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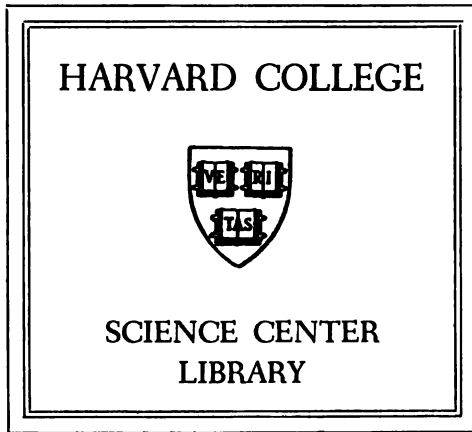
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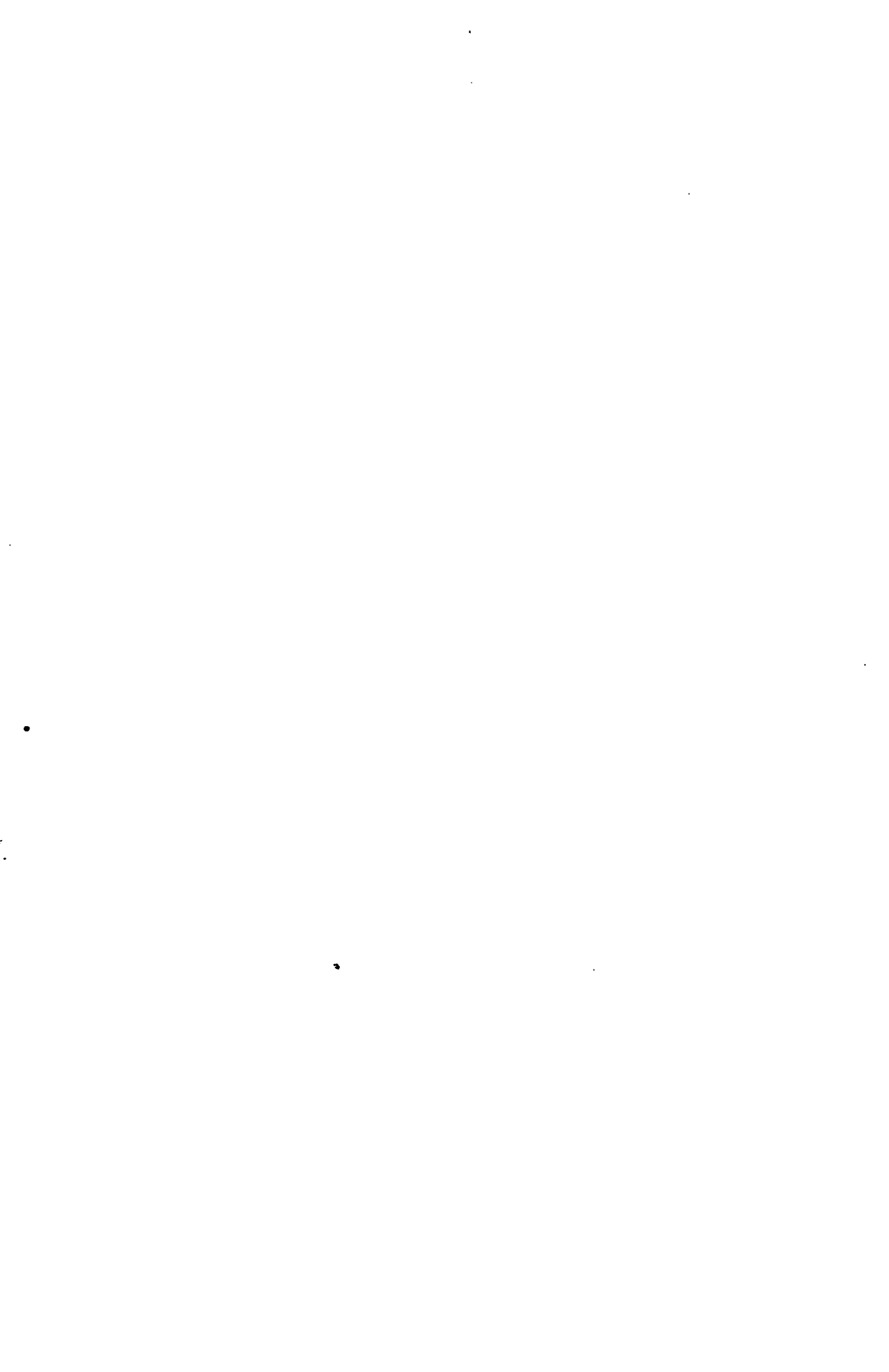
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THE
AMERICAN EPHEMERIS

AND
NAUTICAL ALMANAC.

FOR THE YEAR

1860.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

BUREAU OF ORDNANCE AND HYDROGRAPHY,
WASHINGTON.

1858.

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~~Sci 320.5 (1860)~~



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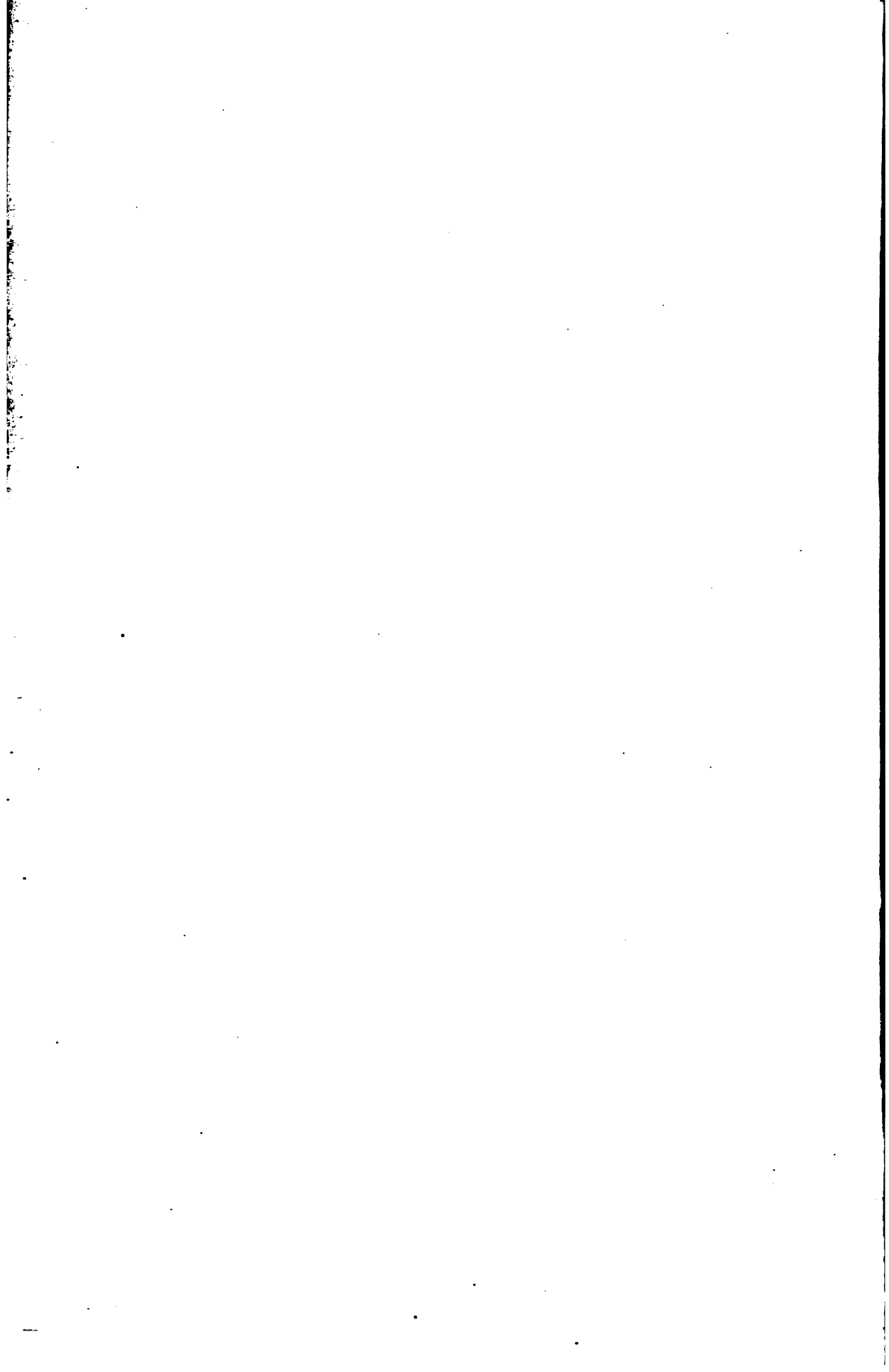
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P R E F A C E.

THE preparation of the American Ephemeris and Nautical Almanac was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation, its details, the values of the constants adopted, and the means employed in various parts of the work to secure additional accuracy, or greater convenience, will be found in the Preface and Appendix of the first volume, for the year 1855. The form and arrangement of the Ephemeris, and the plan for prosecuting the work, then devised and adopted by Lieut. Charles Henry Davis, the Superintendent, with the co-operation of Prof. Benjamin Peirce, have been retained, with slight modification, in the succeeding volumes.

The contents of the volume for the year 1860 are the same, generally, as those of the preceding years. The articles "*On the Construction of the Ephemeris,*" and "*On the Arrangement and Use of the Tables,*" show the few changes that have been made. An Asteroid Supplement to this volume, containing Elements and Ephemerides of the Asteroids for the year 1859, will be published in time to meet the wants of astronomers for that year.

JOSEPH WINLOCK,
Prof. Math., U. S. Navy, Superintendent.



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ERRATA.

ALMANAC FOR 1858.

Page 255, line first, R. A. for March, for 7^h 6^m, read 1^h 6^m.

" 316, line seventeenth, column *Piscium*, for 0^h 55^m, read 0^h 45^m.

" 437, 438, instead of the corresponding occultations, read

1858.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	
Mar. 19	<i>k</i> Pleiadum	7½	h. m.	h. m.	°	°	h. m.	h. m.	°	°	h. m.
22	47 Geminor.	6	6 35	6 46	253	310	7 21	7 32	140	199	0 46
June 29	<i>δ</i> Capricor.	3	13 11	13 9	345	39	Star 2'.6 north of <i>δ</i> 's limb.				
July 17	85 Virginis	6	20 37	14 5	253	239	21 29	14 57	180	178	0 52
Aug. 30	29 Pleiadum	8	17 58	10 16	296	341	18 44	11 1	20	69	0 45
Sept. 19	<i>γ</i> Capricor.	3½	19 49	9 13	256	211	20 28	9 52	142	93	0 40
20	<i>σ</i> Aquarii	4½	18 19	6 25	317	280	19 41	7 47	119	94	1 22
Oct. 30	49 Leonis	6	21 2	9 3	309	290	22 24	10 25	149	149	1 22
			8 11	17 33	203	163	9 17	18 39	86	61	1 6

ALMANAC FOR 1859.

Page 316, line seventeenth, column *Piscium*, for 0^h 55^m, read 0^h 45^m.

" 329, Hor. Par. for December 30^d.5, for 54' 21".2, read 54' 26".2.

" 388, 389, Longitude of Mercury, the precession from the beginning of the year has been omitted.

" 389, Longitude of Mars, the nutation has been omitted.

ALMANAC FOR 1860.

Page 121, Phases of the Moon, First Quarter, for 24^d. 18^h. 19^m.7, read 24^d. 17^h. 40^m.3.

" 302, date Aug. 6, column Apparent Decl. for Apparent Noon, for 58".6, read 54".6.

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1860, WHICH COMPRISES THE LATTER PART OF THE 84TH AND THE BEGINNING OF THE 85TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO

- The year 6573 of the Julian Period ;
- “ 7368 – 69 of the Byzantine era ;
- “ 5620 – 21 of the Jewish era ;
- “ 2613 since the foundation of Rome, according to Varro ;
- “ 2607 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 according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ ;
- “ 2636 of the Olympiads, or the fourth year of the 659th Olympiad, commencing in July, 1857, 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 ;
- “ 2172 of the Grecian era, or the era of the Seleucidæ ;
- “ 1576 of the era of Diocletian.

The year 1277 of the Mohammedan era, or the era of the Hegira, begins on the 20th of July, 1860.

The first day of January of the year 1860 is the 2,400,411th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letters A G		Solar Cycle 21
Epact 7		Roman Indiction 3
Lunar Cycle or Golden Number 18		Julian Period 6573

ASTRONOMICAL SYMBOLS AND ABBREVIATIONS.

SYMBOLS OF THE PLANETS, &c.

<p>☉ Sun. ☾ Moon. ☿ Mercury. ♀ Venus. ♁ or ⊕ Earth.</p>		<p>♂ Mars. ♃ Jupiter. ♄ Saturn. ♅ Uranus. ♆ Neptune.</p>
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SYMBOLS OF THE ASTEROID-GROUP.

<p>① Ceres. ② Pallas. ③ Juno. ④ Vesta. ⑤ Astræa. ⑥ Hebe. ⑦ Iris. ⑧ Flora. ⑨ Metis. ⑩ Hygea. ⑪ Parthenope. ⑫ Clio. ⑬ Egeria. ⑭ Irene. ⑮ Eunomia. ⑯ Psyche. ⑰ Thetis.</p>		<p>⑱ Melpomene. ⑲ Fortuna. ⑳ Massilia. ㉑ Lutetia. ㉒ Calliope. ㉓ Thalia. ㉔ Themis. ㉕ Phocæa. ㉖ Proserpina. ㉗ Euterpe. ㉘ Bellona. ㉙ Amphitrite. ㉚ Urania. ㉛ Euphrosyne. ㉜ Pomona. ㉝ Polyhymnia. ㉞ Circe.</p>		<p>㉟ Leucothea. ㊱ Atalanta. ㊲ Fides. ㊳ Leda. ㊴ Lætitia. ㊵ Harmonia. ㊶ Daphne. ㊷ Isis. ㊸ Ariadne. ㊹ Nysa. ㊺ Aglaia. ㊻ Pales. ㊼ Virginia. ㊽ Nemausa. ㊾ Europa.</p>
---	--	--	--	--

SIGNS OF THE ZODIAC.

<p>♈ Aries. ♉ Taurus. ♊ Gemini. ♋ Cancer.</p>	|	<p>♌ Leo. ♍ Virgo. ♎ Libra. ♏ Scorpio.</p>	|	<p>♐ Sagittarius. ♑ Capricornus. ♒ Aquarius. ♓ Pisces.</p>
---	--	--	--	--

ASPECTS AND NOTATIONS.

<p>♁ Superior Conjunction. ♂ Inferior Conjunction. ☐ Quadrature. ♁ Opposition. ♊ Ascending Node. ♋ Descending Node.</p>	|	<p>° Degrees. ' Minutes of a Degree. " Seconds of a Degree. h. Hours. m. Minutes of Time. s. Seconds of Time.</p>
---	--	---

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

THE SUN'S															
Day of the Week.	Day of the Month.	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.		
		h.	m.	s.	s.	°	'	"	"	'	s.	m.	s.		
Sun.	1	18	45	6.72	11.048	S. 23	3	12.5	11.91	16	18.40	71.11	3	36.77	1.192
Mon.	2	18	49	31.74	11.033	22	58	12.8	12.05	16	18.40	71.07	4	5.14	1.178
Tues.	3	18	53	56.39	11.017	22	52	45.7	14.19	16	18.40	71.02	4	33.15	1.162
Wed.	4	18	58	20.64	10.998	22	46	51.4	15.32	16	18.40	70.97	5	0.76	1.144
Thur.	5	19	2	44.46	10.980	22	40	30.1	16.44	16	18.39	70.91	5	27.95	1.125
Fri.	6	19	7	7.84	10.960	22	33	41.8	17.57	16	18.37	70.85	5	54.70	1.106
Sat.	7	19	11	30.75	10.941	22	26	26.9	18.67	16	18.34	70.79	6	20.97	1.086
Sun.	8	19	15	53.16	10.920	22	18	45.4	19.76	16	18.31	70.92	6	46.75	1.065
Mon.	9	19	20	15.05	10.898	22	10	37.6	20.85	16	18.28	70.65	7	12.02	1.043
Tues.	10	19	24	36.40	10.875	22	2	3.8	21.93	16	18.24	70.57	7	36.75	1.019
Wed.	11	19	28	57.20	10.851	21	53	4.0	23.01	16	18.19	70.49	8	0.92	0.995
Thur.	12	19	33	17.42	10.827	21	43	38.7	24.07	16	18.13	70.41	8	24.52	0.970
Fri.	13	19	37	37.05	10.802	21	33	48.1	25.12	16	18.07	70.33	8	47.54	0.945
Sat.	14	19	41	56.06	10.776	21	23	32.5	26.16	16	18.00	70.23	9	9.94	0.919
Sun.	15	19	46	14.44	10.750	21	12	52.1	27.18	16	17.93	70.14	9	31.70	0.893
Mon.	16	19	50	32.17	10.723	21	1	47.1	28.19	16	17.85	70.05	9	52.81	0.865
Tues.	17	19	54	49.24	10.695	20	50	18.0	29.19	16	17.76	69.95	10	13.26	0.837
Wed.	18	19	59	5.61	10.666	20	38	25.2	30.18	16	17.67	69.85	10	33.03	0.808
Thur.	19	20	3	21.27	10.636	20	26	8.7	31.16	16	17.58	69.75	10	52.08	0.779
Fri.	20	20	7	36.22	10.605	20	13	28.9	32.12	16	17.49	69.65	11	10.42	0.749
Sat.	21	20	11	50.42	10.574	20	0	26.3	33.06	16	17.39	69.55	11	28.02	0.718
Sun.	22	20	16	3.86	10.542	19	47	1.5	33.99	16	17.29	69.45	11	44.87	0.685
Mon.	23	20	20	16.53	10.510	19	33	14.5	34.90	16	17.18	69.34	12	0.94	0.652
Tues.	24	20	24	28.42	10.477	19	19	5.8	35.79	16	17.07	69.23	12	16.22	0.619
Wed.	25	20	28	39.50	10.443	19	4	35.8	36.67	16	16.96	69.12	12	30.70	0.586
Thur.	26	20	32	49.76	10.409	18	49	44.7	37.54	16	16.84	69.01	12	44.37	0.552
Fri.	27	20	36	59.21	10.375	18	34	33.2	38.39	16	16.72	68.90	12	57.23	0.518
Sat.	28	20	41	7.83	10.341	18	19	1.6	39.21	16	16.60	68.79	13	9.26	0.483
Sun.	29	20	45	15.61	10.306	18	3	10.4	40.02	16	16.47	68.67	13	20.45	0.448
Mon.	30	20	49	22.55	10.271	17	46	59.9	40.82	16	16.34	68.55	13	30.80	0.413
Tues.	31	20	53	28.64	10.235	17	30	30.4	41.60	16	16.20	68.44	13	40.32	0.378
Wed.	32	20	57	33.89	10.200	S. 17	13	42.4	42.36	16	16.06	68.33	13	48.99	0.343

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.16 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.					
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.				
		h.	m.	s.	''	°	'				''	''			
Sun.	1	18	45	6.07	11.048	S. 23	3	13.2	11.91	3	36.71	1.192	18	41	29.36
Mon.	2	18	49	30.99	11.033	22	58	13.7	13.05	4	5.06	1.178	18	45	25.91
Tues.	3	18	53	55.54	11.017	22	52	46.8	14.19	4	33.07	1.162	18	49	22.47
Wed.	4	18	58	19.70	10.999	22	46	52.7	15.32	5	0.67	1.144	18	53	19.03
Thur.	5	19	2	43.44	10.980	22	40	31.6	16.44	5	27.85	1.125	18	57	15.59
Fri.	6	19	7	6.74	10.960	22	33	43.5	17.57	5	54.60	1.106	19	1	12.14
Sat.	7	19	11	29.57	10.941	22	26	28.8	18.67	6	20.87	1.086	19	5	8.70
Sun.	8	19	15	51.90	10.920	22	18	47.6	19.76	6	46.64	1.065	19	9	5.26
Mon.	9	19	20	13.72	10.898	22	10	40.1	20.85	7	11.90	1.043	19	13	1.62
Tues.	10	19	24	35.00	10.875	22	2	6.6	21.93	7	36.62	1.019	19	16	58.38
Wed.	11	19	28	55.73	10.851	21	53	7.1	23.01	8	0.79	0.995	19	20	54.94
Thur.	12	19	33	15.89	10.827	21	43	42.1	24.07	8	24.39	0.970	19	24	51.50
Fri.	13	19	37	35.46	10.802	21	33	51.8	25.12	8	47.41	0.945	19	28	48.05
Sat.	14	19	41	54.41	10.776	21	23	36.5	26.16	9	9.80	0.919	19	32	44.61
Sun.	15	19	46	12.73	10.750	21	12	56.4	27.18	9	31.56	0.893	19	36	41.17
Mon.	16	19	50	30.40	10.723	21	1	51.7	28.19	9	52.67	0.865	19	40	37.73
Tues.	17	19	54	47.41	10.695	20	50	22.9	29.19	10	13.12	0.837	19	44	34.29
Wed.	18	19	59	3.73	10.666	20	38	30.4	30.18	10	32.89	0.808	19	48	30.64
Thur.	19	20	3	19.34	10.636	20	26	14.3	31.16	10	51.94	0.779	19	52	27.40
Fri.	20	20	7	34.24	10.603	20	13	34.9	32.12	11	10.28	0.749	19	56	23.96
Sat.	21	20	11	48.40	10.574	20	0	32.7	33.06	11	27.88	0.718	20	0	20.52
Sun.	22	20	16	1.80	10.542	19	47	8.2	33.99	11	44.73	0.685	20	4	17.07
Mon.	23	20	20	14.43	10.510	19	33	21.5	34.90	12	0.80	0.652	20	8	13.63
Tues.	24	20	24	26.28	10.477	19	19	13.1	35.79	12	16.09	0.619	20	12	10.19
Wed.	25	20	28	37.32	10.443	19	4	43.4	36.67	12	30.57	0.586	20	16	6.75
Thur.	26	20	32	47.55	10.409	18	49	52.7	37.54	12	44.25	0.552	20	20	3.30
Fri.	27	20	36	56.97	10.375	18	34	41.5	38.39	12	57.11	0.518	20	23	59.86
Sat.	28	20	41	5.56	10.341	18	19	10.2	39.21	13	9.14	0.483	20	27	56.42
Sun.	29	20	45	13.32	10.306	18	3	19.3	40.02	13	20.35	0.448	20	31	52.97
Mon.	30	20	49	20.24	10.271	17	47	9.1	40.82	13	30.71	0.413	20	35	49.53
Tues.	31	20	53	26.31	10.235	17	30	39.9	41.60	13	40.23	0.378	20	39	46.08
Wed.	32	20	57	31.54	10.200	S. 17	13	52.2	42.36	13	48.90	0.343	20	43	42.64

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

		THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.		
Day of the Month.	Day of the Year.	True LONGITUDE.		Diff. for 1 hour.	LATITUDE.	h.			m.	s.	
		λ	λ'								
1	1	280 ^o 22' 12.7"	21 ⁱ 59.7 ^u	152.91	+0.42		9.9926533	1.4			5	17	38.47
2	2	281 23 22.4	23 9.2	152.90	0.46	.9926512	0.4	5	13	42.56	
3	3	282 24 31.8	24 18.4	152.88	0.48	.9926516	0.7	5	9	46.65	
4	4	283 25 40.8	25 27.2	152.87	0.48	.9926544	1.7	5	5	50.73	
5	5	284 26 49.4	26 35.6	152.85	0.44	.9926598	2.9	5	1	54.81	
6	6	285 27 57.8	27 43.9	152.84	0.37	.9926681	4.1	4	57	58.90	
7	7	286 29 5.9	28 51.8	152.83	0.29	.9926793	5.3	4	54	2.99	
8	8	287 30 13.8	29 59.5	152.82	0.17	.9926933	6.5	4	50	7.08	
9	9	288 31 21.4	31 6.9	152.81	+0.05	.9927101	7.7	4	46	11.16	
10	10	289 32 28.7	32 14.0	152.80	-0.08	.9927297	8.7	4	42	15.25	
11	11	290 33 35.8	33 21.0	152.79	0.21	.9927521	9.8	4	38	19.34	
12	12	291 34 42.7	34 27.7	152.78	0.32	.9927772	11.0	4	34	23.43	
13	13	292 35 49.4	35 34.2	152.78	0.42	.9928049	12.0	4	30	27.52	
14	14	293 36 56.0	36 40.6	152.77	0.51	.9928351	13.0	4	26	31.61	
15	15	294 38 2.3	37 46.7	152.76	0.57	.9928677	14.0	4	22	35.69	
16	16	295 39 8.4	38 52.7	152.75	0.59	.9929026	15.0	4	18	39.78	
17	17	296 40 14.3	39 58.4	152.74	0.59	.9929396	15.9	4	14	43.87	
18	18	297 41 19.9	41 3.8	152.72	0.57	.9929786	16.6	4	10	47.96	
19	19	298 42 25.1	42 8.8	152.71	0.52	.9930195	17.3	4	6	52.05	
20	20	299 43 29.8	43 13.3	152.69	0.43	.9930620	18.0	4	2	56.13	
21	21	300 44 34.0	44 17.4	152.66	0.33	.9931060	18.7	3	59	0.22	
22	22	301 45 37.5	45 20.7	152.63	0.20	.9931515	19.3	3	55	4.31	
23	23	302 46 40.3	46 23.3	152.60	-0.06	.9931986	19.9	3	51	8.40	
24	24	303 47 42.3	47 25.1	152.56	+0.08	.9932472	20.6	3	47	12.49	
25	25	304 48 43.3	48 26.0	152.52	0.21	.9932974	21.3	3	43	16.57	
26	26	305 49 43.3	49 25.9	152.48	0.34	.9933492	21.9	3	39	20.66	
27	27	306 50 42.3	50 24.7	152.43	0.44	.9934025	22.6	3	35	24.75	
28	28	307 51 40.0	51 22.2	152.38	0.53	.9934573	23.3	3	31	28.84	
29	29	308 52 36.4	52 18.4	152.32	0.59	.9935139	24.0	3	27	32.93	
30	30	309 53 31.5	53 13.4	152.27	0.61	.9935724	24.8	3	23	37.02	
31	31	310 54 25.2	54 7.0	152.21	0.61	.9936328	25.6	3	19	41.11	
32	32	311 55 17.6	54 59.2	152.15	+0.58	9.9936953	26.5	3	15	45.20	

NOTE.— λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.			AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	h.	m.	m.	d.
1	15 1.0	15 5.9	55 0.5	+1.38	55 18.3	+1.59	6	1.7	1.74	8.4
2	15 11.5	15 17.6	55 38.5	1.77	56 0.8	1.94	6	45.3	1.89	9.4
3	15 24.2	15 31.2	56 25.0	2.09	56 50.8	2.21	7	32.8	2.07	10.4
4	15 38.5	15 46.1	57 17.9	2.29	57 45.6	2.33	8	25.1	2.29	11.4
5	15 53.7	16 1.2	58 13.5	2.32	58 41.0	2.25	9	22.5	2.49	12.4
6	16 8.3	16 15.0	59 7.3	2.13	59 32.0	1.96	10	24.2	2.62	13.4
7	16 21.1	16 26.3	59 54.2	1.73	60 13.4	1.46	11	27.9	2.65	14.4
8	16 30.6	16 33.8	60 29.1	1.15	60 40.9	0.81	12	30.6	2.56	15.4
9	16 35.9	16 36.7	60 48.4	+0.45	60 51.6	+0.08	13	30.1	2.40	16.4
10	16 36.4	16 35.0	60 50.4	-0.28	60 45.1	-0.61	14	25.6	2.23	17.4
11	16 32.5	16 29.0	60 35.9	0.91	60 23.3	1.18	15	17.6	2.11	18.4
12	16 24.8	16 19.9	60 7.7	1.40	59 49.7	1.58	16	7.2	2.04	19.4
13	16 14.5	16 8.7	59 29.9	1.71	59 8.8	1.79	16	55.7	2.02	20.4
14	16 2.7	15 56.7	58 46.8	1.83	58 24.6	1.84	17	44.5	2.06	21.4
15	15 50.8	15 44.9	58 2.7	1.82	57 41.3	1.77	18	34.5	2.12	22.4
16	15 39.2	15 33.7	57 20.3	1.71	57 0.1	1.64	19	26.2	2.20	23.4
17	15 28.5	15 23.6	56 40.9	1.66	56 22.8	1.47	20	19.6	2.25	24.4
18	15 18.9	15 14.5	56 5.7	1.38	55 49.7	1.29	21	13.9	2.26	25.4
19	15 10.5	15 6.7	55 34.8	1.20	55 21.0	1.11	22	7.7	2.21	26.4
20	15 3.2	15 0.0	55 8.2	1.02	54 56.5	0.94	22	59.8	2.11	27.4
21	14 57.1	14 54.4	54 45.7	0.35	54 35.9	0.77	23	49.0	1.99	28.4
22	14 52.1	14 50.0	54 27.2	0.69	54 19.5	0.60				29.4
23	14 48.2	14 46.7	54 12.9	0.51	54 7.5	0.41	0	35.2	1.86	0.5
24	14 45.5	14 44.7	54 3.2	0.30	54 0.3	-0.19	1	18.5	1.75	1.5
25	14 44.3	14 44.4	53 58.8	-0.07	53 58.9	+0.07	1	59.5	1.68	2.5
26	14 44.9	14 45.8	54 0.6	+0.22	54 4.2	0.38	2	39.2	1.64	3.5
27	14 47.3	14 49.4	54 9.8	0.66	54 17.4	0.74	3	18.4	1.64	4.5
28	14 52.0	14 55.3	54 27.1	0.91	54 39.1	1.09	3	58.3	1.69	5.5
29	14 59.2	15 3.7	54 53.3	1.28	55 9.8	1.47	4	39.9	1.79	6.5
30	15 8.8	15 14.6	55 28.6	1.66	55 49.7	1.85	5	24.5	1.94	7.5
31	15 20.9	15 27.8	56 13.0	2.02	56 38.3	2.18	6	13.1	2.12	8.5
32	15 35.1	15 42.8	57 5.2	+2.31	57 33.4	+2.40	7	6.4	2.32	9.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
	h. m. s.	"	° ' "	"		h. m. s.	"	° ' "	"
0	0 33 1.59	1.8432	N. 8 28 7.3	12.206	0	2 7 13.69	2.1110	N. 18 25 2.3	11.182
1	0 34 52.32	1.8472	8 41 24.9	12.264	1	2 9 20.56	2.1183	18 36 9.3	11.079
2	0 36 43.26	1.8510	8 54 41.3	12.292	2	2 11 27.88	2.1267	18 47 11.8	11.004
3	0 38 34.43	1.8549	9 7 56.3	12.298	3	2 13 35.64	2.1331	18 58 9.8	10.928
4	0 40 25.84	1.8589	9 21 9.9	12.213	4	2 15 43.85	2.1406	19 9 3.2	10.860
5	0 42 17.49	1.8629	9 34 22.0	12.198	5	2 17 52.52	2.1482	19 19 51.8	10.770
6	0 44 9.39	1.8670	9 47 32.5	12.162	6	2 20 1.64	2.1566	19 30 35.6	10.669
7	0 46 1.53	1.8712	10 0 41.5	12.126	7	2 22 11.22	2.1638	19 41 14.5	10.607
8	0 47 53.93	1.8755	10 13 48.8	12.108	8	2 24 21.26	2.1713	19 51 48.4	10.523
9	0 49 46.59	1.8799	10 26 54.5	12.090	9	2 26 31.77	2.1791	20 2 17.3	10.438
10	0 51 39.52	1.8844	10 39 58.4	12.050	10	2 28 42.75	2.1869	20 12 41.0	10.351
11	0 53 32.71	1.8890	10 53 0.5	12.020	11	2 30 54.20	2.1947	20 22 59.5	10.263
12	0 55 26.18	1.8935	11 6 0.8	12.009	12	2 33 6.12	2.2026	20 33 12.5	10.173
13	0 57 19.93	1.8982	11 18 59.2	12.956	13	2 35 18.50	2.2104	20 43 20.1	10.081
14	0 59 13.96	1.9030	11 31 55.7	12.924	14	2 37 31.35	2.2183	20 53 22.2	9.988
15	1 1 8.28	1.9078	11 44 50.1	12.890	15	2 39 44.68	2.2262	21 3 18.7	9.898
16	1 3 2.89	1.9127	11 57 42.5	12.856	16	2 41 58.50	2.2342	21 13 9.5	9.797
17	1 4 57.80	1.9178	12 10 32.7	12.819	17	2 44 12.80	2.2424	21 22 54.5	9.700
18	1 6 53.02	1.9229	12 23 20.8	12.782	18	2 46 27.59	2.2505	21 32 33.5	9.601
19	1 8 48.55	1.9280	12 36 6.6	12.744	19	2 48 42.86	2.2586	21 42 6.5	9.500
20	1 10 44.39	1.9332	12 48 50.1	12.705	20	2 50 58.62	2.2667	21 51 33.5	9.397
21	1 12 40.54	1.9386	13 1 31.2	12.664	21	2 53 14.87	2.2749	22 0 54.2	9.293
22	1 14 37.02	1.9440	13 14 9.8	12.623	22	2 55 31.62	2.2831	22 10 8.7	9.188
23	1 16 33.83	1.9495	N. 13 26 46.0	12.581	23	2 57 48.85	2.2913	N. 22 19 16.9	9.081
MONDAY 2.					WEDNESDAY 4.				
	h. m. s.	"	° ' "	"		h. m. s.	"	° ' "	"
0	1 18 30.97	1.9551	N. 13 39 19.5	12.537	0	3 0 6.58	2.2996	N. 22 28 18.7	8.972
1	1 20 28.44	1.9606	13 51 50.5	12.494	1	3 2 24.79	2.3077	22 37 13.7	8.862
2	1 22 26.26	1.9663	14 4 18.8	12.449	2	3 4 43.50	2.3160	22 46 2.1	8.749
3	1 24 24.42	1.9723	14 16 44.4	12.402	3	3 7 9.70	2.3241	22 54 43.6	8.636
4	1 26 22.94	1.9783	14 29 7.1	12.355	4	3 9 22.39	2.3324	23 3 18.3	8.520
5	1 28 21.81	1.9841	14 41 27.0	12.307	5	3 11 42.58	2.3406	23 11 46.0	8.403
6	1 30 21.04	1.9901	14 53 43.9	12.257	6	3 14 3.26	2.3488	23 20 6.7	8.284
7	1 32 20.63	1.9963	15 5 57.8	12.206	7	3 16 24.43	2.3570	23 28 20.2	8.164
8	1 34 20.59	2.0025	15 18 8.6	12.154	8	3 18 46.10	2.3653	23 36 26.4	8.042
9	1 36 20.92	2.0088	15 30 16.3	12.102	9	3 21 8.26	2.3735	23 44 25.2	7.918
10	1 38 21.64	2.0151	15 42 20.8	12.047	10	3 23 30.91	2.3817	23 52 16.5	7.792
11	1 40 22.74	2.0215	15 54 21.9	11.991	11	3 25 54.05	2.3898	24 0 0.2	7.665
12	1 42 24.22	2.0280	16 6 19.7	11.934	12	3 28 17.68	2.3979	24 7 36.3	7.536
13	1 44 26.09	2.0345	16 18 14.0	11.876	13	3 30 41.80	2.4060	24 15 4.5	7.405
14	1 46 28.36	2.0411	16 30 4.8	11.817	14	3 33 6.40	2.4141	24 22 24.9	7.273
15	1 48 31.03	2.0478	16 41 52.0	11.757	15	3 35 31.49	2.4221	24 29 37.3	7.139
16	1 50 34.10	2.0546	16 53 35.6	11.696	16	3 37 57.05	2.4301	24 36 41.6	7.003
17	1 52 37.58	2.0614	17 5 15.4	11.631	17	3 40 23.10	2.4381	24 43 37.7	6.866
18	1 54 41.47	2.0683	17 16 51.3	11.566	18	3 42 49.62	2.4460	24 50 25.5	6.727
19	1 56 45.78	2.0753	17 28 23.3	11.501	19	3 45 16.62	2.4539	24 57 4.9	6.586
20	1 58 50.51	2.0823	17 39 51.4	11.434	20	3 47 44.09	2.4617	25 3 35.8	6.443
21	2 0 55.66	2.0894	17 51 15.4	11.366	21	3 50 12.03	2.4696	25 9 58.1	6.299
22	2 3 1.24	2.0966	18 2 35.3	11.296	22	3 52 40.43	2.4773	25 16 11.7	6.154
23	2 5 7.25	2.1038	18 13 50.9	11.223	23	3 55 9.29	2.4849	25 22 16.5	6.007
24	2 7 13.69	2.1110	N. 18 25 2.3	11.148	24	3 57 38.61	2.4926	N. 25 28 12.5	5.858

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
0	3 57 38.61	2.4925	N.26 28 13.5	5.586	0	6 3 53.20	2.7100	N.26 51 30.2	2.776
1	4 0 8.38	2.4909	25 33 59.4	5.707	1	6 6 35.82	2.7104	26 48 37.7	2.973
2	4 2 38.60	2.5073	25 39 37.3	5.584	2	6 9 18.45	2.7106	26 45 33.5	3.169
3	4 5 9.27	2.5147	25 45 5.9	5.400	3	6 12 1.10	2.7107	26 42 17.5	3.365
4	4 7 40.37	2.5220	25 50 25.3	5.245	4	6 14 43.74	2.7106	26 38 49.7	3.562
5	4 10 11.91	2.5293	25 55 35.3	5.086	5	6 17 26.37	2.7103	26 35 10.1	3.758
6	4 12 43.87	2.5363	26 0 35.9	4.929	6	6 20 8.97	2.7097	26 31 18.7	3.955
7	4 15 16.26	2.5433	26 5 26.9	4.769	7	6 22 51.54	2.7090	26 27 15.5	4.151
8	4 17 49.07	2.5502	26 10 8.2	4.608	8	6 25 34.05	2.7081	26 23 0.6	4.346
9	4 20 22.29	2.5570	26 14 39.8	4.445	9	6 28 16.51	2.7070	26 18 34.0	4.541
10	4 22 55.91	2.5637	26 19 1.6	4.280	10	6 30 58.89	2.7057	26 13 55.7	4.735
11	4 25 29.93	2.5703	26 23 13.5	4.114	11	6 33 41.20	2.7043	26 9 5.8	4.929
12	4 28 4.35	2.5768	26 27 15.3	3.945	12	6 36 23.41	2.7027	26 4 4.2	5.122
13	4 30 39.16	2.5832	26 31 7.1	3.778	13	6 39 5.52	2.7000	25 58 51.1	5.316
14	4 33 14.34	2.5895	26 34 48.7	3.608	14	6 41 47.52	2.6990	25 53 26.4	5.507
15	4 35 49.89	2.5956	26 38 20.0	3.436	15	6 44 29.40	2.6980	25 47 50.2	5.699
16	4 38 25.81	2.6016	26 41 41.0	3.263	16	6 47 11.15	2.6946	25 42 2.5	5.890
17	4 41 2.09	2.6075	26 44 51.6	3.089	17	6 49 52.76	2.6922	25 36 3.4	6.080
18	4 43 38.71	2.6132	26 47 51.7	2.914	18	6 52 34.21	2.6896	25 29 52.9	6.269
19	4 46 15.68	2.6188	26 50 41.2	2.737	19	6 55 15.51	2.6868	25 23 31.1	6.457
20	4 48 52.97	2.6243	26 53 20.1	2.560	20	6 57 56.62	2.6838	25 16 58.1	6.644
21	4 51 30.59	2.6296	26 55 48.2	2.379	21	7 0 37.56	2.6807	25 10 13.8	6.831
22	4 54 8.52	2.6348	26 58 5.6	2.199	22	7 3 18.31	2.6775	25 3 18.4	7.017
23	4 56 46.77	2.6398	N.27 0 12.1	2.017	23	7 5 58.87	2.6741	N.24 56 11.9	7.201
FRIDAY 6.					SUNDAY 8.				
0	4 59 25.30	2.6447	N.27 2 7.7	1.835	0	7 8 39.21	2.6706	N.24 48 54.3	7.384
1	5 2 4.13	2.6494	27 3 52.3	1.651	1	7 11 19.34	2.6689	24 41 25.8	7.566
2	5 4 43.23	2.6540	27 5 25.8	1.466	2	7 13 59.24	2.6631	24 33 46.4	7.747
3	5 7 22.61	2.6584	27 6 48.2	1.281	3	7 16 38.91	2.6592	24 25 56.2	7.927
4	5 10 2.24	2.6626	27 7 59.5	1.094	4	7 19 18.34	2.6531	24 17 55.9	8.106
5	5 12 42.13	2.6667	27 8 59.5	0.906	5	7 21 57.53	2.6469	24 9 43.5	8.283
6	5 15 22.25	2.6706	27 9 48.2	0.717	6	7 24 36.45	2.6406	24 1 21.3	8.459
7	5 18 2.61	2.6743	27 10 25.6	0.529	7	7 27 15.12	2.6341	23 52 48.5	8.633
8	5 20 43.17	2.6779	27 10 51.6	0.338	8	7 29 53.51	2.6275	23 44 5.3	8.806
9	5 23 23.94	2.6813	27 11 6.2	0.146	9	7 32 31.63	2.6209	23 35 11.8	8.977
10	5 26 4.69	2.6845	27 11 9.3	0.044	10	7 35 9.46	2.6231	23 26 8.0	9.147
11	5 28 46.02	2.6875	27 11 0.9	0.236	11	7 37 47.00	2.6232	23 16 54.0	9.317
12	5 31 27.42	2.6903	27 10 41.0	0.429	12	7 40 24.24	2.6182	23 7 30.0	9.484
13	5 34 8.93	2.6930	27 10 9.5	0.622	13	7 43 1.18	2.6131	22 57 56.0	9.649
14	5 36 50.59	2.6956	27 9 26.3	0.817	14	7 45 37.81	2.6079	22 48 12.1	9.813
15	5 39 32.39	2.6978	27 8 31.5	1.011	15	7 48 14.13	2.6026	22 38 18.5	9.975
16	5 42 14.32	2.6999	27 7 25.0	1.206	16	7 50 50.13	2.5972	22 28 15.1	10.136
17	5 44 56.38	2.7018	27 6 6.8	1.401	17	7 53 25.81	2.5919	22 18 2.1	10.295
18	5 47 38.54	2.7036	27 4 36.9	1.596	18	7 56 1.15	2.5863	22 7 39.7	10.452
19	5 50 20.81	2.7051	27 2 55.3	1.792	19	7 58 36.16	2.5807	21 57 7.9	10.608
20	5 53 3.16	2.7064	27 1 1.9	1.988	20	8 1 10.33	2.5750	21 46 26.8	10.762
21	5 55 45.59	2.7076	26 58 56.7	2.185	21	8 3 45.16	2.5698	21 35 36.6	10.914
22	5 58 28.07	2.7086	26 56 39.7	2.382	22	8 6 19.15	2.5635	21 24 37.3	11.064
23	6 1 10.62	2.7094	26 54 10.8	2.579	23	8 8 52.79	2.5577	21 13 29.0	11.212
24	6 3 53.20	2.7100	N.26 51 30.2	2.776	24	8 11 26.07	2.5518	N.21 2 11.9	11.356

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination	Diff. for 1 m.	Hour.	Right Ascension	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
0	8 11 26.07	2.5518	N. 21 2 11.9	11.359	0	10 6 52.36	2.2669	N. 9 46 45.0	15.992
1	8 13 59.00	2.5457	20 50 46.0	11.602	1	10 9 8.22	2.2620	9 30 44.2	16.037
2	8 16 31.56	2.5397	20 39 11.5	11.614	2	10 11 23.81	2.2572	9 14 40.6	16.081
3	8 19 3.77	2.5337	20 27 28.5	11.786	3	10 13 39.10	2.2524	8 58 34.4	16.123
4	8 21 35.61	2.5276	20 15 37.2	11.924	4	10 15 54.10	2.2477	8 42 25.8	16.163
5	8 24 7.09	2.5215	20 3 37.6	12.061	5	10 18 8.82	2.2431	8 26 14.8	16.202
6	8 26 38.19	2.5153	19 51 29.9	12.196	6	10 20 23.27	2.2386	8 10 1.5	16.239
7	8 29 8.93	2.5091	19 39 14.1	12.329	7	10 22 37.45	2.2341	7 53 46.1	16.273
8	8 31 39.29	2.5029	19 26 50.4	12.460	8	10 24 51.36	2.2297	7 37 28.7	16.306
9	8 34 9.28	2.4967	19 14 18.9	12.589	9	10 27 5.01	2.2254	7 21 9.4	16.337
10	8 36 38.89	2.4904	19 1 39.7	12.716	10	10 29 18.41	2.2212	7 4 48.3	16.366
11	8 39 8.12	2.4841	18 48 53.1	12.840	11	10 31 31.55	2.2170	6 48 25.5	16.398
12	8 41 36.98	2.4778	18 35 59.1	12.962	12	10 33 44.45	2.2129	6 32 1.1	16.418
13	8 44 5.46	2.4716	18 22 57.7	13.083	13	10 35 57.10	2.2089	6 15 35.3	16.442
14	8 46 33.57	2.4653	18 9 49.2	13.202	14	10 38 9.52	2.2050	5 59 8.1	16.463
15	8 49 1.29	2.4590	17 56 33.6	13.318	15	10 40 21.70	2.2012	5 42 39.7	16.483
16	8 51 28.04	2.4527	17 43 11.1	13.432	16	10 42 33.66	2.1975	5 26 10.1	16.501
17	8 53 55.01	2.4463	17 29 41.0	13.545	17	10 44 45.39	2.1938	5 9 39.5	16.517
18	8 56 22.20	2.4400	17 16 5.9	13.655	18	10 46 56.91	2.1902	4 53 8.0	16.532
19	8 58 48.41	2.4338	17 2 23.3	13.763	19	10 49 8.21	2.1867	4 36 35.6	16.546
20	9 1 14.25	2.4275	16 48 34.3	13.869	20	10 51 19.31	2.1833	4 20 2.5	16.557
21	9 3 30.71	2.4212	16 34 38.9	13.973	21	10 53 30.20	2.1800	4 3 28.8	16.566
22	9 6 4.80	2.4150	16 20 37.1	14.074	22	10 55 40.90	2.1767	3 46 54.6	16.574
23	9 8 29.52	2.4083	N. 16 6 29.5	14.174	23	10 57 51.41	2.1735	N. 3 30 20.0	16.579
TUESDAY 10.					THURSDAY 12.				
0	9 10 53.86	2.4026	N. 15 52 16.2	14.271	0	11 0 1.73	2.1704	N. 3 13 45.1	16.584
1	9 13 17.83	2.3964	15 37 57.0	14.367	1	11 2 11.86	2.1675	2 57 10.0	16.586
2	9 15 41.43	2.3903	15 23 32.1	14.461	2	11 4 21.82	2.1646	2 40 34.8	16.586
3	9 18 4.66	2.3842	15 9 1.7	14.552	3	11 6 31.61	2.1617	2 23 59.6	16.583
4	9 20 27.54	2.3781	14 54 25.9	14.641	4	11 8 41.23	2.1590	2 7 24.6	16.578
5	9 22 50.05	2.3721	14 39 44.8	14.728	5	11 10 50.69	2.1564	1 50 49.8	16.573
6	9 25 12.19	2.3661	14 24 58.5	14.813	6	11 12 59.99	2.1539	1 34 15.2	16.572
7	9 27 33.98	2.3601	14 10 7.2	14.896	7	11 15 9.14	2.1514	1 17 41.0	16.565
8	9 29 55.41	2.3542	13 55 11.0	14.977	8	11 17 18.15	2.1490	1 1 7.3	16.556
9	9 32 16.48	2.3484	13 40 10.0	15.056	9	11 19 27.02	2.1467	0 44 34.2	16.546
10	9 34 37.21	2.3426	13 25 4.3	15.132	10	11 21 35.75	2.1445	0 28 1.8	16.534
11	9 36 57.59	2.3368	13 9 54.1	15.207	11	11 23 44.36	2.1423	N. 0 11 30.1	16.520
12	9 39 17.62	2.3311	12 54 39.5	15.279	12	11 25 52.84	2.1402	S. 0 5 0.7	16.504
13	9 41 37.31	2.3254	12 39 20.6	15.349	13	11 28 1.20	2.1383	0 21 30.5	16.488
14	9 43 56.67	2.3196	12 23 57.6	15.417	14	11 30 9.44	2.1364	0 37 59.3	16.470
15	9 46 15.68	2.3142	12 8 30.5	15.484	15	11 32 17.56	2.1346	0 54 26.9	16.450
16	9 48 34.37	2.3087	11 52 59.5	15.548	16	11 34 25.59	2.1329	1 10 53.3	16.429
17	9 50 52.73	2.3033	11 37 24.7	15.610	17	11 36 33.51	2.1313	1 27 18.4	16.406
18	9 53 10.76	2.2979	11 21 46.3	15.670	18	11 38 41.35	2.1298	1 43 42.1	16.382
19	9 55 28.47	2.2926	11 6 4.3	15.729	19	11 40 49.09	2.1284	2 0 4.2	16.356
20	9 57 45.87	2.2873	10 50 18.8	15.784	20	11 42 56.76	2.1270	2 16 24.7	16.329
21	10 0 2.95	2.2821	10 34 30.1	15.839	21	11 45 4.34	2.1257	2 32 43.6	16.300
22	10 2 19.73	2.2770	10 18 38.1	15.891	22	11 47 11.84	2.1245	2 49 0.7	16.270
23	10 4 36.19	2.2719	10 2 43.0	15.942	23	11 49 19.27	2.1234	3 5 16.0	16.239
24	10 6 52.36	2.2669	N. 9 46 45.0	15.992	24	11 51 26.65	2.1224	S. 3 21 29.4	16.206

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	11 51 26.65	2.1924	S. 3 21 29.4	16.206	0	13 33 36.42	2.1607	S. 15 16 47.0	13.137
1	11 53 33.96	2.1916	3 37 40.8	16.172	1	13 35 46.12	2.1629	15 29 52.5	13.046
2	11 55 41.22	2.1906	3 53 50.0	16.126	2	13 37 55.97	2.1662	15 42 52.5	12.933
3	11 57 48.43	2.1896	4 9 57.0	16.069	3	13 40 5.96	2.1676	15 55 46.9	12.859
4	11 59 55.60	2.1891	4 26 1.8	16.060	4	13 42 16.09	2.1700	16 8 35.0	12.764
5	12 2 2.72	2.1886	4 42 4.2	16.030	5	13 44 26.37	2.1735	16 21 18.5	12.668
6	12 4 9.82	2.1880	4 58 4.2	16.979	6	13 46 36.80	2.1780	16 33 55.7	12.571
7	12 6 16.88	2.1875	5 14 1.7	16.967	7	13 48 47.38	2.1776	16 46 27.0	12.473
8	12 8 23.93	2.1871	5 29 56.6	16.968	8	13 50 58.11	2.1802	16 58 52.4	12.374
9	12 10 30.95	2.1869	5 45 48.8	16.947	9	13 53 9.00	2.1828	17 11 11.9	12.274
10	12 12 37.95	2.1867	6 1 38.3	16.900	10	13 55 20.04	2.1854	17 23 25.3	12.173
11	12 14 44.95	2.1865	6 17 24.9	16.738	11	13 57 31.24	2.1881	17 35 32.6	12.071
12	12 16 51.94	2.1865	6 33 8.7	16.708	12	13 59 42.61	2.1908	17 47 33.8	11.968
13	12 18 58.93	2.1866	6 48 49.5	16.664	13	14 1 54.14	2.1935	17 59 28.8	11.864
14	12 21 5.93	2.1868	7 4 27.2	16.608	14	14 4 5.83	2.1962	18 11 17.5	11.760
15	12 23 12.93	2.1869	7 20 1.6	16.540	15	14 6 17.69	2.1990	18 22 59.0	11.654
16	12 25 19.95	2.1871	7 35 32.8	16.466	16	14 8 29.71	2.2018	18 34 36.0	11.547
17	12 27 26.98	2.1874	7 51 0.8	16.430	17	14 10 41.90	2.2046	18 46 5.6	11.439
18	12 29 34.03	2.1878	8 6 25.5	16.382	18	14 12 54.27	2.2074	18 57 28.7	11.331
19	12 31 41.11	2.1883	8 21 46.7	16.324	19	14 15 6.80	2.2102	19 8 45.3	11.221
20	12 33 48.23	2.1889	8 37 4.4	16.265	20	14 17 19.50	2.2131	19 19 55.2	11.111
21	12 35 55.38	2.1896	8 52 18.5	16.206	21	14 19 32.37	2.2160	19 30 58.5	10.999
22	12 38 2.57	2.1902	9 7 29.0	16.144	22	14 21 45.42	2.2189	19 41 55.1	10.886
23	12 40 9.80	2.1910	S. 9 22 35.9	16.081	23	14 23 58.64	2.2218	S. 19 52 44.9	10.773
SATURDAY 14.					MONDAY 16.				
0	12 42 17.08	2.1918	S. 9 37 38.9	16.017	0	14 26 12.04	2.2247	S. 20 3 27.9	10.660
1	12 44 24.41	2.1927	9 52 37.9	14.961	1	14 28 25.61	2.2276	20 14 4.0	10.544
2	12 46 31.80	2.1937	10 7 33.0	14.884	2	14 30 39.36	2.2306	20 24 33.2	10.428
3	12 48 39.25	2.1947	10 22 24.1	14.817	3	14 32 53.28	2.2335	20 34 55.5	10.312
4	12 50 46.77	2.1956	10 37 11.1	14.748	4	14 35 7.38	2.2364	20 45 10.7	10.195
5	12 52 54.36	2.1970	10 51 53.9	14.678	5	14 37 21.65	2.2393	20 55 18.8	10.078
6	12 55 2.02	2.1988	11 6 32.5	14.607	6	14 39 36.09	2.2422	21 5 19.8	9.967
7	12 57 9.75	2.1995	11 21 6.8	14.535	7	14 41 50.71	2.2451	21 15 13.6	9.857
8	12 59 17.57	2.1910	11 35 36.7	14.462	8	14 44 5.61	2.2480	21 25 0.2	9.746
9	13 1 25.46	2.1934	11 50 2.2	14.387	9	14 46 20.48	2.2509	21 34 39.5	9.634
10	13 3 33.45	2.1960	12 4 23.2	14.312	10	14 48 35.62	2.2538	21 44 11.5	9.521
11	13 5 41.53	2.1984	12 18 39.6	14.236	11	14 50 50.93	2.2567	21 53 36.1	9.411
12	13 7 49.70	2.1970	12 32 51.4	14.157	12	14 53 6.42	2.2596	22 2 53.2	9.293
13	13 9 57.97	2.1987	12 46 58.5	14.078	13	14 55 22.08	2.2625	22 12 2.9	9.180
14	13 12 6.34	2.1994	13 1 0.8	13.998	14	14 57 37.90	2.2654	22 21 5.0	9.072
15	13 14 14.82	2.1992	13 14 58.3	13.917	15	14 59 53.99	2.2683	22 29 59.6	8.966
16	13 16 23.41	2.1991	13 28 50.8	13.836	16	15 2 10.05	2.2708	22 38 46.6	8.719
17	13 18 32.11	2.1990	13 42 38.4	13.751	17	15 4 26.38	2.2736	22 47 25.9	8.591
18	13 20 40.93	2.1979	13 56 20.9	13.667	18	15 6 42.88	2.2764	22 55 57.4	8.462
19	13 22 49.86	2.1969	14 9 58.4	13.582	19	15 8 59.54	2.2791	23 4 21.2	8.332
20	13 24 58.92	2.1960	14 23 30.7	13.497	20	15 11 16.37	2.2818	23 12 37.2	8.202
21	13 27 8.10	2.1941	14 36 57.8	13.407	21	15 13 33.36	2.2845	23 20 45.3	8.070
22	13 29 17.41	2.1928	14 50 19.6	13.316	22	15 15 50.50	2.2871	23 28 45.6	7.939
23	13 31 26.65	2.1908	15 3 36.0	13.226	23	15 18 7.81	2.2897	23 36 38.0	7.807
24	13 33 36.42	2.1897	S. 15 16 47.0	13.137	24	15 20 25.27	2.2922	S. 23 44 22.4	7.675

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	15 20 25.27	2.2922	S.23 44 22.4	7.675	0	17 12 21.47	2.2421	S.27 10 17.4	0.798
1	15 22 42.89	2.2950	23 51 58.8	7.840	1	17 14 42.03	2.2422	27 11 0.9	0.652
2	15 25 0.67	2.2975	23 59 27.2	7.406	2	17 17 2.53	2.2411	27 11 35.6	0.506
3	15 27 18.59	2.2999	24 6 47.5	7.271	3	17 19 22.96	2.2399	27 12 1.6	0.360
4	15 29 36.66	2.3024	24 13 59.7	7.135	4	17 21 43.32	2.2387	27 12 18.8	0.214
5	15 31 54.88	2.3048	24 21 3.7	6.999	5	17 24 3.61	2.2374	27 12 27.3	0.068
6	15 34 13.24	2.3072	24 27 59.6	6.862	6	17 26 23.81	2.2360	27 12 27.0	0.078
7	15 36 31.74	2.3095	24 34 47.2	6.725	7	17 28 43.92	2.2344	27 12 18.0	0.222
8	15 38 50.38	2.3118	24 41 26.6	6.587	8	17 31 3.94	2.2328	27 12 0.3	0.368
9	15 41 9.15	2.3138	24 47 57.6	6.447	9	17 33 23.86	2.2312	27 11 33.9	0.512
10	15 43 28.04	2.3160	24 54 20.3	6.308	10	17 35 43.68	2.2294	27 10 58.9	0.656
11	15 45 47.07	2.3181	25 0 34.6	6.168	11	17 38 3.39	2.2278	27 10 15.2	0.800
12	15 48 6.21	2.3200	25 6 40.6	6.029	12	17 40 22.98	2.2262	27 9 22.9	0.944
13	15 50 25.47	2.3220	25 12 38.2	5.889	13	17 42 42.46	2.2245	27 8 22.0	1.087
14	15 52 44.85	2.3239	25 18 27.3	5.748	14	17 45 1.80	2.2228	27 7 12.5	1.230
15	15 55 4.34	2.3258	25 24 7.9	5.607	15	17 47 21.02	2.2211	27 5 54.5	1.372
16	15 57 23.94	2.3276	25 29 40.1	5.465	16	17 49 40.09	2.2197	27 4 27.9	1.514
17	15 59 43.65	2.3293	25 35 3.8	5.322	17	17 51 59.03	2.2184	27 2 52.8	1.655
18	16 2 3.45	2.3309	25 40 18.9	5.180	18	17 54 17.82	2.2170	27 1 9.3	1.796
19	16 4 23.35	2.3324	25 45 25.4	5.037	19	17 56 36.46	2.2058	26 59 17.4	1.935
20	16 6 43.34	2.3339	25 50 23.4	4.894	20	17 58 54.04	2.2047	26 57 17.1	2.075
21	16 9 3.42	2.3353	25 55 12.8	4.751	21	18 1 13.26	2.2039	26 55 8.4	2.214
22	16 11 23.58	2.3367	25 59 53.5	4.607	22	18 3 31.41	2.2032	26 52 51.4	2.353
23	16 13 43.82	2.3380	S.26 4 25.6	4.462	23	18 5 49.40	2.2028	S.26 50 26.0	2.492
WEDNESDAY 18.					FRIDAY 20.				
0	16 16 4.14	2.3392	S.26 8 49.0	4.318	0	18 8 7.20	2.2019	S.26 47 52.4	2.630
1	16 18 24.53	2.3403	26 13 3.7	4.173	1	18 10 24.82	2.2022	26 45 10.5	2.767
2	16 20 44.98	2.3414	26 17 9.7	4.028	2	18 12 42.26	2.2011	26 42 20.4	2.903
3	16 23 5.50	2.3424	26 21 7.0	3.882	3	18 14 59.51	2.2000	26 39 22.1	3.039
4	16 25 26.07	2.3433	26 24 55.5	3.736	4	18 17 16.56	2.2006	26 36 15.7	3.174
5	16 27 46.69	2.3441	26 28 35.3	3.590	5	18 19 33.42	2.2793	26 33 1.2	3.309
6	16 30 7.36	2.3448	26 32 6.3	3.444	6	18 21 50.07	2.2790	26 29 38.6	3.444
7	16 32 28.07	2.3454	26 35 28.5	3.297	7	18 24 6.52	2.2723	26 26 8.0	3.578
8	16 34 48.81	2.3460	26 38 41.9	3.150	8	18 26 22.75	2.2698	26 22 29.4	3.711
9	16 37 9.59	2.3465	26 41 46.6	3.004	9	18 28 38.78	2.2692	26 18 42.8	3.842
10	16 39 30.39	2.3469	26 44 42.4	2.857	10	18 30 54.58	2.2616	26 14 48.4	3.972
11	16 41 51.22	2.3472	26 47 29.4	2.710	11	18 33 10.16	2.2577	26 10 46.1	4.102
12	16 44 12.06	2.3474	26 50 7.6	2.563	12	18 35 25.51	2.2538	26 6 36.1	4.232
13	16 46 32.91	2.3476	26 52 37.0	2.416	13	18 37 40.62	2.2499	26 2 18.3	4.361
14	16 48 53.77	2.3477	26 54 57.5	2.269	14	18 39 55.50	2.2460	25 57 52.8	4.489
15	16 51 14.64	2.3477	26 57 9.2	2.122	15	18 42 10.14	2.2420	25 53 19.6	4.617
16	16 53 35.49	2.3475	26 59 12.1	1.975	16	18 44 24.54	2.2380	25 48 38.8	4.744
17	16 55 56.34	2.3473	27 1 6.2	1.828	17	18 46 38.70	2.2339	25 43 50.4	4.870
18	16 58 17.16	2.3469	27 2 51.4	1.681	18	18 48 52.61	2.2298	25 38 54.4	4.995
19	17 0 37.97	2.3465	27 4 27.8	1.533	19	18 51 6.27	2.2256	25 33 51.0	5.118
20	17 2 58.74	2.3460	27 5 55.3	1.386	20	18 53 19.68	2.2215	25 28 40.2	5.242
21	17 5 19.49	2.3454	27 7 14.1	1.239	21	18 55 33.83	2.2170	25 23 22.0	5.365
22	17 7 40.19	2.3447	27 8 24.0	1.092	22	18 57 45.71	2.2126	25 17 56.4	5.487
23	17 10 0.86	2.3440	27 9 25.1	0.945	23	18 59 58.33	2.2082	25 12 23.6	5.607
24	17 12 21.47	2.3431	S.27 10 17.4	0.798	24	19 2 10.69	2.2037	S.25 6 43.6	5.727

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 21.					MONDAY 23.				
0	19 2 10.69	2.2037	S.25 6 43.6	5.727	0	20 42 24.22	1.9713	S.18 31 25.0	10.370
1	19 4 22.78	2.1992	25 0 56.4	5.846	1	20 44 22.36	1.9667	18 21 0.7	10.443
2	19 6 34.59	2.1946	24 55 2.1	5.965	2	20 46 20.22	1.9621	18 10 32.0	10.516
3	19 8 46.13	2.1901	24 49 0.7	6.082	3	20 48 17.81	1.9576	17 59 58.9	10.588
4	19 10 57.40	2.1855	24 42 52.3	6.198	4	20 50 15.13	1.9531	17 49 21.6	10.666
5	19 13 8.39	2.1808	24 36 37.0	6.314	5	20 52 12.18	1.9486	17 38 40.2	10.725
6	19 15 19.10	2.1762	24 30 14.7	6.429	6	20 54 8.96	1.9441	17 27 54.6	10.783
7	19 17 29.53	2.1714	24 23 45.6	6.543	7	20 56 5.47	1.9397	17 17 5.0	10.860
8	19 19 39.67	2.1666	24 17 9.6	6.656	8	20 58 1.72	1.9352	17 6 11.5	10.926
9	19 21 49.52	2.1618	24 10 26.9	6.768	9	20 59 57.70	1.9308	16 55 14.0	10.991
10	19 23 59.09	2.1572	24 3 37.5	6.879	10	21 1 53.43	1.9263	16 44 12.6	11.055
11	19 26 8.38	2.1523	23 56 41.6	6.988	11	21 3 48.90	1.9223	16 33 7.4	11.118
12	19 28 17.37	2.1474	23 49 39.1	7.097	12	21 5 44.11	1.9181	16 21 58.3	11.180
13	19 30 26.07	2.1426	23 42 30.0	7.203	13	21 7 39.07	1.9139	16 10 45.6	11.242
14	19 32 34.48	2.1377	23 35 14.5	7.312	14	21 9 33.78	1.9098	15 59 29.2	11.303
15	19 34 42.60	2.1328	23 27 52.6	7.417	15	21 11 28.24	1.9057	15 48 9.2	11.363
16	19 36 50.42	2.1279	23 20 24.4	7.522	16	21 13 22.46	1.9016	15 36 45.7	11.422
17	19 38 57.95	2.1230	23 12 49.9	7.627	17	21 15 16.43	1.8975	15 25 18.6	11.480
18	19 41 5.18	2.1180	23 5 9.2	7.731	18	21 17 10.16	1.8933	15 13 48.1	11.537
19	19 43 12.11	2.1131	22 57 22.3	7.833	19	21 19 3.66	1.8897	15 2 14.2	11.603
20	19 45 18.75	2.1082	22 49 29.3	7.934	20	21 20 56.92	1.8856	14 50 37.0	11.648
21	19 47 25.09	2.1033	22 41 30.2	8.034	21	21 22 49.95	1.8815	14 38 56.5	11.703
22	19 49 31.13	2.0982	22 33 25.2	8.133	22	21 24 42.75	1.8781	14 27 12.6	11.756
23	19 51 36.87	2.0932	S.22 25 14.2	8.232	23	21 26 35.32	1.8743	S.14 15 25.6	11.809
SUNDAY 22.					TUESDAY 24.				
0	19 53 42.32	2.0883	S.22 16 57.3	8.329	0	21 28 27.67	1.8707	S.14 3 35.6	11.860
1	19 55 47.47	2.0833	22 8 34.6	8.423	1	21 30 19.80	1.8670	13 51 42.5	11.911
2	19 57 52.32	2.0783	22 0 6.2	8.521	2	21 32 11.71	1.8633	13 39 46.4	11.961
3	19 59 56.86	2.0732	21 51 32.1	8.616	3	21 34 3.40	1.8596	13 27 47.3	12.010
4	20 2 1.11	2.0683	21 42 52.3	8.709	4	21 35 54.89	1.8563	13 15 45.2	12.058
5	20 4 5.06	2.0634	21 34 7.0	8.802	5	21 37 46.16	1.8528	13 3 40.3	12.105
6	20 6 8.72	2.0584	21 25 16.1	8.893	6	21 39 37.23	1.8495	12 51 32.6	12.151
7	20 8 12.07	2.0534	21 16 19.8	8.981	7	21 41 28.10	1.8462	12 39 22.1	12.197
8	20 10 15.13	2.0485	21 7 18.1	9.073	8	21 43 18.77	1.8428	12 27 8.9	12.242
9	20 12 17.89	2.0435	20 58 11.0	9.162	9	21 45 9.24	1.8396	12 14 53.1	12.286
10	20 14 20.35	2.0386	20 48 58.7	9.249	10	21 46 59.52	1.8364	12 2 34.6	12.329
11	20 16 22.52	2.0336	20 39 41.2	9.335	11	21 48 49.61	1.8332	11 50 13.6	12.372
12	20 18 24.39	2.0287	20 30 18.5	9.420	12	21 50 39.51	1.8301	11 37 49.9	12.413
13	20 20 25.97	2.0236	20 20 50.7	9.503	13	21 52 29.23	1.8272	11 25 23.9	12.454
14	20 22 27.25	2.0186	20 11 17.9	9.589	14	21 54 18.77	1.8242	11 12 55.4	12.494
15	20 24 28.24	2.0141	20 1 40.1	9.673	15	21 56 8.13	1.8212	11 0 24.6	12.533
16	20 26 28.94	2.0093	19 51 57.3	9.753	16	21 57 57.32	1.8181	10 47 51.4	12.571
17	20 28 29.35	2.0045	19 42 9.7	9.834	17	21 59 46.34	1.8156	10 35 16.0	12.609
18	20 30 29.48	1.9997	19 32 17.2	9.914	18	22 1 35.19	1.8128	10 22 38.4	12.646
19	20 32 29.31	1.9949	19 22 19.9	9.993	19	22 3 23.88	1.8102	10 9 58.6	12.682
20	20 34 28.86	1.9902	19 12 18.0	10.070	20	22 5 12.41	1.8075	9 57 16.6	12.717
21	20 36 28.13	1.9853	19 2 11.5	10.147	21	22 7 0.78	1.8050	9 44 32.6	12.751
22	20 38 27.10	1.9806	18 52 0.4	10.223	22	22 8 49.01	1.8023	9 31 46.3	12.784
23	20 40 25.80	1.9760	18 41 44.9	10.297	23	22 10 37.08	1.8000	9 18 58.5	12.817
24	20 42 24.22	1.9713	S.18 31 25.0	10.370	24	22 12 25.01	1.7976	S. 9 6 8.5	12.849

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
0	22 12 25.01	1.7976	S. 9 6 8.5	12.849	0	23 37 8.61	1.7980	N. 1 33 34.0	12.886
1	22 14 12.79	1.7982	8 53 16.6	12.880	1	23 38 54.11	1.7988	1 47 6.1	12.883
2	22 16 0.44	1.7929	8 40 22.9	12.910	2	23 40 39.67	1.7997	2 0 38.0	12.880
3	22 17 47.96	1.7908	8 27 27.4	12.940	3	23 42 25.28	1.7997	2 14 9.7	12.886
4	22 19 35.34	1.7897	8 14 30.1	12.969	4	23 44 10.95	1.7918	2 27 41.2	12.891
5	22 21 22.59	1.7896	8 1 31.1	12.997	5	23 45 56.69	1.7920	2 41 12.3	12.815
6	22 23 9.73	1.7845	7 48 30.4	13.021	6	23 47 42.50	1.7641	2 54 43.1	12.810
7	22 24 56.74	1.7825	7 35 28.1	13.051	7	23 49 28.38	1.7693	3 8 13.5	12.804
8	22 26 43.63	1.7806	7 22 24.2	13.077	8	23 51 14.34	1.7697	3 21 43.5	12.897
9	22 28 30.41	1.7798	7 9 18.8	13.102	9	23 53 0.39	1.7691	3 35 13.1	12.899
10	22 30 17.09	1.7770	6 56 11.9	13.127	10	23 54 46.51	1.7696	3 48 42.2	12.880
11	22 32 3.66	1.7753	6 43 3.6	13.151	11	23 56 32.73	1.7711	4 2 10.7	12.871
12	22 33 50.13	1.7737	6 29 53.8	13.174	12	23 58 19.04	1.7737	4 15 36.7	12.861
13	22 35 36.50	1.7721	6 16 42.7	13.196	13	0 0 5.45	1.7744	4 29 6.0	12.860
14	22 37 22.78	1.7706	6 3 30.3	13.217	14	0 1 51.97	1.7792	4 42 32.7	12.828
15	22 39 8.97	1.7691	5 50 16.6	13.238	15	0 3 38.59	1.7790	4 55 58.6	12.826
16	22 40 55.07	1.7677	5 37 1.7	13.258	16	0 5 25.33	1.7800	5 9 23.8	12.813
17	22 42 41.09	1.7663	5 23 45.6	13.278	17	0 7 12.19	1.7800	5 22 46.2	12.809
18	22 44 27.03	1.7650	5 10 28.3	13.297	18	0 8 59.17	1.7840	5 36 11.7	12.805
19	22 46 12.90	1.7639	4 57 9.9	13.316	19	0 10 46.27	1.7691	5 49 34.4	12.870
20	22 47 58.70	1.7628	4 43 50.5	13.332	20	0 12 33.50	1.7693	6 2 56.1	12.854
21	22 49 44.43	1.7617	4 30 30.1	13.348	21	0 14 20.87	1.7906	6 16 16.9	12.837
22	22 51 30.10	1.7607	4 17 8.7	13.364	22	0 16 8.37	1.7930	6 29 36.6	12.820
23	22 53 15.71	1.7597	S. 4 3 46.3	13.380	23	0 17 56.02	1.7934	N. 6 42 55.3	12.802
THURSDAY 26.					SATURDAY 28.				
0	22 55 1.26	1.7587	S. 3 50 23.1	13.394	0	0 19 43.82	1.7979	N. 6 56 12.9	12.891
1	22 56 46.76	1.7579	3 36 59.1	13.407	1	0 21 31.77	1.8006	7 9 29.3	12.884
2	22 58 32.92	1.7572	3 23 34.2	13.420	2	0 23 19.88	1.8032	7 23 44.6	12.844
3	23 0 17.63	1.7566	3 10 8.6	13.433	3	0 25 8.15	1.8059	7 35 58.6	12.823
4	23 2 3.01	1.7560	2 56 42.2	13.446	4	0 26 56.58	1.8087	7 49 11.4	12.801
5	23 3 48.35	1.7554	2 43 15.2	13.458	5	0 28 45.18	1.8115	8 2 22.8	12.779
6	23 5 33.66	1.7549	2 29 47.5	13.469	6	0 30 33.96	1.8143	8 15 32.9	12.756
7	23 7 18.94	1.7545	2 16 19.2	13.476	7	0 32 22.92	1.8171	8 28 41.5	12.732
8	23 9 4.20	1.7542	2 2 50.3	13.483	8	0 34 12.06	1.8206	8 41 46.7	12.707
9	23 10 49.44	1.7539	1 49 20.0	13.493	9	0 36 1.38	1.8236	8 54 54.4	12.681
10	23 12 34.66	1.7537	1 35 51.1	13.501	10	0 37 50.90	1.8270	9 7 58.5	12.654
11	23 14 19.88	1.7536	1 22 20.8	13.508	11	0 39 40.62	1.8303	9 21 1.0	12.627
12	23 16 5.09	1.7535	1 8 50.1	13.514	12	0 41 30.54	1.8337	9 34 1.8	12.600
13	23 17 50.29	1.7534	0 55 19.0	13.520	13	0 43 20.66	1.8372	9 47 0.9	12.571
14	23 19 35.50	1.7535	0 41 47.7	13.524	14	0 45 11.00	1.8407	9 59 58.3	12.542
15	23 21 20.72	1.7537	0 28 16.1	13.528	15	0 47 1.55	1.8443	10 12 53.9	12.512
16	23 23 5.95	1.7539	0 14 44.3	13.532	16	0 48 52.31	1.8480	10 25 47.7	12.481
17	23 24 51.19	1.7541	S. 0 1 12.3	13.535	17	0 50 43.31	1.8518	10 38 39.6	12.448
18	23 26 36.44	1.7544	N. 0 12 19.9	13.537	18	0 52 34.53	1.8556	10 51 29.5	12.415
19	23 28 21.72	1.7549	0 25 52.2	13.539	19	0 54 25.98	1.8595	11 4 17.4	12.382
20	23 30 7.03	1.7554	0 39 24.6	13.540	20	0 56 17.67	1.8635	11 17 3.3	12.348
21	23 31 52.37	1.7559	0 52 57.0	13.540	21	0 58 9.60	1.8676	11 29 47.1	12.312
22	23 33 37.74	1.7565	1 6 29.4	13.539	22	1 0 1.78	1.8717	11 42 28.7	12.276
23	23 35 23.15	1.7572	1 20 1.8	13.536	23	1 1 54.21	1.8759	11 55 8.1	12.239
24	23 37 8.61	1.7580	N. 1 33 34.0	13.532	24	1 3 46.89	1.8802	N. 12 7 45.1	12.201

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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SUNDAY 29.

h.	m.	s.	h.	m.	s.	"	
0	1	3	46.89	1.8895	N.19	7 45.1	12.601
1	1	5	39.84	1.8846	19	20 19.9	12.582
2	1	7	33.04	1.8800	19	32 52.4	12.562
3	1	9	26.51	1.8755	19	45 22.5	12.541
4	1	11	20.26	1.8711	19	57 50.1	12.520
5	1	13	14.28	1.8677	13	10 15.2	12.507
6	1	15	8.59	1.8675	13	22 37.8	12.534
7	1	17	3.18	1.8628	13	34 57.8	12.510
8	1	18	58.06	1.8572	13	47 15.1	12.503
9	1	20	53.24	1.8521	13	59 29.6	12.219
10	1	22	48.72	1.8471	14	11 41.3	12.172
11	1	24	44.50	1.8422	14	23 50.2	12.128
12	1	26	40.58	1.8374	14	35 56.1	12.078
13	1	28	36.98	1.8327	14	47 59.0	12.023
14	1	30	33.69	1.8280	14	59 58.9	11.972
15	1	32	30.72	1.8233	15	11 55.7	11.920
16	1	34	28.08	1.8187	15	23 49.4	11.867
17	1	36	25.77	1.8142	15	35 39.8	11.813
18	1	38	23.79	1.8098	15	47 26.9	11.768
19	1	40	22.14	1.8055	15	59 10.7	11.703
20	1	42	20.84	1.8012	16	10 51.1	11.645
21	1	44	19.88	1.8070	16	22 28.0	11.586
22	1	46	19.27	1.8029	16	34 1.4	11.526
23	1	48	19.02	1.8088	N.16	45 31.2	11.466

MONDAY 30.

0	1	50	19.12	2.0048	N.16	56 57.3	11.401
1	1	52	19.58	2.0106	17	8 19.7	11.342
2	1	54	20.41	2.0169	17	19 38.3	11.278
3	1	56	21.60	2.0231	17	30 53.0	11.218
4	1	58	23.17	2.0293	17	42 3.8	11.147
5	2	0	25.12	2.0356	17	53 10.6	11.079
6	2	2	27.44	2.0420	18	4 13.3	11.010
7	2	4	30.15	2.0484	18	15 11.9	10.941
8	2	6	33.25	2.0549	18	26 6.2	10.870
9	2	8	36.73	2.0614	18	36 58.3	10.798
10	2	10	40.61	2.0680	18	47 42.0	10.725
11	2	12	44.89	2.0747	18	58 23.2	10.650
12	2	14	49.57	2.0814	19	9 0.0	10.574
13	2	16	54.65	2.0881	19	19 32.2	10.498
14	2	19	0.14	2.0949	19	29 59.8	10.420
15	2	21	6.04	2.1017	19	40 22.6	10.340
16	2	23	12.35	2.1085	19	50 40.6	10.260
17	2	25	19.08	2.1153	20	0 53.8	10.178
18	2	27	26.22	2.1220	20	11 2.0	10.093
19	2	29	33.79	2.1287	20	21 5.2	10.010
20	2	31	41.79	2.1355	20	31 3.2	9.924
21	2	33	50.31	2.1440	20	40 56.1	9.837
22	2	35	59.06	2.1513	20	50 43.7	9.749
23	2	38	8.35	2.1584	21	0 26.0	9.660
24	2	40	18.07	2.1657	N.21	10 2.8	9.568

TUESDAY 31.

h.	m.	s.	h.	m.	s.	"	
0	2	40	18.07	2.1657	N.21	10 2.8	9.568
1	2	42	28.23	2.1730	21	19 34.2	9.476
2	2	44	38.82	2.1803	21	28 59.9	9.382
3	2	46	49.86	2.1877	21	38 20.0	9.287
4	2	49	1.34	2.1951	21	47 34.3	9.191
5	2	51	13.27	2.2025	21	56 42.8	9.098
6	2	53	25.64	2.2099	22	5 45.4	8.994
7	2	55	38.46	2.2174	22	14 42.0	8.893
8	2	57	51.74	2.2249	22	23 32.5	8.791
9	3	0	5.46	2.2323	22	32 16.8	8.697
10	3	2	19.64	2.2401	22	40 54.9	8.602
11	3	4	34.27	2.2476	22	49 26.5	8.475
12	3	6	49.36	2.2552	22	57 51.7	8.367
13	3	9	4.90	2.2628	23	6 10.4	8.257
14	3	11	20.90	2.2705	23	14 22.5	8.146
15	3	13	37.36	2.2781	23	22 28.1	8.034
16	3	15	54.28	2.2857	23	30 26.8	7.920
17	3	18	11.65	2.2934	23	38 18.6	7.805
18	3	20	29.48	2.3010	23	46 3.4	7.688
19	3	22	47.77	2.3086	23	53 41.2	7.570
20	3	25	6.52	2.3163	24	1 11.8	7.450
21	3	27	25.73	2.3239	24	8 35.2	7.329
22	3	29	45.39	2.3315	24	15 51.3	7.206
23	3	32	5.51	2.3391	N.24	22 59.9	7.082

WEDNESDAY, FEBRUARY 1.

0	3	34	26.08	2.3467	N.24	30 1.0	6.956
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PHASES OF THE MOON.

	Day.	h.	m.
☉ Full Moon,	8	3	23.4
☾ Last Quarter,	14	18	58.7
● New Moon,	22	12	16.7
☽ First Quarter,	30	17	10.9

	Day.	h.
☾ Perigee,	9	14.8
☾ Apogee,	25	5.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dif.	IIIh.			P. L. of Dif.	VIh.			P. L. of Dif.	IXh.			P. L. of Dif.
			o	i	n		o	i	n		o	i	n		o	i	n	
1	SUN	W.	90	33	29	3329	91	57	7	3316	93	21	0	3303	94	45	8	3290
	Venus	W.	67	22	24	3412	68	44	27	3400	70	6	44	3386	71	29	16	3372
	Fomalhaut	W.	46	2	59	3675	47	20	13	3677	48	38	18	3662	49	57	12	3541
	Aldebaran	E.	57	42	41	3043	56	13	24	3083	54	43	50	3027	53	14	17	3020
	Jupiter	E.	100	32	3	2901	98	59	45	2889	97	27	12	2878	95	54	25	2866
2	SUN	W.	101	49	54	3215	103	15	45	3200	104	41	54	3183	106	8	23	3167
	Venus	W.	78	26	4	3297	79	50	19	3281	81	14	53	3265	82	39	46	3247
	Fomalhaut	W.	56	42	25	3360	58	5	27	3329	59	29	5	3298	60	53	19	3208
	Aldebaran	E.	45	43	37	2981	44	13	1	2975	42	42	17	2969	41	11	26	2964
	Pollux	E.	87	28	32	2858	85	55	19	2843	84	21	47	2828	82	47	55	2813
Jupiter	E.	88	6	18	2793	86	31	47	2784	84	56	58	2769	83	21	49	2753	
3	SUN	W.	113	25	59	3096	114	54	36	3080	116	23	35	3040	117	52	58	3022
	Venus	W.	89	49	22	3157	91	16	23	3133	92	43	47	3119	94	11	34	3100
	Fomalhaut	W.	68	3	1	3129	69	30	35	3103	70	58	41	3078	72	27	17	3054
	α Pegasi	W.	45	28	32	3056	46	57	36	3022	48	27	21	2989	49	57	47	2966
	Pollux	E.	74	53	30	2732	73	17	33	2715	71	41	13	2695	70	4	30	2681
	Jupiter	E.	75	20	53	2673	73	43	37	2655	72	5	56	2638	70	27	53	2621
	Saturn	E.	109	15	15	2704	107	38	41	2687	106	1	44	2669	104	24	23	2652
4	SUN	W.	125	25	51	2924	126	57	40	2904	128	29	54	2884	130	2	33	2866
	Venus	W.	101	36	28	3000	103	6	41	2980	104	37	19	2959	106	8	23	2939
	Fomalhaut	W.	79	57	42	2938	81	29	12	2916	83	1	10	2895	84	33	35	2876
	α Pegasi	W.	57	39	34	2813	59	13	45	2785	60	48	32	2760	62	23	53	2736
	Pollux	E.	61	55	6	2698	60	16	1	2675	58	36	32	2657	56	56	38	2640
	Jupiter	E.	62	11	38	2581	60	31	8	2513	58	50	13	2495	57	8	53	2477
	Saturn	E.	96	11	34	2561	94	31	45	2543	92	51	31	2524	91	10	51	2506
5	Fomalhaut	W.	92	21	59	2782	93	56	51	2765	95	32	5	2749	97	7	40	2724
	α Pegasi	W.	70	28	45	2617	72	7	17	2595	73	46	19	2574	75	25	50	2558
	α Arietis	W.	27	4	27	2494	28	45	49	2469	30	27	46	2445	32	10	17	2422
	Pollux	E.	48	31	5	2453	46	48	46	2437	45	6	4	2421	43	22	59	2405
	Jupiter	E.	48	35	42	2385	46	51	48	2368	45	7	28	2350	43	22	42	2332
	Saturn	E.	82	41	2	2413	80	57	46	2395	79	14	4	2378	77	29	57	2359
	Regulus	E.	85	19	36	2427	83	36	40	2410	81	53	19	2391	80	9	32	2373
6	α Pegasi	W.	83	50	22	2456	85	32	35	2441	87	15	11	2424	88	58	11	2410
	α Arietis	W.	40	50	42	2319	42	36	14	2300	44	22	12	2283	46	8	36	2266
	Jupiter	E.	34	32	37	2249	32	45	22	2234	30	57	45	2218	29	9	46	2204
	Saturn	E.	68	43	1	2274	66	56	24	2259	65	9	23	2243	63	21	59	2227
	Regulus	E.	71	24	16	2288	69	37	59	2272	67	51	19	2256	66	4	15	2241
7	α Arietis	W.	55	6	41	2189	56	55	25	2175	58	44	30	2163	60	33	54	2151
	Aldebaran	W.	24	39	21	2567	26	19	1	2507	28	0	5	2455	29	42	22	2410
	Saturn	E.	54	19	30	2156	52	29	59	2146	50	40	10	2134	48	50	3	2122
	Regulus	E.	57	3	26	2171	55	14	15	2159	53	24	45	2147	51	34	57	2136
	Spica	E.	111	6	0	2174	109	16	54	2161	107	27	27	2149	105	37	42	2137
8	α Arietis	W.	69	45	8	2100	71	36	7	2092	73	27	18	2085	75	18	41	2078
	Aldebaran	W.	38	27	16	2259	40	14	16	2238	42	1	47	2220	43	49	45	2203
	Saturn	E.	39	35	37	2073	37	44	4	2072	35	52	21	2066	34	0	30	2061
	Regulus	E.	42	22	2	2089	40	30	46	2082	38	39	19	2075	36	47	42	2070
	Spica	E.	96	24	55	2089	94	33	39	2081	92	42	11	2075	90	50	33	2068

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Diff.	XVh.			P. L. of Diff.	XVIIIh.			P. L. of Diff.	XXIh.			P. L. of Diff.
			o	'	"		o	'	"		o	'	"		o	'	"	
1	SUN	W.	96	9	32	2276	97	34	12	2261	98	59	9	2247	100	24	23	2232
	Venus	W.	72	53	4	2358	74	15	9	2344	75	38	30	2329	77	2	8	2313
	Fomalhaut	W.	51	16	51	2502	52	37	13	2464	53	58	17	2426	55	20	2	2304
	Aldebaran	E.	51	44	29	2011	50	14	30	2004	48	44	22	2096	47	14	4	2088
	Jupiter	E.	94	21	21	2832	92	48	1	2839	91	14	24	2826	89	40	30	2812
2	SUN	W.	107	35	12	2149	109	2	22	2132	110	29	53	2114	111	57	45	2096
	Venus	W.	84	4	59	2230	85	30	33	2212	86	56	28	2194	88	22	44	2176
	Fomalhaut	W.	62	18	8	2238	63	43	32	2210	65	9	29	2182	66	35	59	2166
	Aldebaran	E.	39	40	28	2269	38	9	24	2257	36	38	17	2256	35	7	9	2256
	Pollux	E.	81	13	44	2797	79	39	12	2781	78	4	19	2765	76	29	5	2749
	Jupiter	E.	81	46	20	2738	80	10	30	2722	78	34	19	2706	76	57	47	2689
3	SUN	W.	119	22	44	2002	120	52	54	2083	122	23	28	2068	123	54	27	2048
	Venus	W.	95	39	44	2080	97	8	18	2060	98	37	17	2040	100	6	40	2020
	Fomalhaut	W.	73	56	23	2030	75	25	59	2005	76	56	5	2082	78	26	39	2060
	α Pegasi	W.	51	28	52	2277	53	0	36	2268	54	32	58	2268	56	5	58	2240
	Pollux	E.	68	27	24	2663	66	49	55	2646	65	12	3	2628	63	38	46	2611
	Jupiter	E.	68	49	27	2604	67	10	37	2605	65	31	21	2609	63	51	42	2660
	Saturn	E.	102	46	38	2634	101	8	29	2615	99	29	55	2598	97	50	57	2680
	SUN	W.	131	35	37	2245	133	9	7	2225	134	43	3	2206	136	17	24	2185
4	Venus	W.	107	39	52	2219	109	11	47	2209	110	44	8	2178	112	16	55	2166
	Fomalhaut	W.	66	6	26	2255	67	39	42	2235	69	13	24	2217	70	47	30	2199
	α Pegasi	W.	63	59	47	2709	65	36	14	2685	67	13	13	2662	68	50	44	2640
	Pollux	E.	55	16	20	2522	53	35	38	2504	51	54	31	2487	50	13	0	2470
	Jupiter	E.	55	27	7	2458	53	44	54	2440	52	2	16	2422	50	19	12	2408
	Saturn	E.	89	29	45	2487	87	48	13	2469	86	6	16	2450	84	23	52	2431
	Fomalhaut	W.	98	43	35	2719	100	19	49	2706	101	56	20	2684	103	33	8	2664
	α Pegasi	W.	77	5	50	2632	78	46	19	2613	80	27	14	2494	82	8	35	2476
5	α Arietis	W.	33	53	21	2400	35	36	56	2378	37	21	2	2287	39	5	39	2268
	Pollux	E.	41	39	32	2390	39	55	43	2375	38	11	33	2362	36	27	3	2346
	Jupiter	E.	41	37	31	2315	39	51	54	2299	38	5	53	2282	36	19	27	2266
	Saturn	E.	75	45	24	2342	74	0	25	2324	72	15	1	2306	70	29	13	2291
	Regulus	E.	78	25	19	2356	76	40	41	2338	74	55	37	2322	73	10	9	2304
	α Pegasi	W.	90	41	32	2284	92	25	15	2260	94	9	19	2267	95	53	41	2254
	α Arietis	W.	47	55	26	2249	49	42	40	2233	51	30	18	2218	53	16	19	2204
	Jupiter	E.	27	21	26	2190	25	39	44	2176	23	43	41	2163	21	54	21	2164
6	Saturn	E.	61	34	12	2212	59	46	3	2198	57	57	32	2184	56	8	41	2171
	Regulus	E.	64	16	49	2226	62	28	59	2212	60	40	49	2198	58	52	16	2184
	α Arietis	W.	62	23	36	2189	64	13	35	2128	66	3	51	2118	67	54	22	2109
	Aldebaran	W.	31	25	42	2371	33	9	58	2338	34	55	2	2308	36	40	50	2289
	Saturn	E.	46	59	39	2113	45	9	0	2103	43	18	6	2094	41	26	58	2088
7	Regulus	E.	49	44	53	2125	47	54	32	2115	46	3	56	2106	44	13	6	2097
	Spica	E.	103	47	40	2127	101	57	21	2116	100	6	47	2107	98	15	58	2097
	α Arietis	W.	77	10	14	2073	79	1	55	2067	80	53	45	2062	82	45	42	2060
	Aldebaran	W.	45	38	8	2189	47	26	52	2177	49	15	54	2163	51	5	14	2166
8	Saturn	E.	32	8	31	2057	30	16	25	2054	28	24	15	2052	26	32	2	2053
	Regulus	E.	34	55	57	2065	33	4	4	2061	31	12	5	2058	29	20	1	2055
	Spica	E.	88	58	45	2062	87	6	48	2067	85	14	43	2063	83	22	32	2060

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
		°	'	"		°	'	"		°	'	"		°	'	"	
9	α Arietis W.	84	37	44	2007	86	29	50	2054	88	22	0	2058	90	14	12	2052
	Aldebaran W.	52	54	48	2148	54	44	34	2141	56	34	30	2135	58	24	36	2131
	Spica E.	81	30	16	2047	79	37	55	2045	77	45	31	2043	75	53	5	2043
	Mars E.	106	12	18	2261	104	25	6	2248	102	37	50	2247	100	50	32	2247
10	Aldebaran W.	67	36	14	2124	69	26	37	2125	71	16	57	2127	73	7	15	2121
	Jupiter W.	25	4	7	2014	26	57	20	2016	28	50	30	2019	30	43	35	2023
	Pollux W.	25	2	41	2127	26	52	59	2120	28	43	28	2116	30	34	2	2114
	Spica E.	66	31	4	2061	64	38	49	2065	62	46	40	2069	60	54	37	2064
	Mars E.	91	54	4	2252	90	6	54	2256	88	19	49	2260	86	32	50	2264
11	Aldebaran W.	82	17	4	2108	84	6	35	2106	85	55	54	2174	87	45	1	2182
	Jupiter W.	40	7	4	2053	41	59	16	2061	43	51	16	2066	45	43	4	2077
	Pollux W.	39	46	57	2126	41	37	17	2130	43	27	30	2137	45	17	33	2144
	Spica E.	51	36	36	2088	49	45	33	2107	47	54	44	2115	46	4	8	2135
	Mars E.	77	40	3	2299	75	54	2	2308	74	8	14	2317	72	22	40	2327
	SUN E.	140	16	12	2403	138	32	41	2410	136	49	21	2419	135	6	14	2429
12	Jupiter W.	54	58	26	2128	56	48	43	2139	58	38	42	2151	60	28	24	2163
	Pollux W.	54	24	49	2186	56	13	34	2199	58	2	3	2210	59	50	16	2221
	Saturn W.	20	28	7	2180	22	17	4	2187	24	5	51	2185	25	54	26	2204
	Spica E.	36	55	7	2182	35	6	12	2195	33	17	37	2206	31	29	22	2222
	Mars E.	63	38	39	2285	61	54	43	2297	60	11	4	2310	58	27	44	2325
	Antares E.	82	39	28	2165	80	50	8	2177	79	1	6	2198	77	12	21	2201
	SUN E.	126	34	10	2482	124	52	32	2495	123	11	12	2507	121	30	9	2520
	13	Jupiter W.	69	32	17	2226	71	20	6	2239	73	7	35	2252	74	54	45	2266
Pollux W.		68	46	59	2282	70	33	25	2296	72	19	31	2309	74	5	18	2322
Saturn W.		34	53	41	2259	36	40	41	2271	38	27	23	2284	40	13	46	2296
Regulus W.		31	45	59	2273	33	32	38	2286	35	18	58	2299	37	4	59	2312
Mars E.		49	56	15	2300	48	15	2	2316	46	34	11	2333	44	53	44	2350
Antares E.		68	13	16	2264	66	26	24	2278	64	39	52	2291	62	53	40	2305
SUN E.		113	9	26	2366	111	30	15	2393	109	51	23	2417	108	12	51	2432
14		Jupiter W.	83	45	34	2325	85	30	43	2348	87	15	32	2362	89	0	1	2375
	Pollux W.	82	49	19	2380	84	33	8	2404	86	16	37	2416	87	59	46	2431
	Saturn W.	49	1	1	2362	50	45	30	2375	52	29	40	2389	54	13	30	2403
	Regulus W.	45	50	15	2379	47	34	20	2393	49	18	5	2407	51	1	30	2420
	Mars E.	36	37	34	2644	34	59	36	2664	33	22	10	2686	31	45	11	2709
	Antares E.	54	7	42	2374	52	23	30	2388	50	39	38	2403	48	56	7	2417
	SUN E.	100	5	9	2706	98	28	37	2721	96	52	24	2736	95	16	32	2751
15	Jupiter W.	97	37	33	2443	99	20	6	2457	101	2	19	2470	102	44	14	2484
	Pollux W.	96	30	39	2500	98	11	52	2515	99	52	45	2527	101	33	20	2540
	Saturn W.	62	47	54	2470	64	29	50	2483	66	11	28	2496	67	52	47	2509
	Regulus W.	59	33	46	2486	61	15	16	2502	62	56	27	2515	64	37	20	2527
	Antares E.	40	23	25	2483	38	41	51	2498	37	0	35	2512	35	19	38	2524
	SUN E.	87	22	3	2625	85	48	7	2639	84	14	29	2653	82	41	10	2667
16	Jupiter W.	111	9	17	2546	112	49	26	2559	114	29	17	2571	116	8	52	2583
	Saturn W.	76	14	56	2572	77	54	30	2584	79	33	47	2596	81	12	48	2607
	Regulus W.	72	57	16	2591	74	36	23	2603	76	15	14	2615	77	53	48	2627
	Spica W.	19	4	18	2640	20	42	19	2646	22	20	12	2652	23	57	57	2658
	SUN E.	74	59	5	2686	73	27	32	2690	71	56	16	2692	70	25	16	2676

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.			P. L. of Diff.	XVIIIh.			P. L. of Diff.	XXIh.			P. L. of Diff.
				°	'	"		°	'	"		°	'	"	
9	α Arietis W.	92 6 26	3032	93	58	39	3033	95	50	51	3054	97	43	1	3057
	Aldebaran W.	60 14 48	3127	62	5	6	3126	63	55	27	3124	65	45	50	3123
	Spica E.	74 0 38	3044	72	8	12	3044	70	15	47	3046	68	23	24	3048
	Mars E.	99 3 13	2947	97	15	54	2946	95	28	35	2947	93	41	18	2949
10	Aldebaran W.	74 57 27	3185	76	47	33	3189	78	37	32	3146	80	27	23	3161
	Jupiter W.	32 36 33	3029	34	29	24	3033	36	23	7	3039	38	14	41	3046
	Pollux W.	32 24 40	3113	34	15	19	3115	36	5	56	3116	37	56	30	3121
	Spica E.	59 2 49	3069	57	10	55	3075	55	19	18	3092	53	27	51	3090
	Mars E.	84 45 58	2970	82	59	14	2977	81	12	40	2988	79	26	16	2991
11	Aldebaran W.	89 33 55	3192	91	23	34	3202	93	10	58	3212	94	59	7	3224
	Jupiter W.	47 34 38	3066	49	25	58	3066	51	17	3	3107	53	7	52	3117
	Pollux W.	47 7 25	3151	48	57	6	3160	50	46	31	3169	52	35	49	3178
	Spica E.	44 13 47	3136	42	23	42	3146	40	33	53	3157	38	44	21	3169
	Mars E.	70 37 20	2937	68	52	15	2949	67	7	26	2960	65	22	54	2972
	SUN E.	133 23 20	3438	131	40	40	3446	129	58	14	3460	128	16	4	3471
12	Jupiter W.	62 17 48	3176	64	6	53	3187	65	55	40	3200	67	44	8	3212
	Pollux W.	61 38 12	3233	63	25	51	3245	65	13	12	3257	67	0	15	3270
	Saturn W.	27 42 48	3214	29	30	55	3224	31	18	47	3235	33	6	23	3247
	Spica E.	29 41 20	3238	27	53	58	3253	26	6	50	3270	24	20	7	3287
	Mars E.	56 44 45	2939	55	2	6	2954	53	19	48	2969	51	37	51	2984
	Antares E.	75 23 55	3213	73	35	47	3225	71	47	57	3239	70	0	27	3251
	SUN E.	119 49 23	3333	118	8	56	3346	116	28	47	3360	114	48	57	3374
13	Jupiter W.	76 41 35	3279	78	26	5	3288	80	14	15	3307	82	0	4	3321
	Pollux W.	75 50 46	3335	77	35	54	3349	79	20	42	3362	81	5	11	3377
	Saturn W.	41 59 51	3309	43	45	38	3322	45	31	5	3336	47	16	12	3348
	Regulus W.	38 50 41	3325	40	36	4	3339	42	21	7	3352	44	5	51	3366
	Mars E.	43 13 40	2967	41	34	0	2986	39	54	46	3004	38	15	57	3024
	Antares E.	61 7 48	3319	59	22	16	3333	57	37	5	3347	55	52	13	3361
	SUN E.	106 34 39	3346	104	56	47	3361	103	19	15	3375	101	42	2	3390
	14	Jupiter W.	90 44 10	3389	92	28	0	3408	94	11	31	3417	95	54	41	3430
Pollux W.		89 42 36	3445	91	25	6	3460	93	7	16	3473	94	49	7	3487
Saturn W.		55 57 1	3416	57	40	13	3430	59	23	5	3443	61	5	39	3456
Regulus W.		52 44 36	3434	54	27	22	3448	56	9	49	3461	57	51	57	3475
Mars E.		30 8 43	2733	28	32	47	2756	26	57	24	2783	25	22	38	2818
Antares E.		47 12 55	3431	45	30	4	3444	43	47	31	3456	42	5	18	3472
SUN E.		93 40 59	3766	92	5	46	3780	90	30	52	3795	88	56	18	3816
15	Jupiter W.	104 25 50	3497	106	7	8	3510	107	48	8	3522	109	28	51	3534
	Pollux W.	103 13 37	3554	104	53	35	3567	106	33	15	3580	108	12	37	3593
	Saturn W.	69 33 48	3522	71	14	31	3534	72	54	57	3547	74	35	5	3559
	Regulus W.	66 17 55	3540	67	58	12	3553	69	38	11	3566	71	17	52	3579
	Antares E.	33 38 58	2937	31	58	36	2950	30	18	32	2961	28	38	44	2973
	SUN E.	81 8 9	3692	79	35	27	3696	78	3	2	3709	76	30	55	3723
16	Jupiter W.	117 48 10	3695	119	27	12	3697	121	5	58	3618	122	44	28	3629
	Saturn W.	82 51 33	3619	84	30	2	3630	86	8	16	3641	87	40	14	3653
	Regulus W.	79 32 6	3640	81	19	7	3651	82	47	53	3662	84	25	24	3673
	Spica W.	25 35 33	3665	27	12	58	3675	28	50	12	3683	30	27	15	3692
	SUN E.	68 54 33	3683	67	24	5	3691	65	53	53	3614	64	23	57	3625

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			°	'	"		°	'	"		°	'	"		°	'	"	
17	Saturn	W.	89	23	57	2664	91	1	25	2674	92	38	40	2685	94	15	40	2695
	Regulus	W.	86	2	40	2685	87	39	41	2695	89	16	28	2706	90	53	0	2716
	Spica	W.	32	4	6	2701	33	40	45	2710	35	17	11	2719	36	53	25	2729
	SUN	E.	62	54	15	3068	61	24	49	3048	59	55	36	3000	58	26	38	3072
18	Saturn	W.	102	17	18	2744	103	52	59	2764	105	28	27	2763	107	3	43	2772
	Spica	W.	44	51	31	2775	46	26	33	2783	48	1	23	2792	49	36	2	2801
	Mars	W.	15	36	32	3309	17	0	33	3266	18	25	24	3266	19	50	51	3212
	SUN	E.	51	5	11	3126	49	37	33	3185	48	10	6	3146	46	42	52	3166
19	Spica	W.	57	26	31	2841	59	0	6	2849	60	33	30	2856	62	6	45	2864
	Mars	W.	27	2	52	3167	28	29	41	3163	29	56	34	3163	31	23	27	3164
	SUN	E.	39	29	33	3202	38	3	26	3211	36	37	30	3219	35	11	43	3228
25	SUN	W.	27	1	32	3465	28	22	35	3466	29	43	37	3468	31	4	37	3468
	α Arietis	E.	64	0	51	3063	62	32	33	3065	61	4	17	3066	59	36	3	3068
	Aldebaran	E.	96	13	2	3146	94	45	47	3146	93	18	33	3146	91	51	19	3148
26	SUN	W.	37	49	33	3468	39	10	33	3468	40	31	35	3466	41	52	38	3468
	α Arietis	E.	52	15	13	3101	50	47	5	3102	49	18	58	3101	47	50	50	3102
	Aldebaran	E.	84	35	21	3148	83	8	10	3148	81	40	58	3147	80	13	45	3146
27	SUN	W.	48	38	28	3450	49	59	48	3446	51	21	13	3442	52	42	42	3428
	Venus	W.	19	59	36	3607	21	18	3	3597	22	36	41	3587	23	55	30	3576
	α Arietis	E.	40	30	5	3008	39	1	53	3006	37	33	40	3006	36	5	25	3004
	Aldebaran	E.	72	57	21	3138	71	29	58	3137	70	2	33	3134	68	35	5	3122
	Jupiter	E.	112	38	57	3020	111	9	9	3018	109	39	18	3014	108	9	22	3008
28	SUN	W.	59	31	36	3408	60	53	44	3400	62	16	0	3393	63	38	24	3385
	Venus	W.	30	32	16	3429	31	52	8	3519	33	12	11	3510	34	32	24	3499
	Aldebaran	E.	61	16	52	3116	59	49	2	3112	58	21	7	3108	56	53	7	3106
	Jupiter	E.	100	38	13	2992	99	7	38	2977	97	36	56	2970	96	6	6	2962
	Pollux	E.	103	20	49	3040	101	51	26	3034	100	21	55	3026	98	52	15	3019
29	SUN	W.	70	32	56	3338	71	56	24	3327	73	20	4	3316	74	43	57	3304
	Venus	W.	41	16	25	3446	42	37	50	3433	43	59	29	3422	45	21	21	3406
	Aldebaran	E.	49	31	55	3084	48	3	26	3080	46	34	52	3077	45	6	14	3073
	Jupiter	E.	88	29	25	2820	86	57	31	2810	85	25	25	2801	83	53	7	2801
	Pollux	E.	91	21	25	2976	89	50	42	2966	88	19	46	2965	86	48	37	2945
30	SUN	W.	81	46	59	3257	83	12	22	3225	84	38	2	3209	86	4	0	3195
	Venus	W.	52	14	29	3339	53	37	55	3325	55	1	38	3309	56	25	39	3294
	α Pegasi	W.	41	31	7	3266	42	55	58	3251	44	21	31	3195	45	47	46	3156
	Aldebaran	E.	37	42	17	3065	36	13	25	3068	34	44	36	3071	33	15	51	3078
	Jupiter	E.	76	8	3	2831	74	34	15	2818	73	0	11	2806	71	25	51	2792
	Pollux	E.	79	9	22	2886	77	36	45	2873	76	3	51	2869	74	30	40	2846
	Saturn	E.	111	47	16	2847	110	13	49	2834	108	40	5	2821	107	6	4	2807
31	SUN	W.	93	18	28	3113	94	46	22	3085	96	14	38	3078	97	43	15	3060
	Venus	W.	63	30	30	3209	64	56	29	3190	66	22	50	3172	67	49	33	3153
	α Pegasi	W.	53	8	7	3020	54	37	55	2993	56	8	16	2967	57	39	10	2942
	Jupiter	E.	63	29	26	2717	61	53	9	2702	60	16	32	2686	58	39	33	2680
	Pollux	E.	66	40	12	2772	65	5	8	2756	63	29	43	2741	61	53	58	2725
	Saturn	E.	99	11	15	2732	97	35	17	2716	95	58	58	2699	94	22	17	2682

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			XVh.			XVIIIh.			XXIh.						
			°	'	"	P. L. of Diff.	°	'	"	P. L. of Diff.	°	'	"	P. L. of Diff.				
17	Saturn	W.	95	52	26	2765	97	28	59	2716	99	5	18	2725	100	41	25	2735
	Regulus	W.	92	29	19	2726	94	5	24	2737	95	41	15	2747	97	16	53	2756
	Spica	W.	38	29	26	2738	40	5	15	2747	41	40	52	2766	43	16	17	2765
	SUN	E.	56	57	54	3063	55	29	24	3003	54	1	6	3105	52	33	2	3115
18	Saturn	W.	108	38	47	2782	110	13	39	2780	111	48	20	2797	113	22	52	2808
	Spica	W.	51	10	29	2808	52	44	46	2917	54	18	52	2825	55	52	47	2834
	Mars	W.	21	16	46	3196	22	43	0	3163	24	9	29	3176	25	36	7	3170
	SUN	E.	45	15	50	3165	43	48	59	3174	42	22	19	3184	40	55	51	3198
19	Spica	W.	63	39	50	2872	65	12	45	2879	66	45	31	2886	68	18	8	2893
	Mars	W.	32	50	19	3165	34	17	10	3167	35	43	59	3169	37	10	45	3173
	SUN	E.	33	46	7	3286	32	20	41	3244	30	55	24	3203	29	30	17	3260
25	SUN	W.	32	25	37	3469	33	46	36	3469	35	7	35	3469	36	28	34	3469
	α Arietis	E.	58	7	51	3069	56	39	40	3100	55	11	30	3101	53	43	21	3101
	Aldebaran	E.	90	24	7	3148	88	56	55	3148	87	29	43	3148	86	2	32	3148
26	SUN	W.	43	13	43	3462	44	34	50	3460	45	55	59	3456	47	17	12	3454
	α Arietis	E.	46	22	43	3101	44	54	35	3101	43	26	26	3100	41	58	16	3099
	Aldebaran	E.	78	46	31	3145	77	19	16	3143	75	51	59	3143	74	24	41	3141
27	SUN	W.	54	4	16	3432	55	25	56	3427	56	47	42	3421	58	9	35	3414
	Venus	W.	25	14	30	3566	26	33	41	3556	27	53	3	3548	29	12	34	3538
	α Arietis	E.	34	37	8	3092	33	8	49	3092	31	40	30	3091	30	12	10	3091
	Aldebaran	E.	67	7	34	3129	65	39	59	3126	64	12	21	3123	62	44	39	3119
	Jupiter	E.	106	39	20	3005	105	9	13	3000	103	39	0	2994	102	8	40	2989
28	SUN	W.	65	0	58	3376	66	23	42	3368	67	46	36	3356	69	9	40	3348
	Venus	W.	35	52	49	3489	37	13	25	3480	38	34	12	3468	39	55	12	3456
	Aldebaran	E.	55	25	3	3100	53	56	53	3096	52	28	38	3092	51	0	19	3088
	Jupiter	E.	94	35	6	2954	93	3	56	2946	91	32	36	2939	90	1	6	2930
	Pollux	E.	97	22	26	3010	95	52	26	3002	94	22	16	2994	92	51	56	2985
29	SUN	W.	76	8	4	3292	77	32	25	3279	78	57	1	3266	80	21	52	3253
	Venus	W.	46	43	28	3393	48	5	50	3382	49	28	27	3369	50	51	20	3356
	Aldebaran	E.	43	37	32	3071	42	8	47	3068	40	39	58	3067	39	11	8	3066
	Jupiter	E.	82	20	36	2879	80	47	50	2867	79	14	49	2856	77	41	34	2844
	Pollux	E.	85	17	15	2934	83	45	39	2923	82	13	49	2910	80	41	43	2898
30	SUN	W.	87	30	15	3179	88	56	49	3163	90	23	42	3147	91	50	55	3130
	Venus	W.	57	49	58	3376	59	14	37	3360	60	39	35	3344	62	4	52	3326
	α Pegasi	W.	47	14	38	3133	48	42	7	3104	50	10	12	3074	51	38	53	3047
	Aldebaran	E.	31	47	14	3086	30	18	47	3086	28	50	33	3116	27	22	33	3150
	Jupiter	E.	69	51	12	2777	68	16	14	2763	66	40	58	2748	65	5	22	2738
	Pollux	E.	72	57	12	2832	71	23	26	2816	69	49	21	2802	68	14	56	2788
	Saturn	E.	105	31	45	2792	103	57	7	2777	102	22	9	2763	100	46	52	2747
31	SUN	W.	99	12	14	3041	100	41	36	3022	102	11	22	3003	103	41	31	2984
	Venus	W.	69	16	38	3134	70	44	6	3115	72	11	57	3096	73	40	12	3075
	α Pegasi	W.	59	10	35	2918	60	42	31	2893	62	14	59	2888	63	47	59	2845
	Jupiter	E.	57	2	12	2633	55	24	29	2636	53	46	23	2618	52	7	53	2601
	Pollux	E.	60	17	51	2708	58	41	22	2692	57	4	31	2675	55	27	18	2668
	Saturn	E.	92	45	13	2686	91	7	47	2648	89	29	57	2631	87	51	44	2613

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour					
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.	Semi-diameter.			
		h.	m.	s.	s.	°	'				"	"	'	"	s.
Wed.	1	20	57	33.89	10.200	S. 17	13	42.4	42.36	16	16.06	68.33	13	48.99	0.843
Thur.	2	21	1	38.30	10.165	16	56	36.4	48.11	16	15.92	68.22	13	56.81	0.308
Fri.	3	21	5	41.86	10.130	16	39	12.8	48.84	16	15.77	68.10	14	3.80	0.273
Sat.	4	21	9	44.59	10.096	16	21	32.0	44.55	16	15.62	67.98	14	9.96	0.239
Sun.	5	21	13	46.49	10.062	16	3	34.1	45.25	16	15.46	67.87	14	15.29	0.205
Mon.	6	21	17	47.57	10.028	15	45	19.7	45.93	16	15.29	67.76	14	19.80	0.171
Tues.	7	21	21	47.84	9.994	15	26	49.3	46.58	16	15.12	67.65	14	23.50	0.138
Wed.	8	21	25	47.30	9.960	15	8	3.3	47.23	16	14.94	67.53	14	26.40	0.103
Thur.	9	21	29	45.97	9.928	14	49	1.9	47.87	16	14.76	67.41	14	28.50	0.072
Fri.	10	21	33	43.84	9.896	14	29	45.2	48.49	16	14.57	67.29	14	29.82	0.040
Sat.	11	21	37	40.95	9.864	14	10	14.1	49.08	16	14.38	67.18	14	30.37	0.008
Sun.	12	21	41	37.30	9.832	13	50	29.1	49.66	16	14.18	67.07	14	30.16	0.023
Mon.	13	21	45	32.89	9.801	13	30	30.3	50.22	16	13.98	66.96	14	29.20	0.055
Tues.	14	21	49	27.74	9.771	13	10	18.3	50.77	16	13.78	66.85	14	27.50	0.085
Wed.	15	21	53	21.87	9.741	12	49	53.2	51.30	16	13.58	66.74	14	25.09	0.115
Thur.	16	21	57	15.29	9.711	12	29	15.4	51.82	16	13.37	66.64	14	21.96	0.145
Fri.	17	22	1	7.99	9.682	12	8	25.6	52.31	16	13.16	66.54	14	18.12	0.174
Sat.	18	22	4	59.99	9.653	11	47	24.4	52.79	16	12.95	66.44	14	13.57	0.203
Sun.	19	22	8	51.31	9.625	11	26	11.9	53.24	16	12.72	66.34	14	8.35	0.231
Mon.	20	22	12	41.97	9.598	11	4	48.5	53.69	16	12.50	66.24	14	2.47	0.259
Tues.	21	22	16	31.96	9.571	10	43	14.8	54.11	16	12.28	66.14	13	55.93	0.287
Wed.	22	22	20	21.29	9.544	10	21	31.1	54.52	16	12.06	66.05	13	48.73	0.314
Thur.	23	22	24	9.98	9.517	9	59	38.0	54.90	16	11.83	65.96	13	40.88	0.340
Fri.	24	22	27	58.04	9.491	9	37	36.0	55.27	16	11.60	65.87	13	32.41	0.365
Sat.	25	22	31	45.48	9.466	9	15	25.3	55.62	16	11.37	65.78	13	23.32	0.390
Sun.	26	22	35	32.31	9.442	8	53	6.3	55.95	16	11.14	65.70	13	13.63	0.415
Mon.	27	22	39	18.56	9.418	8	30	39.7	56.27	16	10.91	65.62	13	3.36	0.439
Tues.	28	22	43	4.26	9.394	8	8	5.8	56.56	16	10.68	65.54	12	52.52	0.463
Wed.	29	22	46	49.41	9.371	7	45	24.9	56.85	16	10.44	65.47	12	41.14	0.485
Thur.	30	22	50	34.01	9.349	S. 7	22	37.3	57.12	16	10.20	65.39	12	29.22	0.507

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.13 from the Sideral Time.

AT GREENWICH MEAN NOON.

THE SUN'S															
Day of the Week.	Day of the Month.	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.			
		h.	m.	s.	s.	°	'	"	"	m.	s.	h.	m.	s.	
Wed.	1	20	57	31.54	10.200	S. 17	18	52.2	42.36	13	48.90	0.348	20	43	42.64
Thur.	2	21	1	35.93	10.165	16	56	46.4	48.11	13	56.73	0.308	20	47	39.20
Fri.	3	21	5	39.48	10.180	16	39	23.1	48.84	14	3.73	0.278	20	51	35.75
Sat.	4	21	9	42.20	10.096	16	21	42.5	44.55	14	9.89	0.239	20	55	32.31
Sun.	5	21	13	44.09	10.062	16	3	44.8	45.25	14	15.23	0.205	20	59	28.86
Mon.	6	21	17	45.17	10.028	15	45	30.6	45.93	14	19.75	0.171	21	3	25.42
Tues.	7	21	21	45.44	9.994	15	27	0.4	46.58	14	23.46	0.188	21	7	21.98
Wed.	8	21	25	44.90	9.960	15	8	14.6	47.23	14	26.37	0.105	21	11	18.53
Thur.	9	21	29	43.57	9.928	14	49	13.4	47.87	14	28.48	0.072	21	15	15.09
Fri.	10	21	33	41.45	9.896	14	29	56.9	48.49	14	29.81	0.040	21	19	11.64
Sat.	11	21	37	38.57	9.864	14	10	26.0	49.08	14	30.37	0.008	21	23	8.20
Sun.	12	21	41	34.93	9.832	13	50	41.1	49.66	14	30.17	0.023	21	27	4.76
Mon.	13	21	45	30.53	9.801	13	30	42.4	50.22	14	29.22	0.055	21	31	1.31
Tues.	14	21	49	25.39	9.771	13	10	30.5	50.77	14	27.52	0.065	21	34	57.87
Wed.	15	21	53	19.53	9.741	12	50	5.5	51.30	14	25.11	0.115	21	38	54.42
Thur.	16	21	57	12.96	9.711	12	29	27.8	51.82	14	21.98	0.145	21	42	50.98
Fri.	17	22	1	5.68	9.682	12	8	38.1	52.31	14	18.15	0.174	21	46	47.53
Sat.	18	22	4	57.70	9.658	11	47	36.9	52.79	14	13.61	0.203	21	50	44.09
Sun.	19	22	8	49.04	9.625	11	26	24.4	53.24	14	8.40	0.281	21	54	40.64
Mon.	20	22	12	39.72	9.598	11	5	1.0	53.69	14	2.52	0.259	21	58	37.20
Tues.	21	22	16	29.73	9.571	10	43	27.3	54.11	13	55.98	0.287	22	2	33.75
Wed.	22	22	20	19.09	9.544	10	21	43.6	54.52	13	48.79	0.314	22	6	30.30
Thur.	23	22	24	7.81	9.517	9	59	50.5	54.90	13	40.95	0.340	22	10	26.86
Fri.	24	22	27	55.90	9.491	9	37	48.5	55.27	13	32.49	0.365	22	14	23.41
Sat.	25	22	31	43.37	9.466	9	15	37.6	55.62	13	23.40	0.390	22	18	19.97
Sun.	26	22	35	30.23	9.442	8	53	18.5	55.95	13	13.71	0.415	22	22	16.52
Mon.	27	22	39	16.51	9.418	8	30	51.8	56.27	13	3.44	0.439	22	26	13.07
Tues.	28	22	43	2.24	9.394	8	8	17.8	56.56	12	52.61	0.463	22	30	9.63
Wed.	29	22	46	47.42	9.371	7	45	36.8	56.85	12	41.24	0.485	22	34	6.18
Thur.	30	22	50	32.06	9.349	S. 7	22	49.1	57.12	12	29.33	0.507	22	38	2.73

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

THE SUN'S										
Day of the Month.	Day of the Year.	True LONGITUDE.				Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		λ		λ'						
		$^{\circ}$	$'$	$'$	$''$					
1	32	311	55 17.6	54 59.2	152.15	+0.58	9.9936953	26.5	3 15 45.20	
2	33	312	56 8.6	55 50.0	152.10	0.51	.9937599	27.4	3 11 49.29	
3	34	313	56 58.2	56 39.5	152.04	0.42	.9938268	28.3	3 7 53.88	
4	35	314	57 46.5	57 27.7	151.98	0.32	.9938960	29.2	3 3 57.47	
5	36	315	58 33.4	58 14.5	151.93	0.20	.9939675	30.2	3 0 1.56	
6	37	316	59 18.9	58 59.8	151.87	+0.07	.9940414	31.3	2 56 5.65	
7	38	317	60 3.2	59 43.9	151.82	-0.06	.9941178	32.3	2 52 9.74	
8	39	319	0 46.3	0 26.9	151.77	0.19	.9941966	33.3	2 48 13.83	
9	40	320	1 28.1	1 8.6	151.72	0.30	.9942777	34.3	2 44 17.92	
10	41	321	2 8.8	1 49.2	151.67	0.39	.9943611	35.2	2 40 22.01	
11	42	322	2 48.3	2 28.5	151.62	0.46	.9944466	36.1	2 36 26.10	
12	43	323	3 26.5	3 6.5	151.57	0.49	.9945341	36.9	2 32 30.19	
13	44	324	4 3.6	3 43.5	151.52	0.48	.9946235	37.6	2 28 34.28	
14	45	325	4 39.5	4 19.3	151.46	0.46	.9947146	38.2	2 24 38.37	
15	46	326	5 14.3	4 54.0	151.42	0.41	.9948071	38.8	2 20 42.46	
16	47	327	5 47.8	5 27.3	151.37	0.32	.9949010	39.3	2 16 46.55	
17	48	328	6 20.0	5 59.4	151.32	0.22	.9949961	39.8	2 12 50.64	
18	49	329	6 50.9	6 30.2	151.26	-0.10	.9950924	40.2	2 8 54.73	
19	50	330	7 20.4	6 59.6	151.20	+0.03	.9951898	40.6	2 4 58.83	
20	51	331	7 48.5	7 27.6	151.14	0.17	.9952880	41.0	2 1 2.92	
21	52	332	8 15.0	7 54.0	151.07	0.31	.9953870	41.3	1 57 7.01	
22	53	333	8 39.7	8 18.5	150.99	0.44	.9954867	41.6	1 53 11.10	
23	54	334	9 2.7	8 41.4	150.92	0.55	.9955872	41.9	1 49 15.19	
24	55	335	9 23.9	9 2.5	150.85	0.64	.9956885	42.2	1 45 19.29	
25	56	336	9 43.3	9 21.8	150.77	0.71	.9957906	42.6	1 41 23.38	
26	57	337	10 0.7	9 39.0	150.68	0.73	.9958935	42.9	1 37 27.47	
27	58	338	10 16.1	9 54.3	150.60	0.73	.9959972	43.3	1 33 31.56	
28	59	339	10 29.4	10 7.5	150.51	0.69	.9961018	43.7	1 29 35.65	
29	60	340	10 40.6	10 18.6	150.42	0.64	.9962075	44.1	1 25 39.75	
30	61	341	10 49.7	10 27.6	150.34	+0.56	9.9963143	44.6	1 21 43.84	

NOTE.— λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
				"		"	h. m.	m.		d.
1	15 35.1	15 42.8	57 5.2	+2.31	57 33.4	+2.40	7 6.4	2.32	9.5
2	15 50.7	15 58.8	58 2.6	2.45	58 32.1	2.46	8 4.4	2.49	10.5
3	16 6.8	16 14.4	59 1.5	2.41	59 29.9	2.31	9 5.8	2.59	11.5
4	16 21.8	16 28.4	59 56.7	2.13	60 21.1	1.90	10 8.4	2.59	12.5
5	16 34.2	16 39.0	60 42.4	1.62	60 59.8	1.28	11 9.7	2.49	13.5
6	16 42.5	16 44.8	61 12.9	0.90	61 21.2	+0.47	12 8.0	2.36	14.5
7	16 45.7	16 45.1	61 24.4	+0.05	61 22.6	-0.37	13 3.2	2.24	15.5
8	16 43.3	16 40.1	61 15.7	-0.77	61 4.1	1.14	13 55.7	2.15	16.5
9	16 35.8	16 30.5	60 48.3	1.47	60 28.9	1.76	14 46.6	2.11	17.5
10	16 24.3	16 17.6	60 6.4	1.97	59 41.6	2.14	15 37.3	2.12	18.5
11	16 10.5	16 3.1	59 15.2	2.24	58 48.0	2.29	16 28.6	2.16	19.5
12	15 55.6	15 48.1	58 20.4	2.28	57 53.1	2.25	17 21.2	2.22	20.5
13	15 40.9	15 34.0	57 26.5	2.17	57 1.1	2.07	18 15.1	2.26	21.5
14	15 27.4	15 21.3	56 37.0	1.95	56 14.4	1.81	19 9.7	2.27	22.5
15	15 15.6	15 10.4	55 53.5	1.66	55 34.4	1.51	20 3.8	2.23	23.5
16	15 5.7	15 1.5	55 17.2	1.86	55 1.8	1.21	20 56.3	2.13	24.5
17	14 57.8	14 54.6	54 48.2	1.06	54 36.3	0.92	21 46.1	2.01	25.5
18	14 51.8	14 49.4	54 26.1	0.78	54 17.5	0.65	22 32.9	1.89	26.5
19	14 47.5	14 46.0	54 10.5	0.53	54 4.9	0.41	23 16.9	1.78	27.5
20	14 44.9	14 44.1	54 0.7	0.29	53 57.8	-0.18	23 58.5	1.70	28.5
21	14 43.7	14 43.6	53 56.3	-0.07	53 56.0	+0.03	6		29.5
22	14 43.8	14 44.4	53 56.9	+0.13	53 59.2	0.24	0 38.6	1.65	0.7
23	14 45.4	14 46.8	54 2.8	0.86	54 7.8	0.48	1 18.0	1.64	1.7
24	14 48.6	14 50.7	54 14.4	0.60	54 22.3	0.73	1 57.6	1.68	2.7
25	14 53.3	14 56.4	54 32.0	0.87	54 43.2	1.01	2 38.5	1.75	3.7
26	15 0.0	15 4.0	54 56.2	1.16	55 11.0	1.31	3 21.6	1.86	4.7
27	15 8.5	15 13.6	55 27.6	1.46	55 46.1	1.61	4 8.0	2.01	5.7
28	15 19.1	15 25.1	56 6.4	1.76	56 28.4	1.91	4 58.3	2.18	6.7
29	15 31.5	15 38.4	56 52.2	2.04	57 17.3	2.15	5 52.6	2.34	7.7
30	15 45.6	15 53.0	57 43.7	+2.24	58 11.0	+2.30	6 50.5	2.46	8.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
0	3 34 26.08	2.46.	N.24 30 1.0	6.936	0	5 34 48.96	2.6341	N.27 19 8.3	0.087
1	3 36 47.12	2.3542	24 36 54.6	6.929	1	5 37 27.10	2.6373	27 11 21.5	0.073
2	3 39 8.60	2.3617	24 43 40.5	6.701	2	5 40 5.44	2.6408	27 10 23.5	1.000
3	3 41 30.53	2.3693	24 50 18.7	6.971	3	5 42 43.95	2.6432	27 9 14.3	1.947
4	3 43 52.92	2.3769	24 56 49.0	6.439	4	5 45 22.63	2.6459	27 7 53.9	1.435
5	3 46 15.76	2.3843	25 3 11.4	6.306	5	5 48 1.46	2.6480	27 6 22.1	1.023
6	3 48 39.05	2.3918	25 9 25.7	6.171	6	5 50 40.45	2.6500	27 4 39.1	1.012
7	3 51 2.78	2.3992	25 15 31.9	6.035	7	5 53 19.57	2.6521	27 2 44.7	2.001
8	3 53 26.95	2.4066	25 21 29.9	5.907	8	5 55 58.83	2.6552	27 0 30.0	2.191
9	3 55 51.56	2.4139	25 27 19.6	5.768	9	5 58 38.20	2.6571	26 58 21.9	2.381
10	3 58 16.62	2.4212	25 33 0.9	5.617	10	6 1 17.68	2.6588	26 55 53.3	2.971
11	4 0 42.11	2.4284	25 38 33.8	5.475	11	6 3 57.26	2.6604	26 53 13.3	2.762
12	4 3 8.03	2.4356	25 43 58.1	5.332	12	6 6 36.93	2.6619	26 50 21.9	2.962
13	4 5 34.38	2.4427	25 49 13.7	5.187	13	6 9 16.68	2.6631	26 47 19.1	3.143
14	4 8 1.16	2.4498	25 54 20.6	5.041	14	6 11 56.50	2.6642	26 44 4.8	3.334
15	4 10 28.37	2.4568	25 59 18.7	4.894	15	6 14 36.38	2.6661	26 40 39.0	3.025
16	4 12 55.98	2.4638	26 4 7.9	4.745	16	6 17 16.31	2.6639	26 37 1.8	3.717
17	4 15 24.01	2.4707	26 8 48.1	4.594	17	6 19 56.28	2.6665	26 33 13.1	3.908
18	4 17 52.46	2.4775	26 13 19.2	4.442	18	6 22 36.29	2.6689	26 29 12.9	4.099
19	4 20 21.31	2.4842	26 17 41.2	4.289	19	6 25 16.31	2.6672	26 25 1.2	4.290
20	4 22 50.57	2.4909	26 21 53.9	4.134	20	6 27 56.35	2.6673	26 20 38.1	4.481
21	4 25 20.22	2.4975	26 25 57.3	3.978	21	6 30 36.39	2.6673	26 16 3.5	4.672
22	4 27 50.26	2.5040	26 29 51.3	3.820	22	6 33 16.43	2.6671	26 11 17.5	4.863
23	4 30 20.69	2.5104	N.26 33 35.8	3.661	23	6 35 56.44	2.6667	N.26 6 20.0	5.053
THURSDAY 2.					SATURDAY 4.				
0	4 32 51.51	2.5167	N.26 37 10.8	3.501	0	6 38 36.43	2.6662	N.26 1 11.1	5.243
1	4 35 22.70	2.5229	26 40 36.1	3.340	1	6 41 16.38	2.6655	25 55 50.8	5.433
2	4 37 54.27	2.5290	26 43 51.7	3.177	2	6 43 56.29	2.6647	25 50 19.2	6.623
3	4 40 26.20	2.5351	26 46 57.4	3.013	3	6 46 36.14	2.6637	25 44 36.2	5.812
4	4 42 58.49	2.5411	26 49 53.2	2.848	4	6 49 15.93	2.6625	25 38 41.8	6.000
5	4 45 31.13	2.5469	26 52 39.1	2.681	5	6 51 55.65	2.6612	25 32 36.1	6.188
6	4 48 4.12	2.5526	26 55 14.9	2.513	6	6 54 35.28	2.6598	25 26 19.2	6.375
7	4 50 37.45	2.5583	26 57 40.6	2.344	7	6 57 14.82	2.6582	25 19 51.0	6.562
8	4 53 11.11	2.5639	26 59 56.1	2.173	8	6 59 54.26	2.6565	25 13 11.7	6.748
9	4 55 45.10	2.5692	27 2 1.4	2.002	9	7 2 33.60	2.6546	25 6 21.2	6.934
10	4 58 19.41	2.5745	27 3 56.3	1.829	10	7 5 12.82	2.6526	24 59 19.5	7.119
11	5 0 54.03	2.5796	27 5 40.9	1.656	11	7 7 51.92	2.6505	24 52 6.8	7.303
12	5 3 28.96	2.5846	27 7 15.0	1.481	12	7 10 30.88	2.6482	24 44 43.1	7.486
13	5 6 4.18	2.5893	27 8 38.6	1.306	13	7 13 9.70	2.6456	24 37 8.4	7.669
14	5 8 39.70	2.5943	27 9 51.6	1.128	14	7 15 48.37	2.6432	24 29 22.8	7.850
15	5 11 15.50	2.5989	27 10 54.0	0.951	15	7 18 26.89	2.6406	24 21 26.4	8.031
16	5 13 51.57	2.6034	27 11 45.7	0.772	16	7 21 5.42	2.6377	24 13 19.1	8.210
17	5 16 27.90	2.6077	27 12 26.7	0.593	17	7 23 43.42	2.6348	24 5 1.1	8.389
18	5 19 4.49	2.6119	27 12 56.9	0.413	18	7 26 21.42	2.6318	23 56 32.4	8.568
19	5 21 41.32	2.6159	27 13 16.2	0.232	19	7 28 59.23	2.6286	23 47 53.1	8.743
20	5 24 18.39	2.6199	27 13 24.6	0.050	20	7 31 36.85	2.6253	23 39 3.3	8.919
21	5 26 55.71	2.6237	27 13 22.1	0.134	21	7 34 14.28	2.6220	23 30 3.0	9.093
22	5 29 33.26	2.6273	27 13 8.5	0.318	22	7 36 51.50	2.6185	23 20 52.2	9.268
23	5 32 11.00	2.6306	27 12 43.9	0.502	23	7 39 28.50	2.6149	23 11 31.1	9.437
24	5 34 48.96	2.6341	N.27 12 8.3	0.687	24	7 42 5.20	2.6112	N.23 1 59.8	9.607

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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SUNDAY 5.

	h.	m.	s.	s.	N.	°	'	"	"
0	7	43	5.29	2.6112	N.23	1	59.8	9.607	
1	7	44	41.85	2.6074	22	52	18.3	9.776	
2	7	47	18.18	2.6036	22	42	26.7	9.944	
3	7	49	54.28	2.6000	22	32	25.1	10.110	
4	7	52	30.13	2.5965	22	22	13.5	10.275	
5	7	55	5.74	2.5934	22	11	52.1	10.438	
6	7	57	41.10	2.5873	22	1	20.9	10.600	
7	8	0	16.21	2.5829	21	50	40.0	10.761	
8	8	2	51.05	2.5784	21	39	49.8	10.920	
9	8	5	25.62	2.5740	21	28	49.7	11.077	
10	8	7	59.93	2.5696	21	17	40.4	11.233	
11	8	10	33.96	2.5649	21	6	21.8	11.387	
12	8	13	7.72	2.5602	20	54	54.0	11.539	
13	8	15	41.19	2.5556	20	43	17.1	11.689	
14	8	18	14.38	2.5509	20	31	31.3	11.837	
15	8	20	47.29	2.5460	20	19	36.5	11.984	
16	8	23	19.90	2.5411	20	7	33.0	12.130	
17	8	25	52.22	2.5363	19	55	20.8	12.275	
18	8	28	24.24	2.5312	19	43	0.0	12.417	
19	8	30	55.97	2.5262	19	30	30.8	12.557	
20	8	33	27.39	2.5212	19	17	53.2	12.695	
21	8	35	58.51	2.5162	19	5	7.4	12.831	
22	8	38	29.33	2.5111	18	52	13.5	12.965	
23	8	40	59.84	2.5060	N.18	39	11.6	13.097	

TUESDAY 7.

	h.	m.	s.	s.	N.	°	'	"	"
0	9	42	2.23	2.3784	N.12	35	57.9	12.740	
1	9	44	24.79	2.3737	12	20	11.1	12.818	
2	9	46	47.07	2.3689	12	4	19.7	12.894	
3	9	49	9.06	2.3642	11	48	23.8	12.968	
4	9	51	30.77	2.3596	11	32	23.5	13.039	
5	9	53	52.21	2.3549	11	16	19.0	13.109	
6	9	56	13.37	2.3502	11	0	10.5	13.176	
7	9	58	34.25	2.3456	10	43	58.0	13.241	
8	10	0	54.87	2.3414	10	27	41.6	13.305	
9	10	3	15.22	2.3369	10	11	21.6	13.368	
10	10	5	35.30	2.3326	9	54	58.0	13.429	
11	10	7	55.13	2.3283	9	38	31.0	13.478	
12	10	10	14.70	2.3240	9	22	0.6	13.532	
13	10	12	34.01	2.3198	9	5	27.1	13.584	
14	10	14	53.08	2.3157	8	48	50.5	13.634	
15	10	17	11.90	2.3117	8	32	11.0	13.681	
16	10	19	30.48	2.3077	8	15	28.8	13.727	
17	10	21	48.82	2.3037	7	58	43.9	13.770	
18	10	24	6.92	2.2998	7	41	56.4	13.811	
19	10	26	24.78	2.2960	7	25	6.5	13.850	
20	10	28	42.44	2.2922	7	8	14.4	13.887	
21	10	30	59.86	2.2885	6	51	20.1	13.921	
22	10	33	17.07	2.2850	6	34	23.8	13.953	
23	10	35	34.06	2.2814	N. 6	17	25.0	13.984	

MONDAY 6.

	h.	m.	s.	s.	N.	°	'	"	"
0	8	43	30.05	2.5009	N.18	26	1.8	13.227	
1	8	45	59.95	2.4967	18	12	44.2	13.356	
2	8	48	29.54	2.4926	17	59	19.0	13.483	
3	8	50	58.82	2.4884	17	45	46.2	13.607	
4	8	53	27.79	2.4842	17	32	6.1	13.730	
5	8	55	56.45	2.4799	17	18	18.6	13.851	
6	8	58	24.79	2.4768	17	4	24.0	13.970	
7	9	0	52.82	2.4636	16	50	22.3	14.088	
8	9	3	20.54	2.4594	16	36	13.7	14.200	
9	9	5	47.95	2.4542	16	21	58.3	14.312	
10	9	8	15.05	2.4491	16	7	36.2	14.422	
11	9	10	41.84	2.4438	15	53	7.6	14.530	
12	9	13	8.31	2.4386	15	38	32.6	14.636	
13	9	15	34.47	2.4335	15	23	51.2	14.741	
14	9	18	0.33	2.4284	15	9	3.7	14.845	
15	9	20	25.88	2.4232	14	54	10.2	14.942	
16	9	22	51.12	2.4182	14	39	10.7	15.039	
17	9	25	16.06	2.4131	14	24	5.5	15.134	
18	9	27	40.69	2.4080	14	8	54.6	15.228	
19	9	30	5.02	2.4031	13	53	38.2	15.318	
20	9	32	29.06	2.3981	13	38	16.4	15.407	
21	9	34	52.79	2.3931	13	22	49.3	15.493	
22	9	37	16.23	2.3882	13	7	17.2	15.578	
23	9	39	39.38	2.3833	12	51	39.9	15.660	
24	9	42	2.23	2.3784	N.12	35	57.9	15.740	

WEDNESDAY 8.

	h.	m.	s.	s.	N.	°	'	"	"
0	10	37	50.84	2.3780	N. 6	0	25.7	17.012	
1	10	40	7.42	2.3746	5	43	24.1	17.039	
2	10	42	23.79	2.3712	5	26	21.0	17.063	
3	10	44	39.96	2.3679	5	9	16.5	17.086	
4	10	46	55.94	2.3648	4	52	10.7	17.106	
5	10	49	11.73	2.3617	4	35	3.8	17.124	
6	10	51	27.34	2.3587	4	17	55.8	17.140	
7	10	53	42.77	2.3557	4	0	46.9	17.154	
8	10	55	58.02	2.3528	3	43	37.3	17.166	
9	10	58	13.10	2.3499	3	26	27.0	17.176	
10	11	0	28.01	2.3472	3	9	16.1	17.184	
11	11	2	42.76	2.3446	2	52	4.9	17.190	
12	11	4	57.36	2.3420	2	34	53.3	17.194	
13	11	7	11.80	2.3395	2	17	41.5	17.197	
14	11	9	26.10	2.3371	2	0	29.7	17.197	
15	11	11	40.25	2.3347	1	43	17.9	17.195	
16	11	13	54.26	2.3324	1	26	6.3	17.191	
17	11	16	8.14	2.3302	1	8	55.0	17.185	
18	11	18	21.89	2.3281	0	51	44.1	17.177	
19	11	20	35.51	2.3261	0	34	33.7	17.168	
20	11	22	49.01	2.3241	0	17	23.9	17.156	
21	11	25	2.40	2.3221	N. 0	0	14.9	17.143	
22	11	27	15.87	2.3203	S. 0	16	53.2	17.127	
23	11	29	28.84	2.3186	0	34	0.4	17.111	
24	11	31	41.91	2.3170	S. 0	51	6.5	17.091	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 9.					SATURDAY 11.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	11 31 41.91	2.2170	S. 0 51 6.5	17.091	0	13 17 35.65	2.2208	S. 13 37 44.1	14.366
1	11 33 54.88	2.2154	1 8 11.4	17.071	1	13 19 48.95	2.2224	13 51 57.3	14.173
2	11 36 7.76	2.2189	1 25 15.0	17.048	2	13 22 2.34	2.2239	14 6 4.9	14.089
3	11 38 20.55	2.2134	1 42 17.2	17.024	3	13 24 15.82	2.2255	14 20 6.7	13.983
4	11 40 33.25	2.2111	1 59 17.9	16.991	4	13 26 29.39	2.2272	14 34 2.8	13.885
5	11 42 45.88	2.2099	2 16 17.0	16.970	5	13 28 43.08	2.2290	14 47 53.0	13.787
6	11 44 58.43	2.2087	2 33 14.3	16.939	6	13 30 56.88	2.2307	15 1 37.3	13.687
7	11 47 10.91	2.2075	2 50 9.8	16.908	7	13 33 10.78	2.2325	15 15 15.6	13.587
8	11 49 23.34	2.2065	3 7 3.3	16.874	8	13 35 24.78	2.2343	15 28 47.8	13.485
9	11 51 35.69	2.2065	3 23 54.8	16.840	9	13 37 38.90	2.2362	15 42 13.8	13.383
10	11 53 47.99	2.2048	3 40 44.1	16.803	10	13 39 53.13	2.2382	15 55 33.7	13.279
11	11 56 0.24	2.2038	3 57 31.2	16.765	11	13 42 7.48	2.2401	16 8 47.3	13.174
12	11 58 12.45	2.2031	4 14 15.9	16.724	12	13 44 21.94	2.2420	16 21 54.6	13.068
13	12 0 24.61	2.2024	4 30 58.2	16.683	13	13 46 36.52	2.2440	16 34 55.5	12.961
14	12 2 36.74	2.2018	4 47 37.9	16.639	14	13 48 51.22	2.2460	16 47 49.9	12.853
15	12 4 48.83	2.2012	5 4 14.9	16.594	15	13 51 6.04	2.2480	17 0 37.8	12.744
16	12 7 0.89	2.2008	5 20 49.2	16.547	16	13 53 20.98	2.2501	17 13 19.1	12.634
17	12 9 12.93	2.2004	5 37 20.6	16.499	17	13 55 36.05	2.2522	17 25 53.8	12.522
18	12 11 24.94	2.2001	5 53 49.1	16.449	18	13 57 51.24	2.2543	17 38 21.7	12.409
19	12 13 36.94	2.1999	6 10 14.6	16.398	19	14 0 6.56	2.2564	17 50 42.9	12.296
20	12 15 48.93	2.1998	6 26 36.9	16.345	20	14 2 22.01	2.2586	18 2 57.9	12.181
21	12 18 0.91	2.1997	6 42 56.0	16.291	21	14 4 37.59	2.2608	18 15 4.6	12.066
22	12 20 12.89	2.1997	6 59 11.8	16.234	22	14 6 53.30	2.2632	18 27 5.1	11.950
23	12 22 24.87	2.1997	S. 7 15 24.2	16.177	23	14 9 9.14	2.2651	S. 18 38 58.6	11.833
FRIDAY 10.					SUNDAY 12.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	12 24 36.85	2.1998	S. 7 31 33.0	16.117	0	14 11 25.11	2.2673	S. 18 50 45.0	11.714
1	12 26 48.84	2.1999	7 47 38.2	16.067	1	14 13 41.21	2.2695	19 2 24.3	11.598
2	12 29 0.84	2.2002	8 3 30.7	15.994	2	14 15 57.45	2.2717	19 13 56.4	11.474
3	12 31 12.86	2.2005	8 19 37.5	15.930	3	14 18 13.82	2.2739	19 25 21.2	11.353
4	12 33 24.90	2.2009	8 35 31.3	15.863	4	14 20 30.32	2.2762	19 36 38.8	11.231
5	12 35 36.97	2.2013	8 51 21.2	15.797	5	14 22 46.96	2.2784	19 47 49.0	11.108
6	12 37 49.06	2.2018	9 7 7.0	15.729	6	14 25 3.74	2.2807	19 58 51.8	10.985
7	12 40 1.18	2.2024	9 22 48.7	15.660	7	14 27 20.64	2.2829	20 9 47.2	10.861
8	12 42 13.34	2.2030	9 38 26.2	15.589	8	14 29 37.68	2.2852	20 20 35.1	10.735
9	12 44 25.54	2.2036	9 53 59.4	15.517	9	14 31 54.86	2.2874	20 31 15.5	10.609
10	12 46 37.78	2.2044	10 9 28.2	15.443	10	14 34 12.17	2.2896	20 41 48.2	10.481
11	12 48 50.07	2.2052	10 24 52.5	15.368	11	14 36 29.61	2.2918	20 52 13.3	10.353
12	12 51 2.41	2.2061	10 40 12.3	15.291	12	14 38 47.19	2.2941	21 2 30.6	10.224
13	12 53 14.80	2.2070	10 55 27.4	15.213	13	14 41 4.90	2.2963	21 12 40.2	10.095
14	12 55 27.25	2.2080	11 10 37.8	15.133	14	14 43 22.75	2.2985	21 22 42.0	9.965
15	12 57 39.76	2.2091	11 25 43.3	15.052	15	14 45 40.72	2.3008	21 32 36.0	9.834
16	12 59 52.34	2.2102	11 40 44.0	14.970	16	14 47 58.82	2.3029	21 42 22.1	9.702
17	13 2 4.99	2.2113	11 55 39.7	14.887	17	14 50 17.06	2.3050	21 52 0.3	9.570
18	13 4 17.70	2.2125	12 10 30.4	14.802	18	14 52 35.42	2.3071	22 1 30.5	9.437
19	13 6 30.49	2.2138	12 25 15.9	14.716	19	14 54 53.91	2.3092	22 10 52.7	9.303
20	13 8 43.35	2.2151	12 39 56.3	14.628	20	14 57 12.53	2.3113	22 20 8.8	9.168
21	13 10 56.30	2.2165	12 54 31.4	14.540	21	14 59 31.27	2.3133	22 29 12.9	9.033
22	13 13 9.33	2.2179	13 9 1.1	14.450	22	15 1 50.13	2.3153	22 38 10.8	8.897
23	13 15 22.45	2.2193	13 23 25.3	14.359	23	15 4 9.11	2.3174	22 47 0.5	8.761
24	13 17 35.65	2.2208	S. 13 37 44.1	14.266	24	15 6 28.22	2.3194	S. 22 55 42.0	8.624

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 13.					WEDNESDAY 15.				
0	h. m. s.	s.	o' "	"	0	h. m. s.	s.	o' "	"
1	15 6 28.92	2.3194	S.22 55 42.0	8.624	1	16 59 9.94	2.3613	S.27 3 41.5	1.622
2	15 8 47.44	2.3213	23 4 15.3	8.487	2	17 1 30.98	2.3601	27 5 14.3	1.473
3	15 11 6.77	2.3222	23 12 40.4	8.349	3	17 3 51.96	2.3490	27 6 38.2	1.325
4	15 13 26.23	2.3251	23 20 57.2	8.210	4	17 6 12.86	2.3478	27 7 53.3	1.177
5	15 15 45.81	2.3270	23 29 5.6	8.071	5	17 8 33.69	2.3464	27 8 59.5	1.030
6	15 18 5.49	2.3289	23 37 5.7	7.931	6	17 10 54.43	2.3450	27 9 56.9	0.883
7	15 20 25.27	2.3307	23 44 57.3	7.791	7	17 13 15.09	2.3435	27 10 45.5	0.737
8	15 22 45.16	2.3324	23 52 40.5	7.650	8	17 15 35.65	2.3418	27 11 25.3	0.590
9	15 25 5.16	2.3341	24 0 15.3	7.509	9	17 17 56.11	2.3401	27 11 56.3	0.444
10	15 27 25.26	2.3357	24 7 41.6	7.367	10	17 20 16.46	2.3383	27 12 18.5	0.298
11	15 29 45.45	2.3373	24 14 59.4	7.225	11	17 22 36.71	2.3366	27 12 32.0	0.153
12	15 32 5.73	2.3389	24 22 8.6	7.082	12	17 24 56.85	2.3347	27 12 36.8	0.008
13	15 34 26.11	2.3404	24 29 9.2	6.939	13	17 27 16.87	2.3326	27 12 32.9	0.137
14	15 36 46.58	2.3418	24 36 1.2	6.795	14	17 29 36.76	2.3304	27 12 20.3	0.282
15	15 39 7.13	2.3432	24 42 44.5	6.651	15	17 31 56.52	2.3282	27 11 59.1	0.426
16	15 41 27.76	2.3445	24 49 19.2	6.506	16	17 34 16.15	2.3261	27 11 29.2	0.570
17	15 43 48.47	2.3458	24 55 45.2	6.361	17	17 36 35.65	2.3237	27 10 50.7	0.713
18	15 46 9.26	2.3471	25 2 2.4	6.215	18	17 38 55.00	2.3213	27 10 3.6	0.856
19	15 48 30.13	2.3483	25 8 10.9	6.069	19	17 41 14.21	2.3189	27 9 8.0	0.998
20	15 50 51.06	2.3494	25 14 10.6	5.923	20	17 43 33.27	2.3168	27 8 3.9	1.139
21	15 53 12.06	2.3505	25 20 1.6	5.776	21	17 45 52.16	2.3136	27 6 51.3	1.280
22	15 55 33.12	2.3515	25 25 43.8	5.629	22	17 48 10.90	2.3110	27 5 30.2	1.422
23	15 57 54.24	2.3524	25 31 17.1	5.482	23	17 50 29.48	2.3083	27 4 0.7	1.562
24	16 0 15.41	2.3533	S.25 36 41.6	5.335	24	17 52 47.89	2.3054	S.27 2 22.7	1.703
TUESDAY 14.					THURSDAY 16.				
0	16 2 36.64	2.3541	S.25 41 57.3	5.188	0	17 55 6.12	2.3024	S.27 0 36.4	1.842
1	16 4 57.90	2.3549	25 47 4.1	5.040	1	17 57 24.18	2.2994	26 58 41.7	1.981
2	16 7 19.21	2.3555	25 52 2.1	4.892	2	17 59 42.05	2.2963	26 56 38.8	2.118
3	16 9 40.56	2.3561	25 56 51.1	4.744	3	18 1 59.74	2.2932	26 54 27.6	2.256
4	16 12 1.94	2.3567	26 1 31.3	4.596	4	18 4 17.23	2.2900	26 52 8.1	2.392
5	16 14 23.36	2.3571	26 6 2.6	4.448	5	18 6 34.53	2.2867	26 49 40.5	2.529
6	16 16 44.80	2.3575	26 10 25.0	4.300	6	18 8 51.64	2.2834	26 47 4.7	2.664
7	16 19 6.26	2.3578	26 14 38.5	4.151	7	18 11 8.54	2.2800	26 44 20.7	2.800
8	16 21 27.74	2.3581	26 18 43.1	4.002	8	18 13 25.24	2.2765	26 41 28.7	2.934
9	16 23 49.23	2.3583	26 22 38.8	3.853	9	18 15 41.73	2.2730	26 38 28.6	3.068
10	16 26 10.73	2.3585	26 26 25.5	3.704	10	18 17 58.00	2.2694	26 35 20.5	3.200
11	16 28 32.24	2.3585	26 30 3.3	3.555	11	18 20 14.06	2.2657	26 32 4.5	3.333
12	16 30 53.75	2.3583	26 33 32.1	3.406	12	18 22 29.89	2.2620	26 28 40.6	3.464
13	16 33 15.24	2.3581	26 36 52.0	3.257	13	18 24 45.50	2.2583	26 25 8.8	3.596
14	16 35 36.72	2.3579	26 40 3.0	3.109	14	18 27 0.89	2.2545	26 21 29.1	3.726
15	16 37 58.19	2.3576	26 43 5.0	2.959	15	18 29 16.05	2.2507	26 17 41.6	3.856
16	16 40 19.64	2.3572	26 45 58.1	2.811	16	18 31 30.97	2.2467	26 13 46.4	3.984
17	16 42 41.07	2.3568	26 48 42.3	2.662	17	18 33 45.65	2.2427	26 9 43.5	4.113
18	16 45 2.46	2.3563	26 51 17.5	2.513	18	18 36 0.09	2.2387	26 5 33.0	4.240
19	16 47 23.82	2.3567	26 53 43.8	2.364	19	18 38 14.30	2.2347	26 1 14.8	4.367
20	16 49 45.14	2.3549	26 56 1.1	2.216	20	18 40 28.26	2.2306	25 56 49.1	4.492
21	16 52 6.41	2.3542	26 58 9.6	2.067	21	18 42 41.97	2.2264	25 52 15.8	4.617
22	16 54 27.64	2.3534	27 0 9.1	1.919	22	18 44 55.42	2.2223	25 47 35.1	4.740
23	16 56 48.82	2.3525	27 1 59.8	1.770	23	18 47 8.63	2.2180	25 42 46.9	4.864
24	16 59 9.94	2.3513	S.27 3 41.5	1.622	24	18 49 21.58	2.2137	S.25 37 51.4	4.986

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 17.					SUNDAY 19.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	18 49 21.58	2.2187	S. 25 37 51.4	4.988	0	20 30 15.71	1.9899	S. 19 33 42.9	9.887
1	18 51 34.97	2.2098	25 32 48.5	5.108	1	20 32 14.91	1.9848	19 23 50.3	9.916
2	18 53 46.70	2.2060	25 27 38.4	5.229	2	20 34 13.83	1.9798	19 13 52.9	9.983
3	18 55 58.87	2.2006	25 22 21.0	5.350	3	20 36 12.49	1.9754	19 3 50.9	10.071
4	18 58 10.77	2.1962	25 16 56.4	5.469	4	20 38 10.88	1.9710	18 53 44.4	10.146
5	19 0 22.40	2.1917	25 11 24.6	5.588	5	20 40 9.00	1.9665	18 43 33.3	10.222
6	19 2 33.77	2.1873	25 5 45.8	5.708	6	20 42 6.86	1.9622	18 33 17.8	10.296
7	19 4 44.87	2.1827	24 59 59.9	5.823	7	20 44 4.46	1.9578	18 22 57.9	10.369
8	19 6 55.69	2.1781	24 54 7.1	5.938	8	20 46 1.79	1.9534	18 12 33.6	10.441
9	19 9 6.24	2.1736	24 48 7.3	6.054	9	20 47 58.87	1.9492	18 2 5.0	10.512
10	19 11 16.52	2.1689	24 42 0.7	6.167	10	20 49 55.69	1.9449	17 51 32.1	10.582
11	19 13 26.51	2.1642	24 35 47.2	6.281	11	20 51 52.26	1.9407	17 40 55.0	10.632
12	19 15 36.23	2.1597	24 29 26.9	6.398	12	20 53 48.57	1.9364	17 30 13.9	10.721
13	19 17 45.67	2.1549	24 22 59.9	6.506	13	20 55 44.63	1.9323	17 19 28.6	10.789
14	19 19 54.82	2.1502	24 16 26.3	6.615	14	20 57 40.45	1.9282	17 8 39.2	10.836
15	19 22 3.69	2.1455	24 9 46.0	6.726	15	20 59 36.02	1.9241	16 57 45.9	10.922
16	19 24 12.28	2.1408	24 2 59.2	6.834	16	21 1 31.34	1.9201	16 46 48.6	10.986
17	19 26 20.59	2.1361	23 56 5.9	6.943	17	21 3 26.43	1.9160	16 35 47.5	11.061
18	19 28 28.61	2.1313	23 49 6.1	7.050	18	21 5 21.27	1.9120	16 24 42.5	11.118
19	19 30 36.35	2.1265	23 41 59.9	7.157	19	21 7 15.87	1.9082	16 13 33.8	11.176
20	19 32 43.80	2.1217	23 34 47.4	7.262	20	21 9 10.24	1.9043	16 2 21.4	11.237
21	19 34 50.96	2.1170	23 27 28.6	7.367	21	21 11 4.36	1.9004	15 51 5.3	11.298
22	19 36 57.83	2.1122	23 20 3.5	7.470	22	21 12 58.29	1.8966	15 39 45.5	11.357
23	19 39 4.42	2.1074	S. 23 12 32.2	7.573	23	21 14 51.97	1.8928	S. 15 28 22.2	11.417
SATURDAY 18.					MONDAY 20.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	19 41 10.72	2.1026	S. 23 4 54.8	7.674	0	21 16 45.43	1.8891	S. 15 16 55.4	11.475
1	19 43 16.73	2.0978	22 57 11.4	7.775	1	21 18 38.66	1.8854	15 5 25.2	11.533
2	19 45 22.46	2.0930	22 49 21.9	7.874	2	21 20 31.68	1.8818	14 53 51.5	11.589
3	19 47 27.90	2.0882	22 41 26.5	7.973	3	21 22 24.48	1.8782	14 42 14.5	11.645
4	19 49 33.04	2.0833	22 33 25.1	8.070	4	21 24 17.07	1.8747	14 30 34.1	11.699
5	19 51 37.88	2.0784	22 25 17.9	8.168	5	21 26 9.44	1.8712	14 18 50.5	11.753
6	19 53 42.44	2.0736	22 17 4.9	8.264	6	21 28 1.60	1.8677	14 7 3.8	11.805
7	19 55 46.71	2.0688	22 8 46.1	8.360	7	21 29 53.56	1.8643	13 55 13.9	11.836
8	19 57 50.69	2.0639	22 0 21.7	8.454	8	21 31 45.32	1.8609	13 43 20.9	11.906
9	19 59 54.38	2.0592	21 51 51.6	8.548	9	21 33 36.87	1.8576	13 31 24.9	11.959
10	20 1 57.79	2.0544	21 43 16.0	8.640	10	21 35 28.23	1.8544	13 19 25.8	12.008
11	20 4 0.91	2.0496	21 34 34.8	8.732	11	21 37 19.40	1.8512	13 7 23.8	12.057
12	20 6 3.74	2.0448	21 25 48.2	8.823	12	21 39 10.37	1.8480	12 55 18.9	12.105
13	20 8 6.29	2.0401	21 16 56.2	8.913	13	21 41 1.16	1.8449	12 43 11.1	12.153
14	20 10 8.55	2.0363	21 7 58.8	9.000	14	21 42 51.76	1.8417	12 31 0.5	12.199
15	20 12 10.53	2.0306	20 58 56.1	9.088	15	21 44 42.17	1.8387	12 18 47.2	12.245
16	20 14 12.22	2.0259	20 49 48.2	9.174	16	21 46 32.41	1.8356	12 6 31.1	12.289
17	20 16 13.64	2.0212	20 40 35.1	9.261	17	21 48 22.47	1.8326	11 54 12.4	12.333
18	20 18 14.77	2.0165	20 31 16.9	9.345	18	21 50 12.36	1.8300	11 41 51.1	12.375
19	20 20 15.63	2.0119	20 21 53.6	9.430	19	21 52 2.08	1.8271	11 29 27.3	12.418
20	20 22 16.19	2.0073	20 12 25.3	9.513	20	21 53 51.63	1.8243	11 17 0.9	12.459
21	20 24 16.48	2.0026	20 2 52.0	9.596	21	21 55 41.00	1.8217	11 4 32.1	12.500
22	20 26 16.50	1.9980	19 53 13.8	9.677	22	21 57 30.24	1.8191	10 52 0.8	12.540
23	20 28 16.24	1.9934	19 43 30.7	9.758	23	21 59 19.31	1.8165	10 39 27.2	12.579
24	20 30 15.71	1.9889	S. 19 33 42.9	9.837	24	22 1 8.22	1.8139	S. 10 26 51.3	12.617

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 21.					THURSDAY 23.				
0	22 1 8.92	1.8139	S. 10 26 51.3	12.617	0	23 26 21.44	1.7697	N. 0 8 5.4	12.580
1	22 2 56.98	1.8114	10 14 13.2	12.655	1	23 26 7.03	1.7691	0 21 38.5	12.582
2	22 4 45.60	1.8089	10 1 33.8	12.691	2	23 29 52.65	1.7698	0 35 11.6	12.582
3	22 6 34.07	1.8066	9 48 50.2	12.728	3	23 31 38.29	1.7610	0 48 44.7	12.552
4	22 8 22.40	1.8043	9 36 5.5	12.762	4	23 33 23.96	1.7615	1 9 17.8	12.550
5	22 10 10.59	1.8021	9 23 18.7	12.797	5	23 35 9.67	1.7621	1 15 50.8	12.548
6	22 11 58.65	1.7999	9 10 29.9	12.830	6	23 36 55.41	1.7626	1 29 23.6	12.545
7	22 13 46.57	1.7977	8 57 39.1	12.863	7	23 38 41.20	1.7632	1 42 56.2	12.543
8	22 15 34.37	1.7956	8 44 46.4	12.894	8	23 40 27.04	1.7638	1 56 28.6	12.538
9	22 17 22.05	1.7935	8 31 51.8	12.926	9	23 42 12.92	1.7642	2 10 0.8	12.534
10	22 19 9.60	1.7915	8 18 55.3	12.956	10	23 43 58.86	1.7647	2 23 32.7	12.528
11	22 20 57.03	1.7896	8 5 57.0	12.986	11	23 45 44.86	1.7652	2 37 4.1	12.522
12	22 22 44.35	1.7877	7 52 57.0	13.013	12	23 47 30.92	1.7657	2 50 35.2	12.516
13	22 24 31.56	1.7858	7 39 55.3	13.043	13	23 49 17.05	1.7663	3 4 5.9	12.508
14	22 26 18.66	1.7840	7 26 52.0	13.069	14	23 51 3.24	1.7706	3 17 36.2	12.499
15	22 28 5.66	1.7823	7 13 47.0	13.096	15	23 52 49.51	1.7717	3 31 5.9	12.490
16	22 29 52.55	1.7807	7 0 40.5	13.123	16	23 54 35.85	1.7730	3 44 35.0	12.480
17	22 31 39.35	1.7792	6 47 32.4	13.147	17	23 56 22.27	1.7744	3 58 3.5	12.470
18	22 33 26.06	1.7777	6 34 22.9	13.170	18	23 58 8.78	1.7760	4 11 31.4	12.458
19	22 35 12.67	1.7762	6 21 11.9	13.194	19	23 59 55.38	1.7774	4 24 58.6	12.447
20	22 36 59.20	1.7748	6 7 59.6	13.216	20	0 1 42.07	1.7789	4 38 25.0	12.434
21	22 38 45.64	1.7734	5 54 45.9	13.239	21	0 3 28.85	1.7806	4 51 50.6	12.420
22	22 40 32.01	1.7721	5 41 30.9	13.260	22	0 5 15.74	1.7823	5 5 15.4	12.406
23	22 42 18.30	1.7708	S. 5 28 14.7	13.281	23	0 7 2.73	1.7841	N. 5 18 39.3	12.391
WEDNESDAY 22.					FRIDAY 24.				
0	22 44 4.52	1.7697	S. 5 14 57.2	13.300	0	0 8 49.83	1.7859	N. 5 32 2.3	12.375
1	22 45 50.67	1.7685	5 1 38.6	13.319	1	0 10 37.04	1.7876	5 45 24.3	12.358
2	22 47 36.75	1.7675	4 48 18.9	13.337	2	0 12 24.37	1.7896	5 58 45.3	12.341
3	22 49 22.77	1.7666	4 34 58.1	13.355	3	0 14 11.81	1.7918	6 12 5.2	12.323
4	22 51 8.74	1.7657	4 21 36.3	13.371	4	0 15 59.38	1.7939	6 25 24.0	12.304
5	22 52 54.65	1.7647	4 8 13.5	13.387	5	0 17 47.08	1.7961	6 38 41.7	12.284
6	22 54 40.50	1.7639	3 54 49.8	13.402	6	0 19 34.91	1.7983	6 51 56.1	12.263
7	22 56 26.31	1.7632	3 41 25.2	13.417	7	0 21 22.88	1.8006	7 5 13.3	12.242
8	22 58 12.08	1.7625	3 27 59.8	13.430	8	0 23 10.98	1.8029	7 18 27.2	12.220
9	22 59 57.81	1.7618	3 14 33.6	13.443	9	0 24 59.22	1.8053	7 31 39.7	12.197
10	23 1 43.50	1.7612	3 1 6.6	13.456	10	0 26 47.62	1.8078	7 44 50.8	12.173
11	23 3 29.16	1.7607	2 47 38.9	13.467	11	0 28 36.17	1.8104	7 58 0.5	12.149
12	23 5 14.79	1.7603	2 34 10.6	13.477	12	0 30 24.87	1.8130	8 11 8.7	12.123
13	23 7 0.40	1.7599	2 20 41.6	13.486	13	0 32 13.73	1.8157	8 24 15.3	12.097
14	23 8 45.98	1.7596	2 7 12.1	13.497	14	0 34 2.75	1.8184	8 37 20.3	12.070
15	23 10 31.54	1.7592	1 53 42.0	13.506	15	0 35 51.94	1.8212	8 50 23.7	12.043
16	23 12 17.09	1.7591	1 40 11.5	13.513	16	0 37 41.30	1.8242	9 3 25.4	12.014
17	23 14 2.63	1.7590	1 26 40.5	13.520	17	0 39 30.84	1.8271	9 16 25.4	12.985
18	23 15 48.17	1.7589	1 13 9.1	13.526	18	0 41 20.55	1.8301	9 29 23.6	12.964
19	23 17 33.70	1.7588	0 59 37.3	13.532	19	0 43 10.45	1.8332	9 42 19.9	12.923
20	23 19 19.23	1.7589	0 46 5.2	13.537	20	0 45 0.53	1.8363	9 55 14.4	12.901
21	23 21 4.77	1.7590	0 32 32.9	13.541	21	0 46 50.80	1.8395	10 8 6.9	12.859
22	23 22 50.31	1.7592	0 19 0.3	13.545	22	0 48 41.27	1.8427	10 20 57.5	12.825
23	23 24 35.87	1.7594	S. 0 5 27.5	13.548	23	0 50 31.93	1.8461	10 33 46.0	12.791
24	23 26 21.44	1.7597	N. 0 8 5.4	13.550	24	0 52 22.80	1.8495	N. 10 46 32.4	12.755

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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SATURDAY 25.

Hour.	h	m	s.	s.	°	'	"	"
0	0	52	22.80	1.8498	N.10	46	32.4	12.785
1	0	54	13.87	1.8529		10	59	16.7
2	0	56	5.14	1.8564		11	11	58.7
3	0	57	56.64	1.8601		11	24	38.5
4	0	59	48.35	1.8637		11	37	16.0
5	1	1	40.28	1.8674		11	49	51.2
6	1	3	32.44	1.8712		12	2	23.9
7	1	5	24.83	1.8751		12	14	54.2
8	1	7	17.45	1.8790		12	27	22.0
9	1	9	10.31	1.8830		12	39	47.2
10	1	11	3.41	1.8870		12	52	9.8
11	1	13	56.75	1.8911		13	4	29.8
12	1	14	50.34	1.8952		13	16	47.0
13	1	16	44.18	1.8994		13	29	1.5
14	1	18	38.27	1.9037		13	41	13.1
15	1	20	32.62	1.9081		13	53	21.8
16	1	22	27.24	1.9125		14	5	27.6
17	1	24	22.12	1.9169		14	17	30.4
18	1	26	17.27	1.9214		14	29	30.2
19	1	28	12.70	1.9258		14	41	26.9
20	1	30	8.40	1.9307		14	53	20.4
21	1	32	4.39	1.9354		15	5	10.6
22	1	34	0.65	1.9401		15	16	57.6
23	1	35	57.20	1.9449	N.15	28	41.2	11.098

MONDAY 27.

Hour.	h	m	s.	s.	°	'	"	"
0	2	26	14.05	2.0927	N.20	0	46.3	9.566
1	2	28	19.19	2.0987		20	10	41.2
2	2	30	24.70	2.0948		20	20	31.0
3	2	32	30.58	2.1010		20	30	15.7
4	2	34	36.83	2.1073		20	30	55.1
5	2	36	43.45	2.1135		20	49	29.3
6	2	38	50.45	2.1198		20	58	58.1
7	2	40	57.83	2.1261		21	8	21.5
8	2	43	5.58	2.1324		21	17	39.4
9	2	45	13.71	2.1388		21	26	51.8
10	2	47	22.23	2.1452		21	35	58.6
11	2	49	31.13	2.1516		21	44	59.6
12	2	51	40.42	2.1580		21	53	54.9
13	2	53	50.09	2.1644		22	2	44.3
14	2	56	0.15	2.1709		22	11	27.8
15	2	58	10.60	2.1774		22	20	5.3
16	3	0	21.44	2.1839		22	28	36.8
17	3	2	32.67	2.1904		22	37	2.1
18	3	4	44.29	2.1969		22	45	21.2
19	3	6	56.30	2.2035		22	53	33.9
20	3	9	8.71	2.2100		23	1	40.3
21	3	11	21.50	2.2165		23	9	40.3
22	3	13	34.69	2.2231		23	17	33.7
23	3	15	48.28	2.2297	N.23	25	20.6	7.725

SUNDAY 26.

Hour.	h	m	s.	s.	°	'	"	"
0	1	37	54.05	1.9499	N.15	40	21.5	11.641
1	1	39	51.19	1.9548		15	51	58.3
2	1	41	48.63	1.9598		16	3	31.5
3	1	43	46.37	1.9649		16	15	1.2
4	1	45	44.41	1.9700		16	26	27.2
5	1	47	42.76	1.9751		16	37	49.5
6	1	49	41.42	1.9803		16	49	8.1
7	1	51	40.40	1.9855		17	0	22.8
8	1	53	39.69	1.9908		17	11	33.6
9	1	55	39.31	1.9963		17	22	40.5
10	1	57	39.25	2.0017		17	33	43.3
11	1	59	39.52	2.0072		17	44	42.1
12	2	1	40.11	2.0127		17	55	36.8
13	2	3	41.04	2.0182		18	6	27.3
14	2	5	42.30	2.0238		18	17	13.5
15	2	7	43.90	2.0295		18	27	55.4
16	2	9	45.85	2.0353		18	38	32.8
17	2	11	48.14	2.0411		18	49	5.8
18	2	13	50.78	2.0469		18	59	34.3
19	2	15	53.77	2.0527		19	9	58.2
20	2	17	57.11	2.0587		19	20	17.4
21	2	20	0.81	2.0646		19	30	31.9
22	2	22	4.86	2.0705		19	40	41.6
23	2	24	9.27	2.0766		19	50	46.4
24	2	26	14.05	2.0827	N.20	0	46.3	9.956

TUESDAY 28.

