22.1	+0.3011	0.5258	0.2809	+61	−28
80 Leonis	6.5	1.70	8.9	4 26.2	8 10.4	+ 1 27.1	−0.2910	0.5255	0.2809	+29	−60
83 Leonis	6.5	1.67	8.9	3 35.0	8 39.3	+ 1 55.1	+0.4417	0.5253	0.2810	+70	−21
τ Leonis	5.3	1.70	9.3	3 26.0	9 11.0	+ 2 25.8	+0.4450	0.5253	0.2813	+70	−21
89 Leonis	6.2	+1.73	− 9.5	+ 3 38.4	12 18.0	+ 5 26.8	−0.6433	0.5247	−0.2820	+11	−84

JUNE.

B. A. C. 4134	6.3	+1.90	−13.0	− 3 22.4	1 9 34.8	+ 2 3.3	+0.4845	0.5228	−0.2812	+72	−20
f Virginis	6.0	1.97	14.7	5 15.4	18 38.1	+10 49.5	−0.1244	0.5238	0.2776	+37	−51
28 Virginis	7.0	+1.98	−15.4	− 6 55.6	21 8.1	−10 45.2	+0.8915	0.5243	−0.2765	+83	+ 2

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.						Limiting Parallels.	
Name.	Mag.	Red'n from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'		N.	S.
		$\Delta\alpha$	$\Delta\delta$									
		s	"	° ′	d h m	h m					°	°
ψ Virginis	5.2	+2.04	−16.3	− 8 58.4	2 3. 7.2	− 4 57.5	+1.3430	0.5253	−0.2727	+81	+38	
g Virginis	5.9	2.11	16.9	10 11.0	9 37.3	+ 1 20.2	+0.8275	0.5272	0.2677	+80	− 1	
B. A. C. 4394	6.0	2.12	16.4	8 25.6	9 56.7	+ 1 38.9	−1.0620	0.5272	0.2674	−15	−90	
50 Virginis	6.3	2.12	16.6	9 46.4	10 30.9	+ 2 12.0	+0.1710	0.5277	0.2670	+51	−35	
56 Virginis	7.0	2.15	16.9	9 49.1	12 54.3	+ 4 30.9	−0.4192	0.5281	0.2649	+20	−68	
58 Virginis	7.0	+2.16	−17.0	− 9 59.9	14 11.9	+ 5 45.9	−0.5786	0.5285	−0.2638	+12	−80	
62 Virginis	7.0	2.17	17.2	10 45.5	15 33.8	+ 7 5.3	−0.1558	0.5290	0.2623	+33	−53	
a Virginis	1.5	2.20	17.3	10 37.1	17 52.2	+ 9 19.0	−0.9028	0.5298	0.2600	− 7	−90	
i Virginis	5.7	2.20	17.7	12 10.0	18 35.3	+10 0.9	+0.5021	0.5302	0.2593	+69	−18	
B. A. C. 4700	5.6	2.46	18.7	15 48.7	3 15 7.5	+ 5 52.5	−0.8119	0.5394	0.2330	− 5	−90	
B. A. C. 4722	5.8	+2.48	−19.1	−17 42.9	17 11.6	+ 7 52.4	+0.6779	0.5405	−0.2298	+72	− 8	
B. A. C. 4923	7 3	2.72	19.5	20 56.7	4 11 55.9	+ 1 58.1	+0.0278	0.5504	0.1962	+34	−42	
42 Librae	5.7	2.97	17.6	23 28.9	5 6 31.5	− 4 6.0	−0.6012	0.5601	0.1553	− 2	−86	
B. A. C. 5197	6.0	3.01	17.4	24 23.5	8 52.2	− 1 50.4	−0.0052	0.5610	0.1497	+28	−44	
b Scorpii	5.3	3.05	17.3	25 26.1	11 1.8	+ 0 14.4	+0.7722	0.5619	0.1444	+65	− 1	
A^2 Scorpii	5.2	+3.05	−17.2	−25 1.0	12 9.4	+ 1 19.6	+0.1716	0.5623	−0.1417	+36	−34	
B. A. C. 5253	5.8	3.04	17.0	24 13.4	12 17.5	+ 1 27.4	−0.6813	0.5624	0.1411	− 8	−90	
B. A. C. 5255	6.0	3.05	17.1	25 6.1	12 24.5	+ 1 34.1	+0.2277	0.5624	0.1409	+39	−32	
3 Scorpii	6.7	3.05	17.1	24 56.1	12 36.1	+ 1 45.3	+0.0245	0.5626	0.1405	+28	−43	
4 Scorpii	6.3	3.07	17.1	25 57.6	12 56.7	+ 2 5.1	+1.0530	0.5626	0.1396	+64	+19	
π Scorpii	3.4	+3.08	−17.0	−25 48.9	14 21.3	+ 3 26.7	+0.7081	0.5633	−0.1360	+64	− 4	
B. A. C. 5314	5.7	3.10	16.7	25 34.5	16 15.2	+ 5 16.4	+0.2017	0.5640	0.1312	+36	−33	
B. A. C. 5347	6.0	3.12	16.5	26 2.8	18 14.6	+ 7 11.4	+0.4424	0.5646	0.1262	+49	−20	
σ Scorpii	3.4	3.16	15.7	25 20.6	23 43.4	−11 32.0	−0.9517	0.5666	0.1117	−27	−90	
α Scorpii	1.4	3.20	15.3	26 12.1	6 3 7.5	− 8 15.6	−0.4104	0.5678	0.1025	+ 2	−71	
τ Scorpii	3.2	+3.25	−15.0	−28 0.0	5 46.8	− 5 42.2	+1.2290	0.5683	−0.0954	+62	+41	
B. A. C. 5800	7.5	3.30	12.3	26 51.6	21 37.7	+ 9 33.0	−1.1190	0.5705	0.0508	−45	−90	
43 Ophiuchi	5.8	3.34	11.6	28 2.6	7 1 21.7	−10 51.5	−0.0533	0.5705	0.0506	+15	−47	
3 Sagittarii	4-6	3.38	9.6	27 47.5	11 21.1	− 1 14.6	−0.5817	0.5694	−0.0116	−15	−86	
B. A. C. 6127	5.1	3.42	7.8	28 28.2	19 51.3	+ 6 56.6	+0.1504	0.5674	+0.0127	+23	−36	
ϕ Sagittarii	3.7	+3.36	− 4.5	−27 6.0	8 11 42.6	− 1 47.3	−0.7782	0.5608	+0.0562	−22	−90	
τ Sagittarii	3.6	3.36	2.7	27 49.4	20 51.8	+ 7 2.1	+0.6290	0.5556	0.0801	+57	− 8	
B. A. C. 6666	5.8	3.29	− 0.7	27 12.0	9 6 57.0	− 7 14.0	+0.8890	0.5489	0.1047	+63	+ 8	
B. A. C. 7049	6.5	2.98	+ 3.4	22 44.3	10 10 32.9	− 4 33.6	−0.2653	0.5483	0.1628	+17	−60	
17 Capricorni	6.0	2.92	4.7	21 53.6	18 37.7	+ 3 15.9	+0.1814	0.5423	0.1769	+41	−34	
20 Capricorni	6.3	+2.78	+ 5.1	−19 26.4	11 1 19.0	+ 9 44.7	−1.3000	0.5176	+0.1876	−48	−81	
η Capricorni	5.1	2.78	5.7	20 16.1	3 42.1	−11 56.6	+0.0661	0.5157	0.1914	+37	−41	
B. A. C. 7325	6.9	2.77	6.0	20 35.9	4 51.5	−10 49.3	+0.6503	0.5150	0.1931	+68	− 9	
26 Capricorni	7.0	2.76	6.2	20 37.0	6 8.8	− 9 34.4	+0.9221	0.5140	0.1949	+69	+ 7	
27 Capricorni	6.5	2.77	6.2	20 58.6	6 17.1	− 9 26.3	+1.3470	0.5140	0.1952	+69	+51	
30 Capricorni	5.5	+2.66	+ 6.2	−18 25.4	10 36.5	− 5 14.9	−0.6124	0.5108	+0.2014	+ 4	−86	
31 Capricorni	6 7	2.65	6.1	17 54.0	10 46.4	− 5 5.1	−1.1570	0.5108	0.2016	−30	−90	
χ Capricorni	3.7	2.53	7.4	17 8.1	22 6.7	+ 6 55.1	+0.3665	0.5036	0.2159	+57	−25	
45 Capricorni	6.3	2.47	7.1	15 13.8	12 0 13.4	+ 7 58.2	−1.2800	0.5024	0.2183	−39	−90	
B. A. C. 7558	8.0	2.49	7.5	16 27.0	0 21.8	+ 8 6.5	+0.0995	0.5017	0.2185	+43	−39	
δ Capricorni	2 8	+2.49	+ 7.6	−16 36.1	1 47.4	+ 9 29.6	+0.5786	0.5012	+0.2201	+69	−14	
ι Aquarii	4.4	2.35	8.4	14 22 6	12 15.1	− 4 20.6	+0.4794	0.4956	0.2309	+66	−19	
40 Aquarii	7.0	2.27	8.3	12 26.5	16 5.8	− 0 36 3	−0.7764	0.4937	0.2343	0	−90	
42 Aquarii	5.8	2.27	8.8	13 21.1	17 55.4	+ 1 10.2	+0.6695	0.4927	0.2359	+76	− 9	
54 Aquarii	7.0	2.20	9.0	11 45.5	23 23.5	+ 6 29.3	+0.2084	0.4904	0.2403	+52	−33	
σ Aquarii	5.1	+2.17	+ 9.0	−11 12.7	13 1 35.4	+ 8 37.6	+0.1328	0.4895	+0.2419	+48	−37	
58 Aquarii	6.7	2.17	9.2	11 26.4	2 9.8	+ 9 11.1	+0.5238	0.4895	0.2423	+71	−17	
64 Aquarii	6.9	2.09	9.2	10 34.3	6 24.3	−10 41.3	+0.5974	0.4877	0.2452	+76	−13	
65 Aquarii	7.0	2.09	9.4	10 39.0	8 30.2	− 8 38.9	+1.2000	0.4871	0.2467	+79	+24	
λ Aquarii	3.6	1.99	9.1	8 8.1	13 55.1	− 3 22.7	−0.2378	0.4855	0.2500	+30	−57	
78 Aquarii	6.4	+1.99	+ 9.1	− 7 45 6	15 1.5	− 2 18.1	+0.3741	0.4851	+0.2506	+24	−66	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
81 Aquarii	6.6	+1.95	+9.4	− 7 37.3	13 18 53.2	+ 1 27.4	+0.4440	0.4844	+0.2525	+68	−22
82 Aquarii	6.4	1.94	9.4	7 8.1	19 32.4	+ 2 5.5	+0.0718	0.4842	0.2528	+46	−41
φ Aquarii	4.1	1.85	9.7	6 36.7	14 2 13.8	+ 8 36.3	+1.1940	0.4833	0.2559	+83	+23
96 Aquarii	5.6	1.81	9.7	5 41.7	5 7.0	+11 24.8	+0.9206	0.4827	0.2567	+84	+ 4
14 Piscium	5.9	1.69	9.0	− 1 49.8	13 32.9	− 4 22.7	−1.1690	0.4825	0.2593	−21	−90
60 Piscium	6.0	+1.21	+9.4	+ 6 10.2	16 6 44.3	+11 42.3	+0.8011	0.4922	+0.2575	+90	− 2
62 Piscium	6.0	1.20	0.2	6 43.7	7 13.2	−11 49.5	+0.3189	0.4925	0.2572	+62	−27
100 Piscium	6.8	0.96	8.7	12 1.4	17 7 56.9	−11 48.3	+0.7969	0.5079	0.2430	+90	+ 1
104 Piscium	7.5	0.94	8.3	13 45.3	10 11.1	− 9 38.0	−0.5433	0.5095	0.2409	+17	−69
26 Arietis	6.0	0.73	7.9	19 23.4	18 11 20.1	− 9 16.1	−0.7848	0.5320	0.2125	+ 2	−71
B. A. C. 782	7.0	+0.73	+8.3	+18 25.1	12 44.3	− 7 54.6	+0.5394	0.5331	+0.2105	+79	− 8
μ Arietis	6.0	0.70	8.2	19 33.9	16 47.6	− 3 59.3	+0.1689	0.5374	0.2014	+54	−25
47 Arietis	6.0	0 66	8.3	20 14.9	23 55.3	+ 2 53.8	+0.8616	0.5448	0.1923	+90	+12
B. A. C. 920	7.0	0.65	8.0	21 12.1	19 0 16.5	+ 3 14.3	−0.0718	0.5450	0.1917	+40	−36
ε Arietis	4.3	0.65	8.1	20 55.3	0 25.7	+ 3 23.3	+0.2502	0.5453	0.1913	+59	−20
66 Arietis	6.0	+0.58	+8.2	+22 26.6	13 11.5	− 8 17.9	+0.9417	0.5584	+0.1663	+90	+21
7 Tauri	6.0	0.56	8.0	24 6.8	15 43.0	− 5 51.9	−0.3851	0.5611	0.1608	+23	−49
9 Tauri	7.0	0.57	8.3	22 51.9	16 48.2	− 4 49.1	+1.0880	0.5622	0.1582	+90	+32
11 Tauri	6.7	0.55	7.9	24 59.5	18 22.1	− 3 18.7	−0.8782	0.5637	0.1548	− 6	−65
g Pleiadum	6.3	0.54	8.2	23 57.6	20 4.2	− 1 40.4	+0.4533	0.5654	0.1509	+74	− 5
17 Tauri	4.3	+0.54	+8.2	+23 47.1	20 6.2	− 1 38.4	+0.6403	0.5656	+0.1508	+90	+ 5
18 Tauri	6.3	0.54	8.1	24 30.7	20 12.6	− 1 32.3	−0.0969	0.5656	0.1505	+39	−33
19 Tauri	5.0	0.54	8.2	24 8.3	20 14.1	− 1 30.9	+0.2923	0.5656	0.1505	+61	−12
20 Tauri	5.0	0.54	8.2	24 2.5	20 29.7	− 1 15.8	+0.4325	0.5658	0.1498	+72	− 6
21 Tauri	7.0	0.54	8.1	24 13.7	20 31.5	− 1 14.1	+0.2439	0.5658	0.1498	+59	−15
22 Tauri	7.0	+0.54	+8.2	+24 12.1	20 35.1	− 1 10.6	+0.2802	0.5659	+0.1496	+61	−14
23 Tauri	4.7	0.54	8.3	23 37.4	20 42.6	− 1 3.4	+0.8995	0.5662	0.1493	+90	+29
24 Tauri	8.0	0.54	8.3	23 47.6	21 7.8	− 0 39.1	+0.7850	0.5666	0.1484	+90	+13
η Tauri	3.0	0.54	8.3	23 46.9	21 11.3	− 0 35.7	+0.8058	0.5666	0.1482	+90	+15
B. A. C. 1171	7.8	0.54	8.3	24 1.5	21 36.3	− 0 11.7	+0.6138	0.5671	0.1471	+88	+ 4
26 Tauri	7.0	+0.54	+8.3	+23 32.2	21 47.9	− 0 0.5	+1.1480	0.5671	+0.1486	+90	+38
27 Tauri	4.0	0.54	8.3	23 44.0	21 53.1	+ 0 4.5	+0.9576	0.5671	0.1466	+90	+24
28 Tauri	6.2	0.53	8.3	23 49.0	21 53.6	+ 0 5.0	+0.8728	0.5674	0.1464	+90	+19
B. A. C. 1192	6.0	0.53	8.0	25 15.8	22 19.9	+ 0 30.3	−0.5650	0.5679	0.1453	+13	−58
p Tauri	6.0	0.51	8.1	26 12.5	26 6 41.3	+ 8 32.6	−0.4196	0.5759	0.1244	+21	−47
φ Tauri	5.3	+0.50	+8.1	+27 6.1	10 28.8	−11 48.8	−0.8770	0.5794	+0.1141	− 7	−63
χ Tauri	5.7	0.50	8.4	25 23.0	11 23.6	−10 56.1	+0.9931	0.5803	+0.1115	+90	+30
					NEW MOON.						
υ Geminorum	4.3	0.74	6.9	27 7.8	23 11 54.2	+10 33.2	−1.0610	0.5961	−0.1222	−21	−63
c Geminorum	6.0	+0.75	+6.5	+26 2.1	15 1.3	−10 27.4	−0.3632	0.5946	−0.1316	+24	−45
ω^1 Cancri	6.0	0.81	6.0	25 40.9	21 27.2	− 4 17.4	−0.9152	0.5905	0.1503	− 9	−64
ω^2 Cancri	6.3	0.81	6.0	25 22.8	21 46.1	− 3 59.2	−0.6604	0.5900	0.1510	+ 7	−63
λ Cancri	5.7	0.86	5.3	24 21.2	24 5 5.3	+ 3 2.2	−0.8162	0.5851	0.1712	− 2	−66
γ Cancri	4.3	0.93	4.2	21 50.9	14 9.1	+11 44.6	+0.0266	0.5779	0.1936	+46	−30
80 Cancri	6.8	+1.00	+2.4	+18 28.5	25 1 53.2	− 0 58.3	+0.9656	0.5682	−0.2191	+90	+17
83 Cancri	5.7	1.02	2.0	18 9.0	4 49.4	+ 1 51.4	+0.6366	0.5657	0.2246	+88	− 3
Venus				16 44.1	11 8.1	+ 7 56.1	+0.5936	0.5212	0.2202	+83	− 7
8 Leonis	5.7	1.08	+0.9	16 54.5	12 28.3	+ 9 13.4	+0.1048	0.5595	0.2382	+50	−32
α Leonis	1.3	1.16	−1.5	12 28.8	26 2 10.4	− 1 33.7	+1.1270	0.5488	0.2576	+90	+23
34 Leonis	6.3	+1.20	−1.2	+13 52.4	3 35.8	− 0 11.3	−0.6351	0.5478	−0.2593	+11	−75
ε Leonis	5.3	1.35	5.7	6 39.8	27 2 5.5	− 2 27.3	+0.5194	0.5339	0.2785	+75	−17
χ Leonis	4.8	1.37	5.4	7 54.1	4 6.1	− 0 30.6	−1.2870	0.5330	0.2795	−32	−82
82 Leonis	6.9	1.45	7.6	3 52.7	13 51.8	+ 8 56.0	+0.0185	0.5289	0.2828	+45	−43
80 Leonis	6.5	1.45	7.4	4 26.2	13 56.8	+ 9 0.9	−0.5683	0.5286	0.2830	+15	−78
83 Leonis	6.5	+1.44	−7.4	+ 3 35.0	14 25.3	+ 9 28.5	+0.1564	0.5286	−0.2830	+53	−36

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'n from 1895.0.		Apparent Declination	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m				°	°
τ Leonis	5.3	+1.45	− 7.9	+ 3 26.0	27 14 56.8	+ 9 59.0	+0.1598	0.5285	−0.2630	+53	−36
89 Leonis	6.2	1.48	8.1	+ 3 38.5	18 1.7	−11 2.1	−0.9943	0.5274	0.2836	− 4	−86
B. A. C. 4134	6.3	1.66	12.2	− 3 22.4	28 15 9.1	+ 9 25.0	+0.2018	0.5235	0.2911	+55	−34
f Virginis	6.0	1.74	13.6	5 15.4	29 0 11.4	− 5 49.9	−0.3998	0.5235	0.2768	+23	−67
98 Virginis	7.0	1.75	14.5	6 55.6	2 40.9	− 3 25.1	+0.6096	0.5235	0.2754	+80	−13
ψ Virginis	5.2	+1.82	−15.3	− 8 58.3	8 40.1	+ 2 24.7	+1.0740	0.5242	−0.2713	+81	+14
g Virginis	5.9	1.90	16.0	10 11.0	15 11.3	+ 8 41.5	+0.5665	0.5254	0.2660	+74	−15
56 Virginis	7.0	1.94	15.9	9 49.1	18 29.9	+11 52.8	−0.6770	0.5262	0.2627	+ 7	−90
58 Virginis	7.0	1.96	16.0	9 59.9	19 47.0	−10 51.7	−0.8333	0.5266	0.2616	− 2	−90
62 Virginis	7.0	1.97	16.3	10 45.5	21 9.3	− 9 31.9	−0.4101	0.5269	0.2602	+20	−68
a Virginis	1.5	+2.01	−16.4	−10 37.1	23 28.4	− 7 17.3	−1.1550	0.5274	−0.2577	−24	−90
i Virginis	5.7	2.00	16.9	12 10.0	30 0 11.8	− 6 35.3	+0.2542	0.5278	0.2569	+54	−31
85 Virginis	6.5	2.15	18.2	15 14.7	9 6.4	+ 2 2.1	+1.1900	0.5309	0.2463	+75	+25
B. A. C. 4700	5.6	2.32	18.2	15 48.7	20 54.2	−10 33.4	−1.0340	0.5357	0.2298	−19	−90
B. A. C. 4722	5.8	+2.35	−18.8	−17 42.9	22 59.6	− 7 32.0	+0.4679	0.5365	−0.2266	+62	−20

JULY.

B. A. C. 4923	7.3	+2.65	−19.8	−20 56.7	1 17 57.8	+ 9 47.4	−0.1486	0.5461	−0.1927	+25	−53
42 Librae	5.7	2.97	18.2	23 28.9	2 12 49.2	+ 3 59.1	−0.7440	0.5550	0.1518	−10	−90
B. A. C. 5197	6.0	3.02	18.2	24 23.5	15 11.9	+ 6 16.7	−0.1391	0.5560	0.1463	+20	−52
b Scorpii	5.3	+3.06	−18.2	−25 26.2	17 23.8	+ 8 23.9	+0.6503	0.5571	−0.1412	+62	− 8
A^2 Scorpii	5.2	3.07	18.0	25 1.1	18 32.1	+ 9 29.7	+0.0494	0.5576	0.1382	+29	−41
B. A. C. 5253	5.8	3.06	17.6	24 13.5	18 40.4	+ 9 37.8	−0.8093	0.5576	0.1379	−15	−90
B. A. C. 5255	6.0	3.08	17.9	25 6.2	18 47.4	+ 9 44.5	+0.1040	0.5576	0.1377	+32	−38
3 Scorpii	6.7	3.08	17.9	24 56.2	18 59.2	+ 9 55.8	−0.1005	0.5576	0.1372	+21	−50
4 Scorpii	6.3	+3.10	−18.0	−25 57.7	19 20.0	+10 15.9	+0.9404	0.5577	−0.1363	+64	+11
π Scorpii	3.4	3.12	17.8	25 49.0	20 45.9	+12 38.7	+0.5912	0.5586	0.1328	+59	−11
B. A. C. 5314	5.7	3.14	17.6	25 34.6	22 41.5	−10 29.9	+0.0865	0.5593	0.1290	+30	−39
B. A. C. 5347	6.0	3.18	17.4	26 2.9	3 0 42.7	− 8 33.0	+0.3339	0.5599	0.1230	+43	−26
σ Scorpii	3.4	3.24	16.5	25 20.7	6 16.2	− 3 11.7	−1.0570	0.5619	0.1095	−35	−90
α Scorpii	1.4	+3.30	−16.2	−26 12.2	9 43.3	+ 0 7.8	−0.5054	0.5630	−0.0995	− 3	−78
τ Scorpii	3.2	3.37	16.1	28 0.2	12 24.7	+ 2 43.3	+1.1510	0.5637	0.0925	+62	+30
43 Ophiuchi	5.8	3.62	12.5	28 2.7	4 8 15.3	− 2 10.3	−0.0947	0.5658	0.0377	+12	−50
3 Sagittarii	4-6	3.72	10.3	27 47.6	18 21.8	+ 7 33.6	−0.6045	0.5658	−0.0090	−16	−89
B. A. C. 6127	5.1	3.80	8.6	28 28.2	5 2 57.4	− 8 9.7	+0.2368	0.5645	+0.0148	+23	−36
ϕ Sagittarii	3.7	+3.84	− 4.8	−27 6.0	18 57.1	+ 7 14.9	−0.7508	0.5590	+0.0582	−20	−90
τ Sagittarii	3.6	3.89	2.9	27 49.4	6 4 10.1	− 7 51.9	+0.6874	0.5546	0.0820	+61	− 5
B. A. C. 6666	5.8	3.88	− 0.7	27 12.0	14 18.7	+ 1 55.3	+0.9681	0.5486	0.1064	+63	+14
B. A. C. 7049	6.5	3.68	+ 5.3	22 44.3	7 17 59.8	+ 4 41.1	−0.1247	0.5291	0.1649	+24	−51
17 Capricorni	6.0	3.62	6.9	21 53.6	8 2 5.2	−11 29.0	+0.3379	0.5231	0.1790	+50	−26
η Capricorni	5.1	+3.52	+ 8.3	−20 16.1	11 10.1	− 2 40.9	+0.9391	0.5168	+0.1935	+46	−31
B. A. C. 7325	6.9	3.53	8.6	20 35.9	12 19.5	− 1 33.6	+0.8279	0.5157	0.1952	+69	+ 1
26 Capricorni	7.0	3.52	8.9	20 37.0	13 36.9	− 0 18.6	+1.1000	0.5150	0.1980	+69	+20
30 Capricorni	5.5	3.43	9.3	18 25.3	18 4.8	+ 4 1.3	−0.4272	0.5121	0.2032	+14	−70
31 Capricorni	6.7	3.42	9.2	17 53.9	18 14.7	+ 4 10.9	−0.9723	0.5117	0.2036	−17	−90
ι Capricorni	4.4	+3.39	+ 9.5	−17 16.7	20 18.0	+ 6 10.5	−1.2360	0.5101	+0.2063	−37	−90
γ Capricorni	3.7	3.30	11.0	17 8.0	9 5 35.2	− 8 48.7	+0.5736	0.5046	0.2178	+68	−14
45 Capricorni	6.3	3.25	10.9	15 13.7	7 42.0	− 6 45.5	−1.0740	0.5030	0.2203	−21	−90
B. A. C. 7558	8.0	3.28	11.2	16 26.9	7 50.3	− 6 37.4	+0.3137	0.5029	0.2205	+54	−28
δ Capricorni	2.8	3.27	11.4	16 36.0	9 16.1	− 5 14.1	+0.7992	0.5020	0.2219	+64	− 2
μ Capricorni	5.4	+3.19	+11.4	−14 2.6	12 38.0	− 1 58.0	−1.2840	0.5000	+0.2255	−38	−88
ι Aquarii	4.4	3.16	12.5	14 22.5	19 44.2	+ 4 56.1	+0.7111	0.4962	0.2326	+76	− 7
σ^1 Aquarii	5.6	3.09	12.4	12 4.7	22 2.7	+ 7 10.8	−1.2870	0.4950	0.2346	−38	−88
40 Aquarii	7.0	3.09	12.6	12 26.5	23 35.1	+ 8 40.7	−0.5320	0.4950	0.2359	+13	−77
42 Aquarii	5.8	3.10	13.1	13 21.1	10 1 24.9	+10 27.4	+0.9109	0.4932	0.2374	+77	+ 5
54 Aquarii	7.0	+3.03	+13.5	−11 45.5	6 53.5	− 8 13.0	+0.4583	0.4909	+0.2417	+67	−20

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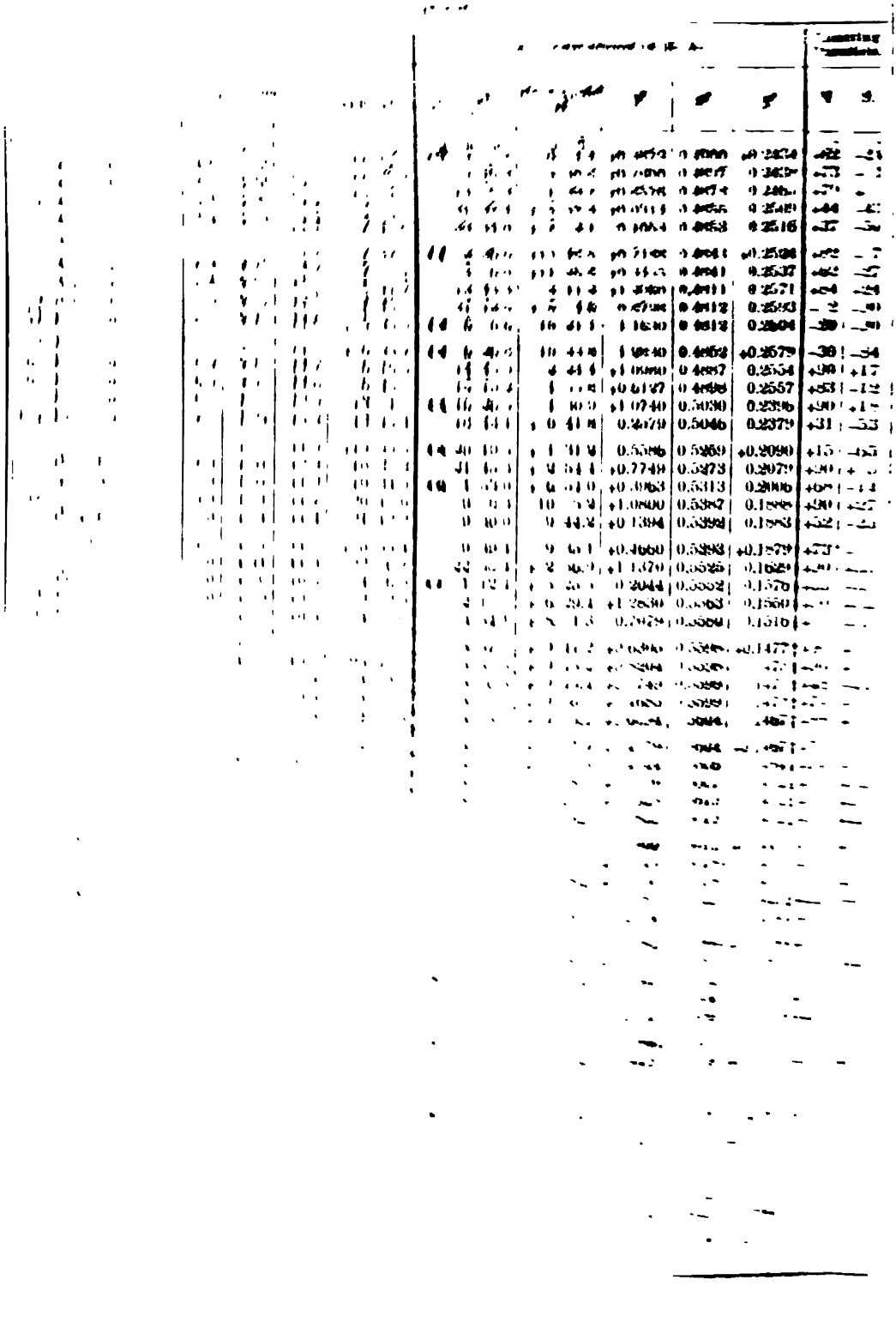

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.						Limiting Parallels.	
Name.	Mag.	Red'n from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'		N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					°	°
82 Leonis	6.9	+1.26	− 6.4	+ 3 52.7	24 21 19.9	− 5 48.2	−0.1857	0.5370	−0.2885		+35	−54
80 Leonis	6.5	1.26	6.3	4 26.2	21 24.8	− 5 43.4	−0.7638	0.5370	0.2885		+ 5	−80
83 Leonis	6.5	1.26	6.6	3 35.0	21 52.5	− 5 16.6	−0.0481	0.5370	0.2885		+42	−46
τ Leonis	5.3	1.26	6.7	3 25.0	22 23.0	− 4 47.1	−0.0448	0.5367	0.2886		+42	−46
89 Leonis	6.2	1.29	6.7	+ 3 38.5	25 1 22.5	− 1 53.7	−1.1290	0.5356	0.2892		−17	−86
B. A. C. 4134	6.3	+1.42	−10.5	− 3 22.4	21 54.8	− 6 1.8	−0.0268	0.5304	−0.2855		+43	−43
f Virginis	6.0	1.48	12.0	5 15.4	26 6 43.2	+ 2 29.5	−0.6256	0.5298	0.2806		+12	−84
28 Virginis	7.0	1.50	12.6	6 55.6	9 9.6	+ 4 51.0	+0.3787	0.5300	0.2790		+64	−25
g Virginis	5.9	1.63	14.3	10 10.9	21 23.5	− 7 18.8	+0.3270	0.5306	0.2686		+60	−27
50 Virginis	6.3	1.64	14.2	9 46.3	22 16.3	− 6 27.7	−0.3954	0.5307	0.2676		+25	−63
56 Virginis	7.0	+1.67	−14.3	− 9 49.0	27 0 37.4	− 4 11.2	−0.9060	0.5311	−0.2671		− 6	−90
58 Virginis	7.0	1.69	14.4	9 59.8	1 53.9	− 2 57.3	−1.0610	0.5314	0.2667		−16	−90
62 Virginis	7.0	1.70	14.7	10 45.4	3 14.7	− 1 39.1	−0.6424	0.5316	0.2622		+ 9	−86
α Virginis	1.5	1.73	14.8	10 37.0	5 31.2	+ 0 32.9	−1.3800	0.5319	0.2596		−48	−90
i Virginis	5.7	1.74	15.4	12 9.9	*h* 13.8	+ 1 14.1	+0.0170	0.5330	0.2589		+41	−43
B. A. C. 4700	5.6	+2.05	−17.1	−15 48.7	26 2 38.5	− 3 1.8	−1.2510	0.5378	−0.2301		−37	−90
B. A. C. 4722	5.8	2.09	17.7	17 42.9	4 42.5	− 1 1.9	+0.2430	0.5386	0.2268		+49	−31
B. A. C. 4923	7.3	2.39	18.5	20 56.7	23 32.0	− 6 51.0	−0.3535	0.5458	0.1918		+15	−66
42 Libræ	5.7	2.75	18.1	23 28.9	29 18 21.3	+11 18.6	+0.9281	0.5534	0.1504		−21	−90
B. A. C. 5197	6.0	2.81	18.2	24 23.5	20 44.1	−10 23.7	−0.3185	0.5546	0.1444		+11	−64
b Scorpii	5.3	+2.86	−18.3	−25 26.2	29 22 56.2	− 8 16.3	+0.4704	0.5552	−0.1393		+52	−18
A^1 Scorpii	5.2	2.87	18.1	25 1.1	30 0 4.7	− 7 10.3	−0.1966	0.5555	0.1367		+20	−42
B. A. C. 5253	5.8	2.86	17.8	24 13.5	0 13.0	− 7 2.3	−0.9854	0.5555	0.1362		−27	−90
B. A. C. 5265	6.0	2.87	18.1	25 6.2	0 20.1	− 6 55.4	−0.0723	0.5556	0.1359		+23	−48
3 Scorpii	6.7	2.88	18.0	24 56.2	0 31.8	− 6 44.2	−0.2751	0.5556	0.1354		+13	−61
4 Scorpii	6.3	+2.90	−18.3	−25 57.7	0 52.7	− 6 24.1	+0.7617	0.5558	−0.1347		+64	− 1
π Scorpii	3.4	2.92	18.1	25 49.0	2 18.7	− 5 1.3	+0.4180	0.5560	0.1310		+49	−21
B. A. C. 5314	5.7	2.95	17.8	25 34.6	4 14.7	− 3 9.3	−0.0848	0.5569	0.1263		+21	−49
B. A. C. 5347	6.0	3.00	17.7	25 2.9	6 16.2	− 1 12.2	+0.1644	0.5576	0.1211		+34	−35
σ Scorpii	3.4	3.08	16.8	25 20.7	11 51.1	+ 4 10.5	−1.2190	0.5590	0.1069		−49	−90
α Scorpii	1.4	+3.15	−16.6	−26 12.2	15 18.8	+ 7 30.6	−0.6622	0.5599	−0.0978		−11	−90
τ Scorpii	3.2	3.23	16.8	28 0.2	18 1.1	+10 7.1	+1.0010	0.5607	0.0902		+62	+16
43 Ophiuchi	5.8	+3.57	−13.4	−28 2.7	31 14 0.8	+ 5 22.6	−0.2205	0.5637	−0.0358		+ 6	−58

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3 Sagittarii	4-6	+3.72	−11.3	−27 47.6	1 0 12.7	− 8 48.1	−0.7144	0.5622	−0.0076	−23	−90
γ^1 Sagittarii	5-6.5	3.87	10.2	29 35.2	7 33.6	− 1 43.3	+1.2440	0.5606	+0.0126	+60	+47
B. A. C. 6127	5.1	3.85	9.6	28 28.3	8 53.2	− 0 26.5	+0.0541	0.5606	0.0162	+18	−41
φ Sagittarii	3.7	4.00	5.6	27 6.0	9 1 2.2	− 8 52.5	−0.5206	0.5551	0.0595	−23	−90
τ Sagittarii	3.6	4.09	3.6	27 49.5	10 20.3	+ 0 5.8	+0.6353	0.5508	0.0832	+58	− 8
B. A. C. 6666	5.8	+4.13	− 1.2	−27 12.0	20 34.3	+ 9 58.5	+0.9311	0.5456	+0.1079	+63	+11
A^1 Sagittarii	5-6	4.07	0.7	24 56.9	23 24.3	−11 17.4	−1.2230	0.5436	0.1144	−49	−90
A^2 Sagittarii	4.7	4.06	− 0.6	25 6.0	23 42.3	−10 50.9	−1.0060	0.5434	0.1151	−30	−90
B. A. C. 7049	6.5	4.07	+ 5.7	22 44.3	4 0 27.6	−11 3.7	−0.1176	0.5400	0.1662	+21	−49
17 Capricorni	6.0	4.04	7.6	21 53.6	8 35.8	− 3 10.9	+0.3589	0.5218	0.1804	+51	−95
20 Capricorni	6.3	+3.96	+ 9.1	−19 26.3	15 19.5	+ 3 20.4	−1.1040	0.5172	+0.1911	−27	−90
π Capricorni	5.1	3.98	9.5	20 16.0	17 43.1	+ 5 30.6	+0.2747	0.5157	0.1948	+48	−30
B. A. C. 7325	6.9	3.99	9.7	20 35.8	18 53.0	+ 6 47.4	+0.8666	0.5152	0.1967	+69	+ 3
26 Capricorni	7.0	3.99	10.0	20 36.9	20 10.7	+ 8 2.7	+1.1430	0.5141	0.1985	+69	+23
30 Capricorni	5.5	3.92	10.8	18 25.3	5 0 39.5	−11 36.5	−0.3801	0.5113	0.2048	+16	−67
31 Capricorni	6.7	+3.90	+10.8	−17 53.9	0 49.3	−11 27.0	−0.9264	0.5113	+0.2050	−13	−90
i Capricorni	4.4	3.88	11.2	17 16.7	2 53.1	− 9 26.8	−1.1890	0.5101	0.2079	−32	−90
45 Capricorni	6.3	3.78	13.3	15 13.7	14 19.0	+ 1 30.1	−1.0020	0.5032	0.2218	−16	−90
B. A. C. 7558	8.0	3.82	13.3	16 26.9	14 27.4	+ 1 47.3	+0.3608	0.5029	0.2220	+58	−24
δ Capricorni	2.8	3.81	14.0	16 26.0	15 53.3	+ 3 10.6	+0.8680	0.5023	0.2238	+73	+ 3
μ Capricorni	5.4	+3.74	+14.0	−14 2.6	19 15.7	+ 6 27.3	−1.2080	0.5003	+0.2274	−30	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′ ″	d h m	h m				°	°
ι Aquarii	4.4	+3.73	+15.1	−14 22.4	6 2 22.5	−10 38.0	+0.7993	0.4966	+0.2343	+66	− 2
e^2 Aquarii	5.6	3.67	15.2	12 4.6	4 41 3	− 8 23.0	−1.2050	0.4955	0.2363	−28	−90
40 Aquarii	7.0	3.67	15.2	12 26.4	6 13.8	− 6 53.1	−0.4368	0.4945	0.2376	+18	−30
42 Aquarii	5.8	3.69	15.5	13 21.0	8 3.7	− 5 6.3	+1.0100	0.4939	0.2392	+77	+11
54 Aquarii	7.0	3.63	16.5	11 45.4	13 32.7	+ 0 13.7	+0.5646	0.4914	0.2436	+73	−15
σ Aquarii	5.1	+3.61	+16.7	−11 12.6	15 45.0	+ 2 22.4	+0.4963	0.4906	+0.2450	+69	−19
58 Aquarii	6.7	3.62	16.8	11 26.3	16 19.5	+ 2 56.0	+0.8906	0.4903	0.2453	+79	+ 3
64 Aquarii	6.9	3.56	17.3	10 34.2	20 34.9	+ 7 4.5	+0.9761	0.4884	0.2482	+79	+ 8
λ Aquarii	3.6	3.48	18.0	8 8.0	7 4 7.4	− 9 35.1	+0.1574	0.4862	0.2526	+51	−36
78 Aquarii	6.4	3.47	18.0	7 45.5	5 14.1	− 8 30.2	+0.0222	0.4859	0.2530	+44	−43
81 Aquarii	6.6	+3.45	+18.5	− 7 37.2	9 7.0	− 4 43.5	+0.8535	0.4849	+0.2548	+82	0
82 Aquarii	6.4	3.43	18.5	7 8.0	9 46.4	− 4 5.2	+0.4814	0.4846	0.2552	+71	−20
B. A. C. 8094	5.4	3.35	18.7	4 3.7	17 14.4	+ 3 10.9	−1.0160	0.4831	0.2578	−10	−90
96 Aquarii	5.6	3.36	19.2	5 41.6	19 24.7	+ 5 17.8	+1.3580	0.4827	0.2585	+84	+39
11 Piscium	6.4	3.28	19.2	2 21.8	6 1 12.9	+10 56.8	−0.8364	0.4819	0.2599	0	−90
13 Piscium	6.4	+3.26	+19.2	− 1 39.6	2 39.6	−11 38.8	−1.2400	0.4817	+0.2602	−27	−90
14 Piscium	5.9	3.25	19.4	− 1 49.7	3 54.9	−10 25.5	−0.7268	0.4814	0.2604	+ 7	−90
21 Piscium	5.8	3.17	19.4	+ 0 29.9	12 44.6	− 1 49.6	−1.0020	0.4811	0.2614	− 9	−90
51 Piscium	5.8	2.96	19.4	6 22.8	9 13 18.5	− 1 54.5	−1.1080	0.4844	0.2581	−16	−84
60 Piscium	6.2	2.89	19.9	6 10.4	21 45.7	+ 6 19.1	+1.2900	0.4870	0.2548	+90	+33
62 Piscium	6.0	+2.88	+19.8	+ 6 43.9	22 15.3	+ 6 48.0	+0.8004	0.4871	+0.2548	+90	− 2
100 Piscium	6.8	2.69	19.1	12 1.6	10 23 40.3	+ 7 30.6	+1.2730	0.4994	0.2383	+90	+35
104 Piscium	7.5	2.69	18.4	13 45.5	11 1 58.9	+ 9 45.1	−0.0728	0.5008	0.2363	+40	−43
26 Arietis	6.0	2.52	16.5	19 23.6	12 4 3.2	+11 2.7	−0.3829	0.5201	0.2065	+24	−55
B. A. C. 782	7.0	2.51	16.8	18 25.3	5 30.8	−11 32.4	+0.9647	0.5216	0.2045	+90	+16
μ Arietis	6.0	+2.49	+16.3	+19 34.1	9 43.8	− 7 27.4	+0.5772	0.5252	+0.1979	+83	− 5
47 Arietis	6.0	2.43	15.9	20 15.1	17 9.1	− 0 16.6	+1.2660	0.5318	0.1861	+90	+44
B. A. C. 920	7.0	2.44	15.5	21 12.3	17 31.3	+ 0 4.9	+0.3142	0.5321	0.1855	+63	−17
ϵ Arietis	4.3	2.44	15.6	20 55.5	17 40.9	+ 0 14.2	+0.6424	0.5321	0.1850	+90	0
64 Arietis	5.7	2.37	14.0	24 21.3	13 5 5.9	+11 16.1	−1.0200	0.5429	0.1640	−15	−66
66 Arietis	6.0	+2.34	+14.6	+22 26.7	6 58.8	−10 54.9	+1.3160	0.5448	+0.1603	+90	+57
7 Tauri	6.0	2.33	13.9	24 6.9	9 36.6	− 8 22.5	−0.0442	0.5475	0.1547	+42	−31
11 Tauri	6.7	2.32	13.3	24 59.6	12 22.4	− 5 42.6	−0.5578	0.5500	0.1488	+14	−58
g Pleiadum	6.3	2.30	13.5	23 57.7	14 8.8	− 4 0.0	+0.7952	0.5520	0.1450	+90	+14
17 Tauri	4.3	2.30	13.6	23 47.2	14 10.9	− 3 57.9	+0.9858	0.5520	0.1447	+90	+26
18 Tauri	6.3	+2.30	+13.3	+24 30.8	14 17.6	− 3 51.5	+0.2327	0.5520	+0.1445	+58	−16
19 Tauri	5.0	2.30	13.3	24 8.4	14 19.2	− 3 49.9	+0.6311	0.5520	0.1445	+90	+ 5
20 Tauri	5.0	2.30	13.5	24 2.6	14 35.4	− 3 34.3	+0.7739	0.5522	0.1438	+90	+13
21 Tauri	7.0	2.30	13.4	24 13.8	14 37.3	− 3 32.5	+0.5801	0.5524	0.1438	+84	+ 2
22 Tauri	7.0	2.30	13.4	24 12.2	14 41.1	− 3 28.8	+0.6169	0.5524	0.1436	+90	+ 4
23 Tauri	4.7	+2.29	+13.6	+23 37.5	14 48.8	− 3 21.4	+1.2480	0.5525	+0.1435	+90	+48
24 Tauri	8.0	2.29	13.5	23 47.7	15 15.3	− 2 55.8	+1.1310	0.5526	0.1423	+90	+37
η Tauri	3.0	2.29	13.6	23 47.0	15 18.8	− 2 52.4	+1.1500	0.5529	0.1422	+90	+39
B. A. C. 1171	7.8	2.29	13.4	24 1.6	15 44.8	− 2 27.3	+0.9566	0.5535	0.1418	+90	+34
27 Tauri	4.0	2.28	13.5	23 44.1	16 2.3	− 2 10.5	+1.3100	0.5538	0.1407	+90	+60
28 Tauri	6.2	+2.28	+13.5	+23 49.1	16 2.8	− 2 10.0	+1.2210	0.5538	+0.1407	+90	+46
B. A. C. 1192	6.0	2.28	13.0	25 15.9	16 30.3	− 1 43.5	−0.2447	0.5539	0.1394	+31	−40
p Tauri	6.0	2.23	12.1	26 12.6	14 1 12.1	+ 6 39.4	−0.1120	0.5622	0.1189	+38	−30
ϕ Tauri	5.3	2.21	11.6	27 6.2	5 8.7	+10 27.1	−0.6026	0.5661	0.1087	+10	−57
B. A. C. 1444	5.7	2.16	10.4	28 24.9	13 40.2	− 5 20.9	−1.1370	0.5733	0.0860	−30	−62
W. iv, 1421	6.0	+2.07	+ 9.7	+27 54.1	15 0 56.9	+ 5 29.4	+0.1878	0.5821	+0.0532	+56	− 9
22 Aurigæ	7.0	2.02	9.0	28 50.6	6 14.5	+10 34.2	−0.5461	0.5856	0.0369	+13	−48
β Tauri	2.0	2.01	9.0	28 31.3	7 22.3	+11 39.2	−0.1750	0.5864	0.0343	+34	−26
B. A. C. 1772	6.3	1.98	8.3	29 9.4	12 21.5	− 7 33.7	−0.6976	0.5892	0.0178	+ 4	−58
136 Tauri	5.3	1.92	8.2	27 35.3	17 43.6	− 2 24.8	+0.9574	0.5919	+0.0005	+90	+38
49 Aurigæ	5.7	+1.80	+ 6.4	+28 6.3	16 9 28.1	−11 19.5	+0.0253	0.5965	−0.0514	+46	−17

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.						Limiting Parallels.	
Name.	Mag.	Red'n from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'		N.	S.
		$\Delta\alpha$	$\Delta\delta$									
		s	′	° ′	d h m	h m					°	°
53 Aurigæ	6.3	+1.80	+ 6.0	+29 4.5	16 10 38.1	-10 12.5	-1.0160	0.5968	-0.0554		-18	-61
54 Aurigæ	6.9	1.79	6.1	28 21.4	11 5.5	- 9 46.2	-0.3166	0.5968	0.0569		+26	-36
25 Geminorum	6.5	1.78	6.0	28 17.7	11 45.8	- 9 7.6	-0.2930	0.5970	0.0591		+28	-35
W. vi, 1656	8.2	1.70	5.4	26 59.5	20 11.5	- 1 3.1	+0.4036	0.5968	0.0869		+69	- 1
47 Geminorum	6.0	1.68	5.1	27 1.8	23 1.4	+ 1 39.7	+0.1053	0.5968	0.0961		+50	-17
ν Geminorum	4.3	+1.63	+ 4.1	+27 7.8	17 8 14.7	+10 29.9	-1.0160	0.5947	-0.1254		-17	-63
ε Geminorum	6.0	1.58	4.1	26 2.1	11 21.5	-10 31.0	-0.3271	0.5939	0.1352		+26	-43
κ Geminorum	3.7	1.57	4.4	24 38.9	11 30.6	-10 22.3	+1.0300	0.5937	0.1355		+90	+31
ω^1 Cancri	6.0	1.54	3.4	25 40.9	17 45.8	- 4 22.6	-0.9026	0.5914	0.1543		- 8	-64
ω^2 Cancri	6.3	1.54	3.4	25 22.8	18 4.1	- 4 5.0	-0.6486	0.5913	0.1551		+ 9	-62
λ Cancri	5.7	+1.49	+ 2.8	+24 21.1	18 1 18.8	+ 2 51.9	-0.8260	0.5882	-0.1756		- 2	-66
γ Cancri	4.3	1.42	+ 1.9	21 50.8	10 13.6	+11 25.3	-0.0230	0.5833	0.1990		+43	-33
				NEW	*MOON.*							
82 Leonis	6.9	1.20	- 5.9	3 52.7	21 7 0.3	+ 5 40.3	-0.2568	0.5449	0.2936		+31	-58
80 Leonis	6.5	+1.20	- 5.8	+ 4 26.2	7 5.1	+ 5 45.0	-0.8294	0.5449	-0.2936		+ 1	-86
83 Leonis	6.5	1.20	5.8	3 35.0	7 32.1	+ 6 11.0	-0.1244	0.5449	0.2939		+38	-51
τ Leonis	5.3	1.20	6.0	3 26.0	8 1.7	+ 6 39.6	-0.1228	0.5445	0.2939		+38	-51
89 Leonis	6.2	1.21	6.3	+ 3 38.5	10 56.3	+ 9 28.2	-1.1890	0.5437	0.2944		-21	-86
B. A. C. 4134	6.3	1.25	9.3	- 3 22.3	22 6 51.9	+ 4 43.2	-0.1254	0.5396	0.2912		+37	-51
f Virginis	6.0	+1.29	-10.5	- 5 15.4	15 23.4	-11 2.5	-0.7169	0.5391	-0.2862		+ 7	-90
χ Virginis	5.2	1.28	11.1	7 25.3	16 30.7	- 9 57.4	+1.1120	0.5391	0.2853		+83	+16
28 Virginis	7.0	1.29	11.1	6 55.6	17 45.1	- 8 45.5	+0.2653	0.5391	0.2845		+58	-31
ψ Virginis	5.2	1.33	11.9	8 58.3	23 24.8	- 3 17.3	+0.7066	0.5394	0.2799		+81	- 8
g Virginis	5.9	1.38	12.6	10 10.9	23 5 35.2	+ 2 40.7	+0.2068	0.5398	0.2738		+53	-34
50 Virginis	6.3	+1.40	-12.5	- 9 46.3	6 26.3	+ 3 30.1	-0.4356	0.5399	-0.2727		+20	-70
56 Virginis	7.0	1.42	12.7	9 49.0	8 42.7	+ 5 41.9	-1.0080	0.5403	0.2703		-12	-90
58 Virginis	7.0	1.43	12.8	9 59.8	9 56.8	+ 6 53.3	-1.1610	0.5405	0.2697		-23	-90
62 Virginis	7.0	1.44	13.0	10 45.4	11 15.0	+ 8 9.1	-0.7498	0.5405	0.2673		+ 3	-90
i Virginis	5.7	1.47	13.5	12 9.9	14 8.4	+10 56.5	-0.1023	0.5413	0.2637		+36	-50
85 Virginis	6.5	+1.57	-15.0	-15 14.6	22 37.8	- 4 51.4	+0.8156	0.5428	-0.2520		+75	- 2
B. A. C. 4722	5.8	1.74	16.1	17 42.9	24 11 55.6	+ 7 58.9	+0.1190	0.5464	0.2302		+43	-38
B. A. C. 4923	7.3	2.02	17.2	20 56.7	25 6 15.0	+ 1 39.5	-0.4695	0.5525	0.1941		+ 9	-74
42 Libræ	5.7	2.38	17.3	23 28.9	26 0 39.5	- 4 35.7	-1.0350	0.5580	0.1514		-29	-90
B. A. C. 5197	6.0	2.43	17.5	24 23.5	2 59.7	- 2 20.6	-0.4322	0.5589	0.1457		+ 6	-72
b Scorpii	5.3	+2.48	-17.7	-25 26.2	5 9.3	- 0 15.8	+0.3525	0.5591	-0.1402		+45	-25
A^2 Scorpii	5.2	2.49	17.5	25 1.1	6 16.7	+ 0 49.2	-0.2428	0.5595	0.1373		+14	-59
B. A. C. 5253	5.8	2.48	17.2	24 13.5	6 24.8	+ 0 57.1	-1.0910	0.5595	0.1368		-35	-90
B. A. C. 5255	6.0	2.49	17.5	25 6.2	6 31.8	+ 1 3.8	-0.1868	0.5595	0.1366		+17	-56
3 Scorpii	6.7	2.50	17.4	24 56.2	6 43.3	+ 1 14.8	-0.3878	0.5598	0.1362		+ 7	-68
4 Scorpii	6.3	+2.52	-17.7	-25 57.7	7 3.8	+ 1 34.6	+0.6412	0.5598	-0.1352		+61	- 8
π Scorpii	3.4	2.54	17.5	25 49.0	8 28.4	+ 2 56.1	+0.3026	0.5602	0.1317		+42	-27
B. A. C. 5314	5.7	2.58	17.3	25 34.6	10 22.5	+ 4 46.0	-0.1978	0.5606	0.1268		+15	-56
B. A. C. 5347	6.0	2.62	17.3	26 2.9	12 22.1	+ 6 41.2	+0.0508	0.5610	0.1214		+27	-41
a Scorpii	1.4	2.79	16.4	26 19.2	21 17.5	- 8 43.2	-0.7683	0.5624	0.0978		-17	-90
r Scorpii	3.2	+2.86	-16.7	-28 0.2	23 57.8	- 6 8.8	+0.8859	0.5628	-0.0906		+62	+ 8
43 Ophiuchi	5.8	3.24	13.9	28 2.7	27 19 46.4	-11 4.5	-0.3177	0.5630	0.0353		+ 1	-64
3 Sagittarii	4-6	3.43	12.0	27 47.6	28 5 55.5	- 1 17.8	-0.8052	0.5615	-0.0070		-28	-90
γ^1 Sagittarii	5-6.5	3.60	11.2	29 35.2	13 15.4	+ 5 46.0	+1.1520	0.5598	+0.0133		+60	+32
B. A. C. 6127	5.1	3.59	10.5	28 28.3	14 34.7	+ 7 2.4	-0.0342	0.5595	0.0169		+14	-46
ϕ Sagittarii	3.7	+3.79	- 6.6	-27 6.0	29 6 44.1	- 1 23.3	-0.8974	0.5530	+0.0600		-28	-90
τ Sagittarii	3.6	3.93	4.8	27 49.5	16 3.6	+ 7 36.4	+0.5604	0.5467	0.0835		+53	-13
B. A. C. 6666	5.8	4.03	2.5	27 12.0	30 2 19.9	- 6 28.5	+0.9672	0.5429	0.1081		+63	+ 6
A^1 Sagittarii	5-6	3.98	1.2	24 56.9	5 10.7	- 3 43.5	-1.2940	0.5413	0.1146		-57	-90
A^2 Sagittarii	4.7	3.98	- 1.2	25 6.9	5 28.9	- 3 25.9	-1.0680	0.5409	0.1152		-34	-90
B. A. Ç. 7049	6.5	+4.10	+ 5.0	-22 44.3	31 6 21.8	- 3 22.1	-0.1637	0.5252	+0.1661		+21	-53