Hour.	h	m	s.	s.	°	'	"	"
0	3	18	2.26	2.2362	N.23	33	0.8	7.613
1	3	20	16.63	2.2428		23	40	34.3
2	3	22	31.40	2.2494		23	48	0.9
3	3	24	46.56	2.2560		23	55	20.6
4	3	27	2.12	2.2626		24	2	33.4
5	3	29	18.07	2.2691		24	9	39.1
6	3	31	34.41	2.2756		24	16	37.8
7	3	33	51.14	2.2821		24	23	29.3
8	3	36	8.27	2.2886		24	30	13.5
9	3	38	25.78	2.2951		24	36	50.4
10	3	40	43.68	2.3016		24	43	19.9
11	3	43	1.97	2.3081		24	49	41.9
12	3	45	20.65	2.3145		24	55	56.3
13	3	47	39.71	2.3209		25	2	3.1
14	3	49	59.16	2.3273		25	8	2.1
15	3	52	18.99	2.3336		25	13	53.4
16	3	54	39.19	2.3399		25	19	36.8
17	3	56	59.77	2.3462		25	25	12.3
18	3	59	20.73	2.3524		25	30	39.8
19	4	1	42.06	2.3586		25	35	59.2
20	4	4	3.76	2.3647		25	41	10.4
21	4	6	25.83	2.3709		25	46	13.4
22	4	8	48.26	2.3769		25	51	8.2
23	4	11	11.05	2.3829		25	55	54.6
24	4	13	34.21	2.3889	N.26	0	32.5	4.551

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 29.					THURSDAY, MARCH 1.				
0	4 13 34.21	2.3680	N.26 0 32.5	4.561	0	5 12 26.97	2.5097	N.27 6 37.7	0.580
1	4 15 57.72	2.3648	26 5 1.9	4.418	PHASES OF THE MOON. ☉ Full Moon, : Day. h. m. ☾ Last Quarter, 13 6 51.3 ● New Moon, 21 7 38.6 ☽ First Quarter, 29 7 55.3 ☾ Perigee, Day. h. ☾ Apogee, 7 1.6 21 8.7				
2	4 18 21.58	2.4008	26 9 22.7	4.275					
3	4 20 45.79	2.4064	26 13 34.9	4.130					
4	4 23 10.35	2.4121	26 17 38.4	3.984					
5	4 25 35.25	2.4178	26 21 33.1	3.837					
6	4 28 0.48	2.4234	26 25 18.9	3.690					
7	4 30 26.05	2.4289	26 28 55.8	3.540					
8	4 32 51.94	2.4343	26 32 23.7	3.390					
9	4 35 18.18	2.4397	26 35 49.6	3.239					
10	4 37 44.70	2.4450	26 38 52.3	3.087					
11	4 40 11.56	2.4502	26 41 52.9	2.933					
12	4 42 38.72	2.4553	26 44 44.3	2.778					
13	4 45 6.19	2.4603	26 47 26.4	2.623					
14	4 47 33.98	2.4653	26 49 59.0	2.467					
15	4 50 2.03	2.4702	26 52 22.2	2.309					
16	4 52 30.38	2.4750	26 54 35.9	2.150					
17	4 54 59.02	2.4798	26 56 40.1	1.991					
18	4 57 27.94	2.4843	26 58 34.7	1.831					
19	4 59 57.13	2.4887	27 0 19.7	1.669					
20	5 2 26.59	2.4931	27 1 54.9	1.507					
21	5 4 56.31	2.4974	27 3 20.4	1.344					
22	5 7 26.28	2.5016	27 4 36.0	1.181					
23	5 9 56.50	2.5057	N.27 5 41.8	1.016					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
			°	'	"		°	'	"		°	'	"		°	'	"	
1	SUN	W.	105	12	4	2864	106	43	2	2844	108	14	25	2924	109	46	13	2904
	Venus	W.	75	8	52	2035	76	37	57	2035	78	7	26	2015	79	37	20	2095
	α Pegasi	W.	65	21	27	2821	66	55	28	2798	68	29	58	2778	70	4	58	2763
	α Arietis	W.	21	49	30	2715	23	25	50	2687	25	2	49	2657	26	40	26	2631
	Jupiter	E.	50	28	59	2563	48	49	41	2566	47	9	59	2548	45	29	52	2530
	Pollux	E.	53	49	42	2641	52	11	43	2624	50	33	20	2607	48	54	35	2589
	Saturn	E.	86	13	7	2586	84	34	5	2577	82	54	38	2559	81	14	46	2540
	Regulus	E.	90	40	17	2618	89	1	47	2601	87	22	54	2583	85	43	35	2564
2	SUN	W.	117	31	46	2801	119	6	12	2780	120	41	6	2760	122	16	27	2738
	Venus	W.	87	13	20	2289	88	45	53	2269	90	18	52	2247	91	52	19	2227
	α Pegasi	W.	78	7	23	2643	79	45	20	2623	81	23	45	2601	83	2	39	2580
	α Arietis	W.	34	57	15	2508	36	38	17	2487	38	19	49	2464	40	1	53	2442
	Jupiter	E.	37	2	53	2437	35	20	11	2419	33	37	3	2401	31	53	29	2382
	Pollux	E.	40	34	51	2604	38	53	43	2488	37	12	15	2472	35	30	20	2457
	Saturn	E.	72	48	55	2445	71	6	25	2426	69	23	27	2407	67	40	2	2389
	Regulus	E.	77	20	30	2469	75	38	32	2450	73	56	9	2430	72	13	17	2410
3	SUN	W.	130	20	6	2635	131	58	13	2615	133	36	47	2596	135	15	48	2577
	Venus	W.	99	46	19	2722	101	22	29	2702	102	59	6	2683	104	36	9	2663
	α Pegasi	W.	91	24	4	2483	93	5	41	2463	94	47	43	2448	96	30	10	2431
	α Arietis	W.	48	39	48	2337	50	24	53	2319	52	10	25	2299	53	56	26	2291
	Aldebaran	W.	18	59	8	2014	20	29	4	2087	22	1	40	2075	23	36	27	2095
	Pollux	E.	26	55	57	2395	25	12	15	2387	23	28	22	2384	21	44	24	2384
	Saturn	E.	58	56	11	2294	57	10	3	2276	55	23	28	2258	53	36	26	2241
	Regulus	E.	63	32	7	2316	61	46	31	2298	60	0	28	2280	58	13	59	2262
4	Venus	W.	112	47	52	2671	114	27	27	2653	116	7	26	2638	117	47	47	2621
	α Pegasi	W.	105	8	6	2356	106	52	44	2344	108	37	39	2333	110	22	50	2322
	α Arietis	W.	62	53	25	2190	64	42	8	2174	66	31	15	2157	68	20	47	2142
	Aldebaran	W.	31	54	24	2419	33	37	32	2380	35	21	37	2364	37	6	32	2313
	Saturn	E.	44	34	53	2187	42	45	20	2141	40	55	24	2127	39	5	6	2112
	Regulus	E.	49	15	0	2176	47	25	57	2161	45	36	31	2146	43	46	42	2130
	Spica	E.	103	17	54	2178	101	28	54	2162	99	39	29	2146	97	49	40	2131
5	α Arietis	W.	77	34	3	2073	79	25	44	2061	81	17	43	2050	83	10	0	2040
	Aldebaran	W.	46	1	28	2189	47	50	12	2170	49	39	24	2153	51	29	3	2136
	Saturn	E.	29	48	27	2052	27	56	14	2043	26	3	47	2035	24	11	7	2026
	Regulus	E.	34	32	14	2066	32	40	23	2055	30	48	15	2046	28	55	52	2037
	Spica	E.	88	35	6	2064	86	43	11	2062	84	50	57	2041	82	58	27	2031
6	α Arietis	W.	92	35	1	1999	94	28	37	1993	96	22	22	1988	98	16	15	1984
	Aldebaran	W.	60	42	50	2074	62	34	20	2065	64	26	22	2067	66	18	27	2050
	Jupiter	W.	21	23	47	1970	23	18	8	1962	25	12	42	1956	27	7	26	1950
	Pollux	W.	18	12	39	2134	20	2	47	2104	21	53	40	2079	23	45	11	2060
	Spica	E.	73	32	20	1991	71	38	31	1985	69	44	33	1980	67	50	27	1973
	Mars	E.	115	18	34	2185	113	29	44	2178	111	40	44	2172	109	51	34	2167
7	Aldebaran	W.	75	40	56	2083	77	33	39	2082	79	26	23	2082	81	19	7	2084
	Jupiter	W.	36	42	47	1988	38	38	0	1988	40	33	13	1989	42	28	24	1941
	Pollux	W.	33	8	28	2009	35	1	48	2005	36	55	14	2003	38	48	43	2003
	Spica	E.	58	18	46	1908	56	24	21	1908	54	29	57	1970	52	35	36	1974
	Mars	E.	100	44	17	2155	96	54	42	2153	97	5	7	2157	95	15	34	2183
	Antares	E.	104	6	16	1980	102	11	39	1980	100	17	2	1962	98	22	27	1964

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Diff.	XVh.			P. L. of Diff.	XVIIIh.			P. L. of Diff.	XXIh.			P. L. of Diff.
			o	i	u		o	i	u		o	i	u		o	i	u	
1	SUN	W.	111	18	27	2683	112	51	7	2663	114	24	13	2642	115	57	46	2621
	Venus	W.	81	7	39	2973	82	38	25	2953	84	9	37	2932	85	41	15	2911
	α Pegasi	W.	71	40	27	2780	73	16	27	2767	74	52	57	2697	76	29	55	2664
	α Arietis	W.	28	18	39	2608	29	57	27	2690	31	36	49	2656	33	16	46	2632
	Jupiter	E.	43	49	20	2511	42	8	22	2492	40	26	58	2475	38	45	9	2455
	Pollux	E.	47	15	25	2672	45	35	52	2655	43	55	55	2638	42	15	35	2621
	Saturn	E.	79	34	28	2521	77	53	44	2502	76	12	34	2484	74	30	58	2466
	Regulus	E.	84	3	50	2545	82	23	40	2526	80	43	3	2507	79	2	0	2488
2	SUN	W.	123	52	16	2718	125	28	32	2697	127	5	16	2677	128	42	27	2656
	Venus	W.	93	26	12	2906	95	0	33	2785	96	35	21	2763	98	10	37	2744
	α Pegasi	W.	84	42	1	2560	86	21	51	2540	88	2	9	2521	89	42	53	2502
	α Arietis	W.	41	44	28	2421	43	27	33	2400	45	11	8	2379	46	55	13	2358
	Jupiter	E.	30	9	28	2364	28	25	2	2346	26	40	10	2328	24	54	52	2311
	Pollux	E.	33	48	6	2442	32	5	31	2429	30	22	37	2416	28	39	25	2405
	Saturn	E.	65	56	10	2369	64	11	51	2350	62	27	5	2332	60	41	52	2313
	Regulus	E.	70	29	57	2391	68	46	10	2373	67	1	56	2354	65	17	15	2335
3	SUN	W.	136	55	15	2668	138	35	8	2638	140	15	28	2620	141	56	13	2602
	Venus	W.	106	13	38	2644	107	51	33	2625	109	29	54	2606	111	8	41	2588
	α Pegasi	W.	98	13	1	2415	99	56	15	2399	101	39	51	2384	103	23	48	2370
	α Arietis	W.	55	49	55	2261	57	29	52	2242	59	17	17	2225	61	5	8	2207
	Aldebaran	W.	25	13	10	2626	26	51	29	2603	28	31	15	2610	30	12	15	2480
	Pollux	E.	20	0	27	2392	18	16	41	2408	16	33	18	2431	14	50	28	2466
	Saturn	E.	51	48	59	2223	50	1	5	2206	48	12	46	2189	46	24	2	2173
	Regulus	E.	56	27	3	2344	54	39	41	2327	52	51	53	2309	51	3	39	2192
4	Venus	W.	119	28	31	2606	121	9	36	2492	122	51	1	2478	124	32	46	2464
	α Pegasi	W.	112	8	17	2313	113	53	58	2305	115	39	50	2298	117	25	52	2282
	α Arietis	W.	70	10	42	2127	72	1	0	2113	73	51	40	2099	75	42	41	2085
	Aldebaran	W.	38	52	13	2284	40	38	36	2238	42	25	38	2253	44	13	16	2210
	Saturn	E.	37	14	25	2099	35	23	24	2086	33	32	4	2073	31	40	24	2062
	Regulus	E.	41	56	29	2116	40	5	55	2103	38	15	1	2090	36	23	47	2078
	Spica	E.	95	59	28	2116	94	8	54	2102	92	17	58	2089	90	26	42	2076
	α Arietis	W.	85	2	32	2080	86	55	20	2021	88	48	21	2018	90	41	35	2006
5	Aldebaran	W.	53	19	7	2123	55	9	33	2108	57	0	20	2096	58	51	27	2086
	Saturn	E.	22	18	16	2024	20	25	19	2021	18	32	17	2020	16	39	14	2023
	Regulus	E.	27	3	15	2029	25	10	26	2022	23	17	26	2016	21	24	17	2012
	Spica	E.	81	5	41	2021	79	12	40	2012	77	19	25	2005	75	25	58	1998
	α Arietis	W.	100	10	15	1961	102	4	19	1973	103	58	28	1977	105	52	39	1976
	Aldebaran	W.	68	10	43	2045	70	3	7	2041	71	55	38	2037	73	48	15	2034
	Jupiter	W.	29	2	19	1946	30	57	19	1942	32	52	25	1939	34	47	35	1938
	Pollux	W.	25	37	19	2044	27	29	37	2033	29	22	20	2023	31	15	18	2016
Spica	E.	65	56	14	1973	64	1	57	1970	62	7	36	1968	60	13	11	1969	
Mars	E.	108	2	16	2163	106	12	52	2159	104	23	23	2157	102	33	51	2156	
7	Aldebaran	W.	83	11	48	2087	85	4	25	2040	86	56	57	2044	88	49	22	2060
	Jupiter	W.	44	23	32	1943	46	18	36	1947	48	13	34	1951	50	8	25	1956
	Pollux	W.	40	42	13	2002	42	35	44	2004	44	29	12	2006	46	22	37	2009
	Spica	E.	50	41	20	1977	48	47	9	1961	46	53	4	1966	44	59	9	1963
	Mars	E.	93	26	3	2161	91	36	37	2165	89	47	17	2170	87	58	5	2176
	Antares	E.	96	27	56	1967	94	33	29	1971	92	39	9	1976	90	44	55	1981

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			o	i	"		o	i	"		o	i	"		o	i	"	
8	Aldebaran	W.	90	41	39	2086	92	33	46	2063	94	25	42	2071	96	17	26	2079
	Jupiter	W.	52	3	8	1963	53	57	41	1969	55	52	4	1977	57	46	15	1985
	Pollux	W.	48	15	57	2014	50	9	10	2019	52	2	14	2026	53	55	9	2032
	Saturn	W.	16	17	11	2009	18	10	31	2009	20	3	51	2010	21	57	10	2013
	Spica	E.	43	5	23	2000	41	11	48	2007	39	18	25	2016	37	25	16	2026
	Mars	E.	86	9	1	2182	84	20	6	2189	82	31	22	2196	80	42	49	2205
Antares	E.	88	50	50	1987	86	56	55	1993	85	3	10	2001	83	9	37	2009	
9	Jupiter	W.	67	13	36	2035	69	6	15	2048	70	58	35	2080	72	50	36	2073
	Pollux	W.	63	16	32	2079	65	8	3	2091	66	59	16	2108	68	50	11	2116
	Saturn	W.	31	21	40	2082	33	13	54	2082	35	5	52	2078	36	57	33	2085
	Regulus	W.	26	14	51	2073	28	6	32	2083	29	57	57	2065	31	49	4	2107
	Spica	E.	28	3	43	2088	26	12	26	2104	24	21	33	2122	22	31	7	2141
	Mars	E.	71	43	43	2290	69	56	45	2273	68	10	6	2286	66	23	46	2300
Antares	E.	73	45	27	2061	71	53	27	2072	70	1	45	2085	68	10	23	2098	
10	Jupiter	W.	82	5	23	2145	83	55	13	2161	85	44	40	2177	87	33	42	2194
	Pollux	W.	77	59	39	2186	79	48	27	2202	81	36	52	2219	83	24	53	2234
	Saturn	W.	46	11	1	2153	48	0	39	2169	49	49	54	2184	51	38	46	2200
	Regulus	W.	40	59	44	2176	42	48	47	2192	44	37	27	2207	46	25	44	2223
	Mars	E.	57	37	35	2280	55	53	32	2297	54	9	53	2315	52	26	39	2333
	Antares	E.	58	58	44	2170	57	9	32	2186	55	20	43	2202	53	32	18	2218
	SUN	E.	132	14	24	2482	130	32	45	2499	128	51	30	2516	127	10	39	2534
	Jupiter	W.	96	32	40	2278	98	19	12	2296	100	5	18	2313	101	50	58	2331
11	Saturn	W.	60	36	58	2283	62	23	24	2300	64	9	21	2317	65	54	55	2326
	Regulus	W.	55	21	7	2307	57	6	57	2324	58	52	22	2341	60	37	22	2359
	Mars	E.	43	57	12	2330	42	16	41	2342	40	36	40	2372	38	57	7	2394
	Antares	E.	44	36	25	2303	42	50	30	2320	41	5	0	2337	39	19	55	2355
	SUN	E.	118	52	34	2624	117	14	12	2643	115	36	16	2663	113	58	46	2681
	Jupiter	W.	88	9	33	2526	89	49	26	2574	91	28	56	2591	93	8	3	2606
12	Regulus	W.	69	16	0	2446	70	58	29	2464	72	40	33	2482	74	22	12	2499
	Spica	W.	15	26	6	2518	17	6	54	2522	18	47	36	2530	20	28	7	2540
	Antares	E.	30	40	54	2444	28	58	22	2461	27	16	14	2479	25	34	31	2496
	Mars	E.	30	47	4	2712	29	10	40	2739	27	34	52	2766	25	59	40	2795
	SUN	E.	105	57	33	2776	104	22	34	2796	102	48	0	2815	101	13	51	2833
	Saturn	W.	82	44	30	2363	84	23	48	2399	86	2	44	2615	87	41	18	2632
13	Spica	W.	28	46	47	2604	30	25	36	2618	32	4	6	2632	33	42	17	2647
	SUN	E.	93	29	3	2925	91	57	16	2942	90	25	51	2960	88	54	48	2977
	Saturn	W.	101	18	27	2682	102	55	31	2696	104	32	16	2711	106	8	41	2724
	Regulus	W.	95	48	48	2707	97	25	18	2732	99	1	28	2735	100	37	21	2750
14	Spica	W.	41	48	21	2718	43	24	37	2732	45	0	35	2744	46	36	16	2758
	SUN	E.	81	24	49	3000	79	55	50	3075	78	23	10	3091	76	58	49	3105
	Saturn	W.	114	6	30	2788	115	41	14	2810	117	15	42	2812	118	49	54	2823
15	Spica	W.	54	30	25	2820	56	4	27	2831	57	38	14	2843	59	11	46	2853
	SUN	E.	69	41	27	3175	68	14	48	3188	66	48	25	3201	65	22	17	3214
	Spica	W.	66	56	4	2905	68	28	17	2913	70	0	19	2923	71	32	9	2931
16	Antares	W.	21	3	51	2898	22	36	13	2907	24	8	23	2916	25	40	22	2924
	Mars	W.	19	40	36	3258	21	5	25	3269	22	30	25	3282	23	55	33	3247

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.			P. L. of Dist.	XVIIIh.			P. L. of Dist.	XXIh.			P. L. of Dist.
				°	'	"		°	'	"		°	'	"	
8	Aldebaran W.	98 8 57	2089	100	0	13	2100	101	51	12	2111	103	41	54	2122
	Jupiter W.	59 40 13	1994	61	33	57	2008	63	27	26	2013	65	20	40	2025
	Pollux W.	55 47 53	2041	57	40	24	2049	59	32	42	2059	61	24	45	2069
	Saturn W.	23 50 24	2018	25	43	30	2025	27	36	26	2032	29	29	10	2041
	Spica E.	35 32 22	2086	33	39	44	2048	31	47	24	2060	29	55	23	2073
	Mars E.	78 54 29	2214	77	6	23	2225	75	18	33	2226	73	30	59	2248
	Antares E.	81 16 17	2018	79	23	11	2028	77	30	20	2038	75	37	45	2049
9	Jupiter W.	74 42 16	2087	76	33	35	2100	78	24	34	2115	80	15	10	2120
	Pollux W.	70 40 46	2129	72	31	1	2143	74	20	55	2157	76	10	28	2171
	Saturn W.	38 48 55	2098	40	39	57	2111	42	30	39	2124	44	21	1	2189
	Regulus W.	33 39 52	2120	35	30	21	2138	37	20	30	2147	39	10	18	2161
	Spica E.	20 41 10	2163	18	51	46	2188	17	2	58	2216	15	14	54	2251
	Mars E.	64 37 47	2315	62	52	10	2331	61	6	55	2346	59	22	3	2363
	Antares E.	66 19 20	2111	64	28	38	2126	62	38	18	2140	60	48	20	2155
10	Jupiter W.	89 22 19	2210	91	10	32	2227	92	58	20	2243	94	45	43	2261
	Pollux W.	85 12 30	2281	86	59	42	2267	88	46	30	2283	90	32	54	2299
	Saturn W.	53 27 13	2217	55	15	15	2228	57	2	54	2249	58	50	0	2265
	Regulus W.	48 13 38	2229	50	1	7	2256	51	48	12	2272	53	34	52	2289
	Mars E.	50 43 52	2452	49	1	31	2470	47	19	36	2491	45	38	10	2511
	Antares E.	51 44 18	2285	49	56	42	2252	48	9	32	2268	46	22	46	2283
	SUN E.	125 30 13	2351	123	50	11	2369	122	10	34	2387	120	31	21	2406
11	Jupiter W.	103 36 13	2248	105	21	2	2266	107	5	26	2283	108	49	25	2401
	Saturn W.	67 40 4	2323	69	24	47	2370	71	9	5	2387	72	52	59	2405
	Regulus W.	62 21 56	2377	64	6	4	2394	65	49	48	2411	67	33	7	2429
	Mars E.	37 18 4	2617	35	39	32	2640	34	1	31	2663	32	24	1	2687
	Antares E.	37 35 16	2373	35	51	2	2391	34	7	14	2409	32	23	52	2426
	SUN E.	112 21 41	2700	110	45	1	2719	109	8	46	2738	107	32	57	2757
	12	Saturn W.	81 26 12	2491	83	7	38	2508	84	48	40	2525	86	29	18	2542
Regulus W.		76 3 27	2516	77	44	18	2533	79	24	45	2550	81	4	49	2566
Spica W.		22 8 25	2551	23	48	27	2564	25	28	12	2577	27	7	39	2591
Antares E.		23 53 12	2514	22	12	18	2530	20	31	47	2548	18	51	40	2564
Mars E.		24 25 6	2626	22	51	14	2662	21	18	6	2690	19	45	47	2642
SUN E.		99 40 6	2682	98	6	45	2670	96	33	48	2688	95	1	14	2696
13		Saturn W.	94 46 50	2622	96	25	15	2638	98	3	19	2652	99	41	3	2667
	Regulus W.	89 19 30	2648	90	57	20	2663	92	34	49	2678	94	11	59	2693
	Spica W.	35 20 8	2662	36	57	39	2675	38	34	52	2689	40	11	46	2704
	SUN E.	87 24 6	2664	85	53	46	2611	84	23	47	2627	82	54	8	2643
14	Saturn W.	107 44 49	2727	109	20	40	2750	110	56	14	2763	112	31	30	2775
	Regulus W.	102 12 54	2763	103	48	10	2777	105	23	8	2789	106	57	50	2801
	Spica W.	48 11 39	2771	49	46	45	2784	51	21	34	2795	52	56	8	2808
	SUN E.	75 30 46	2120	74	3	1	2124	72	35	33	2148	71	8	22	2162
15	Saturn W.	120 23 52	2825	121	57	35	2845	123	31	5	2855	125	4	21	2866
	Spica W.	60 45 5	2864	62	18	10	2875	63	51	1	2885	65	23	39	2895
	SUN E.	63 56 24	2225	62	30	45	2227	61	5	20	2243	59	40	8	2259
16	Spica W.	73 3 49	2929	74	35	19	2946	76	6	39	2955	77	37	48	2962
	Antares W.	27 12 10	2923	26	43	47	2941	30	15	14	2949	31	46	31	2967
	Mars W.	25 20 46	2246	26	46	1	2244	28	11	18	2245	29	36	34	2246

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dif.	IIIh.			P. L. of Dif.	VIh.			P. L. of Dif.	IXh.			P. L. of Dif.
			o	i	"		o	i	"		o	i	"		o	i	"	
16	SUN	E.	58	15	8	3270	56	50	21	3260	55	25	46	3260	54	1	23	3260
17	Spica	W.	79	8	48	2968	80	39	39	2977	82	10	21	2963	83	40	55	2969
	Antares	W.	33	17	36	3262	34	48	39	2973	36	10	27	2977	37	50	8	2983
	Mars	W.	31	1	49	3247	32	27	2	3249	33	52	13	3252	35	17	21	3264
	SUN	E.	47	2	8	3243	45	38	46	3251	44	15	33	3268	42	52	29	3315
18	Spica	W.	91	11	55	3017	92	41	47	3022	94	11	33	3026	95	41	13	3031
	Antares	W.	45	21	43	3011	46	51	42	3017	48	21	34	3021	49	51	21	3025
	Mars	W.	42	22	10	3270	43	46	57	3272	45	11	41	3276	46	36	21	3278
	SUN	E.	35	59	6	3268	34	36	47	3403	33	14	34	3409	31	52	28	3415
23	SUN	W.	18	29	59	3497	19	51	11	3456	21	19	24	3453	22	33	41	3450
	Aldebaran	E.	75	56	42	3121	74	29	10	3129	73	1	36	3128	71	34	0	3127
	Jupiter	E.	113	14	46	3040	111	45	23	3088	110	15	58	3086	108	46	30	3083
24	SUN	W.	29	21	15	3428	30	43	5	3419	32	5	0	3414	33	27	1	3408
	Aldebaran	E.	64	15	35	3119	62	47	48	3117	61	19	59	3115	59	52	8	3114
	Jupiter	E.	101	18	15	3017	99	48	23	3014	98	18	27	3009	96	48	26	3006
	Pollux	E.	106	23	21	3049	104	54	9	3047	103	24	54	3042	101	55	33	3036
25	SUN	W.	40	18	42	3278	41	41	23	3271	43	4	13	3264	44	27	11	3257
	Aldebaran	E.	52	32	23	3106	51	4	21	3106	49	36	17	3105	48	8	13	3103
	Jupiter	E.	89	16	52	2979	87	46	13	2974	86	15	28	2969	84	44	36	2962
	Pollux	E.	94	27	13	3010	92	57	13	3004	91	27	5	2998	89	56	50	2991
	Saturn	E.	125	3	15	2972	123	32	27	2966	122	1	32	2960	120	30	29	2954
26	SUN	W.	51	24	13	3216	52	48	7	3206	54	12	11	3206	55	36	27	3207
	Venus	W.	16	34	18	3266	17	53	9	3249	19	12	39	3218	20	32	43	3491
	Aldebaran	E.	40	47	47	3107	39	19	46	3110	37	51	48	3114	36	23	56	3120
	Jupiter	E.	77	8	3	2925	75	36	16	2917	74	4	19	2909	72	32	11	2900
	Pollux	E.	82	23	23	2964	80	52	13	2946	79	20	53	2938	77	49	23	2930
	Saturn	E.	112	53	1	2916	111	21	1	2908	109	48	52	2899	108	16	32	2890
27	SUN	W.	62	40	44	3232	64	6	15	3221	65	31	59	3209	66	57	58	3196
	Venus	W.	27	19	52	3263	28	42	28	3265	30	5	25	3247	31	28	42	3229
	Jupiter	E.	64	48	37	2932	63	15	16	2943	61	41	42	2931	60	7	54	2919
	Pollux	E.	70	8	57	2981	68	36	14	2971	67	3	18	2960	65	30	8	2949
	Saturn	E.	100	31	50	2941	98	58	15	2930	97	24	26	2919	95	50	23	2907
	Regulus	E.	107	3	22	2966	105	30	19	2955	103	57	3	2944	102	23	32	2932
28	SUN	W.	74	11	47	3128	75	39	23	3114	77	7	16	3099	78	35	27	3088
	Venus	W.	38	30	13	3243	39	55	31	3225	41	21	11	3209	42	47	10	3191
	Jupiter	E.	52	15	2	2757	50	39	38	2745	49	3	58	2732	47	28	1	2718
	Pollux	E.	57	40	37	2790	56	5	56	2778	54	30	59	2765	52	55	45	2752
	Saturn	E.	87	56	13	2744	86	20	32	2732	84	44	35	2719	83	8	20	2705
	Regulus	E.	94	32	4	2769	92	56	56	2756	91	21	31	2743	89	45	48	2729
29	SUN	W.	86	1	11	3002	87	31	21	2986	89	1	51	2969	90	32	43	2961
	Venus	W.	50	2	25	3101	51	30	34	3092	52	59	5	3064	54	27	59	3045
	α Arietis	W.	30	39	17	2707	32	15	48	2697	33	52	46	2686	35	30	11	2647
	Jupiter	E.	39	23	33	2646	37	45	40	2631	36	7	27	2615	34	28	53	2601
	Pollux	E.	44	55	19	2685	43	18	19	2671	41	40	53	2657	40	3	16	2643
	Saturn	E.	75	2	17	2631	73	24	4	2615	71	45	30	2599	70	6	34	2584
	Regulus	E.	81	42	24	2654	80	4	42	2639	78	26	40	2622	76	48	16	2607

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Dif.	XVh.			P. L. of Dif.	XVIIIh.			P. L. of Dif.	XXIh.			P. L. of Dif.
			°	'	"		°	'	"		°	'	"		°	'	"	
16	SUN	E.	52	37	11	3300	51	13	10	3318	49	49	19	3337	48	25	39	3355
17	Spica	W.	85	11	21	2998	86	41	41	3001	88	11	53	3007	89	41	57	3012
	Antares	W.	39	20	42	2999	40	51	8	2998	42	21	27	3001	43	51	38	3006
	Mars	W.	36	42	26	3258	38	7	27	3260	39	32	25	3264	40	57	19	3266
	SUN	E.	41	29	33	3379	40	6	45	3379	38	44	5	3386	37	21	32	3392
18	Spica	W.	97	10	47	3085	98	40	16	3089	100	9	41	3043	101	39	1	3046
	Antares	W.	51	21	3	3090	52	50	39	3083	54	20	11	3097	55	49	38	3040
	Mars	W.	48	0	58	3261	49	25	32	3253	50	50	3	3257	52	14	30	3269
	SUN	E.	30	30	29	3420	29	8	35	3425	27	46	47	3430	26	25	4	3435
23	SUN	W.	23	55	1	3446	25	16	26	3441	26	37	56	3436	27	59	32	3430
	Aldebaran	E.	7	6	23	3125	68	38	44	3124	67	11	3	3123	65	43	20	3120
	Jupiter	E.	107	16	58	3080	105	47	23	3027	104	17	44	3024	102	48	1	3022
24	SUN	W.	34	49	8	3403	36	11	21	3397	37	33	41	3391	38	56	8	3385
	Aldebaran	E.	58	24	15	3112	56	56	20	3110	55	28	23	3109	54	0	24	3107
	Jupiter	E.	95	18	19	3001	93	48	7	2996	92	17	48	2990	90	47	23	2985
	Pollux	E.	100	26	5	3081	98	56	31	3027	97	26	52	3022	95	57	6	3016
25	SUN	W.	45	50	17	3240	47	13	32	3241	48	36	56	3233	50	0	29	3224
	Aldebaran	E.	46	40	7	3102	45	12	0	3108	43	43	54	3108	42	15	50	3105
	Jupiter	E.	83	13	35	2964	81	42	25	2948	80	11	7	2941	78	39	40	2938
	Pollux	E.	88	26	26	2966	86	55	54	2977	85	25	13	2970	83	54	23	2962
	Saturn	E.	118	59	18	2946	117	27	58	2939	115	56	29	2931	114	24	50	2924
26	SUN	W.	57	0	54	3276	58	25	33	3266	59	50	24	3256	61	15	27	3244
	Venus	W.	21	53	17	3466	23	14	19	3443	24	35	47	3423	25	57	38	3402
	Aldebaran	E.	34	56	11	3127	33	28	34	3126	32	1	8	3148	30	33	57	3164
	Jupiter	E.	70	59	52	2961	69	27	22	2952	67	54	40	2972	66	21	45	2962
	Pollux	E.	76	17	42	2920	74	45	48	2911	73	13	43	2901	71	41	26	2892
	Saturn	E.	106	44	0	2961	105	11	17	2971	103	38	21	2961	102	5	12	2951
27	SUN	W.	68	24	12	3183	69	50	42	3170	71	17	27	3166	72	44	28	3143
	Venus	W.	32	52	20	3312	34	16	18	3294	35	40	36	3276	37	5	16	3260
	Jupiter	E.	58	33	51	2907	56	59	32	2794	55	24	58	2783	53	50	8	2771
	Pollux	E.	63	56	44	2928	62	23	5	2926	60	49	11	2915	59	15	2	2902
	Saturn	E.	94	16	4	2795	92	41	30	2784	91	6	41	2772	89	31	36	2766
	Regulus	E.	100	49	46	2921	99	15	45	2908	97	41	28	2796	96	6	55	2782
28	SUN	W.	80	3	57	3068	81	32	46	3062	83	1	54	3066	84	31	22	3019
	Venus	W.	44	13	30	3173	45	40	11	3155	47	7	14	3137	48	34	39	3119
	Jupiter	E.	45	51	45	2704	44	15	11	2690	42	38	18	2675	41	1	5	2661
	Pollux	E.	51	20	14	2735	49	44	25	2725	48	8	18	2713	46	31	54	2696
	Saturn	E.	81	31	47	2689	79	54	53	2676	78	17	41	2661	76	40	9	2646
	Regulus	E.	88	9	47	2714	86	33	26	2699	84	56	45	2685	83	19	45	2669
29	SUN	W.	92	3	57	2983	93	35	34	2918	95	7	33	2908	96	39	55	2900
	Venus	W.	55	57	16	3026	57	26	57	3007	58	57	1	2997	60	27	30	2968
	α Arietis	W.	37	8	2	2927	38	46	20	2907	40	25	5	2898	42	4	16	2869
	Jupiter	E.	32	49	59	2595	31	10	43	2589	29	31	6	2563	27	51	7	2537
	Pollux	E.	38	25	20	2630	36	47	6	2618	35	8	35	2604	33	29	46	2592
	Saturn	E.	68	27	17	2567	66	47	37	2551	65	7	35	2534	63	27	9	2519
	Regulus	E.	75	9	30	2590	73	30	21	2573	71	50	49	2557	70	10	55	2540

AT GREENWICH APPARENT NOON.

THE SUN'S														
Day of the Week.	Day of the Month.	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Semi-diameter.		Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		h.	m.	s.		°	'	"		'	"			
Thur.	1	22	50	34.01	9.319	S. 7	22	37.3	57.12	16	10.20	65.39	12 29.22	0.507
Fri.	2	22	54	18.07	9.328	6	59	43.5	57.36	16	9.96	65.32	12 16.77	0.528
Sat.	3	22	58	1.63	9.308	6	36	44.0	57.59	16	9.72	65.25	12 3.82	0.549
Sun.	4	23	1	44.71	9.288	6	13	39.3	57.81	16	9.47	65.18	11 50.39	0.569
Mon.	5	23	5	27.34	9.269	5	50	29.6	58.02	16	9.22	65.12	11 36.49	0.587
Tues.	6	23	9	9.55	9.251	5	27	14.9	58.21	16	8.96	65.06	11 22.19	0.604
Wed.	7	23	12	51.35	9.234	5	3	55.9	58.38	16	8.70	65.00	11 7.48	0.621
Thur.	8	23	16	32.76	9.219	4	40	33.0	58.53	16	8.44	64.94	10 52.37	0.638
Fri.	9	23	20	13.81	9.205	4	17	6.5	58.67	16	8.18	64.89	10 36.90	0.653
Sat.	10	23	23	54.53	9.191	3	53	36.7	58.81	16	7.92	64.84	10 21.10	0.665
Sun.	11	23	27	34.92	9.178	3	30	3.9	58.93	16	7.65	64.79	10 4.99	0.677
Mon.	12	23	31	15.01	9.166	3	6	28.6	59.03	16	7.38	64.75	9 48.57	0.689
Tues.	13	23	34	54.84	9.156	2	42	51.2	59.11	16	7.11	64.71	9 31.88	0.700
Wed.	14	23	38	34.41	9.146	2	19	11.9	59.18	16	6.83	64.67	9 14.94	0.710
Thur.	15	23	42	13.75	9.187	1	55	31.2	59.23	16	6.55	64.64	8 57.78	0.719
Fri.	16	23	45	52.90	9.129	1	31	49.4	59.27	16	6.28	64.61	8 40.43	0.727
Sat.	17	23	49	31.86	9.122	1	8	6.8	59.29	16	6.01	64.58	8 22.89	0.735
Sun.	18	23	53	10.64	9.115	0	44	23.9	59.29	16	5.73	64.55	8 5.16	0.742
Mon.	19	23	56	49.27	9.109	S. 0	20	41.1	59.29	16	5.45	64.53	7 47.29	0.749
Tues.	20	0	0	27.77	9.104	N. 0	3	1.4	59.27	16	5.17	64.51	7 29.29	0.753
Wed.	21	0	4	6.15	9.100	0	26	43.1	59.23	16	4.90	64.49	7 11.16	0.757
Thur.	22	0	7	44.44	9.097	0	50	23.6	59.16	16	4.63	64.48	6 52.95	0.761
Fri.	23	0	11	22.67	9.094	1	14	2.3	59.08	16	4.35	64.47	6 34.68	0.764
Sat.	24	0	15	0.83	9.091	1	37	39.0	58.99	16	4.07	64.46	6 16.34	0.767
Sun.	25	0	18	38.93	9.088	2	1	13.4	58.89	16	3.79	64.46	5 57.94	0.768
Mon.	26	0	22	16.98	9.088	2	24	45.0	58.77	16	3.51	64.46	5 39.48	0.768
Tues.	27	0	25	54.99	9.088	2	48	13.5	58.63	16	3.23	64.46	5 20.99	0.768
Wed.	28	0	29	32.99	9.089	3	11	38.6	58.48	16	2.96	64.46	5 2.49	0.769
Thur.	29	0	33	11.05	9.090	3	34	59.8	58.31	16	2.69	64.46	4 44.04	0.767
Fri.	30	0	36	49.17	9.092	3	58	16.8	58.13	16	2.42	64.47	4 25.66	0.765
Sat.	31	0	40	27.37	9.095	4	21	29.4	57.94	16	2.14	64.48	4 7.35	0.761
Sun.	32	0	44	5.65	9.099	N. 4	44	37.1	57.72	16	1.87	64.50	3 49.13	0.758

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S								Equation of Time, to be subtracted from Mean Time.	Dif. for 1 hour.	Sidereal Time.			
		Apparent Right Ascension.			Dif. for 1 hour.	Apparent Declination.			Dif. for 1 hour.						
		h.	m.	s.	s.	°	'	"	"						
Thur.	1	22	50	32.06	9.349	S. 7	22	49.1	57.12	12	29.33	0.507	22	38	2.73
Fri.	2	22	54	16.16	9.328	6	59	55.2	57.36	12	16.87	0.528	22	41	59.29
Sat.	3	22	57	59.76	9.308	6	36	55.6	57.59	12	3.92	0.549	22	45	55.84
Sun.	4	23	1	42.88	9.288	6	13	50.7	57.81	11	50.49	0.569	22	49	52.39
Mon.	5	23	5	25.55	9.269	5	50	40.8	58.02	11	36.60	0.587	22	53	48.95
Tues.	6	23	9	7.80	9.251	5	27	25.9	58.21	11	22.30	0.604	22	57	45.50
Wed.	7	23	12	49.64	9.234	5	4	6.7	58.38	11	7.59	0.621	23	1	42.05
Thur.	8	23	16	31.09	9.219	4	40	43.6	58.53	10	52.48	0.638	23	5	38.61
Fri.	9	23	20	12.18	9.205	4	17	16.9	58.67	10	37.01	0.653	23	9	35.17
Sat.	10	23	23	52.94	9.191	3	53	46.9	58.81	10	21.22	0.665	23	13	31.72
Sun.	11	23	27	33.37	9.178	3	30	13.9	58.93	10	5.10	0.677	23	17	28.27
Mon.	12	23	31	13.50	9.166	3	6	38.3	59.03	9	48.67	0.689	23	21	24.83
Tues.	13	23	34	53.37	9.156	2	43	0.6	59.11	9	31.99	0.700	23	25	21.38
Wed.	14	23	38	32.99	9.146	2	19	21.0	59.18	9	15.05	0.710	23	29	17.94
Thur.	15	23	42	12.38	9.137	1	55	40.0	59.23	8	57.89	0.719	23	33	14.49
Fri.	16	23	45	51.57	9.129	1	31	57.9	59.27	8	40.53	0.727	23	37	11.04
Sat.	17	23	49	30.57	9.122	1	8	15.0	59.29	8	22.98	0.735	23	41	7.59
Sun.	18	23	53	9.40	9.115	0	44	31.8	59.29	8	5.25	0.742	23	45	4.15
Mon.	19	23	56	48.08	9.109	S. 0	20	48.7	59.29	7	47.38	0.749	23	49	0.70
Tues.	20	0	0	26.63	9.104	N. 0	2	54.0	59.27	7	29.38	0.753	23	52	57.25
Wed.	21	0	4	5.06	9.100	0	26	36.1	59.23	7	11.25	0.757	23	56	53.81
Thur.	22	0	7	43.40	9.097	0	50	16.9	59.16	6	53.04	0.761	0	0	50.36
Fri.	23	0	11	21.68	9.094	1	13	55.9	59.08	6	34.77	0.764	0	4	46.91
Sat.	24	0	14	59.89	9.091	1	37	32.9	58.99	6	16.43	0.767	0	8	43.46
Sun.	25	0	18	38.04	9.088	2	1	7.6	58.89	6	58.02	0.768	0	12	40.02
Mon.	26	0	22	16.13	9.083	2	24	39.5	58.77	5	39.56	0.768	0	16	36.57
Tues.	27	0	25	54.19	9.068	2	48	8.3	58.63	5	21.07	0.768	0	20	33.12
Wed.	28	0	29	32.24	9.069	3	11	33.7	58.48	5	2.56	0.768	0	24	29.68
Thur.	29	0	33	10.34	9.090	3	34	55.2	58.31	4	44.11	0.767	0	28	26.23
Fri.	30	0	36	48.51	9.092	3	58	12.5	58.13	4	25.72	0.765	0	32	22.79
Sat.	31	0	40	26.75	9.095	4	21	25.4	57.94	4	7.41	0.761	0	36	19.34
Sun.	32	0	44	5.08	9.099	N. 4	44	33.4	57.72	3	49.19	0.758	0	40	15.89

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

		THE SUN'S					Logarithm of the Radius Vector of the Earth.	DIFF. for 1 hour.	Mean Time of Sidereal Oh.
Day of the Month.	Day of the Year.	True LONGITUDE.		DIFF. for 1 hour.	LATITUDE.				
		λ	λ'						
1	61	341 ⁰ 10 ¹ 49.7	10 ¹ 27.6	150.84	+0.56	.9963143	44.6	h. m. s. 1 21 43.84	
2	62	342 10 56.7	10 34.4	150.25	0.46	.9964223	45.2	1 17 47.93	
3	63	343 11 1.6	10 39.2	150.16	0.34	.9965316	45.9	1 13 52.02	
4	64	344 11 4.5	10 42.0	150.08	0.21	.9966424	46.5	1 9 56.11	
5	65	345 11 5.2	10 42.6	149.99	+0.08	.9967547	47.1	1 6 0.21	
6	66	346 11 3.9	10 41.2	149.91	-0.05	.9968685	47.7	1 2 4.30	
7	67	347 11 0.7	10 37.9	149.83	0.16	.9969837	48.3	0 58 8.39	
8	68	348 10 55.6	10 32.7	149.75	0.26	.9971003	48.9	0 54 12.48	
9	69	349 10 48.7	10 25.7	149.67	0.33	.9972183	49.5	0 50 16.57	
10	70	350 10 39.9	10 16.8	149.60	0.36	.9973376	50.0	0 46 20.67	
11	71	351 10 29.3	10 6.1	149.52	0.37	.9974582	50.5	0 42 24.76	
12	72	352 10 16.9	9 53.5	149.45	0.35	.9975799	50.9	0 38 28.85	
13	73	353 10 2.8	9 39.3	149.38	0.31	.9977026	51.2	0 34 32.94	
14	74	354 9 47.0	9 23.4	149.31	0.23	.9978259	51.5	0 30 37.03	
15	75	355 9 29.5	9 5.8	149.24	0.14	.9979498	51.7	0 26 41.13	
16	76	356 9 10.4	8 46.6	149.17	-0.01	.9980743	51.9	0 22 45.22	
17	77	357 8 49.5	8 25.6	149.09	+0.13	.9981991	52.0	0 18 49.31	
18	78	358 8 26.8	8 2.8	149.02	0.27	.9983241	52.0	0 14 53.40	
19	79	359 8 2.3	7 38.2	148.94	0.41	.9984490	52.0	0 10 57.49	
20	80	0 7 35.9	7 11.7	148.86	0.55	.9985739	51.9	0 7 1.59	
21	81	1 7 7.7	6 43.4	148.78	0.65	.9986986	51.9	0 2 5.77	
22	82	2 6 37.4	6 13.0	148.70	0.74	.9988230	51.8	23 55 13.86	
23	83	3 6 5.0	5 40.5	148.61	0.81	.9989470	51.6	23 51 17.96	
24	84	4 5 30.5	5 5.9	148.52	0.84	.9990707	51.5	23 47 22.06	
25	85	5 4 53.8	4 29.1	148.43	0.84	.9991940	51.3	23 43 26.15	
26	86	6 4 14.9	3 50.1	148.33	0.82	.9993170	51.2	23 39 30.24	
27	87	7 3 33.8	3 8.9	148.24	0.77	.9994397	51.1	23 35 34.33	
28	88	8 2 50.3	2 25.3	148.14	0.68	.9995623	51.1	23 31 38.42	
29	89	9 2 4.4	1 39.3	148.04	0.57	.9996849	51.1	23 27 42.52	
30	90	10 1 16.1	0 50.9	147.94	0.45	.9998075	51.1	23 23 46.61	
31	91	11 0 25.5	0 0.2	147.84	0.33	.9999302	51.2	23 19 50.70	
32	92	11 59 32.6	59 7.2	147.75	+0.20	0.0000531	51.3	23 15 54.79	

NOTE. — λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							h. m.	m.		d.
1	15 45.6	15 53.0	57 43.7	+2.24	58 11.0	+2.30	6 50.5	2.49	8.7
2	16 0.6	16 8.1	58 38.7	2.31	59 6.3	2.28	7 50.5	2.52	9.7
3	16 15.4	16 22.3	59 33.2	2.19	59 58.7	2.05	8 50.4	2.48	10.7
4	16 28.7	16 34.3	60 22.2	1.84	60 42.8	1.58	9 48.8	2.39	11.7
5	16 39.0	16 42.5	60 59.9	1.26	61 12.9	0.89	10 44.8	2.28	12.7
6	16 44.8	16 45.7	61 21.2	+0.49	61 24.6	+0.07	11 38.6	2.20	13.7
7	16 45.3	16 43.5	61 22.9	-0.34	61 16.3	-0.76	12 31.0	2.17	14.7
8	16 40.3	16 35.9	61 4.8	1.15	60 48.7	1.50	13 23.1	2.17	15.7
9	16 30.5	16 24.2	60 28.8	1.80	60 5.7	2.06	14 15.8	2.22	16.7
10	16 17.1	16 9.6	59 39.5	2.25	59 11.8	2.37	15 9.9	2.29	17.7
11	16 1.7	15 53.7	58 42.9	2.43	58 13.5	2.44	16 5.4	2.34	18.7
12	15 45.8	15 38.0	57 44.2	2.40	57 16.0	2.32	17 1.6	2.35	19.7
13	15 30.5	15 23.6	56 48.8	2.21	56 23.0	2.07	17 57.4	2.30	20.7
14	15 17.1	15 11.1	55 59.1	1.91	55 37.2	1.73	18 51.4	2.20	21.7
15	15 5.8	15 1.0	55 17.5	1.55	55 0.0	1.36	19 42.6	2.07	22.7
16	14 56.9	14 53.3	54 44.8	1.17	54 31.8	0.98	20 30.4	1.92	23.7
17	14 50.4	14 48.1	54 21.1	0.80	54 12.6	0.63	21 15.1	1.80	24.7
18	14 46.3	14 45.1	54 6.2	0.45	54 1.7	0.29	21 57.4	1.72	25.7
19	14 44.4	14 44.2	53 59.1	-0.14	53 58.2	-0.00	22 37.9	1.66	26.7
20	14 44.4	14 45.0	53 59.0	+0.12	54 1.2	+0.24	23 17.5	1.64	27.7
21	14 46.0	14 47.3	54 4.8	0.35	54 9.7	0.46	23 57.2	1.66	28.7
22	14 49.0	14 50.9	54 15.8	0.56	54 23.0	0.65	6		29.7
23	14 53.2	14 55.8	54 31.3	0.74	54 40.7	0.83	0 37.9	1.73	0.9
24	14 58.6	15 1.8	54 51.2	0.92	55 2.9	1.01	1 20.6	1.82	1.9
25	15 5.2	15 9.0	55 15.6	1.11	55 29.4	1.20	2 6.1	1.97	2.9
26	15 13.1	15 17.4	55 44.3	1.29	56 0.3	1.38	2 55.1	2.12	3.9
27	15 22.1	15 27.1	56 17.5	1.48	56 35.7	1.57	3 47.7	2.27	4.9
28	15 32.3	15 37.7	56 55.0	1.65	57 15.4	1.73	4 43.5	2.38	5.9
29	15 43.6	15 49.6	57 36.6	1.80	57 58.5	1.85	5 41.2	2.43	6.9
30	15 55.7	16 1.8	58 20.8	1.87	58 43.3	1.87	6 39.2	2.41	7.9
31	16 7.9	16 13.8	59 5.6	1.83	59 27.2	1.76	7 36.3	2.35	8.9
32	16 19.3	16 24.4	59 47.6	+1.63	60 6.2	+1.46	8 31.1	2.24	9.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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THURSDAY 1.

	h.	m.	s.	s.	°	'	"	"
0	5	12	26.97	2.5097	N.27	6	37.7	0.880
1	5	14	57.67	2.5136	27	7	23.7	0.684
2	5	17	28.60	2.5174	27	7	59.7	0.516
3	5	19	59.77	2.5211	27	8	25.6	0.348
4	5	22	31.13	2.5246	27	8	41.4	0.178
5	5	25	2.71	2.5280	27	8	47.0	0.009
6	5	27	34.49	2.5313	27	8	42.4	0.162
7	5	30	6.47	2.5346	27	8	27.6	0.383
8	5	32	38.64	2.5377	27	8	2.5	0.504
9	5	35	10.99	2.5406	27	7	27.1	0.676
10	5	37	43.51	2.5435	27	6	41.4	0.849
11	5	40	16.20	2.5462	27	5	45.3	1.022
12	5	42	49.06	2.5486	27	4	38.8	1.196
13	5	45	22.07	2.5513	27	3	21.9	1.369
14	5	47	55.22	2.5537	27	1	54.5	1.544
15	5	50	28.51	2.5559	27	0	16.6	1.719
16	5	53	1.93	2.5581	26	58	28.2	1.895
17	5	55	35.47	2.5600	26	56	29.2	2.071
18	5	58	9.12	2.5618	26	54	19.7	2.247
19	6	0	42.88	2.5636	26	51	59.6	2.423
20	6	3	16.75	2.5652	26	49	29.0	2.600
21	6	5	50.71	2.5667	26	46	47.7	2.777
22	6	8	24.75	2.5680	26	43	55.8	2.954
23	6	10	58.87	2.5693	N.26	40	53.3	3.131

SATURDAY 3.

	h.	m.	s.	s.	°	'	"	"
0	7	15	14.99	2.5699	N.24	27	14.1	7.324
1	7	17	48.53	2.5681	24	19	37.0	7.704
2	7	20	21.96	2.5662	24	11	49.6	7.874
3	7	22	55.27	2.5642	24	3	52.0	8.044
4	7	25	28.46	2.5620	23	55	44.3	8.213
5	7	28	1.52	2.5498	23	47	26.5	8.381
6	7	30	34.44	2.5476	23	38	58.6	8.448
7	7	33	7.22	2.5452	23	30	20.7	8.714
8	7	35	39.86	2.5427	23	21	32.9	8.879
9	7	38	12.35	2.5401	23	12	35.2	9.044
10	7	40	44.68	2.5375	23	3	27.6	9.207
11	7	43	16.85	2.5348	22	54	10.3	9.370
12	7	45	48.86	2.5321	22	44	43.2	9.532
13	7	48	20.70	2.5293	22	35	6.5	9.695
14	7	50	52.36	2.5263	22	25	20.1	9.858
15	7	53	23.85	2.5233	22	15	24.2	10.020
16	7	55	55.16	2.5200	22	5	18.9	10.187
17	7	58	26.28	2.5171	21	55	4.2	10.328
18	8	0	57.21	2.5139	21	44	40.1	10.478
19	8	3	27.95	2.5107	21	34	6.8	10.632
20	8	5	58.50	2.5075	21	23	24.4	10.784
21	8	8	28.85	2.5041	21	12	32.8	10.935
22	8	10	58.99	2.5007	21	1	32.2	11.086
23	8	13	28.93	2.4973	N.20	50	22.6	11.234

FRIDAY 2.

	h.	m.	s.	s.	°	'	"	"
0	6	13	33.06	2.5703	N.26	37	40.1	3.209
1	6	16	7.31	2.5713	26	34	16.2	3.487
2	6	18	41.61	2.5721	26	30	41.7	3.665
3	6	21	15.96	2.5728	26	26	56.5	3.843
4	6	23	50.34	2.5734	26	23	0.6	4.021
5	6	26	24.76	2.5738	26	18	54.0	4.198
6	6	28	59.20	2.5741	26	14	36.8	4.376
7	6	31	33.66	2.5744	26	10	8.9	4.554
8	6	34	8.13	2.5746	26	5	30.3	4.732
9	6	36	42.60	2.5744	26	0	41.0	4.910
10	6	39	17.06	2.5743	25	55	41.1	5.087
11	6	41	51.51	2.5740	25	50	30.6	5.264
12	6	44	25.94	2.5736	25	45	9.4	5.441
13	6	47	0.34	2.5731	25	39	37.6	5.618
14	6	49	34.71	2.5725	25	33	55.2	5.795
15	6	52	9.03	2.5717	25	28	2.3	5.971
16	6	54	43.31	2.5709	25	21	58.8	6.147
17	6	57	17.54	2.5699	25	15	44.8	6.323
18	6	59	51.70	2.5688	25	9	20.2	6.497
19	7	2	25.80	2.5676	25	2	45.2	6.671
20	7	4	59.81	2.5662	24	55	59.7	6.845
21	7	7	33.74	2.5647	24	49	3.8	7.018
22	7	10	7.59	2.5632	24	41	57.6	7.191
23	7	12	41.34	2.5616	24	34	41.0	7.363
24	7	15	14.99	2.5599	N.24	27	14.1	7.534

SUNDAY 4.

	h.	m.	s.	s.	°	'	"	"
0	8	15	58.66	2.4987	N.20	39	4.0	11.381
1	8	18	26.18	2.4992	20	27	36.6	11.327
2	8	20	57.49	2.4987	20	16	0.8	11.671
3	8	23	26.59	2.4981	20	4	16.2	11.814
4	8	25	55.47	2.4796	19	52	23.1	11.956
5	8	28	24.13	2.4766	19	40	21.5	12.096
6	8	30	52.57	2.4731	19	28	11.5	12.235
7	8	33	20.79	2.4694	19	15	53.3	12.373
8	8	35	48.78	2.4647	19	3	26.9	12.509
9	8	38	16.55	2.4600	18	50	52.4	12.643
10	8	40	44.09	2.4573	18	38	9.9	12.775
11	8	43	11.41	2.4534	18	25	19.4	12.906
12	8	45	38.50	2.4496	18	12	21.1	13.036
13	8	48	5.36	2.4458	17	59	15.2	13.163
14	8	50	31.99	2.4420	17	46	1.6	13.289
15	8	52	58.39	2.4382	17	32	40.5	13.413
16	8	55	24.57	2.4344	17	19	12.0	13.536
17	8	57	50.51	2.4305	17	5	36.2	13.657
18	9	0	16.22	2.4266	16	51	53.2	13.776
19	9	2	41.70	2.4228	16	38	3.1	13.893
20	9	5	6.96	2.4189	16	24	6.0	14.009
21	9	7	31.98	2.4151	16	10	2.0	14.123
22	9	9	56.77	2.4113	15	55	51.2	14.236
23	9	12	21.34	2.4076	15	41	33.7	14.346
24	9	14	45.68	2.4038	N.15	27	9.7	14.454

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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MONDAY 5.

h.	m.	s.	s.	°	'	"	"
0	9	14	2.4088	N.15	27	9.7	14.454
1	9	17	2.4000		15	12 39.2	14.561
2	9	19	2.3962		14	58 2.4	14.666
3	9	21	2.3926		14	43 19.3	14.769
4	9	24	2.3888		14	28 30.1	14.870
5	9	26	2.3851		14	13 34.9	14.970
6	9	29	2.3814		13	58 33.7	15.067
7	9	31	2.3778		13	43 26.7	15.163
8	9	33	2.3742		13	28 14.1	15.257
9	9	36	2.3706		13	12 55.9	15.349
10	9	38	2.3671		12	57 32.3	15.438
11	9	40	2.3636		12	42 3.3	15.526
12	9	43	2.3601		12	26 29.1	15.612
13	9	45	2.3566		12	10 49.6	15.696
14	9	48	2.3532		11	55 5.6	15.777
15	9	50	2.3499		11	39 16.5	15.857
16	9	52	2.3466		11	23 22.7	15.935
17	9	55	2.3434		11	7 24.3	16.011
18	9	57	2.3402		10	51 21.4	16.084
19	9	59	2.3370		10	35 14.2	16.156
20	10	2	2.3339		10	19 2.7	16.226
21	10	4	2.3308		10	2 47.1	16.294
22	10	6	2.3278		9	46 27.4	16.360
23	10	9	2.3248	N. 9	30	3.8	16.424

WEDNESDAY 7.

h.	m.	s.	s.	°	'	"	"
0	11	6	2.2697	N. 2	25	15.9	17.343
1	11	8	2.2663		2	7 55.1	17.353
2	11	10	2.2670		1	50 33.7	17.360
3	11	13	2.2666		1	33 11.9	17.365
4	11	15	2.2646		1	15 49.9	17.369
5	11	17	2.2636		0	58 27.7	17.370
6	11	20	2.2625		0	41 5.5	17.369
7	11	22	2.2616		0	23 43.4	17.367
8	11	24	2.2607	N. 0	6	21.5	17.362
9	11	26	2.2599	S. 0	11	0.1	17.356
10	11	29	2.2592		0	28 21.2	17.347
11	11	31	2.2586		0	45 41.7	17.336
12	11	33	2.2580		1	3 1.6	17.322
13	11	35	2.2575		1	20 20.6	17.308
14	11	38	2.2571		1	37 38.6	17.291
15	11	40	2.2567		1	54 55.6	17.273
16	11	42	2.2563		2	12 11.3	17.252
17	11	44	2.2561		2	29 25.7	17.228
18	11	47	2.2559		2	46 38.7	17.203
19	11	49	2.2558		3	3 50.1	17.177
20	11	51	2.2557		3	20 59.9	17.147
21	11	53	2.2556		3	38 7.9	17.117
22	11	56	2.2556		3	55 14.0	17.084
23	11	58	2.2551	S. 4	12	18.0	17.050

TUESDAY 6.

h.	m.	s.	s.	°	'	"	"
0	10	11	2.3218	N. 9	13	36.5	16.485
1	10	13	2.3189		8	57 5.6	16.545
2	10	16	2.3161		8	40 31.2	16.602
3	10	18	2.3124		8	23 53.3	16.657
4	10	20	2.3107		8	7 12.0	16.710
5	10	22	2.3080		7	50 27.6	16.762
6	10	25	2.3054		7	33 40.3	16.811
7	10	27	2.3029		7	16 50.2	16.859
8	10	29	2.3004		6	59 57.2	16.904
9	10	32	2.2980		6	43 1.6	16.948
10	10	34	2.2956		6	26 3.6	16.989
11	10	36	2.2933		6	9 3.2	17.029
12	10	39	2.2911		5	52 0.5	17.064
13	10	41	2.2890		5	34 55.6	17.099
14	10	43	2.2869		5	17 48.6	17.131
15	10	45	2.2849		5	0 39.8	17.162
16	10	48	2.2829		4	43 29.2	17.190
17	10	50	2.2810		4	26 17.0	17.217
18	10	52	2.2792		4	9 3.2	17.241
19	10	55	2.2774		3	51 48.1	17.263
20	10	57	2.2757		3	34 31.7	17.283
21	10	59	2.2741		3	17 14.2	17.301
22	11	1	2.2726		2	59 55.6	17.317
23	11	4	2.2711		2	42 36.1	17.331
24	11	6	2.2697	N. 2	25	15.9	17.343

THURSDAY 8.

h.	m.	s.	s.	°	'	"	"
0	12	0	2.2543	S. 4	29	19.0	17.013
1	12	2	2.2566		4	46 19.6	16.978
2	12	5	2.2570		5	3 16.9	16.984
3	12	7	2.2574		5	20 11.7	16.992
4	12	9	2.2579		5	37 4.0	16.947
5	12	11	2.2584		5	53 53.5	16.902
6	12	14	2.2590		6	10 40.2	16.764
7	12	16	2.2597		6	27 24.0	16.704
8	12	18	2.2605		6	44 4.7	16.631
9	12	21	2.2613		7	0 42.2	16.598
10	12	23	2.2622		7	17 16.5	16.543
11	12	25	2.2631		7	33 47.4	16.485
12	12	27	2.2640		7	50 14.8	16.426
13	12	30	2.2651		8	6 38.6	16.366
14	12	32	2.2662		8	22 58.7	16.303
15	12	34	2.2673		8	39 15.0	16.239
16	12	36	2.2685		8	55 27.4	16.172
17	12	39	2.2697		9	11 35.8	16.105
18	12	41	2.2710		9	27 40.0	16.035
19	12	43	2.2724		9	43 40.0	15.964
20	12	45	2.2739		9	59 35.7	15.891
21	12	48	2.2753		10	15 27.0	15.817
22	12	50	2.2768		10	31 13.7	15.740
23	12	52	2.2783		10	46 55.8	15.662
24	12	55	2.2800	S.11	2	33.1	15.581

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 9.					SUNDAY 11.				
0	12 55 3.09	2.9800	S.11 9 33.1	15.481	0	14 46 53.38	2.9887	S.21 30 21.8	10.087
1	12 57 19.87	2.9816	11 18 5.6	15.400	1	14 49 16.47	2.9888	21 40 22.8	9.844
2	12 59 36.81	2.9832	11 33 33.1	15.416	2	14 51 39.66	2.9878	21 50 15.2	9.802
3	13 1 53.86	2.9849	11 48 55.6	15.332	3	14 54 2.98	2.9897	21 59 59.0	9.656
4	13 4 11.02	2.9866	12 4 12.9	15.344	4	14 56 26.49	2.9916	22 9 34.2	9.514
5	13 6 28.28	2.9882	12 19 24.9	15.187	5	14 58 49.97	2.9934	22 19 0.7	9.369
6	13 8 45.66	2.9895	12 34 31.6	15.067	6	15 1 13.63	2.9953	22 28 18.5	9.223
7	13 11 3.14	2.9924	12 49 33.0	14.977	7	15 3 37.40	2.9971	22 37 27.5	9.076
8	13 13 20.74	2.9943	13 4 28.9	14.884	8	15 6 1.98	2.9988	22 46 27.6	8.933
9	13 15 38.46	2.9963	13 19 19.2	14.790	9	15 8 25.26	2.4006	22 55 18.9	8.780
10	13 17 56.30	2.9983	13 34 3.7	14.694	10	15 10 49.34	2.4022	23 4 1.9	8.632
11	13 20 14.26	2.9998	13 48 42.6	14.597	11	15 13 13.52	2.4038	23 12 34.6	8.483
12	13 22 32.34	2.9994	14 3 15.6	14.498	12	15 15 37.79	2.4053	23 20 59.1	8.333
13	13 24 50.55	2.9945	14 17 42.5	14.398	13	15 18 9.15	2.4067	23 29 14.5	8.182
14	13 27 8.88	2.9966	14 32 3.4	14.296	14	15 20 26.60	2.4082	23 37 20.9	8.031
15	13 29 27.34	2.9987	14 46 18.1	14.193	15	15 22 51.14	2.4096	23 45 18.2	7.880
16	13 31 45.93	2.9999	15 0 26.6	14.088	16	15 25 15.75	2.4108	23 53 6.5	7.728
17	13 34 4.65	2.9981	15 14 26.7	13.983	17	15 27 40.44	2.4121	24 0 45.8	7.575
18	13 36 23.50	2.9963	15 28 24.5	13.878	18	15 30 5.20	2.4133	24 8 15.5	7.422
19	13 38 42.49	2.9976	15 42 13.8	13.767	19	15 32 30.03	2.4144	24 15 36.3	7.269
20	13 41 1.61	2.9998	15 55 56.5	13.666	20	15 34 54.93	2.4155	24 22 47.8	7.116
21	13 43 20.87	2.9981	16 9 32.5	13.544	21	15 37 19.89	2.4165	24 29 50.1	6.961
22	13 45 40.26	2.9944	16 23 1.8	13.421	22	15 39 44.91	2.4174	24 36 43.1	6.806
23	13 47 59.80	2.9967	S.16 36 24.3	13.297	23	15 42 9.98	2.4183	S.24 43 26.8	6.650
SATURDAY 10.					MONDAY 12.				
0	13 50 19.47	2.9960	S.16 49 39.9	13.201	0	15 44 35.09	2.4189	S.24 50 1.9	6.495
1	13 52 39.28	2.9913	17 9 48.6	13.083	1	15 47 0.25	2.4197	24 56 26.3	6.340
2	13 54 59.23	2.9877	17 15 50.2	12.967	2	15 49 25.45	2.4203	25 2 42.0	6.184
3	13 57 19.32	2.9890	17 28 44.7	12.848	3	15 51 50.68	2.4208	25 8 48.4	6.028
4	13 59 39.55	2.9893	17 41 32.0	12.737	4	15 54 15.95	2.4213	25 14 45.4	5.873
5	14 1 59.92	2.9907	17 54 12.0	12.606	5	15 56 41.24	2.4217	25 20 33.0	5.715
6	14 4 20.44	2.9921	18 6 44.7	12.492	6	15 59 6.56	2.4220	25 26 11.9	5.558
7	14 6 41.10	2.9934	18 19 9.9	12.368	7	16 1 31.89	2.4223	25 31 40.0	5.401
8	14 9 1.90	2.9947	18 31 27.7	12.252	8	16 3 57.23	2.4225	25 36 59.3	5.244
9	14 11 22.83	2.9961	18 43 37.9	12.107	9	16 6 22.57	2.4224	25 42 9.2	5.085
10	14 13 43.91	2.9935	18 55 40.5	11.979	10	16 8 47.92	2.4224	25 47 9.6	4.929
11	14 16 5.13	2.9948	19 7 35.4	11.831	11	16 11 13.26	2.4223	25 52 0.6	4.771
12	14 18 26.49	2.9972	19 19 22.6	11.721	12	16 13 38.60	2.4223	25 56 42.1	4.614
13	14 20 47.99	2.9966	19 31 1.9	11.580	13	16 16 3.92	2.4219	26 1 14.2	4.456
14	14 23 9.63	2.9918	19 42 33.4	11.448	14	16 18 29.23	2.4216	26 5 36.8	4.299
15	14 25 31.41	2.9941	19 53 57.0	11.326	15	16 20 54.51	2.4211	26 9 50.0	4.141
16	14 27 53.32	2.9963	20 5 12.5	11.182	16	16 23 19.76	2.4206	26 13 53.7	3.984
17	14 30 15.37	2.9966	20 16 20.0	11.047	17	16 25 44.97	2.4200	26 17 47.9	3.826
18	14 32 37.55	2.9708	20 27 19.3	10.921	18	16 28 10.15	2.4193	26 21 32.7	3.669
19	14 34 59.86	2.9720	20 38 10.5	10.784	19	16 30 35.28	2.4188	26 25 8.1	3.511
20	14 37 22.31	2.9732	20 48 53.4	10.646	20	16 33 0.37	2.4176	26 28 34.0	3.354
21	14 39 44.89	2.9773	20 59 28.1	10.508	21	16 35 25.39	2.4166	26 31 50.5	3.196
22	14 42 7.59	2.9794	21 9 54.4	10.368	22	16 37 50.36	2.4161	26 34 57.5	3.038
23	14 44 30.42	2.9816	21 20 12.3	10.228	23	16 40 15.26	2.4144	26 37 55.1	2.880
24	14 46 53.38	2.9837	S.21 30 21.8	10.087	24	16 42 40.09	2.4132	S.26 40 43.3	2.723

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
TUESDAY 13.					THURSDAY 15.				
0	16 42 40.09	2.4133	S. 26 40 43.3	2.736	0	18 35 26.16	2.2657	S. 25 59 3.1	4.234
1	16 45 4.84	2.4118	26 43 23.1	2.569	1	18 37 43.54	2.2580	25 54 45.8	4.243
2	16 47 29.51	2.4104	26 45 51.6	2.413	2	18 39 58.62	2.2494	25 50 20.9	4.478
3	16 49 54.09	2.4089	26 48 11.7	2.257	3	18 42 13.44	2.2448	25 45 48.4	4.604
4	16 52 18.58	2.4073	26 50 22.5	2.102	4	18 44 27.95	2.2394	25 41 8.4	4.738
5	16 54 42.97	2.4056	26 52 23.9	1.946	5	18 46 42.17	2.2345	25 36 20.9	4.853
6	16 57 7.26	2.4038	26 54 15.9	1.791	6	18 48 56.09	2.2295	25 31 26.1	4.975
7	16 59 31.43	2.4020	26 55 58.7	1.636	7	18 51 9.72	2.2246	25 26 24.0	5.097
8	17 1 55.49	2.4000	26 57 32.2	1.482	8	18 53 23.05	2.2198	25 21 14.6	5.217
9	17 4 19.43	2.3980	26 58 56.4	1.327	9	18 55 36.08	2.2146	25 15 58.0	5.337
10	17 6 43.25	2.3959	27 0 11.4	1.174	10	18 57 48.81	2.2095	25 10 34.1	5.456
11	17 9 6.94	2.3937	27 1 17.2	1.020	11	19 0 1.23	2.2045	25 5 3.1	5.575
12	17 11 30.49	2.3915	27 2 13.7	0.867	12	19 2 13.35	2.1994	24 59 25.0	5.692
13	17 13 53.90	2.3890	27 3 1.1	0.714	13	19 4 25.16	2.1943	24 53 40.0	5.808
14	17 16 17.16	2.3864	27 3 39.4	0.562	14	19 6 36.67	2.1892	24 47 48.0	5.923
15	17 18 40.27	2.3839	27 4 8.6	0.410	15	19 8 47.87	2.1840	24 41 49.1	6.038
16	17 21 3.23	2.3813	27 4 28.8	0.260	16	19 10 58.76	2.1789	24 35 43.4	6.150
17	17 23 26.02	2.3788	27 4 39.9	0.109	17	19 13 9.34	2.1738	24 29 31.0	6.263
18	17 25 48.65	2.3767	27 4 41.9	0.041	18	19 15 10.61	2.1686	24 23 11.8	6.374
19	17 28 11.11	2.3746	27 4 35.0	0.180	19	19 17 29.57	2.1634	24 16 46.0	6.485
20	17 30 33.39	2.3698	27 4 19.1	0.326	20	19 19 39.22	2.1583	24 10 13.5	6.596
21	17 32 55.49	2.3669	27 3 54.3	0.467	21	19 21 48.56	2.1532	24 3 34.5	6.704
22	17 35 17.41	2.3637	27 3 30.7	0.634	22	19 23 57.58	2.1477	23 56 49.0	6.811
23	17 37 39.13	2.3604	S. 27 2 36.2	0.781	23	19 26 6.29	2.1426	S. 23 49 57.1	6.918
WEDNESDAY 14.					FRIDAY 16.				
0	17 40 0.66	2.3573	S. 27 1 47.0	0.927	0	19 28 14.68	2.1373	S. 23 42 58.6	7.024
1	17 42 21.99	2.3538	27 0 47.0	1.073	1	19 30 22.76	2.1321	23 35 54.2	7.129
2	17 44 43.12	2.3504	26 59 38.2	1.218	2	19 32 30.53	2.1269	23 28 43.3	7.234
3	17 47 4.04	2.3469	26 58 20.7	1.363	3	19 34 37.99	2.1216	23 21 26.2	7.337
4	17 49 24.75	2.3433	26 56 54.6	1.506	4	19 36 45.13	2.1164	23 14 2.9	7.439
5	17 51 45.24	2.3396	26 55 19.9	1.650	5	19 38 51.96	2.1113	23 6 33.5	7.540
6	17 54 5.50	2.3359	26 53 36.6	1.792	6	19 40 58.48	2.1060	22 58 58.1	7.640
7	17 56 25.54	2.3321	26 51 44.7	1.935	7	19 43 4.69	2.1006	22 51 16.7	7.740
8	17 58 45.35	2.3283	26 49 44.4	2.075	8	19 45 10.58	2.0952	22 43 29.3	7.839
9	18 1 4.93	2.3245	26 47 35.6	2.216	9	19 47 16.16	2.0898	22 35 36.1	7.938
10	18 3 24.27	2.3208	26 45 18.5	2.356	10	19 49 21.42	2.0844	22 27 37.0	8.032
11	18 5 43.37	2.3168	26 42 53.0	2.495	11	19 51 26.39	2.0792	22 19 32.2	8.127
12	18 8 2.92	2.3129	26 40 19.1	2.633	12	19 53 31.05	2.0741	22 11 21.7	8.221
13	18 10 20.83	2.3090	26 37 37.0	2.770	13	19 55 35.40	2.0690	22 3 5.6	8.315
14	18 12 39.18	2.3049	26 34 46.7	2.906	14	19 57 39.44	2.0640	21 54 43.9	8.408
15	18 14 57.28	2.3006	26 31 48.3	3.042	15	19 59 43.17	2.0597	21 46 16.6	8.500
16	18 17 15.12	2.2961	26 28 41.7	3.177	16	20 1 46.60	2.0547	21 37 43.9	8.591
17	18 19 32.70	2.2916	26 25 27.1	3.311	17	20 3 49.73	2.0496	21 29 5.8	8.680
18	18 21 50.01	2.2869	26 22 4.4	3.444	18	20 5 52.55	2.0446	21 20 22.3	8.769
19	18 24 7.06	2.2818	26 18 33.8	3.576	19	20 7 55.07	2.0395	21 11 33.5	8.857
20	18 26 23.83	2.2773	26 14 55.3	3.707	20	20 9 57.29	2.0345	21 2 39.4	8.944
21	18 28 40.33	2.2727	26 11 8.9	3.838	21	20 11 59.21	2.0295	20 53 40.2	9.030
22	18 30 56.55	2.2680	26 7 14.7	3.967	22	20 14 0.84	2.0247	20 44 35.8	9.116
23	18 33 12.49	2.2634	26 3 12.8	4.097	23	20 16 2.17	2.0198	20 35 26.3	9.200
24	18 35 28.16	2.2587	S. 25 59 3.1	4.224	24	20 18 3.21	2.0148	S. 20 26 11.8	9.284

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 17.					MONDAY 19.				
0	h. m. s.	s.	° ' "	"	0	h. m. s.	s.	° ' "	"
0	20 18 3.21	2.0148	S. 20 26 11.8	9.284	0	21 49 51.75	1.8292	S. 11 41 3.1	12.270
1	20 20 3.95	2.0100	20 16 52.3	9.306	1	21 51 41.36	1.8255	11 28 45.1	12.322
2	20 22 4.41	2.0052	20 7 27.9	9.447	2	21 53 30.80	1.8229	11 16 24.5	12.363
3	20 24 4.58	2.0004	19 57 58.7	9.529	3	21 55 20.09	1.8203	11 4 1.5	12.404
4	20 26 4.46	1.9956	19 48 24.6	9.608	4	21 57 9.23	1.8178	10 51 36.0	12.444
5	20 28 4.06	1.9909	19 38 45.8	9.687	5	21 58 58.22	1.8153	10 39 8.1	12.481
6	20 30 3.37	1.9862	19 29 2.2	9.765	6	22 0 47.06	1.8129	10 26 37.9	12.522
7	20 32 2.40	1.9816	19 19 14.0	9.842	7	22 2 35.76	1.8106	10 14 5.4	12.561
8	20 34 1.16	1.9770	19 9 21.2	9.918	8	22 4 24.33	1.8083	10 1 30.6	12.598
9	20 35 59.64	1.9724	18 59 23.8	9.993	9	22 6 12.76	1.8061	9 48 53.6	12.635
10	20 37 57.84	1.9678	18 49 22.0	10.067	10	22 8 1.05	1.8039	9 36 14.4	12.671
11	20 39 55.77	1.9632	18 39 15.7	10.141	11	22 9 49.22	1.8018	9 23 33.1	12.706
12	20 41 53.43	1.9587	18 29 5.1	10.214	12	22 11 37.27	1.7998	9 10 49.7	12.740
13	20 43 50.82	1.9543	18 18 50.1	10.286	13	22 13 25.19	1.7977	8 58 4.3	12.774
14	20 45 47.95	1.9499	18 8 30.8	10.357	14	22 15 13.00	1.7956	8 45 16.8	12.807
15	20 47 44.81	1.9456	17 58 7.3	10.427	15	22 17 0.09	1.7935	8 32 27.4	12.839
16	20 49 41.42	1.9413	17 47 39.6	10.496	16	22 18 48.27	1.7922	8 19 36.1	12.870
17	20 51 37.77	1.9370	17 37 7.8	10.565	17	22 20 35.75	1.7904	8 6 43.0	12.901
18	20 53 33.86	1.9327	17 26 31.8	10.632	18	22 22 23.12	1.7887	7 53 48.0	12.931
19	20 55 29.70	1.9283	17 15 51.8	10.700	19	22 24 10.39	1.7870	7 40 51.2	12.961
20	20 57 25.29	1.9244	17 5 7.8	10.765	20	22 25 57.57	1.7855	7 27 52.7	12.989
21	20 59 20.63	1.9202	16 54 19.9	10.830	21	22 27 44.65	1.7839	7 14 52.5	13.017
22	21 1 15.72	1.9162	16 43 28.2	10.894	22	22 29 31.64	1.7825	7 1 50.7	13.044
23	21 3-10.57	1.9122	S. 16 32 32.6	10.958	23	22 31 18.55	1.7811	S. 6 48 47.3	13.070
SUNDAY 18.					TUESDAY 20.				
0	21 5 5.19	1.9083	S. 16 21 33.2	11.020	0	22 33 5.37	1.7797	S. 6 35 42.3	13.095
1	21 6 59.57	1.9043	16 10 30.2	11.082	1	22 34 52.12	1.7783	6 22 35.8	13.120
2	21 8 53.71	1.9003	15 59 23.4	11.143	2	22 36 38.79	1.7773	6 9 27.9	13.144
3	21 10 47.63	1.8967	15 48 13.0	11.203	3	22 38 25.39	1.7761	5 56 18.5	13.167
4	21 12 41.31	1.8929	15 36 59.1	11.262	4	22 40 11.92	1.7750	5 43 7.8	13.190
5	21 14 34.77	1.8891	15 25 41.6	11.320	5	22 41 58.39	1.7740	5 29 55.7	13.212
6	21 16 28.00	1.8854	15 14 20.7	11.377	6	22 43 44.80	1.7730	5 16 42.4	13.233
7	21 18 21.02	1.8818	15 2 56.3	11.435	7	22 45 31.15	1.7721	5 3 27.8	13.254
8	21 20 13.82	1.8782	14 51 28.5	11.491	8	22 47 17.45	1.7712	4 50 11.9	13.274
9	21 22 6.41	1.8747	14 39 57.4	11.546	9	22 49 3.70	1.7704	4 36 54.9	13.293
10	21 23 58.78	1.8712	14 28 23.0	11.600	10	22 50 49.90	1.7697	4 23 36.7	13.311
11	21 25 50.95	1.8678	14 16 45.3	11.654	11	22 52 36.06	1.7690	4 10 17.5	13.328
12	21 27 42.92	1.8644	14 5 4.5	11.708	12	22 54 22.18	1.7684	3 56 57.3	13.346
13	21 29 34.68	1.8611	13 53 20.5	11.763	13	22 56 8.27	1.7679	3 43 36.1	13.361
14	21 31 26.25	1.8578	13 41 33.5	11.809	14	22 57 54.32	1.7673	3 30 14.0	13.376
15	21 33 17.62	1.8546	13 29 43.4	11.860	15	22 59 40.35	1.7669	3 16 51.0	13.391
16	21 35 8.81	1.8516	13 17 50.3	11.908	16	23 1 26.35	1.7665	3 3 27.1	13.405
17	21 36 59.80	1.8484	13 5 54.2	11.958	17	23 3 12.33	1.7662	2 50 2.4	13.418
18	21 38 50.61	1.8454	12 53 55.3	12.008	18	23 4 58.30	1.7660	2 36 36.9	13.430
19	21 40 41.23	1.8423	12 41 53.5	12.053	19	23 6 44.26	1.7658	2 23 10.7	13.443
20	21 42 31.68	1.8392	12 29 48.9	12.100	20	23 8 30.20	1.7657	2 9 43.9	13.453
21	21 44 21.95	1.8364	12 17 41.5	12.146	21	23 10 16.14	1.7656	1 56 16.4	13.463
22	21 46 12.05	1.8336	12 5 31.4	12.191	22	23 12 2.07	1.7656	1 42 48.3	13.473
23	21 48 1.98	1.8309	11 53 18.6	12.236	23	23 13 48.01	1.7657	1 29 19.6	13.482
24	21 49 51.75	1.8282	S. 11 41 3.1	12.279	24	23 15 33.96	1.7658	S. 1 15 50.4	13.490

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 21.					FRIDAY 23.				
0	23 15 33.96	1.7658	S. 1 15 50.4	13.480	0	0 41 38.56	1.8444	N. 9 26 18.7	12.989
1	23 17 19.91	1.7660	1 2 20.8	13.482	1	0 43 29.32	1.8476	9 39 15.4	12.928
2	23 19 5.88	1.7663	0 48 50.7	13.504	2	0 45 20.26	1.8507	9 52 10.1	12.895
3	23 20 51.87	1.7666	0 35 20.3	13.509	3	0 47 11.40	1.8539	10 5 2.9	12.882
4	23 22 37.87	1.7670	0 21 49.6	13.514	4	0 49 2.73	1.8572	10 17 53.6	12.828
5	23 24 23.90	1.7674	S. 0 8 18.6	13.518	5	0 50 54.26	1.8606	10 30 42.3	12.794
6	23 26 9.96	1.7679	N. 0 5 12.6	13.521	6	0 52 46.01	1.8640	10 43 28.9	12.756
7	23 27 56.05	1.7684	0 18 44.0	13.524	7	0 54 37.95	1.8675	10 56 13.3	12.723
8	23 29 42.17	1.7690	0 32 15.5	13.526	8	0 56 30.11	1.8711	11 8 55.5	12.684
9	23 31 28.33	1.7697	0 45 47.1	13.527	9	0 58 22.48	1.8748	11 21 35.4	12.645
10	23 33 14.54	1.7704	0 59 18.8	13.527	10	1 0 15.08	1.8783	11 34 12.9	12.605
11	23 35 0.79	1.7712	1 12 50.5	13.527	11	1 2 7.89	1.8820	11 46 48.0	12.565
12	23 36 47.09	1.7721	1 26 22.1	13.526	12	1 4 0.92	1.8857	11 59 20.7	12.523
13	23 38 33.45	1.7730	1 39 53.7	13.525	13	1 5 54.18	1.8896	12 11 50.8	12.481
14	23 40 19.88	1.7740	1 53 25.1	13.523	14	1 7 47.67	1.8935	12 24 18.4	12.438
15	23 42 6.33	1.7751	2 6 56.4	13.520	15	1 9 41.40	1.8974	12 36 43.4	12.394
16	23 43 52.87	1.7762	2 20 27.5	13.516	16	1 11 35.37	1.9014	12 49 5.7	12.348
17	23 45 39.47	1.7774	2 33 58.3	13.511	17	1 13 29.57	1.9055	13 1 25.2	12.302
18	23 47 26.16	1.7786	2 47 28.8	13.506	18	1 15 24.02	1.9096	13 13 41.9	12.255
19	23 49 12.91	1.7799	3 0 50.0	13.499	19	1 17 18.72	1.9137	13 25 55.8	12.207
20	23 50 59.75	1.7813	3 14 28.7	13.491	20	1 19 13.67	1.9179	13 38 6.7	12.156
21	23 52 46.67	1.7828	3 27 58.0	13.483	21	1 21 8.87	1.9222	13 50 14.7	12.109
22	23 54 33.68	1.7843	3 41 26.7	13.474	22	1 23 4.33	1.9265	14 2 19.7	12.067
23	23 56 20.78	1.7859	N. 3 54 54.9	13.465	23	1 25 0.05	1.9308	N.14 14 21.6	12.026
THURSDAY 22.					SATURDAY 24.				
0	23 58 7.97	1.7876	N. 4 8 23.5	13.454	0	1 26 56.03	1.9352	N.14 26 20.4	11.982
1	23 59 55.26	1.7891	4 21 49.4	13.443	1	1 28 52.28	1.9397	14 38 15.9	11.936
2	0 1 49.65	1.7908	4 35 15.7	13.431	2	1 30 48.79	1.9442	14 50 8.2	11.888
3	0 3 30.15	1.7926	4 48 41.2	13.419	3	1 32 45.58	1.9488	15 1 57.1	11.837
4	0 5 17.75	1.7944	5 2 6.0	13.406	4	1 34 42.65	1.9534	15 13 42.6	11.780
5	0 7 5.47	1.7963	5 15 29.9	13.391	5	1 36 39.99	1.9581	15 25 24.7	11.723
6	0 8 53.31	1.7983	5 28 52.9	13.376	6	1 38 37.62	1.9628	15 37 3.2	11.663
7	0 10 41.27	1.8003	5 42 15.0	13.360	7	1 40 35.53	1.9675	15 48 38.2	11.592
8	0 12 29.35	1.8024	5 55 36.1	13.343	8	1 42 33.72	1.9722	16 0 9.5	11.490
9	0 14 17.56	1.8046	6 8 56.1	13.325	9	1 44 32.20	1.9772	16 11 37.1	11.426
10	0 16 5.90	1.8068	6 22 15.1	13.306	10	1 46 30.98	1.9822	16 23 0.9	11.366
11	0 17 54.38	1.8091	6 35 32.9	13.287	11	1 48 30.06	1.9871	16 34 20.9	11.302
12	0 19 42.99	1.8114	6 48 49.6	13.267	12	1 50 29.43	1.9921	16 45 37.1	11.236
13	0 21 31.75	1.8138	7 2 5.0	13.246	13	1 52 29.10	1.9971	16 56 49.3	11.169
14	0 23 20.65	1.8162	7 15 19.1	13.224	14	1 54 29.08	2.0022	17 7 57.4	11.101
15	0 25 9.70	1.8187	7 28 31.9	13.202	15	1 56 29.36	2.0072	17 19 1.5	11.033
16	0 26 58.92	1.8214	7 41 43.3	13.178	16	1 58 29.95	2.0124	17 30 1.4	10.963
17	0 28 48.29	1.8241	7 54 53.3	13.154	17	2 0 30.85	2.0176	17 40 57.1	10.893
18	0 30 37.81	1.8268	8 8 1.8	13.128	18	2 2 32.07	2.0229	17 51 48.6	10.821
19	0 32 27.50	1.8296	8 21 8.7	13.102	19	2 4 33.60	2.0281	18 2 35.7	10.748
20	0 34 17.38	1.8324	8 34 14.1	13.075	20	2 6 35.45	2.0334	18 13 18.4	10.674
21	0 36 7.39	1.8353	8 47 17.8	13.048	21	2 8 37.61	2.0388	18 23 56.6	10.599
22	0 37 57.60	1.8383	9 0 19.9	13.019	22	2 10 40.10	2.0443	18 34 30.3	10.523
23	0 39 47.99	1.8413	9 13 20.2	12.990	23	2 12 42.91	2.0498	18 44 59.4	10.446
24	0 41 38.56	1.8444	N. 9 26 18.7	12.959	24	2 14 46.05	2.0557	N.18 55 23.8	10.367

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 25.					TUESDAY 27.				
0	2 14 46.05	2.0661	N.18 55 23.8	10.267	0	3 59 59.06	2.2378	N.25 20 59.8	5.261
1	2 16 49.52	2.0666	19 5 43.4	10.268	1	4 2 18.87	2.2377	25 26 11.3	5.197
2	2 18 53.31	2.0680	19 15 58.3	10.268	2	4 4 38.99	2.2379	25 31 14.9	4.992
3	2 20 57.44	2.0716	19 26 8.3	10.196	3	4 6 59.42	2.2420	25 36 10.4	4.837
4	2 23 1.90	2.0771	19 36 13.4	10.043	4	4 9 20.15	2.2461	25 40 57.8	4.721
5	2 25 6.69	2.0827	19 46 13.4	9.909	5	4 11 41.19	2.2521	25 45 36.9	4.583
6	2 27 11.82	2.0888	19 56 8.4	9.874	6	4 14 2.52	2.2580	25 50 7.8	4.444
7	2 29 17.30	2.0940	20 5 58.2	9.787	7	4 16 24.15	2.2622	25 54 30.3	4.304
8	2 31 23.10	2.0996	20 15 42.8	9.699	8	4 18 46.07	2.2677	25 58 44.3	4.163
9	2 33 29.25	2.1058	20 25 22.1	9.610	9	4 21 8.27	2.2734	26 2 49.9	4.022
10	2 35 35.74	2.1110	20 34 56.0	9.520	10	4 23 30.76	2.2772	26 6 46.9	3.879
11	2 37 42.57	2.1167	20 44 24.5	9.429	11	4 25 53.53	2.2818	26 10 35.4	3.726
12	2 39 49.75	2.1226	20 53 47.6	9.337	12	4 28 16.57	2.2864	26 14 15.2	3.581
13	2 41 57.27	2.1288	21 3 5.1	9.244	13	4 30 39.88	2.2908	26 17 46.3	3.446
14	2 44 5.14	2.1341	21 12 16.9	9.160	14	4 33 3.46	2.2952	26 21 8.7	3.299
15	2 46 13.36	2.1399	21 21 23.1	9.085	15	4 35 27.30	2.2996	26 24 22.3	3.122
16	2 48 21.93	2.1467	21 30 23.5	8.998	16	4 37 51.40	2.3037	26 27 27.0	2.994
17	2 50 30.84	2.1516	21 39 18.1	8.900	17	4 40 15.75	2.3079	26 30 22.8	2.836
18	2 52 40.10	2.1578	21 48 6.7	8.761	18	4 42 40.34	2.3120	26 33 9.7	2.706
19	2 54 49.72	2.1631	21 56 49.4	8.661	19	4 45 5.18	2.3160	26 35 47.6	2.546
20	2 56 59.68	2.1689	22 5 26.0	8.560	20	4 47 30.26	2.3198	26 38 16.4	2.404
21	2 59 9.99	2.1747	22 13 56.5	8.457	21	4 49 55.57	2.3236	26 40 36.1	2.282
22	3 1 20.65	2.1806	22 22 20.9	8.353	22	4 52 21.10	2.3273	26 42 46.7	2.099
23	3 3 31.60	2.1865	N.22 30 39.0	8.249	23	4 54 46.85	2.3310	N.26 44 48.1	1.946
MONDAY 26.					WEDNESDAY 28.				
0	3 5 43.03	2.1924	N.22 38 50.8	8.143	0	4 57 12.82	2.3346	N.26 46 40.2	1.782
1	3 7 54.75	2.1992	22 46 56.2	8.026	1	4 59 39.00	2.3381	26 48 23.1	1.637
2	3 10 6.81	2.2040	22 54 55.2	7.927	2	5 2 5.38	2.3414	26 49 56.7	1.481
3	3 12 19.23	2.2099	23 2 47.6	7.818	3	5 4 31.97	2.3447	26 51 20.9	1.324
4	3 14 31.99	2.2158	23 10 33.4	7.707	4	5 6 58.75	2.3480	26 52 35.6	1.167
5	3 16 45.10	2.2215	23 18 12.6	7.596	5	5 9 25.71	2.3509	26 53 40.9	1.010
6	3 18 58.56	2.2278	23 25 45.0	7.483	6	5 11 52.86	2.3538	26 54 36.8	0.862
7	3 21 12.37	2.2330	23 33 10.6	7.369	7	5 14 20.18	2.3568	26 55 23.2	0.694
8	3 23 26.53	2.2386	23 40 29.3	7.264	8	5 16 47.68	2.3597	26 56 0.1	0.526
9	3 25 41.03	2.2446	23 47 41.1	7.158	9	5 19 15.34	2.3624	26 56 27.4	0.376
10	3 27 55.88	2.2508	23 54 45.9	7.023	10	5 21 43.16	2.3650	26 56 45.2	0.216
11	3 30 11.07	2.2560	24 1 43.6	6.902	11	5 24 11.12	2.3678	26 56 53.3	0.066
12	3 32 26.60	2.2617	24 8 34.2	6.782	12	5 26 39.23	2.3697	26 56 51.7	0.106
13	3 34 42.48	2.2674	24 15 17.5	6.662	13	5 29 7.48	2.3719	26 56 40.5	0.268
14	3 36 58.69	2.2731	24 21 53.6	6.540	14	5 31 35.86	2.3741	26 50 19.5	0.430
15	3 39 15.24	2.2787	24 28 22.4	6.417	15	5 34 4.37	2.3761	26 55 48.8	0.288
16	3 41 32.13	2.2843	24 34 43.7	6.298	16	5 36 33.00	2.3780	26 55 8.4	0.726
17	3 43 49.35	2.2898	24 40 57.5	6.167	17	5 39 1.74	2.3799	26 54 18.1	0.980
18	3 46 6.90	2.2953	24 47 3.8	6.041	18	5 41 30.59	2.3816	26 53 18.0	1.084
19	3 48 24.79	2.3008	24 53 2.5	5.914	19	5 43 59.53	2.3832	26 52 8.1	1.246
20	3 50 43.00	2.3062	24 58 53.5	5.786	20	5 46 28.57	2.3847	26 50 48.3	1.412
21	3 53 1.53	2.3116	25 4 36.8	5.657	21	5 48 57.69	2.3861	26 49 18.6	1.577
22	3 55 20.39	2.3170	25 10 12.3	5.526	22	5 51 26.90	2.3874	26 47 39.1	1.743
23	3 57 39.57	2.3222	25 15 39.9	5.394	23	5 53 56.18	2.3896	26 45 49.7	1.907
24	3 59 59.06	2.3275	N.25 20 59.6	5.261	24	5 56 25.53	2.3917	N.26 43 50.4	2.073

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
THURSDAY 29.					SATURDAY 31.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	5 56 25.53	2.4987	N.26 43 50.4	2.072	0	7 55 15.63	2.4387	N.21 56 51.4	8.717
1	5 58 54.94	2.4986	26 41 41.1	2.237	1	7 57 41.31	2.4367	21 47 4.0	9.860
2	6 1 24.40	2.4915	26 39 21.9	2.402	2	8 0 6.82	2.4387	21 37 8.0	10.008
3	6 3 53.91	2.4922	26 36 52.8	2.567	3	8 2 32.15	2.4307	21 27 3.5	10.145
4	6 6 23.47	2.4929	26 34 13.8	2.732	4	8 4 57.30	2.4177	21 16 50.6	10.286
5	6 8 53.06	2.4984	26 31 24.8	2.896	5	8 7 22.27	2.4146	21 6 29.2	10.425
6	6 11 22.68	2.4988	26 28 26.0	3.064	6	8 9 47.04	2.4115	20 55 59.5	10.563
7	6 13 52.32	2.4941	26 25 17.2	3.230	7	8 12 11.63	2.4084	20 45 21.5	10.700
8	6 16 21.97	2.4943	26 21 58.6	3.395	8	8 14 36.03	2.4052	20 34 35.3	10.837
9	6 18 51.63	2.4944	26 18 30.0	3.561	9	8 17 0.23	2.4020	20 23 41.0	10.973
10	6 21 21.30	2.4944	26 14 51.5	3.726	10	8 19 24.25	2.3989	20 12 36.5	11.108
11	6 23 50.96	2.4943	26 11 3.0	3.892	11	8 21 48.08	2.3956	20 1 28.0	11.241
12	6 26 20.62	2.4941	26 7 4.6	4.057	12	8 24 11.71	2.3923	19 50 9.7	11.373
13	6 28 50.26	2.4938	26 2 56.2	4.222	13	8 26 35.14	2.3890	19 38 43.4	11.503
14	6 31 19.88	2.4934	25 58 38.0	4.387	14	8 28 58.38	2.3856	19 27 9.3	11.632
15	6 33 49.47	2.4929	25 54 9.8	4.552	15	8 31 21.43	2.3823	19 15 27.6	11.760
16	6 36 19.02	2.4923	25 49 31.7	4.717	16	8 33 44.28	2.3788	19 3 36.2	11.887
17	6 38 48.53	2.4915	25 44 43.8	4.881	17	8 36 6.93	2.3760	18 51 41.2	12.013
18	6 41 18.00	2.4906	25 39 46.0	5.045	18	8 38 29.39	2.3727	18 39 36.7	12.138
19	6 43 47.41	2.4897	25 34 38.4	5.208	19	8 40 51.65	2.3694	18 27 24.8	12.261
20	6 46 16.77	2.4888	25 29 21.0	5.371	20	8 43 13.72	2.3661	18 15 5.5	12.383
21	6 48 46.07	2.4877	25 23 53.8	5.534	21	8 45 35.59	2.3626	18 2 39.0	12.503
22	6 51 15.30	2.4865	25 18 16.8	5.697	22	8 47 57.26	2.3595	17 50 5.3	12.622
23	6 53 44.46	2.4852	N.25 12 30.1	5.860	23	8 50 18.73	2.3562	N.17 37 24.5	12.740
FRIDAY 30.					SUNDAY, APRIL 1.				
0	6 56 13.53	2.4838	N.25 6 33.7	6.021	0	8 52 40.01	2.3528	N.17 24 36.7	12.857
1	6 58 42.52	2.4834	25 0 27.6	6.183					
2	7 1 11.42	2.4829	24 54 11.8	6.344					
3	7 3 40.22	2.4792	24 47 46.4	6.504					
4	7 6 8.93	2.4775	24 41 11.4	6.664					
5	7 8 37.53	2.4758	24 34 26.8	6.823					
6	7 11 6.03	2.4739	24 27 32.6	7.082					
7	7 13 34.41	2.4720	24 20 28.9	7.141					
8	7 16 2.67	2.4700	24 13 15.7	7.298					
9	7 18 30.81	2.4680	24 5 53.1	7.455					
10	7 20 58.83	2.4659	23 58 21.1	7.611					
11	7 23 26.71	2.4636	23 50 39.7	7.767					
12	7 25 54.46	2.4613	23 42 49.0	7.922					
13	7 28 22.07	2.4589	23 34 49.1	8.076					
14	7 30 49.53	2.4565	23 26 39.9	8.229					
15	7 33 16.85	2.4541	23 18 21.5	8.382					
16	7 35 44.02	2.4516	23 9 54.0	8.534					
17	7 38 11.04	2.4490	23 1 17.4	8.685					
18	7 40 37.90	2.4464	22 52 31.8	8.835					
19	7 43 4.60	2.4437	22 43 37.2	8.985					
20	7 45 31.14	2.4410	22 34 33.6	9.133					
21	7 47 57.51	2.4382	22 25 21.2	9.280					
22	7 50 23.72	2.4354	22 16 0.0	9.427					
23	7 52 49.75	2.4325	22 6 30.0	9.573					
24	7 55 15.62	2.4296	N.21 56 51.4	9.717					

PHASES OF THE MOON.

- Full Moon, . . . Day. h. m. 7 0 44.2
- ◐ Last Quarter, . . . 13 21 8.7
- New Moon, . . . 22 1 55.5
- ◑ First Quarter, . . . 29 18 52.8

- ☾ Perigee, Day. h. 6 16.1
- ☽ Apogee, 19 13.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dif.	III ^h .			P. L. of Dif.	VI ^h .			P. L. of Dif.	IX ^h .			P. L. of Dif.
			°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	
1	SUN	W.	98	12	40	2861	99	45	49	2842	101	19	23	2823	102	53	21	2806
	Venus	W.	61	58	23	2848	63	29	40	2829	65	1	32	2809	66	33	30	2800
	α Arietis	W.	43	43	53	2651	45	23	56	2631	47	4	26	2519	48	45	22	2484
	Jupiter	E.	26	10	45	2522	24	30	3	2607	22	48	59	2492	21	7	34	2477
	Saturn	E.	61	46	22	2500	60	5	9	2484	58	23	33	2467	56	41	33	2450
	Regulus	E.	68	30	37	2623	66	49	56	2506	65	8	51	2489	63	27	22	2471
2	SUN	W.	110	49	19	2710	112	25	47	2690	114	2	40	2672	115	39	58	2654
	Venus	W.	74	20	27	2790	75	55	8	2771	77	30	14	2750	79	5	47	2732
	α Arietis	W.	57	16	40	2399	59	0	16	2381	60	44	18	2363	62	28	46	2345
	Aldebaran	W.	26	37	15	2721	28	13	27	2607	29	50	51	2618	31	29	21	2574
	Saturn	E.	48	5	27	2363	46	20	59	2346	44	36	6	2328	42	50	48	2311
	Regulus	E.	54	53	42	2383	53	9	43	2368	51	25	18	2348	49	40	28	2331
3	SUN	W.	123	52	43	2562	125	32	30	2545	127	12	41	2527	128	53	16	2511
	Venus	W.	87	9	56	2636	88	48	2	2618	90	26	33	2599	92	5	29	2582
	α Arietis	W.	71	17	40	2256	73	4	44	2239	74	52	14	2222	76	40	9	2206
	Aldebaran	W.	39	55	26	2403	41	38	57	2375	43	23	8	2349	45	7	56	2334
	Saturn	E.	33	58	11	2230	32	10	28	2215	30	22	23	2200	28	33	56	2186
	Regulus	E.	40	50	2	2246	39	2	43	2229	37	14	59	2214	35	26	52	2198
4	Venus	W.	100	26	0	2500	102	7	13	2485	103	48	47	2471	105	30	41	2458
	α Arietis	W.	85	45	36	2131	87	35	48	2116	89	26	22	2103	91	17	17	2080
	Aldebaran	W.	54	0	27	2218	55	48	28	2190	57	36	57	2182	59	25	51	2166
	Jupiter	W.	16	17	2	2135	18	7	8	2116	19	57	42	2100	21	48	41	2085
	Spica	E.	80	23	11	2120	78	32	43	2107	76	41	55	2094	74	50	47	2081
	5	Aldebaran	W.	68	36	5	2098	70	27	8	2087	72	18	27	2077	74	10	2	2066
Jupiter		W.	31	9	0	2023	33	1	58	2014	34	55	11	2005	36	48	38	1996
Pollux		W.	26	3	4	2099	27	54	4	2081	29	45	33	2065	31	37	26	2051
Spica		E.	65	30	31	2027	63	37	39	2018	61	44	33	2010	59	51	14	2008
Antares		E.	111	18	43	2020	109	25	40	2011	107	32	23	2008	105	38	53	1996
6		Aldebaran	W.	83	30	59	2036	85	23	37	2022	87	16	21	2010	89	9	6	2006
	Jupiter	W.	46	18	44	1988	48	13	9	1965	50	7	39	1962	52	2	13	1960
	Pollux	W.	41	1	31	2004	42	54	59	1993	44	48	37	1993	46	42	22	1990
	Spica	E.	50	22	9	1977	48	27	58	1976	46	33	44	1973	44	39	27	1973
	Antares	E.	96	8	45	1968	94	14	20	1964	92	19	49	1962	90	25	15	1960
	Mars	E.	109	12	38	2147	107	22	50	2143	105	32	57	2141	103	43	0	2138
7	Jupiter	W.	61	35	19	1964	63	29	50	1967	65	24	16	1972	67	18	35	1976
	Pollux	W.	56	11	56	1967	58	5	51	1990	59	59	41	1993	61	53	27	1997
	Saturn	W.	26	20	0	1963	28	14	33	1964	30	9	4	1966	32	3	32	1970
	Spica	E.	35	8	10	1962	33	14	7	1987	31	20	12	1993	29	26	27	2001
	Antares	E.	80	52	11	1965	78	57	41	1968	77	3	16	1973	75	8	58	1977
	Mars	E.	94	32	51	2141	92	42	54	2145	90	53	3	2149	89	3	18	2138
8	Jupiter	W.	76	47	51	2012	78	41	6	2022	80	34	6	2032	82	26	51	2043
	Pollux	W.	71	20	11	2030	73	12	58	2039	75	5	31	2049	76	57	49	2059
	Saturn	W.	41	33	57	2001	43	27	29	2010	45	20	48	2019	47	13	52	2030
	Regulus	W.	34	19	20	2020	36	12	23	2029	38	5	12	2039	39	57	46	2048
	Antares	E.	65	39	43	2012	63	46	28	2022	61	53	28	2032	60	0	44	2042
	Mars	E.	79	56	47	2190	78	8	5	2200	76	19	37	2210	74	31	25	2221
9	Jupiter	W.	91	46	0	2107	93	36	49	2120	95	27	17	2136	97	17	22	2151

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.			P. L. of Dist.			P. L. of Dist.		
			XVh.	XVIIIh.	XXIh.	XVh.	XVIIIh.	XXIh.	XVh.	XVIIIh.	XXIh.
1	SUN W.	104 27 43	2786	106 2 29	2767	107 37 40	2747	109 13 17	2729		
	Venus W.	68 6 2	2689	69 39 0	2660	71 12 23	2630	72 46 12	2610		
	α Arietis W.	50 26 44	2475	52 8 33	2455	53 50 49	2437	55 33 31	2418		
	Jupiter E.	19 25 49	2464	17 43 45	2451	16 1 23	2439	14 18 44	2428		
	Saturn E.	54 59 10	2422	53 16 21	2415	51 33 8	2398	49 49 30	2380		
	Regulus E.	61 45 28	2422	60 3 9	2426	58 20 25	2418	56 37 16	2401		
2	SUN W.	117 17 40	2624	118 55 49	2616	120 34 22	2608	122 13 20	2600		
	Venus W.	80 41 45	2711	82 18 10	2692	83 55 0	2674	85 32 15	2655		
	α Arietis W.	64 13 40	2226	65 59 1	2208	67 44 49	2191	69 31 2	2174		
	Aldebaran W.	33 8 52	2294	34 49 18	2496	36 30 34	2464	38 12 38	2433		
	Saturn E.	41 5 5	2294	39 18 57	2279	37 32 26	2262	35 45 31	2245		
	Regulus E.	47 55 13	2212	46 9 32	2296	44 23 20	2279	42 36 56	2262		
3	SUN W.	130 34 14	2494	132 15 35	2478	133 57 19	2462	135 39 25	2448		
	Venus W.	93 44 49	2566	95 24 32	2548	97 4 39	2532	98 45 8	2516		
	α Arietis W.	78 28 28	2190	80 17 10	2174	82 6 16	2159	83 55 45	2145		
	Aldebaran W.	46 53 20	2200	48 39 19	2278	50 25 51	2257	52 12 54	2237		
	Saturn E.	26 45 7	2172	24 55 58	2161	23 6 31	2147	21 16 40	2135		
	Regulus E.	33 38 22	2184	31 49 30	2169	30 0 16	2155	28 10 40	2141		
4	Venus W.	107 12 54	2444	108 55 26	2422	110 38 15	2420	112 21 21	2410		
	α Arietis W.	93 8 31	2078	95 0 4	2066	96 51 55	2046	98 44 2	2046		
	Aldebaran W.	61 15 10	2120	63 4 53	2126	64 54 57	2128	66 45 21	2110		
	Jupiter W.	23 40 4	2070	25 31 49	2057	27 23 54	2046	29 16 18	2033		
	Spica E.	72 59 19	2070	71 7 33	2066	69 15 29	2047	67 23 8	2037		
	Aldebaran W.	76 1 51	2069	77 53 53	2052	79 46 6	2046	81 28 29	2041		
5	Jupiter W.	38 42 18	1990	40 36 10	1992	42 30 13	1976	44 24 25	1972		
	Pollux W.	33 29 41	2008	35 22 16	2028	37 15 7	2018	39 8 13	2010		
	Spica E.	57 57 44	1996	56 4 3	1990	54 10 13	1984	52 16 14	1981		
	Antares E.	103 45 11	1998	101 51 18	1992	99 57 15	1977	98 3 4	1972		
	Aldebaran W.	91 1 58	2027	92 54 50	2028	94 47 41	2020	96 40 29	2021		
	Jupiter W.	53 56 50	1999	55 51 29	1980	57 46 7	1980	59 40 44	1992		
6	Pollux W.	48 36 12	1987	50 30 6	1986	52 24 3	1986	54 18 0	1986		
	Spica E.	42 45 8	1972	40 50 49	1972	38 56 32	1975	37 2 19	1978		
	Antares E.	88 30 38	1980	86 36 0	1980	84 41 22	1980	82 46 45	1982		
	Mars E.	101 52 59	2127	100 2 56	2127	98 12 53	2127	96 22 51	2129		
	Jupiter W.	69 12 47	1992	71 6 50	1989	73 0 42	1996	74 54 23	2004		
	Pollux W.	63 45 7	2001	65 40 37	2008	67 33 59	2014	69 27 11	2022		
7	Saturn W.	33 57 54	1974	35 52 9	1980	37 46 15	1986	39 40 12	1993		
	Spica E.	27 32 54	2010	25 39 35	2020	23 46 32	2022	21 53 48	2046		
	Antares E.	73 14 47	1992	71 20 45	1989	69 26 53	1996	67 33 12	2003		
	Mars E.	87 13 40	2169	85 24 10	2166	83 34 51	2172	81 45 43	2181		
	Jupiter W.	84 19 18	2064	86 11 28	2063	88 3 19	2060	89 54 49	2092		
	Pollux W.	78 49 50	2071	80 41 34	2082	82 33 0	2092	84 24 7	2108		
8	Saturn W.	49 6 39	2041	50 59 9	2062	52 51 21	2066	54 43 14	2078		
	Regulus W.	41 50 5	2090	43 42 6	2072	45 33 49	2064	47 25 13	2097		
	Antares E.	58 8 16	2084	56 16 6	2066	54 24 15	2079	52 32 43	2092		
	Mars E.	72 43 29	2222	70 55 52	2246	69 8 33	2260	67 21 35	2272		
	Jupiter W.	99 7 3	2167	100 56 20	2184	102 45 12	2200	104 33 39	2218		

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	
9	Pollux	W.	88	14	54	2122	88	5	19	2126	89	55	23	2151	91	45	5	2167
	Saturn	W.	56	34	47	2082	58	25	59	2106	60	16	50	2130	62	7	18	2136
	Regulus	W.	49	16	17	2110	51	7	1	2124	52	57	23	2139	54	47	23	2154
	Antares	E.	50	41	31	2106	48	50	40	2120	47	0	11	2135	45	10	5	2150
	Mars	E.	65	34	56	2268	63	48	39	2304	62	2	45	2320	60	17	14	2336
	α Aquilæ	E.	103	31	35	2774	101	56	33	2780	100	21	39	2787	98	46	54	2796
10	Jupiter	W.	106	21	40	2225	106	9	15	2259	109	56	24	2270	111	43	7	2289
	Pollux	W.	100	47	30	2260	102	34	43	2266	104	21	30	2266	106	7	50	2304
	Saturn	W.	71	13	41	2218	73	1	49	2226	74	49	18	2253	76	36	27	2271
	Regulus	W.	63	51	25	2226	65	38	59	2254	67	26	6	2272	69	12	47	2289
	Antares	E.	36	5	38	2224	34	18	1	2231	32	30	49	2268	30	44	3	2286
	Mars	E.	51	35	44	2424	49	52	43	2442	48	10	10	2462	46	28	4	2482
	α Aquilæ	E.	90	56	43	2663	89	23	37	2682	87	50	55	2701	86	18	37	2722
11	Saturn	W.	85	25	28	2664	87	9	55	2683	88	53	54	2702	90	37	28	2721
	Regulus	W.	77	59	31	2262	79	43	31	2402	81	27	3	2421	83	10	8	2440
	Spica	W.	24	2	41	2410	25	46	7	2426	27	29	4	2442	29	11	38	2459
	Mars	E.	38	4	40	2667	36	25	27	2606	34	46	43	2631	33	8	30	2652
	α Aquilæ	E.	78	44	12	3043	77	14	53	3072	75	46	9	3101	74	18	1	3122
	SUN	E.	125	12	37	2714	123	36	16	2726	122	0	22	2754	120	24	54	2775
12	Saturn	W.	99	8	21	2616	100	49	12	2635	102	29	37	2663	104	9	37	2672
	Regulus	W.	91	38	49	2335	93	19	13	2353	94	59	12	2372	96	38	46	2391
	Spica	W.	37	38	30	2646	39	18	39	2664	40	58	23	2683	42	37	42	2699
	α Aquilæ	E.	67	7	6	2806	65	43	1	2845	64	19	41	2866	62	57	9	2829
	SUN	E.	112	34	14	2876	111	1	25	2896	109	29	1	2916	107	57	2	2936
13	Regulus	W.	104	50	19	2680	106	27	26	2696	108	4	11	2713	109	40	33	2730
	Spica	W.	50	48	25	2686	52	25	24	2702	54	2	1	2719	55	38	16	2735
	α Aquilæ	E.	56	17	16	2678	55	0	6	2726	53	43	57	2757	52	28	52	2761
	SUN	E.	100	23	21	2682	98	53	48	2681	97	24	38	2699	95	55	50	2687
14	Spica	W.	63	34	18	2811	65	8	31	2825	66	42	26	2839	68	16	3	2853
	Antares	W.	17	42	8	2806	19	16	30	2819	20	50	33	2833	22	24	18	2847
	SUN	E.	88	37	10	3171	87	10	26	3167	85	44	1	3202	84	17	54	3217
15	Spica	W.	75	59	55	2915	77	31	55	2927	79	3	40	2937	80	35	12	2948
	Antares	W.	30	8	48	2909	31	40	55	2920	33	12	48	2932	34	44	26	2942
	SUN	E.	77	11	37	3286	75	47	9	3299	74	22	56	3310	72	58	56	3322
16	Spica	W.	88	9	43	2983	89	40	4	3001	91	10	15	3009	92	40	16	3017
	Antares	W.	42	19	32	2988	43	50	0	2997	45	20	17	3004	46	50	25	3011
	Mars	W.	23	50	47	3248	25	15	59	3250	26	41	9	3253	28	6	15	3257
	SUN	E.	66	2	10	3374	64	39	24	3383	63	16	48	3392	61	54	22	3400
17	Spica	W.	100	8	16	3047	101	37	30	3052	103	6	38	3066	104	35	41	3061
	Antares	W.	54	18	59	3042	55	48	20	3047	57	17	35	3051	58	46	45	3055
	Mars	W.	35	10	43	3275	36	35	24	3278	38	0	1	3281	39	24	35	3284
	SUN	E.	55	4	23	3485	53	42	46	3441	52	21	16	3447	50	59	53	3452
18	Antares	W.	66	11	26	3071	67	40	11	3073	69	8	54	3074	70	37	35	3077
	Mars	W.	46	26	39	3294	47	50	57	3296	49	15	14	3296	50	39	30	3296
	SUN	E.	44	14	16	3475	42	53	24	3477	41	32	34	3480	40	11	48	3483

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of DIST.	XVh.			P. L. of DIST.	XVIIIh.			P. L. of DIST.	XXIh.			P. L. of DIST.
					°	'	"		°	'	"		°	'	"	
9	Pollux	W.	93 34 23	2192	95 23 17	2196	97 11 47	2215	98 59 52	2228						
	Saturn	W.	63 57 23	2181	65 47 4	2167	67 36 21	2183	69 25 14	2200						
	Regulus	W.	56 37 0	2170	58 26 13	2166	60 15 2	2202	62 3 26	2219						
	Antares	E.	43 20 22	2167	41 31 4	2162	39 42 10	2199	37 53 41	2216						
	Mars	E.	58 32 6	2243	56 47 23	2208	55 3 4	2267	53 19 10	2406						
	α Aquilæ	E.	97 12 20	2206	95 38 0	2218	94 3 56	2282	92 30 10	2247						
10	Jupiter	W.	113 29 23	2207	115 15 12	2226	117 0 33	2245	118 45 27	2264						
	Pollux	W.	107 53 43	2223	109 39 9	2242	111 24 7	2261	113 8 38	2281						
	Saturn	W.	78 23 9	2220	80 9 24	2207	81 55 13	2226	83 40 34	2245						
	Regulus	W.	70 59 2	2208	72 44 50	2225	74 30 11	2244	76 15 4	2264						
	Antares	E.	28 57 43	2204	27 11 49	2221	25 26 20	2239	23 41 17	2256						
	Mars	E.	44 46 26	2208	43 5 17	2222	41 24 35	2244	39 44 23	2265						
	α Aquilæ	E.	84 46 46	2242	83 15 22	2267	81 44 28	2291	80 14 4	2317						
11	Saturn	W.	92 20 31	2240	94 3 9	2259	95 45 20	2279	97 27 4	2297						
	Regulus	W.	84 52 46	2260	86 34 56	2278	88 16 40	2297	89 57 58	2316						
	Spica	W.	30 53 49	2276	32 35 36	2294	34 16 58	2311	35 57 56	2328						
	Mars	E.	31 30 46	2277	29 53 35	2299	28 16 54	2724	26 40 46	2750						
	α Aquilæ	E.	72 50 30	2164	71 23 38	2197	69 57 25	2223	68 31 55	2268						
	SUN	E.	118 49 53	2796	117 15 19	2816	115 41 11	2835	114 7 20	2866						
12	Saturn	W.	105 49 11	2290	107 28 20	2308	109 7 4	2326	110 45 24	2343						
	Regulus	W.	98 17 54	2210	99 56 36	2227	101 34 54	2245	103 12 48	2262						
	Spica	W.	44 16 38	2217	45 55 10	2235	47 33 18	2252	49 11 3	2269						
	α Aquilæ	E.	61 35 25	2274	60 14 32	2281	58 54 31	2271	57 35 25	2282						
	SUN	E.	106 25 29	2266	104 54 21	2275	103 23 37	2294	101 53 17	2314						
13	Regulus	W.	111 16 33	2746	112 52 19	2768	114 27 29	2779	116 2 25	2794						
	Spica	W.	57 14 9	2780	58 49 42	2766	60 24 54	2762	61 59 46	2797						
	α Aquilæ	E.	51 14 53	2222	50 2 3	2408	48 50 26	2683	47 40 8	2471						
	SUN	E.	94 27 24	2106	92 59 20	2122	91 31 37	2138	90 4 13	2155						
14	Spica	W.	69 49 22	2266	71 22 24	2279	73 55 11	2291	74 27 40	2298						
	Antares	W.	23 57 45	2260	25 30 55	2273	27 3 48	2286	28 36 26	2296						
	SUN	E.	82 52 5	2222	81 26 34	2246	80 1 19	2259	78 36 20	2273						
15	Spica	W.	82 6 30	2266	83 37 36	2267	85 8 30	2277	86 39 12	2285						
	Antares	W.	36 15 52	2262	37 47 5	2262	39 18 5	2271	40 48 54	2280						
	SUN	E.	71 35 10	2222	70 11 37	2244	68 48 16	2255	67 25 8	2264						
16	Spica	W.	94 10 8	2222	95 39 52	2230	97 9 27	2236	98 38 56	2242						
	Antares	W.	48 20 24	2218	49 50 14	2225	51 19 56	2230	52 49 31	2236						
	Mars	W.	29 31 17	2220	30 56 15	2225	32 21 8	2227	33 45 58	2231						
	SUN	E.	60 32 5	2406	59 9 57	2415	57 47 58	2422	56 26 7	2429						
17	Spica	W.	106 4 38	2265	107 33 31	2269	109 2 19	2271	110 31 4	2274						
	Antares	W.	60 15 50	2269	61 44 50	2262	63 13 46	2265	64 42 38	2269						
	Mars	W.	40 49 5	2227	42 13 32	2228	43 37 57	2229	45 2 19	2233						
	SUN	E.	49 38 35	2426	48 17 24	2422	46 56 17	2425	45 35 14	2429						
18	Antares	W.	72 6 13	2278	73 34 50	2278	75 3 26	2279	76 32 1	2279						
	Mars	W.	52 3 44	2229	53 27 57	2229	54 52 10	2228	56 16 24	2229						
	SUN	E.	38 51 5	2427	37 30 26	2429	36 9 50	2422	34 49 17	2425						

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.		P. L. of Diff.	IIIh.		P. L. of Diff.	VIh.		P. L. of Diff.	IXh.		P. L. of Diff.
			°	'		°	'		°	'		°	'	
19	Antares	W.	78	0	36	3079	79	29	11	3079	80	57	46	3078
	Mars	W.	57	40	37	3299	59	4	50	3297	60	29	5	3295
	SUN	E.	33	28	47	3497	39	8	20	3499	30	47	55	3603
24	SUN	W.	21	54	17	3370	23	17	8	3365	24	40	16	3341
	Aldebaran	E.	43	35	1	3073	49	6	18	3076	40	37	39	3078
	Jupiter	E.	80	2	13	2946	78	30	52	2939	76	59	23	2933
	Pollux	E.	85	18	21	2946	83	47	0	2939	82	15	31	2933
25	SUN	W.	33	4	17	3370	34	29	4	3359	35	54	4	3347
	Aldebaran	E.	31	48	1	3130	30	20	28	3147	28	53	15	3166
	Jupiter	E.	67	47	25	2890	66	14	53	2892	64	42	11	2874
	Pollux	E.	73	3	33	2890	71	31	1	2893	69	58	20	2876
	Saturn	E.	101	46	46	2890	100	13	36	2892	98	40	16	2844
	Regulus	E.	109	58	11	2874	108	25	19	2897	106	52	18	2859
26	SUN	W.	44	28	32	3163	45	55	2	3173	47	21	44	3161
	Jupiter	E.	55	29	22	2834	53	48	25	2815	52	14	17	2806
	Pollux	E.	60	38	45	2838	59	4	53	2820	57	30	50	2811
	Saturn	E.	89	16	31	2794	87	41	55	2785	86	7	7	2775
	Regulus	E.	97	30	25	2807	95	56	6	2798	94	21	36	2789
27	SUN	W.	56	6	41	3092	57	35	0	3081	59	3	33	3069
	Jupiter	E.	42	45	12	2747	41	9	35	2738	39	33	45	2728
	Pollux	E.	48	2	37	2788	46	27	14	2750	44	51	40	2741
	Saturn	E.	76	33	56	2716	74	57	38	2706	73	21	6	2695
	Regulus	E.	84	50	12	2739	83	14	11	2719	81	37	56	2709
28	SUN	W.	68	0	15	2992	69	30	38	2979	71	1	17	2965
	Venus	W.	26	46	58	3078	28	15	35	3090	29	44	33	3043
	Jupiter	E.	29	53	49	2662	28	16	18	2681	26	38	32	2639
	Pollux	E.	35	14	14	2690	33	37	21	2684	32	0	19	2677
	Saturn	E.	63	36	48	2628	61	58	31	2616	60	19	58	2604
Regulus	E.	71	55	17	2639	70	17	15	2628	68	38	58	2615	
29	SUN	W.	80	11	17	2882	81	43	59	2867	83	17	0	2852
	Venus	W.	38	45	39	2945	40	17	1	2929	41	48	43	2913
	Aldebaran	W.	23	3	50	2973	24	34	37	2906	26	6	46	2850
	Saturn	E.	50	29	47	2929	48	42	14	2816	47	1	23	2804
	Regulus	E.	58	43	16	2839	57	2	57	2826	55	22	20	2812
Spica	E.	112	46	19	2842	111	6	4	2837	109	25	29	2815	
30	SUN	W.	92	41	40	2763	94	17	6	2748	95	52	42	2733
	Venus	W.	51	6	7	2816	52	40	14	2801	54	14	41	2784
	Aldebaran	W.	35	41	18	2816	37	19	51	2898	38	59	3	2861
	Saturn	E.	36	49	54	2424	35	6	54	2411	33	23	35	2398
	Regulus	E.	45	12	1	2481	43	29	11	2417	41	46	1	2404
	Spica	E.	99	15	16	2431	97	32	25	2417	95	49	14	2403
31	SUN	W.	105	33	22	2643	107	11	19	2629	108	49	35	2615
	Venus	W.	63	48	50	2698	65	25	46	2673	67	3	2	2658
	Aldebaran	W.	49	6	9	2436	50	49	7	2407	52	32	32	2398
	Regulus	E.	31	20	17	2334	29	34	53	2312	27	49	11	2299
	Spica	E.	85	23	2	2218	83	37	29	2204	81	51	35	2291

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Dif.	XVh.			P. L. of Dif.	XVIIIh.			P. L. of Dif.	XXIh.			P. L. of Dif.
			o	i	u	o	i	u	o	i	u	o	i	u	o	i	u	
19	Antares	W.	83	54	58	3077	85	23	36	3076	86	52	15	3074	88	20	56	3073
	Mars	W.	63	17	39	3294	64	41	57	3292	66	6	19	3289	67	30	42	3288
	SUN	E.	26	7	17	3508	26	47	2	3513	25	26	52	3516	24	6	46	3520
24	SUN	W.	27	27	20	3315	28	51	14	3303	30	15	22	3292	31	39	43	3281
	Aldebaran	E.	37	40	33	3089	36	12	10	3086	34	43	56	3105	33	15	52	3115
	Jupiter	E.	73	56	0	3019	72	24	5	2912	70	52	1	2905	69	19	48	2897
	Pollux	E.	79	12	7	3918	77	40	11	2912	76	8	8	2905	74	35	56	2897
25	SUN	W.	36	44	43	3226	40	10	21	3216	41	36	11	3204	43	2	15	3193
	Aldebaran	E.	26	0	10	3226	24	34	32	3267	23	9	42	3219	21	45	52	3206
	Jupiter	E.	61	36	17	2836	60	3	4	2830	58	29	41	2842	56	56	7	2833
	Pollux	E.	66	52	29	2850	65	19	18	2850	63	45	57	2844	62	12	26	2836
	Saturn	E.	95	33	4	2828	93	59	12	2819	92	25	9	2811	90	50	56	2802
Regulus	E.	103	45	44	2648	102	12	12	2634	100	38	28	2624	99	4	32	2618	
26	SUN	W.	50	15	49	3120	51	43	11	3129	53	10	46	3116	54	38	36	3104
	Jupiter	E.	49	5	25	2798	47	30	41	2778	45	55	44	2769	44	20	35	2758
	Pollux	E.	54	22	11	2798	52	47	34	2785	51	12	46	2777	49	37	48	2767
	Saturn	E.	82	56	54	2756	81	21	29	2747	79	45	51	2737	78	10	0	2727
	Regulus	E.	91	12	0	2760	89	36	52	2760	88	1	31	2750	86	25	58	2741
27	SUN	W.	62	1	25	3043	63	30	44	3031	65	0	18	3018	66	30	8	3005
	Jupiter	E.	36	21	24	2708	34	44	52	2696	33	8	6	2684	31	31	5	2673
	Pollux	E.	41	39	57	2728	40	3	48	2714	38	27	27	2707	36	50	56	2696
	Saturn	E.	70	7	20	2674	68	30	5	2663	66	52	35	2651	65	14	49	2640
	Regulus	E.	78	24	44	2686	76	47	45	2675	75	10	31	2663	73	33	2	2652
28	SUN	W.	74	3	26	2938	75	34	57	2924	77	6	46	2909	78	38	53	2896
	Venus	W.	32	43	34	3009	34	13	35	2998	35	43	56	2977	37	14	37	2961
	Jupiter	E.	23	23	13	2617	21	43	41	2607	20	4	55	2596	18	25	54	2585
	Pollux	E.	28	45	49	2686	27	8	23	2683	25	30	53	2663	23	53	23	2663
	Saturn	E.	57	2	2	2380	55	22	39	2367	53	42	59	2355	52	3	2	2342
	Regulus	E.	65	21	33	2392	63	42	25	2378	62	3	0	2365	60	23	17	2352
29	SUN	W.	86	24	0	2822	87	57	58	2808	89	32	15	2793	91	6	52	2778
	Venus	W.	44	53	8	2981	46	25	51	2965	47	58	55	2948	49	32	21	2932
	Aldebaran	W.	29	14	36	2756	30	50	2	2716	32	26	20	2690	34	3	27	2647
	Saturn	E.	43	38	48	2477	41	57	2	2464	40	14	58	2450	38	32	35	2438
	Regulus	E.	52	0	10	2485	50	18	36	2472	48	36	44	2458	46	54	32	2445
	Spica	E.	106	3	23	2487	104	21	51	2472	102	39	59	2458	100	57	47	2445
30	SUN	W.	99	4	55	2702	100	41	32	2686	102	18	28	2672	103	55	45	2657
	Venus	W.	57	24	40	2753	59	0	10	2736	60	36	2	2720	62	12	15	2704
	Aldebaran	W.	42	19	15	2512	44	0	12	2489	45	41	41	2467	47	23	40	2446
	Saturn	E.	29	56	2	2372	28	11	49	2361	26	27	18	2349	24	42	30	2338
	Regulus	E.	38	18	44	2377	36	34	36	2364	34	50	9	2350	33	5	22	2337
	Spica	E.	92	21	52	2374	90	37	40	2360	88	53	8	2346	87	8	15	2332
31	SUN	W.	112	7	5	2265	113	46	20	2272	115	25	54	2259	117	5	45	2245
	Venus	W.	70	18	35	2627	71	56	53	2612	73	35	31	2599	75	14	27	2586
	Aldebaran	W.	56	0	41	2353	57	45	24	2336	59	30	31	2320	61	16	2	2306
	Regulus	E.	24	16	53	2277	22	30	20	2267	20	43	32	2258	18	56	30	2250
	Spica	E.	78	18	49	2364	76	31	56	2350	74	44	43	2337	72	57	11	2325

AT GREENWICH APPARENT NOON.

		THE SUN'S						Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, to be added to		Diff. for 1 hour.
Day of the Week.	Day of the Month.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semidiameter.	subtracted from Apparent Time.				
		h. m. s.	s.	N. ° ' "	"	' "	s.	m. s.	s.		
Sun.	1	0 44 5.65	9.099	N. 4 44 37.1	57.72	16 1.87	64.50	3 49.13	0.758		
Mon.	2	0 47 44.04	9.104	5 7 39.6	57.50	16 1.60	64.52	3 31.00	0.753		
Tues.	3	0 51 22.55	9.109	5 30 36.6	57.26	16 1.33	64.54	3 13.01	0.748		
Wed.	4	0 55 1.19	9.115	5 53 27.7	57.02	16 1.06	64.57	2 55.15	0.741		
Thur.	5	0 58 39.99	9.122	6 16 12.8	56.75	16 0.78	64.60	2 37.45	0.734		
Fri.	6	1 2 18.99	9.130	6 38 51.7	56.49	16 0.50	64.63	2 19.94	0.725		
Sat.	7	1 5 58.21	9.139	7 1 23.8	56.20	16 0.23	64.66	2 2.64	0.715		
Sun.	8	1 9 37.66	9.149	7 23 48.5	55.89	15 59.96	64.70	1 45.57	0.705		
Mon.	9	1 13 17.36	9.160	7 46 5.9	55.57	15 59.69	64.74	1 28.76	0.694		
Tues.	10	1 16 57.31	9.172	8 8 15.8	55.24	15 59.41	64.78	1 12.23	0.682		
Wed.	11	1 20 37.57	9.185	8 30 17.7	54.90	15 59.13	64.82	0 55.98	0.670		
Thur.	12	1 24 18.16	9.198	8 52 11.0	54.55	15 58.86	64.86	0 40.05	0.657		
Fri.	13	1 27 59.08	9.213	9 13 55.5	54.18	15 58.59	64.91	0 24.47	0.643		
Sat.	14	1 31 40.34	9.228	9 35 30.9	53.79	15 58.32	64.96	0 9.23	0.628		
Sun.	15	1 35 21.96	9.244	9 56 57.0	53.39	15 58.05	65.01	0 5.67	0.613		
Mon.	16	1 39 3.95	9.260	10 18 13.6	52.98	15 57.78	65.06	0 20.19	0.597		
Tues.	17	1 42 46.33	9.277	10 39 20.0	52.55	15 57.51	65.12	0 34.32	0.581		
Wed.	18	1 46 29.13	9.294	11 0 15.8	52.10	15 57.24	65.18	0 48.05	0.564		
Thur.	19	1 50 12.34	9.311	11 21 0.6	51.65	15 56.97	65.24	1 1.36	0.546		
Fri.	20	1 53 55.97	9.329	11 41 34.4	51.18	15 56.71	65.30	1 14.24	0.528		
Sat.	21	1 57 40.04	9.347	12 1 56.8	50.69	15 56.45	65.36	1 26.69	0.510		
Sun.	22	2 1 24.55	9.366	12 22 7.2	50.19	15 56.20	65.43	1 38.71	0.491		
Mon.	23	2 5 9.51	9.385	12 42 5.4	49.87	15 55.95	65.50	1 50.27	0.472		
Tues.	24	2 8 54.93	9.404	13 1 51.2	49.14	15 55.70	65.57	2 1.37	0.452		
Wed.	25	2 12 40.82	9.424	13 21 24.1	48.59	15 55.46	65.64	2 12.00	0.432		
Thur.	26	2 16 27.19	9.444	13 40 43.6	48.03	15 55.22	65.71	2 22.16	0.412		
Fri.	27	2 20 14.04	9.464	13 59 49.5	47.46	15 54.98	65.78	2 31.84	0.392		
Sat.	28	2 24 1.38	9.484	14 18 41.5	46.88	15 54.74	65.86	2 41.03	0.372		
Sun.	29	2 27 49.22	9.505	14 37 19.4	46.28	15 54.50	65.94	2 49.73	0.351		
Mon.	30	2 31 37.57	9.526	14 55 42.9	45.67	15 54.27	66.01	2 57.91	0.330		
Tues.	31	2 35 26.44	9.547	N.15 13 51.5	45.05	15 54.04	66.09	3 5.57	0.308		

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Equation of Time, to be subtracted from		Diff. for 1 hour.	Sidereal Time.					
		Apparent Right Ascension.			DI. for 1 hour.	Apparent Declination.							DI. for 1 hour.	added to Mean Time.	
		h.	m.	s.	s.	°	'	"					"	m.	s.
Sat.	1	0	44	5.08	9.099	N. 4	44	33.4	57.72	3	49.19	0.758	0	40	15.89
Mon.	2	0	47	43.51	9.104	5	7	36.2	57.50	3	31.06	0.753	0	44	12.45
Tues.	3	0	51	22.06	9.109	5	30	33.5	57.26	3	13.06	0.748	0	48	9.00
Wed.	4	0	55	0.75	9.115	5	53	24.9	57.02	2	55.19	0.741	0	52	5.56
Thur.	5	0	58	39.60	9.122	6	16	10.3	56.75	2	37.49	0.734	0	56	2.11
Fri.	6	1	2	18.64	9.130	6	38	49.5	56.49	2	19.98	0.725	0	59	58.66
Sat.	7	1	5	57.90	9.139	7	1	21.9	56.20	2	2.68	0.715	1	3	55.22
Sun.	8	1	9	37.39	9.149	7	23	46.9	55.89	1	45.62	0.705	1	7	51.77
Mon.	9	1	13	17.13	9.160	7	46	4.5	55.57	1	28.80	0.694	1	11	48.33
Tues.	10	1	16	57.13	9.172	8	8	14.7	55.24	1	12.25	0.682	1	15	44.88
Wed.	11	1	20	37.43	9.185	8	30	16.9	54.90	0	56.00	0.670	1	19	41.43
Thur.	12	1	24	18.06	9.198	8	52	10.5	54.55	0	40.07	0.657	1	23	37.99
Fri.	13	1	27	59.02	9.213	9	13	55.2	54.18	0	24.48	0.643	1	27	34.54
Sat.	14	1	31	40.32	9.228	9	35	30.8	53.79	0	9.23	0.628	1	31	31.09
Sun.	15	1	35	21.98	9.244	9	56	57.1	53.39	0	5.67	0.613	1	35	27.65
Mon.	16	1	39	4.01	9.260	10	18	13.9	52.98	0	20.19	0.597	1	39	24.20
Tues.	17	1	42	46.43	9.277	10	39	20.5	52.55	0	34.32	0.581	1	43	20.75
Wed.	18	1	46	29.26	9.294	11	0	16.5	52.10	0	48.05	0.564	1	47	17.31
Thur.	19	1	50	12.50	9.311	11	21	1.5	51.65	1	1.36	0.546	1	51	13.86
Fri.	20	1	53	56.17	9.329	11	41	35.5	51.18	1	14.25	0.528	1	55	10.42
Sat.	21	1	57	40.27	9.347	12	1	58.1	50.69	1	26.70	0.510	1	59	6.97
Sun.	22	2	1	24.81	9.366	12	22	8.7	50.19	1	38.72	0.491	2	3	3.53
Mon.	23	2	5	9.80	9.385	12	42	7.0	49.67	1	50.28	0.472	2	7	0.08
Tues.	24	2	8	55.25	9.404	13	1	52.9	49.14	2	1.39	0.452	2	10	56.64
Wed.	25	2	12	41.17	9.424	13	21	25.9	48.59	2	12.02	0.432	2	14	53.19
Thur.	26	2	16	27.57	9.444	13	40	45.5	48.03	2	22.18	0.412	2	18	49.75
Fri.	27	2	20	14.45	9.464	13	59	51.5	47.46	2	31.85	0.392	2	22	46.30
Sat.	28	2	24	1.81	9.484	14	18	43.6	46.88	2	41.05	0.372	2	26	42.86
Sun.	29	2	27	49.67	9.505	14	37	21.6	46.28	2	49.75	0.351	2	30	39.42
Mon.	30	2	31	38.04	9.526	14	55	45.2	45.67	2	57.93	0.330	2	34	35.97
Tues.	31	2	35	26.93	9.547	N.15	13	53.9	45.05	3	5.60	0.308	2	38	32.53

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

		THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.
Day of the Month.	Day of the Year.	True LONGITUDE.		DIF. for 1 hour.	LATITUDE.			
		λ	λ'					
1	92	11° 59' 32.6"	59' 7.2"	147.75	+0.20	0.0000531	51.3	23 15 54.79
2	93	12 58 37.5	58 12.0	147.66	+0.08	.0001762	51.3	23 11 58.88
3	94	13 57 40.2	57 14.6	147.57	-0.03	.0002995	51.6	23 8 2.97
4	95	14 56 40.7	56 15.0	147.48	0.12	.0004232	51.6	23 4 7.06
5	96	15 55 39.1	55 13.3	147.39	0.20	.0005473	51.8	23 0 11.15
6	97	16 54 35.4	54 9.5	147.31	0.25	.0006719	52.0	22 56 15.24
7	98	17 53 29.7	53 8.7	147.22	0.26	.0007968	52.1	22 52 19.33
8	99	18 52 22.1	51 56.0	147.14	0.25	.0009220	52.2	22 48 23.43
9	100	19 51 12.6	50 46.4	147.07	0.21	.0010473	52.2	22 44 27.52
10	101	20 50 1.3	49 34.9	146.99	0.15	.0011727	52.2	22 40 31.61
11	102	21 48 48.3	48 21.8	146.92	-0.06	.0012979	52.1	22 36 35.70
12	103	22 47 33.6	47 7.0	146.84	+0.06	.0014228	51.9	22 32 39.80
13	104	23 46 17.1	45 50.4	146.77	0.20	.0015474	51.7	22 28 43.90
14	105	24 44 58.8	44 32.0	146.70	0.34	.0016715	51.5	22 24 47.99
15	106	25 43 38.8	42 11.8	146.63	0.47	.0017950	51.3	22 20 52.08
16	107	26 42 17.2	41 50.1	146.56	0.60	.0019176	50.9	22 16 56.17
17	108	27 40 54.0	40 26.8	146.49	0.71	.0020392	50.4	22 13 0.26
18	109	28 39 29.1	39 1.8	146.42	0.80	.0021597	49.9	22 9 4.36
19	110	29 38 2.4	37 34.9	146.35	0.88	.0022789	49.4	22 5 8.45
20	111	30 36 33.8	36 6.1	146.27	0.93	.0023968	48.8	22 1 12.54
21	112	31 35 3.2	34 35.4	146.19	0.94	.0025133	48.2	21 57 16.63
22	113	32 33 30.6	33 2.7	146.10	0.93	.0026284	47.6	21 53 20.72
23	114	33 31 56.2	31 28.2	146.02	0.89	.0027422	47.0	21 49 24.81
24	115	34 30 19.8	29 51.7	145.94	0.81	.0028546	46.5	21 45 28.90
25	116	35 28 41.4	28 13.1	145.86	0.71	.0029657	46.0	21 41 32.99
26	117	36 27 1.0	26 32.7	145.77	0.59	.0030755	45.5	21 37 37.08
27	118	37 25 18.5	24 50.0	145.68	0.46	.0031841	45.0	21 33 41.17
28	119	38 23 33.9	23 5.3	145.59	0.33	.0032917	44.6	21 29 45.26
29	120	39 21 47.1	21 18.3	145.50	0.19	.0033988	44.2	21 25 49.35
30	121	40 19 58.2	19 29.2	145.42	+0.08	.0035041	43.9	21 21 53.44
31	122	41 18 7.5	17 38.4	145.34	-0.02	0.0036091	43.6	21 17 57.53

NOTE.— λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN-PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	h. m.	Diff. for 1 hour.	
				"		"		m.	
1	16 19.3	16 24.4	59 47.6	+1.63	60 6.2	+1.46	8 31.1	2.24	9.9
2	16 28.8	16 32.4	60 22.4	1.24	60 35.7	0.98	9 23.9	2.17	10.9
3	16 35.1	16 36.8	60 45.7	+0.68	60 51.9	+0.35	10 15.6	2.14	11.9
4	16 37.4	16 36.7	60 53.9	-0.02	60 51.5	-0.38	11 7.0	2.16	12.9
5	16 34.9	16 31.9	60 44.8	0.74	60 33.9	1.08	11 59.4	2.21	13.9
6	16 27.8	16 22.8	60 18.9	1.40	60 0.4	1.68	12 53.5	2.30	14.9
7	16 16.9	16 10.4	59 38.9	1.90	59 14.8	2.09	13 49.7	2.38	15.9
8	16 3.3	15 55.9	58 48.9	2.21	58 21.8	2.29	14 47.3	2.42	16.9
9	15 48.4	15 40.9	57 54.1	2.32	57 26.4	2.29	15 45.3	2.40	17.9
10	15 33.5	15 26.4	56 59.4	2.22	56 33.3	2.12	16 41.8	2.30	18.9
11	15 19.7	15 13.5	56 8.7	1.98	55 45.9	1.82	17 35.4	2.16	19.9
12	15 7.8	15 2.8	55 25.2	1.64	55 6.6	1.45	18 25.3	2.00	20.9
13	14 58.4	14 54.7	54 50.5	1.24	54 36.8	1.04	19 11.6	1.86	21.9
14	14 51.6	14 49.3	54 25.6	0.83	54 16.9	0.62	19 54.9	1.75	22.9
15	14 47.6	14 46.5	54 10.6	0.42	54 6.8	-0.22	20 36.0	1.68	23.9
16	14 46.1	14 46.3	54 5.3	-0.04	54 5.9	+0.13	21 15.8	1.65	24.9
17	14 47.0	14 48.2	54 8.5	+0.30	54 13.1	0.45	21 55.4	1.66	25.9
18	14 49.9	14 52.0	54 19.3	0.58	54 27.1	0.71	22 35.9	1.72	26.9
19	14 54.5	14 57.3	54 36.2	0.81	54 46.5	0.90	23 18.2	1.81	27.9
20	15 0.4	15 3.7	54 57.7	0.97	55 9.9	1.04	6		28.9
21	15 7.2	15 10.9	55 22.7	1.10	55 36.2	1.15	0 3.2	1.94	0.3
22	15 14.7	15 18.6	55 50.2	1.18	56 4.6	1.21	0 51.6	2.10	1.3
23	15 22.6	15 26.7	56 19.2	1.23	56 34.2	1.26	1 43.7	2.25	2.3
24	15 30.8	15 35.0	56 49.4	1.27	57 4.8	1.29	2 39.1	2.36	3.3
25	15 39.2	15 43.5	57 20.4	1.30	57 36.0	1.30	3 36.5	2.41	4.3
26	15 47.8	15 52.0	57 51.7	1.31	58 7.4	1.30	4 34.1	2.38	5.3
27	15 56.3	16 0.4	58 22.9	1.28	58 38.2	1.26	5 30.4	2.30	6.3
28	16 4.5	16 8.4	58 53.1	1.22	59 7.4	1.15	6 24.4	2.20	7.3
29	16 12.0	16 15.3	59 20.7	1.07	59 32.9	0.96	7 16.2	2.12	8.3
30	16 18.2	16 20.6	59 43.6	0.82	59 52.4	0.65	8 6.5	2.07	9.3
31	16 22.4	16 23.5	59 59.0	+0.45	60 3.1	+0.23	8 56.2	2.08	10.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
0	8 52 40.01	2.3528	N.17 24 36.7	12.837	0	10 42 28.09	2.3280	N. 5 22 5.9	16.620
1	8 55 1.10	2.3499	17 11 42.0	12.971	1	10 44 42.45	2.3268	5 5 27.5	16.657
2	8 57 22.00	2.3467	16 58 40.3	13.084	2	10 46 56.75	2.3270	4 48 47.0	16.692
3	8 59 42.71	2.3436	16 45 31.9	13.196	3	10 49 11.00	2.3271	4 32 4.4	16.726
4	9 2 3.23	2.3404	16 32 16.8	13.307	4	10 51 25.20	2.3269	4 15 19.9	16.758
5	9 4 23.55	2.3372	16 18 55.1	13.417	5	10 53 39.36	2.3266	3 58 33.5	16.787
6	9 6 43.69	2.3340	16 5 26.8	13.525	6	10 55 53.47	2.3249	3 41 45.5	16.814
7	9 9 3.64	2.3308	15 51 52.1	13.631	7	10 58 7.54	2.3248	3 24 55.9	16.839
8	9 11 23.40	2.3276	15 38 11.1	13.736	8	11 0 21.58	2.3238	3 8 4.8	16.862
9	9 13 42.98	2.3247	15 24 23.8	13.839	9	11 2 35.59	2.3233	2 51 12.4	16.884
10	9 16 2.37	2.3217	15 10 30.4	13.941	10	11 4 49.57	2.3229	2 34 18.7	16.904
11	9 18 21.58	2.3187	14 56 30.9	14.042	11	11 7 3.53	2.3226	2 17 23.9	16.922
12	9 20 40.61	2.3157	14 42 25.3	14.141	12	11 9 17.48	2.3224	2 0 28.0	16.938
13	9 22 59.46	2.3126	14 28 13.9	14.239	13	11 11 31.41	2.3222	1 43 31.2	16.953
14	9 25 18.14	2.3095	14 13 56.6	14.335	14	11 13 45.34	2.3221	1 26 33.6	16.966
15	9 27 36.65	2.3070	13 59 33.6	14.430	15	11 15 59.26	2.3220	1 9 35.3	16.976
16	9 29 54.98	2.3042	13 45 5.0	14.523	16	11 18 13.18	2.3221	0 52 36.5	16.985
17	9 32 13.15	2.3014	13 30 30.9	14.614	17	11 20 27.11	2.3222	0 35 37.2	16.993
18	9 34 31.15	2.2986	13 15 51.3	14.704	18	11 22 41.04	2.3224	0 18 37.5	16.997
19	9 36 48.99	2.2959	13 1 6.4	14.792	19	11 24 54.99	2.3227	N. 0 1 37.6	16.999
20	9 39 6.66	2.2932	12 46 16.2	14.879	20	11 27 8.96	2.3230	S. 0 15 22.4	16.999
21	9 41 24.17	2.2906	12 31 20.9	14.964	21	11 29 22.95	2.3233	0 32 22.4	16.996
22	9 43 41.53	2.2880	12 16 20.5	15.047	22	11 31 36.96	2.3236	0 49 22.2	16.996
23	9 45 58.74	2.2855	N.12 1 15.2	15.129	23	11 33 51.00	2.3243	S. 1 6 21.9	16.992
MONDAY 2.					WEDNESDAY 4.				
0	9 48 15.79	2.2830	N.11 46 5.0	15.209	0	11 36 5.07	2.3249	S. 1 23 21.2	16.986
1	9 50 32.69	2.2806	11 30 50.0	15.288	1	11 38 19.18	2.3256	1 40 20.1	16.977
2	9 52 49.45	2.2781	11 15 30.4	15.365	2	11 40 33.24	2.3264	1 57 18.4	16.966
3	9 55 6.07	2.2757	11 0 6.2	15.440	3	11 42 47.55	2.3272	2 14 16.0	16.953
4	9 57 22.54	2.2734	10 44 37.6	15.513	4	11 45 1.80	2.3280	2 31 12.8	16.939
5	9 59 38.88	2.2712	10 29 4.6	15.585	5	11 47 16.11	2.3289	2 48 8.7	16.923
6	10 1 55.08	2.2690	10 13 27.4	15.655	6	11 49 30.47	2.3299	3 5 3.6	16.905
7	10 4 11.16	2.2669	9 57 46.0	15.724	7	11 51 44.90	2.3310	3 21 57.3	16.885
8	10 6 27.11	2.2648	9 42 0.5	15.791	8	11 53 59.39	2.3322	3 38 49.8	16.863
9	10 8 42.94	2.2628	9 26 11.1	15.856	9	11 56 13.96	2.3334	3 55 40.9	16.839
10	10 10 58.65	2.2609	9 10 17.8	15.920	10	11 58 28.60	2.3347	4 12 30.5	16.813
11	10 13 14.25	2.2590	8 54 20.7	15.982	11	12 0 43.32	2.3361	4 29 18.5	16.785
12	10 15 29.73	2.2571	8 38 20.0	16.041	12	12 2 58.13	2.3375	4 46 4.7	16.755
13	10 17 45.10	2.2553	8 22 15.8	16.099	13	12 5 13.02	2.3389	5 2 49.1	16.723
14	10 20 0.37	2.2536	8 6 8.1	16.156	14	12 7 28.00	2.2805	5 19 31.5	16.690
15	10 22 15.53	2.2519	7 49 57.1	16.211	15	12 9 43.08	2.2821	5 36 11.9	16.653
16	10 24 30.60	2.2503	7 33 42.8	16.263	16	12 11 58.25	2.2838	5 52 50.1	16.613
17	10 26 45.58	2.2488	7 17 25.4	16.314	17	12 14 13.53	2.2855	6 9 26.0	16.578
18	10 29 0.46	2.2473	7 1 5.1	16.363	18	12 16 28.91	2.2873	6 25 59.5	16.536
19	10 31 15.26	2.2459	6 44 41.8	16.411	19	12 18 44.40	2.2892	6 42 30.4	16.493
20	10 33 29.97	2.2446	6 28 15.8	16.456	20	12 21 0.01	2.2911	6 58 58.7	16.448
21	10 35 44.61	2.2433	6 11 47.1	16.500	21	12 23 15.73	2.2930	7 15 24.2	16.402
22	10 37 59.17	2.2421	5 55 15.8	16.542	22	12 25 31.57	2.2950	7 31 46.9	16.354
23	10 40 13.66	2.2410	5 38 42.0	16.582	23	12 27 47.53	2.2971	7 48 6.6	16.303
24	10 42 28.09	2.2399	N. 5 22 5.9	16.620	24	12 30 3.62	2.2993	S. 8 4 23.2	16.250

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
0	19 30 3.62	2.2988	S. 8 4 23.2	16.280	0	14 22 12.97	2.4118	S. 19 29 30.4	11.665
1	19 32 19.84	2.2715	8 20 36.6	16.196	1	14 24 37.77	2.4149	19 41 5.7	11.621
2	19 34 36.20	2.2737	8 36 46.6	16.128	2	14 27 2.70	2.4179	19 52 32.9	11.586
3	19 36 52.69	2.2760	8 52 53.2	16.060	3	14 29 27.93	2.4209	20 3 52.0	11.560
4	19 39 9.32	2.2784	9 8 56.2	16.019	4	14 31 53.27	2.4239	20 15 2.9	11.113
5	19 41 26.10	2.2808	9 24 55.5	15.987	5	14 34 18.79	2.4268	20 26 5.5	10.974
6	19 43 43.02	2.2832	9 40 51.1	15.963	6	14 36 44.49	2.4298	20 36 59.8	10.834
7	19 46 0.09	2.2857	9 56 42.8	15.928	7	14 39 10.36	2.4327	20 47 45.6	10.693
8	19 48 17.31	2.2882	10 12 30.5	15.761	8	14 41 36.41	2.4356	20 58 22.9	10.551
9	19 50 34.69	2.2909	10 28 14.1	15.692	9	14 44 2.63	2.4383	21 8 51.6	10.407
10	19 52 52.22	2.2935	10 43 53.5	15.621	10	14 46 29.01	2.4411	21 19 11.7	10.262
11	19 55 9.91	2.2963	10 59 28.6	15.548	11	14 48 55.56	2.4438	21 29 23.1	10.117
12	19 57 27.76	2.2989	11 14 59.2	15.473	12	14 51 22.26	2.4464	21 39 25.7	9.971
13	19 59 45.78	2.3017	11 30 25.3	15.396	13	14 53 49.12	2.4490	21 49 19.5	9.823
14	19 2 3.97	2.3045	11 45 46.7	15.317	14	14 56 16.14	2.4516	21 59 4.4	9.674
15	19 4 22.33	2.3074	12 1 3.3	15.237	15	14 58 43.31	2.4540	22 8 40.4	9.526
16	19 6 40.86	2.3102	12 16 15.1	15.154	16	15 1 10.62	2.4564	22 18 7.4	9.374
17	19 8 59.57	2.3132	12 31 21.8	15.070	17	15 3 38.08	2.4587	22 27 25.4	9.223
18	19 11 18.45	2.3162	12 46 23.5	14.984	18	15 6 5.67	2.4610	22 36 34.2	9.071
19	19 13 37.51	2.3192	13 1 20.0	14.897	19	15 8 33.39	2.4632	22 45 33.9	8.917
20	19 15 56.75	2.3222	13 16 11.2	14.808	20	15 11 1.25	2.4653	22 54 24.3	8.763
21	19 18 16.17	2.3252	13 30 57.0	14.717	21	15 13 29.23	2.4674	23 3 5.5	8.608
22	19 20 35.78	2.3282	13 45 37.3	14.625	22	15 15 57.34	2.4694	23 11 37.3	8.453
23	19 22 55.57	2.3314	S. 14 0 12.0	14.531	23	15 18 25.57	2.4714	S. 23 19 59.8	8.297
FRIDAY 6.					SUNDAY 8.				
0	13 25 15.55	2.2845	S. 14 14 41.0	14.435	0	15 20 53.91	2.4732	S. 23 28 12.9	8.140
1	13 27 35.72	2.2877	14 29 4.2	14.357	1	15 23 22.36	2.4750	23 36 16.5	7.982
2	13 29 56.08	2.2908	14 43 21.4	14.288	2	15 25 50.91	2.4767	23 44 10.7	7.834
3	13 32 16.62	2.2940	14 57 32.7	14.217	3	15 28 19.56	2.4783	23 51 55.4	7.685
4	13 34 37.36	2.2972	15 11 37.8	14.164	4	15 30 48.30	2.4798	23 59 30.5	7.536
5	13 36 58.29	2.2904	15 25 36.7	14.099	5	15 33 17.13	2.4812	24 6 56.0	7.384
6	13 39 19.41	2.2936	15 39 29.3	14.023	6	15 35 46.05	2.4826	24 14 11.8	7.183
7	13 41 40.73	2.2969	15 53 15.5	13.715	7	15 38 15.04	2.4839	24 21 18.0	7.022
8	13 44 2.24	2.2901	16 6 55.1	13.606	8	15 40 44.10	2.4849	24 28 14.5	6.890
9	13 46 23.95	2.2934	16 20 28.2	13.495	9	15 43 13.23	2.4860	24 35 1.3	6.698
10	13 48 45.85	2.2967	16 33 54.6	13.383	10	15 45 42.42	2.4870	24 41 38.3	6.535
11	13 51 7.95	2.2970	16 47 14.2	13.269	11	15 48 11.67	2.4879	24 48 5.5	6.372
12	13 53 30.25	2.2978	17 0 26.9	13.154	12	15 50 40.97	2.4887	24 54 22.9	6.208
13	13 55 52.75	2.2986	17 13 32.7	13.037	13	15 53 10.32	2.4894	25 0 30.6	6.044
14	13 58 15.44	2.2998	17 26 31.4	12.918	14	15 55 39.70	2.4899	25 6 28.2	5.880
15	14 0 38.32	2.2990	17 39 22.9	12.798	15	15 58 9.11	2.4904	25 12 16.1	5.716
16	14 3 1.40	2.2988	17 52 7.2	12.676	16	16 0 38.55	2.4908	25 17 54.1	5.551
17	14 5 24.67	2.2986	18 4 44.1	12.553	17	16 3 8.01	2.4911	25 23 22.2	5.386
18	14 7 48.14	2.2977	18 17 13.6	12.429	18	16 5 37.49	2.4912	25 28 40.4	5.221
19	14 10 11.80	2.2969	18 29 35.6	12.304	19	16 8 0.97	2.4912	25 33 48.7	5.056
20	14 12 35.65	2.2961	18 41 50.1	12.177	20	16 10 36.45	2.4912	25 38 47.1	4.890
21	14 14 59.69	2.2928	18 53 56.9	12.048	21	16 13 5.92	2.4911	25 43 35.5	4.724
22	14 17 23.93	2.4955	19 5 55.9	11.918	22	16 15 35.38	2.4908	25 48 14.0	4.558
23	14 19 48.36	2.4977	19 17 47.1	11.787	23	16 18 4.82	2.4905	25 52 42.5	4.392
24	14 22 12.97	2.4118	S. 19 29 30.4	11.655	24	16 20 34.24	2.4900	S. 25 57 1.0	4.226

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	16 20 34.24	2.4800	S.25 57 1.0	4.826	0	18 17 30.94	2.3484	S.26 14 21.8	3.361
1	16 23 3.62	2.4804	26 1 9.6	4.060	1	18 19 51.51	2.3468	26 11 0.8	3.419
2	16 25 32.97	2.4807	26 5 8.9	3.864	2	18 22 11.77	2.3451	26 7 31.5	3.505
3	16 28 2.28	2.4800	26 8 56.9	3.798	3	18 24 31.72	2.3435	26 3 54.0	3.623
4	16 30 31.53	2.4811	26 12 35.6	3.662	4	18 26 51.26	2.3420	26 0 8.3	3.689
5	16 33 0.73	2.4861	26 16 4.4	3.307	5	18 29 10.68	2.3403	25 56 14.5	3.863
6	16 35 29.86	2.4880	26 19 23.3	3.282	6	18 31 29.67	2.3389	25 52 12.7	4.066
7	16 37 58.92	2.4837	26 22 32.3	3.067	7	18 33 48.34	2.3385	25 48 2.9	4.329
8	16 40 27.90	2.4828	26 25 31.3	2.992	8	18 36 6.69	2.3381	25 43 45.2	4.361
9	16 42 56.80	2.4808	26 28 20.4	2.787	9	18 38 24.71	2.3376	25 39 19.6	4.491
10	16 45 25.60	2.4798	26 30 59.7	2.673	10	18 40 42.40	2.3380	25 34 46.3	4.689
11	16 47 54.31	2.4776	26 33 29.0	2.407	11	18 42 59.75	2.3384	25 30 5.3	4.748
12	16 50 22.91	2.4756	26 35 48.5	2.342	12	18 45 16.77	2.3380	25 25 16.6	4.975
13	16 52 51.40	2.4730	26 37 58.1	2.078	13	18 47 33.45	2.3782	25 20 20.3	5.004
14	16 55 19.78	2.4719	26 39 57.9	1.915	14	18 49 49.79	2.3685	25 15 16.5	5.126
15	16 57 48.03	2.4697	26 41 47.9	1.723	15	18 52 5.79	2.3688	25 10 5.2	5.368
16	17 0 16.15	2.4675	26 43 28.2	1.589	16	18 54 21.44	2.3680	25 4 46.5	5.573
17	17 2 44.13	2.4659	26 44 58.7	1.427	17	18 56 36.74	2.3632	24 59 20.4	5.495
18	17 5 11.97	2.4628	26 46 19.5	1.265	18	18 58 51.70	2.3464	24 53 47.1	5.516
19	17 7 39.66	2.4602	26 47 30.6	1.104	19	19 1 6.31	2.3405	24 48 6.5	5.736
20	17 10 7.19	2.4575	26 48 32.0	0.943	20	19 3 20.57	2.3328	24 42 18.8	5.856
21	17 12 34.56	2.4547	26 49 23.8	0.782	21	19 5 34.48	2.3280	24 36 24.0	5.972
22	17 15 1.76	2.4519	26 50 5.9	0.623	22	19 7 48.04	2.3231	24 30 22.2	6.088
23	17 17 28.78	2.4492	S.26 50 28.5	0.463	23	19 10 1.25	2.3172	S.24 24 13.4	6.308
TUESDAY 10.					THURSDAY 12.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	17 19 55.62	2.4457	S.26 51 1.5	0.304	0	19 12 14.10	2.3113	S.24 17 57.8	6.317
1	17 22 22.27	2.4426	26 51 15.0	0.146	1	19 14 26.60	2.3064	24 11 35.3	6.431
2	17 24 48.73	2.4398	26 51 19.0	0.011	2	19 16 38.75	2.1906	24 5 6.1	6.543
3	17 27 14.99	2.4380	26 51 13.6	0.166	3	19 18 50.54	2.1886	23 58 30.2	6.654
4	17 29 41.05	2.4328	26 50 58.9	0.324	4	19 21 1.96	2.1877	23 51 47.6	6.764
5	17 32 6.90	2.4300	26 50 34.8	0.479	5	19 23 13.06	2.1817	23 44 58.5	6.872
6	17 34 32.53	2.4258	26 50 1.4	0.634	6	19 25 23.78	2.1788	23 38 2.9	6.980
7	17 36 57.94	2.4216	26 49 18.7	0.788	7	19 27 34.15	2.1699	23 31 0.9	7.087
8	17 39 23.12	2.4177	26 48 26.8	0.941	8	19 29 44.17	2.1640	23 23 52.5	7.193
9	17 41 48.06	2.4128	26 47 25.7	1.094	9	19 31 53.93	2.1581	23 16 37.8	7.297
10	17 44 12.77	2.4098	26 46 15.5	1.246	10	19 34 3.14	2.1522	23 9 16.8	7.401
11	17 46 37.23	2.4057	26 44 56.2	1.397	11	19 36 12.09	2.1463	23 1 49.7	7.508
12	17 49 1.45	2.4015	26 43 27.9	1.547	12	19 38 20.69	2.1404	22 54 16.4	7.606
13	17 51 25.41	2.3972	26 41 50.6	1.697	13	19 40 28.94	2.1345	22 46 37.1	7.706
14	17 53 49.12	2.3928	26 40 4.3	1.845	14	19 42 36.83	2.1286	22 38 51.8	7.804
15	17 56 12.56	2.3884	26 38 9.2	1.993	15	19 44 44.38	2.1226	22 31 0.6	7.902
16	17 58 35.73	2.3839	26 36 5.2	2.140	16	19 46 51.57	2.1166	22 23 3.5	8.000
17	18 0 58.63	2.3793	26 33 53.4	2.286	17	19 48 58.41	2.1111	22 15 0.6	8.096
18	18 3 21.25	2.3747	26 31 30.9	2.430	18	19 51 4.90	2.1053	22 6 52.0	8.191
19	18 5 43.59	2.3700	26 29 0.8	2.574	19	19 53 11.05	2.0996	21 58 37.7	8.283
20	18 8 5.65	2.3652	26 26 22.0	2.717	20	19 55 16.85	2.0938	21 50 17.8	8.378
21	18 10 27.42	2.3603	26 23 34.7	2.860	21	19 57 22.31	2.0881	21 41 52.4	8.469
22	18 12 48.89	2.3554	26 20 38.8	3.002	22	19 59 27.42	2.0824	21 33 21.5	8.560
23	18 15 10.07	2.3504	26 17 34.5	3.142	23	20 1 32.19	2.0767	21 24 45.2	8.650
24	18 17 30.94	2.3454	S.26 14 21.8	3.281	24	20 3 36.63	2.0710	S.21 16 3.5	8.739

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
0	20 3 36.83	2.0710	S.21 16 3.5	8.729	0	21 37 16.80	1.8510	S.12 52 10.9	11.919
1	20 5 40.72	2.0684	21 7 16.5	8.827	1	21 39 7.77	1.8476	12 40 14.4	11.965
2	20 7 44.48	2.0658	20 58 24.3	8.913	2	21 40 58.54	1.8446	12 28 15.1	12.010
3	20 9 47.91	2.0632	20 49 26.9	8.999	3	21 42 49.12	1.8415	12 16 13.1	12.055
4	20 11 51.00	2.0606	20 40 24.4	9.084	4	21 44 39.52	1.8385	12 4 8.5	12.099
5	20 13 53.76	2.0580	20 31 16.8	9.168	5	21 46 29.74	1.8355	11 52 1.3	12.142
6	20 15 56.19	2.0554	20 22 4.2	9.251	6	21 48 19.78	1.8325	11 39 51.5	12.184
7	20 17 58.30	2.0528	20 12 46.6	9.333	7	21 50 9.65	1.8295	11 27 39.2	12.226
8	20 20 0.08	2.0502	20 3 24.2	9.414	8	21 51 59.34	1.8265	11 15 24.4	12.268
9	20 22 1.54	2.0476	19 53 56.9	9.494	9	21 53 48.87	1.8232	11 3 7.2	12.306
10	20 24 2.68	2.0450	19 44 24.9	9.573	10	21 55 38.24	1.8215	10 50 47.7	12.345
11	20 26 3.50	2.0411	19 34 48.2	9.651	11	21 57 27.45	1.8189	10 38 25.8	12.383
12	20 28 4.01	2.0385	19 25 6.8	9.728	12	21 59 16.51	1.8164	10 26 1.7	12.421
13	20 30 4.20	2.0366	19 15 20.8	9.804	13	22 1 5.42	1.8139	10 13 35.3	12.459
14	20 32 4.08	1.9966	19 5 30.3	9.879	14	22 2 54.18	1.8115	10 1 6.0	12.495
15	20 34 3.66	1.9904	18 55 35.3	9.953	15	22 4 42.80	1.8091	9 48 35.8	12.531
16	20 36 2.93	1.9838	18 45 35.9	10.027	16	22 6 31.27	1.8068	9 36 2.9	12.566
17	20 38 1.90	1.9808	18 35 32.1	10.100	17	22 8 19.61	1.8046	9 23 27.9	12.601
18	20 40 0.57	1.9754	18 25 23.9	10.172	18	22 10 7.82	1.8024	9 10 50.8	12.634
19	20 41 58.95	1.9706	18 15 11.5	10.242	19	22 11 55.90	1.8003	8 58 11.8	12.667
20	20 43 57.03	1.9656	18 4 54.9	10.311	20	22 13 43.85	1.7983	8 45 30.8	12.699
21	20 45 54.92	1.9607	17 54 34.1	10.380	21	22 15 31.69	1.7963	8 32 47.9	12.731
22	20 47 52.32	1.9549	17 44 9.3	10.448	22	22 17 19.41	1.7944	8 20 3.1	12.762
23	20 49 49.54	1.9512	S.17 33 40.4	10.515	23	22 19 7.02	1.7926	S. 8 7 16.5	12.792
SATURDAY 14.					MONDAY 16.				
0	20 51 46.47	1.9465	S.17 23 7.5	10.581	0	22 20 54.52	1.7908	S. 7 54 28.1	12.821
1	20 53 43.12	1.9419	17 12 30.6	10.647	1	22 22 41.02	1.7891	7 41 38.0	12.850
2	20 55 39.50	1.9374	17 1 49.9	10.711	2	22 24 29.21	1.7875	7 28 46.1	12.878
3	20 57 35.61	1.9329	16 51 5.3	10.774	3	22 26 16.41	1.7859	7 15 52.6	12.905
4	20 59 31.45	1.9284	16 40 17.0	10.837	4	22 28 3.52	1.7844	7 2 57.5	12.932
5	21 1 27.02	1.9240	16 29 24.9	10.899	5	22 29 50.54	1.7829	6 50 0.8	12.958
6	21 3 22.33	1.9197	16 18 29.1	10.960	6	22 31 37.47	1.7815	6 37 2.5	12.984
7	21 5 17.38	1.9154	16 7 29.7	11.020	7	22 33 24.32	1.7802	6 24 2.7	13.009
8	21 7 12.18	1.9111	15 56 26.7	11.079	8	22 35 11.10	1.7790	6 11 1.4	13.033
9	21 9 6.72	1.9069	15 45 20.1	11.138	9	22 36 57.80	1.7778	5 57 58.7	13.056
10	21 11 1.01	1.9028	15 34 10.1	11.196	10	22 38 44.44	1.7767	5 44 54.7	13.079
11	21 12 55.05	1.8987	15 22 56.6	11.252	11	22 40 31.02	1.7757	5 31 49.3	13.101
12	21 14 48.85	1.8947	15 11 39.8	11.308	12	22 42 17.53	1.7747	5 18 49.6	13.122
13	21 16 42.41	1.8907	15 0 19.6	11.364	13	22 44 3.99	1.7738	5 5 34.7	13.143
14	21 18 35.74	1.8868	14 48 56.1	11.418	14	22 45 50.39	1.7730	4 52 25.5	13.163
15	21 20 28.83	1.8830	14 37 29.4	11.472	15	22 47 36.74	1.7722	4 39 15.2	13.182
16	21 22 21.70	1.8792	14 25 59.5	11.525	16	22 49 23.05	1.7715	4 26 3.7	13.201
17	21 24 14.34	1.8755	14 14 26.4	11.577	17	22 51 9.32	1.7708	4 12 51.1	13.219
18	21 26 6.76	1.8718	14 2 50.3	11.628	18	22 52 55.55	1.7703	3 59 37.4	13.236
19	21 27 58.96	1.8682	13 51 11.1	11.678	19	22 54 41.75	1.7698	3 46 22.7	13.253
20	21 29 50.94	1.8647	13 39 28.9	11.728	20	22 56 27.92	1.7694	3 33 7.1	13.269
21	21 31 42.71	1.8612	13 27 43.7	11.777	21	22 58 14.07	1.7690	3 19 50.5	13.284
22	21 33 34.28	1.8577	13 15 55.6	11.825	22	23 0 0.20	1.7687	3 6 33.0	13.298
23	21 35 25.64	1.8543	13 4 4.7	11.873	23	23 1 46.31	1.7684	2 53 14.7	13.312
24	21 37 16.80	1.8510	S.12 52 10.9	11.919	24	23 3 32.41	1.7682	S. 2 39 55.6	13.326

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	23 3 32.41	1.7682	S. 2 39 55.6	13.326	0	0 29 27.85	1.8873	N. 8 1 15.6	13.100
1	23 5 18.50	1.7681	2 26 35.7	13.337	1	0 31 18.17	1.8402	8 14 20.9	13.076
2	23 7 4.58	1.7681	2 13 15.1	13.349	2	0 33 8.68	1.8433	8 27 24.7	13.061
3	23 8 50.66	1.7681	1 59 53.8	13.360	3	0 34 59.37	1.8464	8 40 27.0	13.036
4	23 10 36.75	1.7682	1 46 31.9	13.370	4	0 36 50.25	1.8496	8 53 27.7	12.998
5	23 12 22.84	1.7683	1 33 9.4	13.380	5	0 38 41.33	1.8529	9 6 26.7	12.970
6	23 14 8.95	1.7685	1 19 46.3	13.389	6	0 40 32.00	1.8563	9 19 24.1	12.941
7	23 15 55.07	1.7687	1 6 22.6	13.398	7	0 42 24.08	1.8597	9 32 19.8	12.912
8	23 17 41.20	1.7691	0 52 58.5	13.406	8	0 44 15.76	1.8632	9 45 13.6	12.881
9	23 19 27.36	1.7695	0 39 33.9	13.413	9	0 46 7.65	1.8667	9 58 5.6	12.850
10	23 21 13.54	1.7700	0 26 9.0	13.418	10	0 47 59.76	1.8708	10 10 55.6	12.818
11	23 22 59.76	1.7706	S. 0 12 43.7	13.424	11	0 49 52.08	1.8750	10 23 43.7	12.785
12	23 24 46.01	1.7713	N. 0 0 41.9	13.429	12	0 51 44.63	1.8792	10 36 29.8	12.751
13	23 26 32.30	1.7719	0 14 7.8	13.433	13	0 53 37.40	1.8835	10 49 13.8	12.716
14	23 28 18.64	1.7726	0 27 33.9	13.436	14	0 55 30.39	1.8881	11 1 55.7	12.680
15	23 30 5.02	1.7734	0 41 0.2	13.439	15	0 57 23.61	1.8930	11 14 35.4	12.643
16	23 31 51.45	1.7743	0 54 26.6	13.441	16	0 59 17.07	1.8980	11 27 12.8	12.605
17	23 33 37.94	1.7752	1 7 53.1	13.442	17	1 1 10.77	1.9070	11 39 47.9	12.566
18	23 35 24.48	1.7763	1 21 19.7	13.443	18	1 3 4.71	1.9010	11 52 20.7	12.525
19	23 37 11.09	1.7774	1 34 46.3	13.443	19	1 4 58.89	1.9061	12 4 51.0	12.484
20	23 38 57.77	1.7786	1 48 12.8	13.441	20	1 6 53.32	1.9062	12 17 18.8	12.443
21	23 40 44.52	1.7798	2 1 39.3	13.440	21	1 8 48.00	1.9134	12 29 44.1	12.400
22	23 42 31.34	1.7811	2 15 5.6	13.437	22	1 10 42.93	1.9177	12 42 6.8	12.356
23	23 44 18.24	1.7824	N. 2 28 31.8	13.434	23	1 12 38.12	1.9221	N.12 54 26.8	12.311
WEDNESDAY 18.					FRIDAY 20.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	23 46 5.23	1.7838	N. 2 41 57.7	13.430	0	1 14 33.58	1.9268	N.13 6 44.1	12.265
1	23 47 52.30	1.7853	2 55 23.4	13.426	1	1 16 29.30	1.9309	13 18 58.6	12.218
2	23 49 39.46	1.7868	3 8 48.8	13.420	2	1 18 25.29	1.9354	13 31 10.3	12.170
3	23 51 26.72	1.7884	3 22 13.9	13.414	3	1 20 21.55	1.9399	13 43 19.0	12.121
4	23 53 14.07	1.7901	3 35 38.5	13.407	4	1 22 18.08	1.9445	13 55 24.8	12.071
5	23 55 1.53	1.7918	3 49 2.7	13.399	5	1 24 14.89	1.9491	14 7 27.6	12.020
6	23 56 49.09	1.7937	4 2 26.4	13.391	6	1 26 11.97	1.9538	14 19 27.3	11.968
7	23 58 36.77	1.7956	4 15 49.6	13.382	7	1 28 9.34	1.9586	14 31 23.7	11.914
8	0 0 24.56	1.7975	4 29 12.2	13.372	8	1 30 7.00	1.9634	14 43 16.9	11.859
9	0 2 12.46	1.7994	4 42 34.2	13.361	9	1 32 4.95	1.9682	14 55 6.8	11.804
10	0 4 0.49	1.8015	4 55 55.5	13.349	10	1 34 3.19	1.9731	15 6 53.4	11.747
11	0 5 48.65	1.8037	5 9 16.1	13.337	11	1 36 1.72	1.9780	15 18 36.5	11.690
12	0 7 36.93	1.8060	5 22 35.9	13.323	12	1 38 0.55	1.9830	15 30 16.2	11.632
13	0 9 25.35	1.8081	5 35 54.9	13.309	13	1 39 59.68	1.9880	15 41 52.3	11.573
14	0 11 13.90	1.8104	5 49 13.0	13.294	14	1 41 59.11	1.9931	15 53 24.8	11.510
15	0 13 2.59	1.8127	6 2 30.2	13.279	15	1 43 58.55	1.9982	16 4 53.6	11.448
16	0 14 51.43	1.8152	6 15 46.5	13.262	16	1 45 58.90	2.0033	16 16 18.6	11.385
17	0 16 40.42	1.8177	6 29 1.7	13.245	17	1 47 59.25	2.0085	16 27 39.8	11.322
18	0 18 29.56	1.8203	6 42 15.9	13.227	18	1 49 59.92	2.0138	16 38 57.2	11.257
19	0 20 18.86	1.8230	6 55 28.9	13.208	19	1 52 0.91	2.0191	16 50 10.6	11.190
20	0 22 8.32	1.8257	7 8 40.8	13.189	20	1 54 2.21	2.0244	17 1 20.0	11.122
21	0 23 57.95	1.8285	7 21 51.4	13.167	21	1 56 3.83	2.0298	17 12 25.3	11.053
22	0 25 47.74	1.8313	7 35 0.8	13.145	22	1 58 5.78	2.0352	17 23 26.4	10.983
23	0 27 37.71	1.8342	7 48 8.9	13.123	23	2 0 8.05	2.0406	17 34 23.3	10.912
24	0 29 27.85	1.8372	N. 8 1 15.6	13.100	24	2 2 10.65	2.0461	N.17 45 15.8	10.840

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 21.					MONDAY 23.				
0	2 2 10.65	2.0461	N.17 45 15.8	10.840	0	3 46 59.99	2.2900	N.24 39 28.1	5.268
1	2 4 13.58	2.0516	17 56 4.0	10.765	1	3 49 19.34	2.2923	24 45 21.7	5.227
2	2 6 16.84	2.0571	18 6 47.7	10.691	2	3 51 39.01	2.2904	24 51 7.4	5.095
3	2 8 20.43	2.0626	18 17 26.9	10.616	3	3 53 58.99	2.2856	24 56 45.1	5.262
4	2 10 24.35	2.0682	18 28 1.6	10.539	4	3 56 19.27	2.2806	25 2 14.9	5.428
5	2 12 28.61	2.0738	18 38 31.6	10.461	5	3 58 39.86	2.2806	25 7 36.6	5.294
6	2 14 33.21	2.0793	18 48 56.9	10.381	6	4 1 0.74	2.2806	25 12 50.2	5.158
7	2 16 38.15	2.0832	18 59 17.3	10.300	7	4 3 21.92	2.2668	25 17 55.6	6.021
8	2 18 43.43	2.0890	19 9 32.9	10.218	8	4 5 43.38	2.2601	25 22 52.7	4.283
9	2 20 49.05	2.0906	19 19 43.6	10.136	9	4 8 5.13	2.2648	25 27 41.6	4.745
10	2 22 55.02	2.1023	19 29 49.2	10.052	10	4 10 27.16	2.2685	25 32 22.1	4.006
11	2 25 1.33	2.1081	19 39 49.7	9.966	11	4 12 49.47	2.2741	25 36 54.2	4.464
12	2 27 7.99	2.1139	19 49 45.1	9.879	12	4 15 12.05	2.2786	25 41 17.8	4.322
13	2 29 15.00	2.1197	19 59 35.3	9.792	13	4 17 34.90	2.2830	25 45 32.9	4.180
14	2 31 22.35	2.1255	20 9 20.1	9.705	14	4 19 58.01	2.2874	25 49 39.4	4.037
15	2 33 30.05	2.1313	20 18 59.6	9.618	15	4 22 21.38	2.2917	25 53 37.3	3.893
16	2 35 38.10	2.1371	20 28 33.6	9.530	16	4 24 45.01	2.2966	25 57 26.5	3.747
17	2 37 46.50	2.1430	20 38 2.1	9.442	17	4 27 8.88	2.2999	26 1 6.9	3.600
18	2 39 55.36	2.1488	20 47 25.0	9.354	18	4 29 33.00	2.4039	26 4 38.5	3.453
19	2 42 4.36	2.1547	20 56 42.2	9.269	19	4 31 57.35	2.4078	26 8 1.3	3.306
20	2 44 13.82	2.1606	21 5 53.7	9.183	20	4 34 21.94	2.4117	26 11 15.2	3.167
21	2 46 23.63	2.1665	21 14 59.4	9.096	21	4 36 46.76	2.4155	26 14 20.1	3.008
22	2 48 33.80	2.1724	21 23 59.2	9.007	22	4 39 11.80	2.4191	26 17 16.1	2.856
23	2 50 44.32	2.1782	N.31 32 53.0	8.917	23	4 41 37.05	2.4227	N.26 20 3.1	2.707
SUNDAY 22.					TUESDAY 24.				
0	2 52 55.19	2.1841	N.21 41 40.8	8.746	0	4 44 2.52	2.4261	N.26 22 41.0	2.556
1	2 55 6.41	2.1900	21 50 22.5	8.643	1	4 46 28.19	2.4296	26 25 9.8	2.408
2	2 57 17.99	2.1960	21 58 58.0	8.539	2	4 48 54.06	2.4337	26 27 29.4	2.260
3	2 59 29.92	2.2018	22 7 27.2	8.434	3	4 51 20.12	2.4369	26 29 39.8	2.097
4	3 1 42.20	2.2076	22 15 50.1	8.328	4	4 53 46.37	2.4399	26 31 41.0	1.943
5	3 3 54.84	2.2135	22 24 6.6	8.221	5	4 56 12.80	2.4430	26 33 32.9	1.787
6	3 6 7.82	2.2193	22 32 16.6	8.112	6	4 58 39.41	2.4449	26 35 15.5	1.631
7	3 8 21.15	2.2251	22 40 20.1	8.002	7	5 1 6.19	2.4477	26 36 48.7	1.476
8	3 10 34.83	2.2309	22 48 16.9	7.891	8	5 3 33.13	2.4508	26 38 12.5	1.318
9	3 12 48.86	2.2367	22 56 7.0	7.779	9	5 6 0.23	2.4528	26 39 26.9	1.161
10	3 15 3.23	2.2425	23 3 56.4	7.666	10	5 8 27.47	2.4552	26 40 31.8	1.004
11	3 17 17.95	2.2482	23 11 26.9	7.552	11	5 10 54.86	2.4576	26 41 27.3	0.846
12	3 19 33.02	2.2540	23 18 56.6	7.436	12	5 13 22.38	2.4597	26 42 13.3	0.687
13	3 21 48.43	2.2597	23 26 19.3	7.319	13	5 15 50.03	2.4618	26 42 49.7	0.528
14	3 24 4.18	2.2654	23 33 34.9	7.201	14	5 18 17.80	2.4638	26 43 16.6	0.369
15	3 26 20.27	2.2710	23 40 43.4	7.082	15	5 20 45.69	2.4657	26 43 33.9	0.209
16	3 28 36.70	2.2766	23 47 44.7	6.961	16	5 23 13.69	2.4675	26 43 41.7	0.049
17	3 30 53.46	2.2822	23 54 38.7	6.839	17	5 25 41.79	2.4692	26 43 39.8	0.112
18	3 33 10.56	2.2877	24 1 25.4	6.717	18	5 28 9.99	2.4707	26 43 26.3	0.273
19	3 35 27.99	2.2933	24 8 4.7	6.593	19	5 30 38.27	2.4721	26 43 7.1	0.434
20	3 37 45.74	2.2987	24 14 36.6	6.468	20	5 33 6.64	2.4733	26 42 36.2	0.595
21	3 40 3.82	2.3041	24 21 1.0	6.342	21	5 35 35.08	2.4745	26 41 55.6	0.757
22	3 42 22.23	2.3094	24 27 17.7	6.215	22	5 38 3.58	2.4756	26 41 5.4	0.919
23	3 44 40.95	2.3147	24 33 26.7	6.087	23	5 40 32.15	2.4766	26 40 5.4	1.081
24	3 46 59.99	2.3200	N.24 39 28.1	5.958	24	5 43 0.77	2.4775	N.26 38 55.7	1.243

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
0	5 43 0.77	2.4776	N.26 38 55.7	1.943	0	7 40 53.61	2.4002	N.22 35 50.2	8.706
1	5 45 29.44	2.4782	26 37 36.3	1.406	1	7 43 17.52	2.3998	22 27 3.7	8.844
2	5 47 58.15	2.4788	26 36 7.1	1.867	2	7 45 41.92	2.3994	22 18 8.9	8.983
3	5 50 26.89	2.4794	26 34 28.2	1.739	3	7 48 4.72	2.3989	22 9 5.8	9.121
4	5 53 55.66	2.4799	26 32 39.6	1.592	4	7 50 28.01	2.3984	21 59 54.4	9.257
5	5 55 24.45	2.4799	26 30 41.2	2.065	5	7 52 51.09	2.3978	21 50 34.9	9.393
6	5 57 53.25	2.4801	26 28 33.0	2.317	6	7 55 13.95	2.3788	21 41 7.3	9.527
7	6 0 22.06	2.4802	26 26 15.1	2.579	7	7 57 36.60	2.3787	21 31 31.7	9.660
8	6 2 50.87	2.4801	26 23 47.5	2.842	8	7 59 59.04	2.3781	21 21 48.1	9.792
9	6 5 19.67	2.4798	26 21 10.1	2.705	9	8 2 21.26	2.3684	21 11 56.6	9.924
10	6 7 48.45	2.4795	26 18 22.9	2.967	10	8 4 43.25	2.3648	21 1 57.2	10.054
11	6 10 17.21	2.4792	26 15 26.1	3.028	11	8 7 5.02	2.3611	20 51 50.1	10.188
12	6 12 45.95	2.4787	26 12 19.5	3.190	12	8 9 26.58	2.3674	20 41 35.3	10.310
13	6 15 14.65	2.4791	26 9 3.2	3.352	13	8 11 47.92	2.3637	20 31 12.8	10.437
14	6 17 43.32	2.4774	26 5 37.2	3.513	14	8 14 9.03	2.3600	20 20 42.8	10.568
15	6 20 11.94	2.4765	26 2 1.6	3.674	15	8 16 29.92	2.3492	20 10 5.2	10.698
16	6 22 40.50	2.4766	25 58 16.3	3.835	16	8 18 50.58	2.3496	19 59 20.2	10.812
17	6 25 9.00	2.4745	25 54 21.4	3.996	17	8 21 11.02	2.3387	19 48 27.8	10.925
18	6 27 37.44	2.4734	25 50 16.8	4.157	18	8 23 31.23	2.3280	19 37 28.0	11.036
19	6 30 5.81	2.4732	25 46 2.6	4.317	19	8 25 51.22	2.3218	19 26 21.0	11.176
20	6 32 34.10	2.4708	25 41 38.8	4.478	20	8 28 10.99	2.3175	19 15 6.9	11.296
21	6 35 2.30	2.4698	25 37 5.5	4.638	21	8 30 30.53	2.3226	19 3 45.7	11.412
22	6 37 30.42	2.4678	25 32 22.6	4.794	22	8 32 49.85	2.3200	18 52 17.4	11.529
23	6 39 58.44	2.4662	N.25 27 30.2	4.952	23	8 35 8.94	2.3188	N.18 40 42.2	11.644
THURSDAY 26.					SATURDAY 28.				
0	6 42 26.36	2.4645	N.25 22 28.3	5.110	0	8 37 27.81	2.3126	N.18 29 0.1	11.756
1	6 44 54.18	2.4627	25 17 17.0	5.267	1	8 39 46.46	2.3087	18 17 11.2	11.871
2	6 47 21.88	2.4608	25 11 56.2	5.424	2	8 42 4.88	2.3062	18 5 15.6	11.982
3	6 49 49.47	2.4588	25 6 26.0	5.581	3	8 44 23.08	2.3016	17 53 13.4	12.092
4	6 52 16.93	2.4567	25 0 46.5	5.737	4	8 46 41.07	2.2979	17 41 4.6	12.200
5	6 54 44.27	2.4545	24 54 57.6	5.892	5	8 48 58.84	2.2942	17 28 49.3	12.308
6	6 57 11.47	2.4522	24 48 59.5	6.047	6	8 51 16.39	2.2907	17 16 27.6	12.415
7	6 59 38.54	2.4499	24 42 52.1	6.201	7	8 53 33.72	2.2871	17 3 59.5	12.520
8	7 2 5.46	2.4475	24 36 35.4	6.354	8	8 55 50.84	2.2835	16 51 25.2	12.624
9	7 4 32.24	2.4451	24 30 9.5	6.507	9	8 58 7.75	2.2800	16 38 44.7	12.726
10	7 6 58.87	2.4425	24 23 34.5	6.659	10	9 0 24.44	2.2765	16 25 58.1	12.827
11	7 9 25.34	2.4399	24 16 50.4	6.810	11	9 2 40.93	2.2731	16 13 5.4	12.927
12	7 11 51.66	2.4372	24 9 57.3	6.961	12	9 4 57.21	2.2696	16 0 6.8	13.026
13	7 14 17.81	2.4345	24 2 55.1	7.111	13	9 7 13.28	2.2662	15 47 2.3	13.128
14	7 16 43.80	2.4316	23 55 44.0	7.260	14	9 9 29.15	2.2628	15 33 52.0	13.219
15	7 19 9.61	2.4287	23 48 23.9	7.408	15	9 11 44.82	2.2595	15 20 36.0	13.313
16	7 21 35.25	2.4257	23 40 55.0	7.556	16	9 14 0.29	2.2562	15 7 14.4	13.406
17	7 24 0.71	2.4227	23 33 17.2	7.703	17	9 16 15.56	2.2529	14 53 47.2	13.499
18	7 26 25.98	2.4197	23 25 30.7	7.847	18	9 18 30.64	2.2497	14 40 14.5	13.590
19	7 28 51.07	2.4166	23 17 35.5	7.992	19	9 20 45.52	2.2465	14 26 36.4	13.679
20	7 31 15.97	2.4134	23 9 31.6	8.136	20	9 23 0.22	2.2434	14 12 53.0	13.767
21	7 33 40.68	2.4102	23 1 19.1	8.280	21	9 25 14.73	2.2403	13 59 4.4	13.853
22	7 36 5.19	2.4069	22 52 58.0	8.423	22	9 27 29.06	2.2372	13 45 10.6	13.938
23	7 38 29.50	2.4035	22 44 28.3	8.565	23	9 29 43.21	2.2342	13 31 11.8	14.022
24	7 40 53.61	2.4002	N.22 35 50.2	8.706	24	9 31 57.18	2.2312	N.13 17 8.0	14.104

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 29.					MONDAY 30.				
0	9 31 57.18	2.2813	N. 13 17 8.0	14.184	0	10 24 47.67	2.1781	N. 7 18 22.9	15.653
1	9 34 10.97	2.2984	13 2 59.3	14.186	1	10 26 58.39	2.1787	7 2 42.3	15.669
2	9 36 24.59	2.3166	12 48 45.8	14.264	2	10 29 8.88	2.1784	6 46 59.0	15.744
3	9 38 38.04	2.3286	12 34 27.6	14.343	3	10 31 19.37	2.1742	6 31 13.1	15.787
4	9 40 51.33	2.3200	12 20 4.7	14.419	4	10 33 29.78	2.1720	6 15 24.6	15.828
5	9 43 4.45	2.3178	12 5 37.2	14.486	5	10 35 40.13	2.1719	5 59 33.7	15.868
6	9 45 17.41	2.3147	11 51 5.3	14.540	6	10 37 50.41	2.1700	5 43 40.4	15.907
7	9 47 30.22	2.3122	11 36 29.0	14.642	7	10 40 0.63	2.1689	5 27 44.8	15.944
8	9 49 42.87	2.3097	11 21 48.3	14.713	8	10 42 10.80	2.1680	5 11 47.1	15.980
9	9 51 55.38	2.3072	11 7 3.4	14.782	9	10 44 20.92	2.1682	4 55 47.2	16.014
10	9 54 7.74	2.3046	10 52 14.4	14.846	10	10 46 30.99	2.1675	4 39 45.4	16.046
11	9 56 19.96	2.3026	10 37 21.4	14.917	11	10 48 41.02	2.1688	4 23 41.7	16.078
12	9 58 32.04	2.3002	10 22 24.4	14.988	12	10 50 51.01	2.1683	4 7 36.1	16.107
13	10 0 43.98	2.1980	10 7 23.5	15.046	13	10 53 0.97	2.1688	3 51 28.8	16.138
14	10 2 55.80	2.1960	9 52 18.9	15.108	14	10 55 10.91	2.1684	3 35 19.9	16.161
15	10 5 7.49	2.1988	9 37 10.5	15.170	15	10 57 20.82	2.1680	3 19 9.5	16.186
16	10 7 19.06	2.1916	9 21 58.5	15.229	16	10 59 30.71	2.1648	3 2 57.6	16.209
17	10 9 30.51	2.1899	9 6 43.0	15.287	17	11 1 40.59	2.1646	2 46 44.4	16.231
18	10 11 41.85	2.1880	8 51 24.0	15.344	18	11 3 50.46	2.1645	2 30 29.9	16.251
19	10 13 53.07	2.1862	8 36 1.7	15.399	19	11 6 0.33	2.1644	2 14 14.3	16.269
20	10 16 4.19	2.1845	8 20 36.1	15.458	20	11 8 10.19	2.1644	1 57 57.6	16.286
21	10 18 15.20	2.1826	8 5 7.3	15.506	21	11 10 20.06	2.1645	1 41 39.9	16.302
22	10 20 26.12	2.1812	7 49 35.5	15.556	22	11 12 29.93	2.1647	1 25 21.4	16.316
23	10 22 36.94	2.1795	7 34 0.7	15.605	23	11 14 39.82	2.1680	1 9 2.1	16.327
24	10 24 47.67	2.1781	N. 7 18 22.9	15.653	24	11 16 49.73	2.1654	N. 0 52 42.2	16.338

PHASES OF THE MOON.