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y'	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
17 Capricorni	6.0	+4.11	+ 7.0	−21 53.6	31 14 32.5	+ 4 33.3	+0.3906	0.5198	+0.1803	+49	−27
20 Capricorni	6.3	4.06	8.8	19 26.4	21 18.2	+11 6.6	−1.1390	0.5156	0.1916	−31	−90
η Capricorni	5.1	+4.09	+ 9.1	−20 16.0	23 43.3	−10 32.8	+0.2417	0.5140	+0.1948	+47	−32
SEPTEMBER.											
B. A. C. 7325	6.9	+4.10	+ 9.3	−20 35.8	1 0 52.6	− 9 25.6	+0.8343	0.5133	+0.1965	+69	+ 1
26 Capricorni	7.0	4.10	9.5	20 36.9	2 10.7	− 8 9.8	+1.1140	0.5123	0.1985	+69	+21
30 Capricorni	5.5	4.10	10.8	18 25.3	6 40.7	− 3 47.9	−0.4083	0.5084	0.2048	+15	−69
31 Capricorni	6.7	4.04	10.9	17 53.9	6 50.6	− 3 38.3	−0.9550	0.5084	0.2050	−15	−90
ι Capricorni	4.4	4.03	11.4	17 16.7	8 54.9	− 1 37.6	−1.2160	0.5084	0.2079	−35	−90
γ Capricorni	3.7	+4.03	+13.3	−17 8.0	18 15.7	+ 7 26.8	+0.6234	0.5032	+0.2196	+71	−12
45 Capricorni	6.3	3.98	13.9	15 13.7	20 23.2	+ 9 30.6	−1.0210	0.5019	0.2223	−17	−90
B. A. C. 7558	8.0	4.02	13.7	16 26.9	20 31.8	+ 9 39.1	+0.3644	0.5019	0.2223	+57	−25
δ Capricorni	2.8	4.02	14.0	16 36.0	21 57.8	+11 2.6	+0.8511	0.5013	0.2239	+73	+ 1
μ Capricorni	5.4	3.96	14.8	14 2.6	♑ 1 20.8	− 9 40.2	−1.2240	0.4994	0.2275	−31	−90
ι Aquarii	4.4	+3.98	+15.9	−14 22.4	8 28.6	− 2 44.4	+0.7927	0.4962	+0.2346	+68	− 2
σ^2 Aquarii	5.6	3.93	16.4	12 4.6	10 47.6	− 0 29.2	−1.2150	0.4950	0.2367	−29	−90
40 Aquarii	7.0	3.94	16.6	12 26.4	12 20.3	+ 1 0.9	−0.4445	0.4943	0.2382	+18	−71
42 Aquarii	5.8	3.96	16.8	13 21.0	14 10.4	+ 2 47.9	+1.0060	0.4937	0.2397	+77	+10
54 Aquarii	7.0	3.93	17.7	11 45.4	19 39.7	+ 8 8.2	+0.5613	0.4914	0.2436	+73	−15
σ Aquarii	5.1	+3.92	+18.0	−11 12.6	21 52.1	+10 17.0	+0.4965	0.4903	+0.2457	+69	−19
58 Aquarii	6.7	3.93	18.1	11 26.3	22 26.7	+10 50.7	+0.8910	0.4903	0.2460	+79	+ 3
64 Aquarii	6.9	3.89	18.8	10 34.2	♒ 2 42.1	− 9 0.9	+0.9802	0.4888	0.2490	+79	+ 8
λ Aquarii	3.6	3.84	19.9	8 8.0	10 14.6	− 1 40.5	+0.1667	0.4866	0.2534	+52	−36
78 Aquarii	6.4	3.83	20.0	7 45.5	11 21.2	− 0 35.7	+0.0296	0.4863	0.2540	+45	−43
81 Aquarii	6.6	+3.82	+20.5	− 7 37.2	15 14.0	+ 3 10.9	+0.8652	0.4853	+0.2568	+82	+ 1
82 Aquarii	6.4	3.81	20.6	7 8.0	15 53.4	+ 3 49.2	+0.4927	0.4852	0.2563	+72	−19
B. A. C. 8094	5.4	3.75	21.3	4 3.6	23 20.9	+11 4.8	−1.0000	0.4839	0.2589	− 9	−90
96 Aquarii	5.6	3.77	21.6	5 41.5	♓ 1 30.9	−10 48.6	+1.3740	0.4835	0.2596	+84	+41
11 Piscium	6.4	3.71	22.1	2 21.7	7 18.5	− 5 10.1	−0.8164	0.4831	0.2612	+ 2	−90
13 Piscium	6.4	+3.70	+22.2	− 1 39.5	8 45.0	− 3 45.9	−1.2220	0.4827	+0.2613	−25	−90
14 Piscium	5.9	3.70	22.3	− 1 49.6	10 0.3	− 2 32.6	−0.7052	0.4827	0.2617	+ 8	−90
21 Piscium	5.8	3.60	22.8	+ 0 30.0	18 48.8	+ 6 2.1	−0.9781	0.4826	0.2625	− 7	−90
51 Piscium	5.8	3.52	23.9	6 22.9	♉ 19 20.0	+ 5 54.4	−1.0740	0.4857	0.2592	−14	−84
60 Piscium	6.2	3.48	24.0	6 10.5	● 3 46.8	− 9 52.4	+1.3300	0.4882	0.2560	+90	+37
62 Piscium	6.0	+3.48	+23.9	+ 6 44.0	4 16.4	− 9 23.5	+0.8409	0.4884	+0.2558	+90	+ 1
100 Piscium	6.8	3.38	23.5	12 1.7	♈ 5 43.4	− 8 38.9	+1.3200	0.4994	0.2385	+90	+40
104 Piscium	7.5	3.39	22.9	13 45.6	8 2.6	− 6 23.6	−0.0292	0.5007	0.2366	+43	−41
23 Arietis	7.5	3.34	21.2	19 12.8	♊ 4 35.0	−10 27.5	−1.3470	0.5140	0.2135	−47	−71
26 Arietis	6.0	3.32	20.9	19 23.7	10 18.0	− 4 55.0	−0.3422	0.5182	0.2056	+26	−53
B. A. C. 782	7.0	+3.30	+21.1	+18 25.3	11 46.5	− 3 29.3	+1.0140	0.5193	+0.2037	+90	+20
μ Arietis	6.0	3.29	20.5	19 34.1	16 2.4	+ 0 38.7	+0.6252	0.5224	0.1987	+87	− 2
47 Arietis	6.0	3.26	19.8	20 15.1	23 33.6	+ 7 55.4	+1.3220	0.5286	0.1849	+90	+53
B. A. C. 920	7.0	3.27	19.5	21 12.3	23 56.1	+ 8 17.1	+0.3600	0.5290	0.1844	+66	−14
ε Arietis	4.3	3.27	19.6	20 55.5	♋ 0 5.8	+ 8 26.6	+0.6931	0.5291	0.1840	+90	+ 3
64 Arietis	5.7	+3.24	+17.6	+24 21.4	11 41.9	− 4 20.3	−0.9904	0.5386	+0.1626	−13	−66
7 Tauri	6.0	3.21	17.2	24 7.0	16 17.7	+ 0 6.2	−0.0057	0.5425	0.1533	+44	−39
11 Tauri	6.7	3.21	16.6	24 59.7	19 6.8	+ 2 49.4	−0.5228	0.5448	0.1473	+16	−56
g Pleiadum	6.3	3.19	16.7	23 57.8	20 55.3	+ 4 34.1	+0.4235	0.5464	0.1433	+71	− 6
17 Tauri	4.3	3.19	16.8	23 47.3	20 57.5	+ 4 36.3	+1.0380	0.5464	0.1433	+90	+29
18 Tauri	6.3	+3.20	+16.6	+24 30.9	21 4.3	+ 4 42.8	+0.2656	0.5464	+0.1433	+61	−14
19 Tauri	5.0	3.20	16.5	24 8.5	21 5.9	+ 4 44.4	+0.6792	0.5464	0.1432	+90	+ 7
20 Tauri	5.0	3.19	16.7	24 2.7	21 22.5	+ 5 0.4	+0.8183	0.5468	0.1424	+90	+15
21 Tauri	7.0	3.19	16.6	24 13.9	21 24.4	+ 5 2.2	+0.6258	0.5468	0.1424	+90	+ 4
22 Tauri	7.0	3.19	16.6	24 12.3	21 28.2	+ 5 5.9	+0.6630	0.5469	0.1422	+90	+ 6
23 Tauri	4.7	+3.18	+16.8	+23 37.6	21 36.1	+ 5 13.5	+1.2990	0.5470	+0.1420	+90	+57

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
24 Tauri	8.0	+3.18	+16.7	+23 47.8	9 22 3.2	+ 5 39.7	+1.1810	0.5474	+0.1409	+90	+42
η Tauri	3.0	3.18	16.7	23 47.1	22 6.7	+ 5 43.1	+1.2030	0.5474	0.1408	+90	+44
B. A. C. 1171	7.8	3.18	16.6	24 1.7	22 33.3	+ 6 8.8	+1.0070	0.5479	0.1398	+90	+27
28 Tauri	6.2	3.18	16.6	23 49.2	22 51.7	+ 6 26.6	+1.2700	0.5481	0.1391	+90	+52
B. A. C. 1192	6.0	3.16	16.1	25 16.0	23 19.8	+ 6 53.6	−0.2118	0.5484	0.1380	+32	−38
p Tauri	6.0	+3.15	+14.8	+26 12.7	10 8 13.4	− 8 31.8	−0.0798	0.5556	+0.1173	+40	−29
φ Tauri	5.3	3.13	14.0	27 6.2	12 15.7	− 4 38.3	−0.5729	0.5589	0.1074	+12	−55
B. A. C. 1444	5.7	3.10	12.4	28 24.9	21 0.6	+ 3 47.2	−1.1180	0.5654	0.0847	−27	−62
W. iv, 1421	6.0	2.99	11.1	27 54.1	11 8 36.6	− 9 3.2	+0.2203	0.5733	0.0621	+58	− 7
22 Aurigæ	7.0	2.96	10.0	28 50.6	14 3.8	− 3 48.7	−0.5296	0.5762	0.0362	+15	−47
β Tauri	2.0	+2.94	+ 9.9	+28 31.3	15 14.1	− 2 41.2	−0.1462	0.5772	+0.0327	+36	−24
B. A. C. 1772	6.3	2.91	8.9	29 9.4	20 22.2	+ 2 14.8	−0.6805	0.5812	0.0172	+ 5	−57
136 Tauri	5.3	2.82	8.5	27 35.3	12 1 54.8	+ 7 34.2	+0.9995	0.5817	+0.0002	+00	+39
κ Aurigæ	4.7	2.78	6.5	29 32.3	10 28.2	− 8 13.0	−1.1300	0.5843	−0.0255	−29	−60
49 Aurigæ	5.7	2.67	5.7	28 6.3	18 10.5	− 0 40.3	+0.0496	0.5859	0.0508	+47	+16
53 Aurigæ	6.0	+2.66	+ 5.0	+29 4.5	19 23.2	+ 0 20.5	−1.0110	0.5861	−0.0547	−18	−61
54 Aurigæ	6.0	2.64	5.2	28 21.4	19 51.1	+ 0 47.3	−0.8092	0.5861	0.0562	+27	−35
25 Geminorum	6.5	2.63	5.1	28 17.7	20 32.8	+ 1 27.5	−0.2752	0.5862	0.0570	+29	−33
28 Geminorum	6.0	2.64	4.6	29 4.7	21 50.9	+ 2 42.2	−1.1530	0.5862	0.0625	−32	−61
W. vi, 1656	8.2	2.52	4.1	26 59.5	13 5 15.2	+ 9 48.5	+0.4284	0.5862	0.0857	+72	0
47 Geminorum	6.0	+2.49	+ 3.6	+27 1.8	8 10.9	−11 22.8	+0.1256	0.5861	−0.0947	+52	−16
49 Geminorum	7.2	2.47	3.9	25 55.5	8 45.5	−10 49.8	+1.1960	0.5861	0.0965	+90	+48
53 Geminorum	6.3	2.46	3.4	28 4.9	9 56.7	− 9 42.4	−1.1140	0.5859	0.1000	−26	−62
59 Geminorum	6.9	2.46	2.5	27 50.4	13 16.1	− 6 30.0	−1.2160	0.5853	0.1103	−38	−62
ν Geminorum	4.3	2.40	2.0	27 7.7	17 42.0	− 2 14.9	−1.0100	0.5845	0.1237	−16	−63
ε Geminorum	6.0	+2.36	+ 2.0	+26 2.0	20 54.8	+ 0 50.2	−0.3149	0.5838	−0.1330	+27	−42
ξ Geminorum	3.7	2.34	2.4	24 38.8	21 4.2	+ 0 59.3	+1.0650	0.5837	0.1336	+90	+33
ω¹ Cancri	6.0	2.29	1.1	25 40.8	14 3 30.6	+ 7 10.3	−0.8966	0.5819	0.1519	− 7	−64
ω² Cancri	6.3	2.28	1.1	25 22.7	3 49.9	+ 7 28.8	−0.6404	0.5819	0.1529	+ 9	−62
λ Cancri	5.7	2.18	+ 0.2	24 21.1	11 17.2	− 9 21.5	−0.8949	0.5790	0.1732	− 2	−66
γ Cancri	4.3	+2.01	− 0.6	+21 50.8	20 26.3	− 0 33.8	−0.0116	0.5750	−0.1963	+44	−32
80 Cancri	6.8	1.84	1.3	18 28.4	15 8 9.7	+10 42.5	+0.8758	0.5694	0.2232	+90	+11
83 Cancri	5.7	1.81	1.7	18 9.0	11 4.3	−10 29.4	+0.5364	0.5680	0.2293	+79	− 9
8 Leonis	5.7	1.73	1.9	16 54.5	18 36.5	− 3 14.1	−0.0197	0.5619	0.2437	+43	−38
26 Leonis	7.7	1.65	3.0	15 43.3	16 3 34.1	+ 5 23.8	−1.1010	0.5598	0.2587	−17	−74
α Leonis	1.3	+1.57	− 2.9	+12 28.7	7 57.7	+ 9 37.8	+0.9389	0.5580	−0.2653	+90	+10
34 Leonis	6.3	1.59	3.4	13 52.3	9 20.4	+10 57.5	−0.7193	0.5573	0.2671	+ 2	−67
45 Leonis	6.0	1.50	3.8	10 17.7	16 17.8	− 6 20.0	+0.6906	0.5546	0.2759	+90	+ 1
ρ Leonis	3.9	1.49	4.0	9 50.7	18 32.9	− 4 9.8	+0.6407	0.5537	0.2768	+86	− 9
49 Leonis	6.0	1.48	4.1	+ 9 11.5	19 31.6	− 3 13.1	+1.0100	0.5533	0.2794	+90	+12
				NEW MOON.							
g Virginis	5.9	+1.25	−11.4	−10 10.9	19 15 46.8	− 9 19.6	+0.2095	0.5475	−0.2773	+53	−34
50 Virginis	6.3	1.26	11.4	9 46.3	16 36.6	− 8 31.6	−0.4275	0.5475	0.2765	+20	−69
56 Virginis	7.0	1.27	11.6	9 49.0	18 49.6	− 6 23.1	−0.9928	0.5481	0.2741	−11	−90
58 Virginis	7.0	1.28	11.7	9 59.8	20 1.7	− 5 13.6	−1.1420	0.5483	0.2719	−22	−90
62 Virginis	7.0	+1.28	−11.9	−10 45.4	21 17.8	− 4 0.1	−0.7343	0.5488	−0.2711	+ 4	−90
i Virginis	5.7	1.29	12.2	12 9.9	20 0 6.6	− 1 17.3	−0.0944	0.5494	0.2679	+36	−50
85 Virginis	6.5	1.35	13.4	15 14.6	8 21.7	+ 6 40.5	+0.8117	0.5518	0.2560	+75	− 1
B. A. C. 4722	5.8	1.47	14.4	17 42.8	21 15.7	− 4 53.1	+0.1223	0.5558	0.2341	+43	−38
B. A. C. 4923	7.3	1.68	15.5	20 56.7	21 15 0.5	−11 47.0	−0.4507	0.5620	0.1972	+10	−72
42 Libræ	5.7	+1.96	−15.9	−23 28.9	29 8 50.8	+ 5 23.4	−1.0050	0.5672	−0.1537	−86	−90
B. A. C. 5197	6.0	2.01	16.1	24 23.5	11 6.7	+ 7 34.1	−0.4107	0.5678	0.1478	+ 7	−70
b Scorpii	5.3	2.05	16.3	25 26.2	13 12.5	+ 9 35.2	+0.3629	0.5684	0.1423	+46	−24
A Scorpii	5.2	2.06	16.2	25 1.1	14 17.8	+10 38.0	−0.2221	0.5695	0.1303	+15	−58
B. A. C. 5253	5.8	2.06	15.9	24 13.5	14 25.7	+10 45.7	−1.0590	0.5696	0.1300	−32	−90
B. A. C. 5255	6.0	+2.06	−16.2	−25 6.2	14 32.4	+10 52.1	−0.1670	0.5697	−0.1287	+18	−54

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	Limiting Parallels N.	S.
		s	″	° ′ ″	d h m	h m				″	″
3 Scorpii	6.7	+2.07	-16.1	-24 56.2	22 14 43.7	+11 2.9	-0.3651	0.5687	-0.1395	+ 8	-67
4 Scorpii	6.3	2.08	16.4	25 57.7	15 3.6	+11 22.1	+0.6476	0.5687	0.1373	+62	- ∞
π Scorpii	3.4	2.11	16.3	25 49.0	16 25.7	-11 18.9	+0.3066	0.5690	0.1335	+42	-27
B. A. C. 5314	5.7	2.14	16.1	25 34.6	18 16.4	- 9 32.4	-0.1778	0.5694	0.1296	+16	-55
B. A. C. 5347	6.0	2.17	16.1	25 2.9	20 12.6	- 7 40.6	+0.0674	0.5696	0.1232	+28	-40
σ Scorpii	1.4	+2.32	-15.5	-26 12.2	23 4 53.1	+ 0 40.1	-0.7365	0.5697	-0.0989	-15	-90
τ Scorpii	3.2	2.39	15.8	28 0.2	7 29.1	+ 3 10.2	+0.8950	0.5702	0.0916	+62	+ ∞
43 Ophiuchi	5.8	2.76	13.5	28 2.7	24 2 49.4	- 2 13.8	-0.2911	0.5692	0.0356	+ 2	-62
3 Sagittarii	4-6	2.95	12.0	27 47.6	12 46.2	+ 7 20.4	-0.7739	0.5692	-0.0069	-26	-90
γ¹ Sagittarii	5-6.5	3.12	11.4	29 35.2	19 58.4	- 9 43.5	+1.1650	0.5640	+0.0135	+60	+34
B. A. C. 6127	5.1	+3.11	-10.8	-28 28.3	21 16.4	- 8 28.4	-0.0071	0.5635	+0.0169	+15	-45
φ Sagittarii	3.7	3.38	7.4	27 6.0	25 13 12.4	+ 6 52.6	-0.8636	0.5558	0.0603	-26	-90
τ Sagittarii	3.6	3.52	5.8	27 49.5	22 26.1	- 8 13.5	+0.5856	0.5500	0.0839	+55	-11
B. A. C. 6666	5.8	3.64	3.6	27 12.1	26 8 37.7	+ 1 36.7	-0.8915	0.5437	0.1082	+63	+ ∞
λ¹ Sagittarii	5-6	3.61	2.2	24 56.9	11 27.3	+ 4 20.5	-1.2500	0.5417	0.1148	-52	-90
λ² Sagittarii	4.7	+3.62	- 2.3	-25 6.9	11 45.3	+ 4 37.9	-1.0350	0.5413	+0.1153	-32	-90
B. A. C. 7049	6.5	3.82	+ 3.6	22 44.4	27 12 33.4	+ 4 37.0	-0.1354	0.5230	0.1652	+24	-52
17 Capricorni	6.0	3.87	5.4	21 53.6	20 43.8	-11 28.0	+0.3418	0.5184	0.1797	+50	-26
20 Capricorni	6.3	3.85	7.6	19 26.4	28 3 29.6	- 4 54.5	-1.1100	0.5140	0.1905	-28	-90
η Capricorni	5.1	3.89	7.9	20 16.1	5 54.1	- 2 34.4	+0.2670	0.5125	0.1941	+48	-30
B. A. C. 7325	6.9	+3.90	+ 8.0	-20 35.9	7 4.3	- 1 26.3	+0.8600	0.5118	+0.1958	+62	+ 3
26 Capricorni	7.0	3.91	8.2	20 37.0	8 22.9	- 0 10.1	+1.1390	0.5109	0.1977	+69	+23
30 Capricorni	5.5	3.88	9.7	18 25.3	12 52.7	+ 4 11.6	-0.3835	0.5081	0.2041	+16	-67
31 Capricorni	6.7	3.87	9.8	17 53.9	13 2.7	+ 4 21.3	-0.9294	0.5080	0.2043	-14	-90
ι Capricorni	4.4	3.87	10.4	17 16.7	15 7.1	+ 6 22.1	-1.1900	0.5069	0.2069	-32	-90
γ Capricorni	3.7	+3.90	+12.1	-17 8.0	29 0 28.9	- 8 32.5	+0.6448	0.5013	+0.2187	+72	-10
45 Capricorni	6.3	3.86	13.0	15 13.7	2 36.6	- 6 28.5	-0.9997	0.5006	0.2212	-16	-90
B. A. C. 7558	8.0	3.90	12.6	16 26.9	2 45.0	- 6 20.2	+0.3824	0.5003	0.2214	+58	-24
δ Capricorni	2.8	3.91	12.9	16 36.0	4 11.4	- 4 56.3	+0.8706	0.4998	0.2229	+73	+ 3
μ Capricorni	5.4	3.86	14.0	14 2.6	7 34.6	- 1 39.0	-1.2010	0.4979	0.2267	-30	-90
ι Aquarii	4.4	+3.91	+15.1	-14 22.5	14 43.1	+ 5 17.5	+0.8072	0.4949	+0.2336	+76	- 2
e' Aquarii	5.6	3.87	16.0	12 4.6	17 2.3	+ 7 32.9	-1.1970	0.4938	0.2359	-28	-90
40 Aquarii	7.0	3.89	16.1	12 26.4	18 35.2	+ 9 3.3	-0.4258	0.4930	0.2372	+19	-69
42 Aquarii	5.8	3.92	16.2	13 21.0	20 25.4	+10 50.4	+1.0200	0.4925	0.2386	+77	+11
54 Aquarii	7.0	3.91	17.3	11 45.4	30 1 55.1	- 7 48.9	+0.5755	0.4905	0.2432	+74	-15
σ Aquarii	5.1	+3.91	+17.7	-11 12.6	4 7.6	- 5 40.0	+0.5071	0.4896	+0.2448	+70	-18
58 Aquarii	6.7	3.92	17.8	11 26.3	4 42.1	- 5 6.4	+0.9033	0.4896	0.2452	+79	+ 4
64 Aquarii	6.9	3.89	18.7	10 34.2	8 57.8	- 0 57.6	+0.9886	0.4883	0.2482	+79	+ 9
λ Aquarii	3.6	3.87	20.1	8 8.0	16 30.3	+ 6 22.7	+0.1721	0.4864	0.2526	+52	-35
78 Aquarii	6.4	3.87	20.2	7 45.5	17 36.9	+ 7 27.5	+0.0370	0.4861	0.2533	+45	-42
81 Aquarii	6.6	+3.88	+20.7	- 7 37.2	21 29.5	+11 13.9	+0.8696	0.4853	+0.2552	+82	+ 1
82 Aquarii	6.4	+3.87	+20.9	- 7 8.0	22 8.9	+11 52.2	+0.4960	0.4852	+0.2555	+72	-19

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B. A. C. 8094	5.4	+3.84	+22.1	- 4 3.6	1 5 35.8	- 4 52.8	-0.9991	0.4844	+0.2586	- 9	-90
96 Aquarii	5.6	+3.86	+22.1	- 5 41.5	7 45.6	- 2 46.4	+1.3690	0.4839	+0.2599	+84	+40
11 Piscium	6.4	3.83	23.1	2 21.7	13 32.5	+ 2 51.3	-0.8189	0.4838	0.2608	+ 2	-90
13 Piscium	6.4	3.83	23.3	1 39.5	14 58.7	+ 4 15.3	-1.2260	0.4835	0.2611	-25	-90
14 Piscium	5.9	3.84	23.4	- 1 49.6	16 13.7	+ 5 28.3	-0.7098	0.4837	0.2615	+ 8	-90
21 Piscium	5.8	3.82	24.4	+ 0 30.0	2 1 0.4	- 9 58.8	-0.9877	0.4849	0.2625	- 8	-90
51 Piscium	5.8	+3.81	+26.1	+ 6 22.9	3 1 24.0	-10 14.2	-1.0980	0.4881	+0.2597	-16	-84
60 Piscium	6.2	3.81	26.4	6 10.5	9 47.3	- 2 4.5	+1.2970	0.4919	0.2570	+90	+34
62 Piscium	6.0	3.81	26.4	6 44.0	10 16.7	- 1 35.8	+0.8060	0.4920	0.2568	+90	- 1
100 Piscium	6.8	3.83	26.8	12 1.7	4 11 32.5	- 1 2.4	+1.2670	0.5028	0.2449	+90	+34
101 Piscium	6.3	3.86	26.2	14 7.9	12 0.4	- 0 35.3	-0.9253	0.5028	0.2389	- 6	-70
104 Piscium	7.5	+3.86	+26.2	+13 45.6	13 50.7	+ 1 11.9	-0.0803	0.5039	+0.2373	+40	-44

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.						
Name.	Mag.	Red'n from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	γ	s'	y'	Limiting Parallels.	
		Δα	Δδ							N.	S.
		s	"	° ′	d h m	h m				°	°
26 Arietis	6.0	+3.91	+24.4	+19 23.7	5 15 56.0	+ 2 20.3	−0.4129	0.5210	+0.2061	+22	−57
B. A. C. 782	7.0	3.91	24.4	18 25.4	17 24.1	+ 3 55.8	+0.9448	0.5222	0.2069	+90	+15
μ Arietis	6.0	3.93	23.8	19 34.2	21 20.0	+ 5 2.7	+0.5531	0.5253	0.1975	+90	− 6
47 Arietis	6.0	3.92	23.1	20 15.2	6 5 8.6	− 8 42.3	+1.2440	0.5310	0.1849	+88	+42
B. A. C. 930	7.0	3.94	22.8	21 12.4	5 31.1	− 8 20.5	+0.2830	0.5311	0.1844	+61	−18
ε Arietis	4.3	+3.93	+22.8	+20 55.6	5 40.8	− 8 11.1	+0.6146	0.5313	+0.1841	+87	− 1
64 Arietis	5.7	3.97	20.9	24 21.5	17 16.0	+ 3 1.1	−1.0760	0.5400	0.1625	−20	−66
66 Arietis	6.0	3.94	21.0	22 26.8	19 11.1	+ 4 52.4	+1.2880	0.5413	0.1575	+90	+52
7 Tauri	6.0	3.96	20.4	24 7.0	21 52.1	+ 7 27.9	−0.0914	0.5438	0.1531	+39	−33
11 Tauri	6.7	3.98	19.5	24 59.7	7 0 41.2	+10 11.2	−0.6122	0.5456	0.1470	+10	−61
ζ Pleiadum	6.3	+3.96	+19.5	+23 57.8	2 30.3	+11 56.5	+0.7584	0.5471	+0.1429	+90	+12
17 Tauri	4.3	3.96	19.6	23 47.3	2 32.4	+11 58.6	+0.9617	0.5471	0.1429	+90	+24
18 Tauri	6.3	3.97	19.4	24 30.9	2 39.3	−11 54.8	+0.1878	0.5474	0.1428	+55	−18
19 Tauri	5.0	3.98	19.4	24 8.5	2 40.9	−11 53.3	+0.5839	0.5474	0.1428	+86	+ 2
20 Tauri	5.0	3.96	19.4	24 2.7	2 57.5	−11 37.2	+0.7369	0.5475	0.1420	+90	+11
21 Tauri	7.0	+3.97	+19.4	+24 13.9	2 59.5	−11 35.3	+0.5403	0.5475	+0.1420	+81	0
22 Tauri	7.0	3.97	19.4	24 12.3	3 3.3	−11 31.6	+0.5777	0.5475	0.1418	+84	+ 2
23 Tauri	4.7	3.96	19.5	23 37.6	3 11.7	−11 23.5	+1.2180	0.5475	0.1417	+90	+45
24 Tauri	8.0	3.96	19.4	23 47.8	3 38.3	−10 57.8	+1.0980	0.5478	0.1406	+90	+34
η Tauri	3.0	3.96	19.4	23 47.1	3 41.9	−10 54.3	+1.1190	0.5479	0.1404	+90	+36
B. A. C. 1171	7.8	+3.96	+19.3	+24 1.7	4 8.7	−10 28.4	+0.9808	0.5484	+0.1394	+90	+22
28 Tauri	6.2	3.95	19.3	23 49.2	4 27.1	−10 10.7	+1.1870	0.5486	0.1387	+90	+42
B. A. C. 1192	6.0	3.98	18.8	25 16.0	4 55 3	− 9 43.5	−0.3002	0.5489	0.1376	+27	−43
ρ Tauri	6.0	3.98	17.4	26 12.7	13 51.4	− 1 6.3	−0.1728	0.5552	0.1169	+34	−34
φ Tauri	5.3	3.98	16.6	27 6.3	17 55.4	+ 2 48.8	−0.6704	0.5582	0.1067	+ 6	−61
χ Tauri	5.7	+3.94	+16.9	+25 23.2	18 54.2	+ 3 45.5	+1.2640	0.5587	+0.1043	+90	+55
B. A. C. 1444	5.7	3.99	14.4	28 24.9	8 2 44.9	+11 18.8	−1.2210	0.5640	0.0840	−41	−62
W. iv, 1421	6.0	3.90	12.4	27 54.1	14 29.7	− 1 22.7	+0.1340	0.5702	0.0514	+52	−12
22 Aurigæ	7.0	3.89	11.0	28 50.6	20 2.1	+ 3 57.0	−0.6310	0.5725	0.0357	+ 8	−54
β Tauri	2.0	3.87	10.8	28 31.3	21 13.1	+ 5 5.2	−0.2513	0.5732	0.0322	+30	−30
B. A. C. 1772	6.3	+3.85	+ 9.4	+29 9.5	9 2 27.2	+10 7.3	−0.7903	0.5748	+0.0168	− 2	−61
136 Tauri	5.3	3.76	8.7	27 35.3	8 6.4	− 8 26.8	+0.9069	0.5769	−0.0001	+90	+34
κ Aurigæ	4.7	3.73	6.2	29 32.3	16 51.4	− 0 2.2	−1.2510	0.5784	0.0265	−49	−60
49 Aurigæ	5.7	3.61	5.0	28 6.3	10 0 45.4	+ 7 33.1	−0.0572	0.5786	0.0503	+42	−21
53 Aurigæ	6.0	3.61	4.0	29 4.5	2 0.0	+ 8 44.8	−1.1380	0.5786	0.0541	−29	−61
54 Aurigæ	6.0	+3.59	+ 4.1	+28 21.4	2 28.7	+ 9 12.4	−0.4106	0.5786	−0.0556	+21	−41
25 Geminorum	6.5	3.58	4.0	28 17.7	3 11.5	+ 9 53.5	−0.3862	0.5786	0.0677	+22	−40
W. vi, 1656	8.2	3.45	2.8	26 59.4	12 9.0	− 5 30.1	+0.3294	0.5780	0.0845	+65	− 5
47 Geminorum	6.0	3.42	2.1	27 1.7	15 9.8	− 2 36.4	+0.0224	0.5775	0.0933	+46	−21
49 Geminorum	7.2	3.39	2.3	25 55.4	15 45.5	− 2 2.1	+1.1070	0.5773	0.0950	+90	+40
53 Geminorum	6.3	+3.39	+ 1.9	+28 4.8	16 57.8	− 0 52.6	−1.2370	0.5771	−0.0985	−42	−62
ν Geminorum	4.3	3.28	− 0.1	27 7.7	11 0 59.3	+ 6 50.1	−1.1330	0.5750	0.1214	−27	−63
ω¹ Cancri	6.0	3.09	1.7	25 40.8	11 7.8	− 7 17.1	−1.0170	0.5718	0.1491	−16	−64
ω² Cancri	6.3	3.09	1.6	25 22.7	11 27.7	− 7 7.7	−0.7600	0.5718	0.1499	+ 2	−65
λ Cancri	5.7	2.97	2.8	24 21.1	19 10.8	+ 0 19.7	−0.9866	0.5686	0.1697	− 9	−66
γ Cancri	4.3	+2.80	− 3.8	+21 50.7	12 4 39.8	+ 9 27.4	−0.1132	0.5645	−0.1924	+38	−38
80 Cancri	6.8	2.58	4.7	18 28.3	16 48.7	− 2 50.5	+0.7962	0.5590	0.2184	+90	+ 6
83 Cancri	5.7	2.54	5.2	18 8.9	19 49.7	+ 0 4.0	+0.4529	0.5576	0.2245	+72	−13
8 Leonis	5.7	2.38	5.9	16 54.4	13 3 37.9	+ 7 35.3	−0.1066	0.5543	0.2386	+38	−43
15 Leonis	7.7	2.25	7.0	15 43.2	12 54.0	− 7 28.4	−1.2010	0.5503	0.2536	−26	−74
ε Leonis	1.3	+2.15	− 6.7	+12 28.7	17 26.3	− 3 5.6	+0.8716	0.5487	−0.2599	+90	+ 5
34 Leonis	6.3	2.16	7.4	13 52.3	18 51.6	− 1 43.3	−0.8876	0.5480	0.2617	− 3	−76
45 Leonis	6.0	2.04	7.5	10 17.7	14 2 2.0	+ 5 12.2	+0.7688	0.5459	0.2707	+90	− 2
ρ Leonis	3.9	2.01	7.7	9 50.7	4 21.2	+ 7 26.6	+0.5799	0.5451	0.2731	+80	−12
49 Leonis	6.2	1.99	7.6	9 11.5	5 21.7	+ 8 25.1	+0.9643	0.5448	0.2742	+90	+ 9
56 Leonis	6.6	+1.88	− 8.1	+ 6 44.7	14 51.0	− 6 25.2	+0.7353	0.5426	−0.2828	+90	− 5

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'n from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
ε Leonis	5.3	+1.86	− 8.3	+ 6 39.8	14 16 50.6	− 4 20.9	+0.2088	0.5425	−0.2843	+56	−32
82 Leonis	6.9	1.73	9.0	3 52.6	15 4 20.9	+ 6 37.2	−0.3097	0.5413	0.2906	+20	−60
80 Leonis	6.5	1.73	9.2	4 26.1	4 25.7	+ 6 41.9	−0.8736	0.5413	0.2906	− 1	−86
83 Leonis	6.5	1.69	8.9	3 34.9	4 53.1	+ 7 8.4	−0.1631	0.5411	0.2906	+36	−53
τ Leonis	5.3	1.72	9.1	3 25.9	5 23.1	+ 7 37.4	−0.1590	0.5411	0.2909	+36	−53
89 Leonis	6.2	+1.69	− 9.5	+ 3 38.4	8 19.9	+10 29.2	−1.2240	0.5411	−0.2918	−25	−86
				NEW	*MOON.*						
42 Libræ	5.7	1.73	14.3	−23 28.8	19 18 46.1	− 6 53.2	−0.8080	0.5757	0.1548	−19	−90
B. A. C. 5197	6.0	1.76	14.4	24 23.4	20 58.9	− 4 45.6	−0.2976	0.5763	0.1489	+12	−62
b Scorpii	5.3	1.79	14.5	25 26.1	23 1.8	− 2 47.4	+0.4680	0.5772	0.1433	+52	−12
A¹ Scorpii	5.2	+1.80	−14.4	−25 1.0	20 0 5.4	− 1 46.3	−0.1089	0.5773	−0.1407	+21	−50
B. A. C. 5253	5.8	1.80	14.2	24 13.4	0 13.8	− 1 39.0	−0.9361	0.5773	0.1401	−24	−90
B. A. C. 5255	6.0	1.80	14.4	25 6.1	0 19.6	− 1 32.6	−0.0546	0.5773	0.1401	+24	−47
3 Scorpii	6.7	1.81	14.4	24 56.1	0 30.6	− 1 22.1	−0.2625	0.5773	0.1392	+13	−60
4 Scorpii	6.3	1.82	14.5	25 57.6	0 49.9	− 1 3.6	+0.7534	0.5776	0.1384	+64	− 2
π Scorpii	3.4	+1.83	−14.4	−25 48.9	2 10.1	+ 0 13.6	+0.4251	0.5779	−0.1346	+49	−21
B. A. C. 5314	5.7	1.85	14.3	25 34.5	3 58.0	+ 1 57.3	−0.0643	0.5780	0.1296	+22	−48
B. A. C. 5347	6.0	1.89	14.2	25 2.8	5 51.3	+ 3 46.2	+0.1847	0.5786	0.1242	+35	−34
α Scorpii	1.4	2.00	13.8	26 12.1	14 18.5	+11 53.5	−0.6067	0.5795	0.0995	− 8	−88
τ Scorpii	3.2	2.05	14.1	28 0.1	16 59.4	− 9 40.5	+1.0100	0.5797	0.0921	+64	+17
43 Ophiuchi	5.8	+2.36	−12.5	−28 2.7	21 11 40.3	+ 8 26.0	−0.1430	0.5781	−0.0356	+10	−53
3 Sagittarii	4.6	2.52	11.2	27 47.6	21 22.0	− 6 15.9	−0.6138	0.5748	−0.0065	−17	−90
B. A. C. 6127	5.1	2.66	10.3	28 28.3	22 5 30.9	+ 1 42.9	+0.1481	0.5714	+0.0178	+23	−36
σ Sagittarii	3.7	2.88	7.4	27 6.0	21 14.2	− 7 17.9	−0.6907	0.5620	0.0614	−16	−90
τ Sagittarii	3.6	3.03	6.3	27 40.5	23 6 16.8	+ 1 24.9	+0.7498	0.5562	0.0850	+62	− 1
B. A. C. 6666	5.8	+3.16	− 4.2	−27 12.1	16 17.4	+11 4.2	+1.0640	0.5496	+0.1093	+63	+30
h¹ Sagittarii	5.6	3.14	2.9	24 57.0	19 4.3	−10 14.8	−1.0640	0.5462	0.1156	−34	−90
h² Sagittarii	4.7	3.14	− 2.9	25 7.0	19 22.1	− 9 57.5	−0.8504	0.5461	0.1163	−20	−90
B. A. C. 7040	6.5	3.30	+ 2.4	22 44.4	24 19 50.7	−10 18.0	+0.0419	0.5365	0.1651	+33	−42
17 Capricorni	6.0	3.46	4.2	21 53.6	25 3 56.8	− 2 27.4	+0.5186	0.5301	0.1799	+69	−16
20 Capricorni	6.3	+3.46	+ 6.2	−19 26.4	10 39.5	+ 4 3.0	−0.9083	0.5152	+0.1906	−16	−90
η Capricorni	5.1	3.50	6.3	20 16.1	13 3.1	+ 6 22.1	+0.4416	0.5136	0.1940	+58	−21
B. A. C. 7325	6.9	3.52	6.5	20 35.9	14 12.9	+ 7 29.8	+1.0310	0.5128	0.1957	+69	+15
26 Capricorni	7.0	3.53	6.7	20 37.0	15 30.5	+ 8 46.0	+1.3070	0.5117	0.1976	+69	+42
30 Capricorni	5.5	3.51	8.2	18 25.4	19 59.4	−10 54.1	−0.2074	0.5069	0.2037	+25	−56
31 Capricorni	6.7	+3.50	+ 8.5	−17 54.0	20 9.3	−10 44.5	−0.7508	0.5067	+0.2038	− 4	−90
ι Capricorni	4.4	3.51	9.0	17 16.8	22 13.2	− 8 44.3	−1.0108	0.5071	0.2065	−18	−90
γ Capricorni	3.7	3.59	10.7	17 8.0	26 7 32.9	+ 0 19.1	+0.8023	0.5016	0.2181	+73	− 1
45 Capricorni	6.3	3.55	11.6	15 13.7	9 40.3	+ 2 22.9	−0.8286	0.5005	0.2204	− 5	−90
B. A. C. 7558	8.0	3.58	11.3	16 26.9	9 48.7	+ 2 31.1	+0.5504	0.5002	0.2206	+62	−15
δ Capricorni	2.8	+3.61	+11.2	−16 36.0	11 14.9	+ 3 54.8	+1.0350	0.4986	+0.2221	+73	+13
μ Capricorni	5.4	3.58	12.8	14 2.6	14 37.7	+ 7 11.8	−1.0340	0.4977	0.2267	−17	−90
ι Aquarii	4.4	3.63	13.6	14 22.5	21 45.5	− 9 52.4	+0.9688	0.4942	0.2326	+76	+ 8
σ Aquarii	5.6	3.60	14.8	12 4.7	27 0 4.7	− 7 37.1	−1.0330	0.4932	0.2345	−16	−90
B. A. C. 7740	7.0	3.60	15.0	11 34.8	0 59.8	− 6 43.5	−1.3700	0.4927	0.2355	−48	−78
40 Aquarii	7.0	+3.68	+14.8	−12 26.5	1 37.5	− 6 6.8	−0.2857	0.4922	+0.2360	+27	−39
42 Aquarii	5.8	3.66	14.7	13 21.1	3 27.7	− 4 9.7	+1.1760	0.4917	0.2375	+77	+23
54 Aquarii	7.0	3.67	15.9	11 45.4	8 57.2	+ 1 0.8	+0.7256	0.4896	0.2423	+78	− 6
τ Aquarii	5.1	3.67	16.3	11 12.6	11 9.8	+ 3 9.7	+0.6576	0.4887	0.2434	+78	−10
58 Aquarii	6.7	3.68	16.3	11 26.3	11 44.3	+ 3 43.3	+1.0580	0.4887	0.2437	+79	+14
64 Aquarii	6.9	+3.67	+17.5	−10 34.2	15 59.9	+ 7 52.0	+1.1320	0.4871	+0.2465	+79	+19
λ Aquarii	3.6	3.68	19.1	8 8.0	23 32.6	− 8 47.4	+0.3086	0.4853	0.2511	+50	−22
78 Aquarii	6.4	3.68	19.3	7 45.5	28 0 39.3	− 7 42.5	+0.1737	0.4851	0.2516	+52	−35
81 Aquarii	6.6	3.71	19.7	7 37.2	4 31.8	− 3 56.2	+0.9874	0.4843	0.2535	+82	+ 9
82 Aquarii	6.4	3.70	20.0	7 8.0	5 11.4	− 3 17.6	+0.6262	0.4841	0.2537	+70	−12
B. A. C. 8094	5.4	+3.70	+21.5	− 4 3.6	12 38.4	+ 3 57.5	−0.8770	0.4832	+0.2568	− 2	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination	Washington Mean Time.	Hour Angle H	Y	x'	y'		N.	S.
		$\Delta\alpha$	$\Delta\delta$									
		s	′	° ′ ″	d h m	h m					°	°
11 Piscium	6.4	+3.72	+22.5	− 2 21.7	26 20 35.0	+11 41.5	−0.7068	0.4828	+0.2590		+ 8	−90
13 Piscium	6.4	3.72	22.9	1 39.5	22 1.3	−10 54.5	−1.1140	0.4828	0.2593		−17	−90
14 Piscium	5.9	3.74	23.0	− 1 49.6	23 16.2	− 9 41.6	−0.6033	0.4829	0.2596		+13	−82
21 Piscium	5.8	3.76	24.5	+ 0 30.0	29 8 2.5	− 1 9.2	−0.8919	0.4834	0.2609		− 3	−90
51 Piscium	5.8	3.86	26.8	6 22.9	30 8 22.2	− 1 28.4	−1.0420	0.4889	0.2583		−12	−84
60 Piscium	6.2	+3.90	+27.2	+ 6 10.6	16 42.9	+ 6 38.6	+1.3950	0.4921	+0.2554		+90	+37
62 Piscium	6.0	3.90	27.2	6 44.1	17 12.1	+ 7 7.1	+0.8366	0.4921	0.2553		+90	+ 1
100 Piscium	6.8	4.04	27.9	12 1.8	31 18 16.4	+ 7 29.1	+1.2500	0.5055	0.2389		+90	+33
101 Piscium	6.3	4.05	28.1	14 8.0	18 44.1	+ 7 56.0	−0.9344	0.5059	0.2385		− 6	−76
104 Piscium	7.5	+4.09	+28.0	+13 45.7	20 33.2	+ 9 42.0	−0.0963	0.5067	+0.2367		+39	−44

NOVEMBER.