○ Full Moon,	Day. h. m.
☾ Last Quarter,	5 10 0.0
● New Moon,	19 13 34.5
☽ First Quarter,	20 17 44.8
	28 2 36.2

☾ Perigee,	Day. h.
☽ Apogee,	3 23.5
	16 2.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dif.	IIIh.			P. L. of Dif.	VIh.			P. L. of Dif.	IXh.			P. L. of Dif.
			°	'	"		°	'	"		°	'	"		°	'	"	
1	Sun	W.	118	45	54	2583	120	26	22	2520	122	7	8	2508	123	48	10	2496
	Venus	W.	76	53	45	2569	78	33	22	2556	80	13	17	2543	81	53	31	2530
	Aldebaran	W.	63	2	0	2557	64	48	18	2545	66	34	57	2532	68	21	58	2519
	Jupiter	W.	24	49	40	2535	26	37	15	2522	28	25	10	2509	30	13	25	2496
	Pollux	W.	20	34	50	2523	22	19	53	2510	24	5	42	2497	25	52	11	2484
	Spica	E.	71	9	21	2512	69	21	12	2500	67	32	45	2488	65	43	59	2476
2	Venus	W.	90	19	1	2471	92	0	55	2460	93	43	4	2448	95	25	27	2441
	Aldebaran	W.	77	21	47	2456	79	10	37	2444	80	59	43	2432	82	49	3	2420
	Jupiter	W.	39	19	3	2441	41	8	59	2430	42	59	10	2418	44	49	35	2413
	Pollux	W.	34	52	19	2428	36	41	35	2416	38	31	13	2404	40	21	9	2390
	Spica	E.	56	35	58	2414	54	45	35	2402	52	54	59	2390	51	4	10	2376
	Antares	E.	102	22	57	2402	100	32	23	2390	98	41	35	2378	96	50	33	2366
3	Venus	W.	104	0	25	2408	105	43	55	2396	107	27	33	2384	109	11	18	2372
	Jupiter	W.	54	4	42	2379	55	56	13	2374	57	47	52	2362	59	39	39	2350
	Pollux	W.	49	34	49	2365	51	26	11	2358	53	17	44	2346	55	9	26	2334
	Saturn	W.	21	2	23	2352	22	54	3	2344	24	45	58	2332	26	9	4	2320
	Spica	E.	41	47	19	2338	39	55	30	2334	38	3	35	2322	36	11	34	2310
	Antares	E.	87	32	25	2325	85	40	17	2313	83	48	2	2301	81	55	39	2289
	Mars	E.	115	53	49	2313	114	5	41	2306	112	17	25	2294	110	29	1	2282
4	Jupiter	W.	68	59	41	2307	70	51	47	2306	72	43	54	2297	74	35	58	2289
	Pollux	W.	64	29	28	2303	66	21	39	2303	68	13	50	2294	70	6	0	2284
	Saturn	W.	36	0	26	2303	37	53	6	2303	39	45	46	2295	41	38	26	2285
	Regulus	W.	27	27	45	2306	29	20	8	2306	31	12	32	2294	33	4	57	2284
	Antares	E.	72	32	36	2303	70	39	53	2303	68	47	11	2294	66	54	30	2285
	Mars	E.	101	25	44	2287	99	36	57	2288	97	46	11	2288	95	59	25	2288
5	Jupiter	W.	83	55	23	2308	85	46	56	2304	87	38	20	2291	89	29	33	2283
	Pollux	W.	79	26	6	2302	81	17	49	2307	83	9	24	2298	85	0	49	2290
	Saturn	W.	51	1	2	2303	52	53	15	2307	54	45	20	2304	56	37	15	2291
	Regulus	W.	42	26	26	2301	44	18	26	2305	46	10	19	2302	48	2	2	2298
	Antares	E.	57	32	0	2304	55	39	50	2309	53	47	48	2306	51	55	57	2303
	Mars	E.	86	56	28	2307	85	8	11	2313	83	20	3	2320	81	32	5	2327
6	Jupiter	W.	98	42	36	2145	100	32	29	2155	102	22	4	2167	104	11	22	2178
	Saturn	W.	65	53	47	2116	67	44	22	2126	69	34	41	2138	71	24	42	2160
	Regulus	W.	57	17	39	2122	59	8	4	2134	60	58	12	2145	62	48	3	2157
	Antares	E.	42	39	44	2118	40	49	13	2130	38	58	59	2141	37	9	2	2153
	Mars	E.	72	35	16	2273	70	48	37	2285	69	2	15	2297	67	16	11	2309
	α Aquilæ	E.	96	34	40	2748	94	59	4	2766	93	23	38	2765	91	46	24	2777
7	Saturn	W.	80	29	59	2218	82	18	0	2233	84	5	39	2249	85	52	54	2264
	Regulus	W.	71	52	32	2224	73	40	24	2239	75	27	53	2255	77	14	59	2271
	Mars	E.	58	30	36	2280	56	46	32	2294	55	2	49	2310	53	19	29	2327
	α Aquilæ	E.	83	56	29	2854	82	23	11	2878	80	50	18	2895	79	17	53	2920
	Fomalhaut	E.	108	39	50	2624	107	1	27	2631	105	23	14	2640	103	45	13	2649
8	Saturn	W.	94	43	13	2348	96	28	2	2366	98	12	26	2383	99	56	25	2402
	Regulus	W.	86	4	33	2354	87	49	14	2371	89	33	30	2389	91	17	20	2407
	Spica	W.	39	4	35	2368	33	48	55	2384	35	32	52	2401	37	16	25	2417
	Mars	E.	44	48	49	2614	43	7	55	2633	41	27	27	2651	39	47	24	2670
	α Aquilæ	E.	71	43	53	2660	70	14	54	2682	68	46	35	2708	67	18	59	2735
	Fomalhaut	E.	95	38	58	2716	94	2	39	2732	92	26	41	2749	90	51	6	2766

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	XVh.		XVIIIh.		XXIh.		
			P. L. of Dif.	P. L. of Dif.	P. L. of Dif.	P. L. of Dif.			
1	Sun W.	125 29 29	2488	127 11 4	2474	128 52 54	2483	130 34 59	2455
	Venus W.	83 34 3	2617	85 14 52	2606	86 55 58	2498	88 37 21	2481
	Aldebaran W.	79 9 18	2582	71 56 57	2519	73 44 57	2508	75 33 13	2196
	Jupiter W.	32 1 58	2184	33 50 49	2173	35 39 57	2162	37 29 22	2151
	Pollux W.	27 39 15	2285	29 26 51	2216	31 14 54	2198	33 3 24	2192
	Spica E.	63 54 55	2168	62 5 34	2155	60 15 58	2144	58 26 6	2124
2	Venus W.	97 8 3	2482	98 50 52	2424	100 33 52	2416	102 17 4	2410
	Aldebaran W.	84 38 37	2148	86 28 23	2189	88 18 22	2133	90 8 31	2126
	Jupiter W.	46 40 14	2168	48 31 4	2086	50 22 6	2091	52 13 19	2086
	Pollux W.	42 11 23	2119	44 1 53	2160	45 52 38	2100	47 43 37	2092
	Spica E.	49 13 9	2091	47 21 56	2085	45 30 33	2078	43 39 0	2073
	Antares E.	94 59 18	2082	93 7 51	2074	91 16 12	2068	89 24 24	2062
3	Venus W.	110 55 10	2888	112 39 6	2882	114 23 7	2380	116 7 10	2378
	Jupiter W.	61 31 32	2082	63 23 29	2080	65 15 30	2087	67 7 35	2087
	Pollux W.	57 1 16	2082	58 53 12	2089	60 45 14	2047	62 37 19	2065
	Saturn W.	28 30 20	2046	30 22 43	2041	32 15 13	2088	34 7 48	2036
	Spica E.	34 19 30	2085	32 27 23	2085	30 35 15	2056	28 43 8	2057
	Antares E.	80 3 10	2089	78 10 37	2086	76 17 59	2035	74 25 19	2083
	Mars E.	108 40 30	2194	106 51 54	2182	105 3 14	2190	103 14 31	2187
	Jupiter W.	76 23 1	2081	78 20 0	2084	80 11 54	2087	82 3 42	2073
4	Pollux W.	71 58 10	2087	73 50 16	2089	75 42 19	2082	77 34 16	2087
	Saturn W.	43 31 6	2087	45 23 42	2040	47 16 14	2043	49 8 41	2047
	Regulus W.	34 57 22	2048	36 49 44	2048	38 42 3	2032	40 34 17	2055
	Antares E.	65 1 50	2088	63 9 15	2041	61 16 44	2044	59 24 18	2049
	Mars E.	94 10 40	2193	92 22 0	2194	90 33 24	2197	88 44 52	2302
	Jupiter W.	91 20 36	2168	93 11 27	2114	95 2 5	2124	96 52 28	2134
5	Pollux W.	86 52 3	2089	88 43 5	2104	90 33 55	2116	92 24 30	2126
	Saturn W.	58 28 59	2079	60 20 31	2086	62 11 51	2096	64 2 57	2106
	Regulus W.	49 53 35	2086	51 44 56	2084	53 36 4	2103	55 26 59	2113
	Antares E.	50 4 17	2081	48 12 48	2080	46 21 33	2098	44 30 31	2108
	Mars E.	79 44 18	2285	77 56 42	2243	76 9 19	2253	74 22 10	2263
	Jupiter W.	106 0 22	2192	107 49 2	2204	109 37 23	2219	111 25 22	2224
6	Saturn W.	73 14 25	2163	75 3 49	2176	76 52 53	2190	78 41 36	2202
	Regulus W.	64 37 36	2169	66 26 51	2182	68 15 45	2196	70 4 19	2210
	Antares E.	35 19 24	2165	33 30 4	2179	31 41 5	2198	29 52 27	2206
	Mars E.	65 30 25	2282	63 44 57	2255	61 59 49	2260	60 15 2	2264
	α Aquilæ E.	90 13 26	2788	88 38 42	2801	87 4 16	2818	85 30 11	2835
	Saturn W.	87 39 46	2280	89 26 15	2297	91 12 19	2314	92 57 58	2321
7	Regulus W.	79 1 41	2286	80 48 1	2302	82 33 57	2320	84 19 27	2327
	Mars E.	51 36 33	2442	49 54 0	2461	48 11 52	2476	46 30 8	2496
	α Aquilæ E.	77 45 59	2943	76 14 35	2970	74 43 45	2999	73 13 30	3029
	Fomalhaut E.	102 7 25	2880	100 29 52	2873	98 52 36	2887	97 15 38	2700
	Saturn W.	101 39 57	2418	103 23 4	2438	105 5 44	2456	106 47 59	2475
8	Regulus W.	93 0 45	2425	94 43 44	2442	96 26 17	2462	98 8 24	2480
	Spica W.	38 59 35	2425	40 42 20	2445	42 24 40	2470	44 6 36	2487
	Mars E.	38 7 48	2888	36 28 37	2908	34 49 53	2927	33 11 34	2647
	α Aquilæ E.	65 52 8	2304	64 26 3	2344	63 0 46	2387	61 36 19	2329
	Fomalhaut E.	89 15 53	2785	87 41 5	2804	86 6 42	2823	84 32 44	2843

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.			VI ^h .			IX ^h .			P. L. of Dist.
			°	'	"	°	'	"	°	'	"	
9	Saturn W.	108 29 48	2498	110 11 11	2510	111 59 10	2627	113 32 45	2645			
	Regulus W.	99 50 5	2498	101 31 21	2517	103 12 11	2635	104 52 35	2653			
	Spica W.	45 48 8	2505	47 29 14	2628	49 9 55	2640	50 50 12	2659			
	Mars E.	31 33 44	2666	29 56 19	2686	28 19 20	2705	26 42 47	2725			
	α Aquilæ E.	60 12 46	2680	58 50 7	2431	57 28 26	2484	56 7 44	2541			
	Fomalhaut E.	52 59 12	2685	81 26 8	2687	79 53 32	2609	78 21 24	2681			
SUN E.	131 58 23	2650	130 25 0	2669	128 52 1	2687	127 19 25	2605				
10	Spica W.	59 5 28	2647	60 43 19	2665	62 20 46	2692	63 57 50	2699			
	Antares W.	13 13 34	2640	14 51 35	2667	16 29 12	2675	18 6 28	2692			
	α Aquilæ E.	49 40 59	2692	48 27 21	2684	47 15 6	2654	46 4 20	2151			
	Fomalhaut E.	70 48 14	2656	69 19 11	2682	67 50 40	2109	66 22 41	2126			
	α Pegasi E.	91 41 10	2610	90 6 55	2628	88 33 3	2645	86 59 34	2662			
	SUN E.	119 42 26	3000	118 12 13	3019	116 42 24	3037	115 12 57	3055			
11	Spica W.	71 57 33	2792	73 32 25	2797	75 6 57	2811	76 41 10	2827			
	Antares W.	28 6 52	2776	27 41 51	2792	29 16 30	2807	30 50 49	2822			
	Fomalhaut E.	59 11 40	2822	57 47 19	2825	56 23 37	2821	55 0 36	2808			
	α Pegasi E.	79 17 48	2622	77 46 35	2669	76 15 44	2667	74 45 15	2605			
	SUN E.	107 51 11	3142	106 23 54	3169	104 56 57	3175	103 30 19	3192			
12	Spica W.	84 27 32	2696	85 59 56	2699	87 32 3	2620	89 3 56	2683			
	Antares W.	38 37 41	2691	40 10 11	2698	41 42 26	2616	43 14 25	2627			
	Fomalhaut E.	48 16 33	2610	46 58 10	2661	45 40 41	2712	44 24 7	2770			
	α Pegasi E.	67 18 19	2692	65 50 0	3111	64 22 4	3129	62 54 29	3145			
	SUN E.	96 21 49	3266	94 56 58	3261	93 32 24	3264	92 8 6	3266			
13	Spica W.	96 39 43	2685	98 10 14	2685	99 40 33	3004	101 10 41	3012			
	Antares W.	50 50 45	2681	52 21 22	2690	53 51 47	2696	55 22 2	2606			
	Mars W.	17 32 6	3178	18 58 41	3185	20 25 8	3192	21 51 27	3196			
	α Pegasi E.	55 41 55	2827	54 16 30	2856	52 51 27	2876	51 26 48	2896			
	SUN E.	85 10 7	3365	83 47 10	3375	82 24 25	3385	81 1 51	3398			
14	Antares W.	62 50 53	3042	64 20 14	3047	65 49 29	3062	67 18 38	3067			
	Mars W.	29 1 18	3222	30 26 53	3223	31 52 13	3237	33 17 38	3242			
	α Pegasi E.	44 29 40	3410	43 7 35	3438	41 46 1	3465	40 24 58	3497			
	SUN E.	74 11 26	3422	72 49 46	3428	71 28 13	3445	70 6 47	3450			
15	Antares W.	74 43 4	3078	76 11 47	3076	77 40 26	3077	79 9 5	3078			
	Mars W.	40 23 37	3257	41 48 39	3259	43 13 39	3259	44 38 39	3260			
	SUN E.	63 20 56	3471	61 59 59	3472	60 39 4	3474	59 18 11	3478			
16	Antares W.	86 32 3	3078	88 0 39	3077	89 29 17	3075	90 57 57	3073			
	Mars W.	51 43 30	3259	53 8 30	3257	54 33 32	3255	55 58 36	3252			
	α Aquilæ W.	42 23 57	2746	43 24 18	2683	44 25 57	2669	45 28 49	2492			
	SUN E.	52 34 15	3480	51 13 29	3480	49 52 43	3460	48 31 57	3479			
17	Antares W.	98 22 1	3059	99 51 1	3055	101 20 6	3061	102 49 16	3046			
	Mars W.	63 4 48	3226	64 30 15	3222	65 55 46	3227	67 21 23	3228			
	α Aquilæ W.	50 58 41	2186	52 7 21	2187	53 16 47	2090	54 26 58	2047			
	SUN E.	41 47 44	3472	40 26 49	3470	39 5 51	3467	37 44 50	3465			
18	Mars W.	74 31 1	3194	75 57 17	3188	77 23 41	3182	78 50 19	3174			
	α Aquilæ W.	60 27 36	2670	61 41 26	2641	62 55 46	2612	64 10 36	2785			
	SUN E.	30 59 11	3427	29 37 59	3456	28 16 45	3456	26 55 32	3457			

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.			P. L. of Dist.	XVIIIh.			P. L. of Dist.	XXIh.			P. L. of Dist.
				°	'	"		°	'	"		°	'	"	
9	Saturn W.	115 12 55	2663	116 52 41	2679	118 32 5	2696	120 11 7	2610						
	Regulus W.	106 32 34	2672	108 12 7	2699	109 51 16	2699	111 29 59	2627						
	Spica W.	52 30 4	2677	54 9 31	2694	55 48 34	2612	57 27 13	2629						
	Mars E.	25 6 41	2746	23 31 2	2768	21 55 50	2787	20 21 5	2807						
	α Aquilæ E.	54 48 5	2692	53 29 33	2696	52 12 9	2731	50 55 55	2806						
	Fomalhaut E.	76 49 45	2666	75 18 36	2680	73 47 58	2604	72 17 50	2630						
SUN E.	125 47 13	2626	124 15 26	2644	122 44 3	2662	121 13 3	2661							
10	Spica W.	65 34 31	2716	67 10 49	2733	68 46 45	2749	70 22 20	2766						
	Antares W.	19 43 17	2710	21 19 44	2726	22 55 49	2743	24 31 32	2760						
	α Aquilæ E.	44 55 7	2700	43 47 28	2683	42 41 32	2489	41 37 31	2619						
	Fomalhaut E.	64 55 18	2168	63 28 29	2197	62 2 16	2227	60 36 39	2259						
	α Pegasi E.	85 26 27	2681	83 53 44	2686	82 21 23	2616	80 49 24	2684						
	SUN E.	113 43 52	2673	112 15 9	2691	110 46 49	2109	109 18 50	2125						
11	Spica W.	78 15 3	2642	79 48 37	2666	81 21 53	2669	82 54 51	2688						
	Antares W.	32 24 48	2698	33 58 27	2680	35 31 50	2664	37 4 55	2679						
	Fomalhaut E.	53 38 17	2437	52 16 42	2476	50 55 51	2618	49 35 47	2664						
	α Pegasi E.	73 15 8	2622	71 45 23	2640	70 16 0	2656	68 46 59	2674						
	SUN E.	102 4 0	2600	100 38 1	2624	99 12 20	2629	97 46 56	2623						
	12	Spica W.	90 35 33	2644	92 6 56	2666	93 38 5	2666	95 9 0	2676					
Antares W.		44 46 9	2629	46 17 38	2630	47 48 53	2660	49 19 56	2671						
Fomalhaut E.		43 8 34	2622	41 54 5	2696	40 40 42	2668	39 28 31	2642						
α Pegasi E.		61 27 14	2164	60 0 22	2183	58 33 52	2199	57 7 42	2219						
SUN E.		90 44 2	2619	89 20 13	2632	87 56 38	2642	86 33 16	2664						
13		Spica W.	102 40 39	2620	104 10 27	2628	105 40 5	2634	107 9 35	2641					
	Antares W.	56 52 7	2615	58 22 1	2622	59 51 47	2629	61 21 24	2635						
	Mars W.	23 17 38	2606	24 43 41	2611	26 9 37	2617	27 35 26	2622						
	α Pegasi E.	50 2 32	2617	48 38 40	2629	47 15 14	2662	45 52 14	2636						
	SUN E.	79 39 27	2492	78 17 13	2411	76 55 9	2418	75 33 13	2326						
	14	Antares W.	68 47 46	2661	70 16 37	2666	71 45 30	2668	73 14 19	2671					
Mars W.		34 42 56	2646	36 8 14	2649	37 33 25	2623	38 58 32	2654						
α Pegasi E.		39 4 30	2630	37 44 39	2666	36 25 26	2606	35 6 58	2649						
SUN E.		68 45 27	2484	67 24 12	2459	66 3 2	2463	64 41 57	2467						
15		Antares W.	80 37 41	2678	82 6 17	2679	83 34 52	2679	85 3 27	2679					
		Mars W.	46 3 37	2661	47 28 34	2680	48 53 32	2659	50 18 31	2659					
	SUN E.	57 57 22	2479	56 36 34	2480	55 15 47	2480	53 55 1	2480						
	16	Antares W.	92 26 39	2671	93 55 24	2668	95 24 13	2665	96 53 5	2662					
		Mars W.	57 23 44	2620	58 48 54	2647	60 14 8	2643	61 39 26	2640					
		α Aquilæ W.	46 32 48	2420	47 37 51	2356	48 43 53	2295	49 50 50	2237					
SUN E.		47 11 9	2478	45 50 20	2477	44 29 30	2475	43 8 36	2473						
17		Antares W.	104 18 32	2642	105 47 53	2637	107 17 20	2632	108 46 53	2626					
		Mars W.	68 47 6	2617	70 12 55	2612	71 38 50	2606	73 4 52	2600					
	α Aquilæ W.	55 37 51	2409	56 49 22	2369	58 1 32	2364	59 14 17	2361						
	SUN E.	36 23 47	2463	35 2 41	2461	33 41 33	2459	32 20 23	2467						
	18	Mars W.	80 16 52	2166	81 43 40	2160	83 10 37	2162	84 37 43	2145					
		α Aquilæ W.	65 25 54	2780	66 41 38	2726	67 57 47	2714	69 14 19	2692					
SUN E.		25 34 18	2459	24 13 8	2462	22 52 1	2467	21 31 0	2475						

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			IIIh.			VIh.			IXh.						
			P. L. of Dist.	°	'	"	P. L. of Dist.	°	'	"	P. L. of Dist.	°	'	"				
23	SUN	W.	26	50	49	3121	28	18	33	3105	29	46	36	3088	31	15	0	3073
	Jupiter	E.	48	9	26	2744	46	33	44	2726	44	57	51	2737	43	21	47	2719
	Pollux	E.	51	3	35	2732	49	27	38	2726	47	51	31	2719	46	15	16	2711
	Saturn	E.	79	6	1	2706	77	29	29	2699	75	52	48	2690	74	15	55	2681
	Regulus	E.	87	51	32	2704	86	14	57	2696	84	38	10	2687	83	1	12	2678
24	SUN	W.	38	41	10	3009	40	11	12	2997	41	41	28	2986	43	11	59	2974
	Jupiter	E.	35	18	35	2676	33	41	23	2687	32	3	59	2639	30	26	24	2649
	Pollux	E.	38	11	50	2688	36	34	47	2678	34	57	38	2674	33	20	23	2671
	Saturn	E.	66	8	36	2638	64	30	33	2630	62	52	19	2622	61	13	54	2613
	Regulus	E.	74	53	29	2636	73	15	21	2626	71	37	2	2617	69	58	30	2609
25	SUN	W.	50	48	6	2919	52	20	1	2909	53	52	9	2898	55	24	31	2887
	Aldebaran	W.	20	18	38	3108	21	46	38	3026	23	16	18	2956	24	47	26	2898
	Saturn	E.	52	58	52	2570	51	19	16	2592	49	39	29	2558	47	59	30	2545
	Regulus	E.	61	42	57	2556	60	3	14	2556	58	23	19	2548	56	43	13	2539
	Spica	E.	115	46	9	2566	114	6	28	2569	112	26	36	2549	110	46	31	2540
26	SUN	W.	63	9	42	2636	65	43	25	2626	67	17	21	2618	68	51	29	2604
	Aldebaran	W.	32	38	35	2705	34	15	8	2678	35	59	17	2653	37	30	0	2631
	Venus	W.	19	16	31	2640	19	50	7	2629	21	23	57	2619	22	58	0	2610
	Saturn	E.	39	36	41	2608	37	55	32	2496	36	14	13	2487	34	32	42	2480
	Regulus	E.	48	19	37	2486	46	38	18	2486	44	56	46	2478	43	15	2	2469
Spica	E.	102	22	58	2494	100	41	37	2486	99	0	4	2477	97	18	18	2467	
27	SUN	W.	75	45	35	2758	77	21	4	2744	78	56	46	2733	80	32	42	2724
	Aldebaran	W.	45	45	34	2638	47	25	54	2622	49	6	36	2607	50	47	40	2603
	Venus	W.	30	51	34	2757	32	26	58	2747	34	2	35	2738	35	38	25	2737
	Saturn	E.	26	2	25	2443	24	19	52	2438	22	37	11	2433	20	54	23	2430
	Regulus	E.	34	43	23	2428	33	0	28	2420	31	17	22	2413	29	34	4	2405
Spica	E.	88	46	12	2423	87	3	9	2412	85	19	52	2403	83	36	22	2395	
28	SUN	W.	88	35	37	2674	90	12	52	2665	91	50	19	2656	93	27	59	2646
	Aldebaran	W.	59	17	41	2429	61	0	35	2417	62	43	46	2406	64	27	12	2396
	Venus	W.	43	40	59	2678	45	18	9	2668	46	55	32	2657	48	33	10	2648
	Jupiter	W.	18	18	7	2393	20	1	52	2384	21	45	50	2374	23	30	2	2364
	Spica	E.	74	55	41	2380	73	10	54	2341	71	25	54	2332	69	40	41	2324
Antares	E.	120	43	33	2344	118	58	37	2336	117	13	30	2326	115	28	9	2318	
29	SUN	W.	101	39	26	2601	103	18	19	2593	104	57	23	2585	106	36	39	2577
	Aldebaran	W.	73	8	14	2344	74	53	9	2336	76	38	17	2326	78	23	39	2317
	Venus	W.	56	44	29	2601	56	23	22	2592	60	2	28	2583	61	41	46	2575
	Jupiter	W.	32	14	24	2320	33	59	54	2311	35	45	37	2302	37	31	31	2296
	Pollux	W.	30	43	7	2346	32	28	0	2331	34	13	15	2317	35	58	49	2305
Spica	E.	60	51	36	2283	59	5	11	2274	57	18	34	2268	55	31	47	2260	
Antares	E.	106	38	17	2276	104	51	42	2269	103	4	55	2260	101	17	56	2252	
30	SUN	W.	114	55	37	2540	116	35	54	2535	118	16	19	2529	119	56	52	2523
	Venus	W.	70	1	4	2535	71	41	28	2528	73	22	2	2522	75	2	45	2515
	Jupiter	W.	46	23	49	2260	48	10	48	2253	49	57	56	2247	51	45	14	2241
	Pollux	W.	44	50	50	2284	46	37	57	2245	48	25	17	2237	50	12	49	2230
	Saturn	W.	16	27	42	2270	18	14	26	2255	20	1	32	2243	21	48	56	2233
Spica	E.	46	35	12	2227	44	47	25	2222	42	59	30	2216	41	11	26	2210	
Antares	E.	92	20	17	2216	90	32	14	2210	88	44	2	2204	86	55	40	2198	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Dif.	XVh.			P. L. of Dif.	XVIIIh.			P. L. of Dif.	XXIh.			P. L. of Dif.
			o	i	"		o	i	"		o	i	"		o	i	"	
23	SUN	W.	32	43	42	3081	34	12	39	3047	35	41	53	3084	37	11	24	3022
	Jupiter	E.	41	45	32	2789	40	9	4	2701	38	32	26	2692	36	55	36	2684
	Pollux	E.	44	38	51	2705	43	2	18	2689	41	25	37	2682	39	48	47	2687
	Saturn	E.	72	38	50	2672	71	1	33	2685	69	24	6	2686	67	46	27	2647
	Regulus	E.	81	24	2	2689	79	46	41	2681	78	9	9	2682	76	31	25	2643
24	SUN	W.	44	42	44	2692	46	13	44	2692	47	44	57	2940	49	16	25	2680
	Jupiter	E.	28	48	36	2642	27	10	38	2634	25	32	29	2626	23	54	8	2616
	Pollux	E.	31	43	4	2688	30	5	41	2687	28	28	17	2689	26	50	55	2689
	Saturn	E.	59	35	17	2604	57	56	28	2606	56	17	27	2698	54	38	15	2680
	Regulus	E.	68	19	47	2600	66	40	52	2591	65	1	45	2568	63	22	27	2674
25	SUN	W.	56	57	7	2676	58	29	56	2667	60	2	57	2656	61	36	13	2645
	Aldebaran	W.	26	19	47	2646	27	53	12	2606	29	27	32	2708	31	2	42	2735
	Saturn	E.	46	19	20	2687	44	38	58	2527	42	58	23	2620	41	17	38	2612
	Regulus	E.	55	2	54	2680	53	22	23	2622	51	41	40	2513	50	0	45	2604
	Spica	E.	109	6	14	2681	107	25	44	2622	105	45	1	2612	104	4	6	2604
26	SUN	W.	69	25	52	2794	71	0	28	2784	72	35	17	2772	74	10	20	2764
	Aldebaran	W.	39	8	13	2610	40	46	55	2591	42	26	3	2572	44	5	37	2556
	Venus	W.	24	32	15	2798	26	6	45	2788	27	41	28	2778	29	16	25	2769
	Saturn	E.	32	51	0	2473	31	9	7	2466	29	27	3	2457	27	44	49	2450
	Regulus	E.	41	33	6	2461	39	50	58	2452	38	8	37	2445	36	26	6	2436
Spica	E.	95	36	18	2456	93	54	6	2449	92	11	41	2440	90	29	3	2431	
27	SUN	W.	82	8	50	2713	83	45	12	2704	85	21	47	2692	86	58	36	2684
	Aldebaran	W.	52	29	3	2480	54	10	45	2466	55	52	46	2453	57	35	5	2442
	Venus	W.	37	14	29	2716	38	50	47	2707	40	27	18	2697	42	4	2	2687
	Saturn	E.	19	11	30	2427	17	28	35	2426	15	45	40	2431	14	2	48	2429
	Regulus	E.	27	50	36	2397	26	6	57	2391	24	23	9	2384	22	39	11	2360
Spica	E.	81	52	40	2385	80	8	44	2377	78	24	36	2368	76	40	15	2359	
28	SUN	W.	95	5	52	2637	96	43	57	2628	98	22	14	2618	100	0	44	2610
	Aldebaran	W.	66	10	54	2384	67	54	52	2373	69	39	5	2363	71	23	33	2354
	Venus	W.	50	11	0	2638	51	49	4	2629	53	27	20	2620	55	5	48	2610
	Jupiter	W.	25	14	28	2356	26	59	8	2346	28	44	1	2337	30	29	7	2329
	Spica	E.	67	55	17	2315	66	9	40	2307	64	23	50	2299	62	37	49	2291
Antares	E.	113	42	36	2309	111	56	50	2300	110	10	51	2292	108	24	40	2284	
29	SUN	W.	108	16	6	2668	109	55	45	2661	111	35	33	2655	113	15	30	2648
	Aldebaran	W.	80	9	13	2310	81	54	58	2301	83	40	56	2294	85	27	4	2287
	Venus	W.	63	21	15	2666	65	0	56	2659	66	40	48	2651	68	20	51	2643
	Jupiter	W.	39	17	37	2388	41	3	54	2281	42	50	22	2273	44	37	1	2267
	Pollux	W.	37	44	41	2294	39	30	50	2283	41	17	15	2272	43	3	55	2262
Spica	E.	53	44	48	2233	51	57	39	2216	50	10	20	2209	48	22	51	2203	
Antares	E.	99	30	46	2246	97	43	25	2237	95	55	53	2230	94	8	10	2223	
30	SUN	W.	121	37	33	2618	123	18	21	2613	124	59	16	2610	126	40	17	2606
	Venus	W.	76	43	38	2610	76	24	38	2603	80	5	47	2497	81	47	4	2492
	Jupiter	W.	53	32	40	2236	55	20	14	2231	57	7	56	2225	58	55	46	2221
	Pollux	W.	52	0	32	2223	53	48	26	2216	55	36	29	2210	57	24	42	2204
	Saturn	W.	23	36	35	2223	25	24	28	2215	27	12	33	2206	29	0	50	2200
Spica	E.	39	23	14	2206	37	34	56	2203	35	46	33	2196	33	58	3	2196	
Antares	E.	85	7	10	2198	83	16	32	2188	81	29	46	2182	79	40	52	2178	

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.					
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.	Semi-diameter.			
		h.	m.	s.		°	'						"		
Tues.	1	2	35	26.44	9.547	N.15	13	51.5	45.05	15	54.04	66.09	3	5.57	0.308
Wed.	2	2	39	15.84	9.569	15	31	44.9	44.41	15	53.81	66.17	3	12.71	0.286
Thur.	3	2	43	5.77	9.592	15	49	23.0	43.77	15	53.58	66.25	3	19.32	0.264
Fri.	4	2	46	56.25	9.615	16	6	45.5	43.11	15	53.36	66.33	3	25.38	0.241
Sat.	5	2	50	47.28	9.638	16	23	52.1	42.44	15	53.13	66.41	3	30.88	0.217
Sun.	6	2	54	38.88	9.662	16	40	42.3	41.75	15	52.91	66.49	3	35.82	0.193
Mon.	7	2	58	31.06	9.686	16	57	16.1	41.06	15	52.69	66.57	3	40.19	0.169
Tues.	8	3	2	23.82	9.710	17	13	33.0	40.35	15	52.47	66.65	3	43.98	0.145
Wed.	9	3	6	17.16	9.735	17	29	32.8	39.63	15	52.25	66.74	3	47.19	0.121
Thur.	10	3	10	11.09	9.760	17	45	15.2	38.90	15	52.03	66.83	3	49.81	0.096
Fri.	11	3	14	5.61	9.785	18	0	39.9	38.15	15	51.82	66.91	3	51.84	0.071
Sat.	12	3	18	0.73	9.810	18	15	46.5	37.39	15	51.61	66.99	3	53.27	0.046
Sun.	13	3	21	56.45	9.835	18	30	34.9	36.63	15	51.40	67.07	3	54.10	0.022
Mon.	14	3	25	52.77	9.859	18	45	4.7	35.84	15	51.19	67.15	3	54.34	0.002
Tues.	15	3	29	49.67	9.883	18	59	15.6	35.05	15	50.99	67.23	3	54.00	0.028
Wed.	16	3	33	47.15	9.907	19	13	7.4	34.25	15	50.80	67.31	3	53.07	0.050
Thur.	17	3	37	45.22	9.931	19	26	39.6	33.43	15	50.61	67.39	3	51.56	0.074
Fri.	18	3	41	43.86	9.955	19	39	51.9	32.60	15	50.42	67.47	3	49.48	0.098
Sat.	19	3	45	43.07	9.978	19	52	44.2	31.76	15	50.23	67.55	3	46.85	0.122
Sun.	20	3	49	42.84	10.000	20	5	16.3	30.91	15	50.05	67.63	3	43.65	0.145
Mon.	21	3	53	43.15	10.022	20	17	27.9	30.05	15	49.88	67.71	3	39.90	0.167
Tues.	22	3	57	43.99	10.044	20	29	18.7	29.17	15	49.71	67.79	3	35.63	0.188
Wed.	23	4	1	45.34	10.066	20	40	48.3	28.29	15	49.54	67.86	3	30.85	0.209
Thur.	24	4	5	47.19	10.087	20	51	56.5	27.39	15	49.38	67.93	3	25.56	0.230
Fri.	25	4	9	49.54	10.107	21	2	43.2	26.49	15	49.22	68.00	3	19.78	0.250
Sat.	26	4	13	52.37	10.129	21	13	8.1	25.58	15	49.07	68.07	3	13.53	0.270
Sun.	27	4	17	55.66	10.148	21	23	11.0	24.66	15	48.92	68.14	3	6.82	0.288
Mon.	28	4	21	59.41	10.165	21	32	51.9	23.73	15	48.77	68.20	2	59.65	0.306
Tues.	29	4	26	3.59	10.182	21	42	10.4	22.80	15	48.64	68.26	2	52.04	0.321
Wed.	30	4	30	8.19	10.199	21	51	6.3	21.85	15	48.50	68.32	2	44.02	0.342
Thur.	31	4	34	13.20	10.216	21	59	39.4	20.90	15	48.37	68.38	2	35.60	0.359
Fri.	32	4	38	18.61	10.233	N.22	7	49.5	19.94	15	48.24	68.44	2	26.77	0.376

Nota. — Mean Time of the Semi-diameter passing may be found by subtracting 0s.13 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S								Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.			
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.						
		h.	m.	s.	s.	°	'	"	"						
Tues.	1	2	35	26.93	9.547	N.15	13	53.9	45.05	3	5.60	0.308	2	38	32.53
Wed.	2	2	39	16.35	9.569	15	31	47.4	44.41	3	12.73	0.286	2	42	29.08
Thur.	3	2	43	6.30	9.592	15	49	25.5	43.77	3	19.34	0.264	2	46	25.64
Fri.	4	2	46	56.80	9.615	16	6	48.0	43.11	3	25.39	0.241	2	50	22.19
Sat.	5	2	50	47.85	9.638	16	23	54.6	42.44	3	30.90	0.217	2	54	18.75
Sun.	6	2	54	39.47	9.662	16	40	44.8	41.75	3	35.83	0.193	2	58	15.30
Mon.	7	2	58	31.66	9.686	16	57	18.6	41.06	3	40.20	0.169	3	2	11.86
Tues.	8	3	2	24.42	9.710	17	13	35.5	40.35	3	44.00	0.145	3	6	8.42
Wed.	9	3	6	17.77	9.735	17	29	35.3	39.63	3	47.20	0.121	3	10	4.97
Thur.	10	3	10	11.71	9.760	17	45	17.7	38.90	3	49.82	0.096	3	14	1.58
Fri.	11	3	14	6.24	9.785	18	0	42.4	38.15	3	51.84	0.071	3	17	58.08
Sat.	12	3	18	1.36	9.810	18	15	49.0	37.39	3	53.28	0.046	3	21	54.64
Sun.	13	3	21	57.09	9.835	18	30	37.3	36.63	3	54.10	0.022	3	25	51.19
Mon.	14	3	25	53.41	9.859	18	45	7.0	35.84	3	54.34	0.002	3	29	47.75
Tues.	15	3	29	50.31	9.883	18	59	17.8	35.05	3	54.00	0.026	3	33	44.31
Wed.	16	3	33	47.79	9.907	19	13	9.5	34.25	3	53.08	0.050	3	37	40.87
Thur.	17	3	37	45.86	9.931	19	26	41.6	33.43	3	51.56	0.074	3	41	37.42
Fri.	18	3	41	44.50	9.955	19	39	53.9	32.60	3	49.48	0.098	3	45	33.98
Sat.	19	3	45	43.70	9.978	19	52	46.2	31.76	3	46.84	0.122	3	49	30.54
Sun.	20	3	49	43.46	10.000	20	5	18.2	30.91	3	43.64	0.145	3	53	27.10
Mon.	21	3	53	43.76	10.022	20	17	29.7	30.05	3	39.89	0.167	3	57	23.65
Tues.	22	3	57	44.59	10.044	20	29	20.4	29.17	3	35.62	0.188	4	1	20.21
Wed.	23	4	1	45.93	10.066	20	40	49.9	28.29	3	30.84	0.209	4	5	16.77
Thur.	24	4	5	47.77	10.087	20	51	58.0	27.39	3	25.56	0.230	4	9	13.33
Fri.	25	4	9	50.11	10.107	21	2	44.7	26.49	3	19.77	0.250	4	13	9.88
Sat.	26	4	13	52.92	10.129	21	13	9.5	25.58	3	13.52	0.270	4	17	6.44
Sun.	27	4	17	56.19	10.148	21	23	12.3	24.66	3	6.81	0.288	4	21	3.00
Mon.	28	4	21	59.92	10.165	21	32	53.1	23.73	2	59.64	0.306	4	24	59.56
Tues.	29	4	26	4.09	10.182	21	42	11.5	22.80	2	52.03	0.324	4	28	56.12
Wed.	30	4	30	8.66	10.199	21	51	7.3	21.85	2	44.01	0.342	4	32	52.67
Thur.	31	4	34	13.64	10.216	21	59	40.3	20.90	2	35.59	0.359	4	36	49.23
Fri.	32	4	38	19.03	10.233	N.22	7	50.3	19.94	2	26.76	0.376	4	40	45.79

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

		THE SUN'S					Logarithm of the Radius Vector of the Earth.	DIF. for 1 hour.	Mean Time of Sidereal Oh.
Day of the Month.	Day of the Year.	True LONGITUDE.		DIF. for 1 hour.	LATITUDE.				
		λ	λ'						
1	122	41 18 7.5	17 38.4	145.24	-0.02	0.0036091	43.6	h. m. s. 21 17 57.53	
2	123	42 16 14.9	15 45.7	145.26	0.11	.0037134	43.3	21 14 1.62	
3	124	43 14 20.5	13 51.2	145.19	0.17	.0038170	43.0	21 10 5.72	
4	125	44 12 24.2	11 54.7	145.12	0.19	.0039200	42.7	21 6 9.81	
5	126	45 10 26.2	9 56.5	145.05	0.19	.0040224	42.5	21 2 13.90	
6	127	46 8 26.5	7 56.7	144.99	0.16	.0041242	42.2	20 58 17.99	
7	128	47 6 25.3	5 55.4	144.93	0.09	.0042254	41.9	20 54 22.08	
8	129	48 4 22.7	3 52.6	144.87	-0.01	.0043259	41.6	20 50 26.17	
9	130	49 2 18.7	1 48.4	144.81	+0.11	.0044255	41.2	20 46 30.26	
10	131	49 60 13.3	59 42.8	144.75	0.24	.0045241	40.8	20 42 34.35	
11	132	50 58 6.5	57 35.9	144.70	0.37	.0046217	40.3	20 38 38.44	
12	133	51 55 58.5	55 27.8	144.65	0.50	.0047182	39.8	20 34 42.53	
13	134	52 53 49.3	53 18.4	144.60	0.64	.0048134	39.3	20 30 46.61	
14	135	53 51 39.0	51 7.9	144.55	0.75	.0049072	38.7	20 26 50.71	
15	136	54 49 27.6	48 56.3	144.60	0.84	.0049994	38.0	20 22 54.80	
16	137	55 47 15.0	46 43.6	144.45	0.92	.0050897	37.2	20 18 58.89	
17	138	56 45 1.1	44 29.6	144.40	0.97	.0051779	36.4	20 15 2.98	
18	139	57 42 46.0	42 14.3	144.35	0.98	.0052641	35.5	20 11 7.06	
19	140	58 40 29.7	39 57.8	144.30	0.96	.0053482	34.6	20 7 11.15	
20	141	59 38 12.2	37 40.1	144.24	0.92	.0054302	33.7	20 3 15.24	
21	142	60 35 53.4	35 21.2	144.18	0.85	.0055100	32.8	19 59 19.33	
22	143	61 33 33.2	33 0.9	144.12	0.77	.0055875	31.9	19 55 23.42	
23	144	62 31 11.6	30 39.1	144.06	0.65	.0056629	31.0	19 51 27.50	
24	145	63 28 48.6	28 15.9	144.00	0.53	.0057362	30.1	19 47 31.59	
25	146	64 26 24.2	25 51.3	143.95	0.39	.0058076	29.3	19 43 31.68	
26	147	65 23 58.3	23 25.3	143.89	0.26	.0058770	28.5	19 39 39.77	
27	148	66 21 31.1	20 57.9	143.83	0.13	.0059445	27.8	19 35 43.86	
28	149	67 19 2.6	18 29.2	143.78	+0.02	.0060102	27.1	19 31 47.94	
29	150	68 16 32.7	15 59.1	143.73	-0.07	.0060742	26.4	19 27 52.03	
30	151	69 14 1.5	13 27.7	143.68	0.14	.0061367	25.8	19 23 56.12	
31	152	70 11 29.1	10 55.2	143.63	0.17	.0061978	25.2	19 20 0.21	
32	153	71 8 55.5	8 21.4	143.58	-0.17	0.0062577	24.6	19 16 4.30	

NOTE.— λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	MERIDIAN PASSAGE.		
							h.	m.		m.	d.
1	16 22.4	16 23.5	59 59.0	+0.45	60 3.1	+0.28	8 56.2	2.08	10.3
2	16 23.9	16 23.4	60 4.4	-0.01	60 2.8	-0.27	9 46.6	2.13	11.3
3	16 22.2	16 20.0	59 58.0	0.53	59 50.1	0.79	10 38.7	2.22	12.3
4	16 17.0	16 13.1	59 39.0	1.05	59 25.0	1.29	11 33.4	2.33	13.3
5	16 8.6	16 3.4	59 8.2	1.50	58 49.2	1.67	12 30.5	2.42	14.3
6	15 57.7	15 51.6	58 28.3	1.81	58 5.8	1.92	13 29.2	2.45	15.3
7	15 45.2	15 38.7	57 42.4	1.98	57 18.5	2.00	14 27.6	2.40	16.3
8	15 32.2	15 25.8	56 54.6	1.98	56 31.1	1.92	15 23.8	2.27	17.3
9	15 19.7	15 13.9	56 8.6	1.82	55 47.5	1.70	16 16.4	2.11	18.3
10	15 8.6	15 3.8	55 27.9	1.56	55 10.2	1.39	17 5.0	1.95	19.3
11	14 59.5	14 55.9	54 54.6	1.20	54 41.4	1.00	17 50.0	1.81	20.3
12	14 53.0	14 50.7	54 30.6	0.80	54 22.3	0.53	18 32.2	1.71	21.3
13	14 49.2	14 48.4	54 16.6	-0.37	54 13.5	-0.15	19 12.5	1.66	22.3
14	14 48.2	14 48.7	54 13.0	+0.06	54 14.9	+0.26	19 52.1	1.65	23.3
15	14 49.9	14 51.7	54 19.2	0.45	54 25.8	0.64	20 32.1	1.69	24.3
16	14 54.0	14 56.9	54 34.5	0.81	54 45.1	0.95	21 13.5	1.77	25.3
17	15 0.3	15 4.0	54 57.3	1.08	55 11.0	1.20	21 57.6	1.80	26.3
18	15 8.1	15 12.4	55 25.9	1.28	55 41.7	1.35	22 45.0	2.06	27.3
19	15 16.9	15 21.4	55 58.2	1.40	56 15.1	1.42	23 36.5	2.23	28.3
20	15 26.1	15 30.7	56 32.1	1.42	56 49.0	1.40	♄		29.3
21	15 35.2	15 39.6	57 5.6	1.36	57 21.6	1.31	0 31.8	2.37	0.7
22	15 43.7	15 47.7	57 36.9	1.24	57 51.4	1.17	1 29.7	2.44	1.7
23	15 51.4	15 54.8	58 4.9	1.09	58 17.5	1.00	2 28.4	2.43	2.7
24	15 57.9	16 0.7	58 28.9	0.91	58 39.3	0.82	3 26.0	2.35	3.7
25	16 3.2	16 5.4	58 48.5	0.72	58 56.7	0.63	4 21.0	2.23	4.7
26	16 7.4	16 9.0	59 3.7	0.54	59 9.7	0.45	5 13.2	2.12	5.7
27	16 10.3	16 11.3	59 14.5	0.35	59 18.2	0.25	6 3.1	2.05	6.7
28	16 11.9	16 12.2	59 20.5	+0.14	59 21.6	+0.08	6 51.8	2.02	7.7
29	16 12.2	16 11.7	59 21.3	-0.09	59 19.5	-0.22	7 40.5	2.04	8.7
30	16 10.7	16 9.3	59 16.1	0.35	59 11.0	0.50	8 30.4	2.12	9.7
31	16 7.5	16 5.1	59 4.1	0.65	58 55.4	0.80	9 22.6	2.23	10.7
32	16 2.2	15 58.9	58 44.8	-0.95	58 32.5	-1.10	10 17.5	2.34	11.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
TUESDAY 1.					THURSDAY 3.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	11 16 49.73	2.1684	N. 0 52 42.2	16.838	0	13 2 34.82	2.3070	S. 11 52 5.2	14.878
1	11 18 59.66	2.1686	0 36 21.6	16.847	1	13 4 50.95	2.3706	12 6 55.5	14.903
2	11 21 9.62	2.1683	0 20 0.6	16.854	2	13 7 7.99	2.3743	12 21 41.5	14.798
3	11 23 19.62	2.1680	N. 0 3 39.2	16.859	3	13 9 23.85	2.3779	12 36 23.0	14.622
4	11 25 29.65	2.1676	S. 0 12 42.5	16.863	4	13 11 40.64	2.3817	12 50 59.8	14.475
5	11 27 39.73	2.1683	0 29 4.4	16.866	5	13 13 57.66	2.3855	13 5 32.0	14.496
6	11 29 49.85	2.1691	0 45 26.4	16.866	6	13 16 14.90	2.3893	13 19 59.3	14.415
7	11 32 0.02	2.1700	1 1 48.3	16.865	7	13 18 32.37	2.3931	13 34 21.7	14.332
8	11 34 10.25	2.1710	1 18 10.2	16.863	8	13 20 50.07	2.3969	13 48 39.1	14.247
9	11 36 20.54	2.1720	1 34 31.9	16.859	9	13 23 8.00	2.3996	14 2 51.4	14.161
10	11 38 30.89	2.1731	1 50 53.3	16.848	10	13 25 26.17	2.3947	14 16 58.4	14.073
11	11 40 41.31	2.1743	2 7 14.3	16.846	11	13 27 44.58	2.3987	14 31 0.2	13.984
12	11 42 51.80	2.1756	2 23 34.8	16.837	12	13 30 3.92	2.3127	14 44 56.5	13.892
13	11 45 2.37	2.1769	2 39 54.7	16.826	13	13 32 22.10	2.3167	14 58 47.3	13.799
14	11 47 13.03	2.1782	2 56 13.9	16.813	14	13 34 41.93	2.3206	15 12 32.4	13.704
15	11 49 23.77	2.1796	3 12 32.2	16.809	15	13 37 0.60	2.3249	15 26 11.8	13.608
16	11 51 34.61	2.1814	3 28 49.8	16.803	16	13 39 20.22	2.3291	15 39 45.4	13.510
17	11 53 45.54	2.1830	3 45 6.3	16.796	17	13 41 40.08	2.3331	15 53 13.0	13.410
18	11 55 56.58	2.1847	4 1 21.7	16.787	18	13 44 0.19	2.3372	16 6 34.6	13.309
19	11 58 7.72	2.1865	4 17 35.9	16.776	19	13 46 20.55	2.3413	16 19 50.1	13.207
20	12 0 18.96	2.1884	4 33 48.8	16.768	20	13 48 41.15	2.3454	16 32 59.4	13.103
21	12 2 30.32	2.1903	4 50 0.3	16.759	21	13 51 2.00	2.3495	16 46 2.4	12.998
22	12 4 41.80	2.1923	5 6 10.2	16.748	22	13 53 23.09	2.3536	16 58 58.9	12.893
23	12 6 53.40	2.1944	S. 5 22 18.7	16.736	23	13 55 44.44	2.3578	S. 17 11 48.9	12.779
WEDNESDAY 2.					FRIDAY 4.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	12 9 5.13	2.1966	S. 5 38 25.4	16.696	0	13 58 6.03	2.3620	S. 17 24 32.4	12.668
1	12 11 16.99	2.1986	5 54 30.3	16.685	1	14 0 27.87	2.3661	17 37 9.2	12.546
2	12 13 28.99	2.2011	6 10 33.2	16.682	2	14 2 49.86	2.3702	17 49 39.1	12.443
3	12 15 41.12	2.2044	6 26 34.2	16.686	3	14 5 12.30	2.3743	18 2 2.1	12.336
4	12 17 53.40	2.2080	6 42 33.0	16.692	4	14 7 34.89	2.3785	18 14 18.2	12.208
5	12 20 5.83	2.2064	6 58 29.6	16.694	5	14 9 57.72	2.3826	18 26 27.1	12.089
6	12 22 18.41	2.2100	7 14 23.9	16.684	6	14 12 20.80	2.3867	18 38 28.9	11.968
7	12 24 31.14	2.2135	7 30 15.8	16.683	7	14 14 44.13	2.3908	18 50 23.4	11.847
8	12 26 44.03	2.2182	7 46 5.1	16.680	8	14 17 7.70	2.3949	19 2 10.6	11.724
9	12 28 57.08	2.2189	8 1 51.8	16.786	9	14 19 31.51	2.3990	19 13 50.4	11.600
10	12 31 10.30	2.2217	8 17 35.8	16.799	10	14 21 55.57	2.4030	19 25 22.6	11.474
11	12 33 23.69	2.2246	8 33 16.9	16.661	11	14 24 19.87	2.4070	19 36 47.2	11.346
12	12 35 37.25	2.2275	8 48 55.1	16.611	12	14 26 44.41	2.4110	19 48 4.1	11.217
13	12 37 50.99	2.2305	9 4 30.2	16.560	13	14 29 9.19	2.4149	19 59 13.2	11.087
14	12 40 4.91	2.2336	9 20 2.2	16.505	14	14 31 34.20	2.4188	20 10 14.5	10.955
15	12 42 19.02	2.2367	9 35 30.9	16.450	15	14 33 59.44	2.4227	20 21 7.9	10.822
16	12 44 33.31	2.2399	9 50 56.2	16.393	16	14 36 24.92	2.4265	20 31 53.2	10.687
17	12 46 47.60	2.2431	10 6 18.1	16.335	17	14 38 50.63	2.4303	20 42 30.4	10.552
18	12 49 2.48	2.2464	10 21 36.4	16.274	18	14 41 16.56	2.4341	20 52 59.4	10.415
19	12 51 17.36	2.2497	10 36 51.0	16.212	19	14 43 42.71	2.4378	21 3 20.2	10.277
20	12 53 32.44	2.2530	10 52 1.8	16.148	20	14 46 9.09	2.4415	21 13 32.6	10.138
21	12 55 47.72	2.2564	11 7 8.7	16.082	21	14 48 35.69	2.4451	21 23 36.6	9.997
22	12 58 3.21	2.2599	11 22 11.7	16.015	22	14 51 2.50	2.4487	21 33 32.2	9.855
23	13 0 18.91	2.2634	11 37 10.6	14.946	23	14 53 29.53	2.4522	21 43 19.2	9.712
24	13 2 34.82	2.2670	S. 11 52 5.2	14.875	24	14 55 56.76	2.4556	S. 21 52 57.6	9.567

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	14 55 56.76	2.4886	S.21 52 57.6	9.867	0	16 56 6.68	2.5092	S.26 29 50.1	1.791
1	14 58 24.19	2.4889	22 2 27.9	9.831	1	16 58 37.18	2.5074	26 31 32.6	1.824
2	15 0 51.83	2.4892	22 11 48.1	9.795	2	17 1 7.57	2.5056	26 33 5.0	1.857
3	15 3 19.66	2.4895	22 21 0.9	9.757	3	17 3 37.84	2.5038	26 34 27.4	1.891
4	15 5 47.69	2.4897	22 30 3.3	9.719	4	17 6 7.99	2.5021	26 35 39.9	1.925
5	15 8 15.91	2.4718	22 38 57.4	9.682	5	17 8 38.01	2.4994	26 36 42.5	0.960
6	15 10 44.31	2.4748	22 47 42.5	9.646	6	17 11 7.88	2.4987	26 37 35.1	0.795
7	15 13 12.89	2.4777	22 56 18.5	9.610	7	17 13 37.60	2.4941	26 38 17.8	0.630
8	15 15 41.64	2.4806	23 4 45.4	9.574	8	17 16 7.17	2.4914	26 38 50.7	0.465
9	15 18 10.56	2.4834	23 13 3.1	9.537	9	17 18 36.58	2.4887	26 39 13.7	0.302
10	15 20 39.65	2.4861	23 21 11.5	9.503	10	17 21 5.81	2.4860	26 39 27.0	0.139
11	15 23 8.90	2.4887	23 29 10.6	9.467	11	17 23 34.86	2.4832	26 39 30.5	0.023
12	15 25 38.30	2.4912	23 37 0.3	9.432	12	17 26 3.73	2.4796	26 39 24.3	0.186
13	15 28 7.85	2.4937	23 44 40.6	9.396	13	17 28 32.40	2.4768	26 39 8.4	0.346
14	15 30 37.55	2.4961	23 52 11.4	9.361	14	17 31 0.88	2.4739	26 38 42.8	0.506
15	15 33 7.39	2.4984	23 59 32.7	9.325	15	17 33 29.16	2.4696	26 38 7.6	0.666
16	15 35 37.36	2.5006	24 6 44.4	9.290	16	17 35 57.92	2.4660	26 37 22.9	0.825
17	15 38 7.46	2.5027	24 13 46.5	9.255	17	17 38 25.06	2.4622	26 36 28.6	0.983
18	15 40 47.68	2.5046	24 20 39.0	9.220	18	17 40 52.68	2.4584	26 35 24.9	1.141
19	15 43 8.91	2.5064	24 27 91.8	9.185	19	17 43 20.07	2.4545	26 34 11.7	1.298
20	15 45 38.45	2.5081	24 33 54.9	9.150	20	17 45 47.92	2.4504	26 32 49.9	1.454
21	15 48 8.99	2.5098	24 40 18.2	9.115	21	17 48 14.12	2.4463	26 31 17.3	1.610
22	15 50 39.63	2.5112	24 46 31.6	9.080	22	17 50 40.78	2.4421	26 29 38.0	1.764
23	15 53 10.35	2.5126	S.24 52 35.9	9.045	23	17 53 7.18	2.4378	S.26 27 45.5	1.918
SUNDAY 6.					TUESDAY 8.				
0	15 55 41.16	2.5141	S.24 58 29.0	9.010	0	17 55 33.32	2.4334	S.26 25 45.9	2.070
1	15 58 12.05	2.5163	25 4 12.9	8.974	1	17 57 59.19	2.4290	26 23 37.1	2.222
2	16 0 43.00	2.5183	25 9 46.8	8.938	2	18 0 24.79	2.4243	26 21 19.2	2.373
3	16 3 14.01	2.5212	25 15 10.8	8.902	3	18 2 50.11	2.4196	26 18 52.3	2.523
4	16 5 45.08	2.5249	25 20 24.8	8.866	4	18 5 15.14	2.4148	26 16 16.5	2.672
5	16 8 16.20	2.5290	25 25 28.8	8.830	5	18 7 39.88	2.4099	26 13 31.7	2.820
6	16 10 47.36	2.5336	25 30 22.8	8.794	6	18 10 4.33	2.4049	26 10 38.1	2.967
7	16 13 18.55	2.5391	25 35 6.7	8.758	7	18 12 28.48	2.3999	26 7 35.7	3.113
8	16 15 49.77	2.5450	25 39 40.6	8.722	8	18 14 52.32	2.3948	26 4 24.6	3.258
9	16 18 21.01	2.5507	25 44 4.4	8.686	9	18 17 15.85	2.3897	26 1 4.8	3.402
10	16 20 52.26	2.5566	25 48 18.1	8.650	10	18 19 39.08	2.3844	25 57 36.3	3.546
11	16 23 23.51	2.5626	25 52 21.7	8.614	11	18 22 1.99	2.3791	25 53 59.3	3.687
12	16 25 54.76	2.5687	25 56 15.3	8.578	12	18 24 24.57	2.3737	25 50 13.8	3.828
13	16 28 26.00	2.5749	25 59 58.8	8.542	13	18 26 46.83	2.3682	25 46 19.9	3.967
14	16 30 57.22	2.5811	26 3 32.1	8.506	14	18 29 8.76	2.3627	25 42 17.7	4.105
15	16 33 28.41	2.5876	26 6 55.4	8.470	15	18 31 30.35	2.3571	25 38 7.2	4.243
16	16 35 59.57	2.5940	26 10 8.5	8.434	16	18 33 51.61	2.3514	25 33 48.5	4.380
17	16 38 30.68	2.5999	26 13 11.5	8.398	17	18 36 12.52	2.3457	25 29 21.6	4.516
18	16 41 1.75	2.5973	26 16 4.4	8.362	18	18 38 33.09	2.3399	25 24 46.6	4.650
19	16 43 32.76	2.6038	26 18 47.2	8.326	19	18 40 53.31	2.3341	25 20 3.6	4.783
20	16 46 3.71	2.6101	26 21 19.9	8.290	20	18 43 13.18	2.3282	25 15 12.6	4.915
21	16 48 34.58	2.6166	26 23 42.5	8.254	21	18 45 32.70	2.3223	25 10 13.8	5.046
22	16 51 5.37	2.6231	26 25 55.1	8.218	22	18 47 51.86	2.3163	25 5 7.1	5.176
23	16 53 36.07	2.6299	26 27 57.6	8.182	23	18 50 10.66	2.3103	24 59 52.7	5.304
24	16 56 6.68	2.6362	S.26 29 50.1	8.146	24	18 52 29.10	2.3042	S.24 54 30.6	5.431

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	18 52 29.10	2.2043	S. 24 54 30.6	5.481	0	20 35 54.65	2.0096	S. 18 29 39.0	10.161
1	18 54 47.18	2.2092	24 49 0.9	5.568	1	20 37 55.07	2.0043	18 19 27.2	10.282
2	18 57 4.89	2.2021	24 43 23.7	5.683	2	20 39 55.17	1.9989	18 9 11.1	10.393
3	18 59 22.23	2.2060	24 37 39.0	5.807	3	20 41 54.94	1.9936	17 58 50.9	10.573
4	19 1 39.21	2.2798	24 31 46.9	5.929	4	20 43 54.39	1.9881	17 48 26.5	10.640
5	19 3 55.91	2.2736	24 25 47.5	6.080	5	20 45 53.52	1.9826	17 37 58.1	10.807
6	19 6 12.04	2.2674	24 19 40.9	6.170	6	20 47 52.33	1.9772	17 27 25.6	10.874
7	19 8 27.90	2.2612	24 13 27.1	6.289	7	20 49 50.83	1.9718	17 16 49.2	10.899
8	19 10 43.38	2.2549	24 7 6.2	6.407	8	20 51 49.02	1.9678	17 6 8.9	10.784
9	19 12 58.48	2.2486	24 0 38.2	6.624	9	20 53 46.90	1.9622	16 55 24.7	10.787
10	19 15 13.91	2.2423	23 54 3.3	6.689	10	20 55 44.48	1.9572	16 44 36.8	10.890
11	19 17 27.56	2.2359	23 47 21.5	6.763	11	20 57 41.76	1.9522	16 33 45.1	10.982
12	19 19 41.52	2.2296	23 40 32.9	6.866	12	20 59 38.74	1.9472	16 22 49.7	10.983
13	19 21 55.11	2.2232	23 33 37.5	6.978	13	21 1 35.43	1.9424	16 11 50.7	11.012
14	19 24 8.31	2.2168	23 26 35.5	7.089	14	21 3 31.83	1.9376	16 0 48.2	11.071
15	19 26 21.13	2.2105	23 19 26.9	7.198	15	21 5 27.94	1.9326	15 49 42.2	11.128
16	19 28 33.57	2.2041	23 12 11.7	7.306	16	21 7 23.77	1.9281	15 38 32.8	11.186
17	19 30 45.63	2.1978	23 4 50.1	7.413	17	21 9 19.32	1.9234	15 27 20.0	11.242
18	19 32 57.31	2.1916	22 57 22.1	7.519	18	21 11 14.59	1.9190	15 16 3.8	11.297
19	19 35 8.61	2.1852	22 49 47.8	7.623	19	21 13 9.59	1.9148	15 4 44.4	11.351
20	19 37 19.53	2.1788	22 42 7.3	7.728	20	21 15 4.33	1.9101	14 53 21.7	11.404
21	19 39 30.07	2.1724	22 34 90.6	7.829	21	21 16 58.80	1.9057	14 41 55.8	11.457
22	19 41 40.22	2.1660	22 26 27.8	7.921	22	21 18 53.01	1.9014	14 30 26.8	11.510
23	19 43 49.99	2.1597	S. 22 18 28.9	8.021	23	21 20 46.96	1.8971	S. 14 18 54.7	11.561
THURSDAY 10.					SATURDAY 12.				
0	19 45 59.39	2.1534	S. 22 10 24.1	8.120	0	21 22 40.66	1.8929	S. 14 7 19.5	11.611
1	19 48 8.40	2.1471	22 2 13.4	8.227	1	21 24 34.11	1.8887	13 55 41.4	11.660
2	19 50 17.04	2.1408	21 53 56.9	8.323	2	21 26 27.31	1.8847	13 44 0.3	11.709
3	19 52 25.30	2.1346	21 45 34.6	8.418	3	21 28 20.37	1.8807	13 32 16.3	11.757
4	19 54 33.19	2.1283	21 37 6.7	8.512	4	21 30 12.99	1.8768	13 20 29.5	11.806
5	19 56 40.70	2.1221	21 28 33.1	8.606	5	21 32 5.48	1.8729	13 8 39.9	11.840
6	19 58 47.84	2.1159	21 19 54.0	8.697	6	21 33 57.74	1.8691	12 56 47.6	11.884
7	20 0 54.61	2.1097	21 11 9.5	8.788	7	21 35 49.77	1.8652	12 44 52.6	11.929
8	20 3 1.01	2.1035	21 2 19.5	8.877	8	21 37 41.58	1.8617	12 32 54.9	11.968
9	20 5 7.04	2.0974	20 53 24.2	8.966	9	21 39 33.17	1.8581	12 20 54.6	12.026
10	20 7 12.70	2.0912	20 44 23.6	9.058	10	21 41 24.55	1.8546	12 8 51.8	12.086
11	20 9 18.00	2.0853	20 35 17.8	9.149	11	21 43 15.72	1.8512	11 56 46.4	12.110
12	20 11 22.94	2.0792	20 26 6.9	9.234	12	21 45 6.69	1.8478	11 44 38.6	12.150
13	20 13 27.51	2.0732	20 16 50.9	9.306	13	21 46 57.45	1.8444	11 32 28.4	12.190
14	20 15 31.73	2.0672	20 7 29.9	9.391	14	21 48 48.02	1.8411	11 20 15.8	12.229
15	20 17 35.59	2.0613	19 58 4.0	9.472	15	21 50 38.39	1.8379	11 8 0.9	12.267
16	20 19 39.09	2.0554	19 48 33.2	9.558	16	21 52 28.57	1.8348	10 55 43.7	12.305
17	20 21 42.24	2.0496	19 38 57.6	9.638	17	21 54 18.57	1.8317	10 43 24.3	12.342
18	20 23 45.04	2.0438	19 29 17.2	9.712	18	21 56 8.38	1.8286	10 31 2.7	12.378
19	20 25 47.60	2.0381	19 19 32.2	9.789	19	21 57 58.02	1.8256	10 18 38.9	12.412
20	20 27 49.61	2.0323	19 9 42.5	9.865	20	21 59 47.49	1.8226	10 6 13.1	12.448
21	20 29 51.37	2.0266	18 59 48.3	9.941	21	22 1 36.79	1.8202	9 53 45.2	12.483
22	20 31 52.80	2.0210	18 49 49.6	10.016	22	22 3 25.92	1.8176	9 41 15.3	12.516
23	20 33 53.89	2.0154	18 39 46.5	10.098	23	22 5 14.89	1.8149	9 28 43.4	12.548
24	20 35 54.65	2.0098	S. 18 29 39.0	10.161	24	22 7 3.71	1.8124	S. 9 16 9.6	12.580

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 13.					TUESDAY 15.				
0	22 7 3.71	1.8194	S. 9 16 9.6	12.880	0	23 32 27.41	1.7734	N. 1 11 50.5	13.338
1	22 8 52.38	1.8099	9 3 33.9	12.611	1	23 34 13.84	1.7743	1 25 10.8	13.338
2	22 10 40.90	1.8075	8 50 56.3	12.642	2	23 36 0.33	1.7754	1 38 31.0	13.337
3	22 12 29.27	1.8051	8 38 16.9	12.673	3	23 37 46.89	1.7765	1 51 51.2	13.336
4	22 14 17.51	1.8028	8 25 35.7	12.701	4	23 39 33.51	1.7777	2 5 11.3	13.335
5	22 16 5.61	1.8006	8 12 52.8	12.729	5	23 41 20.21	1.7789	2 18 31.2	13.330
6	22 17 53.58	1.7984	8 0 8.2	12.767	6	23 43 6.98	1.7803	2 31 50.9	13.326
7	22 19 41.42	1.7963	7 47 21.9	12.785	7	23 44 53.84	1.7817	2 45 10.4	13.322
8	22 21 29.14	1.7943	7 34 34.0	12.811	8	23 46 40.78	1.7831	2 58 29.6	13.317
9	22 23 16.74	1.7924	7 21 44.6	12.837	9	23 48 27.81	1.7846	3 11 48.5	13.312
10	22 25 4.23	1.7906	7 8 53.6	12.863	10	23 50 14.93	1.7862	3 25 7.0	13.306
11	22 26 51.61	1.7888	6 56 1.2	12.888	11	23 52 2.15	1.7879	3 38 25.2	13.299
12	22 28 38.89	1.7871	6 43 7.3	12.910	12	23 53 49.48	1.7896	3 51 42.9	13.291
13	22 30 26.06	1.7854	6 30 12.0	12.933	13	23 55 36.91	1.7914	4 5 0.1	13.283
14	22 32 13.14	1.7839	6 17 15.3	12.956	14	23 57 24.45	1.7933	4 18 16.8	13.274
15	22 34 0.13	1.7824	6 4 17.3	12.978	15	23 59 12.11	1.7953	4 31 33.0	13.264
16	22 35 47.03	1.7810	5 51 18.0	12.999	16	0 0 59.89	1.7973	4 44 48.5	13.253
17	22 37 33.84	1.7796	5 38 17.4	13.020	17	0 2 47.79	1.7994	4 58 3.4	13.242
18	22 39 20.58	1.7784	5 25 15.6	13.039	18	0 4 35.82	1.8016	5 11 17.5	13.230
19	22 41 7.25	1.7772	5 12 12.7	13.058	19	0 6 23.99	1.8039	5 24 30.9	13.217
20	22 42 53.84	1.7760	4 59 8.6	13.077	20	0 8 12.29	1.8062	5 37 43.5	13.203
21	22 44 40.37	1.7749	4 46 3.4	13.095	21	0 10 0.73	1.8086	5 50 55.3	13.189
22	22 46 26.83	1.7739	4 32 57.2	13.112	22	0 11 49.32	1.8111	6 4 6.2	13.173
23	22 48 13.24	1.7730	S. 4 19 50.0	13.129	23	0 13 38.06	1.8136	N. 6 17 16.1	13.167
MONDAY 14.					WEDNESDAY 16.				
0	22 49 59.59	1.7722	S. 4 6 41.8	13.144	0	0 15 26.95	1.8162	N. 6 30 25.1	13.140
1	22 51 45.90	1.7714	3 53 32.7	13.160	1	0 17 16.00	1.8196	6 43 33.0	13.123
2	22 53 32.16	1.7707	3 40 22.6	13.175	2	0 19 5.21	1.8216	6 56 39.9	13.105
3	22 55 18.38	1.7700	3 27 11.7	13.189	3	0 20 54.59	1.8244	7 9 45.7	13.087
4	22 57 4.56	1.7695	3 13 59.9	13.203	4	0 22 44.14	1.8273	7 22 50.3	13.067
5	22 58 50.71	1.7690	3 0 47.3	13.216	5	0 24 33.86	1.8302	7 35 53.7	13.047
6	23 0 36.84	1.7686	2 47 34.0	13.228	6	0 26 23.76	1.8332	7 48 55.9	13.025
7	23 2 22.94	1.7682	2 34 19.9	13.240	7	0 28 13.85	1.8363	8 1 56.7	13.003
8	23 4 9.03	1.7679	2 21 5.2	13.251	8	0 30 4.12	1.8395	8 14 56.2	12.980
9	23 5 55.10	1.7677	2 7 49.8	13.261	9	0 31 54.59	1.8427	8 27 54.3	12.956
10	23 7 41.16	1.7676	1 54 33.9	13.270	10	0 33 45.25	1.8460	8 40 50.9	12.931
11	23 9 27.22	1.7676	1 41 17.4	13.279	11	0 35 36.11	1.8493	8 53 46.0	12.906
12	23 11 13.27	1.7676	1 28 0.4	13.288	12	0 37 27.17	1.8528	9 6 39.6	12.879
13	23 12 59.33	1.7677	1 14 42.9	13.296	13	0 39 18.44	1.8563	9 19 31.5	12.852
14	23 14 45.39	1.7679	1 1 24.9	13.303	14	0 41 9.92	1.8599	9 32 21.8	12.824
15	23 16 31.47	1.7681	0 48 6.5	13.309	15	0 43 1.62	1.8636	9 45 10.4	12.795
16	23 18 17.56	1.7684	0 34 47.8	13.315	16	0 44 53.54	1.8673	9 57 57.2	12.764
17	23 20 3.08	1.7688	0 21 28.7	13.320	17	0 46 45.68	1.8709	10 10 42.1	12.733
18	23 21 49.82	1.7693	S. 0 8 9.4	13.324	18	0 48 38.05	1.8747	10 23 25.2	12.701
19	23 23 35.99	1.7698	N. 0 5 10.2	13.328	19	0 50 30.65	1.8786	10 36 6.3	12.669
20	23 25 22.19	1.7704	0 18 30.0	13.331	20	0 52 23.48	1.8826	10 48 45.5	12.636
21	23 27 8.43	1.7710	0 31 50.0	13.334	21	0 54 16.56	1.8867	11 1 22.6	12.602
22	23 28 54.71	1.7717	0 45 10.1	13.336	22	0 56 9.88	1.8908	11 13 57.7	12.568
23	23 30 41.03	1.7725	0 58 30.3	13.337	23	0 58 3.45	1.8949	11 26 30.6	12.532
24	23 32 27.41	1.7734	N. 1 11 50.5	13.338	24	0 59 57.27	1.8991	N.11 39 1.2	12.492

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	0 59 57.27	1.8991	N.11 39 1.2	12.492	0	2 37 2.86	2.1636	N.20 35 39.1	6.423
1	1 1 51.35	1.9084	11 51 29.6	12.454	1	2 30 12.87	2.1700	20 45 1.7	6.329
2	1 3 45.68	1.9078	12 3 55.7	12.416	2	2 41 23.26	2.1764	20 54 18.6	6.234
3	1 5 40.28	1.9122	12 16 19.4	12.375	3	2 43 34.03	2.1837	21 3 29.8	6.138
4	1 7 35.15	1.9167	12 28 40.7	12.334	4	2 45 45.19	2.1891	21 12 35.2	6.041
5	1 9 30.28	1.9212	12 40 59.5	12.292	5	2 47 56.73	2.1945	21 21 34.7	5.942
6	1 11 25.69	1.9258	12 53 15.7	12.249	6	2 50 8.65	2.2019	21 30 28.2	5.841
7	1 13 21.38	1.9305	13 5 29.3	12.205	7	2 52 20.95	2.2082	21 39 15.6	5.739
8	1 15 17.35	1.9352	13 17 40.3	12.160	8	2 54 33.64	2.2146	21 47 56.9	5.636
9	1 17 13.61	1.9400	13 29 48.5	12.113	9	2 56 46.71	2.2210	21 56 32.0	5.532
10	1 19 10.15	1.9448	13 41 53.8	12.065	10	2 59 0.16	2.2274	22 5 0.8	5.427
11	1 21 6.99	1.9497	13 53 56.3	12.017	11	3 1 13.99	2.2338	22 13 23.3	5.321
12	1 23 4.12	1.9547	14 5 55.9	11.968	12	3 3 28.21	2.2402	22 21 39.3	5.212
13	1 25 1.55	1.9597	14 17 52.5	11.917	13	3 5 42.81	2.2466	22 29 48.8	5.102
14	1 26 59.28	1.9648	14 29 46.0	11.865	14	3 7 57.79	2.2530	22 37 51.6	4.991
15	1 28 57.32	1.9699	14 41 36.4	11.813	15	3 10 13.15	2.2594	22 45 47.7	4.879
16	1 30 55.67	1.9751	14 53 23.6	11.760	16	3 12 28.68	2.2658	22 53 37.1	4.766
17	1 32 54.33	1.9803	15 5 7.6	11.706	17	3 14 45.00	2.2721	23 1 19.7	4.652
18	1 34 53.31	1.9856	15 16 48.3	11.650	18	3 17 1.49	2.2785	23 8 55.3	4.536
19	1 36 52.60	1.9909	15 28 25.6	11.593	19	3 19 18.35	2.2848	23 16 23.9	4.418
20	1 38 52.23	1.9963	15 39 59.4	11.534	20	3 21 35.59	2.2910	23 23 45.5	4.300
21	1 40 52.16	2.0017	15 51 29.7	11.475	21	3 23 53.20	2.2973	23 30 59.9	4.180
22	1 42 52.43	2.0072	16 2 56.4	11.415	22	3 26 11.17	2.3036	23 38 7.1	4.059
23	1 44 53.03	2.0128	N.16 14 19.5	11.353	23	3 28 29.51	2.3097	N.23 45 6.9	3.936
FRIDAY 18.					SUNDAY 20.				
0	1 46 53.97	2.0184	N.16 25 38.8	11.291	0	3 30 48.22	2.3147	N.23 51 59.4	3.812
1	1 48 55.24	2.0240	16 36 54.4	11.227	1	3 33 7.29	2.3207	23 58 44.4	3.687
2	1 50 56.85	2.0297	16 48 6.1	11.162	2	3 35 26.71	2.3267	24 5 21.9	3.561
3	1 52 58.80	2.0354	16 59 13.9	11.096	3	3 37 46.49	2.3326	24 11 51.7	3.433
4	1 55 1.10	2.0412	17 10 17.6	11.029	4	3 40 6.62	2.3385	24 18 13.9	3.304
5	1 57 3.75	2.0470	17 21 17.3	10.960	5	3 42 27.11	2.3443	24 24 28.3	3.175
6	1 59 6.74	2.0529	17 32 12.8	10.890	6	3 44 47.94	2.3500	24 30 34.9	3.044
7	2 1 10.09	2.0588	17 43 4.1	10.819	7	3 47 9.12	2.3557	24 36 33.6	2.912
8	2 3 13.79	2.0647	17 53 51.1	10.747	8	3 49 30.63	2.3613	24 42 24.3	2.778
9	2 5 17.85	2.0707	18 4 33.7	10.673	9	3 51 52.48	2.3669	24 48 7.0	2.643
10	2 7 22.27	2.0767	18 15 11.9	10.598	10	3 54 14.66	2.3724	24 53 41.5	2.507
11	2 9 27.05	2.0827	18 25 45.6	10.523	11	3 56 37.17	2.3779	24 59 7.8	2.370
12	2 11 32.19	2.0888	18 36 14.7	10.446	12	3 59 0.01	2.3833	25 4 25.9	2.232
13	2 13 37.70	2.0949	18 46 39.2	10.368	13	4 1 23.17	2.3886	25 9 35.6	2.093
14	2 15 43.58	2.1010	18 56 58.9	10.288	14	4 3 46.64	2.3938	25 14 36.9	1.951
15	2 17 49.83	2.1072	19 7 13.8	10.207	15	4 6 10.42	2.3989	25 19 29.8	1.810
16	2 19 56.44	2.1134	19 17 23.8	10.125	16	4 8 34.51	2.4040	25 24 14.1	1.667
17	2 22 3.43	2.1196	19 27 28.9	10.043	17	4 10 58.90	2.4090	25 28 49.8	1.523
18	2 24 10.79	2.1258	19 37 28.9	9.959	18	4 13 23.59	2.4139	25 33 16.9	1.378
19	2 26 18.52	2.1320	19 47 23.8	9.873	19	4 15 48.57	2.4188	25 37 35.3	1.233
20	2 28 26.63	2.1383	19 57 13.6	9.786	20	4 18 13.84	2.4236	25 41 44.9	1.086
21	2 30 35.12	2.1447	20 6 58.1	9.697	21	4 20 39.39	2.4281	25 45 45.7	0.938
22	2 32 43.99	2.1510	20 16 37.2	9.607	22	4 23 5.21	2.4326	25 49 37.5	0.789
23	2 34 53.23	2.1573	20 26 10.9	9.516	23	4 25 31.30	2.4371	25 53 20.4	0.639
24	2 37 2.86	2.1636	N.20 35 39.1	9.423	24	4 27 57.66	2.4415	N.25 56 54.2	0.489

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	4 27 57.66	2.4416	N.25 56 54.2	2.4699	0	6 27 55.33	2.4081	N.25 39 2.8	4.323
1	4 30 34.27	2.4457	26 0 19.0	2.327	1	6 30 25.76	2.5083	25 34 37.9	4.496
2	4 32 51.14	2.4498	26 3 34.7	2.185	2	6 32 56.09	2.6046	25 30 3.3	4.659
3	4 35 18.25	2.4539	26 6 41.2	2.081	3	6 35 26.30	2.6988	25 25 18.9	4.821
4	4 37 45.60	2.4578	26 9 38.4	2.977	4	6 37 56.40	2.5006	25 20 24.8	4.983
5	4 40 13.19	2.4617	26 12 26.4	2.722	5	6 40 26.37	2.4984	25 15 21.0	5.144
6	4 42 41.00	2.4654	26 15 5.0	2.586	6	6 42 56.21	2.4961	25 10 7.5	5.304
7	4 45 9.03	2.4690	26 17 34.3	2.410	7	6 45 25.91	2.4937	25 4 44.5	5.463
8	4 47 37.27	2.4724	26 19 54.2	2.282	8	6 47 55.46	2.4913	24 59 11.9	5.622
9	4 50 5.72	2.4758	26 22 4.6	2.094	9	6 50 24.86	2.4887	24 53 29.8	5.781
10	4 52 34.36	2.4790	26 24 5.5	1.925	10	6 52 54.11	2.4861	24 47 38.2	5.939
11	4 55 3.20	2.4822	26 25 56.8	1.776	11	6 55 23.19	2.4833	24 41 37.1	6.096
12	4 57 32.22	2.4853	26 27 38.6	1.615	12	6 57 52.11	2.4804	24 35 26.7	6.252
13	5 0 1.42	2.4881	26 29 10.7	1.454	13	7 0 20.85	2.4776	24 29 6.9	6.407
14	5 2 30.79	2.4908	26 30 33.1	1.298	14	7 2 49.41	2.4746	24 22 37.8	6.561
15	5 5 0.32	2.4935	26 31 45.9	1.132	15	7 5 17.79	2.4714	24 15 59.5	6.715
16	5 7 30.01	2.4960	26 32 48.9	0.969	16	7 7 45.98	2.4682	24 9 12.0	6.868
17	5 9 59.84	2.4984	26 33 42.1	0.806	17	7 10 13.97	2.4649	24 2 15.3	7.021
18	5 12 29.82	2.5007	26 34 25.6	0.643	18	7 12 41.77	2.4615	23 55 9.5	7.172
19	5 14 59.93	2.5029	26 34 59.3	0.479	19	7 15 9.36	2.4581	23 47 54.6	7.323
20	5 17 30.17	2.5049	26 35 23.1	0.314	20	7 17 36.74	2.4546	23 40 30.8	7.472
21	5 20 0.53	2.5068	26 35 37.0	0.149	21	7 20 3.91	2.4510	23 32 58.0	7.620
22	5 22 30.99	2.5085	26 35 41.0	0.016	22	7 22 30.86	2.4473	23 25 16.4	7.767
23	5 25 1.55	2.5102	N.26 35 35.1	0.181	23	7 24 57.59	2.4435	N.23 17 26.0	7.913
TUESDAY 22.					THURSDAY 24.				
0	5 27 32.21	2.5117	N.26 35 19.3	0.346	0	7 27 24.09	2.4398	N.23 9 26.9	8.058
1	5 30 2.95	2.5130	26 34 53.5	0.512	1	7 29 50.36	2.4360	23 1 19.1	8.202
2	5 32 33.77	2.5142	26 34 17.8	0.678	2	7 32 16.40	2.4321	22 53 2.6	8.346
3	5 35 4.65	2.5153	26 33 32.1	0.845	3	7 34 42.21	2.4282	22 44 37.6	8.487
4	5 37 35.60	2.5162	26 32 38.4	1.011	4	7 37 7.78	2.4242	22 36 4.1	8.628
5	5 40 6.60	2.5171	26 31 30.7	1.178	5	7 39 33.11	2.4201	22 27 22.2	8.768
6	5 42 37.65	2.5178	26 30 15.0	1.345	6	7 41 58.19	2.4160	22 18 31.9	8.906
7	5 45 8.74	2.5185	26 28 49.3	1.512	7	7 44 23.03	2.4118	22 9 33.4	9.044
8	5 47 39.85	2.5192	26 27 13.6	1.679	8	7 46 47.61	2.4076	22 0 26.6	9.181
9	5 50 10.99	2.5191	26 25 27.8	1.847	9	7 49 11.94	2.4033	21 51 11.6	9.317
10	5 52 42.14	2.5198	26 23 32.0	2.014	10	7 51 36.01	2.3991	21 41 48.6	9.451
11	5 55 13.30	2.5198	26 21 26.2	2.181	11	7 53 59.83	2.3948	21 32 17.6	9.583
12	5 57 44.45	2.5193	26 19 10.3	2.348	12	7 56 23.39	2.3906	21 22 38.6	9.715
13	6 0 15.59	2.5189	26 16 44.4	2.514	13	7 58 46.69	2.3861	21 12 51.8	9.845
14	6 2 46.72	2.5186	26 14 8.6	2.681	14	8 1 9.72	2.3817	21 2 57.2	9.974
15	6 5 17.82	2.5180	26 11 22.7	2.847	15	8 3 32.49	2.3773	20 52 54.9	10.102
16	6 7 48.88	2.5174	26 8 26.9	3.013	16	8 5 54.99	2.3729	20 42 44.9	10.229
17	6 10 19.91	2.5167	26 5 21.1	3.179	17	8 8 17.23	2.3684	20 32 27.4	10.354
18	6 12 50.89	2.5158	26 2 5.4	3.345	18	8 10 39.20	2.3640	20 22 2.4	10.479
19	6 15 21.81	2.5148	25 58 39.7	3.511	19	8 13 0.90	2.3595	20 11 30.0	10.602
20	6 17 52.67	2.5137	25 55 4.1	3.677	20	8 15 22.34	2.3550	20 0 50.2	10.723
21	6 20 23.46	2.5126	25 51 18.5	3.842	21	8 17 43.51	2.3505	19 50 3.2	10.843
22	6 22 54.17	2.5112	25 47 23.1	4.006	22	8 20 4.40	2.3460	19 39 9.0	10.962
23	6 25 24.80	2.5097	25 43 17.9	4.169	23	8 22 25.02	2.3414	19 28 7.8	11.079
24	6 27 55.33	2.5081	N.25 39 2.8	4.333	24	8 24 45.37	2.3369	N.19 16 59.5	11.193

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	8 24 45.37	2.3269	N. 19 16 59.5	11.195	0	10 12 10.95	2.1263	N. 8 32 16.6	15.121
1	8 27 5.45	2.3224	19 5 44.3	11.310	1	10 14 20.26	2.1260	8 17 7.9	15.160
2	8 29 25.26	2.3278	18 54 22.3	11.424	2	10 16 29.42	2.1215	8 1 50.4	15.212
3	8 31 44.80	2.3233	18 42 53.5	11.538	3	10 18 38.44	2.1202	7 46 42.2	15.257
4	8 34 4.06	2.3188	18 31 18.0	11.647	4	10 20 47.33	2.1470	7 31 25.5	15.300
5	8 36 23.05	2.3143	18 19 35.9	11.756	5	10 22 56.09	2.1467	7 16 6.3	15.341
6	8 38 41.78	2.3099	18 7 47.3	11.864	6	10 25 4.78	2.1423	7 0 44.6	15.381
7	8 41 0.24	2.3055	17 55 52.2	11.971	7	10 27 13.24	2.1410	6 45 20.6	15.419
8	8 43 18.44	2.3010	17 43 50.8	12.078	8	10 29 21.64	2.1391	6 29 54.3	15.466
9	8 45 36.37	2.2965	17 31 43.1	12.180	9	10 31 29.93	2.1373	6 14 25.8	15.492
10	8 47 54.03	2.2922	17 19 29.2	12.282	10	10 33 38.19	2.1355	5 58 55.3	15.526
11	8 50 11.43	2.2878	17 7 9.2	12.383	11	10 35 46.20	2.1339	5 43 22.8	15.558
12	8 52 28.57	2.2834	16 54 43.2	12.483	12	10 37 54.19	2.1323	5 27 48.4	15.589
13	8 54 45.44	2.2791	16 42 11.2	12.582	13	10 40 2.08	2.1306	5 12 12.1	15.619
14	8 57 2.06	2.2748	16 29 33.4	12.678	14	10 42 9.89	2.1290	4 56 34.1	15.647
15	8 59 18.49	2.2705	16 16 49.8	12.773	15	10 44 17.62	2.1272	4 40 54.4	15.674
16	9 1 34.53	2.2663	16 4 0.6	12.867	16	10 46 25.27	2.1256	4 25 13.2	15.700
17	9 3 50.38	2.2621	15 51 5.8	12.960	17	10 48 32.84	2.1237	4 9 30.5	15.724
18	9 6 5.98	2.2579	15 38 5.4	13.051	18	10 50 40.35	2.1218	3 53 46.3	15.747
19	9 8 21.33	2.2537	15 24 59.6	13.141	19	10 52 47.79	2.1200	3 38 0.9	15.768
20	9 10 36.43	2.2495	15 11 48.5	13.229	20	10 54 55.18	2.1182	3 22 14.2	15.787
21	9 12 51.29	2.2454	14 58 32.1	13.316	21	10 57 2.51	2.1163	3 6 26.3	15.807
22	9 15 5.90	2.2413	14 45 10.6	13.402	22	10 59 9.80	2.1145	2 50 37.4	15.824
23	9 17 20.28	2.2372	N. 14 31 44.0	13.486	23	11 1 17.04	2.1126	N. 2 34 47.5	15.839
SATURDAY 26.					MONDAY 28.				
0	9 19 34.42	2.2331	N. 14 18 12.3	13.569	0	11 3 24.24	2.1107	N. 2 18 56.7	15.853
1	9 21 48.33	2.2290	14 4 35.7	13.650	1	11 5 31.40	2.1102	2 3 5.1	15.866
2	9 24 2.00	2.2250	13 50 54.3	13.730	2	11 7 38.54	2.1100	1 47 12.8	15.877
3	9 26 15.44	2.2212	13 37 8.2	13.808	3	11 9 45.66	2.1104	1 31 19.9	15.887
4	9 28 28.66	2.2185	13 23 17.4	13.885	4	11 11 52.75	2.1101	1 15 26.4	15.896
5	9 30 41.65	2.2148	13 9 22.0	13.960	5	11 13 59.82	2.1178	0 59 32.4	15.902
6	9 32 54.43	2.2112	12 55 22.2	14.034	6	11 16 6.89	2.1177	0 43 36.1	15.908
7	9 35 6.99	2.2076	12 41 18.0	14.106	7	11 18 13.95	2.1177	0 27 43.5	15.912
8	9 37 19.34	2.2041	12 27 9.5	14.177	8	11 20 21.02	2.1178	N. 0 11 48.6	15.916
9	9 39 31.48	2.2006	12 12 56.7	14.247	9	11 22 28.09	2.1179	S. 0 4 6.4	15.917
10	9 41 43.41	2.1972	11 58 39.8	14.315	10	11 24 35.17	2.1182	0 20 1.4	15.917
11	9 43 55.14	2.1938	11 44 18.8	14.382	11	11 26 42.27	2.1186	0 35 56.4	15.915
12	9 46 6.67	2.1905	11 29 53.9	14.448	12	11 28 49.39	2.1189	0 51 51.2	15.911
13	9 48 18.01	2.1873	11 15 25.1	14.512	13	11 30 56.54	2.1190	1 7 45.8	15.907
14	9 50 29.15	2.1842	11 0 52.5	14.575	14	11 33 3.71	2.1198	1 23 40.1	15.902
15	9 52 40.11	2.1811	10 46 16.2	14.636	15	11 35 10.92	2.1904	1 39 34.0	15.896
16	9 54 50.88	2.1781	10 31 36.2	14.695	16	11 37 18.16	2.1911	1 55 27.5	15.887
17	9 57 1.47	2.1751	10 16 52.7	14.753	17	11 39 25.45	2.1919	2 11 20.4	15.877
18	9 59 11.89	2.1722	10 2 5.8	14.810	18	11 41 32.79	2.1926	2 27 12.7	15.865
19	10 1 22.14	2.1694	9 47 15.5	14.865	19	11 43 40.18	2.1937	2 43 4.2	15.852
20	10 3 32.22	2.1666	9 32 22.0	14.919	20	11 45 47.63	2.1947	2 58 54.9	15.837
21	10 5 42.13	2.1639	9 17 25.3	14.972	21	11 47 55.15	2.1956	3 14 44.8	15.821
22	10 7 51.89	2.1613	9 2 25.4	15.023	22	11 50 2.73	2.1970	3 30 33.4	15.804
23	10 10 1.50	2.1588	8 47 22.5	15.073	23	11 52 10.39	2.1983	3 46 21.1	15.786
24	10 12 10.95	2.1563	N. 8 32 16.6	15.121	24	11 54 18.13	2.1997	S. 4 2 7.6	15.765

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 29.					THURSDAY 31.				
0	11 54 18.13	2.1307	S. 4 9 7.6	15.765	0	13 39 25.92	2.3789	S. 15 47 25.7	13.047
1	11 58 25.95	2.1311	4 17 52.9	15.743	1	13 41 42.48	2.3781	16 0 25.7	12.958
2	11 58 33.66	2.1326	4 33 36.8	15.720	2	13 43 59.29	2.3824	16 13 20.1	12.858
3	12 0 41.86	2.1342	4 49 19.3	15.695	3	13 46 16.39	2.3867	16 26 8.7	12.768
4	12 2 49.96	2.1360	5 5 0.2	15.669	4	13 48 33.69	2.3910	16 38 51.5	12.664
5	12 4 58.16	2.1376	5 20 39.5	15.642	5	13 50 51.28	2.3953	16 51 28.4	12.565
6	12 7 6.47	2.1394	5 36 17.2	15.613	6	13 53 9.12	2.3996	17 3 59.3	12.464
7	12 9 14.89	2.1413	5 51 53.0	15.583	7	13 55 27.23	2.4040	17 16 24.1	12.362
8	12 11 23.43	2.1433	6 7 27.0	15.550	8	13 57 45.60	2.4083	17 28 42.7	12.258
9	12 13 32.08	2.1453	6 23 59.0	15.517	9	14 0 4.23	2.4127	17 40 55.0	12.153
10	12 15 40.86	2.1474	6 38 29.0	15.482	10	14 2 23.13	2.4171	17 53 1.0	12.048
11	12 17 49.77	2.1496	6 53 56.8	15.445	11	14 4 42.29	2.4215	18 5 0.5	11.941
12	12 19 58.81	2.1519	7 9 23.4	15.407	12	14 7 1.71	2.4259	18 16 53.5	11.828
13	12 22 7.99	2.1543	7 24 45.7	15.368	13	14 9 21.39	2.4303	18 28 39.8	11.717
14	12 24 17.31	2.1568	7 40 6.6	15.328	14	14 11 41.34	2.4347	18 40 19.5	11.605
15	12 26 26.78	2.1593	7 55 25.0	15.286	15	14 14 1.55	2.4391	18 51 52.4	11.491
16	12 28 36.39	2.1616	8 10 40.9	15.243	16	14 16 22.03	2.4435	19 3 18.4	11.376
17	12 30 46.16	2.1643	8 25 54.1	15.197	17	14 18 42.77	2.4479	19 14 37.5	11.259
18	12 33 56.09	2.1669	8 41 4.5	15.150	18	14 21 3.77	2.4523	19 25 49.5	11.141
19	12 35 6.18	2.1696	8 56 12.1	15.102	19	14 23 25.03	2.4566	19 36 54.4	11.022
20	12 37 16.44	2.1724	9 11 16.7	15.052	20	14 25 46.56	2.4609	19 47 52.1	10.901
21	12 39 26.87	2.1753	9 26 18.3	15.001	21	14 28 8.35	2.4652	19 58 42.5	10.779
22	12 41 37.48	2.1783	9 41 18.8	14.948	22	14 30 30.39	2.4695	20 9 25.6	10.656
23	12 43 48.26	2.1813	S. 9 56 12.1	14.893	23	14 32 52.69	2.4738	S. 20 20 1.2	10.531
WEDNESDAY 30.					FRIDAY, JUNE 1.				
0	12 45 59.23	2.1844	S. 10 11 4.0	14.837	0	14 35 15.25	2.4781	S. 20 30 29.3	10.408
1	12 48 10.39	2.1874	10 25 52.5	14.780					
2	12 50 21.73	2.1907	10 40 37.6	14.722					
3	12 52 33.27	2.1939	10 55 19.1	14.662					
4	12 54 45.00	2.1973	11 9 57.0	14.600					
5	12 56 56.94	2.2007	11 24 31.1	14.537					
6	12 59 9.08	2.2041	11 39 1.4	14.472					
7	13 1 21.43	2.2076	11 53 27.7	14.405					
8	13 3 33.98	2.2111	12 7 50.0	14.337					
9	13 5 46.75	2.2147	12 22 8.2	14.268					
10	13 7 59.74	2.2183	12 36 22.2	14.197					
11	13 10 12.95	2.2220	12 50 31.9	14.125					
12	13 12 26.38	2.2258	13 4 37.2	14.051					
13	13 14 40.04	2.2296	13 18 38.0	13.976					
14	13 16 53.93	2.2334	13 32 34.3	13.900					
15	13 19 8.05	2.2373	13 46 25.9	13.820					
16	13 21 22.40	2.2412	14 0 12.7	13.740					
17	13 23 36.99	2.2451	14 13 54.7	13.660					
18	13 25 51.81	2.2491	14 27 31.8	13.578					
19	13 28 6.88	2.2532	14 41 3.9	13.492					
20	13 30 22.19	2.2573	14 54 30.8	13.406					
21	13 32 37.75	2.2614	15 7 52.6	13.318					
22	13 34 53.56	2.2655	15 21 9.0	13.229					
23	13 37 9.61	2.2697	15 34 20.1	13.139					
24	13 39 25.92	2.2739	S. 15 47 25.7	13.047					

PHASES OF THE MOON.

○	Full Moon,	Day.	h.	m.
☾	Last Quarter,	19	7	16.4
●	New Moon,	20	6	46.0
☽	First Quarter,	27	8	4.7

☾	Perigee,	Day.	h.
☾	Apogee,	13	20.5
☾	Perigee,	28	15.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
			o	l	u	P. L. of Dist.	o	l	u	P. L. of Dist.	o	l	u	P. L. of Dist.	o	l	u	P. L. of Dist.
1	Venus	W.	83	28	28	2486	85	9	58	2484	86	51	34	2480	88	33	16	2476
	Jupiter	W.	60	43	42	2217	62	31	44	2213	64	19	53	2210	66	9	6	2206
	Pollux	W.	59	13	3	2190	61	1	32	2184	62	50	8	2181	64	38	49	2186
	Saturn	W.	30	49	17	2196	32	37	51	2190	34	26	34	2186	36	15	24	2181
	Spica	E.	32	9	29	2198	30	20	51	2193	28	32	11	2192	26	43	31	2192
	Antares	E.	77	51	52	2174	76	2	45	2170	74	13	32	2167	72	24	15	2163
	Mars	E.	119	19	54	2298	117	33	51	2294	115	47	42	2289	114	1	27	2286
2	Venus	W.	97	2	46	2466	96	44	47	2466	100	26	50	2465	102	8	52	2466
	Jupiter	W.	75	10	7	2198	76	58	37	2197	78	47	9	2196	80	35	30	2196
	Pollux	W.	73	43	30	2176	75	32	34	2174	77	21	40	2175	79	10	45	2174
	Saturn	W.	45	20	46	2170	47	9	59	2169	48	59	13	2169	50	48	28	2169
	Regulus	W.	36	42	46	2166	38	32	7	2164	40	21	29	2163	42	10	53	2166
	Antares	E.	63	16	52	2166	61	27	17	2166	59	37	41	2166	57	48	6	2166
	Mars	E.	105	9	13	2377	103	22	40	2377	101	36	6	2376	99	49	30	2376
3	Jupiter	W.	89	37	43	2210	91	25	56	2214	93	14	3	2218	95	2	4	2228
	Pollux	W.	88	15	48	2186	90	4	37	2189	91	53	21	2196	93	41	59	2196
	Saturn	W.	59	54	19	2178	61	43	19	2169	63	32	13	2166	65	21	1	2190
	Regulus	W.	51	17	30	2173	53	6	40	2174	54	55	45	2179	56	44	44	2184
	Antares	E.	48	40	36	2167	46	51	18	2169	45	2	4	2174	43	12	58	2179
	Mars	E.	90	56	59	2287	89	10	40	2286	87	24	25	2294	85	38	17	2288
	4	Jupiter	W.	104	0	4	2384	105	47	11	2382	107	34	6	2371	109	20	48	2379
Saturn		W.	74	23	2	2228	76	10	56	2281	77	58	38	2282	79	46	9	2246
Regulus		W.	65	47	42	2214	67	35	48	2228	69	23	42	2280	71	11	25	2280
Antares		E.	34	9	26	2209	32	21	12	2216	30	33	9	2226	28	45	19	2226
Mars		E.	76	49	30	2280	75	4	14	2288	73	19	10	2246	71	34	17	2264
a Aquilæ		E.	89	12	22	2282	87	38	23	2281	86	4	36	2242	84	31	3	2265
5		Saturn	W.	88	40	13	2286	90	26	15	2210	92	12	0	2222	93	57	28	2236
	Regulus	W.	80	6	31	2269	81	52	46	2201	83	38	44	2212	85	24	24	2226
	Spica	W.	26	7	41	2211	27	53	24	2220	29	38	54	2230	31	24	10	2241
	Mars	E.	62	53	17	2406	61	9	51	2417	59	26	41	2420	57	43	49	2441
	a Aquilæ	E.	76	47	59	2241	75	16	32	2268	73	45	33	2267	72	15	4	2212
	Fomalhaut	E.	101	9	54	2268	99	32	31	2278	97	55	18	2294	96	18	17	2294
	6	Saturn	W.	102	40	4	2402	104	23	36	2416	106	6	48	2431	107	49	38	2420
Regulus		W.	94	8	8	2406	95	51	54	2268	97	35	21	2420	99	18	27	2425
Spica		W.	40	6	29	2401	41	50	3	2414	43	33	18	2428	45	16	13	2442
Mars		E.	49	13	58	2210	47	32	58	2224	45	52	18	2283	44	11	58	2246
a Aquilæ		E.	64	51	22	2171	63	24	38	2260	61	58	40	2260	60	33	30	2294
Fomalhaut		E.	88	16	54	2726	86	41	31	2773	85	6	28	2790	83	31	47	2696
7		Spica	W.	53	45	38	2517	55	26	27	2523	57	6	55	2549	58	47	2	2604
	Mars	E.	35	55	41	2622	34	17	30	2646	32	39	40	2664	31	2	12	2691
	a Aquilæ	E.	53	41	24	2569	52	22	5	2624	51	3	57	2698	49	47	3	2768
	Fomalhaut	E.	75	44	25	2907	74	12	15	2921	72	40	35	2964	71	9	24	2978
	a Pegasi	E.	96	45	49	2976	95	8	37	2992	93	31	46	2707	91	55	15	2722
	8	Spica	W.	67	2	6	2644	68	40	1	2659	70	17	36	2675	71	54	49	2691
Antares		W.	21	11	37	2638	22	49	41	2653	24	27	24	2670	26	4	44	2696
Fomalhaut		E.	63	41	31	3114	62	13	39	3146	60	46	25	3178	59	19	49	3212
a Pegasi		E.	83	58	1	2806	82	23	40	2822	80	49	41	2840	79	16	5	2859
SUN		E.	138	58	29	3008	137	28	26	3024	135	58	43	3039	134	29	18	3056

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			P. L. of Diff.	XVh.			P. L. of Diff.	XVIIIh.			P. L. of Diff.	XXIh.			P. L. of Diff.		
		o	i	h		o	i	h		o	i	h		o	i	h			
1	Venus	W.	90	15	3	2478	91	56	54	2471	93	38	48	2468	95	20	46	2467	
	Jupiter	W.	67	56	24	2304	69	44	46	2322	71	33	10	2309	73	21	38	2199	
	Pollux	W.	66	27	37	2168	68	16	30	2189	70	5	27	2178	71	54	27	2176	
	Saturn	W.	38	4	20	2178	39	53	21	2176	41	42	26	2173	43	31	35	2171	
	Spica	E.	24	54	51	2188	23	6	13	2186	21	17	40	2202	19	29	14	2208	
	Antares	E.	70	34	53	2161	68	45	27	2180	66	55	58	2157	65	6	26	2156	
	Mars	E.	112	15	7	2284	110	28	44	2281	108	42	17	2279	106	55	46	2277	
2	Venus	W.	103	50	54	2487	105	32	54	2468	107	14	52	2470	108	56	47	2471	
	Jupiter	W.	82	24	9	2300	84	12	37	2301	86	1	3	2304	87	49	24	2306	
	Pollux	W.	80	59	51	2176	82	48	54	2178	84	37	55	2179	86	26	54	2182	
	Saturn	W.	52	37	43	2170	54	26	56	2171	56	16	7	2172	58	5	15	2176	
	Regulus	W.	44	0	16	2164	45	49	38	2166	47	38	58	2167	49	28	16	2169	
	Antares	E.	55	58	30	2187	54	8	58	2186	52	19	27	2160	50	30	0	2163	
	Mars	E.	98	2	55	2277	96	16	22	2279	94	29	52	2280	92	43	23	2282	
3	Jupiter	W.	96	49	58	2229	98	37	43	2224	100	25	20	2241	102	12	47	2247	
	Pollux	W.	95	30	30	2284	97	18	52	2289	99	7	6	2216	100	55	10	2228	
	Saturn	W.	67	9	43	2196	68	58	16	2202	70	46	40	2208	72	34	56	2214	
	Regulus	W.	58	33	36	2188	60	22	21	2184	62	10	57	2200	63	59	24	2206	
	Antares	E.	41	23	58	2184	39	35	7	2189	37	46	23	2196	35	57	50	2202	
	Mars	E.	83	52	14	2264	82	6	20	2269	80	20	34	2215	78	34	57	2222	
	4	Jupiter	W.	111	7	18	2269	112	53	33	2260	114	39	33	2210	116	25	18	2220
Saturn		W.	81	33	28	2267	83	20	31	2266	85	7	20	2276	88	53	55	2267	
Regulus		W.	72	58	55	2246	74	46	11	2248	76	33	12	2268	78	19	59	2278	
Antares		E.	26	57	43	2245	25	10	22	2266	23	23	16	2266	21	36	26	2277	
Mars		E.	69	49	36	2264	68	5	10	2274	66	20	58	2282	64	36	59	2266	
α Aquilæ		E.	82	57	46	2269	81	24	47	2264	79	52	8	2202	78	19	52	2220	
5		Saturn	W.	95	42	37	2247	97	27	28	2260	99	12	0	2274	100	56	12	2268
	Regulus	W.	87	9	47	2288	88	54	51	2260	90	39	37	2266	92	24	2	2278	
	Spica	W.	33	9	11	2261	34	53	56	2262	36	38	25	2275	38	22	36	2287	
	Mars	E.	56	1	13	2465	54	18	66	2468	52	36	59	2481	50	55	18	2496	
	α Aquilæ	E.	70	45	6	2040	69	15	43	2069	67	46	56	2102	66	18	49	2125	
	Fomalhaut	E.	94	41	28	2704	93	4	55	2716	91	28	37	2729	89	52	36	2744	
	6	Saturn	W.	109	32	7	2462	111	14	14	2477	112	56	0	2492	114	37	24	2508
Regulus		W.	101	1	12	2450	102	43	35	2466	104	25	36	2482	106	7	15	2497	
Spica		W.	46	58	47	2457	48	41	1	2471	50	22	55	2487	52	4	27	2502	
Mars		E.	42	32	1	2609	40	52	23	2608	39	13	8	2600	37	34	13	2617	
α Aquilæ		E.	59	9	11	2240	57	45	46	2289	56	23	17	2442	55	1	49	2499	
Fomalhaut		E.	81	57	29	2286	80	23	35	2245	78	50	5	2266	77	17	2	2286	
7		Spica	W.	60	26	46	2260	62	6	9	2266	63	45	10	2612	65	23	49	2628
	Mars	E.	29	25	6	2268	27	48	22	2712	26	12	1	2720	24	36	1	2748	
	α Aquilæ	E.	48	31	28	2260	47	17	17	2287	46	4	35	4021	44	53	26	4122	
	Fomalhaut	E.	69	38	44	2008	68	8	35	2020	66	38	59	2057	65	9	57	2087	
	α Pegasi	E.	90	19	5	2722	88	43	17	2765	87	7	50	2771	85	32	44	2788	
	8	Spica	W.	72	31	41	2707	75	8	12	2722	76	44	22	2728	78	20	13	2738
		Antares	W.	27	41	44	2700	29	18	24	2712	30	54	40	2722	32	30	37	2747
Fomalhaut		E.	57	53	54	2246	56	28	39	2262	55	4	7	2220	53	40	19	2260	
α Pegasi		E.	77	42	53	2676	76	10	3	2694	74	37	36	2912	73	5	33	2920	
SUN		E.	133	0	14	2070	131	31	28	2026	130	3	1	2101	128	34	52	2117	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	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.
			o	i	h		o	i	h		o	i	h		o	i	h	
9	Spica	W.	79	55	49	2768	81	30	52	2768	83	5	42	2798	84	40	13	2812
	Antares	W.	34	6	14	2768	35	41	31	2778	37	16	28	2792	38	51	6	2807
	Fomalhaut	E.	52	17	17	2408	50	55	4	2446	49	33	40	2494	48	13	9	2545
	α Pegasi	E.	71	33	52	2949	70	2	35	2996	68	31	42	2986	67	1	12	3005
	SUN	E.	127	7	3	3123	125	39	33	3147	124	12	20	3162	122	45	25	3178
10	Spica	W.	92	28	13	2880	94	0	57	2888	95	33	25	2905	97	5	37	2916
	Antares	W.	46	39	41	2976	48	12	31	2987	49	45	7	2900	51	17	26	2912
	Fomalhaut	E.	41	45	29	2688	40	31	21	2629	39	18	31	2614	38	7	5	2605
	α Pegasi	E.	59	34	42	3104	58	6	37	3124	56	38	57	3144	55	11	41	3166
	SUN	E.	115	35	14	2948	114	10	2	2961	112	45	5	2974	111	20	23	2987
11	Spica	W.	104	42	59	2972	106	13	47	2981	107	44	23	2991	109	14	47	3000
	Antares	W.	58	55	23	2968	60	26	18	2976	61	57	1	2985	63	27	33	2998
	α Pegasi	E.	48	1	59	2982	46	37	26	2998	45	13	24	3035	43	49	53	3063
	SUN	E.	104	20	27	2845	102	57	7	2854	101	33	58	2864	100	11	0	2872
	12	Antares	W.	70	57	40	3080	72	27	15	3087	73	56	42	3043	75	26	2	3047
Mars		W.	25	21	19	3189	26	48	10	3164	28	15	2	3170	29	41	47	3174
SUN		E.	93	18	40	2408	91	56	38	2420	90	34	44	2425	89	12	56	2421
13	Antares	W.	82	51	25	3065	84	20	17	3067	85	49	7	3089	87	17	54	3089
	Mars	W.	36	54	22	3191	38	20	42	3193	39	47	0	3194	41	13	16	3194
	SUN	E.	82	25	17	2450	81	3	57	2423	79	42	40	2454	78	21	24	2456
14	Antares	W.	94	41	42	3069	96	10	30	3068	97	39	19	3065	99	8	11	3068
	Mars	W.	48	24	33	3192	49	50	51	3189	51	17	13	3188	52	43	36	3184
	α Aquilæ	W.	48	3	10	2906	49	9	57	2921	50	17	35	2977	51	26	4	2989
	SUN	E.	71	35	23	2456	70	14	9	2454	68	52	54	2452	67	31	36	2449
15	Antares	W.	106	33	28	3044	108	2	46	3039	109	32	11	3024	111	1	42	3028
	Mars	W.	59	56	39	3164	61	23	31	3166	62	50	31	3162	64	17	38	3147
	α Aquilæ	W.	57	19	11	2947	58	31	43	2916	59	44	48	2892	60	58	26	2884
	SUN	E.	60	44	15	2431	59	22	34	2426	58	0	47	2420	56	38	53	2415
16	Mars	W.	71	35	10	3110	73	3	8	3101	74	31	16	3092	75	59	35	3093
	α Aquilæ	W.	67	13	51	2722	68	30	15	2696	69	47	4	2677	71	4	16	2655
	Fomalhaut	W.	42	10	44	2898	43	24	6	2841	44	38	26	2788	45	53	41	2739
	SUN	E.	49	47	42	2323	48	25	5	2374	47	2	19	2366	45	39	24	2356
17	Mars	W.	83	23	59	3084	84	53	29	3025	86	23	11	3014	87	53	7	3004
	α Aquilæ	W.	77	35	39	2663	78	54	54	2645	80	14	28	2629	81	34	20	2515
	Fomalhaut	W.	52	21	48	2898	53	41	30	2805	55	1	49	2472	56	22	44	2441
	SUN	E.	38	42	32	2318	37	18	41	2309	35	54	40	2300	34	30	29	2294
22	SUN	W.	21	25	48	2920	22	57	41	2901	24	29	59	2881	26	2	42	2864
	Jupiter	E.	29	49	24	2659	28	9	33	2651	26	29	30	2643	24	49	16	2626
	Saturn	E.	57	19	7	2828	55	38	30	2819	53	57	43	2811	52	16	45	2804
	Regulus	E.	65	10	25	2607	63	29	21	2499	61	48	6	2490	60	6	39	2482
23	SUN	W.	33	51	8	2798	35	25	39	2788	37	0	23	2778	38	35	20	2768
	Saturn	E.	43	49	19	2469	42	7	21	2462	40	25	15	2455	38	43	0	2450
	Regulus	E.	51	36	44	2448	49	54	15	2440	48	11	37	2433	46	28	50	2426
	Spica	E.	105	40	10	2445	103	57	39	2438	102	14	58	2431	100	32	7	2424

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.			P. L. of Dist.	XXIh.			P. L. of Dist.		
		°	'	"				°	'	"		°	'	"		°	'
9	Spica W.	86	14	25	2927	87	48	18	2941	89	21	53	2954	90	55	11	2966
	Antares W.	40	25	25	2921	41	59	25	2929	43	33	7	2948	45	6	33	2962
	Fomalhaut E.	46	53	34	2966	45	34	57	2964	44	17	21	2715	43	0	50	2782
	α Pegasi E.	65	31	6	2925	64	1	24	2944	62	32	6	2964	61	3	12	2983
	SUN E.	121	18	49	2192	119	52	30	2209	118	26	28	2220	117	0	43	2234
10	Spica W.	98	37	35	2929	100	9	17	2940	101	40	45	2951	103	11	59	2962
	Antares W.	59	49	30	2924	54	21	19	2928	55	52	54	2946	57	24	15	2956
	Fomalhaut E.	36	57	8	2926	35	48	46	2918	34	42	12	4440	33	37	27	4579
	α Pegasi E.	53	44	51	2188	52	18	28	2210	50	52	31	2233	49	27	1	2257
	SUN E.	109	55	56	2800	108	31	44	2811	107	7	45	2822	105	43	59	2834
11	Spica W.	110	45	0	2909	112	15	2	2916	113	44	55	2924	115	14	38	2930
	Antares W.	64	57	54	2902	66	28	4	2909	67	58	5	2917	69	27	57	2924
	α Pegasi E.	42	26	54	2998	41	4	30	2925	39	42	42	2961	38	21	34	2977
	SUN E.	98	48	13	2822	97	25	36	2891	96	3	9	2899	94	40	51	2905
	12	Antares W.	76	55	17	2962	78	24	20	2966	79	53	30	2969	81	22	30	2968
Mars W.		31	8	27	2178	32	35	2	2182	34	1	33	2185	35	27	59	2188
SUN E.		87	51	14	2926	86	29	38	2940	85	8	7	2944	83	46	40	2947
13	Antares W.	88	46	41	2971	90	15	26	2971	91	44	11	2970	93	12	57	2971
	Mars W.	42	39	31	2196	44	5	45	2196	45	32	0	2194	46	58	16	2198
	SUN E.	77	0	11	2967	75	38	59	2957	74	17	47	2957	72	56	35	2957
14	Antares W.	100	37	6	2969	102	6	5	2927	103	35	7	2962	105	4	15	2968
	Mars W.	54	10	4	2182	55	36	35	2178	57	3	11	2173	58	29	52	2168
	α Aquilæ W.	52	35	18	2104	53	45	16	2061	54	55	56	2021	56	7	15	2028
	SUN E.	66	10	15	2946	64	48	51	2942	63	27	23	2939	62	5	51	2936
	15	Antares W.	112	31	20	2922	114	1	5	2917	115	30	57	2910	117	0	57	2904
Mars W.		65	44	51	2129	67	12	13	2123	68	39	43	2125	70	7	22	2118
α Aquilæ W.		62	12	34	2924	63	27	12	2793	64	42	18	2770	65	57	51	2745
SUN E.		55	16	53	2909	53	54	47	2902	52	32	33	2896	51	10	12	2890
16		Mars W.	77	28	5	2975	78	56	45	2965	80	25	38	2965	81	54	43	2966
	α Aquilæ W.	72	21	51	2925	73	39	47	2915	74	58	5	2898	76	16	42	2879
	Fomalhaut W.	47	9	47	2998	48	26	41	2950	49	44	21	2911	51	2	43	2872
	SUN E.	44	16	20	2851	42	53	7	2842	41	29	45	2825	40	6	13	2826
	17	Mars W.	89	23	15	2906	90	53	37	2981	92	24	13	2969	93	55	4	2987
α Aquilæ W.		82	54	28	2900	84	14	52	2886	85	35	33	2972	86	56	28	2961
Fomalhaut W.		57	44	14	2914	59	6	15	2886	60	28	47	2860	61	51	49	2835
SUN E.		33	6	10	2926	31	41	41	2977	30	17	3	2970	28	52	16	2964
22		SUN W.	27	35	47	2946	29	9	12	2925	30	42	54	2922	32	16	53	2910
	Jupiter E.	23	8	52	2927	21	28	16	2919	19	47	29	2912	18	6	32	2905
	Saturn E.	50	35	37	2926	48	54	17	2928	47	12	47	2922	45	31	8	2916
	Regulus E.	58	25	1	2975	56	43	12	2967	55	1	13	2960	53	19	3	2953
23	SUN W.	40	10	32	2759	41	45	54	2750	43	21	28	2741	44	57	14	2732
	Saturn E.	37	0	36	2945	35	18	5	2940	33	35	27	2926	31	52	43	2922
	Regulus E.	44	45	53	2921	43	2	48	2915	41	19	35	2910	39	36	14	2905
	Spica E.	98	49	6	2916	97	5	57	2912	95	22	39	2906	93	39	13	2900

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			°	'	"		°	'	"		°	'	"		°	'	"	
24	SUN	W.	46	33	10	2726	48	9	16	2718	49	45	32	2711	51	21	57	2704
	Saturn	E.	30	9	54	2428	28	26	59	2425	26	44	0	2422	25	0	57	2422
	Regulus	E.	37	52	46	2400	36	9	11	2396	34	25	30	2391	32	41	42	2387
	Spica	E.	91	55	38	2394	90	11	54	2388	88	28	2	2382	86	44	2	2378
25	SUN	W.	59	26	11	2674	61	3	26	2669	62	40	48	2663	64	18	17	2659
	Venus	W.	15	23	13	2629	17	0	28	2621	18	38	55	2613	20	17	32	2607
	Regulus	E.	24	1	31	2376	22	17	20	2375	20	33	9	2377	18	49	1	2382
	Spica	E.	78	2	15	2353	76	17	33	2349	74	32	45	2345	72	47	51	2341
26	SUN	W.	72	27	14	2637	74	5	19	2633	75	43	29	2629	77	21	45	2626
	Venus	W.	28	32	51	2677	30	12	17	2672	31	51	51	2668	33	31	30	2664
	Pollux	W.	27	39	48	2407	29	23	13	2394	31	6	56	2394	32	50	54	2378
	Jupiter	W.	24	44	52	2373	26	29	5	2370	28	13	23	2366	29	57	46	2363
	Spica	E.	64	1	57	2323	62	16	31	2320	60	31	1	2317	58	45	27	2314
	Antares	E.	109	48	10	2316	108	2	34	2313	106	16	54	2309	104	31	8	2306
27	SUN	W.	85	34	9	2610	87	12	50	2607	88	51	35	2605	90	30	23	2602
	Pollux	W.	41	33	53	2338	43	18	57	2333	45	4	8	2328	46	49	27	2324
	Venus	W.	41	51	9	2645	43	31	19	2643	45	11	34	2638	46	51	54	2635
	Jupiter	W.	38	40	46	2349	40	25	34	2347	42	10	25	2345	43	55	19	2343
	Spica	E.	49	56	38	2368	48	10	43	2361	46	24	45	2360	44	38	45	2358
	Antares	E.	95	41	15	2293	93	55	5	2291	92	8	52	2289	90	22	36	2286
28	SUN	W.	98	45	6	2694	100	24	9	2688	102	3	14	2692	103	42	20	2691
	Pollux	W.	55	37	24	2307	57	23	13	2306	59	9	5	2303	60	55	0	2301
	Venus	W.	55	14	28	2624	56	55	9	2622	58	35	52	2620	60	16	37	2617
	Jupiter	W.	52	40	31	2335	54	25	40	2334	56	10	50	2332	57	56	3	2331
	Saturn	W.	26	4	59	2323	27	50	25	2320	29	35	56	2315	31	21	33	2313
	Spica	E.	35	48	22	2296	34	2	16	2296	32	16	11	2297	30	30	7	2296
	Antares	E.	81	30	30	2278	79	43	58	2277	77	57	25	2276	76	10	50	2274
	SUN	W.	111	58	5	2689	113	37	15	2690	115	16	24	2691	116	55	31	2691
29	Pollux	W.	69	45	9	2296	71	31	14	2296	73	17	20	2296	75	3	26	2296
	Venus	W.	68	40	55	2613	70	21	50	2613	72	2	45	2612	73	43	41	2612
	Jupiter	W.	66	42	19	2330	68	27	35	2331	70	12	50	2331	71	58	5	2331
	Saturn	W.	40	10	24	2306	41	56	16	2304	43	42	9	2304	45	28	2	2304
	Regulus	W.	32	43	36	2287	34	29	55	2286	36	16	15	2285	38	2	36	2285
	Antares	E.	67	17	39	2273	65	31	0	2273	63	44	21	2273	61	57	42	2274
	Mars	E.	117	35	58	2339	115	50	55	2339	114	5	52	2339	112	20	49	2339
	SUN	W.	83	53	43	2301	85	39	41	2302	87	25	37	2306	89	11	29	2306
30	Venus	W.	82	8	14	2516	83	49	5	2517	85	20	54	2520	87	10	40	2520
	Jupiter	W.	80	44	0	2337	82	29	5	2340	84	14	6	2342	85	59	4	2344
	Saturn	W.	54	17	21	2309	56	3	8	2310	57	48	52	2312	59	34	34	2315
	Regulus	W.	46	54	19	2298	48	40	36	2299	50	26	50	2291	52	13	2	2294
	Antares	E.	53	4	50	2281	51	18	22	2283	49	31	57	2285	47	45	35	2287
	Mars	E.	103	35	45	2344	101	50	49	2345	100	5	55	2347	98	21	4	2346
	SUN	W.	95	33	45	2385	97	14	9	2389	98	54	28	2343	100	34	41	2346
	31	Jupiter	W.	94	42	55	2362	96	27	25	2366	98	11	49	2371	99	56	6	2373
Saturn		W.	68	22	3	2331	70	7	18	2336	71	52	27	2339	73	37	30	2344
Regulus		W.	61	3	6	2309	62	48	52	2313	64	34	33	2317	66	20	7	2322
Antares		E.	38	54	46	2304	37	8	52	2308	35	23	4	2313	33	37	23	2316
Mars		E.	89	37	42	2264	87	53	16	2268	86	8	55	2273	84	24	41	2275

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Diff.	XVh.			P. L. of Diff.	XVIIIh.			P. L. of Diff.	XXTh.			P. L. of Diff.
			°	'	"		°	'	"		°	'	"		°	'	"	
24	Sun	W.	59	58	31	2698	54	35	14	2699	56	12	5	2698	57	49	4	2690
	Saturn	E.	23	17	53	2421	21	34	48	2422	19	51	45	2424	18	8	45	2431
	Regulus	E.	30	57	48	2383	29	13	49	2380	27	29	46	2378	25	45	40	2376
	Spica	E.	84	59	55	2373	83	15	41	2367	81	31	19	2364	79	46	50	2358
25	Sun	W.	65	55	52	2654	67	33	34	2650	69	11	21	2645	70	49	15	2641
	Venus	W.	21	56	19	2699	23	35	16	2698	25	14	20	2698	26	53	32	2698
	Regulus	E.	17	5	0	2385	15	21	10	2400	13	37	35	2415	11	54	21	2433
	Spica	E.	71	2	51	2337	69	17	46	2333	67	32	35	2330	65	47	19	2326
26	Sun	W.	79	0	5	2623	80	38	30	2630	82	16	58	2615	83	55	32	2613
	Venus	W.	35	11	15	2669	36	51	6	2656	38	31	2	2652	40	11	3	2548
	Pollux	W.	34	35	7	2364	36	19	33	2357	38	4	9	2350	30	48	56	2343
	Jupiter	W.	31	42	14	2360	33	26	40	2367	35	11	22	2356	36	56	2	2354
	Spica	E.	56	59	48	2312	55	14	6	2309	53	28	20	2307	51	42	30	2305
	Antares	E.	102	45	17	2303	100	59	22	2301	99	13	24	2298	97	27	23	2295
27	Sun	W.	92	9	14	2601	93	48	8	2600	95	27	5	2597	97	6	4	2595
	Pollux	W.	48	34	52	2320	50	20	23	2317	52	5	58	2313	53	51	39	2310
	Venus	W.	48	32	18	2338	50	12	45	2330	51	53	16	2327	53	33	51	2325
	Jupiter	W.	45	40	16	2341	47	25	16	2339	49	10	19	2337	50	55	24	2336
	Spica	E.	42	52	43	2297	41	6	39	2297	39	20	35	2295	37	34	28	2292
	Antares	E.	88	36	16	2294	86	49	53	2293	85	3	28	2291	83	17	1	2279
28	Sun	W.	105	21	28	2591	107	0	36	2590	108	39	45	2589	110	18	55	2589
	Pollux	W.	62	40	58	2300	64	26	58	2298	66	13	0	2297	67	59	4	2296
	Venus	W.	61	57	26	2517	63	38	16	2516	65	19	7	2515	67	0	0	2513
	Jupiter	W.	59	41	17	2331	61	26	31	2331	63	11	46	2330	64	57	2	2329
	Saturn	W.	33	7	14	2311	34	52	58	2309	36	38	45	2307	38	24	34	2307
	Spica	E.	28	44	5	2300	26	58	6	2304	25	12	12	2307	23	26	23	2313
	Antares	E.	74	24	13	2274	72	37	36	2273	70	50	57	2274	69	4	19	2272
29	Sun	W.	118	34	38	2599	120	13	43	2594	121	52	46	2596	123	31	46	2599
	Pollux	W.	76	49	32	2296	78	35	37	2297	80	21	41	2298	82	7	43	2300
	Venus	W.	75	24	37	2512	77	5	33	2512	78	46	28	2514	80	27	22	2515
	Jupiter	W.	73	43	19	2332	75	28	32	2333	77	13	44	2335	78	58	53	2336
	Saturn	W.	47	13	57	2304	48	59	50	2305	50	45	42	2307	52	31	32	2308
	Regulus	W.	39	48	58	2385	41	35	20	2285	43	21	41	2286	45	8	1	2287
	Antares	E.	60	11	5	2275	58	24	29	2276	56	37	54	2277	54	51	21	2279
	Mars	E.	110	35	47	2239	108	50	45	2239	107	5	43	2241	105	20	43	2242
30	Pollux	W.	90	57	17	2310	93	43	2	2313	94	28	42	2317	96	14	17	2321
	Venus	W.	88	51	25	2522	90	32	6	2526	92	12	43	2529	93	53	16	2532
	Jupiter	W.	87	44	0	2248	89	28	50	2250	91	13	37	2253	92	58	19	2257
	Saturn	W.	61	20	12	2217	63	5	47	2220	64	51	17	2224	66	36	42	2226
	Regulus	W.	53	59	11	2298	55	45	16	2299	57	31	17	2302	59	17	14	2305
	Antares	E.	45	59	10	2289	44	13	1	2288	42	26	51	2286	40	40	46	2300
	Mars	E.	96	36	15	2251	94	51	30	2255	93	6	50	2257	91	22	14	2260
31	Venus	W.	102	14	48	2553	103	54	48	2556	105	34	43	2563	107	14	29	2568
	Jupiter	W.	101	40	17	2280	103	24	20	2285	105	8	15	2291	106	52	2	2298
	Saturn	W.	75	22	26	2248	77	7	15	2254	78	51	56	2259	80	36	29	2266
	Regulus	W.	68	5	35	2227	69	50	55	2232	71	36	8	2237	73	21	14	2244
	Antares	E.	31	51	47	2292	30	6	20	2297	28	21	0	2283	26	35	48	2239
	Mars	E.	82	40	31	2282	80	56	30	2287	79	12	36	2292	77	28	50	2298

AT GREENWICH APPARENT NOON.

THE SUN'S															
Day of the Week.	Day of the Month.	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from	Diff. for 1 hour.		
		h.	m.	s.		''	°	'				''		''	m.	s.	''
Fri.	1	4	38	18.61	10.233	N.22	7	49.5	19.94	15	48.24	68.44	2	26.77	0.376
Sat.	2	4	42	24.42	10.249	22	15	36.5	18.98	15	48.11	68.49	2	17.54	0.391
Sun.	3	4	46	30.60	10.264	22	23	0.4	18.01	15	47.98	68.54	2	7.94	0.406
Mon.	4	4	50	37.14	10.278	22	30	1.0	17.08	15	47.85	68.59	1	57.99	0.421
Tues.	5	4	54	44.02	10.292	22	36	38.0	16.04	15	47.73	68.64	1	47.70	0.435
Wed.	6	4	58	51.22	10.305	22	42	51.2	15.06	15	47.61	68.68	1	37.08	0.448
Thur.	7	5	2	58.74	10.318	22	48	40.5	14.06	15	47.49	68.72	1	26.15	0.461
Fri.	8	5	7	6.56	10.330	22	54	5.9	13.06	15	47.38	68.76	1	14.92	0.473
Sat.	9	5	11	14.67	10.341	22	59	7.3	12.05	15	47.27	68.80	1	3.39	0.485
Sun.	10	5	15	23.04	10.351	23	3	44.5	11.04	15	47.17	68.83	0	51.61	0.495
Mon.	11	5	19	31.65	10.361	23	7	57.3	10.02	15	47.07	68.86	0	39.60	0.505
Tues.	12	5	23	40.48	10.371	23	11	45.6	9.00	15	46.98	68.89	0	27.37	0.514
Wed.	13	5	27	49.51	10.378	23	15	9.4	7.98	15	46.90	68.91	0	14.93	0.522
Thur.	14	5	31	58.71	10.384	23	18	8.7	6.96	15	46.82	68.93	0	2.32	0.528
Fri.	15	5	36	8.06	10.389	23	20	43.3	5.93	15	46.74	68.94	0	10.44	0.534
Sat.	16	5	40	17.54	10.394	23	22	53.2	4.90	15	46.66	68.95	0	23.32	0.538
Sun.	17	5	44	27.10	10.398	23	24	38.3	3.96	15	46.59	68.96	0	36.28	0.542
Mon.	18	5	48	36.73	10.400	23	25	58.6	2.88	15	46.53	68.97	0	49.32	0.544
Tues.	19	5	52	46.41	10.400	23	26	54.0	1.79	15	46.47	68.97	1	2.40	0.546
Wed.	20	5	56	56.11	10.399	23	27	24.6	0.76	15	46.42	68.97	1	15.50	0.546
Thur.	21	6	1	5.79	10.398	23	27	30.3	0.28	15	46.37	68.97	1	28.58	0.545
Fri.	22	6	5	15.42	10.396	23	27	11.2	1.32	15	46.23	68.96	1	41.62	0.543
Sat.	23	6	9	24.98	10.394	23	26	27.2	2.35	15	46.29	68.96	1	54.59	0.539
Sun.	24	6	13	34.45	10.390	23	25	18.5	3.38	15	46.26	68.96	2	7.47	0.534
Mon.	25	6	17	43.80	10.385	23	23	45.1	4.40	15	46.24	68.95	2	20.22	0.528
Tues.	26	6	21	52.99	10.379	23	21	47.0	5.43	15	46.22	68.93	2	32.81	0.521
Wed.	27	6	26	2.00	10.370	23	19	24.3	6.45	15	46.20	68.90	2	45.24	0.514
Thur.	28	6	30	10.82	10.362	23	16	37.2	7.47	15	46.18	68.87	2	57.47	0.506
Fri.	29	6	34	19.44	10.353	23	13	25.7	8.49	15	46.17	68.84	3	9.49	0.496
Sat.	30	6	38	27.83	10.343	23	9	49.7	9.50	15	46.16	68.81	3	21.29	0.486
Sun.	31	6	42	35.96	10.332	N.23	5	49.4	10.51	15	46.15	68.78	3	32.84	0.475

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Equation of Time, to be added to		Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.	subtracted from Mean Time.		
		h. m. s.	s.		o. ' s.	"				
Fri.	1	4 38 19.03	10.238	N.22 7 50.3	19.94	2 26.76	0.376	4 40 45.79		
Sat.	2	4 42 24.81	10.249	22 15 37.2	18.98	2 17.53	0.391	4 44 42.34		
Sun.	3	4 46 30.96	10.264	22 23 1.0	18.01	2 7.94	0.406	4 48 38.90		
Mon.	4	4 50 37.48	10.278	22 30 1.5	17.03	1 57.98	0.421	4 52 35.46		
Tues.	5	4 54 44.38	10.292	22 36 38.4	16.04	1 47.69	0.435	4 56 32.02		
Wed.	6	4 58 51.50	10.305	22 42 51.5	15.06	1 37.07	0.448	5 0 28.57		
Thur.	7	5 2 58.99	10.318	22 48 40.8	14.06	1 26.14	0.461	5 4 25.13		
Fri.	8	5 7 6.78	10.330	22 54 6.2	13.06	1 14.91	0.473	5 8 21.69		
Sat.	9	5 11 14.86	10.341	22 59 7.5	12.06	1 3.39	0.485	5 12 18.25		
Sun.	10	5 15 23.20	10.351	23 3 44.6	11.04	0 51.61	0.495	5 16 14.81		
Mon.	11	5 19 31.77	10.361	23 7 57.3	10.02	0 39.60	0.505	5 20 11.37		
Tues.	12	5 23 40.56	10.370	23 11 45.6	9.00	0 27.37	0.514	5 24 7.93		
Wed.	13	5 27 49.55	10.378	23 15 9.4	7.98	0 14.93	0.522	5 28 4.48		
Thur.	14	5 31 58.72	10.384	23 18 8.7	6.96	0 2.32	0.528	5 32 1.04		
Fri.	15	5 36 8.04	10.389	23 20 43.3	5.93	0 10.44	0.534	5 35 57.60		
Sat.	16	5 40 17.48	10.394	23 22 53.2	4.90	0 23.32	0.538	5 39 54.16		
Sun.	17	5 44 27.00	10.398	23 24 38.3	3.86	0 36.28	0.542	5 43 50.72		
Mon.	18	5 48 36.59	10.400	23 25 58.6	2.83	0 49.31	0.544	5 47 47.28		
Tues.	19	5 52 46.23	10.400	23 26 54.0	1.79	1 2.39	0.546	5 51 43.84		
Wed.	20	5 56 55.89	10.399	23 27 24.6	0.76	1 15.49	0.546	5 55 40.40		
Thur.	21	6 1 5.53	10.398	23 27 30.3	0.28	1 28.57	0.545	5 59 36.96		
Fri.	22	6 5 15.12	10.396	23 27 11.2	1.32	1 41.61	0.543	6 3 33.51		
Sat.	23	6 9 24.64	10.394	23 26 27.3	2.35	1 54.57	0.539	6 7 30.07		
Sun.	24	6 13 34.08	10.390	23 25 18.6	3.38	2 7.45	0.534	6 11 26.63		
Mon.	25	6 17 43.39	10.385	23 23 45.2	4.40	2 20.20	0.528	6 15 23.19		
Tues.	26	6 21 52.54	10.378	23 21 47.2	5.43	2 32.79	0.521	6 19 19.75		
Wed.	27	6 26 1.52	10.370	23 19 24.6	6.45	2 45.22	0.514	6 23 16.30		
Thur.	28	6 30 10.31	10.362	23 16 37.6	7.47	2 57.45	0.506	6 27 12.86		
Fri.	29	6 34 18.89	10.353	23 13 26.1	8.49	3 9.47	0.496	6 31 9.42		
Sat.	30	6 38 27.25	10.343	23 9 50.2	9.50	3 21.27	0.486	6 35 5.98		
Sun.	31	6 42 35.35	10.332	N.23 5 50.0	10.51	3 32.82	0.475	6 39 2.53		

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

-15, 39

AT GREENWICH MEAN NOON.

		THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
Day of the Month.	Day of the Year.	True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	153	71° 8' 55.5"	8° 21.4'	143.58	-0.17	0.0062577	24.6	19 16 4.30	
2	154	72 6 20.7	5 46.4	143.53	0.15	.0063163	24.0	19 12 8.39	
3	155	73 3 44.9	3 10.4	143.49	0.10	.0063736	23.5	19 8 12.48	
4	156	74 1 8.2	0 33.5	143.45	-0.02	.0064296	23.0	19 4 16.57	
5	157	74 58 30.6	57 55.8	143.42	+0.08	.0064843	22.5	19 0 20.66	
6	158	75 55 52.3	55 17.3	143.39	0.21	.0065378	22.0	18 56 24.75	
7	159	76 53 13.3	52 38.1	143.36	0.33	.0065899	21.4	18 52 28.83	
8	160	77 50 33.8	49 58.4	143.34	0.46	.0066406	20.8	18 48 32.92	
9	161	78 47 53.7	47 18.1	143.32	0.58	.0066898	20.1	18 44 37.01	
10	162	79 45 13.2	44 37.5	143.30	0.71	.0067373	19.3	18 40 41.10	
11	163	80 42 32.3	41 56.4	143.28	0.80	.0067829	18.5	18 36 45.19	
12	164	81 39 50.9	39 14.8	143.26	0.88	.0068266	17.7	18 32 49.27	
13	165	82 37 9.1	36 32.8	143.25	0.93	.0068683	16.9	18 28 53.36	
14	166	83 34 26.9	33 50.4	143.24	0.93	.0069078	16.0	18 24 57.45	
15	167	84 31 44.4	31 7.7	143.23	0.92	.0069450	15.0	18 21 1.54	
16	168	85 29 1.6	28 24.7	143.22	0.89	.0069796	13.9	18 17 5.62	
17	169	86 26 18.5	25 41.4	143.20	0.82	.0070116	12.8	18 13 9.70	
18	170	87 23 35.0	22 57.7	143.18	0.73	.0070411	11.7	18 9 13.79	
19	171	88 20 51.0	20 13.5	143.16	0.61	.0070680	10.7	18 5 17.88	
20	172	89 18 6.6	17 29.0	143.14	0.48	.0070924	9.6	18 1 21.97	
21	173	90 15 21.7	14 43.9	143.11	0.35	.0071143	8.5	17 57 26.06	
22	174	91 12 36.3	11 58.3	143.09	0.21	.0071336	7.5	17 53 30.14	
23	175	92 9 50.3	9 12.1	143.07	+0.08	.0071503	6.5	17 49 34.23	
24	176	93 7 3.8	6 25.4	143.05	-0.05	.0071647	5.5	17 45 38.32	
25	177	94 4 16.8	3 38.3	143.03	0.15	.0071769	4.6	17 41 42.41	
26	178	95 1 29.4	0 50.7	143.01	0.21	.0071869	3.7	17 37 46.50	
27	179	95 58 41.5	58 2.6	142.99	0.26	.0071949	2.9	17 33 50.58	
28	180	96 55 53.1	55 14.0	142.97	0.27	.0072010	2.2	17 29 54.67	
29	181	97 53 4.4	52 25.1	142.96	0.26	.0072053	1.5	17 25 58.76	
30	182	98 50 15.4	49 35.9	142.95	0.21	.0072080	0.8	17 22 2.85	
31	183	99 47 26.2	46 46.5	142.94	-0.14	0.0072091	0.1	17 18 6.94	

NOTE. — λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	h. m.	Diff. for 1 hour.	
				"		"	m.	d.	
1	16 2.2	15 58.9	58 44.8	-0.95	58 32.5	-1.10	10 17.5	2.34	11.7
2	15 55.1	15 50.8	58 18.5	1.23	58 3.0	1.35	11 14.8	2.42	12.7
3	15 46.2	15 41.4	57 46.1	1.45	57 28.2	1.53	12 13.2	2.43	13.7
4	15 36.2	15 31.0	57 9.4	1.59	56 50.1	1.62	13 10.6	2.35	14.7
5	15 25.7	15 20.5	56 30.7	1.61	56 11.5	1.58	14 5.3	2.21	15.7
6	15 15.4	15 10.5	55 52.8	1.52	55 35.0	1.44	14 56.3	2.04	16.7
7	15 6.0	15 1.9	55 18.3	1.33	55 3.2	1.20	15 43.3	1.89	17.7
8	14 58.2	14 55.1	54 49.7	1.04	54 38.3	0.86	16 26.9	1.76	18.7
9	14 52.6	14 50.7	54 29.0	0.67	54 22.1	0.48	17 8.1	1.68	19.7
10	14 49.4	14 48.9	54 17.5	-0.27	54 15.5	-0.06	17 47.9	1.65	20.7
11	14 49.1	14 49.9	54 16.1	+0.16	54 19.3	+0.37	18 27.5	1.66	21.7
12	14 51.5	14 53.7	54 25.0	0.58	54 33.2	0.78	19 8.0	1.72	22.7
13	14 56.6	15 0.1	54 43.8	0.98	54 56.7	1.16	19 50.6	1.83	23.7
14	15 4.2	15 8.7	55 11.6	1.32	55 28.4	1.47	20 36.3	1.98	24.7
15	15 13.8	15 19.1	55 46.8	1.59	56 6.5	1.68	21 25.9	2.16	25.7
16	15 24.7	15 30.4	56 27.0	1.74	56 48.1	1.77	22 19.9	2.33	26.7
17	15 36.2	15 42.0	57 9.4	1.77	57 30.5	1.73	23 17.6	2.46	27.7
18	15 47.5	15 52.8	57 50.8	1.65	58 10.1	1.56	6		28.7
19	15 57.7	16 2.1	58 28.1	1.43	58 44.2	1.27	0 17.3	2.51	0.3
20	16 5.9	16 9.2	58 58.4	1.09	59 10.4	0.90	1 16.9	2.45	1.3
21	16 11.8	16 13.8	59 20.1	0.71	59 27.5	0.51	2 14.3	2.33	2.3
22	16 15.2	16 15.9	59 32.4	+0.32	59 35.1	+0.14	3 8.7	2.20	3.3
23	16 16.1	16 15.7	59 35.7	-0.04	59 34.2	-0.20	4 0.2	2.10	4.3
24	16 14.8	16 13.4	59 30.9	0.34	59 26.1	0.47	4 49.7	2.03	5.3
25	16 11.7	16 9.7	59 19.7	0.58	59 12.2	0.68	5 38.3	2.02	6.3
26	16 7.3	16 4.7	59 3.5	0.76	58 53.9	0.83	6 27.3	2.07	7.3
27	16 1.8	15 58.8	58 43.5	0.90	58 32.2	0.97	7 17.8	2.15	8.3
28	15 55.5	15 52.1	58 20.3	1.02	58 7.8	1.07	8 10.7	2.25	9.3
29	15 48.5	15 44.8	57 54.6	1.12	57 40.8	1.17	9 6.2	2.35	10.3
30	15 40.9	15 36.9	57 26.6	1.20	57 11.9	1.24	10 3.0	2.39	11.3
31	15 32.8	15 28.6	56 56.8	-1.27	56 41.4	-1.29	11 0.1	2.35	12.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					SUNDAY 3.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	14 35 15.25	2.3781	S. 20 30 29.3	10.406	0	16 33 13.99	2.5045	S. 26 3 55.1	3.176
1	14 37 38.06	2.3823	20 40 49.8	10.377	1	16 35 44.26	2.5046	26 7 0.7	3.011
2	14 40 1.13	2.3865	20 51 2.6	10.149	2	16 38 14.54	2.5046	26 9 56.4	2.846
3	14 42 24.45	2.3907	21 1 7.5	10.019	3	16 40 44.81	2.5044	26 12 42.2	2.680
4	14 44 48.02	2.3949	21 11 4.7	9.888	4	16 43 15.07	2.5041	26 15 18.0	2.514
5	14 47 11.84	2.3990	21 20 54.1	9.756	5	16 45 45.31	2.5037	26 17 43.9	2.349
6	14 49 35.90	2.4030	21 30 35.5	9.621	6	16 48 15.52	2.5032	26 19 59.9	2.184
7	14 52 0.20	2.4070	21 40 8.8	9.487	7	16 50 45.70	2.5026	26 22 6.0	2.019
8	14 54 24.74	2.4110	21 49 33.9	9.351	8	16 53 15.83	2.5018	26 24 2.2	1.853
9	14 56 49.52	2.4150	21 58 50.8	9.213	9	16 55 45.91	2.5008	26 25 48.4	1.688
10	14 59 14.54	2.4189	22 7 59.4	9.074	10	16 58 15.93	2.4997	26 27 24.8	1.522
11	15 1 39.79	2.4227	22 16 59.7	8.934	11	17 0 45.98	2.4986	26 28 51.3	1.356
12	15 4 5.26	2.4264	22 25 51.5	8.793	12	17 3 15.76	2.4973	26 30 7.9	1.191
13	15 6 30.96	2.4301	22 34 34.9	8.652	13	17 5 45.56	2.4958	26 31 14.6	1.026
14	15 8 56.87	2.4337	22 43 9.7	8.510	14	17 8 15.26	2.4943	26 32 11.5	0.860
15	15 11 23.00	2.4373	22 51 36.0	8.368	15	17 10 44.86	2.4926	26 32 58.6	0.702
16	15 13 49.35	2.4408	22 59 53.6	8.221	16	17 13 14.36	2.4907	26 33 35.8	0.539
17	15 16 15.91	2.4443	23 8 2.5	8.076	17	17 15 43.75	2.4887	26 34 3.2	0.376
18	15 18 42.67	2.4478	23 16 2.6	7.928	18	17 18 13.01	2.4866	26 34 20.9	0.213
19	15 21 9.63	2.4509	23 23 53.9	7.780	19	17 20 42.14	2.4844	26 34 28.8	0.051
20	15 23 36.78	2.4541	23 31 36.3	7.631	20	17 23 11.14	2.4821	26 34 27.0	0.111
21	15 26 4.13	2.4573	23 39 9.6	7.481	21	17 25 39.99	2.4796	26 34 15.5	0.272
22	15 28 31.66	2.4604	23 46 33.9	7.330	22	17 28 8.69	2.4770	26 33 54.4	0.433
23	15 30 59.38	2.4634	S. 23 53 49.2	7.179	23	17 30 37.93	2.4743	S. 26 33 23.7	0.593
SATURDAY 2.					MONDAY 4.				
0	15 33 27.27	2.4668	S. 24 0 55.4	7.026	0	17 33 5.61	2.4715	S. 26 32 43.3	0.733
1	15 35 55.33	2.4691	24 7 52.4	6.872	1	17 35 33.81	2.4685	26 31 53.4	0.912
2	15 38 23.56	2.4718	24 14 40.1	6.717	2	17 38 1.83	2.4654	26 30 53.9	1.070
3	15 40 51.95	2.4744	24 21 18.5	6.562	3	17 40 29.66	2.4622	26 29 44.9	1.228
4	15 43 20.49	2.4769	24 27 47.6	6.407	4	17 42 57.30	2.4589	26 28 26.5	1.385
5	15 45 49.18	2.4793	24 34 7.4	6.251	5	17 45 24.73	2.4554	26 26 58.6	1.542
6	15 48 18.01	2.4816	24 40 17.7	6.094	6	17 47 51.95	2.4519	26 25 21.4	1.698
7	15 50 46.98	2.4839	24 46 18.6	5.936	7	17 50 18.96	2.4483	26 23 34.9	1.853
8	15 53 16.08	2.4861	24 52 10.0	5.777	8	17 52 45.75	2.4446	26 21 39.1	2.007
9	15 55 45.31	2.4881	24 57 51.8	5.617	9	17 55 12.31	2.4407	26 19 34.0	2.161
10	15 58 14.65	2.4900	25 3 24.1	5.457	10	17 57 38.64	2.4367	26 17 19.8	2.314
11	16 0 44.11	2.4918	25 8 46.8	5.297	11	18 0 4.72	2.4327	26 14 56.4	2.466
12	16 3 13.07	2.4935	25 13 59.8	5.136	12	18 2 30.56	2.4286	26 12 23.9	2.617
13	16 5 43.33	2.4951	25 19 3.1	4.976	13	18 4 56.14	2.4243	26 9 42.3	2.767
14	16 8 13.08	2.4966	25 23 56.8	4.814	14	18 7 21.46	2.4198	26 6 51.8	2.916
15	16 10 42.91	2.4978	25 28 40.8	4.652	15	18 9 46.52	2.4154	26 3 52.3	3.065
16	16 13 12.89	2.4990	25 33 15.0	4.489	16	18 12 11.31	2.4108	26 0 44.0	3.212
17	16 15 42.80	2.5002	25 37 39.4	4.325	17	18 14 35.82	2.4062	25 57 26.8	3.359
18	16 18 12.84	2.5013	25 41 54.0	4.162	18	18 17 0.05	2.4014	25 54 0.9	3.504
19	16 20 42.94	2.5020	25 45 58.8	3.998	19	18 19 23.99	2.3966	25 50 26.3	3.649
20	16 23 13.08	2.5027	25 49 53.8	3.834	20	18 21 47.64	2.3917	25 46 43.0	3.793
21	16 25 43.26	2.5033	25 53 38.9	3.670	21	18 24 10.99	2.3867	25 42 51.1	3.936
22	16 28 13.48	2.5038	25 57 14.2	3.506	22	18 26 34.04	2.3816	25 38 50.7	4.077
23	16 30 43.73	2.5042	26 0 39.6	3.341	23	18 28 56.79	2.3765	25 34 41.8	4.218
24	16 33 13.99	2.5045	S. 26 3 55.1	3.176	24	18 31 19.92	2.3713	S. 25 30 24.6	4.357

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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TUESDAY 5.

h.	m.	s.	°	'	"	°	'	"
0	18	31	19.23	2.3713	S.25	30	24.6	4.257
1	18	33	41.34	2.3680	25	25	59.0	4.493
2	18	36	3.14	2.3606	25	21	25.1	4.683
3	18	38	24.61	2.3562	25	16	43.0	4.769
4	18	40	45.76	2.3497	25	11	52.8	4.904
5	18	43	6.57	2.3441	25	6	54.5	5.088
6	18	45	27.05	2.3386	25	1	48.9	5.170
7	18	47	47.19	2.3338	24	56	34.0	5.302
8	18	50	6.99	2.3271	24	51	11.9	5.433
9	18	52	26.44	2.3213	24	45	42.0	5.563
10	18	54	45.55	2.3155	24	40	4.3	5.691
11	18	57	4.30	2.3096	24	34	19.0	5.818
12	18	59	22.70	2.3037	24	28	26.1	5.944
13	19	1	40.74	2.2977	24	23	25.7	6.069
14	19	3	58.42	2.2917	24	16	17.8	6.192
15	19	6	15.74	2.2857	24	10	2.6	6.314
16	19	8	32.70	2.2796	24	3	40.1	6.435
17	19	10	49.29	2.2735	23	57	10.4	6.556
18	19	13	5.52	2.2674	23	50	33.5	6.674
19	19	15	21.38	2.2612	23	43	49.5	6.792
20	19	17	36.86	2.2550	23	36	58.5	6.908
21	19	19	51.97	2.2488	23	30	0.5	7.023
22	19	22	6.71	2.2426	23	23	55.7	7.136
23	19	24	21.08	2.2363	S.23	15	44.1	7.249

THURSDAY 7.

h.	m.	s.	°	'	"	°	'	"
0	20	18	17.66	2.0692	S.19	42	44.1	9.664
1	20	20	22.29	2.0742	19	33	1.8	9.745
2	20	22	26.56	2.0692	19	23	14.7	9.825
3	20	24	30.47	2.0622	19	13	22.8	9.904
4	20	26	34.03	2.0563	19	3	26.2	9.982
5	20	28	37.23	2.0504	18	53	25.0	10.058
6	20	30	40.08	2.0446	18	43	19.2	10.133
7	20	32	42.58	2.0388	18	33	9.0	10.207
8	20	34	44.74	2.0331	18	22	54.3	10.280
9	20	36	46.58	2.0274	18	12	35.3	10.342
10	20	38	48.03	2.0217	18	2	12.0	10.423
11	20	40	49.16	2.0161	17	51	44.4	10.494
12	20	42	49.96	2.0106	17	41	12.7	10.563
13	20	44	50.43	2.0050	17	30	36.9	10.630
14	20	46	50.56	1.9995	17	19	57.1	10.696
15	20	48	50.36	1.9940	17	9	13.3	10.762
16	20	50	49.84	1.9886	16	58	25.6	10.827
17	20	52	48.99	1.9832	16	47	34.0	10.891
18	20	54	47.83	1.9779	16	36	38.7	10.954
19	20	56	46.35	1.9727	16	25	39.6	11.016
20	20	58	44.56	1.9675	16	14	36.9	11.076
21	21	0	42.46	1.9624	16	3	30.6	11.135
22	21	2	40.05	1.9573	15	52	20.7	11.194
23	21	4	37.34	1.9523	S.15	41	7.3	11.252

WEDNESDAY 6.

h.	m.	s.	°	'	"	°	'	"
0	19	26	35.07	2.2901	S.23	8	25.8	7.261
1	19	28	48.68	2.2838	23	1	0.8	7.471
2	19	31	1.92	2.2175	22	53	29.3	7.580
3	19	33	14.78	2.2112	22	45	51.3	7.687
4	19	35	27.26	2.2049	22	38	6.8	7.793
5	19	37	39.36	2.1985	22	30	16.0	7.898
6	19	39	51.08	2.1921	22	22	19.0	8.002
7	19	42	2.42	2.1858	22	14	15.8	8.104
8	19	44	13.38	2.1795	22	6	6.5	8.205
9	19	46	23.96	2.1732	21	57	51.1	8.306
10	19	48	34.17	2.1669	21	49	29.8	8.405
11	19	50	43.99	2.1606	21	41	2.5	8.503
12	19	52	53.44	2.1543	21	32	29.4	8.600
13	19	55	2.51	2.1480	21	23	50.5	8.695
14	19	57	11.20	2.1417	21	15	6.0	8.789
15	19	59	19.52	2.1355	21	6	15.9	8.892
16	20	1	27.46	2.1292	20	57	20.2	8.974
17	20	3	35.03	2.1231	20	48	19.0	9.064
18	20	5	42.23	2.1169	20	39	12.5	9.153
19	20	7	49.05	2.1107	20	30	0.7	9.241
20	20	9	55.51	2.1045	20	20	43.6	9.329
21	20	12	1.60	2.0984	20	11	21.3	9.414
22	20	14	7.32	2.0922	20	1	53.9	9.499
23	20	16	12.67	2.0862	19	52	21.5	9.582
24	20	18	17.66	2.0802	S.19	42	44.1	9.664

FRIDAY 8.

h.	m.	s.	°	'	"	°	'	"
0	21	6	34.33	1.9474	S.15	29	50.5	11.266
1	21	8	31.03	1.9425	15	18	30.4	11.263
2	21	10	27.43	1.9376	15	7	6.9	11.418
3	21	12	23.54	1.9326	14	55	40.2	11.472
4	21	14	19.37	1.9281	14	44	10.3	11.524
5	21	16	14.91	1.9234	14	32	37.3	11.576
6	21	18	10.18	1.9188	14	21	1.2	11.627
7	21	20	5.18	1.9143	14	9	22.0	11.677
8	21	21	59.90	1.9098	13	57	39.9	11.726
9	21	23	54.36	1.9054	13	45	54.9	11.774
10	21	25	48.55	1.9010	13	34	7.0	11.821
11	21	27	42.48	1.8967	13	22	16.3	11.867
12	21	29	36.15	1.8923	13	10	22.9	11.912
13	21	31	29.57	1.8878	12	58	26.8	11.957
14	21	33	22.74	1.8834	12	46	28.0	12.001
15	21	35	15.87	1.8789	12	34	26.6	12.045
16	21	37	8.36	1.8743	12	22	22.6	12.087
17	21	39	0.81	1.8723	12	10	16.1	12.128
18	21	40	53.03	1.8684	11	58	7.2	12.168
19	21	42	45.02	1.8646	11	45	55.9	12.207
20	21	44	36.78	1.8608	11	33	42.3	12.246
21	21	46	28.32	1.8573	11	21	26.4	12.284
22	21	48	19.65	1.8537	11	9	8.2	12.321
23	21	50	10.76	1.8502	10	56	47.9	12.357
24	21	52	1.67	1.8467	S.10	44	25.4	12.392

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 9.					MONDAY 11.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	21 52 1.67	1.8467	S. 10 44 25.4	12.892	0	23 18 3.31	1.7657	S. 0 22 26.6	12.266
1	21 53 52.37	1.8433	10 32 0.8	12.427	1	23 19 49.26	1.7666	S. 0 9 10.7	12.297
2	21 55 42.87	1.8400	10 19 34.2	12.461	2	23 21 35.21	1.7660	N. 0 4 5.4	12.269
3	21 57 33.17	1.8367	10 7 5.5	12.494	3	23 23 21.18	1.7663	0 17 21.6	12.270
4	21 59 23.28	1.8336	9 54 34.9	12.526	4	23 25 7.17	1.7666	0 30 37.8	12.270
5	22 1 13.20	1.8305	9 42 2.3	12.558	5	23 26 53.18	1.7670	0 43 54.0	12.270
6	22 3 2.94	1.8275	9 29 27.9	12.589	6	23 28 39.21	1.7675	0 57 10.2	12.269
7	22 4 52.50	1.8246	9 16 51.6	12.620	7	23 30 25.28	1.7681	1 10 26.4	12.268
8	22 6 41.89	1.8217	9 4 13.5	12.649	8	23 32 11.38	1.7687	1 23 42.4	12.266
9	22 8 31.10	1.8188	8 51 33.7	12.677	9	23 33 57.52	1.7694	1 36 58.3	12.263
10	22 10 20.15	1.8161	8 38 52.2	12.705	10	23 35 43.71	1.7702	1 50 14.0	12.259
11	22 12 9.04	1.8135	8 26 9.1	12.732	11	23 37 29.94	1.7710	2 3 29.4	12.255
12	22 13 57.77	1.8109	8 13 24.3	12.759	12	23 39 16.23	1.7720	2 16 44.6	12.251
13	22 15 46.34	1.8083	8 0 38.0	12.785	13	23 41 2.58	1.7730	2 29 59.5	12.246
14	22 17 34.77	1.8059	7 47 50.1	12.810	14	23 42 48.99	1.7741	2 43 14.1	12.240
15	22 19 23.05	1.8035	7 35 0.8	12.834	15	23 44 35.47	1.7752	2 56 28.3	12.233
16	22 21 11.19	1.8012	7 22 10.0	12.858	16	23 46 22.02	1.7763	3 9 42.0	12.225
17	22 22 59.19	1.7989	7 9 17.8	12.881	17	23 48 8.64	1.7775	3 22 55.3	12.217
18	22 24 47.06	1.7967	6 56 24.3	12.903	18	23 49 55.35	1.7792	3 36 8.1	12.208
19	22 26 34.80	1.7946	6 43 29.5	12.924	19	23 51 42.15	1.7807	3 49 20.3	12.199
20	22 28 22.41	1.7926	6 30 33.4	12.945	20	23 53 29.03	1.7822	4 2 32.0	12.189
21	22 30 9.91	1.7907	6 17 36.0	12.966	21	23 55 16.01	1.7838	4 15 43.1	12.179
22	22 31 57.29	1.7888	6 4 37.5	12.986	22	23 57 3.08	1.7855	4 28 53.5	12.168
23	22 33 44.56	1.7870	S. 5 51 37.8	12.004	23	23 58 50.26	1.7872	N. 4 42 3.3	12.157
SUNDAY 10.					TUESDAY 12.				
0	22 35 31.73	1.7853	S. 5 38 37.0	12.023	0	0 0 37.55	1.7890	N. 4 55 12.3	12.144
1	22 37 18.79	1.7836	5 25 35.2	12.039	1	0 2 24.95	1.7909	5 8 20.6	12.131
2	22 39 5.76	1.7820	5 12 32.3	12.056	2	0 4 12.46	1.7929	5 21 28.0	12.117
3	22 40 52.63	1.7805	4 59 28.4	12.072	3	0 6 0.10	1.7950	5 34 34.5	12.103
4	22 42 39.42	1.7791	4 46 23.6	12.087	4	0 7 47.86	1.7972	5 47 40.2	12.087
5	22 44 26.12	1.7777	4 33 17.9	12.102	5	0 9 35.76	1.7994	6 0 44.9	12.071
6	22 46 12.74	1.7764	4 20 11.3	12.117	6	0 11 23.79	1.8017	6 13 48.7	12.054
7	22 47 59.29	1.7752	4 7 3.8	12.131	7	0 13 11.96	1.8040	6 26 51.4	12.037
8	22 49 45.76	1.7740	3 53 55.6	12.144	8	0 15 0.27	1.8064	6 39 53.1	12.019
9	22 51 32.17	1.7729	3 40 46.6	12.156	9	0 16 48.73	1.8089	6 52 53.7	12.000
10	22 53 18.51	1.7719	3 27 36.9	12.167	10	0 18 37.34	1.8115	7 5 53.1	12.980
11	22 55 4.80	1.7710	3 14 26.5	12.178	11	0 20 26.11	1.8142	7 18 51.3	12.960
12	22 56 51.03	1.7702	3 1 15.5	12.188	12	0 22 15.04	1.8169	7 31 48.3	12.939
13	22 58 37.22	1.7694	2 48 3.9	12.198	13	0 24 4.14	1.8197	7 44 44.0	12.917
14	23 0 23.36	1.7687	2 34 51.7	12.208	14	0 25 53.41	1.8226	7 57 38.4	12.895
15	23 2 9.46	1.7681	2 21 38.9	12.217	15	0 27 42.85	1.8255	8 10 31.4	12.872
16	23 3 55.53	1.7675	2 8 25.7	12.225	16	0 29 32.47	1.8285	8 23 23.0	12.848
17	23 5 41.56	1.7670	1 55 12.0	12.232	17	0 31 22.27	1.8316	8 36 13.1	12.823
18	23 7 27.57	1.7666	1 41 57.9	12.238	18	0 33 12.26	1.8346	8 49 1.7	12.797
19	23 9 13.56	1.7663	1 28 43.4	12.244	19	0 35 2.44	1.8380	9 1 48.7	12.771
20	23 10 59.53	1.7660	1 15 28.6	12.249	20	0 36 52.82	1.8418	9 14 34.2	12.744
21	23 12 45.48	1.7658	1 2 13.5	12.254	21	0 38 43.40	1.8457	9 27 18.0	12.716
22	23 14 31.43	1.7657	0 48 58.1	12.258	22	0 40 34.19	1.8492	9 40 0.1	12.687
23	23 16 17.37	1.7657	0 35 42.4	12.262	23	0 42 25.18	1.8527	9 52 40.5	12.656
24	23 18 3.31	1.7657	S. 0 22 26.6	12.265	24	0 44 16.39	1.8563	N. 10 5 19.1	12.623

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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WEDNESDAY 13.

0	h.	m.	s.	s.	°	'	"	"
0	0	44	16.39	1.9553	N.10	5	19.1	12.623
1	0	46	7.82	1.9590	10	17	55.8	12.597
2	0	47	59.47	1.9626	10	30	30.7	12.565
3	0	49	51.35	1.9666	10	43	3.6	12.533
4	0	51	43.46	1.9705	10	55	34.5	12.498
5	0	53	35.81	1.9745	11	8	3.3	12.463
6	0	55	28.40	1.9785	11	20	30.1	12.428
7	0	57	21.23	1.9826	11	32	54.7	12.392
8	0	59	14.31	1.9868	11	45	17.1	12.355
9	1	1	7.64	1.9910	11	57	37.3	12.317
10	1	3	1.93	1.9953	12	9	55.2	12.278
11	1	4	55.06	1.9997	12	22	10.7	12.238
12	1	6	49.19	1.9042	12	34	23.8	12.199
13	1	8	43.57	1.9087	12	46	34.5	12.157
14	1	10	38.23	1.9133	12	58	42.6	12.114
15	1	12	33.16	1.9179	13	10	48.1	12.070
16	1	14	28.38	1.9226	13	22	51.0	12.025
17	1	16	23.88	1.9274	13	34	51.2	11.980
18	1	18	19.67	1.9323	13	46	48.6	11.934
19	1	20	15.76	1.9372	13	58	43.2	11.887
20	1	22	12.14	1.9422	14	10	35.0	11.839
21	1	24	8.82	1.9472	14	22	23.8	11.789
22	1	26	5.81	1.9523	14	34	9.7	11.739
23	1	28	3.10	1.9575	N.14	45	52.6	11.688

FRIDAY 15.

0	h.	m.	s.	s.	°	'	"	"
0	2	18	46.02	2.1051	N.19	19	3.1	10.047
1	2	20	52.52	2.1117	19	29	3.5	9.966
2	2	22	59.42	2.1182	19	38	59.0	9.884
3	2	25	6.71	2.1247	19	48	49.5	9.800
4	2	27	14.39	2.1313	19	58	35.0	9.716
5	2	29	22.47	2.1379	20	8	15.4	9.630
6	2	31	30.94	2.1445	20	17	50.6	9.542
7	2	33	39.81	2.1512	20	27	20.5	9.453
8	2	35	49.08	2.1579	20	36	45.0	9.363
9	2	37	58.76	2.1647	20	46	4.1	9.272
10	2	40	8.84	2.1714	20	55	17.7	9.179
11	2	42	19.32	2.1782	21	4	25.6	9.085
12	2	44	30.21	2.1849	21	13	27.9	8.990
13	2	46	41.51	2.1917	21	22	24.4	8.893
14	2	48	53.22	2.1985	21	31	15.1	8.795
15	2	51	5.34	2.2054	21	39	59.9	8.696
16	2	53	17.87	2.2122	21	48	38.8	8.595
17	2	55	30.81	2.2191	21	57	11.2	8.493
18	2	57	44.16	2.2260	22	5	37.7	8.390
19	2	59	57.92	2.2328	22	13	58.0	8.285
20	3	2	12.10	2.2397	22	22	11.0	8.179
21	3	4	26.69	2.2465	22	30	19.4	8.072
22	3	6	41.68	2.2533	22	38	20.5	7.963
23	3	8	57.08	2.2601	N.22	46	15.0	7.852

THURSDAY 14.

0	h.	m.	s.	s.	°	'	"	"
0	1	30	0.71	1.9598	N.14	57	32.3	11.686
1	1	31	58.64	1.9681	15	9	8.9	11.662
2	1	33	56.88	1.9734	15	20	42.2	11.627
3	1	35	55.45	1.9788	15	32	12.2	11.472
4	1	37	54.34	1.9843	15	43	38.8	11.415
5	1	39	53.57	1.9899	15	55	2.0	11.357
6	1	41	53.13	1.9956	16	6	21.7	11.298
7	1	43	53.03	2.0012	16	17	37.9	11.239
8	1	45	53.27	2.0069	16	28	50.4	11.179
9	1	47	53.85	2.0126	16	39	50.3	11.117
10	1	49	54.78	2.0184	16	51	4.4	11.054
11	1	51	56.06	2.0243	17	2	5.7	10.989
12	1	53	57.70	2.0302	17	13	3.1	10.923
13	1	55	59.69	2.0362	17	23	56.6	10.857
14	1	58	2.04	2.0422	17	34	46.0	10.790
15	2	0	4.76	2.0483	17	45	31.3	10.721
16	2	2	7.84	2.0545	17	56	12.5	10.650
17	2	4	11.29	2.0607	18	6	49.4	10.579
18	2	6	15.12	2.0669	18	17	22.0	10.507
19	2	8	19.32	2.0731	18	27	50.2	10.433
20	2	10	23.80	2.0794	18	38	14.0	10.358
21	2	12	28.85	2.0858	18	48	33.2	10.282
22	2	14	34.19	2.0922	18	58	47.9	10.205
23	2	16	39.91	2.0986	19	8	57.9	10.127
24	2	18	46.02	2.1051	N.19	19	3.1	10.047

SATURDAY 16.