26 Arietis	6.0	+4.25	+26.7	+19 23.7	1 22 20.7	+10 42.5	−0.4703	0.5254	+0.2060	+19	−60
B. A. C. 782	7.0	4.29	26.5	18 25.4	23 47.6	−11 53.3	+0.8770	0.5265	0.2038	+90	+11
μ Arietis	6.0	4.33	26.2	19 34 2	2 3 59.1	− 7 49.9	+0.4783	0.5301	0.1974	+74	−10
47 Arietis	6.0	+4.39	+25.3	+20 15.2	11 22.8	− 0 40.5	+1.1550	0.5358	+0.1849	+90	+34
B. A. C. 920	7.0	4.40	25.2	21 12.4	11 44.8	− 0 19.3	+0.1972	0.5360	0.1844	+56	−22
ϵ Arietis	4.3	4.39	25.2	20 55.6	11 54.5	− 0 9.8	+0.5290	0.5362	0.1840	+78	− 6
64 Arietis	5.7	4.51	23.3	24 21.5	23 20.2	+10 52.8	−1.1760	0.5455	0.1622	−30	−66
66 Arietis	6.0	4.48	23.0	22 26.9	3 1 13.7	−11 17.6	+1.1740	0.5469	0.1583	+90	+39
7 Tauri	6.0	+4.53	+22.5	+24 7.1	3 52.6	− 8 44.2	−0.2015	0.5491	+0.1526	+33	−39
11 Tauri	6.7	4.57	21.1	24 59.8	6 39.6	− 6 3.0	−0.7235	0.5512	0.1467	+ 4	−65
g Pleiadum	6.3	4.55	20 9	23 57.9	8 27.0	− 4 19.4	+0.6374	0.5524	0.1427	+90	+ 5
17 Tauri	4.3	4.55	20.9	23 47.4	8 29.1	− 4 17.3	+0.8296	0.5524	0.1427	+90	+16
18 Tauri	6.3	4.56	20.8	24 31.0	8 35.8	− 4 10.9	+0.0694	0.5525	0.1424	+46	−24
19 Tauri	5.0	+4.56	+20.8	+24 8.6	8 37.5	− 4 9.3	+0.4719	0.5525	+0.1422	+75	+ 6
20 Tauri	5.6	4.55	20.8	24 2.7	8 53.9	− 3 53.4	+0.6159	0.5527	0.1417	+88	+ 4
21 Tauri	7.0	4.56	20.8	24 13.9	8 55.8	− 3 51.6	+0.4302	0.5527	0.1417	+71	− 6
22 Tauri	7.0	4.56	20.8	24 12.3	8 59.6	− 3 47.9	+0.4575	0.5529	0.1414	+74	− 4
23 Tauri	4.7	4.54	20.8	23 37.6	9 7.4	− 3 40.4	+1.0920	0.5530	0.1411	+90	+34
24 Tauri	8.0	+4.55	+20.7	+23 47.8	9 34.1	− 3 14.6	+0.9752	0.5535	+0.1403	+90	+26
η Tauri	3.0	4.55	20.7	23 47.1	9 37.6	− 3 11.2	+0.9949	0.5537	0.1403	+90	+27
B. A. C. 1171	7.8	4.56	20.6	24 1.7	10 4.0	− 2 45.7	+0.7971	0.5538	0.1390	+90	+15
27 Tauri	4.0	4.55	20.6	23 44.2	10 21.6	− 2 28.8	+1.1490	0.5540	0.1385	+90	+39
28 Tauri	6.2	4.55	20.6	23 49.2	10 22.2	− 2 28.2	+1.0620	0.5540	0.1385	+90	+32
B. A. C. 1192	6 0	+4.59	+20.3	+25 16.0	10 50.0	− 2 1.4	−0.4180	0.5542	+0.1372	+21	−49
p Tauri	6.0	4.65	18.6	26 12.7	19 39.3	+ 6 28.9	−0.3015	0.5568	0.1163	+27	−41
ϕ Tauri	5.3	4.67	17.6	27 6.3	23 40.4	+10 21.2	−0.8095	0.5633	0.1061	− 2	−63
χ Tauri	5.7	4.62	17.7	25 23.2	4 0 38.6	+11 17.2	+1.1200	0.5640	0.1035	+90	+40
W. iv, 1421	6.0	4.70	13.8	27 54.1	20 2.2	+ 5 57.2	−0.0422	0.5742	0.0506	+42	−20
22 Aurigæ	7.0	+4.72	+12.0	+28 50.6	5 1 32.1	+11 14.4	−0.7986	0.5763	+0.0345	− 3	−61
β Tauri	2.0	4.71	11.8	28 31.3	2 42.7	−11 37.9	−0.4228	0.5769	0.0310	+20	−40
B. A. C. 1772	6.3	4.72	9.9	29 9.5	7 55.0	− 6 37.6	−0.9683	0.5782	+0.0158	−15	−61
136 Tauri	5.3	4.63	8.8	27 35.3	13 32.8	− 1 13.0	+0.7197	0.5784	−0.0012	+90	+23
49 Aurigæ	5.7	4.54	4.2	28 6.3	● 6 11.0	− 9 14.0	−0.2588	0.5797	0.0514	+29	−32
54 Aurigæ	6.0	+4.53	+ 3 5	+28 21.4	7 54.5	− 7 34.5	−0.6128	0.5793	−0.0564	+ 9	−54
25 Geminorum	6.5	4.52	3.3	28 17.7	8 37.5	− 6 53.2	−0.5900	0.5793	0.0587	+11	−53
39 Geminorum	6.3	4.38	2.0	26 13.1	15 38.1	− 0 9.0	+1.0840	0.5782	0.0793	+90	+40
W. vi, 1656	8.2	4.39	1.2	26 59.4	17 37.4	+ 1 45.6	+0.1212	0.5775	0.0851	+51	−15
47 Geminorum	6.0	4.36	0.4	27 1.7	20 39.6	+ 4 40.7	−0.1919	0.5765	0.0939	+33	−32
49 Geminorum	7.2	+4.31	+ 0.6	+25 55.4	21 15.6	+ 5 15.3	+0.8069	0.5763	−0.0956	+90	+25
A Geminorum	5.7	4.25	− 0.4	25 15.1	7 1 34.0	+ 9 23.8	+1.1540	0.5749	0.1076	+90	+43
ϵ Geminorum	6.0	4.15	2.9	26 2.0	9 56.1	− 6 33.4	−0.6522	0.5718	0.1306	+ 8	−62
κ Geminorum	3.7	4.10	2.5	24 38.8	10 5.8	− 6 24.0	+0.7571	0.5718	0.1309	+90	+14
ω Cancri	6.0	4.06	4.6	25 40.7	16 51.0	+ 0 5.8	−1.2500	0.5684	0.1486	−40	−64

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallax	
Name.	Mag.	Red'n from 1895.0		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′ ″	d h m	h m				″	″
λ Canes	5.7	+3.91	− 6.1	+24 21.0	8 1 2.2	+ 7 56.6	−1.1800	0.5641	−0.1627	−30	−66
γ Canes	4.3	3.69	7.6	21 50.7	10 42.6	− 6 42.3	−0.3464	0.5591	0.1904	+25	−50
40 Canes	6.8	3.43	9.0	19 28.2	23 8.9	+ 5 17.1	+0.5729	0.5621	0.2156	+52	− 6
43 Canes	5.7	3.37	9.6	18 [illegible]	9 2 14.7	+ 5 16.5	+0.2859	0.5595	0.2212	+57	−24
δ Leonis	5.7	3.22	10.4	16 54.3	10 16.0	− 7 59.9	−0.3406	0.5466	0.2348	+36	−55
α Leonis	1.3	+2.93	−11.4	+12 29.6	10 0 29.6	+ 5 45.3	+0.6615	0.5399	−0.2550	+90	− 6
34 Leonis	6.3	2.95	12.2	13 52.2	1 57.6	+ 7 10.3	−1.1240	0.5396	0.2568	−19	−76
45 Leonis	6.0	2.80	12.2	10 17.6	9 22.1	− 9 40.1	+0.5590	0.5368	0.2651	+79	−13
ρ Leonis	3.9	2.76	12.4	9 50.6	11 45.9	− 7 21.1	+0.3770	0.5362	0.2674	+66	−22
49 Leonis	6.0	2.73	12.3	9 11.4	12 48.4	− 6 20.6	+0.7571	0.5357	0.2683	+90	− 3
56 Leonis	6.0	+2.57	−13.0	+ 6 44.6	22 37.0	+ 3 8.5	+0.5474	0.5335	−0.2765	+78	−15
c Leonis	5.3	2.55	13.3	6 39.7	11 0 50.0	+ 5 17.2	+0.0151	0.5330	0.2781	+45	−62
62 Leonis	6.9	2.38	13.8	3 52.6	12 34.3	− 7 21.5	−0.4657	0.5319	0.2839	+19	−72
60 Leonis	6.5	2.39	14.0	4 26.1	12 39.3	− 7 16.6	−1.0780	0.5319	0.2839	−14	−86
63 Leonis	6.5	2.33	13.6	3 34.9	13 7.6	− 6 49.2	−0.3465	0.5319	0.2840	+27	−63
τ Leonis	5.3	+2.36	−13.8	+ 3 25.9	13 38.6	− 6 19.3	−0.3433	0.5319	−0.2843	+27	−63
69 Leonis	6.2	2.32	14.2	+ 3 38.4	16 41.2	− 3 22.7	−1.4180	0.5319	0.2850	−49	−86
B. A. C. 4134	6.3	2.07	13.9	− 3 22.4	12 13 16.8	− 7 27.5	−0.2722	0.5342	0.2847	+30	−59
f Virginis	6.0	1.95	14.2	5 15.4	21 57.0	+ 0 55.5	−0.8366	0.5367	0.2812	0	−90
χ Virginis	5.2	1.93	14.7	7 25.3	23 5.1	+ 2 1.4	+1.0150	0.5371	0.2806	+83	+10
28 Virginis	7.0	+1.93	−14.4	− 6 55.6	13 0 20.2	+ 3 14.0	+0.1687	0.5378	−0.2799	+52	−35
ψ Virginis	5.2	1.88	14.5	8 58.3	6 2.0	+ 8 44.3	+0.6330	0.5399	0.2761	+79	−11
g Virginis	5.9	1.84	14.4	10 10.9	12 12.3	− 9 17.9	+0.1570	0.5424	0.2710	+50	−36
50 Virginis	6.3	1.84	14.3	9 46.3	13 3.2	− 8 28.8	−0.4845	0.5428	0.2703	+17	−73
56 Virginis	7.0	1.83	14.3	9 49.0	15 18.9	− 6 18.2	−1.0470	0.5439	0.2683	−16	−90
58 Virginis	7.0	+1.81	−14.3	− 9 59.8	16 32.3	− 5 6.8	−1.1950	0.5445	−0.2668	−27	−90
62 Virginis	7.0	1.80	14.3	10 45.4	17 49.8	− 3 51.9	−0.7773	0.5453	0.2661	+ 1	−90
i Virginis	5.7	1.78	14.2	12 9.9	20 41.3	− 1 6.3	−0.1187	0.5463	0.2622	+34	−50
85 Virginis	6.5	1.77	13.7	15 14.6	14 5 2.0	+ 6 57.1	+0.8252	0.5511	0.2516	+75	0
B. A. C. 4722	5.8	1.76	13.7	17 42.8	17 58.0	− 4 34.4	+0.1846	0.5585	0.2313	+46	−34
				NEW MOON.							
B. A. C. 5800	7.5	+2.17	−11.3	−26 51.7	17 17 59.7	− 7 19.0	−1.0690	0.5842	−0.0450	−42	−90
43 Ophiuchi	5.8	2.22	11.1	28 2.7	21 33.0	− 3 54.3	+0.0191	0.5839	0.0340	+18	−43
3 Sagittarii	4-6	2.33	10.0	27 47.6	18 7 5.9	+ 5 16.2	−0.4270	0.5815	−0.0049	− 7	−72
B. A. C. 6127	5.1	2.44	9.1	28 28.3	15 15.5	−10 53.4	+0.3396	0.5781	+0.0196	+34	−24
B. A. C. 6194	5.1	+2.46	− 8.3	−27 4.9	19 17.9	− 7 0.4	−1.0180	0.5758	+0.0316	−39	−90
φ Sagittarii	3.7	2.60	6.7	27 6.0	19 6 33.6	+ 3 49.5	−0.4680	0.5692	0.0634	− 5	−75
σ Sagittarii	2.4	2.63	5.9	26 25.7	10 34.0	+ 7 40.8	−0.9046	0.5665	0.0744	−28	−90
τ Sagittarii	3.6	2.71	5.8	27 49.5	15 26.5	−11 37.5	+0.9795	0.5626	0.0871	+62	+14
h^1 Sagittarii	5-6	2.80	2.8	24 57.0	20 4 0.4	+ 0 29.2	−0.8058	0.5526	0.1180	−17	−90
h^2 Sagittarii	4.7	+2.81	− 2.8	−25 7.0	4 17.8	+ 0 46.0	−0.5916	0.5524	+0.1187	− 5	−86
B. A. C. 7049	6.5	3.02	+ 1.8	22 44.6	21 4 22.9	+ 0 2.0	+0.3219	0.5315	0.1682	+47	−26
17 Capricorni	6.0	3.07	3.5	21 53.6	12 22.2	+ 7 45.9	+0.8037	0.5246	0.1818	+68	0
20 Capricorni	6.3	3.08	5.3	19 26.4	18 59.9	− 9 48.7	−0.6313	0.5194	0.1923	+ 2	−88
η Capricorni	5.1	3.13	5.3	20 16.1	21 21.8	− 7 31.3	+0.7379	0.5175	0.1957	+69	− 4
B. A. C. 7325	6.9	+3.14	+ 5.4	−20 35.9	22 30.8	− 6 24.4	+1.3190	0.5165	+0.1972	+69	+45
30 Capricorni	6.5	3.15	7.0	18 25.4	22 4 13.7	− 0 52.0	+0.0912	0.5117	0.2051	+40	−39
31 Capricorni	6.7	3.14	7.2	17 54.0	4 23.5	− 0 42.5	−0.4489	0.5117	0.2053	+13	−71
ι Capricorni	4.4	3.14	7.7	17 16.8	6 26.2	+ 1 16.6	−0.7068	0.5100	0.2080	0	−90
γ Capricorni	3.7	3.23	9.3	17 8.0	15 41.0	+10 15.0	+1.1080	0.5037	0.2191	+73	+20
44 Capricorni	6.1	+3.18	+10.3	−14 52.6	17 17.7	+11 49.0	−1.0160	0.5027	+0.2206	−17	−90
δ Capricorni	2.8	3.25	9.7	16 36.0	19 21.2	−10 11.1	+1.3350	0.5013	0.2227	+73	+42
μ Capricorni	5.4	3.23	11.3	14 2.6	22 42.9	− 6 55.3	−0.7247	0.4990	0.2262	+ 2	−90
ι Aquarii	4.4	3.29	12.1	14 22.5	23 5 48.4	− 0 1.7	+1.2700	0.4953	0.2327	+76	+32
e^1 Aquarii	5.6	3.26	13.2	12 4.7	8 6.7	+ 2 12.7	−0.7243	0.4942	0.2346	+ 3	−90
B. A. C. 7740	7.0	+3.27	+13.5	−11 34.8	9 1.6	+ 3 6.1	−1.0590	0.4935	+0.2354	−17	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's				At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'n from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
40 Aquarii	7.0	+3.28	+13.2	−12 26.5	23 9 39.1	+ 3 42.6	+0.0386	0.4933	+0.2357	+42	−42
54 Aquarii	7.0	3.34	14.3	11 45.7	16 57.4	+10 48.8	+1.0220	0.4889	0.2414	+78	+12
σ Aquarii	5.1	3.35	14.7	11 12.7	19 9.6	−11 2.7	+0.9676	0.4889	0.2429	+79	+ 7
58 Aquarii	6.7	3.36	14.7	11 26.4	19 44.1	−10 29.1	+1.3500	0.4889	0.2433	+79	+41
67 Aquarii	6.4	3.33	17.1	7 30.4	24 2 14.1	− 4 9.7	−1.4050	0.4864	0.2472	−51	−84
λ Aquarii	3.6	+3.38	+17.4	− 8 8.0	7 31.4	+ 0 59.1	+0.6029	0.4850	+0.2500	+78	−13
78 Aquarii	6.4	3.38	17.7	7 45.5	8 38.1	+ 2 4.0	+0.4666	0.4848	0.2503	+69	−20
81 Aquarii	6.6	3.41	18.1	7 37.2	12 30.8	+ 5 56.6	+1.2850	0.4838	0.2523	+82	+32
82 Aquarii	6.4	3.41	18.3	7 8.0	13 10.2	+ 6 28.9	+0.9164	0.4837	0.2524	+83	+ 4
B. A. C. 8094	5.4	3.43	20.1	4 3.7	20 37.5	−10 15.7	−0.5900	0.4821	0.2549	+13	−81
11 Piscium	6.4	+3.48	+21.3	− 2 21.8	25 4 35.0	− 2 30.7	−0.4295	0.4817	+0.2571	+22	−69
12 Piscium	6.8	3.47	21.5	1 36.5	4 37.1	− 2 28.5	−1.2550	0.4817	0.2572	−28	−90
13 Piscium	6.4	3.48	21.7	1 39.6	6 1.4	− 0 56.6	−0.8389	0.4815	0.2575	0	−90
14 Piscium	5.9	3.49	21.6	− 1 49.7	7 16.5	+ 0 6.5	−0.3281	0.4815	0.2577	+27	−62
21 Piscium	5.8	3.54	23.3	+ 0 30.0	16 4.2	+ 8 40.3	−0.6316	0.4819	0.2585	+12	−84
25 Piscium	6.4	+3.55	+23.8	+ 1 30.8	18 8.6	+10 41.5	−1.2150	0.4821	+0.2586	−25	−88
51 Piscium	5.8	3.72	26.3	6 22.9	26 16 27.8	+ 8 25.0	−0.8250	0.4874	0.2558	+ 1	−84
62 Piscium	6.0	3.79	26.5	6 44.0	27 1 18.9	− 6 58.3	+1.0370	0.4909	0.2513	+90	+13
100 Piscium	6.8	4.04	27.8	12 1.8	28 2 23.5	− 6 36.0	+1.3900	0.5053	0.2364	+72	+54
101 Piscium	6.3	4.05	28.3	14 8.0	2 51.1	− 6 9.2	−0.7929	0.5054	0.2360	+ 2	−69
104 Piscium	7.5	+4.10	+28.3	+13 45.7	4 40.1	− 4 23.3	+0.0399	0.5066	+0.2344	+46	−37
26 Arietis	6.0	4.43	27.9	19 23.8	29 6 20.5	− 3 30.0	−0.4003	0.5269	0.2041	+23	−56
B. A. C. 782	7.0	4.44	27.6	18 25.5	7 46.9	− 2 6.2	+0.9399	0.5292	0.2019	+90	+15
μ Arietis	6.0	4.51	27.1	19 34.2	11 56.5	+ 1 55.4	+0.5355	0.5319	0.1957	+79	− 6
47 Arietis	6.0	4.61	26.4	20 15.2	19 15.6	+ 9 0.0	+1.1850	0.5384	0.1833	+90	+37
B. A. C. 920	7.0	+4.62	+26.4	+21 12.4	19 38.0	+ 9 21.6	+0.2320	0.5388	+0.1827	+58	−20
ε Arietis	4.3	4.62	26.4	20 55.6	19 47.4	+ 9 30.7	+0.5619	0.5387	0.1823	+81	− 3
64 Arietis	5.7	4.81	25.0	24 21.5	30 7 5.6	− 3 34.0	−1.1600	0.5491	0.1607	−28	−66
66 Arietis	6 0	4 79	24.4	22 26.9	8 57.6	− 1 45.9	+1.1710	0.5507	0.1569	+90	+39
7 Tauri	6.0	4.85	24.3	24 7.1	11 34.4	+ 0 45.4	−0.2038	0.5529	0.1514	+33	−39
11 Tauri	6.7	+4.93	+23.7	+24 59.8	14 19.3	+ 3 24.5	−0.7293	0.5551	+0.1453	+ 3	−65
g Pleiadum	6.3	4.92	23.2	23 57.9	16 5.1	+ 5 6.4	+0.6190	0.5567	0.1414	+89	+ 5
17 Tauri	4.3	4.92	23.2	23 47.4	16 6.8	+ 5 8.1	+0.8083	0.5567	0.1414	+90	+15
18 Tauri	6.3	4.94	23.2	24 31.0	16 13.4	+ 5 14.5	+0.0631	0.5569	0.1409	+47	−24
19 Tauri	5.0	4.94	23.2	24 8.6	16 19.7	+ 5 20.7	+0.4634	0.5571	0.1408	+74	− 4
20 Tauri	5.0	+4.93	+23.1	+24 2.8	16 31.6	+ 5 32.0	+0.5943	0.5575	+0.1403	+86	+ 3
21 Tauri	7.0	4.93	23.2	24 14.0	16 33.5	+ 5 33.8	+0.4015	0.5575	0.1403	+69	− 7
22 Tauri	7.0	4.93	23.1	24 12.4	16 37.2	+ 5 37.4	+0.4385	0.5575	0.1401	+72	− 5
23 Tauri	4.7	4.92	23.1	23 37.7	16 45.0	+ 5 45.0	+1.0700	0.5575	0.1397	+90	+33
24 Tauri	8.0	4.93	22.9	23 47.9	17 11.3	+ 6 10.3	+0.9510	0.5575	0.1387	+90	+24
η Tauri	3.0	+4.93	+22.9	+23 47.2	17 14.7	+ 6 13.6	+0.9705	0.5577	+0.1387	+90	+26
B. A. C. 1171	7.8	4.94	22.9	24 1.8	17 40.7	+ 6 39.7	+0.7723	0.5582	0.1375	+90	+13
27 Tauri	4.0	4.93	22.8	23 44.3	17 57.7	+ 6 55.1	+1.1200	0.5584	0.1370	+90	+37
28 Tauri	6.2	4.93	22.8	23 49.3	17 58.7	+ 6 56.1	+1.0340	0.5584	0.1370	+90	+30
B. A. C. 1192	6.0	+4.98	+22.7	+25 16.1	18 26.1	+ 7 22.4	−0.4382	0.5590	+0.1359	+20	−50

DECEMBER.

φ Tauri	5.3	+5.15	+19.9	+27 6.4	1 7 4.4	− 4 27.1	−0.8541	0.5687	+0.1047	− 6	−63
χ Tauri	5.7	5.10	19.8	25 23.2	8 1.6	− 3 32.1	+1.0570	0.5694	0.1022	+90	+36
W. iv, 1421	6.0	5.31	14.4	27 54.1	2 3 4.1	− 9 13.3	−0.1395	0.5811	0.0488	+36	−26
22 Aurigæ	7.0	+5.37	+12.8	+28 50.6	8 27.6	− 4 2.5	−0.9046	0.5834	+0.0327	−10	−61
β Tauri	2.0	5.36	12.4	28 31.3	9 36.8	− 2 56.1	−0.5306	0.5837	0.0282	+14	−47
B. A. C. 1772	6.3	5.43	10.7	29 9.5	14 42.9	+ 1 57.9	−1.0840	0.5856	+0.0135	−25	−61
136 Tauri	5.3	5.35	9.1	27 35.3	20 14.0	+ 7 15.8	+0.5766	0.5865	−0.0035	+86	+13
49 Aurigæ	5.7	5.35	3.8	28 6.3	3 12 32.6	− 1 4.8	−0.4288	0.5891	0 0541	+20	−42
54 Aurigæ	6.0	+5.35	+ 3.3	+28 21.4	14 14.2	+ 0 32.7	−0.7839	0.5864	−0.0592	− 2	−62

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
25 Geminorum	6.5	+5.34	+ 3.0	+28 17.7	3 14 56.3	+ 1 13.2	−0.7625	0.5862	−0.0614	0	−62
39 Geminorum	6.3	5.22	1.0	26 13.1	21 49.1	+ 7 49.5	+0.8861	0.5849	0.0823	+90	+26
W. vi, 1656	8.2	5.24	+ 0.3	26 59.4	23 46.3	+ 9 42.0	−0.0738	0.5842	0.0881	+40	−25
47 Geminorum	6.0	5.23	− 0.8	27 1.7	4 2 45.3	−11 26.1	−0.3893	0.5833	0.0957	+21	−43
49 Geminorum	7.2	5.18	0.7	25 55.4	3 20.6	−10 52.3	+0.6895	0.5830	0.0984	+90	+14
A Geminorum	5.7	+5.12	− 2.0	+25 15.1	7 34.7	− 6 48.2	+0.9353	0.5823	−0.1107	+90	+27
c Geminorum	6.0	5.06	5.2	26 1.9	15 48.8	+ 1 6.7	−0.8700	0.5775	0.1335	− 6	−64
κ Geminorum	3.7	5.00	4.9	24 38.7	15 58.4	+ 1 15.9	+0.5298	0.5773	0.1340	+80	+ 1
ω^2 Cancri	6.3	4.97	7.2	25 22.6	22 57.9	+ 7 59.3	−1.2200	0.5733	0.1522	−36	−65
μ^1 Cancri	6.3	4.86	7.2	22 56.0	5 0 52.6	+ 9 49.6	+0.9863	0.5727	0.1571	+90	+35
γ Cancri	4.3	+4.64	−11.3	+21 50.6	16 18.0	+ 0 40.5	−0.5087	0.5624	−0.1929	+11	−65
80 Cancri	6.5	4.36	13.3	18 28.2	6 4 39.8	−11 24.6	+0.2918	0.5542	0.2172	+61	−20
83 Cancri	6.5	4.30	14.0	18 8.8	7 44.9	− 8 26.0	−0.0677	0.5522	0.2227	+41	−39
ν Leonis	5.3	3.95	16.9	12 56.5	7 1 22.0	+ 8 34.5	+1.0640	0.5416	0.2490	+90	+19
α Leonis	1.3	3.79	16.7	12 28.5	6 1.9	−10 55.0	+0.3639	0.5391	0.2547	+65	−21
45 Leonis	6.0	+3.65	−17.6	+10 17.5	14 58.4	− 2 16.3	+0.2587	0.5347	−0.2640	+58	−28
ρ Leonis	3.9	3.61	17.9	9 50.5	17 23.6	+ 0 4.1	+0.0744	0.5335	0.2662	+48	−38
49 Leonis	6.0	3.59	17.9	9 11.3	18 26.7	+ 1 5.1	+0.4564	0.5334	0.2680	+71	−19
56 Leonis	6.6	3.40	18.3	6 44.5	8 4 22.5	+10 41.4	+0.2501	0.5299	0.2743	+58	−30
c Leonis	5.3	3.38	18.5	6 39.6	6 37.2	−11 8.2	−0.2855	0.5291	0.2755	+29	−58
82 Leonis	6.9	+3.20	−19.0	+ 3 52.5	18 33.6	+ 0 25.1	−0.7854	0.5267	−0.2802	+ 3	−77
80 Leonis	6.5	3.21	19.2	4 26.0	18 38.7	+ 0 30.2	−1.3750	0.5267	0.2802	−42	−86
83 Leonis	6.9	3.15	18.8	3 34.8	19 7.6	+ 0 58.1	−0.6452	0.5267	0.2804	+11	−84
τ Leonis	5.3	3.19	19.0	+ 3 25.8	19 39.3	+ 1 29.8	−0.6401	0.5266	0.2805	+11	−84
B. A. C. 4134	6.3	2.93	18.8	− 3 22.5	9 19 49.0	+ 0 53.2	−0.5357	0.5272	0.2796	+16	−76
χ Virginis	5.2	+2.75	−18.0	− 7 25.4	10 5 52.5	+10 36.4	+0.7794	0.5297	−0.2750	+76	− 3
28 Virginis	7.0	2.74	18.3	6 55.7	7 9.7	+11 51.1	−0.0761	0.5301	0.2741	+39	−48
ψ Virginis	5.2	2.68	17.9	8 58.4	13 0.7	− 6 29.4	+0.4061	0.5320	0.2702	+65	−23
g Virginis	5.9	2.62	17.9	10 11.0	19 21.2	− 0 21.4	−0.0626	0.5347	0.2651	+38	−47
50 Virginis	6.3	2.62	18.0	9 46.4	20 13.5	+ 0 29.2	−0.7094	0.5350	0.2643	+ 5	−90
62 Virginis	7.0	+2.56	−17.9	−10 45.5	11 1 8.1	+ 5 14.1	−0.9959	0.5370	−0.2593	−13	−90
i Virginis	5.7	2.54	17.6	12 10.0	4 4.2	+ 8 4.3	−0.3803	0.5386	0.2563	+24	−62
83 Virginis	6.0	2.50	16.7	15 39.4	12 9.0	− 8 7.2	+1.1980	0.5429	0.2463	+74	+26
85 Virginis	6.5	2.50	16.9	15 14.7	12 38.8	− 7 38.4	+0.6566	0.5429	0.2457	+74	−10
B. A. C. 4728	5.8	2.43	16.3	17 42.9	12 1 55.7	+ 5 11.0	+0.0391	0.5509	0.2256	+38	−42
42 Libræ	5.7	+2.36	−14.1	−23 28.8	13 13 46.7	− 8 16.6	−0.8714	0.5723	−0.1490	−19	−90
B. A. C. 5197	6.0	2.37	13.8	24 23.4	16 1.2	− 6 7.3	−0.2609	0.5736	0.1433	+14	−59
b Scorpii	5.3	2.37	13.6	25 26.1	18 5.9	− 4 7.3	+0.5222	0.5745	0.1377	+55	−15
A^2 Scorpii	5.2	2.37	13.5	25 1.0	19 10.4	− 3 5.3	−0.0550	0.5750	0.1351	+23	−47
B. A. C. 5255	6.0	2.37	13.6	25 6.1	19 24.8	− 2 51.4	0.0000	0.5754	0.1344	+26	−44
3 Scorpii	6.7	+2.37	−13.5	−24 56.1	19 35.9	− 2 40.8	−0.1959	0.5754	−0.1342	+16	−56
4 Scorpii	6.3	2.38	13.4	25 57.6	19 55.6	− 2 21.8	+0.8166	0.5754	0.1330	+64	+ 3
π Scorpii	3.4	2.38	13.3	25 48.9	21 16.7	− 1 3.8	+0.4918	0.5761	0.1293	+52	−16
B. A. C. 5314	5.7	2.37	13.2	25 34.5	23 5.8	+ 0 41.1	+0.0120	0.5768	0.1244	+26	−43
B. A. C. 5347	6.0	2.39	13.0	26 2.8	14 1 0.1	+ 2 31.1	+0.2669	0.5777	0.1191	+38	−29
σ Scorpii	3.4	+2.37	−12.7	−25 20.6	6 14.7	+ 7 33.4	−1.0470	0.5797	−0.1049	−35	−90
α Scorpii	1.4	2.39	12.3	26 12.1	9 30.5	+10 41.6	−0.4835	0.5806	−0.0952	− 2	−76
				NEW	*MOON.*						
φ Sagittarii	3.7	2.62	5.6	27 6.0	16 15 52.8	− 9 3.3	−0.3286	0.5715	+0.0659	+ 3	−65
σ Sagittarii	2.4	2.63	4.9	26 25.7	19 52.4	− 5 12.7	−0.7573	0.5693	0.0768	−19	−90
τ Sagittarii	3.6	+2.69	− 4.7	−27 49.5	17 0 43.7	− 0 32.3	+1.1330	0.5654	+0.0897	+62	+20
A^1 Sagittarii	5-6	2.72	2.2	24 56.9	13 13.1	+11 29.9	−0.6170	0.5559	0.1207	− 6	−89
A^2 Sagittarii	4.7	2.72	− 2.2	25 6.9	13 30.4	+11 46.6	−0.4031	0.5558	0.1214	+ 5	−70
B. A. C. 7049	6.5	2.84	+ 1.9	22 44.4	18 13 23.4	+10 50.4	+0.5659	0.5357	0.1712	+61	−13
17 Capricorni	6.0	2.88	3.4	21 53.6	21 18.2	− 5 30.2	+1.0560	0.5286	0.1848	+68	+18
20 Capricorni	6.3	+2.87	+ 4.9	−19 26.4	19 3 52.1	+ 0 51.3	−0.3607	0.5229	+0.1950	+16	−66

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1895.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'		N.	S.
		$\Delta\alpha$	$\Delta\delta$									
		s	″	° ′	d h m	h m					°	°
η Capricorni	5.1	+2.90	+ 5.0	-20 16.1	19 6 12.6	+ 3 7.4	+1.0010	0.5211	+0.1985		+70	+13
30 Capricorni	5.5	2.91	6.5	18 25.4	13 0.7	+ 9 42.9	+0.3746	0.5156	0.2079		+56	-24
31 Capricorni	6.7	2.90	6.6	17 54.0	13 10.4	+ 9 52.4	-0.1637	0.5153	0.2081		+28	-53
ι Capricorni	4.4	2.90	7.0	17 16.8	15 12.0	+11 50.3	-0.4150	0.5125	0.2106		+15	-69
44 Capricorni	6.1	2.92	9.4	14 52.7	20 1 58.0	- 1 42.9	-0.7086	0.5056	0.2230		+ 2	-90
45 Capricorni	6.3	+2.93	+ 9.3	-15 13.8	2 27.4	- 1 14.4	-0.2137	0.5054	+0.2236		+27	-56
μ Capricorni	5.4	2.97	10.1	14 2.6	7 20.5	+ 3 30.2	-0.4111	0.5017	0.2282		+18	-68
σ^2 Aquarii	5.6	2.99	11.8	12 4.7	16 40.5	-11 25.7	-0.4016	0.4964	0.2365		+20	-67
40 Aquarii	7.0	3.01	12.0	12 26.5	18 12.3	- 9 56.4	+0.3613	0.4958	0.2379		+60	-25
54 Aquarii	7.0	3.06	13.0	11 45.5	21 1 28.0	- 2 52.8	+1.3560	0.4917	0.2429		+78	+42
67 Aquarii	6.4	+3.06	+15.5	- 7 30.4	10 42.7	+ 6 6.8	-1.0640	0.4877	+0.2484		-15	-90
λ Aquarii	3.6	3.11	15.7	8 7.9	15 59.0	+11 14.6	+0.9391	0.4857	0.2506		+82	+ 6
78 Aquarii	6.4	3.11	16.1	7 45.5	17 5.6	-11 40.6	+0.8067	0.4855	0.2509		+70	- 2
B. A. C. 8017	6.1	3.11	17.3	5 16.3	21 2.7	- 7 49.8	-0.9471	0.4843	0.2526		- 7	-90
B. A. C. 8094	5.4	3.16	18.4	4 3.8	22 5 4.3	- 0 1.1	-0.2452	0.4823	0.2562		+31	-57
11 Piscium	6.4	+3.21	+19.6	- 2 21.8	13 2.1	+ 7 44.1	-0.0867	0.4811	+0.2567		+39	-49
12 Piscium	6.8	3.20	19.9	1 36.5	13 4.3	+ 7 46.3	-0.9313	0.4811	0.2567		- 5	-90
13 Piscium	6.4	3.21	20.0	1 39.6	14 28.8	+ 9 8.6	-0.5058	0.4810	0.2569		+19	-73
14 Piscium	5.9	3.22	20.0	- 1 49.7	15 43.7	+10 21.5	+0.0129	0.4808	0.2571		+45	-43
21 Piscium	5.8	3.27	21.7	+ 0 29.9	23 0 33.2	- 5 2.8	-0.2895	0.4807	0.2575		+29	-60
25 Piscium	6.4	+3.28	+22.1	+ 1 30.8	2 38.1	- 3 1.2	-0.8776	0.4808	+0.2575		- 2	-88
51 Piscium	5.8	3.48	24.9	6 22.9	24 1 5.1	- 5 9.8	-0.5055	0.4848	0.2534		+18	-72
62 Piscium	6.0	3.56	25.4	6 44.0	10 0.4	+ 3 31.1	+1.3520	0.4878	0.2499		+90	+41
101 Piscium	6.3	3.90	27.8	14 8.0	25 11 46.5	+ 4 34.0	-0.5242	0.5021	0.2328		+17	-68
104 Piscium	7.5	3.93	27.6	13 45.7	13 36.4	+ 6 20.8	+0.3038	0.5031	0.2312		+61	-24
26 Arietis	6.0	+4.35	+28.1	+19 23.8	26 15 30.0	+ 7 27.5	-0.1906	0.5286	+0.2009		+34	-44
B. A. C. 782	7.0	4.36	27.7	18 25.5	16 57.0	+ 8 51.9	+1.1480	0.5252	0.1988		+90	+31
μ Arietis	6.0	4.44	27.9	19 34.3	21 8.2	-11 4.9	+0.7302	0.5288	0.1925		+90	+ 4
B. A. C. 920	7.0	4.59	27.5	21 12.5	27 4 52.4	- 3 36.0	+0.4110	0.5360	0.1797		+69	-11
ϵ Arietis	4.3	4.59	27.4	20 55.7	5 2.0	- 3 26.7	+0.7398	0.5360	0.1794		+90	+ 6
64 Arietis	5.7	+4.83	+26.6	+24 21.5	16 22.6	+ 7 30.9	-1.0090	0.5471	+0.1603		-16	-66
11 Tauri	6.7	5.00	24.9	24 59.8	23 37.0	- 9 29.9	-0.5962	0.5539	0.1426		+11	-60
g Pleiadum	6.3	4.99	24.3	23 57.9	28 1 23.0	- 7 47.7	+0.7457	0.5554	0.1387		+90	+12
17 Tauri	4.3	4.99	24.3	23 47.4	1 25.1	- 7 45.6	+0.9365	0.5554	0.1386		+90	+23
18 Tauri	6.3	5.01	24.4	24 31.0	1 31.8	- 7 39.1	+0.1820	0.5556	0.1382		+54	-18
19 Tauri	5.0	+5.01	+24.4	+24 8.6	1 33.4	- 7 37.6	+0.5815	0.5556	+0.1382		+84	+ 2
20 Tauri	5.0	5.00	24.3	24 2.8	1 49.5	- 7 22.1	+0.7207	0.5560	0.1376		+90	+10
21 Tauri	7.0	5.01	24.3	+24 14.0	1 51.4	- 7 20.3	+0.5265	0.5560	0.1376		+79	0
22 Tauri	7.0	5.01	24.3	24 12.4	1 55.2	- 7 16.6	+0.5635	0.5560	0.1374		+83	+ 2
23 Tauri	4.7	4.99	24.1	23 37.7	2 2.9	- 7 9.2	+1.1940	0.5563	0.1373		+90	+43
24 Tauri	8.0	+5.00	+24.1	+23 47.9	2 29.2	- 6 43.8	+1.0740	0.5564	+0.1361		+90	+33
η Tauri	3.0	5.00	24.1	23 47.2	2 32.7	- 6 40.4	+1.0930	0.5567	0.1360		+90	+35
B. A. C. 1171	7.8	5.02	24.0	24 1.8	2 58.7	- 6 15.3	+0.8954	0.5571	0.1351		+90	+21
27 Tauri	4.0	5.01	23.9	23 44.3	3 16.1	- 5 58.6	+1.2440	0.5572	0.1345		+90	+49
28 Tauri	6.2	5.02	23.9	23 49.3	3 16.6	- 5 58.1	+1.1540	0.5572	0.1344		+90	+40
B. A. C. 1192	6.0	+5.08	+24.0	+25 16.1	3 44.0	- 5 31.7	-0.3159	0.5576	+0.1332		+26	-43
p Tauri	6.0	5.23	22.3	26 12.8	12 24.5	+ 2 49.8	-0.2460	0.5656	0.1124		+30	-37
ϕ Tauri	5.3	5.30	21.4	27 6.3	16 20.9	+ 6 37.4	-0.7605	0.5689	0.1022		0	-63
χ Tauri	5.7	5.27	20.8	25 23.2	17 17.9	+ 7 32.2	+1.1480	0.5697	0.0998		+90	+43
W. iv, 1421	6.0	5.62	15.4	27 54.2	29 12 12.8	+ 1 43.3	-0.1023	0.5832	0.0467		+38	-23
β Tauri	2.0	+5.72	+13.4	+28 31.3	18 41.4	+ 7 56.4	-0.5044	0.5866	+0.0268		+15	-45
136 Tauri	5.3	5.78	9.8	27 35.4	30 5 10.3	- 6 0.1	+0.5689	0.5907	-0.0060		+85	+15
49 Aurigæ	5.7	5.89	7.7	28 6.3	21 12.4	+ 9 22.8	-0.4657	0.5927	0.0570		+18	-45
54 Aurigæ	6.0	5.91	3.4	28 21.4	22 52.0	+10 58.4	-0.8217	0.5926	0.0622		- 4	-62
39 Geminorum	6.3	5.82	+ 0.7	26 13.1	31 6 17.7	- 5 54.1	+0.8106	0.5912	0.0855		+90	+21
47 Geminorum	6.0	+5.86	- 1.1	+27 1.7	11 7.3	- 1 16.3	-0.4630	0.5905	-0.1004		+18	-48
A Geminorum	5.7	+5.78	- 2.8	+25 15.1	15 50.2	+ 3 15.2	+0.8064	0.5887	-0.1141		+90	+20

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1895.

Date.	The Star's Name.	Mag.	Immersion. Washington. Sidereal Time.	Immersion. Washington. Mean Time.	Immersion. Angle from North Point.	Immersion. Angle from Vertex.	Emersion. Washington. Sidereal Time.	Emersion. Washington. Mean Time.	Emersion. Angle from North Point.	Emersion. Angle from Vertex.	Duration of Occultation.
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 1	ϕ Aquarii	4.1	2 59	8 13	61	15	4 6	9 20	229	180	1 7
1	96 Aquarii *	5.6	6 15	11 29	31	341	6 59	12 13	276	226	0 44
4	100 Piscium *	6.8	8 36	13 38	27	338	9 15	14 17	293	247	0 39
11	γ Cancri	4.3	8 57	13 31	177	165	9 35	14 9	337	307	0 38
14	80 Cancri †	6.8	4 38	9 1	128	178	5 31	9 54	284	335	0 53
18	B. A. C. 4923 †	7.3	10 31	14 37	93	143	11 25	15 31	326	11	0 54
19	B. A. C. 5197 ‡	6.0	8 51	12 54	66	118	9 28	13 31	339	31	0 37
	NEW MOON.										
27	42 Aquarii ‡	5.8	3 32	7 4	9	319	4 11	7 43	288	236	0 39
Feb. 3	g Pleiadum	6.3	6 6	9 10	126	69	6 56	10 0	208	150	0 50
3	19 Tauri	5.0	6 12	9 16	87	40	7 26	10 30	248	190	1 14
3	21 Tauri	7.0	6 37	9 41	76	18	7 50	10 54	262	204	1 13
3	20 Tauri	5.0	6 38	9 42	118	60	7 34	10 38	219	261	0 56
3	22 Tauri	7.0	6 41	9 45	84	26	7 53	10 57	254	196	1 12
6	47 Geminorum	6.0	13 0	15 51	38	343	13 19	16 10	355	302	0 19
16	τ Scorpii	3.2	16 40	18 51	132	130	18 0	20 11	254	235	1 20
Mar. 1	B. A. C. 782	7.0	6 37	7 59	120	65	7 22	8 44	203	148	0 45
5	49 Aurigæ	5.7	10 11	11 16	80	19	11 8	12 13	309	249	0 57
7	γ Cancri	4.3	11 1	11 58	128	75	12 4	13 1	281	225	1 3
10	80 Cancri	6.8	5 53	6 39	100	151	6 48	7 34	319	8	0 55
13	B. A. C. 4722	5.8	12 26	13 0	123	146	13 42	14 16	309	314	1 16
17	γ^1 Sagittarii	5-6.5	15 5	15 22	118	151	16 24	16 41	257	276	1 19
	NEW MOON.										
31	W. iv, 1421	6.0	9 15	8 38	57	356	10 6	9 29	310	9	0 51
Apr. 2	47 Geminorum	6.0	7 46	7 2	161	128	8 32	7 48	230	178	0 46
11	b Scorpii ‡	5.3	19 42	18 20	50	8	20 27	19 5	327	279	0 45
	NEW MOON.										
29	W. vi, 1656	8.2	12 49	10 18	88	33	13 38	11 7	305	255	0 49
May 6	i Virginis	5.7	14 47	11 47	59	39	15 18	12 19	6	340	0 31
7	B. A. C. 4722	5.8	11 47	8 44	151	182	12 53	9 50	260	277	1 6
9	B. A. C. 5347 †	6.0	11 30	8 20	83	129	12 26	9 16	325	9	0 56
	NEW MOON.										
June 5	b Scorpii	5.3	15 22	10 25	81	86	16 36	11 39	321	308	1 14
5	4 Scorpii	6.3	18 23	13 25	125	94	19 33	14 35	255	215	1 10
5	π Scorpii ‡	3.4	20 8	15 10	65	20	21 5	16 7	307	257	0 57
12	42 Aquarii	5.8	0 9	18 43	359	333	0 59	19 33	282	247	0 50
19	9 Tauri	7.0	20 59	15 6	137	189	21 17	15 24	177	230	0 18
	NEW MOON.										
29	ψ Virginis	5.2	15 54	9 22	122	84	17 2	10 30	291	245	1 8
30	85 Virginis	6.5	16 32	9 56	154	120	17 18	10 42	241	199	0 46
July 6	B. A. C. 6666	5.8	21 43	14 43	128	101	22 22	15 22	186	152	0 39
8	B. A. C. 7325	6.9	18 5	10 58	36	71	19 18	12 11	278	300	1 13
8	26 Capricorni	7.0	19 43	12 35	99	117	20 49	13 41	199	202	1 6
10	64 Aquarii	6.9	19 45	12 30	38	74	21 5	13 50	252	274	1 20
11	96 Aquarii	5.6	17 51	10 32	91	141	18 49	11 30	209	256	0 58
13	60 Piscium	6 2	20 14	12 47	87	137	21 13	13 46	201	248	0 59
13	62 Piscium	6.0	21 31	14 3	8	53	22 25	14 57	275	318	0 54
	NEW MOON.										
Aug. 6	54 Aquarii	7.0	22 23	13 21	22	21	23 40	14 38	256	237	1 17
6	σ Aquarii	5.1	1 25	16 22	74	36	2 31	17 28	213	169	1 6
12	B. A. C. 920	7.0	2 15	16 49	65	86	3 42	18 16	237	209	1 27
13	g Pleiadum	6.3	21 42	12 13	80	134	22 39	13 10	233	290	0 57
13	19 Tauri	5.0	22 0	12 31	53	108	22 57	13 28	261	319	0 57

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1895.

Date.	The Star's		Immersion.				Emersion.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Aug. 13	20 Tauri	5.0	22 11	12 41	84	140	23 8	13 38	229	287	0 57
13	21 Tauri	7.0	22 22	12 52	47	103	23 19	13 49	264	322	0 57
13	22 Tauri	7.0	22 23	12 53	56	112	23 22	13 52	255	313	0 59
	NEW MOON.										
Sept. 2	ι Aquarii	4.4	17 42	6 54	19	64	18 30	7 42	294	334	0 48
8	B. A. C 782	7.0	20 57	9 45	98	152	21 45	10 33	202	256	0 48
9	7 Tauri	6.0	3 31	16 14	9	356	4 22	17 5	303	272	0 51
12	49 Aurigæ	5.7	4 36	17 7	64	122	5 49	18 20	302	338	1 13
15	8 Leonis	5.7	4 29	16 49	63	117	5 11	17 31	340	34	0 42
	NEW MOON.										
23	τ Scorpii ‡	3.2	20 24	8 13	108	67	21 28	9 17	253	204	1 4
26	B. A. C. 6666	5.8	21 9	8 47	96	74	22 18	9 56	217	184	1 9
28	B. A. C. 7325	6.9	18 10	5 40	42	66	19 30	7 0	270	290	1 20
28	26 Capricorni	7.0	19 56	7 26	111	126	20 50	8 20	184	187	0 54
30	64 Aquarii	6.9	20 7	7 29	66	98	21 30	8 52	219	235	1 23
Oct. 3	62 Piscium	6.0	21 29	8 39	61	107	22 46	9 55	231	266	1 17
8	W. iv, 1421	6.0	2 28	13 18	45	106	3 37	14 27	286	339	1 9
10	W. vi, 1656	8.2	23 49	10 31	45	94	0 27	11 9	314	6	0 38
10	47 Geminorum	6.0	3 5	13 44	32	92	3 40	14 19	332	32	0 35
14	c Leonis	5.3	4 40	15 6	117	168	5 36	16 1	296	347	0 56
	NEW MOON.										
26	γ Capricorni	3.7	21 20	7 0	57	61	22 47	8 27	228	212	1 27
26	B. A. C. 7558	8.0	0 48	10 27	77	39	1 52	11 31	213	168	1 4
27	54 Aquarii	7.0	23 13	8 48	72	58	0 28	10 3	207	177	1 15
28	81 Aquarii †	6.6	16 54	2 26	57	108	17 57	3 29	251	301	1 3
Nov. 2	ϵ Arietis	4.2	1 49	11 0	101	136	2 54	12 5	200	196	1 5
2	B. A. C. 920	7.0	1 55	11 6	33	66	3 11	12 22	267	256	1 16
3	17 Tauri	4.3	21 25	6 33	83	136	22 20	7 28	231	287	0 55
3	g Pleiadum	6.3	21 33	6 41	44	98	22 25	7 33	270	326	0 52
3	20 Tauri	5.0	31 59	7 7	48	105	22 54	8 2	264	322	0 55
3	19 Tauri	5.0	22 2	7 10	5	60	22 29	7 37	309	5	0 27
3	22 Tauri	7.0	22 22	7 30	12	68	22 57	8 5	300	358	0 35
3	21 Tauri	7.0	22 28	7 36	354	50	22 46	7 54	319	16	0 18
3	B. A. C. 1171	7.8	23 32	8 39	111	169	0 17	9 25	199	257	0 46
6	W. vi, 1656	8.2	9 2	17 57	55	357	9 45	18 40	343	283	0 43
	NEW MOON.										
23	40 Aquarii ‡	7.0	3 17	11 6	11	321	3 58	11 47	286	235	0 41
24	λ Aquarii	3.6	23 42	7 27	58	44	1 3	8 48	220	190	1 21
29	B. A. C. 782	7.0	22 39	6 5	121	175	23 10	6 36	175	228	0 31
30	g Pleiadum	6.3	9 48	17 8	132	79	10 25	17 45	216	166	0 37
30	19 Tauri	5.0	9 55	17 15	90	37	10 49	18 9	258	206	0 54
30	20 Tauri	5.0	10 9	17 29	115	63	10 55	18 15	213	165	0 46
30	21 Tauri	7.0	10 10	17 30	73	21	11 3	18 23	276	229	0 53
30	22 Tauri ‡	7.0	10 13	17 33	80	29	11 7	18 27	269	222	0 54
Dec. 4	κ Geminorum	3.7	9 11	16 15	146	98	10 14	17 18	261	204	1 3
7	45 Leonis	6.0	6 24	13 17	126	177	7 34	14 27	294	339	1 10
7	49 Leonis	6.0	11 26	18 18	80	60	12 23	19 15	348	312	0 57
13	4 Scorpii	6.3	12 7	18 35	152	192	13 0	19 28	257	290	0 53
	NEW MOON.										
27	ϵ Arietis	4.2	21 32	3 8	61	116	22 34	4 10	244	300	1 2
30	136 Tauri	5.3	22 9	3 33	62	107	22 56	4 20	283	333	0 47
31	39 Geminorum	6.3	23 33	4 53	159	207	23 51	5 11	201	249	0 18
31	A Geminorum	5.7	11 43	17 1	174	115	12 9	17 27	227	169	0 26

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	Lat. 72°			Lat. 66°			Lat. 60°			Lat. 54°			Lat. 48°			Lat. 42°			Lat. 36°		
	x'			x'			x'			x'			x'			x'			x'		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	5	6	7
20	3	3	4	4	5	5	5	6	7	6	7	9	8	9	11	9	10	12	11	12	14
30	5	5	6	6	7	8	8	9	11	10	11	13	12	13	16	14	16	18	16	18	22
40	6	7	8	8	9	11	11	12	14	13	15	17	16	18	21	18	21	24	21	24	29
50	7	8	10	10	11	13	13	15	17	16	19	21	19	22	26	22	26	30	26	30	36
1 0	9	10	11	12	14	16	16	18	21	19	22	26	23	26	31	26	31	36	30	35	42
10	10	12	13	14	16	18	18	21	24	22	26	30	26	30	36	31	35	42	35	40	48
20	12	13	15	16	18	21	21	23	27	25	29	34	30	34	40	35	40	47	39	45	54
30	13	15	17	18	20	23	23	26	30	28	32	37	33	38	45	39	44	52	43	50	59
40	14	16	18	20	22	25	25	29	33	31	35	41	36	42	49	42	48	57	47	54	64
50	16	18	20	21	24	28	27	31	36	34	38	44	39	45	53	45	52	61	51	58	68
2 0	17	19	22	23	26	30	29	33	39	36	41	47	42	48	56	48	55	65	54	62	72
10	18	20	23	25	28	32	31	36	41	38	43	50	45	51	59	51	59	68	57	66	76
20	19	22	24	26	30	34	33	38	43	40	46	53	47	54	62	54	62	71	60	69	80
30	20	23	26	28	31	36	35	40	45	42	48	55	50	56	65	57	64	74	63	72	83
40	21	24	27	29	33	37	37	42	47	44	50	58	52	59	68	59	67	77	65	74	86
50	22	25	28	30	34	39	38	43	49	46	52	60	54	61	70	61	69	79	68	76	88
3 0	23	26	30	31	35	40	40	45	51	48	54	62	56	63	72	63	71	81	70	79	90
10	24	27	31	33	36	42	41	46	53	49	56	63	57	65	74	65	73	83	72	81	92
20	25	28	32	34	38	43	42	47	54	51	57	65	59	66	75	66	74	85	73	82	93
30	26	29	33	35	39	44	43	49	55	52	58	66	60	67	77	68	76	86	74	83	95
40	26	29	33	36	40	45	44	50	56	53	59	67	61	69	78	69	77	87	75	84	96
50	27	30	34	36	41	46	45	51	57	54	60	68	62	70	79	70	78	88	76	85	96
4 0	28	31	35	37	41	47	46	52	58	55	61	69	63	70	79	71	79	89	77	86	97
10	28	31	35	38	42	47	47	52	59	56	62	70	64	71	80	71	79	89	78	86	97
20	29	32	36	38	42	48	47	53	59	56	62	70	64	71	80	72	80	89	78	87	97
30	29	32	36	39	43	48	48	53	60	57	63	71	65	72	81	72	80	90	79	87	97
40	29	33	37	39	43	49	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97
50	30	33	37	39	44	49	48	54	60	57	63	71	65	72	81	72	80	89	79	87	96
5 0	30	33	37	39	44	49	49	54	60	57	63	71	65	72	80	72	80	89	78	86	95
10	30	33	37	40	44	49	49	54	60	57	63	71	65	72	80	72	79	88	78	86	95
20	30	33	37	40	44	49	49	54	60	57	63	71	65	71	79	72	79	88	78	85	94
30	30	33	37	40	44	49	49	54	60	57	63	70	64	71	79	71	78	87	77	85	93
40	30	33	37	39	44	49	48	53	59	56	62	70	64	70	78	70	77	86	76	84	91
50	30	33	37	39	43	48	48	53	59	56	61	69	63	70	77	70	77	85	75	83	90
6 0	30	33	37	39	43	48	48	52	58	55	61	68	63	69	76	69	76	84	74	82	89
10	30	33	37	39	43	47	47	52	58	55	60	67	62	68	75	68	75	82	73	80	87
20	29	32	36	38	42	47	47	51	57	54	60	66	61	67	74	67	73	81	72	79	85
30	29	32	36	38	42	46	46	51	56	53	59	65	60	66	73	66	72	80	71	78	84
40	29	32	35	37	41	46	45	50	55	53	58	64	59	65	71	65	71	78	70	76	82
50	28	31	35	37	40	45	45	49	54	52	57	62	58	63	70	63	69	76	68	74	80
7 0	28	31	34	36	40	44	44	48	53	51	55	61	57	62	68	62	68	75	67	73	78
10	27	30	34	35	39	43	43	47	52	50	54	60	56	61	67	61	66	73	65	71	76
20	27	30	33	35	38	42	42	46	51	48	53	58	54	59	65	59	65	71	64	68	74
30	26	29	32	34	37	41	41	45	49	47	52	57	53	58	63	58	63	69	62	67	71
40	26	28	31	33	36	40	40	44	48	46	50	55	51	56	62	56	61	67			
50	25	27	31	32	35	39	39	42	47	45	49	53	50	54	60	54	59	65			
8 0	24	27	30	31	34	38	38	41	45	43	47	52	48	52	58	53	57	63			
10	24	26	29	30	33	37	36	40	44	42	46	50	47	51	56	52	55	60			
20	23	25	28	29	32	35	35	38	42	40	44	48	45	49	54						
30	22	24	27	28	31	34	34	37	41	39	42	46	43	47	52						
40	21	23	26	27	30	33	33	35	39	37	41	44	41	45	49						
50	20	22	25	26	28	31	31	34	37	36	39	42	40	43	47						
9 0	19	21	24	25	27	30	30	32	35	34	37	40									
10	18	20	22	24	26	28	28	31	34	32	35	38									
20	18	19	21	22	24	27	27	29	32	31	33	36									
30	16	18	20	21	23	25	25	27	30	29	31	34									
40	15	17	19	20	22	24	24	26	28	27	29	32									

(*Concluded at bottom of next page.*)

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	Lat. 30°			Lat. 24°			Lat. 18°			Lat. 12°			Lat. 6°			Lat. 0°		
	x′			x′			x′			x′			x′			x′		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	6	7	8	7	7	9	7	8	9	7	8	10	7	8	10	8	9	11
20	12	14	16	13	14	18	14	16	19	14	16	20	14	17	21	15	18	21
30	17	20	24	19	22	27	20	24	29	21	25	30	21	25	31	22	26	32
40	23	27	32	25	29	36	26	32	39	28	33	40	28	34	41	29	34	42
50	28	33	40	31	36	44	32	39	48	35	40	50	35	42	51	35	42	52
1 0	33	39	47	36	42	52	38	46	56	40	47	59	41	49	60	41	49	61
10	38	45	54	41	48	59	44	52	63	46	54	67	47	56	68	47	56	69
20	43	50	60	46	54	65	49	58	70	52	60	74	53	62	75	53	63	76
30	48	55	66	51	60	71	54	64	76	57	66	79	58	68	81	59	69	82
40	52	60	71	56	65	77	59	69	82	62	72	84	63	73	87	64	74	88
50	56	64	76	60	69	82	64	74	87	66	77	89	68	78	92	68	79	93
2 0	59	68	80	64	73	86	68	78	91	70	81	95	72	83	97	72	83	98
10	62	72	84	67	77	90	71	81	95	74	85	99	75	87	101	76	87	102
20	65	75	87	70	81	94	74	85	99	77	88	103	78	90	105	79	91	106
30	68	78	90	73	84	97	77	88	102	80	91	106	81	93	108	82	94	109
40	71	81	93	76	87	100	80	91	105	83	94	109	84	96	111	85	97	112
50	74	83	96	78	89	102	82	93	107	85	96	111	87	98	113	87	99	114
3 0	76	85	98	80	91	104	84	95	109	87	98	113	89	100	115	89	101	116
10	77	87	99	82	92	106	86	97	111	89	100	114	91	102	116	91	103	117
20	79	89	101	84	94	107	88	99	112	91	102	115	92	104	118	93	104	118
30	80	90	102	85	95	108	89	100	113	92	103	116	94	105	119	94	105	119
40	81	91	103	86	96	109	90	101	114	93	104	117	95	106	119	95	106	120
50	82	92	104	87	97	110	91	101	114	94	104	118	95	106	120	96	107	120
4 0	83	92	104	88	98	110	92	102	114	94	105	118	96	107	120	97	107	120
10	84	93	104	88	98	110	92	102	114	95	105	118	96	107	120	97	107	120
20	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	120
30	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	119
40	84	93	104	89	98	109	92	102	113	95	104	116	96	106	118	97	107	119
50	84	93	103	88	97	108	92	101	113	94	104	115	96	106	117	96	106	118
5 0	84	92	102	86	97	108	91	101	112	94	103	114	95	105	116	96	105	117
10	83	92	102	88	96	107	91	100	110	93	102	113	95	104	115	95	104	115
20	83	91	101	87	95	106	90	99	109	92	101	112	94	103	114	94	103	114
30	82	90	100	86	94	104	89	98	108	92	100	111	93	102	112	93	102	113
40	81	89	98	85	93	103	88	97	106	91	99	109	92	100	110			
50	80	88	97	84	92	101	87	95	105	89	97	107						
6 0	79	87	95	83	91	100	86	94	103	88	96	105						
10	78	85	94	82	89	98	84	92	101									
20	77	84	92	80	88	96	82	91	99									
30	75	82	90	79	86	94												
40	74	81	88	77	84	92												
50	72	79	86															
7 0	71	77	84															

(Concluded from preceding page.)

h	Lat. 72°			Lat. 66°			Lat. 60°			h	Lat. 72°			Lat. 66°			Lat. 60°		
	x′			x′			x′				x′			x′			x′		
	.62	.56	.50	.62	.56	.50	.62	.56	.50		.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	h m	m	m	m	m	m	m	m	m	m
9 50	14	16	18	18	20	22	22	24	26	11 0	7	8	8	9	10	11	10	11	12
10 0	13	15	16	17	19	21	20	22	24	10	6	6	7	7	8	9	9	9	10
10	12	14	15	16	17	19	19	21	22	20	5	5	6	6	6	7	7	8	8
20	11	12	14	15	16	17	17	19	20	30	3	4	4	4	5	5			
30	10	11	12	13	14	16	16	17	18	40	2	3	3	3	3	4			
40	9	10	11	12	13	14	14	15	16	50	1	1	1	1	2	2			
50	8	9	10	10	11	12	12	13	14	12	0	0	0	0	0	0			

FOR WASHINGTON MEAN NOON.