0	h.	m.	s.	s.	°	'	"	"
0	3	11	12.89	2.2670	N.22	54	2.8	7.740
1	3	13	29.12	2.2738	23	1	43.9	7.628
2	3	15	45.75	2.2806	23	9	18.2	7.514
3	3	18	2.79	2.2873	23	16	45.6	7.398
4	3	20	20.23	2.2941	23	24	6.0	7.281
5	3	22	38.08	2.3008	23	31	19.3	7.162
6	3	24	56.33	2.3075	23	38	25.5	7.043
7	3	27	14.98	2.3142	23	45	24.5	6.922
8	3	29	34.03	2.3209	23	52	16.1	6.799
9	3	31	53.48	2.3275	23	59	0.3	6.676
10	3	34	13.33	2.3341	24	5	37.1	6.550
11	3	36	33.57	2.3406	24	12	6.3	6.422
12	3	38	54.20	2.3471	24	18	27.9	6.293
13	3	41	15.22	2.3536	24	24	41.8	6.167
14	3	43	36.63	2.3600	24	30	47.9	6.036
15	3	45	58.42	2.3663	24	36	46.1	5.904
16	3	48	20.59	2.3726	24	42	36.4	5.771
17	3	50	43.14	2.3789	24	48	18.7	5.637
18	3	53	6.06	2.3851	24	53	52.8	5.501
19	3	55	29.35	2.3912	24	59	18.7	5.363
20	3	57	53.01	2.3973	25	4	36.4	5.225
21	4	0	17.03	2.4033	25	9	45.8	5.087
22	4	2	41.41	2.4092	25	14	46.8	4.946
23	4	5	6.14	2.4151	25	19	39.3	4.803
24	4	7	31.22	2.4209	N.25	24	23.2	4.660

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
SUNDAY 17.					TUESDAY 19.				
0	h. m. s.	s.	° ' "	"	0	h. m. s.	s.	° ' "	"
1	4 7 31.92	2.4209	N 25 24 23.2	4.669	1	6 8 22.41	2.6622	N 26 4 54.3	3.211
2	4 9 56.65	2.4267	25 28 58.5	4.516	2	6 10 56.31	2.6648	26 1 36.4	3.324
3	4 12 22.42	2.4323	25 33 25.1	4.370	3	6 13 30.18	2.6643	25 58 8.2	3.537
4	4 14 48.52	2.4378	25 37 42.9	4.223	4	6 16 4.02	2.6687	25 54 29.6	3.729
5	4 17 14.95	2.4432	25 41 51.9	4.076	5	6 18 37.82	2.6629	25 50 40.7	3.901
6	4 19 41.71	2.4486	25 45 51.9	3.928	6	6 21 11.56	2.6619	25 46 41.4	4.072
7	4 22 8.78	2.4538	25 49 43.0	3.776	7	6 23 45.25	2.6603	25 42 31.9	4.245
8	4 24 36.17	2.4590	25 53 25.1	3.628	8	6 26 18.87	2.6597	25 38 12.1	4.416
9	4 27 3.86	2.4641	25 56 58.0	3.472	9	6 28 52.42	2.6584	25 33 42.0	4.566
10	4 29 31.86	2.4692	26 0 21.7	3.318	10	6 31 25.88	2.6590	25 29 1.7	4.756
11	4 32 0.16	2.4741	26 3 36.2	3.164	11	6 33 59.25	2.6594	25 24 11.3	4.926
12	4 34 28.74	2.4788	26 6 41.4	3.009	12	6 36 32.52	2.6587	25 19 10.7	5.095
13	4 36 57.01	2.4834	26 9 37.3	2.852	13	6 39 5.69	2.6516	25 13 59.9	5.264
14	4 39 26.75	2.4880	26 12 23.7	2.696	14	6 41 38.74	2.6498	25 8 39.0	5.433
15	4 41 56.17	2.4924	26 15 0.7	2.539	15	6 44 11.66	2.6477	25 3 8.1	5.599
16	4 44 25.85	2.4968	26 17 28.1	2.377	16	6 46 44.46	2.6456	24 57 27.2	5.765
17	4 46 55.79	2.5011	26 19 45.9	2.217	17	6 49 17.12	2.6432	24 51 36.3	5.931
18	4 49 25.98	2.5052	26 21 54.1	2.056	18	6 51 49.64	2.6407	24 45 35.4	6.097
19	4 51 56.41	2.5091	26 23 52.6	1.894	19	6 54 22.00	2.6381	24 39 24.7	6.261
20	4 54 27.07	2.5129	26 25 41.3	1.731	20	6 56 54.21	2.6344	24 33 4.2	6.424
21	4 56 57.96	2.5166	26 27 20.3	1.567	21	6 59 26.25	2.6296	24 26 33.8	6.587
22	4 59 29.07	2.5202	26 28 49.4	1.402	22	7 1 58.12	2.6297	24 19 53.6	6.750
23	5 2 0.40	2.5236	26 30 8.6	1.237	23	7 4 29.82	2.6267	24 13 3.8	6.911
24	5 4 31.93	2.5271	N 26 31 17.9	1.072	24	7 7 1.33	2.6236	N 24 6 4.4	7.071
MONDAY 18.					WEDNESDAY 20.				
0	5 7 3.65	2.5303	N 26 32 17.3	0.906	0	7 9 32.65	2.6204	N 23 58 55.3	7.230
1	5 9 35.56	2.5334	26 33 6.6	0.789	1	7 12 3.78	2.6171	23 51 36.7	7.388
2	5 12 7.66	2.5364	26 33 45.9	0.670	2	7 14 34.70	2.6157	23 44 8.7	7.545
3	5 14 39.93	2.5392	26 34 15.1	0.492	3	7 17 5.42	2.6102	23 36 31.2	7.702
4	5 17 12.36	2.5419	26 34 34.1	0.323	4	7 19 35.92	2.6065	23 28 44.4	7.857
5	5 19 44.95	2.5444	26 34 43.0	0.083	5	7 22 6.20	2.6098	23 20 48.3	8.012
6	5 22 17.69	2.5468	26 34 41.7	0.107	6	7 24 36.26	2.6091	23 12 42.9	8.166
7	5 24 50.57	2.5491	26 34 30.2	0.377	7	7 27 6.10	2.6063	23 4 28.4	8.317
8	5 27 23.58	2.5512	26 34 8.5	0.448	8	7 29 35.70	2.6014	22 56 4.9	8.467
9	5 29 56.71	2.5532	26 33 36.5	0.619	9	7 32 5.07	2.6074	22 47 32.3	8.617
10	5 32 29.96	2.5550	26 32 54.2	0.791	10	7 34 34.19	2.6033	22 38 50.8	8.765
11	5 35 3.31	2.5566	26 32 1.6	0.963	11	7 37 3.07	2.6792	22 30 0.4	8.912
12	5 37 36.75	2.5582	26 30 58.6	1.135	12	7 39 31.70	2.6780	22 21 1.3	9.059
13	5 40 10.29	2.5596	26 29 45.3	1.307	13	7 42 0.07	2.6707	22 11 53.4	9.204
14	5 42 43.90	2.5608	26 28 21.7	1.480	14	7 44 28.19	2.6664	22 2 36.8	9.347
15	5 45 17.58	2.5618	26 26 47.7	1.653	15	7 46 56.04	2.6620	21 53 11.7	9.489
16	5 47 51.32	2.5628	26 25 3.3	1.826	16	7 49 23.63	2.6576	21 43 38.1	9.630
17	5 50 25.11	2.5636	26 23 8.5	1.999	17	7 51 50.95	2.6531	21 33 56.1	9.769
18	5 52 58.95	2.5642	26 21 3.4	2.172	18	7 54 18.00	2.6486	21 24 5.8	9.907
19	5 55 32.82	2.5647	26 18 47.9	2.345	19	7 56 44.78	2.6440	21 14 7.9	10.044
20	5 58 6.72	2.5651	26 16 22.0	2.519	20	7 59 11.28	2.6394	21 4 0.5	10.180
21	6 0 40.64	2.5653	26 13 45.6	2.692	21	8 1 37.50	2.6347	20 53 45.6	10.314
22	6 3 14.56	2.5654	26 10 58.9	2.865	22	8 4 3.44	2.6300	20 43 22.8	10.446
23	6 5 48.49	2.5654	26 8 1.8	3.038	23	8 6 29.10	2.6252	20 32 52.1	10.577
24	6 8 22.41	2.5652	N 26 4 54.3	3.211	24	8 8 54.47	2.6204	N 20 22 13.5	10.707

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 21.					SATURDAY 23.				
0	8 8 54.47	2.4904	N.20 29 13.5	10.707	0	9 59 36.21	2.2025	N. 9 48 34.5	15.074
1	8 11 19.55	2.4166	20 11 27.2	10.834	1	10 1 48.25	2.1990	9 33 28.5	15.126
2	8 13 44.34	2.4168	20 0 33.3	10.962	2	10 4 0.09	2.1956	9 18 19.4	15.175
3	8 16 8.85	2.4060	19 49 31.8	11.087	3	10 6 11.79	2.1922	9 3 7.4	15.223
4	8 18 33.06	2.4011	19 38 23.8	11.211	4	10 8 23.16	2.1889	8 47 52.6	15.270
5	8 20 56.98	2.3929	19 27 6.4	11.334	5	10 10 34.40	2.1857	8 32 35.0	15.315
6	8 23 20.61	2.3913	19 15 42.7	11.454	6	10 12 45.44	2.1825	8 17 14.8	15.358
7	8 25 43.94	2.3894	19 4 11.8	11.573	7	10 14 56.30	2.1794	8 1 52.0	15.400
8	8 28 6.98	2.3816	18 52 33.9	11.691	8	10 17 6.97	2.1764	7 46 26.8	15.440
9	8 30 29.72	2.3795	18 40 48.9	11.807	9	10 19 17.47	2.1735	7 30 59.2	15.479
10	8 32 52.16	2.3716	18 28 57.0	11.921	10	10 21 27.79	2.1706	7 15 29.3	15.516
11	8 35 14.31	2.3697	18 16 58.3	12.034	11	10 23 37.94	2.1678	6 59 57.2	15.552
12	8 37 36.16	2.3618	18 4 52.9	12.146	12	10 25 47.93	2.1651	6 44 23.1	15.586
13	8 39 57.72	2.3568	17 52 40.8	12.256	13	10 27 57.75	2.1624	6 28 47.0	15.618
14	8 42 18.98	2.3518	17 40 23.2	12.364	14	10 30 7.42	2.1599	6 13 8.9	15.649
15	8 44 39.94	2.3469	17 27 57.1	12.471	15	10 32 16.94	2.1574	5 57 29.1	15.678
16	8 47 0.61	2.3420	17 15 25.7	12.576	16	10 34 26.31	2.1550	5 41 47.5	15.705
17	8 49 20.98	2.3371	17 2 48.0	12.679	17	10 36 35.53	2.1526	5 26 4.3	15.732
18	8 51 41.06	2.3322	16 50 4.2	12.780	18	10 38 44.62	2.1503	5 10 19.6	15.757
19	8 54 0.85	2.3274	16 37 14.4	12.880	19	10 40 53.57	2.1481	4 54 33.4	15.781
20	8 56 20.35	2.3225	16 24 18.6	12.979	20	10 43 2.39	2.1460	4 38 45.9	15.803
21	8 58 39.55	2.3177	16 11 16.9	13.076	21	10 45 11.09	2.1440	4 22 57.1	15.823
22	9 0 58.47	2.3129	15 58 9.5	13.171	22	10 47 19.67	2.1421	4 7 7.2	15.842
23	9 3 17.10	2.3080	N.15 44 56.4	13.264	23	10 49 28.13	2.1402	N. 3 51 16.2	15.859
FRIDAY 22.					SUNDAY 24.				
0	9 5 35.45	2.3034	N.15 31 37.8	13.356	0	10 51 36.49	2.1384	N. 3 35 24.1	15.875
1	9 7 53.51	2.2987	15 18 13.7	13.447	1	10 53 44.75	2.1367	3 19 31.1	15.889
2	9 10 11.29	2.2940	15 4 44.2	13.535	2	10 55 52.90	2.1351	3 3 37.4	15.902
3	9 12 28.79	2.2898	14 51 9.4	13.622	3	10 58 0.96	2.1335	2 47 43.0	15.913
4	9 14 46.01	2.2847	14 37 29.5	13.708	4	11 0 8.99	2.1321	2 31 47.9	15.923
5	9 17 2.96	2.2802	14 23 44.4	13.792	5	11 2 16.80	2.1307	2 15 52.3	15.931
6	9 19 19.63	2.2757	14 9 54.4	13.874	6	11 4 24.60	2.1294	1 59 56.2	15.938
7	9 21 36.03	2.2712	13 55 59.5	13.955	7	11 6 32.33	2.1282	1 43 59.7	15.943
8	9 23 52.17	2.2667	13 41 59.8	14.034	8	11 8 39.98	2.1271	1 28 3.0	15.947
9	9 26 8.04	2.2622	13 27 55.4	14.111	9	11 10 47.57	2.1260	1 12 6.1	15.950
10	9 28 23.64	2.2579	13 13 46.5	14.187	10	11 12 55.10	2.1250	0 56 9.0	15.951
11	9 30 38.98	2.2536	12 59 33.0	14.261	11	11 15 2.57	2.1241	0 40 12.0	15.950
12	9 32 54.07	2.2494	12 45 15.2	14.333	12	11 17 9.99	2.1233	0 24 15.0	15.948
13	9 35 8.91	2.2453	12 30 53.1	14.405	13	11 19 17.37	2.1226	N. 0 8 18.2	15.945
14	9 37 23.49	2.2410	12 16 26.8	14.473	14	11 21 24.70	2.1219	S. 0 7 38.4	15.941
15	9 39 37.82	2.2368	12 1 56.4	14.540	15	11 23 32.00	2.1213	0 23 34.7	15.935
16	9 41 51.91	2.2328	11 47 22.0	14.606	16	11 25 39.26	2.1209	0 39 30.6	15.927
17	9 44 5.75	2.2288	11 32 43.7	14.670	17	11 27 46.50	2.1205	0 55 25.9	15.918
18	9 46 19.36	2.2249	11 18 1.6	14.733	18	11 29 53.72	2.1202	1 11 20.7	15.909
19	9 48 32.74	2.2210	11 3 15.8	14.794	19	11 32 0.93	2.1200	1 27 14.8	15.896
20	9 50 45.88	2.2171	10 48 26.3	14.853	20	11 34 8.12	2.1198	1 43 8.2	15.883
21	9 52 58.79	2.2132	10 33 33.3	14.911	21	11 36 15.31	2.1197	1 59 0.8	15.868
22	9 55 11.48	2.2097	10 18 37.0	14.967	22	11 38 22.49	2.1196	2 14 52.4	15.852
23	9 57 23.95	2.2061	10 3 37.4	15.021	23	11 40 29.68	2.1196	2 30 43.0	15.834
24	9 59 36.21	2.2026	N. 9 48 34.5	15.074	24	11 42 36.88	2.1201	S. 2 46 32.5	15.815

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dist. for 1 m.	Declination.	Dist. for 1 m.	Hour.	Right Ascension.	Dist. for 1 m.	Declination.	Dist. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
0	11 42 36.88	2.1201	S. 2 46 32.5	15.815	0	13 26 1.77	2.2180	S. 14 37 41.0	12.284
1	11 44 44.09	2.1203	3 2 20.8	15.795	1	13 28 14.78	2.2185	14 50 56.1	12.269
2	11 46 51.32	2.1207	3 18 7.9	15.773	2	13 30 27.99	2.2200	15 4 6.1	12.252
3	11 48 58.57	2.1211	3 33 53.0	15.750	3	13 32 41.41	2.2255	15 17 10.8	12.234
4	11 51 5.85	2.1216	3 49 37.9	15.725	4	13 34 55.05	2.2301	15 30 10.2	12.215
5	11 53 13.16	2.1222	4 5 20.7	15.699	5	13 37 8.91	2.2327	15 43 4.2	12.194
6	11 55 20.51	2.1228	4 21 1.8	15.673	6	13 39 22.98	2.2354	15 55 52.7	12.172
7	11 57 27.90	2.1235	4 36 41.3	15.643	7	13 41 37.27	2.2401	16 8 35.7	12.149
8	11 59 35.33	2.1243	4 52 19.0	15.613	8	13 43 51.79	2.2428	16 21 13.0	12.125
9	12 1 42.82	2.1252	5 7 54.9	15.582	9	13 46 6.53	2.2476	16 33 44.6	12.100
10	12 3 50.36	2.1262	5 23 28.8	15.549	10	13 48 21.50	2.2514	16 46 10.5	12.073
11	12 5 57.97	2.1273	5 39 0.7	15.514	11	13 50 36.70	2.2562	16 58 30.5	12.044
12	12 8 5.64	2.1285	5 54 30.5	15.478	12	13 52 52.12	2.2600	17 10 44.6	12.014
13	12 10 13.38	2.1297	6 9 58.2	15.442	13	13 55 7.77	2.2628	17 22 52.6	12.002
14	12 12 21.20	2.1310	6 25 23.6	15.404	14	13 57 23.86	2.2657	17 34 54.5	11.980
15	12 14 29.10	2.1323	6 40 46.7	15.364	15	13 59 39.78	2.2706	17 46 50.3	11.977
16	12 16 37.08	2.1337	6 56 7.3	15.323	16	14 1 56.13	2.2745	17 58 39.8	11.773
17	12 18 45.15	2.1352	7 11 25.4	15.280	17	14 4 12.72	2.2784	18 10 23.0	11.667
18	12 20 53.31	2.1368	7 26 40.9	15.237	18	14 6 29.54	2.2823	18 21 59.6	11.559
19	12 23 1.56	2.1384	7 41 53.8	15.192	19	14 8 46.60	2.2862	18 33 30.1	11.450
20	12 25 9.92	2.1402	7 57 3.9	15.146	20	14 11 3.89	2.2902	18 44 53.8	11.340
21	12 27 18.38	2.1420	8 12 11.2	15.097	21	14 13 21.42	2.2942	18 56 10.9	11.229
22	12 29 26.96	2.1439	8 27 15.6	15.048	22	14 15 39.20	2.2982	19 7 21.3	11.117
23	12 31 35.66	2.1459	S. 8 42 17.0	14.997	23	14 17 57.22	2.3023	S. 19 18 25.0	11.004
TUESDAY 26.					THURSDAY 28.				
0	12 33 44.47	2.1479	S. 8 57 15.3	14.945	0	14 20 15.47	2.3063	S. 19 29 21.8	10.890
1	12 35 53.41	2.1500	9 12 10.4	14.892	1	14 22 33.96	2.3102	19 40 11.7	10.774
2	12 38 2.47	2.1521	9 27 2.3	14.838	2	14 24 52.69	2.3142	19 50 54.7	10.657
3	12 40 11.66	2.1543	9 41 50.9	14.782	3	14 27 11.66	2.3181	20 1 30.6	10.538
4	12 42 20.99	2.1567	9 56 36.1	14.724	4	14 29 30.86	2.3221	20 11 59.3	10.419
5	12 44 30.46	2.1591	10 11 17.8	14.665	5	14 31 50.30	2.3260	20 22 20.8	10.298
6	12 46 40.08	2.1615	10 25 55.9	14.605	6	14 34 9.98	2.3300	20 32 35.1	10.177
7	12 48 49.84	2.1639	10 40 30.4	14.544	7	14 36 29.90	2.3339	20 42 42.0	10.054
8	12 50 59.75	2.1663	10 55 1.2	14.481	8	14 38 50.05	2.3378	20 52 41.6	9.930
9	12 53 9.82	2.1687	11 9 28.1	14.417	9	14 41 10.44	2.3417	21 2 33.7	9.805
10	12 55 20.04	2.1711	11 23 51.2	14.352	10	14 43 31.06	2.3456	21 12 18.2	9.679
11	12 57 30.43	2.1735	11 38 10.3	14.285	11	14 45 51.91	2.3494	21 21 55.2	9.552
12	12 59 40.98	2.1773	11 52 25.4	14.217	12	14 48 12.99	2.3533	21 31 24.5	9.424
13	13 1 51.70	2.1802	12 6 36.3	14.147	13	14 50 34.30	2.3571	21 40 46.0	9.294
14	13 4 2.60	2.1831	12 20 43.0	14.076	14	14 52 55.84	2.3609	21 49 59.8	9.163
15	13 6 13.67	2.1860	12 34 45.4	14.004	15	14 55 17.60	2.3646	21 59 5.7	9.032
16	13 8 24.92	2.1891	12 48 43.5	13.931	16	14 57 30.59	2.3683	22 8 3.7	8.900
17	13 10 36.36	2.1922	13 2 37.1	13.856	17	15 0 1.80	2.3719	22 16 53.7	8.766
18	13 12 47.98	2.1953	13 16 26.2	13.780	18	15 2 24.22	2.3755	22 25 35.6	8.631
19	13 14 59.79	2.1984	13 30 10.6	13.702	19	15 4 46.86	2.3791	22 34 9.4	8.495
20	13 17 11.79	2.2016	13 43 50.4	13.623	20	15 7 9.71	2.3827	22 42 35.0	8.358
21	13 19 23.99	2.2049	13 57 25.4	13.543	21	15 9 32.78	2.3862	22 50 52.4	8.221
22	13 21 36.38	2.2082	14 10 55.6	13.461	22	15 11 56.05	2.3896	22 59 1.5	8.082
23	13 23 48.97	2.2116	14 24 20.8	13.378	23	15 14 19.53	2.3930	23 7 2.2	7.942
24	13 26 1.77	2.2150	S. 14 37 41.0	13.294	24	15 16 43.21	2.3963	S. 23 14 54.6	7.802

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 29.					SATURDAY 30.				
	h. m. s.		S. ° ' "			h. m. s.		S. ° ' "	
0	15 16 43.21	2.3993	S. 23 14 54.6	7.802	0	16 15 1.45	2.4544	S. 25 39 46.9	4.207
1	15 19 7.09	2.3996	23 22 38.5	7.861	1	16 17 28.75	2.4587	25 43 54.6	4.060
2	15 21 31.16	2.4028	23 30 13.9	7.619	2	16 19 56.13	2.4588	25 47 52.9	3.993
3	15 23 55.43	2.4080	23 37 40.7	7.376	3	16 22 23.58	2.4579	25 51 41.7	3.785
4	15 26 19.88	2.4091	23 44 59.0	7.232	4	16 24 51.08	2.4566	25 55 21.1	3.577
5	15 28 44.52	2.4121	23 52 8.6	7.087	5	16 27 18.64	2.4597	25 58 51.0	3.419
6	15 31 9.33	2.4161	23 59 9.5	6.941	6	16 29 46.24	2.4604	26 2 11.4	3.261
7	15 33 34.32	2.4180	24 6 1.6	6.796	7	16 32 13.89	2.4611	26 5 22.3	3.102
8	15 35 59.49	2.4208	24 12 44.9	6.648	8	16 34 41.57	2.4616	26 8 23.6	2.943
9	15 38 24.82	2.4236	24 19 19.3	6.500	9	16 37 9.28	2.4620	26 11 15.4	2.783
10	15 40 50.32	2.4292	24 25 44.9	6.351	10	16 39 37.01	2.4623	26 13 57.6	2.625
11	15 43 15.97	2.4298	24 32 1.5	6.202	11	16 42 4.76	2.4623	26 16 30.3	2.466
12	15 45 41.77	2.4313	24 38 9.2	6.052	12	16 44 32.51	2.4626	26 18 53.5	2.307
13	15 48 7.72	2.4327	24 44 7.8	5.902	13	16 47 0.26	2.4626	26 21 7.1	2.147
14	15 50 33.82	2.4360	24 49 57.4	5.750	14	16 49 28.01	2.4622	26 23 11.1	1.988
15	15 53 0.05	2.4383	24 55 37.9	5.598	15	16 51 55.74	2.4620	26 25 5.6	1.828
16	15 55 26.42	2.4405	25 1 9.2	5.445	16	16 54 23.45	2.4616	26 28 50.5	1.668
17	15 57 52.91	2.4428	25 6 31.4	5.292	17	16 56 51.13	2.4611	26 28 25.8	1.509
18	16 0 19.53	2.4445	25 11 44.3	5.139	18	16 59 18.78	2.4604	26 29 51.6	1.349
19	16 2 46.26	2.4464	25 16 48.0	4.984	19	17 1 46.38	2.4596	26 31 7.8	1.190
20	16 5 13.10	2.4482	25 21 42.4	4.829	20	17 4 13.93	2.4587	26 32 14.4	1.031
21	16 7 40.05	2.4499	25 26 27.5	4.674	21	17 6 41.43	2.4577	26 33 11.5	0.873
22	16 10 7.09	2.4518	25 31 3.3	4.519	22	17 9 8.96	2.4566	26 33 59.1	0.714
23	16 12 34.23	2.4530	25 35 29.8	4.363	23	17 11 36.22	2.4553	26 34 37.2	0.556
24	16 15 1.45	2.4544	S. 25 39 46.9	4.207	24	17 14 3.51	2.4541	S. 26 35 5.7	0.397

PHASES OF THE MOON.

○ Full Moon,	Day. h. m.
☾ Last Quarter,	3 4 45.9
● New Moon,	11 1 4.3
☽ First Quarter,	18 17 23.7
	25 12 36.1

☾ Apogee,	Day. h. m.
☾ Perigee,	10 15.2
	22 21.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of ME.	IIIh.			P. L. of ME.	VIh.			P. L. of ME.	IXh.			P. L. of ME.
					°	'	"		°	'	"		°	'	"	
1	Jupiter	W.	108 35 40	2408	110 19 10	2410	112 2 30	2417	113 45 40	2424						
	Venus	W.	108 54 8	2374	110 33 39	2560	112 13 1	2597	113 52 14	2598						
	Saturn	W.	82 20 53	2372	84 5 8	2378	85 49 14	2385	87 33 10	2392						
	Regulus	W.	75 6 10	2350	76 50 57	2355	78 35 35	2364	80 20 3	2369						
	Spica	W.	21 9 38	2387	22 53 32	2387	24 37 25	2390	26 21 14	2393						
	Mars	E.	75 45 12	2408	74 1 42	2410	72 18 22	2417	70 35 11	2424						
α Aquilæ	E.	81 9 41	2396	79 38 48	2391	78 8 12	2396	76 37 54	2401							
2	Saturn	W.	96 10 2	2424	97 52 48	2443	99 35 21	2453	101 17 41	2462						
	Regulus	W.	88 59 42	2410	90 43 2	2419	92 26 9	2429	94 9 3	2438						
	Spica	W.	34 58 42	2423	36 41 44	2431	38 24 35	2438	40 7 15	2447						
	Mars	E.	62 1 57	2464	60 19 53	2473	58 38 2	2483	56 56 25	2492						
	α Aquilæ	E.	69 12 8	3119	67 44 22	3145	66 17 7	3175	64 50 28	3205						
	Fomalhaut	E.	93 0 40	2792	91 25 48	2791	89 51 8	2801	88 16 41	2811						
3	Saturn	W.	109 45 48	2515	111 26 41	2596	113 7 18	2586	114 47 39	2580						
	Regulus	W.	102 40 1	2480	104 21 28	2502	106 2 39	2512	107 43 35	2525						
	Spica	W.	48 37 21	2495	50 18 41	2507	51 59 45	2517	53 40 34	2528						
	Mars	E.	48 31 45	2545	46 51 35	2556	45 11 40	2568	43 32 1	2580						
	α Aquilæ	E.	57 47 15	3399	56 24 57	3447	55 3 34	3497	53 43 7	3544						
	Fomalhaut	E.	80 28 7	2576	78 55 17	2591	77 22 47	2606	75 50 38	2626						
α Pegasi	E.	101 42 7	2664	100 4 25	2668	98 26 56	2673	96 49 40	2683							
4	Spica	W.	62 0 42	2588	63 39 54	2599	65 18 50	2612	66 57 28	2624						
	Mars	E.	35 18 4	2646	33 40 12	2660	32 2 38	2674	30 25 23	2689						
	Fomalhaut	E.	68 15 51	3029	66 46 14	3052	65 17 6	3078	63 48 29	3108						
	α Pegasi	E.	88 46 59	2742	87 11 15	2755	85 35 48	2768	84 0 38	2782						
5	Spica	W.	75 6 21	2689	76 43 15	2702	78 19 52	2715	79 56 12	2729						
	Antares	W.	29 16 55	2684	30 53 57	2695	32 30 42	2710	34 7 9	2722						
	Fomalhaut	E.	56 33 56	3269	55 8 56	3295	53 44 39	3323	52 21 6	3374						
	α Pegasi	E.	76 9 28	2686	74 36 13	2672	73 3 18	2687	71 30 43	2696						
	α Arietis	E.	118 35 14	2704	116 58 39	2716	115 22 20	2729	113 46 18	2741						
6	Spica	W.	87 53 29	2794	89 28 5	2806	91 2 25	2816	92 36 29	2831						
	Antares	W.	42 5 6	2788	43 39 50	2800	45 14 18	2813	46 48 29	2826						
	Fomalhaut	E.	45 36 0	3024	44 17 52	3036	43 0 49	3053	41 44 58	3084						
	α Pegasi	E.	63 53 13	2992	62 22 50	3010	60 52 50	3030	59 23 14	3049						
	α Arietis	E.	105 50 17	2804	104 15 54	2817	102 41 48	2828	101 7 57	2840						
7	Spica	W.	100 22 51	2991	101 55 22	2992	103 27 38	2912	104 59 41	2924						
	Antares	W.	54 35 29	2985	56 8 7	2996	57 40 32	2907	59 12 42	2917						
	α Pegasi	E.	52 1 25	3155	50 34 22	3179	49 7 48	3204	47 41 43	3238						
	α Arietis	E.	93 22 36	2900	91 50 17	2911	90 18 12	2922	88 46 22	2933						
	SUN	E.	134 35 28	3253	133 10 22	3265	131 45 29	3276	130 20 49	3286						
8	Antares	W.	66 50 17	2996	68 21 12	2976	69 51 55	2984	71 22 28	2993						
	Mars	W.	15 20 15	3092	16 48 46	3092	18 17 18	3092	19 45 50	3093						
	α Pegasi	E.	40 39 18	3379	39 16 38	3416	37 54 39	3454	36 33 24	3489						
	α Arietis	E.	81 10 23	2983	79 39 49	2991	78 9 25	3001	76 39 13	3008						
	SUN	E.	123 20 31	3337	121 57 2	3346	120 33 44	3355	119 10 36	3363						
9	Antares	W.	78 52 47	3027	80 22 26	3032	81 51 59	3039	83 21 24	3043						
	Mars	W.	27 8 30	3098	28 36 56	3091	30 5 17	3098	31 33 34	3098						
	α Arietis	E.	69 10 36	3045	67 41 19	3032	66 12 10	3056	64 43 7	3061						

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dif.	XVh.		P. L. of Dif.	XVIIIh.		P. L. of Dif.	XXIh.		P. L. of Dif.
					°	'		°	'		°	'	
1	Jupiter	W.	115 28 40	2422	117 11 29	2441	118 54 6	2448	120 36 32	2458		2458	
	Venus	W.	115 31 18	2601	117 10 11	2609	118 48 54	2617	120 27 26	2626		2626	
	Saturn	W.	89 16 55	2401	91 0 29	2408	92 43 52	2417	94 27 3	2425		2425	
	Regulus	W.	82 4 22	2373	83 48 30	2384	85 32 26	2394	87 16 10	2402		2402	
	Spica	W.	28 4 59	2308	29 48 37	2403	31 32 7	2409	33 15 29	2415		2415	
	Mars	E.	68 52 10	2421	67 9 20	2430	65 26 41	2448	63 44 14	2455		2455	
	α Aquilæ	E.	75 7 56	2080	73 38 21	2060	72 9 10	2072	70 40 26	2068		2068	
2	Saturn	W.	102 59 48	2473	104 41 41	2482	106 23 19	2488	108 4 42	2496		2496	
	Regulus	W.	95 51 43	2448	97 34 9	2458	99 16 21	2468	100 58 19	2480		2480	
	Spica	W.	41 49 43	2456	43 31 58	2465	45 14 0	2475	46 55 48	2486		2486	
	Mars	E.	55 15 1	2402	53 33 50	2412	51 52 53	2422	50 12 12	2432		2432	
	α Aquilæ	E.	63 24 25	2329	61 59 2	2375	60 34 21	2313	59 10 24	2324		2324	
	Fomalhaut	E.	86 42 27	2621	85 8 27	2634	83 34 43	2647	82 1 16	2661		2661	
3	Saturn	W.	116 27 43	2661	118 7 31	2674	119 47 1	2687	121 26 14	2691		2691	
	Regulus	W.	109 24 14	2637	111 4 36	2648	112 44 42	2661	114 24 31	2672		2672	
	Spica	W.	55 21 8	2640	57 1 26	2642	58 41 27	2658	60 21 13	2675		2675	
	Mars	E.	41 52 39	2508	40 13 34	2606	38 34 46	2618	36 56 16	2632		2632	
	α Aquilæ	E.	52 23 42	2613	51 5 22	2677	49 48 11	2748	48 32 15	2622		2622	
	Fomalhaut	E.	74 18 51	2644	72 47 28	2664	71 16 30	2684	69 45 57	2696		2696	
	α Pegasi	E.	95 12 37	2694	93 35 49	2705	91 59 16	2718	90 23 0	2729		2729	
4	Spica	W.	68 35 50	2638	70 13 54	2661	71 51 40	2683	73 29 9	2676		2676	
	Mars	E.	28 48 29	2705	27 11 56	2721	25 35 44	2738	23 59 55	2755		2755	
	Fomalhaut	E.	62 20 23	2122	60 52 52	2161	59 25 56	2191	57 59 38	2225		2225	
	α Pegasi	E.	82 25 46	2798	80 51 13	2811	79 16 59	2826	77 43 4	2840		2840	
5	Spica	W.	81 32 13	2742	83 7 57	2764	84 43 25	2788	86 18 35	2780		2780	
	Antares	W.	35 43 19	2736	37 19 11	2748	38 54 47	2762	40 30 5	2775		2775	
	Fomalhaut	E.	50 58 20	2417	49 36 23	2461	48 15 19	2514	46 55 10	2567		2567	
	α Pegasi	E.	69 58 30	2929	68 26 37	2929	66 55 7	2956	65 23 59	2973		2973	
	α Arietis	E.	112 10 33	2763	110 35 4	2766	108 59 52	2779	107 24 56	2792		2792	
6	Spica	W.	94 10 17	2844	95 43 48	2866	97 17 4	2887	98 50 5	2879		2879	
	Antares	W.	48 22 24	2987	49 56 4	2860	51 29 27	2861	53 2 36	2873		2873	
	Fomalhaut	E.	40 30 21	2906	39 17 0	2900	38 5 17	4082	36 54 58	4123		4123	
	α Pegasi	E.	57 54 2	2989	56 25 14	2980	54 56 52	3111	53 28 56	3122		3122	
	α Arietis	E.	99 34 21	2988	98 1 2	2986	96 27 59	2876	94 55 9	2889		2889	
7	Spica	W.	106 31 29	2985	108 3 4	2945	109 34 26	2954	111 5 36	2965		2965	
	Antares	W.	60 44 39	2926	62 16 22	2988	63 47 53	2948	65 19 11	2966		2966	
	α Pegasi	E.	46 16 7	2356	44 51 4	2364	43 26 34	2314	42 2 38	2345		2345	
	α Arietis	E.	87 14 44	2942	85 43 20	2934	84 12 9	2963	82 41 10	2973		2973	
	SUN	E.	128 58 21	2307	127 32 6	2306	126 8 2	2316	124 44 11	2327		2327	
8	Antares	W.	72 52 50	2991	74 23 2	2908	75 53 5	2914	77 23 0	2921		2921	
	Mars	W.	21 14 22	2982	22 42 54	2961	24 11 26	2981	25 39 59	2991		2991	
	α Pegasi	E.	35 12 58	2345	33 53 23	2396	32 34 44	2654	31 17 8	2712		2712	
	α Arietis	E.	75 9 10	2917	73 39 18	2924	72 9 35	2932	70 40 2	2938		2938	
	SUN	E.	117 47 37	2371	116 24 47	2379	115 2 0	2386	113 39 34	2398		2398	
9	Antares	W.	84 50 43	2948	86 19 56	2952	87 49 5	2955	89 18 10	2959		2959	
	Mars	W.	33 1 48	2998	34 30 0	3101	35 58 9	3102	37 26 16	3104		3104	
	α Arietis	E.	63 14 10	2969	61 45 21	2972	60 16 37	2976	58 47 58	2979		2979	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
			°	'	"		°	'	"		°	'	"		°	'	"	
9	SUN	E.	119	17	10	3400	110	54	53	3405	109	39	49	3410	108	10	37	3416
10	Antares	W.	90	47	10	3000	92	16	8	3064	93	45	9	3006	95	13	55	3067
	α Aquilæ	W.	45	9	8	4457	46	6	38	4860	47	12	8	4826	48	18	35	4871
	Mars	W.	38	54	21	3106	40	23	26	3105	41	50	29	3008	43	18	34	3105
	α Arietis	E.	57	19	23	3083	55	50	53	3066	54	22	26	3068	52	54	2	3060
	SUN	E.	101	21	33	3484	99	59	55	3487	98	38	20	3488	97	16	47	3489
11	Antares	W.	109	38	6	3005	104	6	59	3064	105	35	53	3061	107	4	50	3069
	α Aquilæ	W.	54	2	45	4048	55	13	39	4010	56	26	9	3974	57	37	14	3943
	Mars	W.	50	39	2	3008	52	7	14	3008	53	35	29	3008	55	3	48	3008
	α Arietis	E.	45	32	33	3006	44	4	18	3008	42	36	3	3006	41	7	47	3005
	SUN	E.	90	29	9	3483	89	7	35	3483	87	45	59	3483	86	24	20	3481
12	α Aquilæ	W.	63	45	19	3804	65	0	10	3781	66	15	32	3707	67	31	19	3735
	Mars	W.	62	26	38	3065	63	55	31	3069	65	24	31	3069	66	53	39	3048
	Fomalhaut	W.	39	7	18	4117	40	17	3	4045	41	27	58	3961	42	39	56	3922
	α Arietis	E.	33	46	14	3009	32	17	52	3068	30	49	28	3067	29	21	3	3067
	SUN	E.	79	35	4	3408	78	12	56	3401	76	50	41	3395	75	28	19	3399
13	Mars	W.	74	21	43	3008	75	51	59	3000	77	22	13	3009	78	52	47	3072
	α Aquilæ	W.	73	55	47	3006	75	13	42	3018	76	31	57	3009	77	50	32	3063
	Fomalhaut	W.	48	53	27	3082	50	10	32	3044	51	28	19	3006	52	46	47	3572
	SUN	E.	68	34	21	3347	67	11	4	3398	65	47	36	3327	64	23	56	3317
14	Mars	W.	86	28	56	2916	88	0	54	2905	89	33	7	2908	91	5	35	2980
	α Aquilæ	W.	84	27	51	3305	85	48	9	3493	87	6	42	3477	88	29	32	3464
	Fomalhaut	W.	59	28	6	3419	60	50	1	3393	62	19	27	3365	63	35	23	3340
	α Pegasi	W.	36	45	27	3365	38	8	24	3322	39	32	9	3270	40	56	39	3346
	SUN	E.	57	22	27	3369	55	57	28	3347	54	32	15	3228	53	6	45	3221
15	Mars	W.	98	52	9	2912	100	26	20	2799	102	0	49	2795	103	35	37	2771
	α Aquilæ	W.	95	17	7	3409	96	39	15	3396	98	1	34	3396	99	24	4	3379
	Fomalhaut	W.	70	37	3	3235	72	2	43	3204	73	28	47	3184	75	55	15	3163
	α Pegasi	W.	48	9	23	3091	49	37	44	3068	51	6	39	3086	52	36	5	3013
	SUN	E.	45	55	26	3163	44	28	20	3120	43	0	58	3124	41	33	18	3110
16	Fomalhaut	W.	82	13	27	3072	83	42	11	3065	85	11	15	3039	86	40	40	3023
	α Pegasi	W.	60	10	45	3099	61	43	5	2978	63	15	52	2949	64	49	4	2938
	SUN	E.	34	10	37	3089	32	41	12	3034	31	11	29	3011	29	41	30	2997
21	SUN	W.	29	44	43	2976	31	24	11	2970	33	3	47	2964	34	43	31	2949
	Spica	E.	81	55	5	2361	80	8	8	2366	78	21	7	2368	76	33	59	2351
22	SUN	W.	43	3	38	2542	44	43	52	2540	46	24	9	2540	48	4	27	2539
	Jupiter	W.	15	52	23	2297	17	38	27	2296	19	24	33	2296	21	10	40	2296
	Spica	E.	67	37	26	2341	65	49	59	2340	64	2	31	2340	62	15	3	2340
	Antares	E.	113	23	32	2222	111	35	54	2222	109	48	16	2222	108	0	36	2222
23	SUN	W.	56	26	7	2540	58	6	25	2541	59	46	41	2542	61	26	56	2544
	Jupiter	W.	30	1	11	2296	31	47	13	2299	33	33	14	2291	35	19	12	2298
	Venus	W.	24	15	20	2285	26	1	41	2285	27	48	3	2295	29	34	23	2295
	Spica	E.	53	17	50	2345	51	30	29	2345	49	43	10	2345	47	55	54	2341
	Antares	E.	99	2	17	2224	97	14	40	2226	95	27	6	2226	93	39	35	2229

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Dist.	XVh.			P. L. of Dist.	XVIIIh.			P. L. of Dist.	XXIh.			P. L. of Dist.
			O	I	H		O	I	H		O	I	H		O	I	H	
9	SUN	E.	106	48	39	3421	105	26	46	3425	104	4	58	3429	102	43	14	3421
10	Antares	W.	96	49	45	3067	98	11	35	3067	99	40	25	3067	101	9	15	3065
	α Aquilæ	W.	49	25	54	3290	50	34	1	4173	51	42	54	4128	52	52	29	4088
	Mars	W.	44	46	37	3105	46	14	41	3104	47	42	46	3102	49	10	53	3101
	α Arietis	E.	51	25	40	3083	49	57	21	3084	48	29	4	3085	47	0	48	3086
	SUN	E.	95	55	13	3440	94	33	44	3440	93	12	13	3439	91	60	41	3439
11	Antares	W.	108	33	50	3089	110	2	54	3088	111	32	3	3047	113	1	17	3043
	α Aquilæ	W.	58	49	51	3213	60	2	59	3254	61	16	35	3256	62	30	40	3229
	Mars	W.	56	32	12	3085	58	0	40	3081	59	29	13	3076	60	57	52	3070
	α Arietis	E.	39	39	31	3004	38	11	14	3028	36	42	55	3091	35	14	35	3091
	SUN	E.	85	2	38	3427	83	40	52	3428	82	19	1	3416	80	57	5	3414
12	α Aquilæ	W.	68	47	29	3714	70	4	1	3698	71	20	55	3674	72	38	10	3663
	Mars	W.	68	22	56	3087	69	52	23	3086	71	21	59	3021	72	51	46	3013
	Fomalhaut	W.	43	52	53	3267	45	6	46	3317	46	21	31	3708	47	37	6	3736
	α Arietis	E.	27	52	32	3087	26	24	13	3088	24	55	49	3090	23	27	27	3094
	SUN	E.	74	5	50	3381	72	43	12	3373	71	20	25	3355	69	57	28	3356
13	Mars	W.	80	23	33	3083	81	54	32	3082	83	25	45	3040	84	57	13	2928
	α Aquilæ	W.	79	9	25	3667	80	28	35	3650	81	48	4	3636	83	7	49	3620
	Fomalhaut	W.	54	5	52	3282	55	25	34	3266	56	45	51	3476	58	6	42	3446
	SUN	E.	63	0	4	3305	61	36	0	3295	60	11	43	3288	58	47	12	3271
	Mars	W.	92	38	20	3085	94	11	22	3083	95	44	41	3041	97	18	16	2937
14	α Aquilæ	W.	89	50	36	3423	91	11	54	3440	92	33	25	3428	93	55	10	3417
	Fomalhaut	W.	64	58	48	3315	66	22	42	3292	67	47	3	3270	69	11	49	2947
	α Pegasi	W.	42	21	54	3212	43	47	49	3178	45	14	24	3148	46	41	35	3118
	SUN	E.	51	41	1	3209	50	15	2	3196	48	48	47	3161	47	22	15	3107
	Mars	W.	105	10	43	3765	106	46	9	3742	108	21	53	3729	109	57	55	3716
15	α Aquilæ	W.	100	46	44	3373	102	9	32	3366	103	32	28	3360	104	55	30	3356
	Fomalhaut	W.	78	22	8	3144	77	42	24	3126	79	17	3	3107	80	45	3	3098
	α Pegasi	W.	54	6	2	3089	55	36	29	2965	57	7	26	2942	58	38	52	2920
	SUN	E.	40	5	21	3085	38	37	6	3081	37	8	33	3068	35	39	44	3053
	Fomalhaut	W.	88	10	24	3008	89	40	27	3004	91	10	47	2979	92	41	26	2967
16	α Pegasi	W.	66	22	43	3220	67	56	45	3200	69	31	13	3722	71	6	5	2765
	SUN	E.	28	11	14	2985	26	40	42	2972	25	9	54	2960	23	38	51	2950
	SUN	W.	36	23	22	2656	38	3	19	2651	39	43	21	2645	41	23	28	2645
21	Spica	E.	74	46	48	2248	72	59	32	2245	71	12	12	2244	69	24	50	2243
	SUN	W.	49	44	46	2688	51	25	7	2688	53	5	27	2638	54	45	47	2636
22	Jupiter	W.	22	56	47	2295	24	42	54	2295	26	29	1	2295	28	15	7	2297
	Spica	E.	60	27	35	2240	58	40	7	2241	56	52	40	2241	55	5	14	2243
	Antares	E.	106	12	56	2221	104	25	15	2232	102	37	35	2233	100	49	56	2233
23	SUN	W.	63	7	8	2646	64	47	17	2648	66	27	23	2651	68	7	26	2654
	Jupiter	W.	37	5	7	2205	38	50	59	2205	40	36	47	2210	42	22	32	2212
	Venus	W.	31	20	44	2267	33	7	3	2267	34	53	21	2269	36	39	36	2260
	Spica	E.	46	8	42	2284	44	21	35	2287	42	34	32	2261	40	47	35	2265
	Antares	E.	91	52	5	2241	90	4	39	2244	88	17	17	2247	86	30	0	2249

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dif.	IIIh.			P. L. of Dif.	VIh.			P. L. of Dif.	IXh.			P. L. of Dif.
			°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	
24	Sun	W.	69	47	24	2567	71	27	18	2560	73	7	8	2564	74	46	52	2567
	Jupiter	W.	44	8	12	2317	45	53	47	2320	47	39	18	2324	49	24	43	2327
	Venus	W.	38	25	50	2303	40	12	0	2304	41	58	8	2306	43	44	13	2308
	Saturn	W.	20	46	37	2330	22	31	53	2327	24	17	13	2326	26	2	35	2324
	Spica	E.	39	0	44	2369	37	13	59	2274	35	27	22	2279	33	40	51	2285
	Antares	E.	84	43	45	2263	82	55	36	2266	81	8	32	2269	79	21	32	2263
25	Sun	W.	83	4	14	2589	84	43	24	2583	86	22	28	2589	88	1	24	2606
	Jupiter	W.	58	10	24	2349	59	55	12	2333	61	39	54	2337	63	24	30	2363
	Venus	W.	52	33	43	2313	54	19	24	2316	56	5	0	2318	57	50	33	2322
	Saturn	W.	34	49	19	2333	36	34	31	2326	38	19	38	2329	40	4	40	2344
	Antares	E.	70	28	0	2284	68	41	37	2289	66	55	20	2294	65	9	11	2295
	Mars	E.	122	2	21	2267	120	15	33	2270	118	28	49	2274	116	42	11	2278
26	Sun	W.	96	14	15	2632	97	52	27	2638	99	30	31	2643	101	8	27	2650
	Jupiter	W.	72	5	38	2389	73	49	28	2395	75	33	10	2401	77	16	44	2406
	Venus	W.	66	36	54	2342	68	21	53	2345	70	6	47	2350	71	51	34	2354
	Saturn	W.	48	48	20	2306	50	32	44	2371	52	17	0	2376	54	1	9	2381
	Regulus	W.	43	40	2	2334	45	25	12	2339	47	10	15	2344	48	55	11	2349
	Antares	E.	56	20	10	2324	54	34	46	2330	52	49	30	2335	51	4	21	2340
Mars	E.	107	50	32	2300	106	4	32	2304	104	18	39	2309	102	32	53	2315	
27	Sun	W.	109	16	1	2681	110	53	6	2688	112	30	2	2695	114	6	49	2701
	Jupiter	W.	85	52	28	2436	87	35	11	2443	89	17	44	2449	90	0	9	2455
	Venus	W.	80	33	57	2376	82	18	6	2381	84	2	8	2386	85	46	3	2391
	Saturn	W.	62	39	58	2410	64	23	19	2416	66	6	31	2421	67	49	35	2426
	Regulus	W.	57	37	54	2377	59	22	2	2383	61	6	1	2389	62	49	52	2394
	Antares	E.	42	20	43	2371	40	36	26	2376	38	52	17	2382	37	8	17	2389
Mars	E.	93	45	59	2342	92	1	0	2348	90	16	10	2353	88	31	28	2359	
α Aquilæ	E.	96	27	1	2376	94	56	18	2379	93	25	39	2383	91	55	5	2387	
28	Sun	W.	122	8	25	2736	123	44	16	2744	125	19	57	2753	126	55	27	2760
	Jupiter	W.	99	29	54	2489	101	11	23	2497	102	52	41	2503	104	33	50	2510
	Venus	W.	94	23	52	2417	96	7	3	2422	97	50	7	2426	99	33	4	2432
	Saturn	W.	76	22	38	2480	78	4	47	2467	79	46	46	2475	81	28	35	2482
	Regulus	W.	71	26	52	2426	73	9	48	2434	74	52	35	2441	76	35	12	2448
	Mars	E.	79	50	8	2391	78	6	20	2397	76	22	40	2403	74	39	11	2411
α Aquilæ	E.	84	24	14	2629	82	54	37	2640	81	25	14	2653	79	56	7	2665	
Fomalhaut	E.	109	0	40	2348	107	27	14	2347	105	53	47	2346	104	20	19	2347	
29	Venus	W.	108	5	47	2461	109	47	55	2467	111	29	54	2474	113	11	44	2480
	Saturn	W.	89	55	9	2518	91	35	57	2526	93	16	34	2533	94	57	1	2541
	Regulus	W.	85	5	46	2484	86	47	22	2491	88	28	48	2499	90	10	3	2507
	Spica	W.	31	5	53	2301	32	47	5	2307	34	28	8	2313	36	9	3	2319
	Mars	E.	66	4	15	2447	64	21	47	2455	62	39	30	2462	60	57	23	2470
	α Aquilæ	E.	72	35	6	3153	71	8	0	3174	69	41	20	3196	68	15	6	3220
Fomalhaut	E.	96	33	37	2363	95	0	31	2369	93	27	33	2375	91	54	42	2383	
30	Saturn	W.	103	16	27	2383	104	55	46	2391	106	34	53	2399	108	13	49	2408
	Spica	W.	44	31	21	2354	46	11	19	2362	47	51	6	2370	49	30	42	2377
	Mars	E.	52	29	46	2313	50	48	51	2322	49	8	9	2331	47	27	39	2342
	α Aquilæ	E.	61	11	55	3372	59	49	7	3410	58	27	2	3449	57	5	41	3482
	Fomalhaut	E.	84	13	2	2928	82	41	19	2939	81	9	49	2960	79	38	34	2965
	α Pegasi	E.	105	40	36	2712	104	4	12	2718	102	27	56	2723	100	51	49	2732

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	XVh.			XVIIIh.			XXIh.		
				P. L. of Dist.	P. L. of Dist.	P. L. of Dist.	P. L. of Dist.	P. L. of Dist.				
24	SUN	W.	76 26 32	2372	78 6 6	2376	79 45 34	2380	81 24 57	2384		
	Jupiter	W.	51 10 3	2381	52 55 17	2385	54 40 26	2389	56 25 28	2344		
	Venus	W.	45 30 15	2301	47 16 13	2304	49 2 7	2307	50 47 57	2309		
	Saturn	W.	27 47 59	2323	29 33 22	2326	31 18 44	2328	33 4 3	2330		
	Spica	E.	31 54 29	2291	30 8 17	2298	28 23 14	2304	26 36 21	2313		
	Antares	E.	77 34 38	2267	75 47 50	2270	74 1 7	2274	72 14 30	2279		
25	SUN	W.	89 40 12	2610	91 18 54	2615	92 57 28	2621	94 35 50	2626		
	Jupiter	W.	65 8 58	2369	66 53 19	2373	68 37 33	2378	70 21 40	2384		
	Venus	W.	59 36 0	2336	61 21 21	2330	63 6 37	2333	64 51 48	2337		
	Saturn	W.	41 49 36	2348	43 34 26	2351	45 19 11	2356	47 3 49	2361		
	Antares	E.	63 23 7	2303	61 37 12	2308	59 51 24	2313	58 5 43	2318		
	Mars	E.	114 55 39	2292	113 9 13	2296	111 22 53	2292	109 36 39	2296		
26	SUN	W.	102 46 14	2636	104 23 53	2662	106 1 24	2666	107 38 47	2675		
	Jupiter	W.	79 0 10	2412	80 43 27	2418	82 26 36	2424	84 9 37	2431		
	Venus	W.	73 36 15	2366	75 20 50	2362	77 5 19	2366	78 49 42	2373		
	Saturn	W.	55 45 11	2387	57 29 5	2392	59 12 51	2396	60 56 29	2404		
	Regulus	W.	50 40 0	2355	52 24 40	2360	54 9 12	2366	55 53 37	2371		
	Antares	E.	49 19 20	2346	47 34 28	2353	45 39 45	2358	44 5 10	2364		
Mars	E.	100 47 15	2320	99 1 44	2326	97 16 21	2331	95 31 6	2336			
27	SUN	W.	115 43 27	2708	117 19 56	2716	118 56 15	2722	120 32 25	2729		
	Jupiter	W.	92 42 25	2482	94 24 31	2489	96 6 28	2476	97 48 16	2482		
	Venus	W.	87 29 51	2396	89 13 32	2401	90 57 6	2406	92 40 32	2410		
	Saturn	W.	69 32 30	2434	71 15 16	2441	72 57 52	2447	74 40 20	2454		
	Regulus	W.	64 33 34	2401	66 17 7	2408	68 0 31	2414	69 43 46	2422		
	Antares	E.	35 24 26	2396	33 40 45	2408	31 57 14	2408	30 13 51	2414		
Mars	E.	86 46 54	2366	85 2 29	2371	83 18 13	2378	81 34 6	2384			
α Aquilæ	E.	90 24 36	2394	88 54 16	3001	87 24 4	3009	85 54 3	3019			
28	SUN	W.	128 30 48	2767	130 5 59	2775	131 40 59	2778	133 15 49	2791		
	Jupiter	W.	106 14 49	2517	107 55 38	2525	109 36 17	2538	111 16 45	2540		
	Venus	W.	101 15 53	2438	102 58 33	2443	104 41 6	2449	106 23 31	2456		
	Saturn	W.	83 10 14	2499	84 51 43	2496	86 33 2	2508	88 14 11	2511		
	Regulus	W.	78 17 39	2456	79 59 56	2462	81 42 2	2469	83 23 59	2476		
	Mars	E.	72 55 52	2417	71 12 42	2426	69 29 43	2432	67 46 54	2439		
α Aquilæ	E.	78 27 15	3091	76 58 42	3097	75 30 29	3114	74 2 36	3133			
Fomalhaut	E.	102 46 52	2648	101 13 27	2652	99 40 6	2656	98 6 49	2659			
29	Venus	W.	114 53 26	2487	116 34 58	2499	118 16 22	2499	119 57 37	2506		
	Saturn	W.	96 37 17	2550	98 17 21	2557	99 57 15	2566	101 36 57	2574		
	Regulus	W.	91 51 7	2518	93 32 0	2523	95 12 41	2530	96 53 12	2538		
	Spica	W.	37 49 50	2626	39 30 27	2633	41 50 55	2640	42 51 13	2647		
	Mars	E.	59 15 28	2479	57 33 45	2487	55 52 13	2496	54 10 53	2504		
	α Aquilæ	E.	66 49 21	3247	65 24 8	3276	63 59 28	3306	62 35 23	3336		
Fomalhaut	E.	90 22 1	2899	88 49 29	2898	87 17 8	2906	85 44 59	2917			
30	Saturn	W.	109 52 33	2618	111 31 4	2626	113 9 23	2635	114 47 30	2645		
	Spica	W.	51 10 8	2596	52 49 22	2594	54 28 25	2603	56 7 16	2611		
	Mars	E.	45 47 24	2551	44 7 22	2562	42 27 35	2573	40 48 2	2584		
	α Aquilæ	E.	55 45 8	3358	54 25 26	3368	53 6 39	3641	51 48 49	3700		
	Fomalhaut	E.	78 7 37	2977	76 36 56	2992	75 6 33	3007	73 36 29	3023		
	α Pegasi	E.	99 15 51	2738	97 40 2	2745	96 4 22	2764	94 28 53	2782		

AT GREENWICH APPARENT NOON.

		THE SUN'S										Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.	
Day of the Week.	Day of the Month.	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Semi-diameter.					
		h.	m.	s.		°	'	"							
Sun.	1	6	42	35.96	10.332	N.23	5	49.4	10.51	15	46.15	68.78	3	32.84	0.475
Mon.	2	6	46	43.82	10.320	23	1	25.0	11.51	15	46.16	68.74	3	44.12	0.463
Tues.	3	6	50	51.39	10.307	22	56	36.5	12.52	15	46.17	68.69	3	55.11	0.451
Wed.	4	6	54	58.67	10.294	22	51	24.1	13.51	15	46.18	68.64	4	5.79	0.438
Thur.	5	6	59	5.62	10.281	22	45	47.8	14.50	15	46.19	68.59	4	16.15	0.424
Fri.	6	7	3	12.23	10.267	22	39	47.8	15.48	15	46.20	68.54	4	26.18	0.410
Sat.	7	7	7	18.50	10.253	22	33	24.2	16.46	15	46.22	68.49	4	35.86	0.395
Sun.	8	7	11	24.41	10.237	22	26	37.2	17.44	15	46.24	68.44	4	45.19	0.380
Mon.	9	7	15	29.94	10.221	22	19	26.8	18.41	15	46.27	68.39	4	54.13	0.364
Tues.	10	7	19	35.07	10.205	22	11	53.2	19.37	15	46.30	68.33	5	2.67	0.347
Wed.	11	7	24	39.78	10.188	22	3	56.7	20.33	15	46.33	68.27	5	10.81	0.329
Thur.	12	7	27	44.06	10.170	21	55	37.4	21.27	15	46.36	68.20	5	18.51	0.311
Fri.	13	7	31	47.90	10.150	21	46	55.4	22.21	15	46.40	68.13	5	25.77	0.292
Sat.	14	7	35	51.27	10.130	21	37	51.0	23.14	15	46.45	68.06	5	32.56	0.273
Sun.	15	7	39	54.16	10.110	21	28	24.4	24.06	15	46.50	67.99	5	38.88	0.253
Mon.	16	7	43	56.55	10.089	21	18	35.8	24.97	15	46.56	67.92	5	44.70	0.232
Tues.	17	7	47	58.43	10.067	21	8	25.5	25.87	15	46.62	67.85	5	50.01	0.210
Wed.	18	7	51	59.78	10.044	20	57	53.6	26.76	15	46.69	67.78	5	54.79	0.188
Thur.	19	7	56	0.60	10.021	20	47	0.4	27.65	15	46.77	67.70	5	59.04	0.165
Fri.	20	8	0	0.86	9.998	20	35	46.2	28.52	15	46.85	67.62	6	2.73	0.142
Sat.	21	8	4	0.56	9.975	20	24	11.2	29.38	15	46.93	67.54	6	5.86	0.118
Sun.	22	8	7	59.67	9.951	20	12	15.8	30.23	15	47.02	67.46	6	8.41	0.094
Mon.	23	8	11	58.20	9.927	20	0	0.2	31.07	15	47.12	67.38	6	10.38	0.070
Tues.	24	8	15	56.15	9.902	19	47	24.5	31.89	15	47.22	67.30	6	11.77	0.045
Wed.	25	8	19	53.48	9.877	19	34	29.1	32.70	15	47.33	67.22	6	12.54	0.020
Thur.	26	8	23	50.19	9.851	19	21	14.4	33.50	15	47.44	67.14	6	12.68	0.006
Fri.	27	8	27	46.28	9.825	19	7	40.5	34.30	15	47.55	67.05	6	12.21	0.032
Sat.	28	8	31	41.75	9.799	18	53	47.9	35.08	15	47.67	66.96	6	11.13	0.058
Sun.	29	8	35	36.60	9.773	18	39	36.6	35.85	15	47.79	66.88	6	9.44	0.083
Mon.	30	8	39	30.84	9.747	18	25	6.9	36.61	15	47.91	66.80	6	7.13	0.109
Tues.	31	8	43	24.47	9.722	18	10	19.2	37.36	15	48.04	66.71	6	4.21	0.134
Wed.	32	8	47	17.49	9.697	N.17	55	13.7	38.09	15	48.17	66.62	6	0.68	0.160

NOTE. — Mean Time of the Semi-diameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.															
Day of the Week.	Day of the Month.	THE SUN'S							Equation of Time, to be subtracted from Mean Time.	Sideral Time.					
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.				
		h.	m.	s.	''	°	'	''			''				
Sun.	1	6	42	35.35	10.332	N.23	5	50.0	10.51	3	32.82	0.475	6	39	2.53
Mon.	2	6	46	43.18	10.320	23	1	25.7	11.51	3	44.09	0.463	6	42	59.09
Tues.	3	6	50	50.72	10.307	22	56	37.3	12.51	3	55.07	0.451	6	46	55.65
Wed.	4	6	54	57.97	10.294	22	51	25.0	13.51	4	5.76	0.438	6	50	52.21
Thur.	5	6	59	4.89	10.281	22	45	48.8	14.50	4	16.12	0.424	6	54	48.77
Fri.	6	7	3	11.47	10.267	22	39	48.9	15.48	4	26.14	0.410	6	58	45.33
Sat.	7	7	7	17.72	10.253	22	33	25.5	16.46	4	35.83	0.395	7	2	41.89
Sun.	8	7	11	23.60	10.237	22	26	36.6	17.44	4	45.16	0.380	7	6	38.44
Mon.	9	7	15	29.10	10.221	22	19	28.3	18.41	4	54.10	0.364	7	10	35.00
Tues.	10	7	19	34.21	10.205	22	11	54.8	19.37	5	2.65	0.347	7	14	31.56
Wed.	11	7	23	38.90	10.188	22	3	58.4	20.33	5	10.78	0.329	7	18	28.12
Thur.	12	7	27	43.16	10.170	21	55	39.2	21.27	5	18.48	0.311	7	22	24.68
Fri.	13	7	31	46.98	10.150	21	46	57.4	22.21	5	25.74	0.292	7	26	21.24
Sat.	14	7	35	50.33	10.130	21	37	53.1	23.14	5	32.53	0.273	7	30	17.80
Sun.	15	7	39	53.20	10.110	21	28	26.6	24.06	5	38.85	0.253	7	34	14.35
Mon.	16	7	43	55.58	10.089	21	18	38.1	24.97	5	44.67	0.232	7	38	10.91
Tues.	17	7	47	57.45	10.067	21	8	27.9	25.87	5	49.98	0.210	7	42	7.47
Wed.	18	7	51	58.79	10.044	20	57	56.2	26.76	5	54.76	0.188	7	46	4.03
Thur.	19	7	55	59.60	10.021	20	47	3.2	27.65	5	59.02	0.165	7	50	0.58
Fri.	20	7	59	59.85	9.998	20	35	49.1	28.52	6	2.71	0.142	7	53	57.14
Sat.	21	8	3	59.54	9.975	20	24	14.2	29.38	6	5.84	0.118	7	57	53.70
Sun.	22	8	7	58.65	9.951	20	12	18.9	30.23	6	8.40	0.094	8	1	50.25
Mon.	23	8	11	57.18	9.927	20	0	3.4	31.07	6	10.37	0.070	8	5	46.81
Tues.	24	8	15	55.13	9.902	19	47	27.8	31.89	6	11.76	0.045	8	9	43.37
Wed.	25	8	19	52.46	9.877	19	34	32.5	32.70	6	12.54	0.020	8	13	39.92
Thur.	26	8	23	49.17	9.851	19	21	17.9	33.50	6	12.69	0.006	8	17	36.48
Fri.	27	8	27	45.26	9.825	19	7	44.1	34.30	6	12.92	0.032	8	21	33.04
Sat.	28	8	31	40.74	9.799	18	53	51.5	35.08	6	11.15	0.063	8	25	29.59
Sun.	29	8	35	35.60	9.773	18	39	40.3	35.85	6	9.45	0.083	8	29	26.15
Mon.	30	8	39	29.85	9.747	18	25	10.7	36.61	6	7.14	0.109	8	33	22.71
Tues.	31	8	43	23.49	9.722	18	10	23.0	37.36	6	4.23	0.134	8	37	19.26
Wed.	32	8	47	16.52	9.697	N.17	55	17.5	38.09	6	0.70	0.160	8	41	15.82

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

THE SUN'S										
Day of the Month.	Day of the Year.	True LONGITUDE.				DM. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		λ		λ'						
		$^{\circ}$	$'$	$^{\circ}$	$'$					
1	183	99	47 26.2	46	46.5	142.94	-0.14	0.0072091	0.1	h. m. s. 17 18 6.94
2	184	100	44 36.8	43	56.9	142.94	-0.05	.0072087	0.5	17 14 11.92
3	185	101	41 47.4	41	7.3	142.94	+0.07	.0072069	1.0	17 10 15.11
4	186	102	38 57.9	38	17.6	142.94	0.20	.0072037	1.6	17 6 19.20
5	187	103	36 8.5	35	28.0	142.95	0.33	.0071990	2.2	17 2 23.29
6	188	104	33 19.3	32	38.6	142.96	0.46	.0071928	2.8	16 58 27.37
7	189	105	30 30.5	29	49.6	142.98	0.58	.0071851	3.5	16 54 31.45
8	190	106	27 42.1	27	1.0	143.00	0.68	.0071757	4.2	16 50 35.54
9	191	107	24 54.2	24	13.0	143.02	0.76	.0071646	5.0	16 46 39.63
10	192	108	22 6.8	21	25.4	143.04	0.81	.0071516	5.8	16 42 43.72
11	193	109	19 19.9	18	38.3	143.06	0.83	.0071367	6.7	16 38 47.80
12	194	110	16 33.6	15	51.8	143.08	0.82	.0071197	7.6	16 34 51.88
13	195	111	13 47.8	13	5.8	143.10	0.79	.0071005	8.5	16 30 55.97
14	196	112	11 2.6	10	20.5	143.13	0.71	.0070789	9.5	16 27 0.96
15	197	113	8 18.0	7	35.7	143.16	0.63	.0070549	10.6	16 23 4.15
16	198	114	5 34.0	4	51.5	143.19	0.51	.0070283	11.7	16 19 8.24
17	199	115	2 50.5	2	7.8	143.21	0.38	.0069992	12.8	16 15 12.32
18	200	115	60 7.6	59	24.8	143.23	0.24	.0069675	13.8	16 11 16.41
19	201	116	57 25.3	56	42.4	143.25	+0.11	.0069332	14.8	16 7 20.50
20	202	117	54 43.5	54	0.4	143.27	-0.02	.0068964	15.9	16 3 24.59
21	203	118	52 2.1	51	18.8	143.28	0.14	.0068571	16.9	15 59 28.68
22	204	119	49 21.0	48	37.5	143.30	0.23	.0068154	17.9	15 55 32.77
23	205	120	46 40.3	45	56.6	143.32	0.31	.0067713	18.8	15 51 36.86
24	206	121	44 0.2	43	16.4	143.34	0.36	.0067250	19.7	15 47 40.95
25	207	122	41 20.7	40	36.7	143.36	0.38	.0066765	20.5	15 43 45.04
26	208	123	38 41.7	37	57.5	143.38	0.37	.0066261	21.2	15 39 49.13
27	209	124	36 3.1	35	18.7	143.40	0.33	.0065738	21.9	15 35 53.22
28	210	125	33 24.9	32	40.4	143.42	0.25	.0065199	22.6	15 31 57.31
29	211	126	30 47.2	30	2.6	143.44	0.16	.0064645	23.3	15 28 1.40
30	212	127	28 10.1	27	25.3	143.47	-0.05	.0064078	23.9	15 24 5.49
31	213	128	25 33.8	24	48.8	143.51	+0.07	.0063498	24.5	15 20 9.58
32	214	129	22 58.3	22	13.1	143.55	+0.20	0.0062905	25.0	15 16 13.66

NOTE.— λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.			
							h. m.	m.	
1	15 32.8	15 28.6	56 56.8	-1.27	56 41.4	-1.29	11 0.1	2.35	12.3
2	15 24.4	15 20.1	56 25.9	1.30	56 10.3	1.29	11 55.5	2.25	13.3
3	15 15.9	15 11.8	55 54.8	1.28	55 39.7	1.24	12 47.8	2.10	14.3
4	15 7.8	15 4.0	55 25.0	1.19	55 11.1	1.12	13 36.4	1.95	15.3
5	15 0.5	14 57.3	54 58.1	1.04	54 46.2	0.93	14 21.5	1.82	16.3
6	14 54.4	14 52.0	54 35.7	0.81	54 26.9	0.66	15 3.8	1.72	17.3
7	14 50.1	14 48.7	54 19.8	0.51	54 14.7	-0.34	15 44.1	1.66	18.3
8	14 47.9	14 47.7	54 11.7	-0.15	54 11.0	+0.04	16 23.7	1.65	19.3
9	14 48.2	14 49.3	54 12.7	+0.25	54 16.9	0.45	17 3.4	1.68	20.3
10	14 51.1	14 53.6	54 23.6	0.67	54 32.9	0.88	17 44.6	1.76	21.3
11	14 56.8	15 0.7	54 44.7	1.08	54 58.9	1.28	18 28.2	1.89	22.3
12	15 5.2	15 10.3	55 15.5	1.47	55 34.3	1.65	19 15.3	2.06	23.3
13	15 16.0	15 22.1	55 55.0	1.80	56 17.5	1.93	20 6.7	2.23	24.3
14	15 28.6	15 35.4	56 41.4	2.03	57 6.2	2.09	21 2.2	2.39	25.3
15	15 42.3	15 49.2	57 31.5	2.12	57 57.0	2.10	22 1.1	2.49	26.3
16	15 56.0	16 2.5	58 21.9	2.04	58 45.8	1.93	23 1.4	2.51	27.3
17	16 8.6	16 14.0	59 8.1	1.77	59 28.3	1.57	δ		28.3
18	16 18.8	16 22.8	59 45.8	1.34	60 0.3	1.07	0 0.9	2.44	29.3
19	16 25.8	16 27.9	60 11.5	0.78	60 19.1	+0.48	0 58.1	2.32	0.9
20	16 29.0	16 29.1	60 23.1	+0.18	60 23.5	-0.11	1 52.3	2.20	1.9
21	16 28.2	16 26.5	60 20.4	-0.39	60 14.1	0.64	2 44.0	2.12	2.9
22	16 24.0	16 20.8	60 4.9	0.87	59 53.3	1.06	3 34.2	2.08	3.9
23	16 17.1	16 13.0	59 39.6	1.21	59 24.3	1.33	4 24.1	2.09	4.9
24	16 8.5	16 3.7	59 7.7	1.42	58 50.2	1.47	5 14.8	2.14	5.9
25	15 58.8	15 53.8	58 32.3	1.50	58 14.1	1.51	6 7.1	2.22	6.9
26	15 48.9	15 44.0	57 56.0	1.51	57 38.0	1.49	7 1.5	2.30	7.9
27	15 39.2	15 34.5	57 20.3	1.46	57 2.9	1.42	7 57.5	2.35	8.9
28	15 29.9	15 25.5	56 46.1	1.38	56 29.9	1.32	8 53.9	2.33	9.9
29	15 21.2	15 17.1	56 14.3	1.28	55 59.3	1.22	9 49.2	2.26	10.9
30	15 13.2	15 9.5	55 44.9	1.17	55 31.2	1.12	10 41.9	2.13	11.9
31	15 5.9	15 2.6	55 18.1	1.06	55 5.8	0.99	11 31.4	1.99	12.9
32	14 59.5	14 56.6	54 54.3	-0.92	54 43.7	-0.84	12 17.4	1.85	13.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	17 14 3.51	2,4541	S.26 35 5.7	0,897	0	19 8 15.31	2,2704	S.24 2 6.9	6,464
1	17 16 30.71	2,4525	26 35 24.8	0,289	1	19 10 31.37	2,2648	23 55 35.4	6,564
2	17 18 57.81	2,4509	26 35 34.4	0,061	2	19 12 47.09	2,2592	23 48 56.8	6,708
3	17 21 24.81	2,4492	26 35 34.6	0,076	3	19 15 2.47	2,2535	23 42 11.1	6,821
4	17 23 51.71	2,4478	26 35 25.3	0,233	4	19 17 17.51	2,2478	23 35 18.3	6,937
5	17 26 18.49	2,4454	26 35 6.6	0,390	5	19 19 32.21	2,2421	23 28 18.5	7,063
6	17 28 45.16	2,4434	26 34 36.5	0,546	6	19 21 46.56	2,2364	23 21 11.9	7,167
7	17 31 11.70	2,4412	26 34 1.0	0,702	7	19 24 0.57	2,2306	23 13 58.4	7,261
8	17 33 38.11	2,4389	26 33 14.2	0,858	8	19 26 14.23	2,2248	23 6 38.2	7,363
9	17 36 4.37	2,4365	26 32 18.0	1,013	9	19 28 27.54	2,2190	22 59 11.3	7,504
10	17 38 30.49	2,4340	26 31 12.6	1,167	10	19 30 40.51	2,2132	22 51 37.7	7,614
11	17 40 56.45	2,4313	26 29 58.0	1,321	11	19 32 53.12	2,2073	22 43 57.6	7,732
12	17 43 22.25	2,4288	26 28 34.1	1,475	12	19 35 5.38	2,2015	22 36 11.1	7,839
13	17 45 47.88	2,4267	26 27 1.0	1,628	13	19 37 17.29	2,1956	22 28 18.2	7,935
14	17 48 13.34	2,4227	26 25 18.8	1,780	14	19 39 28.84	2,1897	22 20 18.9	8,040
15	17 50 38.61	2,4197	26 23 27.5	1,931	15	19 41 40.04	2,1838	22 12 13.3	8,144
16	17 53 3.70	2,4166	26 21 27.1	2,082	16	19 43 50.89	2,1779	22 4 1.6	8,246
17	17 55 28.59	2,4133	26 19 17.6	2,233	17	19 46 1.38	2,1719	21 55 43.8	8,347
18	17 57 53.29	2,4099	26 16 59.2	2,382	18	19 48 11.52	2,1659	21 47 19.9	8,447
19	18 0 17.79	2,4065	26 14 31.8	2,531	19	19 50 21.30	2,1600	21 38 50.1	8,546
20	18 2 42.07	2,4030	26 11 55.5	2,679	20	19 52 30.72	2,1541	21 30 14.4	8,644
21	18 5 6.14	2,3993	26 9 10.3	2,827	21	19 54 39.79	2,1482	21 21 32.9	8,740
22	18 7 29.98	2,3955	26 6 16.3	2,974	22	19 56 48.50	2,1423	21 12 45.6	8,835
23	18 9 53.60	2,3917	S.26 3 13.5	3,120	23	19 58 56.86	2,1364	S.21 3 52.6	8,930
MONDAY 2.					WEDNESDAY 4.				
0	18 12 16.98	2,3878	S.26 0 1.9	3,265	0	20 1 4.87	2,1305	S.20 54 54.0	9,033
1	18 14 40.12	2,3837	25 56 41.7	3,409	1	20 3 12.52	2,1246	20 45 49.9	9,114
2	18 17 3.02	2,3795	25 53 12.8	3,552	2	20 5 19.82	2,1187	20 36 40.3	9,205
3	18 19 25.67	2,3753	25 49 35.4	3,695	3	20 7 26.77	2,1128	20 27 25.3	9,295
4	18 21 48.06	2,3710	25 45 49.4	3,837	4	20 9 33.37	2,1070	20 18 4.9	9,383
5	18 24 10.19	2,3666	25 41 55.0	3,978	5	20 11 39.62	2,1012	20 8 39.3	9,470
6	18 26 32.05	2,3621	25 37 52.1	4,118	6	20 13 45.52	2,0954	19 59 8.5	9,556
7	18 28 53.64	2,3576	25 33 40.9	4,257	7	20 15 51.07	2,0895	19 49 32.6	9,640
8	18 31 14.96	2,3530	25 29 21.3	4,395	8	20 17 56.27	2,0838	19 39 51.7	9,722
9	18 33 35.99	2,3482	25 24 53.4	4,533	9	20 20 1.12	2,0780	19 30 5.8	9,806
10	18 35 56.74	2,3434	25 20 17.4	4,669	10	20 22 5.63	2,0722	19 20 15.0	9,887
11	18 38 17.20	2,3386	25 15 33.2	4,804	11	20 24 9.80	2,0665	19 10 19.3	9,967
12	18 40 37.37	2,3337	25 10 41.0	4,938	12	20 26 13.62	2,0609	19 0 18.9	10,046
13	18 42 57.24	2,3287	25 5 40.7	5,071	13	20 28 17.10	2,0553	18 50 13.8	10,124
14	18 45 16.82	2,3237	25 0 32.5	5,203	14	20 30 20.25	2,0496	18 40 4.0	10,201
15	18 47 36.09	2,3186	24 55 16.4	5,334	15	20 32 23.06	2,0440	18 29 49.7	10,276
16	18 49 55.05	2,3135	24 49 52.4	5,464	16	20 34 25.53	2,0383	18 19 30.9	10,349
17	18 52 13.70	2,3083	24 44 20.7	5,593	17	20 36 27.67	2,0326	18 9 7.6	10,424
18	18 54 32.04	2,3031	24 38 41.3	5,720	18	20 38 29.49	2,0275	17 58 40.0	10,497
19	18 56 50.07	2,2978	24 32 54.3	5,847	19	20 40 30.97	2,0220	17 48 8.1	10,568
20	18 59 7.77	2,2924	24 26 59.7	5,973	20	20 42 32.13	2,0166	17 37 31.9	10,638
21	19 1 25.15	2,2869	24 20 57.6	6,098	21	20 44 32.97	2,0113	17 26 51.6	10,707
22	19 3 42.20	2,2814	24 14 48.0	6,221	22	20 46 33.48	2,0059	17 16 7.1	10,775
23	19 5 58.92	2,2769	24 8 31.1	6,343	23	20 48 33.67	2,0006	17 5 18.6	10,842
24	19 8 15.31	2,2704	S.24 2 6.9	6,464	24	20 50 33.55	1,9953	S.16 54 26.1	10,908

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	20 50 33.55	1.9968	S. 16 54 26.1	10.908	0	22 21 15.35	1.8038	S. 7 14 9.8	12.928
1	20 52 33.11	1.9901	16 43 29.7	10.972	1	22 23 3.66	1.8089	7 1 13.7	12.946
2	20 54 32.36	1.9849	16 32 29.5	11.035	2	22 24 51.82	1.8016	6 48 16.3	12.967
3	20 56 31.30	1.9798	16 21 25.5	11.098	3	22 26 39.85	1.7968	6 35 17.7	12.987
4	20 58 29.94	1.9747	16 10 17.8	11.160	4	22 28 27.74	1.7917	6 22 17.9	13.006
5	21 0 28.28	1.9697	15 59 6.4	11.219	5	22 30 15.50	1.7866	6 9 17.0	13.023
6	21 2 26.31	1.9647	15 47 51.5	11.278	6	22 32 3.14	1.7819	5 56 15.1	13.040
7	21 4 24.04	1.9597	15 36 33.1	11.336	7	22 33 50.65	1.7809	5 43 12.1	13.057
8	21 6 21.48	1.9548	15 25 11.2	11.395	8	22 35 38.05	1.7809	5 30 8.2	13.073
9	21 8 18.63	1.9500	15 13 45.9	11.449	9	22 37 25.33	1.7811	5 17 3.3	13.089
10	21 10 15.48	1.9452	15 2 17.3	11.504	10	22 39 12.50	1.7813	5 3 57.5	13.108
11	21 12 12.05	1.9405	14 50 45.4	11.558	11	22 40 59.57	1.7816	4 50 50.9	13.117
12	21 14 8.34	1.9360	14 39 10.3	11.611	12	22 42 46.53	1.7819	4 37 43.4	13.130
13	21 16 4.35	1.9312	14 27 32.0	11.664	13	22 44 33.40	1.7823	4 24 35.2	13.143
14	21 18 0.08	1.9266	14 15 50.6	11.715	14	22 46 20.17	1.7828	4 11 26.2	13.156
15	21 19 55.54	1.9220	14 4 6.2	11.766	15	22 48 6.86	1.7774	3 58 16.5	13.167
16	21 21 50.72	1.9176	13 52 18.8	11.814	16	22 49 53.46	1.7760	3 45 6.1	13.178
17	21 23 45.64	1.9132	13 40 28.4	11.863	17	22 51 39.98	1.7747	3 31 55.1	13.188
18	21 25 40.30	1.9088	13 28 35.2	11.911	18	22 53 26.43	1.7735	3 18 43.5	13.197
19	21 27 34.70	1.9045	13 16 39.1	11.957	19	22 55 12.80	1.7723	3 5 31.4	13.206
20	21 29 28.84	1.9003	13 4 40.3	12.002	20	22 56 59.11	1.7712	2 52 18.8	13.214
21	21 31 22.73	1.8961	12 52 38.8	12.047	21	22 58 45.35	1.7702	2 39 5.7	13.223
22	21 33 16.37	1.8919	12 40 34.6	12.091	22	23 0 31.54	1.7693	2 25 52.2	13.228
23	21 35 9.76	1.8878	S. 12 28 27.8	12.134	23	23 2 17.67	1.7684	S. 2 12 38.3	13.234
FRIDAY 6.					SUNDAY 8.				
0	21 37 2.91	1.8836	S. 12 16 18.5	12.176	0	23 4 3.75	1.7676	S. 1 59 24.1	13.239
1	21 38 55.82	1.8790	12 4 6.7	12.217	1	23 5 49.78	1.7668	1 46 9.6	13.244
2	21 40 48.50	1.8750	11 51 53.5	12.257	2	23 7 35.77	1.7662	1 32 54.8	13.248
3	21 42 40.94	1.8712	11 39 35.9	12.296	3	23 9 21.73	1.7656	1 19 39.8	13.251
4	21 44 33.16	1.8684	11 27 17.0	12.334	4	23 11 7.65	1.7651	1 6 24.7	13.253
5	21 46 25.15	1.8647	11 14 55.9	12.371	5	23 12 53.54	1.7646	0 53 9.4	13.256
6	21 48 16.92	1.8610	11 2 32.5	12.407	6	23 14 39.41	1.7642	0 39 54.1	13.256
7	21 50 8.47	1.8574	10 50 7.0	12.443	7	23 16 25.25	1.7639	0 26 38.7	13.257
8	21 51 59.81	1.8539	10 37 39.3	12.478	8	23 18 11.06	1.7637	0 13 23.2	13.257
9	21 53 50.94	1.8504	10 25 9.6	12.512	9	23 19 56.89	1.7635	S. 0 0 7.8	13.256
10	21 55 41.86	1.8470	10 12 37.9	12.545	10	23 21 42.70	1.7634	N. 0 13 7.6	13.256
11	21 57 32.58	1.8437	10 0 4.3	12.577	11	23 23 28.50	1.7634	0 26 22.9	13.253
12	21 59 23.10	1.8404	9 47 28.7	12.608	12	23 25 14.31	1.7635	0 39 38.0	13.250
13	22 1 13.42	1.8372	9 34 51.3	12.639	13	23 27 0.12	1.7636	0 52 52.9	13.247
14	22 3 3.56	1.8341	9 22 12.0	12.668	14	23 28 45.94	1.7638	1 6 7.7	13.244
15	22 4 53.51	1.8310	9 9 31.0	12.697	15	23 30 31.77	1.7640	1 19 22.3	13.240
16	22 6 43.28	1.8280	8 56 48.3	12.726	16	23 32 17.62	1.7643	1 32 36.5	13.234
17	22 8 32.87	1.8251	8 44 3.9	12.754	17	23 34 3.49	1.7647	1 45 50.4	13.228
18	22 10 22.29	1.8223	8 31 17.8	12.781	18	23 35 49.39	1.7652	1 59 3.9	13.222
19	22 12 11.53	1.8196	8 18 30.2	12.807	19	23 37 35.32	1.7658	2 12 17.1	13.216
20	22 14 0.61	1.8166	8 5 41.0	12.832	20	23 39 21.29	1.7665	2 25 29.8	13.209
21	22 15 49.53	1.8140	7 52 50.3	12.857	21	23 41 7.30	1.7672	2 28 42.1	13.200
22	22 17 38.29	1.8114	7 39 58.2	12.880	22	23 42 53.35	1.7680	2 51 53.8	13.191
23	22 19 26.90	1.8088	7 27 4.7	12.903	23	23 44 39.45	1.7688	3 5 5.0	13.183
24	22 21 15.35	1.8063	S. 7 14 9.8	12.925	24	23 46 25.61	1.7697	N. 3 18 15.6	13.173

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
	h. m. s.	s.	N. ° ' "	"		h. m. s.	s.	N. ° ' "	"
0	23 46 25.61	1.7697	N. 3 18 15.6	13.173	0	1 13 48.47	1.8990	N.13 25 59.3	11.874
1	23 48 11.82	1.7707	3 31 25.6	13.161	1	1 15 42.54	1.9084	13 37 50.4	11.828
2	23 49 58.10	1.7718	3 44 34.9	13.149	2	1 17 36.88	1.9079	13 49 38.7	11.781
3	23 51 44.44	1.7729	3 57 43.5	13.137	3	1 19 31.49	1.9125	14 1 24.1	11.733
4	23 53 30.85	1.7741	4 10 51.3	13.124	4	1 21 26.38	1.9171	14 13 6.7	11.684
5	23 55 17.34	1.7764	4 23 58.4	13.111	5	1 23 21.54	1.9317	14 24 46.4	11.635
6	23 57 3.90	1.7767	4 37 4.6	13.097	6	1 25 16.99	1.9364	14 36 23.0	11.585
7	23 58 50.54	1.7781	4 50 9.9	13.082	7	1 27 12.73	1.9313	14 47 56.6	11.533
8	0 0 37.27	1.7796	5 3 14.4	13.067	8	1 29 8.75	1.9362	14 59 27.0	11.481
9	0 2 24.09	1.7811	5 16 17.9	13.051	9	1 31 5.07	1.9411	15 10 54.3	11.430
10	0 4 11.00	1.7827	5 29 20.5	13.034	10	1 33 1.69	1.9461	15 22 18.4	11.374
11	0 5 58.02	1.7845	5 42 22.0	13.017	11	1 34 58.62	1.9513	15 33 39.2	11.319
12	0 7 45.14	1.7863	5 55 22.5	12.999	12	1 36 55.85	1.9565	15 44 56.7	11.268
13	0 9 32.37	1.7881	6 8 21.9	12.980	13	1 38 53.40	1.9617	15 56 10.8	11.206
14	0 11 19.71	1.7900	6 21 20.1	12.961	14	1 40 51.26	1.9670	16 7 21.5	11.148
15	0 13 7.17	1.7921	6 34 17.2	12.941	15	1 42 49.44	1.9723	16 18 28.6	11.089
16	0 14 54.76	1.7943	6 47 13.0	12.920	16	1 44 47.94	1.9777	16 29 32.2	11.029
17	0 16 42.48	1.7964	7 0 7.5	12.898	17	1 46 46.76	1.9832	16 40 32.1	10.968
18	0 18 30.33	1.7986	7 13 0.8	12.876	18	1 48 45.92	1.9888	16 51 28.4	10.905
19	0 20 18.31	1.8009	7 25 52.7	12.854	19	1 50 45.41	1.9944	17 2 21.0	10.844
20	0 22 6.44	1.8033	7 38 43.3	12.831	20	1 52 45.24	2.0000	17 13 9.7	10.780
21	0 23 54.72	1.8066	7 51 32.4	12.807	21	1 54 45.41	2.0067	17 23 54.6	10.715
22	0 25 43.14	1.8098	8 4 20.1	12.782	22	1 56 45.92	2.0114	17 34 35.5	10.649
23	0 27 31.72	1.8109	N. 8 17 6.2	12.756	23	1 58 46.77	2.0173	N.17 45 12.5	10.582
TUESDAY 10.					THURSDAY 12.				
0	0 29 20.45	1.8186	N. 8 29 50.8	12.730	0	2 0 47.98	2.0280	N.17 55 45.4	10.514
1	0 31 9.35	1.8168	8 42 33.8	12.708	1	2 2 49.54	2.0289	18 6 14.2	10.445
2	0 32 58.41	1.8191	8 55 15.2	12.676	2	2 4 51.45	2.0349	18 16 38.9	10.375
3	0 34 47.64	1.8220	9 7 54.9	12.647	3	2 6 53.72	2.0409	18 26 59.1	10.303
4	0 36 37.05	1.8249	9 20 32.8	12.618	4	2 8 56.36	2.0470	18 37 15.1	10.230
5	0 38 26.63	1.8279	9 33 9.0	12.588	5	2 10 59.36	2.0531	18 47 26.7	10.187
6	0 40 16.40	1.8310	9 45 43.3	12.557	6	2 13 2.73	2.0592	18 57 33.9	10.092
7	0 42 6.35	1.8341	9 58 15.8	12.526	7	2 15 6.47	2.0654	19 7 36.5	10.006
8	0 43 56.49	1.8373	10 10 46.4	12.494	8	2 17 10.58	2.0717	19 17 34.6	9.929
9	0 45 46.83	1.8407	10 23 15.0	12.461	9	2 19 15.07	2.0780	19 27 28.0	9.851
10	0 47 37.37	1.8441	10 35 41.7	12.427	10	2 21 19.94	2.0843	19 37 16.7	9.771
11	0 49 28.12	1.8475	10 48 6.3	12.393	11	2 23 25.19	2.0907	19 47 0.5	9.690
12	0 51 19.07	1.8510	11 0 28.8	12.358	12	2 25 30.83	2.0971	19 56 39.5	9.608
13	0 53 10.24	1.8544	11 12 49.2	12.323	13	2 27 36.85	2.1036	20 6 13.6	9.526
14	0 55 1.63	1.8584	11 25 7.4	12.288	14	2 29 43.26	2.1101	20 15 42.6	9.443
15	0 56 53.24	1.8621	11 37 23.4	12.248	15	2 31 50.06	2.1167	20 25 6.5	9.356
16	0 58 45.08	1.8659	11 49 37.1	12.209	16	2 33 57.26	2.1232	20 34 25.3	9.269
17	1 0 37.15	1.8698	12 1 48.5	12.170	17	2 36 4.85	2.1298	20 43 38.8	9.183
18	1 2 29.46	1.8738	12 13 57.5	12.130	18	2 38 12.84	2.1364	20 52 47.1	9.093
19	1 4 22.00	1.8778	12 26 4.1	12.090	19	2 40 21.22	2.1430	21 1 50.0	9.008
20	1 6 14.79	1.8819	12 38 8.3	12.048	20	2 42 30.00	2.1496	21 10 47.5	8.913
21	1 8 7.83	1.8861	12 50 9.9	12.006	21	2 44 39.18	2.1563	21 19 39.5	8.819
22	1 10 1.12	1.8903	13 2 9.0	11.963	22	2 46 48.76	2.1631	21 28 25.8	8.725
23	1 11 54.66	1.8946	13 14 5.5	11.919	23	2 48 58.75	2.1699	21 37 6.4	8.633
24	1 13 48.47	1.8990	N.13 25 59.3	11.874	24	2 51 9.15	2.1767	N.21 45 41.3	8.533

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	2 51 9.15	2.1767	N 21 45 41.3	8.538	0	4 43 18.90	2.4822	N 26 19 26.3	2.384
1	2 53 19.96	2.1835	21 54 10.4	8.436	1	4 45 47.98	2.4871	26 21 44.6	2.226
2	2 55 31.17	2.1903	22 2 33.6	8.337	2	4 48 17.35	2.4918	26 23 53.4	2.067
3	2 57 42.79	2.1971	22 10 50.8	8.236	3	4 50 47.00	2.4965	26 25 52.7	1.906
4	2 59 54.82	2.2039	22 19 1.9	8.135	4	4 53 16.93	2.5011	26 27 42.4	1.748
5	3 2 7.26	2.2106	22 27 6.9	8.032	5	4 55 47.13	2.5056	26 29 22.4	1.586
6	3 4 20.12	2.2177	22 35 5.7	7.928	6	4 58 17.60	2.5100	26 30 52.7	1.423
7	3 6 33.39	2.2246	22 42 58.2	7.823	7	5 0 48.32	2.5142	26 32 13.2	1.260
8	3 8 47.08	2.2314	22 50 44.3	7.715	8	5 3 19.30	2.5183	26 33 23.8	1.096
9	3 11 1.18	2.2384	22 58 24.0	7.607	9	5 5 50.52	2.5222	26 34 24.6	0.930
10	3 13 15.69	2.2453	23 5 57.1	7.496	10	5 8 21.08	2.5262	26 35 15.4	0.764
11	3 15 30.61	2.2521	23 13 23.6	7.387	11	5 10 53.66	2.5299	26 35 56.3	0.598
12	3 17 45.94	2.2590	23 20 43.5	7.278	12	5 13 25.57	2.5335	26 36 27.1	0.431
13	3 20 1.68	2.2658	23 27 56.6	7.161	13	5 15 57.69	2.5371	26 36 47.8	0.262
14	3 22 17.84	2.2727	23 35 2.8	7.047	14	5 18 30.02	2.5406	26 36 58.5	0.093
15	3 24 34.41	2.2796	23 42 2.1	6.931	15	5 21 2.55	2.5437	26 36 59.0	0.076
16	3 26 51.39	2.2865	23 48 54.4	6.813	16	5 23 35.26	2.5468	26 36 49.4	0.246
17	3 29 8.78	2.2933	23 55 39.7	6.694	17	5 26 8.16	2.5498	26 36 29.5	0.417
18	3 31 26.58	2.3001	24 2 17.8	6.574	18	5 28 41.23	2.5526	26 35 59.4	0.588
19	3 33 44.78	2.3068	24 8 48.7	6.453	19	5 31 14.47	2.5553	26 35 19.0	0.760
20	3 36 3.39	2.3136	24 15 13.2	6.330	20	5 33 47.87	2.5578	26 34 28.2	0.932
21	3 38 22.41	2.3203	24 21 28.3	6.206	21	5 36 21.41	2.5602	26 33 27.1	1.104
22	3 40 41.83	2.3270	24 27 37.0	6.081	22	5 38 55.10	2.5625	26 32 15.7	1.277
23	3 43 1.65	2.3337	N.24 33 38.1	5.954	23	5 41 28.92	2.5647	N.26 30 53.9	1.451
SATURDAY 14.					MONDAY 16.				
0	3 45 21.87	2.3403	N.24 39 31.5	5.826	0	5 44 2.87	2.5667	N.26 29 21.6	1.625
1	3 47 42.49	2.3469	24 45 17.2	5.697	1	5 46 36.93	2.5686	26 27 38.9	1.799
2	3 50 3.50	2.3535	24 50 55.2	5.567	2	5 49 11.10	2.5703	26 25 45.7	1.973
3	3 52 24.90	2.3600	24 56 25.3	5.435	3	5 51 45.37	2.5719	26 23 42.1	2.148
4	3 54 46.70	2.3665	25 1 47.4	5.302	4	5 54 19.73	2.5734	26 21 27.9	2.324
5	3 57 8.88	2.3729	25 7 1.5	5.168	5	5 56 54.17	2.5747	26 19 3.2	2.500
6	3 59 31.45	2.3792	25 12 7.5	5.032	6	5 59 28.69	2.5760	26 16 27.9	2.675
7	4 1 54.39	2.3855	25 17 5.3	4.896	7	6 2 3.28	2.5769	26 13 42.1	2.851
8	4 4 17.71	2.3918	25 21 54.9	4.757	8	6 4 37.92	2.5778	26 10 45.8	3.027
9	4 6 41.40	2.3980	25 26 36.2	4.617	9	6 7 12.61	2.5785	26 7 38.9	3.203
10	4 9 5.47	2.4041	25 31 9.0	4.476	10	6 9 47.34	2.5791	26 4 21.4	3.379
11	4 11 29.90	2.4102	25 35 33.4	4.335	11	6 12 22.10	2.5796	26 0 53.4	3.555
12	4 13 54.70	2.4162	25 39 49.2	4.192	12	6 14 56.89	2.5799	25 57 14.8	3.731
13	4 16 19.86	2.4222	25 43 56.4	4.047	13	6 17 31.69	2.5800	25 53 25.7	3.907
14	4 18 45.37	2.4281	25 47 54.9	3.901	14	6 20 6.49	2.5800	25 49 26.0	4.083
15	4 21 11.23	2.4338	25 51 44.6	3.755	15	6 22 41.29	2.5799	25 45 15.8	4.258
16	4 23 37.43	2.4395	25 55 25.5	3.607	16	6 25 16.08	2.5796	25 40 55.1	4.433
17	4 26 3.98	2.4452	25 58 57.5	3.459	17	6 27 50.85	2.5792	25 36 23.9	4.607
18	4 28 30.86	2.4507	26 2 20.5	3.308	18	6 30 25.59	2.5787	25 31 42.3	4.782
19	4 30 58.07	2.4562	26 5 34.5	3.157	19	6 33 0.29	2.5780	25 26 50.2	4.956
20	4 33 25.61	2.4616	26 8 39.3	3.006	20	6 35 34.95	2.5773	25 21 47.6	5.130
21	4 35 53.47	2.4669	26 11 35.0	2.851	21	6 38 9.56	2.5762	25 16 34.6	5.303
22	4 38 21.64	2.4721	26 14 21.4	2.696	22	6 40 44.10	2.5761	25 11 11.2	5.476
23	4 40 50.12	2.4772	26 16 58.5	2.541	23	6 43 18.57	2.5759	25 5 37.5	5.648
24	4 43 18.90	2.4822	N.26 19 26.3	2.384	24	6 45 52.97	2.5756	N.24 59 53.4	5.820

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
0	6 45 52.97	2.6726	N.24 59 53.4	8.820	0	8 45 55.39	2.4057	N.17 19 18.9	12.895
1	6 48 27.29	2.6712	24 53 59.0	5.992	1	8 48 19.41	2.3989	17 6 22.4	12.907
2	6 51 1.51	2.6696	24 47 54.3	6.163	2	8 50 43.15	2.3934	16 53 19.3	12.107
3	6 53 35.63	2.6679	24 41 39.4	6.334	3	8 53 6.62	2.3888	16 40 9.6	12.216
4	6 56 9.65	2.6661	24 35 14.2	6.504	4	8 55 29.81	2.3843	16 26 53.4	12.323
5	6 58 43.56	2.6641	24 28 38.8	6.674	5	8 57 52.72	2.3796	16 13 30.9	12.428
6	7 1 17.34	2.6620	24 21 53.3	6.842	6	9 0 15.36	2.3750	16 0 2.1	12.531
7	7 3 51.00	2.6599	24 14 57.7	7.010	7	9 2 37.72	2.3704	15 46 27.2	12.632
8	7 6 24.53	2.6576	24 7 52.1	7.177	8	9 4 59.81	2.3658	15 32 46.3	12.731
9	7 8 57.92	2.6552	24 0 36.4	7.344	9	9 7 21.62	2.3612	15 18 59.5	12.828
10	7 11 31.16	2.6527	23 53 10.8	7.509	10	9 9 43.16	2.3567	15 5 6.8	12.925
11	7 14 4.24	2.6501	23 45 35.3	7.674	11	9 12 4.43	2.3522	14 51 8.4	14.019
12	7 16 37.17	2.6474	23 37 49.9	7.838	12	9 14 25.42	2.3477	14 37 4.5	14.111
13	7 19 9.93	2.6446	23 29 54.7	8.001	13	9 16 46.14	2.3432	14 22 55.1	14.202
14	7 21 42.52	2.6417	23 21 49.8	8.163	14	9 19 6.60	2.3387	14 8 40.3	14.291
15	7 24 14.93	2.6388	23 13 35.2	8.323	15	9 21 26.79	2.3342	13 54 20.3	14.377
16	7 26 47.15	2.6358	23 5 11.1	8.482	16	9 23 46.71	2.3296	13 39 55.1	14.461
17	7 29 19.18	2.6327	22 56 37.4	8.641	17	9 26 6.37	2.3251	13 25 24.9	14.544
18	7 31 51.02	2.6296	22 47 54.2	8.798	18	9 28 25.76	2.3210	13 10 49.8	14.625
19	7 34 22.65	2.6265	22 39 01.7	8.953	19	9 30 44.89	2.3167	12 56 9.8	14.705
20	7 36 54.08	2.6232	22 30 59.8	9.108	20	9 33 3.77	2.3124	12 41 25.2	14.782
21	7 39 25.29	2.6194	22 20 48.6	9.262	21	9 35 22.39	2.3082	12 26 36.0	14.867
22	7 41 56.29	2.6148	22 11 28.3	9.415	22	9 37 40.76	2.3040	12 11 42.3	14.951
23	7 44 27.07	2.6111	N.22 1 56.8	9.567	23	9 39 58.88	2.3000	N.11 56 44.2	15.035
WEDNESDAY 18.					FRIDAY 20.				
0	7 46 57.69	2.6078	N.21 52 20.3	9.717	0	9 42 16.75	2.2958	N.11 41 41.9	15.073
1	7 49 27.94	2.6034	21 42 32.8	9.866	1	9 44 34.38	2.2918	11 26 35.4	15.142
2	7 51 58.03	2.4996	21 32 36.4	10.014	2	9 46 51.77	2.2878	11 11 24.9	15.208
3	7 54 27.89	2.4957	21 22 31.2	10.160	3	9 49 8.92	2.2839	10 56 10.5	15.273
4	7 56 57.51	2.4917	21 12 17.2	10.305	4	9 51 25.84	2.2800	10 40 53.2	15.326
5	7 59 26.89	2.4876	21 1 54.6	10.449	5	9 53 42.53	2.2762	10 25 30.2	15.377
6	8 1 56.03	2.4832	20 51 23.4	10.591	6	9 55 58.98	2.2724	10 10 4.6	15.426
7	8 4 24.90	2.4786	20 40 43.7	10.732	7	9 58 15.21	2.2687	9 54 35.5	15.512
8	8 6 53.53	2.4751	20 29 55.6	10.871	8	10 0 31.22	2.2650	9 39 3.0	15.598
9	8 9 21.91	2.4709	20 18 59.2	11.009	9	10 2 47.01	2.2614	9 23 27.2	15.622
10	8 11 50.03	2.4666	20 7 54.5	11.145	10	10 5 2.59	2.2578	9 7 48.3	15.673
11	8 14 17.89	2.4622	19 56 41.7	11.280	11	10 7 17.95	2.2543	8 52 6.4	15.722
12	8 16 45.49	2.4578	19 45 20.9	11.413	12	10 9 33.11	2.2509	8 36 21.5	15.771
13	8 19 12.82	2.4533	19 33 52.1	11.545	13	10 11 48.06	2.2475	8 20 33.8	15.817
14	8 21 39.88	2.4488	19 22 15.5	11.675	14	10 14 2.81	2.2442	8 4 43.4	15.862
15	8 24 6.67	2.4443	19 10 31.1	11.804	15	10 16 17.36	2.2409	7 48 50.4	15.905
16	8 26 33.19	2.4398	18 58 39.0	11.931	16	10 18 31.72	2.2378	7 32 54.8	15.946
17	8 28 59.44	2.4352	18 46 39.4	12.056	17	10 20 45.89	2.2347	7 16 56.9	15.984
18	8 31 25.41	2.4306	18 34 32.3	12.179	18	10 22 59.88	2.2316	7 0 56.7	16.021
19	8 33 51.10	2.4259	18 22 17.9	12.301	19	10 25 13.69	2.2286	6 44 54.3	16.057
20	8 36 16.52	2.4213	18 9 56.2	12.421	20	10 27 27.31	2.2257	6 28 49.9	16.091
21	8 38 41.66	2.4166	17 57 27.4	12.540	21	10 29 40.76	2.2228	6 12 43.5	16.122
22	8 41 6.51	2.4120	17 44 51.5	12.657	22	10 31 54.04	2.2200	5 56 35.3	16.152
23	8 43 31.09	2.4073	17 32 8.6	12.772	23	10 34 7.15	2.2172	5 40 25.3	16.180
24	8 45 55.39	2.4027	N.17 19 18.9	12.885	24	10 36 20.10	2.2145	N. 5 24 13.7	16.206

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 21.					MONDAY 23.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	10 36 20.10	2.2146	N. 5 24 13.7	16.206	0	12 21 1.19	2.1766	S. 7 31 54.1	15.514
1	10 38 32.89	2.2119	5 8 0.6	16.221	1	12 23 11.82	2.1777	7 47 23.4	15.462
2	10 40 45.53	2.2096	4 51 46.0	16.234	2	12 25 22.51	2.1798	8 2 49.5	15.408
3	10 42 58.03	2.2071	4 35 30.1	16.275	3	12 27 33.27	2.1799	8 18 12.4	15.353
4	10 45 10.38	2.2047	4 19 13.0	16.294	4	12 29 44.10	2.1811	8 33 31.9	15.298
5	10 47 22.59	2.2024	4 2 54.8	16.312	5	12 31 55.01	2.1835	8 48 48.0	15.238
6	10 49 34.67	2.2008	3 46 35.6	16.328	6	12 34 6.00	2.1889	9 4 0.5	15.179
7	10 51 46.62	2.1982	3 30 15.5	16.342	7	12 36 17.08	2.1888	9 19 9.5	15.119
8	10 53 58.45	2.1961	3 13 54.6	16.354	8	12 38 28.24	2.1898	9 34 14.8	15.067
9	10 56 10.15	2.1941	2 57 33.0	16.368	9	12 40 39.50	2.1894	9 49 16.3	14.993
10	10 58 21.74	2.1923	2 41 10.8	16.374	10	12 42 50.85	2.1901	10 4 14.0	14.928
11	11 0 33.92	2.1904	2 24 48.1	16.381	11	12 45 2.31	2.1918	10 19 7.8	14.862
12	11 2 44.59	2.1886	2 8 25.1	16.386	12	12 47 13.87	2.1926	10 33 57.5	14.794
13	11 4 55.85	2.1869	1 52 1.8	16.390	13	12 49 25.54	2.1954	10 48 43.1	14.726
14	11 7 7.02	2.1853	1 35 38.3	16.392	14	12 51 37.32	2.1973	11 3 24.6	14.655
15	11 9 18.10	2.1838	1 19 14.7	16.398	15	12 53 49.21	2.1992	11 18 1.8	14.583
16	11 11 29.08	2.1824	1 2 51.1	16.399	16	12 56 1.22	2.2012	11 32 34.6	14.510
17	11 13 39.98	2.1810	0 46 27.6	16.399	17	12 58 13.35	2.2033	11 47 3.0	14.436
18	11 15 50.80	2.1797	0 30 4.4	16.384	18	13 0 25.61	2.2054	12 1 26.9	14.360
19	11 18 1.54	2.1784	N. 0 13 41.5	16.378	19	13 2 38.00	2.2076	12 15 46.1	14.282
20	11 20 12.21	2.1772	S. 0 2 41.0	16.370	20	13 4 50.52	2.2098	12 30 0.7	14.208
21	11 22 22.81	2.1762	0 19 3.0	16.361	21	13 7 3.17	2.2121	12 44 10.5	14.128
22	11 24 33.36	2.1753	0 35 24.4	16.349	22	13 9 15.97	2.2144	12 58 15.5	14.041
23	11 26 43.85	2.1744	S. 0 51 45.0	16.336	23	13 11 28.91	2.2168	S.13 12 15.5	13.959
SUNDAY 22.					TUESDAY 24.				
0	11 28 54.29	2.1736	S. 1 8 4.8	16.323	0	13 13 41.99	2.2192	S.13 26 10.6	13.876
1	11 31 4.66	2.1728	1 24 23.7	16.307	1	13 15 55.92	2.2217	13 40 0.6	13.791
2	11 33 15.03	2.1721	1 40 41.6	16.290	2	13 18 8.60	2.2242	13 53 45.5	13.705
3	11 35 25.34	2.1715	1 56 58.4	16.271	3	13 20 22.13	2.2268	14 7 25.2	13.616
4	11 37 35.61	2.1710	2 13 14.0	16.250	4	13 22 35.82	2.2294	14 20 59.6	13.530
5	11 39 45.86	2.1706	2 29 28.4	16.228	5	13 24 49.66	2.2320	14 34 28.7	13.440
6	11 41 56.08	2.1703	2 45 41.4	16.204	6	13 27 3.66	2.2347	14 47 52.3	13.349
7	11 44 6.28	2.1699	3 1 52.9	16.179	7	13 29 17.83	2.2374	15 1 10.5	13.257
8	11 46 16.47	2.1697	3 18 2.9	16.152	8	13 31 32.16	2.2403	15 14 23.1	13.163
9	11 48 26.65	2.1696	3 34 11.2	16.124	9	13 33 46.66	2.2430	15 27 30.1	13.068
10	11 50 36.82	2.1696	3 50 17.8	16.094	10	13 36 1.32	2.2458	15 40 31.3	12.972
11	11 52 46.99	2.1696	4 6 22.5	16.062	11	13 38 16.16	2.2487	15 53 26.7	12.874
12	11 54 57.17	2.1697	4 22 25.3	16.029	12	13 40 31.17	2.2516	16 6 16.2	12.775
13	11 57 7.35	2.1698	4 38 26.1	15.995	13	13 42 46.36	2.2546	16 18 59.8	12.676
14	11 59 17.55	2.1700	4 54 24.7	15.969	14	13 45 1.72	2.2576	16 31 37.3	12.575
15	12 1 27.76	2.1704	5 10 21.1	15.921	15	13 47 17.96	2.2606	16 44 8.7	12.473
16	12 3 38.00	2.1708	5 26 15.2	15.882	16	13 49 32.99	2.2636	16 56 34.0	12.369
17	12 5 48.27	2.1713	5 42 6.9	15.841	17	13 51 48.90	2.2667	17 8 53.0	12.264
18	12 7 58.56	2.1718	5 57 56.1	15.799	18	13 54 5.00	2.2698	17 21 5.7	12.158
19	12 10 8.89	2.1724	6 13 42.7	15.755	19	13 56 21.28	2.2729	17 33 12.0	12.051
20	12 12 19.25	2.1731	6 29 26.7	15.710	20	13 58 37.75	2.2760	17 45 11.8	11.943
21	12 14 29.66	2.1739	6 45 7.9	15.663	21	14 0 54.41	2.2792	17 57 5.1	11.833
22	12 16 40.12	2.1747	7 0 46.3	15.616	22	14 3 11.26	2.2823	18 8 51.8	11.722
23	12 18 50.63	2.1756	7 16 21.7	15.569	23	14 5 28.30	2.2855	18 20 31.8	11.611
24	12 21 1.10	2.1766	S. 7 31 54.1	15.514	24	14 7 45.52	2.2887	S.18 32 5.1	11.499

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	14 7 45.59	2.2987	S.18 32 5.1	11.489	0	16 1 3.55	2.4180	S.25 15 50.0	4.009
1	14 10 2.94	2.2919	18 43 31.6	11.385	1	16 3 28.68	2.4194	25 20 46.0	4.957
2	14 12 20.55	2.2851	18 54 51.3	11.370	2	16 5 53.88	2.4207	25 25 32.9	4.705
3	14 14 38.35	2.2783	19 6 4.0	11.154	3	16 8 19.16	2.4219	25 30 10.7	4.553
4	14 16 56.35	2.2715	19 17 9.8	11.087	4	16 10 44.51	2.4230	25 34 39.3	4.401
5	14 19 14.54	2.2647	19 28 8.5	10.920	5	16 13 9.92	2.4241	25 38 58.8	4.248
6	14 21 32.02	2.2579	19 39 0.2	10.802	6	16 15 35.40	2.4251	25 43 9.1	4.095
7	14 23 51.49	2.2512	19 49 44.7	10.692	7	16 18 0.93	2.4259	25 47 10.2	3.941
8	14 26 10.26	2.2444	20 0 22.0	10.561	8	16 20 26.51	2.4267	25 51 2.1	3.788
9	14 28 29.22	2.2376	20 10 52.0	10.439	9	16 22 52.13	2.4274	25 54 44.8	3.634
10	14 30 48.37	2.2308	20 21 14.7	10.316	10	16 25 17.80	2.4280	25 58 18.2	3.480
11	14 33 7.71	2.2240	20 31 30.0	10.192	11	16 27 43.50	2.4285	26 1 42.4	3.326
12	14 35 27.25	2.2172	20 41 37.8	10.067	12	16 30 9.21	2.4289	26 4 57.3	3.171
13	14 37 46.98	2.2104	20 51 38.0	9.941	13	16 32 34.95	2.4292	26 8 2.9	3.016
14	14 40 6.90	2.2036	21 1 30.7	9.814	14	16 35 0.71	2.4294	26 10 59.2	2.861
15	14 42 27.01	2.2067	21 11 15.7	9.686	15	16 37 26.48	2.4295	26 13 46.2	2.706
16	14 44 47.31	2.2098	21 20 53.0	9.557	16	16 39 52.25	2.4295	26 16 23.9	2.550
17	14 47 7.79	2.2029	21 30 22.5	9.426	17	16 42 18.02	2.4294	26 18 52.2	2.394
18	14 49 28.46	2.1960	21 39 44.1	9.294	18	16 44 43.78	2.4292	26 21 11.2	2.238
19	14 51 49.31	2.1891	21 48 57.8	9.162	19	16 47 9.52	2.4289	26 23 20.8	2.082
20	14 54 10.35	2.1822	21 58 3.5	9.029	20	16 49 35.25	2.4285	26 25 21.1	1.926
21	14 56 31.57	2.1752	22 7 1.2	8.894	21	16 52 0.95	2.4281	26 27 12.1	1.771
22	14 58 52.97	2.1682	22 15 50.8	8.759	22	16 54 26.62	2.4275	26 28 53.7	1.616
23	15 1 14.55	2.1611	S.22 24 32.3	8.624	23	16 56 52.25	2.4268	S.26 30 26.0	1.461
THURSDAY 26.					SATURDAY 28.				
0	15 3 36.30	2.2640	S.22 33 5.7	8.488	0	16 59 17.93	2.4260	S.26 31 49.0	1.306
1	15 5 58.22	2.2608	22 41 30.9	8.351	1	17 1 43.36	2.4251	26 33 2.7	1.152
2	15 8 20.32	2.2577	22 49 47.8	8.213	2	17 4 8.84	2.4241	26 34 7.2	0.997
3	15 10 42.59	2.2545	22 57 56.5	8.075	3	17 6 34.25	2.4229	26 35 2.4	0.843
4	15 13 5.02	2.2513	23 5 56.8	7.936	4	17 8 59.59	2.4217	26 35 48.3	0.689
5	15 15 27.61	2.2480	23 13 48.8	7.797	5	17 11 24.86	2.4204	26 36 25.0	0.535
6	15 17 50.37	2.2448	23 21 32.4	7.657	6	17 13 50.04	2.4190	26 36 52.5	0.382
7	15 20 13.28	2.2415	23 29 7.5	7.515	7	17 16 15.13	2.4174	26 37 10.8	0.229
8	15 22 36.35	2.2382	23 36 34.2	7.373	8	17 18 40.13	2.4156	26 37 20.0	0.076
9	15 24 59.57	2.2349	23 43 52.3	7.231	9	17 21 5.03	2.4141	26 37 20.0	0.077
10	15 27 22.94	2.2317	23 51 1.9	7.089	10	17 23 29.82	2.4123	26 37 10.8	0.230
11	15 29 46.45	2.2284	23 58 2.8	6.943	11	17 25 54.50	2.4104	26 36 52.5	0.282
12	15 32 10.10	2.2251	24 4 55.0	6.796	12	17 28 19.07	2.4084	26 36 25.0	0.334
13	15 34 33.89	2.2217	24 11 38.5	6.652	13	17 30 43.51	2.4063	26 35 48.4	0.385
14	15 36 57.81	2.2183	24 18 13.2	6.505	14	17 33 7.82	2.4041	26 35 2.8	0.436
15	15 39 21.88	2.4090	24 24 39.1	6.358	15	17 35 31.99	2.4017	26 34 8.1	0.487
16	15 41 46.05	2.4041	24 30 56.2	6.210	16	17 37 56.02	2.3992	26 33 4.4	1.137
17	15 44 10.36	2.4011	24 37 4.4	6.062	17	17 40 19.90	2.3967	26 31 51.7	1.287
18	15 46 34.78	2.4000	24 43 3.6	5.913	18	17 42 43.62	2.3941	26 30 30.0	1.436
19	15 48 59.32	2.4008	24 48 53.9	5.763	19	17 45 7.19	2.3914	26 28 59.4	1.585
20	15 51 23.96	2.4116	24 54 35.2	5.613	20	17 47 30.59	2.3886	26 27 19.8	1.733
21	15 53 48.71	2.4183	25 0 7.5	5.462	21	17 49 53.62	2.3857	26 25 31.4	1.881
22	15 56 13.50	2.4149	25 5 30.7	5.311	22	17 52 16.87	2.3827	26 23 34.1	2.029
23	15 58 38.51	2.4165	25 10 44.9	5.160	23	17 54 39.74	2.3796	26 21 28.0	2.174
24	16 1 3.55	2.4180	S.25 15 50.0	5.009	24	17 57 2.43	2.3764	S.26 19 13.2	2.320

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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SUNDAY 29.

	h.	m.	s.	s.	°	'	"	"
0	17	57	2.43	2.3764	S. 26	19	13.2	2.320
1	17	59	24.92	2.3782	26	16	49.6	2.466
2	18	1	47.22	2.3809	26	14	17.4	2.609
3	18	4	9.31	2.3866	26	11	36.6	2.762
4	18	6	31.20	2.3930	26	8	47.2	2.896
5	18	8	52.87	2.3994	26	5	49.2	3.087
6	18	11	14.33	2.4057	26	2	42.8	3.178
7	18	13	35.56	2.4090	25	59	27.9	3.318
8	18	15	56.57	2.4082	25	56	4.6	3.466
9	18	18	17.34	2.4042	25	52	33.0	3.607
10	18	20	37.88	2.4008	25	48	53.0	3.735
11	18	22	58.18	2.3963	25	45	4.8	3.873
12	18	25	18.23	2.3922	25	41	8.3	4.010
13	18	27	38.03	2.3879	25	37	3.6	4.146
14	18	29	57.58	2.3826	25	32	50.8	4.281
15	18	32	16.87	2.3193	25	28	29.9	4.415
16	18	34	35.90	2.3149	25	24	1.0	4.548
17	18	36	54.66	2.3105	25	19	24.1	4.681
18	18	39	13.16	2.3060	25	14	39.2	4.813
19	18	41	31.38	2.3014	25	9	46.5	4.943
20	18	43	49.33	2.2968	25	4	46.0	5.073
21	18	46	7.00	2.2921	24	59	37.7	5.202
22	18	48	24.38	2.2874	24	54	21.7	5.330
23	18	50	41.48	2.2826	S. 24	48	58.0	5.458

MONDAY 30.

0	18	52	58.29	2.2777	S. 24	43	26.7	5.584
1	18	55	14.81	2.2728	24	37	47.9	5.709
2	18	57	31.03	2.2679	24	32	1.6	5.833
3	18	59	46.96	2.2629	24	26	8.0	5.955
4	19	2	2.58	2.2579	24	20	7.0	6.076
5	19	4	17.90	2.2528	24	13	58.7	6.197
6	19	6	32.92	2.2477	24	7	43.3	6.317
7	19	8	47.63	2.2426	24	1	20.7	6.435
8	19	11	2.04	2.2375	23	54	51.1	6.552
9	19	13	16.13	2.2323	23	48	14.4	6.669
10	19	15	29.91	2.2271	23	41	30.8	6.785
11	19	17	43.38	2.2218	23	34	40.2	6.900
12	19	19	56.53	2.2166	23	27	42.8	7.014
13	19	22	9.36	2.2112	23	20	38.6	7.126
14	19	24	21.88	2.2059	23	13	27.7	7.237
15	19	26	34.07	2.2006	23	6	10.1	7.348
16	19	28	45.94	2.1951	22	58	46.0	7.458
17	19	30	57.49	2.1897	22	51	15.3	7.566
18	19	33	8.71	2.1843	22	43	38.1	7.673
19	19	35	19.61	2.1789	22	35	54.5	7.779
20	19	37	30.18	2.1736	22	28	4.6	7.884
21	19	39	40.42	2.1680	22	20	8.4	7.988
22	19	41	50.34	2.1626	22	12	6.0	8.091
23	19	43	59.93	2.1571	22	3	57.4	8.193
24	19	46	9.19	2.1517	S. 21	55	42.8	8.293

TUESDAY 31.

	h.	m.	s.	s.	°	'	"	"
0	19	46	9.19	2.1517	S. 21	55	42.8	8.293
1	19	48	18.12	2.1462	21	47	22.2	8.392
2	19	50	26.73	2.1407	21	38	55.7	8.490
3	19	52	35.01	2.1352	21	30	23.3	8.588
4	19	54	43.55	2.1297	21	21	45.1	8.684
5	19	56	50.57	2.1242	21	13	1.2	8.778
6	19	58	57.96	2.1188	21	4	11.7	8.872
7	20	1	4.83	2.1134	20	55	16.6	8.966
8	20	3	11.47	2.1079	20	46	15.9	9.056
9	20	5	17.78	2.1025	20	37	9.8	9.146
10	20	7	23.77	2.0971	20	27	58.4	9.235
11	20	9	29.43	2.0917	20	18	41.0	9.324
12	20	11	34.77	2.0863	20	9	19.5	9.412
13	20	13	39.78	2.0809	19	59	52.2	9.498
14	20	15	44.47	2.0755	19	50	19.8	9.583
15	20	17	48.84	2.0702	19	40	42.3	9.667
16	20	19	52.89	2.0648	19	30	59.8	9.750
17	20	21	56.62	2.0595	19	21	12.3	9.832
18	20	24	0.03	2.0541	19	11	20.0	9.913
19	20	26	3.12	2.0488	19	1	22.8	9.992
20	20	28	5.89	2.0435	18	51	20.9	10.070
21	20	30	8.35	2.0383	18	41	14.3	10.148
22	20	32	10.49	2.0331	18	31	3.1	10.224
23	20	34	12.32	2.0280	S. 18	20	47.4	10.299

WEDNESDAY, AUGUST 1.

0	20	36	13.85	2.0229	S. 18	10	27.2	10.373
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PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon,	2	16	7.0
☾ Last Quarter,	10	17	58.1
● New Moon,	18	2	20.3
☽ First Quarter,	24	18	19.7

	Day.	h.
☾ Apogee,	6	9.5
☾ Perigee,	20	7.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
			°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	
1	Spica	W.	57	45	56	2620	59	24	24	2629	61	2	39	2636	62	40	43	2647
	Antares	W.	11	54	47	2619	13	33	25	2621	15	11	51	2631	16	50	4	2640
	Mars	E.	39	8	47	2606	37	29	45	2607	35	51	0	2620	34	12	32	2633
	α Aquilæ	E.	50	32	2	2763	49	16	21	2631	48	1	51	2605	46	48	36	2636
	α Fomalhaut	E.	72	6	46	2609	70	37	22	2608	69	8	21	2677	67	39	43	2607
α Pegasi	E.	92	53	35	2770	91	18	28	2779	89	43	33	2786	88	8	50	2798	
2	Spica	W.	70	47	53	2684	72	24	41	2704	74	1	16	2713	75	37	38	2723
	Antares	W.	24	58	2	2687	26	34	59	2697	28	11	43	2707	29	48	14	2717
	Mars	E.	26	5	14	2718	24	28	58	2740	22	53	11	2764	21	17	56	2793
	Fomalhaut	E.	60	23	7	2916	58	57	16	2943	57	31	58	3274	56	7	16	3306
	α Pegasi	E.	80	18	33	2851	78	45	11	2868	77	12	5	2876	75	39	14	2887
α Arietis	E.	122	53	4	2707	121	16	34	2716	119	40	16	2726	118	4	11	2735	
3	Spica	W.	83	36	11	2776	85	11	13	2785	86	46	3	2794	88	20	39	2808
	Antares	W.	37	47	30	2767	39	22	41	2777	40	57	39	2787	42	32	24	2797
	Fomalhaut	E.	49	13	45	2800	47	53	21	2848	46	33	50	2869	45	15	15	2885
	α Pegasi	E.	67	59	3	2964	66	27	53	2969	64	57	1	2984	63	26	28	3000
	α Arietis	E.	110	6	52	2784	108	32	3	2793	106	57	26	2803	105	23	2	2813
4	Spica	W.	96	10	27	2823	97	43	46	2864	99	16	51	2873	100	49	44	2883
	Antares	W.	50	22	52	2847	51	56	19	2867	53	29	33	2886	55	2	35	2876
	Fomalhaut	E.	38	58	59	4022	37	47	41	4118	36	37	57	4223	35	29	53	4343
	α Pegasi	E.	55	58	49	2686	54	30	22	3108	53	2	19	3125	51	34	40	3147
	α Arietis	E.	97	34	12	2823	96	1	4	2872	94	28	9	2892	92	55	27	2892
5	Spica	W.	108	31	7	2880	110	2	48	2889	111	34	17	2947	113	5	36	2967
	Antares	W.	62	44	41	2923	64	16	31	2932	65	48	9	2940	67	19	37	2949
	Mars	W.	13	43	26	3189	15	10	47	3092	16	39	6	3080	18	8	5	3037
	α Pegasi	E.	44	23	9	2929	42	58	21	3299	41	34	8	3331	40	10	31	3365
	α Arietis	E.	85	14	54	2926	83	43	23	2947	82	12	3	2956	80	40	55	2965
Aldebaran	E.	117	22	48	3011	115	53	37	3009	114	22	35	3016	112	52	42	3023	
6	Antares	W.	74	54	19	2989	76	24	46	2996	77	55	4	3002	79	25	14	3009
	Mars	W.	25	37	46	2998	27	8	4	2994	28	38	24	2994	30	8	44	2993
	α Arietis	E.	73	7	50	3005	71	37	43	3019	70	7	45	3019	68	37	56	3026
	Aldebaran	E.	105	25	21	3066	103	56	18	3062	102	27	22	3069	100	58	34	3074
7	Antares	W.	86	54	4	3089	88	23	29	3043	89	52	49	3047	91	22	3	3062
	α Aquilæ	W.	42	13	39	4650	43	15	21	4660	44	18	20	4466	45	22	25	4416
	Mars	W.	37	40	25	2997	39	10	41	3000	40	40	54	3001	42	11	6	3003
	α Arietis	E.	61	10	57	3058	59	41	56	3064	58	13	1	3069	56	44	13	3074
	Aldebaran	E.	93	36	19	3101	92	8	11	3106	90	40	9	3111	89	12	13	3116
SUN	E.	130	57	25	3402	129	35	11	3408	128	13	3	3411	126	50	59	3416	
8	Antares	W.	98	47	5	3067	100	15	55	3069	101	44	43	3069	103	13	30	3070
	α Aquilæ	W.	50	56	49	4149	52	6	4	4108	53	15	58	4070	54	26	29	4086
	Mars	W.	49	41	40	3008	51	11	43	3008	52	41	46	3008	54	11	49	3007
	α Arietis	E.	49	21	31	3092	47	53	12	3096	46	24	57	3099	44	56	45	3101
	Aldebaran	E.	81	53	39	3131	80	26	7	3133	78	58	38	3135	77	31	11	3136
SUN	E.	120	1	48	3431	118	40	7	3434	117	18	29	3436	115	56	52	3436	
9	Antares	W.	110	37	17	3069	112	6	4	3067	113	34	54	3065	115	3	46	3063
	Mars	W.	61	42	21	3001	63	12	33	2997	64	42	49	2996	66	13	8	2992
	α Aquilæ	W.	60	27	3	2999	61	40	34	2984	62	54	30	2981	64	8	50	2919

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.	
			° ' "		° ' "		° ' "		° ' "		
1	Spica	W.	64 18 34	2666	65 56 13	2666	67 33 39	2678	69 10 52	2684	
	Antares	W.	18 28 5	2649	20 5 53	2638	21 43 29	2668	23 20 52	2678	
	Mars	E.	32 34 22	2649	30 56 33	2663	29 19 4	2679	27 41 56	2686	
	α Aquilæ	E.	45 36 41	4073	44 26 13	4169	43 17 18	4276	42 10 2	4390	
	Fomalhaut	E.	66 11 30	3118	64 43 42	3140	63 16 21	3164	61 49 29	3189	
	α Pegasi	E.	86 34 20	2808	85 0 3	2818	83 25 59	2829	81 52 9	2840	
2	Spica	W.	77 13 47	2788	78 49 43	2744	80 25 25	2768	82 0 55	2783	
	Antares	W.	31 24 32	2797	33 0 36	2737	34 36 27	2747	36 12 5	2756	
	Mars	E.	19 43 19	2828	18 9 27	2808	16 36 27	2919	15 4 32	2985	
	Fomalhaut	E.	54 43 11	3289	53 19 44	3276	51 56 59	3414	50 34 59	3455	
	α Pegasi	E.	74 6 38	2900	72 34 19	2913	71 2 17	2926	69 30 31	2940	
	α Arietis	E.	116 28 18	2745	114 52 38	2764	113 17 10	2784	111 41 55	2773	
3	Spica	W.	89 55 3	2814	91 29 13	2824	93 3 11	2834	94 36 55	2844	
	Antares	W.	44 6 56	2808	45 41 14	2818	47 15 20	2828	48 49 12	2837	
	Fomalhaut	E.	43 57 40	3716	42 41 10	3788	41 25 50	3855	40 11 44	3934	
	α Pegasi	E.	61 56 15	3016	60 26 22	3082	58 56 49	3050	57 27 38	3068	
	α Arietis	E.	103 48 50	2823	102 14 52	2832	100 41 6	2842	99 7 33	2852	
	4	Spica	W.	102 22 25	2892	103 54 54	2902	105 27 10	2912	106 59 14	2920
Antares		W.	56 35 25	2886	58 8 2	2896	59 40 27	2906	61 12 40	2914	
Fomalhaut		E.	34 23 40	4476	33 19 26	4434	32 17 21	4723	31 17 39	4998	
α Pegasi		E.	50 7 27	3168	48 40 39	3191	47 14 19	3216	45 48 29	3242	
α Arietis		E.	91 22 56	2801	89 50 38	2910	88 18 31	2920	86 46 37	2928	
5		Spica	W.	114 36 43	2965	116 7 39	2973	117 38 25	2981	119 9 1	2990
	Antares	W.	68 50 54	2968	70 22 0	2966	71 52 56	2973	73 23 43	2981	
	Mars	W.	19 37 32	3020	21 7 20	3009	22 37 21	3002	24 7 31	2998	
	α Pegasi	E.	38 47 32	3400	37 25 16	3440	36 3 45	3486	34 43 4	3523	
	α Arietis	E.	79 9 57	2973	77 39 10	2981	76 8 33	2989	74 38 7	2997	
	Aldebaran	E.	111 22 57	3030	109 53 21	3086	108 23 53	3043	106 54 33	3049	
6	Antares	W.	80 55 15	3016	82 25 8	3022	83 54 54	3028	85 24 32	3033	
	Mars	W.	31 39 5	2998	33 9 26	2993	34 39 47	2994	36 10 7	2996	
	α Arietis	E.	67 8 16	3083	65 38 44	3040	64 9 21	3046	62 40 5	3052	
	Aldebaran	E.	99 29 53	3081	98 1 20	3086	96 32 53	3091	95 4 33	3096	
	7	Antares	W.	92 51 12	3086	94 20 16	3089	95 49 16	3092	97 18 12	3095
		α Aquilæ	W.	46 27 32	4263	47 33 36	4296	48 40 32	4244	49 48 17	4194
Mars		W.	43 41 16	3004	45 11 24	3005	46 41 31	3006	48 11 36	3007	
α Arietis		E.	55 15 30	3078	53 46 53	3082	52 18 21	3086	50 49 54	3089	
Aldebaran		E.	87 44 21	3119	86 16 34	3123	84 48 52	3126	83 21 14	3129	
SUN		E.	125 29 1	3420	124 7 7	3423	122 45 17	3427	121 23 31	3430	
8	Antares	W.	104 42 16	3071	106 11 1	3071	107 39 46	3071	109 8 31	3070	
	α Aquilæ	W.	55 37 33	4003	56 49 10	3970	58 1 19	3941	59 13 57	3914	
	Mars	W.	55 41 53	3006	57 11 58	3005	58 42 4	3006	60 12 11	3002	
	α Arietis	E.	43 28 37	3108	42 0 31	3108	40 32 28	3106	39 4 26	3109	
	Aldebaran	E.	76 3 47	3139	74 36 24	3140	73 9 3	3141	71 41 43	3141	
	SUN	E.	114 35 16	3436	113 13 40	3436	111 52 5	3436	110 30 29	3435	
9	Antares	W.	116 32 42	3060	118 1 41	3066	119 30 45	3062	120 59 54	3047	
	Mars	W.	67 42 31	2998	69 13 59	2984	70 44 32	2980	72 15 10	2974	
	α Aquilæ	W.	65 23 33	3798	66 38 37	3778	67 54 2	3759	69 9 47	3740	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
		°	'	"		°	'	"		°	'	"		°	'	"	
9	Fomalhaut W.	36	15	41	4368	37	21	36	4276	38	28	52	4197	39	37	23	4126
	α Arietis E.	37	36	27	3110	36	8	20	3111	34	40	33	3112	33	19	38	3114
	Aldebaran E.	70	14	23	3141	68	47	3	3141	67	19	43	3140	65	52	22	3129
	SUN E.	109	8	52	3434	107	47	14	3431	106	25	33	3430	105	3	50	3426
10	Mars W.	73	45	55	2969	75	16	47	2968	76	47	46	2969	78	18	53	2959
	α Aquilæ W.	70	25	52	3723	71	42	15	3706	72	58	66	3690	74	15	54	3673
	Fomalhaut W.	45	35	27	3845	46	49	43	3802	48	4	43	3761	49	20	27	3723
	α Arietis E.	25	53	32	3124	24	25	51	3129	22	58	16	3135	21	30	49	3143
	Aldebaran E.	58	35	15	3131	57	7	43	3129	55	40	8	3126	54	12	30	3123
	SUN E.	98	14	12	3404	96	52	0	3399	95	29	42	3393	94	7	17	3385
11	Mars W.	85	56	45	2911	87	28	50	2901	89	1	7	2991	90	33	37	2983
	α Aquilæ W.	80	44	55	3569	82	3	30	3566	83	22	20	3573	84	41	24	3569
	Fomalhaut W.	55	48	35	3568	57	7	55	3529	58	27	46	3509	59	48	7	3476
	α Pegasi W.	32	58	35	3550	34	48	4	3499	35	38	29	3452	36	59	47	3409
	Aldebaran E.	46	53	26	3110	45	25	29	3106	43	57	27	3104	42	29	21	3101
	SUN E.	87	12	55	3342	85	49	32	3323	84	25	58	3323	83	2	12	3311
12	Mars W.	98	19	27	2926	99	53	21	2914	101	27	31	2901	103	1	57	2799
	α Aquilæ W.	91	20	15	3499	92	40	40	3488	94	1	18	3473	95	22	7	3468
	Fomalhaut W.	66	36	59	3356	68	0	6	3334	69	23	38	3312	70	47	36	3290
	α Pegasi W.	43	57	27	3233	45	22	57	3204	46	49	2	3175	48	15	41	3148
	Aldebaran E.	35	8	38	3105	33	40	34	3110	32	12	36	3116	30	44	46	3126
	SUN E.	76	0	2	3260	74	34	52	3226	73	9	26	3223	71	43	43	3208
13	Mars W.	110	58	26	2930	112	34	39	2706	114	11	11	2693	115	48	2	2677
	α Aquilæ W.	102	8	51	3425	103	30	40	3418	104	52	36	3413	106	14	38	3408
	Fomalhaut W.	77	53	32	3189	79	19	54	3170	80	46	39	3151	82	13	47	3133
	α Pegasi W.	55	36	53	3023	57	6	37	3000	58	36	50	2977	60	7	32	2964
	SUN E.	64	30	45	3181	63	3	13	3114	61	35	21	3093	60	7	9	3082
	α Aquilæ W.	113	5	51	3400	114	26	8	3402	115	50	22	3407	117	12	31	3413
14	Fomalhaut W.	89	34	53	3045	91	4	10	3029	92	33	47	3013	94	3	44	2998
	α Pegasi W.	67	47	59	2847	69	21	26	2827	70	55	19	2806	72	29	39	2786
	α Arietis W.	24	18	5	2746	25	53	44	2720	27	29	57	2693	29	6	42	2672
	SUN E.	52	40	55	2994	51	10	35	2976	49	39	52	2956	48	8	46	2934
	Fomalhaut W.	101	38	0	2990	103	9	41	2919	104	41	38	2906	106	13	45	2899
	α Pegasi W.	80	27	48	2690	82	4	41	2672	83	41	59	2655	85	19	41	2637
15	α Arietis W.	37	18	1	2567	38	57	41	2547	40	37	49	2523	42	18	23	2509
	SUN E.	40	27	30	2848	38	54	4	2830	37	20	15	2811	35	46	2	2794
	SUN W.	26	4	51	2396	27	48	31	2396	29	32	11	2396	31	15	51	2396
	Spica E.	57	56	34	2116	56	5	59	2116	54	15	24	2117	52	24	51	2119
	Antares E.	103	41	28	2107	101	50	39	2107	99	59	49	2107	98	9	1	2108
	SUN W.	39	53	30	2412	41	36	48	2417	43	19	59	2422	45	3	3	2426
20	Spica E.	43	13	3	2186	41	22	59	2141	39	33	3	2147	37	43	15	2156
	Antares E.	88	55	40	2122	87	5	14	2126	85	14	54	2181	83	24	42	2136
	Mars E.	134	25	44	2072	132	34	1	2076	130	42	25	2081	128	50	56	2085
	SUN W.	53	36	15	2461	55	18	23	2469	57	0	20	2477	58	42	6	2486
	Spica E.	28	37	13	2198	26	48	42	2210	25	0	29	2224	23	12	37	2227
	Antares E.	74	15	49	2108	72	26	33	2175	70	37	28	2162	68	48	34	2191

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			P. L. of Dif.	XVh.			P. L. of Dif.	XVIIIh.			P. L. of Dif.	XXIh.			P. L. of Dif.
		O	I	II		O	I	II		O	I	II		O	I	II	
9	Fomalhaut W.	40	47	1	3059	41	57	43	3099	43	9	24	3944	44	22	0	3393
	α Arietis E.	31	44	45	3114	30	16	53	3116	28	49	3	3119	27	21	16	3121
	Aldebaran E.	64	25	0	3138	62	57	37	3137	61	30	12	3134	60	2	45	3133
	SUN E.	103	42	3	3438	102	20	12	3419	100	58	17	3416	99	36	17	3410
10	Mars W.	79	50	8	3248	81	21	32	3238	82	53	6	3227	84	24	50	3219
	α Aquilæ W.	75	33	10	3266	76	50	42	3248	78	8	31	3228	79	26	35	3213
	Fomalhaut W.	50	36	51	3266	51	53	54	3261	53	11	33	3219	54	29	47	3257
	α Arietis E.	20	3	31	3184	18	36	27	3171	17	9	43	3192	15	43	24	3227
	Aldebaran E.	52	44	48	3120	51	17	3	3117	49	49	14	3114	48	21	22	3111
	SUN E.	92	44	43	3278	91	22	1	3300	89	59	9	3300	88	36	7	3351
11	Mars W.	92	6	19	3273	93	39	15	3261	95	12	24	3249	96	45	48	3288
	α Aquilæ W.	86	0	43	3244	87	20	16	3234	88	40	3	3223	90	0	2	3210
	Fomalhaut W.	61	8	58	3451	62	30	17	3436	63	52	4	3404	65	14	18	3379
	α Pegasi W.	38	21	53	3260	39	44	45	3232	41	8	20	3297	42	32	35	3265
	Aldebaran E.	41	1	13	3100	39	33	3	3101	38	4	53	3101	36	36	45	3102
	SUN E.	81	38	13	3300	80	14	1	3328	78	49	36	3276	77	24	56	3264
12	Mars W.	104	36	39	3275	106	11	39	2702	107	46	57	2749	109	22	32	2735
	α Aquilæ W.	96	43	7	3456	98	4	18	3448	99	25	40	3439	100	47	11	3432
	Fomalhaut W.	72	11	59	3270	73	36	46	3248	75	1	58	3229	76	27	33	3209
	α Pegasi W.	49	41	53	3131	51	10	37	3096	52	38	52	3071	54	7	37	3046
	Aldebaran E.	29	17	8	3129	27	49	46	3167	26	22	45	3179	24	56	11	3206
	SUN E.	70	17	43	3198	68	51	26	3178	67	24	51	3163	65	57	57	3148
13	Mars W.	117	25	13	3262	119	2	44	2646	120	40	36	2632	122	18	48	2617
	α Aquilæ W.	107	36	46	3403	108	58	59	3400	110	21	15	3399	111	43	33	3399
	Fomalhaut W.	83	41	17	3114	85	9	9	3097	86	37	22	3079	88	5	57	3062
	α Pegasi W.	61	38	42	2982	63	10	20	2910	64	42	26	2889	66	14	59	2968
	SUN E.	58	38	37	3065	57	9	44	3047	55	40	29	3030	54	19	53	3012
14	α Aquilæ W.	118	34	33	3421	119	56	26	3422	121	18	6	3446	122	39	30	3463
	Fomalhaut W.	95	33	59	2968	97	4	33	2908	98	35	26	2955	100	6	35	2942
	α Pegasi W.	74	4	25	2766	75	39	37	2747	77	15	15	2727	78	51	19	2708
	α Arietis W.	30	43	59	2660	32	21	46	2629	34	0	2	2607	35	38	47	2586
	SUN E.	46	37	17	2929	45	5	25	2903	43	33	10	2885	42	0	32	2866
15	Fomalhaut W.	107	46	5	2891	109	18	38	2883	110	51	18	2879	112	24	2	2874
	α Pegasi W.	86	57	46	2620	88	36	14	2602	90	15	6	2585	91	54	21	2570
	α Arietis W.	43	59	24	2490	45	40	51	2472	47	22	43	2454	49	5	1	2443
	SUN E.	34	11	26	2775	32	36	26	2756	31	1	3	2740	29	25	16	2723
20	SUN W.	32	59	29	2390	34	43	5	2401	36	26	38	2405	38	10	6	2408
	Spica E.	50	34	21	2191	48	43	54	2134	46	53	31	2128	45	3	14	2132
	Antares E.	96	18	14	2100	94	27	30	2112	92	36	49	2115	90	46	12	2118
21	SUN W.	46	46	0	2433	48	28	48	2429	50	11	27	2446	51	53	56	2453
	Spica E.	35	53	39	2162	34	4	14	2160	32	15	0	2178	30	26	0	2187
	Antares E.	81	34	37	2141	79	44	41	2147	77	54	54	2153	76	5	16	2161
	Mars E.	126	59	34	2090	125	8	20	2086	123	17	14	2109	121	26	17	2107
22	SUN W.	60	23	39	2495	62	4	59	2504	63	46	6	2515	65	26	59	2524
	Spica E.	21	25	5	2363	19	37	57	2373	17	51	18	2393	16	5	13	2395
	Antares E.	66	59	53	2300	65	11	25	2308	63	23	10	2317	61	35	8	2327

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
					°	'	"		°	'	"		°	'	"	
23	Mars	E.	119 35 29	2113	117 44 50	2130	115 54 21	2137	114 4 3	2134						
23	SUN	W.	67 7 39	2626	68 48 4	2645	70 28 15	2656	72 8 11	2666						
	Antares	E.	59 47 20	2626	57 59 46	2646	56 12 27	2656	54 25 23	2666						
	Mars	E.	104 55 25	2176	103 6 22	2184	101 17 31	2194	99 26 54	2204						
	α Aquilæ	E.	111 30 52	2626	109 59 17	2629	108 27 35	2625	106 55 48	2623						
24	SUN	W.	80 24 7	2622	82 2 32	2634	83 40 41	2646	85 18 34	2657						
	Antares	E.	45 33 46	2619	43 48 14	2629	42 2 57	2640	40 17 56	2651						
	Mars	E.	90 29 39	2356	88 42 35	2366	86 55 46	2379	85 9 15	2390						
	α Aquilæ	E.	99 16 42	2621	97 45 3	2633	96 13 32	2644	94 42 9	2652						
25	SUN	W.	93 24 0	2717	95 0 17	2729	96 36 19	2741	98 12 5	2752						
	Spica	W.	14 31 54	2408	16 13 3	2497	17 54 21	2492	19 35 45	2494						
	Antares	E.	31 36 50	2406	29 53 24	2417	28 10 14	2429	26 27 20	2439						
	Mars	E.	76 20 38	2346	74 35 45	2356	72 51 7	2368	71 6 46	2379						
	α Aquilæ	E.	87 8 10	3006	85 38 5	3021	84 8 18	3035	82 38 49	3051						
	Fomalhaut	E.	111 47 41	2621	110 14 19	2632	108 40 59	2654	107 7 41	2667						
26	SUN	W.	106 7 3	2811	107 41 17	2823	109 15 15	2834	110 48 59	2845						
	Spica	W.	28 1 29	2422	29 42 11	2430	31 22 42	2438	33 3 2	2547						
	Mars	E.	62 29 8	2437	60 46 26	2448	59 4 0	2460	57 21 51	2473						
	α Aquilæ	E.	75 16 38	3146	73 49 23	3167	72 22 34	3189	70 56 13	3214						
	Fomalhaut	E.	99 22 35	2625	97 49 57	2633	96 17 29	2651	94 45 11	2610						
	α Pegasi	E.	121 33 14	2710	119 56 48	2714	118 20 27	2718	116 44 11	2722						
27	SUN	W.	118 33 59	2901	120 6 16	2912	121 38 19	2924	123 10 8	2934						
	Spica	W.	41 21 38	2503	43 0 43	2501	44 39 36	2511	46 18 16	2520						
	Mars	E.	48 55 11	2621	47 14 41	2543	45 34 28	2556	43 54 32	2567						
	α Aquilæ	E.	63 52 13	3366	62 29 9	3392	61 6 45	3429	59 45 1	3468						
	Fomalhaut	E.	87 6 43	2923	85 35 42	2973	84 4 55	2995	82 34 24	2996						
	α Pegasi	E.	108 44 36	2763	107 9 6	2760	105 33 46	2767	103 58 35	2775						
28	Spica	W.	24 28 30	2606	26 5 55	2675	27 43 9	2654	29 20 10	2688						
	Mars	E.	35 39 12	2625	34 1 4	2649	32 23 16	2654	30 45 49	2681						
	α Aquilæ	E.	53 8 3	3708	51 51 19	3762	50 35 37	3824	49 20 58	3890						
	Fomalhaut	E.	75 6 2	3071	73 37 17	3087	72 8 52	3106	70 40 48	3123						
	α Pegasi	E.	96 5 13	2816	94 31 6	2825	92 57 10	2833	91 23 25	2843						
29	Spica	W.	67 22 17	2783	68 58 7	2746	70 33 46	2764	72 9 14	2783						
	Antares	W.	21 31 58	2780	23 7 58	2788	24 43 47	2747	26 19 24	2756						
	Fomalhaut	E.	63 26 13	3225	62 0 34	3248	60 35 22	3275	59 10 41	3300						
	α Pegasi	E.	83 37 41	2890	82 5 9	2900	80 32 50	2910	79 0 44	2921						
30	Spica	W.	80 3 46	2805	81 38 7	2813	83 12 18	2821	84 46 18	2829						
	Antares	W.	34 14 41	2796	35 49 11	2807	37 23 30	2815	38 57 39	2823						
	Fomalhaut	E.	52 15 30	3480	50 54 21	3499	49 33 54	3540	48 14 14	3585						
	α Pegasi	E.	71 23 39	2977	69 52 57	2988	68 22 29	3002	66 52 17	3014						
	α Arietis	E.	113 39 11	2815	112 5 3	2822	110 31 5	2831	108 57 17	2839						
31	Spica	W.	92 33 44	2869	94 6 43	2877	95 39 31	2884	97 12 10	2892						
	Antares	W.	46 45 47	2862	48 18 54	2870	49 51 51	2878	51 24 38	2886						
	α Pegasi	E.	59 25 19	3022	57 56 47	3037	56 28 34	3113	55 0 40	3136						
	α Arietis	E.	101 10 51	2877	99 38 3	2886	98 5 25	2893	96 32 57	2900						

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.			P. L. of Dist.	XVIIIh.			P. L. of Dist.	XXIh.			P. L. of Dist.
					°	'	"		°	'	"		°	'	"	
23	Mars	E.	112 13 56	2141	110 24 0	2140	108 34 16	2157	106 44 44	2166						
23	SUN	W.	73 47 53	2277	75 27 19	2285	77 6 31	2290	78 45 27	2211						
	Antares	E.	52 38 33	2276	50 51 58	2287	49 5 39	2297	47 19 35	2207						
	Mars	E.	97 40 32	2214	95 52 26	2224	94 4 34	2235	92 16 59	2245						
	α Aquilæ	E.	105 23 58	2223	103 52 7	2223	102 20 16	2234	100 48 27	2227						
24	SUN	W.	86 56 11	2282	88 33 32	2281	90 10 37	2283	91 47 26	2704						
	Antares	E.	38 33 11	2282	36 48 42	2278	35 4 29	2284	33 20 32	2295						
	Mars	E.	83 22 59	2200	81 37 0	2211	79 51 17	2222	78 5 49	2233						
	α Aquilæ	E.	93 10 56	2262	91 39 55	2272	90 9 6	2282	88 38 31	2293						
25	SUN	W.	99 47 36	2764	101 22 51	2776	102 57 50	2788	104 32 34	2799						
	Spica	W.	21 17 6	2427	22 58 24	2422	24 39 34	2426	26 20 36	2518						
	Antares	E.	24 44 41	2420	23 2 18	2422	21 20 11	2473	19 38 19	2484						
	Mars	E.	69 22 41	2291	67 38 54	2402	65 55 22	2414	64 12 7	2425						
	α Aquilæ	E.	81 9 39	2063	79 40 50	2066	78 12 23	2104	76 44 18	2124						
	Fomalhaut	E.	105 34 27	2262	104 1 19	2265	102 28 17	2272	100 55 22	2278						
26	SUN	W.	112 22 28	2287	113 55 42	2288	115 28 42	2279	117 1 28	2291						
	Spica	W.	34 43 10	2266	36 23 6	2265	38 2 49	2274	39 42 20	2283						
	Mars	E.	55 39 58	2484	53 58 22	2496	52 17 2	2508	50 35 59	2519						
	α Aquilæ	E.	69 30 20	2140	68 4 58	2205	66 40 9	2236	65 15 53	2227						
	Fomalhaut	E.	93 13 5	2219	91 41 10	2229	90 9 28	2239	88 37 59	2250						
	α Pegasi	E.	115 8 1	2722	113 31 58	2734	111 56 3	2729	110 20 15	2746						
27	SUN	W.	124 41 44	2245	126 13 6	2265	127 44 15	2285	129 15 11	2276						
	Spica	W.	47 56 44	2229	49 34 59	2238	51 13 2	2248	52 50 52	2257						
	Mars	E.	42 14 52	2260	40 35 30	2268	38 56 25	2297	37 17 40	2291						
	α Aquilæ	E.	58 24 1	2208	57 3 46	2262	55 44 19	2269	54 25 44	2249						
	Fomalhaut	E.	81 4 9	2012	79 34 11	2026	78 4 30	2040	76 35 7	2055						
	α Pegasi	E.	102 23 34	2722	100 48 43	2720	99 14 2	2729	97 39 32	2297						
28	Spica	W.	60 56 59	2702	62 33 36	2711	64 10 1	2719	65 46 15	2729						
	Mars	E.	29 8 43	2299	27 32 2	2719	25 55 47	2729	24 19 59	2730						
	α Aquilæ	E.	48 7 28	2263	46 55 12	2401	45 44 13	4127	44 34 37	4219						
	Fomalhaut	E.	69 13 6	2141	67 45 46	2161	66 18 50	2182	64 52 19	2203						
	α Pegasi	E.	89 49 52	2262	88 16 31	2261	86 43 22	2270	85 10 25	2280						
29	Spica	W.	73 44 31	2772	75 19 36	2780	76 54 30	2788	78 29 14	2797						
	Antares	W.	27 54 50	2724	29 30 5	2773	31 15 8	2782	32 40 0	2790						
	Fomalhaut	E.	57 46 30	2223	56 22 51	2236	54 59 47	2250	53 37 19	2224						
	α Pegasi	E.	77 28 52	2281	75 57 13	2242	74 25 47	2264	72 54 36	2265						
30	Spica	W.	86 20 8	2287	87 53 48	2245	89 27 17	2263	91 0 36	2262						
	Antares	W.	40 31 37	2281	42 5 25	2288	43 39 3	2247	45 12 30	2255						
	Fomalhaut	E.	46 55 23	2223	45 37 23	2265	44 20 20	2742	43 4 17	2202						
	α Pegasi	E.	65 22 21	2202	63 52 40	2209	62 23 16	2253	60 54 9	2267						
	α Arctis	E.	107 23 40	2247	105 50 13	2265	104 16 56	2282	102 43 48	2270						
31	Spica	W.	98 44 39	2200	100 16 58	2207	101 49 8	2215	103 21 8	2222						
	Antares	W.	52 57 15	2292	54 29 43	2291	56 2 1	2296	57 34 10	2216						
	α Pegasi	E.	53 33 7	2148	52 5 55	2166	50 39 5	2185	49 12 38	2205						
	α Arctis	E.	95 0 38	2208	93 28 29	2215	91 56 29	2222	90 24 39	2230						

AT GREENWICH APPARENT NOON.

		THE SUN'S										Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to		Diff. for 1 hour.
Day of the Week.	Day of the Month.	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Semi-diameter.	subtracted from Apparent Time.				
		h.	m.	s.		°.	'	"			m.		s.		
Wed.	1	8	47	17.49	9.697	N. 17	55	13.7	38.09	15	48.17	66.62	6	0.68	0.160
Thur.	2	8	51	9.90	9.672	17	39	50.8	38.82	15	48.30	66.53	5	56.55	0.185
Fri.	3	8	55	1.71	9.647	17	24	10.5	39.54	15	48.43	66.44	5	51.82	0.210
Sat.	4	8	58	52.92	9.622	17	8	13.2	40.23	15	48.57	66.35	5	46.49	0.234
Sun.	5	9	2	43.54	9.598	16	51	59.2	40.92	15	48.71	66.26	5	40.57	0.259
Mon.	6	9	6	33.57	9.574	16	35	28.7	41.61	15	48.85	66.17	5	34.07	0.283
Tues.	7	9	10	23.03	9.550	16	18	42.0	42.27	15	49.00	66.09	5	26.98	0.307
Wed.	8	9	14	11.92	9.526	16	1	39.4	42.93	15	49.15	66.00	5	19.33	0.330
Thur.	9	9	18	0.25	9.503	15	44	21.2	43.57	15	49.30	65.92	5	11.12	0.353
Fri.	10	9	21	48.02	9.480	15	26	47.8	44.20	15	49.46	65.84	5	2.36	0.376
Sat.	11	9	25	35.23	9.457	15	8	59.6	44.81	15	49.62	65.76	4	53.05	0.399
Sun.	12	9	29	21.89	9.435	14	50	56.9	45.42	15	49.79	65.68	4	43.19	0.421
Mon.	13	9	33	8.02	9.413	14	32	39.7	46.01	15	49.96	65.60	4	32.79	0.444
Tues.	14	9	36	53.62	9.391	14	14	8.4	46.59	15	50.13	65.52	4	21.86	0.466
Wed.	15	9	40	38.70	9.369	13	55	23.4	47.15	15	50.31	65.44	4	10.42	0.488
Thur.	16	9	44	23.27	9.347	13	36	25.2	47.70	15	50.49	65.36	3	58.46	0.509
Fri.	17	9	48	7.32	9.325	13	17	14.1	48.23	15	50.68	65.29	3	45.98	0.531
Sat.	18	9	51	50.85	9.304	12	57	50.1	48.76	15	50.87	65.22	3	32.99	0.552
Sun.	19	9	55	33.86	9.284	12	38	13.8	49.26	15	51.07	65.15	3	19.49	0.573
Mon.	20	9	59	16.38	9.264	12	18	25.7	49.75	15	51.27	65.08	3	5.49	0.593
Tues.	21	10	2	58.41	9.244	11	58	26.0	50.23	15	51.47	65.01	2	51.01	0.613
Wed.	22	10	6	39.98	9.224	11	38	15.0	50.70	15	51.68	64.94	2	36.07	0.632
Thur.	23	10	10	21.09	9.205	11	17	52.9	51.15	15	51.89	64.88	2	20.67	0.651
Fri.	24	10	14	1.76	9.187	10	57	20.2	51.59	15	52.10	64.82	2	4.83	0.669
Sat.	25	10	17	42.00	9.170	10	36	37.2	52.01	15	52.32	64.76	1	48.56	0.686
Sun.	26	10	21	21.83	9.153	10	15	44.3	52.42	15	52.54	64.70	1	31.87	0.703
Mon.	27	10	25	1.24	9.136	9	54	41.8	52.81	15	52.77	64.64	1	14.78	0.719
Tues.	28	10	28	40.28	9.121	9	33	29.8	53.20	15	53.00	64.59	0	57.31	0.735
Wed.	29	10	32	18.96	9.107	9	12	8.7	53.57	15	53.23	64.54	0	39.47	0.750
Thur.	30	10	35	57.28	9.093	8	50	38.9	53.93	15	53.46	64.49	0	21.29	0.764
Fri.	31	10	39	35.28	9.079	8	29	0.5	54.27	15	53.69	64.44	0	2.79	0.777
Sat.	32	10	43	12.97	9.066	N. 8	7	14.0	54.61	15	53.92	64.40	0	16.01	0.790

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from		Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	added to Mean Time.			
						m.	s.			s.
Wed.	1	8 47 16.52	9.697	N.17 55 17.5	28.09	6 07.0	0.160	8 41 15.82	
Thur.	2	8 51 8.95	9.672	17 39 54.6	29.82	5 56.57	0.185	8 45 12.38	
Fri.	3	8 55 0.77	9.647	17 24 14.3	29.54	5 51.84	0.210	8 49 8.93	
Sat.	4	8 58 52.00	9.622	17 8 17.0	40.23	5 46.51	0.234	8 53 5.49	
Sun.	5	9 2 42.64	9.598	16 52 3.0	40.92	5 40.59	0.259	8 57 2.05	
Mon.	6	9 6 32.69	9.574	16 35 32.5	41.61	5 34.09	0.283	9 0 58.60	
Tues.	7	9 10 22.17	9.550	16 18 45.8	42.27	5 27.01	0.307	9 4 55.16	
Wed.	8	9 14 11.08	9.526	16 1 43.2	42.93	5 19.36	0.330	9 8 51.72	
Thur.	9	9 17 59.43	9.503	15 44 25.0	43.57	5 11.16	0.353	9 12 48.27	
Fri.	10	9 21 47.22	9.480	15 26 51.6	44.20	5 2.89	0.376	9 16 44.83	
Sat.	11	9 25 34.46	9.457	15 9 3.3	44.81	4 53.08	0.399	9 20 41.38	
Sun.	12	9 29 21.15	9.435	14 51 0.5	45.42	4 43.21	0.421	9 24 37.94	
Mon.	13	9 33 7.31	9.413	14 32 43.2	46.01	4 32.82	0.444	9 28 34.49	
Tues.	14	9 36 52.94	9.391	14 14 11.8	46.59	4 21.89	0.466	9 32 31.05	
Wed.	15	9 40 38.05	9.369	13 55 26.7	47.15	4 10.45	0.488	9 36 27.60	
Thur.	16	9 44 22.65	9.347	13 36 28.4	47.70	3 58.49	0.509	9 40 24.16	
Fri.	17	9 48 6.73	9.325	13 17 17.1	48.23	3 46.02	0.531	9 44 20.71	
Sat.	18	9 51 50.29	9.304	12 57 53.0	48.76	3 33.02	0.552	9 48 17.27	
Sun.	19	9 55 33.34	9.284	12 38 16.6	49.26	3 19.52	0.573	9 52 13.82	
Mon.	20	9 59 15.90	9.264	12 18 28.3	49.75	3 5.52	0.593	9 56 10.38	
Tues.	21	10 2 57.97	9.244	11 58 28.4	50.23	2 51.04	0.613	10 0 6.93	
Wed.	22	10 6 39.58	9.224	11 38 17.2	50.70	2 36.09	0.632	10 4 3.49	
Thur.	23	10 10 20.73	9.205	11 17 54.9	51.15	2 20.69	0.651	10 8 0.04	
Fri.	24	10 14 1.44	9.187	10 57 22.0	51.59	2 4.84	0.669	10 11 56.60	
Sat.	25	10 17 41.72	9.170	10 36 38.8	52.01	1 48.57	0.686	10 15 53.15	
Sun.	26	10 21 21.59	9.153	10 15 45.7	52.42	1 31.88	0.703	10 19 49.71	
Mon.	27	10 25 1.05	9.136	9 54 42.9	52.81	1 14.79	0.719	10 23 46.26	
Tues.	28	10 28 40.13	9.121	9 33 30.6	53.20	0 57.32	0.735	10 27 42.81	
Wed.	29	10 32 18.85	9.107	9 12 9.3	53.57	0 39.48	0.750	10 31 39.37	
Thur.	30	10 35 57.22	9.093	8 50 39.2	53.93	0 21.29	0.764	10 35 35.93	
Fri.	31	10 39 35.27	9.079	8 29 0.5	54.27	0 2.79	0.777	10 39 32.48	
Sat.	32	10 43 13.01	9.066	N. 8 7 13.7	54.61	0 16.02	0.790	10 43 29.03	

NOTE.— The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

THE SUN'S										
Day of the Month.	Day of the Year.	True LONGITUDE.				Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		λ		λ'						
		$^{\circ}$	$'$	$'$	$''$					
1	214	129	22 58.3	22	13.1	143.55	+0.20	0.0062905	25.0	h. m. s. 15 16 19.66
2	215	130	20 23.8	19	38.5	143.59	0.33	.0062299	25.5	15 12 17.75
3	216	131	17 50.3	17	4.9	143.63	0.46	.0061682	26.0	15 8 21.84
4	217	132	15 17.9	14	32.3	143.68	0.56	.0061052	26.5	15 4 25.93
5	218	133	12 46.8	12	1.0	143.73	0.65	.0060409	27.0	15 0 30.02
6	219	134	10 16.9	9	31.0	143.78	0.72	.0059754	27.5	14 56 34.11
7	220	135	7 48.2	7	2.2	143.83	0.75	.0059086	28.1	14 52 38.20
8	221	136	5 20.8	4	34.7	143.89	0.75	.0058404	28.8	14 48 42.29
9	222	137	2 54.8	2	8.5	143.96	0.72	.0057706	29.5	14 44 46.38
10	223	137	60 30.3	59	43.8	144.02	0.65	.0056990	30.2	14 40 50.47
11	224	138	58 7.3	57	20.7	144.08	0.55	.0056256	31.0	14 36 54.56
12	225	139	55 45.8	54	59.1	144.14	0.44	.0055503	31.8	14 32 58.65
13	226	140	53 25.7	52	38.9	144.20	0.32	.0054730	32.6	14 29 2.74
14	227	141	51 7.2	50	20.2	144.26	0.19	.0053937	33.5	14 25 6.83
15	228	142	48 50.1	48	3.0	144.32	+0.06	.0053123	34.3	14 21 10.92
16	229	143	46 34.4	45	47.2	144.38	-0.07	.0052287	35.2	14 17 15.02
17	230	144	44 20.1	43	32.8	144.44	0.20	.0051431	36.1	14 13 19.11
18	231	145	42 7.1	41	19.7	144.49	0.30	.0050554	36.9	14 9 23.20
19	232	146	39 55.4	39	7.8	144.55	0.38	.0049656	37.7	14 5 27.29
20	233	147	37 45.0	36	57.2	144.60	0.44	.0048738	38.5	14 1 31.38
21	234	148	35 35.9	34	48.0	144.65	0.46	.0047801	39.3	13 57 35.47
22	235	149	33 28.0	32	40.0	144.70	0.46	.0046846	40.0	13 53 39.56
23	236	150	31 21.3	30	33.2	144.75	0.43	.0045875	40.7	13 49 43.65
24	237	151	29 15.8	28	27.5	144.80	0.36	.0044890	41.3	13 45 47.74
25	238	152	27 11.6	26	23.2	144.85	0.27	.0043892	41.8	13 41 51.83
26	239	153	25 8.7	24	20.2	144.90	0.16	.0042882	42.2	13 37 55.93
27	240	154	23 7.1	22	18.5	144.96	-0.04	.0041862	42.6	13 34 0.02
28	241	155	21 6.9	20	18.2	145.02	+0.09	.0040834	42.9	13 30 4.11
29	242	156	19 8.1	18	19.2	145.08	0.22	.0039798	43.1	13 26 8.20
30	243	157	17 10.8	16	21.8	145.15	0.35	.0038757	43.4	13 22 12.29
31	244	158	15 15.2	14	26.1	145.22	0.47	.0037709	43.6	13 18 16.39
32	245	159	13 21.3	12	32.1	145.29	+0.56	0.0036655	43.9	13 14 20.48

NOTE. — λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 04.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							h. m.	m.		d.
1	14 59.5	14 56.6	54 54.3	-0.92	54 43.7	-0.84	12 17.4	1.85	13.9
2	14 54.0	14 51.6	54 34.1	0.76	54 25.5	0.67	13 0.6	1.75	14.9
3	14 49.6	14 47.9	54 18.1	0.56	54 12.0	0.44	13 41.5	1.68	15.9
4	14 46.7	14 45.9	54 7.4	0.32	54 4.4	-0.18	14 21.3	1.65	16.9
5	14 45.5	14 45.7	54 3.2	-0.02	54 3.9	+0.14	15 0.8	1.66	17.9
6	14 46.5	14 47.8	54 6.6	+0.32	54 11.6	0.51	15 41.0	1.71	18.9
7	14 49.8	14 52.4	54 18.8	0.70	54 28.4	0.90	16 23.1	1.81	19.9
8	14 55.7	14 59.6	54 40.4	1.10	54 54.7	1.30	17 8.0	1.94	20.9
9	15 4.1	15 9.3	55 11.5	1.49	55 30.6	1.68	17 56.4	2.10	21.9
10	15 15.1	15 21.5	55 51.9	1.86	56 15.2	2.02	18 48.9	2.27	22.9
11	15 28.3	15 35.5	56 40.3	2.15	57 6.8	2.26	19 45.0	2.40	23.9
12	15 43.0	15 50.7	57 34.4	2.33	58 2.6	2.35	20 43.7	2.47	24.9
13	15 58.4	16 6.0	58 30.9	2.33	58 58.7	2.26	21 43.1	2.46	25.9
14	16 13.2	16 19.9	59 25.2	2.14	59 49.9	1.95	22 41.5	2.39	26.9
15	16 26.0	16 31.1	60 12.0	1.71	60 30.9	1.42	23 37.7	2.30	27.9
16	16 35.2	16 38.2	60 46.1	1.09	60 57.1	+0.73	6		28.9
17	16 40.0	16 40.5	61 3.6	+0.35	61 5.5	-0.03	0 31.7	2.21	0.6
18	16 39.8	16 37.9	61 2.8	-0.41	60 55.7	0.76	1 24.1	2.16	1.6
19	16 34.9	16 30.8	60 44.5	1.08	60 29.7	1.37	2 15.8	2.16	2.6
20	16 25.9	16 20.3	60 11.8	1.60	59 51.4	1.78	3 7.9	2.19	3.6
21	16 14.3	16 7.9	59 29.1	1.91	59 5.5	1.99	4 1.3	2.26	4.6
22	16 1.3	15 54.6	58 41.3	2.03	58 16.8	2.03	4 56.3	2.32	5.6
23	15 48.0	15 41.6	57 52.6	1.99	57 29.0	1.93	5 52.7	2.36	6.6
24	15 35.4	15 29.5	57 6.3	1.85	56 44.6	1.75	6 49.4	2.35	7.6
25	15 23.9	15 18.7	56 24.2	1.65	56 5.1	1.53	7 45.1	2.27	8.6
26	15 13.9	15 9.5	55 47.4	1.42	55 31.0	1.31	8 38.3	2.15	9.6
27	15 5.4	15 1.7	55 16.1	1.19	55 2.5	1.08	9 28.4	2.02	10.6
28	14 58.4	14 55.4	54 50.3	0.96	54 39.4	0.85	10 15.1	1.88	11.6
29	14 52.8	14 50.5	54 29.8	0.75	54 21.5	0.64	10 58.8	1.77	12.6
30	14 48.6	14 47.0	54 14.4	0.54	54 8.6	0.43	11 40.3	1.69	13.6
31	14 45.7	14 44.8	54 4.0	0.33	54 0.6	0.23	12 20.3	1.65	14.6
32	14 44.3	14 44.1	53 58.6	-0.12	53 57.9	-0.00	12 59.8	1.65	15.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension	Diff for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	20 36 13.85	2.0229	S. 18 10 27.2	10.373	0	22 8 10.11	1.8266	S. 8 46 31.4	12.756
1	20 38 15.07	2.0178	18 0 2.6	10.446	1	22 9 59.62	1.8287	8 33 45.2	12.764
2	20 40 15.98	2.0127	17 49 33.7	10.518	2	22 11 48.96	1.8210	8 20 57.3	12.811
3	20 42 16.59	2.0076	17 39 0.5	10.589	3	22 13 38.14	1.8164	8 8 7.9	12.857
4	20 44 16.89	2.0026	17 28 23.0	10.660	4	22 15 27.17	1.8106	7 55 16.9	12.902
5	20 46 16.89	1.9976	17 17 41.4	10.732	5	22 17 16.04	1.8132	7 42 24.5	12.936
6	20 48 16.60	1.9927	17 6 55.7	10.796	6	22 19 4.76	1.8107	7 29 30.6	12.969
7	20 50 16.02	1.9879	16 56 6.0	10.862	7	22 20 53.33	1.8083	7 16 35.4	12.982
8	20 52 15.14	1.9830	16 45 12.3	10.927	8	22 22 41.76	1.8060	7 3 38.8	12.984
9	20 54 13.97	1.9782	16 34 14.7	10.992	9	22 24 30.05	1.8037	6 50 40.9	12.975
10	20 56 12.52	1.9734	16 23 13.3	11.066	10	22 26 18.20	1.8016	6 37 41.8	12.966
11	20 58 10.78	1.9686	16 12 8.1	11.118	11	22 28 6.92	1.7996	6 24 41.5	12.914
12	21 0 8.75	1.9639	16 0 59.1	11.179	12	22 29 54.12	1.7972	6 11 40.1	12.853
13	21 2 6.44	1.9592	15 49 46.5	11.240	13	22 31 41.89	1.7952	5 58 37.6	12.801
14	21 4 3.86	1.9546	15 38 30.3	11.300	14	22 33 29.54	1.7932	5 45 34.0	12.867
15	21 6 0.99	1.9499	15 27 10.5	11.356	15	22 35 17.07	1.7912	5 32 29.5	12.883
16	21 7 57.85	1.9453	15 15 47.3	11.416	16	22 37 4.48	1.7893	5 19 24.0	12.899
17	21 9 54.44	1.9408	15 4 20.6	11.472	17	22 38 51.78	1.7875	5 6 17.6	12.114
18	21 11 50.75	1.9364	14 52 50.6	11.528	18	22 40 38.98	1.7866	4 53 10.3	12.128
19	21 13 46.80	1.9320	14 41 17.3	11.582	19	22 42 26.07	1.7841	4 40 9.2	12.141
20	21 15 42.59	1.9276	14 29 40.7	11.635	20	22 44 13.07	1.7820	4 26 53.4	12.153
21	21 17 38.12	1.9233	14 18 1.0	11.688	21	22 45 59.97	1.7800	4 13 43.8	12.165
22	21 19 33.38	1.9190	14 6 18.1	11.740	22	22 47 46.78	1.7784	4 0 33.6	12.176
23	21 21 28.39	1.9147	S. 13 54 32.1	11.790	23	22 49 33.50	1.7769	S. 3 47 22.7	12.187
THURSDAY 2.					SATURDAY 4.				
0	21 23 23.15	1.9105	S. 13 42 43.2	11.839	0	22 51 20.14	1.7766	S. 3 34 11.2	12.197
1	21 25 17.66	1.9064	13 30 51.4	11.886	1	22 53 6.70	1.7768	3 20 59.1	12.206
2	21 27 11.92	1.9024	13 18 56.6	11.936	2	22 54 53.18	1.7741	3 7 46.5	12.214
3	21 29 5.94	1.8984	13 6 59.0	11.983	3	22 56 39.59	1.7730	2 54 33.5	12.221
4	21 30 59.73	1.8944	12 54 58.6	12.029	4	22 58 25.94	1.7719	2 41 20.0	12.227
5	21 32 53.28	1.8905	12 42 55.5	12.074	5	23 0 12.22	1.7708	2 28 6.2	12.233
6	21 34 46.59	1.8867	12 30 49.7	12.118	6	23 1 58.44	1.7698	2 14 52.0	12.239
7	21 36 39.68	1.8829	12 18 41.3	12.161	7	23 3 44.60	1.7689	2 1 37.5	12.244
8	21 38 32.54	1.8791	12 6 30.4	12.203	8	23 5 30.71	1.7681	1 48 22.7	12.248
9	21 40 25.17	1.8754	11 54 16.9	12.245	9	23 7 16.77	1.7673	1 35 7.7	12.251
10	21 42 17.59	1.8718	11 42 1.0	12.285	10	23 9 2.79	1.7666	1 21 52.6	12.254
11	21 44 9.79	1.8682	11 29 42.7	12.324	11	23 10 48.77	1.7660	1 8 37.3	12.256
12	21 46 1.78	1.8647	11 17 23.1	12.363	12	23 12 34.71	1.7654	0 55 21.9	12.257
13	21 47 53.55	1.8612	11 4 59.2	12.401	13	23 14 20.62	1.7649	0 42 6.5	12.257
14	21 49 45.12	1.8578	10 52 34.0	12.438	14	23 16 6.50	1.7645	0 28 51.1	12.257
15	21 51 36.49	1.8544	10 40 6.7	12.473	15	23 17 52.36	1.7641	0 15 35.7	12.256
16	21 53 27.65	1.8510	10 27 37.2	12.508	16	23 19 38.19	1.7638	S. 0 2 20.4	12.254
17	21 55 18.61	1.8477	10 15 5.7	12.542	17	23 21 24.01	1.7635	N. 0 10 54.8	12.252
18	21 57 9.38	1.8445	10 2 32.1	12.575	18	23 23 9.81	1.7633	0 24 9.8	12.249
19	21 58 59.96	1.8414	9 49 56.6	12.607	19	23 24 55.60	1.7632	0 37 24.6	12.245
20	22 0 50.35	1.8383	9 37 19.2	12.638	20	23 26 41.39	1.7632	0 50 39.1	12.240
21	22 2 40.55	1.8352	9 24 39.9	12.669	21	23 28 27.18	1.7632	1 3 53.4	12.235
22	22 4 30.58	1.8323	9 11 58.8	12.699	22	23 30 12.97	1.7632	1 17 7.3	12.229
23	22 6 20.43	1.8294	8 59 16.0	12.728	23	23 31 58.76	1.7633	1 30 20.8	12.223
24	22 8 10.11	1.8265	S. 8 46 31.4	12.756	24	23 33 44.57	1.7634	N. 1 43 34.0	12.216

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 5.					TUESDAY 7.				
	h. m. s.		N. O. ' " "			h. m. s.		N. O. ' " "	
0	23 33 44.57	1.7685	N. 1 43 34.0	13.216	0	0 59 53.55	1.8515	N. 11 56 47.3	12.067
1	23 35 30.39	1.7686	1 56 46.7	13.208	1	1 1 44.74	1.8549	12 8 50.1	12.026
2	23 37 16.23	1.7643	2 9 59.0	13.199	2	1 3 36.14	1.8585	12 20 50.4	11.984
3	23 39 2.09	1.7646	2 23 10.7	13.190	3	1 5 27.76	1.8621	13 32 48.2	11.941
4	23 40 47.98	1.7651	2 36 21.8	13.180	4	1 7 19.59	1.8657	12 44 43.3	11.897
5	23 42 33.90	1.7656	2 49 32.3	13.170	5	1 9 11.64	1.8694	12 56 35.8	11.852
6	23 44 19.85	1.7662	3 2 42.2	13.160	6	1 11 3.92	1.8732	13 8 25.6	11.806
7	23 46 5.84	1.7668	3 15 51.4	13.147	7	1 12 56.42	1.8770	13 20 12.6	11.760
8	23 47 51.87	1.7675	3 28 59.8	13.134	8	1 14 49.16	1.8809	13 31 56.8	11.713
9	23 49 37.94	1.7682	3 42 7.5	13.121	9	1 16 42.13	1.8848	13 43 38.2	11.665
10	23 51 24.07	1.7689	3 55 14.3	13.107	10	1 18 35.34	1.8888	13 55 18.6	11.616
11	23 53 10.25	1.7702	4 8 20.3	13.093	11	1 20 28.79	1.8929	14 6 52.1	11.567
12	23 54 56.49	1.7712	4 21 25.4	13.078	12	1 22 22.49	1.8970	14 18 24.6	11.517
13	23 56 42.79	1.7720	4 34 29.6	13.062	13	1 24 16.44	1.9012	14 29 51.0	11.466
14	23 58 29.16	1.7734	4 47 32.8	13.045	14	1 26 10.64	1.9055	14 41 20.4	11.413
15	0 0 15.60	1.7746	5 0 35.0	13.028	15	1 28 5.10	1.9099	14 52 43.6	11.360
16	0 2 2.11	1.7760	5 13 36.1	13.010	16	1 29 59.83	1.9143	15 4 3.6	11.306
17	0 3 48.70	1.7778	5 26 36.1	12.991	17	1 31 54.82	1.9187	15 15 20.3	11.252
18	0 5 35.38	1.7797	5 39 35.0	12.972	18	1 33 50.08	1.9232	15 26 33.8	11.197
19	0 7 22.14	1.7801	5 52 32.8	12.952	19	1 35 45.61	1.9278	15 37 43.9	11.140
20	0 9 8.99	1.7817	6 5 29.3	12.931	20	1 37 41.41	1.9324	15 48 50.6	11.082
21	0 10 55.94	1.7838	6 18 24.5	12.910	21	1 39 37.49	1.9371	15 59 53.8	11.024
22	0 12 42.98	1.7849	6 31 18.5	12.888	22	1 41 33.86	1.9419	16 10 53.5	10.965
23	0 14 30.12	1.7866	N. 6 44 11.1	12.866	23	1 43 30.52	1.9467	N. 16 21 49.7	10.906
MONDAY 6.					WEDNESDAY 8.				
	h. m. s.		N. O. ' " "			h. m. s.		N. O. ' " "	
0	0 16 17.37	1.7884	N. 6 57 2.4	12.843	0	1 45 27.46	1.9515	N. 16 32 42.2	10.845
1	0 18 4.73	1.7908	7 9 52.2	12.818	1	1 47 24.70	1.9564	16 43 31.1	10.783
2	0 19 52.20	1.7922	7 22 40.6	12.793	2	1 49 22.23	1.9613	16 54 16.2	10.720
3	0 21 39.79	1.7943	7 35 27.4	12.767	3	1 51 20.00	1.9663	17 4 57.5	10.657
4	0 23 27.51	1.7963	7 48 12.7	12.741	4	1 53 18.19	1.9714	17 15 35.0	10.593
5	0 25 15.35	1.7984	8 0 56.4	12.715	5	1 55 16.63	1.9765	17 26 8.6	10.527
6	0 27 3.32	1.8006	8 13 38.5	12.687	6	1 57 15.37	1.9817	17 36 38.2	10.460
7	0 28 51.42	1.8028	8 26 18.9	12.658	7	1 59 14.43	1.9869	17 47 3.8	10.393
8	0 30 39.66	1.8051	8 38 57.5	12.629	8	2 1 13.80	1.9921	17 57 25.3	10.325
9	0 32 28.04	1.8076	8 51 34.4	12.600	9	2 3 13.48	1.9974	18 7 42.7	10.256
10	0 34 16.57	1.8101	9 4 9.5	12.570	10	2 5 13.49	2.0028	18 17 55.9	10.184
11	0 36 5.25	1.8127	9 16 42.7	12.538	11	2 7 13.62	2.0082	18 28 4.9	10.112
12	0 37 54.09	1.8163	9 29 14.1	12.506	12	2 9 14.48	2.0137	18 38 9.5	10.041
13	0 39 43.08	1.8179	9 41 43.5	12.474	13	2 11 15.46	2.0192	18 48 9.8	9.967
14	0 41 32.24	1.8206	9 54 11.0	12.441	14	2 13 16.78	2.0248	18 58 5.6	9.893
15	0 43 21.56	1.8234	10 6 36.4	12.407	15	2 15 18.44	2.0304	19 7 57.0	9.818
16	0 45 11.05	1.8268	10 18 59.8	12.372	16	2 17 20.43	2.0360	19 17 43.8	9.742
17	0 47 0.72	1.8292	10 31 21.1	12.337	17	2 19 22.76	2.0417	19 27 26.0	9.664
18	0 48 50.56	1.8322	10 43 40.2	12.301	18	2 21 25.44	2.0475	19 37 3.5	9.585
19	0 50 40.58	1.8363	10 55 57.1	12.263	19	2 23 28.47	2.0533	19 46 36.3	9.506
20	0 52 30.79	1.8394	11 8 11.8	12.225	20	2 25 31.84	2.0591	19 56 4.3	9.426
21	0 54 21.19	1.8416	11 20 24.2	12.187	21	2 27 35.56	2.0650	20 5 27.4	9.344
22	0 56 11.78	1.8448	11 32 34.3	12.148	22	2 29 39.64	2.0709	20 14 45.6	9.261
23	0 58 2.56	1.8481	11 44 42.0	12.108	23	2 31 44.07	2.0768	20 23 58.8	9.178
24	0 59 53.55	1.8515	N. 11 56 47.3	12.067	24	2 33 48.86	2.0828	N. 20 33 7.0	9.093

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 9.					SATURDAY 11.				
0	2 33 48.86	2.0836	N 20 33 7.0	9.083	0	4 20 57.55	2.3791	N 25 50 28.2	2.353
1	2 35 54.01	2.0886	20 42 10.0	9.097	1	4 23 20.46	2.3847	25 54 5.0	2.342
2	2 37 59.52	2.0946	20 51 7.9	9.120	2	4 25 43.71	2.3901	25 57 33.3	2.400
3	2 40 5.39	2.1006	21 0 0.6	9.153	3	4 28 7.28	2.3955	26 0 53.0	2.367
4	2 42 11.62	2.1069	21 8 47.9	9.144	4	4 30 31.17	2.4009	26 4 4.1	2.313
5	2 44 18.92	2.1131	21 17 29.6	9.135	5	4 32 55.38	2.4062	26 7 6.5	2.267
6	2 46 25.19	2.1192	21 26 6.3	9.126	6	4 35 19.91	2.4114	26 10 0.2	2.220
7	2 48 32.53	2.1254	21 34 37.3	9.117	7	4 37 44.75	2.4166	26 12 45.0	2.173
8	2 50 40.94	2.1316	21 43 2.7	9.108	8	4 40 9.89	2.4218	26 15 21.0	2.126
9	2 52 48.32	2.1378	21 51 22.5	9.099	9	4 42 35.34	2.4269	26 17 48.0	2.079
10	2 54 56.78	2.1440	21 59 36.5	9.090	10	4 45 1.08	2.4319	26 20 6.1	2.032
11	2 57 5.61	2.1502	22 7 44.8	9.081	11	4 47 27.11	2.4369	26 22 15.2	2.075
12	2 59 14.81	2.1564	22 15 47.2	9.072	12	4 49 53.43	2.4411	26 24 15.1	1.928
13	3 1 24.39	2.1626	22 23 43.7	9.063	13	4 52 20.04	2.4452	26 26 5.9	1.780
14	3 3 34.35	2.1688	22 31 34.2	9.054	14	4 54 46.92	2.4494	26 27 47.4	1.632
15	3 5 44.69	2.1750	22 39 18.7	9.045	15	4 57 14.07	2.4535	26 29 19.7	1.484
16	3 7 55.41	2.1812	22 46 57.0	9.036	16	4 59 41.50	2.4576	26 30 42.7	1.336
17	3 10 6.51	2.1874	22 54 29.1	9.027	17	5 2 9.19	2.4617	26 31 56.3	1.188
18	3 12 18.00	2.1936	23 1 55.0	9.018	18	5 4 37.14	2.4657	26 33 0.5	0.990
19	3 14 29.80	2.2000	23 0 14.6	9.009	19	5 7 5.34	2.4697	26 33 55.2	0.842
20	3 16 42.11	2.2073	23 16 27.7	9.000	20	5 9 33.78	2.4737	26 34 40.4	0.694
21	3 18 54.74	2.2137	23 23 34.4	9.001	21	5 12 2.47	2.4777	26 35 16.0	0.546
22	3 21 7.75	2.2200	23 30 34.5	9.002	22	5 14 31.39	2.4816	26 35 42.0	0.398
23	3 23 21.14	2.2264	N 23 37 28.0	9.003	23	5 17 0.54	2.4855	N 26 35 58.4	0.250
FRIDAY 10.					SUNDAY 12.				
0	3 25 34.92	2.2328	N 23 44 14.8	9.004	0	5 19 29.91	2.4894	N 26 36 5.0	0.099
1	3 27 49.08	2.2392	23 50 54.9	9.011	1	5 21 59.49	2.4947	26 36 1.8	0.134
2	3 30 3.63	2.2455	23 57 28.1	9.017	2	5 24 29.28	2.4991	26 35 48.9	0.286
3	3 32 18.56	2.2519	24 3 54.4	9.023	3	5 26 59.27	2.5034	26 35 26.1	0.437
4	3 34 33.86	2.2582	24 10 13.8	9.029	4	5 29 29.45	2.5076	26 34 53.5	0.587
5	3 36 49.54	2.2645	24 16 26.1	9.035	5	5 31 59.82	2.5118	26 34 10.9	0.739
6	3 39 5.60	2.2708	24 22 31.3	9.041	6	5 34 30.36	2.5159	26 33 18.4	0.890
7	3 41 22.04	2.2771	24 28 29.3	9.047	7	5 37 1.07	2.5199	26 32 16.0	1.041
8	3 43 38.85	2.2833	24 34 20.0	9.053	8	5 39 31.95	2.5239	26 31 3.5	1.191
9	3 45 56.03	2.2895	24 40 3.4	9.059	9	5 42 2.99	2.5278	26 29 41.0	1.340
10	3 48 13.59	2.2957	24 45 39.4	9.065	10	5 44 34.17	2.5317	26 28 8.4	1.487
11	3 50 31.52	2.3019	24 51 8.0	9.071	11	5 47 5.50	2.5355	26 26 25.7	1.634
12	3 52 49.82	2.3080	24 56 29.0	9.077	12	5 49 36.96	2.5393	26 24 33.0	1.780
13	3 55 8.49	2.3141	25 1 42.4	9.083	13	5 52 8.58	2.5431	26 23 30.1	1.926
14	3 57 27.52	2.3202	25 6 48.1	9.089	14	5 54 40.28	2.5468	26 20 17.0	2.071
15	3 59 46.92	2.3263	25 11 46.1	9.095	15	5 57 12.12	2.5505	26 17 53.7	2.217
16	4 2 6.68	2.3323	25 16 36.3	9.101	16	5 59 44.07	2.5542	26 15 20.3	2.362
17	4 4 26.80	2.3383	25 21 18.6	9.107	17	6 2 16.12	2.5578	26 12 36.6	2.507
18	4 6 47.28	2.3443	25 25 52.9	9.113	18	6 4 48.27	2.5614	26 9 42.7	2.652
19	4 9 8.12	2.3502	25 30 19.2	9.119	19	6 7 20.51	2.5649	26 6 38.5	2.797
20	4 11 29.31	2.3561	25 34 37.5	9.125	20	6 9 52.83	2.5684	26 3 24.1	2.942
21	4 13 50.85	2.3619	25 38 47.6	9.131	21	6 12 25.22	2.5719	25 59 59.4	3.087
22	4 16 12.74	2.3677	25 42 49.4	9.137	22	6 14 57.68	2.5754	25 56 24.4	3.232
23	4 18 34.97	2.3734	25 46 43.0	9.143	23	6 17 30.90	2.5788	25 53 39.2	3.377
24	4 20 57.55	2.3791	N 25 50 28.2	9.149	24	6 20 2.76	2.5822	N 25 48 43.7	3.522

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 13.					WEDNESDAY 15.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	6 20 2.76	2.4421	N.25 48 43.7	4.050	0	8 20 56.13	2.4002	N.19 25 35.9	11.083
1	6 22 35.37	2.4427	25 44 37.9	4.102	1	8 23 23.64	2.4008	19 13 52.0	11.798
2	6 25 8.01	2.4433	25 40 21.8	4.263	2	8 25 50.94	2.4013	19 2 0.1	11.981
3	6 27 40.68	2.4447	25 35 55.4	4.525	3	8 28 18.03	2.4018	18 50 0.2	12.068
4	6 30 13.37	2.4460	25 31 18.8	4.886	4	8 30 44.91	2.4023	18 37 52.5	12.124
5	6 32 46.07	2.4481	25 26 31.9	4.886	5	8 33 11.58	2.4027	18 25 37.0	12.223
6	6 35 18.78	2.4491	25 21 34.7	4.089	6	8 35 38.03	2.4031	18 13 13.7	12.451
7	6 37 51.49	2.4501	25 16 27.2	4.310	7	8 38 4.26	2.4035	18 0 42.8	12.677
8	6 40 24.19	2.4509	25 11 9.5	4.361	8	8 40 30.28	2.4039	17 48 4.5	12.701
9	6 42 56.88	2.4516	25 5 41.5	4.802	9	8 42 56.08	2.4042	17 35 18.7	12.824
10	6 45 29.54	2.4522	25 0 3.3	4.722	10	8 45 21.66	2.4045	17 22 25.6	12.946
11	6 48 2.17	2.4528	24 54 14.9	4.901	11	8 47 47.02	2.4049	17 9 25.3	13.065
12	6 50 34.77	2.4530	24 48 16.4	4.061	12	8 50 12.17	2.4173	16 56 17.8	13.183
13	6 53 7.32	2.4532	24 42 7.7	4.230	13	8 52 37.10	2.4186	16 43 3.3	13.299
14	6 55 39.83	2.4533	24 35 48.8	4.266	14	8 55 1.80	2.4069	16 29 41.9	13.414
15	6 58 12.29	2.4541	24 29 19.9	4.266	15	8 57 26.28	2.4062	16 16 13.6	13.527
16	7 0 44.68	2.4534	24 22 40.9	4.734	16	8 59 50.54	2.4025	16 2 38.6	13.638
17	7 3 17.01	2.4532	24 15 51.9	4.901	17	9 2 14.58	2.4069	15 48 57.0	13.748
18	7 5 49.26	2.4530	24 8 52.8	7.068	18	9 4 38.40	2.4062	15 35 8.8	13.856
19	7 8 21.43	2.4526	24 1 43.7	7.284	19	9 7 2.00	2.4016	15 21 14.2	13.962
20	7 10 53.52	2.4520	23 54 24.7	7.469	20	9 9 25.28	2.4079	15 7 13.3	14.068
21	7 13 25.52	2.4523	23 46 55.8	7.604	21	9 11 48.55	2.4043	14 53 6.2	14.180
22	7 15 57.42	2.4526	23 39 17.0	7.726	22	9 14 11.50	2.4007	14 38 52.9	14.270
23	7 18 29.21	2.4520	N.23 31 28.4	7.892	23	9 16 34.23	2.3771	N.14 24 33.7	14.369
TUESDAY 14.					THURSDAY 16.				
0	7 21 0.90	2.4571	N.23 23 30.0	8.065	0	9 18 56.75	2.3785	N.14 10 8.6	14.468
1	7 23 32.47	2.4562	23 15 21.8	8.217	1	9 21 19.05	2.4069	13 55 37.7	14.562
2	7 26 3.92	2.4522	23 7 4.0	8.378	2	9 23 41.14	2.4033	13 41 1.2	14.656
3	7 28 35.25	2.4510	22 58 36.5	8.488	3	9 26 3.02	2.4038	13 26 19.1	14.747
4	7 31 6.44	2.4187	22 49 59.5	8.607	4	9 28 24.66	2.4003	13 11 31.6	14.836
5	7 33 37.49	2.4184	22 41 12.9	8.866	5	9 30 46.14	2.4066	12 56 38.8	14.924
6	7 36 8.41	2.4140	22 32 16.8	9.014	6	9 33 7.29	2.4021	12 41 40.7	15.010
7	7 38 39.18	2.4116	22 23 11.2	9.171	7	9 35 28.44	2.4000	12 26 37.5	15.095
8	7 41 9.80	2.4080	22 13 56.3	9.227	8	9 37 49.28	2.4065	12 11 20.3	15.177
9	7 43 40.26	2.4061	22 4 32.0	9.492	9	9 40 9.92	2.4033	11 56 16.2	15.257
10	7 46 10.57	2.4027	21 54 58.5	9.686	10	9 42 30.36	2.4000	11 40 58.4	15.333
11	7 48 40.71	2.4010	21 45 15.8	9.788	11	9 44 50.60	2.4027	11 25 36.0	15.412
12	7 51 10.69	2.4022	21 35 24.0	9.989	12	9 47 10.65	2.4025	11 10 9.0	15.487
13	7 53 40.49	2.4033	21 25 23.1	10.090	13	9 49 30.51	2.4008	10 54 37.6	15.560
14	7 56 10.12	2.4024	21 15 13.2	10.220	14	9 51 50.17	2.4021	10 39 1.9	15.630
15	7 58 39.58	2.4021	21 4 54.4	10.267	15	9 54 9.64	2.4020	10 23 22.0	15.699
16	8 1 8.85	2.4003	20 54 26.8	10.484	16	9 56 28.93	2.4169	10 7 38.0	15.768
17	8 3 37.94	2.4022	20 43 50.4	10.660	17	9 58 48.03	2.4169	9 51 50.0	15.831
18	8 6 6.84	2.4000	20 33 5.2	10.894	18	10 1 6.96	2.4189	9 35 58.2	15.894
19	8 8 35.55	2.4008	20 22 11.4	10.997	19	10 3 25.71	2.4110	9 20 2.7	15.968
20	8 11 4.06	2.4026	20 11 9.1	11.109	20	10 5 44.29	2.4061	9 4 3.6	16.014
21	8 13 32.38	2.4023	19 59 58.3	11.260	21	10 8 2.69	2.4068	8 48 1.0	16.072
22	8 16 0.50	2.4070	19 48 39.1	11.369	22	10 10 20.93	2.4025	8 31 55.0	16.127
23	8 18 28.42	2.4066	19 37 11.6	11.527	23	10 12 39.00	2.4008	8 15 45.8	16.180
24	8 20 56.13	2.4022	N.19 25 35.9	11.693	24	10 14 56.91	2.3771	N. 7 59 33.4	16.221

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 17.					SUNDAY 19.				
0	10 14 56.01	2.2971	N. 7 59 33.4	16.281	0	12 3 19.20	2.2441	S. 5 21 11.4	16.304
1	10 17 14.66	2.2945	7 43 18.0	16.281	1	12 5 33.86	2.2446	5 37 33.8	16.353
2	10 19 32.25	2.2920	7 26 59.7	16.282	2	12 7 48.55	2.2452	5 53 53.6	16.398
3	10 21 49.69	2.2896	7 10 38.7	16.273	3	12 10 3.28	2.2458	6 10 10.7	16.392
4	10 24 6.99	2.2871	6 54 15.0	16.416	4	12 12 18.05	2.2466	6 26 25.0	16.214
5	10 26 24.14	2.2847	6 37 48.8	16.458	5	12 14 32.87	2.2474	6 42 36.4	16.164
6	10 28 41.15	2.2824	6 21 20.1	16.497	6	12 16 47.74	2.2483	6 58 44.7	16.113
7	10 30 58.02	2.2801	6 4 49.1	16.584	7	12 19 2.66	2.2492	7 14 49.9	16.060
8	10 33 14.76	2.2779	5 48 16.0	16.569	8	12 21 17.64	2.2502	7 30 51.9	16.005
9	10 35 31.37	2.2758	5 31 40.9	16.602	9	12 23 32.68	2.2513	7 46 50.6	15.949
10	10 37 47.85	2.2737	5 15 3.7	16.633	10	12 25 47.79	2.2524	8 2 45.8	15.891
11	10 40 4.21	2.2716	4 58 24.7	16.668	11	12 28 2.96	2.2536	8 18 37.5	15.833
12	10 42 20.44	2.2696	4 41 44.1	16.691	12	12 30 18.21	2.2548	8 34 25.8	15.771
13	10 44 36.56	2.2678	4 25 1.9	16.716	13	12 32 33.54	2.2561	8 50 10.0	15.708
14	10 46 52.57	2.2660	4 8 18.2	16.739	14	12 34 48.94	2.2574	9 5 50.5	15.643
15	10 49 8.47	2.2642	3 51 33.1	16.761	15	12 37 4.42	2.2588	9 21 27.1	15.576
16	10 51 24.27	2.2626	3 34 46.8	16.781	16	12 39 19.99	2.2602	9 36 59.6	15.506
17	10 53 39.96	2.2608	3 17 59.4	16.798	17	12 41 35.65	2.2617	9 52 28.0	15.438
18	10 55 55.56	2.2592	3 1 11.0	16.814	18	12 43 51.40	2.2633	10 7 52.2	15.367
19	10 58 11.07	2.2577	2 44 21.7	16.828	19	12 46 7.25	2.2649	10 23 12.1	15.294
20	11 0 26.49	2.2563	2 27 31.6	16.840	20	12 48 23.19	2.2666	10 38 27.5	15.220
21	11 2 41.83	2.2549	2 10 40.9	16.850	21	12 50 39.24	2.2683	10 53 38.4	15.144
22	11 4 57.08	2.2536	1 53 49.6	16.858	22	12 52 55.39	2.2701	11 8 44.8	15.068
23	11 7 12.26	2.2524	N. 1 36 57.9	16.863	23	12 55 11.65	2.2719	S. 11 23 46.5	14.987
SATURDAY 18.					MONDAY 20.				
0	11 9 27.37	2.2511	N. 1 20 6.0	16.867	0	12 57 28.02	2.2738	S. 11 38 43.3	14.907
1	11 11 42.41	2.2502	1 3 13.9	16.869	1	12 59 44.50	2.2757	11 53 35.3	14.823
2	11 13 57.39	2.2492	0 46 21.7	16.869	2	13 2 1.10	2.2777	12 8 22.3	14.741
3	11 16 12.31	2.2482	0 29 29.6	16.867	3	13 4 17.82	2.2797	12 23 4.2	14.666
4	11 18 27.17	2.2473	N. 0 12 37.6	16.863	4	13 6 34.66	2.2817	12 37 41.0	14.570
5	11 20 41.98	2.2465	S. 0 4 14.1	16.857	5	13 8 51.62	2.2838	12 52 12.6	14.482
6	11 22 56.75	2.2457	0 21 5.4	16.849	6	13 11 8.71	2.2859	13 6 38.8	14.388
7	11 25 11.47	2.2450	0 37 56.1	16.840	7	13 13 25.92	2.2880	13 20 59.6	14.303
8	11 27 26.15	2.2444	0 54 46.2	16.829	8	13 15 43.27	2.2902	13 35 15.0	14.210
9	11 29 40.79	2.2438	1 11 35.6	16.816	9	13 18 0.75	2.2925	13 49 24.8	14.116
10	11 31 55.41	2.2433	1 28 24.1	16.801	10	13 20 18.37	2.2947	14 3 28.9	14.021
11	11 34 10.00	2.2430	1 45 11.6	16.784	11	13 22 36.12	2.2970	14 17 27.2	13.924
12	11 36 24.57	2.2427	2 1 58.1	16.765	12	13 24 54.01	2.2993	14 31 19.7	13.826
13	11 38 39.12	2.2424	2 18 43.4	16.744	13	13 27 12.04	2.3017	14 45 6.3	13.726
14	11 40 53.06	2.2422	2 35 27.4	16.721	14	13 29 30.22	2.3041	14 58 46.8	13.625
15	11 43 8.19	2.2421	2 52 10.0	16.697	15	13 31 48.54	2.3065	15 12 21.3	13.523
16	11 45 22.71	2.2421	3 8 51.0	16.671	16	13 34 7.01	2.3090	15 25 49.6	13.420
17	11 47 37.23	2.2421	3 25 30.4	16.643	17	13 36 25.63	2.3115	15 39 11.7	13.315
18	11 49 51.76	2.2422	3 42 8.1	16.613	18	13 38 44.39	2.3140	15 52 27.4	13.209
19	11 52 6.29	2.2423	3 58 43.9	16.581	19	13 41 3.31	2.3166	16 5 36.7	13.101
20	11 54 20.84	2.2425	4 15 17.8	16.547	20	13 43 22.38	2.3191	16 18 39.5	12.992
21	11 56 35.40	2.2428	4 31 49.6	16.512	21	13 45 41.60	2.3217	16 31 35.7	12.883
22	11 58 49.97	2.2432	4 48 19.2	16.475	22	13 48 0.98	2.3243	16 44 25.3	12.771
23	12 1 4.57	2.2436	5 4 46.5	16.435	23	13 50 20.52	2.3269	16 57 8.2	12.656
24	12 3 19.20	2.2441	S. 5 21 11.4	16.394	24	13 52 40.21	2.3295	S. 17 9 44.3	12.544

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 21.					THURSDAY 23.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	13 52 40.21	2.3286	S.17 9 44.3	12.544	0	15 47 19.28	2.4261	S.24 40 57.0	5.286
1	13 55 0.06	2.3331	17 22 13.5	12.429	1	15 49 45.42	2.4302	24 46 48.5	5.782
2	13 57 20.06	2.3347	17 34 35.8	12.313	2	15 52 11.62	2.4371	24 52 30.8	6.277
3	13 59 40.23	2.3374	17 46 51.0	12.196	3	15 54 37.87	2.4379	24 58 3.8	6.472
4	14 2 0.55	2.3400	17 58 59.2	12.076	4	15 57 4.17	2.4387	25 3 27.4	6.517
5	14 4 21.03	2.3427	18 11 0.2	11.957	5	15 59 30.52	2.4394	25 8 41.7	6.161
6	14 6 41.87	2.3453	18 22 54.0	11.836	6	16 1 56.91	2.4401	25 13 46.7	6.006
7	14 9 2.47	2.3480	18 34 40.5	11.714	7	16 4 23.34	2.4407	25 18 42.4	4.849
8	14 11 23.43	2.3506	18 46 19.7	11.591	8	16 6 49.80	2.4412	25 23 28.7	4.698
9	14 13 44.55	2.3533	18 57 51.4	11.467	9	16 9 16.28	2.4416	25 28 5.6	4.537
10	14 16 5.83	2.3559	19 9 15.7	11.342	10	16 11 42.79	2.4419	25 32 33.2	4.381
11	14 18 27.27	2.3586	19 20 32.5	11.216	11	16 14 9.31	2.4422	25 36 51.4	4.224
12	14 20 48.87	2.3612	19 31 41.6	11.088	12	16 16 35.85	2.4428	25 41 0.1	4.067
13	14 23 10.62	2.3639	19 42 43.0	10.960	13	16 19 2.39	2.4432	25 44 59.4	3.910
14	14 25 32.53	2.3665	19 53 36.7	10.829	14	16 21 28.93	2.4429	25 48 49.3	3.753
15	14 27 54.60	2.3691	20 4 22.6	10.699	15	16 23 55.46	2.4420	25 52 29.8	3.596
16	14 30 16.92	2.3717	20 15 0.6	10.568	16	16 26 21.98	2.4418	25 56 0.8	3.439
17	14 32 39.20	2.3743	20 25 30.7	10.435	17	16 28 48.48	2.4415	25 59 22.4	3.281
18	14 35 1.73	2.3769	20 35 52.8	10.301	18	16 31 14.96	2.4411	26 2 34.5	3.124
19	14 37 24.42	2.3794	20 46 6.9	10.167	19	16 33 41.41	2.4406	26 5 37.2	2.966
20	14 39 47.26	2.3819	20 56 12.8	10.033	20	16 36 7.83	2.4399	26 8 30.5	2.809
21	14 43 10.25	2.3844	21 6 10.6	9.898	21	16 38 34.21	2.4392	26 11 14.4	2.652
22	14 44 33.39	2.3869	21 16 0.2	9.767	22	16 41 0.54	2.4384	26 13 48.8	2.495
23	14 46 56.68	2.3893	S.21 25 41.5	9.619	23	16 43 26.82	2.4376	S.26 16 13.8	2.338
WEDNESDAY 22.					FRIDAY 24.				
0	14 49 20.11	2.3917	S.21 35 14.5	9.480	0	16 45 53.04	2.4366	S.26 18 29.4	2.181
1	14 51 43.68	2.3941	21 44 39.2	9.341	1	16 48 19.20	2.4356	26 20 35.6	2.025
2	14 54 7.40	2.3965	21 53 55.4	9.201	2	16 50 45.30	2.4343	26 22 32.4	1.869
3	14 56 31.26	2.3988	22 3 3.2	9.069	3	16 53 11.33	2.4330	26 24 19.8	1.713
4	14 58 55.25	2.4010	22 12 2.5	8.916	4	16 55 37.28	2.4317	26 25 57.9	1.557
5	15 1 19.37	2.4032	22 20 53.2	8.773	5	16 58 3.15	2.4308	26 27 26.7	1.402
6	15 3 43.63	2.4054	22 29 35.3	8.630	6	17 0 28.92	2.4298	26 28 46.1	1.246
7	15 6 8.02	2.4075	22 38 8.8	8.486	7	17 2 54.60	2.4271	26 29 56.2	1.091
8	15 8 32.53	2.4096	22 46 33.6	8.341	8	17 5 20.17	2.4254	26 30 57.0	0.936
9	15 10 57.17	2.4116	22 54 49.6	8.194	9	17 7 45.64	2.4226	26 31 48.5	0.781
10	15 13 21.93	2.4136	23 2 56.9	8.047	10	17 10 11.00	2.4217	26 32 30.8	0.627
11	15 15 46.80	2.4156	23 10 55.3	7.900	11	17 12 36.24	2.4196	26 33 3.8	0.473
12	15 18 11.79	2.4174	23 18 44.9	7.752	12	17 15 1.35	2.4175	26 33 27.6	0.320
13	15 20 36.89	2.4192	23 26 25.6	7.604	13	17 17 26.33	2.4153	26 33 42.2	0.167
14	15 23 2.10	2.4210	23 33 57.4	7.456	14	17 19 51.18	2.4130	26 33 47.6	0.014
15	15 25 27.41	2.4227	23 41 20.2	7.305	15	17 22 15.89	2.4106	26 33 43.9	0.138
16	15 27 52.83	2.4243	23 48 34.0	7.155	16	17 24 40.45	2.4081	26 33 31.1	0.290
17	15 30 18.24	2.4259	23 55 38.8	7.004	17	17 27 4.86	2.4056	26 33 9.2	0.441
18	15 32 43.94	2.4274	24 2 34.5	6.853	18	17 29 29.12	2.4030	26 32 36.2	0.592
19	15 35 9.63	2.4289	24 9 21.1	6.701	19	17 31 53.21	2.4002	26 31 58.2	0.742
20	15 37 35.41	2.4304	24 15 58.6	6.549	20	17 34 17.14	2.3973	26 31 9.2	0.891
21	15 40 1.27	2.4316	24 22 27.0	6.397	21	17 36 40.89	2.3944	26 30 11.3	1.040
22	15 42 27.20	2.4328	24 28 46.2	6.244	22	17 39 4.47	2.3914	26 29 4.4	1.189
23	15 44 53.20	2.4340	24 34 56.2	6.090	23	17 41 27.86	2.3883	26 27 48.6	1.337
24	15 47 19.28	2.4351	S.24 40 57.0	5.936	24	17 43 51.07	2.3851	S.26 26 24.0	1.484

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 25.					MONDAY 27.				
	h. m. s.	s.	S. O. I. "	"		h. m. s.	s.	S. O. I. "	"
0	17 43 51.07	2.2661	S. 26 26 24.0	1.464	0	19 33 27.12	2.1642	S. 22 40 18.9	7.867
1	17 46 14.08	2.2619	26 24 50.5	1.631	1	19 35 36.81	2.1608	22 32 40.5	7.891
2	17 48 36.90	2.2786	26 23 8.3	1.777	2	19 37 46.18	2.1585	22 24 56.0	7.793
3	17 50 59.51	2.2762	26 21 17.4	1.923	3	19 39 55.33	2.1481	22 17 5.3	7.866
4	17 53 21.92	2.2717	26 19 17.7	2.067	4	19 42 3.95	2.1486	22 9 8.6	7.806
5	17 55 44.12	2.2682	26 17 9.4	2.211	5	19 44 12.35	2.1374	22 1 5.9	8.005
6	17 58 6.10	2.2646	26 14 52.4	2.264	6	19 46 20.44	2.1381	21 52 57.9	8.128
7	18 0 27.86	2.2608	26 12 26.9	2.296	7	19 48 28.20	2.1267	21 44 42.7	8.290
8	18 2 49.39	2.2570	26 9 52.9	2.688	8	19 50 35.64	2.1214	21 36 22.4	8.366
9	18 5 10.69	2.2531	26 7 10.4	2.779	9	19 52 42.75	2.1160	21 27 56.3	8.482
10	18 7 31.76	2.2491	26 4 19.4	2.919	10	19 54 49.55	2.1106	21 19 24.6	8.576
11	18 9 52.59	2.2451	26 1 20.0	3.059	11	19 56 56.03	2.1053	21 10 47.2	8.699
12	18 12 13.18	2.2410	25 58 12.3	3.198	12	19 59 2.19	2.1000	21 2 4.3	8.761
13	18 14 33.52	2.2369	25 54 56.3	3.296	13	20 1 8.03	2.0947	20 53 15.9	8.862
14	18 16 53.61	2.2327	25 51 32.0	3.473	14	20 3 13.55	2.0894	20 44 22.1	8.942
15	18 19 13.45	2.2285	25 47 59.5	3.610	15	20 5 18.76	2.0841	20 35 22.9	9.031
16	18 21 33.03	2.2242	25 44 18.8	3.746	16	20 7 23.65	2.0788	20 26 18.4	9.119
17	18 23 52.35	2.2198	25 40 30.0	3.880	17	20 9 28.22	2.0736	20 17 8.6	9.206
18	18 26 11.41	2.2154	25 36 33.2	4.014	18	20 11 32.48	2.0684	20 7 53.7	9.292
19	18 28 30.90	2.2109	25 32 28.4	4.147	19	20 13 36.43	2.0632	19 58 33.7	9.376
20	18 30 49.72	2.2063	25 28 15.6	4.279	20	20 15 40.07	2.0580	19 49 8.6	9.459
21	18 33 6.96	2.2017	25 23 54.9	4.410	21	20 17 43.40	2.0529	19 39 36.5	9.542
22	18 35 24.93	2.2071	25 19 26.4	4.540	22	20 19 46.42	2.0476	19 30 3.5	9.624
23	18 37 42.62	2.2024	S. 25 14 50.1	1.670	23	20 21 49.13	2.0427	S. 19 20 23.7	9.704
SUNDAY 26.					TUESDAY 28.				
	h. m. s.	s.	S. O. I. "	"		h. m. s.	s.	S. O. I. "	"
0	18 40 0.03	2.2077	S. 25 10 6.0	4.799	0	20 23 51.54	2.0376	S. 19 10 39.0	9.783
1	18 42 17.15	2.2032	25 5 14.3	4.926	1	20 25 53.65	2.0326	19 0 49.6	9.862
2	18 44 33.98	2.2781	25 0 14.9	5.062	2	20 27 55.45	2.0276	18 50 55.5	9.940
3	18 46 50.59	2.2722	24 55 7.9	5.178	3	20 29 56.95	2.0226	18 40 56.8	10.017
4	18 49 6.76	2.2663	24 49 53.5	5.303	4	20 31 58.15	2.0176	18 30 53.5	10.093
5	18 51 22.71	2.2603	24 44 31.6	5.426	5	20 33 59.05	2.0126	18 20 45.7	10.167
6	18 53 38.36	2.2563	24 39 2.4	5.549	6	20 35 59.66	2.0077	18 10 33.5	10.240
7	18 55 53.71	2.2523	24 33 25.8	5.671	7	20 37 59.98	2.0028	18 0 16.9	10.312
8	18 58 8.76	2.2482	24 27 41.9	5.792	8	20 40 0.00	1.9980	17 49 56.0	10.385
9	19 0 23.50	2.2431	24 21 50.8	5.912	9	20 41 59.73	1.9932	17 39 30.8	10.458
10	19 2 37.94	2.2380	24 15 52.5	6.031	10	20 43 59.18	1.9884	17 29 1.4	10.531
11	19 4 52.07	2.2329	24 9 47.2	6.148	11	20 45 58.34	1.9837	17 18 27.8	10.603
12	19 7 5.89	2.2278	24 3 34.8	6.265	12	20 47 57.22	1.9790	17 7 50.2	10.681
13	19 9 19.40	2.2226	23 57 15.4	6.381	13	20 49 55.81	1.9743	16 57 8.5	10.757
14	19 11 32.60	2.2174	23 50 49.1	6.496	14	20 51 54.13	1.9697	16 46 22.9	10.792
15	19 13 45.48	2.2121	23 44 15.9	6.609	15	20 53 52.17	1.9651	16 35 33.4	10.857
16	19 15 58.05	2.2068	23 37 36.0	6.722	16	20 55 49.94	1.9606	16 24 40.0	10.921
17	19 18 10.30	2.2016	23 30 49.3	6.834	17	20 57 47.44	1.9561	16 13 42.6	10.984
18	19 20 22.23	2.1962	23 23 55.9	6.945	18	20 59 44.67	1.9516	16 2 41.9	11.046
19	19 22 33.84	2.1909	23 16 55.9	7.054	19	21 1 41.63	1.9472	15 51 37.3	11.107
20	19 24 45.13	2.1856	23 9 49.4	7.163	20	21 3 38.33	1.9428	15 40 29.1	11.167
21	19 26 56.11	2.1802	23 2 36.4	7.271	21	21 5 34.77	1.9385	15 29 17.4	11.225
22	19 29 6.77	2.1749	22 55 16.9	7.378	22	21 7 30.95	1.9342	15 18 2.1	11.283
23	19 31 17.11	2.1695	22 47 51.0	7.483	23	21 9 26.88	1.9300	15 6 43.4	11.340
24	19 33 27.12	2.1642	S. 22 40 18.9	7.587	24	21 11 22.55	1.9256	S. 14 55 21.3	11.396

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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WEDNESDAY 29.

Hour.	h.	m.	s.	°.	'	"	°.	'	"
0	21	11	23.55	1.9268	S.14	55	21.3	11.286	
1	21	13	17.97	1.9217		14	43 55.9	11.481	1
2	21	15	13.15	1.9176		14	32 27.2	11.805	2
3	21	17	8.08	1.9135		14	20 55.3	11.556	3
4	21	19	2.77	1.9095		14	9 20.2	11.810	4
5	21	20	57.23	1.9053		13	57 43.0	11.692	5
6	21	22	51.43	1.9016		13	46 0.7	11.713	6
7	21	24	45.41	1.8979		13	34 16.4	11.762	7
8	21	26	39.16	1.8940		13	22 29.2	11.811	8
9	21	28	32.68	1.8902		13	10 39.1	11.860	9
10	21	30	25.98	1.8863		12	58 46.1	11.906	10
11	21	32	19.05	1.8825		12	46 50.4	11.952	11
12	21	34	11.91	1.8787		12	34 51.9	11.997	12
13	21	36	4.55	1.8748		12	22 50.8	12.041	13
14	21	37	56.98	1.8711		12	10 47.0	12.084	14
15	21	39	49.20	1.8673		11	58 40.6	12.127	15
16	21	41	41.22	1.8635		11	46 31.7	12.169	16
17	21	43	33.03	1.8597		11	34 20.4	12.209	17
18	21	45	24.65	1.8558		11	22 6.6	12.249	18
19	21	47	16.07	1.8519		11	9 50.5	12.288	19
20	21	49	7.30	1.8480		10	57 32.0	12.326	20
21	21	50	58.34	1.8441		10	45 11.2	12.363	21
22	21	52	49.20	1.8401		10	32 48.4	12.399	22
23	21	54	39.87	1.8361	S.10	20	23.3	12.435	23

FRIDAY 31.

Hour.	h.	m.	s.	°.	'	"	°.	'	"
0	22	39	56.97	1.7858	S. 5	0	38.4	13.000	
1	22	41	44.07	1.7813		4	47 34.3	13.075	1
2	22	43	31.09	1.7769		4	34 29.4	13.099	2
3	22	45	18.02	1.7725		4	21 23.6	13.102	3
4	22	47	4.87	1.7681		4	8 17.1	13.115	4
5	22	48	51.84	1.7738		3	55 9.8	13.127	5
6	22	50	38.33	1.7776		3	42 1.9	13.138	6
7	22	52	24.95	1.7764		3	28 53.3	13.148	7
8	22	54	11.50	1.7768		3	15 44.1	13.156	8
9	22	55	57.99	1.7742		2	3 34.4	13.167	9
10	22	57	44.41	1.7722		2	49 24.1	13.175	10
11	22	59	30.78	1.7723		2	36 13.4	13.182	11
12	23	1	17.09	1.7714		2	23 2.2	13.186	12
13	23	3	3.35	1.7705		2	9 50.7	13.194	13
14	23	4	49.57	1.7699		1	56 38.9	13.199	14
15	23	6	35.74	1.7692		1	43 26.8	13.203	15
16	23	8	21.87	1.7686		1	30 14.4	13.207	16
17	23	10	7.97	1.7680		1	17 1.9	13.210	17
18	23	11	54.03	1.7674		1	3 49.2	13.212	18
19	23	13	40.07	1.7670		0	50 36.4	13.213	19
20	23	15	26.08	1.7666		0	37 23.5	13.214	20
21	23	17	12.07	1.7662		0	24 10.6	13.214	21
22	23	18	58.04	1.7660	S. 0	10	57.8	13.213	22
23	23	20	44.00	1.7656	N. 0	2	15.0	13.212	23

THURSDAY 30.

Hour.	h.	m.	s.	°.	'	"	°.	'	"
0	21	56	36.38	1.8401	S.10	7	56.1	12.470	
1	21	58	26.68	1.8373		9	53 26.9	12.504	1
2	22	0	10.82	1.8345		9	42 55.6	12.537	2
3	22	2	0.79	1.8316		9	30 23.4	12.570	3
4	22	3	50.59	1.8287		9	17 47.2	12.602	4
5	22	5	40.23	1.8258		9	5 10.2	12.632	5
6	22	7	29.71	1.8229		8	52 31.4	12.661	6
7	22	9	19.03	1.8200		8	39 50.9	12.690	7
8	22	11	8.20	1.8168		8	27 8.6	12.718	8
9	22	12	57.22	1.8136		8	14 24.7	12.746	9
10	22	14	46.09	1.8104		8	1 39.1	12.773	10
11	22	16	34.62	1.8111		7	48 52.0	12.798	11
12	22	18	23.42	1.8098		7	36 3.3	12.822	12
13	22	20	11.88	1.8086		7	23 13.2	12.847	13
14	22	22	0.21	1.8044		7	10 21.7	12.870	14
15	22	23	48.41	1.8023		6	57 28.8	12.892	15
16	22	25	36.48	1.8002		6	44 34.5	12.915	16
17	22	27	24.43	1.7982		6	31 39.0	12.936	17
18	22	29	12.26	1.7963		6	18 42.2	12.956	18
19	22	30	59.98	1.7944		6	5 44.3	12.975	19
20	22	32	47.59	1.7925		5	52 45.2	12.994	20
21	22	34	35.09	1.7907		5	39 45.0	13.012	21
22	22	36	22.48	1.7880		5	26 43.8	13.029	22
23	22	38	9.77	1.7874		5	13 41.6	13.045	23
24	22	39	56.97	1.7868	S. 5	0	38.4	13.060	24

SATURDAY, SEPTEMBER 1.

0	23	23	29.94	1.7657	N. 0	15	27.7	13.210
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PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon,	1	5	33.6
☾ Last Quarter,	9	9	23.4
● New Moon,	16	10	20.2
☽ First Quarter,	23	0	49.8
○ Full Moon,	30	20	57.4

	Day.	h.
☾ Apogee,	5	1.8
☽ Perigee,	17	11.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIF.	III ^h .			P. L. of DIF.	VI ^h .			P. L. of DIF.	IX ^h .			P. L. of DIF.
				°	'	"		°	'	"		°	'	"	
1	Spica W.	104 52 59	2930	106 24 40	2937	107 56 12	2944	109 27 35	2950						
	Antares W.	59 6 9	2923	60 37 59	2930	62 9 40	2937	63 41 12	2943						
	Mars W.	16 55 41	3068	18 24 36	3089	19 54 2	3019	21 23 51	3007						
	α Pegasi E.	47 46 35	3327	46 20 58	3350	44 55 48	3276	43 31 8	3301						
	α Arietis E.	88 53 58	2937	87 21 26	2945	85 50 4	2951	84 18 50	2966						
2	Antares W.	71 16 47	2977	72 47 29	2982	74 18 4	2989	75 48 30	2995						
	Mars W.	28 55 35	2963	30 26 9	2983	31 56 43	2964	33 27 16	2965						
	α Arietis E.	76 44 51	2992	75 14 28	2999	73 44 14	3005	72 14 7	3011						
	Aldebaran E.	108 59 43	3047	107 30 28	3052	106 1 20	3056	104 32 16	3063						
	Antares W.	83 18 55	3022	84 48 40	3027	86 18 19	3033	87 47 51	3038						
3	Mars W.	40 59 26	2997	42 29 43	3001	43 59 56	3003	45 30 5	3006						
	α Aquilæ W.	39 50 32	4880	40 49 3	4772	41 49 2	4675	42 50 22	4557						
	α Arietis E.	64 45 28	3041	63 16 6	3045	61 46 50	3052	60 17 41	3056						
	Aldebaran E.	97 8 38	3067	95 40 12	3091	94 11 51	3096	92 43 37	3101						
	Antares W.	95 14 12	3047	96 43 14	3050	98 12 13	3053	99 41 8	3056						
4	Mars W.	52 59 53	3021	54 29 40	3024	55 59 23	3026	57 29 4	3028						
	α Aquilæ W.	48 13 53	4280	49 21 23	4210	50 29 40	4161	51 38 41	4122						
	α Arietis E.	52 53 28	3080	51 24 54	3085	49 56 26	3089	48 28 3	3092						
	Aldebaran E.	85 23 42	3131	83 55 58	3124	82 28 18	3127	81 0 41	3131						
	Mars W.	64 56 50	3036	66 26 18	3037	67 55 45	3038	69 25 11	3039						
5	α Aquilæ W.	57 32 51	3956	58 45 14	3929	59 58 4	3905	61 11 19	3882						
	α Arietis E.	41 7 14	3110	39 39 17	3113	38 11 23	3117	36 43 34	3119						
	Aldebaran E.	73 43 34	3144	72 16 18	3147	70 49 5	3148	69 21 53	3150						
	Venus E.	114 13 6	3067	112 44 16	3069	111 15 28	3070	109 46 42	3071						
	SUN E.	138 22 30	2442	137 1 1	2443	135 39 33	2443	134 18 5	2444						
6	Mars W.	76 52 23	3025	78 21 52	3034	79 51 23	3031	81 20 57	3029						
	α Aquilæ W.	67 22 57	3786	68 38 14	3789	69 53 48	3784	71 9 38	3740						
	Fomalhaut W.	42 39 39	3988	43 51 30	3935	45 4 14	3989	46 17 45	3848						
	Aldebaran E.	62 6 22	3167	60 39 19	3167	59 12 17	3167	57 45 16	3167						
	Venus E.	102 23 5	3073	100 54 22	3073	99 25 39	3072	97 56 55	3069						
7	Pollux E.	104 3 55	3096	102 35 40	3098	101 7 22	3091	99 39 2	3088						
	SUN E.	127 30 44	2439	126 9 12	2438	124 47 38	2436	123 26 1	2431						
	Mars W.	88 49 37	3013	90 19 34	3008	91 49 37	3008	93 19 46	2997						
	α Aquilæ W.	77 32 26	3675	78 49 40	3668	80 7 6	3652	81 24 44	3641						
	Fomalhaut W.	52 35 11	3678	53 52 25	3648	55 10 8	3621	56 28 20	3584						
8	α Pegasi W.	29 47 18	3743	31 3 21	3679	32 20 30	3623	33 38 38	3573						
	Aldebaran E.	50 30 11	3157	49 3 9	3157	47 36 7	3157	46 9 6	3157						
	Venus E.	90 32 39	3059	89 3 39	3056	87 34 35	3052	86 5 27	3047						
	Pollux E.	92 16 19	3069	90 47 31	3063	89 18 36	3058	87 49 35	3052						
	SUN E.	116 36 57	2411	115 14 53	2406	113 52 43	2400	112 30 26	2393						
8	Mars W.	100 52 23	2965	102 23 20	2967	103 54 27	2960	105 25 43	2940						
	α Aquilæ W.	87 55 42	3592	89 14 25	3583	90 33 18	3575	91 52 20	3566						
	Fomalhaut W.	63 6 4	3490	64 26 51	3450	65 48 1	3440	67 9 32	3419						
	α Pegasi W.	40 21 39	3379	41 44 19	3350	43 7 33	3321	44 31 20	3293						
	Aldebaran E.	36 54 10	3163	37 27 16	3166	36 0 26	3173	34 33 43	3178						
8	Venus E.	78 36 17	3022	77 8 31	3015	75 38 37	3009	74 8 35	3001						
	Pollux E.	80 22 29	3017	78 52 37	3008	77 22 34	2999	75 52 20	2990						
	SUN E.	105 37 2	2354	104 13 53	2345	102 50 34	2335	101 27 3	2326						

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of DI.			XVh.			P. L. of DI.			XVIIIh.			P. L. of DI.			XXIh.			P. L. of DI.		
			°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1	Spica	W.	110	58	50	2968	112	29	55	2965	114	0	52	2972	115	31	40	2979								
	Antares	W.	65	12	36	2980	66	43	51	2967	68	14	58	2963	69	45	57	2970								
	Mars	W.	22	53	55	2968	24	24	10	2991	25	54	34	2967	27	25	3	2965								
	α Pegasi	E.	42	6	58	2986	40	43	21	2961	39	20	20	2965	37	57	58	2929								
	α Arietis	E.	82	47	45	2965	81	16	49	2972	79	46	1	2979	78	15	22	2965								
2	Antares	W.	77	18	49	3001	78	49	1	3006	80	19	6	3012	81	49	4	3018								
	Mars	W.	34	57	48	2987	36	28	17	2989	37	58	43	2992	39	29	6	2994								
	α Arietis	E.	70	44	8	3018	69	14	17	3022	67	44	33	3020	66	14	57	3025								
	Aldebaran	E.	103	3	21	3027	101	34	31	3073	100	5	48	3076	98	37	9	3082								
3	Antares	W.	89	17	17	3042	90	46	38	3046	92	15	54	3060	93	45	5	3068								
	Mars	W.	47	0	10	3009	48	30	11	3012	50	0	8	3015	51	30	2	3018								
	α Aquilæ	W.	43	52	57	4509	44	56	40	4441	46	1	27	4367	47	7	13	4309								
	α Arietis	E.	58	48	38	3023	57	19	42	3066	55	50	51	3072	54	22	7	3076								
4	Aldebaran	E.	91	15	28	3106	89	47	24	3109	88	19	25	3112	86	51	31	3117								
	Antares	W.	101	9	59	3089	102	38	47	3070	104	7	33	3072	105	36	17	3074								
	Mars	W.	58	58	42	3080	60	28	17	3082	61	57	50	3084	63	27	21	3035								
	α Aquilæ	W.	52	48	21	4083	53	58	39	4048	55	9	31	4015	56	20	56	3964								
5	α Arietis	E.	46	59	44	3066	45	31	30	3100	44	3	20	3104	42	35	15	3107								
	Aldebaran	E.	79	33	9	3124	78	5	41	3127	76	38	10	3128	75	10	53	3122								
	Mars	W.	70	54	36	3088	72	24	2	3088	73	53	28	3087	75	22	55	3086								
	α Aquilæ	W.	62	24	57	2990	63	38	57	3240	64	53	18	3221	66	7	58	2928								
6	α Arietis	E.	35	15	48	3122	33	48	6	3126	32	20	28	3130	30	52	55	3128								
	Aldebaran	E.	67	54	44	3122	66	27	37	3153	65	0	31	3183	63	33	26	3124								
	Venus	E.	108	17	57	3072	108	49	13	3072	105	20	30	3072	103	51	48	3072								
	SUN	E.	132	56	36	2444	131	35	11	2423	130	13	43	2422	128	52	14	2441								
	Mars	W.	82	50	34	3026	84	20	14	3024	85	49	57	3021	87	19	44	3016								
	α Aquilæ	W.	72	25	43	2726	73	42	3	2712	74	58	37	2699	76	15	25	2687								
7	Fomalhaut	W.	47	31	58	2990	48	46	51	2771	50	2	23	2728	51	18	30	2706								
	Aldebaran	E.	56	18	15	3187	54	51	14	3187	53	24	13	3187	51	57	12	3187								
	Venus	E.	96	28	8	3089	94	59	20	3086	93	30	29	3065	92	1	36	3061								
	Pollux	E.	98	10	38	3086	96	42	10	3082	95	13	38	3078	93	45	1	3073								
	SUN	E.	122	4	20	2429	120	42	36	2425	119	20	48	2421	117	58	55	2416								
	Mars	W.	94	50	2	2991	96	20	26	2988	97	50	57	2979	99	21	36	2973								
8	α Aquilæ	W.	82	42	34	2631	84	0	35	2621	85	18	47	2611	86	37	9	2601								
	Fomalhaut	W.	57	47	1	2509	59	6	9	2546	60	25	42	2522	61	45	41	2501								
	α Pegasi	W.	34	57	42	2529	36	17	34	2487	37	38	13	2442	38	59	36	2412								
	Aldebaran	E.	44	42	5	3187	43	15	4	3158	41	48	4	3159	40	21	6	3161								
	Venus	E.	84	36	13	3048	83	6	53	3029	81	37	28	3023	80	7	56	3027								
	Pollux	E.	86	20	26	2046	84	51	10	2029	83	21	45	2023	81	52	12	2024								
	SUN	E.	111	8	2	2826	109	45	20	2879	108	22	50	2872	107	0	1	2863								
	Mars	W.	106	57	11	2921	108	28	51	2922	110	0	42	2912	111	32	45	2902								
	α Aquilæ	W.	93	11	31	2658	94	30	51	2650	95	50	20	2643	97	9	57	2635								
Fomalhaut	W.	68	31	27	2400	69	53	44	2381	71	16	22	2364	72	39	20	2345									
α Pegasi	W.	45	55	40	2267	47	20	30	2242	48	45	50	2218	50	11	38	2194									
Aldebaran	E.	33	7	7	2185	31	40	40	2195	30	14	25	2209	28	48	26	2225									
Venus	E.	72	38	23	2998	71	8	2	2986	69	37	32	2977	68	6	51	2969									
Pollux	E.	74	21	55	2991	72	51	18	2970	71	20	28	2960	69	49	26	2960									
SUN	E.	100	3	22	2214	98	39	27	2202	97	15	19	2292	95	50	58	2280									

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
		°	'	"		°	'	"		°	'	"		°	'	"	
9	α Aquilæ W.	98	29	42	2829	99	49	34	2828	101	9	33	2810	102	29	30	2812
	Fomalhaut W.	74	2	40	2826	75	26	21	2809	76	50	22	2822	78	14	43	2876
	α Pegasi W.	51	37	54	2171	53	4	38	2160	54	31	47	2128	55	59	23	2106
	Venus E.	66	36	0	2961	65	4	58	2961	63	33	44	2942	62	2	18	2982
	Pollux E.	68	18	10	2989	66	46	40	2927	65	14	56	2916	63	42	57	2908
	SUN E.	94	26	23	2267	93	1	33	2264	91	36	28	2236	90	11	7	2227
10	Fomalhaut W.	85	21	30	2190	86	47	51	2174	88	14	31	2166	89	41	30	2142
	α Pegasi W.	63	23	47	2008	64	53	56	2064	66	24	29	2064	67	55	27	2043
	α Arietis W.	19	48	32	2927	21	20	16	2988	22	52	38	2989	24	25	36	2942
	Venus E.	54	21	54	2679	52	49	8	2689	51	16	9	2686	49	42	56	2646
	Pollux E.	55	59	1	2689	54	25	23	2620	52	51	27	2611	51	17	13	2726
	SUN E.	83	0	7	2182	81	33	0	2126	80	5	33	2119	78	37	47	2102
11	Fomalhaut W.	97	1	7	2006	98	29	58	2008	99	59	5	2040	101	28	28	2026
	α Pegasi W.	75	36	37	2645	77	10	6	2626	78	44	1	2606	80	18	21	2757
	α Arietis W.	32	18	30	2727	33	54	34	2705	35	31	7	2685	37	8	7	2663
	Venus E.	41	53	12	2792	40	18	34	2788	38	43	44	2773	37	8	41	2766
	Pollux E.	43	21	21	2794	41	45	13	2710	40	8	47	2696	38	32	2	2682
	SUN E.	71	13	38	2013	69	43	39	2004	68	12	19	2076	66	42	35	2066
12	α Pegasi W.	88	16	20	2692	89	53	11	2673	91	30	27	2655	93	8	8	2626
	α Arietis W.	45	20	9	2861	48	59	57	2842	48	40	12	2822	50	20	55	2802
	Venus E.	29	11	15	2746	27	35	35	2749	26	0	0	2756	24	24	34	2769
	SUN E.	59	2	50	2689	57	29	38	2688	55	56	0	2619	54	21	57	2720
	α Arietis W.	58	51	25	2408	60	34	53	2386	62	18	48	2367	64	3	10	2248
13	Aldebaran W.	27	47	19	2674	29	24	34	2627	31	2	52	2624	32	42	9	2644
	SUN E.	46	25	11	2701	44	48	39	2661	43	11	27	2663	41	33	57	2642
	α Arietis W.	72	51	33	2261	74	38	30	2245	76	25	51	2229	78	13	35	2212
14	Aldebaran W.	41	10	56	2689	42	54	48	2662	44	39	17	2636	46	24	21	2217
	SUN E.	33	20	12	2682	31	40	15	2688	29	59	55	2628	28	19	14	2607
18	SUN W.	22	27	46	2818	24	13	19	2820	25	58	49	2824	27	44	12	2826
	Spica E.	34	2	17	2687	32	9	41	2644	30	17	15	2652	28	26	1	2661
	Antares E.	79	42	56	2016	77	49	45	2020	76	56	42	2024	74	3	47	2020
19	SUN W.	36	29	8	2906	38	13	33	2874	39	57	43	2864	41	41	43	2884
	Antares E.	64	41	40	2668	62	49	52	2677	60	58	18	2686	59	6	58	2607
	Mars E.	105	47	6	2086	103	55	48	2086	102	4	45	2109	100	13	58	2118
20	SUN W.	50	17	27	2486	51	59	42	2470	53	41	38	2462	55	23	15	2486
	Antares E.	49	54	32	2166	48	4	57	2169	46	15	42	2182	44	26	47	2196
	Mars E.	91	4	20	2179	89	15	21	2192	87	26	42	2206	85	38	23	2219
	α Aquilæ E.	103	1	9	2786	101	26	15	2789	99	51	33	2786	98	17	0	2804
21	SUN W.	63	46	6	2674	65	25	36	2660	67	4	45	2607	68	43	31	2622
	Antares E.	35	27	22	2267	33	40	34	2292	31	54	8	2266	30	8	3	2212
	Mars E.	76	42	13	2226	74	56	6	2211	73	10	29	2226	71	25	1	2242
	α Aquilæ E.	90	27	23	2688	88	54	17	2679	87	21	31	2686	85	49	7	2612
22	SUN W.	76	51	51	2767	78	28	24	2722	80	4	35	2726	81	40	24	2725
	Spica W.	24	36	4	2429	26	19	6	2422	28	1	51	2447	29	44	19	2429
	Mars E.	62	44	6	2424	61	1	6	2441	59	18	29	2426	57	36	16	2474

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DM.	XVh.		P. L. of DM.	XVIIIh.		P. L. of DM.	XXIh.		P. L. of DM.
				°	'		°	'		°	'	
9	α Aquilæ W.	103 49 50	2606	105 10 7	2608	106 30 28	2600	107 50 52	2497			
	Fomalhaut W.	79 39 24	2337	81 4 26	2340	82 29 48	2324	83 55 29	2307			
	α Pegasi W.	57 27 25	2066	58 55 53	2066	60 24 46	2045	61 54 3	2028			
	Venus E.	60 30 39	2922	58 58 48	2912	57 26 44	2901	55 54 26	2890			
	Pollux E.	62 10 42	2691	60 38 12	2678	59 5 25	2666	57 32 22	2652			
	SUN E.	88 45 30	2212	87 19 36	2198	85 53 24	2183	84 26 55	2168			
10	Fomalhaut W.	91 8 48	2126	92 36 26	2111	94 4 22	2097	95 32 35	2082			
	α Pegasi W.	69 26 51	2934	70 58 40	2904	72 30 54	2884	74 3 33	2866			
	α Arctis W.	25 59 8	2618	27 33 13	2704	29 7 49	2771	30 42 55	2749			
	Venus E.	48 9 28	2635	46 35 45	2624	45 1 48	2613	43 27 37	2602			
	Pollux E.	49 42 40	2762	48 7 49	2767	46 39 38	2758	44 57 9	2739			
	SUN E.	77 9 40	2065	75 41 12	2067	74 12 22	2049	72 43 10	2031			
11	Fomalhaut W.	102 58 9	2614	104 28 5	2601	105 58 16	2591	107 28 40	2581			
	α Pegasi W.	81 53 6	2767	83 28 17	2748	85 3 53	2729	86 39 54	2710			
	α Arctis W.	38 45 36	2643	40 23 33	2628	42 1 57	2602	43 40 49	2582			
	Venus E.	35 33 27	2757	33 58 3	2728	32 22 32	2718	30 46 56	2714			
	Pollux E.	36 54 58	2669	35 17 36	2656	33 39 57	2644	32 9 9	2632			
	SUN E.	65 11 27	2937	63 39 55	2917	62 7 58	2906	60 35 37	2878			
12	α Pegasi W.	94 46 14	2614	96 24 44	2601	98 3 38	2583	99 42 55	2568			
	α Arctis W.	52 2 6	2462	53 43 44	2462	55 25 50	2443	57 8 24	2424			
	Venus E.	22 49 26	2791	21 14 46	2821	19 40 45	2864	18 7 40	2927			
	SUN E.	52 47 28	2779	51 12 32	2760	49 37 11	2740	48 1 24	2720			
13	α Arctis W.	65 47 59	2621	67 33 14	2612	69 18 55	2596	71 5 1	2578			
	Aldebaran W.	34 22 21	2409	36 3 22	2476	37 45 11	2444	39 27 43	2416			
	SUN E.	39 56 1	2626	38 17 41	2607	36 38 55	2591	34 59 46	2572			
14	α Arctis W.	80 1 43	2166	81 50 14	2166	83 39 7	2169	85 28 21	2167			
	Aldebaran W.	48 9 56	2394	49 56 5	2374	51 42 43	2356	53 29 49	2338			
	SUN E.	26 38 11	2492	24 56 48	2479	23 15 5	2467	21 33 5	2456			
18	SUN W.	29 29 31	2236	31 14 40	2241	32 59 40	2249	34 44 30	2256			
	Spica E.	26 33 1	2072	24 41 18	2068	22 49 53	2067	20 58 49	2116			
	Antares E.	72 11 0	2087	70 18 23	2044	68 25 57	2051	66 33 42	2069			
19	SUN W.	43 25 26	2406	45 8 52	2416	46 52 1	2420	48 34 53	2448			
	Antares E.	57 15 54	2109	55 25 8	2119	53 34 38	2130	51 44 25	2148			
	Mars E.	98 23 27	2120	96 33 13	2141	94 43 19	2153	92 53 39	2166			
20	SUN W.	57 4 31	2612	58 45 26	2627	60 26 1	2643	62 6 15	2659			
	Antares E.	42 38 12	2209	40 49 58	2223	39 2 5	2237	37 14 33	2251			
	Mars E.	83 50 25	2236	82 2 49	2249	80 15 35	2264	78 28 43	2279			
	α Aquilæ E.	96 42 37	2612	95 8 26	2624	93 34 29	2635	92 0 47	2649			
21	SUN W.	70 21 56	2629	71 59 58	2646	73 37 38	2672	75 14 56	2699			
	Antares E.	28 22 21	2227	26 37 1	2248	24 52 4	2267	23 7 26	2272			
	Mars E.	69 40 3	2267	67 55 29	2275	66 11 18	2291	64 27 30	2308			
	α Aquilæ E.	84 17 5	2692	82 45 27	2643	81 14 15	2672	79 43 29	2696			
22	SUN W.	83 15 51	2772	84 50 56	2788	86 25 40	2805	88 0 2	2821			
	Spica W.	31 26 30	2472	33 8 21	2486	34 49 54	2496	36 31 10	2512			
	Mars E.	55 54 26	2490	54 12 59	2507	52 31 56	2524	50 51 16	2540			

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
22	α Aquilæ	E.	78 13 11	3019	76 43 22	3044	75 14 4	3069	73 45 17	3098
23	SUN	W.	89 34 3	2637	91 7 43	2638	92 41 2	2669	94 14 1	2684
	Spica	W.	38 12 5	2627	39 52 40	2640	41 32 57	2653	43 12 56	2668
	Mars	E.	49 10 59	2657	47 31 6	2674	45 51 35	2691	44 12 27	2697
	α Aquilæ	E.	66 30 2	2651	65 4 53	2695	63 40 24	2624	62 16 40	2692
	Fomalhaut	E.	90 2 20	2692	88 29 51	2609	86 57 43	2624	85 25 54	2640
24	SUN	W.	101 53 56	2962	103 24 57	2976	104 55 40	2990	106 26 5	3006
	Spica	W.	51 28 6	2636	53 6 14	2648	54 44 4	2663	56 21 35	2673
	Mars	E.	36 2 30	2692	34 25 39	2709	32 49 11	2728	31 13 8	2748
	α Aquilæ	E.	55 29 51	2693	54 11 9	2647	52 53 25	2705	51 36 43	2767
	Fomalhaut	E.	77 52 10	2629	76 22 33	2647	74 53 19	2667	73 24 29	2687
	α Pegasi	E.	98 58 26	2787	97 23 41	2798	95 49 11	2811	94 14 58	2824
25	SUN	W.	113 53 50	3072	115 22 34	3088	116 51 1	3098	118 19 13	3110
	Spica	W.	64 25 7	2735	66 1 1	2746	67 36 40	2756	69 12 5	2768
	Antares	W.	18 34 47	2726	20 10 50	2738	21 46 39	2750	23 22 12	2761
	Fomalhaut	E.	66 6 43	3198	64 40 31	3222	63 14 48	3247	61 49 35	3274
	α Pegasi	E.	86 27 53	2837	84 55 17	2898	83 22 56	2911	81 50 51	2923
26	SUN	W.	125 36 32	3169	127 3 18	3180	128 29 51	3191	129 56 11	3203
	Spica	W.	77 5 34	2821	78 39 35	2830	80 13 24	2839	81 47 1	2849
	Antares	W.	31 16 25	2816	32 50 34	2824	34 24 31	2833	35 58 16	2842
	Fomalhaut	E.	54 51 34	3424	53 29 45	3459	52 8 35	3497	50 48 8	3535
	α Pegasi	E.	74 14 24	2967	72 43 55	2989	71 13 41	3018	69 43 44	3028
27	Spica	W.	89 32 9	2908	91 4 37	2900	92 36 56	2908	94 9 5	2916
	Antares	W.	43 44 5	2887	45 16 41	2894	46 49 7	2901	48 21 24	2909
	Fomalhaut	E.	44 17 39	3782	43 2 18	3843	41 48 0	3910	40 34 50	3983
	α Pegasi	E.	62 18 4	3094	60 49 47	3108	59 21 47	3123	57 54 5	3138
	α Arietis	E.	104 12 3	2902	102 39 47	2910	101 7 41	2917	99 35 44	2924
28	Spica	W.	101 47 27	2961	103 18 41	2968	104 49 47	2964	106 20 45	2970
	Antares	W.	56 0 26	2945	57 31 48	2951	59 3 2	2958	60 34 8	2963
	α Pegasi	E.	50 40 23	3223	49 14 41	3242	47 49 22	3264	46 24 28	3286
	α Arietis	E.	91 58 17	2969	90 27 13	2965	88 56 17	2971	87 25 28	2977
29	Antares	W.	68 7 49	2991	69 38 13	2997	71 8 30	3001	73 38 41	3006
	Mars	W.	26 27 11	3107	27 55 12	3107	29 23 13	3108	30 51 13	3110
	α Pegasi	E.	39 26 59	3423	38 5 8	3468	36 43 57	3497	35 23 29	3539
	α Arietis	E.	79 53 21	3006	78 23 18	3013	76 53 21	3018	75 23 31	3022
	Aldebaran	E.	112 5 55	3063	110 37 0	3067	109 8 10	3070	107 39 24	3074
30	Antares	W.	80 8 12	3028	81 37 50	3031	83 7 24	3035	84 36 53	3039
	Mars	W.	38 10 43	3119	39 38 29	3122	41 6 12	3124	42 33 52	3127
	α Aquilæ	W.	37 51 37	6123	38 46 49	6005	39 43 40	4990	40 42 3	4796
	α Arietis	E.	67 55 48	3045	66 26 31	3060	64 57 20	3064	63 28 14	3068
	Aldebaran	E.	100 16 40	3091	98 48 19	3095	97 20 3	3098	95 51 51	3101
31	Antares	W.	92 3 18	3064	93 32 24	3066	95 1 27	3069	96 30 27	3071
	Mars	W.	49 51 24	3140	51 18 46	3143	52 46 5	3144	54 13 21	3147
	α Aquilæ	W.	45 53 39	4361	46 59 17	4320	48 5 51	4264	49 13 17	4216
	α Arietis	E.	56 3 55	3077	54 35 17	3080	53 6 43	3083	51 38 13	3087
	Aldebaran	E.	88 31 46	3115	87 3 55	3119	85 36 8	3121	84 8 24	3124

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.						
		°	'	"													
22	<i>a</i> Aquilæ E.	72	17	3	3194	70	49	23	3154	69	22	19	3184	67	55	11	3217
23	SUN W.	95	46	40	3201	97	18	58	3216	98	50	57	3231	100	22	36	3246
	Spica W.	44	52	35	2628	46	31	55	2696	48	10	57	2699	49	49	40	2621
	Mars E.	42	33	42	3234	40	55	19	2641	39	17	20	2657	37	39	43	2675
	<i>a</i> Aquilæ E.	60	53	40	3403	59	31	27	3446	58	10	3	3492	56	49	30	3541
	Fomalhaut E.	83	54	26	2967	82	23	19	2973	80	52	33	2992	79	22	10	3010
24	SUN W.	107	56	12	3018	109	26	2	3032	110	55	35	3046	112	24	51	3060
	Spica W.	57	58	51	2687	59	35	49	2699	61	12	31	2710	62	48	57	2723
	Mars E.	29	37	28	3794	28	2	13	3783	26	27	23	2803	24	52	59	2928
	<i>a</i> Aquilæ E.	50	21	6	3234	49	6	39	3204	47	53	23	3292	46	41	26	4063
	Fomalhaut E.	71	56	4	3108	70	28	4	3129	69	0	30	3162	67	33	23	3174
	<i>a</i> Pegasi E.	92	41	1	2836	91	7	20	2848	89	33	55	2861	88	0	46	2873
25	SUN W.	119	47	10	3123	121	14	52	3134	122	42	20	3147	124	9	33	3169
	Spica W.	70	47	15	2779	72	22	10	2790	73	56	51	2799	75	31	20	2811
	Antares W.	24	57	31	3772	26	32	36	3783	28	7	26	3794	29	42	2	2902
	Fomalhaut E.	60	24	53	3300	59	0	42	3329	57	37	4	3359	56	14	1	3391
	<i>a</i> Pegasi E.	80	19	1	2936	78	47	28	2949	77	16	11	2961	75	45	9	2974
26	SUN W.	131	22	18	3212	132	48	13	3223	134	13	55	3233	135	39	25	3242
	Spica W.	83	20	25	2686	84	53	38	2697	86	26	39	2675	87	59	30	2684
	Antares W.	37	31	49	3262	39	5	10	3261	40	38	19	2969	42	11	17	2977
	Fomalhaut E.	49	28	23	3578	48	9	25	3623	46	51	16	3673	45	34	0	3725
	<i>a</i> Pegasi E.	68	14	3	3099	66	44	36	3092	65	15	30	3065	63	46	38	3060
27	Spica W.	95	41	4	2924	97	12	53	2931	98	44	33	2933	100	16	4	2944
	Antares W.	49	53	31	3217	51	25	28	3224	52	57	16	2981	54	28	56	2989
	Fomalhaut E.	39	22	54	4064	38	12	17	4123	37	3	6	4251	35	55	28	4361
	<i>a</i> Pegasi E.	56	26	41	3184	54	59	37	3170	53	32	52	3187	52	6	27	3207
	<i>a</i> Arietis E.	98	3	56	2992	96	32	18	2989	95	0	49	2946	93	29	29	2953
28	Spica W.	107	51	35	2976	109	22	18	2982	110	52	53	2983	112	23	21	2994
	Antares W.	62	5	7	2909	63	35	58	2975	65	6	42	2981	66	37	19	2986
	<i>a</i> Pegasi E.	45	0	0	3309	43	35	59	3324	42	12	27	3361	40	49	26	3391
	<i>a</i> Arietis E.	85	54	47	3294	84	24	14	2980	82	53	49	2986	81	23	31	3002
29	Antares W.	74	8	46	3011	75	28	45	3015	77	8	39	3019	78	38	27	3023
	Mars W.	32	19	11	3110	33	47	8	3113	35	15	2	3114	36	42	54	3117
	<i>a</i> Pegasi E.	34	3	48	2687	32	44	59	2641	31	27	9	3702	30	10	24	3789
	<i>a</i> Arietis E.	73	53	47	3026	72	24	9	3023	70	54	37	3027	69	25	10	3041
	Aldebaran E.	106	10	43	3078	104	42	6	3081	103	13	33	3084	101	45	4	3088
30	Antares W.	86	6	18	3042	87	35	39	3045	89	4	56	3048	90	34	9	3052
	Mars W.	44	1	29	3120	45	29	2	3123	46	56	33	3124	48	24	1	3128
	<i>a</i> Aquilæ W.	41	41	52	4698	42	43	2	4691	43	45	26	4820	44	49	0	4447
	<i>a</i> Arietis E.	61	59	13	3061	60	30	16	3066	59	1	25	3069	57	32	38	3073
	Aldebaran E.	94	23	43	3104	92	55	38	3107	91	27	37	3110	89	59	40	3113
31	Antares W.	97	59	24	3063	99	28	19	3065	100	57	11	3068	102	26	0	3069
	Mars W.	55	40	34	3148	57	7	46	3151	58	34	54	3153	60	2	0	3153
	<i>a</i> Aquilæ W.	50	21	29	4166	51	30	27	4122	52	40	7	4084	53	50	24	4047
	<i>a</i> Arietis E.	50	9	47	3090	48	41	25	3093	47	13	7	3096	45	44	52	3099
	Aldebaran E.	82	40	44	3126	81	13	6	3129	79	45	31	3130	78	17	58	3133

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semidiameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.					
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.	Semi-diameter.			
		h.	m.	s.	s.	°	'				"	"	'	"	s.
Sat.	1	10	43	12.97	9.066	N. 8	7	14.0	54.61	15	53.92	64.40	0	16.01	0.790
Sun.	2	10	46	50.38	9.054	7	45	19.6	54.93	15	54.15	64.36	0	35.12	0.801
Mon.	3	10	50	27.51	9.043	7	23	17.5	55.25	15	54.38	64.32	0	54.49	0.812
Tues.	4	10	54	4.41	9.033	7	1	8.1	55.54	15	54.61	64.28	1	14.09	0.821
Wed.	5	10	57	41.08	9.024	6	38	51.8	55.83	15	54.85	64.25	1	33.92	0.830
Thur.	6	11	1	17.54	9.017	6	16	28.9	56.10	15	55.09	64.22	1	53.95	0.838
Fri.	7	11	4	53.81	9.010	5	53	59.4	56.37	15	55.33	64.19	2	14.18	0.846
Sat.	8	11	8	29.92	9.004	5	31	23.8	56.61	15	55.57	64.16	2	34.58	0.852
Sun.	9	11	12	5.89	8.998	5	8	42.7	56.84	15	55.81	64.14	2	55.11	0.858
Mon.	10	11	15	41.74	8.993	4	45	56.4	57.05	15	56.06	64.12	3	15.75	0.863
Tues.	11	11	19	17.47	8.989	4	23	5.0	57.26	15	56.31	64.10	3	36.51	0.867
Wed.	12	11	22	53.12	8.986	4	0	8.6	57.44	15	56.56	64.08	3	57.36	0.870
Thur.	13	11	26	28.69	8.984	3	37	7.9	57.62	15	56.82	64.07	4	18.29	0.873
Fri.	14	11	30	4.19	8.982	3	14	3.4	57.77	15	57.06	64.06	4	39.28	0.875
Sat.	15	11	33	39.65	8.980	2	50	55.4	57.92	15	57.34	64.06	5	0.31	0.877
Sun.	16	11	37	15.09	8.979	2	27	44.1	58.05	15	57.60	64.06	5	21.36	0.878
Mon.	17	11	40	50.52	8.979	2	4	29.7	58.17	15	57.87	64.06	5	42.43	0.878
Tues.	18	11	44	25.94	8.980	1	41	12.8	58.26	15	58.14	64.06	6	3.51	0.877
Wed.	19	11	48	1.39	8.981	1	17	53.8	58.34	15	58.41	64.07	6	24.56	0.876
Thur.	20	11	51	36.89	8.983	0	54	33.2	58.40	15	58.68	64.08	6	45.56	0.873
Fri.	21	11	55	12.44	8.985	0	31	11.1	58.46	15	58.95	64.00	7	6.49	0.871
Sat.	22	11	58	48.07	8.988	N. 0	7	47.7	58.50	15	59.23	64.11	7	27.35	0.868
Sun.	23	12	2	23.81	8.992	S. 0	15	36.5	58.58	15	59.51	64.13	7	48.12	0.863
Mon.	24	12	5	59.67	8.998	0	39	1.1	58.54	15	59.79	64.15	8	8.76	0.858
Tues.	25	12	9	35.66	9.005	1	2	25.7	58.54	16	0.07	64.17	8	29.26	0.851
Wed.	26	12	13	11.81	9.612	1	25	50.0	58.52	16	0.35	64.20	8	49.61	0.844
Thur.	27	12	16	48.15	9.021	1	49	14.0	58.49	16	0.63	64.23	9	9.77	0.835
Fri.	28	12	20	24.70	9.029	2	12	37.1	58.45	16	0.91	64.27	9	29.72	0.826
Sat.	29	12	24	1.48	9.039	2	35	58.9	58.39	16	1.19	64.31	9	49.45	0.816
Sun.	30	12	27	38.51	9.050	2	59	19.1	58.32	16	1.46	64.35	10	8.90	0.806
Mon.	31	12	31	15.83	9.062	S. 3	22	37.6	58.24	16	1.73	64.39	10	28.08	0.794

Nota. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.					
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.				
		h.	m.	s.	"	°	'				"	"			
Sat.	1	10	43	13.01	9.068	N. 8	7	13.7	54.61	m. 0	s. 16.02	0.790	h. 10	m. 43	s. 29.03
Sun.	2	10	46	50.46	9.054	7	45	19.0	54.93	0	35.13	0.801	10	47	25.59
Mon.	3	10	50	27.64	9.043	7	23	16.6	55.25	0	54.50	0.812	10	51	22.14
Tues.	4	10	54	4.59	9.033	7	1	6.9	55.54	1	14.10	0.821	10	55	18.69
Wed.	5	10	57	41.31	9.024	6	38	50.3	55.83	1	33.94	0.830	10	59	15.25
Thur.	6	11	1	17.82	9.017	6	16	27.1	56.10	1	53.98	0.838	11	3	11.80
Fri.	7	11	4	54.14	9.010	5	53	57.3	56.37	2	14.21	0.846	11	7	8.35
Sat.	8	11	8	30.30	9.004	5	31	21.4	56.61	2	34.61	0.852	11	11	4.91
Sun.	9	11	12	6.32	8.993	5	8	40.0	56.84	2	55.14	0.858	11	15	1.46
Mon.	10	11	15	42.22	8.993	4	45	53.3	57.05	3	15.79	0.863	11	18	58.01
Tues.	11	11	19	18.01	8.989	4	23	1.5	57.26	3	36.56	0.867	11	22	54.57
Wed.	12	11	22	53.71	8.986	4	0	4.8	57.44	3	57.41	0.870	11	26	51.12
Thur.	13	11	26	29.33	8.984	3	37	3.8	57.62	4	18.34	0.873	11	30	47.67
Fri.	14	11	30	4.88	8.982	3	13	59.0	57.77	4	39.34	0.875	11	34	44.22
Sat.	15	11	33	40.39	8.980	2	50	50.6	57.92	5	0.39	0.877	11	38	40.78
Sun.	16	11	37	15.89	8.979	2	27	38.9	58.05	5	21.44	0.878	11	42	37.33
Mon.	17	11	40	51.37	8.979	2	4	24.2	58.17	5	42.51	0.878	11	46	33.88
Tues.	18	11	44	26.84	8.980	1	41	7.0	58.26	6	3.60	0.877	11	50	30.44
Wed.	19	11	48	2.35	8.981	1	17	47.7	58.34	6	24.64	0.876	11	54	26.99
Thur.	20	11	51	37.91	8.983	0	54	26.7	58.40	6	45.64	0.873	11	58	23.55
Fri.	21	11	55	13.51	8.985	0	31	4.2	58.46	7	6.59	0.871	12	2	20.10
Sat.	22	11	58	49.20	8.988	N. 0	7	40.5	58.50	7	27.45	0.868	12	6	16.85
Sun.	23	12	2	24.99	8.992	S. 0	15	44.0	58.53	7	48.22	0.863	12	10	13.21
Mon.	24	12	6	0.90	8.998	0	39	8.9	58.54	8	8.86	0.858	12	14	9.76
Tues.	25	12	9	36.94	9.005	1	2	33.9	58.54	8	29.37	0.851	12	18	6.31
Wed.	26	12	13	13.14	9.012	1	25	58.6	58.52	8	49.73	0.844	12	22	2.87
Thur.	27	12	16	49.53	9.021	1	49	22.9	58.49	9	9.89	0.835	12	25	59.42
Fri.	28	12	20	26.13	9.029	2	12	46.3	58.45	9	29.84	0.826	12	29	55.97
Sat.	29	12	24	2.96	9.039	2	36	8.4	58.39	9	49.57	0.816	12	33	52.53
Sun.	30	12	27	40.05	9.050	2	59	29.0	58.32	10	9.03	0.806	12	37	49.08
Mon.	31	12	31	17.41	9.062	S. 3	22	47.8	58.24	10	28.22	0.794	12	41	45.63

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

THE SUN'S									
Day of the Month.	Day of the Year.	True LONGITUDE.				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.	
		λ		λ'	DIFF. for 1 hour.				LATITUDE.
		λ	λ'						
1	245	159° 13' 21.3"	12° 32.1"	145.29	+0.56	0.0036655	43.9	13 14 20.48	
2	246	160 11 29.1	10 39.8	145.36	0.63	.0035596	44.2	13 10 24.57	
3	247	161 9 38.8	8 49.4	145.44	0.66	.0034532	44.4	13 6 28.66	
4	248	162 7 50.4	7 0.9	145.52	0.66	.0033462	44.6	13 2 32.75	
5	249	163 6 4.0	5 14.4	145.60	0.64	.0032386	44.9	12 58 36.85	
6	250	164 4 19.5	3 29.8	145.68	0.59	.0031303	45.2	12 54 40.94	
7	251	165 2 37.0	1 47.2	145.77	0.51	.0030213	45.6	12 50 45.03	
8	252	166 0 56.6	0 6.6	145.86	0.42	.0029114	46.0	12 46 49.12	
9	253	166 59 18.4	58 28.3	145.95	0.30	.0028006	46.4	12 42 53.21	
10	254	167 57 42.3	56 52.1	146.04	0.17	.0026887	46.8	12 38 57.31	
11	255	168 56 8.3	55 18.0	146.13	+0.04	.0025756	47.2	12 35 1.40	
12	256	169 54 36.4	53 46.0	146.21	-0.09	.0024613	47.8	12 31 5.49	
13	257	170 53 6.5	52 16.0	146.30	0.22	.0023458	48.4	12 27 9.58	
14	258	171 51 38.6	50 48.0	146.38	0.33	.0022290	49.0	12 23 13.68	
15	259	172 50 12.7	49 22.0	146.46	0.42	.0021109	49.6	12 19 17.78	
16	260	173 48 48.7	47 57.9	146.54	0.49	.0019915	50.1	12 15 21.87	
17	261	174 47 26.6	46 35.7	146.62	0.51	.0018708	50.5	12 11 25.96	
18	262	175 46 6.3	45 15.3	146.70	0.51	.0017489	50.9	12 7 30.05	
19	263	176 44 47.7	43 56.6	146.77	0.47	.0016259	51.3	12 3 34.14	
20	264	177 43 30.9	42 39.7	146.84	0.42	.0015020	51.7	11 59 38.24	
21	265	178 42 15.9	41 24.6	146.91	0.34	.0013773	52.1	11 55 42.33	
22	266	179 41 2.6	40 11.2	146.98	0.24	.0012520	52.3	11 51 46.42	
23	267	180 39 51.0	38 59.5	147.06	-0.12	.0011262	52.5	11 47 50.51	
24	268	181 38 41.1	37 49.5	147.12	+0.01	.0010001	52.6	11 43 54.60	
25	269	182 37 32.9	36 41.2	147.19	0.14	.0008740	52.6	11 39 58.70	
26	270	183 36 26.5	35 34.7	147.27	0.27	.0007479	52.6	11 36 2.79	
27	271	184 35 21.9	34 30.0	147.35	0.38	.0006219	52.5	11 32 6.88	
28	272	185 34 19.2	33 27.2	147.43	0.48	.0004961	52.4	11 28 10.97	
29	273	186 33 18.4	32 26.3	147.51	0.54	.0003705	52.3	11 24 15.06	
30	274	187 32 19.5	31 27.3	147.59	0.59	.0002453	52.1	11 20 19.17	
31	275	188 31 22.7	30 30.4	147.68	+0.60	0.0001207	51.8	11 16 23.26	

NOTE. — λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	MERIDIAN PASSAGE.		
							h.	m.		Diff. for 1 hour.
1	14 44.3	14 44.1	53 58.6	-0.12	53 57.9	-0.00	12 59.8	1.65	15.6
2	14 44.3	14 44.9	53 58.6	+0.13	54 0.9	+0.26	13 39.8	1.69	16.6
3	14 46.0	14 47.5	54 4.8	0.40	54 10.5	0.55	14 21.1	1.76	17.6
4	14 49.6	14 52.2	54 18.1	0.71	54 27.5	0.87	15 4.6	1.87	18.6
5	14 55.3	14 59.0	54 39.0	1.04	54 52.6	1.22	15 51.0	2.01	19.6
6	15 3.3	15 8.1	55 8.3	1.39	55 26.1	1.57	16 40.9	2.15	20.6
7	15 13.5	15 19.4	55 45.9	1.74	56 7.8	1.90	17 34.2	2.28	21.6
8	15 25.9	15 32.8	56 31.5	2.05	56 56.9	2.18	18 30.1	2.37	22.6
9	15 40.1	15 47.7	57 23.8	2.28	57 51.7	2.35	19 27.4	2.39	23.6
10	15 55.5	16 3.3	58 20.2	2.38	58 48.9	2.37	20 24.7	2.37	24.6
11	16 11.0	16 18.4	59 17.1	2.30	59 44.1	2.18	21 20.8	2.30	25.6
12	16 25.3	16 31.4	60 9.3	1.99	60 31.9	1.74	22 15.3	2.24	26.6
13	16 36.6	16 40.8	60 51.2	1.44	61 6.6	1.10	23 8.5	2.20	27.6
14	16 43.8	16 45.4	61 17.5	+0.71	61 23.6	+0.30	♄		28.6
15	16 45.7	16 44.6	61 24.6	-0.13	61 20.6	-0.54	0 1.2	2.20	0.2
16	16 42.2	16 38.5	61 11.6	0.94	60 58.1	1.30	0 54.3	2.24	1.2
17	16 33.7	16 27.9	60 40.4	1.62	60 19.2	1.88	1 48.9	2.31	2.2
18	16 21.3	16 14.2	59 55.2	2.09	59 29.0	2.24	2 45.3	2.39	3.2
19	16 6.7	15 59.1	59 1.4	2.32	58 33.2	2.35	3 43.2	2.43	4.2
20	15 51.4	15 43.8	58 4.9	2.34	57 37.1	2.28	4 41.7	2.42	5.2
21	15 36.5	15 29.5	57 10.2	2.19	56 44.6	2.07	5 39.1	2.35	6.2
22	15 22.9	15 16.9	56 20.6	1.93	55 58.4	1.77	6 34.0	2.22	7.2
23	15 11.3	15 6.3	55 38.0	1.62	55 19.6	1.45	7 25.4	2.06	8.2
24	15 1.8	14 57.9	55 3.1	1.29	54 48.6	1.12	8 13.1	1.92	9.2
25	14 54.5	14 51.6	54 36.1	0.96	54 25.5	0.81	8 57.6	1.80	10.2
26	14 49.2	14 47.3	54 16.8	0.66	54 9.8	0.51	9 39.6	1.71	11.2
27	14 45.9	14 44.9	54 4.4	0.38	54 0.7	0.25	10 19.9	1.66	12.2
28	14 44.3	14 44.0	53 58.5	-0.13	53 57.7	-0.01	10 59.5	1.65	13.2
29	14 44.2	14 44.7	53 58.2	+0.10	54 0.1	+0.21	11 39.3	1.68	14.2
30	14 45.5	14 46.7	54 3.2	0.31	54 7.6	0.42	12 20.3	1.74	15.2
31	14 48.3	14 50.2	54 13.3	+0.53	54 20.2	+0.63	13 3.2	1.83	16.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
SATURDAY 1.					MONDAY 3.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	23 22 29.94	1.7657	N. 0 15 27.7	13.210	0	0 48 13.64	1.9208	N. 10 33 20.0	12.265
1	23 24 15.88	1.7686	0 28 40.2	13.207	1	0 50 3.48	1.9231	10 45 34.2	12.317
2	23 26 1.81	1.7656	0 41 52.6	13.203	2	0 51 53.49	1.9249	10 57 46.1	12.178
3	23 27 47.75	1.7657	0 55 4.7	13.199	3	0 53 43.87	1.9276	11 9 55.6	12.138
4	23 29 33.69	1.7658	1 8 16.5	13.194	4	0 55 34.02	1.9307	11 22 2.7	12.098
5	23 31 19.64	1.7659	1 21 28.0	13.188	5	0 57 24.55	1.9347	11 34 7.4	12.067
6	23 33 5.60	1.7661	1 34 39.1	13.181	6	0 59 15.26	1.9406	11 46 9.6	12.045
7	23 34 51.57	1.7664	1 47 49.8	13.174	7	1 1 6.16	1.9499	11 58 9.2	11.972
8	23 36 37.56	1.7667	2 1 0.0	13.166	8	1 2 57.25	1.9530	12 10 6.3	11.929
9	23 38 23.57	1.7671	2 14 9.7	13.157	9	1 4 48.53	1.9622	12 22 0.7	11.885
10	23 40 9.61	1.7675	2 27 18.9	13.148	10	1 6 40.00	1.9695	12 33 52.5	11.840
11	23 41 55.67	1.7680	2 40 27.5	13.138	11	1 8 31.67	1.9739	12 45 41.5	11.794
12	23 43 41.77	1.7686	2 53 35.5	13.127	12	1 10 23.55	1.9793	12 57 27.8	11.747
13	23 45 27.90	1.7692	3 6 42.8	13.116	13	1 12 15.63	1.9867	13 9 11.2	11.700
14	23 47 14.08	1.7699	3 19 49.4	13.104	14	1 14 7.92	1.9732	13 20 51.8	11.652
15	23 49 0.30	1.7707	3 32 55.3	13.091	15	1 16 0.42	1.9707	13 32 29.5	11.603
16	23 50 46.57	1.7715	3 46 0.3	13.077	16	1 17 53.13	1.9803	13 44 4.2	11.553
17	23 52 32.89	1.7724	3 59 4.5	13.063	17	1 19 46.06	1.9840	13 55 35.9	11.502
18	23 54 19.26	1.7734	4 12 7.9	13.048	18	1 21 39.21	1.9877	14 7 4.5	11.450
19	23 56 5.69	1.7744	4 25 10.3	13.032	19	1 23 32.59	1.9915	14 18 30.0	11.398
20	23 57 52.19	1.7755	4 38 11.7	13.016	20	1 25 26.19	1.9968	14 29 52.3	11.345
21	23 59 38.75	1.7766	4 51 12.1	12.998	21	1 27 20.02	1.9991	14 41 11.4	11.291
22	0 1 25.38	1.7777	5 4 11.5	12.980	22	1 29 14.08	1.9980	14 52 27.2	11.236
23	0 3 12.06	1.7789	N. 5 17 9.7	12.961	23	1 31 8.36	1.9970	N. 15 3 39.7	11.181
SUNDAY 2.					TUESDAY 4.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	0 4 58.85	1.7802	N. 5 30 6.8	13.942	0	1 33 2.92	1.9110	N. 15 14 48.9	11.135
1	0 6 45.70	1.7816	5 43 2.7	13.922	1	1 34 57.70	1.9161	15 25 54.6	11.087
2	0 8 32.64	1.7830	5 55 57.4	13.901	2	1 36 52.73	1.9192	15 36 56.9	11.038
3	0 10 19.66	1.7845	6 8 50.8	13.879	3	1 38 48.00	1.9222	15 47 55.6	10.989
4	0 12 6.78	1.7861	6 21 42.9	13.856	4	1 40 43.53	1.9275	15 58 50.8	10.939
5	0 13 53.99	1.7877	6 34 33.6	13.833	5	1 42 39.31	1.9318	16 9 42.3	10.889
6	0 15 41.30	1.7894	6 47 22.9	13.810	6	1 44 35.35	1.9361	16 20 30.2	10.765
7	0 17 28.71	1.7911	7 0 10.8	13.786	7	1 46 31.65	1.9405	16 31 14.3	10.704
8	0 19 16.23	1.7929	7 12 57.2	13.761	8	1 48 28.22	1.9449	16 41 54.7	10.641
9	0 21 3.85	1.7947	7 25 42.0	13.734	9	1 50 25.05	1.9494	16 52 31.2	10.576
10	0 22 51.59	1.7965	7 38 25.3	13.707	10	1 52 22.15	1.9539	17 3 3.8	10.511
11	0 24 39.44	1.7985	7 51 6.9	13.680	11	1 54 19.52	1.9584	17 13 32.5	10.445
12	0 26 27.41	1.8005	8 3 46.9	13.652	12	1 56 17.16	1.9630	17 23 57.2	10.378
13	0 28 15.50	1.8026	8 16 25.2	13.623	13	1 58 15.08	1.9676	17 34 17.8	10.310
14	0 30 3.72	1.8047	8 29 1.7	13.593	14	2 0 13.27	1.9723	17 44 34.4	10.241
15	0 31 52.07	1.8069	8 41 36.4	13.562	15	2 2 11.75	1.9770	17 54 46.8	10.171
16	0 33 40.55	1.8092	8 54 9.2	13.531	16	2 4 10.51	1.9817	18 4 55.0	10.100
17	0 35 29.17	1.8115	9 6 40.2	13.500	17	2 6 9.56	1.9865	18 14 58.9	10.029
18	0 37 17.93	1.8139	9 19 9.2	13.467	18	2 8 8.89	1.9913	18 24 58.5	9.957
19	0 39 6.84	1.8163	9 31 36.2	13.433	19	2 10 8.51	1.9962	18 34 53.7	9.883
20	0 40 55.89	1.8188	9 44 1.2	13.399	20	2 12 8.43	2.0011	18 44 44.5	9.808
21	0 42 45.09	1.8213	9 56 24.1	13.364	21	2 14 8.64	2.0060	18 54 30.8	9.733
22	0 44 34.45	1.8239	10 8 44.9	13.328	22	2 16 9.15	2.0109	19 4 12.5	9.657
23	0 46 23.96	1.8265	10 21 3.6	13.292	23	2 18 9.95	2.0160	19 13 49.6	9.580
24	0 48 13.64	1.8292	N. 10 33 20.0	13.255	24	2 20 11.06	2.0210	N. 19 23 22.1	9.503

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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WEDNESDAY 5.

	h.	m.	s.	°	'	"	Diff.
0	2	20	11.06	N.19	23	22.1	9.602
1	2	22	12.47		19	32 49.8	9.433
2	2	24	14.19		19	42 12.8	9.343
3	2	26	16.22		19	51 30.9	9.262
4	2	28	18.55		20	0 44.2	9.180
5	2	30	21.20		20	9 52.5	9.097
6	2	32	24.16		20	18 55.8	9.013
7	2	34	27.43		20	27 54.1	8.939
8	2	36	31.02		20	36 47.2	8.843
9	2	38	34.93		20	45 35.2	8.766
10	2	40	39.15		20	54 17.9	8.699
11	2	42	43.70		21	2 55.3	8.679
12	2	44	48.57		21	11 27.3	8.489
13	2	46	53.76		21	19 53.9	8.399
14	2	48	59.28		21	28 15.1	8.306
15	2	51	5.12		21	36 30.7	8.214
16	2	53	11.28		21	44 40.8	8.121
17	2	55	17.77		21	52 45.2	8.026
18	2	57	24.59		22	0 43.9	7.930
19	2	59	31.74		22	8 36.8	7.833
20	3	1	39.22		22	16 23.8	7.736
21	3	3	47.03		22	24 4.9	7.636
22	3	5	55.17		22	31 40.1	7.536
23	3	8	3.64	N.22	39	9.3	7.436

FRIDAY 7.

	h.	m.	s.	°	'	"	Diff.
0	4	3	22.60	N.25	10	44.5	4.587
1	4	5	39.54		25	15 15.9	4.460
2	4	7	56.79		25	19 30.7	4.322
3	4	10	14.34		25	23 55.8	4.203
4	4	12	32.20		25	28 4.1	4.073
5	4	14	50.36		25	32 4.6	3.942
6	4	17	8.81		25	35 57.2	3.810
7	4	19	27.66		25	39 41.8	3.677
8	4	21	46.60		25	43 18.5	3.543
9	4	24	5.93		25	46 47.1	3.409
10	4	26	25.54		25	50 7.6	3.274
11	4	28	45.44		25	53 20.0	3.138
12	4	31	5.61		25	56 24.2	3.001
13	4	33	26.06		25	59 20.1	2.863
14	4	35	46.78		26	2 7.8	2.724
15	4	38	7.77		26	4 47.1	2.586
16	4	40	29.03		26	7 18.0	2.448
17	4	42	50.55		26	9 40.4	2.308
18	4	45	12.32		26	11 54.4	2.161
19	4	47	34.35		26	13 59.8	2.019
20	4	49	56.62		26	15 56.7	1.876
21	4	52	19.14		26	17 44.9	1.731
22	4	54	41.90		26	19 24.4	1.585
23	4	57	4.90	N.26	20	55.1	1.439

THURSDAY 6.

	h.	m.	s.	°	'	"	Diff.
0	3	10	12.45	N.22	46	32.4	7.334
1	3	12	21.59		22	53 49.4	7.261
2	3	14	31.06		23	1 0.1	7.127
3	3	16	40.88		23	8 4.6	7.022
4	3	18	50.99		23	15 2.7	6.916
5	3	21	1.45		23	21 54.5	6.809
6	3	23	12.25		23	28 39.8	6.701
7	3	25	23.38		23	35 18.6	6.592
8	3	27	34.84		23	41 50.9	6.482
9	3	29	46.63		23	48 16.6	6.371
10	3	31	58.76		23	54 35.5	6.259
11	3	34	11.21		24	0 47.7	6.146
12	3	36	23.99		24	6 53.0	6.032
13	3	38	37.10		24	12 51.5	5.917
14	3	40	50.53		24	18 43.0	5.801
15	3	43	4.29		24	24 27.6	5.684
16	3	45	18.38		24	30 5.1	5.566
17	3	47	32.79		24	35 35.5	5.447
18	3	49	47.52		24	40 58.8	5.327
19	3	52	2.57		24	46 14.8	5.206
20	3	54	17.95		24	51 23.5	5.084
21	3	56	33.64		24	56 24.9	4.962
22	3	58	49.65		25	1 18.9	4.838
23	4	1	5.97		25	6 5.5	4.713
24	4	3	22.60	N.25	10	44.5	4.587

SATURDAY 8.

	h.	m.	s.	°	'	"	Diff.
0	4	59	28.13	N.26	22	17.1	1.392
1	5	1	51.58		26	23 30.2	1.145
2	5	4	15.26		26	24 34.5	0.997
3	5	6	39.16		26	25 29.9	0.848
4	5	9	3.27		26	26 16.3	0.698
5	5	11	27.59		26	26 53.7	0.548
6	5	13	52.11		26	27 22.1	0.397
7	5	16	16.83		26	27 41.4	0.246
8	5	18	41.74		26	27 51.6	0.094
9	5	21	6.84		26	27 52.6	0.039
10	5	23	32.12		26	27 44.5	0.212
11	5	25	57.68		26	27 27.1	0.366
12	5	28	23.21		26	27 0.5	0.520
13	5	30	49.01		26	26 24.7	0.675
14	5	33	14.97		26	25 39.5	0.831
15	5	35	41.09		26	24 45.0	0.987
16	5	38	7.36		26	23 41.1	1.143
17	5	40	33.76		26	22 27.9	1.299
18	5	43	0.33		26	21 5.2	1.456
19	5	45	27.02		26	19 33.1	1.614
20	5	47	53.83		26	17 51.5	1.772
21	5	50	20.77		26	16 0.4	1.930
22	5	52	47.82		26	13 59.9	2.089
23	5	55	14.98		26	11 49.8	2.248
24	5	57	42.25	N.26	9	30.2	2.407

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	5 57 42.25	2.4683	N 26 9 30.2	2.407	0	7 55 47.03	2.4226	N 21 10 49.3	2.916
1	6 0 9.69	2.4689	26 7 1.0	2.567	1	7 58 13.00	2.4217	21 0 50.0	10.059
2	6 2 37.08	2.4694	26 4 22.2	2.726	2	8 0 38.84	2.4206	20 50 42.2	10.201
3	6 5 4.03	2.4698	26 1 33.9	2.886	3	8 3 4.55	2.4194	20 40 25.9	10.342
4	6 7 32.26	2.4711	25 58 35.9	2.046	4	8 5 30.13	2.4182	20 30 1.1	10.483
5	6 9 59.96	2.4628	25 55 28.3	2.207	5	8 7 55.57	2.4179	20 19 27.9	10.623
6	6 12 27.74	2.4634	25 52 11.1	2.367	6	8 10 20.88	2.4166	20 8 46.3	10.762
7	6 14 55.59	2.4648	25 48 44.3	2.528	7	8 12 46.05	2.4152	19 57 56.4	10.900
8	6 17 23.49	2.4655	25 45 7.8	2.688	8	8 15 11.07	2.4140	19 46 58.3	11.037
9	6 19 51.45	2.4663	25 41 21.7	2.849	9	8 17 35.95	2.4128	19 35 52.0	11.172
10	6 22 19.45	2.4670	25 37 26.0	4.010	10	8 20 0.99	2.4112	19 24 37.7	11.306
11	6 24 47.49	2.4678	25 33 20.6	4.171	11	8 22 25.99	2.4098	19 13 15.3	11.439
12	6 27 15.57	2.4692	25 29 5.5	4.331	12	8 24 49.74	2.4083	19 1 45.0	11.571
13	6 29 43.68	2.4697	25 24 40.8	4.492	13	8 27 14.04	2.4068	18 50 6.8	11.702
14	6 32 11.81	2.4691	25 20 0.4	4.652	14	8 29 38.19	2.4013	18 38 20.7	11.833
15	6 34 39.96	2.4698	25 15 22.4	4.813	15	8 32 2.19	2.3997	18 26 26.9	11.969
16	6 37 8.13	2.4695	25 10 28.8	4.973	16	8 34 26.03	2.3982	18 14 25.4	12.077
17	6 39 36.30	2.4696	25 5 25.6	5.134	17	8 36 49.72	2.3966	18 2 16.4	12.212
18	6 42 4.48	2.4696	25 0 12.7	5.295	18	8 39 13.26	2.3911	17 49 59.8	12.336
19	6 44 32.65	2.4695	24 54 50.2	5.456	19	8 41 36.65	2.3895	17 37 35.8	12.462
20	6 47 0.82	2.4698	24 49 18.0	5.616	20	8 43 59.89	2.3880	17 25 4.4	12.584
21	6 49 28.97	2.4691	24 43 36.2	5.776	21	8 46 22.97	2.3864	17 12 25.7	12.706
22	6 51 57.11	2.4688	24 37 44.9	5.935	22	8 48 45.90	2.3848	16 59 39.8	12.825
23	6 54 25.22	2.4689	N 24 31 44.0	6.094	23	8 51 8.67	2.3782	N 16 46 46.8	12.943
MONDAY 10.					WEDNESDAY 12.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	6 56 53.31	2.4678	N 24 25 33.6	6.253	0	8 53 31.99	2.3766	N 16 33 46.7	13.080
1	6 59 21.36	2.4672	24 19 13.7	6.412	1	8 55 53.75	2.3731	16 20 39.6	13.175
2	7 1 49.37	2.4665	24 12 44.2	6.570	2	8 58 16.06	2.3705	16 7 25.7	13.269
3	7 4 17.34	2.4656	24 6 5.2	6.728	3	9 0 38.22	2.3680	15 54 5.0	13.401
4	7 6 45.26	2.4650	23 59 16.8	6.886	4	9 3 0.22	2.3654	15 40 37.6	13.512
5	7 9 13.13	2.4640	23 52 19.0	7.043	5	9 5 22.07	2.3629	15 27 3.6	13.622
6	7 11 40.94	2.4630	23 45 11.7	7.200	6	9 7 43.77	2.3604	15 13 23.0	13.730
7	7 14 8.69	2.4620	23 37 55.0	7.356	7	9 10 5.32	2.3580	14 59 36.0	13.836
8	7 16 36.38	2.4609	23 30 29.0	7.512	8	9 12 26.72	2.3555	14 45 42.7	13.941
9	7 19 3.99	2.4598	23 22 53.7	7.667	9	9 14 47.98	2.3530	14 31 43.1	14.045
10	7 21 31.53	2.4583	23 15 9.0	7.822	10	9 17 0.09	2.3505	14 17 37.3	14.147
11	7 23 58.99	2.4570	23 7 15.1	7.976	11	9 19 30.05	2.3481	14 3 25.5	14.247
12	7 26 26.37	2.4556	22 59 11.9	8.130	12	9 21 50.86	2.3457	13 49 7.7	14.346
13	7 28 53.66	2.4541	22 50 59.6	8.282	13	9 24 11.53	2.3434	13 34 44.0	14.443
14	7 31 20.86	2.4525	22 42 38.1	8.434	14	9 26 32.06	2.3410	13 20 14.5	14.538
15	7 33 47.96	2.4509	22 34 7.5	8.586	15	9 28 52.45	2.3387	13 5 39.3	14.632
16	7 36 14.96	2.4492	22 25 27.8	8.737	16	9 31 12.70	2.3364	12 50 58.6	14.734
17	7 38 41.86	2.4476	22 16 39.1	8.887	17	9 33 32.81	2.3341	12 36 12.4	14.815
18	7 41 8.66	2.4457	22 7 41.4	9.036	18	9 35 52.79	2.3318	12 21 20.7	14.904
19	7 43 35.35	2.4438	21 58 34.8	9.184	19	9 38 12.64	2.3296	12 6 23.8	14.992
20	7 46 1.92	2.4419	21 49 19.3	9.332	20	9 40 32.35	2.3274	11 51 21.7	15.078
21	7 48 28.38	2.4400	21 39 54.9	9.479	21	9 42 51.93	2.3252	11 36 14.5	15.161
22	7 50 54.72	2.4380	21 30 21.8	9.625	22	9 45 11.39	2.3232	11 21 2.3	15.242
23	7 53 20.94	2.4360	21 20 39.9	9.771	23	9 47 30.72	2.3211	11 5 45.3	15.324
24	7 55 47.03	2.4338	N 21 10 49.3	9.916	24	9 49 49.92	2.3191	N 10 50 23.5	15.402

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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THURSDAY 13.

h.	m.	s.	2.3191	N. 10	50	23.5	16.403
0	9	49	2.3191	10	50	23.5	16.403
1	9	52	2.3171	10	34	57.0	16.479
2	9	54	2.3162	10	19	26.0	16.554
3	9	56	2.3153	10	3	50.5	16.628
4	9	59	2.3115	9	48	10.6	16.700
5	10	1	2.3097	9	32	26.5	16.769
6	10	3	2.3080	9	16	38.3	16.837
7	10	6	2.3063	9	0	46.1	16.903
8	10	8	2.3046	8	44	49.9	16.967
9	10	10	2.3030	8	28	49.9	16.030
10	10	12	2.3014	8	12	46.3	16.091
11	10	15	2.3000	7	56	39.1	16.149
12	10	17	2.2984	7	40	28.4	16.206
13	10	19	2.2970	7	24	14.4	16.261
14	10	22	2.2956	7	7	57.1	16.314
15	10	24	2.2943	6	51	36.7	16.365
16	10	26	2.2931	6	35	13.3	16.414
17	10	29	2.2919	6	18	47.0	16.461
18	10	31	2.2908	6	2	18.0	16.506
19	10	33	2.2897	5	45	46.3	16.550
20	10	35	2.2887	5	29	12.0	16.592
21	10	38	2.2877	5	12	35.3	16.631
22	10	40	2.2868	4	55	56.3	16.668
23	10	42	2.2859	N. 4	39	15.1	16.704

SATURDAY 15.

h.	m.	s.	2.2854	S. 2	23	56.7	16.940
0	11	39	2.2854	S. 2	23	56.7	16.940
1	11	42	2.2822	2	40	52.6	16.923
2	11	44	2.2871	2	57	47.5	16.904
3	11	46	2.2880	3	14	41.2	16.883
4	11	48	2.2890	3	31	33.5	16.860
5	11	51	2.2900	3	48	24.4	16.835
6	11	53	2.2911	4	5	13.7	16.808
7	11	55	2.2923	4	23	1.4	16.779
8	11	58	2.2936	4	38	47.2	16.748
9	12	0	2.2949	4	55	31.1	16.714
10	12	2	2.2963	5	12	12.9	16.679
11	12	4	2.2977	5	28	53.6	16.643
12	12	7	2.2992	5	45	30.0	16.603
13	12	9	2.3007	6	2	5.0	16.562
14	12	11	2.3023	6	18	37.5	16.518
15	12	14	2.3039	6	35	7.3	16.473
16	12	16	2.3056	6	51	34.3	16.426
17	12	18	2.3073	7	7	58.4	16.377
18	12	21	2.3091	7	24	19.5	16.326
19	12	23	2.3110	7	40	37.5	16.273
20	12	25	2.3130	7	56	52.2	16.218
21	12	28	2.3149	8	13	3.5	16.161
22	12	30	2.3169	8	29	11.4	16.102
23	12	32	2.3190	S. 8	45	15.7	16.041

FRIDAY 14.

h.	m.	s.	2.2851	N. 4	22	31.8	16.738
0	10	45	2.2851	N. 4	22	31.8	16.738
1	10	47	2.2844	4	5	46.6	16.769
2	10	49	2.2838	3	48	59.5	16.799
3	10	51	2.2832	3	32	10.7	16.827
4	10	54	2.2827	3	15	20.3	16.853
5	10	56	2.2822	2	58	28.4	16.876
6	10	58	2.2818	2	41	35.2	16.897
7	11	1	2.2814	2	24	40.8	16.917
8	11	3	2.2811	2	7	45.2	16.935
9	11	5	2.2809	1	50	48.6	16.950
10	11	7	2.2808	1	33	51.2	16.963
11	11	10	2.2807	1	16	53.0	16.975
12	11	12	2.2807	0	59	54.2	16.983
13	11	14	2.2807	0	42	54.8	16.992
14	11	16	2.2808	0	25	55.1	16.997
15	11	19	2.2810	N. 0	8	55.1	17.001
16	11	21	2.2812	S. 0	8	5.0	17.008
17	11	23	2.2815	0	25	5.1	17.002
18	11	26	2.2818	0	42	5.2	16.999
19	11	28	2.2822	0	59	5.1	16.995
20	11	30	2.2827	1	16	4.6	16.988
21	11	32	2.2833	1	33	3.6	16.979
22	11	35	2.2839	1	50	2.1	16.968
23	11	37	2.2846	2	6	59.8	16.955
24	11	39	2.2854	S. 2	23	56.7	16.940

SUNDAY 16.

h.	m.	s.	2.2811	S. 9	1 <th>16.3</th> <th>16.978</th>	16.3	16.978
0	12	35	2.2811	S. 9	1	16.3	16.978
1	12	37	2.2822	9	17	13.0	16.913
2	12	39	2.2834	9	33	5.8	16.846
3	12	41	2.2877	9	48	54.5	16.778
4	12	44	2.2900	10	4	39.1	16.708
5	12	46	2.2924	10	20	19.4	16.635
6	12	48	2.2948	10	35	55.3	16.560
7	12	51	2.2973	10	51	26.7	16.484
8	12	53	2.2997	11	6	53.4	16.406
9	12	55	2.3022	11	22	15.4	16.327
10	12	58	2.3046	11	37	32.6	16.246
11	13	0	2.3074	11	52	44.9	16.162
12	13	3	2.3090	12	7	52.1	16.077
13	13	5	2.3096	12	22	54.1	14.990
14	13	7	2.3092	12	37	50.9	14.901
15	13	10	2.3079	12	52	42.3	14.810
16	13	12	2.3066	13	7	28.1	14.717
17	13	14	2.3054	13	22	8.3	14.623
18	13	17	2.3041	13	36	42.9	14.527
19	13	19	2.3029	13	51	11.7	14.430
20	13	21	2.3017	14	5	34.5	14.331
21	13	24	2.3004	14	19	51.3	14.229
22	13	26	2.3076	14	34	2.0	14.126
23	13	29	2.3004	14	48	6.5	14.022
24	13	31	2.3033	S. 15	2	4.6	13.916

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 17.					WEDNESDAY 19.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	13 31 25.41	2.3983	S.15 2 4.0	13.916	0	15 28 57.97	2.5005	S.23 41 18.2	7.381
1	13 33 48.49	2.3982	15 15 56.3	13.906	1	15 31 28.04	2.5017	23 48 30.2	7.130
2	13 36 11.75	2.3991	15 29 41.6	13.699	2	15 33 58.18	2.5028	23 55 32.6	6.959
3	13 38 35.19	2.3921	15 43 20.3	13.589	3	15 36 28.39	2.5038	24 2 25.3	6.797
4	13 40 58.80	2.3950	15 56 52.3	13.477	4	15 38 58.64	2.5047	24 9 8.2	6.634
5	13 43 22.59	2.3979	16 10 17.5	13.362	5	15 41 28.95	2.5056	24 15 41.4	6.471
6	13 45 46.55	2.4008	16 23 35.8	13.246	6	15 43 59.30	2.5062	24 22 4.8	6.308
7	13 48 10.69	2.4038	16 36 47.1	13.130	7	15 46 29.70	2.5069	24 28 18.4	6.144
8	13 50 35.01	2.4067	16 49 51.4	13.012	8	15 49 0.13	2.5075	24 34 22.1	5.980
9	13 52 59.51	2.4097	17 2 48.5	12.892	9	15 51 30.59	2.5079	24 40 16.0	5.816
10	13 55 24.18	2.4126	17 15 38.4	12.771	10	15 54 1.08	2.5082	24 46 0.0	5.652
11	13 57 49.03	2.4156	17 28 21.0	12.648	11	15 56 31.58	2.5085	24 51 34.2	5.487
12	14 0 14.05	2.4185	17 40 56.3	12.524	12	15 59 2.10	2.5087	24 56 58.4	5.322
13	14 2 39.25	2.4214	17 53 23.8	12.398	13	16 1 32.62	2.5087	25 2 12.7	5.156
14	14 5 4.62	2.4243	18 5 43.9	12.271	14	16 4 3.15	2.5087	25 7 17.1	4.991
15	14 7 30.17	2.4272	18 17 56.3	12.142	15	16 6 33.67	2.5086	25 12 11.6	4.826
16	14 9 55.89	2.4301	18 30 0.9	12.012	16	16 9 4.17	2.5082	25 16 56.1	4.659
17	14 12 21.78	2.4329	18 41 57.7	11.881	17	16 11 34.86	2.5079	25 21 30.7	4.492
18	14 14 47.85	2.4358	18 53 46.6	11.748	18	16 14 5.12	2.5075	25 25 55.3	4.327
19	14 17 14.08	2.4386	19 5 27.5	11.614	19	16 16 35.55	2.5069	25 30 10.0	4.162
20	14 19 40.48	2.4414	19 17 0.3	11.479	20	16 19 5.95	2.5062	25 34 14.8	3.996
21	14 22 7.05	2.4442	19 28 25.0	11.342	21	16 21 36.30	2.5054	25 38 9.6	3.831
22	14 24 33.78	2.4469	19 39 41.4	11.206	22	16 24 6.60	2.5045	25 41 54.5	3.665
23	14 27 0.67	2.4495	S.19 50 49.6	11.067	23	16 26 36.85	2.5036	S.25 45 29.5	3.500
TUESDAY 18.					THURSDAY 20.				
0	14 29 27.72	2.4522	S.20 1 49.4	10.927	0	16 29 7.04	2.5026	S.25 48 54.5	3.334
1	14 31 54.93	2.4548	20 12 40.8	10.786	1	16 31 37.16	2.5014	25 52 9.6	3.169
2	14 34 22.30	2.4574	20 23 23.7	10.644	2	16 34 7.21	2.5001	25 55 14.8	3.004
3	14 36 49.82	2.4600	20 33 58.0	10.500	3	16 36 37.18	2.4988	25 58 10.1	2.839
4	14 39 17.50	2.4625	20 44 23.7	10.356	4	16 39 7.06	2.4975	26 0 55.4	2.673
5	14 41 45.32	2.4649	20 54 40.7	10.211	5	16 41 36.85	2.4957	26 3 30.9	2.509
6	14 44 13.29	2.4673	21 4 49.0	10.065	6	16 44 6.54	2.4940	26 5 56.5	2.344
7	14 46 41.40	2.4697	21 14 48.4	9.917	7	16 46 36.13	2.4922	26 8 12.3	2.181
8	14 49 9.66	2.4720	21 24 39.0	9.768	8	16 49 5.60	2.4908	26 10 18.2	2.017
9	14 51 38.05	2.4743	21 34 20.6	9.619	9	16 51 34.96	2.4892	26 12 14.3	1.853
10	14 54 6.58	2.4765	21 43 53.3	9.469	10	16 54 4.19	2.4880	26 14 0.6	1.689
11	14 56 35.24	2.4787	21 53 16.9	9.317	11	16 56 33.29	2.4868	26 15 37.1	1.525
12	14 59 4.03	2.4808	22 2 31.4	9.166	12	16 59 2.25	2.4855	26 17 3.9	1.361
13	15 1 32.94	2.4828	22 11 36.8	9.012	13	17 1 31.07	2.4791	26 18 20.9	1.208
14	15 4 1.97	2.4848	22 20 32.9	8.856	14	17 3 59.74	2.4766	26 19 28.3	1.052
15	15 6 31.12	2.4867	22 29 19.8	8.704	15	17 6 28.25	2.4739	26 20 26.0	0.892
16	15 9 0.38	2.4885	22 37 57.4	8.549	16	17 8 56.61	2.4712	26 21 14.1	0.732
17	15 11 29.75	2.4902	22 46 25.6	8.392	17	17 11 24.80	2.4684	26 21 52.6	0.569
18	15 13 59.22	2.4920	22 54 44.5	8.235	18	17 13 52.92	2.4656	26 22 21.5	0.408
19	15 16 28.79	2.4936	23 2 53.9	8.078	19	17 16 20.66	2.4624	26 22 40.9	0.244
20	15 18 58.45	2.4951	23 10 53.9	7.920	20	17 18 48.31	2.4598	26 22 50.8	0.086
21	15 21 28.21	2.4966	23 18 44.3	7.761	21	17 21 15.77	2.4561	26 22 51.2	0.071
22	15 23 58.05	2.4980	23 26 25.2	7.602	22	17 23 43.04	2.4529	26 22 42.2	0.228
23	15 26 27.97	2.4993	23 33 56.5	7.442	23	17 26 10.11	2.4494	26 22 23.8	0.384
24	15 28 57.97	2.5005	S.23 41 18.2	7.281	24	17 28 36.97	2.4459	S.26 21 56.1	0.540

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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FRIDAY 21.

	h.	m.	s.	°.	'	"	°.
0	17	28	36.97	2.4459	S.26	21	56.1
1	17	31	3.62	2.4423	26	21	19.0
2	17	33	30.05	2.4386	26	20	32.7
3	17	35	56.26	2.4349	26	19	37.2
4	17	38	22.24	2.4311	26	18	32.5
5	17	40	47.98	2.4271	26	17	18.7
6	17	43	13.49	2.4231	26	15	55.8
7	17	45	38.75	2.4190	26	14	23.8
8	17	48	3.77	2.4148	26	12	42.8
9	17	50	28.53	2.4106	26	10	52.9
10	17	52	53.04	2.4063	26	8	54.0
11	17	55	17.28	2.4019	26	6	46.3
12	17	57	41.26	2.3973	26	4	29.9
13	18	0	4.96	2.3927	26	2	4.7
14	18	2	28.39	2.3881	25	59	30.8
15	18	4	51.54	2.3835	25	56	48.3
16	18	7	14.41	2.3788	25	53	57.9
17	18	9	36.99	2.3739	25	50	57.6
18	18	11	59.28	2.3690	25	47	49.5
19	18	14	21.27	2.3641	25	44	33.0
20	18	16	42.97	2.3591	25	41	8.2
21	18	19	4.36	2.3540	25	37	35.1
22	18	21	25.45	2.3489	25	33	53.7
23	18	23	46.24	2.3438	S.25	30	4.1

SUNDAY 23.

	h.	m.	s.	°.	'	"	°.
0	19	20	38.62	2.2034	S.23	13	10.5
1	19	22	50.65	2.1975	23	6	10.5
2	19	25	2.32	2.1917	22	59	4.0
3	19	27	13.64	2.1858	22	51	51.1
4	19	29	24.61	2.1800	22	44	31.9
5	19	31	35.23	2.1741	22	37	6.4
6	19	33	45.50	2.1683	22	29	34.8
7	19	35	55.42	2.1624	22	21	57.1
8	19	38	4.99	2.1566	22	14	13.3
9	19	40	14.21	2.1507	22	6	23.5
10	19	42	23.08	2.1449	21	58	27.8
11	19	44	31.60	2.1391	21	50	26.2
12	19	46	39.77	2.1333	21	42	18.8
13	19	48	47.60	2.1275	21	34	5.7
14	19	50	55.08	2.1218	21	25	46.9
15	19	53	2.22	2.1161	21	17	22.5
16	19	55	9.01	2.1104	21	8	52.6
17	19	57	15.46	2.1047	21	0	17.2
18	19	59	21.57	2.0990	20	51	36.4
19	20	1	27.35	2.0934	20	42	50.3
20	20	3	32.79	2.0878	20	33	58.9
21	20	5	37.89	2.0822	20	25	2.3
22	20	7	42.66	2.0767	20	16	0.5
23	20	9	47.10	2.0713	S.20	6	53.6

SATURDAY 22.

	h.	m.	s.	°.	'	"	°.
0	18	26	6.71	2.3286	S.25	26	6.5
1	18	28	26.87	2.3234	25	22	0.8
2	18	30	46.71	2.3181	25	17	47.1
3	18	33	6.23	2.3127	25	13	25.5
4	18	35	25.43	2.3173	25	8	56.0
5	18	37	44.30	2.3118	25	4	18.7
6	18	40	2.84	2.3063	24	59	33.6
7	18	42	21.06	2.3008	24	54	40.9
8	18	44	38.94	2.2953	24	49	40.5
9	18	46	56.49	2.2897	24	44	32.6
10	18	49	13.70	2.2841	24	39	17.1
11	18	51	30.57	2.2785	24	33	54.2
12	18	53	47.11	2.2729	24	28	24.0
13	18	56	3.31	2.2671	24	22	46.5
14	18	58	19.16	2.2614	24	17	1.7
15	19	0	34.67	2.2556	24	11	9.7
16	19	2	49.83	2.2499	24	5	10.7
17	19	5	4.65	2.2441	23	59	4.6
18	19	7	19.12	2.2383	23	52	51.6
19	19	9	33.24	2.2325	23	46	31.6
20	19	11	47.02	2.2267	23	40	4.8
21	19	14	0.45	2.2209	23	33	31.2
22	19	16	13.52	2.2151	23	26	50.9
23	19	18	26.24	2.2092	23	20	4.0
24	19	20	38.62	2.2034	S.23	13	10.5

MONDAY 24.

	h.	m.	s.	°.	'	"	°.
0	20	11	51.20	2.0687	S.19	57	41.6
1	20	13	54.07	2.0602	19	48	24.7
2	20	15	58.42	2.0547	19	39	2.9
3	20	18	1.54	2.0489	19	29	36.2
4	20	20	4.34	2.0430	19	20	4.8
5	20	22	6.82	2.0386	19	10	28.7
6	20	24	8.97	2.0333	19	0	47.8
7	20	26	10.81	2.0280	18	51	2.3
8	20	28	12.33	2.0227	18	41	12.3
9	20	30	13.54	2.0175	18	31	17.8
10	20	32	14.43	2.0124	18	21	18.9
11	20	34	15.02	2.0073	18	11	15.6
12	20	36	15.30	2.0022	18	1	8.0
13	20	38	15.28	1.9972	17	50	56.1
14	20	40	14.96	1.9922	17	40	40.1
15	20	42	14.34	1.9873	17	30	19.9
16	20	44	13.43	1.9824	17	19	55.7
17	20	46	12.23	1.9775	17	9	27.4
18	20	48	10.73	1.9727	16	58	55.2
19	20	50	8.95	1.9679	16	48	19.1
20	20	52	6.88	1.9632	16	37	39.1
21	20	54	4.53	1.9586	16	26	55.3
22	20	56	1.91	1.9540	16	16	7.8
23	20	57	59.01	1.9494	16	5	16.6
24	20	59	55.84	1.9449	S.15	54	21.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 25.					THURSDAY 27.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	20 59 55.84	1.9449	S. 15 54 21.7	10.944	0	22 29 6.49	1.7080	S. 6 16 21.4	12.836
1	21 1 52.40	1.9404	15 43 23.3	11.003	1	22 30 54.02	1.7013	6 3 31.1	12.846
2	21 3 46.69	1.9360	15 32 21.4	11.080	2	22 32 41.45	1.7097	5 50 39.6	12.908
3	21 5 44.72	1.9316	15 21 16.0	11.118	3	22 34 28.78	1.7081	5 37 46.9	12.987
4	21 7 40.48	1.9273	15 10 7.3	11.176	4	22 36 16.02	1.7066	5 24 53.2	12.905
5	21 9 35.99	1.9230	14 58 55.0	11.230	5	22 38 3.17	1.7051	5 11 58.4	12.922
6	21 11 31.34	1.9188	14 47 39.6	11.264	6	22 39 50.23	1.7037	4 59 2.6	12.936
7	21 13 26.24	1.9147	14 36 20.9	11.337	7	22 41 37.31	1.7023	4 46 5.8	12.984
8	21 15 21.00	1.9106	14 24 59.1	11.390	8	22 43 24.10	1.7010	4 33 8.1	12.969
9	21 17 15.51	1.9065	14 13 34.1	11.443	9	22 45 10.92	1.7098	4 20 9.5	12.988
10	21 19 9.77	1.9025	14 2 6.0	11.498	10	22 46 57.67	1.7086	4 7 10.1	12.996
11	21 21 3.80	1.8985	13 50 34.9	11.548	11	22 48 44.35	1.7075	3 54 9.9	12.909
12	21 22 57.59	1.8946	13 39 0.8	11.592	12	22 50 30.97	1.7063	3 41 9.0	12.921
13	21 24 51.15	1.8906	13 27 23.8	11.641	13	22 52 17.53	1.7055	3 28 7.3	12.933
14	21 26 44.49	1.8870	13 15 43.9	11.689	14	22 54 4.03	1.7048	3 15 5.0	12.944
15	21 28 37.60	1.8833	13 4 1.1	11.736	15	22 55 50.48	1.7037	3 2 2.1	12.943
16	21 30 30.48	1.8796	12 52 15.0	11.782	16	22 57 36.87	1.7029	2 48 58.6	12.963
17	21 32 23.15	1.8760	12 40 27.3	11.827	17	22 59 23.22	1.7021	2 35 54.6	12.971
18	21 34 15.60	1.8724	12 28 36.4	11.871	18	23 1 9.52	1.7014	2 22 50.1	12.979
19	21 36 7.84	1.8689	12 16 42.8	11.914	19	23 2 55.79	1.7008	2 9 45.1	12.986
20	21 37 59.87	1.8655	12 4 46.7	11.957	20	23 4 42.02	1.7003	1 56 39.8	12.992
21	21 39 51.70	1.8621	11 52 48.0	11.999	21	23 6 28.22	1.7007	1 43 34.1	12.998
22	21 41 43.33	1.8588	11 40 46.8	12.040	22	23 8 14.39	1.7002	1 30 28.1	12.998
23	21 43 34.76	1.8555	S. 11 28 43.2	12.080	23	23 10 0.53	1.7008	S. 1 17 21.8	12.997
WEDNESDAY 26.					FRIDAY 28.				
0	21 45 25.99	1.8523	S. 11 16 37.2	12.119	0	23 11 46.65	1.7000	S. 1 4 15.3	12.990
1	21 47 17.03	1.8492	11 4 28.8	12.163	1	23 13 32.75	1.7002	0 51 8.6	12.993
2	21 49 7.89	1.8461	10 52 18.2	12.196	2	23 15 18.84	1.7000	0 38 1.7	12.995
3	21 50 58.56	1.8430	10 40 5.3	12.232	3	23 17 4.92	1.7079	0 24 54.8	12.996
4	21 52 49.05	1.8400	10 27 50.3	12.268	4	23 18 51.00	1.7078	S. 0 11 47.8	12.997
5	21 54 39.36	1.8371	10 15 33.2	12.303	5	23 20 37.07	1.7078	N. 0 1 19.2	12.997
6	21 56 29.50	1.8343	10 3 13.9	12.338	6	23 22 23.14	1.7079	0 14 26.2	12.996
7	21 58 19.47	1.8316	9 50 52.6	12.372	7	23 24 9.22	1.7080	0 27 33.1	12.994
8	22 0 9.28	1.8288	9 38 29.2	12.405	8	23 25 55.30	1.7082	0 40 39.9	12.991
9	22 1 58.93	1.8261	9 26 3.9	12.437	9	23 27 41.40	1.7084	0 53 46.5	12.986
10	22 3 48.41	1.8235	9 13 36.7	12.468	10	23 29 27.51	1.7087	1 6 52.9	12.980
11	22 5 37.74	1.8209	9 1 7.7	12.499	11	23 31 13.64	1.7090	1 19 59.0	12.971
12	22 7 26.91	1.8184	8 48 36.8	12.529	12	23 32 59.79	1.7094	1 33 4.9	12.965
13	22 9 15.94	1.8159	8 36 4.2	12.558	13	23 34 45.97	1.7098	1 46 10.4	12.959
14	22 11 4.82	1.8135	8 23 29.8	12.586	14	23 36 32.17	1.7103	1 59 15.6	12.953
15	22 12 53.56	1.8112	8 10 53.8	12.614	15	23 38 18.41	1.7109	2 12 20.3	12.947
16	22 14 42.17	1.8090	7 58 16.1	12.641	16	23 40 4.68	1.7115	2 25 24.6	12.941
17	22 16 30.65	1.8068	7 45 36.8	12.667	17	23 41 50.99	1.7122	2 38 28.4	12.936
18	22 18 18.99	1.8046	7 32 56.0	12.692	18	23 43 37.35	1.7126	2 51 31.6	12.931
19	22 20 7.20	1.8025	7 20 13.7	12.717	19	23 45 23.76	1.7128	3 4 34.2	12.926
20	22 21 55.39	1.8005	7 7 30.0	12.741	20	23 47 10.21	1.7131	3 17 36.2	12.921
21	22 23 43.26	1.7985	6 54 44.8	12.764	21	23 48 56.72	1.7136	3 30 37.5	12.916
22	22 25 31.11	1.7966	6 41 58.3	12.786	22	23 50 43.28	1.7138	3 43 38.1	12.911
23	22 27 18.85	1.7948	6 29 10.5	12.807	23	23 52 29.91	1.7141	3 56 38.0	12.906
24	22 29 6.49	1.7930	S. 6 16 21.4	12.828	24	23 54 16.60	1.7145	N. 4 9 37.0	12.901

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 29.					SUNDAY 30.				
0	23 54 16.00	1.7798	N. 4 9 37.0	12.977	0	0 37 25.47	1.8223	N. 9 15 11.9	12.415
1	23 56 3.36	1.7799	4 22 35.2	12.982	1	0 39 14.88	1.8248	9 27 35.9	12.382
2	23 57 50.19	1.7811	4 35 32.4	12.946	2	0 41 4.45	1.8274	9 39 57.8	12.348
3	23 59 37.10	1.7834	4 48 28.7	12.930	3	0 42 54.17	1.8300	9 52 17.7	12.314
4	0 1 24.08	1.7887	5 1 24.0	12.913	4	0 44 44.05	1.8327	10 4 35.5	12.279
5	0 3 11.15	1.7881	5 14 18.3	12.896	5	0 46 34.09	1.8354	10 16 51.1	12.242
6	0 4 58.30	1.7866	5 27 11.5	12.878	6	0 48 24.30	1.8382	10 29 4.5	12.205
7	0 6 45.54	1.7881	5 40 3.5	12.860	7	0 50 14.67	1.8410	10 41 15.7	12.168
8	0 8 32.87	1.7897	5 52 54.4	12.833	8	0 52 5.22	1.8439	10 53 24.6	12.129
9	0 10 20.29	1.7913	6 5 44.1	12.816	9	0 53 55.94	1.8468	11 5 31.1	12.089
10	0 12 7.82	1.7930	6 18 32.5	12.797	10	0 55 46.84	1.8498	11 17 35.3	12.048
11	0 13 55.45	1.7948	6 31 19.6	12.774	11	0 57 37.92	1.8529	11 29 37.0	12.007
12	0 15 43.19	1.7966	6 44 5.3	12.751	12	0 59 29.19	1.8560	11 41 36.2	11.965
13	0 17 31.03	1.7984	6 56 49.6	12.727	13	1 1 20.64	1.8591	11 53 32.8	11.922
14	0 19 18.99	1.8003	7 9 32.5	12.703	14	1 3 12.28	1.8623	12 5 26.9	11.879
15	0 21 7.07	1.8022	7 22 13.9	12.678	15	1 5 4.11	1.8656	12 17 18.3	11.835
16	0 22 55.26	1.8043	7 34 53.8	12.652	16	1 6 56.14	1.8689	12 29 7.1	11.790
17	0 24 43.57	1.8065	7 47 32.1	12.626	17	1 8 48.36	1.8721	12 40 53.1	11.743
18	0 26 32.01	1.8084	8 0 8.8	12.599	18	1 10 40.79	1.8756	12 52 36.3	11.695
19	0 28 20.58	1.8106	8 12 43.8	12.569	19	1 12 33.42	1.8789	13 4 16.6	11.648
20	0 30 9.28	1.8128	8 25 17.0	12.539	20	1 14 26.26	1.8824	13 15 54.1	11.599
21	0 31 58.12	1.8151	8 37 48.5	12.510	21	1 16 19.31	1.8859	13 27 28.6	11.550
22	0 33 47.09	1.8174	8 50 18.2	12.480	22	1 18 12.57	1.8896	13 39 0.1	11.500
23	0 35 36.21	1.8198	9 2 46.0	12.448	23	1 20 6.05	1.8933	13 50 28.6	11.449
24	0 37 25.47	1.8223	N. 9 15 11.9	12.415	24	1 21 59.75	1.8968	N.14 1 54.0	11.397

PHASES OF THE MOON.

	Day. h. m.
☾ Last Quarter,	7 23 7.1
● New Moon,	14 18 9.5
☽ First Quarter,	21 11 24.9
○ Full Moon,	29 13 39.8

	Day. h.
☾ Apogee,	1 11.9
☾ Perigee,	14 20.4
☾ Apogee,	28 13.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dif.	IIIh.			P. L. of Dif.	VIh.			P. L. of Dif.	IXh.			P. L. of Dif.
			^o	ⁱ	ⁿ		^o	ⁱ	ⁿ		^o	ⁱ	ⁿ		^o	ⁱ	ⁿ	
1	Antares	W.	103	54	49	3069	105	23	36	3071	106	52	21	3072	108	21	5	3073
	Mars	W.	61	29	4	3155	62	56	7	3156	64	23	9	3158	65	50	8	3159
	α Aquilæ	W.	55	1	17	4018	56	12	44	3983	57	24	40	3963	58	37	6	3927
	α Arietis	E.	44	16	41	3102	42	48	34	3105	41	20	31	3108	39	52	31	3111
	Aldebaran	E.	76	50	29	3135	75	23	2	3137	73	55	37	3139	72	28	15	3142
Venus	E.	125	16	42	3341	123	53	18	3342	122	29	55	3343	121	6	33	3344	
2	Mars	W.	73	4	52	3129	74	31	47	3161	75	58	43	3160	77	25	40	3160
	α Aquilæ	W.	64	45	25	3819	66	0	8	3901	67	15	9	3785	68	30	27	3768
	Fomalhaut	W.	40	8	6	4110	41	15	58	4049	42	26	49	3965	43	38	34	3943
	α Arietis	E.	32	33	33	3129	31	5	59	3133	29	38	30	3139	28	11	8	3146
	Aldebaran	E.	65	11	59	3149	63	44	49	3161	62	17	41	3153	60	50	35	3164
	Pollux	E.	107	13	11	3097	105	44	58	3096	104	16	44	3096	102	48	29	3095
Venus	E.	114	9	51	3345	112	46	31	3345	111	23	11	3344	109	59	50	3343	
3	Mars	W.	84	40	37	3154	86	7	41	3162	87	34	48	3149	89	1	58	3147
	α Aquilæ	W.	74	50	43	3705	76	7	25	3694	77	24	18	3684	78	41	22	3675
	Fomalhaut	W.	49	48	31	3760	51	4	25	3720	52	20	51	3692	53	37	47	3664
	α Pegasi	W.	27	12	2	3917	28	25	5	3886	29	39	30	3765	30	55	9	3704
	Aldebaran	E.	53	35	29	3180	52	8	32	3163	50	41	38	3164	49	14	46	3165
	Pollux	E.	95	26	49	3066	93	58	22	3062	92	29	51	3079	91	1	16	3078
	Venus	E.	103	2	47	3336	101	39	17	3333	100	15	44	3332	98	52	9	3328
	Jupiter	E.	118	54	30	3143	117	27	12	3139	115	59	50	3138	114	32	26	3133
4	Mars	W.	96	18	41	3130	97	46	14	3125	99	13	53	3120	100	41	38	3115
	α Aquilæ	W.	85	9	4	3634	86	27	2	3627	87	45	7	3621	89	3	19	3615
	Fomalhaut	W.	60	9	7	3562	61	28	34	3483	62	48	22	3415	64	8	30	3407
	α Pegasi	W.	37	27	36	3490	38	48	22	3447	40	9	45	3419	41	31	40	3389
	Aldebaran	E.	42	1	3	3179	40	34	29	3183	39	7	59	3188	37	41	36	3158
	Pollux	E.	83	37	25	3056	82	8	24	3053	80	39	17	3049	79	10	5	3043
	Venus	E.	91	53	17	3310	90	29	17	3306	89	5	12	3300	87	41	1	3294
Jupiter	E.	107	14	16	3114	105	46	23	3109	104	18	24	3103	102	50	18	3097	
5	Mars	W.	108	2	1	3086	109	30	28	3078	110	59	4	3070	112	27	50	3064
	α Aquilæ	W.	95	35	48	3380	96	54	33	3357	98	13	22	3363	99	32	15	3350
	Fomalhaut	W.	70	53	53	3416	72	15	51	3402	73	38	5	3398	75	0	35	3373
	α Pegasi	W.	48	28	46	3278	49	53	29	3253	51	18	36	3234	52	44	5	3215
	Pollux	E.	71	42	14	3012	70	12	16	3005	68	42	9	2997	67	11	53	2990
	Venus	E.	80	38	25	3264	79	13	31	3256	77	48	28	3248	76	23	16	3240
	Jupiter	E.	95	27	57	3064	93	59	3	3066	92	30	0	3048	91	0	47	3039
	SUN	E.	123	46	40	3362	122	23	40	3353	121	0	30	3345	119	37	10	3335
6	Fomalhaut	W.	81	57	8	3306	83	21	13	3292	84	45	34	3281	86	10	8	3268
	α Pegasi	W.	59	56	53	3127	61	24	30	3111	62	52	26	3086	64	20	42	3079
	α Arietis	W.	16	19	12	3100	17	47	22	3055	19	16	15	3031	20	45	49	3023
	Pollux	E.	59	38	2	2946	58	6	41	2988	56	35	10	2928	55	3	25	2918
	Venus	E.	69	14	40	3198	67	48	23	3183	66	21	53	3172	64	55	10	3161
	Jupiter	E.	83	31	55	2992	82	1	32	2981	80	30	56	2969	79	0	5	2958
	SUN	E.	112	37	41	3283	111	13	10	3272	109	48	26	3260	108	23	28	3247
7	Fomalhaut	W.	93	16	41	3306	94	42	43	3194	96	8	59	3183	97	35	28	3172
	α Pegasi	W.	71	47	3	2996	73	17	21	2981	74	47	58	2965	76	18	55	2947
	α Arietis	W.	28	21	50	2987	29	54	26	2989	31	27	25	2948	33	0	51	2931
	Pollux	E.	47	21	27	2963	45	48	21	2952	44	15	1	2941	42	41	26	2931
	Venus	E.	57	38	3	3096	56	9	51	3085	54	41	23	3071	53	12	38	3057

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.			XVIIIh.			P. L. of Diff.	XXIh.			P. L. of Diff.
				°	'	"	°	'	"		°	'	"	
1	Antares W.	109 49 48	3073	111 18 30	3073	112 47 12	3074	114 15 53	3074					
	Mars W.	67 17 6	3160	68 44 3	3160	70 11 0	3161	71 37 56	3161					
	α Aquilæ W.	59 49 58	3002	61 3 10	3079	62 16 57	3086	63 31 1	3084					
	α Arietis E.	38 24 35	3114	36 56 43	3119	35 28 56	3122	34 1 13	3124					
	Aldebaran E.	71 0 56	3143	69 33 39	3144	68 6 23	3147	66 39 10	3148					
	Venus E.	119 43 12	3344	118 19 51	3345	116 56 31	3346	115 33 11	3346					
2	Mars W.	78 52 37	3168	80 19 35	3168	81 46 34	3167	83 13 35	3166					
	α Aquilæ W.	69 46 2	3765	71 1 51	3741	72 17 55	3727	73 34 13	3716					
	Fomalhaut W.	44 51 8	3000	46 4 28	3057	47 18 31	3030	48 33 12	3784					
	α Arietis E.	26 43 54	3151	25 16 46	3160	23 49 49	3170	22 23 4	3182					
	Aldebaran E.	59 23 31	3155	57 56 28	3157	56 29 27	3158	55 2 27	3159					
	Pollux E.	101 20 13	3093	99 51 55	3091	98 23 35	3090	96 55 13	3093					
	Venus E.	108 36 28	3343	107 13 5	3341	105 49 41	3339	104 26 15	3338					
3	Mars W.	90 29 11	3144	91 56 27	3141	93 23 47	3137	94 51 12	3133					
	α Aquilæ W.	79 58 30	3665	81 16 0	3656	82 33 32	3649	83 51 14	3641					
	Fomalhaut W.	54 55 12	3639	56 13 4	3616	57 31 21	3604	58 50 2	3673					
	α Pegasi W.	32 11 52	3649	33 29 34	3600	34 48 8	3655	36 7 31	3517					
	Aldebaran E.	47 47 50	3168	46 21 8	3170	44 54 23	3173	43 27 41	3176					
	Pollux E.	89 32 39	3073	88 3 57	3070	86 35 11	3067	85 6 21	3062					
	Venus E.	97 28 30	3325	96 4 48	3322	94 41 2	3319	93 17 12	3314					
	Jupiter E.	113 4 57	3130	111 37 24	3127	110 9 47	3122	108 42 4	3118					
	4	Mars W.	102 9 29	3110	103 37 26	3105	105 5 31	3099	106 33 42	3092				
α Aquilæ W.		90 21 37	3610	91 40 1	3604	92 58 31	3599	94 17 7	3594					
Fomalhaut W.		65 28 58	3480	66 49 44	3463	68 10 49	3447	69 32 12	3431					
α Pegasi W.		42 54 9	3364	44 17 7	3338	45 40 34	3316	47 4 27	3294					
Aldebaran E.		36 15 19	3300	34 49 10	3309	33 23 12	3320	31 57 26	3281					
Pollux E.		77 40 45	3038	76 11 19	3031	74 41 45	3026	73 12 4	3018					
Venus E.		86 16 43	3289	84 52 19	3284	83 27 49	3272	82 3 11	3270					
Jupiter E.		101 22 5	3091	99 53 45	3085	98 25 17	3078	96 56 41	3073					
5		Mars W.	113 56 44	3065	115 25 49	3047	116 55 4	3038	118 24 30	3029				
	α Aquilæ W.	100 51 11	3377	102 10 10	3376	103 29 10	3374	104 48 13	3374					
	Fomalhaut W.	76 23 22	3359	77 46 25	3345	79 9 44	3332	80 33 18	3319					
	α Pegasi W.	54 9 56	3196	55 36 10	3180	57 2 43	3162	58 29 38	3145					
	Pollux E.	65 41 28	2963	64 10 52	2973	62 40 6	2965	61 9 9	2967					
	Venus E.	74 57 54	3331	73 32 21	3323	72 6 38	3314	70 40 45	3304					
	Jupiter E.	89 31 23	3090	88 1 48	3022	86 32 3	3012	85 2 5	3002					
	SUN E.	118 13 39	3325	116 49 57	3316	115 26 4	3306	114 1 59	3294					
	6	Fomalhaut W.	87 34 57	3354	89 0 2	3343	90 25 22	3331	91 50 54	3319				
α Pegasi W.		65 49 17	3092	67 18 13	3045	68 47 30	3029	70 17 7	3014					
α Arietis W.		23 15 59	2977	23 46 41	2954	25 17 55	2927	26 49 39	2906					
Pollux E.		53 31 27	2908	51 59 18	2897	50 26 55	2885	48 54 17	2876					
Venus E.		63 28 14	3148	62 1 3	3145	60 33 38	3134	59 5 58	3112					
Jupiter E.		77 29 0	2946	75 57 40	2935	74 26 5	2921	72 54 13	2909					
SUN E.		106 58 15	3325	105 32 47	3323	104 7 4	3308	102 41 4	3194					
7		Fomalhaut W.	99 2 11	3161	100 29 7	3149	101 56 17	3140	103 23 38	3129				
	α Pegasi W.	77 50 14	2931	79 21 54	2902	80 53 55	2898	82 26 17	2881					
	α Arietis W.	34 34 39	2811	36 8 52	2794	37 43 28	2775	39 18 28	2767					
	Pollux E.	41 7 38	2918	39 33 35	2908	37 59 16	2796	36 24 43	2786					
	Venus E.	51 43 30	3043	50 14 16	3028	48 44 38	3013	47 14 41	2997					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			IIIh.			VIh.			IXh.						
			P. L. of Dist.			P. L. of Dist.			P. L. of Dist.			P. L. of Dist.						
			O	I	II	O	I	II	O	I	II	O	I	II				
7	Jupiter	E.	71	22	5	2895	69	49	40	2893	68	16	58	2897	66	43	57	2898
	SUN	E.	101	14	48	3181	99	48	16	3167	98	21	27	3151	96	54	19	3126
8	Fomalhaut	W.	104	51	12	3119	106	18	58	3110	107	46	55	3103	109	15	12	3094
	α Pegasi	W.	83	59	0	2865	85	32	4	2848	87	5	30	2831	88	39	18	2814
	α Arietis	W.	40	53	52	2739	42	29	40	2730	44	5	53	2704	45	42	28	2684
	Pollux	E.	34	49	57	2775	33	14	57	2766	31	39	44	2658	30	4	21	2749
	Venus	E.	45	44	25	2861	44	13	49	2866	42	42	53	2860	41	11	38	2884
	Jupiter	E.	58	54	8	2776	57	19	9	2760	55	43	49	2744	54	8	7	2727
	SUN	E.	89	33	51	3054	88	4	45	3067	86	35	18	3019	85	5	29	3001
9	α Arietis	W.	53	51	41	2891	55	30	48	2873	57	10	20	2854	58	50	18	2835
	Aldebaran	W.	23	6	28	2973	24	37	13	2966	26	9	24	2948	27	42	50	2797
	Venus	E.	33	30	6	2880	31	56	43	2894	30	22	59	2818	28	48	54	2801
	Jupiter	E.	46	3	56	2840	44	25	55	2822	42	47	30	2804	41	8	40	2865
	SUN	E.	77	30	44	2909	75	58	36	2890	74	26	4	2871	72	53	8	2862
10	α Arietis	W.	67	16	46	2430	68	59	25	2423	70	42	29	2401	72	26	2	2384
	Aldebaran	W.	35	44	55	2899	37	23	52	2907	39	3	32	2896	40	43	55	2868
	Jupiter	E.	32	48	16	2494	31	6	55	2474	29	25	9	2460	27	42	59	2441
	SUN	E.	65	2	6	2768	63	26	37	2784	61	50	42	2716	60	14	22	2685
11	α Arietis	W.	81	10	24	2292	82	56	35	2273	84	43	14	2256	86	30	18	2239
	Aldebaran	W.	49	15	19	2880	50	59	22	2867	52	43	58	2835	54	29	6	2814
	SUN	E.	52	6	13	2801	50	27	20	2868	48	48	1	2866	47	8	19	2848
12	α Arietis	W.	95	31	51	2160	97	21	21	2144	99	11	13	2129	101	1	28	2116
	Aldebaran	W.	63	22	11	2218	65	10	12	2201	66	58	38	2184	68	47	29	2169
	Pollux	W.	21	14	36	2208	23	0	31	2206	24	47	20	2225	26	34	56	2205
	SUN	E.	38	44	2	2470	37	2	7	2486	35	19	52	2444	33	37	19	2422
17	SUN	W.	32	15	51	2412	33	59	8	2422	35	42	11	2425	37	24	56	2446
	Antares	E.	40	58	58	2061	39	7	29	2092	37	16	18	2106	35	25	28	2121
	Mars	E.	87	56	53	2196	86	8	19	2210	84	20	6	2224	82	32	14	2239
	α Aquilæ	E.	95	12	35	2876	93	35	23	2897	91	58	25	2908	90	21	43	2713
18	SUN	W.	45	53	50	2822	47	34	31	2830	49	14	50	2846	50	54	46	2874
	Mars	E.	73	38	37	2820	71	53	6	2837	70	8	1	2853	68	22	21	2872
	α Aquilæ	E.	82	23	30	2804	80	49	7	2827	79	15	14	2831	77	41	52	2876
	Fomalhaut	E.	107	3	42	2616	105	25	10	2626	103	46	50	2627	102	8	45	2647
19	SUN	W.	59	8	14	2666	60	45	39	2685	62	22	39	2704	63	59	13	2723
	Mars	E.	59	46	39	2467	58	4	40	2486	56	23	7	2507	54	42	3	2525
	α Aquilæ	E.	70	3	47	3027	68	34	7	3063	67	5	10	3068	65	36	58	3126
	Fomalhaut	E.	94	2	38	2721	92	26	26	2728	90	50	37	2746	89	15	11	2772
	α Pegasi	E.	115	49	48	2821	114	9	18	2854	112	29	6	2868	110	49	13	2870
20	SUN	W.	71	55	41	2821	73	29	42	2840	75	3	18	2860	76	36	29	2897
	Mars	E.	46	23	29	2926	44	45	9	2944	43	7	14	2964	41	29	47	2984
	α Aquilæ	E.	58	28	18	3361	57	5	17	3414	55	43	16	3469	54	22	17	3527
	Fomalhaut	E.	81	24	20	2876	79	51	31	2899	78	19	11	2921	76	47	19	2944
	α Pegasi	E.	102	34	42	2847	100	56	51	2863	99	19	22	2880	97	42	15	2895
21	SUN	W.	84	16	26	2979	85	47	15	2969	87	17	41	3006	88	47	46	3024
	Antares	W.	15	10	46	2924	16	49	9	2939	18	27	11	2956	20	4	50	2971

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XV ^h .	P. L. of Dist.	XVIII ^h .	P. L. of Dist.	XXI ^h .	P. L. of Dist.
7	Jupiter	E.	65 10 38	2898	63 37 0	2894	62 3 3	2898	60 28 45	2798
	SUN	E.	95 26 52	3119	93 59 6	3104	92 31 1	3087	91 2 36	3071
8	Fomalhaut	W.	110 43 59	3087	112 11 45	3080	113 40 19	3074	115 9 0	3070
	α Pegasi	W.	90 13 28	2797	91 48 0	2781	93 22 53	2763	94 58 9	2746
	α Arietis	W.	47 19 29	2806	48 56 55	2847	50 34 46	2830	52 13 0	2810
	Pollux	E.	28 28 46	2743	26 53 2	2738	25 17 13	2737	23 41 22	2737
	Venus	E.	39 40 2	2917	38 8 5	2900	36 35 46	2894	35 3 7	2847
	Jupiter	E.	52 32 3	2710	50 55 36	2693	49 18 46	2675	47 41 32	2658
	SUN	E.	83 35 18	2968	82 4 44	2966	80 33 48	2946	79 2 28	2927
9	α Arietis	W.	60 30 43	2816	62 11 34	2497	63 52 51	2478	65 34 35	2459
	Aldebaran	W.	29 17 22	2780	30 52 55	2708	32 29 24	2689	34 6 45	2633
	Venus	E.	27 14 28	2788	25 39 41	2770	24 4 34	2766	22 29 8	2742
	Jupiter	E.	39 29 25	2698	37 49 46	2649	36 9 41	2631	34 29 11	2613
	SUN	E.	71 19 47	2931	69 46 0	2811	68 11 47	2792	66 37 9	2773
10	α Arietis	W.	74 10 0	2865	75 54 25	2846	77 39 18	2828	79 24 37	2809
	Aldebaran	W.	42 24 57	2480	44 6 38	2454	45 48 56	2429	47 31 50	2404
	Jupiter	E.	26 0 23	2424	24 17 22	2408	22 33 59	2391	20 50 12	2378
	SUN	E.	58 37 36	2675	57 0 23	2657	55 22 45	2633	53 44 41	2620
11	α Arietis	W.	88 17 48	2223	90 5 42	2206	91 54 1	2190	93 42 44	2174
	Aldebaran	W.	56 14 45	2294	58 0 53	2274	59 47 31	2255	61 34 37	2236
	SUN	E.	45 28 13	2931	43 47 43	2816	42 6 51	2499	40 25 37	2485
12	α Arietis	W.	102 52 3	2108	104 42 58	2090	106 34 13	2078	108 25 46	2068
	Aldebaran	W.	70 36 43	2154	72 26 20	2129	74 16 19	2126	76 6 38	2115
	Pollux	W.	28 23 14	2180	30 12 11	2168	32 1 42	2137	33 51 44	2118
	SUN	E.	31 54 30	2431	30 11 25	2412	28 28 8	2406	26 44 40	2441
17	SUN	W.	39 7 23	2461	40 49 31	2476	42 31 19	2480	44 12 46	2507
	Antares	E.	33 35 1	2136	31 44 55	2180	29 55 12	2166	28 5 53	2183
	Mars	E.	80 44 44	2254	78 57 37	2309	77 10 52	2287	75 24 33	2302
	α Aquilæ	E.	88 45 20	2729	87 9 18	2744	85 33 37	2763	83 58 21	2782
18	SUN	W.	52 34 17	2891	54 13 24	2810	55 52 6	2823	57 30 23	2847
	Mars	E.	66 39 7	2891	64 55 19	2410	63 11 58	2427	61 29 4	2449
	α Aquilæ	E.	76 9 2	2808	74 36 47	2831	73 5 8	2862	71 34 8	2893
	Fomalhaut	E.	100 30 54	2880	98 53 21	2675	97 16 7	2689	95 39 13	2704
19	SUN	W.	65 35 22	2743	67 11 5	2768	68 46 22	2781	70 21 15	2801
	Mars	E.	53 1 25	2846	51 21 16	2865	49 41 33	2868	48 2 17	2865
	α Aquilæ	E.	64 9 33	2178	62 42 55	2319	61 17 8	2366	59 52 15	2311
	Fomalhaut	E.	87 40 8	2794	86 5 32	2814	84 31 22	2824	82 57 38	2854
	α Pegasi	E.	109 9 39	2866	107 30 23	2801	105 51 29	2816	104 12 55	2831
20	SUN	W.	78 9 17	2916	79 41 40	2935	81 13 38	2953	82 45 14	2971
	Mars	E.	39 52 48	2706	38 16 13	2726	36 40 6	2744	35 4 25	2766
	α Aquilæ	E.	53 2 23	2460	51 43 38	2637	50 26 5	2728	49 9 48	2802
	Fomalhaut	E.	75 15 56	2989	73 45 4	2928	72 14 42	2916	70 44 52	2944
	α Pegasi	E.	96 5 29	2713	94 29 6	2729	92 53 5	2746	91 17 26	2763
21	SUN	W.	90 17 29	3042	91 46 50	3068	93 15 51	3075	94 44 31	3091
	Antares	W.	21 42 9	2687	23 19 6	2702	24 55 43	2717	26 32 0	2732

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
			^o	ⁱ	ⁿ		^o	ⁱ	ⁿ		^o	ⁱ	ⁿ		^o	ⁱ	ⁿ	
21	Mars	E.	33	29	12	2785	31	54	25	2306	30	20	4	2826	28	46	10	2648
	Fomalhaut	E.	69	15	34	3071	67	46	49	3098	66	18	37	3126	64	50	59	3156
	α Pegasi	E.	89	42	9	2780	88	7	15	2797	86	32	43	2914	84	58	33	2681
22	SUN	W.	96	12	51	3108	97	40	51	3123	99	8	33	3188	100	35	56	3158
	Antares	W.	28	7	58	2747	29	43	35	2761	31	18	54	2775	32	53	54	2789
	Fomalhaut	E.	57	41	50	3316	56	17	57	3380	54	54	43	3398	53	32	13	3437
	α Pegasi	E.	77	13	8	2914	75	41	7	2961	74	9	28	2949	72	38	11	2965
23	SUN	W.	107	48	27	3224	109	14	8	3283	110	39	32	3249	112	4	43	3282
	Antares	W.	40	44	35	2852	42	17	55	2964	43	51	0	2975	45	23	51	2936
	Fomalhaut	E.	46	51	33	3661	45	34	4	3718	44	17	34	3776	43	9	7	3641
	α Pegasi	E.	65	6	57	3049	63	37	45	3066	62	8	54	3063	60	40	24	3101
	α Arietis	E.	107	10	23	2970	105	37	26	2980	104	4	42	2991	102	32	12	2901
24	SUN	W.	119	7	8	3319	120	30	58	3328	121	54	37	3339	123	18	3	3286
	Antares	W.	53	4	44	2986	54	36	17	2945	56	7	39	2963	57	38	51	2961
	α Pegasi	E.	53	23	17	3193	51	56	59	3215	50	31	5	3233	49	5	35	3254
	α Arietis	E.	94	53	0	2961	93	21	46	2961	91	50	44	2998	90	19	51	2977
25	Antares	W.	65	12	24	2997	66	42	40	3063	68	12	49	3069	69	42	51	3015
	Mars	W.	15	31	44	3272	16	56	28	3263	18	21	23	3265	19	46	27	3249
	α Pegasi	E.	42	4	45	3380	40	42	6	3410	39	20	1	3443	37	58	33	3479
	α Arietis	E.	82	47	58	3014	81	18	2	3020	79	48	14	3096	78	18	33	3081
	Aldebaran	E.	114	59	57	3099	113	31	10	3074	112	2	29	3078	110	33	52	3062
26	Antares	W.	77	11	20	3039	78	40	45	3042	80	10	6	3047	81	39	21	3049
	Mars	W.	26	52	50	3242	28	18	9	3242	29	43	28	3244	31	8	45	3244
	α Arietis	E.	70	51	48	3066	69	22	45	3060	67	53	47	3065	66	24	54	3068
	Aldebaran	E.	103	12	5	3101	101	43	57	3104	100	15	52	3106	98	47	50	3110
27	Antares	W.	89	4	46	3062	90	33	42	3064	92	2	36	3066	93	31	28	3067
	α Aquilæ	W.	43	43	26	4520	44	47	0	4446	45	51	40	4379	46	57	20	4319
	Mars	W.	38	14	57	3249	39	40	8	3261	41	5	17	3261	42	30	26	3263
	α Arietis	E.	59	1	33	3084	57	33	4	3067	56	4	38	3060	54	36	16	3091
	Aldebaran	E.	91	28	33	3121	90	0	49	3124	88	33	8	3124	87	5	27	3126
28	Antares	W.	100	55	26	3070	102	24	12	3071	103	52	57	3071	105	21	42	3071
	α Aquilæ	W.	52	38	28	4077	53	48	52	4089	54	59	53	4005	56	11	28	3973
	Mars	W.	49	35	59	3253	51	1	5	3253	52	26	12	3253	53	51	18	3253
	α Arietis	E.	47	15	1	3101	45	46	53	3103	44	18	47	3105	42	50	44	3107
Aldebaran	E.	79	47	36	3132	78	20	5	3133	76	52	36	3133	75	25	7	3134	
29	α Aquilæ	W.	62	16	43	3841	63	31	3	3821	64	45	43	3801	66	0	44	3763
	Mars	W.	60	56	57	3246	62	22	9	3246	63	47	24	3245	65	12	37	3244
	Fomalhaut	W.	37	47	9	4222	38	54	46	4178	40	3	33	4140	41	13	25	4048
	α Arietis	E.	35	31	3	3118	34	3	15	3120	32	35	40	3124	31	7	59	3137
	Aldebaran	E.	68	7	54	3186	66	40	28	3188	65	13	4	3138	63	45	39	3136
	Pollux	E.	110	11	41	3093	108	43	23	3091	107	15	2	3090	105	46	40	3097
30	Mars	W.	72	19	19	3235	73	44	47	3232	75	10	18	3230	76	35	52	3227
	α Aquilæ	W.	72	20	15	3706	73	36	56	3698	74	53	50	3691	76	10	57	3671
	Fomalhaut	W.	47	16	22	3610	48	31	14	3774	49	46	43	3730	51	2	48	3710
	Aldebaran	E.	56	28	43	3139	55	1	21	3140	53	34	0	3141	52	6	40	3143
	Pollux	E.	98	24	12	3077	96	55	34	3073	95	26	52	3071	93	58	7	3069

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Dif.	XVh.			P. L. of Dif.	XVIIIh.			P. L. of Dif.	XXIh.			P. L. of Dif.
			^O	^I	^N		^O	^I	^N		^O	^I	^N		^O	^I	^N	
21	Mars	E.	27	19	44	2869	25	39	45	2891	24	7	14	2913	22	35	12	2988
	Fomalhaut	E.	63	23	56	3185	61	57	29	3216	60	31	38	3247	59	6	24	3281
	α Pegasi	E.	83	24	45	2847	81	51	18	2864	80	18	13	2881	78	45	30	2898
22	SUN	W.	102	3	1	3169	103	29	47	3188	104	56	17	3197	106	22	30	3210
	Antares	W.	34	28	36	2892	36	3	1	2815	37	37	9	2828	39	11	0	2841
	Fomalhaut	E.	52	10	27	3469	50	49	28	3513	49	29	18	3568	48	9	58	3609
	α Pegasi	E.	71	7	15	2981	69	36	39	2908	68	6	24	3015	66	36	30	3082
23	SUN	W.	113	29	39	3274	114	54	21	3286	116	18	49	3296	117	43	5	3307
	Antares	W.	46	56	28	2897	48	28	51	2917	50	1	1	2916	51	32	59	2927
	Fomalhaut	E.	41	47	47	3913	40	34	39	3988	39	22	48	4073	38	12	20	4168
	α Pegasi	E.	59	12	15	3119	57	44	28	3186	56	17	2	3184	54	49	58	3173
	α Arietis	E.	100	59	55	2913	99	27	53	2923	97	56	3	2983	96	24	26	2942
24	SUN	W.	124	41	19	3348	126	4	24	3366	127	27	19	3375	128	50	4	3384
	Antares	W.	59	9	53	2989	60	40	45	2977	62	11	27	2984	63	42	0	2991
	α Pegasi	E.	47	40	30	3276	46	15	51	3300	44	51	40	3325	43	27	57	3351
	α Arietis	E.	88	49	10	2985	87	18	38	2993	85	48	16	2999	84	18	2	3007
25	Antares	W.	71	12	45	3021	72	42	32	3026	74	12	13	3030	75	41	49	3034
	Mars	W.	21	11	38	3246	22	36	53	3244	24	2	10	3242	25	27	30	3242
	α Pegasi	E.	36	37	45	3518	35	17	41	3502	33	58	25	3609	32	40	0	3663
	α Arietis	E.	76	48	59	3037	75	19	33	3042	73	50	11	3047	72	20	56	3063
	Aldebaran	E.	109	5	21	3087	107	36	56	3091	106	8	35	3094	104	40	18	3097
26	Antares	W.	83	8	33	3052	84	37	41	3066	86	6	45	3087	87	35	47	3080
	Mars	W.	32	34	2	3245	33	59	18	3247	35	24	32	3247	36	49	45	3248
	α Arietis	E.	64	56	5	3072	63	27	21	3076	61	58	42	3078	60	30	6	3081
	Aldebaran	E.	97	19	53	3112	95	51	58	3115	94	24	7	3118	92	56	19	3119
27	Antares	W.	95	0	18	3088	96	29	7	3089	97	57	55	3070	99	26	41	3071
	α Aquilæ	W.	48	3	55	4261	49	11	24	4210	50	19	41	4161	51	28	44	4118
	Mars	W.	43	55	33	3292	45	20	41	3253	46	45	48	3244	48	10	53	3253
	α Arietis	E.	53	7	56	3093	51	39	38	3096	50	11	23	3098	48	43	11	3100
	Aldebaran	E.	85	37	50	3128	84	10	14	3129	82	42	40	3130	81	15	7	3132
28	Antares	W.	106	50	27	3070	108	19	13	3089	109	48	0	3089	111	16	48	3070
	α Aquilæ	W.	57	23	34	3942	58	36	11	3915	59	49	16	3899	61	2	47	3964
	Mars	W.	55	16	24	3292	56	41	32	3233	58	6	39	3251	59	31	48	3250
	α Arietis	E.	41	22	43	3109	39	54	44	3110	38	26	47	3113	36	58	53	3116
	Aldebaran	E.	73	57	40	3134	72	30	12	3136	71	2	45	3137	69	35	20	3136
29	α Aquilæ	W.	67	16	4	3768	68	31	43	3749	69	47	38	3734	71	3	49	3720
	Mars	W.	66	37	52	3243	68	3	11	3242	69	28	31	3210	70	53	53	3226
	Fomalhaut	W.	42	24	17	3991	43	36	5	3939	44	48	45	3993	46	2	12	3951
	α Arietis	E.	29	40	12	3131	28	12	40	3137	26	45	15	3143	25	17	58	3150
	Aldebaran	E.	62	18	16	3138	60	50	52	3138	59	23	29	3138	57	56	6	3138
	Pollux	E.	104	18	15	3086	102	49	48	3084	101	21	19	3092	99	52	47	3079
30	Mars	W.	78	1	29	3224	79	27	10	3221	80	52	54	3218	82	18	42	3214
	α Aquilæ	W.	77	28	15	3861	78	45	44	3850	80	3	24	3842	81	21	13	3834
	Fomalhaut	W.	52	19	24	3679	53	36	33	3652	54	54	11	3627	56	12	16	3605
	Aldebaran	E.	50	39	23	3143	49	12	5	3146	47	44	50	3247	46	17	38	3149
	Pollux	E.	92	29	19	3085	91	0	27	3082	89	31	31	3059	88	2	31	3056

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semidiameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.					
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.				Semi-diameter.				
		h.	m.		s.	°						'	"		
Mon.	1	12	31	15.83	9.062	S. 3	22	37.6	58.24	16	1.73	64.39	10	28.08	0.784
Tues.	2	12	34	53.45	9.075	3	45	54.1	58.14	16	2.01	64.44	10	46.97	0.780
Wed.	3	12	38	31.39	9.039	4	9	8.0	58.08	16	2.29	64.49	11	5.53	0.766
Thur.	4	12	42	9.69	9.105	4	32	18.9	57.90	16	2.56	64.54	11	23.73	0.751
Fri.	5	12	45	48.36	9.122	4	55	26.8	57.76	16	2.83	64.59	11	41.56	0.735
Sat.	6	12	49	27.43	9.139	5	18	31.1	57.61	16	3.10	64.65	11	59.00	0.717
Sun.	7	12	53	6.92	9.157	5	41	31.6	57.44	16	3.38	64.71	12	16.01	0.699
Mon.	8	12	56	46.85	9.176	6	4	27.8	57.25	16	3.65	64.77	12	32.58	0.681
Tues.	9	13	0	27.24	9.195	6	27	19.3	57.05	16	3.92	64.84	12	48.71	0.662
Wed.	10	13	4	8.10	9.214	6	50	5.7	56.83	16	4.19	64.91	13	4.36	0.641
Thur.	11	13	7	49.46	9.235	7	12	46.6	56.59	16	4.46	64.98	13	19.51	0.620
Fri.	12	13	11	31.33	9.257	7	35	21.7	56.34	16	4.73	65.06	13	34.15	0.599
Sat.	13	13	15	13.72	9.279	7	57	50.6	56.07	16	5.00	65.14	13	48.28	0.577
Sun.	14	13	18	56.64	9.302	8	20	13.0	55.78	16	5.27	65.22	14	1.88	0.554
Mon.	15	13	22	40.12	9.325	8	42	28.2	55.48	16	5.54	65.30	14	14.92	0.531
Tues.	16	13	26	24.18	9.349	9	4	35.9	55.16	16	5.82	65.38	14	27.38	0.507
Wed.	17	13	30	8.82	9.373	9	26	35.9	54.83	16	6.10	65.47	14	39.26	0.482
Thur.	18	13	33	54.05	9.398	9	48	27.7	54.47	16	6.38	65.56	14	50.54	0.457
Fri.	19	13	37	39.90	9.424	10	10	10.6	54.10	16	6.66	65.65	15	1.22	0.431
Sat.	20	13	41	26.38	9.450	10	31	44.6	53.71	16	6.93	65.74	15	11.27	0.405
Sun.	21	13	45	13.49	9.477	10	53	9.0	53.31	16	7.20	65.84	15	20.69	0.379
Mon.	22	13	49	1.24	9.505	11	14	23.8	52.99	16	7.47	65.94	15	29.47	0.351
Tues.	23	13	52	49.65	9.534	11	35	28.2	52.46	16	7.74	66.04	15	37.60	0.323
Wed.	24	13	56	38.75	9.563	11	56	21.9	52.01	16	8.01	66.14	15	45.03	0.294
Thur.	25	14	0	28.55	9.592	12	17	4.5	51.54	16	8.28	66.24	15	51.76	0.265
Fri.	26	14	4	19.07	9.621	12	37	35.7	51.06	16	8.54	66.35	15	57.78	0.235
Sat.	27	14	8	10.32	9.651	12	57	55.3	50.56	16	8.80	66.46	16	3.07	0.205
Sun.	28	14	12	2.30	9.682	13	18	2.8	50.04	16	9.06	66.57	16	7.63	0.174
Mon.	29	14	15	55.04	9.713	13	37	57.6	49.51	16	9.32	66.68	16	11.44	0.142
Tues.	30	14	19	48.54	9.746	13	57	39.5	48.96	16	9.57	66.79	16	14.49	0.109
Wed.	31	14	23	42.83	9.780	14	17	8.1	48.40	16	9.82	66.90	16	16.75	0.076
Thur.	32	14	27	37.93	9.814	S. 14	36	23.1	47.82	16	10.06	67.01	16	18.21	0.042

Nota. — Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

THE SUN'S

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		h. m. s.	"	° ' "	"	m. s.	s.	h. m. s.
Mon.	1	12 31 17.41	9.062	S. 3 22 47.8	58.24	10 26.22	0.794	12 41 45.63
Tues.	2	12 34 55.08	9.075	3 46 4.6	58.14	10 47.11	0.780	12 45 42.19
Wed.	3	12 38 33.07	9.069	4 9 18.8	58.03	11 5.67	0.766	12 49 38.74
Thur.	4	12 42 11.42	9.105	4 32 30.0	57.90	11 23.87	0.751	12 53 35.29
Fri.	5	12 45 50.14	9.122	4 55 38.1	57.76	11 41.70	0.735	12 57 31.84
Sat.	6	12 49 29.26	9.139	5 18 42.6	57.61	11 59.14	0.717	13 1 28.40
Sun.	7	12 53 8.60	9.157	5 41 43.4	57.44	12 16.15	0.699	13 5 24.95
Mon.	8	12 56 48.78	9.176	6 4 39.8	57.25	12 32.72	0.681	13 9 21.50
Tues.	9	13 0 29.21	9.195	6 27 31.5	57.05	12 48.85	0.662	13 13 18.06
Wed.	10	13 4 10.11	9.214	6 50 18.1	56.83	13 4.50	0.641	13 17 14.61
Thur.	11	13 7 51.51	9.235	7 12 59.2	56.59	13 19.65	0.620	13 21 11.16
Fri.	12	13 11 33.42	9.257	7 35 34.5	56.34	13 34.28	0.599	13 25 7.72
Sat.	13	13 15 15.85	9.279	7 58 3.6	56.07	13 48.42	0.577	13 29 4.27
Sun.	14	13 18 58.81	9.302	8 20 26.1	55.78	14 2.02	0.554	13 33 0.83
Mon.	15	13 22 42.33	9.325	8 42 41.4	55.48	14 15.05	0.531	13 36 57.38
Tues.	16	13 26 26.43	9.349	9 4 49.2	55.16	14 27.50	0.507	13 40 53.93
Wed.	17	13 30 11.11	9.373	9 26 49.3	54.83	14 39.38	0.482	13 44 50.49
Thur.	18	13 33 56.38	9.398	9 48 41.2	54.47	14 50.66	0.457	13 48 47.04
Fri.	19	13 37 42.26	9.424	10 10 24.2	54.10	15 1.34	0.431	13 52 43.60
Sat.	20	13 41 28.77	9.450	10 31 58.2	53.71	15 11.38	0.405	13 56 40.15
Sun.	21	13 45 15.91	9.477	10 53 22.6	53.31	15 20.80	0.379	14 0 36.71
Mon.	22	13 49 3.69	9.505	11 14 37.4	52.89	15 29.57	0.351	14 4 33.26
Tues.	23	13 52 52.13	9.534	11 35 41.8	52.46	15 37.69	0.323	14 8 29.82
Wed.	24	13 56 41.26	9.563	11 56 35.5	52.01	15 45.11	0.294	14 12 26.37
Thur.	25	14 0 31.09	9.592	12 17 18.1	51.54	15 51.83	0.265	14 16 22.92
Fri.	26	14 4 21.63	9.621	12 37 49.3	51.06	15 57.85	0.235	14 20 19.48
Sat.	27	14 8 12.90	9.651	12 58 8.8	50.56	16 3.13	0.205	14 24 16.03
Sun.	28	14 12 4.90	9.682	13 18 16.2	50.04	16 7.69	0.174	15 28 12.59
Mon.	29	14 15 57.66	9.713	13 38 10.9	49.51	16 11.48	0.142	14 32 9.14
Tues.	30	14 19 51.18	9.746	13 57 52.7	48.96	16 14.52	0.109	14 36 5.70
Wed.	31	14 23 45.48	9.780	14 17 21.2	48.40	16 16.77	0.076	14 40 2.25
Thur.	32	14 27 40.59	9.814	S. 14 36 36.1	47.82	16 18.22	0.042	14 43 58.81