Date.	k	i	θ	L	Date.	k	i	θ	L
		°	°				°	°	
Jan. 1	0.991	10.9	161.5	24.8	July 0	0.008	169.8	76.1	1.3
6	0.997	5.8	133.5	25.9	5	0.025	161.7	145.4	4.2
11	0.998	4.7	45.9	28.2	10	0.086	145.9	162.8	13.1
16	0.990	11.2	13.2	32.2	15	0.184	129.1	170.1	25.1
21	0.969	20.3	359.0	38.4	20	0.314	111.9	175.6	38.0
26	0.923	32.2	350.4	47.3	25	0.471	93.4	181.0	51.0
31	0.835	47.9	344.2	58.6	30	0.647	72 9	187.0	62.7
Feb. 5	0.686	68.2	339.2	68.0	Aug. 4	0.813	51.2	194.2	68.9
10	0.472	93.2	334.8	65.5	9	0.934	29.8	203.9	66.3
15	0.236	121.9	329.2	43.0	14	0.990	11.5	226.0	57.3
20	0.064	150.8	319.4	13.6	19	0.996	7.5	339.2	47.3
25	0.008	169.4	235.4	1.8	24	0.974	18.5	9.6	39.3
Mar. 2	0.079	147.4	175.6	14.4	29	0.941	28.0	17.2	33.8
7	0.194	127.8	166.7	27.5	Sept. 3	0.904	36.0	21.1	30.3
12	0.301	113.5	161.9	32.4	8	0.865	43.1	23.4	28.4
17	0.407	100.8	159.0	33.9	13	0.823	49.8	24.8	27.9
22	0.495	90.5	156.6	33.3	18	0.776	56.5	25.5	28.4
27	0.570	81.9	154.5	32.3	23	0.722	63.6	25.8	29.9
Apr. 1	0.637	74.1	152.6	31.8	28	0.655	71.9	25.9	32.5
6	0.698	66.7	151.2	32.2	Oct. 3	0.570	81.9	25.9	35.8
11	0.758	59.3	150.2	33.7	8	0.459	94.7	26.1	38.8
16	0.813	51.2	149.6	36.5	13	0.316	111.6	27.2	37.7
21	0.882	40.4	149.6	41.8	18	0.150	134.4	29.2	25.6
26	0.937	29.0	150.5	48.9	23	0.019	164.2	37.2	4.2
May 1	0.969	12.2	151.7	58.2	28	0.030	160.1	201.6	7.1
6	0.997	6.6	337.9	66.1	Nov. 2	0.211	125.2	207.0	40.8
11	0.944	27.4	339.7	68.2	7	0.454	95.3	207.6	61.1
16	0.837	47.6	343.8	63.0	12	0.655	71.9	206.8	58.7
21	0.706	65.7	348.2	54.4	17	0.791	54.3	205.1	48.9
26	0.578	81.0	352.6	46.2	22	0.878	40.9	202.5	39.9
31	0.482	92.1	356.7	41.1	27	0.930	30.8	198.9	33.2
June 5	0.357	106.6	0.5	33.7	Dec. 2	0.962	22.5	194.1	28.8
10	0.261	118.5	4.1	27.9	7	0.982	15.6	187.5	26.1
15	0.172	131.1	8.0	21.2	12	0.993	9.5	176.4	24.7
20	0.093	144.5	13.5	13.6	17	0.998	4.5	145.6	24.4
25	0.034	158.8	25.8	5.4	22	0.999	4.1	53.7	25.3
30	0.008	169.8	76.1	1.3	27	0.992	9.9	20.9	27.3
					32	0.978	17.1	8.7	30.9

NOTATION.

k, the ratio of the illuminated portion of the apparent disk to the entire apparent disk considered as the superficies of a circle.

i, the angle between the sun and earth, as seen from the planet.

θ, the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L, the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

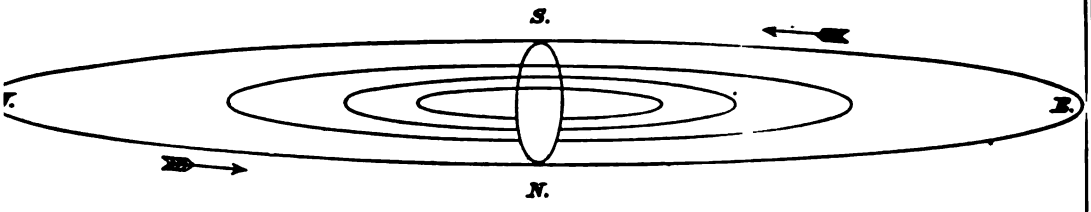
Date.		k	i	θ	L	Date.		k	i	θ	L
Jan.	1	0.992	10.5°	359.7°	47.8	July	30	0.371	104.7°	24.9°	172.5
	6	0.989	12.1	356.8	48.1	Aug.	4	0.336	109.2	25.8	180.2
	11	0.986	13.7	354.2	48.4		9	0.298	113.9	26.9	186.0
	16	0.982	15.4	351.9	48.7		14	0.257	119.0	28.4	187.9
	21	0.978	17.1	349.6	49.1		19	0.215	124.8	30.2	184.3
	26	0.973	18.8	347.5	49.6		24	0.172	131.2	32.6	173.5
	31	0.969	20.4	345.7	50.1		29	0.126	138.4	36.0	148.7
Feb.	5	0.963	22.1	344.0	50.7	Sept.	3	0.084	146.3	40.2	114.4
	10	0.958	23.8	342.6	51.3		8	0.048	154.7	50.1	73.3
	15	0.951	25.5	341.4	52.0		13	0.022	163.0	67.7	36.7
	20	0.945	27.2	340.4	52.8		15	0.016	165.6	80.2	26.7
	25	0.937	29.0	339.7	53.6		17	0.011	168.1	97.0	18.7
Mar.	2	0.929	30.8	339.2	54.5		19	0.011	168.0	117.8	19.2
	7	0.921	32.6	338.9	55.5		21	0.013	167.1	137.7	21.9
	12	0.914	34.4	339.0	56.6		23	0.017	164.9	153.4	29.8
	17	0.903	36.3	339.2	57.7		25	0.024	162.3	164.3	40.2
	22	0.893	38.2	339.7	59.0		27	0.034	158.8	172.8	56.0
	27	0.882	40.2	340.4	60.4		29	0.046	155.3	178.6	72.9
Apr.	1	0.872	42.1	341.4	61.9	Oct.	1	0.059	151.9	182.9	90.8
	6	0.859	44.1	342.6	63.4		3	0.074	148.4	186.3	109.0
	11	0.846	46.2	344.0	65.0		5	0.090	145.0	188.9	126.5
	16	0.833	48.3	345.7	66.8		7	0.107	141.8	191.1	142.8
	21	0.819	50.4	347.6	68.8		9	0.125	138.6	192.9	157.4
	26	0.804	52.6	349.7	70.9		11	0.143	135.4	194.4	171.0
May	1	0.789	54.8	351.9	73.2		13	0.161	132.7	195.6	180.7
	6	0.773	57.0	354.3	75.7		15	0.179	129.9	196.8	189.3
	11	0.756	59.2	356.7	78.4		17	0.198	127.2	197.7	196.1
	16	0.739	61.4	359.2	81.4		22	0.242	121.0	199.9	206.1
	21	0.720	63.8	1.7	84.6		27	0.284	115.6	201.2	207.0
	26	0.701	66.3	4.1	88.0	Nov.	1	0.323	110.7	202.4	203.3
	31	0.682	68.7	6.5	91.9		6	0.361	106.2	203.3	196.4
June	5	0.661	71.2	8.8	96.1		11	0.395	102.1	203.9	187.9
	10	0.641	73.7	10.9	100.7		16	0.428	98.3	204.2	178.6
	15	0.619	76.3	12.9	105.7		21	0.458	94.8	204.3	169.0
	20	0.596	79.0	14.8	111.1		26	0.487	91.5	204.2	159.8
	25	0.572	81.7	16.4	117.0	Dec.	1	0.514	88.4	203.8	150.9
	30	0.547	84.6	18.0	123.6		6	0.538	85.6	203.2	142.3
July	5	0.522	87.5	19.4	130.7		11	0.563	82.8	202.3	134.3
	10	0.495	90.6	20.6	138.4		16	0.586	80.1	201.2	127.4
	15	0.466	93.9	21.8	146.5		21	0.608	77.5	199.8	120.8
	20	0.436	97.3	22.8	155.2		26	0.629	75.1	198.2	114.6
	25	0.405	101.0	23.8	164.0		31	0.649	72.7	196.4	108.9

MARS not being in opposition during the year 1895, the satellites will not be visible.

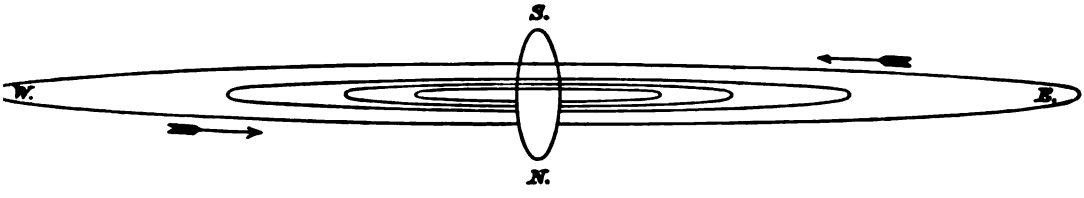
APPARENT DISK OF MARS, 1895.

January	1,	0.896
January	31,	0.828
March	2,	0.896
April	1,	0.913
May	1,	0.931
May	31,	0.951
June	30,	0.970
July	30,	0.984
August	29,	0.994
September	28,	0.999
October	28,	0.999
November	27,	0.993
December	27,	0.987

The numbers in this table are the versed sines of the illuminated disk, the apparent diameter of the planet being taken as unity.



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN JANUARY 1895, AS SEEN IN AN INVERTING TELESCOPE.



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN DECEMBER, 1895, AS SEEN IN AN INVERTING TELESCOPE.

(The vertical scale for the planet and orbits in the first diagram is three times the horizontal one and the vertical scale for the planet in the second diagram is three times and for the orbits five times the horizontal one.)

The object of this figure is to facilitate the identification of the satellites in cases where the diagrams of configurations do not suffice for that purpose: reference to the above diagram enables one to identify the inner and outer satellite of the pair. The central, vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction.

Facing each page of the phenomena of Jupiter's satellites, pages 460—480, is the page of diagrams of configurations, for the same month. The light disks ○ in the vertical row in the middle of the page represent the relative position of Jupiter each day. The dots adjacent in the same horizontal space represent the positions of the several satellites on the same day, at the hour and minute of Washington mean time indicated above the diagrams. The latitudes of the satellites are always considered zero in constructing the diagrams, except where two or more satellites chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. The numerals designating the satellites are placed on the right or left hand side of the dot, according as the motion of the satellite, for the time of the configuration, is toward the east or toward the west—the motion being always toward the numeral. Frequently, at the epoch of the configuration, one or more satellites will be invisible, being projected on the disk of the planet: this phenomenon is indicated by a light disk ○ at the left hand side of the page. Frequently, also, one or more satellites will be invisible, being concealed in occultation behind the disk, or eclipsed in the shadow of the planet: this phenomenon is indicated by a dark disk ● at the right hand side of the page. In both cases, the annexed numeral serves to point out which satellite is thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the motion of the satellite during the interval may be judged by transferring its given position to the above diagram, and estimating its motion during the elapsed interval on the above diagrams of the orbits, by means of the following table of the periods:—

MEAN SYNODIC PERIODS OF THE SATELLITES.

	d h m s	d		d h m s	d
I.	1 18 28 35.945	= 1.76986048	III.	7 3 59 35.854	= 7.16638720
II.	3 13 17 53.735	= 3.55409416	IV.	16 18 5 6.928	= 16.75355241

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

		h m			h m			h m			h m
Jan.	1	13 38.6	March	22	4 15.2	June	9	20 41.7	Oct.	18	21 32.6
	3	8 4.7		23	22 44.3		11	15 12.1		20	16 1.1
	5	2 30.7		25	17 13.4					22	10 29.7
	6	20 56.9		27	11 42.6					24	4 58.2
	8	15 23.0		29	6 12.0					25	23 26.6
	10	9 49.3		31	0 41.2	Aug.	9	1 52.6		27	17 55.0
	12	4 15.6	April	1	19 10.5		10	20 22.8		29	12 23.3
	13	22 42.0		3	13 40.0		12	14 52.8		31	6 51.5
	15	17 8.3		5	8 9.5		14	9 22.9	Nov.	2	1 19.7
	17	11 34.8		7	2 39.0		16	3 53.0		3	19 47.9
	19	6 1.3		8	21 8.7		17	22 23.0		5	14 15.9
	21	0 27.8		10	15 38.1		19	16 53.0		7	8 44.0
	22	18 54.4		12	10 7.7		21	11 22.9		9	3 12.0
	24	13 21.1		14	4 37.4		23	5 52.9		10	21 39.8
	26	7 47.9		15	23 7.2		25	0 22.9		12	16 7.6
	28	2 14.8		17	17 36.9		26	18 52.8		14	10 35.4
	29	20 41.7		19	12 6.8		28	13 22.6		16	5 3.0
	31	15 8.7		21	6 36.5		30	7 52.5		17	23 30.6
Feb.	2	9 35.7		23	1 6.4	Sept.	1	2 22.4		19	17 58.1
	4	4 2.9		24	19 36.2		2	20 52.0		21	12 25.4
	5	22 30.1		26	14 6.2		4	15 21.8		23	6 52.9
	7	16 57.5		28	8 36.2		6	9 51.4		25	1 20.2
	9	11 24.8		30	3 6.2		8	4 21.1		26	19 47.4
	11	5 52.3	May	1	21 36.2		9	22 50.7		28	14 14.6
	13	0 19.8		3	16 6.3		11	17 20.4		30	8 41.7
	14	18 47.4		5	10 36.3		13	11 49.9	Dec.	2	3 8.8
	16	13 15.1		7	5 6.5		15	6 19.5		3	21 35.7
	18	7 43.0		8	23 36.6		17	0 48.9		5	16 2.6
	20	2 10.7		10	18 6.8		18	19 18.4		7	10 29.5
	21	20 38.7		12	12 36.9		20	13 47.8		9	4 56.3
	23	15 6.6		14	7 7.1		22	8 17.2		10	23 23.0
	25	9 34.7		16	1 37.3		24	2 46.6		12	17 49.6
	27	4 2.8		17	20 7.5		25	21 16.0		14	12 16.2
	28	22 31.0		19	14 37.7		27	15 45.3		16	6 42.8
March	2	16 59.3		21	9 8.1		29	10 14.4		18	1 9.2
	4	11 27.7		23	3 38.3	Oct.	1	4 43.5		19	19 35.6
	6	5 56.1		24	22 8.7		2	23 12.6		21	14 2.0
	8	0 24.6		26	16 38.9		4	17 41.7		23	8 28.3
	9	18 53.1		28	11 9.3		6	12 10.7		25	2 54.5
	11	13 21.9		30	5 39.5		8	6 39.6		26	21 20.7
	13	7 50.6	June	1	0 9.9		10	1 8.7		28	15 46.9
	15	2 19.4		2	18 40.2		11	19 37.6		30	10 13.0
	16	20 48.3		4	13 10.7		13	14 6.4			
	18	15 17.2		6	7 41.0		15	8 35.2			
	20	9 46.1		8	2 11.4		17	3 3.9			

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h m			h m			h m			h m
Jan.	3	23 10.1	March	23	1 41.6	June	9	7 46.2	Oct.	15	10 13.2
	7	12 17.2		26	15 0.0					18	23 33.7
	11	1 24.7		30	4 18.9					22	12 52.5
	14	14 32.6	April	2	17 38.2	Aug.	8	19 53.8		26	2 11.9
	18	3 40.8		6	6 58.0		12	9 18.4		29	15 29.8
	21	16 49.5		9	20 18.2		15	22 43.8	Nov.	2	4 48.2
	25	5 58.6		13	9 38.8		19	12 8.0		5	18 4.9
	28	19 8.4		16	22 59.7		23	1 33.1		9	7 22.3
Feb.	1	8 18.5		20	12 20.9		26	14 57.0		12	20 37.9
	4	21 29.4		24	1 42.6		30	4 21.8		16	9 54.0
	8	10 40.8		27	15 4.5	Sept.	2	17 45.5		19	23 8.4
	11	23 52.7	May	1	4 26.7		6	7 9.8		23	12 23.5
	15	13 5.2		4	17 49.1		9	20 33.0		27	1 36.6
	19	2 18.4		8	7 11.8		13	9 57.0		30	14 50.3
	22	15 32.0		11	20 34.7		16	23 19.7	Dec.	4	4 2.3
	26	4 46.3		15	9 58.1		20	12 43.1		7	17 14.7
March	1	18 1.0		18	23 21.7		24	2 5.2		11	6 25.5
	5	7 16.4		22	12 45.4		27	15 28.0		14	19 36.6
	8	20 32.4		26	2 9.2	Oct.	1	4 49.3		18	8 46.3
	12	9 48.9		29	15 33.3		4	18 11.6		21	21 56.3
	15	23 6.1	June	2	4 57.5		8	7 32.2		25	11 5.0
	19	12 23.6		5	18 21.8		11	20 53.5		29	0 14.0

SATELLITE III.

		h m			h m			h m			h m
Jan.	6	23 39.4	March	26	16 11.2	Aug.	10	3 31.8	Oct.	28	2 21.8
	14	2 58.9	April	2	20 18.4		17	7 58.0	Nov.	4	6 18.6
	21	6 21.4		10	0 28.8		24	12 22.3		11	10 11.7
	28	9 48.6		17	4 42.3		31	16 45.5		18	13 59.8
Feb.	4	13 19.5		24	8 59.2	Sept.	7	21 5.7		25	17 43.8
	11	16 55.5	May	1	13 18.2		15	1 24.6	Dec.	2	21 22.2
	18	20 36.0		8	17 39.9		22	5 41.7		10	0 56.0
	26	0 21.4		15	22 2.7		29	9 56.2		17	4 25.0
March	5	4 12.0		23	2 27.0	Oct.	6	14 8.1		24	7 50.2
	12	8 7.3		30	6 52.2		13	18 16.4		31	11 12.4
	19	12 6.6	June	6	11 18.7		20	22 21.0			

SATELLITE IV.

		h m			h m			h m			h m
Jan.	16	14 43.8	April	10	3 42.7	Aug.	22	23 12.1	Oct.	29	4 57.5
Feb.	2	5 45.4		26	23 13.4	Sept.	8	19 26.6	Nov.	14	22 33.6
	18	21 46.2	May	13	19 16.6		25	15 14.4	Dec.	1	15 9.5
March	7	14 49.5		30	15 41.7	Oct.	12	10 27.7		18	6 45.6
	24	8 50.7									

WASHINGTON MEAN TIME.

JANUARY.

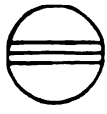
d	h	m	s			d	h	m	s			d	h	m	s		
1	12	30		I. * Oc.	Dis.	11	8	46		I. * Sh.	Eg.	21	20	37		I. Tr.	In.
	15	0	35.8	I. * Ec.	Re.	12	3	7		I. Oc.	Dis.		21	21		I. Sh.	In.
2	2	56		II. Tr.	In.		5	53	14.3	I. * Ec.	Re.		22	53		I. Tr.	Eg.
	3	28		II. Sh.	In.		18	20		II. Tr.	In.		23	38		I. Sh.	Eg.
	5	33		II. Tr.	Eg.		19	23		II. Sh.	In.	22	17	46		I. Oc.	Dis.
	6	6		II. * Sh.	Eg.		20	56		II. Tr.	Eg.		20	46	8.0	I. Ec.	Re.
	9	49		I. * Tr.	In.		22	2		II. Sh.	Eg.	23	9	49		II. * Tr.	In.
	10	6		I. * Sh.	In.	13	0	25		I. Tr.	In.		11	20		II. * Sh.	In.
	12	5		I. * Tr.	Eg.		0	58		I. Sh.	In.		12	26		II. * Tr.	Eg.
	12	22		I. * Sh.	Eg.		2	41		I. Tr.	Eg.		13	59		II. * Sh.	Eg.
3	6	57		I. * Oc.	Dis.		3	14		I. Sh.	Eg.		15	3		I. * Tr	In.
	8	48		III. * Tr.	In.		21	34		I. Oc.	Dis.		15	50		I. * Sh.	In.
	9	29	25.2	I. * Ec.	Re.	14	0	22	4.9	I. Ec.	Re.		17	20		I. Tr.	Eg.
	10	2		III. * Sh.	In.		1	34		III. Oc.	Dis.		18	7		I. Sh.	Eg.
	11	37		III. * Tr.	Eg.		6	39	32.1	III. * Ec.	Re.	24	12	13		I. * Oc.	Dis.
	12	54		III. * Sh.	Eg.		13	14		II. * Oc.	Dis.		15	15	2.3	I. * Ec.	Re.
	21	52		II. Oc.	Dis.		16	57	56.9	II. Ec.	Re.		18	50		III. Tr.	In.
4	1	4	56.3	II. Ec.	Re.		18	52		I. Tr.	In.		21	39		III. Tr.	Eg.
	4	15		I. Tr.	In.		19	26		I. Sh.	In.		22	1		III. Sh.	In.
	4	35		I. Sh.	In.		21	8		I. Tr.	Eg.	25	0	56		III. Sh.	Eg.
	6	31		I. * Tr.	Eg.		21	43		I. Sh.	Eg.		4	40		II. Oc.	Dis.
	6	51		I. * Sh.	Eg.	15	16	0		I. * Oc.	Dis.		5	31		IV. Sh.	In.
5	1	23		I. Oc.	Dis.		18	50	49.5	I. Ec.	Re.		6	38		IV. * Sh.	Eg.
	3	58	7.4	I. Ec.	Re.	16	7	29		II. * Tr.	In.		8	50	57.9	II. * Ec.	Re.
	16	4		II. * Tr.	In.		8	42		II. * Sh.	In.		9	30		I. * Tr.	In.
	16	46		II. * Sh.	In.		10	6		II. * Tr.	Eg.		10	18		I. * Sh.	In.
	18	40		II. Tr.	Eg.		11	21		II. * Sh.	Eg.		11	46		I. * Tr.	Eg.
	19	24		II. Sh.	Eg.		13	18		I. * Tr.	In.		12	35		I. * Sh.	Eg.
	22	41		I. Tr.	In.		13	55		I. * Sh.	In.	26	6	40		I. * Oc.	Dis
	23	3		I. Sh.	In.		15	34		I. * Tr.	Eg.		9	43	51.4	I. * Ec.	Re.
6	0	57		I. Tr.	Eg.		16	12		I. * Sh.	Eg.		23	0		II. Tr.	In.
	1	20		I. Sh.	Eg.		20	27	11.4	IV. Ec.	Dis.	27	0	38		II. Sh.	In.
	19	49		I. Oc.	Dis.		20	59	58.2	IV. Ec.	Re.		1	37		II. Tr.	Eg.
	22	15		III. Oc.	Dis.	17	10	27		I. * Oc.	Dis.		3	18		II. Sh.	Eg.
	22	26	55.9	I. Ec.	Re.		13	19	42.0	I. * Ec.	Re.		3	57		I. Tr.	In.
7	2	38	16.6	III. Ec.	Re.		15	26		III. * Tr.	In.		4	47		I. Sh.	In.
	10	59		II. * Oc.	Dis.		18	1		III. Sh.	In.		6	13		I. * Tr.	Eg.
	14	22	35.5	II. * Ec.	Re.		18	16		III. Tr.	Eg.		7	4		I. * Sh.	Eg.
	17	7		I. * Tr.	In.		20	56		III. Sh.	Eg.	28	1	7		I. Oc.	Dis.
	17	32		I. * Sh.	In.	18	2	22		II. Oc.	Dis.		4	12	45.8	I. Ec.	Re.
	19	23		I. Tr.	Eg.		6	15	36.9	II. * Ec.	Re.		8	24		III. * Oc.	Dis.
	19	48		I. Sh.	Eg.		7	44		I. * Tr.	In.		11	14		III. * Oc.	Re.
8	14	15		I. * Oc.	Dis.		8	24		I. * Sh.	In.		11	55	18.8	III. * Ec.	Dis.
	16	55	38.4	I. * Ec.	Re.		10	1		I. * Tr.	Eg.		14	42	45.2	III. * Ec.	Re.
9	5	12		II. Tr.	In.		10	40		I. * Sh.	Eg.		17	50		II. Oc.	Dis.
	6	5		II. * Sh.	In.	19	4	53		I. Oc.	Dis.		22	8	39.0	II. Ec.	Re.
	7	48		II. * Tr.	Eg.		7	48	29.2	I. * Ec.	Re.		22	24		I. Tr.	In.
	8	43		II. * Sh.	Eg.		20	39		II. Tr.	In.		23	16		I. Sh.	In.
	11	33		I. * Tr.	In.		22	1		II. Sh.	In.	29	0	40		I. Tr.	Eg.
	12	0		I. * Sh.	In.		23	16		II. Tr.	Eg.		1	33		I. Sh.	Eg.
	13	49		I. * Tr.	Eg.	20	0	40		II. Sh.	Eg.		19	33		I. Oc.	Dis.
	14	17		I. * Sh.	Eg.		2	11		I. Tr.	In.		22	41	33.5	I. Ec.	Re.
10	8	41		I. * Oc.	Dis.		2	53		I. Sh.	In.	30	12	11		II. * Tr.	In.
	11	24	29.2	I. * Ec.	Re.		4	27		I. Tr.	Eg.		13	57		II. * Sh.	In.
	12	6		III. * Tr.	In.		5	9		I. Sh.	Eg.		14	48		II. * Tr.	Eg.
	14	1		III. * Sh.	In.		23	20		I. Oc.	Dis.		16	37		II. Sh.	Eg.
	14	55		III. * Tr.	Eg.	21	2	17	21.8	I. Ec.	Re.		16	51		I. Tr.	In.
	16	55		III. * Sh.	Eg.		4	57		III. Oc.	Dis.		17	45		I. Sh.	In.
11	0	6		II. Oc.	Dis.		7	46		III. * Oc.	Re.		19	7		I. Tr.	Eg.
	3	40	16.7	II. Ec.	Re.		7	54	35.1	III. * Ec.	Dis.		20	1		I. Sh.	Eg.
	5	59		I. * Tr.	In.		10	40	48.5	III. * Ec.	Re.	31	14	0		I. * Oc.	Dis
	6	29		I. * Sh.	In.		15	31		II. * Oc.	Dis.		17	10	29.5	I. Ec.	Re.
	8	15		I. * Tr.	Eg.		19	33	17.7	II. Ec.	Re.		22	18		III. Tr.	In.

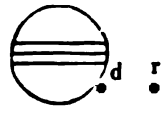
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington

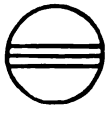
WASHINGTON MEAN TIME.

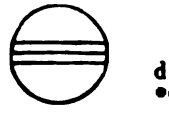
JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I. 

III. 

II. 

IV. 

Configurations at 11h 0m for an Inverting Telescope.

Day.	West.	East.
1	·1	○ 2· ·4 ·3
2	○ 1· 2·	○ 3· ·4
3	○ 3· ·2	○ ·1 ·4
4	3· 1·	○ ·2 4·
5	·3	○ 2· ·1 4·
6	3· ·3 ·1	○ 4·
7		○ 1· ·3 4· ·2●
8	·1 4·	○ 2· ·3
9	4· 2·	○ 1· 3·
10	4· ·2	○ ·1●
11	4· 3· 1·	○ ·2
12	4· ·3	○
13	·4	○
14	·4 ·2	○
15	·4 ·1	○ ·2 ·3
16		○ 1· 3·
17	·2	○ 3· ·4 ·1●
18	3· 1·	○ ·2 ·4
19	3·	○ ·1 2· 4·
20	·3 2· 1·	○ ·4
21	·2	○ ·3 ·1 4·
22	·1	○ ·2 ·3 4·
23	○ 2·	○ 1·
24	·2 ·1	○
25	○ 1· 3· 4·	○ ·2
26		○ ·1 2·
27	4· 3· 2· 1·	○
28	4· ·2	○ ·1 ·3●
29	·4 ·1	○ ·2 ·3
30	·4	○ 2· 1· 3·
31	·4 ·2 ·1	○ 3·

WASHINGTON MEAN TIME.

FEBRUARY.

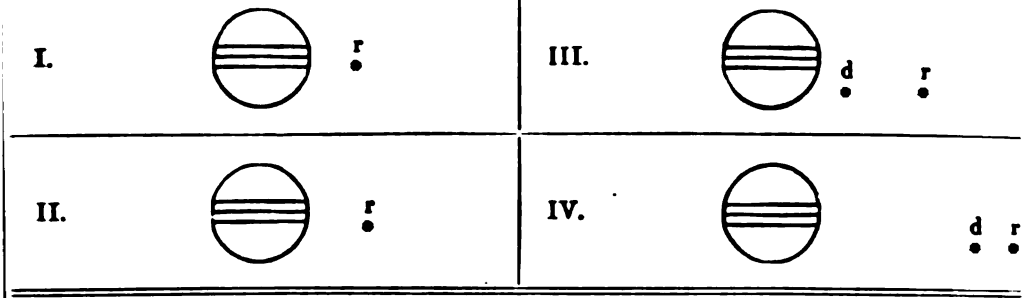
d	h	m	s				d	h	m	s				d	h	m	s			
1	1	8		III.	Tr.	Eg.	10	8	37		I.	Sh.	In.	19	7	18		I.	Sh.	Eg.
	2	0		III.	Sh.	In.		9	49		I.	Tr.	Eg.		8	15	6.4	IV.	Ec.	Dis.
	4	57		III.	Sh.	Eg.		10	54		I.	Sh.	Eg.		9	50	40.0	IV.	Ec.	Re.
	7	0		II.	Oc.	Dis.		23	23		IV.	Sh.	In.	20	1	2		I.	Oc.	Dis.
	11	17		I.	Tr.	In.	11	0	57		IV.	Sh.	Eg.		4	28	21.3	I.	Ec.	Re.
	11	26	19.4	II.	Ec.	Re.		4	44		I.	Oc.	Dis.		19	32		II.	Tr.	In.
	12	13		I.	Sh.	In.		8	3	51.3	I.	Ec.	Re.		21	51		II.	Sh.	In.
	13	34		I.	Tr.	Eg.		15	30		III.	Oc.	Dis.		22	9		II.	Tr.	Eg.
	14	30		I.	Sh.	Eg.		18	21		III.	Oc.	Re.		22	18		I.	Tr.	In.
2	8	27		I.	Oc.	Dis.		19	55	45.7	III.	Ec.	Dis.		23	29		I.	Sh.	In.
	11	39	19.8	I.	Ec.	Re.		22	34		II.	Oc.	Dis.	21	0	32		II.	Sh.	Eg.
	14	17	10.0	IV.	Ec.	Dis.		22	45	35.3	III.	Ec.	Re.		0	34		I.	Tr.	Eg.
	15	28	37.6	IV.	Ec.	Re.	12	2	0		I.	Tr.	In.		1	46		I.	Sh.	Eg.
3	1	23		II.	Tr.	In.		3	5		I.	Sh.	In.		19	30		I.	Oc.	Dis.
	3	16		II.	Sh.	In.		3	19	22.8	II.	Ec.	Re.		22	57	20.6	I.	Ec.	Re.
	4	0		II.	Tr.	Eg.		4	16		I.	Tr.	Eg.	22	9	11		III.	Tr.	In.
	5	44		I.	Tr.	In.		5	22		I.	Sh.	Eg.		12	4		III.	Tr.	Eg.
	5	56		II.	Sh.	Eg.		23	12		I.	Oc.	Dis.		14	0		III.	Sh.	In.
	6	42		I.	Sh.	In.	13	2	32	41.5	I.	Ec.	Re.		14	13		II.	Oc.	Dis.
	8	0		I.	Tr.	Eg.		17	2		II.	Tr.	In.		16	46		I.	Tr.	In.
	8	59		I.	Sh.	Eg.		19	13		II.	Sh.	In.		17	1		III.	Sh.	Eg.
4	2	55		I.	Oc.	Dis.		19	40		II.	Tr.	Eg.		17	58		I.	Sh.	In.
	6	8	15.9	I.	Ec.	Re.		20	27		I.	Tr.	In.		19	2		I.	Tr.	Eg.
	11	54		III.	Oc.	Dis.		21	34		I.	Sh.	In.		19	12	27.3	II.	Ec.	Re.
	14	45		III.	Oc.	Re.		21	53		II.	Sh.	Eg.		20	15		I.	Sh.	Eg.
	15	55	31.1	III.	Ec.	Dis.		22	44		I.	Tr.	Eg.	23	13	58		I.	Oc.	Dis.
	18	44	9.3	III.	Ec.	Re.		23	51		I.	Sh.	Eg.		17	26	13.6	I.	Ec.	Re.
	20	11		II.	Oc.	Dis.	14	17	39		I.	Oc.	Dis.	24	8	47		II.	Tr.	In.
5	0	11		I.	Tr.	In.		21	1	39.8	I.	Ec.	Re.		11	10		II.	Sh.	In.
	0	44	0.8	II.	Ec.	Re.	15	5	29		III.	Tr.	In.		11	13		I.	Tr.	In.
	1	11		I.	Sh.	In.		8	20		III.	Tr.	Eg.		11	25		II.	Tr.	Eg.
	2	28		I.	Tr.	Eg.		10	0		III.	Sh.	In.		12	27		I.	Sh.	In.
	3	28		I.	Sh.	Eg.		11	47		II.	Oc.	Dis.		13	30		I.	Tr.	Eg.
	21	22		I.	Oc.	Dis.		13	0		III.	Sh.	Eg.		13	51		II.	Sh.	Eg.
6	0	37	5.0	I.	Ec.	Re.		14	55		I.	Tr.	In.		14	44		I.	Sh.	Eg.
	14	36		II.	Tr.	In.		16	3		I.	Sh.	In.	25	8	26		I.	Oc.	Dis
	16	35		II.	Sh.	In.		16	37	3.4	II.	Ec.	Re.		11	55	12.9	I.	Ec.	Re.
	17	13		II.	Tr.	Eg.		17	11		I.	Tr.	Eg.		22	55		III.	Oc.	Dis.
	18	38		I.	Tr.	In.		18	20		I.	Sh.	Eg.	26	1	48		III.	Oc.	Re.
	19	15		II.	Sh.	Eg.	16	12	7		I.	Oc.	Dis.		3	27		II.	Oc.	Dis.
	19	39		I.	Sh.	In.		15	30	32.3	I.	Ec.	Re.		3	55	52.5	III.	Ec.	Dis.
	20	55		I.	Tr.	Eg.	17	6	17		II.	Tr.	In.		5	41		I.	Tr.	In.
	21	56		I.	Sh.	Eg.		8	32		II.	Sh.	In.		6	48	2.1	III.	Ec.	Re.
7	15	49		I.	Oc.	Dis.		8	54		II.	Tr.	Eg.		6	55		I.	Sh.	In.
	19	6	2.2	I.	Ec.	Re.		9	23		I.	Tr.	In.		7	58		I.	Tr.	Eg.
8	1	51		III.	Tr.	In.		10	32		I.	Sh.	In.		8	30	10.0	II.	Ec.	Re.
	4	41		III.	Tr.	Eg.		11	12		II.	Sh.	Eg.		9	13		I.	Sh.	Eg.
	6	0		III.	Sh.	In.		11	39		I.	Tr.	Eg.	27	2	54		I.	Oc.	Dis.
	8	58		III.	Sh.	Eg.		12	49		I.	Sh.	Eg.		5	58		IV.	Tr.	In.
	9	22		II.	Oc.	Dis.	18	6	35		I.	Oc.	Dis.		6	24	4.3	I.	Ec.	Re.
	13	6		I.	Tr.	In.		9	59	30.4	I.	Ec.	Re.		6	57		IV.	Tr.	Eg.
	14	1	41.2	II.	Ec.	Re.		19	10		III.	Oc.	Dis.		17	21		IV.	Sh.	In.
	14	8		I.	Sh.	In.		21	28		IV.	Oc.	Dis.		19	13		IV.	Sh.	Eg.
	15	22		I.	Tr.	Eg.		22	2		III.	Oc.	Re.		22	3		II.	Tr.	In.
	16	25		I.	Sh.	Eg.		22	4		IV.	Oc.	Re.	28	0	10		I.	Tr.	In.
9	10	17		I.	Oc.	Dis.		23	55	46.2	III.	Ec.	Dis.		0	29		II.	Sh.	In.
	13	34	54.1	I.	Ec.	Re.	19	1	0		II.	Oc.	Dis.		0	41		II.	Tr.	Eg.
10	3	49		II.	Tr.	In.		2	46	46.4	III.	Ec.	Re.		1	24		I.	Sh.	In.
	5	54		II.	Sh.	In.		3	50		I.	Tr.	In.		2	26		I.	Tr.	Eg.
	6	26		II.	Tr.	Eg.		5	0		I.	Sh.	In.		3	10		II.	Sh.	Eg.
	7	33		I.	Tr.	In.		5	54	45.8	II.	Ec.	Re.		3	41		I.	Sh.	Eg.
	8	34		II.	Sh.	Eg.		6	7		I.	Tr.	Eg.		21	23		I.	Oc.	Dis.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 10h 0m for an Inverting Telescope.

Day.	West.	East.
1	·4 3·	1· ·2●
2	3·	·4 2· ·1●
3	·3 2· 1·	·4
4	·2 ·3	·1 ·4
5	1·	·2 ·3 ·4
6		2· 1· 3· 4·
7	2· ·1	3· 4·
8	3·	1· 4· ·2●
9	3· ·1	2· 4·
10	·3 2· 1·	4·
11	4· ·3	·1
12	4· 1·	·2 ·3
13	4·	3· ·3
14	4· 2· ·1	3·
15	·4	1·
16	·4 3· ·1	·2
17	1·	2·
18	·2	·1
19	1·	·3
20		
21	2· 1·	3· ·4
22	3· ·2	1· ·4
23	3· ·1	·2 4·
24	2· ·3	1· 4·
25	·2 ·3	4· ·1●
26	1·	·2 ·3 4·
27	4·	·1 2· ·3
28		3·

WASHINGTON MEAN TIME.

MARCH.

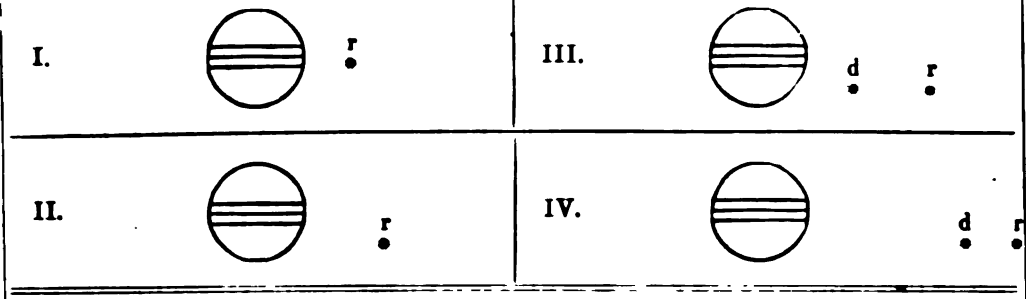
d	h	m	s				d	h	m	s				d	h	m	s			
1	0	53	3.9	I.	Ec.	Re.	11	12	14		I.	* Oc.	Dis.	21	9	27		I.	* Sh.	Eg.
	12	58		III.	* Tr.	In.		15	46	42.5	I.	Ec.	Re.		11	6		II.	* Sh.	Eg.
	15	52		III.	Tr.	Eg.	12	6	40		III.	* Oc.	Dis.	22	3	7		I.	Oc.	Dis.
	16	42		II.	Oc.	Dis.		8	30		II.	* Oc.	Dis.		6	40	19.1	I.	* Ec.	Re.
	18	0		III.	Sh.	In.		9	28		I.	* Tr.	In.	23	0	20		I.	Tr.	In.
	18	38		I.	Tr.	In.		9	35		III.	* Oc.	Re.		0	22		II.	Oc.	Dis.
	19	53		I.	Sh.	In.		10	45		I.	* Sh.	In.		0	46		III.	Tr.	In.
	20	54		I.	Tr.	Eg.		11	44		I.	* Tr.	Eg.		1	38		I.	Sh.	In.
	21	2		III.	Sh.	Eg.		11	56	57.3	III.	* Ec.	Dis.		2	37		I.	Tr.	Eg.
	21	47	52.2	II.	Ec.	Re.		13	3		I.	* Sh.	Eg.		3	42		III.	Tr.	Eg.
	22	10		I.	Sh.	Eg.		13	41	0.5	II.	Ec.	Re.		3	55		I.	Sh.	Eg.
2	15	51		I.	Oc.	Dis.		14	51	23.7	III.	Ec.	Re.		5	34	12.5	II.	Ec.	Re.
	19	21	57.8	I.	Ec.	Re.	13	6	42		I.	* Oc.	Dis.		5	59		III.	Sh.	In.
3	11	20		II.	* Tr.	In.		10	15	34.5	I.	* Ec.	Re.		9	4		III.	* Sh.	Eg.
	13	6		I.	* Tr.	In.	14	3	13		II.	Tr.	In.		21	36		I.	Oc.	Dis.
	13	48		II.	* Sh.	In.		3	56		I.	Tr.	In.	24	1	9	12.9	I.	Ec.	Re.
	13	58		II.	* Tr.	Eg.		5	14		I.	Sh.	In.		8	5		IV.	* Oc.	Dis.
	14	22		I.	Sh.	In.		5	45		II.	Sh.	In.		9	36		IV.	* Oc.	Re.
	15	22		I.	Tr.	Eg.		5	51		II.	Tr.	Eg.		18	49		I.	Tr.	In.
	16	29		II.	Sh.	Eg.		6	13		I.	Tr.	Eg.		19	10		II.	Tr.	In.
	16	39		I.	Sh.	Eg.		7	32		I.	* Sh.	Eg.		20	7		I.	Sh.	In.
4	10	19		I.	Oc.	Dis.		8	27		II.	* Sh.	Eg.		20	16	44.8	IV.	Ec.	Dis.
	13	50	56.3	I.	Ec.	Re.	15	1	11		I.	Oc.	Dis.		21	6		I.	Tr.	Eg.
5	2	45		III.	Oc.	Dis.		4	44	34.0	I.	Ec.	Re.		21	43		II.	Sh.	In.
	5	39		III.	Oc.	Re.		20	45		III.	Tr.	In.		21	49		II.	Tr.	Eg.
	5	57		II.	Oc.	Dis.		21	47		II.	Oc.	Dis.		22	24		I.	Sh.	Eg.
	7	34		I.	* Tr.	In.		22	25		I.	Tr.	In.		22	27	25.0	IV.	Ec.	Re.
	7	56	28.4	III.	* Ec.	Dis.		23	16		IV.	Tr.	In.	25	0	25		II.	Sh.	Eg.
	8	51		I.	* Sh.	In.		23	41		III.	Tr.	Eg.		16	5		I.	Oc.	Dis.
	9	50		I.	* Tr.	Eg.		23	43		I.	Sh.	In.		19	38	12.4	I.	Ec.	Re.
	10	49	46.8	III.	* Ec.	Re.	16	0	39		IV.	Tr.	Eg.	26	13	18		I.	Tr.	In.
	11	5	34.9	II.	* Ec.	Re.		0	41		I.	Tr.	Eg.		13	40		II.	Oc.	Dis.
	11	8		I.	* Sh.	Eg.		1	59		III.	Sh.	In.		14	36		I.	Sh.	In.
6	4	48		I.	Oc.	Dis.		2	1		I.	Sh.	Eg.		14	43		III.	Oc.	Dis.
	8	19	48.9	I.	* Ec.	Re.		2	58	44.2	II.	Ec.	Re.		15	35		I.	Tr.	Eg.
7	0	37		II.	Tr.	In.		5	3		III.	Sh.	Eg.		16	53		I.	Sh.	Eg.
	2	2		I.	Tr.	In.		11	19		IV.	* Sh.	In.		17	40		III.	Oc.	Re.
	3	7		II.	Sh.	In.		13	29		IV.	* Sh.	Eg.		18	51	56.4	II.	Ec.	Re.
	3	15		II.	Tr.	Eg.		19	40		I.	Oc.	Dis.		19	58	21.4	III.	Ec.	Dis.
	3	19		I.	Sh.	In.		23	13	28.1	I.	Ec.	Re.		22	55	2.4	III.	Ec.	Re.
	4	19		I.	Tr.	Eg.	17	16	32		II.	Tr.	In.	27	10	34		I.	* Oc.	Dis.
	5	36		I.	Sh.	Eg.		16	53		I.	Tr.	In.		14	7	3.7	I.	Ec.	Re.
	5	49		II.	Sh.	Eg.		18	12		I.	Sh.	In.	28	7	47		I.	* Tr.	In.
	14	14		IV.	Oc.	Dis.		19	5		II.	Sh.	In.		8	30		II.	* Tr.	In.
	15	25		IV.	Oc.	Re.		19	10		II.	Tr.	Eg.		9	4		I.	* Sh.	In.
	23	16		I.	Oc.	Dis.		19	10		I.	Tr.	Eg.		10	4		I.	* Tr.	Eg.
8	2	15	21.9	IV.	Ec.	Dis.		20	29		I.	Sh.	Eg.		11	2		II.	* Sh.	In.
	2	48	48.8	I.	Ec.	Re.		21	47		II.	Sh.	Eg.		11	10		II.	* Tr.	Eg.
	4	9	54.3	IV.	Ec.	Re.	18	14	9		I.	Oc.	Dis.		11	22		I.	* Sh.	Eg.
	16	50		III.	Tr.	In.		17	42	27.9	I.	Ec.	Re.		13	44		II.	Sh.	Eg.
	19	13		II.	Oc.	Dis.	19	10	39		III.	* Oc.	Dis.	29	5	3		I.	Oc.	Dis.
	19	44		III.	Tr.	Eg.		11	4		II.	* Oc.	Dis.		8	36	2.5	I.	* Ec.	Re.
	20	31		I.	Tr.	In.		11	22		I.	* Tr.	In.	30	2	16		I.	Tr.	In.
	21	48		I.	Sh.	In.		12	40		I.	* Sh.	In.		2	59		II.	Oc.	Dis.
	22	0		III.	Sh.	In.		13	35		III.	Oc.	Re.		3	33		I.	Sh.	In.
	22	47		I.	Tr.	Eg.		13	39		I.	Tr.	Eg.		4	33		I.	Tr.	Eg.
9	0	5		I.	Sh.	Eg.		14	58		I.	Sh.	Eg.		4	51		III.	Tr.	In.
	0	23	17.7	II.	Ec.	Re.		15	57	59.0	III.	Ec.	Dis.		5	50		I.	Sh.	Eg.
	1	2		III.	Sh.	Eg.		16	16	27.5	II.	Ec.	Re.		7	49		III.	* Tr.	Eg.
	17	45		I.	Oc.	Dis.		18	53	32.8	III.	Ec.	Re.		8	9	42.1	II.	* Ec.	Re.
	21	17	42.7	I.	Ec.	Re.	20	8	38		I.	* Oc.	Dis.		9	59		III.	* Sh.	In.
10	13	54		II.	* Tr.	In.		12	11	19.4	I.	* Ec.	Re.		13	6		III.	Sh.	Eg.
	14	59		I.	Tr.	In.	21	5	51		II.	Tr.	In.		23	33		I.	Oc.	Dis.
	16	17		I.	Sh.	In.		5	51		I.	Tr.	In.	31	3	4	55.9	I.	Ec.	Re.
	16	27		II.	Sh.	In.		7	9		I.	* Sh.	In.		20	45		I.	Tr.	In.
	16	33		II.	Tr.	Eg.		8	8		I.	* Tr.	Eg.		21	51		II.	Tr.	In.
	17	16		I.	Tr.	Eg.		8	24		II.	* Sh.	In.		22	2		I.	Sh.	In.
	18	34		I.	Sh.	Eg.		8	29		II.	* Tr.	Eg.		23	3		I.	Tr.	Eg.
	19	8		II.	Sh.	Eg.														

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 9h 30m for an Inverting Telescope.

Day.	West.	East.
1	·4 ·2	○ 3· 1·
2	4· 3· ·1	○ ·2
3	4· ·3	○ 2· 1·
4	·4 2· ·1	○
5	○ 1· ·4	○ ·2● ·3●
6	·4	○ ·1 2· ·3
7	2· 1· ·4	○ ·3·
8	·2	○ 3· ·1 ·4
9	3· ·1	○ ·2 ·4
10	3·	○ 2· 1· ·4
11	·32· ·1	○ ·4
12	○ 1·	○ 4· ·3● ·2●
13		○ 2· ·3 4· ·1●
14	2· 1·	○ 4· 3·
15	·2	○ 1· 3·
16	3· 1· 4·	○ ·2
17	3· 4·	○ 2· 1·
18	4· ·3 2· ·1	○
19	4·	○ 2· 3· 1·
20	·4	○ ·2·3 ·1●
21	·4	○ 3·
22	·4 ·2	○ ·1 3·
23	·4 ·13·	○ ·2
24	3·	○ 1· 2· ·4●
25	·3 2· ·1	○ ·4
26	2· 3·	○ 1· ·4
27	·1	○ 3· ·4
28	○ 1· ○ 2·	○ ·3 4
29	·2	○ ·1 3· 4·
30	1· 3	○ ·2 4·
31	3·	○ ·12 1·

WASHINGTON MEAN TIME.

APRIL.