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.										
THE SUN'S										
Day of the Month.	Day of the Year.	True LONGITUDE.		Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.		
		λ	λ'					h	m.	s
1	275	188 ^o 31' 22.7"	30' 30.4"	147.68	+0.60	0.0001207	51.8	11	16	23.26
2	276	189 30 28.2	29 35.8	147.77	0.58	9.9999967	51.5	11	12	27.35
3	277	190 29 35.8	28 43.3	147.86	0.54	.9998731	51.4	11	8	31.44
4	278	191 28 45.5	27 52.9	147.96	0.46	.9997499	51.3	11	4	35.53
5	279	192 27 57.5	27 4.8	148.06	0.36	.9996271	51.1	11	0	39.63
6	280	193 27 11.9	26 19.1	148.16	0.23	.9995046	51.0	10	56	43.72
7	281	194 26 28.7	25 35.8	148.25	+0.10	.9993823	51.0	10	52	47.81
8	282	195 25 47.9	24 54.9	148.35	-0.03	.9992600	50.9	10	48	51.90
9	283	196 25 9.3	24 16.2	148.45	0.16	.9991377	50.9	10	44	55.99
10	284	197 24 33.0	23 39.8	148.54	0.28	.9990154	51.0	10	41	0.09
11	285	198 23 59.0	23 5.7	148.63	0.40	.9988931	51.0	10	37	4.18
12	286	199 23 27.2	22 33.7	148.72	0.50	.9087705	51.1	10	33	8.27
13	287	200 22 57.6	22 4.0	148.81	0.57	.9986477	51.2	10	29	12.36
14	288	201 22 30.2	21 36.5	148.90	0.60	.9985247	51.3	10	25	16.45
15	289	202 22 4.8	21 11.0	148.98	0.60	.9984015	51.4	10	21	20.55
16	290	203 21 41.4	20 47.5	149.06	0.58	.9982781	51.5	10	17	24.64
17	291	204 21 19.9	20 25.8	149.14	0.53	.9981545	51.5	10	13	28.73
18	292	205 21 0.3	20 6.2	149.22	0.44	.9980308	51.5	10	9	32.82
19	293	206 20 42.5	19 48.2	149.30	0.35	.9979072	51.5	10	5	36.91
20	294	207 20 26.4	19 32.0	149.37	0.23	.9977838	51.3	10	1	41.00
21	295	208 20 12.0	19 17.5	149.44	-0.10	.9976608	51.1	9	57	45.09
22	296	209 19 59.3	19 4.6	149.51	+0.03	.9975383	50.9	9	53	49.18
23	297	210 19 48.3	18 53.5	149.58	0.16	.9974166	50.6	9	49	53.27
24	298	211 19 39.0	18 44.1	149.65	0.27	.9972957	50.2	9	45	57.36
25	299	212 19 31.5	18 36.5	149.72	0.37	.9971758	49.7	9	42	1.46
26	300	213 19 25.7	18 30.6	149.79	0.45	.9970570	49.2	9	38	5.55
27	301	214 19 21.6	18 26.3	149.86	0.50	.9969396	48.6	9	34	9.64
28	302	215 19 19.2	18 23.8	149.94	0.51	.9968237	48.0	9	30	13.73
29	303	216 19 18.7	18 23.2	150.02	0.51	.9967093	47.3	9	26	17.82
30	304	217 19 20.0	18 24.4	150.10	0.48	.9965962	46.6	9	22	21.92
31	305	218 19 23.3	18 27.5	150.18	0.40	.9964847	46.0	9	18	26.01
32	306	219 19 28.5	18 32.5	150.26	+0.30	9.9963749	45.4	9	14	30.10

NOTE. — λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.			MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	h. m.		Diff. for 1 hour.
							m.		d.
1	14 48.3	14 50.2	54 13.3	+0.53	54 20.2	+0.63	13 3.2	1.83	16.2
2	14 52.4	14 55.0	54 28.5	0.73	54 38.2	0.85	13 48.7	1.96	17.2
3	14 58.0	15 1.5	54 49.3	0.98	55 1.9	1.12	14 37.3	2.09	18.2
4	15 5.4	15 9.7	55 16.1	1.26	55 31.9	1.39	15 29.0	2.20	19.2
5	15 14.4	15 19.5	55 49.2	1.52	56 8.1	1.65	16 23.0	2.23	20.2
6	15 25.1	15 31.1	56 28.5	1.77	56 50.4	1.88	17 18.4	2.31	21.2
7	15 37.4	15 44.0	57 13.6	1.98	57 37.9	2.06	18 13.9	2.29	22.2
8	15 50.8	15 57.8	58 3.0	2.11	58 28.6	2.13	19 8.4	2.24	23.2
9	16 4.8	16 11.6	58 54.2	2.11	59 19.3	2.03	20 1.5	2.19	24.2
10	16 18.2	16 24.4	59 43.6	1.94	60 6.3	1.79	20 53.5	2.16	25.2
11	16 29.9	16 34.6	60 26.6	1.57	60 43.9	1.30	21 45.2	2.17	26.2
12	16 38.4	16 41.1	60 57.7	0.98	61 7.5	+0.63	22 37.5	2.21	27.2
13	16 42.5	16 42.6	61 12.8	+0.24	61 13.3	-0.16	23 31.5	2.30	28.2
14	16 41.5	16 39.0	61 9.0	-0.56	60 59.9	0.96	♄		29.2
15	16 35.3	16 30.5	60 46.3	1.31	60 28.6	1.63	0 27.8	2.40	0.9
16	16 24.7	16 18.1	60 7.3	1.90	59 43.1	2.13	1 26.6	2.49	1.9
17	16 10.9	16 3.3	59 16.6	2.28	58 48.6	2.37	2 26.9	2.51	2.9
18	15 55.4	15 47.5	58 19.8	2.41	57 50.9	2.40	3 27.0	2.46	3.9
19	15 39.8	15 32.3	57 22.3	2.34	56 54.7	2.24	4 24.8	2.33	4.9
20	15 25.2	15 18.5	56 28.5	2.11	56 4.1	1.95	5 18.9	2.17	5.9
21	15 12.4	15 6.8	55 41.7	1.78	55 21.4	1.60	6 8.8	2.00	6.9
22	15 1.9	14 57.7	55 3.4	1.40	54 47.8	1.20	6 54.9	1.85	7.9
23	14 54.1	14 51.1	54 34.6	1.00	54 23.8	0.81	7 37.8	1.74	8.9
24	14 48.8	14 47.1	54 15.2	0.62	54 8.8	0.44	8 18.6	1.68	9.9
25	14 45.9	14 45.3	54 4.6	-0.27	54 2.4	-0.10	8 58.4	1.65	10.9
26	14 45.3	14 45.7	54 2.2	+0.06	54 3.8	+0.20	9 38.1	1.67	11.9
27	14 46.5	14 47.8	54 6.9	0.33	54 11.5	0.44	10 18.7	1.73	12.9
28	14 49.4	14 51.3	54 17.5	0.55	54 24.7	0.65	11 1.2	1.82	13.9
29	14 53.6	14 56.2	54 33.0	0.74	54 42.3	0.82	11 46.2	1.94	14.9
30	14 59.0	15 2.0	54 52.5	0.90	55 3.6	0.97	12 34.3	2.07	15.9
31	15 5.3	15 8.8	55 15.6	1.04	55 28.4	1.10	13 25.5	2.19	16.9
32	15 12.4	15 16.3	55 41.9	+1.16	55 56.2	+1.22	14 19.1	2.26	17.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 1.					WEDNESDAY 3.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	1 21 59.75	1.9968	N.14 1 54.0	11.397	0	2 57 57.95	2.1122	N.21 51 41.0	7.390
1	1 23 53.67	1.9008	14 13 16.2	11.344	1	3 0 4.85	2.1172	21 59 27.9	7.732
2	1 25 47.81	1.8043	14 24 35.2	11.290	2	3 2 13.04	2.1222	22 7 7.6	7.083
3	1 27 42.18	1.8081	14 35 50.9	11.235	3	3 4 19.52	2.1272	22 14 42.0	7.343
4	1 29 36.77	1.9119	14 47 3.4	11.179	4	3 6 27.30	2.1321	22 22 10.4	7.622
5	1 31 31.60	1.9158	14 58 12.5	11.122	5	3 8 35.38	2.1371	22 29 32.7	7.910
6	1 33 26.67	1.9197	15 9 18.1	11.064	6	3 10 43.76	2.1420	22 36 48.9	7.218
7	1 35 21.98	1.9237	15 20 20.3	11.006	7	3 12 52.43	2.1470	22 43 58.9	7.115
8	1 37 17.49	1.9277	15 31 19.0	10.946	8	3 15 1.40	2.1519	22 51 2.7	7.011
9	1 39 13.27	1.9317	15 42 14.0	10.886	9	3 17 10.67	2.1568	22 58 0.2	6.906
10	1 41 9.30	1.9356	15 53 5.4	10.825	10	3 19 20.23	2.1617	23 4 51.4	6.800
11	1 43 5.57	1.9399	16 3 53.1	10.763	11	3 21 30.08	2.1666	23 11 36.9	6.692
12	1 45 2.09	1.9440	16 14 37.2	10.700	12	3 23 40.23	2.1715	23 18 14.4	6.583
13	1 46 58.86	1.9482	16 25 17.4	10.637	13	3 25 50.67	2.1764	23 24 46.1	6.474
14	1 48 55.88	1.9524	16 35 53.7	10.573	14	3 28 1.40	2.1813	23 31 11.3	6.364
15	1 50 53.15	1.9567	16 46 26.1	10.508	15	3 30 13.42	2.1862	23 37 29.9	6.253
16	1 52 50.68	1.9610	16 56 54.6	10.442	16	3 32 23.73	2.1910	23 43 41.8	6.142
17	1 54 48.47	1.9653	17 7 19.1	10.375	17	3 34 35.33	2.1958	23 49 47.0	6.030
18	1 56 46.53	1.9697	17 17 39.5	10.307	18	3 36 47.22	2.2006	23 55 45.4	5.917
19	1 58 44.85	1.9741	17 27 55.8	10.238	19	3 38 59.39	2.2054	24 1 37.0	5.803
20	2 0 43.43	1.9785	17 38 7.9	10.167	20	3 41 11.84	2.2099	24 7 21.6	5.687
21	2 2 42.28	1.9829	17 48 15.8	10.096	21	3 43 24.57	2.2146	24 12 59.3	5.570
22	2 4 41.40	1.9875	17 58 19.4	10.024	22	3 45 37.68	2.2192	24 18 30.0	5.452
23	2 6 40.79	1.9921	N.18 8 18.6	9.951	23	3 47 50.87	2.2238	N.24 23 53.6	5.334
TUESDAY 2.					THURSDAY 4.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	2 8 40.45	1.9967	N.18 18 13.4	9.878	0	3 50 4.44	2.2284	N.24 29 10.1	5.215
1	2 10 40.39	2.0013	18 28 3.8	9.803	1	3 52 18.28	2.2330	24 34 19.4	5.096
2	2 12 40.61	2.0060	18 37 49.7	9.727	2	3 54 32.39	2.2376	24 39 21.5	4.976
3	2 14 41.10	2.0107	18 47 31.0	9.650	3	3 56 46.77	2.2420	24 44 16.4	4.855
4	2 16 41.87	2.0154	18 57 7.7	9.572	4	3 59 1.42	2.2464	24 49 4.0	4.733
5	2 18 42.93	2.0201	19 6 39.7	9.498	5	4 1 16.33	2.2507	24 53 44.2	4.610
6	2 20 44.28	2.0248	19 16 6.9	9.413	6	4 3 31.51	2.2550	24 58 16.9	4.486
7	2 22 45.91	2.0295	19 25 29.3	9.332	7	4 5 46.94	2.2593	25 2 42.1	4.360
8	2 24 47.82	2.0343	19 34 46.9	9.251	8	4 8 2.63	2.2635	25 6 59.9	4.232
9	2 26 50.01	2.0391	19 43 59.6	9.169	9	4 10 18.57	2.2677	25 11 10.1	4.106
10	2 28 52.49	2.0439	19 53 7.3	9.086	10	4 12 34.77	2.2719	25 15 12.7	3.978
11	2 30 55.26	2.0487	20 2 10.0	9.002	11	4 14 51.92	2.2759	25 19 7.6	3.850
12	2 32 58.33	2.0535	20 11 7.6	8.917	12	4 17 7.92	2.2800	25 22 54.8	3.722
13	2 35 1.69	2.0583	20 20 0.1	8.831	13	4 19 24.85	2.2840	25 26 34.2	3.593
14	2 37 5.33	2.0632	20 28 47.3	8.744	14	4 21 42.01	2.2879	25 30 5.9	3.463
15	2 39 9.26	2.0681	20 37 29.3	8.656	15	4 23 59.42	2.2918	25 33 29.7	3.332
16	2 41 13.49	2.0730	20 46 6.0	8.567	16	4 26 17.06	2.2957	25 36 45.6	3.200
17	2 43 18.02	2.0779	20 54 37.3	8.477	17	4 28 34.92	2.2995	25 39 53.6	3.067
18	2 45 22.83	2.0828	21 3 3.1	8.386	18	4 30 53.02	2.3033	25 42 53.6	2.933
19	2 47 27.94	2.0877	21 11 23.5	8.294	19	4 33 11.34	2.3070	25 45 45.6	2.799
20	2 49 33.35	2.0926	21 19 38.3	8.201	20	4 35 29.87	2.3106	25 48 29.5	2.664
21	2 51 39.05	2.0975	21 27 47.5	8.107	21	4 37 48.62	2.3142	25 51 5.2	2.529
22	2 53 45.05	2.1024	21 35 51.1	8.013	22	4 40 7.68	2.3177	25 53 32.8	2.393
23	2 55 51.35	2.1073	21 43 49.0	7.917	23	4 42 26.75	2.3212	25 55 52.3	2.257
24	2 57 57.95	2.1122	N.21 51 41.0	7.820	24	4 44 46.13	2.3247	N.25 58 3.6	2.119

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 5.					SUNDAY 7.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	4 44 46.13	2.3047	N.25 58 3.6	2.119	0	6 38 45.88	2.3043	N.24 52 57.3	4.922
1	4 47 5.71	2.3051	26 0 6.6	1.981	1	6 41 9.52	2.3038	24 47 57.5	6.071
2	4 49 25.48	2.3053	26 2 1.9	1.843	2	6 43 33.13	2.3032	24 42 48.8	6.220
3	4 51 45.44	2.3044	26 3 47.5	1.704	3	6 45 56.70	2.3026	24 37 31.1	6.368
4	4 54 5.58	2.3074	26 5 25.5	1.565	4	6 48 20.24	2.3019	24 32 4.5	6.516
5	4 56 25.91	2.3408	26 6 55.0	1.426	5	6 50 43.73	2.3012	24 26 20.1	6.664
6	4 58 46.42	2.3422	26 8 16.2	1.284	6	6 53 7.17	2.3004	24 20 44.9	6.811
7	5 1 7.11	2.3400	26 9 28.9	1.142	7	6 55 30.56	2.3006	24 14 51.8	6.958
8	5 3 27.96	2.3426	26 10 23.1	0.999	8	6 57 53.90	2.3006	24 8 49.9	6.106
9	5 5 48.98	2.3416	26 11 28.7	0.856	9	7 0 17.18	2.3076	24 2 39.2	6.252
10	5 8 10.16	2.3433	26 12 15.7	0.713	10	7 2 40.39	2.3065	23 56 19.8	6.398
11	5 10 31.50	2.3509	26 12 54.1	0.569	11	7 5 3.53	2.3058	23 49 51.6	6.544
12	5 12 52.98	2.3504	26 13 23.9	0.424	12	7 7 26.61	2.3040	23 43 14.6	6.690
13	5 15 14.61	2.3517	26 13 45.1	0.280	13	7 9 49.61	2.3027	23 36 28.9	6.835
14	5 17 36.38	2.3540	26 13 57.6	0.135	14	7 12 12.54	2.3014	23 29 34.6	6.979
15	5 19 58.29	2.3523	26 14 1.4	0.010	15	7 14 35.39	2.3000	23 22 31.7	7.122
16	5 22 20.33	2.3528	26 13 56.4	0.186	16	7 16 58.15	2.3786	23 15 20.2	7.265
17	5 24 42.50	2.3704	26 13 42.7	0.302	17	7 19 20.82	2.3772	23 8 0.0	7.408
18	5 27 4.80	2.3724	26 13 20.3	0.448	18	7 21 43.41	2.3757	23 0 31.2	7.550
19	5 29 27.21	2.3744	26 12 49.1	0.595	19	7 24 5.90	2.3742	22 52 54.0	7.692
20	5 31 49.73	2.3768	26 12 9.0	0.742	20	7 26 28.30	2.3726	22 45 8.3	7.833
21	5 34 12.36	2.3781	26 11 20.1	0.889	21	7 28 50.60	2.3709	22 37 14.1	7.973
22	5 36 35.09	2.3798	26 10 22.3	1.086	22	7 31 12.80	2.3692	22 29 11.5	8.113
23	5 38 57.92	2.3814	N.26 9 15.6	1.184	23	7 33 34.90	2.3674	N.22 21 0.5	8.253
SATURDAY 6.					MONDAY 8.				
0	5 41 20.85	2.3822	N.26 8 0.0	1.282	0	7 35 56.89	2.3656	N.22 12 41.1	8.392
1	5 43 43.86	2.3842	26 6 35.6	1.480	1	7 38 18.78	2.3638	22 4 13.4	8.530
2	5 46 6.95	2.3856	26 5 2.3	1.639	2	7 40 40.56	2.3619	21 55 37.4	8.668
3	5 48 30.12	2.3871	26 3 20.0	1.778	3	7 43 2.22	2.3600	21 46 53.2	8.806
4	5 50 53.36	2.3879	26 1 28.7	1.927	4	7 45 23.76	2.3561	21 38 0.8	8.941
5	5 53 16.67	2.3900	25 59 28.5	2.077	5	7 47 45.19	2.3522	21 29 0.3	9.076
6	5 55 40.04	2.3900	25 57 19.4	2.227	6	7 50 6.51	2.3482	21 19 51.7	9.211
7	5 58 3.47	2.3900	25 55 1.3	2.377	7	7 52 27.71	2.3422	21 10 35.0	9.346
8	6 0 26.96	2.3917	25 52 34.2	2.527	8	7 54 48.78	2.3402	21 1 10.3	9.478
9	6 2 50.49	2.3926	25 49 58.1	2.677	9	7 57 9.73	2.3422	20 51 37.6	9.611
10	6 5 14.06	2.3922	25 47 13.0	2.827	10	7 59 30.56	2.3461	20 41 57.0	9.744
11	6 7 37.67	2.3926	25 44 18.9	2.977	11	8 1 51.27	2.3440	20 32 8.6	9.874
12	6 10 1.32	2.3948	25 41 15.8	3.127	12	8 4 11.85	2.3419	20 22 12.3	10.005
13	6 12 25.00	2.3947	25 38 3.7	3.277	13	8 6 32.30	2.3398	20 12 8.3	10.135
14	6 14 48.69	2.3950	25 34 42.6	3.427	14	8 8 52.63	2.3377	20 1 56.5	10.263
15	6 17 12.40	2.3958	25 31 12.5	3.577	15	8 11 12.82	2.3356	19 51 37.0	10.390
16	6 19 36.12	2.3966	25 27 33.4	3.727	16	8 13 32.88	2.3334	19 41 9.9	10.516
17	6 21 59.86	2.3966	25 23 45.3	3.877	17	8 15 52.82	2.3312	19 30 35.3	10.641
18	6 24 23.61	2.3966	25 19 48.2	4.027	18	8 18 12.63	2.3290	19 19 53.1	10.766
19	6 26 47.35	2.3966	25 15 42.2	4.177	19	8 20 32.31	2.3268	19 9 3.5	10.888
20	6 29 11.08	2.3965	25 11 27.2	4.326	20	8 22 51.85	2.3246	18 58 6.5	11.010
21	6 31 34.81	2.3968	25 7 3.2	4.475	21	8 25 11.26	2.3224	18 47 2.2	11.132
22	6 33 58.52	2.3960	25 2 30.2	4.624	22	8 27 30.54	2.3202	18 35 50.5	11.253
23	6 36 22.21	2.3947	24 57 48.2	4.773	23	8 29 49.69	2.3180	18 24 31.6	11.373
24	6 38 45.88	2.3943	N.24 52 57.3	4.922	24	8 32 8.71	2.3159	N.18 13 5.6	11.493

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 9.					THURSDAY 11.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	8 32 8.71	2.3169	N.18 13 5.6	11.498	0	10 21 11.03	2.3430	N. 7 6 30.7	15.772
1	8 34 27.60	2.3188	18 1 32.4	11.611	1	10 23 25.52	2.3415	6 50 42.8	15.926
2	8 36 46.35	2.3117	17 49 52.1	11.728	2	10 25 39.99	2.3410	6 34 51.6	15.978
3	8 39 4.97	2.3094	17 38 4.9	11.844	3	10 27 54.44	2.3406	6 18 57.4	15.929
4	8 41 23.47	2.3072	17 26 10.8	11.969	4	10 30 8.87	2.3403	6 3 0.2	15.978
5	8 43 41.84	2.3060	17 14 9.8	12.072	5	10 32 23.29	2.3401	5 47 0.0	16.025
6	8 46 0.07	2.3029	17 2 2.1	12.184	6	10 34 37.70	2.3401	5 30 57.0	16.071
7	8 48 18.18	2.3008	16 49 47.6	12.296	7	10 36 52.11	2.3402	5 14 51.3	16.115
8	8 50 36.16	2.2987	16 37 26.4	12.406	8	10 39 6.52	2.3406	4 58 43.1	16.168
9	8 52 54.02	2.2966	16 24 58.7	12.514	9	10 41 20.94	2.3404	4 42 32.4	16.199
10	8 55 11.75	2.2945	16 12 24.5	12.622	10	10 43 35.36	2.3406	4 26 19.3	16.238
11	8 57 29.35	2.2924	15 59 43.8	12.731	11	10 45 49.79	2.3406	4 10 3.8	16.276
12	8 59 46.83	2.2903	15 46 56.6	12.838	12	10 48 4.24	2.3410	3 53 46.1	16.312
13	9 2 4.19	2.2883	15 34 3.1	12.943	13	10 50 18.71	2.3413	3 37 26.4	16.346
14	9 4 21.43	2.2863	15 21 3.4	13.047	14	10 52 33.90	2.3417	3 21 4.7	16.378
15	9 6 38.54	2.2843	15 7 57.5	13.150	15	10 54 47.71	2.3422	3 4 41.1	16.408
16	9 8 55.54	2.2824	14 54 45.5	13.251	16	10 57 2.26	2.3426	2 48 15.8	16.436
17	9 11 12.43	2.2806	14 41 27.5	13.351	17	10 59 16.85	2.3426	2 31 48.8	16.463
18	9 13 29.21	2.2788	14 28 3.5	13.449	18	11 1 31.48	2.3442	2 15 20.2	16.488
19	9 15 45.87	2.2768	14 14 33.6	13.546	19	11 3 46.16	2.3450	1 58 50.1	16.511
20	9 18 2.42	2.2750	14 0 57.9	13.642	20	11 6 0.86	2.3456	1 42 18.8	16.532
21	9 20 18.86	2.2732	13 47 16.5	13.737	21	11 8 15.65	2.3467	1 25 46.3	16.552
22	9 22 35.19	2.2714	13 33 29.4	13.831	22	11 10 30.48	2.3477	1 9 12.6	16.570
23	9 24 51.42	2.2697	N.13 19 36.8	13.924	23	11 12 45.37	2.3487	N. 0 52 37.9	16.586
WEDNESDAY 10.					FRIDAY 12.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	9 27 7.54	2.2680	N.13 5 38.6	14.016	0	11 15 0.32	2.3488	N. 0 36 2.2	16.600
1	9 29 23.57	2.2663	12 51 35.0	14.105	1	11 17 15.34	2.3510	0 19 25.8	16.612
2	9 31 39.50	2.2647	12 37 26.1	14.193	2	11 19 30.43	2.3522	N. 0 2 48.7	16.623
3	9 33 55.34	2.2631	12 23 12.0	14.280	3	11 21 45.60	2.3535	S. 0 13 49.0	16.632
4	9 36 11.09	2.2616	12 8 52.6	14.365	4	11 24 0.85	2.3549	0 30 27.1	16.639
5	9 38 26.74	2.2602	11 54 28.1	14.449	5	11 26 16.19	2.3564	0 47 5.5	16.644
6	9 40 42.31	2.2588	11 39 58.7	14.532	6	11 28 31.62	2.3579	1 3 44.1	16.647
7	9 42 57.80	2.2574	11 25 24.4	14.614	7	11 30 47.14	2.3595	1 20 22.8	16.647
8	9 45 13.20	2.2561	11 10 45.2	14.694	8	11 33 2.75	2.3612	1 37 1.6	16.645
9	9 47 28.52	2.2548	10 56 1.2	14.772	9	11 35 18.47	2.3629	1 53 40.3	16.642
10	9 49 43.77	2.2535	10 41 12.5	14.848	10	11 37 34.29	2.3647	2 10 18.8	16.637
11	9 51 58.95	2.2523	10 26 19.3	14.923	11	11 39 50.21	2.3665	2 26 56.2	16.630
12	9 54 14.05	2.2512	10 11 21.6	14.997	12	11 42 6.95	2.3684	2 43 34.3	16.621
13	9 56 29.09	2.2501	9 56 19.4	15.070	13	11 44 22.41	2.3703	3 0 11.2	16.610
14	9 58 44.07	2.2490	9 41 12.9	15.142	14	11 46 38.69	2.3723	3 16 47.5	16.597
15	10 0 58.99	2.2480	9 26 2.3	15.213	15	11 48 55.09	2.3744	3 33 23.0	16.582
16	10 3 13.84	2.2470	9 10 47.5	15.282	16	11 51 11.62	2.3766	3 49 57.5	16.566
17	10 5 28.64	2.2461	8 55 28.6	15.349	17	11 53 28.92	2.3789	4 6 30.9	16.547
18	10 7 43.39	2.2453	8 40 5.7	15.414	18	11 55 45.10	2.3812	4 23 3.2	16.527
19	10 9 58.10	2.2446	8 24 39.0	15.478	19	11 58 2.04	2.3836	4 39 34.1	16.504
20	10 12 12.76	2.2440	8 9 8.5	15.540	20	12 0 19.13	2.3861	4 56 3.6	16.479
21	10 14 27.38	2.2435	7 53 34.3	15.600	21	12 2 36.36	2.3886	5 12 31.6	16.452
22	10 16 41.97	2.2430	7 37 56.5	15.659	22	12 4 53.75	2.3912	5 28 58.0	16.423
23	10 18 56.52	2.2425	7 22 15.3	15.716	23	12 7 11.30	2.3938	5 45 22.6	16.388
24	10 21 11.03	2.2420	N. 7 6 30.7	15.772	24	12 9 29.00	2.3965	S. 6 1 45.2	16.351

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 13.					MONDAY 15.				
0	13 9 29.00	2.2966	S. 6 1 45.2	16.261	0	14 3 39.99	2.4714	S.17 51 17.1	12.483
1	13 11 46.87	2.2992	6 18 5.8	16.227	1	14 6 8.40	2.4758	18 3 40.5	12.226
2	13 14 4.90	2.3020	6 34 24.3	16.201	2	14 8 37.04	2.4792	18 15 56.3	12.198
3	13 16 23.10	2.3046	6 50 40.6	16.262	3	14 11 5.91	2.4830	18 28 4.2	12.068
4	13 18 41.47	2.3077	7 6 54.5	16.311	4	14 13 35.01	2.4868	18 40 4.2	11.936
5	13 21 0.02	2.3107	7 23 5.9	16.168	5	14 16 4.34	2.4906	18 51 56.2	11.802
6	13 23 18.75	2.3137	7 39 14.6	16.123	6	14 18 33.90	2.4944	19 3 40.2	11.666
7	13 25 37.66	2.3167	7 55 20.5	16.076	7	14 21 3.68	2.4982	19 15 16.0	11.528
8	13 27 56.76	2.3198	8 11 23.6	16.027	8	14 23 33.68	2.5019	19 26 43.6	11.389
9	13 30 16.05	2.3230	8 27 23.7	15.976	9	14 26 3.96	2.5056	19 38 2.8	11.249
10	13 32 35.54	2.3263	8 43 20.7	15.923	10	14 28 34.34	2.5092	19 49 13.6	11.108
11	13 34 55.22	2.3296	8 59 14.5	15.868	11	14 31 4.99	2.5127	20 0 15.9	10.966
12	13 37 15.09	2.3329	9 15 5.0	15.811	12	14 33 35.85	2.5162	20 11 9.8	10.822
13	13 39 35.16	2.3363	9 30 51.9	15.752	13	14 36 6.92	2.5196	20 21 54.5	10.676
14	13 41 55.45	2.3397	9 46 35.2	15.691	14	14 38 38.19	2.5229	20 32 30.6	10.529
15	13 44 15.94	2.3432	10 2 14.8	15.628	15	14 41 9.66	2.5262	20 42 57.9	10.381
16	13 46 36.63	2.3467	10 17 50.5	15.563	16	14 43 41.33	2.5295	20 53 16.3	10.232
17	13 48 57.54	2.3503	10 33 22.3	15.496	17	14 46 13.19	2.5327	21 3 25.7	10.082
18	13 51 18.66	2.3539	10 48 50.0	15.427	18	14 48 45.24	2.5358	21 13 26.0	9.931
19	13 53 40.00	2.3576	11 4 13.5	15.356	19	14 51 17.47	2.5388	21 23 17.1	9.778
20	13 56 1.55	2.3612	11 19 32.7	15.283	20	14 53 49.88	2.5417	21 32 59.0	9.624
21	13 58 23.33	2.3649	11 34 47.5	15.208	21	14 56 22.47	2.5445	21 42 31.6	9.468
22	13 0 45.33	2.3686	11 49 57.7	15.131	22	14 58 55.22	2.5473	21 51 54.9	9.310
23	13 3 7.56	2.3723	S.12 5 3.1	15.052	23	15 1 28.14	2.5500	S.22 1 8.7	9.151
SUNDAY 14.					TUESDAY 16.				
0	13 5 30.01	2.3760	S.12 20 3.8	14.971	0	15 4 1.23	2.5527	S.22 10 13.0	8.991
1	13 7 52.69	2.3798	12 34 59.6	14.887	1	15 6 34.47	2.5553	22 19 7.7	8.831
2	13 10 15.60	2.3836	12 49 50.3	14.802	2	15 9 7.87	2.5578	22 27 52.8	8.670
3	13 12 38.75	2.3875	13 4 35.8	14.715	3	15 11 41.41	2.5602	22 36 28.2	8.508
4	13 15 2.14	2.3914	13 19 16.0	14.626	4	15 14 15.08	2.5625	22 44 53.8	8.345
5	13 17 25.76	2.3953	13 33 50.9	14.535	5	15 16 48.89	2.5647	22 53 9.7	8.181
6	13 19 49.61	2.3993	13 48 20.2	14.442	6	15 19 22.83	2.5668	23 1 15.7	8.016
7	13 22 13.69	2.4033	14 2 43.0	14.347	7	15 21 56.89	2.5687	23 9 11.7	7.851
8	13 24 38.01	2.4073	14 17 2.0	14.250	8	15 24 31.06	2.5705	23 16 57.8	7.685
9	13 27 2.58	2.4113	14 31 14.2	14.151	9	15 27 5.35	2.5723	23 24 33.9	7.518
10	13 29 27.39	2.4153	14 45 20.4	14.050	10	15 29 39.74	2.5740	23 32 0.0	7.350
11	13 31 52.43	2.4193	14 59 20.4	13.948	11	15 32 14.22	2.5756	23 39 16.0	7.182
12	13 34 17.71	2.4233	15 13 14.2	13.844	12	15 34 48.80	2.5771	23 46 21.8	7.013
13	13 36 43.24	2.4274	15 27 1.8	13.738	13	15 37 23.47	2.5786	23 53 17.5	6.843
14	13 39 9.01	2.4315	15 40 43.0	13.630	14	15 39 58.22	2.5797	24 0 3.0	6.672
15	13 41 35.02	2.4356	15 54 17.6	13.521	15	15 42 33.03	2.5808	24 6 38.2	6.501
16	13 44 1.28	2.4397	16 7 45.5	13.410	16	15 45 7.91	2.5818	24 13 3.2	6.329
17	13 46 27.78	2.4437	16 21 6.7	13.297	17	15 47 42.84	2.5827	24 19 17.9	6.157
18	13 48 54.52	2.4477	16 34 21.0	13.182	18	15 50 17.82	2.5835	24 25 22.2	5.985
19	13 51 21.50	2.4517	16 47 28.4	13.065	19	15 52 52.85	2.5842	24 31 16.1	5.812
20	13 53 48.72	2.4557	17 0 28.7	12.946	20	15 55 27.91	2.5847	24 36 59.6	5.639
21	13 56 16.18	2.4597	17 13 21.8	12.825	21	15 58 3.00	2.5851	24 42 32.8	5.466
22	13 58 43.88	2.4636	17 26 7.6	12.702	22	16 0 38.11	2.5853	24 47 55.6	5.292
23	14 1 11.82	2.4675	17 38 46.1	12.578	23	16 3 13.23	2.5853	24 53 7.9	5.118
24	14 3 39.99	2.4714	S.17 51 17.1	12.453	24	16 5 48.35	2.5853	S.24 68 9.7	4.943

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
WEDNESDAY 17.					FRIDAY 19.				
	h. m. s.		S. O. I. "	"		h. m. s.		S. O. I. "	"
0	16 5 48.35	2.8858	S.24 58 9.7	4.943	0	18 7 30.77	2.4406	S.25 38 19.2	2.849
1	16 8 23.47	2.8853	25 3 1.0	4.768	1	18 9 57.03	2.4380	25 35 11.9	2.196
2	16 10 58.59	2.8851	25 7 41.9	4.598	2	18 12 22.95	2.4358	25 31 55.6	2.542
3	16 13 33.70	2.8847	25 12 12.3	4.418	3	18 14 48.54	2.4325	25 28 30.6	2.887
4	16 16 8.77	2.8842	25 16 32.2	4.243	4	18 17 13.78	2.4177	25 24 56.9	2.831
5	16 18 43.80	2.8835	25 20 41.6	4.068	5	18 19 38.67	2.4118	25 21 14.6	2.774
6	16 21 18.79	2.8837	25 24 40.5	3.893	6	18 22 3.21	2.4059	25 17 23.7	2.916
7	16 23 53.74	2.8818	25 28 28.9	3.718	7	18 24 27.39	2.4000	25 13 24.4	4.057
8	16 26 28.63	2.8808	25 32 6.8	3.543	8	18 26 51.21	2.3940	25 9 16.8	4.197
9	16 29 3.46	2.8797	25 35 34.2	3.368	9	18 29 14.67	2.3879	25 5 0.8	4.335
10	16 31 38.21	2.8785	25 38 51.1	3.193	10	18 31 37.76	2.3818	25 0 36.5	4.473
11	16 34 12.86	2.8771	25 41 57.6	3.021	11	18 34 0.49	2.3756	24 56 4.1	4.608
12	16 36 47.46	2.8756	25 44 53.6	2.847	12	18 36 22.83	2.3698	24 51 23.6	4.743
13	16 39 21.95	2.8739	25 47 39.1	2.673	13	18 38 44.80	2.3639	24 46 35.0	4.877
14	16 41 56.33	2.8721	25 50 14.1	2.499	14	18 41 6.39	2.3567	24 41 38.5	5.010
15	16 44 30.60	2.8702	25 52 38.7	2.325	15	18 43 27.61	2.3508	24 36 34.1	5.141
16	16 47 4.75	2.8681	25 54 53.0	2.152	16	13 45 48.44	2.3439	24 31 21.9	5.270
17	16 49 38.78	2.8659	25 56 58.9	1.979	17	18 48 8.88	2.3375	24 26 9.0	5.397
18	16 52 12.67	2.8636	25 58 50.4	1.806	18	18 50 28.94	2.3310	24 20 34.4	5.523
19	16 54 46.41	2.8611	26 0 33.6	1.634	19	18 52 48.61	2.3245	24 14 59.2	5.646
20	16 57 20.00	2.8585	26 2 6.5	1.462	20	18 55 7.89	2.3180	24 9 16.6	5.773
21	16 59 53.44	2.8558	26 3 29.0	1.291	21	18 57 26.78	2.3115	24 3 26.5	5.895
22	17 2 26.71	2.8530	26 4 41.3	1.120	22	18 59 45.28	2.3050	23 57 29.1	6.017
23	17 4 59.81	2.8501	S.26 5 43.4	0.950	23	19 2 3.38	2.2984	S.23 51 24.4	6.138
THURSDAY 18.					SATURDAY 20.				
	h. m. s.		S. O. I. "	"		h. m. s.		S. O. I. "	"
0	17 7 32.73	2.8470	S.26 6 35.4	0.781	0	19 4 21.08	2.2918	S.23 45 12.4	6.266
1	17 10 5.46	2.8458	26 7 17.2	0.612	1	19 6 38.39	2.2862	23 38 53.3	6.377
2	17 12 37.99	2.8406	26 7 48.8	0.444	2	19 8 55.30	2.2795	23 32 27.2	6.484
3	17 15 10.32	2.8371	26 8 10.3	0.276	3	19 11 11.81	2.2718	23 25 54.1	6.510
4	17 17 42.44	2.8336	26 8 21.8	0.109	4	19 13 27.92	2.2662	23 19 14.1	6.734
5	17 20 14.34	2.8300	26 8 23.4	0.067	5	19 15 43.64	2.2596	23 12 27.3	6.837
6	17 22 46.02	2.8262	26 8 15.0	0.223	6	19 17 58.95	2.2530	23 5 33.7	6.949
7	17 25 17.40	2.8223	26 7 56.6	0.389	7	19 20 13.86	2.2464	22 58 33.5	7.060
8	17 27 48.68	2.8183	26 7 28.4	0.552	8	19 22 28.38	2.2387	22 51 26.6	7.170
9	17 30 19.65	2.8142	26 6 50.4	0.715	9	19 24 42.50	2.2320	22 44 13.2	7.275
10	17 32 50.36	2.8099	26 6 2.6	0.877	10	19 26 56.21	2.2253	22 36 53.4	7.386
11	17 35 20.92	2.8056	26 5 5.2	1.038	11	19 29 9.52	2.2186	22 29 27.2	7.490
12	17 37 51.02	2.8010	26 3 58.0	1.198	12	19 31 22.43	2.2119	22 21 54.7	7.594
13	17 40 20.95	2.7964	26 2 41.2	1.358	13	19 33 34.95	2.2053	22 14 16.0	7.697
14	17 43 50.60	2.7918	26 1 14.8	1.517	14	19 35 47.07	2.1987	22 6 31.1	7.799
15	17 45 19.97	2.7871	25 59 39.0	1.676	15	19 37 58.79	2.1921	21 58 40.1	7.899
16	17 47 49.06	2.7823	25 57 53.8	1.832	16	19 40 10.12	2.1856	21 50 43.1	7.996
17	17 50 17.85	2.7774	25 55 59.2	1.988	17	19 42 21.05	2.1790	21 42 40.3	8.095
18	17 52 46.35	2.7734	25 53 55.2	2.143	18	19 44 31.59	2.1725	21 34 31.6	8.193
19	17 55 14.55	2.7673	25 51 42.0	2.297	19	19 46 41.74	2.1660	21 26 17.1	8.289
20	17 57 42.43	2.7621	25 49 19.6	2.450	20	19 48 51.50	2.1595	21 17 56.8	8.384
21	18 0 9.90	2.7568	25 46 48.1	2.602	21	19 51 0.86	2.1530	21 9 30.9	8.478
22	18 2 37.24	2.7515	25 44 7.5	2.753	22	19 53 9.83	2.1465	21 0 59.4	8.571
23	18 5 4.17	2.7461	25 41 17.8	2.901	23	19 55 18.42	2.1400	20 52 22.5	8.663
24	18 7 30.77	2.7406	S.25 38 19.2	3.049	24	19 57 26.62	2.1334	S.20 43 40.1	8.753

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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SUNDAY 21.

	h.	m.	s.	°	'	"	"
0	19	57	26.62	S. 20	43	40.1	8.753
1	19	59	34.44		20	34	52.4
2	20	1	41.87		20	25	59.4
3	20	3	48.93		20	17	1.1
4	20	5	55.61		20	7	57.7
5	20	8	1.91		19	58	49.3
6	20	10	7.83		19	49	35.8
7	20	12	13.39		19	40	17.4
8	20	14	18.58		19	30	54.1
9	20	16	23.40		19	21	26.1
10	20	18	27.86		19	11	53.2
11	20	20	31.96		19	2	15.7
12	20	22	35.69		18	52	33.6
13	20	24	39.07		18	42	47.0
14	20	26	42.09		18	32	55.9
15	20	28	44.77		18	23	0.4
16	20	30	47.10		18	13	0.5
17	20	32	49.08		18	2	56.3
18	20	34	50.72		17	52	47.9
19	20	36	52.02		17	42	35.4
20	20	38	52.98		17	32	18.8
21	20	40	53.61		17	21	58.1
22	20	42	53.91		17	11	33.5
23	20	44	53.89	S. 17	1	4.9	10.508

TUESDAY 22.

	h.	m.	s.	°	'	"	"
0	21	33	17.17	S. 19	20	46.5	11.822
1	21	35	9.88		12	8	56.0
2	21	37	2.37		11	57	3.0
3	21	38	54.63		11	45	7.6
4	21	40	46.66		11	33	9.8
5	21	42	38.51		11	21	9.7
6	21	44	30.12		11	9	7.3
7	21	46	21.52		10	57	2.8
8	21	48	12.72		10	44	56.1
9	21	50	3.73		10	32	47.3
10	21	51	54.54		10	20	36.5
11	21	53	45.15		10	8	23.6
12	21	55	35.57		9	56	8.7
13	21	57	25.81		9	43	51.9
14	21	59	15.87		9	31	33.2
15	22	1	5.75		9	19	12.7
16	22	2	55.46		9	6	50.4
17	22	4	45.00		8	54	26.3
18	22	4	34.38		8	42	0.4
19	22	8	23.61		8	29	32.9
20	22	10	12.68		8	17	3.8
21	22	12	1.59		8	4	33.2
22	22	13	50.35		7	52	1.0
23	22	15	38.97	S. 7	39	27.3	12.874

MONDAY 22.

	h.	m.	s.	°	'	"	"
0	20	46	53.54	S. 16	50	32.5	10.572
1	20	48	52.87		16	39	56.3
2	20	50	51.89		16	29	16.3
3	20	52	50.59		16	18	32.7
4	20	54	48.98		16	7	45.5
5	20	56	47.06		15	56	54.7
6	20	58	44.84		15	46	0.4
7	21	0	42.32		15	35	2.7
8	21	2	39.50		15	24	1.6
9	21	4	36.39		15	12	57.1
10	21	6	33.00		15	1	49.3
11	21	8	29.32		14	50	38.3
12	21	10	25.35		14	39	24.2
13	21	12	21.11		14	28	6.9
14	21	14	16.59		14	16	46.6
15	21	16	11.81		14	5	23.3
16	21	18	6.76		13	53	57.0
17	21	20	1.44		13	42	27.8
18	21	21	55.86		13	30	55.7
19	21	23	50.03		13	19	20.9
20	21	25	43.95		13	7	43.3
21	21	27	37.62		12	56	3.0
22	21	29	31.04		12	44	20.1
23	21	31	24.22		12	32	34.6
24	21	33	17.17	S. 12	20	46.5	11.822

WEDNESDAY 24.

	h.	m.	s.	°	'	"	"
0	22	17	27.44	S. 7	26	52.2	12.698
1	22	19	15.78		7	14	15.7
2	22	21	3.99		7	1	37.8
3	22	22	52.08		6	48	58.5
4	22	24	40.04		6	36	18.0
5	22	26	27.88		6	23	36.2
6	22	28	15.61		6	10	53.2
7	22	30	3.22		5	58	9.1
8	22	31	50.72		5	45	23.9
9	22	33	38.12		5	32	37.6
10	22	35	25.43		5	19	50.2
11	22	37	12.64		5	7	1.9
12	22	38	59.75		4	54	12.6
13	22	40	46.77		4	41	22.4
14	22	42	33.72		4	28	31.3
15	22	44	20.59		4	15	39.4
16	22	46	7.38		4	2	46.7
17	22	47	54.09		3	49	53.3
18	22	49	40.74		3	36	59.2
19	22	51	27.33		3	24	4.4
20	22	53	13.86		3	11	9.0
21	22	55	0.33		2	58	13.0
22	22	56	46.75		2	45	16.4
23	22	58	33.12		2	32	19.3
24	23	0	19.46	S. 2	19	21.8	12.968

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
THURSDAY 25.					SATURDAY 27.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	23 0 19.46	1.7719	S. 2 19 21.8	12.968	0	0 25 48.38	1.8140	N. 7 58 33.1	12.515
1	23 2 5.76	1.7712	2 6 23.8	12.970	1	0 27 37.29	1.8164	8 11 3.3	12.489
2	23 3 52.01	1.7706	1 53 25.5	12.976	2	0 29 26.35	1.8188	8 23 31.8	12.462
3	23 5 38.23	1.7701	1 40 26.8	12.981	3	0 31 15.56	1.8213	8 35 58.6	12.434
4	23 7 24.42	1.7697	1 27 27.8	12.986	4	0 33 4.92	1.8239	8 48 23.6	12.405
5	23 9 10.59	1.7693	1 14 28.5	12.990	5	0 34 54.44	1.8265	9 0 46.9	12.375
6	23 10 56.75	1.7690	1 1 29.0	12.994	6	0 36 44.12	1.8291	9 13 8.4	12.344
7	23 12 42.89	1.7688	0 48 29.4	12.997	7	0 38 33.95	1.8318	9 25 28.0	12.312
8	23 14 29.01	1.7687	0 35 29.6	12.999	8	0 40 23.95	1.8346	9 37 45.7	12.279
9	23 16 15.13	1.7687	0 22 29.7	13.001	9	0 42 14.12	1.8374	9 50 1.4	12.245
10	23 18 1.24	1.7687	S. 0 9 29.7	13.002	10	0 44 4.46	1.8403	10 2 15.1	12.211
11	23 19 47.36	1.7687	N. 0 3 30.4	13.002	11	0 45 54.98	1.8433	10 14 26.7	12.176
12	23 21 33.48	1.7687	0 16 30.4	13.001	12	0 47 45.67	1.8463	10 26 36.1	12.140
13	23 23 19.60	1.7688	0 29 30.4	13.000	13	0 49 36.54	1.8494	10 38 43.4	12.103
14	23 25 5.74	1.7690	0 42 30.2	12.998	14	0 51 27.60	1.8526	10 50 48.5	12.065
15	23 26 51.89	1.7693	0 55 29.9	12.995	15	0 53 18.85	1.8558	11 2 51.4	12.027
16	23 28 38.06	1.7697	1 8 29.5	12.992	16	0 55 10.29	1.8590	11 14 51.9	11.988
17	23 30 24.25	1.7701	1 21 28.8	12.988	17	0 57 1.93	1.8622	11 26 50.0	11.948
18	23 32 10.47	1.7706	1 34 27.9	12.983	18	0 58 53.76	1.8655	11 38 45.7	11.907
19	23 33 56.72	1.7712	1 47 26.7	12.978	19	1 0 45.79	1.8688	11 50 39.0	11.866
20	23 35 43.01	1.7719	2 0 25.1	12.973	20	1 2 38.03	1.8722	12 2 29.8	11.824
21	23 37 29.34	1.7725	2 13 23.2	12.968	21	1 4 30.48	1.8757	12 14 17.9	11.781
22	23 39 15.71	1.7732	2 26 20.8	12.967	22	1 6 23.13	1.8792	12 26 3.4	11.737
23	23 41 2.12	1.7740	N. 2 39 18.0	12.969	23	1 8 15.99	1.8826	N.12 37 46.3	11.692
FRIDAY 26.					SUNDAY 28.				
	h. m. s.		° ' "			h. m. s.		° ' "	
0	23 42 48.58	1.7748	N. 2 52 14.7	12.960	0	1 10 9.07	1.8864	N.12 49 26.4	11.646
1	23 44 35.09	1.7757	3 5 10.9	12.950	1	1 12 2.37	1.8901	13 1 3.8	11.600
2	23 46 21.66	1.7767	3 18 6.3	12.920	2	1 13 55.89	1.8939	13 12 38.3	11.551
3	23 48 8.30	1.7777	3 31 1.2	12.909	3	1 15 49.64	1.8977	13 24 9.9	11.503
4	23 49 55.00	1.7788	3 43 55.5	12.898	4	1 17 43.61	1.9016	13 35 38.6	11.454
5	23 51 41.77	1.7800	3 56 49.0	12.886	5	1 19 37.81	1.9054	13 47 4.3	11.404
6	23 53 28.61	1.7813	4 9 41.8	12.873	6	1 21 32.24	1.9093	13 58 26.9	11.353
7	23 55 15.53	1.7826	4 22 33.8	12.859	7	1 23 26.91	1.9132	14 9 46.4	11.301
8	23 57 2.53	1.7840	4 35 25.0	12.844	8	1 25 21.82	1.9172	14 21 2.7	11.248
9	23 58 49.61	1.7854	4 48 15.2	12.829	9	1 27 16.97	1.9212	14 32 15.9	11.194
10	0 0 36.78	1.7869	5 1 4.5	12.814	10	1 29 12.36	1.9253	14 43 25.8	11.139
11	0 2 24.04	1.7885	5 13 52.8	12.798	11	1 31 8.00	1.9294	14 54 32.4	11.083
12	0 4 11.40	1.7901	5 26 40.2	12.781	12	1 33 3.89	1.9335	15 5 35.6	11.026
13	0 5 58.85	1.7918	5 39 26.5	12.763	13	1 35 0.03	1.9377	15 16 35.4	10.968
14	0 7 46.41	1.7935	5 52 11.7	12.744	14	1 36 56.42	1.9419	15 27 31.7	10.909
15	0 9 34.07	1.7953	6 4 55.7	12.724	15	1 38 53.06	1.9462	15 38 24.4	10.849
16	0 11 21.84	1.7972	6 17 38.5	12.703	16	1 40 49.97	1.9506	15 49 13.4	10.788
17	0 13 9.73	1.7992	6 30 20.1	12.682	17	1 42 47.13	1.9549	15 59 58.9	10.726
18	0 14 57.73	1.8013	6 43 0.4	12.660	18	1 44 44.55	1.9592	16 10 40.7	10.663
19	0 16 45.85	1.8033	6 55 39.4	12.637	19	1 46 42.24	1.9636	16 21 18.6	10.600
20	0 18 34.09	1.8052	7 8 17.1	12.614	20	1 48 40.20	1.9681	16 31 52.7	10.536
21	0 20 22.46	1.8073	7 20 53.3	12.590	21	1 50 38.43	1.9726	16 42 22.9	10.471
22	0 22 10.97	1.8095	7 33 28.0	12.566	22	1 52 36.92	1.9771	16 52 49.2	10.405
23	0 23 59.61	1.8117	7 46 1.3	12.541	23	1 54 35.69	1.9817	17 3 11.5	10.338
24	0 25 48.38	1.8140	N. 7 58 33.1	12.515	24	1 56 34.73	1.9863	N.17 13 29.7	10.270

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
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MONDAY 29.

	h.	m.	s.	°	'	"	°	'	"
0	1	56	34.73	1.9863	N.17	13	29.7		10.270
1	1	58	34.05	1.9909		17	23	43.8	10.301
2	2	0	33.65	1.9956		17	33	53.7	10.131
3	2	2	33.53	2.0003		17	43	59.4	10.060
4	2	4	33.69	2.0040		17	54	0.7	9.987
5	2	6	34.13	2.0077		18	3	57.7	9.913
6	2	8	34.86	2.0145		18	13	50.3	9.839
7	2	10	35.87	2.0193		18	23	38.4	9.764
8	2	12	37.17	2.0241		18	33	22.0	9.688
9	2	14	38.76	2.0289		18	43	0.9	9.611
10	2	16	40.64	2.0337		18	52	35.2	9.533
11	2	18	42.81	2.0386		19	2	4.8	9.454
12	2	20	45.27	2.0435		19	11	29.6	9.374
13	2	22	48.03	2.0484		19	20	49.6	9.293
14	2	24	51.08	2.0533		19	30	4.6	9.211
15	2	26	54.43	2.0582		19	39	14.7	9.128
16	2	28	58.07	2.0632		19	48	19.9	9.044
17	2	31	2.01	2.0682		19	57	19.9	8.960
18	2	33	6.25	2.0732		20	6	14.7	8.873
19	2	35	10.79	2.0782		20	15	4.3	8.786
20	2	37	15.63	2.0832		20	23	48.7	8.697
21	2	39	20.77	2.0882		20	32	27.8	8.607
22	2	41	26.20	2.0932		20	41	1.5	8.516
23	2	43	31.93	2.0982	N.20	49	29.7		8.425

TUESDAY 30.

	h.	m.	s.	°	'	"	°	'	"
0	2	45	37.07	2.1082	N.20	57	52.4		8.333
1	2	47	44.31	2.1082		21	6	9.6	8.340
2	2	49	50.94	2.1182		21	14	21.2	8.146
3	2	51	57.88	2.1182		21	22	27.0	8.061
4	2	54	5.12	2.1282		21	30	27.0	7.954
5	2	56	12.66	2.1381		21	38	21.3	7.856
6	2	58	20.49	2.1380		21	46	9.7	7.757
7	3	0	28.62	2.1380		21	53	52.1	7.637
8	3	2	37.06	2.1480		22	1	28.6	7.536
9	3	4	45.79	2.1480		22	8	59.0	7.465
10	3	6	54.81	2.1529		22	16	23.3	7.363
11	3	9	4.13	2.1578		22	23	41.4	7.250
12	3	11	13.75	2.1627		22	30	53.3	7.146
13	3	13	23.67	2.1676		22	37	58.9	7.041
14	3	15	33.88	2.1725		22	44	58.1	6.935
15	3	17	44.38	2.1774		22	51	50.9	6.828
16	3	19	55.17	2.1822		22	58	37.3	6.720
17	3	22	6.25	2.1870		23	5	17.2	6.610
18	3	24	17.62	2.1918		23	11	50.5	6.499
19	3	26	29.27	2.1966		23	18	17.2	6.389
20	3	28	41.21	2.2013		23	24	37.1	6.276
21	3	30	53.43	2.2060		23	30	50.2	6.163
22	3	33	5.93	2.2107		23	36	56.6	6.049
23	3	35	18.71	2.2154		23	42	56.1	5.934
24	3	37	31.77	2.2200	N.23	48	48.7		5.818

WEDNESDAY 31.

	h.	m.	s.	°	'	"	°	'	"
0	3	37	31.77	2.2200	N.23	48	48.7		5.818
1	3	39	45.10	2.2246		23	54	34.3	5.702
2	3	41	58.71	2.2292		24	0	12.9	5.585
3	3	44	12.59	2.2337		24	5	44.4	5.466
4	3	46	26.73	2.2381		24	11	8.7	5.346
5	3	48	41.14	2.2425		24	16	25.9	5.225
6	3	50	55.81	2.2468		24	21	35.8	5.104
7	3	53	10.74	2.2510		24	26	38.4	4.982
8	3	55	25.93	2.2552		24	31	33.6	4.860
9	3	57	41.37	2.2594		24	36	21.5	4.738
10	3	59	57.06	2.2635		24	41	2.0	4.611
11	4	2	13.00	2.2676		24	45	34.9	4.486
12	4	4	29.18	2.2717		24	50	0.3	4.360
13	4	6	45.60	2.2757		24	54	18.1	4.233
14	4	9	2.96	2.2796		24	58	28.2	4.106
15	4	11	19.15	2.2835		25	2	30.7	3.976
16	4	13	36.28	2.2873		25	6	25.5	3.846
17	4	15	53.63	2.2910		25	10	12.4	3.716
18	4	18	11.19	2.2947		25	13	51.4	3.584
19	4	20	28.97	2.2983		25	17	22.6	3.452
20	4	22	46.97	2.3019		25	20	46.0	3.320
21	4	25	5.19	2.3054		25	24	1.4	3.188
22	4	27	23.61	2.3088		25	27	8.8	3.056
23	4	29	42.24	2.3121	N.25	30	8.1		2.922

THURSDAY, NOVEMBER 1.

0	4	32	1.06	2.3153	N.25	32	59.4		2.788
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PHASES OF THE MOON.

	Day.	h.	m.
☾ Last Quarter, . . .	7	11	4.8
● New Moon, . . .	14	2	37.6
☽ First Quarter, . . .	21	2	10.6
○ Full Moon, . . .	29	6	49.9

	Day.	h.
☾ Perigee,	13	7.2
☾ Apogee,	25	19.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	Mars W.	83 44 34	3210	85 10 31	3208	86 36 31	3204	88 2 36	3199
	α Aquilæ W.	82 39 11	3205	83 57 18	3219	85 15 32	3211	86 33 54	3206
	Fomalhaut W.	57 30 45	3261	58 49 40	3261	60 8 57	3241	61 28 36	3222
	Aldebaran E.	44 50 27	3161	43 23 19	3184	41 56 15	3168	40 29 16	3163
	Pollux E.	86 33 27	3082	85 4 18	3048	83 35 5	3045	82 5 48	3041
2	Mars W.	95 14 18	3177	96 40 55	3172	98 7 38	3166	99 34 28	3160
	Fomalhaut W.	68 11 41	3442	69 33 10	3428	70 54 55	3415	72 16 55	3402
	α Pegasi W.	45 48 19	3206	47 12 24	3206	48 36 52	3206	50 1 43	3247
	Pollux E.	74 38 3	3019	73 8 14	3014	71 38 18	3008	70 8 15	3004
	Jupiter E.	103 34 39	3080	102 5 41	3086	100 36 37	3061	99 7 27	3046
	Venus E.	107 11 54	3270	105 49 3	3265	104 26 6	3249	103 3 3	3254
3	Mars W.	106 50 22	3129	108 17 56	3122	109 45 38	3116	111 13 28	3109
	Fomalhaut W.	79 10 22	3345	80 33 42	3324	81 57 14	3324	83 20 58	3314
	α Pegasi W.	57 10 56	3169	58 37 42	3166	60 4 45	3142	61 32 4	3129
	Pollux E.	62 36 26	2976	61 5 43	2989	59 34 52	2965	58 3 55	2967
	Jupiter E.	91 39 41	3012	90 9 43	3005	88 39 36	2997	87 9 20	2990
	Venus E.	96 6 3	3221	94 42 16	3213	93 18 20	3206	91 54 16	3200
	Saturn E.	106 5 45	2998	104 35 30	2991	103 5 6	2984	101 34 33	2976
4	Fomalhaut W.	90 22 24	3269	91 47 12	3261	93 12 9	3253	94 37 16	3246
	α Pegasi W.	68 52 40	3064	70 21 34	3062	71 50 43	3059	73 20 7	3027
	α Arietis W.	25 22 0	2969	26 52 52	2960	28 24 7	2934	29 55 43	2919
	Pollux E.	50 26 59	2934	48 55 11	2916	47 23 13	2909	45 51 6	2903
	Jupiter E.	79 35 31	2948	78 4 13	2989	76 32 44	2980	75 1 3	2920
	Venus E.	84 51 35	3226	83 26 32	3247	82 1 18	3227	80 35 53	3228
	Regulus E.	87 12 50	2888	85 40 16	2880	84 7 31	2871	82 34 35	2861
	Saturn E.	93 59 17	2984	92 27 41	2926	90 55 55	2916	89 23 57	2906
5	α Pegasi W.	80 50 56	2965	82 21 52	2964	83 53 3	2941	85 24 30	2920
	α Arietis W.	37 38 28	2846	39 11 56	2832	40 45 42	2819	42 19 45	2804
	Pollux E.	38 8 24	2872	36 35 29	2866	35 2 27	2800	33 29 17	2866
	Jupiter E.	67 19 28	2968	65 46 28	2987	64 13 14	2946	62 39 46	2936
	Venus E.	73 25 45	3174	71 59 5	3168	70 32 11	3150	69 5 2	3128
	Regulus E.	74 46 43	2810	73 12 28	2799	71 37 59	2786	70 3 15	2776
	Saturn E.	81 40 55	2866	80 7 38	2844	78 34 7	2833	77 0 22	2821
	SUN E.	119 16 47	3179	117 50 13	3168	116 23 25	3164	114 56 21	3142
6	α Arietis W.	50 14 35	2735	51 50 29	2720	53 26 42	2705	55 3 14	2691
	Jupiter E.	54 48 31	2772	53 13 26	2769	51 38 4	2746	50 2 25	2732
	Venus E.	61 45 30	3073	60 16 47	3060	58 47 48	3044	57 18 30	3030
	Regulus E.	62 5 43	2715	60 29 23	2702	58 52 46	2689	57 15 51	2676
	Saturn E.	69 7 43	2760	67 32 22	2747	65 56 44	2734	64 20 49	2720
	SUN E.	107 37 2	3073	106 8 19	3069	104 39 19	3048	103 10 0	3029
7	α Arietis W.	63 10 54	2615	64 49 28	2601	66 28 22	2588	68 7 38	2569
	Aldebaran W.	31 43 36	2905	33 17 58	2773	34 53 1	2742	36 28 45	2717
	Jupiter E.	41 59 33	2602	40 22 2	2642	38 44 10	2622	37 5 59	2618
	Regulus E.	49 6 43	2606	47 27 56	2591	45 48 49	2577	44 9 22	2562
	Venus E.	49 47 33	2955	48 16 24	2940	46 44 56	2924	45 13 8	2909
	Saturn E.	56 16 40	2651	54 38 54	2636	53 0 48	2621	51 22 22	2607
	SUN E.	95 38 41	2950	94 7 26	2935	92 35 51	2918	91 3 55	2901
8	α Arietis W.	76 29 31	2487	78 11 2	2471	79 52 56	2455	81 35 12	2438

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			XVh.			XVIIIh.			XXIh.						
			P. L. of Dist.			P. L. of Dist.			P. L. of Dist.			P. L. of Dist.						
1	Mars	W.	89	28	46	3184	90	55	2	3191	92	21	22	3188	93	47	46	3181
	α Aquilæ	W.	87	52	22	3609	89	10	56	3606	90	29	36	3601	91	48	20	3608
	Fomalhaut	W.	62	48	36	3605	64	8	55	3486	65	29	33	3471	66	50	29	3457
	Aldebaran	E.	39	2	23	3108	37	35	35	3176	36	8	56	3183	34	42	26	3191
	Pollux	E.	80	36	26	3086	79	6	58	3083	77	37	25	3028	76	7	47	3023
2	Mars	W.	101	1	25	3166	102	28	28	3149	103	55	38	3140	105	22	56	3185
	Fomalhaut	W.	73	39	9	3389	75	1	38	3378	76	24	20	3365	77	47	15	3356
	α Pegasi	W.	51	26	56	3282	52	52	27	3215	54	18	18	3109	55	44	28	3184
	Pollux	E.	68	38	7	3098	67	7	52	3083	65	37	30	3068	64	7	2	3061
	Jupiter	E.	97	38	10	3088	96	8	44	3082	94	39	11	3026	93	9	30	3019
Venus	E.	101	39	54	2347	100	16	37	3341	98	53	13	3334	97	29	42	3326	
3	Mars	W.	112	41	27	3191	114	9	36	3093	115	37	54	3086	117	6	21	3078
	Fomalhaut	W.	84	44	53	3304	86	9	0	3295	87	33	17	3266	88	57	45	3276
	α Pegasi	W.	62	59	40	3115	64	27	31	3101	65	55	39	3089	67	24	2	3077
	Pollux	E.	56	32	48	2961	55	1	34	2944	53	30	11	2987	51	58	39	2981
	Jupiter	E.	85	38	54	2982	84	8	19	2974	82	37	34	2965	81	6	38	2967
	Venus	E.	90	30	3	3291	89	5	41	3282	87	41	9	3274	86	16	27	3206
	Saturn	E.	100	3	50	3096	98	32	57	2980	97	1	54	2962	95	30	41	2943
4	Fomalhaut	W.	96	2	31	3238	97	27	55	3221	98	53	28	3224	100	19	9	3217
	α Pegasi	W.	74	49	46	3015	76	19	40	3002	77	49	50	2989	79	20	16	2978
	α Arietis	W.	31	27	38	2908	32	59	53	2893	34	32	27	2975	36	5	18	2960
	Pollux	E.	44	18	51	2996	42	46	27	2989	41	13	54	2982	39	41	12	2877
	Jupiter	E.	73	29	10	2910	71	57	4	2900	70	24	45	2891	68	52	14	2879
	Venus	E.	79	10	17	3217	77	44	28	3207	76	18	27	3196	74	52	13	3184
	Regulus	E.	81	1	26	2982	79	28	5	2942	77	54	31	2931	76	20	44	2921
	Saturn	E.	87	51	46	2996	86	19	23	2987	84	46	46	2877	83	13	58	2866
5	α Pegasi	W.	86	56	12	2916	88	28	10	2904	90	0	24	2991	91	32	54	2879
	α Arietis	W.	43	54	7	2791	45	28	47	2777	47	3	45	2763	48	39	1	2750
	Pollux	E.	31	56	1	2880	30	22	38	2846	28	49	9	2840	27	15	33	2836
	Jupiter	E.	61	6	3	2822	59	32	4	2811	57	57	50	2798	56	23	19	2785
	Venus	E.	67	37	39	3126	66	10	0	3113	64	42	6	3100	63	13	56	3087
	Regulus	E.	68	28	16	2766	66	53	2	2753	65	17	32	2741	63	41	46	2738
	Saturn	E.	75	26	22	2909	73	52	6	2796	72	17	35	2786	70	42	47	2773
	SUN	E.	113	29	2	3128	112	1	26	3116	110	33	35	3101	109	5	27	3087
6	α Arietis	W.	56	40	6	2676	58	17	18	2661	59	54	50	2646	61	32	42	2632
	Jupiter	E.	48	26	28	2718	46	50	12	2704	45	13	38	2690	43	36	45	2676
	Venus	E.	55	48	56	3016	54	19	3	3001	52	48	52	2986	51	18	22	2971
	Regulus	E.	55	38	39	2668	54	1	9	2648	52	23	19	2634	50	45	10	2621
	Saturn	E.	62	44	36	2706	61	8	4	2698	59	31	15	2679	57	54	7	2665
	SUN	E.	101	40	23	3014	100	10	27	2997	98	40	11	2981	97	9	35	2967
7	α Arietis	W.	69	47	16	2682	71	27	17	2667	73	7	39	2650	74	48	24	2604
	Aldebaran	W.	38	5	8	2696	39	42	7	2680	41	19	41	2635	42	57	49	2611
	Jupiter	E.	35	27	28	2608	33	48	37	2588	32	9	26	2573	30	29	54	2569
	Regulus	E.	42	29	35	2648	40	49	27	2632	39	8	58	2517	37	28	9	2502
	Venus	E.	43	41	0	2892	42	8	31	2876	40	35	42	2860	39	2	32	2844
	Saturn	E.	49	43	37	2692	48	4	31	2676	46	25	6	2663	44	45	20	2640
	SUN	E.	89	31	38	2894	87	58	59	2868	86	25	59	2861	84	52	37	2834
	8	α Arietis	W.	83	17	52	3422	85	0	55	3406	86	44	22	2889	88	28	13	2873

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			P. L. of Dif.	IIIh.			P. L. of Dif.	VIh.			P. L. of Dif.	IXh.			P. L. of Dif.
		o	i	u		o	i	u		o	i	u		o	i	u	
8	Aldebaran W.	44	36	29	2588	46	15	41	2566	47	55	24	2643	49	35	38	2622
	Regulus E.	35	46	59	2480	34	5	29	2473	32	23	38	2459	30	41	27	2445
	Venus E.	37	29	1	2627	35	55	8	2611	34	20	55	2795	32	46	21	2779
	Saturn E.	43	5	15	2635	41	24	50	2620	39	44	4	2605	38	2	58	2492
	SUN E.	83	18	53	2617	81	44	47	2720	80	10	18	2752	78	35	26	2765
9	α Arietis W.	90	12	27	2857	91	57	4	2841	93	42	5	2824	95	27	30	2808
	Aldebaran W.	58	4	7	2420	59	47	13	2401	61	30	46	2392	63	14	46	2364
	Saturn E.	29	32	54	2431	27	50	3	2422	26	6	59	2414	24	23	44	2410
	SUN E.	70	35	24	2678	68	58	15	2660	67	20	42	2644	65	42	47	2628
10	α Arietis W.	104	20	19	2231	106	8	0	2217	107	56	2	2202	109	44	26	2188
	Aldebaran W.	72	1	16	2278	73	47	48	2262	75	34	44	2245	77	22	4	2231
	Pollux W.	29	51	2	2307	31	36	51	2288	33	23	16	2261	35	10	13	2229
	SUN E.	57	27	36	2547	55	47	28	2533	54	7	0	2518	52	26	12	2504
11	Aldebaran W.	86	24	3	2163	88	13	26	2151	90	3	8	2139	91	53	7	2128
	Pollux W.	44	12	11	2162	46	1	51	2138	47	51	52	2124	49	42	15	2111
	SUN E.	43	57	30	2442	42	14	55	2422	40	32	6	2422	38	49	3	2415
16	SUN W.	26	49	38	2540	28	29	55	2549	30	10	0	2559	31	49	51	2571
	α Aquilæ E.	75	4	42	2792	73	30	3	2820	71	56	1	2846	70	22	35	2879
	Mars E.	78	25	3	2333	76	39	51	2348	74	55	1	2364	73	10	37	2381
	Fomalhaut E.	99	32	22	2656	97	52	26	2666	96	12	45	2678	94	33	20	2692
17	SUN W.	40	4	41	2644	41	42	36	2659	43	20	9	2678	44	57	18	2686
	α Aquilæ E.	62	46	10	2607	61	17	20	3111	59	49	24	3160	58	22	26	3209
	Mars E.	64	34	45	2473	62	51	54	2492	61	11	29	2511	59	30	31	2531
	Fomalhaut E.	86	21	36	2690	84	44	29	2699	83	7	48	2720	81	31	35	2743
18	SUN W.	52	56	56	2791	54	31	36	2810	56	5	51	2820	57	39	40	2849
	Mars E.	51	12	40	2632	49	34	29	2658	47	56	46	2675	46	19	32	2686
	Fomalhaut E.	73	38	11	2666	72	5	9	2694	70	32	42	2922	69	0	51	2951
	α Pegasi E.	94	11	43	2593	92	32	39	2612	90	54	1	2631	89	15	48	2651
19	SUN W.	65	22	26	2948	66	53	44	2965	68	24	38	2986	69	55	8	3006
	Antares W.	23	56	56	2588	25	36	7	2607	27	14	52	2625	28	53	13	2643
	Mars E.	38	20	24	2801	36	45	58	2822	35	12	0	2844	33	38	29	2866
	Fomalhaut E.	61	31	13	3114	60	3	20	3150	58	36	11	3186	57	9	48	3226
	α Pegasi E.	81	11	15	2749	79	35	40	2768	78	0	30	2786	76	25	47	2806
20	SUN W.	77	21	47	3098	78	49	59	3115	80	17	50	3133	81	45	19	3149
	Antares W.	36	59	5	2729	38	35	7	2744	40	10	48	2760	41	46	8	2776
	Fomalhaut E.	50	10	4	3454	48	48	49	3506	47	28	32	3563	46	9	17	3622
	α Pegasi E.	68	38	47	2911	67	6	42	2962	65	35	4	2963	64	3	52	2973
21	SUN W.	88	57	50	3231	90	23	23	3245	91	48	39	3260	93	13	39	3273
	Antares W.	49	37	46	2850	51	11	9	2968	52	44	15	2976	54	17	4	2989
	α Pegasi E.	56	34	30	3062	55	5	59	3105	53	37	55	3127	52	10	18	3152
	α Arietis E.	98	18	16	2966	96	45	14	2980	95	12	29	2992	93	40	0	2906
22	SUN W.	100	14	45	3336	101	38	15	3347	103	1	32	3356	104	24	37	3369
	Antares W.	61	57	17	2946	63	28	37	2967	64	59	44	2986	66	30	39	2978
	α Pegasi E.	44	59	39	3281	43	35	5	3310	42	11	5	3342	40	47	42	3374
	α Arietis E.	86	1	28	2963	84	30	29	2973	82	59	43	2992	81	29	8	2988

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.		P. L. of Diff.	XVIIIh.		P. L. of Diff.	XXIh.		P. L. of Diff.
				°	'		°	'		°	'	
8	Aldebaran W.	51 16 21	2499	52	57 35	2479	54	39 18	2460	56	21 28	2439
	Regulus E.	28 58 56	2431	27	16 6	2418	25	32 57	2405	23	49 30	2394
	Venus E.	31 11 23	2763	29	36 9	2747	28	0 32	2732	26	24 34	2718
	Saturn E.	36 21 34	2478	34	39 50	2465	32	57 48	2453	31	15 29	2442
	SUN E.	77 0 12	2747	75	24 35	2739	73	48 34	2713	72	12 11	2696
9	α Arietis W.	97 13 18	2291	98	59 30	2277	100	46 4	2262	102	33 0	2246
	Aldebaran W.	64 59 13	2245	66	44 7	2228	68	29 26	2211	70	15 9	2205
	Saturn E.	22 40 23	2407	20	57 0	2409	19	13 38	2414	17	30 23	2423
	SUN E.	64 4 30	2611	62	25 50	2608	60	46 46	2679	59	7 22	2663
10	α Arietis W.	111 33 11	2175	113	22 16	2162	115	11 41	2150	117	1 24	2137
	Aldebaran W.	79 9 45	2216	80	57 48	2202	82	46 12	2188	84	34 58	2176
	Pollux W.	36 57 42	2220	38	45 39	2201	40	34 5	2185	42	22 55	2166
	SUN E.	50 45 4	2480	49	3 37	2477	47	21 52	2465	45	39 49	2453
11	Aldebaran W.	93 43 23	2118	95	33 54	2109	97	24 39	2100	99	15 38	2094
	Pollux W.	51 32 57	2098	53	23 59	2087	55	15 18	2075	57	6 55	2068
	SUN E.	37 5 49	2407	35	22 24	2400	33	38 49	2396	31	55 8	2383
16	SUN W.	33 29 28	2683	35	8 45	2697	36	47 44	2612	38	26 23	2627
	α Aquilæ E.	68 49 49	2912	67	17 45	2947	65	46 26	3000	64	15 53	3024
	Mars E.	71 26 35	2400	69	43 0	2417	67	59 49	2435	66	17 4	2454
	Fomalhaut E.	92 54 14	2608	91	15 30	2624	89	37 8	2641	87	59 9	2660
17	SUN W.	46 34 3	2715	48	10 23	2733	49	46 19	2752	51	21 50	2771
	α Aquilæ E.	56 56 28	2363	55	31 33	2320	54	7 45	2382	52	45 8	2446
	Mars E.	57 50 1	2661	56	10 0	2671	54	30 25	2691	52	51 18	2612
	Fomalhaut E.	79 55 52	2765	78	20 38	2789	76	45 56	2814	75	11 46	2841
18	SUN W.	59 13 4	2869	60	46 2	2889	62	18 35	2909	63	50 43	2923
	Mars E.	44 42 47	2716	43	6 29	2738	41	30 39	2769	39	55 17	2781
	Fomalhaut E.	67 29 37	2682	65	59 2	2613	64	29 5	2646	62	59 49	2678
	α Pegasi E.	87 38 2	2669	86	0 41	2689	84	23 46	2708	82	47 17	2729
19	SUN W.	71 25 14	3025	72	54 56	3043	74	24 15	3060	75	53 12	3079
	Antares W.	30 31 10	2660	32	8 44	2678	33	45 53	2696	35	22 40	2711
	Mars E.	32 5 26	2898	30	32 52	2910	29	0 46	2932	27	29 8	2955
	Fomalhaut E.	55 44 10	2369	54	19 22	2311	52	55 23	2357	51	32 17	2403
	α Pegasi E.	74 51 30	2829	73	17 40	2849	71	44 16	2869	70	11 18	2891
20	SUN W.	83 12 29	3167	84	39 18	3183	86	5 47	3198	87	31 58	3214
	Antares W.	43 21 7	2792	44	55 45	2807	46	30 4	2821	48	4 4	2835
	Fomalhaut E.	44 51 7	2687	43	34 6	2755	42	18 17	2830	41	3 46	2810
	α Pegasi E.	62 33 6	2895	61	2 47	3016	59	32 54	3039	58	3 29	3060
21	SUN W.	94 38 23	3286	96	2 51	3299	97	27 4	3312	98	51 2	3325
	Antares W.	55 49 37	2901	57	21 54	2913	58	53 57	2925	60	25 44	2938
	α Pegasi E.	50 43 11	3178	49	16 33	3200	47	50 24	3226	46	24 46	3233
	α Arietis E.	92 7 47	2917	90	35 50	2929	89	4 8	2941	87	32 41	2952
22	SUN W.	105 47 29	3379	107	10 9	3388	108	32 39	3397	109	54 59	3406
	Antares W.	68 1 22	2985	69	31 53	2998	71	2 14	3001	72	32 26	3009
	α Pegasi E.	39 24 56	3410	38	2 51	3450	36	41 28	3490	35	20 53	3535
	α Arietis E.	79 58 46	3001	78	28 35	3010	76	58 35	3018	75	28 45	3027

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
			° ' "		° ' "		° ' "		° ' "	
23	SUN	W.	111 17 9	3415	112 39 9	3428	114 1 0	3439	115 22 44	3497
	Antares	W.	74 2 27	3017	75 32 19	3023	77 2 3	3029	78 31 40	3036
	a Arietis	E.	73 59 6	3034	72 29 35	3041	71 0 13	3048	69 31 0	3054
24	SUN	W.	122 9 32	3464	123 30 36	3470	124 51 34	3474	126 12 27	3478
	Antares	W.	85 57 59	3059	87 26 59	3063	88 55 54	3065	90 24 46	3069
	Mars	W.	21 19 42	3348	22 42 58	3344	24 6 19	3341	25 29 43	3336
	a Arietis	E.	62 6 39	3080	60 38 5	3086	59 9 37	3088	57 41 13	3091
	Aldebaran	E.	94 34 56	3117	93 7 7	3119	91 39 21	3123	90 11 39	3126
25	Antares	W.	97 48 23	3077	99 17 1	3077	100 45 39	3078	102 14 16	3078
	a Aquilæ	W.	50 6 50	4186	51 15 58	4112	52 25 48	4071	53 36 18	4084
	Mars	W.	32 27 22	3230	33 50 59	3228	35 14 38	3226	36 38 19	3226
	a Arietis	E.	50 20 9	3106	48 52 5	3108	47 24 4	3109	45 56 5	3110
	Aldebaran	E.	82 53 49	3124	81 26 21	3126	79 58 55	3127	78 31 30	3127
26	a Aquilæ	W.	59 37 13	3881	60 50 52	3886	62 4 57	3892	63 19 26	3810
	Mars	W.	43 37 16	3314	45 1 11	3311	46 25 10	3309	47 49 12	3306
	a Arietis	E.	38 36 35	3117	37 8 46	3117	35 40 57	3119	34 13 11	3121
	Aldebaran	E.	71 14 26	3126	69 47 0	3126	68 19 34	3125	66 52 7	3123
	Pollux	E.	113 18 14	3102	111 50 7	3099	110 21 56	3096	108 53 42	3094
27	a Aquilæ	W.	69 37 11	3716	70 53 41	3700	72 10 28	3696	73 27 30	3672
	Mars	W.	54 50 21	3267	56 14 48	3263	57 39 19	3278	59 3 56	3274
	Fomalhaut	W.	44 42 1	3606	45 55 15	3600	47 9 16	3619	48 23 59	3778
	Aldebaran	E.	59 34 31	3126	58 6 55	3127	56 39 18	3126	55 11 40	3126
	Pollux	E.	101 31 35	3076	100 2 56	3073	98 34 14	3068	97 5 25	3065
28	a Aquilæ	W.	79 56 12	3611	81 14 34	3602	82 33 6	3592	83 51 49	3584
	Mars	W.	66 8 26	3248	67 33 38	3243	68 58 58	3227	70 24 21	3221
	Fomalhaut	W.	54 47 1	3630	56 5 14	3629	57 23 56	3629	58 43 4	3646
	Aldebaran	E.	47 53 12	3121	46 25 28	3122	44 57 46	3123	43 30 3	3124
	Pollux	E.	89 40 2	3040	88 10 39	3035	86 41 10	3031	85 11 36	3028
29	Mars	W.	77 33 11	3201	78 59 19	3196	80 25 34	3188	81 51 58	3182
	Fomalhaut	W.	65 24 39	3448	66 46 1	3431	68 7 43	3415	69 29 42	3409
	a Pegasi	W.	42 58 53	3313	44 22 50	3298	45 47 15	3285	47 12 7	3245
	Aldebaran	E.	36 12 12	3143	34 44 54	3149	33 17 44	3149	31 50 46	3171
	Pollux	E.	77 42 0	2997	76 11 44	2991	74 41 20	2986	73 10 50	2981
	Jupiter	E.	110 45 48	3022	109 16 3	3017	107 46 11	3010	106 16 11	3003
30	Mars	W.	89 5 53	3148	90 33 5	3141	92 0 25	3133	93 27 54	3127
	Fomalhaut	W.	76 23 43	3333	77 47 16	3322	79 11 9	3312	80 35 0	3300
	a Pegasi	W.	54 22 10	3156	55 49 13	3140	57 16 34	3128	58 44 13	3111
	Pollux	E.	65 36 28	2980	64 5 13	2945	62 33 51	2938	61 2 20	2923
	Jupiter	E.	98 44 2	2969	97 13 11	2962	95 42 11	2956	94 11 3	2948
	Saturn	E.	111 44 6	2986	110 13 11	2938	108 42 6	2951	107 10 52	2944
31	Mars	W.	100 47 29	3090	102 15 51	3082	103 44 22	3074	105 13 3	3067
	a Pegasi	W.	66 6 32	3047	67 35 46	3036	69 5 14	3026	70 34 56	3014
	a Arietis	W.	22 31 52	2970	24 2 42	2932	25 33 55	2924	27 5 31	2917
	Pollux	E.	53 22 56	2904	51 50 42	2896	50 18 20	2892	48 45 51	2887
	Jupiter	E.	86 33 1	2911	85 0 56	2908	83 26 41	2906	81 56 17	2898
	Regulus	E.	90 9 24	2909	88 36 24	2901	87 3 15	2894	85 29 57	2846
	Saturn	E.	99 32 22	2907	98 0 12	2899	96 27 52	2891	94 55 21	2883

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.			P. L. of Dif.	XVh.			P. L. of Dif.	XVIIIh.			P. L. of Dif.	XXIh.			P. L. of Dif.
			°	'	"		°	'	"		°	'	"		°	'	"	
23	SUN	W.	116	44	19	3443	118	5	47	3449	119	27	8	3454	120	48	23	3460
	Antares	W.	80	1	8	3041	81	30	30	3045	82	59	46	3050	84	28	54	3055
	α Arietis	E.	68	1	54	3060	66	32	56	3065	65	4	3	3071	63	35	18	3076
24	SUN	W.	127	33	16	3481	128	54	1	3484	130	14	43	3488	131	35	21	3491
	Antares	W.	91	53	34	3071	93	22	19	3073	94	51	2	3074	96	19	43	3075
	Mars	W.	26	53	11	3086	26	16	41	3085	29	40	19	3082	31	3	46	3331
	α Arietis	E.	56	12	53	3095	54	44	37	3096	53	16	25	3101	51	48	16	3102
	Aldebaran	E.	88	44	0	3128	87	16	24	3129	85	48	50	3122	84	21	19	3123
25	Antares	W.	103	42	53	3077	105	11	31	3076	106	40	10	3075	108	8	50	3075
	α Aquilæ	W.	54	47	24	3099	55	59	5	3098	57	11	18	3096	58	24	1	3096
	Mars	W.	38	2	1	3323	39	25	46	3320	40	49	34	3319	42	13	24	3317
	α Arietis	E.	44	26	8	3112	43	0	13	3113	41	32	19	3114	40	4	27	3114
	Aldebaran	E.	77	4	5	3127	75	36	40	3127	74	9	16	3127	72	41	51	3127
26	α Aquilæ	W.	64	34	18	3780	65	49	31	3780	67	5	5	3780	68	21	59	3733
	Mars	W.	49	13	17	3301	50	37	27	3296	52	1	41	3294	53	25	59	3291
	α Arietis	E.	32	45	27	3122	31	17	45	3125	29	50	6	3129	28	22	31	3123
	Aldebaran	E.	65	24	38	3123	63	57	9	3123	62	29	38	3120	61	2	5	3129
	Pollux	E.	107	25	25	3091	105	57	4	3087	104	28	38	3084	103	0	9	3080
27	α Aquilæ	W.	74	44	47	3656	76	2	19	3646	77	20	4	3634	78	38	2	3622
	Mars	W.	60	28	36	3298	61	53	27	3265	63	18	20	3259	64	43	20	3228
	Fomalhaut	W.	49	39	24	3742	50	55	27	3708	52	12	6	3677	53	29	17	3647
	Aldebaran	E.	53	44	1	3124	52	16	20	3123	50	48	38	3122	49	20	55	3122
	Pollux	E.	95	36	32	3080	94	7	33	3065	92	38	28	3062	91	9	19	3045
28	α Aquilæ	W.	85	10	41	3576	86	29	42	3567	87	48	52	3560	89	8	10	3554
	Mars	W.	71	49	53	3225	73	15	32	3220	74	41	18	3214	76	7	11	3206
	Fomalhaut	W.	60	2	37	3324	61	22	35	3303	62	42	56	3284	64	3	38	3267
	Aldebaran	E.	42	2	22	3126	40	34	43	3129	39	7	9	3122	37	39	38	3126
	Pollux	E.	83	41	54	3019	82	12	5	3014	80	42	10	3009	79	12	9	3008
29	Mars	W.	83	18	29	3175	84	45	8	3168	86	11	55	3162	87	38	50	3155
	Fomalhaut	W.	70	51	58	3286	72	14	31	3272	73	37	20	3268	75	0	24	3245
	α Pegasi	W.	48	37	23	3225	50	3	2	3206	51	29	4	3188	52	55	27	3173
	Aldebaran	E.	30	24	2	3185	28	57	35	3202	27	31	28	3225	26	5	48	3222
	Pollux	E.	71	40	13	2974	70	9	28	2980	68	38	35	2982	67	7	35	2987
	Jupiter	E.	104	46	2	2997	103	15	45	2989	101	45	19	2983	100	14	45	2976
30	Mars	W.	94	55	31	3119	96	23	17	3112	97	51	12	3105	99	19	16	3097
	Fomalhaut	W.	81	59	11	3220	83	23	34	3202	84	48	7	3272	86	12	51	3263
	α Pegasi	W.	60	12	9	3098	61	40	21	3085	63	8	49	3072	64	37	33	3060
	Pollux	E.	59	30	42	2927	57	58	57	2920	56	27	4	2914	54	55	4	2908
	Jupiter	E.	92	39	45	2941	91	8	18	2934	89	36	42	2926	88	4	56	2919
	Saturn	E.	105	39	29	2926	104	7	56	2929	102	36	14	2922	101	4	23	2914
31	Mars	W.	106	41	53	3060	108	10	52	3052	109	40	1	3044	111	9	19	3035
	α Pegasi	W.	72	4	51	3008	73	35	0	2993	75	5	22	2982	76	35	57	2972
	α Arietis	W.	28	37	28	2902	30	9	44	2883	31	42	18	2875	33	15	9	2862
	Pollux	E.	47	13	15	2981	45	40	32	2976	44	7	43	2973	42	34	48	2968
	Jupiter	E.	80	23	43	2880	78	50	59	2873	77	18	5	2866	75	45	1	2857
	Regulus	E.	83	56	29	2826	82	22	51	2821	80	49	3	2823	79	15	5	2816
Saturn	E.	93	22	41	2876	91	49	51	2868	90	16	51	2860	88	43	41	2852	

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.					
		Apparent Right Ascension			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.	Semi-diameter.			
		h.	m.	s.	s.	°	'				"	"	'	"	s.
Thur.	1	14	27	37.93	9.814	S. 14	36	23.1	47.82	16	10.06	67.01	16	18.21	0.042
Fri.	2	14	31	33.86	9.848	14	55	23.9	47.22	16	10.30	67.12	16	18.83	0.008
Sat.	3	14	35	30.63	9.883	15	14	10.1	46.61	16	10.54	67.24	16	18.62	0.027
Sun.	4	14	39	28.24	9.918	15	32	41.5	45.98	16	10.78	67.36	16	17.56	0.062
Mon.	5	14	43	26.70	9.953	15	50	57.7	45.33	16	11.01	67.48	16	15.66	0.097
Tues.	6	14	47	26.01	9.989	16	8	58.2	44.67	16	11.24	67.59	16	12.92	0.132
Wed.	7	14	51	26.16	10.025	16	26	42.4	43.99	16	11.47	67.71	16	9.34	0.167
Thur.	8	14	55	27.17	10.061	16	44	10.0	43.29	16	11.70	67.83	16	4.90	0.203
Fri.	9	14	59	29.04	10.097	17	1	20.7	42.57	16	11.92	67.95	15	59.60	0.239
Sat.	10	15	3	31.77	10.132	17	18	13.9	41.84	16	12.14	68.07	15	53.43	0.275
Sun.	11	15	7	35.37	10.168	17	34	49.5	41.09	16	12.36	68.19	15	46.39	0.311
Mon.	12	15	11	39.85	10.204	17	51	6.8	40.32	16	12.58	68.31	15	38.49	0.347
Tues.	13	15	15	45.19	10.239	18	7	5.4	39.53	16	12.80	68.43	15	29.74	0.383
Wed.	14	15	19	51.37	10.274	18	22	44.8	38.72	16	13.01	68.55	15	20.15	0.418
Thur.	15	15	23	58.39	10.309	18	38	4.7	37.90	16	13.22	68.67	15	9.71	0.453
Fri.	16	15	28	6.25	10.343	18	53	4.9	37.07	16	13.44	68.79	14	58.43	0.487
Sat.	17	15	32	14.95	10.377	19	7	44.7	36.22	16	13.65	68.91	14	46.32	0.522
Sun.	18	15	36	24.47	10.411	19	22	3.9	35.35	16	13.85	69.03	14	33.40	0.556
Mon.	19	15	40	34.79	10.444	19	36	2.1	34.47	16	14.05	69.14	14	19.68	0.589
Tues.	20	15	44	45.90	10.477	19	49	38.9	33.57	16	14.24	69.25	14	5.17	0.621
Wed.	21	15	48	57.79	10.510	20	2	54.1	32.66	16	14.44	69.36	13	49.87	0.654
Thur.	22	15	53	10.46	10.542	20	15	47.2	31.73	16	14.63	69.47	13	33.79	0.686
Fri.	23	15	57	23.92	10.574	20	28	17.8	30.79	16	14.82	69.58	13	16.04	0.718
Sat.	24	16	1	38.14	10.606	20	40	25.5	29.83	16	15.00	69.68	12	59.34	0.750
Sun.	25	16	5	53.10	10.637	20	52	10.1	28.85	16	15.18	69.78	12	40.99	0.781
Mon.	26	16	10	8.80	10.667	21	3	31.4	27.88	16	15.35	69.88	12	21.90	0.811
Tues.	27	16	14	25.21	10.696	21	14	28.9	26.88	16	15.52	69.98	12	2.09	0.840
Wed.	28	16	18	42.34	10.725	21	25	2.4	25.87	16	15.68	70.08	11	41.58	0.869
Thur.	29	16	23	0.16	10.754	21	35	11.4	24.85	16	15.84	70.18	11	20.38	0.898
Fri.	30	16	27	18.65	10.782	21	44	55.7	23.82	16	15.99	70.27	10	58.50	0.926
Sat.	31	16	31	37.81	10.809	S. 21	54	15.3	22.78	16	16.14	70.36	10	35.95	0.953

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

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.			
		h.	m.	s.	s.	°	'	"	"	m.	s.	s.	h.	m.	s.
Thur.	1	14	27	40.59	9.814	S. 14	36	36.1	47.82	16	18.22	0.042	14	43	58.81
Fri.	2	14	31	36.53	9.848	14	55	36.8	47.22	16	18.83	0.008	14	47	55.36
Sat.	3	14	35	33.31	9.883	15	14	22.8	46.61	16	18.61	0.027	14	51	51.92
Sun.	4	14	39	30.93	9.918	15	32	54.0	45.98	16	17.54	0.062	14	55	48.47
Mon.	5	14	43	29.39	9.953	15	51	10.0	45.33	16	15.64	0.097	14	59	45.03
Tues.	6	14	47	28.69	9.989	16	9	10.3	44.67	16	12.89	0.132	15	3	41.58
Wed.	7	14	51	28.84	10.025	16	26	54.3	43.99	16	9.30	0.167	15	7	38.14
Thur.	8	14	55	29.85	10.061	16	44	21.7	43.29	16	4.85	0.203	15	11	34.70
Fri.	9	14	59	31.72	10.097	17	1	32.1	42.57	15	59.53	0.239	15	15	31.25
Sat.	10	15	3	34.45	10.132	17	18	25.0	41.84	15	53.36	0.275	15	19	27.81
Sun.	11	15	7	38.05	10.168	17	35	0.3	41.09	15	46.32	0.311	15	23	24.37
Mon.	12	15	11	42.51	10.204	17	51	17.3	40.32	15	38.41	0.347	15	27	20.92
Tues.	13	15	15	47.83	10.239	18	7	15.6	39.53	15	29.65	0.383	15	31	17.48
Wed.	14	15	19	53.99	10.274	18	22	54.7	38.72	15	20.05	0.418	15	35	14.04
Thur.	15	15	24	0.99	10.309	18	38	14.3	37.90	15	9.60	0.453	15	39	10.59
Fri.	16	15	28	8.83	10.343	18	53	14.2	37.07	14	58.32	0.487	15	43	7.15
Sat.	17	15	32	17.50	10.377	19	7	53.7	36.22	14	46.21	0.522	15	47	3.71
Sun.	18	15	36	26.99	10.411	19	22	12.6	35.35	14	33.27	0.556	15	51	0.26
Mon.	19	15	40	37.28	10.444	19	36	10.4	34.47	14	19.54	0.589	15	54	56.82
Tues.	20	15	44	48.35	10.477	19	49	46.8	33.57	14	5.02	0.621	15	58	53.37
Wed.	21	15	49	0.21	10.510	19	3	1.6	32.66	13	49.72	0.654	16	2	49.93
Thur.	22	15	53	12.84	10.542	20	15	54.3	31.73	13	33.65	0.686	16	6	46.49
Fri.	23	15	57	26.25	10.574	20	28	24.5	30.79	13	16.79	0.718	16	10	43.04
Sat.	24	16	1	40.42	10.606	20	40	31.9	29.83	12	59.18	0.750	16	14	39.60
Sun.	25	16	5	55.34	10.637	20	52	16.2	28.85	12	40.82	0.781	16	18	36.16
Mon.	26	16	10	10.99	10.667	21	3	37.1	27.88	12	21.72	0.811	16	22	32.71
Tues.	27	16	14	27.35	10.696	21	14	34.2	26.88	12	1.92	0.840	16	26	29.27
Wed.	28	16	18	44.42	10.725	21	25	7.4	25.87	11	41.41	0.869	16	30	25.83
Thur.	29	16	23	2.18	10.754	21	35	16.1	24.85	11	20.21	0.898	16	34	22.39
Fri.	30	16	27	20.62	10.782	21	45	0.1	23.82	10	58.33	0.926	16	38	18.95
Sat.	31	16	31	39.72	10.809	S. 21	54	19.4	22.78	10	35.78	0.953	16	42	15.50

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

THE SUN'S										
Day of the Month.	Day of the Year.	True LONGITUDE.				Dist. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		λ		λ'						
		$^{\circ}$	$'$	$^{\circ}$	$'$					
1	306	219	19 28.5	18	32.5	150.26	+0.30	9.9963749	45.4	9 14 30.10
2	307	220	19 35.8	18	39.7	150.31	0.19	.9962665	44.8	9 10 34.19
3	308	221	19 45.1	18	48.9	150.42	+0.06	.9961596	44.2	9 6 38.28
4	309	222	19 56.4	19	0.1	150.51	-0.07	.9960542	43.6	9 2 42.37
5	310	223	20 9.7	19	13.2	150.60	0.21	.9959502	43.0	8 58 46.46
6	311	224	20 25.1	19	28.4	150.69	0.34	.9958474	42.5	8 54 50.55
7	312	225	20 42.6	19	45.8	150.78	0.47	.9957457	42.1	8 50 54.64
8	313	226	21 2.1	20	5.2	150.87	0.57	.9956451	41.7	8 46 58.73
9	314	227	21 23.5	20	26.5	150.95	0.65	.9955455	41.3	8 43 2.82
10	315	228	21 46.9	20	49.7	151.02	0.68	.9954466	40.9	8 39 6.91
11	316	229	22 12.1	21	14.7	151.09	0.68	.9953486	40.6	8 35 11.00
12	317	230	22 39.2	21	41.7	151.16	0.67	.9952514	40.3	8 31 15.09
13	318	231	23 7.9	22	10.3	151.23	0.63	.9951551	40.0	8 27 19.18
14	319	232	23 38.2	22	40.4	151.29	0.55	.9950597	39.7	8 23 23.27
15	320	233	24 10.0	23	12.0	151.35	0.45	.9949651	39.3	8 19 27.36
16	321	234	24 43.2	23	45.0	151.41	0.35	.9948715	38.8	8 15 31.45
17	322	235	25 17.8	24	19.5	151.46	0.23	.9947789	38.3	8 11 35.54
18	323	236	25 53.6	24	55.2	151.51	-0.10	.9946875	37.8	8 7 39.63
19	324	237	26 30.6	25	32.0	151.56	+0.03	.9945974	37.2	8 3 43.72
20	325	238	27 8.9	26	10.0	151.61	0.15	.9945087	36.6	7 59 47.81
21	326	239	27 48.1	26	49.1	151.66	0.25	.9944216	35.9	7 55 51.90
22	327	240	28 28.6	27	29.5	151.70	0.34	.9943362	35.1	7 51 55.99
23	328	241	29 10.2	28	11.0	151.75	0.40	.9942527	34.2	7 48 0.08
24	329	242	29 52.9	28	53.5	151.80	0.42	.9941712	33.3	7 44 4.16
25	330	243	30 36.7	29	37.1	151.85	0.42	.9940920	32.4	7 40 8.25
26	331	344	31 21.7	30	21.9	151.90	0.39	.9940151	31.5	7 36 12.34
27	332	245	32 7.8	31	7.9	151.95	0.32	.9939406	30.5	7 32 16.43
28	333	246	32 55.0	31	54.9	152.00	0.23	.9938685	29.5	7 28 20.52
29	334	247	33 43.4	32	43.1	152.05	+0.11	.9937988	28.5	7 24 24.60
30	335	248	34 33.1	33	32.6	152.10	-0.02	.9937315	27.5	7 20 28.69
31	336	249	35 24.1	34	23.4	152.15	-0.15	9.9936666	26.5	7 16 32.78

Nota. — λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.			
							h. m.	m.	
1	15 12.4	15 16.3	55 41.9	+1.16	55 56.2	+1.22	14 19.1	2.26	17.9
2	15 20.4	15 24.7	56 11.3	1.29	56 27.2	1.35	15 14.1	2.29	18.9
3	15 29.3	15 34.0	56 43.8	1.41	57 1.1	1.47	16 9.0	2.26	19.9
4	15 38.9	15 43.9	57 19.1	1.52	57 37.6	1.56	17 2.7	2.20	20.9
5	15 49.1	15 54.3	57 56.6	1.59	58 15.9	1.61	17 54.7	2.13	21.9
6	15 59.6	16 4.9	58 35.4	1.62	58 54.6	1.59	18 45.1	2.08	22.9
7	16 10.0	16 14.9	59 13.4	1.53	59 31.3	1.43	19 34.8	2.07	23.9
8	16 19.4	16 23.4	59 47.8	1.30	60 2.5	1.12	20 24.8	2.11	24.9
9	16 26.7	16 29.3	60 14.8	0.91	60 24.3	0.66	21 16.2	2.19	25.9
10	16 31.0	16 31.8	60 30.6	+0.38	60 33.4	+0.08	22 10.1	2.31	26.9
11	16 31.5	16 30.2	60 32.4	-0.24	60 27.6	-0.57	23 7.2	2.43	27.9
12	16 27.8	16 24.4	60 18.8	0.88	60 6.3	1.19	♄		28.9
13	16 20.0	16 14.8	59 50.2	1.47	59 31.0	1.70	0 7.1	2.52	0.5
14	16 8.8	16 2.3	59 9.2	1.91	58 45.2	2.06	1 8.5	2.54	1.5
15	15 55.4	15 48.2	58 19.8	2.15	57 53.5	2.20	2 9.0	2.45	2.5
16	15 41.0	15 33.8	57 27.0	2.21	57 0.6	2.16	3 6.5	2.30	3.5
17	15 26.9	15 20.3	56 35.2	2.07	56 10.9	1.96	3 59.7	2.12	4.5
18	15 14.2	15 8.5	55 48.3	1.81	55 27.5	1.64	4 48.4	1.95	5.5
19	15 3.5	14 59.0	55 9.0	1.45	54 52.8	1.25	5 33.2	1.80	6.5
20	14 55.3	14 52.3	54 39.1	1.03	54 28.0	0.82	6 15.2	1.71	7.5
21	14 49.9	14 48.3	54 19.4	0.61	54 13.4	-0.40	6 55.5	1.66	8.5
22	14 47.4	14 47.1	54 9.9	-0.19	54 8.9	+0.01	7 35.2	1.66	9.5
23	14 47.4	14 48.4	54 10.2	+0.20	54 13.7	0.38	8 15.4	1.70	10.5
24	14 50.0	14 52.0	54 19.3	0.54	54 26.8	0.69	8 57.1	1.78	11.5
25	14 54.4	14 57.3	54 35.9	0.82	54 46.5	0.93	9 41.2	1.90	12.5
26	15 0.6	15 4.1	54 58.4	1.03	55 11.3	1.11	10 28.5	2.04	13.5
27	15 7.8	15 11.7	55 25.1	1.17	55 39.5	1.21	11 19.2	2.17	14.5
28	15 15.7	15 19.8	55 54.1	1.23	56 9.0	1.25	12 12.9	2.27	15.5
29	15 23.9	15 28.0	56 24.0	1.25	56 38.9	1.24	13 8.5	2.32	16.5
30	15 32.0	15 35.9	56 53.7	1.22	57 8.2	1.20	14 4.4	2.30	17.5
31	15 39.8	15 43.6	57 22.4	+1.17	57 36.1	+1.13	14 59.1	2.23	18.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 1.					SATURDAY 3.				
0	h. m. s.	s.	O I U	"	0	h. m. s.	s.	O I U	"
0	4 32 1.06	2.3183	N 25 32 59.4	2.788	0	6 25 19.88	2.3737	N 25 3 10.5	4.105
1	4 34 20.09	2.3185	25 35 42.6	2.683	1	6 27 42.21	2.3717	24 58 59.9	4.340
2	4 36 39.30	2.3216	25 38 17.6	2.517	2	6 30 4.48	2.3707	24 54 40.6	4.304
3	4 38 58.69	2.3247	25 40 44.5	2.380	3	6 32 26.69	2.3697	24 50 12.6	4.238
4	4 41 18.26	2.3277	25 43 3.1	2.242	4	6 34 48.83	2.3685	24 45 36.0	4.091
5	4 43 38.01	2.3306	25 45 13.5	2.103	5	6 37 10.90	2.3673	24 40 50.7	4.026
6	4 45 57.93	2.3333	25 47 15.5	1.964	6	6 39 32.99	2.3660	24 35 56.8	4.970
7	4 48 18.01	2.3360	25 49 9.2	1.825	7	6 41 54.81	2.3647	24 30 54.3	5.113
8	4 50 38.25	2.3386	25 50 54.6	1.685	8	6 44 16.65	2.3633	24 25 43.3	5.255
9	4 52 58.64	2.3411	25 52 31.7	1.545	9	6 46 38.40	2.3618	24 20 23.8	5.397
10	4 55 19.18	2.3435	25 54 0.3	1.405	10	6 49 0.05	2.3602	24 14 55.8	5.538
11	4 57 39.86	2.3459	25 55 20.4	1.264	11	6 51 21.61	2.3586	24 9 19.3	5.678
12	5 0 0.69	2.3482	25 56 32.1	1.123	12	6 53 43.07	2.3569	24 3 34.4	5.818
13	5 2 21.66	2.3505	25 57 35.2	0.981	13	6 56 4.43	2.3552	23 57 41.1	5.958
14	5 4 42.77	2.3527	25 58 29.8	0.839	14	6 58 25.69	2.3535	23 51 39.4	6.098
15	5 7 4.01	2.3547	25 59 15.9	0.697	15	7 0 46.85	2.3517	23 45 29.3	6.237
16	5 9 25.37	2.3566	25 59 53.5	0.555	16	7 3 7.90	2.3499	23 39 10.9	6.375
17	5 11 46.84	2.3585	26 0 22.5	0.412	17	7 5 28.83	2.3478	23 32 44.3	6.513
18	5 14 8.41	2.3602	26 0 42.9	0.268	18	7 7 49.63	2.3457	23 26 9.4	6.650
19	5 16 30.08	2.3618	26 0 54.6	0.124	19	7 10 10.30	2.3436	23 19 26.3	6.787
20	5 18 51.85	2.3634	26 0 57.7	0.020	20	7 12 30.84	2.3414	23 12 35.0	6.923
21	5 21 13.71	2.3650	26 0 52.1	0.165	21	7 14 51.25	2.3392	23 5 35.6	7.058
22	5 23 35.68	2.3665	26 0 37.7	0.311	22	7 17 11.53	2.3370	22 58 28.1	7.193
23	5 25 57.69	2.3679	N 26 0 14.6	0.457	23	7 19 31.68	2.3348	N 23 51 12.5	7.328
FRIDAY 2.					SUNDAY 4.				
0	5 28 19.80	2.3692	N 25 59 42.8	0.602	0	7 21 51.70	2.3325	N 22 43 48.8	7.462
1	5 30 41.99	2.3704	25 59 2.3	0.747	1	7 24 11.58	2.3302	22 36 17.1	7.595
2	5 33 4.25	2.3715	25 58 13.1	0.892	2	7 26 31.32	2.3278	22 28 37.4	7.727
3	5 35 26.57	2.3725	25 57 15.2	1.038	3	7 28 50.92	2.3254	22 20 49.8	7.859
4	5 37 48.95	2.3734	25 56 8.6	1.184	4	7 31 10.37	2.3230	22 12 54.3	7.990
5	5 40 11.39	2.3742	25 54 53.2	1.330	5	7 33 29.67	2.3205	22 4 51.0	8.120
6	5 42 33.85	2.3748	25 53 29.0	1.477	6	7 35 48.92	2.3180	21 56 39.9	8.249
7	5 44 56.35	2.3753	25 51 56.0	1.624	7	7 38 7.82	2.3155	21 48 21.1	8.376
8	5 47 18.89	2.3756	25 50 14.1	1.771	8	7 40 26.67	2.3129	21 39 54.7	8.503
9	5 49 41.46	2.3762	25 48 23.4	1.918	9	7 42 45.37	2.3103	21 31 20.7	8.630
10	5 52 4.05	2.3768	25 46 23.9	2.065	10	7 45 3.91	2.3077	21 22 39.1	8.757
11	5 54 26.66	2.3769	25 44 15.6	2.212	11	7 47 22.29	2.3051	21 13 49.9	8.883
12	5 56 49.28	2.3771	25 41 58.5	2.358	12	7 49 40.52	2.3025	21 4 53.2	9.007
13	5 59 11.91	2.3772	25 39 32.6	2.505	13	7 51 58.59	2.2999	20 55 49.1	9.130
14	6 1 34.54	2.3772	25 36 57.9	2.652	14	7 54 16.50	2.2972	20 46 37.6	9.253
15	6 3 57.16	2.3771	25 34 14.4	2.798	15	7 56 34.25	2.2945	20 37 18.7	9.376
16	6 6 19.78	2.3769	25 31 22.1	2.944	16	7 58 51.84	2.2919	20 27 52.5	9.498
17	6 8 42.39	2.3766	25 28 21.1	3.090	17	8 1 9.26	2.2890	20 18 19.0	9.619
18	6 11 4.98	2.3763	25 25 11.4	3.235	18	8 3 26.51	2.2862	20 8 38.2	9.740
19	6 13 27.55	2.3759	25 21 53.0	3.380	19	8 5 43.59	2.2834	19 58 50.2	9.860
20	6 15 50.09	2.3754	25 18 25.9	3.525	20	8 8 0.51	2.2806	19 48 55.1	9.979
21	6 18 12.60	2.3748	25 14 50.1	3.670	21	8 10 17.26	2.2778	19 38 52.9	10.098
22	6 20 35.07	2.3742	25 11 5.6	3.815	22	8 12 33.84	2.2750	19 28 43.7	10.211
23	6 22 57.50	2.3735	25 7 12.4	3.960	23	8 14 50.25	2.2722	19 18 27.5	10.326
24	6 25 19.88	2.3727	N 25 3 10.5	4.105	24	8 17 6.49	2.2694	N 19 8 4.4	10.440

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 5.					WEDNESDAY 7.				
	<i>h. m. s.</i>	<i>s.</i>	<i>N. O. I. W.</i>	<i>''</i>		<i>h. m. s.</i>	<i>s.</i>	<i>N. O. I. W.</i>	<i>''</i>
0	8 17 6.49	2.2684	N.19 8 4.4	10.440	0	10 3 16.60	2.1689	N. 8 54 53.6	14.678
1	8 19 22.56	2.2686	18 57 34.7	10.553	1	10 5 26.71	2.1690	8 40 11.1	14.738
2	8 21 38.47	2.2688	18 46 58.3	10.664	2	10 7 36.77	2.1672	8 25 25.0	14.797
3	8 23 54.22	2.2613	18 36 15.2	10.775	3	10 9 46.77	2.1665	8 10 35.4	14.855
4	8 26 9.81	2.2685	18 25 25.4	10.885	4	10 11 56.72	2.1658	7 55 42.4	14.911
5	8 28 25.24	2.2686	18 14 29.0	10.995	5	10 14 6.63	2.1661	7 40 46.1	14.965
6	8 30 40.51	2.2682	18 3 26.0	11.105	6	10 16 16.51	2.1645	7 25 46.6	15.018
7	8 32 55.62	2.2685	17 52 16.5	11.213	7	10 18 26.35	2.1640	7 10 43.9	15.070
8	8 35 10.57	2.2478	17 41 0.5	11.320	8	10 20 36.17	2.1636	6 55 38.2	15.120
9	8 37 25.36	2.2461	17 29 36.1	11.427	9	10 22 45.96	2.1632	6 40 29.5	15.170
10	8 39 40.00	2.2425	17 18 9.4	11.532	10	10 24 55.73	2.1628	6 25 17.9	15.218
11	8 41 54.48	2.2399	17 6 34.4	11.635	11	10 27 5.48	2.1625	6 10 3.4	15.265
12	8 44 8.81	2.2373	16 54 53.2	11.737	12	10 29 15.21	2.1623	5 54 46.1	15.310
13	8 46 22.97	2.2347	16 43 5.9	11.838	13	10 31 24.94	2.1622	5 39 26.2	15.353
14	8 48 36.97	2.2321	16 31 12.0	11.938	14	10 33 34.67	2.1622	5 24 3.7	15.395
15	8 50 50.82	2.2295	16 19 13.4	12.037	15	10 35 44.39	2.1622	5 8 38.7	15.436
16	8 53 4.51	2.2269	16 7 8.3	12.135	16	10 37 54.12	2.1622	4 53 11.3	15.475
17	8 55 18.05	2.2244	15 54 57.3	12.232	17	10 40 3.86	2.1623	4 37 41.6	15.513
18	8 57 31.44	2.2220	15 42 40.5	12.328	18	10 42 13.61	2.1625	4 23 9.7	15.549
19	8 59 44.69	2.2195	15 30 18.0	12.423	19	10 44 23.38	2.1629	4 6 35.7	15.584
20	9 1 57.80	2.2173	15 17 49.8	12.517	20	10 46 33.17	2.1633	3 50 59.7	15.617
21	9 4 10.77	2.2150	15 5 16.0	12.610	21	10 48 42.99	2.1638	3 35 21.7	15.648
22	9 6 23.60	2.2127	14 52 36.7	12.702	22	10 50 52.84	2.1644	3 19 41.9	15.678
23	9 8 36.29	2.2104	N.14 39 51.9	12.792	23	10 53 2.73	2.1651	N. 3 4 0.2	15.708
TUESDAY 6.					THURSDAY 8.				
	<i>h. m. s.</i>	<i>s.</i>	<i>N. O. I. W.</i>	<i>''</i>		<i>h. m. s.</i>	<i>s.</i>	<i>N. O. I. W.</i>	<i>''</i>
0	9 10 48.84	2.2082	N.14 27 1.7	12.882	0	10 55 12.66	2.1656	N. 2 48 16.8	15.737
1	9 13 1.26	2.2060	14 14 6.1	12.971	1	10 57 22.63	2.1655	2 32 31.8	15.764
2	9 15 13.55	2.2038	14 1 5.2	13.059	2	10 59 32.65	2.1673	2 16 45.2	15.789
3	9 17 25.71	2.2017	13 47 59.1	13.145	3	11 1 42.72	2.1683	2 0 57.1	15.813
4	9 19 37.74	2.1996	13 34 47.9	13.229	4	11 3 52.85	2.1698	1 45 7.6	15.835
5	9 21 49.65	2.1975	13 21 31.6	13.312	5	11 6 3.04	2.1708	1 29 16.8	15.856
6	9 24 1.44	2.1955	13 8 10.3	13.395	6	11 8 13.30	2.1715	1 13 24.8	15.875
7	9 26 13.11	2.1936	12 54 44.1	13.477	7	11 10 23.63	2.1728	0 57 31.7	15.892
8	9 28 24.67	2.1918	12 41 13.1	13.557	8	11 12 34.04	2.1742	0 41 37.6	15.908
9	9 30 36.12	2.1900	12 27 37.3	13.637	9	11 14 44.53	2.1757	0 25 42.6	15.922
10	9 32 47.46	2.1882	12 13 56.8	13.715	10	11 16 55.11	2.1772	N. 0 9 46.8	15.935
11	9 34 58.70	2.1864	12 0 11.6	13.792	11	11 19 5.79	2.1788	S. 0 6 9.7	15.947
12	9 37 9.83	2.1847	11 46 21.8	13.868	12	11 21 16.56	2.1804	0 22 6.9	15.957
13	9 39 20.86	2.1831	11 32 27.5	13.943	13	11 23 27.43	2.1820	0 38 4.6	15.965
14	9 41 31.80	2.1815	11 18 28.7	14.017	14	11 25 38.40	2.1837	0 54 2.7	15.971
15	9 43 42.65	2.1800	11 4 25.5	14.089	15	11 27 49.48	2.1855	1 10 1.1	15.975
16	9 45 53.41	2.1785	10 50 18.0	14.159	16	11 30 0.67	2.1875	1 25 59.7	15.978
17	9 48 4.08	2.1771	10 36 6.3	14.228	17	11 32 11.98	2.1895	1 41 58.5	15.980
18	9 50 14.86	2.1757	10 21 50.5	14.296	18	11 34 23.41	2.1916	1 57 57.3	15.980
19	9 52 25.16	2.1743	10 7 30.7	14.362	19	11 36 34.96	2.1937	2 13 56.2	15.979
20	9 54 35.58	2.1730	9 53 6.9	14.428	20	11 38 46.64	2.1959	2 29 55.0	15.976
21	9 56 45.93	2.1718	9 38 39.2	14.493	21	11 40 58.46	2.1982	2 45 53.0	15.971
22	9 58 56.22	2.1708	9 24 7.7	14.556	22	11 43 10.43	2.2007	3 1 51.8	15.964
23	10 1 6.44	2.1698	9 9 32.5	14.618	23	11 45 22.54	2.2032	3 17 49.5	15.956
24	10 3 16.60	2.1689	N. 8 54 53.6	14.678	24	11 47 34.80	2.2057	S. 3 33 46.6	15.946

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 9.					SUNDAY 11.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	11 47 34.80	2.2067	S. 3 33 46.6	15.946	0	13 37 36.65	2.2066	S. 15 34 2.4	12.255
1	11 49 47.22	2.2083	3 49 43.0	15.984	1	13 40 0.76	2.4043	15 47 20.7	12.235
2	11 51 59.80	2.2109	4 5 38.6	15.921	2	13 42 25.17	2.4085	16 0 33.0	12.158
3	11 54 12.54	2.2136	4 21 33.4	15.906	3	13 44 49.88	2.4143	16 13 39.1	12.049
4	11 56 25.45	2.2164	4 37 27.3	15.890	4	13 47 14.88	2.4192	16 26 38.9	12.943
5	11 58 38.53	2.2193	4 53 20.2	15.872	5	13 49 40.18	2.4243	16 39 32.3	12.886
6	12 0 51.78	2.2222	5 9 11.9	15.852	6	13 52 5.78	2.4292	16 52 19.2	12.787
7	12 3 5.20	2.2252	5 25 2.4	15.830	7	13 54 31.68	2.4343	17 4 59.6	12.617
8	12 3 18.80	2.2284	5 40 51.6	15.807	8	13 56 57.88	2.4392	17 17 33.3	12.504
9	12 7 32.60	2.2316	5 56 39.3	15.782	9	13 59 24.38	2.4443	17 30 0.1	12.389
10	12 9 46.59	2.2349	6 12 25.4	15.755	10	14 1 51.18	2.4492	17 42 19.9	12.278
11	12 12 0.78	2.2382	6 28 9.8	15.725	11	14 4 18.29	2.4543	17 54 32.8	12.154
12	12 14 15.17	2.2415	6 43 52.4	15.698	12	14 6 45.70	2.4592	18 6 38.5	12.085
13	12 16 29.76	2.2449	6 59 33.0	15.669	13	14 9 13.41	2.4643	18 18 37.0	11.914
14	12 18 44.56	2.2484	7 15 11.6	15.636	14	14 11 41.41	2.4692	18 30 28.2	11.792
15	12 20 59.57	2.2520	7 30 48.1	15.600	15	14 14 9.70	2.4740	18 42 11.9	11.665
16	12 23 14.80	2.2557	7 46 22.4	15.562	16	14 16 38.28	2.4788	18 53 48.0	11.537
17	12 25 30.25	2.2595	8 1 54.4	15.513	17	14 19 7.15	2.4837	19 5 16.4	11.408
18	12 27 45.93	2.2634	8 17 24.0	15.473	18	14 21 36.31	2.4885	19 16 37.0	11.278
19	12 30 1.84	2.2673	8 32 51.1	15.430	19	14 24 5.76	2.4933	19 27 49.8	11.148
20	12 32 17.99	2.2712	8 48 15.6	15.385	20	14 26 35.50	2.4980	19 38 54.8	11.018
21	12 34 34.38	2.2752	9 3 37.3	15.338	21	14 29 5.52	2.5027	19 49 51.8	10.880
22	12 36 51.01	2.2792	9 18 56.0	15.288	22	14 31 35.82	2.5073	20 0 40.5	10.742
23	12 39 7.88	2.2832	S. 9 34 11.7	15.236	23	14 34 6.40	2.5119	S. 20 11 20.9	10.605
SATURDAY 10.					MONDAY 12.				
0	12 41 24.99	2.2872	S. 9 49 24.3	15.188	0	14 36 37.26	2.5166	S. 20 21 53.1	10.466
1	12 43 42.35	2.2913	10 4 33.7	15.129	1	14 39 8.39	2.5211	20 32 16.9	10.326
2	12 45 59.96	2.2955	10 19 39.8	15.073	2	14 41 39.79	2.5256	20 42 32.2	10.183
3	12 48 17.83	2.2999	10 34 42.5	15.016	3	14 44 11.45	2.5300	20 52 38.8	10.088
4	12 50 35.96	2.3043	10 49 41.6	14.955	4	14 46 43.37	2.5344	21 2 36.7	9.992
5	12 52 54.35	2.3087	11 4 37.0	14.892	5	14 49 15.53	2.5388	21 12 25.8	9.744
6	12 55 13.00	2.3131	11 19 28.6	14.828	6	14 51 47.95	2.5432	21 22 6.0	9.595
7	12 57 31.92	2.3175	11 34 16.3	14.762	7	14 54 20.60	2.5475	21 31 37.2	9.444
8	12 59 51.10	2.3220	11 49 0.0	14.694	8	14 56 53.49	2.5518	21 40 59.3	9.292
9	13 2 10.55	2.3266	12 3 39.6	14.624	9	14 59 26.62	2.5561	21 50 12.2	9.139
10	13 4 30.28	2.3312	12 18 15.0	14.553	10	15 1 59.98	2.5603	21 59 15.9	8.985
11	13 6 50.29	2.3358	12 32 40.1	14.480	11	15 4 33.56	2.5646	22 8 10.3	8.880
12	13 9 10.58	2.3405	12 47 12.7	14.405	12	15 7 7.35	2.5688	22 16 55.4	8.674
13	13 11 31.15	2.3452	13 1 34.7	14.328	13	15 9 41.38	2.5729	22 25 31.2	8.517
14	13 13 52.00	2.3499	13 15 52.0	14.248	14	15 12 15.63	2.5774	22 33 57.5	8.336
15	13 16 13.13	2.3547	13 30 4.5	14.167	15	15 14 50.09	2.5819	22 42 14.2	8.198
16	13 18 34.56	2.3596	13 44 12.1	14.085	16	15 17 24.75	2.5872	22 50 21.2	8.077
17	13 20 56.28	2.3645	13 58 14.7	14.001	17	15 19 59.60	2.5923	22 58 18.5	7.974
18	13 23 18.29	2.3694	14 12 12.2	13.915	18	15 22 34.63	2.5973	23 6 6.0	7.799
19	13 25 40.60	2.3743	14 26 4.4	13.826	19	15 25 9.83	2.6022	23 13 43.6	7.542
20	13 28 3.21	2.3793	14 39 51.2	13.735	20	15 27 45.20	2.6070	23 21 11.2	7.377
21	13 30 26.12	2.3843	14 53 32.5	13.642	21	15 30 20.74	2.6117	23 28 28.8	7.210
22	13 32 49.33	2.3893	15 7 8.2	13.548	22	15 32 56.44	2.6163	23 35 36.4	7.043
23	13 35 12.84	2.3943	15 20 38.2	13.452	23	15 35 32.30	2.6208	23 42 34.0	6.876
24	13 37 36.65	2.3993	S. 15 34 2.4	13.355	24	15 38 8.31	2.6253	S. 23 49 21.6	6.708

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 13.					THURSDAY 15.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	15 38 8.31	2.6018	S. 23 49 21.6	6.708	0	17 43 3.36	2.5475	S. 25 49 17.0	1.668
1	15 40 44.46	2.6036	23 55 59.0	6.536	1	17 45 36.07	2.5428	25 47 32.0	1.632
2	15 43 20.75	2.6056	24 2 26.3	6.367	2	17 48 8.49	2.5380	25 45 37.2	1.995
3	15 45 57.16	2.6078	24 8 43.1	6.196	3	17 50 40.62	2.5332	25 43 32.6	2.167
4	15 48 33.68	2.6098	24 14 49.6	6.023	4	17 53 12.46	2.5282	25 41 18.3	2.318
5	15 51 10.31	2.6118	24 20 45.7	5.848	5	17 55 44.00	2.5231	25 38 54.4	2.478
6	15 53 47.03	2.6139	24 26 31.4	5.674	6	17 58 15.23	2.5180	25 36 21.0	2.637
7	15 56 23.84	2.6162	24 32 6.7	5.500	7	18 0 46.15	2.5128	25 33 38.1	2.795
8	15 59 0.73	2.6185	24 37 31.5	5.326	8	18 3 16.76	2.5075	25 30 45.7	2.962
9	16 1 37.69	2.6166	24 42 45.8	5.152	9	18 5 47.05	2.5021	25 27 43.9	3.108
10	16 4 14.72	2.6177	24 47 49.6	4.977	10	18 8 17.01	2.4967	25 24 32.7	3.263
11	16 6 51.81	2.6196	24 52 42.9	4.801	11	18 10 46.64	2.4912	25 21 12.2	3.417
12	16 9 28.95	2.6198	24 57 25.6	4.624	12	18 13 15.94	2.4855	25 17 42.5	3.570
13	16 12 6.13	2.6199	25 1 57.7	4.447	13	18 15 44.88	2.4797	25 14 3.7	3.721
14	16 14 43.34	2.6204	25 6 19.2	4.270	14	18 18 13.46	2.4737	25 10 15.9	3.871
15	16 17 20.57	2.6207	25 10 30.1	4.093	15	18 20 41.68	2.4676	25 6 19.2	4.019
16	16 19 57.82	2.6209	25 14 30.3	3.915	16	18 23 9.53	2.4614	25 2 13.7	4.165
17	16 22 35.08	2.6209	25 18 19.7	3.737	17	18 25 37.01	2.4552	24 57 59.4	4.310
18	16 25 12.33	2.6208	25 21 58.4	3.560	18	18 28 4.12	2.4489	24 53 36.4	4.454
19	16 27 49.57	2.6206	25 25 26.4	3.379	19	18 30 30.85	2.4427	24 49 4.8	4.608
20	16 30 26.79	2.6201	25 28 43.7	3.200	20	18 32 57.20	2.4363	24 44 24.6	4.741
21	16 33 3.98	2.6196	25 31 50.3	3.023	21	18 35 23.17	2.4299	24 39 35.9	4.883
22	16 35 41.13	2.6188	25 34 46.3	2.843	22	18 37 48.75	2.4234	24 34 38.8	5.023
23	16 38 18.24	2.6179	S. 25 37 31.4	2.665	23	18 40 13.94	2.4168	S. 24 29 33.3	5.162
WEDNESDAY 14.					FRIDAY 16.				
0	16 40 55.29	2.6166	S. 25 40 6.1	2.486	0	18 42 38.73	2.4101	S. 24 24 19.5	5.299
1	16 43 32.27	2.6156	25 42 29.9	2.308	1	18 45 3.13	2.4034	24 18 57.5	5.434
2	16 46 9.17	2.6142	25 44 43.0	2.130	2	18 47 27.13	2.3966	24 13 27.4	5.566
3	16 48 45.98	2.6127	25 46 45.4	1.952	3	18 49 50.72	2.3898	24 7 49.3	5.701
4	16 51 22.69	2.6111	25 48 37.9	1.775	4	18 52 13.90	2.3829	24 2 3.3	5.832
5	16 53 59.30	2.6098	25 50 18.4	1.608	5	18 54 36.67	2.3760	23 56 9.5	5.961
6	16 56 35.80	2.6074	25 51 49.0	1.421	6	18 56 59.02	2.3690	23 50 8.0	6.089
7	16 59 12.18	2.6053	25 53 9.0	1.244	7	18 59 20.95	2.3620	23 43 58.9	6.215
8	17 1 48.43	2.6030	25 54 18.4	1.068	8	19 1 42.46	2.3550	23 37 42.3	6.340
9	17 4 24.53	2.6005	25 55 17.3	0.893	9	19 4 3.55	2.3480	23 31 18.1	6.464
10	17 7 0.48	2.5979	25 56 5.7	0.719	10	19 6 24.22	2.3410	23 24 46.5	6.587
11	17 9 36.27	2.5961	25 58 43.6	0.545	11	19 8 44.47	2.3340	23 18 7.6	6.709
12	17 12 11.89	2.5922	25 57 11.1	0.371	12	19 11 4.30	2.3270	23 11 21.4	6.830
13	17 14 47.33	2.5892	25 57 28.1	0.197	13	19 13 23.71	2.3199	23 4 28.0	6.949
14	17 17 22.59	2.5861	25 57 34.7	0.023	14	19 15 42.69	2.3128	22 57 27.5	7.067
15	17 19 57.66	2.5828	25 57 30.9	0.180	15	19 18 1.24	2.3057	22 50 20.0	7.183
16	17 22 32.52	2.5794	25 57 16.8	0.323	16	19 20 19.36	2.2985	22 43 5.6	7.297
17	17 25 7.18	2.5760	25 56 52.4	0.468	17	19 22 37.05	2.2913	22 35 44.4	7.409
18	17 27 41.63	2.5724	25 56 17.7	0.603	18	19 24 54.31	2.2842	22 28 16.5	7.521
19	17 30 15.86	2.5686	25 55 32.8	0.833	19	19 27 11.14	2.2770	22 20 41.9	7.632
20	17 32 49.86	2.5647	25 54 37.7	1.002	20	19 29 27.54	2.2698	22 13 0.7	7.741
21	17 35 23.62	2.5606	25 53 32.5	1.170	21	19 31 43.51	2.2627	22 5 13.0	7.849
22	17 37 57.13	2.5564	25 52 17.3	1.337	22	19 33 59.05	2.2555	21 57 18.9	7.955
23	17 40 30.38	2.5520	25 50 52.1	1.503	23	19 36 14.16	2.2483	21 49 18.5	8.068
24	17 43 3.66	2.5475	S. 25 49 17.0	1.668	24	19 38 28.85	2.2412	S. 21 41 11.9	8.182

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 17.					MONDAY 19.				
0	19 38 28.85	2.2412	S. 21 41 11.9	8.162	0	21 18 23.32	1.9401	S. 13 35 14.5	11.681
1	19 40 43.11	2.2340	21 32 59.2	8.262	1	21 20 19.68	1.9381	13 23 35.3	11.677
2	19 42 56.94	2.2268	21 24 40.5	8.362	2	21 22 15.55	1.9362	13 11 53.4	11.732
3	19 45 10.34	2.2197	21 16 15.8	8.462	3	21 24 11.23	1.9284	13 0 8.8	11.765
4	19 47 23.31	2.2127	21 7 45.2	8.560	4	21 26 6.62	1.9207	12 48 21.6	11.807
5	19 49 35.86	2.2056	20 59 8.7	8.657	5	21 28 1.73	1.9160	12 36 31.9	11.849
6	19 51 47.98	2.1985	20 50 26.4	8.753	6	21 29 56.66	1.9114	12 24 39.7	11.890
7	19 53 59.68	2.1914	20 41 38.4	8.847	7	21 31 51.12	1.9068	12 12 45.1	11.930
8	19 56 10.95	2.1843	20 32 44.9	8.938	8	21 33 45.41	1.9026	12 0 48.2	11.969
9	19 58 21.80	2.1773	20 23 45.9	9.028	9	21 35 39.43	1.8983	11 48 49.0	12.007
10	20 0 32.23	2.1703	20 14 41.5	9.118	10	21 37 33.20	1.8940	11 36 47.5	12.044
11	20 2 42.24	2.1633	20 5 31.7	9.207	11	21 39 26.72	1.8898	11 24 43.8	12.080
12	20 4 51.82	2.1564	19 56 16.0	9.295	12	21 41 19.99	1.8857	11 12 37.0	12.115
13	20 7 1.00	2.1495	19 46 50.3	9.381	13	21 43 13.01	1.8817	11 0 29.9	12.149
14	20 9 9.77	2.1427	19 37 30.9	9.466	14	21 45 5.79	1.8777	10 48 19.9	12.183
15	20 11 18.13	2.1360	19 28 0.5	9.547	15	21 46 58.33	1.8737	10 36 7.9	12.216
16	20 13 26.09	2.1293	19 18 25.2	9.626	16	21 48 50.64	1.8698	10 23 53.9	12.248
17	20 15 33.05	2.1227	19 8 45.1	9.703	17	21 50 42.72	1.8662	10 11 38.0	12.279
18	20 17 40.81	2.1160	18 59 0.2	9.777	18	21 52 34.59	1.8626	9 59 20.3	12.310
19	20 19 47.57	2.1093	18 49 10.6	9.855	19	21 54 26.24	1.8590	9 47 0.8	12.340
20	20 21 53.93	2.1027	18 39 16.4	9.932	20	21 56 17.67	1.8556	9 34 39.5	12.369
21	20 23 59.90	2.0962	18 29 17.6	10.018	21	21 58 8.89	1.8521	9 22 16.5	12.397
22	20 26 5.48	2.0897	18 19 14.3	10.092	22	21 59 59.91	1.8487	9 9 51.8	12.425
23	20 28 10.67	2.0832	S. 18 9 6.6	10.166	23	22 1 50.73	1.8453	S. 8 57 25.5	12.453
SUNDAY 18.					TUESDAY 20.				
0	20 30 15.48	2.0768	S. 17 58 54.6	10.237	0	22 3 41.35	1.8420	S. 8 44 57.6	12.478
1	20 32 19.90	2.0706	17 48 38.3	10.306	1	22 5 31.78	1.8389	8 32 28.9	12.502
2	20 34 23.94	2.0642	17 38 17.7	10.376	2	22 7 22.02	1.8358	8 19 57.4	12.526
3	20 36 27.60	2.0579	17 27 52.9	10.447	3	22 9 12.08	1.8328	8 7 25.2	12.549
4	20 38 30.89	2.0517	17 17 24.0	10.515	4	22 11 1.96	1.8298	7 54 51.6	12.572
5	20 40 33.81	2.0455	17 6 51.1	10.582	5	22 12 51.06	1.8268	7 42 16.6	12.595
6	20 42 36.36	2.0394	16 56 14.3	10.647	6	22 14 41.18	1.8239	7 29 40.3	12.617
7	20 44 38.54	2.0333	16 45 33.6	10.710	7	22 16 30.53	1.8211	7 17 2.7	12.639
8	20 46 40.36	2.0272	16 34 49.1	10.772	8	22 18 19.72	1.8184	7 4 23.8	12.660
9	20 48 41.81	2.0212	16 24 0.9	10.833	9	22 20 8.75	1.8158	6 51 43.6	12.680
10	20 50 42.90	2.0153	16 13 9.1	10.893	10	22 21 57.62	1.8132	6 39 2.2	12.699
11	20 52 43.65	2.0095	16 2 13.7	10.953	11	22 23 46.34	1.8108	6 26 19.7	12.717
12	20 54 44.05	2.0038	15 51 14.8	11.013	12	22 25 34.92	1.8085	6 13 36.2	12.734
13	20 56 44.11	1.9981	15 40 12.4	11.069	13	22 27 23.36	1.8062	6 0 51.7	12.750
14	20 58 43.83	1.9925	15 29 6.6	11.125	14	22 29 11.67	1.8040	5 48 6.3	12.765
15	21 0 43.22	1.9870	15 17 57.4	11.180	15	22 30 59.85	1.8019	5 35 20.0	12.780
16	21 2 42.28	1.9816	15 6 44.9	11.234	16	22 32 47.90	1.7998	5 22 32.8	12.794
17	21 4 41.02	1.9763	14 55 29.2	11.288	17	22 34 35.83	1.7978	5 9 44.7	12.808
18	21 6 39.44	1.9710	14 44 10.3	11.340	18	22 36 23.64	1.7958	4 56 55.8	12.821
19	21 8 37.52	1.9657	14 32 48.3	11.391	19	22 38 11.34	1.7938	4 44 6.2	12.833
20	21 10 35.29	1.9604	14 21 23.4	11.441	20	22 39 58.93	1.7922	4 31 15.9	12.844
21	21 12 32.75	1.9552	14 9 55.5	11.490	21	22 41 46.42	1.7906	4 18 24.9	12.855
22	21 14 29.91	1.9501	13 58 24.7	11.538	22	22 43 33.81	1.7890	4 5 33.3	12.866
23	21 16 26.77	1.9451	13 46 51.0	11.585	23	22 45 21.11	1.7875	3 52 41.1	12.875
24	21 18 23.32	1.9401	S. 13 35 14.5	11.631	24	22 47 8.32	1.7861	S. 3 39 48.3	12.884

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 21.					FRIDAY 23.				
0	22 47 8.32	1.7861	S. 3 39 48.3	12.884	0	0 13 30.82	1.7984	N. 6 37 20.2	12.585
1	22 48 55.44	1.7847	3 26 55.0	12.893	1	0 14 18.78	1.8008	6 49 54.7	12.563
2	22 50 42.48	1.7833	3 14 1.2	12.902	2	0 16 6.86	1.8028	7 2 27.8	12.540
3	22 52 29.44	1.7820	3 1 6.9	12.910	3	0 17 55.06	1.8044	7 14 59.5	12.517
4	22 54 16.32	1.7808	2 48 12.1	12.917	4	0 19 43.39	1.8065	7 27 29.8	12.493
5	22 56 3.13	1.7796	2 35 16.9	12.923	5	0 21 31.85	1.8087	7 39 58.7	12.468
6	22 57 49.87	1.7785	2 22 21.3	12.928	6	0 23 20.44	1.8110	7 52 26.1	12.443
7	22 59 36.55	1.7775	2 9 25.4	12.933	7	0 25 9.17	1.8134	8 4 51.9	12.417
8	23 1 23.17	1.7768	1 56 29.3	12.937	8	0 26 58.04	1.8168	8 17 16.1	12.389
9	23 3 9.74	1.7768	1 43 33.0	12.940	9	0 28 47.06	1.8188	8 29 38.6	12.360
10	23 4 56.26	1.7760	1 30 36.5	12.943	10	0 30 36.24	1.8209	8 41 59.3	12.331
11	23 6 42.74	1.7748	1 17 39.9	12.945	11	0 32 25.57	1.8235	8 54 18.3	12.302
12	23 8 29.18	1.7737	1 4 43.2	12.947	12	0 34 15.06	1.8262	9 6 35.5	12.272
13	23 10 15.59	1.7722	0 51 46.4	12.948	13	0 36 4.71	1.8290	9 18 50.9	12.242
14	23 12 1.97	1.7728	0 38 49.5	12.948	14	0 37 54.53	1.8317	9 31 4.4	12.211
15	23 13 48.33	1.7726	0 25 52.6	12.948	15	0 39 44.52	1.8345	9 43 16.1	12.180
16	23 15 34.67	1.7731	S. 0 12 55.7	12.948	16	0 41 34.67	1.8374	9 55 25.9	12.147
17	23 17 20.99	1.7718	N. 0 0 1.1	12.947	17	0 43 25.00	1.8408	10 7 33.7	12.118
18	23 19 7.29	1.7715	0 12 57.8	12.945	18	0 45 15.51	1.8433	10 19 39.4	12.078
19	23 20 53.57	1.7713	0 25 54.4	12.943	19	0 47 6.20	1.8464	10 31 43.0	12.043
20	23 22 39.84	1.7712	0 38 50.8	12.938	20	0 48 57.08	1.8495	10 43 44.5	12.007
21	23 24 26.11	1.7712	0 51 46.9	12.933	21	0 50 48.15	1.8527	10 55 43.8	11.970
22	23 26 12.39	1.7714	1 4 42.7	12.928	22	0 52 39.41	1.8560	11 7 40.9	11.932
23	23 27 58.68	1.7717	N. 1 17 38.2	12.922	23	0 54 30.87	1.8593	N.11 19 35.7	11.894
THURSDAY 22.					SATURDAY 24.				
0	23 29 44.99	1.7720	N. 1 30 33.3	12.916	0	0 56 22.53	1.8627	N.11 31 28.2	11.855
1	23 31 31.32	1.7728	1 43 28.0	12.910	1	0 58 14.40	1.8662	11 43 18.3	11.815
2	23 33 17.67	1.7736	1 56 22.4	12.903	2	1 0 6.48	1.8697	11 55 5.9	11.774
3	23 35 4.04	1.7730	2 9 16.4	12.896	3	1 1 58.77	1.8733	12 6 51.1	11.732
4	23 36 50.44	1.7726	2 22 9.9	12.888	4	1 3 51.28	1.8770	12 18 33.8	11.690
5	23 38 36.87	1.7741	2 35 2.9	12.879	5	1 5 44.01	1.8807	12 30 13.9	11.647
6	23 40 23.34	1.7748	2 47 55.4	12.870	6	1 7 36.97	1.8845	12 41 51.4	11.603
7	23 42 9.85	1.7755	3 0 47.3	12.860	7	1 9 30.16	1.8883	12 53 26.2	11.557
8	23 43 56.40	1.7762	3 13 38.6	12.849	8	1 11 23.58	1.8921	13 4 58.2	11.511
9	23 45 43.00	1.7770	3 26 29.2	12.837	9	1 13 17.22	1.8959	13 16 27.4	11.464
10	23 47 29.65	1.7779	3 39 19.0	12.825	10	1 15 11.09	1.8998	13 27 53.8	11.416
11	23 49 16.36	1.7789	3 52 8.1	12.812	11	1 17 5.20	1.9038	13 39 17.3	11.367
12	23 51 3.13	1.7800	4 4 56.4	12.798	12	1 18 59.55	1.9079	13 50 37.8	11.317
13	23 52 49.97	1.7812	4 17 43.8	12.783	13	1 20 54.15	1.9120	14 1 55.2	11.266
14	23 54 36.88	1.7825	4 30 30.3	12.768	14	1 22 49.00	1.9162	14 13 9.6	11.215
15	23 56 23.87	1.7838	4 43 15.9	12.753	15	1 24 44.10	1.9206	14 24 20.0	11.163
16	23 58 10.94	1.7851	4 56 0.6	12.738	16	1 26 39.46	1.9248	14 35 29.1	11.111
17	23 59 58.09	1.7865	5 8 44.4	12.722	17	1 28 35.08	1.9292	14 46 34.2	11.056
18	0 1 45.33	1.7880	5 21 27.2	12.706	18	1 30 30.96	1.9335	14 57 36.1	11.006
19	0 3 32.66	1.7895	5 34 8.9	12.687	19	1 32 27.10	1.9378	15 8 34.7	10.950
20	0 5 20.08	1.7912	5 46 49.5	12.668	20	1 34 23.50	1.9423	15 19 30.0	10.894
21	0 7 7.60	1.7929	5 59 29.0	12.648	21	1 36 20.17	1.9467	15 30 21.9	10.836
22	0 8 55.23	1.7947	6 12 7.3	12.628	22	1 38 17.11	1.9513	15 41 10.3	10.777
23	0 10 42.97	1.7965	6 24 44.4	12.607	23	1 40 14.32	1.9559	15 51 55.2	10.717
24	0 12 30.82	1.7984	N. 6 37 20.2	12.585	24	1 42 11.81	1.9606	N.16 2 36.5	10.657

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 25.					TUESDAY 27.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	1 42 11.81	1.9606	N.16 2 36.5	10.667	0	3 22 12.61	2.9115	N.23 5 18.8	6.563
1	1 44 9.59	1.9633	16 13 14.1	10.665	1	3 24 25.46	2.9168	23 11 48.6	6.540
2	1 46 7.65	1.9700	16 23 47.9	10.582	2	3 26 38.62	2.9230	23 18 11.6	6.287
3	1 48 5.99	1.9747	16 34 17.9	10.469	3	3 28 52.09	2.9272	23 24 27.8	6.213
4	1 50 4.61	1.9795	16 44 44.1	10.405	4	3 31 5.87	2.9323	23 30 37.2	6.098
5	1 52 3.52	1.9844	16 55 6.5	10.340	5	3 33 19.96	2.9374	23 36 39.7	5.983
6	1 54 2.72	1.9893	17 5 24.9	10.374	6	3 35 34.36	2.9425	23 42 35.3	5.867
7	1 56 2.22	1.9942	17 15 30.3	10.367	7	3 37 49.06	2.9475	23 48 23.9	5.750
8	1 58 2.02	1.9992	17 25 49.6	10.188	8	3 40 4.06	2.9525	23 54 5.4	5.633
9	2 0 2.12	2.0042	17 35 55.8	10.069	9	3 42 19.36	2.9575	23 59 39.8	5.513
10	2 2 2.52	2.0092	17 45 57.8	9.998	10	3 44 34.96	2.9624	24 5 6.9	5.393
11	2 4 3.22	2.0142	17 55 55.6	9.927	11	3 46 50.85	2.9673	24 10 26.8	5.271
12	2 6 4.23	2.0193	18 5 49.1	9.855	12	3 49 7.03	2.9721	24 15 39.4	5.148
13	2 8 5.54	2.0244	18 15 36.2	9.782	13	3 51 23.50	2.9769	24 20 44.6	5.025
14	2 10 7.16	2.0295	18 25 22.8	9.709	14	3 53 40.25	2.9816	24 25 42.4	4.901
15	2 12 9.09	2.0346	18 35 2.9	9.638	15	3 55 57.28	2.9861	24 30 32.7	4.776
16	2 14 11.32	2.0398	18 44 38.5	9.567	16	3 58 14.58	2.9907	24 35 15.4	4.648
17	2 16 13.86	2.0450	18 54 9.6	9.490	17	4 0 32.15	2.9952	24 39 50.4	4.520
18	2 18 16.72	2.0502	19 3 36.0	9.402	18	4 2 49.99	2.9998	24 44 17.7	4.391
19	2 20 19.90	2.0557	19 12 57.7	9.322	19	4 5 8.09	2.9999	24 48 37.3	4.262
20	2 22 23.40	2.0610	19 22 14.6	9.242	20	4 7 26.45	2.9982	24 52 49.1	4.132
21	2 24 27.22	2.0663	19 31 26.6	9.160	21	4 09 45.06	2.9934	24 56 53.1	4.002
22	2 26 31.36	2.0717	19 40 33.7	9.077	22	4 12 3.92	2.9885	25 0 49.2	3.870
23	2 28 35.82	2.0770	N.19 49 35.8	8.994	23	4 14 23.03	2.9837	N.25 4 37.4	3.737
MONDAY 26.					WEDNESDAY 28.				
0	2 30 40.60	2.0824	N.19 58 32.9	8.910	0	4 16 42.39	2.9747	N.25 8 17.6	3.603
1	2 32 45.71	2.0878	20 7 24.8	8.825	1	4 19 1.99	2.9697	25 11 49.8	3.469
2	2 34 51.14	2.0932	20 16 11.5	8.738	2	4 21 21.83	2.9647	25 15 13.9	3.332
3	2 36 56.89	2.0985	20 24 53.0	8.650	3	4 23 41.90	2.9597	25 18 29.8	3.197
4	2 39 2.96	2.1038	20 33 29.2	8.561	4	4 26 2.20	2.9547	25 21 37.6	3.061
5	2 41 9.35	2.1092	20 42 0.0	8.471	5	4 28 22.72	2.9497	25 24 37.2	2.925
6	2 43 16.06	2.1146	20 50 25.4	8.379	6	4 30 43.46	2.9447	25 27 28.6	2.789
7	2 45 23.10	2.1200	20 58 45.3	8.285	7	4 33 4.41	2.9397	25 30 11.7	2.650
8	2 47 30.47	2.1255	21 6 59.6	8.192	8	4 35 25.57	2.9347	25 32 46.5	2.511
9	2 49 38.17	2.1310	21 15 8.3	8.097	9	4 37 46.93	2.9297	25 35 13.0	2.372
10	2 51 46.20	2.1365	21 23 11.3	8.001	10	4 40 8.49	2.9247	25 37 31.1	2.232
11	2 53 54.56	2.1420	21 31 8.5	7.904	11	4 42 30.24	2.9197	25 39 40.8	2.091
12	2 56 3.24	2.1474	21 38 59.9	7.807	12	4 44 52.18	2.9147	25 41 42.0	1.950
13	2 58 12.25	2.1528	21 46 45.4	7.709	13	4 47 14.30	2.9097	25 43 34.6	1.808
14	3 0 21.59	2.1583	21 54 24.9	7.608	14	4 49 36.59	2.9047	25 45 18.6	1.663
15	3 2 31.25	2.1637	22 1 58.3	7.507	15	4 51 59.04	2.8997	25 46 54.0	1.522
16	3 4 41.24	2.1691	22 9 25.7	7.405	16	4 54 21.65	2.8947	25 48 20.8	1.379
17	3 6 51.55	2.1745	22 16 47.0	7.303	17	4 56 44.42	2.8897	25 49 38.9	1.233
18	3 9 2.18	2.1799	22 24 2.1	7.200	18	4 59 7.35	2.8847	25 50 48.3	1.087
19	3 11 13.13	2.1852	22 31 10.9	7.095	19	5 1 30.43	2.8797	25 51 48.9	0.940
20	3 13 24.40	2.1905	22 38 13.4	6.990	20	5 3 53.65	2.8747	25 52 40.7	0.793
21	3 15 35.98	2.1957	22 45 9.5	6.882	21	5 6 17.00	2.8697	25 53 23.7	0.647
22	3 17 47.87	2.2009	22 51 59.2	6.773	22	5 8 40.48	2.8647	25 53 57.9	0.500
23	3 20 0.08	2.2062	22 58 42.3	6.663	23	5 11 4.08	2.8597	25 54 23.3	0.352
24	3 22 12.61	2.2115	N.23 5 18.8	6.552	24	5 13 27.80	2.8547	N.25 54 39.9	0.202

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 29.					FRIDAY 30.				
	h. m. s.	s.	O I H	"		h. m. s.	s.	O I H	"
0	5 13 27.80	2.3083	N.25 54 39.9	0.303	0	6 11 15.19	2.4068	N.25 16 28.2	3.391
1	5 15 51.63	2.3080	25 54 47.6	0.055	1	6 13 39.73	2.4066	25 13 0.3	3.540
2	5 18 15.56	2.3077	25 54 46.4	0.083	2	6 16 4.33	2.4079	25 9 23.5	3.689
3	5 20 39.59	2.4013	25 54 36.3	0.343	3	6 18 28.67	2.4070	25 5 37.7	3.838
4	5 23 3.71	2.4037	25 54 17.3	0.391	4	6 20 53.06	2.4080	25 1 43.0	3.987
5	5 25 27.91	2.4040	25 53 49.4	0.540	5	6 23 17.39	2.4049	24 57 39.4	4.135
6	5 27 52.18	2.4062	25 53 12.5	0.680	6	6 25 41.65	2.4037	24 53 26.9	4.282
7	5 30 16.53	2.4063	25 52 26.6	0.840	7	6 28 5.84	2.4025	24 49 5.6	4.429
8	5 32 40.94	2.4073	25 51 31.7	0.990	8	6 30 29.95	2.4012	24 44 35.5	4.576
9	5 35 5.41	2.4082	25 50 27.8	1.040	9	6 32 53.98	2.3998	24 39 56.6	4.723
10	5 37 29.93	2.4090	25 49 14.9	1.200	10	6 35 17.92	2.3992	24 35 8.9	4.868
11	5 39 54.49	2.4097	25 47 53.0	1.440	11	6 37 41.76	2.3986	24 30 12.5	5.012
12	5 42 19.09	2.4103	25 46 22.1	1.590	12	6 40 5.50	2.3948	24 25 7.4	5.156
13	5 44 43.79	2.4106	25 44 42.2	1.740	13	6 42 29.13	2.3930	24 19 53.6	5.303
14	5 47 8.38	2.4113	25 42 53.2	1.891	14	6 44 52.65	2.3910	24 14 31.1	5.447
15	5 49 33.07	2.4117	25 40 55.2	2.042	15	6 47 16.05	2.3890	24 9 0.0	5.590
16	5 51 57.78	2.4119	25 38 48.2	2.192	16	6 49 39.33	2.3870	24 3 20.3	5.733
17	5 54 22.50	2.4120	25 36 32.2	2.342	17	6 52 2.48	2.3849	23 57 32.0	5.876
18	5 56 47.22	2.4120	25 34 7.2	2.492	18	6 54 25.50	2.3827	23 51 35.2	6.018
19	5 59 11.94	2.4119	25 32 33.2	2.642	19	6 56 48.39	2.3804	23 45 29.9	6.156
20	6 1 36.65	2.4117	25 29 50.0	2.792	20	6 59 11.14	2.3780	23 39 16.2	6.298
21	6 4 1.34	2.4113	25 26 58.0	2.942	21	7 1 33.75	2.3766	23 32 54.1	6.438
22	6 6 25.99	2.4107	25 23 57.0	3.092	22	7 3 50.20	2.3751	23 26 23.6	6.577
23	6 8 50.61	2.4100	25 20 47.1	3.242	23	7 6 18.50	2.3706	23 19 44.7	6.715
24	6 11 15.19	2.4092	N.25 16 28.2	3.391	24	7 8 40.65	2.3678	N.23 12 57.6	6.853

PHASES OF THE MOON.

☾ Last Quarter,	Day. h. m.
● New Moon,	5 21 17.5
☽ First Quarter,	12 12 36.4
○ Full Moon,	19 20 52.7
	27 23 37.9

☾ Perigee,	Day. h.
☾ Apogee,	10 15.0
	22 11.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			IIIh.			VIh.			IXh.						
			°	'	"	P. L. of Dist.	°	'	"	P. L. of Dist.	°	'	"	P. L. of Dist.				
1	a Pegasi	W.	78	6	45	2902	79	37	45	2902	81	8	58	2943	82	40	23	2933
	a Arietis	W.	34	48	17	2850	36	21	40	2838	37	55	18	2927	39	29	11	2816
	Pollux	E.	41	1	48	2802	39	28	41	2800	37	55	30	2855	36	22	14	2853
	Jupiter	E.	74	11	47	2848	72	38	22	2841	71	4	47	2832	69	31	1	2824
	Regulus	E.	77	40	57	2808	76	6	39	2790	74	32	10	2791	72	57	30	2783
	Saturn	E.	87	10	20	2844	85	36	49	2826	84	3	8	2827	82	29	15	2819
	Venus	E.	105	43	21	2827	104	17	56	2820	102	52	21	2820	101	26	36	2810
2	a Pegasi	W.	90	20	25	2838	91	52	59	2880	93	25	44	2870	94	58	41	2862
	a Arietis	W.	47	22	9	2761	48	57	26	2752	50	32	57	2745	52	8	42	2732
	Jupiter	E.	61	39	27	2782	60	4	35	2772	58	29	30	2763	56	54	14	2755
	Regulus	E.	65	1	29	2741	63	25	43	2732	61	49	45	2723	60	13	36	2714
	Saturn	E.	74	37	11	2777	73	2	13	2768	71	27	3	2759	69	51	41	2750
	Venus	E.	94	15	4	2764	92	48	12	2755	91	21	9	2745	89	53	54	2736
	3	a Arietis	W.	60	10	51	2800	61	47	58	2800	63	25	20	2853	65	2	56	2843
Aldebaran		W.	28	45	56	2800	30	18	15	2807	31	51	16	2828	33	24	54	2811
Jupiter		E.	48	54	55	2708	47	18	26	2698	45	41	44	2689	44	4	50	2680
Regulus		E.	52	9	50	2669	50	32	28	2669	48	54	53	2650	47	17	6	2640
Saturn		E.	61	51	56	2704	60	15	21	2695	58	38	35	2687	57	1	37	2676
Venus		E.	82	34	41	2686	81	6	14	2675	79	37	34	2665	78	8	41	2654
SUN		E.	125	34	3	2681	124	4	20	2679	122	34	40	2668	121	4	37	2656
4	a Arietis	W.	73	14	36	2808	74	53	41	2802	76	33	1	2870	78	12	37	2859
	Aldebaran	W.	41	21	6	2702	42	57	43	2684	44	34	45	2665	46	12	12	2649
	Jupiter	E.	35	57	8	2682	34	18	57	2684	32	40	34	2675	31	1	59	2666
	Regulus	E.	39	4	53	2692	37	25	47	2683	35	46	29	2673	34	6	57	2664
	Saturn	E.	48	53	32	2629	47	15	17	2620	45	36	49	2611	43	58	8	2601
	Venus	E.	70	41	0	2600	69	10	47	2589	67	40	20	2578	66	9	40	2567
	SUN	E.	113	30	39	2586	111	59	6	2584	110	27	17	2572	108	55	13	2560
5	a Arietis	W.	86	34	33	2801	88	15	45	2480	89	57	13	2478	91	38	57	2465
	Aldebaran	W.	54	25	0	2669	56	4	38	2654	57	44	36	2639	59	24	55	2624
	Saturn	E.	35	41	40	2639	34	1	48	2641	32	21	46	2645	30	41	35	2639
	Venus	E.	58	32	45	2611	57	0	40	2600	55	28	21	2608	53	55	47	2607
	SUN	E.	101	10	55	2635	99	37	13	2624	98	3	16	2611	96	29	2	2606
6	Aldebaran	W.	67	51	29	2484	69	33	47	2441	71	16	23	2427	72	59	19	2414
	Pollux	W.	25	50	20	2822	27	31	3	2495	29	12	23	2471	30	54	17	2448
	Venus	E.	46	9	27	2824	44	35	30	2814	43	1	20	2805	41	26	58	2796
	SUN	E.	88	33	37	2722	86	57	40	2719	85	21	26	2707	83	44	56	2694
7	Aldebaran	W.	81	38	36	2351	83	23	21	2320	85	8	23	2297	86	53	43	2286
	Pollux	W.	39	31	1	2355	41	15	39	2341	43	0	40	2328	44	46	3	2311
	Venus	E.	33	32	31	2703	31	57	13	2706	30	21	50	2707	28	46	26	2707
	SUN	E.	75	38	3	2630	73	59	49	2618	72	21	19	2607	70	42	33	2604
8	Aldebaran	W.	95	44	25	2263	97	31	19	2253	99	18	27	2244	101	5	49	2235
	Pollux	W.	53	38	2	2245	55	25	22	2222	57	13	0	2222	59	0	54	2212
	Jupiter	W.	19	19	40	2294	21	5	48	2277	22	52	22	2280	24	39	22	2244
	Regulus	W.	16	38	26	2280	18	24	55	2267	20	11	58	2258	21	59	29	2250
	SUN	E.	62	24	42	2629	60	44	23	2626	59	3	48	2620	57	23	3	2609
9	Pollux	W.	68	4	13	2165	69	53	33	2157	71	43	6	2150	73	32	49	2142
	Jupiter	W.	33	39	20	2185	35	28	9	2177	37	17	11	2168	39	6	27	2161

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of DIST.			XVIII ^h .			P. L. of DIST.			XXI ^h .			P. L. of DIST.		
				XV ^h .	XV ^h .	XV ^h .	XVIII ^h .	XVIII ^h .	XVIII ^h .	XXI ^h .	XXI ^h .	XXI ^h .	XXI ^h .	XXI ^h .	XXI ^h .			
1	α Pegasi	W.	84 12 0	3924	85 43 49	3916	87 15 49	3906	88 48 1	3896	89 48 1	3886						
	α Arietis	W.	41 3 19	3906	42 37 40	3784	44 12 16	3768	45 47 6	3753	45 47 6	3773						
	Pollux	E.	34 48 55	3861	33 15 33	3860	31 42 10	3860	30 8 47	3851	30 8 47	3851						
	Jupiter	E.	67 57 4	3815	66 22 56	3808	64 48 38	3796	63 14 8	3790	63 14 8	3790						
	Regulus	E.	71 22 40	3776	69 47 39	3765	68 12 27	3757	66 37 3	3750	66 37 3	3750						
	Saturn	E.	80 55 12	3811	79 20 59	3802	77 46 34	3794	76 11 58	3786	76 11 58	3786						
	Venus	E.	100 0 39	3301	98 34 31	3188	97 8 13	3183	95 41 44	3174	95 41 44	3174						
2	α Pegasi	W.	96 31 49	3864	98 5 7	3845	99 38 36	3838	101 12 15	3829	101 12 15	3829						
	α Arietis	W.	53 44 40	3721	55 20 52	3710	56 57 18	3701	58 33 57	3689	58 33 57	3689						
	Jupiter	E.	55 18 47	3745	53 43 7	3786	52 7 15	3737	50 31 11	3718	50 31 11	3718						
	Regulus	E.	58 37 15	3706	57 0 42	3686	55 23 57	3687	53 47 0	3678	53 47 0	3678						
	Saturn	E.	68 16 8	3741	66 40 23	3732	65 4 26	3723	63 28 17	3714	63 28 17	3714						
	Venus	E.	86 26 28	3126	86 58 49	3116	85 30 59	3106	84 2 56	3096	84 2 56	3096						
3	α Arietis	W.	66 40 46	3637	68 18 51	3626	69 57 11	3616	71 35 46	3604	71 35 46	3604						
	Aldebaran	W.	34 59 8	3785	36 33 55	3768	38 9 11	3742	39 44 55	3722	39 44 55	3722						
	Jupiter	E.	42 27 43	3670	40 50 23	3661	39 12 51	3652	37 35 6	3642	37 35 6	3642						
	Regulus	E.	45 39 5	3630	44 0 51	3621	42 22 25	3611	40 43 45	3602	40 43 45	3602						
	Saturn	E.	55 24 25	3666	53 47 0	3658	52 9 24	3648	50 31 34	3639	50 31 34	3639						
	Venus	E.	76 39 35	3043	75 10 16	3033	73 40 44	3022	72 10 59	3011	72 10 59	3011						
	SUN	E.	119 34 19	2964	118 3 46	2973	116 32 59	2960	115 1 56	2949	115 1 56	2949						
4	α Arietis	W.	79 52 28	2847	81 32 36	2836	83 12 59	2826	84 53 38	2816	84 53 38	2816						
	Aldebaran	W.	47 50 1	2832	49 28 13	2816	51 6 47	2809	52 45 43	2804	52 45 43	2804						
	Jupiter	E.	29 23 12	2897	27 44 13	2869	26 5 3	2862	24 25 43	2873	24 25 43	2873						
	Regulus	E.	32 27 13	2856	30 47 16	2846	29 7 7	2838	27 26 46	2829	27 26 46	2829						
	Saturn	E.	42 19 14	2868	40 40 9	2864	39 0 52	2874	37 21 22	2866	37 21 22	2866						
	Venus	E.	64 38 46	2906	63 7 38	2844	61 36 15	2832	60 4 37	2821	60 4 37	2821						
	SUN	E.	107 22 54	2987	105 50 19	2874	104 17 27	2862	102 44 19	2849	102 44 19	2849						
5	α Arietis	W.	93 20 59	2454	95 3 17	2442	96 45 52	2430	98 28 44	2418	98 28 44	2418						
	Aldebaran	W.	61 5 35	2510	62 46 34	2497	64 27 52	2482	66 9 31	2468	66 9 31	2468						
	Saturn	E.	29 1 16	2684	27 20 50	2682	25 40 21	2680	23 59 50	2632	23 59 50	2632						
	Venus	E.	52 22 59	2986	50 49 56	2865	49 16 40	2846	47 43 10	2835	47 43 10	2835						
	SUN	E.	94 54 31	2786	93 19 43	2772	91 44 38	2759	90 9 16	2746	90 9 16	2746						
6	Aldebaran	W.	74 42 34	2401	76 26 7	2388	78 9 59	2376	79 54 9	2364	79 54 9	2364						
	Pollux	W.	32 36 43	2428	34 19 38	2409	36 3 0	2391	37 46 48	2374	37 46 48	2374						
	Venus	E.	39 52 25	2787	38 17 40	2779	36 42 45	2773	35 7 42	2767	35 7 42	2767						
	SUN	E.	82 8 8	2681	80 31 2	2668	78 53 39	2656	77 16 0	2643	77 16 0	2643						
7	Aldebaran	W.	88 39 19	2304	90 25 12	2284	92 11 21	2268	93 57 46	2273	93 57 46	2273						
	Pollux	W.	46 31 47	2397	48 17 51	2383	50 4 15	2369	51 51 0	2356	51 51 0	2356						
	Venus	E.	27 11 2	2760	25 35 41	2766	24 0 29	2777	22 25 31	2798	22 25 31	2798						
	SUN	E.	69 3 30	2683	67 24 11	2672	65 44 37	2660	64 4 47	2649	64 4 47	2649						
8	Aldebaran	W.	102 53 24	2227	104 41 11	2219	106 29 10	2212	108 17 19	2205	108 17 19	2205						
	Pollux	W.	60 49 4	2301	62 37 30	2191	64 26 11	2182	66 15 5	2173	66 15 5	2173						
	Jupiter	W.	26 26 44	2231	28 14 26	2218	30 2 27	2206	31 50 45	2196	31 50 45	2196						
	Regulus	W.	23 47 26	2206	25 35 45	2192	27 24 25	2180	29 13 23	2170	29 13 23	2170						
	SUN	E.	55 42 2	2301	54 0 50	2492	52 19 26	2484	50 37 50	2477	50 37 50	2477						
9	Pollux	W.	75 22 43	2137	77 12 46	2131	79 2 58	2126	80 53 17	2121	80 53 17	2121						
	Jupiter	W.	40 55 53	2154	42 45 30	2147	44 35 17	2141	46 25 13	2136	46 25 13	2136						

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.			P. L. of Dist.	VIh.			P. L. of Dist.	IXh.			P. L. of Dist.
				°	'	"		°	'	"		°	'	"	
9	Regulus W.	31 2 37	2187	32 52 7	2180	34 41 51	2141	36 31 47	2122						
	Saturn W.	21 21 22	2844	23 8 3	2836	24 55 18	2847	26 43 4	2819						
	SUN E.	48 56 4	2470	47 14 8	2463	45 32 3	2488	43 49 50	2453						
10	Pollux W.	82 43 44	2117	84 34 17	2115	86 24 54	2112	88 15 35	2110						
	Jupiter W.	48 15 16	2132	50 5 27	2128	51 55 44	2125	53 46 5	2122						
	Regulus W.	45 44 13	2194	47 35 6	2099	49 26 6	2096	51 17 11	2094						
	Saturn W.	35 47 6	2187	37 36 39	2180	39 26 22	2144	41 16 14	2139						
	SUN E.	35 17 24	2441	33 34 48	2441	31 52 12	2444	30 9 40	2447						
14	SUN W.	20 6 45	2722	21 42 56	2726	23 19 3	2729	24 55 5	2726						
	Mars E.	73 25 58	2605	71 44 51	2620	70 4 7	2628	68 23 46	2654						
	Fomalhaut E.	79 9 8	2766	77 32 36	2726	75 56 33	2720	74 20 59	2772						
	α Pegasi E.	99 56 18	2449	98 13 53	2462	96 31 46	2477	94 50 0	2491						
15	SUN W.	32 51 59	2795	34 26 32	2811	36 0 45	2829	37 34 37	2844						
	Mars E.	60 8 1	2625	58 30 6	2663	56 52 36	2681	55 15 32	2701						
	Fomalhaut E.	66 31 14	2809	64 59 6	2829	63 27 36	2871	61 56 47	2905						
	α Pegasi E.	86 26 36	2874	84 47 6	2892	83 8 0	2911	81 29 20	2929						
16	SUN W.	45 18 36	2621	46 50 16	2645	48 21 34	2665	49 52 30	2688						
	Mars E.	47 16 40	2799	45 42 12	2821	44 8 9	2839	42 34 33	2860						
	Fomalhaut E.	54 34 2	2905	53 7 59	2922	51 42 51	2961	50 18 41	2982						
	α Pegasi E.	73 22 29	2720	71 46 29	2760	70 10 55	2773	68 35 50	2798						
17	SUN W.	57 21 33	2672	58 50 15	2691	60 18 36	2708	61 46 36	2725						
	Mars E.	34 53 8	2685	33 22 10	2696	31 51 39	2697	30 21 34	2628						
	α Pegasi E.	60 47 33	2806	59 15 22	2820	57 43 41	2864	56 12 30	2878						
	α Arietis E.	102 46 49	2717	101 10 32	2723	99 34 36	2720	97 59 2	2766						
18	SUN W.	69 1 30	2207	70 27 31	2223	71 53 13	2228	73 18 37	2232						
	α Pegasi E.	48 44 32	2112	47 16 37	2141	45 49 17	2171	44 22 33	2202						
	α Arietis E.	90 6 24	2843	88 32 52	2867	86 59 38	2872	85 26 43	2885						
19	SUN W.	80 21 26	2220	81 45 14	2222	83 8 47	2245	84 32 6	2256						
	α Arietis E.	77 46 25	2280	76 15 9	2261	74 44 7	2272	73 13 20	2282						
	Aldebaran E.	110 9 51	2995	108 39 33	3006	107 9 28	3016	105 39 35	3025						
20	SUN W.	91 25 41	2405	92 47 51	2414	94 9 52	2422	95 31 45	2429						
	α Arietis E.	65 42 34	2681	64 13 0	2689	62 43 35	2647	61 14 21	2654						
	Aldebaran E.	98 12 59	3063	96 44 10	3075	95 15 30	3092	93 46 59	3099						
21	SUN W.	102 19 9	2459	103 40 19	2468	105 1 24	2467	106 22 25	2470						
	α Aquilæ W.	47 14 56	2245	48 22 40	2194	49 31 12	2147	50 40 28	2105						
	α Arietis E.	53 50 12	2625	52 21 44	2691	50 53 23	2694	49 25 6	2699						
	Aldebaran E.	86 26 13	2116	84 58 23	2119	83 30 37	2124	82 2 56	2127						
22	SUN W.	113 6 48	2480	114 27 35	2480	115 48 22	2479	117 9 10	2480						
	α Aquilæ W.	56 36 6	2625	57 48 50	2609	59 2 1	2622	60 15 39	2626						
	Mars W.	23 30 3	2408	24 52 16	2395	26 14 38	2389	27 37 7	2382						
	α Arietis E.	42 4 51	2114	40 36 59	2117	39 9 10	2119	37 41 24	2121						
	Aldebaran E.	74 45 22	2128	73 17 58	2129	71 50 36	2129	70 23 14	2140						
23	SUN W.	123 53 24	2470	125 14 22	2467	126 35 23	2468	127 56 28	2469						
	α Aquilæ W.	66 29 34	2765	67 45 23	2727	69 1 31	2721	70 17 56	2704						

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.			P. L. of Diff.			P. L. of Diff.			P. L. of Diff.		
				XVh.	XVIIIh.	XXIh.	XVh.	XVIIIh.	XXIh.	XVh.	XVIIIh.	XXIh.			
9	Regulus	W.	38 21 57	2186	40 12 17	2119	42 2 47	2189	43 53 26	2106					
	Saturn	W.	28 31 15	2611	30 19 47	2692	32 8 38	2704	33 57 45	2785					
	SUN	E.	42 7 30	2449	40 25 5	2445	38 42 35	2442	37 0 0	2441					
10	Pollux	W.	90 6 19	2109	91 57 5	2108	93 47 52	2108	95 38 39	2107					
	Jupiter	W.	55 36 30	2190	57 26 59	2119	59 17 29	2118	61 8 0	2118					
	Regulus	W.	53 8 19	2092	54 59 30	2091	56 50 43	2190	58 41 57	2090					
	Saturn	W.	43 6 14	2186	44 56 19	2182	46 46 29	2181	48 36 41	2189					
	SUN	E.	28 27 12	2443	26 44 52	2460	25 2 42	2470	23 20 46	2452					
14	SUN	W.	26 30 57	2746	28 6 36	2787	29 42 0	2799	31 17 9	2783					
	Mars	E.	66 43 49	2670	65 4 16	2690	63 25 6	2697	61 46 21	2626					
	Fomalhaut	E.	72 45 54	2797	71 11 22	2823	69 37 24	2690	68 4 1	2678					
	α Pegasi	E.	93 8 34	2567	91 27 30	2622	89 46 49	2689	88 6 30	2567					
15	SUN	W.	39 8 8	2690	40 41 18	2677	42 14 6	2694	43 46 32	2612					
	Mars	E.	53 38 53	2721	52 2 41	2740	50 26 55	2760	48 51 34	2780					
	Fomalhaut	E.	60 26 41	2642	58 57 20	2679	57 28 45	2619	56 0 58	2611					
	α Pegasi	E.	79 51 4	2649	78 13 16	2696	76 35 53	2699	74 56 58	2706					
16	SUN	W.	51 23 4	2682	52 53 14	2620	54 23 2	2687	55 52 29	2606					
	Mars	E.	41 1 23	2682	39 28 39	2691	37 56 22	2622	36 24 32	2642					
	Fomalhaut	E.	48 55 30	2469	47 33 24	2469	46 12 25	2632	44 52 36	2699					
	α Pegasi	E.	67 1 13	2616	65 27 5	2687	63 53 25	2690	62 20 15	2682					
17	SUN	W.	63 14 15	2142	64 41 33	2169	66 8 31	2175	67 35 10	2191					
	Mars	E.	28 51 57	2682	27 22 47	2673	25 54 6	2696	24 25 54	2123					
	α Pegasi	E.	54 41 50	2693	53 11 41	2680	51 42 5	2696	50 13 1	2694					
	α Arietis	E.	96 23 49	2782	94 48 58	2797	93 14 26	2613	91 40 15	2629					
18	SUN	W.	74 43 43	2267	76 8 33	2282	77 33 6	2294	78 57 24	2306					
	α Pegasi	E.	42 56 27	2296	41 31 1	2271	40 6 16	2309	38 42 15	2349					
	α Arietis	E.	83 54 6	2689	82 21 46	2612	80 49 43	2225	79 17 56	2688					
19	SUN	W.	85 55 13	2365	87 18 7	2378	88 40 49	2387	90 3 20	2396					
	α Arietis	E.	71 42 46	2993	70 12 25	2604	68 42 17	2613	67 12 20	2622					
	Aldebaran	E.	104 9 54	2684	102 40 23	2644	101 11 5	2682	99 41 57	2660					
20	SUN	W.	96 53 26	2426	98 15 2	2442	99 36 31	2448	100 57 53	2454					
	α Arietis	E.	59 45 15	2661	58 16 18	2698	56 47 29	2673	55 18 47	2679					
	Aldebaran	E.	92 18 36	2695	90 50 20	2601	89 22 11	2606	87 54 9	2611					
21	SUN	W.	107 43 23	2472	109 4 18	2476	110 25 9	2477	111 45 59	2478					
	α Aquilæ	W.	51 50 24	4066	53 0 59	4031	54 12 8	3997	55 23 51	3964					
	α Arietis	E.	47 56 55	2102	46 28 48	2106	45 0 45	2109	43 32 46	2112					
	Aldebaran	E.	80 35 19	2129	79 7 45	2138	77 40 15	2136	76 12 48	2136					
22	SUN	W.	118 29 57	2478	119 50 46	2477	121 11 36	2476	122 32 28	2471					
	α Aquilæ	W.	61 29 41	3836	62 44 7	3614	63 58 55	3793	65 14 4	3778					
	Mars	W.	28 59 44	2877	30 22 27	2870	31 45 18	2865	33 8 15	2858					
	α Arietis	E.	36 13 40	2124	34 45 59	2126	33 18 21	2129	31 50 46	2121					
	Aldebaran	E.	68 55 53	2140	67 28 32	2140	66 1 11	2140	64 33 50	2138					
23	SUN	W.	129 17 37	2455	130 38 51	2462	132 0 9	2446	133 21 33	2445					
	α Aquilæ	W.	71 34 39	3686	72 51 38	3674	74 8 53	3661	75 26 22	3646					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			IIIh.			VIh.			IXh.			
			P. L. of Diff.	P. L. of Diff.	P. L. of Diff.	P. L. of Diff.	P. L. of Diff.	P. L. of Diff.	P. L. of Diff.	P. L. of Diff.	P. L. of Diff.	P. L. of Diff.			
			° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	P. L. of Diff.		
23	Fomalhaut	W.	41 56 24	4060	43 7 5	4008	44 18 42	3850	45 31 11	3908					
	Mars	W.	34 31 19	3858	35 54 29	3847	37 17 46	3842	38 41 9	3336					
	Aldebaran	E.	63 6 27	3138	61 39 3	3137	60 11 38	3136	58 44 12	3134					
	Pollux	E.	105 2 54	3095	103 34 38	3091	102 6 18	3093	100 37 54	3093					
24	α Aquilæ	W.	76 44 7	3633	78 2 6	3621	79 20 18	3609	80 38 43	3598					
	Fomalhaut	W.	51 44 47	3707	53 1 27	3676	54 18 40	3644	55 36 27	3617					
	Mars	W.	45 39 58	3802	47 4 7	3294	48 28 25	3286	49 52 50	3279					
	α Pegasi	W.	29 0 5	3742	30 16 8	3679	31 33 27	3610	32 51 51	3606					
	Aldebaran	E.	51 26 30	3125	49 58 51	3134	48 31 10	3122	47 3 27	3131					
	Pollux	E.	93 14 28	3058	91 45 27	3052	90 16 19	3047	88 47 4	3041					
25	α Aquilæ	W.	87 13 48	3545	88 33 22	3488	89 53 4	3429	91 12 56	3422					
	Fomalhaut	W.	62 12 29	3494	63 33 0	3473	64 53 54	3452	66 15 12	3433					
	Mars	W.	56 57 22	3238	58 22 46	3231	59 48 19	3220	61 14 3	3213					
	α Pegasi	W.	39 36 28	3360	40 59 30	3330	42 23 7	3301	43 47 17	3275					
	Aldebaran	E.	39 44 35	3120	38 16 50	3122	36 49 7	3125	35 21 28	3129					
	Pollux	E.	81 18 44	3005	79 48 37	2997	78 18 20	2989	76 47 54	2982					
	Jupiter	E.	116 51 47	3007	115 21 43	2997	113 51 27	2989	112 21 1	2981					
26	Fomalhaut	W.	73 6 54	3345	74 30 13	3331	75 53 49	3314	77 17 44	3301					
	Mars	W.	68 25 33	3163	69 52 26	3155	71 19 29	3143	72 46 46	3134					
	α Pegasi	W.	50 55 20	3162	52 22 15	3142	53 49 34	3134	55 17 14	3106					
	Pollux	E.	69 13 13	2940	67 41 45	2932	66 10 7	2924	64 38 18	2915					
	Jupiter	E.	104 46 8	2936	103 14 35	2926	101 42 49	2916	100 10 51	2908					
	Saturn	E.	117 3 31	2946	115 32 11	2936	114 0 38	2926	112 28 52	2916					
27	Fomalhaut	W.	84 21 12	3236	85 46 38	3225	87 12 18	3214	88 38 10	3206					
	Mars	W.	80 6 10	3082	81 34 41	3073	83 3 23	3063	84 32 18	3053					
	α Pegasi	W.	62 40 50	3025	64 10 32	3011	65 40 31	2996	67 10 49	2982					
	Pollux	E.	56 56 32	2973	55 23 38	2966	53 50 35	2957	52 17 91	2949					
	Jupiter	E.	92 28 2	2859	90 54 50	2846	89 21 25	2838	87 47 47	2829					
	Regulus	E.	93 44 34	2841	92 10 59	2831	90 37 12	2821	89 3 12	2811					
	Saturn	E.	104 46 56	2866	103 13 54	2856	101 40 39	2847	100 7 12	2837					
28	Fomalhaut	W.	95 50 15	3163	97 17 9	3156	98 44 11	3149	100 11 21	3144					
	Mars	W.	92 0 2	3001	93 30 13	2992	95 0 36	2982	96 31 11	2973					
	α Pegasi	W.	74 46 31	2918	76 18 27	2906	77 50 38	2896	79 23 3	2888					
	α Arietis	W.	31 22 31	2814	32 56 41	2800	34 31 9	2785	36 5 56	2773					
	Pollux	E.	44 28 46	2814	42 54 36	2808	41 20 19	2803	39 45 55	2799					
	Jupiter	E.	79 56 31	2782	78 21 38	2771	76 46 32	2761	75 11 13	2752					
	Regulus	E.	81 10 2	2763	79 34 46	2754	77 59 18	2744	76 23 37	2736					
	Saturn	E.	92 16 43	2788	90 41 59	2778	89 7 2	2769	87 31 53	2759					
29	Mars	W.	104 7 11	2924	105 38 59	2916	107 10 58	2906	108 43 9	2896					
	α Arietis	W.	44 3 55	2713	45 40 17	2703	47 16 53	2692	48 53 43	2681					
	Jupiter	E.	67 11 34	2705	65 35 1	2696	63 58 16	2688	62 21 20	2679					
	Regulus	E.	68 22 11	2689	66 45 17	2681	65 8 12	2672	63 30 54	2668					
	Saturn	E.	79 32 59	2713	77 56 36	2704	76 20 1	2696	74 43 14	2687					
30	α Arietis	W.	57 1 18	2633	58 39 28	2624	60 17 50	2615	61 56 24	2606					
	Aldebaran	W.	25 43 24	2906	27 15 36	2896	28 48 39	2883	30 23 25	2871					
	Jupiter	E.	54 13 46	2638	52 35 42	2629	50 57 27	2622	49 19 2	2615					
	Regulus	E.	55 21 36	2623	53 43 11	2614	52 4 35	2607	50 25 49	2599					
	Saturn	E.	66 36 29	2645	64 58 35	2636	63 20 31	2629	61 42 16	2621					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			P. L. of Dist.	XVh.			P. L. of Dist.	XVIIIh.			P. L. of Dist.	XXTh.			P. L. of Dist.
		°	'	"		°	'	"		°	'	"		°	'	"	
23	Fomalhaut W.	46	44	28	3857	47	58	31	3816	49	13	17	3778	50	28	42	3740
	Mars W.	40	4	40	3823	41	28	19	3823	42	52	4	3817	44	15	56	3308
	Aldebaran E.	57	16	44	3132	55	49	13	3131	54	21	41	3129	52	54	6	3128
	Pollux E.	99	9	24	3079	97	40	49	3075	96	12	9	3069	94	43	21	3066
24	α Aquilæ W.	81	57	20	3886	83	16	10	3875	84	35	12	3865	85	54	25	3866
	Fomalhaut W.	56	54	43	3889	58	13	29	3865	59	32	42	3839	60	52	23	3516
	Mars W.	51	17	26	3371	52	42	11	3364	54	7	5	3266	55	32	8	3247
	α Pegasi W.	34	11	11	3413	35	31	21	3471	36	52	18	3430	38	14	1	3391
	Aldebaran E.	45	35	43	3119	44	7	57	3119	42	40	10	3118	41	12	22	3119
	Pollux E.	87	17	42	3083	85	48	10	3026	84	18	30	3020	82	48	42	3012
25	α Aquilæ W.	92	32	56	3815	93	53	4	3408	95	13	19	3401	96	33	42	3498
	Fomalhaut W.	67	36	51	3414	68	58	52	3396	70	21	13	3379	71	43	54	3362
	Mars W.	62	39	59	3202	64	6	6	3193	65	32	23	3183	66	58	53	3174
	α Pegasi W.	45	11	57	3250	46	37	7	3225	48	2	46	3204	49	28	50	3183
	Aldebaran E.	33	53	54	3136	32	26	28	3143	30	59	11	3164	29	32	7	3109
	Pollux E.	75	17	19	2973	73	46	33	2965	72	15	37	2967	70	44	30	2949
	Jupiter E.	110	50	25	2977	109	19	38	2963	107	48	39	2964	106	17	29	2946
26	Fomalhaut W.	78	41	54	3287	80	6	21	3273	81	31	4	3262	82	56	0	3248
	Mars W.	74	14	14	3124	75	41	55	3114	77	9	48	3105	78	37	52	3083
	α Pegasi W.	56	45	16	3088	58	13	40	3072	59	42	24	3066	61	11	28	3041
	Pollux E.	63	6	18	2906	61	34	7	2908	60	1	46	2901	58	29	15	2881
	Jupiter E.	98	38	42	2998	97	6	20	2989	95	33	47	2979	94	1	1	2970
	Saturn E.	110	56	54	2908	109	24	43	2907	107	52	20	2907	106	19	45	2976
27	Fomalhaut W.	90	4	12	3184	91	30	28	3186	92	56	54	3178	94	23	30	3170
	Mars W.	86	1	26	3042	87	30	47	3032	89	0	20	3023	90	30	4	3013
	α Pegasi W.	68	41	24	2969	70	12	16	2965	71	43	25	2942	73	14	50	2930
	Pollux E.	50	43	57	2842	49	10	23	2835	47	36	40	2828	46	2	48	2820
	Jupiter E.	86	13	57	2921	84	39	55	2910	83	5	40	2799	81	31	11	2791
	Regulus E.	87	28	59	2802	85	54	34	2792	84	19	56	2779	82	45	6	2772
	Saturn E.	98	33	32	2827	96	59	39	2817	95	25	33	2807	93	51	14	2798
28	Fomalhaut W.	101	38	36	3140	103	5	57	3137	104	33	22	3133	106	0	51	3121
	Mars W.	98	1	59	2962	99	32	59	2963	101	4	11	2943	102	35	35	2934
	α Pegasi W.	80	55	43	2973	82	28	37	2962	84	1	45	2962	85	35	5	2942
	α Arietis W.	37	40	59	2780	39	16	19	2747	40	51	56	2736	42	27	48	2726
	Pollux E.	38	11	24	2794	36	36	48	2791	35	2	8	2787	33	27	23	2786
	Jupiter E.	73	35	42	2743	71	59	59	2733	70	24	3	2723	68	47	54	2715
	Regulus E.	74	47	45	2726	73	11	40	2716	71	35	22	2707	69	58	52	2699
	Saturn E.	85	56	31	2749	84	20	56	2740	82	45	9	2731	81	9	10	2722
	29	Mars W.	110	15	31	2988	111	48	5	2980	113	20	50	2971	114	53	46	2962
α Arietis W.		50	30	48	2972	52	8	6	2962	53	45	37	2962	55	23	21	2943
Jupiter E.		60	44	12	2971	59	6	53	2962	57	29	22	2964	55	51	39	2945
Regulus E.		61	53	25	2965	60	15	45	2946	58	37	53	2938	56	59	50	2930
Saturn E.		73	6	16	2978	71	29	6	2969	69	51	44	2961	68	14	12	2953
30	α Arietis W.	63	35	11	2988	65	14	9	2989	66	53	19	2981	68	32	40	2972
	Aldebaran W.	31	56	52	2774	33	31	54	2760	35	7	28	2757	36	43	32	2707
	Jupiter E.	47	40	27	2907	46	1	42	2900	44	22	47	2908	42	43	42	2905
	Regulus E.	48	46	52	2991	47	7	45	2984	45	28	28	2977	43	49	2	2970
	Saturn E.	60	3	50	2615	58	25	15	2607	56	46	30	2600	55	7	35	2593

AT GREENWICH APPARENT NOON.