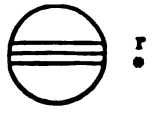
d	h	m	s			
1	0	19		I.	Sh.	Eg.
	0	21		II.	Sh.	In.
	0	30		II.	Tr.	Eg.
	3	3		II.	Sh.	Eg.
	18	1		IV.	Tr.	In.
	18	2		I.	Oc.	Dis.
	19	11		IV.	Tr.	Eg.
	21	33	55.0	I.	Ec.	Re.
2	5	19		IV.	Sh.	In.
	7	43		IV.	*Sh.	Eg.
	15	15		I.	Tr.	In.
	16	18		II.	Oc.	Dis.
	16	20		I.	Sh.	In.
	17	32		I.	Tr.	Eg.
	18	48		I.	Sh.	Eg.
	18	49		III.	Oc.	Dis.
	21	27	26.6	II.	Ec.	Re.
	21	48		III.	Oc.	Re.
	23	58	37.5	III.	Ec.	Dis.
3	2	56	25.5	III.	Ec.	Re.
	12	31		I.	Oc.	Dis
	16	2	46.0	I.	Ec.	Re.
4	9	44		I.	*Tr.	In.
	10	59		I.	*Sh.	In.
	11	12		II.	*Tr.	In.
	12	1		I.	Tr.	Eg.
	13	17		I.	Sh.	Eg.
	13	40		II.	Sh.	In.
	13	51		II.	Tr.	Eg.
	16	23		II.	Sh.	Eg.
5	7	1		I.	*Oc.	Dis.
	10	31	43.8	I.	*Ec.	Re.
6	4	13		I.	Tr.	In.
	5	28		I.	Sh.	In.
	5	38		II.	Oc.	Dis.
	6	30		I.	Tr.	Eg.
	7	46		I.	*Sh.	Eg.
	8	59		III.	*Tr.	In.
	10	45	13.7	II.	*Ec.	Re.
	11	58		III.	Tr.	Eg.
	13	59		III.	Sh.	In.
	17	7		III.	Sh.	Eg.
7	1	30		I.	Oc.	Dis.
	5	0	36.3	I.	Ec.	Re.
	22	42		I.	Tr.	In.
	23	57		I.	Sh.	In.
8	0	33		II.	Tr.	In.
	0	59		I.	Tr.	Eg.
	2	14		I.	Sh.	Eg.
	2	59		II.	Sh.	In.
	3	13		II.	Tr.	Eg.
	5	42		II.	Sh.	Eg.
	20	0		I.	Oc.	Dis.
	23	29	34.6	I.	Ec.	Re.
9	17	12		I.	Tr.	In.
	18	25		I.	Sh.	In.
	18	58		II.	Oc.	Dis.
	19	29		I.	Tr.	Eg.
	20	43		I.	Sh.	Eg.
	22	59		III.	Oc.	Dis.
10	0	2	59.4	II.	Ec.	Re.
	1	59		III.	Oc.	Re.
	2	47		IV.	Oc.	Dis.
	3	58	35.8	III.	Ec.	Dis.
	4	38		IV.	Oc.	Re.
	6	57	28.6	III.	*Ec.	Re.
	14	19	18.3	IV.	Ec.	Dis.
10	14	30		I.	Oc.	Dis.
	16	43	0.5	IV.	Ec.	Re.
	17	58	24.7	I.	Ec.	Re.
11	11	41		I.	Tr.	In.
	12	54		I.	Sh.	In.
	13	54		II.	Tr.	In.
	13	59		I.	Tr.	Eg.
	15	12		I.	Sh.	Eg.
	16	18		II.	Sh.	In.
	16	35		II.	Tr.	Eg.
	19	1		II.	Sh.	Eg.
12	8	59		I.	*Oc.	Dis.
	12	27	21.8	I.	Ec.	Re.
13	6	11		I.	Tr.	In.
	7	23		I.	*Sh.	In.
	8	19		II.	*Oc.	Dis.
	8	28		I.	*Tr.	Eg.
	9	41		I.	*Sh.	Eg.
	13	11		III.	Tr.	In.
	13	20	46.4	II.	Ec.	Re.
	16	11		III.	Tr.	Eg.
	18	0		III.	Sh.	In.
	21	8		III.	Sh.	Eg.
14	3	29		I.	Oc.	Dis.
	6	56	13.5	I.	*Ec.	Re.
15	0	40		I.	Tr.	In.
	1	51		I.	Sh.	In.
	2	58		I.	Tr.	Eg.
	3	16		II.	Tr.	In.
	4	10		I.	Sh.	Eg.
	5	36		II.	Sh.	In.
	5	57		II.	Tr.	Eg.
	8	20		II.	*Sh.	Eg.
	21	59		I.	Oc.	Dis.
16	1	25	10.8	I.	Ec.	Re.
	19	10		I.	Tr.	In.
	20	20		I.	Sh.	In.
	21	27		I.	Tr.	Eg.
	21	39		II.	Oc.	Dis.
	22	38		I.	Sh.	Eg.
17	2	38	34.5	II.	Ec.	Re.
	3	12		III.	Oc.	Dis.
	6	13		III.	Oc.	Re.
	7	58	34.4	III.	*Ec.	Dis.
	10	58	31.4	III.	*Ec.	Re.
	16	28		I.	Oc.	Dis.
	19	53	59.9	I.	Ec.	Re.
18	12	28		IV.	Tr.	In.
	13	40		I.	Tr.	In.
	14	31		IV.	Tr.	Eg.
	14	49		I.	Sh.	In.
	15	57		I.	Tr.	Eg.
	16	39		II.	Tr.	In.
	17	7		I.	Sh.	Eg.
	18	55		II.	Sh.	In.
	19	19		II.	Tr.	Eg.
	21	39		II.	Sh.	Eg.
	23	18		IV.	Sh.	In.
19	1	57		IV.	Sh.	Eg.
	10	58		I.	Oc.	Dis.
	14	22	56.0	I.	Ec.	Re.
20	8	9		I.	*Tr.	In.
	9	18		I.	*Sh.	In.
	10	27		I.	*Tr.	Eg.
	11	0		II.	*Oc.	Dis.
	11	36		I.	Sh.	Eg.
20	15	56	23.7	II.	Ec.	Re.
	17	25		III.	Tr.	In.
	20	26		III.	Tr.	Eg.
	21	59		III.	Sh.	In.
21	1	9		III.	Sh.	Eg.
	5	28		I.	Oc.	Dis.
	8	51	46.9	I.	*Ec.	Re.
22	2	39		I.	Tr.	In.
	3	46		I.	Sh.	In.
	4	56		I.	Tr.	Eg.
	6	1		II.	Tr.	In.
	6	4		I.	Sh.	Eg.
	8	14		II.	*Sh.	In.
	8	42		II.	*Tr.	Eg.
	10	56		II.	Sh.	Eg.
	23	58		I.	Oc.	Dis.
23	3	20	43.2	I.	Ec.	Re.
	21	9		I.	Tr.	In.
	22	15		I.	Sh.	In.
	23	26		I.	Tr.	Eg.
24	0	22		II.	Oc.	Dis.
	0	33		I.	Sh.	Eg.
	5	14	12.7	II.	Ec.	Re.
	7	28		III.	*Oc.	Dis.
	10	30		III.	*Oc.	Re.
	11	58	58.1	III.	Ec.	Dis.
	14	59	58.1	III.	Ec.	Re.
	18	28		I.	Oc.	Dis.
	21	49	31.2	I.	Ec.	Re.
25	15	39		I.	Tr.	In.
	16	44		I.	Sh.	In.
	17	56		I.	Tr.	Eg.
	19	2		I.	Sh.	Eg.
	19	24		II.	Tr.	In.
	21	33		II.	Sh.	In.
	22	5		II.	Tr.	Eg.
26	0	17		II.	Sh.	Eg.
	12	58		I.	Oc.	Dis.
	16	18	26.0	I.	Ec.	Re.
	22	7		IV.	Oc.	Dis
27	0	20		IV.	Oc.	Re.
	8	21	46.3	IV.	*Ec.	Dis.
	10	9		I.	*Tr.	In.
	10	59	15.5	IV.	Ec.	Re.
	11	13		I.	Sh.	In.
	12	26		I.	Tr.	Eg.
	13	30		I.	Sh.	Eg.
	13	44		II.	Oc.	Dis.
	18	32	2.8	II.	Ec.	Re.
	21	41		III.	Tr.	In.
28	0	44		III.	Tr.	Eg.
	1	59		III.	Sh.	In.
	5	9		III.	Sh.	Eg.
	7	28		I.	*Oc.	Dis.
	10	47	15.5	I.	Ec.	Re.
29	4	34		I.	Tr.	In.
	5	42		I.	Sh.	In.
	6	55		I.	Tr.	Eg.
	7	59		I.	*Sh.	Eg.
	8	47		II.	*Tr.	In.
	10	51		II.	Sh.	In.
	11	28		II.	Tr.	Eg.
	13	36		II.	Sh.	Eg.
30	1	58		I.	Oc.	Dis.
	5	16	10.8	I.	Ec.	Re.
	23	8		I.	Tr.	In.

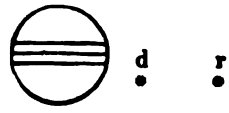
Note. In denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

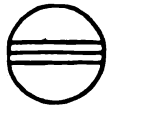
WASHINGTON MEAN TIME.

APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I. 

III. 

II. 

IV. 

Configurations at 9h 0m for an Inverting Telescope.

Day.	West.	East.
1	·3 2· ·1	○ . 4·
2	4· ·3	○ 1·
3	4· ·1	○ ·3 ·2
4	4·	○ ·3
5	4· 2·	○ 3· ·1 ●
6	○ 3· ·4 1·	○ ·2 ●
7	·4 3·	○ ·1 2·
8	·4 ·3 1·	○
9		○ 1·
10	·1	○ ·4 ·3 ·2
11		○ ·4 ·3
12	2·	○ 3· ·4 ·1 ●
13	1·	○ 3· ·4 ·2 ●
14	3·	○ ·1 2· 4·
15	3· 1· 2·	○ 4·
16	·3 ·2	○ ·1 4·
17	·1	○ ·2 4· ·3 ●
18		○ 4· 1·2· ·3
19	4· ·1	○ 3·
20	○ 1· 4· ·2	○ 3·
21	4· 3·	○ ·1 ·2
22	4· 3· 1· 2·	○
23	·4 ·3 ·2	○ ·1
24	·4 ·1	○ ·2 ·3 ●
25	·4	○ 1·2· ·3
26	2· ·4 ·1	○ 3·
27	·2	○ 1· 3· ·4 ●
28	3·	○ ·2 ·4 ·1 ●
29	○ 2· 3· 1·	○ ·4
30	·3 ·2	○ ·1 ·4

WASHINGTON MEAN TIME.

MAY.

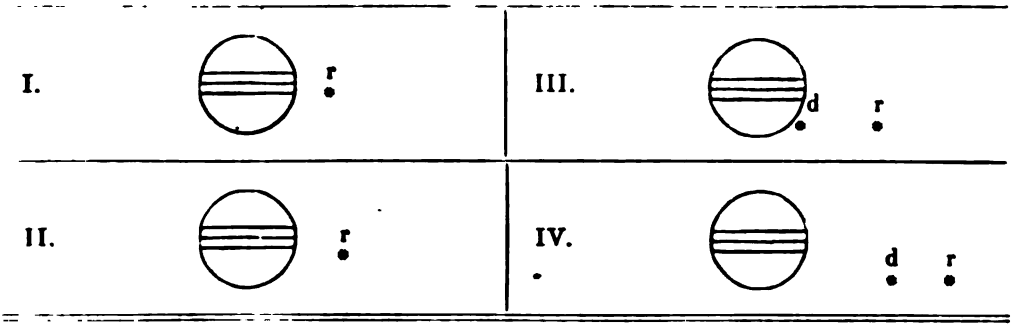
d	h	m	s			
1	0	10		I.	Sh.	In.
	1	25		I.	Tr.	Eg.
	2	28		I.	Sh.	Eg.
	3	6		II.	Oc.	Dis.
	7	49	53.7	II.	* Ec.	Re.
	11	46		III.	Oc.	Dis.
	14	50		III.	Oc.	Re.
	15	59	7.8	III.	Ec.	Dis.
	19	1	10.2	III.	Ec.	Re.
	20	28		I.	Oc.	Dis.
	23	44	58.0	I.	Ec.	Re.
2	17	38		I.	Tr.	In.
	18	39		I.	Sh.	In.
	19	56		I.	Tr.	Eg.
	20	57		I.	Sh.	Eg.
	22	10		II.	Tr.	In.
3	0	10		II.	Sh.	In.
	0	52		II.	Tr.	Eg.
	2	55		II.	Sh.	Eg.
	14	58		I.	Oc.	Dis.
	18	13	51.3	I.	Ec.	Re.
4	12	8		I.	Tr.	In.
	13	8		I.	Sh.	In.
	14	25		I.	Tr.	Eg.
	15	25		I.	Sh.	Eg.
	16	28		II.	Oc.	Dis.
	21	7	44.5	II.	Ec.	Re.
5	2	0		III.	Tr.	In.
	5	4		III.	Tr.	Eg.
	5	58		III.	Sh.	In.
	8	3		IV.	* Tr.	In.
	9	9		III.	* Sh.	Eg.
	9	28		I.	* Oc.	Dis.
	10	26		IV.	Tr.	Eg.
	12	42	39.7	I.	Ec.	Re.
	17	19		IV.	Sh.	In.
	20	9		IV.	Sh.	Eg.
6	6	37		I.	Tr.	In.
	7	36		I.	* Sh.	In.
	8	55		I.	* Tr.	Eg.
	9	54		I.	* Sh.	Eg.
	11	33		II.	Tr.	In.
	13	29		II.	Sh.	In.
	14	15		II.	Tr.	Eg.
	16	13		II.	Sh.	Eg.
7	3	58		I.	Oc.	Dis
	7	11	33.6	I.	Ec.	Re.
8	1	7		I.	Tr.	In.
	2	5		I.	Sh.	In.
	3	25		I.	Tr.	Eg.
	4	23		I.	Sh.	Eg.
	5	51		II.	Oc.	Dis.
	10	25	37.9	II.	Ec.	Re.
	16	7		III.	Oc.	Dis.
	19	12		III.	Oc.	Re.
	19	59	44.2	III.	Ec.	Dis.
	22	28		I.	Oc.	Dis.
	23	2	47.8	III.	Ec.	Re.
9	1	40	19.7	I.	Ec.	Re.
	19	38		I.	Tr.	In.
	20	34		I.	Sh.	In.
	21	55		I.	Tr.	Eg.
	22	52		I.	Sh.	Eg.
10	0	57		II.	Tr.	In.
	2	47		II.	Sh.	In.
	3	39		II.	Tr.	Eg.
	5	32		II.	Sh.	Eg.
	16	58		I.	Oc.	Dis.
	20	9	11.5	I.	Ec.	Re.
11	14	8		I.	Tr.	In.
11	15	2		I.	Sh.	In.
	16	25		I.	Tr.	Eg.
	17	20		I.	Sh.	Eg.
	19	14		II.	Oc.	Dis.
	23	43	29.8	II.	Ec.	Re.
12	6	21		III.	Tr.	In.
	9	27		III.	* Tr.	Eg.
	9	58		III.	Sh.	In.
	11	28		I.	Oc.	Dis.
	13	10		III.	Sh.	Eg.
	14	37	58.3	I.	Ec.	Re.
13	8	38		I.	* Tr.	In.
	9	31		I.	* Sh.	In.
	10	55		I.	Tr.	Eg.
	11	49		I.	Sh.	Eg.
	14	21		II.	Tr.	In.
	16	6		II.	Sh.	In.
	17	3		II.	Tr.	Eg.
	18	3		IV.	Oc.	Dis.
	18	51		II.	Sh.	Eg.
	20	31		IV.	Oc.	Re.
14	2	24	10.6	IV.	Ec.	Dis.
	5	13	17.0	IV.	Ec.	Re.
	5	58		I.	Oc.	Dis.
	9	6	50.7	I.	* Ec.	Re.
15	3	8		I.	Tr.	In.
	4	0		I.	Sh.	In.
	5	26		I.	Tr.	Eg.
	6	18		I.	Sh.	Eg.
	8	37		II.	* Oc.	Dis.
	13	1	26.3	II.	Ec.	Re.
	20	29		III.	Oc.	Dis.
	23	36		III.	Oc.	Re.
	23	59	37.2	III.	Ec.	Dis.
16	0	28		I.	Oc.	Dis.
	3	3	41.0	III.	Ec.	Re.
	3	35	36.6	I.	Ec.	Re.
	21	38		I.	Tr.	In.
	22	29		I.	Sh.	In.
	23	56		I.	Tr.	Eg.
17	0	47		I.	Sh.	Eg.
	3	45		II.	Tr.	In.
	5	24		II.	Sh.	In.
	6	28		II.	Tr.	Eg.
	8	9		II.	* Sh.	Eg.
	18	59		I.	Oc.	Dis.
	22	4	25.8	I.	Ec.	Re.
18	16	8		I.	Tr.	In.
	16	57		I.	Sh.	In.
	18	26		I.	Tr.	Eg.
	19	15		I.	Sh.	Eg.
	22	0		II.	Oc.	Dis.
19	2	19	19.4	II.	Ec.	Re.
	10	44		III.	Tr.	In.
	13	29		I.	Oc.	Dis.
	13	51		III.	Tr.	Eg.
	13	58		III.	Sh.	In.
	16	33	11.3	I.	Ec.	Re.
	17	11		III.	Sh.	Eg.
20	10	38		I.	Tr.	In.
	11	26		I.	Sh.	In.
	12	56		I.	Tr.	Eg.
	13	44		I.	Sh.	Eg.
	17	9		II.	Tr.	In.
	18	43		II.	Sh.	In.
	19	52		II.	Tr.	Eg.
	21	28		II.	Sh.	Eg.
21	7	59		I.	* Oc.	Dis.
	11	2	2.0	I.	Ec.	Re.
22	4	9		IV.	Tr.	In.
	5	9		I.	Tr.	In.
	5	55		I.	Sh.	In.
	6	42		IV.	Tr.	Eg.
	7	26		I.	Tr.	Eg.
	8	13		I.	* Sh.	Eg.
	11	9		IV.	Sh.	In.
	11	24		II.	Oc.	Dis.
	14	19		IV.	Sh.	Eg.
	15	37	19.1	II.	Ec.	Re.
23	0	53		III.	Oc.	Dis.
	2	29		I.	Oc.	Dis.
	5	30	45.4	I.	Ec.	Re.
	7	4	22.7	III.	Ec.	Re.
	23	39		I.	Tr.	In.
24	0	24		I.	Sh.	In.
	1	56		I.	Tr.	Eg.
	2	42		I.	Sh.	Eg.
	6	34		II.	Tr.	In.
	8	1		II.	* Sh.	In.
	9	17		II.	* Tr.	Eg.
	10	47		II.	Sh.	Eg.
	21	0		I.	Oc.	Dis.
	23	59	33.8	I.	Ec.	Re.
25	18	9		I.	Tr.	In.
	18	52		I.	Sh.	In.
	20	27		I.	Tr.	Eg.
	21	10		I.	Sh.	Eg.
26	0	47		II.	Oc.	Dis.
	4	55	13.1	II.	Ec.	Re.
	15	8		III.	Tr.	In.
	15	30		I.	Oc.	Dis.
	17	58		III.	Sh.	In.
	18	16		III.	Tr.	Eg.
	18	28	17.7	I.	Ec.	Re.
	21	12		III.	Sh.	Eg.
27	12	39		I.	Tr.	In.
	13	21		I.	Sh.	In.
	14	57		I.	Tr.	Eg.
	15	39		I.	Sh.	Eg.
	19	58		II.	Tr.	In.
	21	20		II.	Sh.	In.
	22	42		II.	Tr.	Eg.
28	0	5		II.	Sh.	Eg.
	10	0		I.	Oc.	Dis.
	12	57	6.7	I.	Ec.	Re.
29	7	9		I.	Tr.	In.
	7	50		I.	* Sh.	In.
	9	27		I.	Tr.	Eg.
	10	8		I.	Sh.	Eg.
	14	11		II.	Oc.	Dis.
	18	13	16.0	II.	Ec.	Re.
30	4	31		I.	Oc.	Dis.
	5	17		III.	Oc.	Dis.
	7	25	48.4	I.	Ec.	Re.
	11	4	43.3	III.	Ec.	Re.
	14	20		IV.	Oc.	Dis.
	17	3		IV.	Oc.	Re.
	20	26	55.8	IV.	Ec.	Dis.
	23	26	38.0	IV.	Ec.	Re.
31	1	40		I.	Tr.	In.
	2	18		I.	Sh.	In.
	3	58		I.	Tr.	Eg.
	4	36		I.	Sh.	Eg.
	9	23		II.	Tr.	In.
	10	38		II.	Sh.	In.
	12	6		II.	Tr.	Eg.
	13	24		II.	Sh.	Eg.
	23	1		I.	Oc.	Dis.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 8h 30m for an Inverting Telescope.

Day.	West.	East.
1	·1 ·3	·2 4·
2	1· 2· ·3 4·
3	2· ·1 3· 4·
4	·2 1·
5	4· 3· ·1 ·2
6	1· 3· 4· 2·
7	4· ·3 2· ·1
8	4· 1· ·2
9	4· ·1
10	·4 ·12· ·3
11	·4 ·2 1· 3·
12	3· ·4 ·1 ·2
13	3· ·4 1· 2·
14	·3 2· ·4 ·1
15	·3 1· ·4 ·2
16	2· 4·
17	1· 2· ·3 ·4
18	·2 1· 3· 4·
19	·1 3· ·2 4·
20	3· 1· 2· 4·
21	·3 2· 4· ·1
22	·3 1·
23	4· ·2
24	2· 4· 1· ·3
25	4· ·2 ·1 3·
26	4· ·1
27	·4 3· 1· 2·
28	·4 3· 2· ·1
29	1· 4 3 ·2
30	·4 ·1 ·2 ·3
31	1· 2· ·4 ·3

WASHINGTON MEAN TIME.

JUNE.

d	h	m	s				d	h	m	s				d	h	m	s			
1	1	54	35.1	I.	Ec.	Re.	5	9	11		I.	Tr.	In.	8	8	29		IV.	Sh.	Eg.
	20	10		I.	Tr.	In.		9	44		I.	Sh.	In.		22	11		I.	Tr.	In.
	20	47		I.	Sh.	In.		11	28		I.	Tr.	Eg.		22	42		I.	Sh.	In.
	22	28		I.	Tr.	Eg.		12	2		I.	Sh.	Eg.	9	0	29		I.	Tr.	Eg.
	23	5		I.	Sh.	Eg.		17	0		II.	Oc.	Dis.		1	0		I.	Sh.	Eg.
2	3	35		II.	Oc.	Dis.		20	49	17.0	II.	Ec.	Re.		6	24		II.	Oc.	Dis.
	7	31	10.2	II.	Ec.	Re.	6	6	32		I.	Oc.	Dis.		10	7	11.4	II.	Ec.	Re.
	17	31		I.	Oc.	Dis.		9	20	45.0	I.	Ec.	Re.		19	33		I.	Oc.	Dis.
	19	34		III.	Tr.	In.		9	43		III.	Oc.	Dis.		22	18	10.4	I.	Ec.	Re.
	20	23	17.4	I.	Ec.	Re.		15	5	1.5	III.	Ec.	Re.	10	0	0		III.	Tr.	In.
	21	57		III.	Sh.	In.	7	3	41		I.	Tr.	In.		1	57		III.	Sh.	In.
	22	44		III.	Tr.	Eg.		4	13		I.	Sh.	In.		3	11		III.	Tr.	Eg.
3	1	12		III.	Sh.	Eg.		5	59		I.	Tr.	Eg.		5	13		III.	Sh.	Eg.
	14	40		I.	Tr.	In.		6	31		I.	Sh.	Eg.		16	42		I.	Tr.	In.
	15	16		I.	Sh.	In.		12	12		II.	Tr.	In.		17	10		I.	Sh.	In.
	16	58		I.	Tr.	Eg.		13	15		II.	Sh.	In.		19	0		I.	Tr.	Eg.
	17	34		I.	Sh.	Eg.		14	56		II.	Tr.	Eg.		19	28		I.	Sh.	Eg.
	22	47		II.	Tr.	In.		16	1		II.	Sh.	Eg.	11	1	36		II.	Tr.	In.
	23	56		II.	Sh.	In.	8	0	29		IV.	Tr.	In.		2	33		II.	Sh.	In.
4	1	31		II.	Tr.	Eg.		1	2		I.	Oc.	Dis.		4	21		II.	Tr.	Eg.
	2	42		II.	Sh.	Eg.		3	21		IV.	Tr.	Eg.		5	19		II.	Sh.	Eg.
	12	2		I.	Oc.	Dis.		3	49	29.9	I.	Ec.	Re.		14	3		I.	Oc.	Dis.
	14	52	4.7	I.	Ec.	Re.		5	19		IV.	Sh.	In.		16	46	55.9	I.	Ec.	Re.

THE SATELLITES OF JUPITER

ARE NOT VISIBLE FROM JUNE 12TH UNTIL AUGUST 8TH,

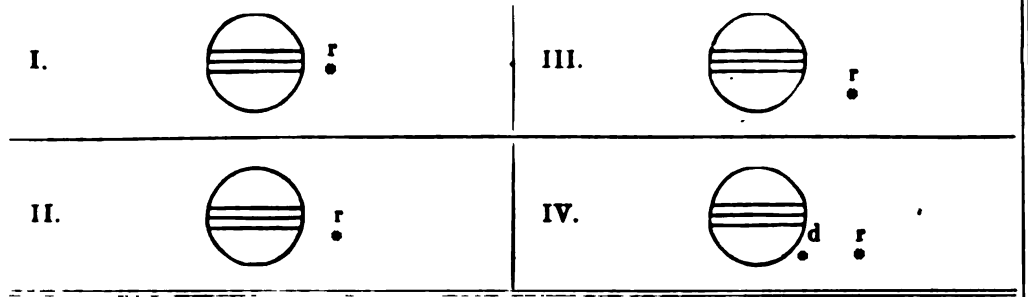
JUPITER BEING TOO NEAR THE SUN.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 8h 0m for an Inverting Telescope.

Day.	West.	East.
1	·2	·1 3· ·4
2	1·	·2 3· ·4
3	3·	1· 2· ·4
4	3· 2· ·1	4·
5	·3 ·2	1· 4·
6	·3	·2 4· ·1
7	1·	2· 4· ·3
8	2· 4·	·1 3·
9	4· 1·	3· ·2
10	4· 3·	1· 2·
11	4· 3· 1· 2·	

WASHINGTON MEAN TIME.

AUGUST.

d	h	m	s				d	h	m	s				d	h	m	s			
8	2	54		I.	Sh.	In.	16	2	9	40.9	I.	Ec.	Dis.	24	7	47	10.7	III.	Ec.	Dis.
	3	23		I.	Tr.	In.		5	3		I.	Oc.	Re.		14	7		III.	Oc.	Re.
	5	13		I.	Sh.	Eg.		23	17		I.	Sh.	In.		17	41		II.	Sh.	In.
	5	42		I.	Tr.	Eg.		23	54		I.	Tr.	In.		19	9		II.	Tr.	In.
	17	31	7.7	II.	Ec.	Dis.	17	1	36		I.	Sh.	Eg.		20	30		II.	Sh.	Eg.
	21	19		II.	Oc.	Re.		2	13		I.	Tr.	Eg.		22	1		II.	Tr.	Eg.
9	0	15	56.1	I.	Ec.	Dis.		3	48	52.4	III.	Ec.	Dis.		22	31	43.1	I.	Ec.	Dis.
	3	2		I.	Oc.	Re.		9	42		III.	Oc.	Re.	25	1	33		I.	Oc.	Re.
	21	22		I.	Sh.	In.		15	7		II.	Sh.	In.		19	39		I.	Sh.	In.
	21	53		I.	Tr.	In.		16	23		II.	*Tr.	In.		20	24		I.	Tr.	In.
	23	42		I.	Sh.	Eg.		17	56		II.	Sh.	Eg.		21	58		I.	Sh.	Eg.
	23	49	49.5	III.	Ec.	Dis.		19	14		II.	Tr.	Eg.		22	43		I.	Tr.	Eg.
10	0	12		I.	Tr.	Eg.		20	38	6.3	I.	Ec.	Dis.	26	12	1	13.0	II.	Ec.	Dis.
	5	15		III.	Oc.	Re.		23	33		I.	Oc.	Re.		16	23		II.	*Oc.	Re.
	12	32		II.	Sh.	In.	18	17	45		I.	Sh.	In.		17	0	5.0	I.	Ec.	Dis.
	13	35		II.	Tr.	In.		18	24		I.	Tr.	In.		20	2		I.	Oc.	Re.
	15	21		II.	*Sh.	Eg.		20	4		I.	Sh.	Eg.	27	14	8		I.	Sh.	In.
	16	25		II.	*Tr.	Eg.		20	43		I.	Tr.	Eg.		14	54		I.	Tr.	In.
	18	44	23.3	I.	Ec.	Dis.	19	9	24	58.9	II.	Ec.	Dis.		16	27		I.	*Sh.	Eg.
	21	32		I.	Oc.	Re.		13	33		II.	Oc.	Re.		17	13		I.	Tr.	Eg.
11	15	51		I.	*Sh.	In.		15	6	29.6	I.	*Ec.	Dis.		21	45		III.	Sh.	In.
	16	23		I.	*Tr.	In.		18	3		I.	Oc.	Re.	28	0	52		III.	Tr.	In.
	18	10		I.	Sh.	Eg.	20	12	14		I.	Sh.	In.		1	11		III.	Sh.	Eg.
	18	43		I.	Tr.	Eg.		12	54		I.	Tr.	In.		4	21		III.	Tr.	Eg.
12	6	48	47.6	II.	Ec.	Dis.		14	33		I.	Sh.	Eg.		6	57		II.	Sh.	In.
	10	43		II.	Oc.	Re.		15	13		I.	*Tr.	Eg.		8	32		II.	Tr.	In.
	13	12	48.2	I.	Ec.	Dis.		17	46		III.	Sh.	In.		9	47		II.	Sh.	Eg.
	16	2		I.	*Oc.	Re.		20	29		III.	Tr.	In.		11	24		II.	Tr.	Eg.
13	10	20		I.	Sh.	In.		21	11		III.	Sh.	Eg.		11	28	30.0	I.	Ec.	Dis.
	10	53		I.	Tr.	In.		23	56		III.	Tr.	Eg.		14	32		I.	Oc.	Re.
	12	39		I.	Sh.	Eg.	21	4	24		II.	Sh.	In.	29	8	36		I.	Sh.	In.
	13	13		I.	Tr.	Eg.		5	46		II.	Tr.	In.		9	24		I.	Tr.	In.
	13	47		III.	Sh.	In.		7	13		II.	Sh.	Eg.		10	55		I.	Sh.	Eg.
	16	4		III.	*Tr.	In.		8	37		II.	Tr.	Eg.		11	43		I.	Tr.	Eg.
	17	11		III.	Sh.	Eg.		9	34	54.5	I.	Ec.	Dis.	30	1	19	50.0	II.	Ec.	Dis.
	19	31		III.	Tr.	Eg.		12	33		I.	Oc.	Re.		5	48		II.	Oc.	Re.
14	1	49		II.	Sh.	In.	22	6	42		I.	Sh.	In.		5	56	51.9	I.	Ec.	Dis.
	2	59		II.	Tr.	In.		7	24		I.	Tr.	In.		9	2		I.	Oc.	Re.
	4	39		II.	Sh.	Eg.		9	1		I.	Sh.	Eg.		23	13		IV.	Sh.	In.
	5	15		IV.	Sh.	In.		9	43		I.	Tr.	Eg.	31	3	5		I.	Sh.	In.
	5	50		II.	Tr.	Eg.		14	34	13.0	IV.	Ec.	Dis.		3	5		IV.	Sh.	Eg.
	7	41	16.5	I.	Ec.	Dis.		18	16	35.0	IV.	Ec.	Re.		3	55		I.	Tr.	In.
	8	59		IV.	Sh.	Eg.		21	13		IV.	Oc.	Dis.		5	24		I.	Sh.	Eg.
	10	32		I.	Oc.	Re.		22	43	33.8	II.	Ec.	Dis.		6	13		I.	Tr.	Eg.
	10	43		IV.	Tr.	In.	23	1	11		IV.	Oc.	Re.		6	58		IV.	Tr.	In.
	14	36		IV.	Tr.	Eg.		2	59		II.	Oc.	Re.		11	3		IV.	Tr.	Eg.
15	4	48		I.	Sh.	In.		4	3	19.2	I.	Ec.	Dis.		11	45	17.1	III.	Ec.	Dis
	5	23		I.	Tr.	In.		7	3		I.	Oc.	Re.		18	30		III.	Oc.	Re.
	7	7		I.	Sh.	Eg.	24	1	11		I.	Sh.	In.		20	14		II.	Sh.	In.
	7	43		I.	Tr.	Eg.		1	54		I.	Tr.	In.		21	55		II.	Tr.	In.
	20	7	19.4	II.	Ec.	Dis.		3	30		I.	Sh.	Eg.		23	4		II.	Sh.	Eg.
16	0	9		II.	Oc.	Re.		4	13		I.	Tr.	Eg.							

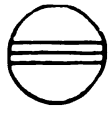
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

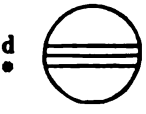
WASHINGTON MEAN TIME.

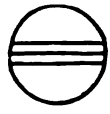
AUGUST.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I. 

III. 

II. 

IV. 

Configurations at 16h 0m for an Inverting Telescope.

Day.	West.	East.
8	·3 ·1 ·2 ○	·4
9	·3 ○ 1· ·2 ·4
10	○ 2· ·1 ○ ·3 4·
11	·2 ○ 1· ·3 4·
12	○ ·1 ·2 3· 4·
13	○ 3· 1· ○ 2·4·
14	3· 2· 4· ○ ·1
15	·3 4· 1· ·2 ○
16	4· ·3 ○ 1· ·2
17	4· ·1 ○ 2· ·3
18	4· ·2 ○ 1· ·3
19	·4 ○ ·2 3· ·1●
20	·4 1· ○ 3· 2·
21	·4 3· 2· ○ ·1
22	3· 1½ ○ ·4●
23	·3 ○ ·1·4·2
24	·1 ○ ½ ·4
25	2· ○ 1· ·3 ·4
26	·1 ○ 3· ·4 ·2●
27	○ 1· ○ 3· 2· 4·
28	3· 2· ○ ·1 4·
29	3· ·2 1· ○ 4·
30	·3 ○ ¼ ½
31	·1 4· ○ 2· ·3●

WASHINGTON MEAN TIME.

SEPTEMBER.

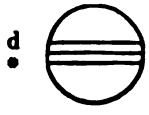
d	h	m	s				d	h	m	s				d	h	m	s			
1	0	25	14.0	I.	Ec.	Dis.	11	9	34		III.	Tr.	In.	21	9	51		I.	Tr.	In.
	0	46		II.	Tr.	Eg.		12	4		II.	Sh.	In.		11	6		I.	Sh.	Eg.
	3	32		I.	Oc.	Re.		13	6		III.	Tr.	Eg.		12	10		I.	Tr.	Eg.
	21	33		I.	Sh.	In.		14	1		II.	Tr.	In.		23	39	18.3	III.	Ec.	Dis.
	22	24		I.	Tr.	In.		14	55		II.	*Sh.	Eg.	22	2	58	44.3	III.	Ec.	Re.
	23	52		I.	Sh.	Eg.		15	15	20.7	I.	*Ec.	Dis.		3	54		II.	Sh.	In.
2	0	43		I.	Tr.	Eg.		16	54		II.	*Tr.	Eg.		3	55		III.	Oc.	Dis.
	14	37	28.5	II.	*Ec.	Dis.		18	30		I.	Oc.	Re.		6	5	15.4	I.	Ec.	Dis.
	18	53	34.6	I.	Ec.	Dis.	12	12	24		I.	Sh.	In.		6	6		II.	Tr.	In.
	19	11		II.	Oc.	Re.		13	22		I.	Tr.	In.		6	45		II.	Sh.	Eg.
	22	2		I.	Oc.	Re.		14	44		I.	*Sh.	Eg.		7	28		III.	Oc.	Re.
3	16	2		I.	*Sh.	In.		15	42		I.	*Tr.	Eg.		8	59		II.	Tr.	Eg.
	16	54		I.	*Tr.	In.	13	6	32	26.0	II.	Ec.	Dis.		9	27		I.	Oc.	Re.
	18	21		I.	Sh.	Eg.		9	43	40.1	I.	Ec.	Dis.	23	3	15		I.	Sh.	In.
	19	13		I.	Tr.	Eg.		11	23		II.	Oc.	Re.		4	20		I.	Tr.	In.
4	1	44		III.	Sh.	In.		13	0		I.	Oc.	Re.		5	34		I.	Sh.	Eg.
	5	10		III.	Sh.	Eg.	14	6	53		I.	Sh.	In.		6	40		I.	Tr.	Eg.
	5	14		III.	Tr.	In.		7	52		I.	Tr.	In.		22	26	21.9	II.	Ec.	Dis.
	8	45		III.	Tr.	Eg.		9	12		I.	Sh.	Eg.	24	0	33	32.8	I.	Ec.	Dis.
	9	31		II.	Sh.	In.		10	12		I.	Tr.	Eg.		3	32		II.	Oc.	Re.
	11	17		II.	Tr.	In.		19	40	59.1	III.	Ec.	Dis.		3	56		I.	Oc.	Re.
	12	21		II.	Sh.	Eg.		22	59	42.1	III.	Ec.	Re.		21	43		I.	Sh.	In.
	13	21	58.0	I.	Ec.	Dis.		23	38		III.	Oc.	Dis.		22	50		I.	Tr.	In.
	14	9		II.	Tr.	Eg.	15	1	21		II.	Sh.	In.	25	0	3		I.	Sh.	Eg.
	16	31		I.	*Oc.	Re.		3	11		III.	Oc.	Re.		1	9		I.	Tr.	Eg.
5	10	30		I.	Sh.	In.		3	23		II.	Tr.	In.		2	24	32.5	IV.	Ec.	Dis.
	11	24		I.	Tr.	In.		4	11	59.7	I.	Ec.	Dis.		6	30	29.5	IV.	Ec.	Re.
	12	50		I.	Sh.	Eg.		4	11		II.	Sh.	Eg.		13	5		IV.	Oc.	Dis.
	13	43		I.	Tr.	Eg.		6	16		II.	Tr.	Eg.		13	38		III.	*Sh.	In.
6	3	56	7.5	II.	Ec.	Dis.		7	29		I.	Oc.	Re.		17	7		III.	*Sh.	Eg.
	7	50	18.7	I.	Ec.	Dis.	16	1	21		I.	Sh.	In.		17	11		II.	*Sh.	In.
	8	36		II.	Oc.	Re.		2	22		I.	Tr.	In.		17	24		IV.	*Oc.	Re.
	11	1		I.	Oc.	Re.		3	40		I.	Sh.	Eg.		18	6		III.	Tr.	In.
7	4	59		I.	Sh.	In.		4	42		I.	Tr.	Eg.		19	1	52.0	I.	Ec.	Dis.
	5	53		I.	Tr.	In.		17	11		IV.	*Sh.	In.		19	27		II.	Tr.	In.
	7	18		I.	Sh.	Eg.		19	50	3.7	II.	Ec.	Dis.		20	2		II.	Sh.	Eg.
	8	13		I.	Tr.	Eg.		21	8		IV.	Sh.	Eg.		21	40		III.	Tr.	Eg.
	15	43	7.5	III.	*Ec.	Dis.		22	40	18.0	I.	Ec.	Dis.		22	20		II.	Tr.	Eg.
	19	1	6.1	III.	Ec.	Re.	17	0	46		II.	Oc.	Re.		22	26		I.	Oc.	Re.
	19	20		III.	Oc.	Dis.		1	59		I.	Oc.	Re.	26	16	12		I.	*Sh.	In.
	22	47		II.	Sh.	In.		2	52		IV.	Tr.	In.		17	19		I.	*Tr.	In.
	22	51		III.	Oc.	Re.		7	7		IV.	Tr.	Eg.		18	31		I.	Sh.	Eg.
8	0	39		II.	Tr.	In.		19	50		I.	Sh.	In.		19	39		I.	Tr.	Eg.
	1	38		II.	Sh.	Eg.		20	52		I.	Tr.	In.	27	11	45	3.8	II.	Ec.	Dis.
	2	18	39.3	I.	Ec.	Dis.		22	9		I.	Sh.	Eg.		13	30	10.2	I.	*Ec.	Dis.
	3	32		II.	Tr.	Eg.		23	11		I.	Tr.	Eg.		16	55		II.	*Oc.	Re.
	5	31		I.	Oc.	Re.	18	9	40		III.	Sh.	In.		16	55		I.	*Oc.	Re.
	8	34	56.6	IV.	Ec.	Dis.		13	8		III.	Sh.	Eg.	28	10	40		I.	Sh.	In.
	12	24	9.0	IV.	Ec.	Re.		13	51		III.	*Tr.	In.		11	48		I.	Tr.	In.
	17	22		IV.	Oc.	Dis.		14	38		II.	*Sh.	In.		13	0		I.	Sh.	Eg.
	21	31		IV.	Oc.	Re.		16	45		II.	*Tr.	In.		14	8		I.	*Tr.	Eg.
	23	27		I.	Sh.	In.		17	8	38.4	I.	*Ec.	Dis.	29	3	37	20.0	III.	Ec.	Dis.
9	0	23		I.	Tr.	In.		17	24		III.	*Tr.	Eg.		6	28		II.	Sh.	In.
	1	47		I.	Sh.	Eg.		17	28		II.	Sh.	Eg.		6	57	27.8	III.	Ec.	Re.
	2	43		I.	Tr.	Eg.		19	38		II.	Tr.	Eg.		7	58	27.5	I.	Ec.	Dis.
	17	13	45.6	II.	*Ec.	Dis.		20	28		I.	Oc.	Re.		8	9		III.	Oc.	Dis.
	20	46	58.8	I.	Ec.	Dis.	19	14	18		I.	*Sh.	In.		8	47		II.	Tr.	In.
	21	59		II.	Oc.	Re.		15	21		I.	*Tr.	In.		9	19		II.	Sh.	Eg.
10	0	0		I.	Oc.	Re.		16	37		I.	*Sh.	Eg.		11	24		I.	Oc.	Re.
	17	56		I.	Sh.	In.		17	41		I.	Tr.	Eg.		11	41		II.	Tr.	Eg.
	18	53		I.	Tr.	In.	20	9	8	45.3	II.	Ec.	Dis.		11	43		III.	Oc.	Re.
	20	15		I.	Sh.	Eg.		11	36	57.3	I.	Ec.	Dis.	30	5	9		I.	Sh.	In.
	21	12		I.	Tr.	Eg.		14	10		II.	*Oc.	Re.		6	18		I.	Tr.	In.
11	5	42		III.	Sh.	In.		14	58		I.	*Oc.	Re.		7	28		I.	Sh.	Eg.
	9	9		III.	Sh.	Eg.	21	8	46		I.	Sh.	In.		8	37		I.	Tr.	Eg.

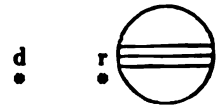
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

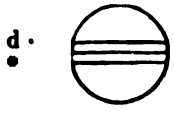
WASHINGTON MEAN TIME.

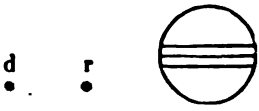
SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I. 

III. 

II. 

IV. 

Configurations at 15h 30m for an Inverting Telescope.

Day.	West.	East.
1	4· 2·	○ 1· ·3
2	4· ·1	○ 3· ·2●
3	4·	○ 1· 3·2·
4	·4 3· 2·	○ ·1●
5	·4 3· ·2 1·	○
6	·4 ·3	○ ·1·2
7	·4 1· ·3	○ 2·
8	2· ·4	○ 1· ·3
9	·1·2	○ ·4 ·3
10		○ 1· 3/4 ·4
11	○ 2· 3·	○ ·4 ·1●
12	○ 1· 3· ·2	○ ·4
13	·3	○ ·1·2 4·
14	1/3	○ 2· 4·
15	2·	○ ·1 ·3 4·
16	·1·2	○ 4· ·3
17	4·	○ 1· ·2 3·
18	○ 3· 4· ·1	○ 2·
19	○ 1· 4· 3· ·2	○
20	4· ·3	○ 1/2
21	·4 ·3 1·	○ 2·
22	·4 2·	○ 1/3
23	·4 1/2	○ ·3
24	·4	○ 1· ·2 3·
25	·1	○ 3·2· ·4●
26	3/4	○ 1· ·4
27	·3	○ ·4 ·2● ·1●
28	·3 1·	○ 2· ·4
29	2·	○ ·3·1 ·4
30	·2 1·	○ ·3 4·

WASHINGTON MEAN TIME.

OCTOBER.

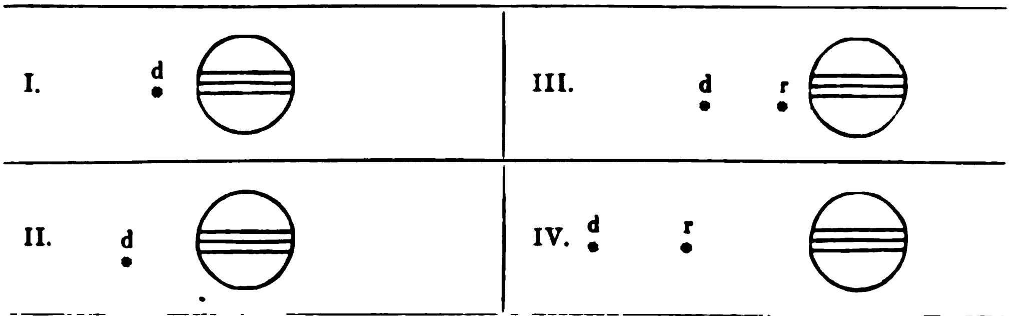
d	h	m	s			
1	1	2	39.0	II.	Ec.	Dis.
	2	26	43.9	I.	Ec.	Dis.
	5	53		I.	Oc.	Re.
	6	16		II.	Oc.	Re.
	23	37		I.	Sh.	In.
2	0	47		I.	Tr.	In.
	1	57		I.	Sh.	Eg.
	3	7		I.	Tr.	Eg.
	17	37		III.	*Sh.	In.
	19	44		II.	Sh.	In.
	20	55	2.1	I.	Ec.	Dis.
	21	6		III.	Sh.	Eg.
	22	8		II.	Tr.	In.
	22	19		III.	Tr.	In.
	22	36		II.	Sh.	Eg.
3	0	22		I.	Oc.	Re.
	1	1		II.	Tr.	Eg.
	1	54		III.	Tr.	Eg.
	11	8		IV.	Sh.	In.
	15	12		IV.	*Sh.	Eg.
	18	5		I.	Sh.	In.
	19	16		I.	Tr.	In.
	20	25		I.	Sh.	Eg.
	21	36		I.	Tr.	Eg.
	22	15		IV.	Tr.	In.
4	2	39		IV.	Tr.	Eg.
	14	21	21.3	II.	*Ec.	Dis.
	15	23	19.6	I.	*Ec.	Dis.
	18	52		I.	Oc.	Re.
	19	38		II.	Oc.	Re.
5	12	34		I.	*Sh.	In.
	13	46		I.	*Tr.	In.
	14	54		I.	*Sh.	Eg.
	16	5		I.	*Tr.	Eg.
6	7	35	46.5	III.	Ec.	Dis.
	9	1		II.	Sh.	In.
	9	51	35.8	I.	Ec.	Dis.
	10	56	35.5	III.	Ec.	Re.
	11	27		II.	Tr.	In.
	11	52		II.	*Sh.	Eg.
	12	20		III.	*Oc.	Dis.
	13	21		I.	*Oc.	Re.
	14	21		II.	*Tr.	Eg.
	15	56		III.	*Oc.	Re.
7	7	3		I.	Sh.	In.
	8	15		I.	Tr.	In.
	9	22		I.	Sh.	Eg.
	10	35		I.	Tr.	Eg.
8	3	38	56.2	II.	Ec.	Dis.
	4	19	51.8	I.	Ec.	Dis.
	7	49		I.	Oc.	Re.
	8	59		II.	Oc.	Re.
9	1	31		I.	Sh.	In.
	2	44		I.	Tr.	In.
	3	51		I.	Sh.	Eg.
	5	4		I.	Tr.	Eg.
	21	35		III.	Sh.	In.
	22	17		II.	Sh.	In.
	22	48	9.5	I.	Ec.	Dis.
10	0	47		II.	Tr.	In.
	1	5		III.	Sh.	Eg.
	1	9		II.	Sh.	Eg.
	2	19		I.	Oc.	Re.
	2	29		III.	Tr.	In.
	3	41		II.	Tr.	Eg.
	6	5		III.	Tr.	Eg.
	19	59		I.	Sh.	In.
	21	13		I.	Tr.	In.
	22	19		I.	Sh.	Eg.
	23	33		I.	Tr.	Eg.
11	16	57	37.6	II.	*Ec.	Dis.
	17	16	26 0	I.	*Ec.	Dis.
	20	34	16.4	IV.	Ec.	Dis.
	20	47		I.	Oc.	Re.
	22	21		II.	Oc.	Re.
12	0	35	47.4	IV.	Ec.	Re.
	8	14		IV.	Oc.	Dis.
	12	41		IV.	*Oc.	Re.
	14	28		I.	*Sh.	In.
	15	42		I.	*Tr.	In.
	16	48		I.	*Sh.	Eg.
	18	2		I.	Tr.	Eg.
13	11	33	32.6	III.	Ec.	Dis.
	11	34		II.	Sh.	In.
	11	44	41.6	I.	Ec.	Dis.
	14	5		II.	*Tr.	In.
	14	26		II.	*Sh.	Eg.
	14	55	1.8	III.	*Ec.	Re.
	15	16		I.	*Oc.	Re.
	16	28		III.	*Oc.	Dis.
	17	0		II.	*Tr.	Eg.
	20	4		III.	Oc.	Re.
14	8	56		I.	Sh.	In.
	10	11		I.	Tr.	In.
	11	16		I.	Sh.	Eg.
	12	31		I.	*Tr.	Eg.
15	6	12	56.9	I.	Ec.	Dis.
	6	15	11.2	II.	Ec.	Dis.
	9	45		I.	Oc.	Re.
	11	40		II.	Oc.	Re.
16	3	25		I.	Sh.	In.
	4	40		I.	Tr.	In.
	5	44		I.	Sh.	Eg.
	7	0		I.	Tr.	Eg.
17	0	41	13.4	I.	Ec.	Dis.
	0	51		II.	Sh.	In.
	1	33		III.	Sh.	In.
	3	24		II.	Tr.	In.
	3	42		II.	Sh.	Eg.
	4	14		I.	Oc.	Re.
	5	4		III.	Sh.	Eg.
	6	18		II.	Tr.	Eg.
	6	36		III.	Tr.	In.
	10	12		III.	Tr.	Eg.
	21	53		I.	Sh.	In.
	23	9		I.	Tr.	In.
18	0	13		I.	Sh.	Eg.
	1	28		I.	Tr.	Eg.
	19	9	30.2	I.	Ec.	Dis.
	19	33	51.9	II.	Ec.	Dis.
	22	42		I.	Oc.	Re.
19	1	1		II.	Oc.	Re.
	16	22		I.	*Sh.	In.
	17	37		I.	*Tr.	In.
	18	41		I.	Sh.	Eg.
	19	57		I.	Tr.	Eg.
20	5	5		IV.	Sh.	In.
	9	15		IV.	Sh.	Eg.
	13	37	45.1	I.	*Ec.	Dis.
	14	7		II.	*Sh.	In.
	15	31	9.7	III.	*Ec.	Dis.
	16	42		II.	*Tr.	In.
	16	59		II.	*Sh.	Eg.
	17	1		IV.	*Tr.	In.
	17	11		I.	*Oc.	Re.
	18	53	17.7	III.	Ec.	Re.
	19	36		II.	Tr.	Eg.
	20	33		III.	Oc.	Dis.
	21	32		IV.	Tr.	Eg.
21	0	9		III.	Oc.	Re.
21	10	50		I.	Sh.	In.
	12	6		I.	*Tr.	In.
	13	10		I.	*Sh.	Eg.
	14	26		I.	*Tr.	Eg.
22	8	6	0.4	I.	Ec.	Dis.
	8	51	24.8	II.	Ec.	Dis.
	11	40		I.	*Oc.	Re.
	14	20		II.	*Oc.	Re.
23	5	18		I.	Sh.	In.
	6	35		I.	Tr.	In.
	7	38		I.	Sh.	Eg.
	8	54		I.	Tr.	Eg.
24	2	34	16.4	I.	Ec.	Dis.
	3	24		II.	Sh.	In.
	5	32		III.	Sh.	In.
	5	59		II.	Tr.	In.
	6	8		I.	Oc.	Re.
	6	16		II.	Sh.	Eg.
	8	54		II.	Tr.	Eg.
	9	3		III.	Sh.	Eg.
	10	39		III.	Tr.	In.
	14	16		III.	*Tr.	Eg.
	23	47		I.	Sh.	In.
25	1	3		I.	Tr.	In.
	2	7		I.	Sh.	Eg.
	3	23		I.	Tr.	Eg.
	21	2	33.1	I.	Ec.	Dis.
	22	10	4.0	II.	Ec.	Dis.
26	0	37		I.	Oc.	Re.
	3	39		II.	Oc.	Re.
	18	15		I.	Sh.	In.
	19	32		I.	Tr.	In.
	20	35		I.	Sh.	Eg.
	21	52		I.	Tr.	Eg.
27	15	30	47.7	I.	*Ec.	Dis.
	16	40		II.	*Sh.	In.
	19	5		I.	Oc.	Re.
	19	16		II.	Tr.	In.
	19	28	37.4	III.	Ec.	Dis.
	19	32		II.	Sh.	Eg.
	22	11		II.	Tr.	Eg.
	22	51	23.4	III.	Ec.	Re.
28	0	33		III.	Oc.	Dis.
	4	10		III.	Oc.	Re.
	12	44		I.	*Sh.	In.
	14	0		I.	*Tr.	In.
	14	34	15.9	IV.	*Ec.	Dis.
	15	3		I.	*Sh.	Eg.
	16	20		I.	*Tr.	Eg.
	18	41	17.3	IV.	Ec.	Re.
29	2	41		IV.	Oc.	Dis.
	7	14		IV.	Oc.	Re.
	9	59	2.8	I.	Ec.	Dis.
	11	27	35.9	II.	*Ec.	Dis.
	13	33		I.	*Oc.	Re.
	16	57		II.	*Oc.	Re.
30	7	12		I.	Sh.	In.
	8	29		I.	Tr.	In.
	9	32		I.	Sh.	Eg.
	10	49		I.	Tr.	Eg.
31	4	27	18.6	I.	Ec.	Dis.
	5	57		II.	Sh.	In.
	8	1		I.	Oc.	Re.
	8	33		II.	Tr.	In.
	8	49		II.	Sh.	Eg.
	9	30		III.	Sh.	In.
	11	28		II.	*Tr.	Eg.
	13	2		III.	*Sh.	Eg.
	14	38		III.	*Tr.	In.
	18	16		III.	Tr.	Eg.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

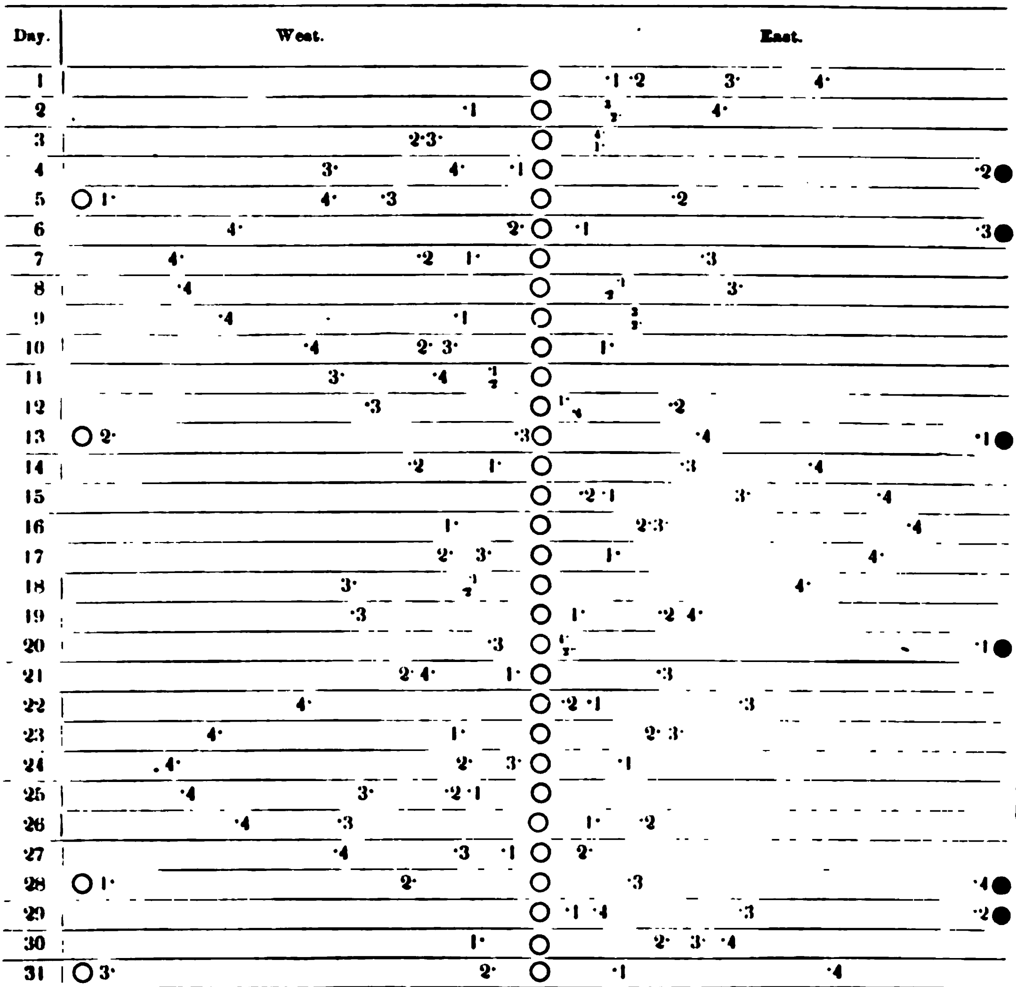
WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 15ʰ 0ᵐ for an Inverting Telescope.



WASHINGTON MEAN TIME.

NOVEMBER.

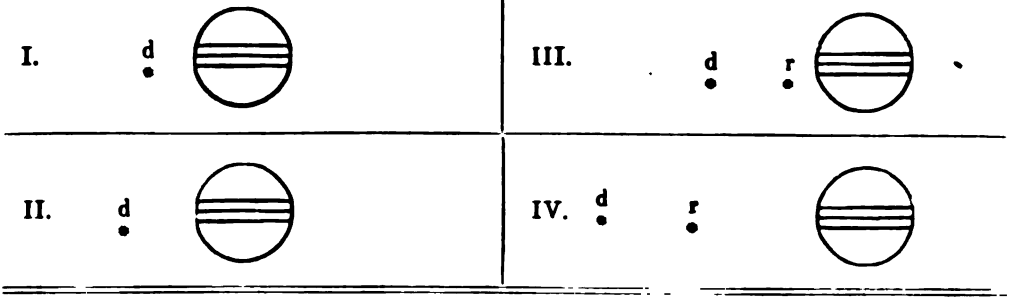
d	h	m	s		d	h	m	s		d	h	m	s	
1	1	41		I. Sh. In.	11	3	24	19.0	III. Ec. Dis.	21	13	35		I. * Oc. Re.
	2	57		I. Tr. In.		6	48	19.0	III. Ec. Re.		13	37		II. * Sh. In.
	4	0		I. Sh. Eg.		8	22		III. Oc. Dis.		16	2		II. * Tr. In.
	5	17		I. Tr. Eg.		12	1		III. * Oc. Re.		16	30		II. * Sh. Eg.
	22	55	35.5	I. Ec. Dis.		16	31		I. * Sh. In.		18	57		II. Tr. Eg.
2	0	46	13.2	II. Ec. Dis.		17	47		I. * Tr. In.		21	24		III. Sh. In.
	2	30		I. Oc. Re.		18	51		I. Sh. Eg.	22	0	57		III. Sh. Eg.
	6	16		II. Oc. Re.		20	6		I. Tr. Eg.		2	9		III. Tr. In.
	20	9		I. Sh. In.	12	13	45	9.0	I. * Ec. Dis.		5	48		III. Tr. Eg.
	21	26		I. Tr. In.		16	39	50.8	II. * Ec. Dis.		7	22		I. Sh. In.
	22	29		I. Sh. Eg.		17	18		I. * Oc. Re.		8	32		I. Tr. In.
	23	46		I. Tr. Eg.		22	5		II. Oc. Re.		9	41		I. Sh. Eg.
3	17	23	50.1	I. * Ec. Dis.	13	11	0		I. * Sh. In.		10	52		I. * Tr. Eg.
	19	14		II. Sh. In.		12	15		I. * Tr. In.		16	59		IV. * Sh. In.
	20	58		I. Oc. Re.		13	19		I. * Sh. Eg.		21	20		IV. Sh. Eg.
	21	49		II. Tr. In.		14	34		I. * Tr. Eg.	23	4	0		IV. Tr. In.
	22	6		II. Sh. Eg.	14	8	13	24.9	I. Ec. Dis.		4	34	50.1	I. Ec. Dis.
	23	26	11.3	III. Ec. Dis.		8	33	33.6	IV. Ec. Dis.		8	3		I. Oc. Re.
4	0	44		II. Tr. Eg.		11	4		II. * Sh. In.		8	34	23.2	II. Ec. Dis.
	2	49	34.7	III. Ec. Re.		11	45		I. * Oc. Re.		8	40		IV. Tr. Eg.
	4	29		III. Oc. Dis.		12	45	39.0	IV. * Ec. Re.		13	51		II. * Oc. Re.
	8	8		III. Oc. Re.		13	35		II. * Tr. In.	24	1	50		I. Sh. In.
	14	37		I. * Sh. In.		13	56		II. * Sh. Eg.		3	0		I. Tr. In.
	15	54		I. * Tr. In.		16	30		II. * Tr. Eg.		4	10		I. Sh. Eg.
	16	57		I. * Sh. Eg.		17	26		III. * Sh. In.		5	20		I. Tr. Eg.
	18	14		I. * Tr. Eg.		20	15		IV. Oc. Dis.		23	3	5.8	I. Ec. Dis.
5	11	52	5.5	I. * Ec. Dis.		20	59		III. Sh. Eg.	25	2	30		I. Oc. Re.
	14	3	44.6	II. * Ec. Dis.		22	23		III. Tr. In.		2	54		II. Sh. In.
	15	26		I. * Oc. Re.	15	0	52		IV. Oc. Re.		5	14		II. Tr. In.
	19	32		II. Oc. Re.		2	2		III. Tr. Eg.		5	47		II. Sh. Eg.
	23	2		IV. Sh. In.		5	28		I. Sh. In.		8	10		II. Tr. Eg.
6	3	18		IV. Sh. Eg.		6	43		I. Tr. In.		11	20	35.8	III. * Ec. Dis.
	9	6		I. Sh. In.		7	48		I. Sh. Eg.		14	45	45.8	III. * Ec. Re.
	10	22		I. Tr. In.		9	2		I. Tr. Eg.		15	54		III. * Oc. Dis.
	10	58		IV. * Tr. In.	16	2	41	43.0	I. Ec. Dis.		19	33		III. Oc. Re.
	11	26		I. * Sh. Eg.		5	58	23.0	II. Ec. Dis.		20	18		I. Sh. In.
	12	42		I. * Tr. Eg.		6	13		I. Oc. Re.		21	27		I. Tr. In.
	15	35		IV. * Tr. Eg.		11	21		II. * Oc. Re.		22	38		I. Sh. Eg.
7	6	20	21.3	I. Ec. Dis.		23	56		I. Sh. In.		23	47		I. Tr. Eg.
	8	30		II. Sh. In.	17	1	10		I. Tr. In.	26	17	31	23.3	I. * Ec. Dis.
	9	54		I. Oc. Re.		2	16		I. Sh. Eg.		20	57		I. Oc. Re.
	11	5		II. * Tr. In.		3	30		I. Tr. Eg.		21	51	52.9	II. Ec. Dis.
	11	23		II. * Sh. Eg.		21	9	58.2	I. Ec. Dis.	27	3	4		II. Oc. Re.
	13	28		III. * Sh. In.	18	0	20		II. Sh. In.		14	47		I. * Sh. In.
	14	0		II. * Tr. Eg.		0	41		I. Oc. Re.		15	55		I. * Tr. In.
	17	0		III. * Sh. Eg.		2	48		II. Tr. In.		17	7		I. * Sh. Eg.
	18	33		III. Tr. In.		3	13		II. Sh. Eg.		18	15		I. * Tr. Eg.
	22	12		III. Tr. Eg.		5	44		II. Tr. Eg.	28	11	59	40.2	I. * Ec. Dis.
8	3	34		I. Sh. In.		7	22	12.5	III. Ec. Dis.		15	25		I. * Oc. Re.
	4	50		I. Tr. In.		10	46	48.1	III. * Ec. Re.		16	10		II. * Sh. In.
	5	54		I. Sh. Eg.		12	10		III. * Oc. Dis.		18	27		II. * Tr. In.
	7	10		I. Tr. Eg.		15	49		III. * Oc. Re.		19	4		II. Sh. Eg.
9	0	48	38.6	I. Ec. Dis.		18	25		I. Sh. In.		21	22		II. Tr. Eg.
	3	22	19.6	II. Ec. Dis.		19	37		I. Tr. In.	29	1	22		III. Sh. In.
	4	22		I. Oc. Re.		20	44		I. Sh. Eg.		4	56		III. Sh. Eg.
	8	50		II. Oc. Re.		21	57		I. Tr. Eg.		5	50		III. Tr. In.
	22	3		I. Sh. In.	19	15	38	14.7	I. * Ec. Dis.		9	15		I. Sh. In.
	23	19		I. Tr. In.		19	8		I. Oc. Re.		9	30		III. Tr. Eg.
10	0	22		I. Sh. Eg.		19	15	53.3	II. Ec. Dis.		10	22		I. * Tr. In.
	1	38		I. Tr. Eg.	20	0	36		II. Oc. Re.		11	35		I. * Sh. Eg.
	19	16	53.4	I. Ec. Dis.		12	53		I. * Sh. In.		12	42		I. * Tr. Eg.
	21	47		II. Sh. In.		14	5		I. * Tr. In.	30	6	28	0.2	I. Ec. Dis.
	22	50		I. Oc. Re.		15	13		I. * Sh. Eg.		9	52		I. * Oc. Re.
11	0	20		II. Tr. In.		16	25		I. * Tr. Eg.		11	10	19.9	II. * Ec. Dis.
	0	40		II. Sh. Eg.	21	10	6	31.0	I. * Ec. Dis.		16	18		II. * Oc. Re.
	3	15		II. Tr. Eg.										

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 14h 30m for an Inverting Telescope.

Day.	West.	East.
1	3· ·2 1·	·4
2	·3	1· ·2 4·
3	·3 ·1	2· 4·
4	2·	1· ·3 4·
5	·2	4· ·3 ·1 ●
6	○ 4· 1·	·2 3·
7	4· 2·	3· ·1
8	4· 3· ·2 1·	
9	4· 3·	·2 1·
10	4· ·3 ·1	2·
11	·4 2·	·3 1·
12	·4 ·2	·3 ·1 ●
13	○ 1· ·4	·2 3·
14	○ 2· ·4	·13·
15	·23· 1·	·4
16	3·	·2 ·1 ·4
17	·3 ·1	2· ·4
18	2·	·4 ·4 ·3 ●
19	·2 ·1	·3 4·
20	○ 1·	·2 3· 4·
21		·3 4·
22	2· 3· 1·	4·
23	3· 4·	·2 ·1
24	·3 1·	2·
25	4· 2·	1· ·3 ●
26	4· ·2 ·1	·3
27	·4	1· ·2 3·
28	·4	2· 3· ·1 ●
29	·4 2· 3· 1·	
30	3· ·4	·1 ·2 ●

WASHINGTON MEAN TIME.

DECEMBER.

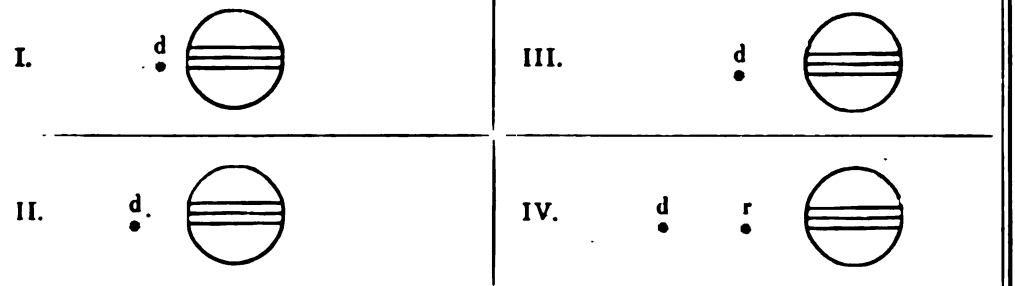
d	h	m	s			d	h	m	s			d	h	m	s		
1	2	32	56.9	IV.	Ec. Dis.	10	2	46		III.	Oc. Re.	20	18	4		I.	* Tr. Eg.
	3	44		I.	Sh. In.		3	24		I.	Tr. Eg.		20	6		III.	Tr. Eg.
	4	49		I.	Tr. In.		21	17	53.2	I.	Ec. Dis.	21	12	8	1.8	I.	* Ec. Dis.
	6	4		I.	Sh. Eg.	11	0	33		I.	Oc. Re.		15	12		I.	* Oc. Re.
	6	49	48.7	IV.	Ec. Re.		3	3	43.7	II.	Ec. Dis.		18	57	52.4	II.	Ec. Dis.
	7	9		I.	Tr. Eg.		7	53		II.	Oc. Re.		23	24		II.	Oc. Re.
	12	49		IV.	* Oc. Dis.		18	34		I.	* Sh. In.	22	9	25		I.	* Sh. In.
	17	30		IV.	* Oc. Re.		19	31		I.	Tr. In.		10	10		I.	* Tr. In.
●	0	56	17.0	I.	Ec. Dis.		20	54		I.	Sh. Eg.		11	45		I.	* Sh. Eg.
	4	19		I.	Oc. Re.		21	51		I.	Tr. Eg.		12	31		I.	* Tr. Eg.
	5	27		II.	Sh. In.	12	15	46	12.1	I.	* Ec. Dis.	23	6	36	22.9	I.	Ec. Dis.
	7	38		II.	Tr. In.		19	0		I.	Oc. Re.		9	38		I.	* Oc. Re.
	8	21		II.	Sh. Eg.		21	18		II.	Sh. In.		13	9		II.	* Sh. In.
	10	34		II.	* Tr. Eg.		23	10		II.	Tr. In.		14	37		II.	* Tr. In.
	15	18	24.1	III.	* Ec. Dis.	13	0	11		II.	Sh. Eg.		16	3		II.	* Sh. Eg.
	18	44	7.3	III.	* Ec. Re.		2	5		II.	Tr. Eg.		17	33		II.	* Tr. Eg.
	19	32		III.	Oc. Dis.		9	19		III.	* Sh. In.	24	3	11	53.1	III.	Ec. Dis.
	22	12		I.	Sh. In.		12	54		III.	* Sh. Eg.		3	54		I.	Sh. In.
	23	12		III.	Oc. Re.		12	59		III.	* Tr. In.		4	37		I.	Tr. In.
	23	16		I.	Tr. In.		13	3		I.	* Sh. In.		6	13		I.	Sh. Eg.
3	0	32		I.	Sh. Eg.		13	58		I.	* Tr. In.		6	57		I.	Tr. Eg.
	1	36		I.	Tr. Eg.		15	23		I.	* Sh. Eg.		9	40		III.	* Oc. Re.
	19	25	35.8	I.	Ec. Dis.		16	18		I.	* Tr. Eg.	25	1	4	46.8	I.	Ec. Dis.
	22	46		I.	Oc. Re.		16	39		III.	* Tr. Eg.		3	5		I.	Oc. Re.
4	0	27	50.0	II.	Ec. Dis.	14	10	14	35.2	I.	* Ec. Dis.		8	15	23.0	II.	* Ec. Dis.
	5	30		II.	Oc. Re.		13	26		I.	* Oc. Re.		12	33		II.	* Oc. Re.
	16	41		I.	* Sh. In.		16	22	4.5	II.	* Ec. Dis.		22	22		I.	Sh. In.
	17	43		I.	* Tr. In.		21	4		II.	Oc. Re.		23	3		I.	Tr. In.
	19	0		I.	Sh. Eg.	15	7	31		I.	Sh. In.	26	0	42		I.	Sh. Eg.
	20	3		I.	Tr. Eg.		8	24		I.	* Tr. In.		1	23		I.	Tr. Eg.
5	13	52	53.7	I.	* Ec. Dis.		9	51		I.	* Sh. Eg.		4	54		IV.	Sh. In.
	17	13		I.	* Oc. Re.		10	44		I.	* Tr. Eg.		9	24		IV.	* Sh. Eg.
	18	44		II.	* Sh. In.	16	4	42	54.8	I.	Ec. Dis.		11	10		IV.	* Tr. In.
	10	49		II.	Tr. In.		7	53		I.	Oc. Re.		15	53		IV.	* Tr. Eg.
	21	38		II.	Sh. Eg.		10	35		II.	* Sh. In.		19	33	6.7	I.	Ec. Dis.
	23	45		II.	Tr. Eg.		12	19		II.	* Tr. In.		22	31		I.	Oc. Re.
6	5	20		III.	Sh. In.		13	29		II.	* Sh. Eg.	27	2	26		II.	Sh. In.
	8	55		III.	* Sh. Eg.		15	15		II.	* Tr. Eg.		3	45		II.	Tr. In.
	9	27		III.	* Tr. In.		23	13	54.7	III.	Ec. Dis.		5	20		II.	Sh. Eg.
	11	9		I.	* Sh. In.	17	2	0		I.	Sh. In.		6	41		II.	Tr. Eg.
	12	11		I.	* Tr. In.		2	51		I.	Tr. In.		16	51		I.	* Sh. In.
	13	6		III.	* Tr. Eg.		4	19		I.	Sh. Eg.		17	15		III.	* Sh. In.
	13	29		I.	* Sh. Eg.		5	11		I.	Tr. Eg.		17	30		I.	* Tr. In.
	14	31		I.	* Tr. Eg.		6	15		III.	Oc. Re.		19	10		I.	Sh. Eg.
7	8	21	14.9	I.	Ec. Dis.		20	33	20.3	IV.	Ec. Dis.		19	50		I.	Tr. Eg.
	11	40		I.	* Oc. Re.		23	11	15.2	I.	Ec. Dis.		19	50		III.	Tr. In.
	13	46	13.8	II.	* Ec. Dis.	18	0	54	31.5	IV.	Ec. Re.		10	52		III.	Sh. Eg.
	18	42		II.	* Oc. Re.		2	19		I.	Oc. Re.		23	30		III.	Tr. Eg.
8	5	38		I.	Sh. In.		4	25		IV.	Oc. Dis.	28	14	1	35.8	I.	* Ec. Dis.
	6	37		I.	Tr. In.		5	39	34.8	II.	Ec. Dis.		16	57		I.	* Oc. Re.
	7	57		I.	Sh. Eg.		9	6		IV.	Oc. Re.		21	33	37.4	II.	Ec. Dis.
	8	58		I.	* Tr. Eg.		10	14		II.	* Oc. Re.	29	1	42		II.	Oc. Re.
9	2	49	33.1	I.	Ec. Dis.		20	28		I.	Sh. In.		11	19		I.	* Sh. In.
	6	6		I.	Oc. Re.		21	18		I.	Tr. In.		11	56		I.	* Tr. In.
	8	1		II.	Sh. In.		22	48		I.	Sh. Eg.		13	39		I.	* Sh. Eg.
	10	0		II.	* Tr. In.		23	38		I.	Tr. Eg.		14	16		I.	* Tr. Eg.
	10	55		II.	* Sh. Eg.	19	17	39	36.9	I.	* Ec. Dis.	30	8	29	53.9	I.	* Ec. Dis.
	10	56		IV.	* Sh. In.		30	46		I.	Oc. Re.		11	23		I.	* Oc. Re.
	12	55		II.	* Tr. Eg.		23	52		II.	Sh. In.		15	43		II.	* Sh. In.
	15	21		IV.	* Sh. Eg.	20	1	28		II.	Tr. In.		16	55		II.	* Tr. In.
	19	16	9.7	III.	Ec. Dis.		2	46		II.	Sh. Eg.		18	37		II.	* Sh. Eg.
	20	2		IV.	Tr. In.		4	24		II.	Tr. Eg.		19	50		II.	Tr. Eg.
	22	42	25.1	III.	Ec. Re.		13	17		III.	* Sh. In.	31	5	48		I.	Sh. In.
	23	6		III.	Oc. Dis.		14	57		I.	* Sh. In.		6	22		I.	Tr. In.
10	0	6		I.	Sh. In.		15	44		I.	* Tr. In.		7	10	32.8	III.	Ec. Dis.
	0	45		IV.	Tr. Eg.		16	26		III.	* Tr. In.		8	7		I.	* Sh. Eg.
	1	4		I.	Tr. In.		19	53		III.	* Sh. Eg.		8	42		I.	* Tr. Eg.
	2	26		I.	Sh. Eg.		17	17		I.	* Sh. Eg.		13	2		III.	* Oc. Re.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

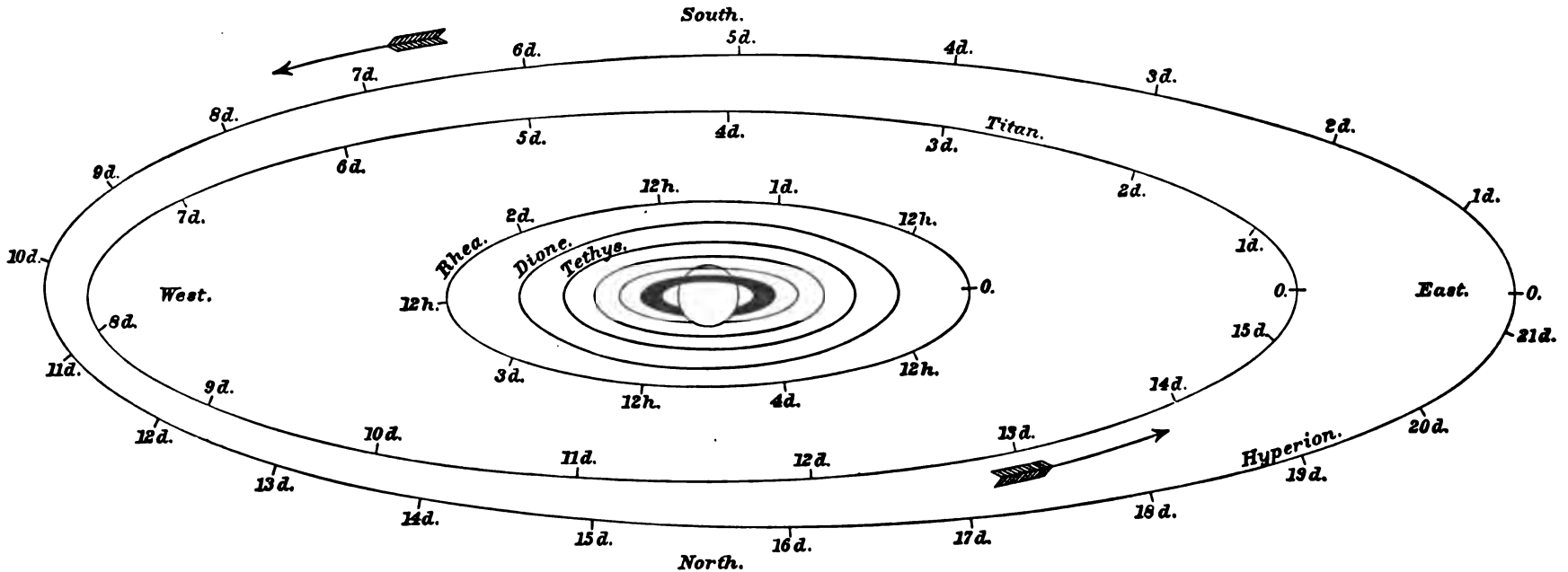
DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 13h 30m for an Inverting Telescope.

Day.	West.	East.
1	·3 1·	2· ·4 ●
2	3·	·1 ·4
3	·2 ·1	·3 ·4
4		1· ·2 ·3 ·4
5	·1	2· 3· ·4
6	○ 1· 2· 3·	4·
7	3· ·2	·1 4·
8	·3 1·	·2 4·
9	·3 2·	4· ·1
10	·2 4· 1	·3
11	4·	1/2 ·3
12	4· ·1	2· 3·
13	○ 3· 4· 2·	○ 1·
14	·4 3· ·2	○ ·1
15	·4 ·3 1·	·2
16	○ 2· ·4 ·3	·1
17	·2 1·	·3
18		3/4 1· ·3
19	·1	2· 3/4
20	2·	3/1· ·4
21	3· ·2	·4 ·1 ●
22	·3 1·	·2 4·
23	·3	○ 2· ·1 4·
24	2· 1·	○ ·3 4·
25		○ ·2 ·1 4· ·3
26	○ 4· ·1	2· 3·
27	4· 2·	3/1·
28	4· 3· ·2 ·1	○
29	○ 1· 4· 3·	·2
30	4· ·3	2/1
31	·4 2· 1·	○ ·3



APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN,

AT OPPOSITION IN 1895,

AS SEEN IN AN INVERTING TELESCOPE.

Names of the Satellites.	
I.	Mimas.
II.	Enceladus.
III.	Tethys.
IV.	Dione.
V.	Rhea.
VI.	Titan.
VII.	Hyperion.
VIII.	Iapetus.

Mean Synodic Periods.	d	h
I.	0	22.6
II.	1	8.9
III.	1	21.3
IV.	2	17.7
V.	4	12.4
VI.	15	23.3
VII.	21	7.8
VIII.	79	09.0

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The apparent positions of a satellite at any time may be marked on the diagram by counting around the orbit the interval in days and hours which has elapsed since the last east elongation. The times of these elongations may be found from the following tables. Mimas can be seen only within a few hours of each elongation: the time of every elongation visible at Washington is therefore given. The times of other elongations of any satellite in the same direction may be found by adding or subtracting any multiple of the period. For the three outer satellites the times of elongation and conjunction are given. The following abbreviations are used:—

E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

	d	h			d	h			d	h			d	h			d	h			d	h	
Jan.	5	18.5	E.	Feb.	16	17.0	W.	Mar.	17	10.9	E.	Apr.	16	14.4	E.	May	13	10.9	W.	June	12	14.6	W.
	6	17.1	E.		17	15.7	W.		21	16.5	W.		17	13.0	E.		14	9.5	W.		13	13.2	W.
	7	15.7	E.		18	14.3	W.		22	15.1	W.		18	11.6	E.		15	8.1	W.		14	11.8	W.
	13	18.8	W.		19	13.0	W.		23	13.7	W.		19	10.2	E.		18	15.3	E.		15	10.4	W.
	14	17.4	W.		20	11.6	W.		24	12.4	W.		20	8.9	E.		19	13.9	E.		16	9.1	W.
	15	16.0	W.		24	17.4	E.		25	11.0	W.		23	16.0	W.		20	12.5	E.		22	12.1	E.
	16	14.6	W.		25	16.0	E.		26	9.6	W.		24	14.6	W.		21	11.1	E.		23	10.7	E.
	22	17.6	E.		26	14.6	E.		29	16.7	E.		25	13.2	W.		22	9.7	E.		24	9.3	E.
	23	16.3	E.		27	13.2	E.		30	15.4	E.		26	11.9	W.		23	8.3	E.		30	12.4	W.
	24	14.9	E.		28	11.8	E.		31	14.0	E.		27	10.5	W.		26	15.4	W.	July	1	11.0	W.
	25	13.5	E.	Mar.	4	17.6	W.	Apr.	1	12.6	E.		28	9.1	W.		27	14.1	W.		2	9.6	W.
	30	17.9	W.		5	16.2	W.		2	11.2	E.	May	1	16.2	E.		28	12.7	W.		8	12.6	E.
	31	16.5	W.		6	14.8	W.		3	9.8	E.		2	14.8	E.		29	11.3	W.		9	11.3	E.
Feb.	1	15.1	W.		7	13.5	W.		7	15.6	W.		3	13.4	E.		30	9.9	W.		10	9.9	E.
	2	13.7	W.		8	12.1	W.		8	14.2	W.		4	12.0	E.		31	8.6	W.		17	11.5	W.
	7	18.1	E.		9	10.7	W.		9	12.8	W.		5	10.7	E.	June	4	14.3	E.		18	10.1	W.
	8	16.7	E.		13	16.4	E.		10	11.4	W.		6	9.2	E.		5	12.9	E.		19	8.8	W.
	9	15.4	E.		14	15.1	E.		11	10.0	W.		10	15.0	W.		6	11.6	E.		26	10.4	E.
	10	14.0	E.		15	13.7	E.		12	8.6	W.		11	13.6	W.		7	10.2	E.		27	9.0	E.
	11	12.6	E.		16	12.3	E.		15	15.8	E.		12	12.3	W.		8	8.8	E.	Aug.	4	9.3	W.

ENCELADUS.

	d	h			d	h			d	h			d	h			d	h			d	h	
Jan.	1	3.6	E.	Jan.	14	20.4	E.	Jan.	28	13.4	E.	Feb.	11	6.2	E.	Feb.	24	23.0	E.	Mar.	10	15.8	E.
	2	12.5	E.		16	5.3	E.		29	22.3	E.		12	15.1	E.		26	7.9	E.		12	0.7	E.
	3	21.4	E.		17	14.2	E.		31	7.1	E.		13	23.9	E.		27	16.8	E.		13	9.6	E.
	5	6.2	E.		18	23.1	E.	Feb.	1	16.0	E.		15	8.8	E.	Mar.	1	1.7	E.		14	18.5	E.
	6	15.1	E.		20	8.0	E.		3	0.9	E.		16	17.7	E.		2	10.5	E.		16	3.3	E.
	8	0.0	E.		21	16.9	E.		4	9.8	E.		18	2.6	E.		3	19.4	E.		17	12.2	E.
	9	8.9	E.		23	1.8	E.		5	18.7	E.		19	11.5	E.		5	4.3	E.		18	21.1	E.
	10	17.8	E.		24	10.7	E.		7	3.6	E.		20	20.3	E.		6	13.2	E.		20	5.9	E.
	12	2.7	E.		25	19.6	E.		8	12.5	E.		22	5.2	E.		7	22.1	E.		21	14.8	E.
	13	11.6	E.		27	4.5	E.		9	21.3	E.		23	14.1	E.		9	6.9	E.		22	23.7	E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(*Concluded.*)

d h	d h	d h	d h	d h	d h
Mar. 24 8.6 E.	Apr. 13 21.7 E.	May 4 10.8 E.	May 25 0.0 E.	June 14 13.3 E.	July 5 2.6 E.
25 17.5 E.	15 6.6 E.	5 19.7 E.	26 8.9 E.	15 22.1 E.	6 11.5 E.
27 2.3 E.	16 15.4 E.	7 4.6 E.	27 17.8 E.	17 7.0 E.	7 20.4 E.
28 11.2 E.	18 0.3 E.	8 13.5 E.	29 2.7 E.	18 15.9 E.	9 5.3 E.
29 20.1 E.	19 9.2 E.	9 22.4 E.	30 11.6 E.	20 0.8 E.	10 14.2 E.
31 5.0 E.	20 18.1 E.	11 7.2 E.	31 20.4 E.	21 9.7 E.	11 23.0 E.
Apr. 1 13.9 E.	22 2.9 E.	12 16.1 E.	June 2 5.3 E.	22 18.6 E.	13 7.9 E.
2 22.7 E.	23 11.8 E.	14 1.0 E.	3 14.2 E.	24 3.5 E.	14 16.8 E.
4 7.6 E.	24 20.7 E.	15 9.8 E.	4 23.1 E.	25 12.4 E.	16 1.7 E.
5 16.5 E.	26 5.6 E.	16 18.7 E.	6 8.0 E.	26 21.2 E.	17 10.5 E.
7 1.3 E.	27 14.5 E.	18 3.6 E.	7 16.9 E.	28 6.1 E.	18 19.4 E.
8 10.2 E.	28 23.3 E.	19 12.5 E.	9 1.7 E.	29 15.0 E.	20 4.3 E.
9 19.1 E.	30 8.2 E.	20 21.4 E.	10 10.6 E.	30 23.9 E.	21 13.2 E.
11 4.0 E.	May 1 17.1 E.	22 6.3 E.	11 19.5 E.	July 2 8.8 E.	22 22.1 E.
12 12.8 E.	3 2.0 E.	23 15.1 E.	13 4.4 E.	3 17.7 E.	24 7.0 E.

TETHYS.

d h	d h	d h	d h	d h	d h
Jan. 1 22.2 E.	Feb. 4 21.9 E.	Mar. 10 21.2 E.	Apr. 13 20.5 E.	May 17 19.7 E.	June 20 19.1 E.
3 19.5 E.	6 19.2 E.	12 18.5 E.	15 17.8 E.	19 17.0 E.	22 16.4 E.
5 16.9 E.	8 16.5 E.	14 15.8 E.	17 15.1 E.	21 14.3 E.	24 13.7 E.
7 14.2 E.	10 13.8 E.	16 13.1 E.	19 12.4 E.	23 11.6 E.	26 11.0 E.
9 11.5 E.	12 11.1 E.	18 10.4 E.	21 9.7 E.	25 8.9 E.	28 8.3 E.
11 8.8 E.	14 8.4 E.	20 7.7 E.	23 7.0 E.	27 6.2 E.	30 5.6 E.
13 6.1 E.	16 5.7 E.	22 5.0 E.	25 4.2 E.	29 3.5 E.	July 2 2.9 E.
15 3.5 E.	18 3.0 E.	24 2.3 E.	27 1.5 E.	31 0.8 E.	4 0.2 E.
17 0.8 E.	20 0.3 E.	25 23.6 E.	28 22.8 E.	June 1 22.1 E.	5 21.6 E.
18 22.0 E.	21 21.6 E.	27 20.9 E.	30 20.1 E.	3 19.4 E.	7 18.9 E.
20 19.4 E.	23 18.9 E.	29 18.2 E.	May 2 17.4 E.	5 16.7 E.	9 16.2 E.
22 16.7 E.	25 16.2 E.	31 15.5 E.	4 14.7 E.	7 14.0 E.	11 13.5 E.
24 14.0 E.	27 13.5 E.	Apr. 2 12.8 E.	6 12.0 E.	9 11.3 E.	13 10.8 E.
26 11.3 E.	Mar. 1 10.8 E.	4 10.1 E.	8 9.3 E.	11 8.6 E.	15 8.1 E.
28 8.6 E.	3 8.1 E.	6 7.4 E.	10 6.6 E.	13 5.9 E.	17 5.4 E.
30 6.0 E.	5 5.4 E.	8 4.6 E.	12 3.8 E.	15 3.2 E.	19 2.7 E.
Feb. 1 3.3 E.	7 2.6 E.	10 1.9 E.	14 1.1 E.	17 0.5 E.	21 0.0 E.
3 0.6 E.	8 23.9 E.	11 23.2 E.	15 22.4 E.	18 21.8 E.	22 21.3 E.

DIONE.

d h	d h	d h	d h	d h	d h
Jan. 1 3.9 E.	Feb. 3 0.4 E.	Mar. 7 20.5 E.	Apr. 9 16.4 E.	May 12 12.1 E.	June 14 8.1 E.
3 21.6 E.	5 18.1 E.	10 14.1 E.	12 10.0 E.	15 5.8 E.	17 1.8 E.
6 15.3 E.	8 11.7 E.	13 7.8 E.	15 3.6 E.	17 23.5 E.	19 19.5 E.
9 9.0 E.	11 5.4 E.	16 1.5 E.	17 21.3 E.	20 17.1 E.	22 13.2 E.
12 2.7 E.	13 23.1 E.	18 19.1 E.	20 14.9 E.	23 10.8 E.	25 6.8 E.
14 20.5 E.	16 16.8 E.	21 12.8 E.	23 8.6 E.	26 4.4 E.	28 0.5 E.
17 14.2 E.	19 10.5 E.	24 6.5 E.	26 2.2 E.	28 22.1 E.	30 18.2 E.
20 7.9 E.	22 4.2 E.	27 0.1 E.	28 19.9 E.	31 15.8 E.	July 3 11.9 E.
23 1.6 E.	24 21.9 E.	29 17.8 E.	May 1 13.5 E.	June 3 9.4 E.	6 5.6 E.
25 19.3 E.	27 15.5 E.	Apr. 1 11.4 E.	4 7.2 E.	6 3.1 E.	8 23.3 E.
28 13.0 E.	Mar. 2 9.2 E.	4 5.0 E.	7 0.8 E.	8 20.8 E.	11 17.0 E.
31 6.7 E.	5 2.8 E.	6 22.7 E.	9 18.5 E.	11 14.4 E.	14 10.7 E.

RHEA.

	d	h		d	h
Jan.	3	7.2 E.	Apr.	12	16.0 E.
	7	19.7 E.		17	4.3 E.
	12	8.2 E.		21	16.6 E.
	16	20.7 E.		26	5.0 E.
	21	9.2 E.		30	17.3 E.
	25	21.6 E.	May	5	5.6 E.
	30	10.1 E.		9	18.0 E.
Feb.	3	22.5 E.		14	6.3 E.
	8	10.9 E.		18	18.6 E.
	12	23.3 E.		23	6.9 E.
	17	11.7 E.		27	19.3 E.
	22	0.1 E.	June	1	7.6 E.
	26	12.6 E.		5	20.0 E.
Mar.	3	1.0 E.		10	8.4 E.
	7	13.3 E.		14	20.8 E.
	12	1.7 E.		19	9.2 E.
	16	14.0 E.		23	21.6 E.
	21	2.4 E.		28	10.0 E.
	25	14.7 E.	July	2	22.4 E.
	30	3.0 E.		7	10.8 E.
Apr.	3	15.3 E.		11	23.3 E.
	8	3.7 E.		16	11.7 E.

TITAN.

	d	h		d	h
Jan.	1	12.9 W.	Mar.	30	3.4 E.
	5	14.4 S.	Apr.	3	0.8 I.
	9	9.7 E.		7	4.8 W.
	13	7.7 I.		11	5.7 S.
	17	11.9 W.		15	1.0 E.
	21	13.2 S.		18	22.2 I.
	25	8.7 E.		23	2.0 W.
	29	6.5 I.		27	3.1 S.
Feb.	2	10.7 W.		30	22.8 E.
	6	12.2 S.	May	4	19.7 I.
	10	8.3 E.		8	23.9 W.
	14	5.9 I.		13	0.9 S.
	18	10.0 W.		16	20.5 E.
	22	11.1 S.		20	17.4 I.
	26	7.4 E.		24	21.5 W.
Mar.	2	5.0 I.		28	22.4 S.
	6	9.2 W.	June	1	17.9 E.
	10	10.0 S.		5	14.8 I.
	14	5.0 E.		9	19.0 W.
	18	2.9 I.		13	20.1 S.
	22	6.9 W.		17	15.4 E.
	26	7.8 S.	Dec.	30	14.2 I.

HYPERION.

	d	h		d	h
Jan.	3	8.3 E.	Apr.	30	14.9 W.
	9	13.5 I.	May	5	2.9 S.
	14	10.4 W.		10	21.4 E.
	18	22.7 S.		17	0.7 I.
	24	16.7 E.		21	20.1 W.
	30	21.5 I.		26	8.1 S.
Feb.	4	17.2 W.	June	1	2.7 E.
	9	5.3 S.		7	5.9 I.
	14	23.4 E.		12	1.1 W.
	21	3.8 I.		16	12.9 S.
	25	23.4 W.		22	8.4 E.
Mar.	2	11.5 S.		26	11.7 I.
	8	5.7 E.	July	3	7.0 W.
	14	9.9 I.		7	19.5 S.
	19	5.3 W.		13	15.7 E.
	23	17.3 S.		19	18.7 I.
	29	11.4 E.		24	13.3 W.
Apr.	4	15.0 I.		29	2.4 S.
	9	10.3 W.	Aug.	3	23.3 E.
	13	22.3 S.		10	1.7 I.
	19	16 5 E.	Dec.	25	20.8 S.
	25	19.7 I.	Jan.	1	0.8 E.

IAPETUS.

	d	h		d	h		d	h		d	h
Jan.	13	15.4 W.	Feb.	23	12.6 E.	Apr.	2	18.2 W.	May	12	20.2 E.
Feb.	2	18.9 S.	Mar.	13	12.0 I.		22	21.8 S.		30	17.6 I.

	d	h		d	h
June	19	23.5 W.	July	30	20.8 E.
July	9	23.4 S.	Dec.	18	23.6 S.

THE APPARENT ELEMENTS OF SATURN'S RINGS.

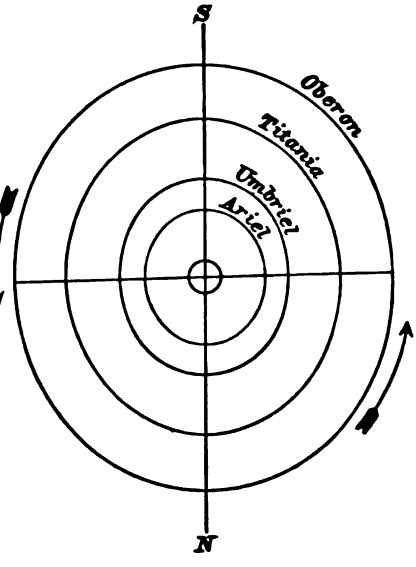
Greenwich Mean Noon.		*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	*i* The Elevation of the Earth above the Plane of the Ring.	*i'* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on the Equator.	*u'* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on the Ecliptic.
		"	"	° ′	° ′	° ′	° ′	° ′
Jan.	0	38.93	11.47	— 0 22.0	+ 18 6.1	+ 16 11.5	267 2.8	224 38.3
	20	38.12	12.04	— 0 13.0	+ 18 25.3	+ 16 25.7	268 14.9	225 50.5
Feb.	9	39.45	12.53	— 0 8.9	+ 18 31.1	+ 16 39.8	268 48.3	226 24.0
Mar.	1	40.75	12.85	— 0 9.9	+ 18 23.4	+ 16 53.6	268 40.4	226 16.1
	21	41.83	12.97	— 0 15.6	+ 18 3.8	+ 17 7.3	267 53.8	225 29.6
Apr.	10	42.49	12.85	— 0 24.9	+ 17 35.8	+ 17 20.8	266 34.2	224 14.0
	30	42.61	12.52	— 0 35.8	+ 17 4.9	+ 17 34.3	265 9.4	222 45.4
May	20	42.15	12.06	— 0 46.0	+ 16 37.1	+ 17 47.6	263 45.9	221 22.0
June	9	41.23	11.57	— 0 53.6	+ 16 18.4	+ 18 0.8	262 43.9	220 20.1
	29	40.00	11.17	— 0 57.1	+ 16 12.8	+ 18 13 9	262 14.5	219 50.7
July	19	38.68	10.90	— 0 56.2	+ 16 21.6	+ 18 26.7	262 22.5	219 58.8
Aug.	8	37.41	10.76	— 0 50.7	+ 16 43.9	+ 18 39.5	263 7.7	220 44.0
	28	36.30	10.79	— 0 41.1	+ 17 17.3	+ 18 52.1	264 26.4	222 2.9
Sept.	17	35.44	10.93	— 0 28.1	+ 17 58.6	+ 19 4.6	266 13.0	223 49.6
Oct.	7	34.87	11.20	— 0 12.3	+ 18 44.3	+ 19 17.0	268 20.6	225 57.2
	27	34.61	11.56	+ 0 5.1	+ 19 31.0	+ 19 29.2	270 41.3	228 18.0
Nov.	16	34.67	12.00	+ 0 23.3	+ 20 15.1	+ 19 41.3	273 6.5	230 43.3
Dec.	6	35.06	12.51	+ 0 40.6	+ 20 54.2	+ 19 53.2	275 25.1	233 2.0
	26	35.76	13.07	+ 0 56.7	+ 21 25.8	+ 20 5.0	277 33.4	235 10.3
	31	35.99	13.21	+ 1 0.3	+ 21 32 3	+ 20 7.9	278 1.4	235 38.4

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring	= 0.8301	log factor = 9.9445
The outer ellipse of the inner ring	= 0.8599	log factor = 9.9344
The inner ellipse of the inner ring	= 0.6650	log factor = 9.8228
The inner ellipse of the dusky ring	= 0.5486	log factor = 9.7392

NOTE.—The positive sign of *i* indicates that the visible surface of the ring is the northern one.

Date.	Position Angle.	App. Distances Ariel.	Umbriel.
Feb. 9,	−1.°3	14.″2	19.″8
May 8,	+0.3	15.0	20.8
Aug. 8,	+1.7	14.2	19.7



Date.	Position Angle.	App. Distances. Titania.	Oberon.
Feb. 9,	−1.°3	32.″4	43.″4
May 8,	+0.3	34.2	45.7
Aug. 8,	+1.7	32.4	43.3

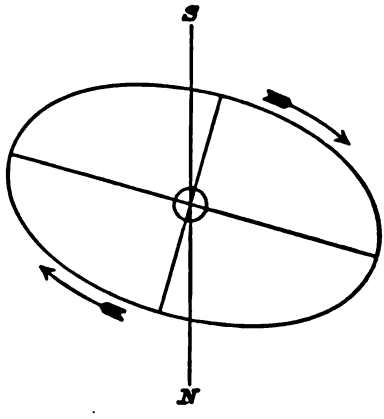
APPARENT ORBITS OF THE SATELLITES OF URANUS IN 1895, *AS SEEN IN AN INVERTING TELESCOPE.*

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ARIEL. North.		ARIEL. South.		UMBRIEL. North.		UMBRIEL. South.		TITANIA. North.		TITANIA. South.		OBERON. North and South.		
d	h	d	h	d	h	d	h	d	h	d	h	d	h	
Feb. 1	17.3	Feb. 5	12.0	Jan. 27	17.5	Jan. 29	19.2	Jan. 22	19.3	Jan. 27	3.8	Feb. 6	19.3	N.
9	6.8	13	1.5	Feb. 5	0.4	Feb. 7	2.1	31	12.3	Feb. 4	20.8	13	13.0	S.
16	20.2	20	15.0	13	7.3	15	9.1	Feb. 9	5.3	13	13.8	20	6.6	N.
24	9.7	28	4.4	21	14.3	23	16.0	17	22.3	22	6.8	27	0.2	S.
Mar. 3	23.2	Mar. 7	17.9	Mar. 1	21.2	Mar. 3	22.9	26	15.3	Mar. 2	23.8	Mar. 5	17.8	N.
11	12.7	15	7.4	10	4.2	12	5.9	Mar. 7	8.3	11	16.8	12	11.4	S.
19	2.1	22	20.9	18	11.1	20	12.8	16	1.3	20	9.8	19	5.1	N.
26	15.6	30	10.3	26	18.0	28	19.8	24	18.3	29	2.8	25	22.7	S.
Apr. 3	5.1	Apr. 6	23.8	Apr. 4	1.0	Apr. 6	2.7	Apr. 2	11.3	Apr. 6	19.8	Apr. 1	16.3	N.
10	18.5	14	13.3	12	7.9	14	9.6	11	4.3	15	12.8	8	9.9	S.
18	8.0	22	2.7	20	14.8	22	16.6	19	21.3	24	5.8	15	3.6	N.
25	21.5	29	16.2	28	21.8	30	23.5	28	14.3	May 2	22.8	21	21.2	S.
May 3	11.0	May 7	5.7	May 7	4.7	May 9	6.4	May 7	7.3	11	15.8	28	14.8	N.
11	0.4	14	19.2	15	11.7	17	13.4	16	0.3	20	8.8	May 5	8.5	S.
18	13.9	22	8.7	23	18.6	25	20.4	24	17.3	29	1.8	12	2.1	N.
26	3.4	29	22.2	June 1	1.6	June 3	3.3	June 2	10.3	June 6	18.8	18	19.8	S.
June 2	16.9	June 6	11.7	9	8.5	11	10.3	11	3.3	15	11.8	25	13.4	N.
10	6.4	14	1.1	17	15.5	19	17.2	19	20.3	24	4.9	June 1	7.0	S.
17	19.9	21	14.6	25	22.5	28	0.2	28	13.3	July 2	21.9	8	0.7	N.
25	9.4	29	4.1	July 4	5.4	July 6	7.1	July 7	6.4	11	14.9	14	18.3	S.
July 2	22.9	July 6	17.6	12	12.4	14	14.1	15	23.4	20	7.9	21	11.9	N.
10	12.4	14	7.1	20	19.3	22	21.1	24	16.4	29	0.9	28	5.5	S.
18	1.9	21	20.6	29	2.3	31	4.0	Aug. 2	9.4	Aug. 6	17.9	July 4	23.2	N.
25	15.3	29	10.1	Aug. 6	9.2	Aug. 8	11.0	11	2.4	15	10.9	11	16.8	S.
Aug. 2	4.8	Aug. 5	23.6	14	16.2	16	17.9	19	19.4	24	3.9	18	10.4	N.

	d	h		d	h
Period of Ariel,	2	12.489	Period of Titania,	8	16.942
Period of Umbriel,	4	3.460	Period of Oberon,	13	11.119

NOTE.—For Ariel only every third elongation is given, and for Umbriel every alternate one. The intermediate ones may be found by adding multiples of the period of the satellite.



Date.	Position Angle.	Apparent Distance.
	°	″
Mar. 1,	248.1	16.4
Sept. 16,	253.4	16.5
Dec. 8,	251.9	17.0

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1895, AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

East.		West.		East.		West.		East.		West.	
	d h		d h		d h		d h		d h		d h
Dec.	29 6.8	Jan.	1 5.4	Mar.	9 20.0	Mar.	12 18.5	Oct.	24 22.6	Oct.	27 21.1
Jan.	4 3.9		7 2.5	Aug.	21 6.7	Aug.	24 5.2		30 19.7	Nov.	2 18.2
	10 1.1		12 23.6		27 3.8		30 2.3	Nov.	5 16.7		8 15.3
	15 22.1		18 20.7	Sept.	2 0.8	Sept.	4 23.4		11 13.8		14 12.4
	21 19.2		24 17.8		7 21.9		10 20.5		17 10.9		20 9.5
	27 16.3		30 14.9		13 19.0		16 17.5		23 8.0		26 6.5
Feb.	2 13.4	Feb.	5 12.0		19 16.1		22 14.6		29 5.1	Dec.	2 3.6
	8 10.5		11 9.1		25 13.2		28 11.7	Dec.	5 2.2		8 0.7
	14 7.6		17 6.1	Oct.	1 10.3	Oct.	4 8.8		10 23.2		13 21.8
	20 4.7		23 3.2		7 7.3		10 5.9		16 20.3		19 18.9
	26 1.8	Mar.	1 0.3		13 4.4		16 3.0		22 17.4		25 15.9
Mar.	3 22.9		6 21.4		19 1.5		22 0.0		28 14.5		31 13.0

The above times are those of each passage of the satellite through an apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, remembering that the radius vector of the satellite describes equal areas in equal times.

Period of the satellite of Neptune, $5^d\,21^h.045$.

NOTE.—In the preceding diagrams the central circle represents the planet, and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m						°	′
Jan.	2	7	–	☽			in Perihelion.			
	5	2	56	☌	♂	☽	. . . . .	♂ −	2	9
	7	17	–		☿		in Aphelion.			
	8	3	5	☌	♆	☽	. . . . .	♆ −	6	32
	9	3	2	☌	♅	☽	. . . . .	♅ −	5	13
	9	10	–	☌	☿	☉	Superior.			
	17	19	–		☿		Greatest Hel. Lat. S.			
	18	2	2	☌	♄	☽	. . . . .	♄ +	6	25
	19	0	27	☌	♁	☽	. . . . .	♁ +	4	44
	26	4	45	☌	☿	☽	. . . . .	☿ +	1	20
	26	9	–	□	♄	☉				
	26	9	50	☌	♀	☽	. . . . .	♀ +	1	21
	30	9	–		♀		Greatest Hel. Lat. S.			
	31	20	–	☌	☿	♀	. . . . .	☿ +	0	35
Feb.	2	11	41	☌	♂	☽	. . . . .	♂ −	2	55
	4	12	23	☌	♆	☽	. . . . .	♆ −	6	42
	5	7	–	□	♂	☉				
	5	9	59	☌	♅	☽	. . . . .	♅ −	5	18
	5	20	–		☿		in ♌			
	8	3	–	□	♁	☉				
	9	1	–		☿		Greatest elong. E.	18	11	
	9	20	–	☌	☿	♀	. . . . .	☿ +	2	38
	10	10	–		☿		in Perihelion.			
	14	10	36	☌	♄	☽	. . . . .	♄ +	6	47
	14	22	–		☿		Stationary.			
	15	0	–		♄		Stationary.			
	15	8	9	☌	♁	☽	. . . . .	♁ +	5	2
	19	12	–		♅		Stationary.			
	20	17	–		☿		Greatest Hel. Lat. N.			
	21	17	–		♆		Stationary.			
	22	9	–		♁		Stationary.			
	23	22	2	☌	☿	☽	. . . . .	☿ +	5	38
	24	14	–	☌	☿	☉	Inferior.			
	25	23	19	☌	♀	☽	. . . . .	♀ −	2	3
Mar.	2	22	3	☌	♂	☽	. . . . .	♂ −	3	31
	3	3	–	□	♆	☉				
	3	19	49	☌	♆	☽	. . . . .	♆ −	6	46
	4	18	12	☌	♅	☽	. . . . .	♅ −	5	19
	8	21	–		☿		Stationary.			
	10	–	–		☽		eclipsed, vis. at Wash.			
	13	19	2	☌	♄	☽	. . . . .	♄ +	6	55
	14	16	40	☌	♁	☽	. . . . .	♁ +	5	6
	16	4	–		☿		in ♉			
	17	12	–	□	♅	☉				
	20	4	–		☉		enters ♈, Spring com.			
	23	4	44	☌	☿	☽	. . . . .	☿ +	0	19
	23	16	–		☿		Greatest elong. W.	27	48	
	24	22	–	☌	♂	♆	. . . . .	♂ +	3	1
	25	–	–		☉		eclipsed, invis. at Wash.			
	26	9	–		☿		in Aphelion.			
	27	16	–		♀		in ♌			
	27	21	–		♅		in ♌			
	28	6	30	☌	♀	☽	. . . . .	♀ −	3	58
Mar.	31	2	4	☌	♆	☽	. . . . .	♆ −	6	42
	31	8	27	☌	♂	☽	. . . . .	♂ −	3	43
Apr.	1	4	2	☌	♅	☽	. . . . .	♅ −	5	12
	10	2	34	☌	♄	☽	. . . . .	♄ +	6	50
	11	1	19	☌	♁	☽	. . . . .	♁ +	5	2
	15	19	–		☿		Greatest Hel. Lat. S.			
	23	11	40	☌	☿	☽	. . . . .	☿ −	4	51
	23	16	–	☌	♄	☉				
	25	9	–	☌	♂	♅	. . . . .	♂ +	1	27
	27	4	52	☌	♀	☽	. . . . .	♀ −	3	38
	27	8	57	☌	♆	☽	. . . . .	♆ −	6	37
	28	16	19	☌	♅	☽	. . . . .	♅ −	4	58
	28	18	48	☌	♂	☽	. . . . .	♂ −	3	30
	29	6	–	☌	♀	♆	. . . . .	♀ +	3	0
	30	1	–		♀		in Perihelion.			
May	4	7	–	☌	☿	☉	Superior.			
	4	19	–		☿		in ♌			
	7	8	27	☌	♄	☽	. . . . .	♄ +	6	42
	8	1	–	☌	♁	☉				
	8	8	56	☌	♁	☽	. . . . .	♁ +	4	54
	9	9	–		☿		in Perihelion.			
	17	23	–	☌	♀	♅	. . . . .	♀ +	2	5
	19	7	–	☌	☿	♆	. . . . .	☿ +	3	31
	19	16	–		☿		Greatest Hel. Lat. N.			
	22	4	–		♀		Greatest Hel. Lat. N.			
	24	17	45	☌	♆	☽	. . . . .	♆ −	6	28
	25	10	36	☌	☿	☽	. . . . .	☿ −	2	44
	26	7	34	☌	♅	☽	. . . . .	♅ −	4	39
	26	21	52	☌	♀	☽	. . . . .	♀ −	2	10
	27	5	52	☌	♂	☽	. . . . .	♂ −	2	53
	30	10	–		♂		Greatest Hel. Lat. N.			
June	3	12	50	☌	♄	☽	. . . . .	♄ +	6	38
	4	5	–		☿		Greatest elong. E.	23	45	
	4	14	48	☌	♁	☽	. . . . .	♁ +	4	54
	4	17	–	☌	♀	♂	. . . . .	♀ +	0	58
	5	19	–	☌	♆	☉				
	7	22	–	☌	☿	♅	. . . . .	☿ +	0	47
	12	4	–		☿		in ♌			
	17	13	–		☿		Stationary.			
	21	0	–		☉		enters ♋, Summer com.			
	21	4	25	☌	♆	☽	. . . . .	♆ −	6	28
	21	9	–	☌	☿	♅	. . . . .	☿ −	2	34
	22	9	–		☿		in Aphelion.			
	23	0	6	☌	☿	☽	. . . . .	☿ −	7	23
	23	1	35	☌	♅	☽	. . . . .	♅ −	4	20
	24	18	19	☌	♂	☽	. . . . .	♂ −	1	50
	25	11	3	☌	♀	☽	. . . . .	♀ −	0	37
	30	17	16	☌	♄	☽	. . . . .	♄ +	6	42
	30	21	–	☌	☿	☉	Inferior.			
July	1	11	–		⊕		in Aphelion.			
	1	19	32	☌	♁	☽	. . . . .	♁ +	5	2
	4	11	–		♄		Stationary.			
	4	14	–		♂		in Aphelion.			