THE SUN'S														
Day of the Week.	Day of the Month.	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from	Diff. for 1 hour.	
		h.	m.	s.	"	°	'	"	"	°	m.	s.		
Sat.	1	16	31	37.81	10.809	S. 21	54	15.3	22.78	16	16.14	70.36	10 35.95	0.958
Sun.	2	16	35	57.63	10.835	22	3	9.8	21.72	16	16.28	70.44	10 12.76	0.979
Mon.	3	16	40	18.07	10.861	22	11	38.7	20.65	16	16.42	70.52	9 48.95	1.005
Tues.	4	16	44	39.12	10.886	22	19	41.7	19.57	16	16.55	70.60	9 24.53	1.030
Wed.	5	16	49	0.76	10.910	22	27	18.6	18.49	16	16.67	70.67	8 59.51	1.064
Thur.	6	16	53	22.95	10.932	22	34	29.4	17.39	16	16.79	70.74	8 33.95	1.077
Fri.	7	16	57	45.66	10.953	22	41	13.7	16.23	16	16.91	70.80	8 7.86	1.097
Sat.	8	17	2	8.88	10.973	22	47	31.2	15.15	16	17.02	70.86	7 41.27	1.117
Sun.	9	17	6	32.57	10.993	22	53	21.6	14.03	16	17.13	70.92	7 14.21	1.136
Mon.	10	17	10	56.70	11.011	22	58	44.9	12.89	16	17.23	70.98	6 46.71	1.154
Tues.	11	17	15	21.24	11.027	23	3	40.9	11.76	16	17.33	71.03	6 18.81	1.170
Wed.	12	17	19	46.16	11.042	23	8	9.4	10.61	16	17.43	71.07	5 50.53	1.185
Thur.	13	17	24	11.41	11.055	23	12	10.4	9.46	16	17.53	71.11	5 21.91	1.197
Fri.	14	17	28	36.96	11.067	23	15	43.5	8.29	16	17.62	71.15	4 53.00	1.209
Sat.	15	17	33	2.77	11.077	23	18	48.7	7.13	16	17.70	71.19	4 23.83	1.219
Sun.	16	17	37	28.81	11.085	23	21	25.8	5.96	16	17.78	71.22	3 54.43	1.228
Mon.	17	17	41	55.04	11.091	23	23	34.8	4.79	16	17.86	71.24	3 24.83	1.234
Tues.	18	17	46	21.41	11.096	23	25	15.7	3.61	16	17.94	71.26	2 55.10	1.240
Wed.	19	17	50	47.89	11.101	23	26	28.4	2.44	16	18.01	71.28	2 25.26	1.244
Thur.	20	17	55	14.45	11.104	23	27	12.9	1.26	16	18.08	71.30	1 55.34	1.247
Fri.	21	17	59	41.07	11.104	23	27	29.0	0.08	16	18.14	71.30	1 25.36	1.248
Sat.	22	18	4	7.70	11.104	23	27	16.9	1.10	16	18.19	71.30	0 55.37	1.248
Sun.	23	18	8	34.31	11.102	23	26	36.5	2.28	16	18.24	71.30	0 25.41	1.246
Mon.	24	18	13	0.85	11.100	23	25	27.7	3.46	16	18.29	71.30	0 4.49	1.243
Tues.	25	18	17	27.30	11.096	23	23	50.6	4.63	16	18.33	71.29	0 34.30	1.239
Wed.	26	18	21	53.64	11.091	23	21	45.3	5.80	16	18.36	71.27	1 4.00	1.234
Thur.	27	18	26	19.83	11.084	23	19	11.9	6.97	16	18.38	71.25	1 33.55	1.227
Fri.	28	18	30	45.85	11.076	23	16	10.5	8.14	16	18.40	71.22	2 2.93	1.219
Sat.	29	18	35	11.67	11.067	23	12	41.1	9.30	16	18.41	71.19	2 32.11	1.209
Sun.	30	18	39	37.26	11.057	23	8	43.9	10.46	16	18.42	71.16	3 1.06	1.200
Mon.	31	18	44	2.59	11.046	23	4	18.8	11.61	16	18.42	71.12	3 29.75	1.189
Tues.	32	18	48	27.62	11.033	S. 22	59	26.1	12.76	16	18.42	71.08	3 58.14	1.176

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to		Diff. for 1 hour.	Sideral Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Subtracted from Mean Time.			
						m.	s.			s.
Sat.	1	16 31 30.72	10.809	S. 21 54 19.4	22.78	10 35.78	0.953	16 42 15.50	
Sun.	2	16 35 59.47	10.835	22 3 13.5	21.72	10 12.59	0.979	16 46 12.06	
Mon.	3	16 40 19.84	10.861	22 11 42.1	20.65	9 48.78	1.005	16 50 8.62	
Tues.	4	16 44 40.82	10.886	22 19 44.8	19.57	9 24.36	1.030	16 54 5.18	
Wed.	5	16 49 2.39	10.910	22 27 21.4	18.49	8 59.35	1.054	16 58 1.74	
Thur.	6	16 53 24.51	10.932	22 34 31.9	17.39	8 33.79	1.077	17 1 58.30	
Fri.	7	16 57 47.15	10.953	22 41 15.9	16.28	8 7.70	1.097	17 5 54.85	
Sat.	8	17 2 10.29	10.973	22 47 33.1	15.15	7 41.12	1.117	17 9 51.41	
Sun.	9	17 6 33.90	10.993	22 53 23.3	14.03	7 14.07	1.136	17 13 47.97	
Mon.	10	17 10 57.95	11.011	22 58 46.4	12.89	6 46.58	1.154	17 17 44.53	
Tues.	11	17 15 22.41	11.027	23 3 42.2	11.76	6 18.68	1.170	17 21 41.09	
Wed.	12	17 19 47.24	11.042	23 8 10.5	10.61	5 50.41	1.185	17 25 37.65	
Thur.	13	17 24 12.40	11.055	23 12 11.3	9.46	5 21.60	1.197	17 29 34.20	
Fri.	14	17 28 37.85	11.067	23 15 44.2	8.29	4 52.91	1.209	17 33 30.76	
Sat.	15	17 33 3.58	11.077	23 18 49.2	7.18	4 23.74	1.219	17 37 27.32	
Sun.	16	17 37 29.53	11.085	23 21 26.2	5.96	3 54.35	1.228	17 41 23.88	
Mon.	17	17 41 55.67	11.091	23 23 35.1	4.79	3 24.76	1.234	17 45 20.43	
Tues.	18	17 46 21.95	11.096	23 25 15.9	3.61	2 55.04	1.240	17 49 16.99	
Wed.	19	17 50 48.34	11.101	23 26 28.5	2.44	2 25.21	1.244	17 53 13.55	
Thur.	20	17 55 14.81	11.104	23 27 12.9	1.26	1 55.30	1.247	17 57 10.11	
Fri.	21	17 59 41.34	11.104	23 27 29.0	0.09	1 25.33	1.248	18 1 6.67	
Sat.	22	18 4 7.86	11.104	23 27 16.9	1.10	0 55.35	1.248	18 5 3.23	
Sun.	23	18 8 34.39	11.102	23 26 36.5	2.28	0 25.40	1.246	18 8 59.79	
Mon.	24	18 13 0.83	11.100	23 25 27.7	3.46	0 4.49	1.243	18 12 56.34	
Tues.	25	18 17 27.19	11.096	23 23 50.6	4.63	0 34.29	1.239	18 16 52.90	
Wed.	26	18 21 53.44	11.091	23 21 45.4	5.80	1 3.98	1.234	18 20 49.46	
Thur.	27	18 26 19.54	11.084	23 19 12.1	6.97	1 33.52	1.227	18 24 46.02	
Fri.	28	18 30 45.47	11.076	23 16 10.8	8.14	2 2.89	1.219	18 28 42.58	
Sat.	29	18 35 11.20	11.067	23 12 41.5	9.30	2 32.06	1.209	18 32 39.14	
Sun.	30	18 39 36.70	11.057	23 8 44.4	10.46	3 1.00	1.200	18 36 35.70	
Mon.	31	18 44 1.94	11.046	23 4 19.5	11.61	3 29.68	1.189	18 40 32.26	
Tues.	23	18 48 26.88	11.033	S. 22 59 27.0	12.76	3 58.06	1.176	18 44 28.82	

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

		THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
Day of the Month.	Day of the Year.	True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	336	249 ^o 35 ⁱ 24.1	34 ⁱ 23.4	152.15	-0.15	9.9936666	26.5	h. m. s. 7 16 32.78	
2	337	250 36 16.5	35 15.7	152.20	0.28	.9936041	25.5	7 12 36.87	
3	338	251 37 10.1	36 9.1	152.26	0.42	.9935441	24.5	7 8 40.96	
4	339	252 38 4.9	37 3.7	152.32	0.53	.9934863	23.6	7 4 45.04	
5	340	253 39 1.0	37 59.6	152.37	0.63	.9934306	22.7	7 0 49.13	
6	341	254 39 58.4	38 56.8	152.42	0.71	.9933770	21.9	6 56 53.22	
7	342	255 40 57.0	39 55.3	152.47	0.76	.9933252	21.2	6 52 57.31	
8	343	256 41 56.8	40 54.9	152.52	0.77	.9932751	20.5	6 49 1.40	
9	344	257 42 57.7	41 55.6	152.57	0.77	.9932267	19.8	6 45 5.48	
10	345	258 43 59.7	42 57.4	152.61	0.73	.9931801	19.1	6 41 9.57	
11	346	259 45 2.7	44 0.2	152.64	0.65	.9931350	18.5	6 37 13.66	
12	347	260 46 6.5	45 3.9	152.67	0.55	.9930914	17.9	6 33 17.75	
13	348	261 47 11.1	46 8.3	152.70	0.44	.9930493	17.3	6 29 21.84	
14	349	262 48 16.3	47 13.3	152.73	0.32	.9930087	16.6	6 25 25.92	
15	350	263 49 22.1	48 18.9	152.75	0.19	.9929697	15.9	6 21 30.01	
16	351	264 50 28.3	49 24.9	152.77	-0.06	.9929324	15.2	6 17 34.10	
17	352	265 51 34.9	50 31.4	152.78	+0.06	.9928969	14.4	6 13 38.19	
18	353	266 52 41.8	51 38.1	152.79	0.18	.9928632	13.6	6 9 42.28	
19	354	267 53 48.9	52 45.0	152.80	0.28	.9928314	12.8	6 5 46.36	
20	355	268 54 56.3	53 52.2	152.81	0.33	.9928016	11.9	6 1 50.45	
21	356	269 56 3.8	54 59.5	152.82	0.36	.9927741	10.9	5 57 54.54	
22	357	270 57 11.5	56 7.0	152.82	0.36	.9927490	9.9	5 53 58.63	
23	358	271 58 19.2	57 14.5	152.82	0.32	.9927264	8.8	5 50 2.72	
24	359	272 59 27.0	58 22.1	152.83	0.26	.9927064	7.7	5 46 6.80	
25	360	273 60 34.8	59 29.7	152.83	0.18	.9926891	6.6	5 42 10.89	
26	361	275 1 42.7	0 37.4	152.83	+0.07	.9926747	5.4	5 38 14.98	
27	362	276 2 50.7	1 45.3	152.83	-0.05	.9926631	4.2	5 34 19.07	
28	363	277 3 59.0	2 53.4	152.84	0.18	.9926544	3.1	5 30 23.15	
29	364	278 5 7.5	4 1.7	152.85	0.31	.9926485	1.9	5 26 27.23	
30	365	279 6 16.1	5 10.1	152.86	0.44	.9926454	0.7	5 22 31.32	
31	366	280 7 24.9	6 18.7	152.87	0.57	.9926451	0.6	5 18 35.41	
32	367	281 8 33.9	7 27.5	152.89	-0.67	9.9926474	1.5	5 14 39.50	

NOTE.— λ corresponds to the true equinox of the date, λ' to the mean equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							h. m.	m. d.	
1	15 39.8	15 43.6	57 22.4	+1.17	57 36.1	+1.18	14 59.1	2.23	18.5
2	15 47.2	15 50.7	57 49.5	1.10	58 2.4	1.06	15 51.7	2.15	19.5
3	15 54.1	15 57.4	58 14.9	1.02	58 27.0	0.98	16 42.2	2.07	20.5
4	16 0.5	16 3.5	58 38.5	0.94	58 49.4	0.88	17 31.1	2.03	21.5
5	16 6.3	16 8.9	58 59.7	0.83	59 9.2	0.76	18 19.5	2.03	22.5
6	16 11.2	16 13.2	59 17.8	0.67	59 25.2	0.56	19 8.6	2.06	23.5
7	16 14.8	16 16.0	59 31.2	0.48	59 35.5	+0.28	19 59.5	2.18	24.5
8	16 16.7	16 16.8	59 38.0	+0.12	59 38.4	-0.06	20 53.4	2.31	25.5
9	16 16.3	16 15.1	59 36.5	-0.26	59 32.2	0.47	21 50.5	2.48	26.5
10	16 13.2	16 10.6	59 25.3	0.68	59 15.8	0.89	22 50.3	2.50	27.5
11	16 7.4	16 3.5	59 3.8	1.10	58 49.4	1.29	23 51.0	2.50	28.5
12	15 59.0	15 54.0	58 32.8	1.46	58 14.4	1.60	6		29.5
13	15 48.5	15 42.7	57 54.4	1.71	57 33.3	1.79	0 50.4	2.40	1.0
14	15 36.8	15 30.8	57 11.4	1.83	56 49.3	1.84	1 46.4	2.24	2.0
15	15 24.8	15 18.9	56 27.3	1.81	56 5.9	1.78	2 38.0	2.06	3.0
16	15 13.4	15 8.3	55 45.7	1.63	55 26.7	1.51	3 25.4	1.90	4.0
17	15 3.6	14 59.4	55 9.5	1.36	54 54.2	1.18	4 9.3	1.78	5.0
18	14 55.8	14 52.9	54 41.1	1.00	54 30.3	0.79	4 50.7	1.70	6.0
19	14 50.7	14 49.2	54 22.1	0.58	54 16.5	-0.36	5 30.8	1.67	7.0
20	14 48.3	14 48.2	54 13.5	-0.14	54 13.1	+0.03	6 10.8	1.68	8.0
21	14 48.9	14 50.3	54 15.5	+0.31	54 20.5	0.52	6 51.6	1.74	9.0
22	14 52.3	14 54.9	54 27.9	0.71	54 37.6	0.90	7 34.4	1.84	10.0
23	14 58.1	15 1.8	54 49.5	1.07	55 3.3	1.22	8 20.1	1.97	11.0
24	15 6.0	15 10.7	55 18.8	1.35	55 35.7	1.46	9 9.3	2.12	12.0
25	15 15.7	15 20.8	55 53.8	1.53	56 12.6	1.58	10 2.0	2.25	13.0
26	15 26.0	15 31.3	56 31.9	1.61	56 51.2	1.60	10 57.5	2.34	14.0
27	15 36.5	15 41.5	57 10.3	1.57	57 28.8	1.50	11 54.5	2.36	15.0
28	15 46.3	15 50.7	57 46.3	1.41	58 2.6	1.30	12 51.0	2.32	16.0
29	15 54.7	15 58.3	58 17.5	1.18	58 30.8	1.08	13 45.9	2.23	17.0
30	16 1.5	16 4.2	58 42.3	0.89	58 52.1	0.74	14 38.3	2.14	18.0
31	16 6.4	16 8.1	59 0.1	0.59	59 6.3	0.44	15 28.6	2.07	19.0
32	16 9.3	16 10.0	59 10.6	+0.28	59 13.0	+0.12	16 17.5	2.02	20.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 1.					MONDAY 3.				
0	7 8 40.65	2.3678	N.23 12 57.6	6.988	0	8 58 37.53	2.2067	N.15 22 28.2	12.282
1	7 11 2.64	2.3661	23 6 2.3	6.990	1	9 0 49.96	2.2065	15 10 4.4	12.440
2	7 13 24.46	2.3623	22 58 58.8	7.127	2	9 3 2.20	2.2022	14 57 35.4	12.627
3	7 15 46.11	2.3596	22 51 47.2	7.262	3	9 5 14.25	2.1992	14 45 1.3	12.822
4	7 18 7.60	2.3568	22 44 27.5	7.397	4	9 7 26.12	2.1962	14 32 22.1	12.986
5	7 20 28.92	2.3539	22 36 59.7	7.530	5	9 9 37.80	2.1932	14 19 37.9	12.779
6	7 22 50.07	2.3510	22 29 23.9	7.663	6	9 11 49.29	2.1902	14 6 48.7	12.961
7	7 25 11.04	2.3480	22 21 40.1	7.796	7	9 14 0.60	2.1872	13 53 54.6	12.942
8	7 27 31.83	2.3450	22 13 48.4	7.928	8	9 16 11.74	2.1842	13 40 55.7	13.021
9	7 29 52.44	2.3420	22 5 46.8	8.060	9	9 18 22.71	2.1813	13 27 52.1	13.099
10	7 32 12.87	2.3390	21 57 41.3	8.190	10	9 20 33.51	2.1785	13 14 43.9	13.175
11	7 34 33.11	2.3360	21 49 26.1	8.318	11	9 22 44.14	2.1757	13 1 31.9	13.250
12	7 36 53.16	2.3326	21 41 3.2	8.445	12	9 24 54.60	2.1730	12 48 14.0	13.324
13	7 39 13.02	2.3298	21 32 32.6	8.573	13	9 27 4.90	2.1705	12 34 52.4	13.397
14	7 41 32.68	2.3269	21 23 54.5	8.698	14	9 29 15.04	2.1677	12 21 26.5	13.468
15	7 43 52.14	2.3236	21 15 8.9	8.823	15	9 31 25.02	2.1650	12 7 56.3	13.538
16	7 46 11.40	2.3198	21 6 15.8	8.947	16	9 33 34.84	2.1624	11 54 21.9	13.608
17	7 48 30.46	2.3169	20 57 15.4	9.069	17	9 35 44.51	2.1608	11 40 43.3	13.677
18	7 50 49.32	2.3125	20 48 7.6	9.191	18	9 37 54.03	2.1578	11 27 0.6	13.745
19	7 53 7.96	2.3090	20 38 52.5	9.312	19	9 40 3.40	2.1549	11 13 13.9	13.811
20	7 55 26.39	2.3055	20 29 30.2	9.432	20	9 42 12.63	2.1527	10 59 23.3	13.875
21	7 57 44.61	2.3020	20 20 0.8	9.550	21	9 44 21.72	2.1508	10 45 28.9	13.937
22	8 0 2.62	2.2985	20 10 24.3	9.668	22	9 46 30.67	2.1481	10 31 30.8	13.998
23	8 2 20.42	2.2950	N.20 0 40.7	9.785	23	9 48 39.49	2.1456	N.10 17 29.1	14.058
SUNDAY 2.					TUESDAY 4.				
0	8 4 38.01	2.2915	N.19 50 50.1	9.900	0	9 50 48.19	2.1438	N.10 3 23.8	14.118
1	8 6 55.38	2.2880	19 40 52.7	10.014	1	9 52 56.76	2.1418	9 49 15.0	14.176
2	8 9 12.55	2.2845	19 30 48.4	10.128	2	9 55 5.21	2.1399	9 35 2.7	14.232
3	8 11 29.51	2.2810	19 20 37.3	10.242	3	9 57 13.55	2.1380	9 20 47.0	14.288
4	8 13 46.26	2.2775	19 10 19.4	10.355	4	9 59 21.78	2.1362	9 6 28.1	14.343
5	8 16 2.80	2.2740	18 50 54.8	10.467	5	10 1 29.90	2.1344	8 52 5.9	14.397
6	8 18 19.13	2.2705	18 49 23.5	10.577	6	10 3 37.91	2.1327	8 37 40.5	14.449
7	8 20 35.20	2.2671	18 38 45.6	10.686	7	10 5 45.82	2.1310	8 23 12.0	14.500
8	8 22 51.18	2.2636	18 28 1.2	10.794	8	10 7 53.63	2.1294	8 8 40.5	14.550
9	8 25 6.89	2.2601	18 17 10.4	10.900	9	10 10 1.35	2.1279	7 54 6.1	14.600
10	8 27 22.39	2.2566	18 6 13.3	11.004	10	10 12 8.98	2.1265	7 39 28.9	14.649
11	8 29 37.68	2.2531	17 55 10.0	11.107	11	10 14 16.53	2.1251	7 24 48.9	14.699
12	8 31 52.77	2.2496	17 44 0.6	11.209	12	10 16 23.99	2.1238	7 10 6.2	14.748
13	8 34 7.64	2.2461	17 32 45.0	11.310	13	10 18 31.38	2.1226	6 55 20.9	14.796
14	8 36 22.30	2.2426	17 21 23.4	11.410	14	10 20 38.70	2.1214	6 40 33.0	14.843
15	8 38 36.75	2.2391	17 9 55.8	11.510	15	10 22 45.95	2.1203	6 25 42.6	14.889
16	8 40 50.99	2.2357	16 58 22.3	11.609	16	10 24 53.14	2.1193	6 10 49.8	14.936
17	8 43 5.02	2.2322	16 46 42.9	11.708	17	10 27 0.27	2.1183	5 55 54.8	14.982
18	8 45 18.85	2.2288	16 34 57.7	11.802	18	10 29 7.34	2.1174	5 40 57.6	15.029
19	8 47 32.47	2.2254	16 23 6.7	11.898	19	10 31 14.36	2.1166	5 25 58.2	15.075
20	8 49 45.88	2.2220	16 11 10.0	11.992	20	10 33 21.33	2.1158	5 10 56.7	15.121
21	8 51 59.09	2.2186	15 59 7.7	12.084	21	10 35 28.26	2.1151	4 55 53.2	15.167
22	8 54 12.10	2.2152	15 46 59.9	12.175	22	10 37 35.15	2.1145	4 40 47.8	15.212
23	8 56 24.91	2.2119	15 34 46.7	12.265	23	10 39 42.01	2.1140	4 25 40.6	15.258
24	8 58 37.53	2.2087	N.15 22 28.2	12.353	24	10 41 48.84	2.1135	N. 4 10 31.7	15.303

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 5.					FRIDAY 7.				
0	h. m. s.	s.	° ' "	"	0	h. m. s.	s.	° ' "	"
1	10 41 48.84	2.1126	N. 4 10 31.7	15.163	0	12 24 16.63	2.1896	S. 8 5 3.5	14.946
2	10 43 55.64	2.1131	3 55 21.1	15.190	1	12 26 27.89	2.1898	8 19 59.0	14.905
3	10 46 2.42	2.1136	3 40 8.9	15.217	2	12 28 39.34	2.1928	8 34 52.1	14.864
4	10 48 9.18	2.1136	3 24 55.1	15.243	3	12 30 51.02	2.1964	8 49 42.7	14.822
5	10 50 15.93	2.1136	3 9 39.8	15.267	4	12 33 2.91	2.2006	9 4 30.7	14.778
6	10 52 23.68	2.1136	2 54 23.1	15.289	5	12 35 15.09	2.2066	9 19 16.0	14.732
7	10 54 31.43	2.1136	2 39 5.1	15.310	6	12 37 27.35	2.2073	9 33 58.4	14.683
8	10 56 36.19	2.1136	2 23 45.9	15.330	7	12 39 39.90	2.2110	9 48 37.9	14.633
9	10 58 42.97	2.1131	2 8 25.5	15.349	8	12 41 52.68	2.2148	10 3 14.4	14.583
10	11 0 49.77	2.1136	1 53 4.0	15.367	9	12 44 5.69	2.2188	10 17 47.8	14.531
11	11 2 56.60	2.1140	1 37 41.5	15.383	10	12 46 18.94	2.2226	10 32 18.1	14.478
12	11 5 3.46	2.1145	1 22 18.1	15.397	11	12 48 32.43	2.2266	10 46 45.2	14.423
13	11 7 10.35	2.1150	1 6 53.9	15.410	12	12 50 46.17	2.2310	11 1 8.9	14.367
14	11 9 17.97	2.1156	0 51 29.0	15.422	13	12 53 0.16	2.2358	11 15 29.1	14.309
15	11 11 24.22	2.1162	0 36 3.4	15.432	14	12 55 14.41	2.2406	11 29 45.8	14.247
16	11 13 31.21	2.1169	0 20 37.2	15.441	15	12 57 28.92	2.2466	11 43 58.8	14.185
17	11 15 38.24	2.1176	N. 0 5 10.5	15.449	16	12 59 43.69	2.2489	11 58 8.0	14.121
18	11 17 45.32	2.1184	S. 0 10 16.6	15.455	17	13 1 58.71	2.2526	12 12 13.3	14.056
19	11 19 52.45	2.1190	0 25 44.0	15.460	18	13 4 13.99	2.2566	12 26 14.6	13.997
20	11 21 59.64	2.1203	0 41 11.6	15.462	19	13 6 29.54	2.2613	12 40 11.8	13.938
21	11 24 6.89	2.1212	0 56 39.3	15.463	20	13 8 45.36	2.2658	12 54 4.8	13.877
22	11 26 14.31	2.1226	1 12 7.1	15.463	21	13 11 1.45	2.2704	13 7 53.5	13.815
23	11 28 21.60	2.1236	1 27 35.0	15.463	22	13 13 17.82	2.2750	13 21 37.8	13.751
24	11 30 29.06	2.1248	S. 1 43 2.8	15.463	23	13 15 34.47	2.2797	S.13 35 17.6	13.686
THURSDAY 6.					SATURDAY 8.				
0	11 32 36.65	2.1269	S. 1 58 30.4	15.460	0	13 17 51.40	2.2845	S.13 48 53.8	13.648
1	11 34 44.32	2.1295	2 13 57.8	15.455	1	13 20 8.64	2.2894	14 2 23.3	13.610
2	11 36 52.09	2.1308	2 29 24.9	15.449	2	13 22 26.15	2.2943	14 15 49.1	13.569
3	11 38 59.96	2.1320	2 44 51.6	15.441	3	13 24 43.95	2.2992	14 29 10.1	13.529
4	11 41 7.93	2.1338	3 0 17.8	15.432	4	13 27 2.05	2.3042	14 42 26.2	13.487
5	11 43 16.01	2.1365	3 15 43.4	15.421	5	13 29 20.45	2.3092	14 55 37.4	13.443
6	11 45 24.20	2.1375	3 31 8.3	15.409	6	13 31 39.14	2.3141	15 8 43.5	13.398
7	11 47 32.51	2.1395	3 46 32.4	15.395	7	13 33 58.13	2.3190	15 21 44.4	13.351
8	11 49 40.94	2.1416	4 1 55.6	15.380	8	13 36 17.41	2.3240	15 34 40.0	13.302
9	11 51 49.50	2.1438	4 17 18.0	15.365	9	13 38 37.09	2.3290	15 47 30.2	13.251
10	11 53 58.20	2.1461	4 32 39.4	15.348	10	13 40 56.88	2.3341	16 0 14.9	13.200
11	11 56 7.04	2.1485	4 47 59.7	15.329	11	13 43 17.08	2.3392	16 12 54.0	13.148
12	11 58 16.02	2.1510	5 3 18.8	15.308	12	13 45 37.59	2.3443	16 25 27.4	13.095
13	12 0 25.15	2.1536	5 18 36.6	15.285	13	13 47 58.41	2.3495	16 37 54.9	13.041
14	12 2 34.43	2.1561	5 33 53.0	15.262	14	13 50 19.54	2.3547	16 50 16.5	12.986
15	12 4 43.87	2.1588	5 49 8.0	15.238	15	13 52 40.98	2.3598	17 2 32.1	12.930
16	12 6 53.48	2.1615	6 4 21.5	15.212	16	13 55 2.73	2.3650	17 14 41.5	12.874
17	12 9 3.26	2.1643	6 19 33.4	15.184	17	13 57 24.79	2.3702	17 26 44.6	12.818
18	12 11 13.20	2.1671	6 34 43.6	15.155	18	13 59 47.16	2.3753	17 38 41.3	12.761
19	12 13 23.31	2.1699	6 49 52.0	15.124	19	14 2 9.84	2.3805	17 50 31.5	12.703
20	12 15 33.60	2.1728	7 4 58.5	15.092	20	14 4 32.83	2.3857	18 2 15.1	12.645
21	12 17 44.07	2.1758	7 20 3.0	15.058	21	14 6 56.13	2.3909	18 13 52.1	12.587
22	12 19 54.73	2.1790	7 35 5.4	15.022	22	14 9 19.75	2.3961	18 25 22.4	12.528
23	12 22 5.58	2.1824	7 50 5.6	14.985	23	14 11 43.68	2.4013	18 36 45.8	12.468
24	12 24 16.63	2.1868	S. 8 5 3.5	14.946	24	14 14 7.92	2.4065	S.18 48 2.4	12.408

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
0	h. m. s.	"	° ' "	"	0	h. m. s.	"	° ' "	"
0	14 14 7.92	2.4065	S.18 48 2.4	11.318	0	16 14 47.44	2.5897	S.25 6 17.1	4.086
1	14 16 32.47	2.4117	18 59 12.0	11.101	1	16 17 22.86	2.5910	25 10 17.6	3.923
2	14 18 57.33	2.4168	19 10 14.5	10.983	2	16 19 58.36	2.5922	25 14 7.7	3.760
3	14 21 32.50	2.4220	19 21 9.9	10.862	3	16 22 33.93	2.5933	25 17 47.5	3.577
4	14 23 47.98	2.4272	19 31 58.0	10.740	4	16 25 9.56	2.5943	25 21 16.9	3.403
5	14 26 13.77	2.4323	19 42 38.7	10.617	5	16 27 45.24	2.5950	25 24 35.9	3.230
6	14 28 39.87	2.4375	19 53 12.0	10.493	6	16 30 20.96	2.5956	25 27 44.5	3.057
7	14 31 6.98	2.4426	20 3 37.8	10.367	7	16 32 56.71	2.5960	25 30 42.7	2.883
8	14 33 32.99	2.4477	20 13 56.0	10.239	8	16 35 32.48	2.5963	25 33 30.5	2.710
9	14 36 0.00	2.4527	20 24 6.5	10.110	9	16 38 8.26	2.5965	25 36 7.9	2.537
10	14 38 27.31	2.4577	20 34 9.2	9.979	10	16 40 44.05	2.5966	25 38 34.9	2.363
11	14 40 54.92	2.4626	20 44 4.0	9.847	11	16 43 19.83	2.5968	25 40 51.4	2.189
12	14 43 22.82	2.4675	20 53 50.8	9.713	12	16 45 55.60	2.5969	25 42 57.5	2.015
13	14 45 51.00	2.4723	21 3 29.5	9.577	13	16 48 31.35	2.5969	25 44 53.2	1.841
14	14 48 19.47	2.4770	21 13 0.0	9.439	14	16 51 7.06	2.5968	25 46 38.4	1.667
15	14 50 48.23	2.4817	21 22 22.1	9.299	15	16 53 42.73	2.5964	25 48 13.1	1.492
16	14 53 17.27	2.4863	21 31 35.8	9.158	16	16 56 18.35	2.5962	25 49 37.4	1.318
17	14 55 46.59	2.4910	21 40 41.1	9.017	17	16 58 53.91	2.5959	25 50 51.3	1.145
18	14 58 16.19	2.4956	21 49 37.9	8.875	18	17 1 29.40	2.5950	25 51 54.8	0.972
19	15 0 46.06	2.5001	21 58 26.1	8.732	19	17 4 4.81	2.5944	25 52 47.9	0.798
20	15 3 16.20	2.5045	22 7 5.6	8.587	20	17 6 40.13	2.5937	25 53 30.6	0.625
21	15 5 46.60	2.5088	22 15 36.4	8.440	21	17 9 15.35	2.5929	25 54 2.9	0.452
22	15 8 17.26	2.5132	22 23 58.4	8.292	22	17 11 50.47	2.5924	25 54 24.8	0.279
23	15 10 48.18	2.5175	S.22 32 11.5	8.143	23	17 14 25.48	2.5920	S.25 54 36.4	0.107
MONDAY 10.					WEDNESDAY 12.				
0	15 13 19.35	2.5217	S.22 40 15.7	7.994	0	17 17 0.37	2.5906	S.25 54 37.7	0.084
1	15 15 50.77	2.5257	22 48 10.9	7.844	1	17 19 35.13	2.5798	25 54 28.7	0.233
2	15 18 22.43	2.5296	22 55 57.0	7.692	2	17 22 9.75	2.5790	25 54 9.5	0.406
3	15 20 54.32	2.5334	23 3 33.9	7.538	3	17 24 44.22	2.5782	25 53 40.0	0.577
4	15 23 26.43	2.5371	23 11 1.5	7.383	4	17 27 18.53	2.5776	25 53 0.3	0.747
5	15 25 58.77	2.5408	23 18 19.8	7.227	5	17 29 52.67	2.5770	25 52 10.4	0.917
6	15 28 31.33	2.5444	23 25 28.7	7.069	6	17 32 26.63	2.5764	25 51 10.3	1.086
7	15 31 4.10	2.5479	23 32 28.1	6.910	7	17 35 0.41	2.5761	25 50 0.1	1.254
8	15 33 37.08	2.5513	23 39 17.9	6.750	8	17 37 34.00	2.5759	25 48 39.9	1.421
9	15 36 10.26	2.5547	23 45 58.1	6.589	9	17 40 7.39	2.5758	25 47 9.7	1.587
10	15 38 43.64	2.5579	23 52 28.6	6.427	10	17 42 40.57	2.5752	25 45 29.5	1.753
11	15 41 17.21	2.5610	23 58 49.3	6.264	11	17 45 13.53	2.5747	25 43 39.4	1.919
12	15 43 50.96	2.5640	24 5 0.3	6.101	12	17 47 46.26	2.5742	25 41 39.4	2.082
13	15 46 24.89	2.5668	24 11 1.5	5.938	13	17 50 18.76	2.5737	25 39 29.6	2.244
14	15 48 58.98	2.5695	24 16 52.9	5.774	14	17 52 51.02	2.5732	25 37 10.1	2.405
15	15 51 33.24	2.5722	24 22 34.4	5.609	15	17 55 23.04	2.5726	25 34 41.0	2.566
16	15 54 7.85	2.5747	24 28 6.0	5.443	16	17 57 54.81	2.5720	25 32 2.2	2.727
17	15 56 42.20	2.5770	24 33 27.6	5.277	17	18 0 26.31	2.5715	25 29 13.8	2.887
18	15 59 16.89	2.5792	24 38 39.2	5.110	18	18 2 57.54	2.5710	25 26 15.8	3.047
19	16 1 51.71	2.5813	24 43 40.8	4.943	19	18 5 28.50	2.5707	25 23 8.2	3.206
20	16 4 26.65	2.5833	24 48 32.4	4.776	20	18 7 59.18	2.5700	25 19 51.1	3.364
21	16 7 1.70	2.5850	24 53 13.9	4.607	21	18 10 29.57	2.5693	25 16 24.6	3.520
22	16 9 36.85	2.5867	24 57 45.2	4.437	22	18 12 59.67	2.5685	25 13 46.8	3.675
23	16 12 12.10	2.5883	25 2 6.3	4.266	23	18 15 39.47	2.5681	25 9 3.7	3.829
24	16 14 47.44	2.5897	S.25 6 17.1	4.095	24	18 17 58.96	2.5680	S.25 5 9.4	3.981

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 13.					SATURDAY 15.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	18 17 56.96	2.4888	S.25 5 9.4	2.981	0	20 10 11.98	2.1740	S.19 23 21.0	9.737
1	18 20 28.13	2.4884	25 1 6.0	4.122	1	20 12 21.53	2.1673	19 13 34.9	9.812
2	18 22 56.97	2.4780	24 56 53.6	4.282	2	20 14 31.37	2.1606	19 3 43.7	9.906
3	18 25 25.48	2.4726	24 52 32.2	4.430	3	20 16 40.80	2.1537	18 53 47.5	9.978
4	18 27 53.66	2.4670	24 48 2.0	4.577	4	20 18 49.82	2.1470	18 43 46.4	10.058
5	18 30 21.51	2.4614	24 43 23.0	4.723	5	20 20 58.44	2.1408	18 33 40.5	10.138
6	18 32 49.02	2.4566	24 38 35.3	4.868	6	20 23 6.66	2.1337	18 23 29.8	10.217
7	18 35 16.18	2.4497	24 33 38.9	5.013	7	20 25 14.48	2.1270	18 13 14.4	10.295
8	18 37 42.99	2.4438	24 28 33.9	5.154	8	20 27 21.90	2.1204	18 2 54.4	10.373
9	18 40 9.44	2.4378	24 23 20.4	5.295	9	20 29 28.93	2.1138	17 52 29.9	10.447
10	18 42 35.53	2.4318	24 17 58.5	5.435	10	20 31 35.57	2.1073	17 42 0.9	10.520
11	18 45 1.25	2.4257	24 12 28.1	5.575	11	20 33 41.82	2.1008	17 31 27.6	10.592
12	18 47 26.60	2.4196	24 6 49.4	5.713	12	20 35 47.68	2.0944	17 20 50.0	10.662
13	18 49 51.58	2.4132	24 1 2.5	5.850	13	20 37 53.15	2.0880	17 10 8.2	10.731
14	18 52 16.18	2.4068	23 55 7.5	5.985	14	20 39 58.24	2.0817	16 59 22.3	10.799
15	18 54 40.40	2.4004	23 49 4.4	6.119	15	20 42 2.95	2.0754	16 48 32.4	10.866
16	18 57 4.23	2.3940	23 42 53.3	6.251	16	20 44 7.28	2.0691	16 37 38.5	10.931
17	18 59 27.68	2.3875	23 36 34.3	6.382	17	20 46 11.24	2.0630	16 26 40.8	10.995
18	19 1 50.73	2.3809	23 30 7.5	6.511	18	20 48 14.84	2.0569	16 15 39.2	11.058
19	19 4 13.38	2.3742	23 23 33.0	6.639	19	20 50 18.07	2.0508	16 4 33.9	11.120
20	19 6 35.63	2.3675	23 16 50.9	6.765	20	20 52 20.94	2.0448	15 53 24.9	11.180
21	19 8 57.48	2.3606	23 10 1.3	6.889	21	20 54 23.45	2.0388	15 42 12.3	11.240
22	19 11 18.93	2.3542	23 3 4.3	7.012	22	20 56 25.60	2.0329	15 30 56.2	11.298
23	19 13 39.98	2.3476	S.22 55 59.9	7.135	23	20 58 27.40	2.0270	S.15 19 36.6	11.355
FRIDAY 14.					SUNDAY 16.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	19 16 0.62	2.3407	S.22 48 48.2	7.256	0	21 0 28.85	2.0212	S.15 8 13.6	11.410
1	19 18 20.85	2.3338	22 41 29.2	7.376	1	21 2 29.95	2.0153	14 56 47.3	11.464
2	19 20 40.67	2.3270	22 34 3.1	7.494	2	21 4 30.70	2.0095	14 45 17.7	11.517
3	19 23 0.08	2.3202	22 26 30.0	7.611	3	21 6 31.10	2.0038	14 33 44.9	11.569
4	19 25 19.08	2.3133	22 18 49.9	7.726	4	21 8 31.16	1.9982	14 22 9.1	11.620
5	19 27 37.67	2.3063	22 11 2.9	7.840	5	21 10 30.89	1.9928	14 10 30.2	11.670
6	19 29 55.84	2.2993	22 3 9.1	7.952	6	21 12 30.30	1.9875	13 58 48.4	11.720
7	19 32 13.59	2.2923	21 55 8.6	8.063	7	21 14 29.39	1.9822	13 47 3.6	11.769
8	19 34 30.92	2.2853	21 47 1.5	8.172	8	21 16 28.16	1.9769	13 35 15.9	11.817
9	19 36 47.83	2.2783	21 38 47.9	8.279	9	21 18 26.61	1.9716	13 23 25.4	11.863
10	19 39 4.32	2.2713	21 30 28.0	8.385	10	21 20 24.74	1.9663	13 11 32.2	11.908
11	19 41 20.39	2.2643	21 22 1.7	8.490	11	21 22 22.58	1.9611	12 59 36.3	11.953
12	19 43 36.04	2.2573	21 13 29.1	8.594	12	21 24 20.07	1.9560	12 47 37.7	11.997
13	19 45 51.27	2.2503	21 4 50.3	8.697	13	21 26 17.28	1.9510	12 35 36.8	12.039
14	19 48 6.08	2.2433	20 56 5.4	8.798	14	21 28 14.19	1.9461	12 23 33.1	12.080
15	19 50 20.47	2.2364	20 47 14.5	8.897	15	21 30 10.81	1.9413	12 11 27.2	12.120
16	19 52 34.45	2.2295	20 38 17.8	8.994	16	21 32 7.15	1.9365	11 59 19.0	12.159
17	19 54 48.02	2.2226	20 29 15.3	9.091	17	21 34 3.20	1.9318	11 47 8.5	12.198
18	19 57 1.17	2.2157	20 20 7.0	9.186	18	21 35 58.96	1.9270	11 34 55.8	12.238
19	19 59 13.90	2.2087	20 10 53.0	9.280	19	21 37 54.44	1.9223	11 22 40.9	12.279
20	20 1 26.21	2.2017	20 1 33.4	9.373	20	21 39 49.64	1.9177	11 10 23.9	12.304
21	20 3 38.10	2.1947	19 52 8.3	9.463	21	21 41 44.56	1.9132	10 58 4.8	12.338
22	20 5 49.57	2.1877	19 42 37.8	9.553	22	21 43 39.21	1.9087	10 45 43.7	12.371
23	20 8 0.63	2.1808	19 33 2.0	9.641	23	21 45 33.60	1.9043	10 33 20.5	12.403
24	20 10 11.98	2.1740	S.19 23 21.0	9.727	24	21 47 27.73	1.9001	S.10 20 55.4	12.433

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 17.					WEDNESDAY 19.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	21 47 27.73	1.9001	S. 10 20 55.4	12.483	0	23 15 9.18	1.7818	S. 0 3 48.2	12.800
1	21 49 21.61	1.8990	10 8 28.5	12.463	1	23 16 56.07	1.7812	N. 0 9 11.6	12.805
2	21 51 15.25	1.8980	9 55 59.9	12.462	2	23 18 42.93	1.7807	0 22 11.1	12.809
3	21 53 8.65	1.8980	9 43 29.6	12.530	3	23 20 29.76	1.7802	0 35 10.2	12.812
4	21 55 1.81	1.8940	9 30 57.6	12.547	4	23 22 16.55	1.7797	0 48 8.9	12.815
5	21 56 54.73	1.8901	9 18 24.0	12.573	5	23 24 3.32	1.7798	1 1 7.2	12.808
6	21 58 47.42	1.8763	9 5 48.8	12.609	6	23 25 50.07	1.7790	1 14 5.1	12.811
7	22 0 39.88	1.8725	8 53 12.1	12.625	7	23 27 36.80	1.7786	1 27 2.6	12.814
8	22 2 32.12	1.8688	8 40 33.9	12.650	8	23 29 23.52	1.7786	1 39 59.6	12.816
9	22 4 24.14	1.8642	8 27 54.2	12.674	9	23 31 10.23	1.7785	1 52 56.0	12.815
10	22 6 15.94	1.8617	8 15 13.1	12.697	10	23 32 56.94	1.7785	2 5 51.8	12.811
11	22 8 7.53	1.8592	8 2 30.7	12.718	11	23 34 43.65	1.7786	2 18 46.9	12.812
12	22 9 58.92	1.8548	7 49 47.0	12.736	12	23 36 30.37	1.7786	2 31 41.3	12.800
13	22 11 50.11	1.8518	7 37 2.1	12.766	13	23 38 17.10	1.7790	2 44 34.9	12.808
14	22 13 41.10	1.8482	7 24 16.0	12.778	14	23 40 3.85	1.7788	2 57 27.8	12.813
15	22 15 31.90	1.8450	7 11 28.8	12.797	15	23 41 50.62	1.7797	3 10 19.9	12.802
16	22 17 22.51	1.8420	6 58 40.5	12.814	16	23 43 37.41	1.7801	3 23 11.2	12.808
17	22 19 12.94	1.8390	6 45 51.2	12.831	17	23 45 24.23	1.7806	3 36 1.6	12.833
18	22 21 3.19	1.8360	6 33 0.9	12.847	18	23 47 11.08	1.7812	3 48 51.1	12.818
19	22 22 53.26	1.8330	6 20 9.7	12.862	19	23 48 57.97	1.7819	4 1 39.6	12.802
20	22 24 43.16	1.8302	6 7 17.6	12.876	20	23 50 44.90	1.7826	4 14 27.1	12.795
21	22 26 32.89	1.8275	5 54 24.7	12.890	21	23 52 31.87	1.7834	4 27 13.6	12.788
22	22 28 22.46	1.8248	5 41 31.0	12.902	22	23 54 18.90	1.7843	4 39 59.0	12.780
23	22 30 11.87	1.8222	S. 5 28 36.6	12.914	23	23 56 5.98	1.7842	N. 4 52 43.3	12.771
TUESDAY 18.					THURSDAY 20.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	22 32 1.12	1.8197	S. 5 15 41.4	12.926	0	23 57 53.12	1.7802	N. 5 5 26.5	12.713
1	22 33 50.22	1.8173	5 2 45.5	12.937	1	23 59 40.32	1.7872	5 18 8.6	12.682
2	22 35 39.19	1.8180	4 49 49.0	12.947	2	0 1 27.59	1.7868	5 30 49.5	12.671
3	22 37 28.02	1.8127	4 36 51.9	12.957	3	0 3 14.93	1.7865	5 43 29.1	12.660
4	22 39 16.72	1.8106	4 23 54.2	12.966	4	0 5 2.34	1.7868	5 56 7.4	12.628
5	22 41 5.29	1.8084	4 10 56.0	12.975	5	0 6 49.83	1.7822	6 8 44.4	12.606
6	22 42 53.73	1.8063	3 57 57.3	12.982	6	0 8 37.40	1.7827	6 21 20.1	12.583
7	22 44 42.05	1.8043	3 44 58.2	12.989	7	0 10 25.06	1.7832	6 33 54.4	12.560
8	22 46 30.25	1.8023	3 31 58.7	12.995	8	0 12 12.82	1.7836	6 46 27.3	12.537
9	22 48 18.34	1.8005	3 18 58.9	13.000	9	0 14 0.68	1.7836	6 58 58.7	12.512
10	22 50 6.32	1.7988	3 5 58.8	13.004	10	0 15 48.64	1.8002	7 11 28.6	12.486
11	22 51 54.20	1.7971	2 52 58.5	13.007	11	0 17 36.71	1.8030	7 23 56.9	12.460
12	22 53 41.98	1.7955	2 39 58.0	13.010	12	0 19 24.89	1.8038	7 36 23.7	12.434
13	22 55 29.66	1.7939	2 26 57.3	13.013	13	0 21 13.18	1.8057	7 48 48.9	12.407
14	22 57 17.25	1.7924	2 13 56.4	13.018	14	0 23 1.58	1.8077	8 1 12.4	12.379
15	22 59 4.75	1.7910	2 0 55.3	13.017	15	0 24 50.10	1.8097	8 13 34.3	12.348
16	23 0 52.17	1.7897	1 47 54.2	13.018	16	0 26 38.74	1.8118	8 25 54.2	12.316
17	23 2 39.51	1.7886	1 34 53.1	13.018	17	0 28 27.51	1.8140	8 38 12.4	12.288
18	23 4 26.79	1.7874	1 21 52.0	13.018	18	0 30 16.42	1.8163	8 50 28.8	12.260
19	23 6 14.00	1.7863	1 8 51.0	13.017	19	0 32 5.47	1.8187	9 2 43.3	12.227
20	23 8 1.15	1.7853	0 55 50.1	13.016	20	0 33 54.66	1.8211	9 14 56.0	12.196
21	23 9 48.24	1.7843	0 42 49.3	13.013	21	0 35 44.00	1.8236	9 27 6.8	12.168
22	23 11 35.27	1.7833	0 29 48.7	13.008	22	0 37 33.49	1.8261	9 39 15.7	12.139
23	23 13 22.25	1.7825	0 16 48.3	13.004	23	0 39 23.13	1.8287	9 51 22.5	12.096
24	23 15 9.18	1.7818	S. 0 3 48.2	13.000	24	0 41 12.93	1.8313	N. 10 3 27.3	12.068

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 21.					SUNDAY 23.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	0 41 12.93	1.8818	N.10 3 27.3	12.062	0	2 13 21.86	2.0202	N.18 47 58.6	9.473
1	0 43 2.89	1.8840	10 15 29.9	12.027	1	2 15 23.78	2.0347	18 57 24.7	9.397
2	0 44 53.02	1.8868	10 27 30.4	11.991	2	2 17 26.02	2.0400	19 6 46.2	9.320
3	0 46 43.32	1.8897	10 39 28.7	11.954	3	2 19 28.59	2.0454	19 16 3.1	9.242
4	0 48 33.79	1.8927	10 51 24.8	11.916	4	2 21 31.49	2.0509	19 25 15.3	9.163
5	0 50 24.44	1.8957	11 3 18.6	11.877	5	2 23 34.71	2.0563	19 34 22.7	9.083
6	0 52 15.27	1.8987	11 15 10.0	11.837	6	2 25 38.26	2.0618	19 43 25.2	9.002
7	0 54 6.29	1.9018	11 26 59.1	11.798	7	2 27 42.14	2.0673	19 52 22.8	8.920
8	0 55 57.49	1.9050	11 38 45.8	11.758	8	2 29 46.35	2.0728	20 1 15.5	8.836
9	0 57 48.88	1.9082	11 50 30.1	11.717	9	2 31 50.89	2.0784	20 10 3.2	8.751
10	0 59 40.47	1.9115	12 2 11.9	11.676	10	2 33 55.76	2.0840	20 18 45.7	8.666
11	1 1 32.26	1.9148	12 13 51.2	11.633	11	2 36 0.97	2.0896	20 27 23.1	8.580
12	1 3 24.26	1.9182	12 25 27.9	11.590	12	2 38 6.52	2.0953	20 35 55.3	8.494
13	1 5 16.47	1.9216	12 37 2.0	11.546	13	2 40 12.41	2.1010	20 44 22.3	8.406
14	1 7 8.89	1.9251	12 48 33.5	11.502	14	2 42 18.64	2.1067	20 52 44.0	8.317
15	1 9 1.53	1.9287	13 0 2.3	11.457	15	2 44 25.21	2.1123	21 1 0.3	8.227
16	1 10 54.39	1.9323	13 11 28.3	11.410	16	2 46 32.12	2.1180	21 9 11.2	8.136
17	1 12 47.47	1.9360	13 22 51.5	11.362	17	2 48 39.37	2.1237	21 17 16.6	8.044
18	1 14 40.78	1.9398	13 34 11.7	11.313	18	2 50 46.96	2.1294	21 25 16.4	7.950
19	1 16 34.32	1.9437	13 45 29.0	11.263	19	2 52 54.89	2.1351	21 33 10.5	7.856
20	1 18 28.09	1.9476	13 56 43.3	11.213	20	2 55 3.17	2.1408	21 40 58.9	7.760
21	1 20 22.09	1.9516	14 7 54.6	11.162	21	2 57 11.79	2.1465	21 48 41.5	7.662
22	1 22 16.33	1.9556	14 19 2.8	11.111	22	2 59 20.75	2.1522	21 56 18.3	7.565
23	1 24 10.82	1.9598	N.14 30 7.9	11.058	23	3 1 30.06	2.1580	N.22 3 49.2	7.467
SATURDAY 22.					MONDAY 24.				
0	1 26 5.56	1.9645	N.14 41 9.8	11.005	0	3 3 39.72	2.1638	N.22 11 14.2	7.367
1	1 28 0.56	1.9697	14 52 8.5	10.952	1	3 5 49.73	2.1696	22 18 33.2	7.266
2	1 29 55.81	1.9750	15 3 3.9	10.898	2	3 8 0.08	2.1753	22 25 46.1	7.164
3	1 31 51.32	1.9803	15 13 56.1	10.843	3	3 10 10.77	2.1810	22 32 52.7	7.060
4	1 33 47.09	1.9857	15 24 45.0	10.787	4	3 12 21.80	2.1867	22 39 53.1	6.955
5	1 35 43.12	1.9911	15 35 30.5	10.730	5	3 14 33.17	2.1924	22 46 47.2	6.849
6	1 37 39.42	1.9966	15 46 12.6	10.673	6	3 16 44.88	2.1981	22 53 34.9	6.742
7	1 39 35.99	1.9990	15 56 51.2	10.615	7	3 18 56.94	2.2038	23 0 16.2	6.634
8	1 41 32.83	1.9996	16 7 26.3	10.556	8	3 21 9.34	2.2095	23 6 51.0	6.525
9	1 43 29.95	1.9942	16 17 57.9	10.496	9	3 23 22.08	2.2152	23 13 19.2	6.415
10	1 45 27.34	1.9888	16 28 25.8	10.435	10	3 25 35.16	2.2209	23 19 40.8	6.305
11	1 47 25.01	1.9836	16 38 50.0	10.372	11	3 27 48.58	2.2266	23 25 55.7	6.193
12	1 49 22.97	1.9785	16 49 10.4	10.308	12	3 30 2.34	2.2322	23 32 3.9	6.080
13	1 51 21.23	1.9734	16 59 26.9	10.243	13	3 32 16.44	2.2377	23 38 5.3	5.966
14	1 53 19.78	1.9683	17 9 39.5	10.178	14	3 34 30.87	2.2432	23 43 59.8	5.850
15	1 55 18.63	1.9633	17 19 48.2	10.112	15	3 36 45.62	2.2486	23 49 47.3	5.733
16	1 57 17.78	1.9583	17 29 52.9	10.044	16	3 39 0.70	2.2540	23 55 27.8	5.615
17	1 59 17.23	1.9533	17 39 53.5	9.975	17	3 41 16.11	2.2595	24 1 1.3	5.497
18	2 1 16.98	1.9483	17 49 49.9	9.906	18	3 43 31.85	2.2650	24 6 27.6	5.378
19	2 3 17.03	2.0033	17 59 42.0	9.834	19	3 45 47.91	2.2704	24 11 46.7	5.256
20	2 5 17.38	2.0083	18 9 29.9	9.763	20	3 48 4.30	2.2758	24 16 58.5	5.137
21	2 7 18.04	2.0134	18 19 13.6	9.692	21	3 50 21.01	2.2812	24 22 3.0	5.014
22	2 9 19.00	2.0185	18 28 53.0	9.620	22	3 52 38.04	2.2865	24 27 0.1	4.891
23	2 11 20.27	2.0236	18 38 28.0	9.547	23	3 54 55.39	2.2917	24 31 49.8	4.766
24	2 13 21.86	2.0292	N.18 47 58.6	9.473	24	3 57 13.05	2.2969	N.24 36 32.0	4.640

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 25.					THURSDAY 27.				
	h. m. s.	".	° ' "	"		h. m. s.	".	° ' "	"
0	3 57 13.05	2.3969	N.24 36 32.0	4.640	0	5 51 59.98	2.4499	N.25 38 18.9	2.306
1	3 59 31.02	2.3970	24 41 6.8	4.513	1	5 54 26.99	2.4505	25 35 55.8	2.462
2	4 1 49.29	2.3970	24 45 33.6	4.385	2	5 56 54.04	2.4511	25 33 23.4	2.617
3	4 4 7.86	2.3190	24 49 59.9	4.256	3	5 59 21.12	2.4515	25 30 41.7	2.773
4	4 6 26.73	2.3170	24 54 4.4	4.127	4	6 1 48.22	2.4518	25 27 50.6	2.928
5	4 8 45.89	2.3218	24 58 8.1	3.997	5	6 4 15.34	2.4520	25 24 50.2	3.083
6	4 11 5.34	2.3265	25 2 3.9	3.865	6	6 6 42.46	2.4520	25 21 40.5	3.238
7	4 13 25.07	2.3312	25 5 51.8	3.732	7	6 9 9.58	2.4520	25 18 21.5	3.393
8	4 15 45.08	2.3358	25 9 31.8	3.600	8	6 11 36.69	2.4518	25 14 53.9	3.548
9	4 18 5.37	2.3405	25 13 3.7	3.468	9	6 14 3.79	2.4515	25 11 15.6	3.703
10	4 20 25.94	2.3451	25 16 27.5	3.338	10	6 16 30.87	2.4512	25 7 28.7	3.858
11	4 22 46.78	2.3496	25 19 43.1	3.192	11	6 18 57.93	2.4508	25 3 32.5	4.013
12	4 25 7.89	2.3540	25 23 50.5	3.045	12	6 21 24.96	2.4502	24 59 27.0	4.168
13	4 27 29.26	2.3583	25 25 49.7	2.918	13	6 23 51.95	2.4495	24 55 12.3	4.323
14	4 29 50.89	2.3626	25 28 40.6	2.790	14	6 26 18.90	2.4488	24 50 48.4	4.476
15	4 32 12.78	2.3668	25 31 23.2	2.640	15	6 28 45.80	2.4480	24 46 15.2	4.630
16	4 34 34.92	2.3709	25 33 57.3	2.499	16	6 31 12.65	2.4470	24 41 32.8	4.783
17	4 36 57.30	2.3749	25 36 23.0	2.368	17	6 33 39.44	2.4459	24 36 41.2	4.936
18	4 39 19.91	2.3788	25 38 40.2	2.216	18	6 36 6.16	2.4447	24 31 40.4	5.088
19	4 41 42.75	2.3826	25 40 48.9	2.073	19	6 38 32.80	2.4433	24 26 30.6	5.240
20	4 44 5.82	2.3863	25 42 49.0	1.980	20	6 40 59.36	2.4418	24 21 11.7	5.391
21	4 46 29.11	2.3899	25 44 40.5	1.788	21	6 43 25.82	2.4402	24 15 43.7	5.543
22	4 48 52.61	2.3935	25 46 23.3	1.641	22	6 45 52.19	2.4386	24 10 6.6	5.695
23	4 51 16.32	2.3970	N.25 47 57.4	1.495	23	6 48 18.46	2.4370	N.24 4 20.5	5.848
WEDNESDAY 26.					FRIDAY 28.				
	h. m. s.	".	° ' "	"		h. m. s.	".	° ' "	"
0	4 53 40.24	2.4004	N.25 49 22.7	1.349	0	6 50 44.63	2.4353	N.23 58 25.4	5.003
1	4 56 4.36	2.4037	25 50 39.2	1.202	1	6 53 10.70	2.4355	23 52 21.4	6.142
2	4 58 28.67	2.4068	25 51 46.9	1.054	2	6 55 36.65	2.4315	23 46 8.5	6.290
3	5 0 53.17	2.4098	25 52 45.8	0.906	3	6 58 2.48	2.4295	23 39 46.7	6.437
4	5 3 17.85	2.4128	25 53 35.8	0.757	4	7 0 28.18	2.4273	23 33 16.1	6.583
5	5 5 42.71	2.4168	25 54 16.7	0.607	5	7 2 53.75	2.4250	23 26 36.8	6.729
6	5 8 7.75	2.4187	25 54 48.6	0.457	6	7 5 19.18	2.4227	23 19 48.7	6.875
7	5 10 32.96	2.4215	25 55 11.5	0.307	7	7 7 44.47	2.4204	23 12 51.9	7.020
8	5 12 58.33	2.4241	25 55 25.4	0.156	8	7 10 9.62	2.4180	23 5 46.4	7.164
9	5 15 23.85	2.4265	25 55 30.2	0.005	9	7 12 34.62	2.4155	22 58 32.3	7.307
10	5 17 49.51	2.4287	25 55 25.9	0.147	10	7 14 59.47	2.4129	22 51 9.6	7.450
11	5 20 15.29	2.4308	25 55 12.5	0.300	11	7 17 24.16	2.4102	22 43 38.3	7.592
12	5 22 41.20	2.4328	25 54 49.9	0.453	12	7 19 48.69	2.4074	22 35 58.5	7.733
13	5 25 7.23	2.4348	25 54 18.1	0.607	13	7 22 13.04	2.4045	22 28 10.3	7.872
14	5 27 33.38	2.4367	25 53 37.1	0.760	14	7 24 37.22	2.4016	22 20 13.8	8.009
15	5 29 59.65	2.4386	25 52 46.9	0.913	15	7 27 1.23	2.3987	22 12 9.1	8.145
16	5 32 26.02	2.4403	25 51 47.5	1.067	16	7 29 25.06	2.3957	22 3 56.2	8.282
17	5 34 52.49	2.4420	25 50 38.9	1.220	17	7 31 48.71	2.3927	21 55 35.1	8.419
18	5 37 19.05	2.4435	25 49 21.1	1.374	18	7 34 12.18	2.3896	21 47 5.8	8.555
19	5 39 45.70	2.4448	25 47 54.0	1.528	19	7 36 35.46	2.3864	21 38 28.4	8.690
20	5 42 12.43	2.4461	25 46 17.6	1.683	20	7 38 58.55	2.3831	21 29 43.0	8.824
21	5 44 39.23	2.4472	25 44 31.9	1.838	21	7 41 21.44	2.3798	21 20 49.6	8.957
22	5 47 6.09	2.4482	25 42 36.9	1.992	22	7 43 44.13	2.3765	21 11 48.3	9.088
23	5 49 33.01	2.4491	25 40 32.6	2.150	23	7 46 6.62	2.3733	21 2 39.1	9.218
24	5 51 59.98	2.4499	N.25 38 18.9	2.306	24	7 48 28.91	2.3698	N.20 53 22.1	9.347

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 29.					MONDAY 31.				
	h. m. s.	s.	° ' "	"		h. m. s.	s.	° ' "	"
0	7 48 28.91	2.3668	N.20 53 22.1	9.347	0	9 37 59.93	2.1973	N.11 19 40.9	14.043
1	7 50 50.99	2.3663	20 43 57.4	9.476	1	9 40 11.67	2.1942	11 5 36.4	14.107
2	7 53 12.86	2.3628	20 34 25.0	9.608	2	9 42 23.23	2.1912	10 51 28.1	14.169
3	7 55 34.52	2.3568	20 24 45.0	9.728	3	9 44 34.61	2.1862	10 37 16.1	14.230
4	7 57 55.97	2.3558	20 14 57.6	9.892	4	9 46 45.81	2.1868	10 23 0.5	14.290
5	8 0 17.21	2.3522	20 5 2.8	9.976	5	9 48 56.85	2.1895	10 8 41.4	14.348
6	8 2 38.23	2.3485	19 55 0.7	10.097	6	9 51 7.72	2.1797	9 54 18.8	14.404
7	8 4 59.03	2.3448	19 44 51.3	10.217	7	9 53 18.42	2.1770	9 39 52.9	14.459
8	8 7 19.61	2.3411	19 34 34.7	10.337	8	9 55 28.96	2.1743	9 25 23.8	14.512
9	8 9 39.97	2.3374	19 24 11.0	10.456	9	9 57 39.34	2.1717	9 10 51.6	14.563
10	8 12 0.10	2.3337	19 13 40.2	10.572	10	9 59 49.57	2.1692	8 56 16.3	14.613
11	8 14 20.01	2.3300	19 3 2.4	10.688	11	10 1 59.65	2.1668	8 41 38.0	14.662
12	8 16 39.70	2.3263	18 52 17.7	10.803	12	10 4 9.59	2.1645	8 26 56.8	14.710
13	8 18 59.17	2.3226	18 41 26.1	10.917	13	10 6 19.39	2.1622	8 12 12.8	14.757
14	8 21 18.41	2.3189	18 30 27.7	11.030	14	10 8 29.05	2.1609	7 57 26.1	14.802
15	8 23 37.42	2.3150	18 19 22.6	11.142	15	10 10 38.58	2.1577	7 42 36.7	14.845
16	8 25 56.20	2.3112	18 8 10.8	11.262	16	10 12 47.98	2.1556	7 27 44.7	14.887
17	8 28 14.75	2.3073	17 56 52.4	11.380	17	10 14 57.25	2.1534	7 12 50.2	14.929
18	8 30 33.07	2.3035	17 45 27.5	11.467	18	10 17 6.39	2.1513	6 57 53.2	14.970
19	8 32 51.16	2.2997	17 33 56.3	11.573	19	10 19 15.41	2.1492	6 42 53.8	15.009
20	8 35 9.02	2.2958	17 22 18.8	11.677	20	10 21 24.31	2.1474	6 27 52.1	15.047
21	8 37 26.65	2.2920	17 10 35.1	11.780	21	10 23 33.10	2.1456	6 12 48.2	15.083
22	8 39 44.05	2.2882	16 58 45.3	11.882	22	10 25 41.79	2.1439	5 57 42.2	15.117
23	8 42 1.22	2.2844	N.16 46 49.4	11.982	23	10 27 50.38	2.1423	N. 5 42 34.3	15.148
SUNDAY 30.					TUESDAY, JANUARY 1, 1861.				
0	8 44 18.17	2.2806	N.16 34 47.5	12.082	0	10 29 58.87	2.1407	N. 5 27 24.5	15.178
1	8 46 34.89	2.2768	16 22 39.7	12.180					
2	8 48 51.38	2.2730	16 10 26.0	12.277					
3	8 51 7.65	2.2692	15 58 6.6	12.372					
4	8 53 23.70	2.2657	15 45 41.5	12.466					
5	8 55 39.53	2.2620	15 33 10.8	12.558					
6	8 57 55.14	2.2583	15 20 34.6	12.648					
7	9 0 10.53	2.2547	15 7 53.0	12.737					
8	9 2 25.70	2.2510	14 55 6.1	12.825					
9	9 4 40.65	2.2473	14 42 14.0	12.912					
10	9 6 55.38	2.2437	14 29 16.8	12.997					
11	9 9 9.89	2.2400	14 16 14.5	13.081					
12	9 11 24.18	2.2364	14 3 7.2	13.163					
13	9 13 38.26	2.2329	13 49 55.0	13.243					
14	9 15 52.13	2.2295	13 36 38.0	13.323					
15	9 18 5.80	2.2262	13 23 16.3	13.402					
16	9 20 19.27	2.2228	13 9 49.9	13.479					
17	9 22 32.54	2.2194	12 56 18.9	13.554					
18	9 24 45.60	2.2160	12 42 43.4	13.628					
19	9 26 58.46	2.2127	12 29 3.5	13.701					
20	9 29 11.13	2.2095	12 15 19.2	13.773					
21	9 31 23.61	2.2064	12 1 30.7	13.843					
22	9 33 35.90	2.2033	11 47 38.1	13.911					
23	9 35 48.01	2.2003	11 33 41.5	13.978					
24	9 37 59.93	2.1973	N.11 19 40.9	14.043					

PHASES OF THE MOON.

	Day. h. m.
☾ Last Quarter, . . .	5 6 0.8
● New Moon, . . .	12 0 48.5
☽ First Quarter, . . .	19 18 9.8
○ Full Moon, . . .	27 15 17.4

	Day. h.
☾ Perigee,	8 8.0
☾ Apogee,	20 7.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	α Arietis W.	70 12 13	2664	71 51 58	2556	73 31 54	2648	75 12 0	2640
	Aldebaran W.	38 20 3	2669	39 56 58	2673	41 34 16	2655	43 11 57	2640
	Jupiter E.	41 4 27	2680	39 25 4	2573	37 45 32	2668	36 5 53	2661
	Regulus E.	42 9 26	2668	40 29 40	2667	38 49 46	2651	37 9 44	2645
	Saturn E.	53 28 31	2667	51 49 18	2680	50 9 56	2675	48 30 27	2669
	Spica E.	96 10 45	2663	94 30 45	2645	92 50 34	2638	91 10 13	2580
2	α Arietis W.	83 35 12	2602	85 16 22	2486	86 57 41	2480	88 39 10	2482
	Aldebaran W.	51 25 1	2577	53 4 28	2566	54 44 10	2555	56 24 7	2545
	Saturn E.	40 11 5	2644	38 30 53	2541	36 50 37	2638	35 10 16	2536
	Spica E.	82 45 51	2496	81 4 28	2487	79 22 56	2480	77 41 14	2473
	Venus E.	93 38 4	2631	92 6 24	2624	90 34 35	2615	89 2 35	2608
	SUN E.	131 28 25	2640	129 54 49	2592	128 21 3	2625	126 47 7	2615
3	α Arietis W.	97 9 2	2448	98 51 29	2441	100 34 5	2434	102 16 51	2428
	Aldebaran W.	64 47 14	2486	66 28 30	2490	68 9 57	2492	69 51 36	2474
	Spica E.	69 10 19	2489	67 27 40	2432	65 44 51	2426	64 1 53	2419
	Venus E.	81 20 14	2670	79 47 17	2664	78 14 12	2658	76 40 59	2650
	SUN E.	118 54 43	2776	117 19 43	2769	115 44 34	2760	114 9 14	2738
	4	Aldebaran W.	78 22 33	2436	80 5 17	2429	81 48 10	2423	83 31 12	2417
Pollux W.		36 20 7	2455	38 2 24	2443	39 44 57	2431	41 27 47	2422
Spica E.		55 24 49	2389	53 40 68	2383	51 56 59	2377	50 12 51	2371
Venus E.		68 52 40	2618	67 18 35	2613	65 44 23	2606	64 10 3	2599
SUN E.		106 10 12	2716	104 33 54	2710	102 57 28	2703	101 20 52	2696
5		Aldebaran W.	92 8 39	2385	93 52 35	2380	95 36 38	2375	97 20 49	2369
	Pollux W.	50 5 26	2375	51 49 37	2367	53 23 59	2360	55 18 32	2353
	Spica E.	41 30 11	2344	39 45 16	2339	38 0 14	2336	36 15 7	2331
	Venus E.	56 16 31	2773	54 41 28	2769	53 6 19	2765	51 31 5	2762
	SUN E.	93 15 35	2663	91 38 5	2657	90 0 27	2649	88 22 39	2644
	6	Pollux W.	64 3 54	2318	65 49 27	2312	67 35 9	2307	69 20 59	2301
Jupiter W.		28 2 9	2330	29 47 25	2321	31 32 54	2312	33 18 36	2304
Regulus W.		27 2 7	2320	28 47 38	2311	30 33 29	2302	32 19 18	2296
Venus E.		43 33 48	2747	41 58 11	2747	40 22 33	2746	38 46 54	2747
SUN E.		80 11 38	2614	78 33 2	2606	76 54 18	2604	75 15 28	2599
7		Pollux W.	78 12 4	2277	79 58 37	2273	81 45 16	2269	83 32 1	2266
	Jupiter W.	42 9 40	2273	43 56 19	2268	45 43 6	2264	47 29 59	2259
	Regulus W.	41 11 26	2266	42 58 16	2260	44 45 14	2256	46 32 18	2252
	Saturn W.	30 6 11	2328	31 51 30	2317	33 37 4	2309	35 22 51	2300
	SUN E.	66 59 35	2575	65 20 0	2571	63 40 31	2568	62 0 52	2565
	8	Pollux W.	92 26 51	2253	94 13 59	2252	96 1 9	2251	97 48 21	2250
Jupiter W.		56 25 52	2243	58 13 15	2241	60 0 42	2239	61 48 12	2237
Regulus W.		55 29 0	2237	57 16 32	2235	59 4 8	2233	60 51 46	2233
Saturn W.		44 14 28	2270	46 1 11	2266	47 48 1	2263	49 34 55	2261
SUN E.		53 41 38	2658	52 1 38	2652	50 21 37	2651	48 41 34	2650
9		Jupiter W.	70 46 1	2226	72 33 35	2227	74 21 7	2229	76 8 37	2240
	Regulus W.	69 50 14	2232	71 37 54	2232	73 25 34	2234	75 13 11	2226
	Saturn W.	58 30 9	2255	60 17 15	2255	62 4 21	2256	63 51 26	2267
	SUN E.	40 21 19	2654	38 41 21	2556	37 1 26	2559	35 21 35	2562

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	α Arietis W.	76 52 18	2632	78 32 46	2625	80 13 25	2618	81 54 13	2610
	Aldebaran W.	44 49 57	2626	46 28 17	2612	48 6 55	2600	49 45 50	2588
	Jupiter E.	34 26 5	2566	32 46 10	2553	31 6 9	2548	29 26 3	2545
	Regulus E.	35 29 34	2639	33 49 15	2634	32 8 49	2629	30 28 16	2626
	Saturn E.	46 50 49	2663	45 11 3	2558	43 31 10	2553	41 51 10	2549
	Spica E.	89 29 41	2622	87 48 59	2615	86 8 6	2607	84 27 3	2600
2	α Arietis W.	90 20 49	2674	92 2 39	2667	93 44 38	2661	95 26 46	2655
	Aldebaran W.	58 4 18	2635	59 44 42	2626	61 25 20	2616	63 6 11	2607
	Saturn E.	33 29 53	2634	31 49 27	2635	30 9 2	2635	28 28 37	2638
	Spica E.	75 59 22	2465	74 17 20	2469	72 35 9	2468	70 52 49	2465
	Venus E.	87 30 26	2600	85 58 7	2603	84 25 39	2605	82 53 1	2678
	SUN E.	125 12 59	2607	123 38 40	2600	122 4 12	2792	120 29 33	2768
3	α Arietis W.	103 59 46	2422	105 42 50	2415	107 26 4	2408	109 9 27	2408
	Aldebaran W.	71 33 26	2465	73 15 27	2456	74 57 39	2451	76 40 1	2444
	Spica E.	62 18 46	2413	60 35 30	2407	58 52 5	2401	57 8 31	2395
	Venus E.	75 7 36	2644	73 34 5	2636	72 0 25	2631	70 26 37	2624
	SUN E.	112 33 45	2747	110 58 7	2739	109 22 19	2732	107 46 21	2723
	4	Aldebaran W.	85 14 23	2410	86 57 43	2408	88 41 13	2397	90 24 52	2391
Pollux W.		43 10 51	2411	44 54 10	2401	46 37 43	2392	48 21 29	2384
Spica E.		48 28 34	2366	46 44 10	2360	44 59 38	2355	43 14 59	2349
Venus E.		62 35 34	2795	61 0 59	2788	59 26 15	2784	57 51 27	2779
SUN E.		99 44 7	2669	98 7 13	2663	96 30 10	2675	94 52 57	2669
5		Aldebaran W.	99 5 8	2664	100 49 34	2669	102 34 7	2655	104 18 47	2650
	Pollux W.	57 3 15	2344	58 48 10	2337	60 33 15	2331	62 18 30	2324
	Spica E.	34 29 53	2328	32 44 34	2324	30 59 9	2322	29 13 41	2320
	Venus E.	49 55 47	2767	48 20 23	2754	46 44 55	2751	45 9 23	2749
	SUN E.	86 44 44	2638	85 6 40	2630	83 28 26	2626	81 50 6	2620
	6	Pollux W.	71 6 57	2266	72 53 3	2261	74 39 16	2256	76 25 37	2251
Jupiter W.		35 4 29	2297	36 50 33	2291	38 36 46	2284	40 23 9	2279
Regulus W.		34 5 25	2268	35 51 42	2262	37 38 8	2276	39 24 43	2270
Venus E.		37 11 16	2748	35 35 40	2751	34 0 8	2755	32 24 41	2761
SUN E.		73 36 30	2663	71 57 26	2668	70 18 15	2664	68 38 58	2660
7		Pollux W.	85 18 51	2263	87 5 45	2260	88 52 44	2256	90 39 46	2256
	Jupiter W.	49 16 59	2266	51 4 4	2261	52 51 16	2248	54 38 32	2245
	Regulus W.	48 19 28	2249	50 6 43	2245	51 54 4	2241	53 41 30	2239
	Saturn W.	37 8 50	2292	38 55 1	2285	40 41 22	2280	42 27 51	2274
	SUN E.	60 21 9	2662	58 41 22	2669	57 1 30	2667	55 21 36	2664
	8	Pollux W.	99 35 34	2260	101 22 47	2260	103 10 0	2261	104 57 12	2262
Jupiter W.		63 35 44	2237	65 23 16	2237	67 10 51	2237	68 58 26	2237
Regulus W.		62 39 26	2231	64 27 7	2230	66 14 50	2231	68 2 31	2230
Saturn W.		51 21 52	2268	53 8 53	2266	54 55 57	2266	56 43 2	2264
SUN E.		47 1 30	2660	45 21 26	2660	43 41 22	2661	42 1 20	2662
9		Jupiter W.	77 56 5	2243	79 43 29	2245	81 30 49	2248	83 18 5	2251
	Regulus W.	77 0 45	2239	78 48 15	2241	80 35 42	2245	82 23 3	2247
	Saturn W.	65 38 29	2239	67 25 29	2261	69 12 26	2264	70 59 19	2267
	SUN E.	33 41 48	2666	32 2 7	2672	30 22 33	2677	28 43 7	2668

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			o	i	"		o	i	"		o	i	"		o	i	"	
14	SUN	W.	24	40	21	2956	26	11	29	2969	27	42	19	2963	29	12	54	2997
	Mars	E.	58	0	32	2933	56	26	47	2949	54	53	23	2966	53	20	21	2983
	α Pegasi	E.	65	50	30	2766	64	15	17	2785	62	40	30	2906	61	6	9	2926
	α Arietis	E.	108	3	55	2969	106	24	59	2614	104	46	23	2928	103	8	6	2643
15	SUN	W.	36	41	12	3072	38	9	56	3057	39	38	22	3102	41	6	29	3119
	Mars	E.	45	40	37	2970	44	9	47	2986	42	39	17	3006	41	9	11	3022
	α Pegasi	E.	53	21	33	2943	51	50	9	2969	50	19	17	2966	48	48	59	3024
	α Arietis	E.	95	1	45	2718	93	25	29	2732	91	49	32	2747	90	13	55	2763
16	SUN	W.	48	22	26	3108	49	48	44	3207	51	14	45	3221	52	40	29	3236
	Mars	E.	33	44	13	3115	32	16	22	3133	30	48	53	3156	29	21	50	3173
	α Pegasi	E.	41	26	39	3186	40	0	13	3224	38	34	33	3266	37	9	41	3309
	α Arietis	E.	82	20	35	2633	80	46	50	2847	79	13	23	2861	77	40	14	2875
17	SUN	W.	59	45	6	3801	61	9	16	3814	62	33	11	3825	63	56	53	3837
	α Arietis	E.	69	58	42	2939	68	27	12	2949	66	55	55	2992	65	24	54	2971
	Aldebaran	E.	102	29	39	2978	100	58	59	2969	99	28	33	3000	97	58	20	3009
18	SUN	W.	70	52	15	3887	72	14	46	3896	73	37	7	3405	74	59	16	3414
	α Aquilæ	W.	44	5	25	4851	45	11	31	4288	46	18	35	4284	47	26	29	4168
	α Arietis	E.	57	53	4	3022	56	23	19	3031	54	53	45	3039	53	24	21	3048
	Aldebaran	E.	90	30	17	3066	89	1	14	3065	87	32	22	3073	86	3	39	3079
19	SUN	W.	81	48	8	3446	83	9	33	3450	84	30	53	3454	85	52	9	3487
	α Aquilæ	W.	53	16	44	3969	54	28	34	3960	55	40	53	3933	56	53	39	3906
	α Arietis	E.	45	59	48	3084	44	31	19	3091	43	2	58	3096	41	34	44	3101
	Aldebaran	E.	78	42	10	3113	77	14	15	3116	75	46	25	3122	74	18	42	3125
20	SUN	W.	92	37	38	3468	93	58	38	3469	95	19	37	3469	96	40	36	3468
	α Aquilæ	W.	63	3	29	3802	64	18	29	3785	65	33	47	3768	66	49	22	3723
	Fomalhaut	W.	38	59	57	4254	40	7	32	4185	41	16	12	4130	42	25	54	4092
	α Arietis	E.	34	15	11	3128	32	47	35	3132	31	20	5	3138	29	52	40	3142
Aldebaran	E.	67	1	15	3142	65	33	56	3144	64	6	40	3145	62	39	25	3148	
21	SUN	W.	103	25	55	3456	104	47	8	3458	106	8	25	3449	107	29	46	3444
	α Aquilæ	W.	73	11	13	3683	74	28	18	3671	75	45	36	3660	77	3	6	3648
	Fomalhaut	W.	48	27	19	3692	49	41	48	3796	50	56	54	3792	52	12	36	3729
	Mars	W.	23	52	26	3417	25	14	23	3406	26	36	33	3394	27	58	56	3384
	Aldebaran	E.	55	23	32	3150	53	56	22	3150	52	29	12	3150	51	2	3	3148
Pollux	E.	97	11	58	3683	95	43	40	3670	94	15	18	3660	92	46	51	3648	
22	SUN	W.	114	18	7	3413	115	40	9	3405	117	2	20	3396	118	24	41	3386
	α Aquilæ	W.	83	33	40	3594	84	52	21	3585	86	11	12	3676	87	30	13	3566
	Fomalhaut	W.	58	39	3	3592	59	57	46	3667	61	16	56	3645	62	36	31	3523
	Mars	W.	34	53	58	3829	36	17	36	3818	37	41	27	3806	39	5	31	3296
	Aldebaran	E.	43	46	2	3148	42	18	50	3147	40	51	37	3146	39	24	23	3148
	Pollux	E.	85	23	1	3052	83	53	53	3046	82	24	37	3039	80	55	12	3031
23	SUN	W.	125	18	59	3839	126	42	25	3829	128	6	3	3817	129	29	55	3806
	Fomalhaut	W.	69	20	17	3423	70	42	9	3403	72	4	22	3385	73	26	56	3368
	α Pegasi	W.	46	53	51	3228	48	19	15	3216	49	45	5	3198	51	11	21	3172
	Mars	W.	46	8	59	3340	47	34	21	3228	48	59	57	3217	50	25	46	3204
	Pollux	E.	73	25	38	2988	71	55	10	2979	70	24	31	2969	68	53	40	2969
	Jupiter	E.	109	13	31	2956	107	42	23	2945	106	11	1	2935	104	39	26	2924

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
14	SUN	W.	30 43 11	3012	32 13 9	3027	33 42 48	3042	35 12 9	3056
	Mars	E.	51 47 40	2901	50 15 22	2917	48 43 25	2935	47 11 50	2952
	α Pegasi	E.	59 32 15	2849	57 58 50	2870	56 25 54	2894	54 53 28	2918
	α Arietis	E.	101 30 10	2666	99 52 34	2673	98 15 18	2687	96 38 21	2708
15	SUN	W.	42 34 17	3133	44 1 46	3148	45 28 57	3163	46 55 50	3178
	Mars	E.	39 39 26	3043	38 10 5	3059	36 41 5	3077	35 12 27	3096
	α Pegasi	E.	47 19 16	3063	45 50 9	3083	44 21 39	3116	42 53 49	3149
	α Arietis	E.	88 38 37	2777	87 3 39	2791	85 28 59	2805	83 54 38	2819
16	SUN	W.	54 5 56	3250	55 31 6	3263	56 56 1	3276	58 20 41	3288
	Mars	E.	27 55 9	3196	26 28 55	3219	25 3 8	3240	23 37 46	3266
	α Pegasi	E.	35 45 40	3268	34 22 36	3411	33 0 32	3470	31 39 34	3532
	α Arietis	E.	76 7 23	2988	74 34 49	2901	73 2 31	2913	71 30 28	2926
17	SUN	W.	65 20 22	3348	66 43 38	3366	68 6 42	3389	69 29 34	3379
	α Arietis	E.	63 54 5	2968	62 23 31	2998	60 53 9	3004	59 23 1	3013
	Aldebaran	E.	96 28 19	3030	94 58 31	3080	93 28 56	3089	91 59 31	3047
18	SUN	W.	76 21 19	3421	77 43 12	3427	79 4 58	3434	80 26 36	3439
	α Aquilæ	W.	48 35 11	4137	49 44 37	4077	50 54 42	4054	52 5 26	4022
	α Arietis	E.	51 55 8	3066	50 26 5	3064	48 57 11	3070	47 28 25	3078
	Aldebaran	E.	84 35 4	3067	83 6 39	3063	81 38 21	3101	80 10 13	3106
19	SUN	W.	87 13 21	3461	88 34 29	3463	89 55 34	3466	91 16 37	3467
	α Aquilæ	W.	58 6 51	3863	59 20 28	3861	60 34 27	3840	61 48 48	3820
	α Arietis	E.	40 6 36	3107	38 38 35	3112	37 10 40	3116	35 42 52	3126
	Aldebaran	E.	72 51 3	3130	71 23 30	3138	69 56 1	3138	68 28 37	3139
20	SUN	W.	98 1 36	3468	99 22 37	3466	100 43 40	3463	102 4 46	3460
	α Aquilæ	W.	68 5 14	3737	69 21 22	3723	70 37 45	3709	71 54 22	3696
	Fomalhaut	W.	43 36 33	4008	44 48 5	3959	46 0 25	3914	47 13 31	3872
	α Arietis	E.	28 25 21	3148	26 58 9	3153	25 31 3	3158	24 4 3	3164
	Aldebaran	E.	61 12 13	3148	59 45 1	3149	58 17 51	3149	56 50 41	3150
21	SUN	W.	108 51 12	3428	110 12 46	3423	111 34 26	3426	112 56 13	3420
	α Aquilæ	W.	78 20 49	3636	79 38 44	3626	80 56 51	3614	82 15 10	3604
	Fomalhaut	W.	53 28 52	3992	54 45 40	3977	56 2 59	3944	57 20 47	3916
	Mars	W.	29 21 31	3872	30 44 19	3892	32 7 19	3861	33 30 32	3839
	Aldebaran	E.	49 34 52	3148	48 7 41	3148	46 40 28	3148	45 13 16	3147
	Pollux	E.	91 18 18	2636	89 49 39	2626	88 20 53	2614	86 52 1	2604
22	SUN	W.	119 47 11	3379	121 9 51	3369	122 39 43	3360	123 55 45	3350
	α Aquilæ	W.	88 49 24	3657	90 8 45	3649	91 28 15	3640	92 47 55	3633
	Fomalhaut	W.	63 56 30	3801	65 16 53	3690	66 37 39	3660	67 58 48	3642
	Mars	W.	40 29 47	3286	41 54 15	3276	43 18 56	3263	44 43 51	3262
	Aldebaran	E.	37 57 12	3151	36 30 4	3153	35 2 59	3158	33 36 0	3162
	Pollux	E.	79 25 38	2622	77 55 53	2616	76 25 59	2606	74 55 54	2597
23	SUN	W.	130 54 0	3294	132 18 18	3282	133 42 51	3270	135 7 38	3260
	Fomalhaut	W.	74 49 49	3861	76 13 2	3833	77 36 35	3819	79 0 26	3801
	α Pegasi	W.	52 38 3	3192	54 5 10	3139	55 32 42	3113	57 0 38	3098
	Mars	W.	51 51 51	3191	53 18 11	3178	54 44 46	3166	56 11 36	3163
	Pollux	E.	67 22 36	2949	65 51 19	2930	64 19 49	2928	62 48 6	2918
	Jupiter	E.	103 7 38	2912	101 35 35	2902	100 3 19	2890	98 30 47	2879

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIST.	III ^h .	P. L. of DIST.	VI ^h .	P. L. of DIST.	IX ^h .	P. L. of DIST.
24	Fomalhaut W.	80 24 36	2886	81 49 4	2870	83 13 51	2827	84 38 53	2848
	α Pegasi W.	58 28 55	2078	59 57 37	2064	61 26 41	2088	62 56 7	2030
	Mars W.	57 38 42	2129	59 6 4	2127	60 33 41	2112	62 1 36	2059
	Pollux E.	61 16 10	2907	59 44 0	2896	58 11 36	2885	56 38 58	2874
	Jupiter E.	96 58 1	2866	95 24 59	2865	93 51 42	2841	92 18 8	2830
	Regulus E.	98 6 25	2877	96 33 37	2866	95 0 34	2864	93 27 16	2842
25	α Pegasi W.	70 28 41	2925	72 0 15	2920	73 32 8	2905	75 4 22	2888
	Mars W.	69 25 20	2929	70 54 57	2918	72 24 50	2900	73 55 3	2898
	α Arietis W.	26 59 6	2842	28 32 40	2822	30 6 39	2802	31 41 4	2785
	Pollux E.	48 52 18	2821	47 18 17	2811	45 44 3	2800	44 9 35	2790
	Jupiter E.	84 26 13	2766	82 51 0	2758	81 15 30	2739	79 39 42	2726
	Regulus E.	85 36 42	2777	84 1 44	2764	82 26 29	2752	80 50 58	2738
26	α Pegasi W.	82 50 23	2815	84 24 32	2801	85 58 59	2787	87 33 43	2774
	Mars W.	81 30 26	2816	83 2 24	2808	84 34 39	2808	86 7 13	2876
	α Arietis W.	39 38 50	2701	41 15 29	2687	42 52 27	2670	44 29 47	2657
	Pollux E.	36 14 13	2749	34 38 38	2743	33 2 55	2739	31 27 7	2725
	Jupiter E.	71 36 18	2680	69 58 45	2648	68 20 54	2635	66 42 46	2622
	Regulus E.	79 48 59	2672	71 11 42	2660	69 34 9	2648	67 56 19	2635
	Saturn E.	84 19 7	2681	82 42 1	2668	81 4 38	2655	79 26 57	2642
27	α Pegasi W.	95 31 38	2712	97 8 0	2702	98 44 37	2692	100 21 28	2682
	Mars W.	93 54 16	2810	95 28 31	2798	97 3 2	2784	98 37 51	2773
	α Arietis W.	52 41 11	2387	54 20 24	2374	55 59 55	2361	57 39 44	2349
	Aldebaran W.	21 42 57	2978	23 13 37	2914	24 45 38	2899	26 18 50	2812
	Jupiter E.	58 27 52	2561	56 48 4	2588	55 8 0	2588	53 97 40	2627
	Regulus E.	59 42 53	2874	58 3 22	2862	56 23 35	2851	54 43 32	2840
	Saturn E.	71 14 22	2581	69 35 1	2670	67 55 25	2659	66 15 33	2648
28	Mars W.	106 35 41	2716	108 11 59	2706	109 48 31	2698	111 25 16	2687
	α Arietis W.	66 2 55	2421	67 44 21	2421	69 26 1	2470	71 7 56	2460
	Aldebaran W.	34 17 57	2854	35 55 49	2822	37 34 13	2801	39 13 6	2800
	Jupiter E.	45 2 19	2477	43 20 34	2468	41 38 36	2460	39 56 26	2452
	Regulus E.	46 19 36	2489	44 38 7	2480	42 56 25	2471	41 14 31	2462
	Saturn E.	57 52 31	2497	56 11 13	2488	54 29 43	2480	52 48 1	2472
	Spica E.	100 21 22	2480	98 39 41	2470	96 57 45	2460	95 15 35	2450
29	α Arietis W.	79 40 55	2418	81 24 8	2408	83 7 32	2390	84 51 8	2382
	Aldebaran W.	47 33 50	2300	49 15 3	2487	50 56 34	2475	52 38 22	2465
	Jupiter E.	31 23 5	2421	29 40 0	2418	27 56 51	2416	26 13 39	2415
	Regulus E.	32 42 16	2427	30 59 20	2422	29 16 17	2418	27 33 8	2415
	Saturn E.	44 16 50	2428	42 34 9	2423	40 51 21	2429	39 8 27	2426
	Spica E.	86 41 29	2406	84 58 3	2396	83 14 26	2391	81 30 39	2384
30	α Arietis W.	93 31 33	2361	95 18 4	2355	97 2 43	2350	98 47 29	2346
	Aldebaran W.	61 11 1	2417	62 54 11	2410	64 37 32	2408	66 21 3	2396
	Saturn E.	30 33 13	2424	28 50 13	2429	27 7 20	2427	25 24 38	2426
	Spica E.	72 49 15	2348	71 4 32	2348	69 19 42	2343	67 34 45	2338
	Venus E.	118 0 51	2772	116 25 46	2766	114 50 32	2759	113 15 10	2758
	Aldebaran W.	75 0 45	2370	76 45 3	2367	78 29 25	2363	80 13 53	2359
31	Pollux W.	33 1 49	2408	34 45 21	2391	36 29 8	2382	38 13 8	2373
	Spica E.	58 48 28	2320	57 2 58	2317	55 17 24	2315	53 31 47	2313
	Venus E.	105 16 30	2728	103 40 27	2728	102 4 20	2721	100 28 8	2718

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.			P. L. of Dist.			P. L. of Dist.		
			XVh.	XVIIIh.	XXIh.	XVh.	XVIIIh.	XXIh.	XVh.	XVIIIh.	XXIh.
24	Fomalhaut W.	86 4 13	2296	87 29 51	2314	88 55 44	2300	90 21 53	2186		
	α Pegasi W.	64 25 56	2002	65 56 6	2005	67 26 37	2069	68 57 28	2002		
	Mars W.	63 29 47	2085	64 58 15	2072	66 26 59	2087	67 56 1	2043		
	Pollux E.	55 6 6	2263	53 33 0	2282	51 59 40	2242	50 26 6	2231		
	Jupiter E.	90 44 19	2317	89 10 13	2304	87 35 50	2791	86 1 10	2778		
25	Regulus E.	91 53 42	2289	90 19 52	2318	88 45 45	2304	87 11 22	2791		
	α Pegasi W.	76 36 55	2273	78 9 48	2315	79 43 1	2243	81 16 35	2231		
	Mars W.	75 25 31	2272	76 56 19	2230	78 27 23	2244	79 58 46	2231		
	α Arietis W.	33 15 52	2703	34 51 4	2720	36 26 37	2722	38 2 34	2718		
	Pollux E.	42 34 54	2720	41 0 0	2772	39 24 55	2763	37 49 39	2766		
26	Jupiter E.	78 3 36	2712	76 27 12	2699	74 50 31	2697	73 13 33	2674		
	Regulus E.	79 15 9	2725	77 39 2	2708	76 2 38	2680	74 25 57	2697		
	α Pegasi W.	80 8 45	2761	80 44 4	2749	82 19 39	2736	83 55 31	2725		
	Mars W.	87 40 3	2602	89 13 11	2349	90 46 35	2335	92 20 18	2323		
	α Arietis W.	46 7 25	2642	47 45 23	2628	49 23 40	2613	51 2 17	2601		
27	Pollux E.	29 51 14	2734	28 15 19	2735	26 39 26	2740	25 3 39	2749		
	Jupiter E.	65 4 21	2610	63 25 39	2697	61 46 40	2595	60 7 24	2573		
	Regulus E.	66 16 12	2622	64 39 47	2610	63 1 5	2598	61 22 7	2586		
	Saturn E.	77 49 0	2630	76 10 46	2618	74 32 15	2606	72 53 27	2593		
	α Pegasi W.	101 58 39	2672	103 35 49	2663	105 13 18	2655	106 50 58	2646		
28	Mars W.	100 12 54	2761	101 48 13	2749	103 23 48	2738	104 59 37	2727		
	α Arietis W.	59 19 49	2536	61 0 12	2526	62 40 50	2513	64 21 45	2502		
	Aldebaran W.	27 53 2	2770	29 28 9	2732	31 4 4	2705	32 40 41	2673		
	Jupiter E.	51 47 5	2577	50 6 15	2506	48 25 10	2496	46 43 51	2497		
	Regulus E.	53 3 15	2529	51 22 42	2518	49 41 54	2507	48 0 51	2499		
29	Saturn E.	64 35 26	2587	62 55 4	2526	61 14 27	2516	59 33 36	2506		
	Mars W.	113 2 14	2677	114 39 25	2669	116 16 47	2660	117 54 21	2652		
	α Arietis W.	72 50 5	2450	74 39 29	2442	76 15 4	2432	77 57 53	2423		
	Aldebaran W.	40 52 28	2562	42 32 15	2545	44 12 25	2530	45 52 57	2516		
	Jupiter E.	38 14 5	2446	36 31 34	2438	34 48 52	2431	33 6 3	2426		
30	Regulus E.	39 32 25	2424	37 50 7	2447	36 7 39	2441	34 25 1	2434		
	Saturn E.	51 6 7	2463	49 24 2	2456	47 41 47	2450	45 59 23	2443		
	Spica E.	93 33 11	2441	91 50 34	2432	90 7 45	2423	88 24 43	2415		
	α Arietis W.	86 34 54	2386	88 18 50	2380	90 2 55	2372	91 47 10	2366		
	Aldebaran W.	54 20 25	2426	56 2 44	2423	57 45 17	2424	59 28 3	2426		
31	Jupiter E.	25 40 26	2416	22 47 13	2418	21 4 4	2424	19 21 4	2426		
	Regulus E.	24 39 54	2414	24 6 39	2416	22 23 27	2420	20 40 21	2426		
	Saturn E.	37 25 29	2422	35 42 26	2422	33 59 22	2421	32 16 17	2422		
	Spica E.	79 46 41	2377	78 2 33	2370	76 18 16	2364	74 33 50	2356		
	α Arietis W.	100 30 22	2342	102 15 21	2338	104 0 25	2334	105 45 35	2330		
30	Aldebaran W.	68 4 44	2380	69 48 33	2384	71 32 30	2380	73 16 34	2376		
	Saturn E.	23 42 9	2460	21 59 59	2479	20 18 17	2506	18 37 12	2540		
	Spica E.	65 49 41	2324	64 4 31	2330	62 19 15	2326	60 33 54	2323		
	Venus E.	111 39 40	2747	110 4 3	2741	108 28 18	2737	106 52 27	2732		
	Aldebaran W.	81 58 27	2246	83 43 5	2256	85 27 45	2263	87 12 27	2260		
31	Pollux W.	39 57 21	2206	41 41 44	2209	43 26 17	2204	45 10 58	2248		
	Spica E.	51 46 7	2311	50 0 24	2310	48 14 39	2309	46 28 52	2307		
	Venus E.	96 51 52	2714	97 15 31	2713	95 39 7	2710	94 2 41	2709		

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.	Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h. m. s.	s.	O	I	II	h. m.	h. m. s.	s.	O	I	II	h. m.	
1	20 25 58.92	12.890	-20	53	13.1	42.67	1 44.6	11.383	-8	14	30.6	74.61	2 12.9
2	20 31 10.03	12.935	20	35	51.1	44.16	1 45.9	11.346	7	44	36.3	75.01	2 13.5
3	20 36 19.83	12.880	20	17	53.6	45.62	1 47.1	11.310	7	14	30.3	75.48	2 14.1
4	20 41 28.30	12.824	19	59	21.3	47.06	1 48.2	11.275	6	44	13.4	75.92	2 14.7
5	20 46 35.42	12.766	19	40	14.6	48.48	1 49.4	11.243	6	13	46.4	76.32	2 15.2
6	20 51 41.19	12.709	19	20	34.2	49.87	1 50.5	11.212	5	43	10.1	76.69	2 15.8
7	20 56 45.59	12.654	19	0	21.0	51.22	1 51.7	11.182	5	12	25.1	77.04	2 16.3
8	21 1 48.61	12.697	18	39	35.8	52.53	1 52.8	11.153	4	41	32.1	77.36	2 16.8
9	21 6 50.26	12.540	18	18	19.4	53.82	1 53.9	11.128	4	10	32.0	77.64	2 17.3
10	21 11 50.52	12.483	17	56	32.4	55.08	1 54.9	11.103	3	39	25.4	77.89	2 17.8
11	21 16 49.41	12.425	17	34	15.5	56.31	1 56.0	11.080	3	8	13.1	78.12	2 18.3
12	21 21 46.94	12.368	17	11	29.6	57.50	1 57.0	11.059	2	36	55.8	78.31	2 18.8
13	21 26 43.10	12.312	16	48	15.3	58.66	1 58.0	11.039	2	5	34.3	78.47	2 19.3
14	21 31 37.91	12.256	16	24	33.5	59.80	1 58.9	11.022	1	34	9.1	78.61	2 19.8
15	21 36 31.38	12.200	16	0	24.9	60.90	1 59.9	11.006	1	2	41.1	78.71	2 20.2
16	21 41 23.53	12.145	15	35	50.3	61.96	2 0.8	10.992	-0	31	11.0	78.78	2 20.7
17	21 46 14.34	12.090	15	10	50.2	63.00	2 1.7	10.978	+0	0	20.4	78.82	2 21.1
18	21 51 3.85	12.036	14	45	25.9	64.00	2 2.6	10.967	0	31	52.4	78.83	2 21.6
19	21 55 52.08	11.983	14	19	38.1	64.97	2 3.5	10.959	1	3	24.4	78.81	2 22.0
20	22 0 39.05	11.931	13	53	27.4	65.91	2 4.3	10.950	1	34	55.4	78.76	2 22.5
21	22 5 24.79	11.880	13	26	54.6	66.81	2 5.1	10.944	2	6	24.8	78.67	2 22.9
22	22 10 9.30	11.829	13	0	0.6	67.67	2 5.9	10.939	2	37	51.9	78.57	2 23.3
23	22 14 52.61	11.780	12	32	46.2	68.51	2 6.7	10.936	3	9	16.0	78.43	2 23.7
24	22 19 34.73	11.731	12	5	12.2	69.31	2 7.4	10.933	3	40	36.4	78.26	2 24.2
25	22 24 15.70	11.683	11	37	19.4	70.09	2 8.2	10.934	4	11	52.3	78.06	2 24.6
26	22 28 55.54	11.637	11	9	8.5	70.81	2 8.9	10.935	4	43	2.9	77.81	2 25.1
27	22 33 34.29	11.592	10	40	40.4	71.51	2 9.6	10.937	5	14	7.3	77.56	2 25.5
28	22 38 11.95	11.547	10	11	56.0	72.17	2 10.3	10.940	5	45	5.0	77.25	2 25.9
29	22 42 48.57	11.504	9	42	56.0	72.81	2 11.0	10.946	6	15	55.3	76.92	2 26.3
30	22 47 24.17	11.463	9	13	41.3	73.40	2 11.6	10.952	6	46	37.4	76.57	2 26.8
31	22 51 58.79	11.422	8	44	12.6	73.97	2 12.3	10.959	7	17	10.5	76.18	2 27.2
32	22 56 32.45	11.383	-8	14	30.6	74.51	2 12.9	10.968	+7	47	34.1	75.77	2 27.6

Day of Month, 1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
Semidiam.	5.6	5.7	5.8	5.9	6.0	6.1	Semidiameter	6.3	6.4	6.5	6.7	6.8	7.0
Hor. Par.	5.7	5.7	5.8	5.9	6.0	6.1	Hor. Parallax	6.3	6.5	6.6	6.7	6.9	7.1

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' "	"	h. m.		h. m. s.	s.	° ' "	"	h. m.
1	1 4 47.09	10.982	+ 6 46 37.4	76.57	2 26.8	1	3 24 4.24	11.601	+20 27 52.0	51.40	2 43.9
2	1 9 10.02	10.989	7 17 10.5	76.18	2 27.2	2	3 28 42.93	11.621	20 48 10.5	50.14	2 44.6
3	1 13 33.15	10.988	7 47 34.1	75.77	2 27.6	3	3 33 22.12	11.643	21 7 58.9	48.88	2 45.3
4	1 17 56.51	10.979	8 17 47.5	75.33	2 28.0	4	3 38 1.79	11.662	21 27 16.6	47.59	2 46.0
5	1 22 20.14	10.991	8 47 49.9	74.86	2 28.5	5	3 42 41.92	11.681	21 46 3.0	46.28	2 46.7
6	1 26 44.06	11.004	9 17 40.5	74.38	2 28.9	6	3 47 22.47	11.698	22 4 17.8	44.96	2 47.5
7	1 31 8.32	11.018	9 47 18.6	73.81	2 29.4	7	3 52 3.43	11.714	22 22 0.7	43.61	2 48.2
8	1 35 32.92	11.033	10 16 43.5	73.25	2 29.9	8	3 56 44.74	11.727	22 39 11.1	42.24	2 49.0
9	1 39 57.92	11.050	10 45 54.8	72.68	2 30.4	9	4 1 26.36	11.741	22 55 48.4	40.86	2 49.7
10	1 44 23.33	11.068	11 14 51.8	72.06	2 30.9	10	4 6 8.29	11.752	23 11 52.2	39.45	2 50.5
11	1 48 49.19	11.087	11 43 33.6	71.41	2 31.4	11	4 10 50.48	11.761	23 27 22.0	38.03	2 51.2
12	1 53 15.51	11.107	12 11 59.6	70.74	2 31.9	12	4 15 32.87	11.769	23 42 17.5	36.59	2 52.0
13	1 57 42.31	11.129	12 40 9.0	70.03	2 32.4	13	4 20 15.43	11.776	23 56 38.5	35.15	2 52.8
14	2 2 9.64	11.150	13 8 1.3	69.31	2 32.9	14	4 24 58.11	11.779	24 10 24.6	33.69	2 53.6
15	2 6 37.51	11.173	13 35 35.7	68.56	2 33.4	15	4 29 40.83	11.779	24 23 35.2	32.20	2 54.3
16	2 11 5.94	11.197	14 2 51.6	67.76	2 33.9	16	4 34 23.55	11.779	24 36 10.2	30.70	2 55.1
17	2 15 34.95	11.221	14 29 48.2	66.94	2 34.5	17	4 39 6.20	11.774	24 48 9.3	29.21	2 55.8
18	2 20 4.55	11.246	14 56 24.9	66.10	2 35.0	18	4 43 48.74	11.768	24 59 32.5	27.71	2 56.6
19	2 24 34.77	11.273	15 22 41.0	65.23	2 35.6	19	4 48 31.09	11.759	25 10 19.3	26.16	2 57.3
20	2 29 5.60	11.297	15 48 35.9	64.33	2 36.2	20	4 53 13.19	11.746	25 20 29.3	24.65	2 58.1
21	2 33 37.06	11.325	16 14 8.9	63.40	2 36.8	21	4 57 54.95	11.731	25 30 2.5	23.12	2 58.9
22	2 38 9.16	11.350	16 39 19.2	62.44	2 37.4	22	5 2 36.28	11.712	25 38 59.0	21.58	2 59.6
23	2 42 41.88	11.377	17 4 6.2	61.46	2 38.0	23	5 7 17.12	11.689	25 47 18.4	20.03	3 0.3
24	2 47 15.25	11.403	17 28 29.3	60.45	2 38.6	24	5 11 57.38	11.663	25 55 0.6	18.48	3 1.1
25	2 51 49.25	11.430	17 52 27.7	59.40	2 39.2	25	5 16 36.97	11.634	26 2 5.6	16.94	3 1.8
26	2 56 23.89	11.455	18 16 0.7	58.33	2 39.8	26	5 21 15.80	11.600	26 8 33.6	15.39	3 2.5
27	3 0 59.13	11.481	18 39 7.8	57.24	2 40.5	27	5 25 53.79	11.563	26 14 24.5	13.83	3 3.2
28	3 5 34.98	11.506	19 1 48.3	56.13	2 41.1	28	5 30 30.83	11.521	26 19 38.3	12.30	3 3.9
29	3 10 11.43	11.531	19 24 1.6	54.97	2 41.8	29	5 35 6.83	11.476	26 24 15.0	10.76	3 4.5
30	3 14 45.47	11.556	19 45 47.0	53.80	2 42.5	30	5 39 41.69	11.427	26 28 15.0	9.23	3 5.2
31	3 19 26.08	11.578	20 7 4.0	52.60	2 43.2	31	5 44 15.31	11.375	26 31 38.3	7.71	3 5.8
32	3 24 4.24	11.601	+20 27 52.0	51.40	2 43.9	32	5 48 47.61	11.316	+26 34 25.1	6.20	3 6.4

Day of Month, 1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
Semidiam. "	7.0	7.2	7.4	7.6	7.9	8.1	Semidiameter	8.7	9.0	9.4	9.8	10.3	10.8
Hor. Par.	7.1	7.2	7.4	7.7	7.9	8.4	Hor. Parallax	8.8	9.1	9.5	9.9	10.4	10.9

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' " "	"	h. m.		h. m. s.	s.	° ' " "	"	h. m.
1	5 44 15.31	11.375	+26 31 38.3	7.71	3 5.8	1	7 46 07.69	7.561	+23 52 6.0	28.94	3 5.2
2	5 48 47.61	11.316	26 34 25.1	6.30	3 6.4	2	7 49 5.21	7.399	23 40 23.5	29.58	3 4.2
3	5 53 18.49	11.256	26 36 35.7	4.69	3 6.9	3	7 51 57.59	7.073	23 28 26.1	30.17	3 3.2
4	5 57 47.86	11.190	26 38 10.4	3.90	3 7.5	4	7 54 44.67	6.648	23 16 14.9	30.73	3 2.0
5	6 2 15.62	11.121	26 39 9.4	1.73	3 8.0	5	7 57 26.29	6.616	23 3 51.0	31.24	3 0.7
6	6 6 41.66	11.047	26 39 33.0	+0.25	3 8.5	6	8 0 2.26	6.375	22 51 15.5	31.70	2 59.3
7	6 11 5.88	10.969	26 39 21.6	-1.12	3 8.9	7	8 2 32.43	6.133	22 38 29.6	32.11	2 57.9
8	6 15 28.19	10.887	26 38 35.5	2.63	3 9.4	8	8 4 56.63	5.891	22 25 34.4	32.47	2 56.3
9	6 19 48.48	10.801	26 37 15.2	4.05	3 9.8	9	8 7 14.70	5.631	22 12 31.0	32.79	2 54.7
10	6 24 6.85	10.710	26 35 21.2	5.44	3 10.2	10	8 9 26.45	5.364	21 59 20.3	33.07	2 52.9
11	6 28 22.61	10.617	26 32 53.9	6.82	3 10.4	11	8 11 31.69	5.079	21 46 3.4	33.31	2 51.1
12	6 32 36.26	10.518	26 29 53.9	8.17	3 10.7	12	8 13 36.24	4.796	21 32 41.6	33.48	2 49.0
13	6 36 47.49	10.415	26 26 21.5	9.51	3 10.9	13	8 15 21.89	4.504	21 19 16.2	33.61	2 47.0
14	6 40 56.19	10.308	26 22 17.2	10.83	3 11.1	14	8 17 6.45	4.205	21 5 48.5	33.68	2 44.3
15	6 45 2.26	10.196	26 17 41.8	12.11	3 11.2	15	8 18 43.72	3.897	20 52 19.4	33.79	2 42.5
16	6 49 5.61	10.080	26 12 35.9	13.37	3 11.4	16	8 20 13.50	3.580	20 38 50.1	33.70	2 40.0
17	6 53 6.11	9.959	26 7 0.1	14.59	3 11.4	17	8 21 35.57	3.254	20 25 22.0	33.62	2 37.4
18	6 57 3.65	9.833	26 0 55.2	15.79	3 11.5	18	8 22 49.79	2.919	20 11 56.5	33.48	2 34.7
19	7 0 58.12	9.703	25 54 21.8	16.97	3 11.4	19	8 23 55.68	2.574	19 58 34.7	33.30	2 31.9
20	7 4 49.39	9.566	25 47 20.6	18.11	3 11.4	20	8 24 53.27	2.220	19 45 17.9	33.06	2 28.9
21	7 8 37.33	9.426	25 39 52.3	19.23	3 11.2	21	8 25 42.25	1.857	19 32 7.5	32.77	2 25.8
22	7 12 21.33	9.280	25 31 57.8	20.30	3 11.0	22	8 26 22.42	1.486	19 19 4.7	32.43	2 22.4
23	7 16 2.75	9.128	25 23 37.9	21.34	3 10.7	23	8 26 53.57	1.105	19 6 10.8	32.03	2 19.0
24	7 19 39.97	8.971	25 14 53.4	22.34	3 10.4	24	8 27 15.48	0.717	18 53 27.1	31.68	2 15.4
25	7 23 13.35	8.808	25 5 45.4	23.31	3 10.0	25	8 27 27.97	+0.391	18 40 55.0	31.07	2 11.7
26	7 26 42.76	8.640	24 56 14.7	24.23	3 9.5	26	8 27 30.90	-0.079	18 28 35.7	30.51	2 7.3
27	7 30 8.05	8.465	24 46 22.2	25.12	3 8.9	27	8 27 24.14	0.486	18 16 30.4	29.90	2 3.3
28	7 33 29.03	8.284	24 36 8.8	25.97	3 8.4	28	8 27 07.55	0.098	18 4 40.3	29.34	1 59.5
29	7 36 45.70	8.098	24 25 35.4	26.79	3 7.7	29	8 26 41.01	1.314	17 53 6.7	28.63	1 55.2
30	7 39 57.73	7.906	24 14 43.1	27.55	3 7.0	30	8 26 4.43	1.739	17 41 50.6	27.78	1 50.6
31	7 43 5.16	7.706	24 3 32.9	28.27	3 6.1	31	8 25 17.96	2.144	17 30 53.0	26.99	1 45.9
32	7 46 7.69	7.501	+23 52 6.0	28.94	3 5.2	32	8 24 21.54	2.567	+17 20 14.9	26.16	1 41.0

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	" 11.4	" 12.1	" 12.8	" 13.6	" 14.5	" 15.6	Semidiameter	" 16.7	" 18.0	" 19.5	" 21.2	" 23.0	" 24.3
Hor. Parallax	" 11.5	" 12.1	" 12.9	" 13.7	" 14.6	" 15.7	Hor. Parallax	" 16.3	" 18.2	" 19.7	" 21.3	" 23.1	" 25.0

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' "	"	h. m.		h. m. s.	s.	° ' "	"	h. m.
1	8 25 17.98	3.144	+17 30 58.0	24.90	1 45.9	1	7 20 34.33	3.331	+15 9 36.6	3.90	22 34.4
2	8 24 21.54	3.347	17 20 14.9	24.16	1 41.0	2	7 19 19.21	3.924	15 11 20.9	4.69	22 29.5
3	8 23 15.24	3.964	17 9 57.1	23.39	1 36.0	3	7 18 13.96	3.510	15 13 18.9	5.22	22 24.6
4	8 21 59.24	3.344	17 0 0.5	24.40	1 30.7	4	7 17 18.73	3.094	15 15 31.4	5.79	22 19.8
5	8 20 33.74	3.784	16 50 26.0	23.46	1 25.4	5	7 16 33.57	1.671	15 17 56.9	6.30	22 15.3
6	8 18 59.08	4.132	16 41 14.3	23.49	1 19.6	6	7 15 58.51	1.280	15 20 34.0	6.76	22 11.0
7	8 17 15.46	4.492	16 32 26.1	21.51	1 14.2	7	7 15 33.53	0.830	15 23 21.4	7.16	22 6.8
8	8 15 23.43	4.834	16 24 1.8	20.61	1 8.4	8	7 15 18.56	0.416	15 26 17.7	7.50	22 2.8
9	8 13 23.40	5.167	16 16 1.8	19.48	1 2.5	9	7 15 13.51	-0.013	15 29 21.3	7.77	21 58.9
10	8 11 15.91	5.484	16 8 26.7	18.43	0 56.4	10	7 15 18.26	+0.398	15 32 30.7	7.97	21 55.2
11	8 9 1.59	5.798	16 1 17.0	17.37	0 50.3	11	7 15 32.64	0.795	15 35 44.3	8.13	21 51.7
12	8 6 41.13	5.968	15 54 33.0	16.29	0 44.0	12	7 15 56.48	1.166	15 39 0.7	8.21	21 48.3
13	8 4 15.27	6.173	15 48 14.9	15.21	0 37.7	13	7 16 29.57	1.567	15 42 18.5	8.24	21 45.0
14	8 1 44.84	6.343	15 42 22.9	14.11	0 31.3	14	7 17 11.69	1.988	15 45 36.2	8.21	21 41.9
15	7 59 16.70	6.483	15 36 57.3	13.01	0 24.8	15	7 18 2.57	2.296	15 48 52.5	8.13	21 38.9
16	7 56 33.72	6.579	15 31 58.2	11.91	0 18.3	16	7 19 1.97	2.647	15 52 6.2	7.99	21 36.1
17	7 53 54.88	6.639	15 27 25.4	10.81	0 11.7	17	7 20 9.62	2.966	15 55 16.2	7.81	21 33.4
18	7 51 15.12	6.668	15 23 19.2	9.70	0 5.2	18	7 21 25.29	3.216	15 58 21.0	7.66	21 30.8
19	7 48 24.32	6.669	15 19 39.6	8.60	23 52.1	19	7 22 48.75	3.634	16 1 19.0	7.35	21 28.4
20	7 45 56.42	6.581	15 16 26.3	7.51	23 45.5	20	7 24 19.74	3.943	16 4 9.1	6.99	21 26.2
21	7 43 19.43	6.483	15 13 39.3	6.41	23 39.1	21	7 25 56.00	4.241	16 6 50.1	6.49	21 23.9
22	7 40 45.27	6.346	15 11 18.3	5.34	23 32.6	22	7 27 48.32	4.531	16 9 20.8	6.04	21 21.8
23	7 38 14.89	6.169	15 9 23.0	4.28	23 26.3	23	7 29 35.46	4.809	16 11 40.1	5.54	21 19.8
24	7 35 49.15	5.969	15 7 52.9	3.24	23 20.0	24	7 31 34.17	5.078	16 13 46.9	4.99	21 18.0
25	7 33 28.91	5.714	15 6 47.5	2.22	23 13.9	25	7 33 39.21	5.337	16 15 40.0	4.40	21 16.2
26	7 31 14.87	5.444	15 6 6.2	1.23	23 7.9	26	7 35 50.36	5.589	16 17 18.3	3.77	21 14.6
27	7 29 7.66	5.144	15 5 48.4	-0.26	23 2.0	27	7 38 7.42	5.929	16 18 40.8	3.09	21 13.0
28	7 27 7.94	4.819	15 5 58.2	+0.65	22 56.2	28	7 40 30.17	6.062	16 19 46.4	2.36	21 11.6
29	7 25 16.31	4.473	15 6 19.6	1.53	22 50.5	29	7 42 58.41	6.287	16 20 34.2	1.60	21 10.1
30	7 23 23.23	4.166	15 7 6.7	2.37	22 44.9	30	7 45 31.94	6.503	16 21 3.3	+0.60	21 8.8
31	7 21 59.11	3.797	15 8 13.4	3.17	22 39.6	31	7 48 10.55	6.710	16 21 12.7	-0.04	21 7.6
32	7 20 34.33	3.331	+15 9 38.6	3.90	22 34.4	32	7 50 54.05	6.911	+16 21 1.5	0.90	21 6.5

Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month,	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	26.6	28.1	29.2	29.4	28.9	27.8	Semidiameter	26.3	24.5	22.7	21.1	19.5	18.1
Hor. Parallax	26.8	28.3	29.3	29.6	29.1	28.0	Hor. Parallax	26.5	24.7	22.9	21.2	19.6	18.2

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Light Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.	Day of Month.	Apparent Light Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' "	"	h. m.	h. m. s.	s.	° ' "	"	h. m.	
1	7 50 54.05	6.911	+16 21 1.5	0.90	21 6.5	1	9 37 24.82	10.087	+12 56 32.3	24.30	20 55.8
2	7 53 42.26	7.108	16 20 29.2	1.81	21 5.4	2	9 41 27.45	10.129	12 42 33.9	35.50	20 55.9
3	7 56 34.98	7.286	16 19 34.7	2.74	21 4.4	3	9 45 31.05	10.169	12 28 8.1	36.64	20 56.0
4	7 59 32.04	7.464	16 18 17.5	3.71	21 3.4	4	9 49 35.60	10.208	12 13 15.2	37.76	20 56.1
5	8 2 33.27	7.633	16 16 36.8	4.70	21 2.6	5	9 53 41.06	10.245	11 57 55.7	38.88	20 56.3
6	8 5 38.48	7.796	16 14 32.1	5.71	21 1.8	6	9 57 47.37	10.279	11 42 10.0	39.94	20 56.5
7	8 8 47.49	7.951	16 12 2.7	6.75	21 1.1	7	10 1 54.46	10.311	11 25 58.3	41.02	20 56.6
8	8 12 0.14	8.099	16 9 8.2	7.81	21 0.3	8	10 6 2.30	10.340	11 9 21.0	42.06	20 56.8
9	8 15 16.27	8.241	16 5 48.1	8.87	20 59.7	9	10 10 10.80	10.368	10 52 18.5	43.12	20 57.0
10	8 18 35.78	8.377	16 2 2.1	9.96	20 59.1	10	10 14 19.94	10.393	10 34 51.3	44.14	20 57.3
11	8 21 58.37	8.506	15 57 49.8	11.07	20 58.6	11	10 18 29.68	10.418	10 16 59.6	45.15	20 57.5
12	8 25 24.03	8.629	15 53 10.8	12.19	20 58.1	12	10 22 40.00	10.441	9 58 44.1	46.13	20 57.8
13	8 28 52.56	8.745	15 48 4.7	13.33	20 57.7	13	10 26 50.86	10.462	9 40 5.3	47.09	20 58.0
14	8 32 23.81	8.856	15 42 31.4	14.46	20 57.3	14	10 31 2.20	10.482	9 21 3.8	48.03	20 58.2
15	8 35 57.66	8.963	15 36 30.6	15.61	20 57.0	15	10 35 13.99	10.501	9 1 39.9	48.95	20 58.5
16	8 39 33.99	9.063	15 30 2.2	16.76	20 56.7	16	10 39 26.22	10.518	8 41 54.1	49.85	20 58.8
17	8 43 12.68	9.158	15 23 5.9	17.93	20 56.5	17	10 43 38.87	10.535	8 21 46.9	50.73	20 59.0
18	8 46 53.60	9.249	15 15 41.6	19.10	20 56.2	18	10 47 51.92	10.551	8 1 18.9	51.59	20 59.3
19	8 50 36.64	9.335	15 7 49.1	20.27	20 56.0	19	10 52 5.34	10.566	7 40 30.7	52.42	20 59.6
20	8 54 21.69	9.417	14 59 28.4	21.45	20 55.8	20	10 56 19.10	10.581	7 19 22.9	53.23	20 59.9
21	8 58 8.67	9.495	14 50 39.3	22.63	20 55.7	21	11 0 33.21	10.595	6 57 55.9	54.01	21 0.2
22	9 1 57.48	9.569	14 41 22.0	23.81	20 55.6	22	11 4 47.65	10.609	6 36 10.4	54.77	21 0.5
23	9 5 48.02	9.640	14 31 36.3	24.99	20 55.5	23	11 9 2.44	10.623	6 14 6.8	55.52	21 0.8
24	9 9 40.20	9.706	14 21 22.2	26.19	20 55.5	24	11 13 17.55	10.636	5 51 45.6	56.24	21 1.1
25	9 13 33.92	9.769	14 10 39.7	27.36	20 55.5	25	11 17 32.98	10.649	5 29 7.4	56.92	21 1.4
26	9 17 29.12	9.830	13 59 28.7	28.54	20 55.5	26	11 21 48.73	10.663	5 6 13.0	57.60	21 1.8
27	9 21 25.73	9.887	13 47 49.5	29.72	20 55.5	27	11 26 4.83	10.678	4 43 2.8	58.24	21 2.1
28	9 25 23.69	9.941	13 35 42.1	30.89	20 55.5	28	11 30 21.27	10.692	4 19 37.4	58.86	21 2.4
29	9 29 22.90	9.993	13 23 6.6	32.06	20 55.6	29	11 34 38.05	10.706	3 55 57.4	59.45	21 2.7
30	9 33 23.29	10.040	13 10 3.2	33.21	20 55.7	30	11 38 55.16	10.720	3 32 3.5	60.03	21 3.1
31	9 37 24.82	10.087	12 56 32.3	34.36	20 55.8	31	11 43 12.62	10.735	3 7 56.3	60.57	21 3.5
32	9 41 27.45	10.129	+12 42 33.9	35.50	20 55.9	32	11 47 30.43	10.749	+ 2 43 36.2	61.08	21 3.9

Day of Month, 2d.	7th.	13th.	17th.	23d.	27th.	33d.	Day of the Month,	7th.	13th.	17th.	23d.	27th.	33d.
Semidiam. "	16.8	15.6	14.6	13.8	13.0	12.3	Semidiameter "	11.0	10.5	10.1	9.7	9.3	8.9
Hor. Par.	16.9	15.8	14.7	13.9	13.1	12.3	Hor. Parallax "	11.1	10.6	10.1	9.7	9.3	9.0

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' "	"	h. m.		h. m. s.	s.	° ' "	"	h. m.
1	11 47 30.43	10.749	+ 2 43 36.2	61.08	21 3.9	1	14 0 23.65	11.529	-10 4 58.3	62.33	21 18.7
2	11 51 48.61	10.765	2 19 4.4	61.56	21 4.2	2	14 5 0.83	11.570	10 29 49.4	61.90	21 19.4
3	11 56 7.17	10.782	1 54 21.3	62.02	21 4.6	3	14 9 39.00	11.612	10 54 29.6	61.43	21 20.2
4	12 0 26.14	10.799	1 29 27.6	62.44	21 4.9	4	14 14 18.20	11.655	11 18 58.1	60.92	21 20.9
5	12 4 45.52	10.816	1 4 28.9	62.84	21 5.2	5	14 18 58.44	11.699	11 43 13.7	60.36	21 21.6
6	12 9 5.29	10.832	0 39 11.1	63.21	21 5.6	6	14 23 39.76	11.744	12 7 15.5	59.77	21 22.4
7	12 13 25.48	10.850	+ 0 18 49.8	63.55	21 6.1	7	14 28 22.14	11.789	12 31 3.0	59.16	21 23.2
8	12 17 46.11	10.869	- 0 11 39.3	63.95	21 6.5	8	14 33 5.61	11.834	12 54 35.3	58.51	21 24.0
9	12 22 7.19	10.888	0 37 15.3	64.13	21 6.9	9	14 37 50.17	11.880	13 17 51.4	57.82	21 24.8
10	12 26 28.73	10.907	1 2 57.6	64.39	21 7.3	10	14 42 35.36	11.928	13 40 50.7	57.10	21 25.6
11	12 30 50.76	10.928	1 28 45.5	64.60	21 7.8	11	14 47 22.69	11.976	14 3 32.3	56.34	21 26.4
12	12 35 18.29	10.949	1 54 38.2	64.78	21 8.2	12	14 52 10.66	12.022	14 25 55.3	55.55	21 27.3
13	12 39 36.32	10.970	2 20 34.9	64.93	21 8.7	13	14 56 59.77	12.070	14 47 58.9	54.73	21 28.2
14	12 43 59.87	10.992	2 46 35.0	65.06	21 9.1	14	15 1 50.03	12.118	15 9 42.4	53.88	21 29.1
15	12 48 28.98	11.016	3 12 37.7	65.15	21 9.6	15	15 6 41.46	12.168	15 31 5.0	52.99	21 30.1
16	12 52 48.65	11.040	3 38 42.1	65.20	21 10.1	16	15 11 34.08	12.217	15 52 5.8	52.07	21 31.0
17	12 57 18.91	11.065	4 4 47.4	65.23	21 10.6	17	15 16 27.86	12.265	16 12 44.2	51.11	21 32.0
18	13 1 39.80	11.092	4 30 53.1	65.23	21 11.1	18	15 21 22.83	12.316	16 32 59.2	50.12	21 33.0
19	13 6 6.32	11.119	4 56 58.5	65.20	21 11.6	19	15 26 18.97	12.364	16 52 50.1	49.10	21 34.0
20	13 10 33.50	11.147	5 23 2.7	65.18	21 12.1	20	15 31 16.30	12.413	17 12 16.2	48.05	21 35.0
21	13 15 1.36	11.176	5 49 4.8	65.03	21 12.7	21	15 36 14.82	12.463	17 31 16.7	46.97	21 36.1
22	13 19 29.98	11.206	6 15 4.3	64.91	21 13.2	22	15 41 14.53	12.513	17 49 51.0	45.87	21 37.2
23	13 23 59.24	11.237	6 41 0.7	64.77	21 13.8	23	15 46 15.43	12.562	18 7 58.3	44.72	21 38.3
24	13 28 29.32	11.270	7 6 53.1	64.58	21 14.3	24	15 51 17.50	12.611	18 26 37.7	43.54	21 39.4
25	13 33 0.20	11.304	7 32 40.5	64.35	21 14.9	25	15 56 20.74	12.659	18 42 48.5	42.34	21 40.5
26	13 37 31.90	11.338	7 58 22.1	64.09	21 15.5	26	16 1 25.14	12.707	18 59 30.0	41.10	21 41.6
27	13 42 4.44	11.374	8 23 57.2	63.82	21 16.2	27	16 6 30.69	12.755	19 15 41.5	39.85	21 42.8
28	13 46 37.86	11.411	8 49 25.3	63.51	21 16.8	28	16 11 37.33	12.803	19 31 22.4	38.55	21 44.0
29	13 51 12.18	11.449	9 14 45.5	63.15	21 17.4	29	16 16 45.20	12.849	19 46 31.9	37.23	21 45.2
30	13 55 47.43	11.489	9 39 56.7	62.76	21 18.0	30	16 21 54.12	12.894	20 1 9.4	35.88	21 46.4
31	14 0 23.65	11.529	10 4 58.3	62.35	21 18.7	31	16 27 4.13	12.939	20 15 14.1	34.51	21 47.7
32	14 5 0.83	11.570	-10 29 49.4	61.90	21 19.4	32	16 32 15.21	12.984	-20 28 45.7	33.11	21 49.0

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.	Day of Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	8.9	8.6	8.3	8.0	7.8	7.6	Semidiam.	7.4	7.2	7.0	6.8	6.7	6.5	6.4
Hor. Parallax	9.0	8.7	8.4	8.1	7.8	7.6	Hor. Par.	7.4	7.2	7.0	6.9	6.7	6.6	6.4

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.															
Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.		Meridian Passage.	Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.		Meridian Passage.								
	Noon.			Neon.	Noon.			Noon.			Neon.	Noon.									
	h.	m.	s.	s.	o	"	h.	m.	s.	s.	o	"	h.	m.	s.						
1	14	38	21.49	6.056	-14	26	23.9	29.29	19	55.6	1	15	54	45.32	6.293	-19	35	59.0	20.19	19	9.9
2	14	40	46.87	6.063	14	38	23.5	29.03	19	54.1	2	15	57	15.19	6.295	19	43	59.5	19.85	19	8.5
3	14	43	12.46	6.070	14	49	47.2	28.78	19	52.6	3	15	59	45.18	6.299	19	51	52.0	19.52	19	7.0
4	14	45	38.23	6.078	15	1	14.8	28.53	19	51.1	4	16	2	15.16	6.292	19	59	36.6	19.19	19	5.6
5	14	48	4.17	6.085	15	12	26.2	28.26	19	49.6	5	16	4	45.26	6.296	20	7	13.2	18.86	19	4.1
6	14	50	30.29	6.093	15	23	51.4	28.00	19	48.1	6	16	7	15.43	6.298	20	14	41.7	18.53	19	2.7
7	14	52	56.62	6.100	15	35	0.3	27.74	19	46.6	7	16	9	45.66	6.291	20	22	2.2	18.16	19	1.3
8	14	55	23.11	6.107	15	46	2.8	27.47	19	45.1	8	16	12	15.94	6.293	20	29	14.4	17.84	18	59.8
9	14	57	49.78	6.115	15	56	58.9	27.20	19	43.6	9	16	14	46.25	6.294	20	36	18.5	17.50	18	58.4
10	15	0	16.63	6.122	16	7	48.4	26.93	19	42.1	10	16	17	16.60	6.295	20	43	14.4	17.16	18	57.0
11	15	2	43.66	6.130	16	18	31.3	26.65	19	40.6	11	16	19	46.96	6.295	20	50	2.0	16.81	18	55.5
12	15	5	10.87	6.137	16	29	7.5	26.37	19	39.1	12	16	22	17.34	6.296	20	56	41.3	16.47	18	54.1
13	15	7	33.25	6.144	16	39	37.0	26.09	19	37.6	13	16	24	47.74	6.297	21	3	12.4	16.13	18	52.6
14	15	10	5.79	6.151	16	49	59.7	25.80	19	36.1	14	16	27	18.15	6.297	21	9	35.2	15.78	18	51.2
15	15	12	33.51	6.158	17	0	15.4	25.51	19	34.7	15	16	29	48.56	6.298	21	15	49.8	15.44	18	49.8
16	15	15	1.39	6.166	17	10	24.2	25.23	19	33.2	16	16	32	19.00	6.297	21	21	56.1	15.10	18	48.3
17	15	17	29.44	6.172	17	20	25.9	24.93	19	31.7	17	16	34	49.42	6.297	21	27	54.1	14.75	18	46.9
18	15	19	57.64	6.178	17	30	20.5	24.62	19	30.2	18	16	37	19.80	6.295	21	33	43.9	14.40	18	45.5
19	15	22	25.99	6.184	17	40	7.8	24.32	19	28.8	19	16	39	50.13	6.293	21	39	25.2	14.05	18	44.0
20	15	24	54.47	6.189	17	49	47.8	24.02	19	27.3	20	16	42	20.39	6.293	21	44	58.2	13.70	18	42.6
21	15	27	23.03	6.195	17	59	20.5	23.71	19	25.9	21	16	44	50.53	6.294	21	50	22.7	13.35	18	41.2
22	15	29	51.33	6.200	18	8	45.8	23.40	19	24.4	22	16	47	20.59	6.290	21	55	38.8	13.00	18	39.7
23	15	32	20.69	6.204	18	18	3.6	23.08	19	22.9	23	16	49	50.55	6.296	22	0	46.5	12.65	18	38.3
24	15	34	49.67	6.209	18	27	13.9	22.77	19	21.5	24	16	52	20.40	6.291	22	5	45.9	12.30	18	36.9
25	15	37	18.77	6.214	18	36	16.6	22.45	19	20.0	25	16	54	50.13	6.296	22	10	37.1	11.96	18	35.4
26	15	39	47.99	6.219	18	45	11.6	22.13	19	18.6	26	16	57	19.72	6.290	22	15	29.0	11.62	18	34.0
27	15	42	17.90	6.223	18	53	58.9	21.81	19	17.1	27	16	59	49.18	6.294	22	19	54.3	11.28	18	32.5
28	15	44	46.71	6.227	19	2	38.5	21.49	19	15.7	28	17	2	18.49	6.293	22	24	21.5	10.94	18	31.1
29	15	47	16.22	6.232	19	11	10.3	21.18	19	14.2	29	17	4	47.64	6.291	22	28	40.0	10.60	18	29.6
30	15	49	45.33	6.237	19	19	34.4	20.84	19	12.8	30	17	7	16.63	6.294	22	32	59.3	10.26	18	28.1
31	15	52	15.53	6.240	19	27	50.6	20.51	19	11.3	31	17	9	45.45	6.197	22	36	52.4	9.92	18	26.6
32	15	54	45.32	6.243	-19	35	59.0	20.19	19	9.9	32	17	12	14.08	6.199	-22	40	46.3	9.56	18	25.2

Day of the Month,	1st.	9th.	17th.	25th.	Day of the Month,	3d.	10th.	18th.	26th.
Polar Semidiameter	"	"	"	"	Polar Semidiameter	"	"	"	"
Horizontal Parallax	2.6	2.8	2.9	3.0	Horizontal Parallax	3.1	3.3	3.5	3.7
	4.5	4.7	4.9	5.1		5.3	5.6	6.0	6.3

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' "	"	h. m.		h. m. s.	s.	° ' "	"	h. m.
1	17 7 16.63	6.204	-22 32 50.3	10.26	18 28.1	1	18 21 46.51	5.708	-23 39 16.5	1.03	17 40.3
2	17 9 45.46	6.197	22 36 52.4	9.92	18 26.6	2	18 24 3.18	5.692	23 39 38.4	0.80	17 38.6
3	17 12 14.08	6.189	22 40 46.3	9.58	18 25.2	3	18 26 19.23	5.656	23 39 54.9	0.68	17 36.9
4	17 14 42.53	6.181	22 44 32.1	9.24	18 23.7	4	18 28 34.64	5.620	23 40 6.1	0.36	17 35.2
5	17 17 10.77	6.173	22 48 9.9	8.91	18 22.2	5	18 30 49.38	5.600	23 40 12.2	0.15	17 33.5
6	17 19 38.81	6.164	22 51 39.6	8.57	18 20.8	6	18 33 3.44	5.571	23 40 13.3	0.05	17 31.8
7	17 22 6.64	6.154	22 55 1.4	8.24	18 19.3	7	18 35 16.81	5.542	23 40 9.6	0.26	17 30.1
8	17 24 34.24	6.145	22 58 15.2	7.91	18 17.8	8	18 37 29.47	5.512	23 40 1.3	0.44	17 28.4
9	17 27 1.60	6.135	23 1 21.2	7.59	18 16.3	9	18 39 41.38	5.481	23 39 48.5	0.62	17 26.6
10	17 29 28.71	6.124	23 4 19.4	7.26	18 14.8	10	18 41 52.54	5.448	23 39 31.3	0.80	17 24.8
11	17 31 55.55	6.112	23 7 9.8	6.94	18 13.3	11	18 44 2.90	5.415	23 39 9.9	0.97	17 23.1
12	17 34 22.10	6.100	23 9 52.5	6.62	18 11.8	12	18 46 12.45	5.380	23 38 44.6	1.13	17 21.3
13	17 36 48.35	6.087	23 12 27.5	6.30	18 10.3	13	18 48 21.16	5.345	23 38 15.6	1.28	17 19.5
14	17 39 14.27	6.073	23 14 55.0	5.99	18 8.8	14	18 50 28.99	5.308	23 37 43.0	1.42	17 17.7
15	17 41 39.86	6.059	23 17 14.9	5.68	18 7.3	15	18 52 35.93	5.270	23 37 7.2	1.56	17 15.8
16	17 44 5.09	6.044	23 19 27.4	5.37	18 5.8	16	18 54 41.95	5.231	23 36 28.3	1.68	17 14.0
17	17 46 29.95	6.028	23 21 32.5	5.07	18 4.2	17	18 56 47.01	5.191	23 35 46.4	1.80	17 12.1
18	17 48 54.42	6.011	23 23 30.4	4.76	18 2.7	18	18 58 51.10	5.149	23 35 1.9	1.91	17 10.2
19	17 51 18.48	5.994	23 25 21.1	4.47	18 1.1	19	19 0 54.18	5.107	23 34 14.9	2.00	17 8.3
20	17 53 42.11	5.976	23 27 4.7	4.17	17 59.6	20	19 2 56.23	5.063	23 33 25.7	2.09	17 6.4
21	17 56 5.29	5.956	23 29 41.4	3.89	17 58.0	21	19 4 57.22	5.019	23 32 34.4	2.17	17 4.5
22	17 58 28.01	5.937	23 30 11.2	3.60	17 56.5	22	19 6 57.13	4.973	23 31 41.3	2.26	17 2.5
23	18 0 50.25	5.916	23 31 34.2	3.32	17 54.9	23	19 8 55.93	4.927	23 30 46.6	2.31	17 0.5
24	18 3 12.00	5.896	23 32 50.7	3.04	17 53.3	24	19 10 53.63	4.880	23 29 50.6	2.36	16 58.5
25	18 5 33.24	5.874	23 34 0.6	2.78	17 51.7	25	19 12 50.19	4.833	23 28 53.5	2.40	16 56.5
26	18 7 53.95	5.852	23 35 4.1	2.51	17 50.1	26	19 14 45.60	4.784	23 27 55.6	2.43	16 54.5
27	18 10 14.13	5.829	23 36 1.3	2.26	17 48.5	27	19 16 39.85	4.735	23 26 57.1	2.46	16 52.5
28	18 12 33.76	5.806	23 36 52.2	2.00	17 46.9	28	19 18 32.90	4.685	23 25 58.3	2.46	16 50.4
29	18 14 52.82	5.782	23 37 37.1	1.75	17 45.2	29	19 20 24.72	4.633	23 24 59.3	2.46	16 48.3
30	18 17 11.31	5.758	23 38 16.0	1.50	17 43.6	30	19 22 15.29	4.580	23 24 0.4	2.46	16 46.2
31	18 19 29.21	5.733	23 38 49.1	1.26	17 41.9	31	19 24 4.56	4.526	23 23 1.8	2.43	16 44.1
32	18 21 46.51	5.706	-23 39 16.5	1.03	17 40.3	32	19 25 52.52	4.470	-23 22 3.7	2.40	16 41.9

Day of the Month,	5th.	13th.	21st.	29th.	Day of the Month,	6th.	14th.	22d.	30th.
Polar Semidiameter	" 3.9	" 4.1	" 4.4	" 4.7	Polar Semidiameter	" 5.1	" 5.4	" 5.9	" 6.4
Horizontal Parallax	6.7	7.1	7.5	8.0	Horizontal Parallax	8.6	9.3	10.0	10.8

GREENWICH MEAN TIME.

MAY.						JUNE.															
Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.	Apparent Declination.		Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.	Apparent Declination.		Var. of Dec. for 1 Hour.	Meridian Passage.						
	h.	m.		s.	°				'	"		h.	m.			s.	°	'	"		
1	19	24	4.56	4.626	-23	23	1.8	2.43	16	44.1	1	20	6	37.34	2.062	-23	22	10.6	4.29	15	23.9
2	19	25	52.52	4.470	23	22	3.7	2.40	16	41.9	2	20	7	25.53	1.964	23	23	58.3	4.69	15	20.7
3	19	27	39.13	4.414	23	21	6.5	2.36	16	39.7	3	20	8	11.13	1.845	23	25	55.6	6.09	15	17.5
4	19	29	24.37	4.356	23	20	10.4	2.31	16	37.5	4	20	8	54.08	1.733	23	28	2.7	6.49	15	14.2
5	19	31	8.22	4.297	23	19	15.7	2.24	16	35.3	5	20	9	34.33	1.620	23	30	19.4	6.91	15	11.0
6	19	32	50.63	4.237	23	18	22.7	2.17	16	33.1	6	20	10	11.84	1.604	23	32	46.2	6.34	15	7.6
7	19	34	31.59	4.173	23	17	31.6	2.08	16	30.8	7	20	10	46.54	1.386	23	35	23.4	6.78	15	4.2
8	19	36	11.06	4.112	23	16	42.9	1.98	16	28.5	8	20	11	18.38	1.266	23	38	11.2	7.23	15	0.8
9	19	37	48.99	4.048	23	15	56.6	1.87	16	26.1	9	20	11	47.30	1.143	23	41	9.7	7.67	14	57.3
10	19	39	25.34	3.981	23	15	13.3	1.74	16	23.8	10	20	12	13.25	1.018	23	44	19.3	8.13	14	53.8
11	19	41	0.07	3.913	23	14	33.2	1.60	16	21.4	11	20	12	36.19	0.991	23	47	40.2	8.60	14	50.2
12	19	42	33.13	3.843	23	13	56.6	1.46	16	19.0	12	20	12	56.05	0.763	23	51	12.3	9.07	14	46.6
13	19	44	4.43	3.769	23	13	23.8	1.28	16	16.6	13	20	13	12.30	0.633	23	54	55.6	9.54	14	42.9
14	19	45	34.07	3.695	23	12	55.2	1.10	16	14.1	14	20	13	26.41	0.501	23	58	50.1	10.00	14	39.2
15	19	47	1.85	3.619	23	12	31.2	0.90	16	11.6	15	20	13	36.85	0.368	24	2	55.6	10.46	14	35.4
16	19	48	27.79	3.541	23	12	12.0	0.69	16	9.1	16	20	13	44.08	0.234	24	7	12.0	10.91	14	31.5
17	19	49	51.83	3.462	23	11	58.0	0.47	16	6.5	17	20	13	48.08	0.099	24	11	39.1	11.35	14	27.6
18	19	51	13.94	3.380	23	11	49.5	0.23	16	3.9	18	20	13	48.35	0.036	24	16	16.6	11.78	14	23.7
19	19	52	34.06	3.298	23	11	46.8	0.02	16	1.3	19	20	13	46.35	0.173	24	21	4.3	12.20	14	19.7
20	19	53	52.17	3.211	23	11	50.3	0.28	15	58.6	20	20	13	40.59	0.308	24	26	2.0	13.60	14	15.6
21	19	55	8.20	3.124	23	12	0.2	0.55	15	55.9	21	20	13	31.57	0.443	24	31	9.3	13.00	14	11.5
22	19	56	22.13	3.036	23	12	16.9	0.84	15	53.2	22	20	13	19.31	0.578	24	36	25.8	13.37	14	7.3
23	19	57	38.91	2.946	23	12	40.6	1.14	15	50.4	23	20	13	3.81	0.712	24	41	51.1	13.72	14	3.1
24	19	58	43.52	2.854	23	13	11.7	1.44	15	47.6	24	20	12	45.11	0.846	24	47	24.7	14.06	13	58.8
25	19	59	50.90	2.761	23	13	50.2	1.76	15	44.8	25	20	12	23.23	0.977	24	53	6.0	14.37	13	54.5
26	20	0	56.04	2.666	23	14	36.4	2.09	15	41.9	26	20	11	53.21	1.107	24	58	54.5	14.66	13	50.1
27	20	1	58.89	2.570	23	15	30.5	2.43	15	39.0	27	20	11	30.09	1.235	25	4	49.7	14.92	13	45.7
28	20	2	59.42	2.473	23	16	32.9	2.78	15	36.1	28	20	10	58.90	1.363	25	10	50.7	15.15	13	41.2
29	20	3	57.57	2.373	23	17	43.9	3.14	15	33.1	29	20	10	24.69	1.487	25	16	57.1	15.36	13	36.7
30	20	4	53.31	2.271	23	19	3.6	3.51	15	30.0	30	20	9	47.52	1.609	25	23	8.2	15.54	13	32.1
31	20	5	46.58	2.167	23	20	32.4	3.90	15	27.0	31	20	9	7.45	1.729	25	29	23.2	15.69	13	27.5
32	20	6	37.34	2.062	-23	22	10.6	4.29	15	23.9	32	20	8	24.55	1.845	-23	35	41.6	15.81	13	22.8
Day of the Month,						8th.	16th.	24th.	Day of the Month,						1st.	9th.	17th.	25th.			
Polar Semidiameter						"	"	"	Polar Semidiameter						"	"	"	"			
Horizontal Parallax						6.9	7.5	8.2	Horizontal Parallax						9.0	9.8	10.6	11.6			
						11.7	12.3	13.9							15.2	16.6	18.0	19.4			

GREENWICH MEAN TIME.

JULY.						AUGUST.													
Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.			Noon.	Noon.			Noon.			Noon.			Noon.	Noon.			Noon.	
	h.	m.	s.	''	°	'	''	''	h. m.		h.	m.	s.	''	°	'	''	''	h. m.
1	20	9	7.45	1.729	25	29	23.2	15.69	13 27.5	1	19	36	11.87	2.357	28	0	47.3	4.05	10 52.7
2	20	8	24.55	1.845	25	35	41.6	15.81	13 22.8	2	19	35	15.98	2.255	28	2	16.4	3.38	10 47.9
3	20	7	38.66	1.969	25	42	2.4	15.90	13 18.1	3	19	34	23.09	2.149	28	3	29.4	2.72	10 43.1
4	20	6	50.54	2.069	25	48	24.9	15.93	13 13.3	4	19	33	32.82	2.037	28	4	26.6	2.08	10 38.4
5	20	5	59.59	2.175	25	54	48.2	15.97	13 8.6	5	19	32	45.28	1.921	28	5	8.0	1.40	10 33.7
6	20	5	6.14	2.278	26	1	11.4	15.95	13 3.7	6	19	32	0.59	1.800	28	5	34.0	0.76	10 29.0
7	20	4	10.27	2.375	26	7	33.9	15.90	12 58.8	7	19	31	18.86	1.674	28	5	44.5	0.13	10 24.4
8	20	3	12.12	2.468	26	13	54.7	15.81	12 53.9	8	19	30	40.19	1.544	28	5	40.0	0.50	10 19.9
9	20	2	11.81	2.555	26	20	12.9	15.69	12 49.0	9	19	30	4.69	1.410	28	5	20.6	1.11	10 15.4
10	20	1	9.48	2.636	26	26	27.7	15.53	12 44.0	10	19	29	32.45	1.274	28	4	46.7	1.73	10 10.9
11	20	0	5.29	2.710	26	32	33.2	15.33	12 39.0	11	19	29	8.55	1.133	28	3	53.4	2.31	10 6.6
12	19	58	59.41	2.777	26	38	43.4	15.08	12 33.9	12	19	28	38.07	0.989	28	2	55.9	2.90	10 2.2
13	19	57	52.00	2.837	26	44	42.2	14.80	12 28.9	13	19	28	16.05	0.844	28	1	39.5	3.47	9 57.9
14	19	56	43.25	2.889	26	50	33.7	14.47	12 23.8	14	19	27	57.55	0.696	28	0	9.3	4.03	9 53.6
15	19	55	33.34	2.933	26	56	16.8	14.11	12 18.7	15	19	27	42.62	0.546	27	58	25.9	4.58	9 49.5
16	19	54	22.47	2.968	27	1	50.7	13.70	12 13.6	16	19	27	31.33	0.394	27	56	29.6	5.11	9 45.4
17	19	53	10.86	2.995	27	7	14.4	13.26	12 8.5	17	19	27	23.71	0.240	27	54	20.7	5.63	9 41.4
18	19	51	58.71	3.013	27	12	27.2	12.78	12 3.3	18	19	27	19.77	0.087	27	51	59.4	6.14	9 37.4
19	19	50	46.22	3.021	27	17	28.2	12.26	11 58.2	19	19	27	19.52	0.066	27	49	26.0	6.64	9 33.4
20	19	49	33.65	3.020	27	22	16.8	11.75	11 53.1	20	19	27	22.97	0.220	27	46	40.8	7.13	9 29.6
21	19	48	21.21	3.011	27	26	52.3	11.19	11 47.9	21	19	27	30.12	0.375	27	43	43.6	7.61	9 25.9
22	19	47	9.11	2.993	27	31	14.0	10.61	11 42.8	22	19	27	40.96	0.528	27	40	35.3	8.07	9 22.1
23	19	45	57.56	2.965	27	35	21.5	10.00	11 37.7	23	19	27	55.45	0.677	27	37	16.4	8.51	9 18.4
24	19	44	46.76	2.930	27	39	14.1	9.38	11 32.6	24	19	28	13.54	0.826	27	33	46.7	8.95	9 14.9
25	19	43	36.93	2.885	27	42	51.4	8.74	11 27.5	25	19	28	35.20	0.976	27	30	6.6	9.38	9 11.3
26	19	42	28.25	2.833	27	46	18.2	8.07	11 22.4	26	19	29	0.38	1.122	27	26	16.4	9.80	9 7.8
27	19	41	20.94	2.772	27	49	19.2	7.40	11 17.4	27	19	29	29.04	1.268	27	22	16.2	10.21	9 4.3
28	19	40	15.17	2.704	27	52	9.2	6.73	11 12.4	28	19	30	1.11	1.406	27	18	6.4	10.61	9 1.0
29	19	39	11.14	2.628	27	54	43.0	6.06	11 7.4	29	19	30	36.55	1.546	27	13	46.8	11.01	8 57.7
30	19	38	9.08	2.544	27	57	0.6	5.39	11 2.5	30	19	31	15.33	1.683	27	9	17.8	11.39	8 54.5
31	19	37	9.11	2.453	27	59	2.1	4.71	10 57.6	31	19	31	57.39	1.820	27	4	40.0	11.75	8 51.3
32	19	36	11.37	2.357	28	0	47.3	4.05	10 52.7	32	19	32	42.68	1.954	26	59	53.5	12.12	8 48.1
Day of the Month,						3d.	11th.	19th.	27th.	Day of the Month,						4th.	12th.	20th.	28th.
Polar Semidiameter						''	''	''	''	Polar Semidiameter						''	''	''	''
Horizontal Parallax						20.6	21.5	21.9	21.3	Horizontal Parallax						21.3	20.4	19.3	18.1

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.							
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		
	Noon.		Noon.				Noon.		Noon.			Noon.	
	h. m. s.	s.	° ' "	"			h. m.	h. m. s.	s.	° ' "		"	h. m.
1	19 32 42.68	1.964	26 59 53.5	12.12	8 48.1	1	20 15 27.88	4.806	23 30 10.7	22.82	7 33.1		
2	19 33 31.14	2.083	26 54 58.3	12.48	8 44.9	2	20 17 23.92	4.861	23 20 58.5	22.18	7 31.1		
3	19 34 22.67	2.209	26 49 54.2	12.85	8 41.9	3	20 19 21.32	4.916	23 11 38.1	22.53	7 29.1		
4	19 35 17.20	2.334	26 44 41.4	13.21	8 38.9	4	20 21 20.08	4.972	23 2 9.2	22.89	7 27.2		
5	19 36 14.70	2.456	26 39 20.0	13.67	8 36.0	5	20 23 20.00	5.026	22 52 31.9	22.23	7 25.3		
6	19 37 15.11	2.577	26 33 49.8	14.14	8 33.0	6	20 25 21.19	5.076	22 42 46.0	22.61	7 23.3		
7	19 38 18.38	2.696	26 28 10.9	14.59	8 30.2	7	20 27 23.56	5.125	22 32 51.5	22.95	7 21.4		
8	19 39 24.46	2.808	26 22 23.9	15.03	8 27.3	8	20 29 27.07	5.174	22 22 48.5	23.31	7 19.5		
9	19 40 33.29	2.923	26 16 28.5	15.49	8 24.5	9	20 31 31.69	5.221	22 12 36.8	23.67	7 17.7		
10	19 41 44.82	3.035	26 10 24.9	15.93	8 21.8	10	20 33 37.40	5.267	22 2 16.3	24.04	7 15.9		
11	19 42 58.99	3.144	26 4 12.8	16.37	8 19.0	11	20 35 44.19	5.311	21 51 46.9	24.41	7 14.1		
12	19 44 15.74	3.251	25 57 52.2	16.80	8 16.5	12	20 37 52.04	5.353	21 41 8.7	24.77	7 12.3		
13	19 45 35.03	3.356	25 51 22.8	17.24	8 13.9	13	20 40 0.98	5.391	21 30 21.7	25.14	7 10.5		
14	19 46 56.79	3.457	25 44 44.9	17.66	8 11.3	14	20 42 10.80	5.427	21 19 25.9	25.49	7 8.7		
15	19 48 20.97	3.557	25 37 58.5	18.07	8 8.8	15	20 44 21.60	5.463	21 8 21.2	25.88	7 7.0		
16	19 49 47.51	3.654	25 31 3.5	18.47	8 6.3	16	20 46 33.26	5.499	20 57 7.6	26.24	7 5.2		
17	19 51 16.35	3.748	25 24 0.0	18.83	8 3.9	17	20 48 45.73	5.535	20 45 45.4	26.60	7 3.5		
18	19 52 47.44	3.841	25 16 47.7	19.19	8 1.5	18	20 50 59.00	5.569	20 34 14.7	26.96	7 1.8		
19	19 54 20.72	3.932	25 9 26.3	19.54	7 59.1	19	20 53 18.06	5.601	20 22 35.6	27.31	7 0.1		
20	19 55 56.16	4.019	25 1 57.5	19.89	7 56.7	20	20 55 27.87	5.632	20 10 48.0	27.65	6 58.3		
21	19 57 33.66	4.104	24 54 19.7	20.23	7 54.4	21	20 57 48.40	5.661	19 58 52.1	28.00	6 56.6		
22	19 59 13.15	4.186	24 46 33.4	20.56	7 52.2	22	20 59 59.61	5.689	19 46 47.8	28.33	6 55.0		
23	20 0 54.57	4.265	24 38 38.5	20.88	7 50.0	23	21 2 16.46	5.714	19 34 35.4	28.69	6 53.3		
24	20 2 37.86	4.341	24 30 35.1	21.20	7 47.8	24	21 4 33.91	5.739	19 22 14.8	29.03	6 51.7		
25	20 4 22.98	4.414	24 22 23.1	21.51	7 45.6	25	21 6 51.94	5.762	19 9 46.1	29.36	6 50.0		
26	20 6 9.75	4.486	24 14 2.5	21.81	7 43.4	26	21 9 10.51	5.784	18 57 9.4	29.69	6 48.4		
27	20 7 58.26	4.555	24 5 33.4	22.10	7 41.2	27	21 11 29.59	5.805	18 44 34.8	29.99	6 46.8		
28	20 9 48.38	4.621	23 56 55.7	22.38	7 39.1	28	21 13 49.15	5.825	18 31 32.3	30.28	6 45.2		
29	20 11 40.07	4.685	23 48 9.3	22.65	7 37.1	29	21 16 9.18	5.843	18 18 32.1	30.57	6 43.6		
30	20 13 33.25	4.746	23 39 14.3	22.91	7 35.1	30	21 18 29.64	5.862	18 5 24.0	30.85	6 42.0		
31	20 15 27.88	4.805	23 30 10.7	23.16	7 33.1	31	21 20 50.54	5.879	17 52 8.1	31.12	6 40.4		
32	20 17 23.92	4.861	23 20 58.5	23.40	7 31.1	32	21 23 11.84	5.895	17 38 44.5	31.38	6 38.8		

Day of the Month,	5th.	13th.	21st.	29th.	Day of the Month,	7th.	15th.	23d.	31st.
Polar Semidiameter	" 9.9	" 9.2	" 8.5	" 7.9	Polar Semidiameter	" 7.4	" 6.9	" 6.4	" 6.0
Horizontal Parallax	16.9	15.7	14.6	13.5	Horizontal Parallax	12.6	11.7	10.9	10.2

GREENWICH MEAN TIME.

NOVEMBER.

DECEMBER.