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m						° ′
July	9	20	–	☌	☿	☉			
	10	16	–		♀		Greatest elong. E.		45 31
	12	0	–		☿		Stationary.		
	12	18	–		☿		Greatest Hel. Lat. S.		
	17	5	–		♀		in ♍.		
	18	15	55	☌	☽	☽	. . . . .	☽	— 6 35
	20	1	30	☌	☿	☽	. . . . .	☿	— 7 29
	20	21	26	☌	☿	☽	. . . . .	☿	— 4 1
	22	5	–		☿		Greatest elong. W.		20 1
	23	8	–	□	♄	☉			
	23	8	34	☌	♂	☽	. . . . .	♂	— 0 24
	24	11	–		☉		Stationary.		
	24	16	42	☌	♀	☽	. . . . .	♀	— 0 38
	27	23	48	☌	♄	☽	. . . . .	♄	+ 6 48
	29	0	46	☌	☉	☽	. . . . .	☉	+ 5 13
	31	18	–		☿		in ♌		
Aug.	1	0	–	☌	☿	☿	. . . . .	☿	— 0 9
	5	8	–		☿		in Perihelion.		
	8	2	–	□	☉	☉			
	15	2	29	☌	☿	☽	. . . . .	☿	— 6 42
	15	16	–		☿		Greatest Hel. Lat. N.		
	17	2	–	☌	☿	☉	Superior.		
	17	17	40	☌	☿	☽	. . . . .	☿	— 3 42
	19	–	–		☉		eclipsed, invis at Wash.		
	20	1	15	☌	☿	☽	. . . . .	☿	+ 0 39
	20	11	–		♀		in Aphelion.		
	21	0	36	☌	♂	☽	. . . . .	♂	+ 1 18
	22	2	31	☌	♀	☽	. . . . .	♀	— 4 4
	24	9	52	☌	♄	☽	. . . . .	♄	+ 6 53
	25	8	9	☌	☉	☽	. . . . .	☉	+ 5 20
	26	7	–		♀		Stationary.		
	31	18	–	☌	☿	♂	. . . . .	☿	— 0 1
Sept.	3	–	–		☽		eclipsed, vis. at Wash.		
	5	5	–	☌	☿	♀	. . . . .	☿	+ 9 58
	8	3	–		☿		in ♍		
	9	6	–	☌	♀	♂	. . . . .	♀	— 9 59
	10	8	–	□	☿	☉			
	11	10	46	☌	☿	☽	. . . . .	☿	— 6 44
	12	1	–		♀		Greatest Hel. Lat. S.		
	14	12	22	☌	☿	☽	. . . . .	☿	— 3 19
	17	23	40	☌	♀	☽	. . . . .	♀	— 8 25
	18	–	–		☉		eclipsed, invis. at Wash.		
	18	8	–		☿		in Aphelion.		
	18	13	–	☌	♀	☉	Inferior.		
	18	17	57	☌	♂	☽	. . . . .	♂	+ 2 58
	19	21	6	☌	☿	☽	. . . . .	☿	+ 1 55
	20	15	–		☿		Stationary.		
	20	23	23	☌	♄	☽	. . . . .	♄	+ 6 55
	21	18	34	☌	☉	☽	. . . . .	☉	+ 5 20
	22	14	–		☉		enters ♎, Autumn com.		
Oct.	1	6	–		☿		Greatest elong. E.		25 44
	7	13	–		♀		Stationary.		
Oct.	8	16	34	☌	☿	☽	. . . . .	☿	— 6 40
	8	17	–		☿		Greatest Hel. Lat. S.		
	10	16	–	☌	♂	☉			
	12	3	36	☌	☿	☽	. . . . .	☿	— 2 51
	13	17	–		☿		Stationary.		
	15	0	12	☌	♀	☽	. . . . .	♀	— 4 1
	17	11	54	☌	♂	☽	. . . . .	♂	+ 4 17
	18	14	6	☌	☿	☽	. . . . .	☿	+ 1 46
	18	15	0	☌	♄	☽	. . . . .	♄	+ 6 55
	19	7	13	☌	☉	☽	. . . . .	☉	+ 5 17
	25	5	–	☌	☿	☉	Inferior.		
	27	15	–	☌	☿	♂	. . . . .	☿	— 0 30
	27	17	–		☿		in ♌		
	31	2	–	□	☿	☉			
Nov.	1	7	–		☿		in Perihelion.		
	1	23	–	☌	♄	☉			
	2	19	–		☿		Stationary.		
	4	21	19	☌	☿	☽	. . . . .	☿	— 6 32
	7	8	–		♀		in ♌		
	8	14	2	♂	☿	☽	. . . . .	☿	— 2 22
	10	5	–		☿		Greatest elong. W.		19 10
	11	15	–		☿		Greatest Hel. Lat. N.		
	12	4	–	☌	☉	☉			
	12	16	39	☌	♀	☽	. . . . .	♀	+ 3 9
	14	19	13	☌	☿	☽	. . . . .	☿	+ 6 45
	15	5	57	☌	♂	☽	. . . . .	♂	+ 5 2
	15	6	35	☌	♄	☽	. . . . .	♄	+ 7 0
	15	20	14	☌	☉	☽	. . . . .	☉	+ 5 15
	16	0	–	☌	☉	♄	. . . . .	♂	— 1 59
	18	0	–	☌	♂	α	Libræ . . .	♂	— 0 6
	20	5	–	☌	☿	♄	. . . . .	☿	— 0 29
	23	7	–	☌	☿	♂	. . . . .	☿	+ 1 13
	25	7	–		☿		Stationary.		
	25	20	–	☌	☿	☉	. . . . .	☿	+ 0 50
	29	2	–	☌	♂	☉	. . . . .	♂	— 0 9
	29	10	–		♀		Greatest elong. W.		46 47
Dec.	2	3	8	☌	☿	☽	. . . . .	☿	— 6 27
	5	2	–		☿		in ♍		
	5	20	3	☌	☿	☽	. . . . .	☿	— 1 59
	8	6	–	☌	☿	☉			
	10	23	–		♀		in Perihelion.		
	12	2	56	☌	♀	☽	. . . . .	♀	+ 7 23
	12	20	4	☌	♄	☽	. . . . .	♄	+ 7 13
	13	7	36	☌	☉	☽	. . . . .	☉	+ 5 21
	13	23	–		♂		in ♍		
	13	23	44	☌	♂	☽	. . . . .	♂	+ 5 7
	15	7	–		☿		in Aphelion.		
	15	8	49	☌	☿	☽	. . . . .	☿	+ 3 46
	20	0	–	☌	☿	☉	Superior.		
	21	8	–		☉		enters ♑, Winter com.		
	22	4	–	☌	♀	♄	. . . . .	♀	+ 0 33
	28	3	–	☌	♀	☉	. . . . .	♀	+ 2 29

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Åbo	+ 60 26 56.8	− 10 2.1	9.998887	− 6 37 18.45	− 1 29 6.41
Adelaide	− 34 55 33.8	+ 10 56.8	9.999520	−14 22 32.34	− 9 14 20.30
Albany	+ 42 39 49.5	− 11 38.0	9.999326	− 0 13 12.87	+ 4 54 59.17
Alfred (N. Y.)	+ 42 15 19.8	− 11 37.0	9.999337	+ 0 2 55.00	+ 5 11 7.04
Algier (*Old Obs.*)	+ 36 44 0	− 11 10.8	9.999476	− 5 20 28.95	− 0 12 16.91
Algier (*New Obs.*)	+ 36 47 50	− 11 11.3	9.999474	− 5 20 20.59	− 0 12 8.55
Allegheny	+ 40 27 41.6	− 11 31.3	9.999383	+ 0 11 50.89	+ 5 20 2.93
Altona	+ 53 32 45.3	− 11 10.2	9.999049	− 5 47 58.39	− 0 39 46.35
Amherst	+ 42 22 17.1	− 11 37.3	9.999334	− 0 18 7.37	+ 4 50 4.67
Annapolis	+ 38 58 53.5	− 11 24.5	9.999282	− 0 2 15.60	+ 5 5 56.44
Ann Arbor	+ 42 16 48.0	− 11 37.0	9.999336	+ 0 26 43.10	+ 5 34 55.14
Arcetri	+ 43 45 14.4	− 11 39.7	9.999298	− 5 53 15.15	− 0 45 3.11
Armagh	+ 54 21 12.7	− 11 4.2	9.999029	− 4 41 36.54	+ 0 26 35.5
Athens	+ 37 58 20.0	− 11 18.9	9.999445	− 6 43 7.74	− 1 34 55.7
Beloit	+ 42 30 9.0	− 11 37.6	9.999331	+ 0 47 55.26	+ 5 56 7.30
Berlin	+ 52 30 16.7	− 11 17.1	9.999075	− 6 1 46.95	− 0 53 34.91
Berne	+ 46 57 8.7	− 11 39.0	9.999216	− 5 37 58.04	− 0 29 46.0
Besançon	+ 47 14 59.0	− 11 38.5	9.999207	− 5 32 9.24	− 0 23 57.20
Bethlehem	+ 40 36 23.4	− 11 31.9	9.999379	− 0 6 40.19	+ 5 1 31.85
Birr Castle	+ 53 5 47.0	− 11 13.3	9.999061	− 4 36 31.14	+ 0 31 40.9
Bologna	+ 44 29 47.0	− 11 40.3	9.999279	− 5 53 36.64	− 0 45 24.6
Bonn	+ 50 43 45.0	− 11 27.0	9.999120	− 5 36 35.33	− 0 28 23.29
Bordeaux	+ 44 50 16.7	− 11 40.4	9.999271	− 5 6 6.60	+ 0 2 5.44
Bothkamp	+ 54 12 9.6	− 11 5.3	9.999033	− 5 48 42.84	− 0 40 30.8
Breslau	+ 51 6 56.5	− 11 25.0	9.999110	− 6 16 20.75	− 1 8 8.71
Brussels	+ 50 51 10.5	− 11 26.4	9.999117	− 5 25 40.64	− 0 17 28.6
Cambridge (*England*)	+ 52 12 51.6	− 11 18.9	9.999082	− 5 8 34.79	− 0 0 22.75
Cambridge (*Mass.*)	+ 42 22 47.6	− 11 37.3	9.999334	− 0 23 41.05	+ 4 44 30.99
Cape of Good Hope	− 33 56 3.4	+ 10 48.0	9.999543	− 6 22 6.78	− 1 13 54.74
Chapultepec	+ 19 25 17.5	− 7 18.2	9.999838	+ 1 28 26.20	+ 6 36 38.24
Charkow	+ 50 0 10.2	− 11 30.2	9.999138	− 7 33 6.74	− 2 24 54.7
Charlottesville	+ 38 2 1.2	− 11 19.3	9.999444	+ 0 5 53.18	+ 5 14 5.22
Chicago	+ 41 50 1.0	− 11 35.9	9.999348	+ 0 42 14.69	+ 5 50 26.73
Christiania	+ 59 54 43.7	− 10 8.7	9.998899	− 5 51 5.89	− 0 42 53.85
Cincinnati (*New Obs.*)	+ 39 8 19.5	− 11 25.4	9.999416	+ 0 29 29.25	+ 5 37 41.29
Cincinnati (*Old Obs.*)	+ 39 6 26.5	− 11 25.2	9.999417	+ 0 29 47.01	+ 5 37 59.05
Clinton	+ 43 3 17.0	− 11 38.7	9.999316	− 0 6 34.65	+ 5 1 37.39
Coimbra	+ 40 12 25.8	− 11 30.3	9.999389	+ 4 34 37.54	+ 0 33 34.5
Copenhagen	+ 55 41 13.6	− 10 53.1	9.998997	− 5 58 30.96	− 0 50 18.92
Cordoba	− 31 25 15.5	+ 10 22.3	9.999602	− 0 51 23.84	+ 4 16 48.2
Cracow	+ 50 3 50.0	− 11 30.0	9.999137	− 6 28 2.41	− 1 19 50.37
Dantzig	+ 54 21 18.0	− 11 4.1	9.999029	− 6 22 51.34	− 1 14 39.3
Denver	+ 39 40 36.4	− 11 27.9	9.999402	+ 1 51 35.59	+ 6 59 47.63
Dorpat	+ 58 22 47.4	− 10 26.4	9.998934	− 6 55 5.54	− 1 46 53.5
Dresden	+ 51 2 16.8	− 11 25.4	9.999112	− 6 3 6.88	− 0 54 54.84
Dublin	+ 53 23 13	− 11 11.3	9.999053	− 4 42 50.04	+ 0 25 22
Dun Echt	+ 57 9 36	− 10 39.3	9.998962	− 4 58 32.04	+ 0 9 40.0

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Durham	+ 54 46 6.2	— 11 0.9	9.999019	— 5 1 52.24	+ 0 6 19.8
Düsseldorf	+ 51 12 25	— 11 24.6	9.999108	— 5 35 17.04	— 0 27 5
Edinburgh	+ 55 57 23.2	— 10 50.7	9.999991	— 4 55 28.99	+ 0 12 43.05
Florence	+ 43 46 4.1	— 11 39.7	9.999298	— 5 53 13.54	— 0 45 1.5
Geneva	+ 46 11 58.8	— 11 39.9	9.999236	— 5 32 48.81	— 0 24 36.77
Georgetown	+ 38 54 26.2	— 11 24.2	9.999422	+ 0 0 6.20	+ 5 8 18.24
Glasgow (*Missouri*)	+ 39 13 45.6	— 11 25.8	9.999414	+ 1 3 5.93	+ 6 11 17.97
Glasgow (*Scotland*)	+ 55 52 42.8	— 10 51.4	9.999993	— 4 51 1.44	+ 0 17 10.6
Gotha	+ 50 56 37.5	— 11 25.9	9.999114	— 5 51 2.57	— 0 42 50.53
Göttingen	+ 51 31 47.9	— 11 22.9	9.999100	— 5 47 58.28	— 0 39 46.24
Greenwich	+ 51 28 38.4	— 11 23.1	9.999101	— 5 8 12.04	0 0 0
Hamburg	+ 53 33 7.0	— 11 10.1	9.999049	— 5 48 5.74	— 0 39 53.7
Hanover	+ 43 42 15	— 11 39.6	9.999300	— 0 19 4.13	+ 4 49 7.91
Hastings-on-Hudson	+ 40 59 25	— 11 33.2	9.999369	— 0 12 42.4	+ 4 55 29.64
Haverford	+ 40 0 40.1	— 11 29 4	9.999394	— 0 6 59.34	+ 5 1 12.70
Helsingfors	+ 60 9 43.3	— 10 5.6	9.998893	— 6 48 1.20	— 1 39 49.16
Hereny Ungarn	+ 47 15 47.4	— 11 38.4	9.999208	— 6 14 36.75	— 1 6 24.71
Hong Kong	+ 22 18 12.2	— 8 10.7	9.999789	—12 44 53.94	— 7 36 41.9
Hudson	+ 41 14 42.6	— 11 34.1	9.999363	+ 0 17 32.12	+ 5 25 44.16
Ipswich	+ 52 0 33.0	— 11 20.1	9.999088	— 5 13 7.81	— 0 4 55.80
Jena	+ 50 55 35.6	— 11 26.0	9.999115	— 5 54 32.85	— 0 46 20.81
Karlsruhe	+ 49 0 29.6	— 11 33.9	9.999163	— 5 41 48.55	— 0 33 36.51
Kasan	+ 55 47 24.2	— 10 52.2	9.998995	— 8 24 40.94	— 3 16 28.9
Kew	+ 51 28 6	— 11 23.2	9.999101	— 5 6 56.94	+ 0 1 15.1
Kiel	+ 54 20 29.7	— 11 4.2	9.999030	— 5 48 47.80	— 0 40 35.76
Kiew	+ 50 27 11.1	— 11 28.2	9.999127	— 7 10 12.68	— 2 2 0.64
Königsberg	+ 54 42 50.6	— 11 1.3	9.999021	— 6 30 10.95	— 1 21 58.91
Kremsmünster	+ 48 3 23.7	— 11 36.7	9.999188	— 6 4 44.24	— 0 56 32.2
Leiden	+ 52 9 20.0	— 11 19.3	9.999084	— 5 26 8.39	— 0 17 56.35
Leipzig	+ 51 20 6.3	— 11 23.9	9.999104	— 5 57 46.06	— 0 49 34.02
Leyton	+ 51 34 34	— 11 22.6	9.999098	— 5 8 11.17	+ 0 0 0.87
Lisbon (*Marine Obs.*)	+ 38 42 17.6	— 11 23.3	9.999427	— 4 31 47.04	+ 0 36 25.0
Lisbon (*Royal Obs.*)	+ 38 42 31.3	— 11 23.1	9.999427	— 4 31 27.36	+ 0 36 44.68
Liverpool	+ 53 24 4	— 11 11.2	9.999053	— 4 55 54.84	+ 0 12 17.2
Lübec	+ 53 51 31.2	— 11 7 9	9.999042	— 5 50 57.59	— 0 42 45.55
Lund	+ 55 41 52.1	— 10 53.0	9.998997	— 6 0 57.07	— 0 52 45.03
Lyons	+ 45 41 40.0	— 11 40.3	9.999248	— 5 27 19.90	— 0 19 7.86
Madison	+ 43 4 37.0	— 11 38.7	9.999316	+ 0 49 25.79	+ 5 57 37.83
Madras	+ 13 4 8.1	— 5 7.6	9.999925	—10 29 11.46	— 5 20 59.42
Madrid	+ 40 24 30.0	— 11 31.1	9.999384	— 4 53 26.64	+ 0 14 45.4
Manheim	+ 49 29 11.0	— 11 32.2	9.999151	— 5 42 2.56	— 0 33 50.52
Marburg	+ 50 48 46.9	— 11 26.6	9.999118	— 5 43 17.04	— 0 35 5.0
Markree	+ 54 10 31.8	— 11 5.5	9.999034	— 4 34 23.64	+ 0 33 48.4
Marseilles	+ 43 18 19.1	— 11 39.1	9.999310	— 5 29 46.68	— 0 21 34.64
Melbourne	— 37 49 53.3	+ 11 18.1	9.999449	—14 48 6.18	— 9 39 54.14
Mexico	+ 19 26 1.3	— 7 18.4	9.999839	+ 1 28 14.63	+ 6 36 26.67
Milan	+ 45 27 59.2	— 11 40.4	9.999254	— 5 44 58.01	— 0 36 45.97

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude From Washington.	Longitude From Greenwich.
				h m s	h m s
Modena	+ 44 38 52.8	− 11 40.4	9.999275	− 5 51 54.84	− 0 43 42.8
Montreal	+ 45 30 17.0	− 11 40.4	9.999253	− 0 13 53.50	+ 4 54 18.54
Montsouris	+ 48 49 18.0	− 11 34.5	9.999168	− 5 17 32.72	− 0 9 20.68
Moscow	+ 55 45 19.8	− 10 54.3	9.999995	− 7 38 28.94	− 2 30 16.9
Mount Hamilton	+ 37 20 23.5	− 11 14.9	9.999461	+ 2 58 22.05	+ 8 6 34.69
Munich	+ 48 8 45.5	− 11 36.5	9.999136	− 5 54 38.17	− 0 46 26.13
Naples	+ 40 51 45.4	− 11 32.8	9.999372	− 6 5 12.94	− 0 57 0.9
Nashville	+ 36 8 58.2	− 11 6.6	9.999490	+ 0 38 55.93	+ 5 47 7.97
Natal	− 29 50 47 0	+ 10 3.7	9.999637	− 7 10 13.20	− 2 2 1.16
Neuchatel	+ 46 59 51.0	− 11 38.9	9.999215	− 5 36 2.24	− 0 27 50.2
New Haven	+ 41 18 36.5	− 11 34.3	9.999361	− 0 16 29.90	+ 4 51 42.14
New York (*Columb. Coll.*)	+ 40 45 23.1	− 11 32.4	9.999375	− 0 12 18.40	+ 4 55 53.64
New York (RUTHERFURD)	+ 40 43 48.5	− 11 32.3	9.999376	− 0 12 15.00	+ 4 55 57 04
Nice	+ 43 43 16.7	− 11 39.6	9.999299	− 5 37 24.24	− 0 29 12.20
Nicolaeff	+ 46 58 20.6	− 11 37.3	9.999216	− 7 16 6.14	− 2 7 54.1
Northfield	+ 44 27 41 6	− 11 40.3	9.999280	+ 1 4 23.77	+ 6 12 35.81
Odessa	+ 46 28 36	− 11 39.6	9.999228	− 7 11 14.34	− 2 3 2.3
Ogden	+ 41 13 8.6	− 11 34.0	9.999363	+ 2 19 47.52	+ 7 27 59.56
O-Gyalla	+ 47 52 43.4	− 11 37.1	9.999192	− 6 20 57.63	− 1 12 45.59
Olmütz	+ 49 35 43	− 11 31.8	9.999149	− 6 17 14.64	− 1 9 2.6
Oxford (*Mississippi*)	+ 34 22 12.6	− 10 52.0	9.999533	+ 0 49 55.05	+ 5 58 7.09
Oxford (*Radcliffe*)	+ 51 45 36.0	− 11 22.4	9.999094	− 5 3 9.44	+ 0 5 2.6
Oxford (*University*)	+ 51 45 34.2	− 11 22.4	9.999094	− 5 3 11.64	+ 0 5 0.40
Padua	+ 45 24 2.5	− 11 40.4	9.999256	− 5 55 41.17	− 0 47 29.13
Palermo	+ 38 6 44	− 11 19.7	9.999442	− 6 1 37.04	− 0 53 25.0
Paramatta	− 33 48 49.8	+ 10 46.9	9.999546	− 15 12 18.24	− 10 4 6.2
Paris	+ 48 50 11.8	− 11 34.5	9.999168	− 5 17 32.99	− 0 9 20.95
Philadelphia	+ 39 57 7.5	− 11 29.2	9.999396	− 0 7 33.58	+ 5 0 38.46
Plonsk	+ 52 37 40.0	− 11 16.4	9.999072	− 6 29 44.05	− 1 21 32.01
Pola	+ 44 51 49.0	− 11 40.4	9.999270	− 6 3 35.22	− 0 55 23.18
Portsmouth	+ 50 48 3.0	− 11 26.6	9.999118	− 5 3 48.14	+ 0 4 23.90
Potsdam	+ 52 22 56	− 11 17.9	9.999078	− 6 0 29.04	− 0 52 17
Poughkeepsie	+ 41 41 18	− 11 35.4	9.999351	− 0 12 38.44	+ 4 55 33.6
Prague	+ 50 5 18.8	− 11 29.8	9.999136	− 6 5 53.44	− 0 57 41.4
Princeton	+ 40 20 57.8	− 11 30.8	9.999385	− 0 9 34.54	+ 4 58 37.50
Providence	+ 41 50 21	− 11 35.9	9.999348	− 0 22 36.14	+ 4 45 35.90
Pulkowa	+ 59 46 18.7	− 10 10.4	9.998902	− 7 9 30.71	− 2 1 18.67
Quebec	+ 46 48 17.3	− 11 39.2	9.999220	− 0 23 22.74	+ 4 44 49.3
Rio de Janeiro	− 22 54 23.8	+ 8 21.1	9.999779	− 2 15 30.63	+ 2 52 41.41
Rochester	+ 43 9 16.8	− 11 38.8	9.999313	+ 0 2 9.74	+ 5 10 21.78
Rome (*Coll. Rom.*)	+ 41 53 53.6	− 11 36.1	9.999346	− 5 58 6.74	− 0 49 54.70
Rome (*Capitol*)	+ 41 53 33.5	− 11 36.0	9.999346	− 5 58 8.56	− 0 49 56.52
San Fernando	+ 36 27 41.5	− 11 8.9	9.999483	− 4 43 22.44	+ 0 24 49.6
San Francisco	+ 37 47 24.1	− 11 17.8	9.999450	+ 3 1 30.47	+ 8 9 42.51
Santiago de Chile	− 33 26 42.0	+ 10 43.4	9.999555	− 0 25 25.74	+ 4 42 46.30
Schwerin	+ 53 37 38.2	− 11 9.6	9.999047	− 5 53 52.74	− 0 45 40.7
Senftenberg	+ 50 5 10.1	− 11 29.8	9.999136	− 6 14 2.64	− 1 5 50.6

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
South Hadley . .	+ 42 15 18.2	− 11 37.0	9.999337	− 0 17 51.75	+ 4 50 20.29
Speier . . .	+ 49 18 55.4	− 11 32.9	9.999156	− 5 41 57.64	− 0 33 45.6
St. Louis . . .	+ 38 38 3.6	− 11 22.7	9.999429	+ 0 52 37.07	+ 6 0 49.11
St. Petersburg . .	+ 59 56 29.7	− 10 8.4	9.998898	− 7 9 25.54	− 2 1 13.5
St. Petersburg (*Univ.*)	+ 59 56 29.7	− 10 8.4	9.998898	− 7 9 23.45	− 2 1 11.41
Stockholm . .	+ 59 20 33.0	− 10 15.5	9.998912	− 6 20 26.04	− 1 12 14.00
Stonyhurst . .	+ 53 50 40	− 11 8.0	9.999042	− 4 58 19.36	+ 0 9 52.68
Strassburg (*New Obs.*)	+ 48 34 59.7	− 11 35.3	9.999174	− 5 39 16.69	− 0 31 4.65
Strassburg (*Old Obs.*)	+ 48 34 53.8	− 11 35.3	9.999174	− 5 39 14.53	− 0 31 2.49
Sydney . . .	− 33 51 41.1	+ 10 47.3	9.999545	− 15 13 1.58	− 10 4 49.54
Syracuse . . .	+ 43 2 13.1	− 11 38.6	9.999317	− 0 3 38.68	+ 5 4 33.36
Tacubaya . . .	+ 19 24 17.5	− 7 17.8	9.999839	+ 1 28 34.45	+ 6 36 46.49
Taschkent . .	+ 41 19 32.2	− 11 34.4	9.999361	− 9 45 22.84	− 4 37 10.80
Tokio . . .	+ 35 39 17.5	− 11 2.8	9.999502	− 16 14 19.85	− 11 6 7.81
Toronto . . .	+ 43 39 35.9	− 11 39.6	9.999301	+ 0 9 22.61	+ 5 17 34.65
Toulouse . . .	+ 43 36 47	− 11 39.5	9.999302	− 5 14 3.14	− 0 5 51.1
Tulse Hill . . .	+ 51 26 47.0	− 11 23.3	9.999102	− 5 7 44.35	+ 0 0 27.69
Turin	+ 45 4 6.0	− 11 40.4	9.999265	− 5 39 0.44	− 0 30 48.4
Twickenham . .	+ 51 27 4.2	− 11 23.3	9.999102	− 5 6 58.94	+ 0 1 13.1
Upsala (*New Obs.*) .	+ 59 51 29.4	− 10 9.3	9.998900	− 6 18 42.27	− 1 10 30.23
Utrecht . . .	+ 52 5 10.5	− 11 19.7	9.999086	− 5 28 43.74	− 0 20 31.7
Venice . . .	+ 45 25 49.5	− 11 40.4	9.999255	− 5 57 37.41	− 0 49 25.4
Vienna (*Josephstadt*)	+ 48 12 53.8	− 11 36.2	9.999183	− 6 13 37.34	− 1 5 25.3
Vienna (*New Obs.*) .	+ 48 13 55.4	− 11 36.2	9.999183	− 6 13 33.26	− 1 5 21.22
Vienna (*Old Obs.*) .	+ 48 12 35.5	− 11 36.3	9.999184	− 6 13 43.78	− 1 5 31.74
Vienna (*Ottakring*) .	+ 48 12 47.2	− 11 36.2	9.999183	− 6 13 23.15	− 1 5 11.11
Warsaw . . .	+ 52 13 5.7	− 11 18.9	9.999082	− 6 32 19.44	− 1 24 7.4
Washington . .	+ 38 53 38.8	− 11 24.1	9.999422	0 0 0	+ 5 8 12.04
West Point (*Old Obs.*)	+ 41 23 31	− 11 34.6	9.999359	− 0 12 22.71	+ 4 55 49.33
West Point (*New Obs.*)	+ 41 23 22.1	− 11 34.6	9.999359	− 0 12 21.49	− 4 55 50.55
Wilhelmshaven .	+ 53 31 52.0	− 11 10.3	9.999050	− 5 40 47.25	− 0 32 35.21
Williamstown (*Mass.*)	+ 42 42 49	− 11 38.0	9.999325	− 0 15 18.6	+ 4 52 53.44
Williamstown (*Victoria*)	− 37 52 7.2	+ 11 18.3	9.999448	− 14 47 50.84	− 9 39 38.8
Wilna . . .	+ 54 41 0	− 11 1.6	9.999021	− 6 49 23.94	− 1 41 11.9
Windsor . . .	− 33 36 30.8	+ 10 40.5	9.999551	− 15 11 32.81	− 10 3 20.77
Zürich . . .	+ 47 22 40.0	− 11 38.2	9.999205	− 5 42 24.64	− 0 34 12.6

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

THE greater portion of this Ephemeris, embracing the positions of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the sun, the moon's longitude and latitude, data for the libration of the moon, the obliquity of the ecliptic, the equation of the equinoxes, etc.

TIME.

Astronomers make use of several different kinds of time; mean solar time; true, or apparent solar time; and sidereal time.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour-angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the same meridian are not exactly equal, owing to the varying motion of the earth around the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal it is impossible to regulate a clock or chronometer so that it shall accurately follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called the *Mean Sun*, is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion; it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes of time.

Mean Solar Time, which is perfectly equable in its increase, is measured by the motion of this mean sun. The clocks in ordinary use and the chronometers used by navigators are regulated to mean solar time.

True, or *Apparent Solar Time* is measured by the motion of the real sun.

The difference between apparent and mean time is called the *Equation of Time.* By means of it, we change apparent to mean time, or the reverse. Thus, if the apparent time be given, the mean time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I of the Calendar for each month. If the mean time be given, the apparent time is obtained by applying the equation of time as directed by the precept on page II of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars; or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascension of the stars is counted. This point is the vernal equinox, and its hour-angle is called *Sidereal Time.* Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over the meridian, and its next succeeding return to the same meridian. It is about $3^m\ 56^s$ shorter than the mean solar day; 365¼ solar days, or a year, being divided into 366¼ sidereal days. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21st of each year the sidereal clock agrees with the mean time, or ordinary clock, and the former gains on the latter about $3^m\ 56^s$ per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean time clock.

Day.—The *Civil Day*, according to the customs of society, commences at midnight, and comprises twenty-four hours, from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each, of which the first is marked A. M., and the last is marked P. M.

The *Astronomical Day* commences at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first period of the civil day answers to the last part of the preceding astronomical day, and the last period of the civil day corresponds to the first part of the same astronomical day. Thus, January 9th, 2 o'clock, A. M , civil time, is January 8th, 14^h, astronomical time; and January 9th, 2 o'clock, P. M., civil time, is also January 9th, 2^h, astronomical time. The rule, then, for the transformation of civil time into astronomical time is this:—*If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.*

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 *hours. If greater than* 12 *hours, we subtract* 12 *hours from it, add* 1 *to the days, and write A. M.* For example, January 3d, 23 hours, astronomical time, is January 4th, 11 o'clock, A. M., civil time.

If the longitude from Greenwich be expressed in time, and, when *west*, *added* to the local time, or, when *east*, *subtracted* from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the Greenwich mean time, which ordinarily is that required for the use of this Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, the contents of which are as follow:—

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, and the *Equation of Time.* Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of any quantity for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, and, when greater accuracy is required, should be first interpolated for half the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is $0^h\ 0^m\ 0^s$. The longitude from Greenwich expressed in time, if west, is at that instant the Greenwich apparent time, or time after Greenwich apparent noon; if east, it is time before

Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at the place.

The right ascension of the sun thus reduced is the sidereal time of local apparent noon. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on sidereal time.

The declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of page I:—

Let the sun's declination be required at apparent noon, 1895, May 31, at a place whose longitude is 179° 40′, or 11^h 58^m 40^s east from Greenwich:

		h	m	s
Local apparent time . . .	May 31,	0	0	0
Longitude from Greenwich (subtractive) . .		11	58	40
Greenwich apparent time . . .	May 30,	12	1	20

Reducing the minutes and seconds to decimals of an hour, we find that this moment is 12^h.022 after Greenwich apparent noon on May 30, or 11^h.978 before Greenwich apparent noon on May 31.

On page 74 of the Ephemeris we find that the change of declination in one hour is

May 30, at Greenwich apparent noon . . .	22″.30
May 31, at Greenwich apparent noon . . .	21.35
Difference for one day	0.95

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 6 hours after Greenwich noon of the 30th, this being half of 12 hours. Six hours is 0.25 of a day; so the calculation is as follows:—

Difference for one hour, May 30	22″.30
Change for 0.25 of a day or 0″.95 × 0.25 . . .	0.24
Difference at 6 hours after noon	22.06
22″.06 × 12.022 = 265″.2 = 4′ 25″.2	
Declination at Greenwich noon, May 30 . .	N. 21° 46′ 49″.8
Change in 12.022 hours (additive) . . .	4 25.2
Sun's declination at time of observation . .	N. 21 51 15.0

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is 11^h.978 before Greenwich noon of May 31; half this interval is about 0.25 of a day, and the hourly motion for the middle of the interval is 21″.59. Then, we find:—

Declination at Greenwich noon, May 31 . .	N. 21° 55′ 33″.6
Product of 21″.59 × 11.978 = 258″.6 (subtractive) .	4 18.6
Sun's declination at time of observation . . .	N. 21 51 15.0

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute, and the reduction may be found by Table V of Bowditch's *American Practical Navigator*.

The equation of time, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the apparent time, or the time given by an observation of the sun, to obtain the mean time. The heading of the column directs the manner in which the equation is to be applied. When there is a change in the course of the month from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change takes place. The equation of time, as given on page I, is the mean time of apparent noon, or the hour-angle of the mean sun at that instant.

The Sun's Semidiameter and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The sun's semidiameter is used in reducing the altitude of the upper or lower limb of the sun to the altitude of the center; and in reducing the angular distance of the limb from the moon or some other object, to the distance from the center of the sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the sun's center over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension*, and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The hourly changes of these quantities are also given, and may be used in reducing them to any Greenwich mean time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The right ascension and declination on pages I and II are affected by aberration, and therefore denote the *apparent* position of the *true* sun. Page II is more conveniently used when the mean time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to mean time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from observations out of the meridian. The heading of the column directs the manner in which it is to be applied to mean time to obtain the apparent time.

The equation of time, as given on page II, is the apparent time of mean noon; and is equivalent to the hour-angle of the true sun at the instant of mean noon.

The sidereal time of mean noon is also the right ascension of the mean sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, $9^s.8565$; or by Table III, appended to this volume, for reducing intervals of mean solar to sidereal time. Table IX of BOWDITCH's *Navigator* may be used for the same purpose when only the nearest quarter of a second is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the R. A. of the mean sun for this time, as last explained: this being added to the local mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a sidereal interval to a mean time interval, in Table II, appended to this volume, or Table VIII of BOWDITCH'S *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given sidereal time.

As examples of the use of page II:—

1.—Let the sun's right ascension and the equation of time be required for 1895, May 15, $9^h\ 2^m\ 30^s$, A. M., mean time, at a place whose longitude is $100°\ 10'$, or $6^h\ 40^m\ 40^s$, west of Greenwich.

		h m s
Local astronomical mean time . . .	May 14,	21 2 30
Longitude from Greenwich (additive) . . .		6 40 40
Greenwich mean time	May 15,	3 43 10 = $3^h.7194$

Sun's Right Ascension.	h m s	*Equation of Time.*	m s	
May 15, Greenwich noon .	3 27 59.36	May 15, noon . .	3 51.47	(additive)
H. D. $9^s.876 \times 3.7194$ . .	+ 0 36.73	H. D. $-0^s.018 \times 3.72$	— 0.07	
	3 28 36.09		3 51.40	

In this case, the hourly differences interpolated to half the interval, or $1^h.9$ after noon, have been used. The equation of time in this example is additive to mean time.

2.—If the sidereal time is required for the same date and time, we have:—

	h m s
May 15, Sidereal Time (at Greenwich mean noon) . . .	3 31 50.83
Hourly difference $9^s.8565 \times 3.7194$	+ 0 36.66
Add the local astronomical mean time	21 2 30.00
The required sidereal time is (rejecting 24^h)	0 34 57.49

The reduction $0^m\ 36^s.66$ could have been found in Table III corresponding to the Greenwich mean time $3^h\ 43^m\ 10^s$. Also, by Table IX of Bowditch's *Navigator*, the reduction is $0^m\ 36^s.7$.

3.—On 1895, May 15, A. M., at a place whose longitude is 100° 10′ W., suppose the sidereal time to be $0^h\ 36^m\ 37^s.16$, and that the corresponding mean time is required.

The astronomical day is May 14; the longitude in time, $+6^h\ 40^m\ 40^s$, or $+6^h.678$.

	h m s
May 14, Sidereal Time (at Greenwich mean noon)	3 27 54.28
The H. D. $9^s.8565 \times 6.678$, or the reduction for $6^h\ 40^m\ 40^s$ in Table III .	+ 1 5.82
The sidereal time of local mean noon	3 29 0.10
The given sidereal time ($+24^h$, if necessary for the following subtraction) .	24 36 37.16
Subtracting the first from the second gives the sidereal interval from noon .	21 7 37.06 $= 21^h.12696$
$-9^s.8296 \times 21.12696$, or the reduction for $21^h\ 7^m\ 37^s.06$ in Table II . .	— 3 27.67
The required astronomical mean time is . . . May 14,	21 4 9.39

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth*. The longitudes of the sun are the true longitudes, not corrected for aberration. The longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ', the same co-ordinate counted from the mean equinox of the beginning of the year, (January $0^d.0$). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The latitude is referred to the ecliptic of the date.

The last column on page III contains the *Mean Time of Sidereal Noon;* that is, the number of hours, minutes and seconds after Greenwich mean noon when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich sidereal time by means of the hourly difference, $-9^s.8296$. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time; or, approximately, from Table VIII of Bowditch's *Navigator*.

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 13, that is the preceding astronomical day.

	h m s
May 14, the mean time of Greenwich sidereal noon is . .	20 26 43.87
The H. D. $-9^s.8296 \times 6.678$, or the reduction for long., Table II	— 1 5.64
The mean time of local sidereal noon	20 27 38.23
Add the given sidereal time	0 36 37.16 $= 0^h.6103$
The sum is	21 4 15.39
$-9^s.8296 \times 0.6103$, or the reduction for $0^h\ 36^m\ 37^s.2$ in Table II .	— 0 6.00
The required astronomical mean time . May 14,	21 4 9.39

Page IV contains *The Moon's Semidiameter* and Equatorial *Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the sun's declination and the equation of time in the preceding examples. The sign plus or minus prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272274, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1895, June 11, 10^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of June 11 is 2″.2; then,

$$12^h : 10^h = 2''.2 : 1''.8,$$

which is the correction to be subtracted from the semidiameter at noon, because the semidiameter is decreasing. The moon's semidiameter then, for June 11, 10^h, is 14′ 53″.7 − 1″.8, or 14′ 51″.9.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for half the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich*, which is given on page IV to tenths of a minute, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude converted into time, the local time of the moon's meridian passage at any other place, may be computed. The reduction may be taken by simple inspection from BOWDITCH's Table XI. The last column of this page contains the *Age* of the moon, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V—XII contain *The Moon's Right Ascension*, and *Declination*, for each day and hour of Greenwich mean time. They are accompanied with columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the day and hour of the Greenwich mean time; the *Diff. for* 1 *Minute* multiplied by the minutes and parts of a minute of the Greenwich time, and the product added to, or subtracted from the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1895, May 1, $10^h\ 10^m\ 30^s$, astronomical mean time at Greenwich:—

	Right Ascension.		*Declination.*
	h m s		
May 1, 10^h	8 45 56.97	. . . . .	N. 21° 36′ 17″.2
Diff. $2^s.3901 \times 10.5$ . .	= + 25.10	$11''.559 \times 10.5$	= − 2 1.4
May 1, $10^h\ 10^m\ 30^s$ . . .	8 46 22.07	. . . . .	N. 21 34 15.8

The differences interpolated for $5^m.2 = 0^h.09$ are, for the right ascension $2^s.3901$, and for the declination 11″.559, have been used for greater precision.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII—XVIII contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, and from the four larger planets and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore astronomical. All the distances that can be observed on the same day, are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the sun, planet or star, to indicate that it is on the west, or east side of the moon.

An observer on the earth's surface having measured a lunar distance, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the true or geocentric distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the Greenwich mean time of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the logarithm of the seconds of time in which the distance changes 1″; or, as it is usually called, the *Proportional Logarithm of the Difference.* It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in the Navigator, subtract the P. L. of Diff. taken from the Almanac.

The result is the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference of the true and the Almanac-distances to the P. L. of Diff. of the Almanac; the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. Table XXXIV of BOWDITCH's *Navigator* saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the Prop. Logs. in the Ephemeris are decreasing; and subtracted when they are increasing.

Thus the Greenwich mean time of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer-time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In this way lunar distances can be used as a check upon the chronometer. By a series of carefully observed lunar distances on both sides of the moon, the chronometer-error may generally be ascertained within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5′ or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1895, Oct. 10, the corrected distance of the moon's centre from that of Aldebaran is 28° 57′:—

Corrected distance	28° 57′ 0″		
Distance in Ephemeris Oct. 10, III^h	28 17 2	P. L.	0.2977
Difference	0 39 58	P. L.	0.6536
	h m s	P. L.	0.3659
Time from III^h (*after*)	+1 17 31		
Corr. for 2d Diff., Table I	+ 14		
Greenwich mean time Oct. 10	4 17 45		

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:—

From Ephemeris	P. L.	0.2966
Diff. of distances, 39′ 58″ = 2398″	log	3.3798
Red. of Greenwich time, 4651ˢ = 1ʰ 17ᵐ 31ˢ	log	3.6675

The result is the same as by the previous method.

Pages 218—249 contain the geocentric ephemerides of the seven major planets. The positions are referred to the equator and true equinox of the date, and corrected for aberration; they are, therefore, apparent positions. All the data except meridian passage are given for the moment of Greenwich mean noon. The column *Meridian Passage* gives the hour, minute and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it has been observed for time, latitude or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples for the sun, previously given. The local mean time of passage across any other meridian can be found by dividing the daily differences by 24, and multiplying the quotient by the hours and fractions of the longitude of the place. The product is subtractive from the time of Greenwich passage when the place is east of Greenwich, and additive when west. The corrections can never exceed one-half the change for one day.

Pages 250—263 contain the heliocentric positions of the seven major planets, and the logarithms of their distances from the earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox is required. The daily motion is given for the moment of Greenwich mean noon. The column *Reduction to Orbit* gives the correction to be applied to the heliocentric longitudes in order to obtain the longitude counted along the orbit of the planet. This longitude is equal to the distance of the node from the mean equinox, plus the distance of the planet from the node. The heliocentric latitude is counted from the moving plane of the ecliptic. The *Logarithm of Radius Vector* is the logarithm of the distance of the centre of the planet from that of the sun, at each Greenwich mean noon given in the first column. The two last columns give, in the same way, the logarithm of the true distance of the centre of the planet from that of the earth. The one column gives the quantity for the Greenwich noon indicated on the left hand side of the page, and the other for the noon which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean noon of the day immediately following; in the case of Venus, Mars, Jupiter, and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 264—271 contain the rectangular co-ordinates of the centre of the sun, referred to the centre of the earth as the origin, and to the true equator and equinox of each date as the circle and point of reference. Each co-ordinate is given first for Greenwich mean noon, and in the column following for mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan. 0* give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 0.

Pages 272—275 give the longitude and latitude of the moon for every Greenwich mean noon and midnight. Both quantities are referred to the true ecliptic and equinox of the date.

Pages 276 and 277 contain the position of the moon's equator and the mean longitude of the moon, and a table for computing the libration of the moon. The epochs of greatest libration of the moon, together with the formulæ for finding the libration in longitude and latitude are given on page 419.

Page 278 contains, for each tenth Greenwich mean noon, the values of the principal elements arising from the motion of the equinox, and also the aberration and parallax of the sun. The column *Apparent Obliquity of the Ecliptic* (HANSEN) gives the true inclination of the earth's

equator to the ecliptic, without correction for the terms depending on the moon's longitude. The *Equation of Equinoxes* is really the astronomical nutation; that given *In Longitude* is the correction to be applied to the longitude of the body referred to the mean equinox, in order to obtain that longitude as referred to the true equinox. When the correction is positive, the true longitudes are greater than those referred to the mean equinox; while the contrary is true when the correction has the negative sign. The equation *In R. A.* is equal to that in longitude, multiplied by the cosine of the obliquity of the ecliptic.

The next column gives the *Precession of Equinoxes in Longitude*, from January 0 to each of the dates following. *The Sun's Aberration* is the quantity which is to be applied to the true longitude of the sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the next column, is the angle subtended by the radius of the earth's equator, as seen from the centre of the sun.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 280 contains the formulæ for reducing the positions of the fixed stars, using the notation of BESSEL, and the constants of PETERS and STRUVE. The formulæ by which the star-numbers are computed are also given.

Pages 281—284 contain the logarithms of the *Besselian Star-Numbers*, A, B, C, D, for each Washington mean midnight. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given. If used in accordance with the English and French notation, the pair of quantities A and B must be interchanged with the pair C and D; that is, A must be interchanged with C, and B with D. In the first column along with the solar day is given, for certain dates, the sidereal hour and tenth of midnight. The sidereal time for which any set of quantities is given can be found by interpolation from these numbers.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:—

Computation of the apparent place of α Virginis for March 10, 1895, for the upper transit at Washington.

(Star-Catalogue)	$\log a$	0.4994	$\log b$	8.0699	$\log c$	8.8046 n	$\log d$ 8.3637 n
	$\log A$	9.3968	$\log B$	0.9847 n	$\log C$	1.2671 n	$\log D$ 0.5283
	$\log a'$	1.2754 n	$\log b'$	9.5323	$\log c'$	9.5607	$\log d'$ 9.2985
	$\log Aa$	9.8962	$\log Bb$	9.0546 n	$\log Cc$	0.0717	$\log Dd$ 8.8920 n
	$\log Aa'$	0.6722 n	$\log Bb'$	0.5170 n	$\log Cc'$	0.8278 n	$\log Dd'$ 9.7668

	$\alpha_0 =$	13	19	39.637	$\delta_0 =$ — 10 36 47.83
	$Aa =$		+	0.787	$Aa' =$ — 4.70
	$Bb =$		—	0.113	$Bb' =$ — 3.29
	$Cc =$		+	1.179	$Cc' =$ — 6.73
	$Dd =$		—	0.078	$Dd' =$ + 0.58
	$E =$			0.000	$\tau\mu' =$ — 0.00
	$\tau\mu =$		—	0.002	
Apparent Place, 1895, *Mar.* 10,	$\alpha =$	13	19	41.410	$\delta =$ — 10 37 1.97

Pages 285—292 contain the *Independent Star-Numbers*, which can be used for the same purpose. The column τ gives the fraction of the year from the beginning of the fictitious year to each date. These quantities are connected with those of BESSEL by the relations given on page 280, where are also found the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, a, b, c, d, a', b', c', d'. The independent star-numbers are given in order that the apparent place of the star may be determined when it is not convenient to compute these numbers.

The following is an example of the reduction of a star to apparent place by the independent star-numbers: —

Computation of the apparent place of α Virginis for 1895, *March* 10, *for upper transit at Washington.*

$\alpha_o = 199^\circ\ 54'.9$ $\qquad$ $\delta_o = -\ 10^\circ\ 36'.8$

$G = 297\ 22.3$ $\qquad$ $G+\alpha_o = 137\ 17.2$

$H = 280\ 21.3$ $\qquad$ $H+\alpha_o = 120\ 16.2$

$\log \frac{1}{\gamma\delta}$	$= 8.8239$	$\log \frac{1}{\gamma\delta}$	$= 8.8239$	α_o	$=$	$13^h\ 19^m\ 39^s.637$
$\log g$	$= 1.0363$	$\log k$	$= 1.2742$	f	$=$	$+\ 0.766$
$\sin (G+\alpha_o)$	$= 9.8314$	$\sin (H+\alpha_o)$	$= 9.9363$	(g)	$=$	$-\ 0.092$
$\tan \delta_o$	$= 9.2727\ n$	$\sec \delta_o$	$= 0.0075$	(k)	$=$	$+\ 1.101$
$\log (g)$	$= 8.9643\ n$	$\log (k)$	$= 0.0419$	$\tau\mu$	$=$	$-\ 0.002$
			Apparent R. A.,	α		$13\ 19\ 41.410$
$\log g$	$= 1.0363$	$\log k$	$= 1.2742$	δ_o	$= -$	$10^\circ\ 36'\ 47''.83$
$\cos (G+\alpha_o)$	$= 9.8661\ n$	$\cos (H+\alpha_o)$	$= 9.7025\ n$	(g')	$=$	$-\ 7.98$
$\log (g')$	$= 0.9024\ n$	$\sin \delta_o$	$= 9.2652\ n$	(k')	$=$	$+\ 1.74$
		$\log (k')$	$= 0.2419$	(i)	$=$	$-\ 7.89$
				$\tau\mu'$	$=$	0.00
			Apparent Dec.,	δ	$= -$	$10\ 37\ 1.96$
$\log i$	$= 0.9046\ n$					
$\cos \delta_o$	$= 9.9925$					
$\log (i)$	$= 0.8971\ n$					

Pages 293—301 contain the mean places of three hundred and eighty-three stars, for the beginning of the fictitious year 1895, or the moment when the sun's mean longitude is 280°.

The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

In order that the list of mean places of stars may serve the purpose of a working-catalogue for the convenient use of astronomers, the position of each of the northern circumpolar stars is given in duplicate, one position being for the upper and the other for the lower culmination. The positions for the lower culmination are marked S. P. In this case, the right ascensions are the sidereal times at which the star crosses the lower meridian; and, in order to have the expressions for the co-ordinates congruous in all cases, the declinations are counted from the equator through the north pole, and therefore exceed 90°. The time of observation and the setting of the circle, in order to find a star on the meridian, are then obtained uniformly for all the stars.

Beginning with the volume of 1882, the number of stars has been greatly increased, in order to make the list more useful to field-astronomers. In order to show at a glance these additional stars, they are indicated in the list by an asterisk.

Pages 302—313 contain the apparent positions of the four north polar stars, α, δ and λ Ursæ Minoris, and 51 Cephei, for every upper transit at Washington. They include the terms depending on the moon's longitude. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26th is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 302, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But, the lower transit following that of July 1st (page 308), does not take place until July 2.3. Hence, the lower transit of July 1st precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column of *Mean Solar Date.*

Pages 314—364 contain, for every tenth upper transit at Washington, the apparent places of those stars of the preceding list which are not marked with an asterisk. The mean solar date in each left hand column gives the day and tenth of the transit; so that each intermediate transit

may be readily identified. Along with each co-ordinate is given, in small type, the change for ten days. This quantity is to be regarded as the differential coefficient corresponding to the dates for which the star-places are given.

Pages 365—376 contain the apparent right ascensions of all stars marked with an asterisk in the list of mean places. The apparent right ascension of each star is given only for that part of the year when it may readily be observed on the meridian. In the case of circumpolar stars, the right ascensions for lower, as well as upper, transit are given.

Pages 377—384 contain the apparent right ascension, declination, and semidiameter of the sun, and the sidereal time, all for Washington mean noon. Adjoining columns give the seconds of right ascension and of declination for apparent noon, that is, for the moment of transit of the sun's centre over the meridian of Washington. The hours and minutes of right ascension, and the degrees and minutes of declination are the same for both mean and apparent noon. In case they would have differed, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that there is always a correspondence between the two numbers. The hourly motions in right ascension and declination are given for the moment of mean noon, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the sun's centre over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich.*

Pages 385—392 contain the right ascension, declination, semidiameter, and parallax of the moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the moon's centre over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the moment of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the moon in right ascension were uniform. By means of them, the position of the moon can be computed with astronomical accuracy at the moment of transit over any meridian not exceeding one hour in longitude from that of Washington, by taking account of second differences. With greater longitudes of the place, the accuracy of the result obtained in this way will diminish. The columns of sidereal time of semidiameter passing meridian, etc., do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When two opposite limbs are both so nearly full that they can be well observed, both are indicated; and the one which is deficient is printed in smaller type. When the illumination is so nearly equal that no choice can be made between them, both are printed in large type.

Pages 393—409 contain the geocentric apparent right ascensions and declinations of the seven major planets, and their semidiameters and horizontal parallaxes, for the moments of all those transits over the meridian of Washington which can be observed.

PART III—PHENOMENA.

This portion of *The American Ephemeris and Nautical Almanac* gives the principal astronomical phenomena of the year, reduced to Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are given in Greenwich mean time.

Pages 413—418 inclusive contain the elements necessary for computing the eclipses of the sun and a transit of Mercury which occur during the year

The eclipse-elements are given for the moment of conjunction of the sun and moon in right ascension. The subsequent tables and results are not, however, computed from these

elements unchanged; but from the accurate positions of the two bodies as interpolated for each hour of the eclipse. The principal circumstances of each eclipse are as follow:—

On the line "Eclipse begins" is given the Greenwich mean time at which the earth first touches the moon's penumbra, and the longitude and latitude of the point of touching.

The "Central eclipse begins" when the axis of the moon's shadow first touches the earth, and the longitude and latitude of the point of touching follow.

"Central eclipse at noon" indicates the moment when the axis of the shadow is coincident with the plane of the meridian at the point of its intersection with the earth's surface. To the observer at this point, the eclipse will be central at the moment of apparent noon.

"Central eclipse ends" and "Eclipse ends" have the converse meaning of the beginning.

Maps of the Eclipses.—The regions in which each eclipse is visible, are shown upon the maps given in connection with them. From these maps may also be derived the approximate determination of the times of beginning and ending, and of the magnitude of the eclipses at any place. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time and therefore pass through all the places where the eclipse begins or ends at that hour. To find at what hour the eclipse begins at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between these two hours of Greenwich mean time: the fraction of the hour may be determined by dividing the hour proportionally to the space which it represents on the map. This division may be a little more exact by allowing for the changes in this space as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the time at which the eclipse of 1895, March 25, begins and ends at Cape Farewell.

For the beginning we compare the distance of the place from the curves of 21^h and 22^h and we find it to correspond to about 20 minutes from the former, therefore the time of beginning is approximately $21^h\ 20^m$; for the end we find that the curve of 23^h passes directly through the point, therefore the approximate time of end is 23^h, both of which are probably correct to within 2 or 3 minutes. Changing to local mean time the result will be:—

		Beginning.		Ending.	
		d h m		h m	
Greenwich mean time	March	25 21 20		23 0	
Longitude West		2 56.1		2 56.1	
Local mean time	March	25 18 23.9	March	25 20 3.9	

In the case of total and annular eclipses, a rough estimate of the magnitude of the eclipse may be obtained from the position of the place relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while on the limit, the limb of the moon only grazes that of the sun.

More Accurate Computations.—A more accurate determination of the phases as visible at any point of the earth's surface may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the centre of the earth, perpendicular to the right line joining the centres of the sun and moon. This latter line is the axis of the moon's shadow, and the plane is called the *fundamental plane*. We take the intersection of this plane with that of the earth's equator as the axis of X, and the centre of the earth as the origin of co-ordinates. The axis of Y is perpendicular to that of X, and directed toward the north; x and y are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle d, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; this direction being that from the earth toward the moon and sun. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l and l' are the radii of the shadow-cones upon the fundamental plane, l corresponding to the penumbra, and l' to the umbra, or annulus. The notation is that of CHAUVENET'S *Spherical and Practical Astronomy*, in which l' is regarded as positive for an annular, and negative for a total eclipse.

The angles f and f', the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

At the bottom of the table are given the logarithms of the change of x, y and μ, in one minute, in order to facilitate the interpolation to any required moment.

The method of computing the eclipse from the given elements is as follows: It is premised that the moments of beginning and ending are those at which the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find such distance and radius we compute—

(1) The co-ordinates, ξ, η and ζ, of the observer, at some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase, together with their variations for one minute.

(2) The co-ordinates x and y of the axis of the shadow at the same moment, which, with their variations for one minute, are taken from the tables of elements.

(3) Hence, the position and motion of the observer relative to the axis of the shadow.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follow:—

(1) Find the geocentric co-ordinates of the station referred to the earth's equator, which are represented by $\rho \cos \varphi'$ and $\rho \sin \varphi'$, ρ being the distance from the centre of the earth, and φ' the geocentric latitude. These may be obtained from geodetic tables, or may be computed from the following table by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$
$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F.		Log G.	
0°	0.00000		0.00295	
5	0.00001	1	0.00294	1
10	0.00004	3	0.00291	3
15	0.00010	6	0.00285	6
20	0.00017	7	0.00278	7
25	0.00026	9	0.00269	9
30	0.00037	11	0.00258	11
35	0.00048	11	0.00247	11
40	0.00061	13	0.00234	13
45	0.00074	13	0.00221	13
50	0.00086	12	0.00209	12
55	0.00099	13	0.00196	13
60	0.00111	12	0.00184	12
65	0.00121	10	0.00174	10
70	0.00130	9	0.00165	9
75	0.00138	8	0.00157	8
80	0.00143	5	0.00152	5
85	0.00146	3	0.00149	3
90	0.00147	1	0.00147	2

For the assumed Greenwich mean time of computation, take from the table of elements the values of sin d, cos d, and μ. Put:

λ, the longitude west from Greenwich. The co-ordinates of the observer will then be:—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda)$$
$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda)$$

and their variations in one minute of mean time will be:—

$$\xi' = [7.63992]\, \rho \cos \varphi' \cos (\mu - \lambda)$$
$$\eta' = [7.63992]\, \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992]\, \xi \sin d$$

ζ' is not wanted.

(2) The co-ordinates x and y of the axis of the shadow are taken from the tables of elements for the same assumed moment of Greenwich mean time, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. The variations for one minute we represent by x' and y'. Their logarithms are given at the foot of the tables.

(3) The distance m and position-angle M of the axis of the shadow relative to the observer, and the relative motions, n and N, are computed by the formulæ:—

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$

(4) The radius L of the shadow or penumbra at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found in the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or end of the eclipse, we shall have—

$$m = L$$

But, as this condition can scarcely ever be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ψ from the equation,

$$\sin \psi = \frac{m \sin (M - N)}{L}$$

There will be two values to this angle, of which one will be in the first and the other in the second quadrant when sin ψ is positive, and one in the third and the other in the fourth when sin ψ is negative. But, simplicity will be gained by taking only that value of ψ for which cos ψ is positive. This value lies between the limits $+ 90°$ and $- 90°$. The correction τ to the assumed time will be found in minutes, from—

For beginning: $$\tau = - \frac{m \cos (M - N)}{n} - \frac{L \cos \psi}{n}$$

For ending: $$\tau = - \frac{m \cos (M - N)}{n} + \frac{L \cos \psi}{n}$$

One such pair of values of τ cannot, however, give the times of both beginning and ending with accuracy. To attain accuracy we must, in commencing the computation, assume two times, one near that of beginning, and another near that of ending. These approximate times may be derived from the chart of the eclipse. The computation for the first assumed time will give a small value of τ which, applied to the assumed time, will give a nearly correct time for the beginning of the eclipse, and a large value which, added to the assumed time, will give an inaccurate time of ending. The computation for the second assumed time will give a small and nearly correct value of τ, to be applied to the assumed time for the end, and a large negative and inaccurate one to be subtracted for the beginning. We shall thus deduce two times of each phase only one of which is to be considered approximately correct.

The more accurate times of beginning and ending may now be taken in place of the first assumed ones, and the computation may be repeated from the beginning, leading to a pair of values of τ, which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors. The following theorem will, however, enable us to obtain a second approximation to the true times of each phase without repeating the computation.

THEOREM.—*The error of each result is approximately proportional to the square of the correction τ, multiplied by the sine of the sun's hour-angle, $(\mu-\lambda)$, for the middle of the interval between the time of computation and that of the phase.*

To apply this theorem we find the two values of $\tau^2 \sin(\mu-\lambda)$ corresponding to the required phase. We then find the ratio of these quantities—which will commonly be a large number, and divide the difference of the results by this ratio. The quotient will be a correction to be applied to the more accurate result in such a way as to make it deviate yet more from the less accurate one. This correction should be positive in the local forenoon, and negative in the afternoon, and its value should never materially exceed $0^m.001\ \tau^2$.

Unless the times chosen for computation are unusually in error, say ten minutes or more, the corrected results thus obtained will be theoretically correct within less than a second. But to guard against numerical errors it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, further corrections and computations may be made by the computer according to his own judgment.

It may be remarked that the uncertainty of the ephemerides is such that a prediction may be several seconds in error from this unavoidable cause alone.

Position-angle of Point of Contact.—The position-angle P, of the point of contact, reckoned from the north point of the sun's limb toward the east, is found by the formula

For beginning: $P = N - \psi \pm 180°$

For end: $P = N + \psi$

it being assumed that, in each case, the value of ψ is taken between the limits $\pm 90°$.

Computation of the Solar Eclipse of 1895, March 25, for Santa Cruz Castle, Fayal, Azores, whose geographical position is—

Latitude, $\varphi = +\ 38° 31' 45''$

Longitude, $\lambda = +\ 28° 38' 54''$

Constants for the given place:—

$\rho \sin \varphi' = 9.79205$

$\rho \cos \varphi' = 9.89394$

From the Eclipse Charts we find the approximate times of the phases to be—

		d	h	m	
Beginning	March	25	20	50	} Greenwich Mean Time.
Ending	March	22	5		}

Greenwich Mean Time,		Beginning. March $25^d\ 20^h\ 50^m$	Ending. $22^h\ 5^m$
	μ	$311°\ 2'\ 36''$	$329°\ 47'\ 48''$
	λ	28 38 54	28 38 54
	$\mu-\lambda$	282 23 42	301 8 54
	$\rho \cos \varphi'$	9.89394	9.89394
	$\sin(\mu-\lambda)$	9.98976 n	9.93239 n
	$\log \xi$	9.88370 n	9.82633 n
	ξ	$-$ 0.76507	$-$ 0.67040

Greenwich Mean Time,		Beginning. March 25d 20h 50m	Ending. 22h 5m
	$\rho \sin \varphi'$	9.79205	9.79205
	$\cos d$	9.99969	9.99968
		9.79174	9.79173
	(1)	+ 0.61907	+ 0.61906
	$\rho \cos \varphi'$	9.89394	9.89394
	$\sin d$	8.57731	8.58123
	$\cos (\mu - \lambda)$	9.33173	9.71371
		7.80298	8.18888
	(2)	+ 0 00635	+ 0 01545
(1)—(2)	η	+ 0.61272	+ 0.60361
	$\rho \sin \varphi' \sin d$	8.36936	8.37328
	(3)	+ 0.02341	+ 0.02362
	$\rho \cos \varphi' \cos d \cos (\mu - \lambda)$	9.22536	9.60733
	(4)	+ 0.16802	+ 0.40488
(3)+(4)	ζ	+ 0.19143	+ 0.42850
	const. log	7.63992	7.63992
	$\rho \cos \varphi' \cos (\mu - \lambda)$	9.22567	9.60765
	$\log \xi'$	6.86559	7.24757
	ξ'	+ 0.00073	+ 0.00177
	const. log	7.63992	7.63992
	$\xi \sin d$	8.46101 n	8.40756 n
	$\log \eta'$	6.10093 n	6.04748 n
	η'	— 0.000126	— 0.000112
	$x - \xi$	— 0.48948	— 0.02024
	$y - \eta$	+ 0.24428	+ 0.56470
	$x' - \xi'$	+ 0.00678	+ 0.00575
	$y' - \eta'$	+ 0.00428	+ 0.00426
	$m \sin M$	9.68973 n	8.30621 n
	$m \cos M$	9.38788	9.75182
	$\tan M$	0.30185 n	8 55439 n
	M	296° 31′ 17″	357° 56′ 50″
	$\cos M$	9.64985	9.99972
	$\log m$	9.73803	9.75210
	$n \sin N$	7.83123	7.75967
	$n \cos N$	7.63144	7.62941
	$\tan N$	0.19979	0.13026
	N	57° 44′ 15″	53° 28′ 0″
	$\cos N$	9.72738	9.77473
	$\log n$	7.90406	7.85468
	$\tan f$	7.67077	7.67077
	$\log \zeta$	9.28201	9.63195
		6.95278	7.30272

Greenwich Mean Time,		Beginning. March $25^d\ 20^h\ 50^m$	Ending. $22^h\ 5^m$
	$\zeta \tan f$	0.000897	0.002008
	l	0.56545	0.56535
	L	0.56455	0.56334
	M−N	238° 47′ 2″	304° 28′ 50″
	$\sin(M-N)$	9.93207 n	9.91609 n
	$\log n$	9.73803	9.75210
		9.67010 n	9.66819 n
	$\log L$	9.75170	9.75077
	$\sin \phi$	9.91840 n	9.91742 n
	ϕ	− 55° 58′ 0	− 55° 46′ 30″
	$\log \frac{m}{n}$	1.83397	1.89742
	$\cos(M-N)$	9.71455 n	9.75291
		1.54852 n	1.65033
	$-\frac{m}{n}\cos(M-N)$	+ 35.361	− 44.702
	$\log L$	9.75170	9.75077
	$\cos \phi$	9.74794	9.75008
	colog n	2.09594	2.14532
		1.59558	1.64617
	$\frac{L\cos\phi}{n}$	∓ 39.407	± 44.276
	τ	− 4.046 m	− 0.426 m
	T	March 25 20 50.0	22 5.
	t	March 25 20 45.95	22 4.57
	λ	+ 1 54.59	+ 1 54.59
Local Mean Time,		March 25 18 51.36	20 9.98

Therefore we have

Beginning of the eclipse,	March	25 18 51.36	Local Mean Time.
End of the eclipse,	"	25 20 9.98	
Duration,		1 18.62	

Angle of position:

		Beginning.		Ending.
		° ′		° ′
N		57 44.3		53 28
ϕ (+ 180)	−	55 58.0	−	55 46.5
P		293 42.3		357 41.5

from the north point of the sun's disk towards the east for direct image.

Elements of Occultations.—Pages 420—449 give the elements for the prediction of the times of occultation of stars and planets by the moon. In the columns referring to the star, those headed *Red'ns from* 1895.0 give the quantities necessary to reduce the mean place of the star at the beginning of 1895 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

The quantities in the following five columns are all given for the moment of geocentric conjunction of the star and moon in right ascension. Let there be a line passing from the star through the centre of the moon, and let a plane perpendicular to this line pass through the centre of the earth: this plane will be the fundamental plane for the occultation. The system of co-ordinates is similar to that already described for eclipses. The cone circumscribing the moon and star may be regarded as a cylinder having everywhere the same diameter as the moon. This cylinder will intercept the fundamental plane in a circle of which the linear diameter will be the same as that of the moon.

The *Washington Mean Time* is the moment at which the two bodies are in geocentric conjunction in right ascension. At this moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour-Angle H* gives the common geocentric hour-angle of the moon and star at the same moment, counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the hourly variation of x and y. The linear unit in these columns is the earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star behind the limb of the moon may be computed for any part of the earth by a method nearly the same as that already explained for computing eclipses, only more simple.

We shall first show how to compute an isolated occultation for a particular place, assuming it to be visible at that place, and then show how all the occultations which will be visible at a place may be selected and computed by a more rapid process.

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed with three or four places of decimals by the formulæ,

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$
$$\rho \cos \varphi' = F \cos \varphi$$

already given in connection with the eclipses.

As in the case of eclipses, it is necessary to have an approximate time of the phenomenon, corresponding to that obtained from the charts of the eclipses. The quantity H being the Washington west hour-angle of the two bodies at the moment of geocentric conjunction, $H - \lambda$ will be the local hour-angle of the star at this same moment. Let us call this angle h_0, putting

$$h_0 = H - \lambda$$

where λ is the longitude west of *Washington*.

The next step will then be to find the approximate moment of apparent conjunction in right ascension as seen from the place. An approximate correction to reduce the time and hour-angle for geocentric conjunction to those for apparent conjunction may be taken from Mr. DOWNES's table, on pages 452—453. This correction will have the same sign as h_0.

When this table is not available, the correction may be computed thus: Compute the quantities ξ_0, ξ' and τ from the formulæ,

$$\xi_0 = \rho \cos \varphi' \sin h_0$$
$$\xi' = [9.41920] \cos (h_0 + \tfrac{1}{2} h_0)$$
$$\tau = \frac{\xi_0}{x' - \xi'}$$

τ will then be the approximate interval between the times of geocentric and local conjunction.

By applying it to the Washington mean time of the former, as given with the elements, we shall have the Washington mean time of the latter within a few minutes.

The average duration of an occultation is about an hour. Thence, by adding $0^h.5$ to and subtracting it from the mean time of apparent conjunction, we shall have approximate times of the phases of immersion and emersion for farther computation. Let us then put,

$\tau_1 = \tau - 0^h.5$

$\tau_2 = \tau + 0^h.5$

T, the Washington mean time of geocentric conjunction in R. A.

d, the declination of the star.

(2) Compute for the moments $T + \tau_1$ and $T + \tau_2$ the following quantities, in which we write τ for each of the quantities τ_1 and τ_2. The latter, when used as angles, are to be changed to arc by multiplying by 15, and the minutes are to be further increased by one-sixth the number of degrees in order to reduce to the sidereal hour-angle.

$$\xi = \rho \cos \varphi' \sin (h_o + \tau)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (h_o + \tau)$$
$$\xi' = [9.41920]\, \rho \cos \varphi' \cos (h_o + \tau)$$
$$\eta' = [9.41920]\, \rho \cos \varphi' \sin d \sin (h_o + \tau) = [9.41920]\, \xi \sin a$$
$$x = x' \tau$$
$$y = Y + y' \tau$$

Compute m, M, n and N from the equations

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$
$$n' = \frac{n}{60} = [8.22185]\, n$$
$$\sin \psi = [0.56500]\, m \sin (M - N)$$

Then, t_1 and t_2 from the equations

$$t_1 = -\frac{m}{n'} \cos (M - N) - \frac{[9.43500]}{n'} \cos \psi \quad \text{(Beginning.)}$$
$$t_2 = -\frac{m}{n'} \cos (M - N) + \frac{[9.43500]}{n'} \cos \psi \quad \text{(End.)}$$

The quantities t_1 and t_2 will then be the corrections in minutes to be applied to the respective times $T + \tau_1$ and $T + \tau_2$ to obtain the Washington mean times of the phases.

As in the case of eclipses, the small value of t_1 will give an accurate result for one phase, and the large value an inaccurate result for the other. Both accurate results may then be corrected by comparison with the inaccurate one, in the way described for eclipses, and a result obtained which will probably be correct within a fraction of a minute of time.

As a check upon the result, it will be advisable to compute ξ, η, x and y for the moments finally obtained. If the times are correct these quantities will fulfil the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.27227$$

If $\log m \sin (M - N) = 9.43500$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\sin \psi < 1$, or $\sin \psi > 1$. In the latter case, the impossible value of $\sin \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemerides of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 90°$, or $270°$, according as $\sin (M - N)$ is positive or negative; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M - N)}{n'}$$

Putting π for the moon's horizontal parallax, the distance from the moon's limb will be,

$$\pi\,[m \sin (M - N) - 0.27227]$$

disregarding the sign of $\sin (M - N)$; or, allowing for the augmentation of the semidiameter,

$$\pi\,[m \sin (M - N) - 0.27227]\,[1 + z \sin \pi]$$

where

$$z = \rho \cos \varphi' \cos d \cos (h_0 + \tau) + \rho \sin \varphi' \sin d$$

The position-angle P, of the line from the moon's centre to the star at the times of contact, reckoned from the north point toward the east, is given by the formulæ: —

$$P = N - \psi \qquad \text{for immersion,}$$
$$P = N + \psi \pm 180^\circ \qquad \text{for emersion,}$$

it being supposed that the value of ψ, in each case, is taken between the limits $\pm 90^\circ$.

To find the angle from the vertex, we compute the angle C from the formula,

$$\tan C = \frac{\xi + t\,\xi'}{\eta + t\,\eta'}$$

in which the value of t corresponding to the phase is to be used. Then

$$V = P - C$$

is the angle from the vertex, also reckoned from the north toward the east.

As an example of an isolated occultation, we will compute that of π Scorpii, on June 5, 1895, for Ogden, whose position is

$$\varphi = +\ 41^\circ\ 13'\ 8.6''$$
$$\lambda = +\ 2^h\ 19^m\ 47^s.52$$

Constants for the given place,

$$\rho \sin \varphi' = 9.81654$$
$$\rho \cos \varphi' = 9.87698$$

From the elements on page 433, we have

$$H = 3^h\ 26^m.7$$
$$h_0 = H - \lambda = 1\ \ 6.908$$

From DOWNES's Table, pages 452 and 453, or from the formulæ on page 512, we find the correction to the Washington mean time of geocentric conjunction to be about $+35^m$, therefore the Washington mean time of apparent conjunction at the given place is June $5^d\ 14^h\ 56^m.3$; subtracting and adding 30^m, we shall have the approximate Washington mean times of immersion and emersion to be used in the computation, thus:

$\tau_1 = +\ 0^h\ 5^m$ $\qquad$ $T + \tau_1 =$ June $5^d\ 14^h\ 26^m.3$

$\tau_2 = +\ 1^h\ 5^m$ $\qquad$ $T + \tau_2 =$ $\qquad 5\ 15\ 26.3$

		Immersion.	Emersion.
Washington Mean Time,	June	$5^d\ 14^h\ 26^m.3$	$15^h\ 26^m.3$
h_0		$+\ 1^h\ 6^m.908$	$+\ 1^h\ 6^m.908$
τ (in sidereal time)		$0^h\ 5^m.0'4$	$1^h\ 5^m.178$
$h_0 + \tau$ (in arc)		$17^\circ\ 58'\ 30''$	$33^\circ\ 1'\ 17''$
$\rho \cos \varphi'$		9.87698	9.87698
$\sin (h_0 + \tau)$		9.48952	9.73635
$\log \xi$		9.36650	9.61333
ξ		$+$ 0.23254	$+$ 0.41052

Washington Mean Time,		Immersion. June $5^d\ 14^h\ 26^m.3$	Emersion. $15^h\ 26^m.3$
	$\rho \sin \varphi'$	9.81654	9.81654
	$\cos d$	9.95434	9.95434
		9.77088	9.77088
	(1)	+ 0.59004	+ 0.59004
	$\rho \cos \varphi'$	9.87698	9.87698
	$\sin d$	9.63898 n	9.63898 n
	$\cos (h_0 + \tau)$	9.97826	9.92349
		9.49422 n	9.43945 n
	(2)	− 0.31205	− 0.27507
(1)−(2)	η	+ 0.90209	+ 0.86511
	const. log	9.41920	9.41920
	$\rho \cos \varphi' \cos (h_0 + \tau)$	9.85524	9.80047
	$\log \xi'$	9.27444	9.21967
	ξ'	+ 0.18812	+ 0.16583
	const. log	9.41920	9.41920
	$\xi \sin d$	9.00548 n	9.25231 n
	$\log \eta'$	8.42468 n	8.67151 n
	η'	− 0.02659	− 0.04694
	$\log x'$	9.75074	9.75074
	$\log \tau$	8.92082	0.03476
	$\log x$	8.67156	9.78550
	x	+ 0.04694	+ 0.61024
	$\log y'$	9.13354 n	9.13354 n
	$\log y' \tau$	8.05136 n	9.16830 n
	$y' \tau$	− 0.01133	− 0.14733
	Y	+ 0.70810	+ 0.70810
	y	+ 0.69677	+ 0.56077
	$x - \xi$	− 0.18560	+ 0.19972
	$y - \eta$	− 0.20532	− 0.30434
	$x' - \xi'$	+ 0.37518	+ 0.39747
	$y' - \eta'$	− 0.10941	− 0.08906
	$m \sin M$	9.26858 n	9.30042
	$m \cos M$	9.31243 n	9.18336 n
	$\tan M$	9.95615	9.81706 n
	M	222° 6′ 44″	146° 43′ 32″
	$\sin M$	9.82645 n	9.73930
	$\log m$	9.44213	9.56112
	$n \sin N$	9.57424	9.59931
	$n \cos N$	9.03906 n	8.94968 n
	$\tan N$	0.53518 n	0.64963 n
	N	106° 15′ 28″	102° 37′ 45″
	$\cos N$	9.44709 n	9.33974 n
	$\log n$	9.59197	9.60994
	colog 60	8.22185	8.22185
	$\log n'$	7.81382	7.83179

		Immersion.	Emersion.
Washington Mean Time,	June	$5^d\ 14^h\ 26^m.3$	$15^h\ 26^m.3$
const. log		0.56500	0.56500
$\log m$		9.44213	9.56112
$\sin(M-N)$		9.95419	9.84252
$\sin\psi$		9.96132	9.96864
ψ		66° 10′ 30″	68° 29′ 15″
$\log\frac{m}{n'}$		1.62831	1.72933
$\cos(M-N)$		9.63959 n	9.85622
		1.26790 n	1.58555
$-\frac{m}{n'}\cos(M-N)$	+	^{m} 18.531	− ^{m} 38.508
const. log		9.43500	9.43500
$\cos\psi$		9.60632	9.56432
colog n'		2.18618	2.16821
		1.22750	1.16753
$\frac{[9.43500]\cos\psi}{n'}$	∓	^{m} 16.885	± ^{m} 4.707
t	+	1.646	− 23.801
		^{d} ^{h}	^{h}
T		14 26.3	15 26.3
Washington Mean Time,	June 5,	14 27.946	15 2.499
λ		2 19.792	2 19.792
Ogden Mean Time,	June 5,	12 8.154	12 42.707

A recomputation for the time of emersion gives June $5^d\ 12^h\ 43.179^m$

Angle of position,	106° 15.5	102° 37.8
ψ (+ 180°)	66 10.5	68 29.3
P	40 5.0	351 7.1

from the north point of the moon's limb towards the east for direct image.

Prediction of Many Occultations for a Given Place.—When it is desired to predict all the occultations which will be visible at some one place, tables may be constructed and applied in such a way as to greatly diminish the labor of computation. In using such tables, the most convenient course will be to find for each occultation the hour-angle of the star at the moment of apparent conjunction in right ascension, as seen from the place of observation. The table of elements, pages 420—449, gives H, the Washington hour-angle at the moment of geocentric conjunction. The corresponding geocentric hour-angle at the place will be

$$h_o = H - \lambda \qquad (\lambda = \text{west longitude from Washington}).$$

The moment of apparent conjunction, as seen from the station, will be given by the condition $\xi = x$; or, using the values of ξ and x,

$$\rho\cos\varphi'\sin h = x'\tau$$

h being the west hour-angle of the star at the moment in question, and τ the interval, in hours of mean time, which has elapsed since geocentric conjunction. We shall therefore have,

$$h = h_o + \tau$$

for the hour-angle at the end of the interval τ after geocentric conjunction. In strictness, τ should here be multiplied by the factor $1 + \frac{1}{365.25}$, because the star moves a little more than 15° in an hour of mean time; but the error arising from the neglect of the factor is too small to be important, as it will affect the predicted time of conjunction by less than 10 seconds. The equation for finding τ is therefore,

$$\rho \cos \varphi' \sin (h_0 + \tau) = x' \tau$$

The quantities h_0 and x' being derived immediately from the data of the Ephemeris, the quantity τ is readily obtained by successive approximation, and may be tabulated as a function of h_0 and x'. The computation of τ is effected as follows. We have

$$\sin (h_0 + \tau) = \sin h_0 + 2 \sin \tfrac{1}{2}\tau \cos (h_0 + \tfrac{1}{2}\tau) \qquad (1)$$

The value of τ in arc being seldom more than 24° we may put τ itself for $2 \sin \frac{1}{2}\tau$. The equation will then become

$$\rho \cos \varphi' \sin h_0 + \tau \rho \cos \varphi' \cos (h_0 + \tfrac{1}{2}\tau) = x' \tau$$

from which we find

$$\tau = \frac{\rho \cos \varphi' \sin h_0}{x' - \rho \cos \varphi' \cos (h_0 + \frac{1}{2}\tau)} \qquad (2)$$

To tabulate τ, we must first have a table of the quantities

$$\begin{aligned} \xi &= \rho \cos \varphi' \sin h \\ \xi' &= [9.41916]\, \rho \cos \varphi' \cos h \end{aligned} \qquad (3)$$

which table may be formed for every 10 minutes (in time) of h. If we then put ξ_0 for the value of ξ corresponding to $h = h_0$ and ξ'_1 for the value of ξ' corresponding to $h = h_0 + \frac{1}{2}\tau$, we shall have

$$\tau = \frac{\xi_0}{x' - \xi'_1} \qquad (4)$$

Since we must know the value of τ, approximately, before we can take ξ'_1 from the table, this equation can be solved only by successive approximations. The approximations converge so rapidly as to offer no difficulty. It will be best to begin by comparing values of τ for the two extremes of x', namely, $x' = 0.48$ and $x' = 0.60$, because the approximate values of τ can then be interpolated for all the intermediate values of x'. For the first approximation may be taken—

$$\begin{aligned} \tfrac{1}{2}\tau &= 50^{m} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.48) \\ \tfrac{1}{2}\tau &= 40^{m} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.60) \end{aligned} \qquad (5)$$

or, the approximate values of τ may be taken from Mr. Downes's table, pages 452—453. It will be best to make the computation for every 30^{m} of h_0, and to find the intermediate values of τ for every 10^{m} by interpolation. Then for each 30^{m} of h_0 we take ξ' from a table with the argument $h_0 + \frac{1}{2}\tau$, and log ξ with the argument h_0, and thence compute τ by (4). If the value of τ thus arrived at differs more than 3^{m} from that employed in taking out ξ', a new value may be used to correct ξ', and the computation may be repeated. The values corresponding to $x' = 0.51$, $x' = 0.54$, and $x' = 0.57$, can then be computed with the single interpolation of approximate values of τ, and afterward the table can be extended by interpolation to every 0.01 of x' between $x' = 0.48$ and $x' = 0.60$. It will be best to compute τ in the first place to every 0.001 of an hour, and to drop the last figure in forming the definitive table. The table thus formed will be called *Table I.*

The values of η and η' may then be tabulated for every degree of the star's declination, and every 10^m of h. It is a mere question of convenience whether to compute the table for negative values of d, since by putting

$$\eta_1 = \rho \sin \varphi' \cos d$$
$$\eta_2 = -\rho \cos \varphi' \sin d \cos h$$

η_1 may be given in a table of single-entry; and taking η_2 from the table of double-entry for a positive d, we shall have

$$\eta = \eta_1 \pm \eta_2$$

the lower sign being used for a negative d. But the extension of the table for η to negative values of d is so readily made that it will probably be found better to do it, so as to save taking out η_1 and η_2 separately.

This table for η will be called *Table II*, and the corresponding one for η' with the same arguments *Table III*. The precepts for using the tables will then be as follow:—

From Table I with the arguments x' and $H - \lambda = h_0$ take out the value of τ. It will be sufficient to use the nearest 0.01 of x'. τ will be of the same sign as h_0. Then, enter Table II with the arguments d (the star's declination) and $h = h_0 + \tau$, and take out the value of η. Form the quantities $y = Y + y'\tau$, and $y - \eta$. If the latter quantity lies between the limits ± 0.28, it is almost certain that there will be an occultation. If it falls without the limits ± 0.33, it is almost certain that there will not be an occultation. Between the years 1881 and 1896 these last limits may be reduced to ± 0.32, and cases near this limit may be rejected if y is small. A convenient rule to adopt will be—

$y' < 0.10$,	$= \pm 0.29$
$0.10 < y' < 0.15$,	$= \pm 0.30$
$0.15 < y' < 0.20$,	$= \pm 0.31$
$0.20 < y'$	$= \pm 0.33$ or ± 0.32

Here, only the absolute value of y' is to be considered, without respect to its algebraic sign.

If $y - \eta$ falls between the limits thus indicated, take the values of ξ' and η' from the appropriate tables and compute v, Q and Δ from the equations

$$v \sin Q = y' - \eta'$$
$$v \cos Q = x' - \xi'$$
$$\Delta = (y - \eta) \cos Q$$

If $\Delta > 0.27227$ or $\log \Delta > 9.43500$ there will be no occultation, though the moon may graze the star when $\Delta - 0.27227$ is very small. If $\Delta < 0.27227$, compute

$$\tau_1 = -\frac{y - \eta}{v} \sin Q \qquad \cos P = \frac{\Delta}{0.27227} \quad (P < 180^\circ)$$
$$\tau_2 = \frac{0.27227 \sin P}{v}$$

We shall then have—

Local mean time of immersion, $T - \lambda + \tau + \tau_1 - \tau_2$
Local mean time of emersion, $T - \lambda + \tau + \tau_1 + \tau_2$
Position-angle from north toward east at immersion, $180^\circ - Q - P$
Position-angle from north toward east at emersion, $180^\circ - Q + P$

In predicting the occultations for a given place, the first operation will be to go over the list of occultations in the Ephemeris, and select those which may be visible. The conditions of possible visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east horizon, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

The most convenient course will be to write the value of $-\lambda$ on the bottom of a sheet of paper, and passing through the list of occultations, pause over each one for which condition (1) is fulfilled, and examine whether conditions (2) and (3) are fulfilled. If either fails, the computer passes on. Very often it will require some examination to find whether $H - \lambda$ or $T - \lambda$ falls within the limits; in these cases, the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

Phenomena of Planets and Satellites, pages 454—487.—These are, for the most part, sufficiently explained in the body of the work. The following additional explanations are added for completeness:

Disks of Mercury and Venus, pages 454—455.—The angle θ, needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the sun, makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360°, as in the measurement of double stars, the planet taking the place of the central star. But its measure is 90° greater than that of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Disk of Mars, page 456.—This page gives the apparent disk of the planet for every thirtieth day throughout the year.

Satellites of Jupiter, pages 457—481.—The times of phenomena are explained at the foot of each page; the diagram is on page 457.

Phenomena, pages 488—489.—The conjunctions, quadratures, and oppositions of the planets with respect to the sun, give the hours when the longitude of each planet differs from that of the sun by 0°, 90° or 180°.

The conjunctions of the moon and planets with each other are given in right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Latitude by Observed Altitude of Polaris.—Table IV replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874—1881, and is intended for use at sea and reconnaissance on land. It will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to a right ascension of Polaris equal to $1^h\,20^m.1$. Somewhat greater accuracy may be insured by substituting the right ascension of Polaris at the date of observation, from pages 302—313 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1895.

THE adopted constants of precession, nutation, and aberration are those of STRUVE and PETERS, namely:—

$$\text{Precession} = 50''.2411 + 0''.0002268\ t$$
$$\text{Nutation} = 9''.2231 + 0''.000009\ t$$
$$\text{Aberration} = 20''.4451$$

in which t is the number of years after 1800.0.

The obliquity of the ecliptic is that of HANSEN's *Tables du Soleil*, which is 0".31 greater than that of PETERS, given in the issues of this Ephemeris preceding that for 1882. A comparison of HANSEN's mean obliquity with that of PETERS and of LE VERRIER at different epochs is given in the following table:—

Epoch.	HANSEN.	PETERS.	LE VERRIER.	H.—P.	H.—L.
	° ′ ″	″	″	″	″
1750	23 28 18.19	17.44	19.42	+0.75	−1.23
1800	23 27 54.80	54.22	55.63	+0.58	−0.83
1850	23 27 31.42	30.99	31.83	+0.43	−0.41
1900	23 27 8.02	7.76	8.03	+0.26	−0.01

The formulæ for reducing the places of the fixed stars, page 280, correspond to the *Star Tables of the American Ephemeris*, Washington, 1869.

The mean right ascensions of stars have been reduced to NEWCOMB's fundamental standard in the catalogue attached to the *Washington Observations for* 1870, Appendix II, with the following exceptions: The right ascensions of the 48 circumpolar stars north of 60° north declination are from Dr. GOULD's *Standard Places of Fundamental Stars*, second edition, United States Coast Survey Office, 1866. Of the twelve stars south of 50° south declination, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. GOULD; while the remaining nine are, as before, from the *British Nautical Almanac* for 1848.

The right ascensions of the additional stars in the general list, whose apparent right ascensions are given in a subsequent section, have been taken partly from the *Catalogue of* 1098 *Standard Clock and Zodiacal Stars*, forming Part IV of Vol. I of *Astronomical Papers Prepared for the Use of the American Ephemeris and Nautical Almanac*, Washington, 1881; and partly from the catalogue of the Astronomische Gesellschaft of 1878. A few have been derived from recent catalogues without a rigorous reduction for equinox.

The mean declinations of stars are taken from Boss's paper in the *Report of the Northern Boundary Commission*, Washington, 1879, for all stars found therein. The declinations of all the other stars have been reduced to the same standard, except those of the additional ones above, which have been taken partly from the Astronomische Gesellschaft list, and partly from places in recent catalogues. To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from AUWERS's investigations.

The values of these corrections are:—

Year.	Sirius.		Procyon	
	s	″	s	″
1895.0	$\Delta\alpha = +0.116$	$\Delta\delta = +1.27$	$\Delta\alpha = +0.070$	$\Delta\delta = +0.08$
1896.0	$\Delta\alpha = +0.083$	$\Delta\delta = +1.39$	$\Delta\alpha = +0.070$	$\Delta\delta = -0.08$

The ephemeris of the sun is constructed from HANSEN *and* OLUFSEN'S *Tables du Soleil*, Copenhagen, 1853, except that STRUVE'S aberration has been used. This is equivalent to adding 0″.19 to the true longitudes, but it does not affect the right ascensions and declinations. The sun's rectangular equatorial co-ordinates have been computed from the longitudes and latitudes by the following formulæ:—

$$X = R \cos \lambda$$
$$Y = R \sin \lambda \cos \omega - 19.3\ R\ \beta$$
$$Z = R \sin \lambda \sin \omega + 44.5\ R\ \beta$$

The reductions to mean equinox, 1895.0, are computed by the formulæ,

$$\Delta X' = + Y \sec \omega\ \Delta \lambda \sin 1''$$
$$\Delta Y' = - X \cos \omega\ \Delta \lambda \sin 1'' + Z\ \Delta \omega \sin 1'' - 9.4\ \tau\ R \sin (\lambda + 187^\circ)$$
$$\Delta Z' = - X \sin \omega\ \Delta \lambda \sin 1'' - Y\ \Delta \omega \sin 1'' + 21.7\ \tau\ R \sin (\lambda + 187^\circ)$$

Wherein—

λ and β are the longitude and latitude of the sun referred to the equinox and ecliptic of the date;
ω, the obliquity of the ecliptic;
$\Delta\lambda$, the reduction of longitude for precession and nutation from January 0;
$\Delta\omega$, the reduction of the mean to the apparent obliquity;
τ, the fraction of the year since January 0.

The numerical coefficients are in units of the seventh place of decimals. The correction for latitude has been taken from GOETZE'S paper in the *Astronomical Journal*, Vol. II, page 71.

The mean equatorial horizontal parallax of the sun, adopted from Professor NEWCOMB'S *Investigation of the Distance of the Sun and the Elements which depend on it*,* is 8″.848. The adopted semi-diameter of the sun at the earth's mean distance is 16′ 2″. In the computations pertaining to eclipses, BESSEL'S semidiameter, 15′ 59″.788 has been used.

The right ascension, declination and parallax of the moon are derived from HANSEN'S *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with NEWCOMB'S *Researches on the Motion of the Moon*, Part I, page 268,† and a corrected table being substituted for Table XXXIV.

The semidiameter of the moon is computed from the moon's horizontal parallax by the formula,

$$S = 0.272274\ \pi + 2''.5$$

The constant 2″.5 is omitted in the computation of eclipses and occultations, as due entirely to telescopic and ocular irradiation.

The ephemeris of Mercury is derived from Professor WINLOCK'S *Tables of Mercury*, Washington, 1864. They are based on the older theory of LE VERRIER, published in the Additions to the *Connaissance des Temps* for 1848.

The ephemeris of Venus is derived from Mr. G. W. HILL'S *Tables of Venus*, Washington, 1872.

The ephemeris of Mars is derived from manuscript tables constructed from LINDENAU'S Tables. Mr. HUGH BREEN'S results, contained in his paper *On the Corrections of* LINDENAU'S *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX, have also been discussed and applied; and LE VERRIER'S secular variations of the elements are likewise adopted. The perturbations produced by Jupiter have been increased numerically by $\frac{1}{50}$ of their value. The following are the corresponding corrected elements and annual variations for Washington, 1855.0:—

$\mathfrak{L}$	= 320° 13′ 33.87″	+	689101.1527″ t
π	= 333 23 17.84	+	65.9990 t
Ω	= 48 25 55.29	+	27.6997 t
i	= 1 51 2.20	−	0.02141 t
e	= 19238″.75	+	0.18549 t
n	= 689050″.8927		
a	= 1.5236915		

The ephemeris of Jupiter is derived from manuscript tables constructed from BOUVARD'S Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The ephemeris of Saturn is derived from a provisional theory constructed by Mr. GEORGE W. HILL, and still unpublished.

The ephemerides of Uranus and Neptune are derived from Professor NEWCOMB'S Tables, published by the *Smithsonian Institution*.

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* *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1865, Appendix II.

† *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1875, Appendix II.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3".34	0.00	LE VERRIER, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	PEIRCE, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Mars	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the sun and occultations of stars by the moon are adapted to BESSEL's method, using the special forms in CHAUVENET's *Spherical and Practical Astronomy.* The adopted semidiameters are:—

Semidiameter of the sun at distance unity . . . . 959".788
Ratio of radius of moon to radius of earth . . . 0.27227

The eclipses of Jupiter's satellites are computed from TODD's *Continuation of* DAMOISEAU's *Tables*, Washington, 1876. The occultations, transits, etc., are computed from WOOLHOUSE's Tables, *British Nautical Almanac* for 1835, Table II of each satellite having been adapted to DAMOISEAU's Tables.

The elongations and conjunctions of the satellites of Saturn, except those of Titan and Hyperion, are computed from HALL's Tables, published in Washington observations of 1882–1883.

The apparent elements of the rings of Saturn are computed from BESSEL's data, except those for the dusky ring.

The elongations of the satellites of Uranus, and of the satellite of Neptune are computed from the data of Professor NEWCOMB's *Uranian and Neptunian Systems*, Washington, 1875.

In compiling the positions of observatories, the latest available data have been used. The positions have been furnished, in many instances, through the courtesy of the directors of the Observatories, in response to a circular issued by the Superintendent of the American Ephemeris.

The reduction to geocentric latitude, and the logarithm of the radius of the earth, are derived from CLARKE's elements of the terrestrial spheroid, as adopted by the U. S. Coast and Geodetic Survey.

$$\log e = 8.9152503$$
$$\varphi' - \varphi = -11' 40''.43 \sin 2\varphi + 1''.19 \sin 4\varphi$$
$$\log \rho = 9.9992645 + 0.0007374 \cos 2\varphi - 0.0000019 \cos 4\varphi$$

Table IV, for finding the latitude from an observed altitude of Polaris, is constructed for—
(1) An altitude of Polaris equal to 45°.
(2) A declination of Polaris equal to + 88° 45′.

The principal computations of the Ephemeris have been distributed in the following manner:—

The ephemeris of the Sun was computed by Mrs. E. DAVIS; the Moon's longitude, latitude, semidiameter and horizontal parallax, by Professor KEITH; the right ascension and declination, by Professor VAN VLECK; the culminations, by Dr. J. MORRISON; the lunar distances, by Mr. BRADFORD; Mercury and Venus, by Mr. E. P. AUSTIN; Mars, Jupiter, Saturn, Uranus, and Neptune, by Mr. ROBERDEAU BUCHANAN; Jupiter's satellites, by Professor H. D. TODD; the satellites of Saturn, Uranus, and Neptune, by Dr. MORRISON. The mean and apparent places of the fixed stars were prepared by Mr. MEIER and Mr. HEDRICK; the general constants for their reduction, by Mr. BUCHANAN; the occultations, by Mr. AUHAGEN; and the eclipses were computed and the charts projected by Mr. BUCHANAN.

CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																							
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																							
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																							
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138					
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s					
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
0 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9					
0 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17					
0 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24					
0 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30					
0 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34					
1 0	2 0	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38					
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41					
1 20	1 40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42					
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43					

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807	0 0.000
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1 0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2 0.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3 0.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4 0.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5 0.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6 0.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7 0.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8 0.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9 0.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10 0.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11 0.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12 0.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13 0.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14 0.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15 0.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16 0.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17 0.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18 0.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19 0.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20 0.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21 0.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22 0.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23 0.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24 0.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25 0.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26 0.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27 0.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28 0.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29 0.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30 0.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31 0.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32 0.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33 0.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34 0.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35 0.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36 0.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37 0.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38 0.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39 0.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40 0.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41 0.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42 0.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43 0.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44 0.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45 0.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46 0.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47 0.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48 0.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49 0.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50 0.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51 0.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52 0.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53 0.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54 0.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55 0.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56 0.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57 0.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58 0.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59 0.161
Sidereal.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443	0	0.000
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	0.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	0.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	0.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	0.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	0.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	0.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	0.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	0.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	0.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	0.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	0.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	0.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	0.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	0.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	0.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17	0.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	0.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	0.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	0.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	0.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	0.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	0.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24	0.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	0.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	0.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	0.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	0.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	0.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	0.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	0.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	0.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	0.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	0.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	0.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	0.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	0.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	0.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	0.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	0.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	0.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	0.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	0.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	0.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	0.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	0.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47	0.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.948	2 25.477	2 35.307	48	0.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	0.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	0.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	0.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	0.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	0.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	0.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	0.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56	0.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	0.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	0.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161
Sidereal.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0 0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1 0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2 0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3 0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4 0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5 0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6 0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7 0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8 0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9 0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10 0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11 0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12 0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13 0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14 0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15 0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16 0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17 0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18 0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19 0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20 0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21 0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22 0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23 0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24 0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25 0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26 0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27 0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28 0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29 0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30 0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31 0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32 0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33 0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34 0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35 0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36 0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37 0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38 0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39 0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40 0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41 0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42 0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43 0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44 0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45 0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46 0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47 0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48 0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49 0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50 0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51 0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52 0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53 0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54 0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55 0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56 0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57 0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58 0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59 0.161
Sidereal.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0 0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1 0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2 0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3 0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4 0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5 0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6 0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7 0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8 0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9 0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10 0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11 0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12 0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13 0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14 0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15 0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16 0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17 0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18 0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19 0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20 0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21 0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22 0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23 0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24 0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25 0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26 0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27 0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28 0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29 0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30 0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31 0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32 0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33 0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34 0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35 0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36 0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37 0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38 0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39 0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40 0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41 0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42 0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43 0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44 0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45 0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46 0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47 0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48 0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49 0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50 0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51 0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52 0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53 0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54 0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55 0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56 0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57 0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58 0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59 0.162
Mean Solar.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847	0	0.000
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	0.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	3	0.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	0.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	5	0.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	0.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	0.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	0.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	0.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	10	0.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	0.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	0.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	0.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	0.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	0.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	0.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	0.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	0.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	0.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	0.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	0.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	0.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	0.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	0.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	0.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	26	0.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	27	0.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	0.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	0.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	0.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	0.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	0.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	0.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	0.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	0.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	36	0.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	0.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	0.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	0.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	0.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	0.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	0.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	0.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	0.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	0.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	0.126
47	1 26 573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	0.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	0.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	0.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	0.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	0.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	52	0.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	0.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	0.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	0.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	0.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	0.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	0.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162
Mean Solar.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699	0	0.000
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	0.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	0.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	0.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	0.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	0.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	0.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	0.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	0.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	0.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	0.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	0.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	0.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	0.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	0.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	0.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	0.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	0.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	0.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	0.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	0.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	0.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	0.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	0.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	0.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	0.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	0.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	0.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	0.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	0.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	0.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	0.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	0.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	0.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	0.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	0.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	0.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	0.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	0.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	0.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	0.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	0.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	0.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	0.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	0.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	0.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	0.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	0.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	0.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	0.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	0.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	0.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	0.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	0.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	0.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	0.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	0.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	0.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162
Mean Solar.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	

TABLE FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS.

Reduce the observed altitude of Polaris to the true altitude.

Reduce the recorded time of observation to local sidereal time.

If the sidereal time is { *less than* 1h 20m.1, *subtract it from* 1h 20m.1; *between* 1h 20m.1 *and* 13h 20m.1, *subtract* 1h 20m.1 *from it;* *greater than* 13h 20m.1, *subtract it from* 25h 20m.1;

and the remainder is the hour-angle of Polaris.

With this hour-angle take out the correction from Table IV (below), and add it to or subtract it from the true altitude, according to its sign. The result is the approximate latitude of the place.

Example.—1895, July 10, at 9h 29m 29s, P. M., mean solar time, in longitude 2° east of Greenwich, *suppose the true altitude of Polaris to be* 29° 29′. *required the latitude of the place.*

	h m s
Local astronomical mean time	9 29 29
Reduction from Table III, for 9h 29m 29s	+ 1 34
Greenwich sidereal time of mean noon, July 10, page 111	7 12 38.1
Reduction from Table III, for longitude (= 1h 53m east, or minus)	— 0 19
Sum (having regard to signs) is equal to local sidereal time.	16 43 22.1
	h m s
	25 20 6
Subtract sidereal time	16 43 22.1
Remainder is equal to hour-angle of Polaris	8 36 43.9

True altitude	+ 29° 29′.0
Correction from Table IV (below)	+ 0 48.1
Approximate Latitude	+ 30 17.1

TABLE IV—1895.

Hour-Angle.	0h.		1h.		2h.		3h.		4h.		5h.	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	− 1 15.4	0.0	− 1 12.8	0.4	− 1 5.1	0.8	− 0 52.9	1.2	− 0 37.1	1.5	− 0 18.7	1.6
5	1 15.4	0.0	1 12.4	0.5	1 4.3	0.9	0 51.7	1.2	0 35.6	1.4	0 17.1	1.6
10	1 15.4	0.1	1 11.9	0.5	1 3.4	0.9	0 50.5	1.2	0 34.2	1.5	0 15.5	1.6
15	1 15.3	0.2	1 11.4	0.6	1 2.5	1.0	0 49.3	1.3	0 32.7	1.5	0 13.9	1.6
20	− 1 15.1	0.1	− 1 10.8	0.6	− 1 1.5	1.0	− 0 48.0	1.3	− 0 31.2	1.5	− 0 12.3	1.6
25	1 15.0	0.2	1 10.2	0.6	1 0.5	1.0	0 46.7	1.3	0 29.7	1.5	0 10.7	1.7
30	1 14.8	0.3	1 9.6	0.7	0 59.5	1.0	0 45.4	1.3	0 28.2	1.6	0 9.0	1.6
35	1 14.5	0.3	1 8.9	0.7	0 58.5	1.1	0 44.1	1.4	0 26.6	1.5	0 7.4	1.6
40	− 1 14.3	0.3	− 1 8.2	0.7	− 0 57.4	1.0	− 0 42.7	1.4	− 0 25.1	1.6	− 0 5.8	1.7
45	1 14.0	0.4	1 7.5	0.8	0 56.4	1.2	0 41.3	1.4	0 23.5	1.6	0 4.1	1.6
50	1 13.6	0.4	1 6.7	0.8	0 55.2	1.1	0 39.9	1.4	0 21.9	1.6	0 2.5	1.7
55	1 13.2	0.4	1 5.9	0.8	0 54.1	1.2	0 38.5	1.4	0 20.3	1.6	− 0 0.8	1.6
60	− 1 12.8		− 1 5.1		− 0 52.9		− 0 37.1		− 0 18.7		+ 0 0.8	

Hour-Angle.	6h.		7h.		8h.		9h.		10h.		11h.	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	+ 0 0.8	1.7	+ 0 20.3	1.6	+ 0 38.3	1.4	+ 0 53.7	1.2	+ 1 5.5	0.8	+ 1 12.9	0.4
5	0 2.5	1.6	0 21.9	1.5	0 39.7	1.4	0 54.9	1.1	1 6.3	0.8	1 13.3	0.4
10	0 4.1	1.6	0 23.4	1.6	0 41.1	1.4	0 56.0	1.1	1 7.1	0.7	1 13.7	0.3
15	0 5.7	1.7	0 25.0	1.5	0 42.5	1.3	0 57.1	1.0	1 7.8	0.7	1 14.0	0.3
20	+ 0 7.4	1.6	+ 0 26.5	1.6	+ 0 43.8	1.3	+ 0 58.1	1.0	+ 1 8.5	0.7	+ 1 14.3	0.3
25	0 9.0	1.7	0 28.1	1.5	0 45.1	1.3	0 59.1	1.0	1 9.2	0.6	1 14.6	0.2
30	0 10.7	1.6	0 29.6	1.5	0 46.4	1.3	1 0.1	1.0	1 9.8	0.6	1 14.8	0.2
35	0 12.3	1.6	0 31.1	1.5	0 47.7	1.3	1 1.1	1.0	1 10.4	0.6	1 15.0	0.1
40	+ 0 13.9	1.6	+ 0 32.6	1.4	+ 0 49.0	1.2	+ 1 2.1	0.9	+ 1 11.0	0.5	+ 1 15.1	0.2
45	0 15.5	1.6	0 34.0	1.5	0 50.2	1.2	1 3.0	0.9	1 11.5	0.5	1 15.3	0.1
50	0 17.1	1.6	0 35.5	1.4	0 51.4	1.2	1 3.9	0.8	1 12.0	0.5	1 15.4	0.0
55	0 18.7	1.6	0 36.9	1.4	0 52.6	1.1	1 4.7	0.8	1 12.5	0.4	1 15.4	0.0
60	+ 0 20.3		+ 0 38.3		+ 0 53.7		+ 1 5.5		+ 1 12.9		+ 1 15.4