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.		Apparent Declination.			Var. of Dec. for 1 Hour.		Meridian Passage.	Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.		Apparent Declination.			Var. of Dec. for 1 Hour.		Meridian Passage.
	Noon.			Noon.		Noon.			Noon.				Noon.			Noon.		Noon.			Noon.		
	h.	m.	s.	s.	"	°	'	"	"	"	h. m.		h.	m.	s.	s.	"	°	'	"	"	"	h. m.
1	21	23	11.84	5.995	-	17	38	44.5	33.64	6	38.8	1	22	35	47.65	6.131	-	10	5	35.5	41.13	5	58.1
2	21	25	33.52	5.911	-	17	25	13.3	33.93	6	37.2	2	22	38	14.82	6.133	-	9	49	6.0	41.31	5	51.6
3	21	27	55.56	5.925	-	17	11	34.6	34.27	6	35.6	3	22	40	42.04	6.136	-	9	32	32.5	41.47	5	50.2
4	21	30	17.94	5.938	-	16	57	48.3	34.58	6	34.0	4	22	43	9.31	6.137	-	9	15	55.2	41.63	5	48.7
5	21	32	40.65	5.950	-	16	43	54.6	34.89	6	32.5	5	22	45	36.63	6.139	-	8	59	14.1	41.79	5	47.2
6	21	35	3.67	5.963	-	16	29	53.3	35.20	6	31.0	6	22	48	4.00	6.141	-	8	42	29.5	41.93	5	45.8
7	21	37	27.01	5.976	-	16	15	44.9	35.49	6	29.4	7	22	50	31.43	6.144	-	8	25	41.4	42.07	5	44.3
8	21	39	50.65	5.991	-	16	1	29.6	35.78	6	27.8	8	22	52	58.90	6.146	-	8	8	49.9	42.21	5	42.8
9	21	42	14.58	6.002	-	15	47	7.4	36.06	6	26.3	9	22	55	26.43	6.148	-	7	51	55.1	42.36	5	41.3
10	21	44	38.77	6.013	-	15	32	38.4	36.34	6	24.7	10	22	57	54.00	6.150	-	7	34	57.1	42.48	5	39.8
11	21	47	3.22	6.023	-	15	18	2.8	36.62	6	23.2	11	22	0	21.62	6.152	-	7	17	56.0	42.61	5	38.4
12	21	49	27.90	6.033	-	15	3	20.6	36.89	6	21.7	12	22	2	49.23	6.153	-	7	0	52.0	42.73	5	36.9
13	21	51	52.82	6.043	-	14	48	31.9	37.16	6	20.2	13	22	5	16.98	6.155	-	6	43	45.2	42.84	5	35.4
14	21	54	17.96	6.053	-	14	33	36.8	37.43	6	18.7	14	22	7	44.71	6.156	-	6	26	35.8	42.94	5	33.9
15	21	56	43.32	6.060	-	14	18	35.4	37.69	6	17.1	15	22	10	12.48	6.158	-	6	9	24.0	43.04	5	32.4
16	21	59	8.87	6.068	-	14	3	27.8	37.94	6	15.6	16	22	12	40.29	6.159	-	5	52	10.0	43.13	5	30.9
17	22	1	34.61	6.076	-	13	48	14.1	38.19	6	14.1	17	22	15	8.15	6.161	-	5	34	53.8	43.21	5	29.5
18	22	4	0.52	6.085	-	13	32	54.5	38.43	6	12.6	18	22	17	36.06	6.163	-	5	17	35.7	43.29	5	28.0
19	22	6	26.59	6.090	-	13	17	29.2	38.67	6	11.1	19	22	20	4.01	6.165	-	5	0	15.7	43.37	5	26.5
20	22	8	52.81	6.095	-	13	1	58.4	38.89	6	9.6	20	22	22	31.99	6.167	-	4	42	53.9	43.44	5	25.0
21	22	11	19.16	6.100	-	12	46	22.2	39.13	6	8.1	21	22	25	0.02	6.168	-	4	25	30.4	43.60	5	23.5
22	22	13	45.64	6.106	-	12	30	40.1	39.36	6	6.6	22	22	27	28.07	6.169	-	4	8	5.7	43.66	5	22.0
23	22	16	12.25	6.111	-	12	14	52.7	39.58	6	5.0	23	22	29	56.15	6.170	-	3	50	39.7	43.60	5	20.6
24	22	18	38.96	6.116	-	11	59	0.0	39.80	6	3.6	24	22	32	24.26	6.173	-	3	33	12.8	43.64	5	19.1
25	22	21	5.76	6.118	-	11	43	2.1	40.01	6	2.1	25	22	34	52.41	6.173	-	3	15	44.9	43.68	5	17.6
26	22	23	32.63	6.120	-	11	26	59.2	40.23	6	0.6	26	22	37	20.59	6.175	-	2	58	16.1	43.71	5	16.2
27	22	25	59.54	6.123	-	11	10	51.5	40.43	5	59.1	27	22	39	48.80	6.176	-	2	40	46.6	43.74	5	14.7
28	22	28	26.49	6.124	-	10	54	39.1	40.61	5	57.6	28	22	42	17.04	6.177	-	2	28	16.4	43.77	5	13.2
29	22	30	53.49	6.126	-	10	38	22.3	40.81	5	56.1	29	22	44	45.31	6.178	-	2	5	45.6	43.79	5	11.8
30	22	33	20.54	6.128	-	10	22	1.0	40.97	5	54.6	30	22	47	13.61	6.180	-	1	48	14.4	43.81	5	10.3
31	22	35	47.65	6.131	-	10	5	35.5	41.13	5	53.1	31	22	49	41.94	6.181	-	1	30	42.3	43.82	5	8.8
32	22	38	14.82	6.133	-	9	49	6.0	41.31	5	51.6	32	22	52	10.30	6.182	-	1	13	11.0	43.84	5	7.3

Day of the Month,	7th.	15th.	23d.	31st.	Day of the Month,	8th.	16th.	24th.	32d.
Polar Semidiameter	" 5.6	" 5.3	" 5.0	" 4.7	Polar Semidiameter	" 4.5	" 4.2	" 4.0	" 3.8
Horizontal Parallax	9.6	9.0	8.5	8.0	Horizontal Parallax	7.6	7.2	6.8	6.5

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.									
Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.	Apparent Declination.		Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.	Apparent Declination.		Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.		Noon.	Noon.		Noon.			Noon.		Noon.	Noon.		Noon.	
	h. m. s.	s.	o' / "	"	h. m.	h. m. s.			s.	o' / "	"	h. m.			
1	7 33	13.07	1.393	+22 1	35.0	3.44	12 49.3	1	7 16	8.20	1.303	+22 39	58.3	3.43	10 30.5
2	7 32	39.75	1.393	22 2	57.7	3.44	12 44.9	2	7 15	39.60	1.180	22 40	56.0	3.37	10 26.1
3	7 32	6.21	1.401	22 4	20.3	3.44	12 40.4	3	7 15	11.54	1.158	22 41	52.3	3.31	10 21.7
4	7 31	32.47	1.410	22 5	42.9	3.44	12 35.9	4	7 14	44.03	1.135	22 42	47.2	3.26	10 17.8
5	7 30	58.54	1.417	22 7	5.4	3.43	12 31.4	5	7 14	17.08	1.111	22 43	40.6	3.20	10 12.9
6	7 30	24.45	1.433	22 8	27.6	3.43	12 26.9	6	7 13	50.72	1.088	22 44	32.6	3.14	10 8.5
7	7 29	50.24	1.428	22 9	49.5	3.41	12 22.5	7	7 13	24.96	1.060	22 45	23.2	3.08	10 4.2
8	7 29	15.92	1.432	22 11	11.2	3.40	12 17.9	8	7 12	59.82	1.034	22 46	12.4	3.03	9 59.9
9	7 28	41.52	1.434	22 12	32.5	3.38	12 13.4	9	7 12	35.32	1.006	22 47	0.1	1.96	9 55.6
10	7 28	7.08	1.436	22 13	53.4	3.38	12 8.9	10	7 12	11.47	0.981	22 47	46.4	1.90	9 51.3
11	7 27	32.61	1.436	22 15	13.7	3.34	12 4.4	11	7 11	48.27	0.953	22 48	31.3	1.84	9 47.0
12	7 26	58.14	1.436	22 16	33.5	3.31	11 59.9	12	7 11	25.75	0.924	22 49	14.7	1.78	9 42.7
13	7 26	23.69	1.434	22 17	52.6	3.29	11 55.4	13	7 11	8.98	0.905	22 49	56.6	1.73	9 38.4
14	7 25	49.30	1.432	22 19	11.1	3.25	11 50.9	14	7 10	42.81	0.865	22 50	37.1	1.66	9 34.1
15	7 25	14.98	1.428	22 20	28.9	3.23	11 46.4	15	7 10	22.41	0.836	22 51	16.1	1.59	9 29.8
16	7 24	40.76	1.423	22 21	45.9	3.19	11 41.9	16	7 10	2.74	0.804	22 51	53.6	1.53	9 25.5
17	7 24	6.67	1.417	22 23	2.1	3.16	11 37.4	17	7 9	43.82	0.773	22 52	29.6	1.47	9 21.3
18	7 23	32.73	1.411	22 24	17.5	3.12	11 32.9	18	7 9	25.65	0.741	22 53	4.1	1.41	9 17.1
19	7 22	58.97	1.403	22 25	31.9	3.08	11 28.4	19	7 9	8.24	0.709	22 53	37.1	1.35	9 12.9
20	7 22	25.42	1.398	22 26	45.4	3.04	11 23.9	20	7 8	51.61	0.676	22 54	8.6	1.29	9 8.7
21	7 21	52.10	1.388	22 27	57.9	3.00	11 19.4	21	7 8	35.77	0.643	22 54	38.7	1.23	9 4.5
22	7 21	19.04	1.373	22 29	9.3	2.96	11 14.9	22	7 8	20.73	0.610	22 55	7.3	1.16	9 0.3
23	7 20	46.26	1.360	22 30	19.7	2.91	11 10.4	23	7 8	6.49	0.576	22 55	34.4	1.10	8 56.1
24	7 20	13.79	1.346	22 31	28.9	2.86	11 6.0	24	7 7	53.06	0.542	22 56	0.0	1.04	8 51.9
25	7 19	41.65	1.332	22 32	36.9	2.81	11 1.5	25	7 7	40.46	0.508	22 56	24.2	0.98	8 47.8
26	7 19	9.58	1.316	22 33	43.8	2.76	10 57.0	26	7 7	28.68	0.474	22 56	46.9	0.93	8 43.7
27	7 18	39.50	1.300	22 34	49.5	2.71	10 52.5	27	7 7	17.72	0.439	22 57	8.1	0.88	8 39.6
28	7 18	7.53	1.283	22 35	53.9	2.66	10 48.1	28	7 7	7.60	0.405	22 57	27.8	0.79	8 35.5
29	7 17	36.99	1.263	22 36	57.0	2.61	10 43.7	29	7 6	58.31	0.370	22 57	46.1	0.73	8 31.4
30	7 17	6.91	1.243	22 37	58.8	2.55	10 39.3	30	7 6	49.86	0.335	22 58	3.0	0.67	8 27.3
31	7 16	37.31	1.222	22 38	59.2	2.49	10 34.9	31	7 6	42.25	0.300	22 58	18.4	0.61	8 23.2
32	7 16	8.20	1.202	+22 39	58.3	2.43	10 30.5	32	7 6	35.49	0.265	+22 58	32.4	0.55	8 19.2

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	" 21.9	" 21.9	" 21.8	" 21.6	Polar Semidiameter	" 21.5	" 21.1	" 20.6	" 20.0
Horizontal Parallax	2.0	2.0	2.0	2.0	Horizontal Parallax	2.0	1.9	1.9	1.8

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.	Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	o. ' "	"	h. m.	h. m. s.	s.	o. ' "	"	h. m.	
1	7 6 49.86	0.385	+22 58 3.0	0.67	8 27.3	1	7 9 20.81	0.720	+22 55 16.6	1.11	6 28.1
2	7 6 42.25	0.300	22 58 18.4	0.61	8 23.2	2	7 9 38.45	0.751	22 54 49.3	1.17	6 24.5
3	7 6 35.49	0.265	22 58 32.4	0.55	8 19.2	3	7 9 56.82	0.781	22 54 20.6	1.23	6 20.9
4	7 6 29.57	0.229	22 58 44.9	0.49	8 15.2	4	7 10 15.91	0.811	22 53 50.6	1.28	6 17.3
5	7 6 24.50	0.194	22 58 55.9	0.43	8 11.2	5	7 10 35.72	0.840	22 53 19.3	1.33	6 13.7
6	7 6 20.27	0.159	22 59 5.6	0.37	8 7.2	6	7 10 56.23	0.870	22 52 46.7	1.39	6 10.1
7	7 6 16.88	0.124	22 59 13.9	0.31	8 3.2	7	7 11 17.45	0.899	22 52 12.7	1.45	6 6.5
8	7 6 14.33	0.089	22 59 20.9	0.26	7 59.2	8	7 11 39.37	0.928	22 51 37.3	1.50	6 2.9
9	7 6 12.62	0.054	22 59 26.5	0.20	7 55.2	9	7 12 1.97	0.956	22 51 0.5	1.56	5 59.3
10	7 6 11.75	-0.019	22 59 30.7	0.15	7 51.3	10	7 12 25.25	0.984	22 50 22.3	1.62	5 55.8
11	7 6 11.72	+0.016	22 59 33.5	0.09	7 47.4	11	7 12 49.21	1.012	22 49 42.7	1.68	5 52.3
12	7 6 12.54	0.051	22 59 35.0	+0.03	7 43.5	12	7 13 13.84	1.040	22 49 1.7	1.74	5 48.8
13	7 6 14.19	0.086	22 59 35.0	-0.03	7 39.6	13	7 13 39.13	1.067	22 48 19.3	1.80	5 45.3
14	7 6 16.69	0.121	22 59 33.7	0.08	7 35.7	14	7 14 5.07	1.094	22 47 35.5	1.85	5 41.8
15	7 6 20.00	0.156	22 59 31.0	0.14	7 31.8	15	7 14 31.66	1.121	22 46 50.3	1.91	5 38.3
16	7 6 24.15	0.190	22 59 27.0	0.20	7 27.9	16	7 14 58.89	1.148	22 46 3.7	1.97	5 34.8
17	7 6 29.14	0.225	22 59 21.6	0.26	7 24.1	17	7 15 26.74	1.174	22 45 15.7	2.03	5 31.3
18	7 6 34.95	0.259	22 59 14.9	0.31	7 20.3	18	7 15 55.22	1.200	22 44 26.2	2.09	5 27.8
19	7 6 41.59	0.294	22 59 6.8	0.37	7 16.5	19	7 16 24.31	1.225	22 43 35.3	2.15	5 24.3
20	7 6 49.04	0.328	22 58 57.3	0.42	7 12.7	20	7 16 54.01	1.250	22 42 42.9	2.21	5 20.9
21	7 6 57.31	0.362	22 58 46.4	0.48	7 8.9	21	7 17 24.31	1.275	22 41 49.0	2.27	5 17.5
22	7 7 6.40	0.396	22 58 34.2	0.54	7 5.1	22	7 17 55.21	1.300	22 40 53.7	2.33	5 14.1
23	7 7 16.30	0.430	22 58 20.6	0.60	7 1.3	23	7 18 26.69	1.324	22 39 56.9	2.40	5 10.7
24	7 7 27.01	0.463	22 58 5.7	0.65	6 57.6	24	7 18 58.74	1.348	22 38 58.7	2.46	5 7.3
25	7 7 38.52	0.496	22 57 49.4	0.71	6 53.9	25	7 19 31.36	1.371	22 37 59.0	2.52	5 3.9
26	7 7 50.82	0.529	22 57 31.7	0.76	6 50.2	26	7 20 4.53	1.394	22 36 57.8	2.58	5 0.5
27	7 8 3.90	0.561	22 57 12.6	0.82	6 46.5	27	7 20 38.25	1.416	22 35 55.1	2.64	4 57.1
28	7 8 17.76	0.592	22 56 52.1	0.88	6 42.8	28	7 21 12.50	1.438	22 34 51.0	2.70	4 53.7
29	7 8 32.39	0.623	22 56 30.3	0.94	6 39.1	29	7 21 47.25	1.460	22 33 45.4	2.76	4 50.4
30	7 8 47.78	0.657	22 56 7.1	0.99	6 35.4	30	7 22 22.58	1.482	22 32 38.4	2.82	4 47.0
31	7 9 3.92	0.689	22 55 42.5	1.05	6 31.7	31	7 22 58.40	1.503	22 31 29.8	2.89	4 43.7
32	7 9 20.81	0.720	+22 55 16.6	1.11	6 28.1	32	7 23 34.72	1.524	+22 30 19.7	2.95	4 40.4

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	"	"	"	"	Polar Semidiameter	"	"	"	"
Horizontal Parallax	1.9	1.8	1.7	1.7	Horizontal Parallax	1.7	1.6	1.6	1.5

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' "	"	h. m.		h. m. s.	s.	° ' "	"	h. m.
1	7 22 58.40	1.503	+22 31 29.8	2.99	4 43.7	1	7 45 1.08	2.004	+21 43 22.4	4.88	3 3.8
2	7 23 34.72	1.524	22 30 19.7	2.95	4 40.4	2	7 45 49.25	2.015	21 41 24.3	4.93	3 0.7
3	7 24 11.58	1.544	22 29 8.1	2.91	4 37.1	3	7 46 27.74	2.026	21 39 24.6	5.01	2 57.5
4	7 24 48.83	1.564	22 27 55.0	2.87	4 33.8	4	7 47 26.48	2.036	21 37 23.4	5.06	2 54.4
5	7 25 26.60	1.584	22 26 40.4	2.84	4 30.5	5	7 48 15.48	2.047	21 35 20.6	5.14	2 51.3
6	7 26 4.85	1.603	22 25 24.3	2.80	4 27.2	6	7 49 4.73	2.057	21 33 16.3	5.21	2 48.2
7	7 26 48.56	1.622	22 24 6.7	2.77	4 23.9	7	7 49 54.23	2.067	21 31 10.4	5.27	2 45.1
8	7 27 22.73	1.641	22 22 47.5	2.73	4 20.6	8	7 50 43.97	2.077	21 29 3.0	5.34	2 42.0
9	7 28 2.34	1.660	22 21 26.9	2.69	4 17.3	9	7 51 33.95	2.087	21 26 54.1	5.40	2 38.9
10	7 28 42.40	1.678	22 20 4.8	2.65	4 14.0	10	7 52 24.15	2.096	21 24 43.6	5.47	2 35.8
11	7 29 22.89	1.696	22 18 41.1	2.62	4 10.7	11	7 53 14.57	2.105	21 22 31.6	5.53	2 32.7
12	7 30 3.81	1.714	22 17 15.9	2.58	4 7.5	12	7 54 5.21	2.114	21 20 18.0	5.60	2 29.6
13	7 30 45.15	1.731	22 15 49.1	2.55	4 4.3	13	7 54 56.06	2.123	21 18 2.9	5.66	2 26.5
14	7 31 26.90	1.748	22 14 20.8	2.51	4 1.1	14	7 55 47.11	2.131	21 15 46.2	5.73	2 23.4
15	7 32 9.07	1.765	22 12 50.9	2.48	3 57.9	15	7 56 38.36	2.139	21 13 28.0	5.79	2 20.3
16	7 32 51.64	1.782	22 11 19.4	2.44	3 54.7	16	7 57 29.81	2.147	21 11 8.3	5.85	2 17.2
17	7 33 34.60	1.798	22 9 46.4	2.41	3 51.5	17	7 58 21.44	2.155	21 8 47.1	5.91	2 14.2
18	7 34 17.95	1.814	22 8 11.8	2.37	3 48.3	18	7 59 13.25	2.163	21 6 24.4	5.98	2 11.2
19	7 35 1.67	1.830	22 6 35.6	2.34	3 45.1	19	8 0 5.24	2.170	21 4 0.1	6.04	2 8.1
20	7 35 45.76	1.846	22 4 57.9	2.30	3 41.9	20	8 0 57.40	2.177	21 1 34.4	6.10	2 5.0
21	7 36 30.22	1.860	22 3 18.6	2.27	3 38.7	21	8 1 49.71	2.184	20 59 7.2	6.17	2 2.0
22	7 37 15.04	1.875	22 1 37.7	2.23	3 35.5	22	8 2 42.18	2.190	20 56 38.5	6.23	1 58.9
23	7 38 0.20	1.889	21 59 55.2	2.20	3 32.3	23	8 3 34.80	2.196	20 54 8.4	6.29	1 55.9
24	7 38 45.70	1.903	21 58 11.1	2.16	3 29.1	24	8 4 27.56	2.201	20 51 36.8	6.35	1 52.8
25	7 39 31.54	1.917	21 56 25.5	2.13	3 25.9	25	8 5 20.45	2.207	20 49 3.8	6.41	1 49.7
26	7 40 17.70	1.930	21 54 38.3	2.09	3 22.7	26	8 6 13.48	2.212	20 46 29.3	6.47	1 46.7
27	7 41 4.18	1.943	21 52 49.6	2.05	3 19.5	27	8 7 6.68	2.217	20 43 53.4	6.53	1 43.6
28	7 41 50.97	1.956	21 50 59.3	2.02	3 16.3	28	8 7 59.90	2.222	20 41 16.2	6.59	1 40.6
29	7 42 38.05	1.968	21 49 7.4	1.98	3 13.2	29	8 8 53.28	2.227	20 38 37.6	6.64	1 37.5
30	7 43 25.43	1.980	21 47 14.0	1.95	3 10.1	30	8 9 46.77	2.231	20 35 57.6	6.70	1 34.5
31	7 44 13.09	1.992	21 45 19.0	1.91	3 7.0	31	8 10 40.36	2.235	20 33 16.2	6.76	1 31.4
32	7 45 1.03	2.004	+21 43 22.4	1.88	3 3.8	32	8 11 34.05	2.239	+20 30 33.5	6.81	1 28.4

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	16.7	16.3	15.9	15.6	Polar Semidiameter	15.6	15.3	15.1	14.9
Horizontal Parallax	1.5	1.5	1.5	1.4	Horizontal Parallax	1.4	1.4	1.4	1.4

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.	Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.		Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	o. ' "	"	h. m.	h. m. s.	s.	o. ' "	"	h. m.	
1	8 10 40.36	2.325	+20 33 16.2	6.76	1 31.4	1	8 38 46.49	2.264	+18 59 42.8	8.22	23 54.5
2	8 11 34.05	2.290	20 30 33.5	6.81	1 28.4	2	8 39 40.80	2.262	18 56 25.1	8.26	23 51.4
3	8 12 27.83	2.243	20 27 49.4	6.87	1 25.3	3	8 40 35.05	2.259	18 53 6.6	8.29	23 48.4
4	8 13 21.70	2.246	20 25 4.0	6.92	1 22.3	4	8 41 29.24	2.257	18 49 47.3	8.32	23 45.4
5	8 14 15.66	2.230	20 22 17.2	6.98	1 19.2	5	8 42 23.37	2.254	18 46 27.2	8.35	23 42.3
6	8 15 9.69	2.253	20 19 29.1	7.03	1 16.2	6	8 43 17.43	2.251	18 43 6.4	8.38	23 39.3
7	8 16 3.80	2.266	20 16 39.7	7.09	1 13.2	7	8 44 11.42	2.248	18 39 44.8	8.41	23 36.3
8	8 16 57.98	2.269	20 13 49.0	7.14	1 10.1	8	8 45 5.33	2.245	18 36 22.5	8.44	23 33.2
9	8 17 52.23	2.262	20 10 57.0	7.20	1 7.1	9	8 45 59.17	2.241	18 32 59.5	8.47	23 30.2
10	8 18 46.54	2.264	20 8 3.7	7.25	1 4.1	10	8 46 52.92	2.238	18 29 35.8	8.50	23 27.2
11	8 19 40.90	2.266	20 5 9.1	7.31	1 1.1	11	8 47 46.58	2.234	18 26 11.4	8.53	23 24.1
12	8 20 35.32	2.268	20 2 13.3	7.36	0 58.0	12	8 48 40.15	2.230	18 22 46.4	8.56	23 21.1
13	8 21 29.73	2.270	19 59 16.3	7.41	0 55.0	13	8 49 33.61	2.226	18 19 20.8	8.59	23 18.0
14	8 22 24.29	2.272	19 56 18.0	7.46	0 52.0	14	8 50 26.97	2.221	18 15 54.7	8.60	23 15.0
15	8 23 18.84	2.274	19 53 18.5	7.51	0 49.0	15	8 51 20.21	2.216	18 12 28.1	8.62	23 11.9
16	8 24 13.41	2.275	19 50 17.8	7.56	0 45.9	16	8 52 13.33	2.211	18 9 1.0	8.64	23 8.9
17	8 25 8.01	2.276	19 47 16.0	7.61	0 42.9	17	8 53 6.33	2.206	18 5 33.4	8.66	23 5.8
18	8 26 2.63	2.276	19 44 13.0	7.65	0 39.9	18	8 53 59.20	2.201	18 2 5.4	8.68	23 2.8
19	8 26 57.26	2.277	19 41 8.9	7.70	0 36.9	19	8 54 51.95	2.195	17 58 37.0	8.69	22 59.7
20	8 27 51.91	2.277	19 38 3.8	7.74	0 33.8	20	8 55 44.56	2.189	17 55 8.2	8.71	22 56.7
21	8 28 46.56	2.277	19 34 57.5	7.79	0 30.8	21	8 56 37.03	2.183	17 51 39.1	8.72	22 53.6
22	8 29 41.21	2.277	19 31 50.2	7.83	0 27.8	22	8 57 29.35	2.177	17 48 9.7	8.73	22 50.6
23	8 30 35.85	2.276	19 28 41.8	7.88	0 24.8	23	8 58 21.52	2.170	17 44 40.0	8.74	22 47.5
24	8 31 30.48	2.276	19 25 32.4	7.92	0 21.7	24	8 59 13.52	2.164	17 41 10.1	8.75	22 44.4
25	8 32 25.09	2.275	19 22 22.0	7.96	0 18.7	25	9 0 5.37	2.157	17 37 40.0	8.76	22 41.3
26	8 33 19.68	2.274	19 19 10.6	8.00	0 15.7	26	9 0 57.05	2.150	17 34 9.7	8.77	22 38.2
27	8 34 14.24	2.273	19 15 58.2	8.04	0 12.6	27	9 1 48.56	2.143	17 30 39.2	8.77	22 35.1
28	8 35 8.77	2.271	19 12 44.9	8.08	0 9.6	28	9 2 39.89	2.136	17 27 8.6	8.78	22 32.1
29	8 36 3.26	2.270	19 9 30.7	8.12	0 6.6	29	9 3 31.05	2.128	17 23 37.9	8.78	22 29.0
30	8 36 57.72	2.268	19 6 15.6	8.15	0 3.5	30	9 4 22.02	2.120	17 20 7.2	8.78	22 25.9
31	8 37 52.13	2.266	19 2 59.6	8.19	0 0.5	31	9 5 12.80	2.112	17 16 36.4	8.78	22 22.8
32	8 38 46.49	2.264	+18 59 42.8	8.22	23 54.5	32	9 6 3.39	2.104	+17 13 5.6	8.78	22 19.7

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	14.9	14.8	14.8	14.7	Polar Semidiameter	14.7	14.8	14.9	15.0
Horizontal Parallax	1.4	1.4	1.4	1.4	Horizontal Parallax	1.4	1.4	1.4	1.4

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.		Noon.				Noon.		Noon.		
	h. m. s.	s.	O	I			h. m.	h. m. s.	s.	O		I	h. m.
1	9 6 3.39	2.104	+17 18 5.6	8.78	22 19.7	1	9 29 26.74	1.760	+15 30 42.3	8.03	20 44.9
2	9 6 58.78	2.096	17 9 34.9	8.78	22 16.6	2	9 30 8.81	1.745	15 27 30.2	7.98	20 41.7
3	9 7 43.98	2.088	17 6 4.2	8.78	22 13.5	3	9 30 50.51	1.730	15 24 19.4	7.93	20 38.5
4	9 8 33.97	2.079	17 2 33.5	8.77	22 10.4	4	9 31 31.84	1.714	15 21 9.8	7.87	20 35.2
5	9 9 28.75	2.070	16 59 3.0	8.77	22 7.3	5	9 32 12.80	1.699	15 18 1.6	7.81	20 31.9
6	9 10 18.32	2.061	16 55 32.6	8.76	22 4.2	6	9 32 58.38	1.683	15 14 54.8	7.75	20 28.6
7	9 11 2.67	2.052	16 52 2.4	8.76	22 1.1	7	9 33 33.58	1.667	15 11 49.4	7.69	20 25.4
8	9 11 51.80	2.042	16 48 32.5	8.74	21 58.0	8	9 34 13.40	1.651	15 8 45.6	7.63	20 22.1
9	9 12 40.69	2.033	16 45 2.9	8.73	21 54.9	9	9 34 52.82	1.634	15 5 43.3	7.57	20 18.8
10	9 13 29.35	2.022	16 41 33.5	8.72	21 51.8	10	9 35 31.83	1.617	15 2 42.6	7.50	20 15.5
11	9 14 17.77	2.012	16 38 4.4	8.71	21 48.6	11	9 36 10.43	1.600	14 59 43.5	7.43	20 12.2
12	9 15 5.95	2.002	16 34 35.7	8.69	21 45.4	12	9 36 48.61	1.582	14 56 46.1	7.36	20 8.9
13	9 15 53.87	1.991	16 31 7.5	8.67	21 42.3	13	9 37 26.37	1.564	14 53 50.5	7.29	20 5.6
14	9 16 41.53	1.980	16 27 39.8	8.65	21 39.2	14	9 38 3.69	1.546	14 50 56.7	7.20	20 2.3
15	9 17 28.92	1.969	16 24 12.6	8.63	21 36.1	15	9 38 40.57	1.528	14 48 4.8	7.12	19 59.0
16	9 18 16.05	1.958	16 20 46.0	8.60	21 32.9	16	9 39 17.01	1.509	14 45 14.7	7.04	19 55.7
17	9 19 2.90	1.947	16 17 20.0	8.57	21 29.7	17	9 39 52.99	1.490	14 42 26.6	6.96	19 52.4
18	9 19 49.47	1.935	16 13 54.6	8.54	21 26.5	18	9 40 28.51	1.470	14 39 40.5	6.88	19 49.1
19	9 20 35.75	1.923	16 10 29.9	8.51	21 23.3	19	9 41 3.56	1.451	14 36 56.4	6.80	19 45.7
20	9 21 21.74	1.910	16 7 6.0	8.48	21 20.1	20	9 41 38.14	1.431	14 34 14.5	6.71	19 42.3
21	9 22 7.42	1.897	16 3 42.8	8.45	21 16.9	21	9 42 12.24	1.411	14 31 34.8	6.62	19 38.9
22	9 22 52.80	1.884	16 0 20.5	8.41	21 13.7	22	9 42 45.86	1.391	14 28 57.2	6.52	19 35.5
23	9 23 37.87	1.871	15 56 59.0	8.38	21 10.5	23	9 43 18.99	1.370	14 26 21.8	6.43	19 32.1
24	9 24 22.62	1.858	15 53 38.4	8.34	21 7.3	24	9 43 51.62	1.349	14 23 48.8	6.33	19 28.7
25	9 25 7.05	1.845	15 50 18.7	8.30	21 4.1	25	9 44 23.75	1.328	14 21 18.1	6.23	19 25.3
26	9 25 51.17	1.831	15 46 59.9	8.26	21 0.9	26	9 44 55.38	1.307	14 18 49.7	6.13	19 21.9
27	9 26 34.96	1.818	15 43 42.2	8.22	20 57.7	27	9 45 26.50	1.286	14 16 23.7	6.03	19 18.5
28	9 27 18.42	1.804	15 40 25.5	8.17	20 54.5	28	9 45 57.10	1.264	14 14 0.2	5.93	19 15.1
29	9 28 1.54	1.790	15 37 10.0	8.13	20 51.3	29	9 46 27.18	1.242	14 11 39.2	5.83	19 11.6
30	9 28 44.32	1.775	15 33 55.6	8.08	20 48.1	30	9 46 56.72	1.220	14 9 20.7	5.72	19 8.1
31	9 29 26.74	1.760	15 30 42.3	8.03	20 44.9	31	9 47 25.72	1.197	14 7 4.8	5.61	19 4.6
32	9 30 8.81	1.745	+15 27 30.2	7.98	20 41.7	32	9 47 54.18	1.174	+14 4 51.6	5.50	19 1.1

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	^N 15.0	^N 15.2	^N 15.4	^N 15.7	Polar Semidiameter	^N 15.7	^N 16.0	^N 16.4	^N 16.9
Horizontal Parallax	1.4	1.4	1.4	1.4	Horizontal Parallax	1.4	1.5	1.5	1.6

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	O I N	"	h. m.		h. m. s.	s.	O I N	"	h. m.
1	9 47 54.18	1.174	+14 4 51.6	6.59	19 1.1	1	9 57 21.63	0.366	+13 22 42.4	1.29	17 12.4
2	9 48 22.09	1.161	14 2 41.1	6.39	18 57.6	2	9 57 30.06	0.356	13 22 13.5	1.12	17 8.6
3	9 48 49.44	1.138	14 0 33.3	5.36	18 54.1	3	9 57 37.73	0.345	13 21 48.6	0.96	17 4.8
4	9 49 16.23	1.104	13 58 28.3	5.14	18 50.6	4	9 57 44.68	0.374	13 21 27.6	0.80	17 1.0
5	9 49 42.44	1.060	13 56 26.2	5.03	18 47.1	5	9 57 50.89	0.343	13 21 10.6	0.63	16 57.2
6	9 50 8.06	1.016	13 54 26.9	4.90	18 43.6	6	9 57 56.36	0.312	13 20 57.5	0.46	16 53.3
7	9 50 33.13	1.032	13 52 30.6	4.78	18 40.1	7	9 58 1.08	0.181	13 20 48.5	0.29	16 49.4
8	9 50 57.59	1.007	13 50 37.3	4.66	18 36.6	8	9 58 5.05	0.150	13 20 48.5	-0.12	16 45.5
9	9 51 21.45	0.982	13 48 47.0	4.53	18 33.1	9	9 58 8.27	0.119	13 20 42.6	+0.05	16 41.6
10	9 51 44.70	0.956	13 46 59.9	4.40	18 29.6	10	9 58 10.74	0.087	13 20 45.8	0.22	16 37.7
11	9 52 7.33	0.930	13 45 15.9	4.26	18 26.0	11	9 58 12.45	0.055	13 20 53.0	0.39	16 33.8
12	9 52 29.34	0.904	13 43 35.2	4.13	18 22.4	12	9 58 13.39	-0.023	13 21 4.3	0.56	16 29.9
13	9 52 50.72	0.878	13 41 57.7	3.99	18 18.8	13	9 58 13.57	+0.009	13 21 19.6	0.72	16 26.0
14	9 53 11.46	0.851	13 40 23.6	3.85	18 15.2	14	9 58 12.99	0.041	13 21 39.0	0.89	16 22.0
15	9 53 31.56	0.824	13 38 52.9	3.71	18 11.6	15	9 58 11.64	0.072	13 22 2.4	1.06	16 18.0
16	9 53 51.01	0.797	13 37 25.5	3.57	18 8.0	16	9 58 9.53	0.104	13 22 30.0	1.23	16 14.0
17	9 54 9.31	0.770	13 36 1.5	3.43	18 4.4	17	9 58 6.67	0.135	13 23 1.6	1.40	16 10.0
18	9 54 27.96	0.743	13 34 41.0	3.29	18 0.8	18	9 58 3.05	0.167	13 23 37.3	1.57	16 6.0
19	9 54 45.44	0.715	13 33 23.9	3.15	17 57.2	19	9 57 58.67	0.198	13 24 17.0	1.73	16 2.0
20	9 55 2.26	0.687	13 32 10.4	3.09	17 53.5	20	9 57 53.54	0.230	13 25 0.6	1.90	15 58.0
21	9 55 18.40	0.660	13 31 0.4	3.84	17 49.8	21	9 57 47.65	0.261	13 25 48.2	2.06	15 54.0
22	9 55 33.86	0.630	13 29 58.9	3.69	17 46.1	22	9 57 41.01	0.292	13 26 39.7	2.23	15 50.0
23	9 55 48.63	0.601	13 28 51.1	3.54	17 42.4	23	9 57 33.63	0.323	13 27 35.0	2.39	15 45.9
24	9 56 2.71	0.572	13 27 51.9	3.39	17 38.7	24	9 57 25.50	0.354	13 28 34.2	2.55	15 41.8
25	9 56 16.09	0.543	13 26 56.4	3.24	17 35.0	25	9 57 16.64	0.385	13 29 37.3	2.71	15 37.7
26	9 56 28.78	0.514	13 26 4.6	3.09	17 31.3	26	9 57 7.04	0.416	13 30 44.2	2.87	15 33.6
27	9 56 40.77	0.486	13 25 16.5	1.93	17 27.6	27	9 56 56.71	0.446	13 31 54.9	3.03	15 29.5
28	9 56 52.05	0.456	13 24 32.2	1.77	17 23.8	28	9 56 45.65	0.476	13 33 9.4	3.19	15 25.4
29	9 57 2.63	0.426	13 23 51.7	1.61	17 20.0	29	9 56 33.88	0.506	13 34 27.6	3.34	15 21.3
30	9 57 12.49	0.396	13 23 15.1	1.46	17 16.2	30	9 56 21.39	0.535	13 35 49.5	3.49	15 17.2
31	9 57 21.63	0.366	13 22 42.4	1.28	17 12.4	31	9 56 8.20	0.564	13 37 14.9	3.63	15 13.1
32	9 57 30.05	0.336	+13 22 13.5	1.13	17 8.6	32	9 55 54.31	0.593	+13 38 43.8	3.77	15 8.9

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	16.9	17.4	17.9	18.5	Polar Semidiameter	18.5	19.0	19.6	20.1
Horizontal Parallax	1.6	1.6	1.7	1.7	Horizontal Parallax	1.7	1.8	1.8	1.9

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.						
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	
	Noon.		Noon.				Noon.		Noon.			
	h. m. s.	s.	O	I			N	h. m.	h. m. s.	s.		O	I	N	h. m.
1	9 52 52.93	-0.430	+14 15	8.7	+2.73	15 8.8	1	9 45 13.75	-0.760	+15 0 2.0	+4.20	12 59.3
2	9 52 42.66	0.436	14 16	10.1	2.80	15 4.7	2	9 44 55.46	0.764	15 1 42.9	4.21	12 55.0
3	9 52 32.08	0.461	14 17	18.2	2.88	15 0.6	3	9 44 37.06	0.769	15 3 24.1	4.22	12 50.8
4	9 52 21.03	0.466	14 18	28.1	2.95	14 56.5	4	9 44 18.55	0.773	15 5 5.6	4.23	12 46.5
5	9 52 9.68	0.460	14 19	39.6	3.01	14 52.3	5	9 43 59.96	0.778	15 6 47.2	4.24	12 42.3
6	9 51 57.98	0.496	14 20	52.8	3.08	14 48.2	6	9 43 41.29	0.779	15 8 28.9	4.24	12 38.1
7	9 51 45.93	0.509	14 22	7.6	3.15	14 44.1	7	9 43 22.55	0.782	15 10 10.6	4.24	12 33.8
8	9 51 33.54	0.523	14 23	24.0	3.23	14 39.9	8	9 43 3.74	0.785	15 11 52.3	4.24	12 29.6
9	9 51 20.81	0.537	14 24	42.1	3.29	14 35.8	9	9 42 44.88	0.786	15 13 33.9	4.23	12 25.3
10	9 51 7.76	0.550	14 26	1.7	3.35	14 31.6	10	9 42 25.99	0.788	15 15 15.4	4.23	12 21.1
11	9 50 54.40	0.563	14 27	22.8	3.41	14 27.5	11	9 42 7.07	0.789	15 16 56.7	4.22	12 16.8
12	9 50 40.72	0.576	14 28	45.3	3.47	14 23.3	12	9 41 48.13	0.789	15 18 37.8	4.21	12 12.6
13	9 50 26.73	0.589	14 30	9.2	3.52	14 19.2	13	9 41 29.18	0.790	15 20 18.6	4.19	12 8.4
14	9 50 12.44	0.601	14 31	34.4	3.58	14 15.0	14	9 41 10.23	0.789	15 21 59.1	4.18	12 4.1
15	9 49 57.86	0.613	14 33	0.9	3.63	14 10.8	15	9 40 51.30	0.788	15 23 39.2	4.16	11 59.9
16	9 49 43.00	0.626	14 34	28.7	3.68	14 6.7	16	9 40 32.40	0.787	15 25 18.8	4.14	11 55.6
17	9 49 27.86	0.636	14 35	57.7	3.73	14 2.5	17	9 40 13.53	0.785	15 26 57.9	4.12	11 51.4
18	9 49 12.45	0.647	14 37	27.9	3.78	13 58.3	18	9 39 54.71	0.783	15 28 36.4	4.09	11 47.2
19	9 48 56.78	0.658	14 38	59.2	3.83	13 54.1	19	9 39 35.94	0.781	15 30 14.4	4.07	11 42.9
20	9 48 40.37	0.668	14 40	31.6	3.87	13 49.9	20	9 39 17.24	0.777	15 31 51.3	4.04	11 38.7
21	9 48 24.72	0.678	14 42	5.0	3.91	13 45.7	21	9 38 58.63	0.773	15 33 28.4	4.01	11 34.4
22	9 48 8.33	0.688	14 43	39.3	3.95	13 41.5	22	9 38 40.11	0.769	15 35 4.2	3.97	11 30.2
23	9 47 51.71	0.697	14 45	14.5	3.98	13 37.3	23	9 38 21.70	0.765	15 36 39.1	3.94	11 25.9
24	9 47 34.88	0.706	14 46	50.5	4.02	13 33.1	24	9 38 3.40	0.760	15 38 13.2	3.90	11 21.7
25	9 47 17.84	0.714	14 48	27.3	4.05	13 28.8	25	9 37 45.22	0.755	15 39 46.4	3.86	11 17.5
26	9 47 0.61	0.722	14 50	4.8	4.08	13 24.6	26	9 37 27.18	0.749	15 41 18.6	3.82	11 13.3
27	9 46 43.19	0.729	14 51	43.0	4.10	13 20.4	27	9 37 9.29	0.742	15 42 49.7	3.77	11 9.0
28	9 46 25.60	0.736	14 53	21.8	4.13	13 16.2	28	9 36 51.55	0.736	15 44 19.7	3.73	11 4.3
29	9 46 7.85	0.743	14 55	1.2	4.15	13 11.9	29	9 36 33.97	0.729	15 45 48.6	3.68	11 0.6
30	9 45 49.96	0.749	14 56	41.1	4.17	13 7.7	30	9 36 16.57	0.721	15 47 16.4	3.63	10 56.3
31	9 45 31.92	0.754	14 58	21.4	4.19	13 3.5	31	9 35 59.36	0.713	15 48 42.9	3.58	10 52.1
32	9 45 13.75	-0.760	+15 0 2.0	+4.20		12 59.3	32	9 35 42.34	-0.765	+15 50 8.2	+3.53	10 47.9

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	" 9.2	" 9.3	" 9.4	" 9.5	Polar Semidiameter	" 9.5	" 9.5	" 9.5	" 9.4
Horizontal Parallax	1.0	1.0	1.0	1.0	Horizontal Parallax	1.0	1.0	1.0	1.0

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ' "	"	h. m.		h. m. s.	s.	° ' "	"	h. m.
1	9 36 16.57	-0.721	+15 47 16.4	+3.63	10 56.3	1	9 29 29.18	-0.338	+16 19 54.8	+1.45	8 47.7
2	9 35 59.36	0.713	15 48 42.9	3.58	10 52.1	2	9 29 21.50	0.312	16 20 28.7	1.37	8 43.7
3	9 35 42.34	0.705	15 50 8.2	3.53	10 47.9	3	9 29 14.22	0.295	16 21 0.6	1.29	8 39.6
4	9 35 25.53	0.696	15 51 32.2	3.47	10 43.7	4	9 29 7.33	0.279	16 21 30.5	1.20	8 35.6
5	9 35 8.93	0.687	15 52 54.9	3.42	10 39.5	5	9 29 0.84	0.262	16 21 58.3	1.12	8 31.6
6	9 34 52.55	-0.678	15 54 16.3	3.36	10 35.3	6	9 28 54.76	0.245	16 22 24.1	1.03	8 27.6
7	9 34 36.40	-0.669	15 55 36.3	3.30	10 31.1	7	9 28 49.08	0.228	16 22 47.9	0.96	8 23.5
8	9 34 20.49	-0.659	15 56 54.8	3.24	10 26.9	8	9 28 43.81	0.211	16 23 9.7	0.87	8 19.5
9	9 34 4.82	-0.648	15 58 11.9	3.18	10 22.7	9	9 28 38.95	0.194	16 23 29.5	0.78	8 15.5
10	9 33 49.40	0.637	15 59 27.5	3.12	10 18.5	10	9 28 34.50	0.177	16 23 47.2	0.69	8 11.5
11	9 33 34.24	0.626	16 0 41.6	3.05	10 14.3	11	9 28 30.47	0.160	16 24 2.8	0.61	8 7.5
12	9 33 19.35	0.616	16 1 54.1	2.99	10 10.1	12	9 28 26.86	0.143	16 24 16.4	0.52	8 3.5
13	9 33 4.74	0.605	16 3 5.0	2.92	10 5.9	13	9 28 23.67	0.126	16 24 27.9	0.44	7 59.5
14	9 32 50.42	0.591	16 4 14.3	2.85	10 1.7	14	9 28 20.89	0.107	16 24 37.3	0.35	7 55.5
15	9 32 36.39	0.578	16 5 22.0	2.78	9 57.6	15	9 28 18.53	0.089	16 24 44.6	0.26	7 51.5
16	9 32 22.66	0.565	16 6 28.0	2.71	9 53.4	16	9 28 16.60	0.072	16 24 49.9	0.18	7 47.6
17	9 32 9.24	0.553	16 7 32.3	2.64	9 49.3	17	9 28 15.09	0.054	16 24 53.1	+0.09	7 43.6
18	9 31 56.13	0.540	16 8 34.8	2.57	9 45.2	18	9 28 14.01	0.036	16 24 54.2	0.00	7 39.6
19	9 31 43.34	0.526	16 9 35.6	2.50	9 41.0	19	9 28 13.35	0.019	16 24 53.3	-0.08	7 35.7
20	9 31 30.88	0.513	16 10 34.6	2.42	9 36.9	20	9 28 13.12	-0.001	16 24 50.3	0.17	7 31.8
21	9 31 18.75	0.498	16 11 31.8	2.34	9 32.8	21	9 28 13.32	+0.017	16 24 45.2	0.26	7 27.8
22	9 31 6.96	0.484	16 12 27.1	2.26	9 28.6	22	9 28 13.94	0.035	16 24 38.0	0.34	7 23.9
23	9 30 55.53	0.469	16 13 20.5	2.19	9 24.5	23	9 28 14.99	0.053	16 24 28.7	0.43	7 20.0
24	9 30 44.45	0.454	16 14 12.1	2.11	9 20.4	24	9 28 16.47	0.070	16 24 17.4	0.51	7 16.1
25	9 30 33.73	0.439	16 15 1.8	2.03	9 16.3	25	9 28 18.37	0.088	16 24 4.0	0.60	7 12.2
26	9 30 23.38	0.424	16 15 49.6	1.95	9 12.2	26	9 28 20.70	0.106	16 23 48.6	0.69	7 8.3
27	9 30 13.40	0.408	16 16 35.4	1.87	9 8.1	27	9 28 23.45	0.123	16 23 31.1	0.77	7 4.4
28	9 30 3.79	0.392	16 17 19.2	1.79	9 4.0	28	9 28 26.62	0.141	16 23 11.6	0.85	7 0.5
29	9 29 54.56	0.377	16 18 1.1	1.70	8 59.9	29	9 28 30.21	0.158	16 22 50.1	0.94	6 56.7
30	9 29 45.71	0.361	16 18 41.0	1.62	8 55.9	30	9 28 34.22	0.176	16 22 26.6	1.02	6 52.8
31	9 29 37.25	0.344	16 19 18.9	1.54	8 51.8	31	9 28 38.65	0.193	16 22 1.1	1.10	6 49.0
32	9 29 29.18	-0.328	+16 19 54.8	+1.45	8 47.7	32	9 28 43.49	+0.210	+16 21 33.6	-1.19	6 45.2

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	9.4	9.4	9.3	9.1	Polar Semidiameter	9.1	9.0	8.8	8.7
Horizontal Parallax	1.0	1.0	1.0	1.0	Horizontal Parallax	1.0	1.0	1.0	0.9

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	h. m. s.	s.	° ' "	"			h. m.	h. m. s.	s.	° ' "	
1	9 28 38.65	+0.193	+16 22 1.1	-1.10	6 49.0	1	9 34 10.48	+0.690	+15 53 11.8	-3.46	4 52.7
2	9 28 43.49	0.210	16 21 33.6	1.19	6 45.2	2	9 34 26.95	0.693	15 51 47.9	3.33	4 49.0
3	9 28 48.74	0.228	16 21 4.1	1.27	6 41.3	3	9 34 43.74	0.706	15 50 22.4	3.00	4 45.4
4	9 28 54.41	0.246	16 20 32.6	1.35	6 37.5	4	9 35 0.84	0.719	15 48 55.3	2.65	4 41.7
5	9 29 0.48	0.262	16 19 59.2	1.43	6 33.7	5	9 35 18.26	0.732	15 47 26.7	2.73	4 38.1
6	9 29 6.96	0.279	16 19 28.8	1.52	6 29.9	6	9 35 35.99	0.746	15 45 56.5	2.79	4 34.5
7	9 29 13.85	0.295	16 18 46.4	1.60	6 26.0	7	9 35 54.03	0.760	15 44 24.8	2.85	4 30.8
8	9 29 21.14	0.312	16 18 7.1	1.68	6 22.2	8	9 36 12.37	0.770	15 42 51.5	2.92	4 27.2
9	9 29 28.83	0.329	16 17 25.9	1.76	6 18.4	9	9 36 31.01	0.788	15 41 16.7	3.08	4 23.6
10	9 29 36.92	0.345	16 16 42.8	1.84	6 14.6	10	9 36 49.94	0.796	15 39 40.5	4.04	4 20.0
11	9 29 45.40	0.362	16 15 57.8	1.91	6 10.8	11	9 37 9.17	0.807	15 38 2.8	4.30	4 16.3
12	9 29 54.28	0.378	16 15 10.9	1.99	6 7.0	12	9 37 28.68	0.819	15 36 23.6	4.16	4 12.7
13	9 30 3.55	0.395	16 14 22.1	2.07	6 3.2	13	9 37 48.48	0.831	15 34 42.9	4.29	4 9.1
14	9 30 13.22	0.411	16 13 31.5	2.15	5 59.5	14	9 38 8.56	0.843	15 33 0.8	4.29	4 5.5
15	9 30 23.27	0.427	16 12 39.0	2.23	5 55.7	15	9 38 28.92	0.854	15 31 17.2	4.36	4 1.9
16	9 30 33.70	0.443	16 11 44.6	2.30	5 51.9	16	9 38 49.55	0.865	15 29 32.2	4.40	3 58.3
17	9 30 44.52	0.459	16 10 48.4	2.38	5 48.2	17	9 39 10.44	0.876	15 27 45.8	4.46	3 54.7
18	9 30 55.72	0.474	16 9 50.3	2.46	5 44.4	18	9 39 31.60	0.887	15 25 58.1	4.52	3 51.1
19	9 31 7.29	0.490	16 8 50.4	2.53	5 40.7	19	9 39 53.02	0.898	15 24 9.0	4.59	3 47.5
20	9 31 19.23	0.505	16 7 48.7	2.61	5 37.0	20	9 40 14.69	0.908	15 22 19.5	4.63	3 43.9
21	9 31 31.55	0.521	16 6 45.2	2.68	5 33.3	21	9 40 36.62	0.919	15 20 26.7	4.69	3 40.4
22	9 31 44.24	0.536	16 5 39.9	2.76	5 29.5	22	9 40 58.79	0.929	15 18 33.6	4.74	3 36.8
23	9 31 57.29	0.551	16 4 32.7	2.84	5 25.8	23	9 41 21.21	0.939	15 16 39.3	4.79	3 33.3
24	9 32 10.70	0.565	16 3 23.8	2.91	5 22.1	24	9 41 43.87	0.949	15 14 43.7	4.84	3 29.7
25	9 32 24.47	0.581	16 2 13.2	2.98	5 18.4	25	9 42 6.76	0.959	15 12 46.8	4.90	3 26.2
26	9 32 38.59	0.596	16 1 0.9	3.04	5 14.7	26	9 42 29.87	0.968	15 10 48.7	4.96	3 22.7
27	9 32 53.06	0.610	15 59 46.9	3.12	5 11.0	27	9 42 53.21	0.977	15 8 49.4	5.00	3 19.1
28	9 33 7.87	0.624	15 58 31.2	3.19	5 7.3	28	9 43 16.77	0.986	15 6 48.9	5.05	3 15.6
29	9 33 23.02	0.638	15 57 13.8	3.26	5 3.7	29	9 43 40.54	0.995	15 4 47.2	5.09	3 12.1
30	9 33 38.51	0.652	15 55 54.8	3.33	5 0.0	30	9 44 4.52	1.004	15 2 44.4	5.14	3 8.6
31	9 33 54.33	0.666	15 54 34.1	3.40	4 56.3	31	9 44 28.71	1.012	15 0 40.4	5.19	3 5.0
32	9 34 10.48	+0.680	+15 53 11.8	-3.46	4 52.7	32	9 44 53.10	+1.021	+14 58 33.3	-3.24	3 1.5

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	" 8.7	" 8.5	" 8.4	" 8.2	Polar Semidiameter	" 8.2	" 8.1	" 7.9	" 7.8
Horizontal Parallax	0.9	0.9	0.9	0.9	Horizontal Parallax	0.9	0.9	0.9	0.9

GREENWICH MEAN TIME.

JULY.

AUGUST.

Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.	Apparent Declination.		Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.		Var. of R.A. for 1 Hour.	Apparent Declination.		Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.			Noon.					Noon.			Noon.			
	h. m. s.	s.	o	'	"	h. m.	h. m. s.		s.	o	'	"	h. m.		
1	9 44	28.71	+1.012	+15	0 40.4	-5.19	3 5.0	1	9 58	19.56	+1.194	+13 48 47.8	-6.27	1 16.8	
2	9 44	58.10	1.021	14 58	35.3	5.24	3 1.5	2	9 58	48.25	1.197	13 46 17.0	6.29	1 13.4	
3	9 45	17.70	1.029	14 56	29.1	5.28	2 58.0	3	9 59	17.01	1.200	13 43 45.7	6.31	1 9.9	
4	9 45	42.49	1.037	14 54	21.8	5.33	2 54.5	4	9 59	45.88	1.202	13 41 18.9	6.34	1 6.5	
5	9 46	7.47	1.045	14 52	18.5	5.37	2 50.9	5	10 0	14.72	1.205	13 38 41.6	6.36	1 3.1	
6	9 46	32.64	1.053	14 50	4.1	5.41	2 47.4	6	10 0	43.67	1.207	13 36 8.8	6.38	0 59.6	
7	9 46	57.99	1.060	14 47	58.7	5.46	2 43.9	7	10 1	12.68	1.210	13 33 35.5	6.40	0 56.2	
8	9 47	23.51	1.067	14 45	42.2	5.50	2 40.4	8	10 1	41.74	1.212	13 31 1.9	6.41	0 52.7	
9	9 47	49.21	1.075	14 43	29.7	5.54	2 36.9	9	10 2	10.85	1.214	13 28 27.7	6.43	0 49.3	
10	9 48	15.09	1.083	14 41	16.2	5.58	2 33.4	10	10 2	40.01	1.216	13 25 53.2	6.44	0 45.8	
11	9 48	41.14	1.090	14 39	1.8	5.63	2 29.9	11	10 3	9.21	1.218	13 23 18.4	6.46	0 42.3	
12	9 49	7.35	1.096	14 36	46.4	5.66	2 26.4	12	10 3	38.46	1.219	13 20 43.3	6.47	0 38.9	
13	9 49	33.72	1.102	14 34	30.1	5.70	2 22.9	13	10 4	7.74	1.221	13 18 7.8	6.49	0 35.4	
14	9 50	0.24	1.108	14 32	12.8	5.74	2 19.4	14	10 4	37.05	1.223	13 15 32.0	6.50	0 32.0	
15	9 50	26.92	1.116	14 29	54.6	5.78	2 15.9	15	10 5	6.38	1.223	13 12 56.0	6.51	0 28.5	
16	9 50	53.75	1.121	14 27	35.5	5.81	2 12.4	16	10 5	35.73	1.223	13 10 19.7	6.52	0 25.1	
17	9 51	20.72	1.127	14 25	15.6	5.85	2 8.9	17	10 6	5.10	1.224	13 7 43.2	6.53	0 21.7	
18	9 51	47.84	1.133	14 22	54.9	5.88	2 5.4	18	10 6	34.49	1.225	13 5 6.5	6.53	0 18.2	
19	9 52	15.10	1.139	14 20	33.3	5.92	2 1.9	19	10 7	3.88	1.226	13 2 29.7	6.54	0 14.8	
20	9 52	42.48	1.145	14 18	10.9	5.95	1 58.4	20	10 7	33.23	1.226	12 59 52.7	6.54	0 11.3	
21	9 53	9.98	1.149	14 15	47.7	5.98	1 54.9	21	10 8	2.68	1.226	12 57 15.6	6.55	0 7.8	
22	9 53	37.60	1.153	14 13	23.8	6.01	1 51.4	22	10 8	32.07	1.224	12 54 38.5	6.55	0 4.4	
23	9 54	5.24	1.158	14 10	59.2	6.04	1 48.0	23	10 9	1.45	1.224	12 52 1.3	6.55	0 0.9	
24	9 54	33.19	1.163	14 8	33.8	6.07	1 44.5	24	10 9	30.82	1.223	12 49 24.0	6.55	23 54.0	
25	9 55	1.15	1.167	14 6	7.8	6.10	1 41.0	25	10 10	0.17	1.223	12 46 46.7	6.55	23 50.6	
26	9 55	29.22	1.172	14 3	41.1	6.13	1 37.6	26	10 10	29.51	1.223	12 44 9.4	6.55	23 47.2	
27	9 55	57.39	1.176	14 1	13.7	6.16	1 34.1	27	10 10	58.82	1.221	12 41 32.2	6.55	23 43.7	
28	9 56	25.65	1.179	13 58	45.7	6.18	1 30.7	28	10 11	28.10	1.219	12 38 55.0	6.55	23 40.3	
29	9 56	54.00	1.183	13 56	17.1	6.20	1 27.2	29	10 11	57.34	1.218	12 36 17.9	6.54	23 36.9	
30	9 57	22.44	1.187	13 53	47.9	6.23	1 23.7	30	10 12	26.55	1.216	12 33 40.9	6.54	23 33.4	
31	9 57	50.96	1.190	13 51	18.1	6.25	1 20.3	31	10 12	55.72	1.215	12 31 4.0	6.54	23 30.0	
32	9 58	19.56	+1.194	+13 48 47.8	-6.27	1 16.8		32	10 13	24.85	+1.213	+12 28 27.2	-6.53	23 26.5	

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	" 7.8	" 7.8	" 7.7	" 7.7	Polar Semidiameter	" 7.6	" 7.6	" 7.6	" 7.6
Horizontal Parallax	0.9	0.9	0.9	0.9	Horizontal Parallax	0.8	0.8	0.8	0.8

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.							
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		
	Noon.		Noon.				Noon.		Noon.			Noon.	
	h. m. s.	s.	° ' "	"			h. m.	h. m. s.	s.	° ' "		"	h. m.
1	10 13 24.85	+1.213	+12 28 27.2	-6.53	23 26.5	1	10 27 18.66	+1.077	+11 18 13.5	-5.84	21 42.4		
2	10 13 53.98	1.211	12 25 50.6	6.52	23 23.1	2	10 27 44.48	1.070	11 10 53.9	6.80	21 38.9		
3	10 14 22.96	1.209	12 23 14.2	6.51	23 19.6	3	10 28 10.03	1.063	11 8 35.2	5.76	21 35.4		
4	10 14 51.94	1.206	12 20 38.0	6.51	23 16.1	4	10 28 35.45	1.055	11 6 17.5	5.72	21 31.9		
5	10 15 20.86	1.204	12 18 1.9	6.50	23 12.7	5	10 29 0.69	1.048	11 4 0.8	5.67	21 28.3		
6	10 15 49.72	1.201	12 15 26.1	6.49	23 9.2	6	10 29 25.74	1.040	11 1 45.2	5.63	21 24.8		
7	10 16 18.52	1.198	12 12 50.6	6.47	23 5.8	7	10 29 50.60	1.032	10 59 30.7	5.58	21 21.3		
8	10 16 47.24	1.195	12 10 15.4	6.46	23 2.3	8	10 30 15.27	1.024	10 57 17.3	5.53	21 17.8		
9	10 17 15.89	1.192	12 7 40.5	6.45	22 58.8	9	10 30 39.74	1.015	10 55 5.0	5.49	21 14.3		
10	10 17 44.46	1.189	12 5 6.0	6.43	22 55.4	10	10 31 4.01	1.007	10 52 53.9	5.44	21 10.7		
11	10 18 12.95	1.185	12 2 31.9	6.41	22 51.9	11	10 31 28.07	0.998	10 50 44.0	5.39	21 7.2		
12	10 18 41.86	1.182	11 59 58.2	6.40	22 48.5	12	10 31 51.92	0.989	10 48 35.3	5.34	21 3.7		
13	10 19 9.67	1.178	11 57 24.9	6.38	22 45.0	13	10 32 15.55	0.980	10 46 27.9	5.28	21 0.1		
14	10 19 37.88	1.173	11 54 52.1	6.36	22 41.5	14	10 32 38.96	0.971	10 44 21.9	5.22	20 56.6		
15	10 20 5.99	1.169	11 52 19.8	6.34	22 38.1	15	10 33 2.14	0.961	10 42 17.2	5.17	20 53.0		
16	10 20 34.00	1.165	11 49 48.0	6.31	22 34.6	16	10 33 25.09	0.951	10 40 13.9	5.11	20 49.5		
17	10 21 1.90	1.160	11 47 16.8	6.29	22 31.2	17	10 33 47.81	0.942	10 38 12.0	5.06	20 45.9		
18	10 21 29.68	1.155	11 44 46.2	6.26	22 27.7	18	10 34 10.29	0.932	10 36 11.5	4.99	20 42.3		
19	10 21 57.35	1.150	11 42 16.2	6.24	22 24.2	19	10 34 32.52	0.921	10 34 12.4	4.93	20 38.8		
20	10 22 24.89	1.145	11 39 46.8	6.21	22 20.8	20	10 34 54.51	0.911	10 32 14.8	4.87	20 35.2		
21	10 22 52.31	1.140	11 37 18.1	6.18	22 17.3	21	10 35 16.24	0.900	10 30 18.7	4.80	20 31.6		
22	10 23 19.60	1.134	11 34 50.1	6.15	22 13.8	22	10 35 37.71	0.889	10 28 24.2	4.74	20 28.1		
23	10 23 46.75	1.128	11 32 22.8	6.12	23 10.4	23	10 35 58.93	0.878	10 26 31.2	4.68	20 24.5		
24	10 24 13.76	1.122	11 29 56.3	6.09	22 6.9	24	10 36 19.98	0.867	10 24 39.7	4.61	20 20.9		
25	10 24 40.63	1.117	11 27 30.5	6.06	22 3.4	25	10 36 40.57	0.856	10 22 49.8	4.54	20 17.3		
26	10 25 7.36	1.111	11 25 5.5	6.02	21 59.9	26	10 37 0.99	0.845	10 21 1.6	4.47	20 13.7		
27	10 25 33.94	1.104	11 22 41.4	5.99	21 56.4	27	10 37 21.18	0.834	10 19 15.1	4.40	20 10.1		
28	10 26 0.36	1.098	11 20 18.1	5.95	21 52.9	28	10 37 41.00	0.822	10 17 30.2	4.34	20 6.5		
29	10 26 26.62	1.091	11 17 55.7	5.92	21 49.4	29	10 38 0.58	0.810	10 15 47.0	4.26	20 2.9		
30	10 26 52.72	1.084	11 15 34.1	5.88	21 45.9	30	10 38 19.88	0.799	10 14 5.6	4.19	19 59.2		
31	10 27 18.66	1.077	11 13 18.5	5.84	21 42.4	31	10 38 38.89	0.786	10 12 25.9	4.12	19 55.6		
32	10 27 44.43	+1.070	+11 10 53.9	-5.80	21 38.9	32	10 38 57.61	+0.774	+10 10 48.0	-4.04	19 52.0		

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	" 7.6	" 7.6	" 7.7	" 7.8	Polar Semidiameter	" 7.8	" 7.8	" 7.9	" 8.1
Horizontal Parallax	0.8	0.8	0.8	0.8	Horizontal Parallax	0.9	0.9	0.9	0.9

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.		Noon.		Noon.		Noon.		Noon.		Noon.
	h. m. s.	"	° ' "	"	h. m.		h. m. s.	"	° ' "	"	h. m.
1	10 38 57.61	+0.774	+10 10 48.0	-4.04	19 52.0	1	10 45 43.38	+0.333	+ 9 37 45.8	-1.33	18 0.6
2	10 39 16.08	0.761	10 9 11.9	3.97	19 48.3	2	10 45 51.17	0.316	9 37 15.0	1.23	17 56.8
3	10 39 34.15	0.748	10 7 37.6	3.89	19 44.7	3	10 45 58.56	0.300	9 36 46.6	1.13	17 53.0
4	10 39 51.96	0.735	10 6 5.2	3.81	19 41.0	4	10 46 5.55	0.283	9 36 20.6	1.03	17 49.1
5	10 40 9.46	0.723	10 4 34.7	3.73	19 37.4	5	10 46 12.14	0.266	9 35 57.1	0.93	17 45.3
6	10 40 26.64	0.710	10 3 6.1	3.65	19 33.8	6	10 46 18.33	0.249	9 35 36.1	0.82	17 41.5
7	10 40 43.51	0.696	10 1 39.4	3.57	19 30.1	7	10 46 24.10	0.232	9 35 17.6	0.72	17 37.6
8	10 41 0.06	0.683	10 0 14.7	3.49	19 26.5	8	10 46 29.46	0.215	9 35 1.6	0.61	17 33.8
9	10 41 16.28	0.669	9 58 52.0	3.40	19 22.8	9	10 46 34.41	0.198	9 34 48.2	0.51	17 29.9
10	10 41 32.17	0.655	9 57 31.4	3.32	19 19.1	10	10 46 38.95	0.180	9 34 37.8	0.40	17 26.1
11	10 41 47.73	0.641	9 56 12.8	3.23	19 15.4	11	10 46 43.07	0.163	9 34 28.9	0.30	17 22.2
12	10 42 2.95	0.627	9 54 56.3	3.14	19 11.8	12	10 46 46.78	0.146	9 34 23.0	0.19	17 18.3
13	10 42 17.82	0.612	9 53 41.9	3.05	19 8.1	13	10 46 50.07	0.128	9 34 19.7	-0.08	17 14.5
14	10 42 32.55	0.598	9 52 29.7	2.96	19 4.4	14	10 46 52.94	0.111	9 34 19.0	+0.02	17 10.6
15	10 42 46.53	0.583	9 51 19.6	2.88	19 0.7	15	10 46 55.38	0.093	9 34 20.8	0.13	17 6.7
16	10 43 0.85	0.569	9 50 11.6	2.79	18 57.0	16	10 46 57.40	0.076	9 34 25.1	0.23	17 2.8
17	10 43 13.82	0.554	9 49 5.9	2.69	18 53.3	17	10 46 59.01	0.058	9 34 32.0	0.34	16 58.9
18	10 43 26.93	0.539	9 48 2.4	2.60	18 49.6	18	10 47 0.20	0.041	9 34 41.4	0.44	16 55.0
19	10 43 39.68	0.524	9 47 1.1	2.51	18 45.8	19	10 47 0.97	0.023	9 34 53.3	0.53	16 51.0
20	10 43 52.06	0.508	46 2.1	2.42	18 42.1	20	10 47 1.32	+0.006	9 35 7.8	0.66	16 47.1
21	10 44 4.07	0.493	9 45 5.4	2.32	18 38.4	21	10 47 1.25	-0.012	9 35 24.8	0.76	16 43.2
22	10 44 15.71	0.477	9 44 10.9	2.23	18 34.6	22	10 47 0.76	0.029	9 35 44.3	0.86	16 39.2
23	10 44 26.98	0.462	9 43 18.7	2.13	18 30.9	23	10 46 59.86	0.046	9 36 6.2	0.96	16 35.3
24	10 44 37.87	0.446	9 42 28.8	2.03	18 27.1	24	10 46 58.54	0.064	9 36 30.6	1.07	16 31.3
25	10 44 48.39	0.430	9 41 41.3	1.93	18 23.4	25	10 46 56.81	0.081	9 36 57.4	1.17	16 27.4
26	10 44 58.53	0.414	9 40 56.1	1.84	18 19.6	26	10 46 54.66	0.098	9 37 26.7	1.27	16 23.4
27	10 45 8.28	0.398	9 40 13.2	1.74	18 15.8	27	10 46 52.10	0.115	9 37 58.4	1.37	16 19.4
28	10 45 17.64	0.382	9 39 32.7	1.64	18 12.0	28	10 46 49.13	0.132	9 38 32.6	1.47	16 15.4
29	10 45 26.61	0.366	9 38 54.6	1.54	18 8.2	29	10 46 45.75	0.149	9 39 9.2	1.57	16 11.4
30	10 45 35.19	0.349	9 38 19.0	1.43	18 4.4	30	10 46 41.97	0.166	9 39 48.2	1.67	16 7.4
31	10 45 43.38	0.333	9 37 45.8	1.33	18 0.6	31	10 46 37.78	0.183	9 40 29.6	1.77	16 3.4
32	10 45 51.17	+0.316	+ 9 37 15.0	-1.23	17 56.8	32	10 46 33.18	-0.200	+ 9 41 13.3	+1.87	15 59.4

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	8.1	8.2	8.3	8.5	Polar Semidiameter	8.5	8.6	8.8	8.9
Horizontal Parallax	0.9	0.9	0.9	0.9	Horizontal Parallax	0.9	1.0	1.0	1.0

242 SUN'S COÖRDINATES, 1860.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
Jan.	d.				Mar.	d.			
0	0	+1597535	-8899830	-3862150	61	+9385395	-2934242	-1273327	
1	1	.1769881	.8872256	.3850180	62	.9442245	.2783936	.1208103	
2	2	.1941645	.8841925	.3837016	63	.9496232	.2632799	.1142521	
3	3	.2112793	.8808849	.3822662	64	.9547346	.2480875	.1076598	
4	4	.2283275	.8773038	.3807122	65	.9595577	.2328211	.1010354	
5	5	+2453038	-8734505	-3790403	66	+9640917	-2174854	-0943809	
6	6	.2622033	.8693266	.3772512	67	.9683358	.2020845	.0876982	
7	7	.2790209	.8649336	.3753455	68	.9722892	.1866228	.0809890	
8	8	.2957517	.8602732	.3733236	69	.9759506	.1711047	.0742551	
9	9	.3123907	.8553466	.3711861	70	.9793191	.1555346	.0674983	
10	10	+3289332	-8501549	-3689336	71	+9823939	-1399172	-0607209	
11	11	.3453744	.8446995	.3665669	72	.9851741	.1242567	.0539247	
12	12	.3617096	.8389819	.3640866	73	.9876589	.1085578	.0471117	
13	13	.3779341	.8330038	.3614930	74	.9898473	.0928253	.0402841	
14	14	.3940427	.8267669	.3587869	75	.9917386	.0770634	.0334434	
15	15	+4100303	-8202730	-3559691	76	+9933320	-0612765	-0265919	
16	16	.4258920	.8135238	.3530404	77	.9946270	.0484697	.0197316	
17	17	.4416228	.8065211	.3500015	78	.9956233	.0296479	.0128647	
18	18	.4572175	.7992665	.3468533	79	.9963205	-.0138162	-.0059935	
19	19	.4726711	.7917624	.3435964	80	.9967185	+0020204	+0008797	
20	20	+4879784	-7840108	-3402318	81	+9968171	+0178569	+0077525	
21	21	.5031340	.7760142	.3367610	82	.9966165	.0336884	.0146233	
22	22	.5181330	.7677754	.3331854	83	.9961167	.0495097	.0214895	
23	23	.5329706	.7592969	.3295061	84	.9953182	.0653156	.0283487	
24	24	.5476421	.7505816	.3257238	85	.9942218	.0811012	.0351992	
25	25	+5621426	-7416328	-3218396	86	+9928283	+0968617	+0420885	
26	26	.5764676	.7324537	.3178550	87	.9911389	.1125925	.0488648	
27	27	.5906122	.7230473	.3137720	88	.9891549	.1282887	.0567660	
28	28	.6045718	.7134165	.3095921	89	.9868771	.1439451	.0624699	
29	29	.6183426	.7035651	.3053169	90	.9843068	.1595569	.0692443	
30	30	+6319208	-6934968	-3009477	91	+9814454	+1751203	+0759973	
31	31	.6453023	.6832151	.2964859	92	.9782942	.1906308	.0827275	
Feb. 1	32	.6584832	.6727233	.2919330	93	.9748548	.2060836	.0894329	
2	33	.6714597	.6620248	.2872907	94	.9711286	.2214751	.0961116	
3	34	.6842284	.6511231	.2825604	95	.9671170	.2368008	.1027618	
4	35	+6967858	-6400217	-2777433	96	+9628218	+2520564	+1093817	
5	36	.7091287	.6287242	.2728410	97	.9582446	.2672379	.1159695	
6	37	.7212535	.6172341	.2678554	98	.9533867	.2823413	.1225238	
7	38	.7331570	.6055549	.2627880	99	.9482496	.2973625	.1290425	
8	39	.7448362	.5936895	.2576398	100	.9428346	.3122974	.1355238	
9	40	+7562876	-5816418	-2524122	101	+9371432	+3271419	+1419659	
10	41	.7675079	.5694157	.2471069	102	.9311770	.3418920	.1483670	
11	42	.7784937	.5570146	.2417254	103	.9249378	.3565428	.1547257	
12	43	.7892414	.5444416	.2362695	104	.9184273	.3710904	.1610396	
13	44	.7997479	.5317005	.2307404	105	.9116472	.3855307	.1673067	
14	45	+8100098	-5187950	-2251399	106	+9045997	+3998593	+1735253	
15	46	.8200240	.5057289	.2194695	107	.8972864	.4140722	.1796938	
16	47	.8297873	.4925063	.2137310	108	.8897096	.4281651	.1858100	
17	48	.8392963	.4791316	.2079263	109	.8818716	.4421332	.1918721	
18	49	.8485480	.4656084	.2020572	110	.8737747	.4559724	.1978782	
19	50	+8575396	-4519411	-1961254	111	+8654217	+4696785	+2038264	
20	51	.8662680	.4381346	.1901333	112	.8568134	.4832472	.2097149	
21	52	.8747299	.4241935	.1840827	113	.8479587	.4966745	.2155417	
22	53	.8829231	.4101219	.1779754	114	.8388545	.5099560	.2213050	
23	54	.8908453	.3959244	.1718136	115	.8295059	.5230879	.2270031	
24	55	+8984943	-3816059	-1655995	116	+8199163	+5360667	+2326347	
25	56	.9058680	.3671711	.1593350	117	.8100891	.5488889	.2381982	
26	57	.9129644	.3526251	.1530224	118	.8000276	.5615507	.2436921	
27	58	.9197811	.3379726	.1466638	119	.7897354	.5740486	.2491150	
28	59	.9263167	.3232184	.1402613	120	.7792160	.5863795	.2544653	
29	60	+9325698	-3083673	-1338170	121	+7684726	+5985401	+2597417	

SUN'S COORDINATES, 1860. 243

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
May	d.				July	d.			
1	122	+7575086	+6105278	+2649430	1	183	-1728938	+9191184	+3988522
2	123	.7463276	.6223378	.2700678	2	184	.1895327	.9163524	.3976525
3	124	.7349329	.6339689	.2751149	3	185	.2061182	.9133300	.3963416
4	125	.7233279	.6454178	.2800831	4	186	.2226464	.9100521	.3949198
5	126	.7115161	.6566818	.2849710	5	187	.2391129	.9065194	.3933874
6	127	+6995007	+6677577	+2897775	6	188	-2555130	+9027327	+3917448
7	128	.6872850	.6786425	.2945015	7	189	.2718418	.8986926	.3899922
8	129	.6748720	.6893338	.2991413	8	190	.2880952	.8944002	.3881301
9	130	.6622651	.6998286	.3036959	9	191	.3042694	.8898563	.3861587
10	131	.6494682	.7101241	.3081643	10	192	.3203599	.8850619	.3840784
11	132	+6364848	+7202171	+3125449	11	193	-3363615	+8800179	+3818896
12	133	.6233181	.7301049	.3168365	12	194	.3522698	.8747254	.3795928
13	134	.6099716	.7397851	.3210377	13	195	.3680799	.8691853	.3771886
14	135	.5964491	.7492540	.3251473	14	196	.3837872	.8633996	.3746775
15	136	.5827544	.7585090	.3291639	15	197	.3993871	.8573692	.3720601
16	137	+5688914	+7675473	+3330863	16	198	-4148750	+8510953	+3693371
17	138	.5548640	.7763661	.3369133	17	199	.4302461	.8445795	.3665092
18	139	.5406767	.7849627	.3406439	18	200	.4454952	.8378247	.3635774
19	140	.5263340	.7933344	.3442769	19	201	.4606171	.8308325	.3605425
20	141	.5118402	.8014786	.3478109	20	202	.4756082	.8236051	.3574052
21	142	+4971998	+8093928	+3512449	21	203	-4904640	+8161445	+3541667
22	143	.4824173	.8170750	.3545779	22	204	.5051798	.8084526	.3508281
23	144	.4674973	.8245233	.3578091	23	205	.5197518	.8005316	.3473905
24	145	.4524444	.8317355	.3609380	24	206	.5341757	.7923843	.3438549
25	146	.4372635	.8387099	.3639639	25	207	.5484471	.7840134	.3402224
26	147	+4219592	+8454447	+3668858	26	208	-5625621	+7754216	+3364940
27	148	.4065362	.8519383	.3697030	27	209	.5765170	.7666117	.3326711
28	149	.3909992	.8581892	.3724150	28	210	.5903078	.7575860	.3287550
29	150	.3753527	.8641961	.3750212	29	211	.6039306	.7483480	.3247467
30	151	.3596014	.8699580	.3775211	30	212	.6173820	.7389003	.3206473
31	152	+3437496	+8754735	+3799141	31	213	-6306585	+7292447	+3164580
1	153	.3278018	.8807412	.3821999	Aug. 1	214	.6437568	.7193836	.3121798
2	154	.3117623	.8857601	.3843779	2	215	.6566739	.7093201	.3078135
3	155	.2956355	.8905292	.3864478	3	216	.6694063	.6990566	.3033600
4	156	.2794254	.8950474	.3884089	4	217	.6819504	.6885955	.2988206
5	157	+2631366	+8993137	+3902607	5	218	-6943027	+6779395	+2941967
6	158	.2467736	.9033271	.3920028	6	219	.7064596	.6670911	.2894894
7	159	.2303404	.9070865	.3936347	7	220	.7184174	.6560530	.2846999
8	160	.2138412	.9105907	.3951559	8	221	.7301724	.6448284	.2798293
9	161	.1972804	.9138386	.3965660	9	222	.7417211	.6334199	.2748784
10	162	+1806623	+9168291	+3978644	10	223	-7530600	+6218300	+2698487
11	163	.1639917	.9195612	.3990505	11	224	.7641855	.6100621	.2647416
12	164	.1472733	.9220340	.4001239	12	225	.7750939	.5981192	.2595585
13	165	.1305119	.9242464	.4010842	13	226	.7857817	.5860047	.2543007
14	166	.1137123	.9261975	.4019309	14	227	.7962453	.5737214	.2489696
15	167	+0968791	+9278864	+4026637	15	228	-8064812	+5612732	+2435667
16	168	.0800175	.9293124	.4032823	16	229	.8164860	.5486637	.2380940
17	169	.0631324	.9304754	.4037865	17	230	.8262564	.5358965	.2325532
18	170	.0462286	.9313750	.4041762	18	231	.8357894	.5229758	.2269458
19	171	.0293114	.9320105	.4044513	19	232	.8450820	.5099053	.2212735
20	172	+0123860	+9323815	+4046116	20	233	-8541313	+4966888	+2155377
21	173	.0045421	.9324881	.4046573	21	234	.8629345	.4833302	.2097404
22	174	.0214678	.9323308	.4045884	22	235	.8714891	.4698337	.2038836
23	175	.0383862	.9319102	.4044050	23	236	.8797930	.4562035	.1979691
24	176	.0552924	.9312264	.4041073	24	237	.8878438	.4424426	.1919983
25	177	-0721813	+9302796	+4036957	25	238	-8956391	+4285580	+1859730
26	178	.0890484	.9290705	.4031705	26	239	.9031767	.4145507	.1798952
27	179	.1058890	.9276000	.4025321	27	240	.9104549	.4004263	.1737666
28	180	.1226984	.9258686	.4017807	28	241	.9174718	.3861980	.1675885
29	181	.1394719	.9238775	.4009166	29	242	.9242256	.3718397	.1613628
30	182	.1562054	.9216271	.3999403	30	243	.9307144	.3573857	.1550911
31	183	-1728938	+9191184	+3988522	31	244	-9369364	+3428294	+1487749

244 SUN'S COÖRDINATES, 1860.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.	
Sept. 1	d. 245	-.9428897	+.3281752	+.1424161	Nov. 1	d. 306	-.7671871	-.5765040	-.2601719	
	2	.9485725	.3134267	.1360163		2	307	.7558414	.5885752	.254107
	3	.9539831	.2985876	.1295770		3	308	.7443163	.6004693	.2605726
	4	.9591196	.2836618	.1231000		4	309	.7325649	.6121824	.2656561
	5	.9639802	.2686533	.1165870		5	310	.7205902	.6237106	.2706595
6	250	-.9685631	+.2535660	+.1100396	6	311	-.7083951	-.6350502	-.2755810	
	7	.9728665	.2384043	.1034597		7	312	.6959829	.6461974	.2804187
	8	.9768885	.2231725	.0968491		8	313	.6833569	.6571483	.2851711
	9	.9806273	.2078743	.0902096		9	314	.6705206	.6678993	.2898367
	10	.9840813	.1925144	.0835433		10	315	.6574782	.6784466	.2944138
11	255	-.9872490	+.1770970	+.0768521	11	316	-.6442535	-.6887866	-.2989008	
	12	.9901288	.1616267	.0701381		12	317	.6307905	.6989153	.3032961
	13	.9927194	.1461083	.0634034		13	318	.6171533	.7088296	.3075981
	14	.9950195	.1305468	.0566498		14	319	.6033263	.7185259	.3118052
	15	.9970281	.1149468	.0498793		15	320	.5893140	.7280007	.3159161
16	260	-.9987444	+.0993126	+.0430945	16	321	-.5751208	-.7372509	-.3199295	
	17	1.0001676	.0836498	.0362974		17	322	.5607512	.7462738	.3238442
	18	1.0012970	.0679632	.0294901		18	323	.5462098	.7550663	.3276588
	19	1.0021321	.0522575	.0226747		19	324	.5315016	.7636253	.3313722
	20	1.0026729	.0365375	.0158532		20	325	.5166315	.7719486	.3349834
21	265	-1.0029192	+.0208081	+.0090277	21	326	-.5016038	-.7800339	-.3384913	
	22	1.0028710	+.0050736	+.0022004		22	327	.4864232	.7878788	.3418950
	23	1.0025285	-.0106609	-.0046270		23	328	.4710945	.7954810	.3451936
	24	1.0018920	.0263909	.0114524		24	329	.4556222	.8028383	.3483861
	25	1.0009617	.0421117	.0182737		25	330	.4400111	.8099486	.3514715
26	270	-.9997380	-.0578184	-.0250890	26	331	-.4242660	-.8168098	-.3544489	
	27	.9982213	.0735071	.0318966		27	332	.4083912	.8234200	.3573175
	28	.9964118	.0891734	.0386947		28	333	.3923914	.8297771	.3600766
	29	.9943099	.1048134	.0454814		29	334	.3762710	.8358795	.3627253
	30	.9919161	.1204224	.0522546		30	335	.3600344	.8417254	.3652626
Oct. 1	275	-.9892309	-.1359960	-.0590127	Dec. 1	336	-.3436863	-.8473128	-.3676878	
	2	.9862548	.1515301	.0657537		2	337	.3272313	.8526396	.3699999
	3	.9829882	.1670196	.0724757		3	338	.3106741	.8577039	.3721980
	4	.9794316	.1824606	.0791769		4	339	.2940197	.8625039	.3742812
	5	.9755854	.1978492	.0858555		5	340	.2772730	.8670378	.3762490
6	280	-.9714501	-.2131808	-.0925093	6	341	-.2604390	-.8713035	-.3781006	
	7	.9670263	.2284509	.0991363		7	342	.2435227	.8752993	.3798349
	8	.9623146	.2436543	.1057345		8	343	.2265292	.8790239	.3814511
	9	.9573160	.2587861	.1123018		9	344	.2094639	.8824759	.3829487
	10	.9520312	.2738420	.1188360		10	345	.1923324	.8856530	.3843271
11	285	-.9464614	-.2888176	-.1253352	11	346	-.1751400	-.8885540	-.3855857	
	12	.9406081	.3037079	.1317972		12	347	.1578923	.8911780	.3867240
	13	.9344726	.3185079	.1382199		13	348	.1405951	.8935241	.3877415
	14	.9280560	.3332125	.1446012		14	349	.1232543	.8955914	.3886379
	15	.9213603	.3478168	.1509389		15	350	.1058756	.8973792	.3894129
16	290	-.9143877	-.3623164	-.1572310	16	351	-.0884647	-.8988867	-.3900663	
	17	.9071402	.3767069	.1634753		17	352	.0710275	.9001138	.3905981
	18	.8996198	.3909833	.1696700		18	353	.0535694	.9010602	.3910061
	19	.8918287	.4051409	.1758131		19	354	.0360962	.9017254	.3912963
	20	.8837695	.4191753	.1819029		20	355	.0186133	.9021098	.3914627
21	295	-.8754446	-.4330820	-.1879374	21	356	-.0011260	-.9022135	-.3915076	
	22	.8668569	.4468573	.1939145		22	357	+.0163607	.9020373	.3914311
	23	.8580094	.4604968	.1998325		23	358	.0338408	.9015809	.3912332
	24	.8489049	.4739965	.2056898		24	359	.0513079	.9008450	.3909141
	25	.8395459	.4873525	.2114849		25	360	.0687577	.8998300	.3904740
26	300	-.8299352	-.5005612	-.2172163	26	361	+.0861856	-.8985362	-.3899130	
	27	.8200755	.5136185	.2228821		27	362	.1035867	.8969641	.3892313
	28	.8099694	.5265208	.2284807		28	363	.1209556	.8951142	.3884292
	29	.7996197	.5392640	.2340106		29	364	.1382876	.8929869	.3875067
	30	.7890292	.5518448	.2394701		30	365	.1555774	.8905828	.3864640
31	.7782007	-.5642594	-.2448578	31	366	+.1728198	-.8879026	-.3853015		

MOON'S LONGITUDE, &c., 1860. .245

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	10 55 27.8	+4 30 18.9	57 10 43.8	+5 5 43.9	79 24 25.6	+4 5 16.3
1.5	17 3 16.2	4 45 47.9	63 48 44.2	4 53 35.3	86 10 5.1	3 40 31.8
2.0	23 15 39.3	4 58 8.8	70 33 24.3	4 37 13.4	93 1 58.1	3 12 15.7
2.5	29 33 10.7	5 7 6.0	77 24 56.1	4 16 39.0	100 0 14.1	2 40 43.7
3.0	35 56 20.8	5 12 24.5	84 23 23.6	3 51 57.5	107 4 55.6	2 6 16.3
3.5	42 25 35.4	5 13 50.2	91 28 41.7	3 23 20.1	114 15 56.4	1 29 20.2
4.0	49 1 14.6	5 11 10.5	98 40 35.0	2 51 4.3	121 33 0.1	0 50 27.5
4.5	55 43 31.8	5 4 15.0	105 58 37.5	2 15 34.4	128 55 39.6	+0 10 16.2
5.0	62 32 32.3	4 52 56.3	113 22 12.3	1 37 22.0	136 23 16.9	-0 30 30.3
5.5	69 28 12.3	4 37 11.9	120 50 31.9	0 57 5.6	143 55 2.2	1 11 5.0
6.0	76 30 18.3	4 17 1.7	128 22 39.4	+0 15 29.4	151 29 55.9	1 50 38.6
6.5	83 38 27.3	3 52 35.8	135 57 30.1	-0 26 37.7	159 6 49.3	2 28 21.9
7.0	90 52 6.1	3 24 8.2	143 33 53.5	1 8 24.3	166 44 27.7	3 3 27.3
7.5	98 10 32.6	2 52 0.9	151 10 36.0	1 48 58.1	174 21 32.9	3 35 11.6
8.0	105 32 56.4	2 16 42.9	158 46 23.3	2 27 30.0	181 56 45.9	4 2 57.9
8.5	112 58 21.4	1 38 50.3	166 20 3.8	3 3 15.3	189 28 51.5	4 26 17.1
9.0	120 25 47.0	0 59 3.9	173 50 30.4	3 35 34.5	196 56 10.9	4 44 48.7
9.5	127 54 11.3	+0 18 9.7	181 16 43.8	4 3 54.9	204 19 10.9	4 58 20.9
10.0	135 22 32.2	-0 23 4.7	188 37 53.8	4 27 52.4	211 35 34.1	5 6 51.0
10.5	142 49 50.3	1 3 51.2	195 53 19.9	4 47 11.6	218 45 12.3	5 10 23.2
11.0	150 15 11.0	1 43 23.1	203 2 33.4	5 1 44.0	225 47 40.9	5 9 8.3
11.5	157 37 45.0	2 20 57.0	210 5 16.7	5 11 28.3	232 42 47.5	5 3 22.0
12.0	164 56 51.3	2 55 54.5	217 1 21.8	5 16 29.2	239 30 30.7	4 53 23.4
12.5	172 11 56.6	3 27 42.6	223 50 49.2	5 16 54.9	246 10 59.4	4 39 34.2
13.0	179 22 34.6	3 55 54.3	230 33 47.3	5 12 57.4	252 44 31.1	4 22 17.2
13.5	186 28 27.2	4 20 8.9	237 10 31.9	5 4 53.5	259 11 30.3	4 1 55.8
14.0	193 29 23.9	4 40 11.5	243 41 23.0	4 52 59.6	265 32 26.6	3 38 53.1
14.5	200 25 20.0	4 55 52.8	250 6 44.7	4 37 34.2	271 47 53.6	3 13 31.7
15.0	207 16 17.0	5 7 8.7	256 27 3.5	4 18 56.2	277 58 27.1	2 46 13.6
15.5	214 2 20.2	5 13 59.1	262 42 47.4	3 57 25.0	284 4 44.8	2 17 20.1
16.0	220 43 38.3	5 16 27.9	268 54 25.1	3 33 20.6	290 7 24.3	1 47 11.5
16.5	227 20 22.6	5 14 41.9	275 2 25.6	3 7 2.5	296 7 3.3	1 16 7.4
17.0	233 52 45.9	5 8 50.8	281 7 16.9	2 38 50.8	302 4 18.4	0 44 27.0
17.5	240 21 2.1	4 59 6.6	287 9 26.4	2 9 5.2	307 59 44.2	-0 12 29.6
18.0	246 45 35.4	4 45 43.1	293 9 19.9	1 38 5.6	313 53 53.8	+0 19 27.4
18.5	253 6 10.2	4 28 55.7	299 7 21.6	1 6 11.8	319 47 17.6	0 51 5.4
19.0	259 23 30.7	4 9 1.6	305 3 54.1	0 33 43.8	325 40 23.7	1 22 6.6
19.5	265 37 40.8	3 46 18.7	310 59 18.2	-0 1 1.2	331 33 37.5	1 52 13.0
20.0	271 48 54.0	3 21 6.2	316 53 53.3	+0 31 36.1	337 27 21.4	2 21 7.1
20.5	277 57 23.4	2 53 44.0	322 47 57.2	1 3 48.7	343 21 55.3	2 48 31.4
21.0	284 3 21.4	2 24 32.6	328 41 46.5	1 35 17.3	349 17 36.8	3 14 8.8
21.5	290 7 0.6	1 53 53.1	334 35 37.0	2 5 43.2	355 14 41.0	3 37 42.8
22.0	296 8 33.4	1 22 6.8	340 29 43.7	2 34 47.9	1 13 20.8	3 58 57.6
22.5	302 8 12.4	0 49 34.7	346 24 21.3	3 2 13.7	7 13 47.3	4 17 37.8
23.0	308 6 11.0	-0 16 38.3	352 19 44.5	3 27 43.3	13 16 10.3	4 33 29.5
23.5	314 2 43.0	+0 16 21.8	358 16 8.2	3 51 1.1	19 20 38.4	4 46 20.0
24.0	319 58 3.7	0 49 5.3	4 13 48.1	4 11 52.4	25 27 19.7	4 55 57.8
24.5	325 52 29.6	1 21 12.6	10 13 0.7	4 30 3.3	31 36 22.1	5 2 13.4
25.0	331 46 18.7	1 52 24.8	16 14 3.5	4 45 20.3	37 47 54.3	5 4 58.9
25.5	337 39 50.7	2 22 23.6	22 17 15.3	4 57 30.9	44 2 5.3	5 4 8.1
26.0	343 39 27.3	2 50 51.8	28 22 56.5	5 6 24.8	50 19 4.8	4 59 37.1
26.5	349 27 31.7	3 17 32.9	34 31 28.6	5 11 52.3	56 39 3.9	4 51 23.7
27.0	355 22 29.4	3 42 11.0	40 43 14.3	5 13 45.1	63 2 15.3	4 39 28.6
27.5	1 18 47.6	4 4 31.5	46 58 37.7	5 11 56.0	69 28 53.2	4 23 54.7
28.0	7 16 55.4	4 24 19.8	53 18 3.4	5 6 19.6	75 59 12.8	4 4 47.2
28.5	13 17 23.0	4 41 22.0	59 41 56.6	4 56 52.0	82 33 30.3	3 42 14.2
29.0	19 20 42.2	4 55 25.0	66 10 42.3	4 43 31.5	89 12 2.1	3 16 26.9
29.5	25 27 25.2	5 6 15.7	72 44 44.6	4 26 18.5	95 55 4.6	2 47 39.2
30.0	31 38 5.0	5 13 42.0	79 24 25.6	4 5 16.3	102 42 52.9	2 16 9.1
30.5	37 53 14.1	5 17 32.1	86 10 5.1	3 40 31.8	109 35 40.8	1 42 17.6
31.0	44 13 24.1	5 17 35.3	93 1 58.1	3 12 15.7	116 33 36.4	1 6 30.3
31.5	50 39 4.9	+5 13 41.9	100 0 14.1	+2 40 43.7	123 36 46.2	+0 29 16.5

246. MOON'S LONGITUDE, &c., 1860.

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.			MAY.			JUNE.		
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.	
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1.0	130 45 6.5	-0 8 50.7	169 44 8.6	-3 28 1.1	222 53 34.2	-5 1 48.9			
1.5	137 58 28.9	0 47 14.3	177 1 16.1	3 54 0.0	229 53 41.9	4 53 23.7			
2.0	145 16 34.1	1 25 14.1	184 19 51.3	4 16 12.7	236 50 43.3	4 40 40.8			
2.5	152 38 53.1	2 2 8.0	191 39 9.4	4 34 14.0	243 44 7.7	4 23 57.8			
3.0	160 4 46.5	2 37 12.7	198 58 19.7	4 47 43.9	250 33 28.1	4 3 36.3			
3.5	167 33 24.8	3 9 45.7	206 16 28.0	4 56 29.1	257 18 21.9	3 40 1.1			
4.0	175 3 49.4	3 39 6.8	213 32 38.5	5 0 23.1	263 58 32.4	3 13 38.8			
4.5	182 34 54.4	4 4 40.2	220 45 56.0	4 59 26.5	270 33 48.6	2 44 57.3			
5.0	190 5 29.0	4 25 55.9	227 55 28.6	4 53 46.7	277 4 5.7	2 14 25.1			
5.5	197 34 20.6	4 42 31.1	235 0 29.9	4 43 37.4	283 29 25.4	1 42 30.2			
6.0	205 0 18.2	4 54 11.3	242 0 20.8	4 29 17.4	289 49 55.5	1 9 39.8			
6.5	212 22 15.0	5 0 50.2	248 54 30.8	4 11 9.9	296 5 49.3	0 36 19.7			
7.0	219 39 11.9	5 2 29.8	255 42 39.0	3 49 40.6	302 17 25.3	-0 2 54.0			
7.5	226 50 19.3	4 59 19.1	262 24 33.7	3 25 17.2	308 25 6.8	+0 30 14.7			
8.0	233 54 58.9	4 51 33.5	269 0 13.2	2 58 28.1	314 29 20.5	1 2 45.8			
8.5	240 52 44.3	4 39 33.1	275 29 44.2	2 29 41.4	320 30 37.0	1 34 20.4			
9.0	247 43 21.2	4 23 41.6	281 53 21.3	1 59 24.3	326 29 29.2	2 4 41.0			
9.5	254 26 46.8	4 4 24.5	288 11 26.1	1 28 2.6	332 26 32.1	2 33 31.6			
10.0	261 3 8.6	3 42 8.4	294 24 25.6	0 56 0.7	338 22 22.8	3 0 37.3			
10.5	267 32 43.0	3 17 19.8	300 32 51.7	-0 23 41.0	344 17 39.0	3 25 44.1			
11.0	273 55 54.4	2 50 24.8	306 37 19.7	+0 8 25.3	350 12 59.0	3 48 38.7			
11.5	280 13 12.7	2 21 48.1	312 38 27.7	0 40 29.3	356 9 0.7	4 9 8.5			
12.0	286 25 12.5	1 51 53.2	318 36 55.3	1 11 42.8	2 6 21.7	4 27 1.1			
12.5	292 32 32.0	1 21 2.3	324 33 23.2	1 41 58.9	8 5 38.3	4 42 4.5			
13.0	298 35 51.1	0 49 36.1	330 28 32.3	2 11 2.0	14 7 25.0	4 54 7.0			
13.5	304 35 51.0	-0 17 54.2	336 33 3.1	2 38 26.9	20 12 13.8	5 2 57.5			
14.0	310 33 13.3	+0 13 44.9	342 17 35.1	3 4 28.8	26 20 34.1	5 8 25.3			
14.5	316 28 38.8	0 45 3.6	348 12 46.2	3 28 23.3	32 32 51.5	5 10 20.7			
15.0	322 22 47.1	1 15 44.9	354 9 11.9	3 50 6.5	38 49 37.8	5 8 35.1			
15.5	328 16 16.3	1 45 32.3	0 7 25.4	4 9 24.4	45 10 40.1	5 3 1.6			
16.0	334 9 41.9	2 14 9.4	6 7 56.5	4 26 3.4	51 36 40.3	4 53 35.5			
16.5	340 3 36.8	2 41 20.3	12 11 11.9	4 39 50.2	58 7 35.0	4 40 14.9			
17.0	345 58 31.1	3 6 49.1	18 17 33.9	4 50 32.1	64 43 25.1	4 23 1.2			
17.5	351 54 51.4	3 30 20.1	24 27 21.4	4 57 57.3	71 24 5.4	4 2 0.0			
18.0	357 53 1.3	3 51 37.8	30 40 48.1	5 1 55.1	78 9 25.4	3 37 21.0			
18.5	3 53 20.5	4 10 27.3	36 58 3.6	5 2 16.3	84 59 9.0	3 9 18.8			
19.0	9 56 5.2	4 26 34.0	43 19 12.9	4 58 54.1	91 52 55.6	2 38 12.9			
19.5	16 1 28.2	4 39 44.3	49 44 16.3	4 51 43.9	98 50 20.6	2 4 27.9			
20.0	22 9 38.9	4 49 45.7	56 13 10.5	4 40 44.1	105 50 56.5	1 28 32.7			
20.5	28 20 45.3	4 56 27.1	62 45 47.8	4 25 56.8	112 54 13.9	0 51 0.3			
21.0	34 34 44.9	4 59 39.4	69 21 58.2	4 27 27.4	119 59 42.7	+0 12 26.9			
21.5	40 51 44.8	4 59 15.4	76 1 28.9	3 45 25.5	127 6 52.7	-0 26 29.3			
22.0	47 11 42.3	4 55 10.2	82 44 6.1	3 20 4.7	134 15 14.5	1 5 8.8			
22.5	53 34 35.5	4 47 21.7	89 29 35.2	2 51 42.7	141 24 30.3	1 42 52.1			
23.0	60 0 22.3	4 35 50.8	96 17 41.8	2 20 40.8	148 33 44.2	2 19 1.0			
23.5	66 29 0.4	4 20 41.2	103 8 12.5	1 47 23.8	155 43 2.7	2 52 59.0			
24.0	73 0 28.6	4 1 59.9	110 0 55.2	1 12 19.7	162 51 54.1	3 24 12.8			
24.5	79 34 46.8	3 39 57.0	116 55 39.4	+0 35 59.1	169 59 59.0	3 52 12.6			
25.0	86 11 56.1	3 14 45.6	123 52 15.8	-0 1 5.5	177 7 0.0	4 16 32.8			
25.5	92 51 59.5	2 46 42.0	130 50 37.2	0 8 20.3	184 12 40.9	4 36 52.0			
26.0	99 35 1.2	2 16 5.6	137 50 36.8	1 15 10.5	191 16 46.8	4 52 53.8			
26.5	106 21 7.0	1 43 18.9	144 52 8.5	1 51 1.1	198 19 4.0	5 4 26.4			
27.0	113 10 23.3	1 8 46.8	151 55 5.9	2 25 17.7	205 19 19.3	5 11 23.1			
27.5	120 2 56.4	+0 32 57.0	158 59 21.3	2 57 27.0	212 17 19.4	5 13 41.7			
28.0	126 58 52.0	-0 3 40.0	166 4 45.5	3 26 57.2	219 12 52.0	5 11 24.7			
28.5	133 58 13.8	0 40 31.9	173 11 6.6	3 53 19.0	226 5 44.5	5 4 39.0			
29.0	141 1 2.5	1 17 4.4	180 18 9.5	4 16 6.1	232 55 44.8	4 53 35.7			
29.5	148 7 14.7	1 52 41.8	187 25 35.7	4 34 55.7	239 42 41.2	4 38 29.4			
30.0	155 16 41.3	2 26 47.8	194 33 2.7	4 49 39.3	246 26 32.9	4 19 38.3			
30.5	162 29 6.9	2 58 46.0	201 40 4.5	4 59 33.2	253 6 39.7	3 57 23.4			
31.0	169 44 8.6	3 28 1.1	208 46 11.9	5 4 59.0	259 43 23.1	3 32 8.0			
31.5	177 1 16.1	-3 54 0.0	215 50 52.9	-5 5 43.4	266 16 26.4	-3 4 17.2			

MOON'S LONGITUDE, &c., 1860. 247

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	259 45 23.1	-3 32 8.0	306 46 32.9	+0 26 1.3	351 29 21.0	+3 57 18.1
1.5	266 16 26.4	3 4 17.2	312 51 31.3	0 59 24.9	357 24 43.3	4 16 33.8
2.0	272 45 45.0	2 34 17.3	318 54 19.4	1 31 55.8	3 20 10.3	4 33 2.9
2.5	279 11 16.4	2 2 35.3	324 55 10.6	2 3 13.9	9 15 56.9	4 46 35.5
3.0	285 33 1.2	1 29 38.1	330 54 19.4	2 33 0.8	15 12 19.0	4 57 3.2
3.5	291 51 2.9	0 55 52.4	336 52 1.9	3 0 59.2	21 9 33.9	5 4 19.0
4.0	298 5 28.3	-0 21 44.0	342 48 35.3	3 26 53.6	27 8 0.6	5 8 17.3
4.5	304 16 27.2	+0 12 22.3	348 44 18.7	3 50 30.0	33 7 59.9	5 8 53.6
5.0	310 24 12.6	0 46 3.6	354 39 33.0	4 11 35.5	39 9 54.7	5 6 4.9
5.5	316 29 0.8	1 18 58.4	0 34 40.7	4 29 58.7	45 14 9.5	4 59 49.2
6.0	322 31 10.9	1 50 46.5	6 30 6.1	4 45 29.3	51 21 11.1	4 50 6.1
6.5	328 31 4.7	2 21 9.5	12 26 15.3	4 57 58.1	57 31 27.7	4 36 56.4
7.0	334 29 7.0	2 49 51.0	18 23 36.4	5 7 16.8	63 45 38.9	4 20 22.5
7.5	340 25 44.8	3 16 35.5	24 22 38.8	5 13 18.2	70 3 44.9	4 0 28.7
8.0	346 21 27.3	3 41 9.2	30 23 53.3	5 15 55.7	76 26 46.3	3 37 21.2
8.5	352 16 45.4	4 3 19.3	36 27 51.6	5 15 3.8	82 55 3.0	3 11 8.7
9.0	358 12 11.8	4 22 53.8	42 25 6.0	5 10 37.7	89 29 3.3	2 42 2.8
9.5	4 8 20.3	4 29 41.7	48 46 9.4	5 2 33.9	96 9 12.6	2 10 18.4
10.0	10 5 45.5	4 53 32.7	55 1 33.6	4 50 50.2	102 55 52.2	1 36 14.5
10.5	16 5 2.5	5 4 16.8	61 21 49.6	4 35 26.0	109 49 17.8	1 0 14.1
11.0	22 6 46.3	5 11 44.8	67 47 26.3	4 16 22.8	116 49 37.7	+0 22 45.1
11.5	28 11 31.2	5 15 48.0	74 18 49.7	3 53 44.8	123 56 51.0	-0 15 39.9
12.0	34 19 50.3	5 16 18.3	80 56 21.7	3 27 39.4	131 10 46.6	0 54 23.4
12.5	40 32 15.1	5 13 8.6	87 40 19.0	2 58 17.7	138 31 1.3	1 32 44.3
13.0	46 49 14.3	5 6 13.0	94 30 52.1	2 25 55.6	145 56 59.4	2 9 57.9
13.5	53 11 13.4	4 55 27.4	101 28 3.7	1 50 54.0	153 27 52.5	2 45 18.3
14.0	59 38 33.9	4 40 49.6	108 31 47.7	1 13 39.2	161 2 40.1	3 17 59.8
14.5	66 11 32.6	4 22 20.6	115 41 48.6	+0 34 43.1	168 40 11.5	3 47 18.9
15.0	72 50 20.4	4 0 4.6	122 57 40.4	-0 5 17.0	176 19 7.6	4 12 37.1
15.5	79 35 1.6	3 34 9.7	130 18 47.0	0 45 39.1	183 58 5.8	4 33 22.2
16.0	86 25 33.7	3 4 49.1	137 44 22.2	1 25 37.7	191 35 40.3	4 49 10.4
16.5	93 21 46.7	2 32 21.2	145 13 30.9	2 4 25.3	199 10 30.2	4 59 46.7
17.0	100 23 22.8	1 57 9.8	152 45 10.2	2 41 14.3	206 41 20.3	5 5 5.8
17.5	107 29 56.6	1 19 44.4	160 18 12.1	3 15 19.3	214 7 5.1	5 5 11.2
18.0	114 40 55.9	0 40 39.5	167 51 25.8	3 45 58.8	221 26 51.3	5 0 14.3
18.5	121 55 42.0	+0 0 34.4	175 23 40.1	4 12 37.2	228 39 58.7	4 50 33.1
19.0	129 13 31.0	-0 39 48.5	182 58 47.2	4 34 46.2	235 46 1.1	4 36 30.5
19.5	136 33 35.0	1 19 44.6	190 20 44.5	4 52 5.5	242 44 45.5	4 18 32.9
20.0	143 55 4.1	1 58 28.9	197 43 37.2	5 4 23.2	249 36 10.9	3 57 8.4
20.5	151 17 7.6	2 35 17.6	205 1 39.9	5 11 35.3	256 30 26.8	3 32 46.1
21.0	158 38 55.8	3 9 30.0	212 14 17.6	5 13 45.2	262 57 51.2	3 5 54.8
21.5	165 59 41.1	3 40 29.3	219 21 5.9	5 11 2.2	269 28 48.8	2 37 2.6
22.0	173 18 40.1	4 7 44.2	226 21 50.8	5 3 41.1	275 53 48.8	2 6 36.6
22.5	180 35 13.9	4 30 49.6	233 16 27.5	4 52 0.2	282 13 23.9	1 35 2.1
23.0	187 48 49.5	4 49 26.5	240 4 59.1	4 38 20.8	288 28 8.8	1 2 43.3
23.5	194 58 59.4	5 3 22.4	246 47 35.8	4 17 6.2	294 38 38.8	-0 30 3.0
24.0	202 5 22.7	5 12 31.1	253 24 33.1	3 54 40.6	300 45 28.9	+0 2 37.4
24.5	209 7 43.8	5 16 51.9	259 56 10.5	3 29 28.8	306 49 13.3	0 34 57.7
25.0	216 5 52.6	5 16 29.2	266 22 50.1	3 1 55.7	312 50 24.6	1 6 38.8
25.5	222 59 43.8	5 11 31.9	272 44 56.0	2 32 26.2	318 49 33.6	1 37 22.4
26.0	229 49 15.9	5 2 12.4	279 2 53.1	2 1 24.6	324 47 8.5	2 6 51.2
26.5	236 34 30.9	4 48 46.6	285 17 6.3	1 29 14.8	330 43 35.2	2 34 48.7
27.0	243 15 33.3	4 31 32.8	291 28 0.3	0 56 20.1	336 39 16.9	3 0 59.1
27.5	249 52 29.7	4 10 51.5	297 35 58.7	-0 23 3.1	342 34 24.1	3 25 7.6
28.0	256 25 28.3	3 47 4.7	303 41 23.9	+0 10 14.1	348 29 44.8	3 47 0.3
28.5	262 54 38.4	3 20 35.7	309 44 36.5	0 43 10.3	354 25 5.0	4 6 24.2
29.0	269 20 9.7	2 51 48.6	315 45 55.8	1 15 25.1	0 20 48.3	4 23 7.4
29.5	275 42 12.6	2 21 8.4	321 45 39.6	1 46 58.8	6 17 6.9	4 36 59.4
30.0	282 0 57.6	1 49 0.0	327 44 4.2	2 16 32.9	12 14 11.4	4 47 51.0
30.5	288 16 35.3	1 15 48.4	333 41 24.6	2 44 49.7	18 12 12.1	4 55 34.4
31.0	294 29 16.5	0 41 58.3	339 37 55.1	3 11 12.8	24 11 18.6	5 0 3.4
31.5	300 39 11.9	-0 7 54.0	345 33 49.5	+3 35 26.9	30 11 40.8	+5 1 13.5

248 MOON'S LONGITUDE, &c., 1860.

FOR GREENWICH MEAN NOON AND MIDNIGHT.						
Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	24 11 18.6	+5 0 3.4	70 12 35.9	+3 35 28.2	105 44 32.8	+0 41 31.0
1.5	30 11 40.8	5 1 13.5	76 31 22.7	3 11 0.0	112 24 36.3	+0 5 31.7
2.0	36 13 28.5	4 59 1.9	82 52 47.1	2 43 56.9	119 7 24.1	-0 30 49.1
2.5	42 16 53.5	4 53 27.5	89 17 0.2	2 14 35.5	125 52 56.8	1 7 0.8
3.0	48 22 8.7	4 44 31.0	95 44 15.0	1 43 14.5	132 41 15.8	1 42 31.7
3.5	54 29 28.9	4 32 14.8	102 14 46.7	1 10 14.6	139 32 22.7	2 16 49.8
4.0	60 39 11.1	4 16 43.2	108 48 52.0	0 35 58.8	146 26 18.9	2 49 23.2
4.5	66 51 34.6	3 58 2.3	115 26 48.1	+0 0 52.2	153 23 4.7	3 19 40.5
5.0	73 7 0.6	3 36 20.1	122 8 52.3	-0 34 38.2	160 22 38.7	3 47 11.4
5.5	79 25 52.3	3 11 46.5	128 55 21.3	1 10 3.4	167 24 56.9	4 11 27.4
6.0	85 48 34.8	2 44 33.6	135 46 29.7	1 44 52.6	174 29 51.8	4 32 2.0
6.5	92 15 34.2	2 14 55.8	142 42 28.5	2 18 33.5	181 37 11.3	4 48 31.9
7.0	98 47 17.0	1 43 9.9	149 43 23.8	2 50 32.5	188 46 38.2	5 0 37.3
7.5	105 24 9.2	1 9 35.7	156 49 15.1	3 20 15.3	195 57 50.2	5 8 2.8
8.0	112 6 35.5	+0 34 35.7	163 59 54.3	3 47 8.1	203 10 19.6	5 10 38.1
8.5	118 54 56.5	-0 1 24.1	171 15 4.1	4 10 38.1	210 23 33.5	5 8 18.3
9.0	125 49 29.6	0 37 54.3	178 34 17.0	4 30 14.5	217 36 54.3	5 1 4.7
9.5	132 50 25.0	1 14 22.3	185 56 55.2	4 45 30.2	224 49 40.9	4 49 4.9
10.0	139 57 44.6	1 50 12.3	193 22 11.0	4 56 3.2	232 1 9.8	4 32 32.8
10.5	147 11 20.6	2 24 45.6	200 49 8.1	5 1 37.5	239 10 37.1	4 11 47.8
11.0	154 30 53.4	2 57 22.3	208 16 42.9	5 2 4.4	246 17 19.5	3 47 14.9
11.5	161 55 50.9	2 27 21.6	215 43 47.6	4 57 23.2	253 20 36.6	3 19 23.4
12.0	169 25 27.9	3 54 3.7	223 9 12.8	4 47 41.1	260 19 52.2	2 48 45.5
12.5	176 58 46.8	4 16 51.9	230 31 50.2	4 33 13.3	267 14 35.3	2 15 55.6
13.0	184 34 38.9	4 35 14.2	237 50 36.7	4 14 21.9	274 4 21.4	1 41 29.0
13.5	192 11 46.8	4 48 45.2	245 4 36.4	3 51 34.7	280 48 53.0	1 6 0.5
14.0	199 48 47.6	4 57 7.4	252 13 2.8	3 25 23.6	287 27 59.8	-0 30 3.6
14.5	207 24 16.7	5 0 12.5	259 15 19.9	2 56 23.2	294 1 39.0	+0 5 50.2
15.0	214 56 52.1	4 58 1.4	266 11 3.0	2 25 9.2	300 29 54.6	0 41 12.0
15.5	222 25 17.6	4 50 43.9	272 59 59.0	1 52 17.1	306 52 57.1	1 15 35.9
16.0	229 48 26.7	4 38 37.8	279 42 5.6	1 18 20.8	313 11 2.8	1 48 38.9
16.5	237 5 24.9	4 22 7.2	286 17 30.7	0 43 51.9	319 24 33.3	2 20 1.0
17.0	244 15 31.4	4 1 40.9	292 46 30.4	-0 9 19.6	325 33 54.4	2 49 24.8
17.5	251 18 19.1	3 37 50.8	299 9 27.6	+0 24 49.8	331 39 35.3	3 16 35.6
18.0	258 13 34.9	3 11 10.1	305 26 51.3	0 58 12.9	337 42 8.2	3 41 20.6
18.5	265 1 18.3	2 42 12.0	311 39 14.7	1 30 29.1	343 42 7.6	4 3 28.8
19.0	271 41 39.9	2 11 28.5	317 47 14.1	2 1 20.0	349 40 9.4	4 22 51.0
19.5	278 14 59.5	1 39 30.2	323 51 27.9	2 30 29.5	355 36 50.3	4 39 19.0
20.0	284 41 44.2	1 6 45.4	329 52 36.0	2 57 43.3	1 32 47.7	4 52 45.5
20.5	291 2 26.3	0 33 40.1	335 51 18.0	3 22 48.7	7 28 38.6	5 3 3.9
21.0	297 17 42.2	-0 0 37.8	341 48 13.2	3 45 38.9	13 24 59.2	5 10 8.6
21.5	303 28 10.7	+0 31 59.7	347 43 59.9	4 5 48.2	19 22 24.6	5 13 54.5
22.0	309 34 31.5	1 8 52.9	353 39 15.2	4 23 21.7	25 21 28.3	5 14 17.1
22.5	315 37 24.9	1 34 43.8	359 34 33.6	4 38 5.3	31 22 41.8	5 11 12.9
23.0	321 37 30.0	2 4 15.9	5 30 27.5	4 49 50.5	37 26 33.9	5 4 89.3
23.5	327 35 24.8	2 32 13.8	11 27 26.6	4 58 29.5	43 33 30.9	4 54 35.1
24.0	333 31 45.3	2 58 23.1	17 25 57.3	5 3 55.2	49 43 55.4	4 41 0.8
24.5	339 27 5.4	3 22 30.5	23 26 22.6	5 6 1.5	55 58 6.1	4 23 58.8
25.0	345 21 56.0	3 44 23.1	29 29 2.2	5 4 43.6	62 16 18.2	4 3 34.1
25.5	351 16 45.2	4 3 49.0	35 34 12.6	4 59 58.1	68 38 42.2	3 39 54.5
26.0	357 11 57.9	4 20 36.8	41 42 6.6	4 51 43.4	75 5 24.1	3 13 11.1
26.5	3 7 55.9	4 34 36.2	47 52 53.6	4 40 0.0	81 36 25.7	2 43 38.4
27.0	9 4 57.9	4 45 37.7	54 6 39.8	4 24 50.8	88 11 44.1	2 11 34.9
27.5	15 3 19.4	4 53 32.9	60 23 28.7	4 6 21.2	94 51 12.2	1 37 22.7
28.0	21 3 13.3	4 58 14.8	66 43 21.0	3 44 39.6	101 34 39.1	1 1 27.9
28.5	27 4 49.7	4 59 37.8	73 6 15.4	3 19 57.4	108 21 50.1	+0 24 19.8
29.0	33 8 16.6	4 57 38.1	79 32 9.4	2 52 29.3	115 12 28.1	-0 13 29.4
29.5	39 13 40.4	4 52 13.7	86 0 59.6	2 22 32.7	122 6 13.9	0 51 25.1
30.0	45 21 6.0	4 43 24.9	92 32 42.3	1 50 28.3	129 2 46.6	1 28 51.2
30.5	51 30 37.8	4 31 14.1	99 7 14.2	1 16 39.2	136 1 44.2	2 5 11.2
31.0	57 42 20.1	4 15 45.9	105 44 32.8	0 41 31.0	143 2 44.7	2 39 49.1
31.5	63 56 17.6	+3 57 7.5	112 24 36.3	+0 5 31.7	150 5 26.4	-3 19 10.0

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

250 OBLIQUITY OF THE ECLIPTIC, &c.

Sidereal O ^h .	Apparent Obliquity.	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. Parallax.	
1860.	23° 27'						
0	32.10	+12.90	-0.79	0.00	-20.80	8.72	312° 49.1
10	32.13	13.42	0.82	1.37	20.79	8.72	312 17.4
20	32.21	13.83	0.84	2.74	20.77	8.71	311 45.7
30	32.32	14.10	0.86	4.12	20.75	8.70	311 14.1
40	32.44	14.21	0.87	5.49	20.72	8.69	310 42.4
50	32.55	14.17	0.87	6.86	20.67	8.67	310 10.7
60	32.61	13.99	0.86	8.23	20.62	8.65	309 39.0
70	32.63	13.71	0.84	9.60	20.57	8.63	309 7.3
80	32.58	13.38	0.82	10.98	20.51	8.61	308 35.6
90	32.46	13.05	0.80	12.35	20.45	8.58	308 3.9
100	32.29	12.78	0.79	13.72	20.40	8.56	307 32.2
110	32.07	12.60	0.77	15.09	20.34	8.53	307 0.5
120	31.81	12.54	0.77	16.47	20.29	8.51	306 28.8
130	31.55	12.62	0.78	17.84	20.24	8.49	305 57.2
140	31.30	12.83	0.79	19.21	20.19	8.47	305 25.5
150	31.08	13.16	0.80	20.58	20.16	8.46	304 53.8
160	30.90	13.58	0.83	21.95	20.13	8.45	304 22.1
170	30.77	14.05	0.86	23.33	20.12	8.44	303 50.4
180	30.70	14.53	0.89	24.70	20.11	8.44	303 18.7
190	30.70	14.98	0.92	26.07	20.11	8.44	302 47.0
200	30.73	15.34	0.95	27.44	20.12	8.44	302 15.3
210	30.81	15.60	0.95	28.81	20.14	8.45	301 43.6
220	30.90	15.73	0.96	30.19	20.17	8.46	301 11.9
230	31.00	15.73	0.96	31.56	20.21	8.48	300 40.3
240	31.07	15.59	0.95	32.93	20.25	8.50	300 8.6
250	31.11	15.34	0.94	34.31	20.30	8.52	299 36.9
260	31.09	15.01	0.92	35.68	20.35	8.54	299 5.2
270	31.01	14.66	0.90	37.05	20.41	8.57	298 33.5
280	30.87	14.32	0.88	38.42	20.47	8.59	298 1.8
290	30.67	14.06	0.86	39.79	20.53	8.61	297 30.1
300	30.42	13.90	0.85	41.16	20.59	8.64	296 58.4
310	30.15	13.88	0.85	42.54	20.64	8.66	296 26.7
320	29.87	14.02	0.86	43.91	20.68	8.68	295 55.0
330	29.60	14.31	0.88	45.28	20.73	8.70	295 23.4
340	29.38	14.73	0.90	46.65	20.76	8.71	294 51.7
350	29.23	15.24	0.93	48.02	20.78	8.71	294 20.0
360	29.12	15.78	0.96	49.40	20.79	8.72	293 48.3
370	29.09	+16.29	+1.00	50.77	-20.79	8.72	293 16.6
Mean Obliquity, 1860.0, 23° 27' 26.35 Precession for 1860.5, 50.2547 Log. Precession in a Sidereal Day, 9.13739 Log. Precession in a Solar Day, 9.13858							Daily Motion. 3.169

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	-0.55752	+1.30239	+9.41226	-0.75969	Mar. 1	-1.25107	+0.80299	+9.64651	-0.80183
2	0.59517	1.30080	9.41874	0.75983	2	1.25348	0.77906	9.64870	0.80216
3	0.62967	1.29908	9.42504	0.76001	3	1.25574	0.75360	9.65087	0.80245
4	0.66150	1.29720	9.43120	0.76022	4	1.25786	0.72643	9.65301	0.80271
5	0.69103	1.29518	9.43724	0.76048	5	1.25983	0.69733	9.65512	0.80293
6	-0.71854	+1.29301	+9.44317	-0.76079	6	-1.26166	+0.66602	+9.65721	-0.80310
7	0.74428	1.29069	9.44900	0.76115	7	1.26335	0.63214	9.65927	0.80323
8	0.76846	1.28822	9.45473	0.76156	8	1.26491	0.59527	9.66132	0.80332
9	0.79123	1.28560	9.46035	0.76201	9	1.26633	0.55486	9.66335	0.80336
10	0.81273	1.28283	9.46586	0.76250	10	1.26761	0.51107	9.66536	0.80337
11	-0.83308	+1.27990	+9.47128	-0.76302	11	-1.26875	+0.46023	+9.66734	-0.80332
12	0.85239	1.27681	9.47660	0.76357	12	1.26976	0.40366	9.66930	0.80323
13	0.87074	1.27356	9.48182	0.76416	13	1.27064	0.33851	9.67124	0.80310
14	0.88822	1.27016	9.48694	0.76479	14	1.27138	0.26171	9.67317	0.80293
15	0.90489	1.26658	9.49197	0.76545	15	1.27199	0.16819	9.67508	0.80271
16	-0.92081	+1.26283	+9.49692	-0.76614	16	-1.27247	+0.04878	+9.67699	-0.80244
17	0.93603	1.25892	9.50178	0.76686	17	1.27282	9.88346	9.67888	0.80213
18	0.95061	1.25483	9.50654	0.76761	18	1.27303	9.61313	9.68077	0.80177
19	0.96457	1.25057	9.51121	0.76839	19	1.27312	-8.74868	9.68265	0.80136
20	0.97796	1.24612	9.51580	0.76919	20	1.27307	-9.47224	9.68451	0.80090
21	-0.99083	+1.24150	+9.52031	-0.77001	21	-1.27290	-9.81411	+9.68637	-0.80040
22	1.00318	1.23669	9.52473	0.77085	22	1.27259	0.00224	9.68821	0.79986
23	1.01505	1.23168	9.52907	0.77172	23	1.27216	0.13292	9.69006	0.79928
24	1.02648	1.22647	9.53334	0.77260	24	1.27159	0.23308	9.69190	0.79865
25	1.03748	1.22107	9.53753	0.77350	25	1.27090	0.31426	9.69374	0.79797
26	-1.04806	+1.21547	+9.54164	-0.77442	26	-1.27007	-0.38247	+9.69558	-0.79724
27	1.05826	1.20965	9.54567	0.77534	27	1.26912	0.44127	9.69741	0.79646
28	1.06809	1.20361	9.54961	0.77627	28	1.26803	0.49289	9.69924	0.79564
29	1.07756	1.19735	9.55347	0.77721	29	1.26681	0.53889	9.70108	0.79478
30	1.08670	1.19088	9.55728	0.77816	30	1.26546	0.58033	9.70291	0.79387
31	-1.09551	+1.18417	+9.56102	-0.77911	31	-1.26398	-0.61803	+9.70475	-0.79291
Feb. 1	1.10400	1.17720	9.56468	0.78007	Apr. 1	1.26237	0.65256	9.70658	0.79192
2	1.11220	1.16999	9.56827	0.78103	2	1.26062	0.68441	9.70842	0.79088
3	1.12011	1.16253	9.57179	0.78199	3	1.25874	0.71394	9.71025	0.78980
4	1.12774	1.15481	9.57525	0.78294	4	1.25672	0.74147	9.71209	0.78867
5	-1.13511	+1.14681	+9.57865	-0.78389	5	-1.25457	-0.76722	+9.71394	-0.78750
6	1.14221	1.13852	9.58197	0.78484	6	1.25227	0.79138	9.71578	0.78630
7	1.14906	1.12993	9.58523	0.78577	7	1.24984	0.81418	9.71764	0.78504
8	1.15567	1.12103	9.58845	0.78670	8	1.24727	0.83563	9.71951	0.78374
9	1.16206	1.11182	9.59160	0.78762	9	1.24456	0.85599	9.72138	0.78241
10	-1.16821	+1.10227	+9.59469	-0.78853	10	-1.24170	-0.87530	+9.72326	-0.78104
11	1.17413	1.09237	9.59773	0.78942	11	1.23869	0.89366	9.72515	0.77964
12	1.18985	1.08211	9.60070	0.79029	12	1.23554	0.91114	9.72705	0.77819
13	1.18536	1.07146	9.60363	0.79114	13	1.23225	0.92781	9.72896	0.77670
14	1.19066	1.06041	9.60650	0.79198	14	1.22880	0.94374	9.73086	0.77518
15	-1.19576	+1.04893	+9.60933	-0.79281	15	-1.22519	-0.95897	+9.73278	-0.77362
16	1.20067	1.03701	9.61210	0.79361	16	1.22143	0.97357	9.73471	0.77202
17	1.20539	1.02462	9.61484	0.79438	17	1.21751	0.93756	9.73665	0.77041
18	1.20992	1.01173	9.61751	0.79513	18	1.21343	1.00098	9.73861	0.76876
19	1.21427	0.99831	9.62014	0.79586	19	1.20919	1.01387	9.74058	0.76707
20	-1.21844	+0.98432	+9.62273	-0.79656	20	-1.20478	-1.02626	+9.74256	-0.76536
21	1.22244	0.96975	9.62528	0.79723	21	1.20020	1.03817	9.74454	0.76363
22	1.22627	0.95455	9.62779	0.79787	22	1.19545	1.04964	9.74653	0.76186
23	1.22993	0.93866	9.63026	0.79848	23	1.19052	1.06069	9.74854	0.76007
24	1.23342	0.92203	9.63267	0.79906	24	1.18542	1.07134	9.75055	0.75824
25	-1.23676	+0.90461	+9.63506	-0.79961	25	-1.18013	-1.08160	+9.75257	-0.75639
26	1.23993	0.88634	9.63743	0.80013	26	1.17465	1.09150	9.75461	0.75453
27	1.24294	0.86713	9.63975	0.80061	27	1.16897	1.10104	9.75666	0.75265
28	1.24580	0.84690	9.64203	0.80105	28	1.16309	1.11026	9.75872	0.75075
29	1.24851	0.82556	9.64428	0.80146	29	1.15701	1.11916	9.76079	0.74884
30	-1.25107	+0.80299	+9.64651	-0.80183	30	-1.15073	-1.12775	+9.76286	-0.74691
31	-1.25348	+0.77906	+9.64870	-0.80216	31	-1.14423	-1.13605	+9.76496	-0.74496

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
May 1	-1.14423	-1.13605	+9.76496	-0.74496	July 1	+0.53257	-1.30330	+9.89857	-0.65992
2	1.18751	1.14407	9.76706	0.74298	2	0.56994	1.30190	9.90056	0.65990
3	1.13056	1.15181	9.76916	0.74099	3	0.60423	1.30038	9.90254	0.65993
4	1.12338	1.15929	9.77129	0.73898	4	0.63590	1.29873	9.90451	0.66002
5	1.11595	1.16652	9.77343	0.73696	5	0.66530	1.29695	9.90646	0.66016
6	-1.10827	-1.17351	+9.77557	-0.73495	6	+0.69273	-1.29505	+9.90839	-0.66034
7	1.10033	1.18027	9.77772	0.73294	7	0.71842	1.29302	9.91031	0.66058
8	1.09212	1.18679	9.77987	0.73091	8	0.74257	1.29086	9.91221	0.66085
9	1.08363	1.19310	9.78204	0.72889	9	0.76533	1.28856	9.91409	0.66118
10	1.07484	1.19519	9.78422	0.72688	10	0.78685	1.28613	9.91596	0.66155
11	-1.06576	-1.20507	+9.78641	-0.72485	11	+0.80723	-1.28357	+9.91781	-0.66198
12	1.05636	1.21076	9.78860	0.72283	12	0.82660	1.28087	9.91965	0.66243
13	1.04663	1.21625	9.79080	0.72081	13	0.84502	1.27803	9.92146	0.66295
14	1.03655	1.22154	9.79302	0.71879	14	0.86258	1.27505	9.92325	0.66350
15	1.02611	1.22665	9.79524	0.71678	15	0.87935	1.27193	9.92503	0.66408
16	-1.01529	-1.23157	+9.79747	-0.71478	16	+0.89539	-1.26866	+9.92680	-0.66470
17	1.00408	1.23631	9.79970	0.71279	17	0.91073	1.26525	9.92854	0.66536
18	0.99244	1.24089	9.80194	0.71082	18	0.92543	1.26169	9.93026	0.66606
19	0.98036	1.24529	9.80419	0.70887	19	0.93954	1.25797	9.93196	0.66679
20	0.96782	1.24952	9.80643	0.70694	20	0.95309	1.25410	9.93365	0.66755
21	-0.95478	-1.25360	+9.80868	-0.70502	21	+0.96612	-1.25008	+9.93533	-0.66833
22	0.94131	1.25751	9.81093	0.70312	22	0.97865	1.24589	9.93698	0.66913
23	0.92709	1.26126	9.81319	0.70124	23	0.99071	1.24154	9.93861	0.66996
24	0.91238	1.26486	9.81545	0.69939	24	1.00233	1.23702	9.94023	0.67081
25	0.89703	1.26831	9.81771	0.69756	25	1.01353	1.23234	9.94183	0.67169
26	-0.88099	-1.27161	+9.81998	-0.69575	26	+1.02434	-1.22748	+9.94341	-0.67259
27	0.86422	1.27476	9.82225	0.69398	27	1.03477	1.22244	9.94497	0.67351
28	0.84866	1.27776	9.82453	0.69223	28	1.04483	1.21722	9.94651	0.67446
29	0.82824	1.28062	9.82680	0.69051	29	1.05455	1.21181	9.94803	0.67541
30	0.80888	1.28334	9.82907	0.68883	30	1.06394	1.20621	9.94954	0.67638
31	-0.78850	-1.28593	+9.83134	-0.68717	31	+1.07301	-1.20042	+9.95103	-0.67735
June 1	0.76701	1.28838	9.83360	0.68557	Aug. 1	1.08178	1.19442	9.95250	0.67833
2	0.74426	1.29069	9.83586	0.68401	2	1.09027	1.18821	9.95395	0.67932
3	0.72012	1.29287	9.83811	0.68249	3	1.09847	1.18179	9.95538	0.68032
4	0.69446	1.29492	9.84037	0.68101	4	1.10640	1.17515	9.95680	0.68132
5	-0.66707	-1.29684	+9.84263	-0.67957	5	+1.11408	-1.16828	+9.95820	-0.68232
6	0.63770	1.29863	9.84488	0.67811	6	1.12151	1.16117	9.95956	0.68331
7	0.60608	1.30029	9.84713	0.67681	7	1.12869	1.15381	9.96092	0.68433
8	0.57184	1.30182	9.84937	0.67550	8	1.13564	1.14619	9.96227	0.68534
9	0.53455	1.30323	9.85161	0.67424	9	1.14237	1.13832	9.96359	0.68634
10	-0.49362	-1.30451	+9.85383	-0.67303	10	+1.14887	-1.13018	+9.96490	-0.68732
11	0.44831	1.30567	9.85606	0.67187	11	1.15516	1.12175	9.96619	0.68830
12	0.39758	1.30670	9.85828	0.67076	12	1.16125	1.11303	9.96746	0.68925
13	0.34001	1.30761	9.86049	0.66970	13	1.16713	1.10400	9.96872	0.69019
14	0.27350	1.30840	9.86269	0.66869	14	1.17281	1.09465	9.96995	0.69113
15	-0.19474	-1.30907	+9.86489	-0.66774	15	+1.17830	-1.08497	+9.97117	-0.69205
16	0.09838	1.30962	9.86708	0.66684	16	1.18361	1.07493	9.97238	0.69296
17	0.97420	1.31004	9.86925	0.66599	17	1.18873	1.06453	9.97358	0.69385
18	0.79944	1.31034	9.87142	0.66519	18	1.19367	1.05374	9.97476	0.69472
19	0.52021	1.31053	9.87358	0.66445	19	1.19844	1.04254	9.97592	0.69557
20	-7.74043	-1.31059	+9.87573	-0.66377	20	+1.20303	-1.03092	+9.97707	-0.69638
21	+9.48685	1.31053	9.87786	0.66315	21	1.20746	1.01885	9.97820	0.69717
22	9.79165	1.31035	9.87999	0.66258	22	1.21172	1.00631	9.97932	0.69794
23	9.96890	1.31005	9.88211	0.66205	23	1.21582	0.99326	9.98042	0.69868
24	0.04931	1.30963	9.88421	0.66158	24	1.21977	0.97967	9.98151	0.69939
25	+0.19139	-1.30909	+9.88630	-0.66117	25	+1.22355	-0.96550	+9.98259	-0.70006
26	0.27058	1.30843	9.88838	0.66083	26	1.22718	0.95073	9.98366	0.70069
27	0.33742	1.30765	9.89045	0.66054	27	1.23066	0.93531	9.98472	0.70130
28	0.39521	1.30674	9.89251	0.66030	28	1.23399	0.91918	9.98576	0.70188
29	0.44611	1.30572	9.89455	0.66012	29	1.23717	0.90229	9.98679	0.70241
30	+0.49154	-1.30457	+9.89657	-0.66000	30	+1.24021	-0.88458	+9.98781	-0.70291
31	+0.53257	-1.30330	+9.89857	-0.65992	31	+1.24311	-0.86599	+9.98882	-0.70336

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	+1.24587	-0.84642	+9.98981	-0.70378	Nov. 1	+1.15713	+1.11901	+0.04624	-0.63063
2	1.24848	0.82578	9.99080	0.70415	2	1.15063	1.12790	0.04733	0.62792
3	1.25096	0.80398	9.99177	0.70448	3	1.14389	1.13648	0.04842	0.62518
4	1.25330	0.78088	9.99273	0.70477	4	1.13691	1.14476	0.04952	0.62241
5	1.25551	0.75633	9.99369	0.70501	5	1.12967	1.15277	0.05063	0.61962
6	+1.25758	-0.73016	+9.99463	-0.70521	6	+1.12216	+1.16051	+0.05174	-0.61681
7	1.25952	0.70216	9.99556	0.70536	7	1.11439	1.16798	0.05287	0.61398
8	1.26133	0.67208	9.99649	0.70546	8	1.10634	1.17520	0.05401	0.61113
9	1.26301	0.63961	9.99742	0.70551	9	1.09880	1.18217	0.05516	0.60825
10	1.26455	0.60436	9.99834	0.70552	10	1.08935	1.18890	0.05632	0.60537
11	+1.26597	-0.56582	+9.99925	-0.70548	11	+1.08038	+1.19541	+0.05749	-0.60247
12	1.26726	0.52337	0.00015	0.70539	12	1.07108	1.20169	0.05866	0.59958
13	1.26841	0.47612	0.00105	0.70524	13	1.06143	1.20775	0.05984	0.59667
14	1.26944	0.42294	0.00194	0.70504	14	1.05143	1.21358	0.06103	0.59376
15	1.27035	0.36216	0.00283	0.70478	15	1.04105	1.21922	0.06223	0.59085
16	+1.27112	-0.29128	+0.00371	-0.70447	16	+1.03027	+1.22466	+0.06344	-0.58795
17	1.27177	0.20630	0.00459	0.70411	17	1.01907	1.22989	0.06466	0.58505
18	1.27229	0.10037	0.00546	0.70369	18	1.00744	1.23493	0.06588	0.58217
19	1.27268	9.99566	0.00633	0.70322	19	0.99534	1.23978	0.06711	0.57930
20	1.27295	9.74986	0.00720	0.70271	20	0.98275	1.24444	0.06835	0.57645
21	+1.27309	-9.32781	+0.00807	-0.70214	21	+0.96964	+1.24892	+0.06959	-0.57362
22	1.27311	+9.13661	0.00893	0.70150	22	0.95598	1.25323	0.07084	0.57081
23	1.27300	9.68733	0.00979	0.70080	23	0.94174	1.25736	0.07210	0.56802
24	1.27276	9.92253	0.01065	0.70005	24	0.92687	1.26132	0.07336	0.56525
25	1.27239	0.07423	0.01151	0.69923	25	0.91132	1.26511	0.07463	0.56250
26	+1.27189	+0.18639	+0.01237	-0.69836	26	+0.89505	+1.26873	+0.07589	-0.55978
27	1.27127	0.27537	0.01323	0.69742	27	0.87800	1.27219	0.07717	0.55711
28	1.27051	0.34913	0.01410	0.69645	28	0.86010	1.27549	0.07846	0.55450
29	1.26963	0.41208	0.01496	0.69540	29	0.84129	1.27863	0.07975	0.55192
30	1.26861	0.46697	0.01582	0.69431	30	0.82148	1.28161	0.08104	0.54938
31	+1.26746	+0.51560	+0.01668	-0.69316	31	+0.80057	+1.28443	+0.08234	-0.54689
Oct. 1	1.26746	0.51560	0.01668	0.69316	Dec. 1	0.80057	1.28443	0.08234	0.54689
2	1.26618	0.55924	0.01755	0.69193	2	0.77845	1.28711	0.08365	0.54445
3	1.26477	0.59881	0.01842	0.69067	3	0.75500	1.28964	0.08495	0.54207
4	1.26322	0.63496	0.01929	0.68933	4	0.73004	1.29201	0.08626	0.53974
5	+1.26154	+0.66824	+0.02017	-0.68793	5	+0.70339	+1.29424	+0.08756	-0.53747
6	1.25972	0.69906	0.02105	0.68648	6	0.67484	1.29632	0.08887	0.53526
7	1.25776	0.72773	0.02192	0.68497	7	0.64414	1.29825	0.09018	0.53312
8	1.25566	0.75452	0.02281	0.68341	8	0.61098	1.30004	0.09150	0.53106
9	1.25342	0.77962	0.02371	0.68179	9	0.57492	1.30169	0.09281	0.52905
10	+1.25104	+0.80327	+0.02461	-0.68011	10	+0.53540	+1.30320	+0.09413	-0.52711
11	1.24851	0.82559	0.02551	0.67838	11	0.49174	1.30456	0.09544	0.52525
12	1.24582	0.84670	0.02642	0.67660	12	0.44306	1.30579	0.09676	0.52347
13	1.24300	0.86672	0.02734	0.67477	13	0.38804	1.30687	0.09807	0.52178
14	1.24003	0.88574	0.02827	0.67288	14	0.32487	1.30782	0.09938	0.52016
15	+1.23690	+0.90384	+0.02920	-0.67094	15	+0.25074	+1.30862	+0.10070	-0.51862
16	1.23361	0.92111	0.03014	0.66893	16	0.16112	1.30929	0.10200	0.51717
17	1.23016	0.93760	0.03108	0.66687	17	0.04787	1.30982	0.10330	0.51582
18	1.22655	0.95337	0.03203	0.66477	18	9.99406	1.31021	0.10461	0.51454
19	1.22278	0.96846	0.03299	0.66262	19	9.65347	1.31046	0.10591	0.51335
20	+1.21884	+0.98293	+0.03396	-0.66040	20	+9.06757	+1.31058	+0.10721	-0.51224
21	1.21474	0.99681	0.03494	0.65814	21	-9.33577	1.31056	0.10850	0.51123
22	1.21046	1.01015	0.03592	0.65585	22	9.74042	1.31040	0.10979	0.51030
23	1.20600	1.02296	0.03691	0.65352	23	9.94612	1.31010	0.11108	0.50946
24	1.20135	1.03528	0.03791	0.65113	24	0.08504	1.30967	0.11236	0.50872
25	+1.19652	+1.04714	+0.03892	-0.64871	25	-0.19003	+1.30910	+0.11364	-0.50809
26	1.19150	1.05857	0.03994	0.64625	26	0.27439	1.30839	0.11491	0.50755
27	1.18629	1.06957	0.04097	0.64373	27	0.34489	1.30755	0.11617	0.50710
28	1.18088	1.08018	0.04201	0.64118	28	0.40541	1.30656	0.11743	0.50674
29	1.17526	1.09042	0.04306	0.63859	29	0.45842	1.30543	0.11868	0.50645
30	+1.16944	+1.10030	+0.04411	-0.63597	30	-0.50551	+1.30416	+0.11992	-0.50627
31	+1.16340	+1.10982	+0.04517	-0.63332	31	-0.54789	+1.30275	+0.12116	-0.50617

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1860.	<i>f.</i>	Log. <i>g.</i>	<i>g.</i>	Log. <i>h.</i>	<i>h.</i>	Log. <i>i.</i>	<i>τ.</i>	
January	1	+11.89	0.8889	311 58	1.3093	349 48	-0.1950	0.000
	6	12.77	0.9038	313 55	1.3079	345 5	0.3560	0.014
	11	13.63	0.9189	315 38	1.3060	340 20	0.4705	0.027
	16	14.46	0.9338	317 7	1.3037	335 32	0.5583	0.041
	21	15.26	0.9484	318 24	1.3010	330 41	0.6283	0.055
February	26	+16.02	0.9623	319 30	1.2980	325 47	-0.6855	0.068
	31	16.76	0.9758	320 28	1.2948	320 49	0.7330	0.082
	5	17.45	0.9883	321 18	1.2916	315 46	0.7726	0.096
	10	18.11	0.9999	322 1	1.2882	310 40	0.8057	0.110
	15	18.73	1.0107	322 41	1.2850	305 30	0.8333	0.123
March	20	+19.32	1.0206	323 18	1.2820	300 15	-0.8559	0.137
	25	19.87	1.0297	323 53	1.2793	294 58	0.8743	0.151
	1	20.41	1.0380	324 28	1.2770	289 37	0.8885	0.164
	6	20.92	1.0456	325 3	1.2752	284 14	0.8991	0.178
	11	21.41	1.0525	325 40	1.2739	278 50	0.9062	0.192
April	16	+21.89	1.0589	326 18	1.2732	273 25	-0.9099	0.205
	21	22.37	1.0648	327 0	1.2732	268 0	0.9104	0.219
	26	22.85	1.0704	327 44	1.2737	262 37	0.9075	0.233
	31	23.34	1.0758	328 32	1.2748	257 16	0.9014	0.246
	5	23.83	1.0811	329 23	1.2764	251 58	0.8920	0.260
May	10	+24.35	1.0865	330 17	1.2785	246 44	-0.8792	0.274
	15	24.89	1.0920	331 15	1.2811	241 34	0.8627	0.287
	20	25.46	1.0978	332 14	1.2838	236 28	0.8422	0.301
	25	26.05	1.1038	333 15	1.2869	231 27	0.8176	0.315
	30	26.68	1.1102	334 17	1.2900	226 31	0.7882	0.329
June	5	+27.34	1.1170	335 20	1.2933	221 40	-0.7534	0.342
	10	28.03	1.1244	336 21	1.2963	216 54	0.7123	0.356
	15	28.75	1.1322	337 22	1.2993	212 13	0.6636	0.370
	20	29.50	1.1404	338 20	1.3020	207 36	0.6053	0.383
	25	30.28	1.1489	339 15	1.3044	203 2	0.5345	0.397
July	30	+31.08	1.1579	340 7	1.3065	198 32	-0.4463	0.411
	4	31.90	1.1672	340 54	1.3082	194 5	0.3319	0.424
	9	32.73	1.1765	341 38	1.3094	189 40	0.1720	0.438
	14	33.58	1.1859	342 17	1.3102	185 16	9.9110	0.452
	19	34.43	1.1955	342 51	1.3106	180 54	-9.1397	0.465
August	24	+35.28	1.2050	343 20	1.3104	176 31	+9.7318	0.479
	29	36.13	1.2144	343 46	1.3098	172 8	0.0836	0.493
	4	36.97	1.2235	344 7	1.3088	167 44	0.2734	0.507
	9	37.80	1.2325	344 24	1.3072	163 19	0.4028	0.520
	14	38.61	1.2412	344 38	1.3053	158 51	0.5001	0.534
September	19	+39.39	1.2495	344 49	1.3030	154 21	+0.5770	0.548
	24	40.14	1.2575	344 58	1.3004	149 47	0.6398	0.561
	29	40.87	1.2650	345 4	1.2976	145 9	0.6920	0.575
	3	41.57	1.2723	345 9	1.2946	140 28	0.7359	0.589
	8	42.23	1.2791	345 14	1.2915	135 42	0.7731	0.602
October	13	+42.87	1.2854	345 16	1.2884	130 51	+0.8046	0.616
	18	43.47	1.2913	345 19	1.2853	125 55	0.8311	0.630
	23	44.04	1.2969	345 22	1.2824	120 53	0.8533	0.643
	28	44.58	1.3021	345 26	1.2798	115 51	0.8715	0.657
	2	45.10	1.3070	345 31	1.2775	110 42	0.8859	0.671
November	7	+45.60	1.3115	345 38	1.2756	105 29	+0.8970	0.684
	12	46.08	1.3158	345 47	1.2742	100 13	0.9048	0.698
	17	46.56	1.3199	345 57	1.2731	94 55	0.9092	0.712
	22	47.03	1.3239	346 10	1.2731	89 35	0.9106	0.726
	27	47.49	1.3277	346 26	1.2735	84 14	0.9087	0.739
December	2	+47.97	1.3315	346 43	1.2744	78 53	+0.9036	0.753
	7	48.46	1.3353	347 3	1.2759	73 34	0.8952	0.767
	12	+48.96	1.3391	347 25	1.2779	68 15	+0.8833	0.780

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1860.	<i>f.</i>	Log. <i>g.</i>	<i>a.</i>	Log. <i>h.</i>	<i>H.</i>	Log. <i>i.</i>	<i>τ.</i>
October 17	+49.49	1.3431	347 49	1.2808	62 59	+0.8676	0.794
22	50.04	1.3473	348 14	1.2831	57 46	0.8479	0.808
27	50.63	1.3516	348 41	1.2862	52 36	0.8228	0.821
November 1	51.25	1.3560	349 8	1.2894	47 31	0.7946	0.835
6	51.90	1.3611	349 36	1.2927	42 28	0.7596	0.849
11	+52.59	1.3662	350 8	1.2959	37 30	+0.7178	0.862
16	53.31	1.3716	350 30	1.2991	32 35	0.6677	0.876
21	54.08	1.3772	350 56	1.3018	27 44	0.6071	0.890
26	54.87	1.3831	351 20	1.3045	22 56	0.5325	0.903
December 1	55.69	1.3891	351 43	1.3066	18 10	0.4380	0.917
6	+56.53	1.3952	352 3	1.3084	13 27	+0.3123	0.931
11	57.39	1.4014	352 20	1.3096	8 45	0.1292	0.945
16	58.27	1.4078	352 35	1.3104	4 4	+9.7986	0.958
21	59.15	1.4141	352 48	1.3106	359 24	-8.9732	0.972
26	60.03	1.4204	352 58	1.3102	354 43	9.9118	0.986
31	+60.90	1.4265	353 5	1.3094	350 1	-0.1853	0.999

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND THE NOTATION OF THE CATALOGUE OF STARS OF THE BRITISH ASSOCIATION.

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

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

$$C = \tau - 0.34238 \sin \Omega + 0.00410 \sin 2 \Omega - 0.02519 \sin 2 \odot + 0.00294 \sin (\odot + 82^\circ 34') - 0.00405 \sin 2 \llcorner + 0.00135 \sin (\llcorner - I').$$

$$D = -9''.2236 \cos \Omega + 0''.0896 \cos 2 \Omega - 0''.5507 \cos 2 \odot - 0''.0092 \cos (\odot + 280^\circ 22') - 0''.0885 \cos 2 \llcorner.$$

$$E = -0''.0481 \sin \Omega + 0''.0014 \sin 2 \Omega - 0''.0034 \sin 2 \odot.$$

$$a = \cos \alpha \sec \delta.$$

$$b = \sin \alpha \sec \delta.$$

$$c = 46''.0780 + 20''.0560 \sin \alpha \tan \delta.$$

$$d = \cos \alpha \tan \delta.$$

$$a' = \tan \omega \cos \delta - \sin \alpha \sin \delta.$$

$$b' = \cos \alpha \sin \delta.$$

$$c' = 20''.0560 \cos \alpha.$$

$$d' = -\sin \alpha.$$

μ = the annual proper motion in right ascension.

μ' = the annual proper motion in declination.

τ = the time from the beginning of the year in fractional parts of the year.

\odot = the sun's longitude.

\llcorner = the moon's longitude.

Ω = the longitude of the moon's ascending node.

ω = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.

δ = the star's mean declination for the beginning of the year.

α' = the star's apparent right ascension at the time τ .

δ' = the star's apparent declination at the time τ .

$$\alpha' - \alpha = A a + B b + C c + D d + E + \tau \mu.$$

$$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu'.$$

The following formulæ may also be used by putting

$$f = 46''.0780 C.$$

$$g \cos G = 20''.0560 C.$$

$$g \sin G = D.$$

$$i = A \tan \alpha.$$

$$h \cos H = B.$$

$$h \sin H = A.$$

$$\alpha' - \alpha = f + \tau \mu + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta.$$

$$\delta' - \delta = i \cos \delta + \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta.$$

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR
JANUARY 1, 1860.

Star's Name.	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h.	m.	s.		°	'	"	
α ANDROMEDE	2	0	1	9.41	+ 3.085	+28	19	2.8	+19.91
γ PEGASI (<i>Algenib</i>)	3.2	0	6	1.77	3.081	+14	24	17.9	20.03
β Hydri	3	0	18	20.06	3.287	-78	2	36.9	20.24
α CASSIOPEÆ	var.	0	32	35.08	3.360	+55	46	8.3	19.83
β Ceti	2	0	36	33.55	3.016	-18	45	20.9	19.82
α URS. MIN. (<i>Polaris</i>)	2	1	8	2.49	+18.807	+88	33	47.4	+19.18
θ^1 Ceti	3	1	17	1.60	3.000	- 8	54	24.9	18.74
α ERIDANI (<i>Achernar</i>)	1	1	32	29.67	2.238	-57	56	55.7	18.45
α ARIETIS	2	1	59	17.27	3.365	+22	47	54.7	17.25
γ Ceti	3.4	2	36	2.93	3.102	+ 2	38	36.7	15.39
α CETI	2.3	2	54	57.80	+ 3.127	+ 3	32	16.0	+14.36
α PERSEI	2	3	14	20.73	4.244	+49	21	33.3	13.24
η TAURI	3	3	39	10.06	3.553	+23	40	8.9	11.53
γ^1 ERIDANI	3	3	51	29.89	2.796	-13	54	34.4	10.57
α TAURI (<i>Aldebaran</i>)	1	4	27	53.45	3.435	+16	13	27.9	7.66
α AURIGÆ (<i>Capella</i>)	1	5	6	21.17	+ 4.423	+45	51	3.3	+ 4.20
β ORIONIS (<i>Rigel</i>)	1	5	7	48.63	2.880	- 8	22	0.3	4.49
β TAURI	2	5	17	26.63	3.788	+28	29	5.4	3.48
δ ORIONIS	2	5	24	51.35	3.066	- 0	24	22.4	3.04
α Leporis	3	5	26	33.41	2.648	-17	55	31.2	2.93
ϵ ORIONIS	2	5	29	6.63	+ 3.044	- 1	17	40.8	+ 2.70
α COLUMBÆ	2	5	34	34.93	2.177	-34	9	2.8	2.22
α ORIONIS	var.	5	47	35.57	3.246	+ 7	22	38.0	+ 1.06
μ GEMINORUM	3	6	14	29.45	3.636	+22	34	53.0	- 1.40
α ARGUS (<i>Canopus</i>)	1	6	20	50.78	1.330	-52	37	13.7	1.81
51 (Hev.) Cephei	5	6	33	38.52	+30.471	+87	14	53.6	- 3.01
α CANIS MAJ. (<i>Sirius</i>)	1	6	38	58.86	2.647	-16	31	35.9	4.62
ϵ Canis Majoris	2.1	6	53	7.46	2.360	-28	47	3.7	4.61
δ GEMINORUM	3.4	7	11	45.61	3.597	+22	14	11.1	6.18
α^2 GEMINOR. (<i>Castor</i>)	2.1	7	25	39.45	3.840	+32	11	28.4	7.44
α CAN. MIN. (<i>Procyon</i>)	1	7	31	58.28	+ 3.146	+ 5	34	51.6	- 8.89
β GEMINOR. (<i>Pollux</i>)	1.2	7	36	44.65	3.682	+28	21	38.3	8.31
15 ARGUS	3	8	1	34.95	2.558	-23	54	10.9	10.07
ϵ HYDRÆ	3.4	8	39	21.63	3.189	+ 6	55	48.1	12.87
ϵ URSE MAJORIS	3	8	49	36.20	4.142	+48	35	17.8	13.79
ϵ ARGUS	2	9	13	20.53	+ 1.602	-58	41	17.8	-14.89
α HYDRÆ	2	9	20	42.40	2.948	- 8	3	14.1	15.39
θ URSE MAJORIS	3	9	23	28.24	4.058	+52	18	45.7	16.12
ϵ LEONIS	3	9	37	53.93	3.424	+24	25	1.0	16.35
α LEONIS (<i>Regulus</i>)	1.2	10	0	54.74	3.203	+12	38	59.3	17.42
η ARGUS	2	10	39	38.27	+ 2.305	-58	56	55.2	-18.73
α URSE MAJORIS	2	10	55	3.44	3.775	+62	30	20.7	19.34
δ LEONIS	2.3	11	6	39.51	3.208	+21	17	24.5	19.65
δ HYDRÆ et Crateris	3.4	11	12	20.58	+ 2.997	-14	1	17.5	-19.45

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR
JANUARY 1, 1860.

Star's Name.	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h.	m.	s.	"	°	'	"	"
β LEONIS	2	11	41	54.94	+ 3.065	+15	21	16.3	-20.10
γ URSÆ MAJORIS	2.3	11	46	26.97	3.194	+54	28	22.9	20.04
β Chamæleontis	5	12	10	12.63	3.321	-78	32	5.6	20.05
α^1 Crucis	1	12	18	50.09	3.258	-62	19	19.9	19.94
β Corvi	2.3	12	27	2.22	3.132	-22	37	19.5	19.99
12 Canum Venaticorum	3	12	49	28.34	+ 2.822	+39	4	30.8	-19.56
α VIRGINIS (<i>Spica</i>)	1	13	17	49.26	3.150	-10	25	46.8	18.95
η URSÆ MAJORIS	2	13	42	1.18	2.371	+50	0	47.2	18.14
η Bootis	3	13	48	1.13	2.862	+19	6	3.7	18.23
β Centauri	1	13	53	58.68	4.153	-59	41	42.9	17.72
α BOOTIS (<i>Arcturus</i>)	1	14	9	16.57	+ 2.733	+19	54	46.6	-18.91
α^2 Centauri	1	14	30	7.99	4.027	-60	15	8.8	15.08
ϵ BOOTIS	2.3	14	38	52.33	2.622	+27	39	58.5	15.44
α^3 LIBRÆ	3	14	43	8.31	+ 3.305	-15	27	27.5	15.24
β URSÆ MINORIS	2	14	51	9.19	- 0.260	+74	43	38.6	14.78
β Libræ	2	15	9	28.61	+ 3.220	- 8	51	49.1	-13.59
α CORONÆ BOREALIS	2	15	28	45.65	2.538	+27	11	17.2	12.36
α SERPENTIS	2.3	15	37	22.40	+ 2.949	+ 6	52	6.7	11.63
ζ URSÆ MINORIS	4.5	15	49	8.42	- 2.309	+78	13	23.8	10.83
β^1 Scorpii	2	15	57	18.06	+ 3.479	-19	25	8.1	10.27
δ OPHIUCHI	3	16	7	0.65	+ 3.138	- 3	19	50.7	- 9.62
α SCORPII (<i>Antares</i>)	1.2	16	20	49.69	3.666	-26	7	4.3	8.43
η DRACONIS	3.2	16	22	6.55	0.821	+61	49	55.1	8.23
α Trianguli Australis	2	16	33	52.79	+ 6.272	-68	45	50.3	7.49
ϵ URSÆ MINORIS	4.5	17	0	27.03	- 6.426	+82	15	41.0	5.14
α HERCULIS	var.	17	8	15.87	+ 2.732	+14	33	9.6	- 4.44
β DRACONIS	3.2	17	27	16.24	1.353	+52	24	23.2	2.85
α OPHIUCHI	2	17	28	26.19	2.781	+12	39	53.8	2.95
σ Octantis	6	17	48	8.00	109.554	-89	16	40.3	0.95
γ DRACONIS	2.3	17	53	21.37	1.394	+51	30	24.0	- 0.61
μ^1 Sagittarii	4	18	5	23.36	+ 3.587	-21	5	29.8	+ 0.48
δ URSÆ MINORIS	4.5	18	17	30.37	-19.349	+86	36	6.9	1.55
α LYRÆ (<i>Vega</i>)	1	18	32	11.91	+ 2.031	+38	39	19.2	3.10
β LYRÆ	var.	18	44	54.62	2.215	+33	12	8.3	3.88
ζ AQUILÆ	3	18	58	58.42	2.755	+13	39	30.3	5.04
δ AQUILÆ	3.4	19	18	26.29	+ 3.027	+ 2	50	19.5	+ 6.83
γ AQUILÆ	3	19	39	36.18	2.852	+10	16	29.1	8.46
α AQUILÆ (<i>Altair</i>)	1.2	19	43	57.11	2.928	+ 8	30	4.5	9.18
β AQUILÆ	4	19	48	26.12	+ 2.947	+ 6	3	34.6	8.67
λ URSÆ MINORIS	5	20	3	53.82	-56.307	+88	53	24.5	10.30
α^2 CAPRICORNI	3.4	20	10	17.01	+ 3.333	-12	58	34.4	+10.81
α PAVONIS	2	20	14	33.20	4.802	-57	10	44.7	11.07
α CYGNI	2.1	20	36	39.57	2.043	+44	46	53.7	12.67
δ^1 CYGNI	5.6	21	0	37.23	+ 2.676	+38	3	46.7	+17.46

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR
JANUARY 1, 1860.

Star's Name	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h.	m.	s.		°	'	"	
ζ Cygni	3	21	6	58.68	+ 2.550	+29	39	16.1	+14.54
α CEPHEI	3.2	21	15	14.08	1.439	+61	59	35.4	15.10
β AQUARI	3	21	24	11.11	3.163	— 6	11	5.8	15.62
β CEPHEI	3	21	26	50.38	0.803	+69	56	47.2	15.69
ε Pegasi	2.3	21	37	18.59	2.951	+ 9	14	5.7	16.31
α AQUARI	3	21	58	35.48	+ 3.083	— 0	59	55.3	+17.31
α GRUIS	2	21	59	23.50	3.820	—47	38	11.7	17.15
ζ Pegasi	3.4	22	34	28.66	2.990	+10	6	6.4	18.69
α PIS. AUS. (<i>Fomalhaut</i>)	1.2	22	49	54.38	3.330	—30	21	50.4	18.94
α PEGASI (<i>Markab</i>) .	2	22	57	47.84	2.988	+14	27	10.3	19.31
ε Piscium	4.5	23	32	45.04	+ 3.084	+ 4	52	4.4	+19.47
γ Cephei	3.4	23	33	37.95	+ 2.394	+76	51	4.1	+20.07

APPARENT PLACES OF α URSAE MINORIS, (*Polaris*), FOR THE
UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Sidereal Day of the Month.				
	R.A.		Dec. North.		R.A.		Dec. North.						
	h.	m.	°	'	h.	m.	°	'		h.	m.	°	'
	1	7	88	34	1	7	88	34	1	7	88	33	
1	59.06	14.19	33.71	14.12	14.67	8.90	6.28	60.07	1				
2	58.28	14.25	33.04	14.02	14.21	8.69	6.14	59.75	2				
3	57.56	14.31	32.33	13.96	13.71	8.48	6.03	59.43	3				
4	56.84	14.39	31.57	13.88	13.15	8.27	5.97	59.08	4				
5	56.12	14.48	30.73	13.80	12.58	8.02	6.00	58.73	5				
6	55.39	14.59	29.86	13.69	12.01	7.75	6.10	58.38	6				
7	54.60	14.69	28.98	13.56	11.47	7.44	6.29	58.05	7				
8	53.74	14.78	28.12	13.39	11.02	7.14	6.50	57.73	8				
9	52.82	14.86	27.31	13.21	10.64	6.81	6.72	57.43	9				
10	51.85	14.92	26.58	13.02	10.35	6.49	6.92	57.15	10				
11	50.89	14.96	25.92	12.83	10.13	6.21	7.09	56.89	11				
12	49.96	14.96	25.30	12.65	9.90	5.92	7.23	56.63	12				
13	49.07	14.94	25.71	12.48	9.66	5.66	7.34	56.37	13				
14	48.24	14.92	24.13	12.32	9.40	5.40	7.44	56.09	14				
15	47.48	14.90	23.55	12.17	9.10	5.14	7.53	55.80	15				
16	46.73	14.90	22.92	12.01	8.77	4.89	7.63	55.48	16				
17	45.99	14.90	22.25	11.85	8.45	4.61	7.79	55.17	17				
18	45.27	14.91	21.56	11.69	8.09	4.33	7.98	54.83	18				
19	44.49	14.92	20.83	11.51	7.77	4.04	8.24	54.51	19				
20	43.68	14.94	20.08	11.31	7.43	3.72	8.56	54.18	20				
21	42.83	14.94	19.39	11.10	7.16	3.40	8.93	53.86	21				
22	41.95	14.94	18.67	10.87	6.94	3.07	9.35	53.57	22				
23	41.04	14.92	18.01	10.62	6.76	2.73	9.78	53.29	23				
24	40.11	14.88	17.41	10.38	6.66	2.41	10.22	53.04	24				
25	39.18	14.81	16.87	10.12	6.60	2.07	10.64	52.78	25				
26	38.29	14.73	16.38	9.86	6.60	1.76	11.04	52.54	26				
27	37.42	14.63	15.94	9.60	6.60	1.46	11.38	52.31	27				
28	36.61	14.53	15.51	9.36	6.59	1.18	11.69	52.07	28				
29	35.83	14.42	15.10	9.12	6.56	0.91	11.96	51.81	29				
30	35.10	14.31	14.67	8.90	6.51	0.65	12.28	51.53	30				
31	34.39	14.21	..	..	6.39	0.37	12.61	51.25	31		
32	33.71	14.12	..	..	6.28	0.07	13.02	50.93	32		

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE
UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	MAY		JUNE.		JULY.		AUGUST.		Sidereal Day of the Month.				
	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.					
	^{h.} 1	^{m.} 7	^{h.} 88	^{m.} 33	^{h.} 1	^{m.} 7	^{h.} 88	^{m.} 33	^{h.} 1	^{m.} 8	^{h.} 88	^{m.} 33	
1	12.61	51.25	32.28	44.98	58.25	43.67	25.19	47.53	1				1
2	13.02	50.93	33.19	44.86	59.19	43.76	25.90	47.75	2				2
3	13.53	50.65	34.10	44.76	60.07	43.84	26.58	47.96	3				3
4	14.11	50.35	34.98	44.66	60.91	43.93	27.29	48.15	4				4
5	14.70	50.09	35.80	44.61	61.72	44.00	28.01	48.34	5				5
6	15.33	49.85	36.57	44.54	62.51	44.07	28.78	48.52	6				6
7	15.95	49.63	37.33	44.48	63.30	44.12	29.56	48.71	7				7
8	16.54	49.45	38.05	44.40	64.12	44.18	30.39	48.91	8				8
9	17.08	49.25	38.78	44.32	65.95	44.22	31.25	49.13	9				9
10	17.60	49.05	39.52	44.22	65.82	44.28	32.12	49.35	10				10
11	18.08	48.86	40.26	44.12	66.75	44.33	32.99	49.61	11				11
12	18.58	48.64	41.07	44.00	67.70	44.39	33.84	49.89	12				12
13	19.06	48.41	41.92	43.90	68.69	44.49	34.65	50.18	13				13
14	19.57	48.19	42.81	43.83	69.71	44.59	35.35	50.47	14				14
15	20.13	47.95	43.76	43.74	70.70	44.74	36.02	50.77	15				15
16	20.74	47.71	44.75	43.68	71.67	44.88	36.61	51.05	16				16
17	21.38	47.47	45.72	43.65	72.57	45.05	37.15	51.31	17				17
18	22.10	47.25	46.69	43.64	73.41	45.21	37.74	51.55	18				18
19	22.86	47.04	47.62	43.65	74.18	45.37	38.37	51.79	19				19
20	23.66	46.85	48.49	43.67	74.92	45.52	39.06	52.02	20				20
21	24.44	46.68	49.29	43.67	75.65	45.64	39.81	52.25	21				21
22	25.21	46.52	50.07	43.67	76.41	45.76	40.60	52.53	22				22
23	25.95	46.39	50.82	43.65	77.24	45.86	41.41	52.80	23				23
24	26.64	46.26	51.60	43.62	78.11	45.98	42.15	53.13	24				24
25	27.25	46.14	52.41	43.59	79.05	46.12	42.85	53.46	25				25
26	27.86	46.00	53.27	43.58	80.01	46.27	43.49	53.80	26				26
27	28.47	45.86	54.20	43.57	81.00	46.45	44.09	54.13	27				27
28	29.11	45.66	55.20	43.55	81.95	46.65	44.67	54.47	28				28
29	29.80	45.49	56.21	43.56	82.83	46.86	45.17	54.78	29				29
30	30.56	45.30	57.25	43.61	83.67	47.07	45.66	55.10	30				30
31	31.40	45.13	58.25	43.67	84.45	47.31	46.14	55.40	31				31
32	32.28	44.98	59.19	43.76	85.19	47.53	46.64	55.71	32				32

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE
UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Sidereal Day of the Month.
	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	
	^{h.} 1	^{m.} 8	[°] 88	['] 33	^{h.} 1	^{m.} 8	[°] 88	['] 34	
1	46.64	55.71	58.76	6.27	59.79	18.02	48.39	27.94	1
2	47.15	55.98	59.07	6.61	59.70	18.42	47.76	28.27	2
3	47.70	56.28	59.32	6.98	59.54	18.83	47.13	28.56	3
4	48.28	56.57	59.68	7.35	59.32	19.22	46.37	28.83	4
5	48.90	56.87	59.96	7.77	59.02	19.64	45.62	29.09	5
6	49.53	57.19	60.22	8.18	58.67	20.02	44.90	29.29	6
7	50.17	57.53	60.41	8.61	58.26	20.38	44.23	29.48	7
8	50.79	57.89	60.53	9.02	57.86	20.71	43.62	29.69	8
9	51.36	58.26	60.55	9.44	57.48	21.02	43.08	29.88	9
10	51.85	58.66	60.53	9.85	57.15	21.32	42.61	30.10	10
11	52.28	59.06	60.52	10.24	56.84	21.63	42.04	30.32	11
12	52.65	59.43	60.48	10.61	56.64	21.94	41.46	30.56	12
13	52.93	59.77	60.50	10.93	56.45	22.27	40.84	30.84	13
14	53.21	60.11	60.55	11.29	56.24	22.64	40.14	31.10	14
15	53.53	60.43	60.71	11.63	55.97	23.00	39.34	31.34	15
16	53.90	60.74	60.88	11.99	55.63	23.37	38.62	31.55	16
17	54.38	61.06	61.03	12.37	55.20	23.75	37.75	31.77	17
18	54.87	61.40	61.16	12.77	54.73	24.12	36.90	31.94	18
19	55.40	61.75	61.24	13.21	54.19	24.46	36.09	32.10	19
20	55.88	62.12	61.24	13.62	53.64	24.77	35.29	32.26	20
21	56.34	62.52	61.16	14.05	53.10	25.07	34.50	32.37	21
22	56.72	62.93	61.02	14.44	52.56	25.37	33.77	32.51	22
23	57.05	63.34	60.85	14.83	52.01	25.62	33.06	32.64	23
24	57.31	63.74	60.67	15.22	51.53	25.88	32.42	32.78	24
25	57.52	64.12	60.47	15.57	51.10	26.15	31.75	32.91	25
26	57.71	64.51	60.29	15.93	50.68	26.42	31.10	33.06	26
27	57.89	64.88	60.14	16.25	50.27	26.70	30.40	33.26	27
28	58.07	65.23	60.04	16.61	49.89	26.99	29.68	33.42	28
29	58.26	65.58	59.95	16.92	49.47	27.30	28.84	33.57	29
30	58.49	65.93	59.89	17.28	48.97	27.64	27.92	33.73	30
31	58.76	66.27	59.84	17.65	48.39	27.94	27.00	33.86	31
32	59.07	66.61	59.79	18.02	47.76	28.27	26.04	33.96	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE
UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Sidereal Day of the Month.
	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	
	h. m.	° ′	h. m.	° ′	h. m.	° ′	h. m.	° ′	
	18 17	86 35	18 17	86 35	18 17	86 35	18 17	86 35	
1	2.10	59.18	4.93	49.57	12.71	43.59	23.47	42.46	1
2	2.11	58.86	5.10	49.32	13.00	43.45	23.85	42.50	2
3	2.12	58.56	5.27	49.05	13.30	43.30	24.23	42.55	3
4	2.11	58.27	5.44	48.77	13.62	43.14	24.61	42.62	4
5	2.09	57.98	5.63	48.47	13.97	42.98	24.99	42.74	5
6	2.06	57.66	5.84	48.17	14.33	42.84	25.35	42.87	6
7	2.03	57.32	6.08	47.88	14.70	42.73	25.69	43.02	7
8	2.03	56.96	6.35	47.61	15.08	42.65	26.02	43.16	8
9	2.05	56.58	6.63	47.36	15.47	42.61	26.32	43.29	9
10	2.11	56.21	6.91	47.14	15.83	42.57	26.62	43.41	10
11	2.18	55.85	7.17	46.94	16.17	42.55	26.91	43.52	11
12	2.27	55.50	7.43	46.75	16.50	42.51	27.22	43.63	12
13	2.37	55.18	7.68	46.56	16.82	42.47	27.52	43.73	13
14	2.47	54.88	7.92	46.37	17.13	42.42	27.84	43.84	14
15	2.57	54.61	8.16	46.16	17.45	42.36	28.17	43.94	15
16	2.66	54.33	8.40	45.95	17.79	42.30	28.51	44.06	16
17	2.74	54.04	8.65	45.72	18.13	42.22	28.85	44.21	17
18	2.80	53.74	8.92	45.49	18.48	42.16	29.19	44.37	18
19	2.88	53.43	9.19	45.26	18.85	42.11	29.52	44.56	19
20	2.96	53.11	9.50	45.03	19.24	42.08	29.84	44.76	20
21	3.05	52.78	9.81	44.82	19.63	42.06	30.15	44.97	21
22	3.15	52.44	10.13	44.63	20.02	42.06	30.44	45.19	22
23	3.28	52.10	10.48	44.46	20.40	42.08	30.71	45.40	23
24	3.44	51.77	10.82	44.31	20.78	42.13	30.96	45.61	24
25	3.61	51.45	11.15	44.17	21.14	42.19	31.20	45.82	25
26	3.80	51.13	11.49	44.05	21.49	42.25	31.45	46.00	26
27	3.99	50.83	11.81	43.94	21.83	42.31	31.69	46.17	27
28	4.19	50.55	12.12	43.83	22.16	42.37	31.96	46.34	28
29	4.39	50.29	12.41	43.71	22.48	42.40	32.24	46.53	29
30	4.58	50.05	12.71	43.59	22.80	42.43	32.52	46.71	30
31	4.76	49.81	..	..	23.13	42.44	32.81	46.91	31
32	4.93	49.57	..	..	23.47	42.46	33.10	47.16	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE
UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Sidereal Day of the Month.
	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	
	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "	
	18 17	86 35	18 17	86 35	18 17	86 36	18 17	86 36	
1	32.81	46.91	38.12	55.70	37.52	5.59	31.14	14.64	1
2	33.10	47.16	38.18	56.06	37.37	5.91	30.86	14.86	2
3	33.38	47.41	38.22	56.39	37.22	6.20	30.58	15.08	3
4	33.63	47.70	38.26	56.72	37.07	6.49	30.31	15.31	4
5	33.86	47.98	38.29	57.03	36.92	6.78	30.05	15.54	5
6	34.07	48.27	38.31	57.33	36.79	7.06	29.77	15.78	6
7	34.27	48.53	38.34	57.62	36.66	7.35	29.49	16.04	7
8	34.45	48.78	38.37	57.91	36.54	7.63	29.19	16.30	8
9	34.63	49.02	38.41	58.21	36.41	7.94	28.88	16.57	9
10	34.82	49.25	38.45	58.51	36.28	8.26	28.56	16.84	10
11	35.02	49.47	38.49	58.83	36.13	8.60	28.20	17.09	11
12	35.23	49.70	38.53	59.16	35.97	8.93	27.83	17.33	12
13	35.43	49.94	38.56	59.52	35.77	9.30	27.46	17.53	13
14	35.65	50.20	38.58	59.88	35.58	9.63	27.09	17.72	14
15	35.86	50.47	38.58	60.26	35.35	9.95	26.78	17.89	15
16	36.07	50.76	38.56	60.63	35.11	10.26	26.38	18.04	16
17	36.26	51.06	38.52	60.98	34.87	10.54	26.05	18.19	17
18	36.45	51.39	38.45	61.33	34.63	10.81	25.73	18.37	18
19	36.61	51.72	38.38	61.66	34.41	11.06	25.42	18.57	19
20	36.74	52.04	38.31	61.97	34.20	11.30	25.09	18.78	20
21	36.87	52.37	38.24	62.26	34.00	11.56	24.75	19.00	21
22	36.97	52.68	38.17	62.54	33.81	11.84	24.37	19.23	22
23	37.08	52.97	38.13	62.83	33.61	12.13	23.99	19.44	23
24	37.18	53.24	38.10	63.13	33.39	12.44	23.60	19.63	24
25	37.28	53.50	38.07	63.45	33.17	12.77	23.18	19.81	25
26	37.41	53.77	38.03	63.80	32.91	13.08	22.77	19.96	26
27	37.54	54.04	37.97	64.15	32.63	13.39	22.38	20.09	27
28	37.68	54.33	37.90	64.52	32.34	13.68	21.97	20.21	28
29	37.82	54.64	37.79	64.89	32.03	13.94	21.58	20.32	29
30	37.94	54.99	37.66	65.26	31.73	14.18	21.21	20.43	30
31	38.03	55.33	37.52	65.59	31.43	14.41	20.84	20.55	31
32	38.12	55.70	37.37	65.91	31.14	14.64	20.47	20.68	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE
UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Sidereal Day of the Month.
	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	R.A.	Dec. North.	
	h. m.	86° 36'	h. m.	86° 36'	h. m.	86° 36'	h. m.	86° 36'	
1	20.47	20.68	67.91	22.66	55.13	20.11	45.67	13.31	1
2	20.10	20.81	67.50	22.68	54.70	19.95	45.42	12.99	2
3	19.73	20.96	67.07	22.70	54.30	19.78	45.18	12.66	3
4	19.36	21.11	66.62	22.72	53.89	19.58	44.98	12.33	4
5	18.96	21.27	66.16	22.71	53.51	19.37	44.79	12.00	5
6	18.54	21.43	65.69	22.70	53.15	19.14	44.62	11.69	6
7	18.11	21.57	65.23	22.65	52.81	18.92	44.47	11.39	7
8	17.67	21.69	64.78	22.58	52.50	18.69	44.31	11.13	8
9	17.22	21.79	64.33	22.49	52.19	18.49	44.14	10.86	9
10	16.77	21.88	63.90	22.39	51.88	18.29	43.95	10.59	10
11	16.33	21.93	63.48	22.30	51.56	18.10	43.76	10.31	11
12	15.90	21.98	63.10	22.22	51.24	17.96	43.56	10.03	12
13	15.50	22.02	62.72	22.16	50.89	17.79	43.35	9.72	13
14	15.11	22.06	62.34	22.12	50.53	17.60	43.17	9.39	14
15	14.73	22.12	61.95	22.07	50.17	17.40	43.01	9.03	15
16	14.35	22.20	61.52	22.05	49.82	17.17	42.84	8.69	16
17	13.94	22.30	61.09	21.99	49.49	16.92	42.73	8.32	17
18	13.53	22.40	60.64	21.93	49.15	16.64	42.62	7.97	18
19	13.08	22.50	60.19	21.84	48.86	16.36	42.53	7.64	19
20	12.64	22.58	59.75	21.71	48.56	16.09	42.44	7.30	20
21	12.17	22.63	59.32	21.58	48.30	15.82	42.37	6.99	21
22	11.71	22.67	58.89	21.43	48.04	15.56	42.30	6.70	22
23	11.25	22.68	58.50	21.27	47.79	15.32	42.24	6.40	23
24	10.79	22.67	58.13	21.12	47.53	15.07	42.15	6.11	24
25	10.35	22.66	57.76	20.97	47.28	14.84	42.06	5.81	25
26	9.92	22.64	57.39	20.83	47.03	14.61	41.96	5.51	26
27	9.51	22.63	57.03	20.70	46.78	14.39	41.87	5.19	27
28	9.11	22.61	56.66	20.58	46.50	14.16	41.77	4.84	28
29	8.71	22.61	56.29	20.46	46.22	13.86	41.70	4.48	29
30	8.32	22.63	55.92	20.36	45.94	13.56	41.65	4.10	30
31	7.91	22.66	55.52	20.24	45.67	13.31	41.62	3.71	31
32	7.50	22.68	55.13	20.11	45.42	12.99	41.63	3.35	32

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α ANDROMEDÆ.			γ PEGASI. (Algenib.)			β Hydre.					
	Right Ascension.		Dec. North.	Right Ascension.		Dec. North.	Right Ascension.		Dec. South.			
	h. m.	° ' "	° ' "	h. m.	° ' "	° ' "	h. m.	° ' "				
	0	1	28	19	0	6	14	24	0	18	78	2
Jan. 1	9.73	0.14	16.1	0.9	2.27	0.12	26.7	0.8	21.91	0.95	51.4	1.2
11	9.59	0.11	15.2	1.2	2.15	0.10	25.9	0.9	20.96	0.85	50.2	1.7
21	9.48	0.10	14.0	1.4	2.05	0.09	25.0	1.0	20.11	0.76	48.5	2.3
31	9.38	0.08	12.6	1.5	1.96	0.07	24.0	1.0	19.35	0.66	46.2	2.8
Feb. 10	9.30	0.06	11.1	1.6	1.89	0.05	23.0	1.0	18.69	0.53	43.4	3.1
20	9.24	0.04	9.5	1.6	1.84	0.03	22.0	0.9	18.16	0.41	40.3	3.4
March 1	9.20	0.00	7.9	1.5	1.81	0.01	21.1	0.7	17.75	0.27	36.9	3.7
11	9.20	0.05	6.4	1.4	1.82	0.05	20.4	0.5	17.48	0.10	33.2	3.8
21	9.25	0.09	5.0	1.0	1.87	0.08	19.9	0.3	17.38	0.07	29.4	3.9
31	9.34	0.15	4.0	0.7	1.95	0.12	19.6	0.0	17.45	0.24	25.5	4.0
April 10	9.49	0.19	3.3	0.4	2.07	0.17	19.6	0.3	17.69	0.39	21.5	3.7
20	9.68	0.22	2.9	0.1	2.24	0.20	19.9	0.6	18.08	0.55	17.8	3.5
30	9.90	0.27	2.8	0.3	2.44	0.24	20.5	0.8	18.63	0.70	14.3	3.3
May 10	10.17	0.30	3.1	0.6	2.68	0.28	21.3	1.2	19.33	0.80	11.0	2.9
20	10.47	0.33	3.7	1.0	2.96	0.30	22.5	1.5	20.13	0.89	8.1	2.6
30	10.80	0.34	4.7	1.3	3.26	0.32	24.0	1.8	21.02	0.98	5.5	2.1
June 9	11.14	0.35	6.0	1.6	3.58	0.32	25.8	1.9	22.00	1.04	3.4	1.6
19	11.49	0.34	7.6	2.0	3.90	0.33	27.7	2.0	23.04	1.11	1.8	1.2
29	11.83	0.34	9.6	2.3	4.23	0.34	29.7	2.2	24.15	1.11	0.6	0.6
July 9	12.17	0.34	11.9	2.4	4.57	0.30	31.9	2.2	25.26	1.07	0.0	0.2
19	12.51	0.30	14.3	2.6	4.87	0.28	34.1	2.2	26.33	1.03	0.2	0.6
29	12.81	0.26	16.9	2.5	5.15	0.26	36.3	2.1	27.36	0.98	0.8	1.2
Aug. 8	13.07	0.23	19.4	2.6	5.41	0.22	38.4	2.0	28.34	0.82	2.0	1.7
18	13.30	0.20	22.0	2.5	5.63	0.20	40.4	1.9	29.16	0.67	3.7	2.1
28	13.50	0.15	24.5	2.3	5.83	0.15	42.3	1.7	29.83	0.53	5.8	2.4
Sept. 7	13.65	0.11	26.8	2.4	5.98	0.11	44.0	1.6	30.36	0.33	8.2	2.8
17	13.76	0.06	29.2	2.1	6.09	0.06	45.6	1.3	30.69	0.14	11.0	3.1
27	13.82	0.03	31.3	1.9	6.15	0.03	46.9	1.0	30.83	0.06	14.1	3.1
Oct. 7	13.85	0.01	33.2	1.6	6.18	0.00	47.9	0.8	30.77	0.24	17.2	3.0
17	13.84	0.02	34.8	1.3	6.18	0.02	48.7	0.6	30.53	0.42	20.2	2.9
27	13.82	0.06	36.1	1.1	6.16	0.05	49.3	0.3	30.11	0.57	23.1	2.5
Nov. 6	13.76	0.09	37.2	0.8	6.11	0.07	49.6	0.1	29.54	0.71	25.6	2.0
16	13.67	0.11	38.0	0.4	6.04	0.08	49.7	0.0	28.83	0.83	27.6	1.7
26	13.56	0.12	38.4	0.0	5.96	0.09	49.7	0.2	28.00	0.93	29.3	1.1
Dec. 6	13.44	0.12	38.4	0.1	5.87	0.10	49.5	0.3	27.07	0.95	30.4	0.4
16	13.32	0.18	38.3	0.5	5.77	0.11	49.2	0.7	26.12	0.97	30.8	0.2
26	13.19	0.14	37.8	0.8	5.66	0.12	48.5	0.8	25.15	0.96	30.6	0.9
36	13.05		37.0		5.54		47.7		24.19		29.7	

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Cassiopee.		β Ceti.		δ^1 Ceti.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.
	h. m.	$^{\circ}$ $'$	h. m.	$^{\circ}$ $'$	h. m.	$^{\circ}$ $'$
	0 32	55 46	0 36	18 44	1 17	8 53
Jan. 1	35.32 0.27	30.2 0.5	34.42 0.12	82.9 0.4	2.65 0.11	82.8 0.6
11	35.05 0.27	29.7 1.0	34.30 0.11	83.3 0.1	2.54 0.12	83.4 0.5
21	34.78 0.26	28.7 1.3	34.19 0.11	83.4 0.1	2.42 0.12	83.9 0.3
31	34.52 0.22	27.4 1.8	34.08 0.10	83.3 0.4	2.30 0.11	84.2 0.2
Feb. 10	34.30 0.19	25.6 2.2	33.98 0.08	82.9 0.6	2.19 0.10	84.4 0.1
20	34.11 0.14	23.4 2.4	33.90 0.05	82.3 0.9	2.09 0.09	84.3 0.4
March 1	33.97 0.08	21.0 2.5	33.85 0.02	81.4 1.1	2.00 0.06	83.9 0.6
11	33.89 0.01	18.5 2.5	33.83 0.01	80.3 1.4	1.94 0.08	83.3 0.8
21	33.88 0.06	16.0 2.4	33.84 0.05	78.9 1.8	1.91 0.01	82.5 1.0
31	33.94 0.14	13.6 2.2	33.89 0.08	77.1 2.0	1.92 0.04	81.5 1.1
April 10	34.08 0.21	11.4 1.9	33.97 0.13	75.1 2.1	1.96 0.09	80.4 1.5
20	34.29 0.29	9.5 1.6	34.10 0.17	73.0 2.2	2.05 0.14	78.9 1.8
30	34.58 0.34	7.9 1.2	34.27 0.20	70.8 2.3	2.19 0.18	77.1 1.9
May 10	34.92 0.40	6.7 0.6	34.47 0.25	68.5 2.4	2.37 0.21	75.2 2.0
20	35.32 0.44	6.1 0.2	34.72 0.28	66.1 2.4	2.58 0.24	73.2 2.2
30	35.76 0.46	5.9 0.4	35.00 0.31	63.7 2.4	2.82 0.28	71.0 2.3
June 9	36.22 0.49	6.3 0.7	35.31 0.32	61.3 2.2	3.10 0.29	68.7 2.2
19	36.71 0.50	7.0 1.2	35.63 0.32	59.1 2.1	3.39 0.31	66.5 2.1
29	37.21 0.49	8.2 1.6	35.95 0.33	57.0 1.9	3.70 0.32	64.4 2.0
July 9	37.70 0.47	9.8 2.2	36.28 0.32	55.1 1.6	4.02 0.32	62.4 1.9
19	38.17 0.44	12.0 2.5	36.60 0.31	53.5 1.3	4.34 0.31	60.5 1.6
29	38.61 0.41	14.5 2.7	36.91 0.28	52.2 1.1	4.65 0.30	58.9 1.3
Aug. 8	39.02 0.35	17.2 3.0	37.19 0.25	51.1 0.6	4.95 0.27	57.6 1.1
18	39.37 0.31	20.2 3.1	37.44 0.21	50.5 0.2	5.22 0.23	56.5 0.9
28	39.68 0.26	23.3 3.2	37.65 0.19	50.3 0.1	5.45 0.20	55.6 0.5
Sept. 7	39.94 0.20	26.5 3.3	37.84 0.14	50.4 0.3	5.65 0.18	55.1 0.1
17	40.14 0.13	29.8 3.3	37.98 0.10	50.7 0.8	5.83 0.14	55.0 0.2
27	40.27 0.07	33.1 3.2	38.08 0.05	51.5 1.1	5.97 0.11	55.2 0.3
Oct. 7	40.34 0.02	36.3 3.0	38.13 0.02	52.6 1.1	6.08 0.07	55.5 0.7
17	40.36 0.01	39.3 2.7	38.15 0.00	53.7 1.2	6.15 0.04	56.2 0.9
27	40.35 0.08	42.0 2.5	38.15 0.03	54.9 1.3	6.19 0.01	57.1 1.0
Nov. 6	40.27 0.12	44.5 2.2	38.12 0.05	56.2 1.4	6.20 0.02	58.1 1.0
16	40.15 0.18	46.7 1.8	38.07 0.09	57.6 1.3	6.18 0.04	59.1 1.1
26	39.97 0.21	48.5 1.3	37.98 0.10	58.9 1.1	6.14 0.06	60.2 1.1
Dec. 6	39.76 0.22	49.8 0.9	37.88 0.11	60.0 1.0	6.08 0.09	61.3 1.0
16	39.54 0.25					
26	39.29 0.27	50.7 0.3	37.77 0.12	61.0 0.8	5.99 0.10	62.3 0.8
36	39.02	51.0 0.2	37.65 0.12	61.8 0.5	5.89 0.11	63.1 0.8
		50.8	37.53	62.3	5.78	63.9

NOTE. — Before the 23d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Eridani. (Achernar.)		α ARIETIS.		γ Ceti.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "
	1 32	57 56	1 59	22 48	2 36	2 38
Jan. 1	31.39 0.33	66.4 0.3	18.49 0.11	8.0 0.4	4.37 0.10	43.6 0.7
11	31.06 0.34	66.7 0.3	18.38 0.13	7.6 0.5	4.27 0.11	42.9 0.6
21	30.72 0.33	66.4 0.9	18.25 0.14	7.1 0.5	4.16 0.12	42.3 0.6
31	30.39 0.31	65.5 1.3	18.11 0.14	6.6 0.7	4.04 0.13	41.7 0.5
Feb. 10	30.08 0.29	64.2 1.8	17.97 0.14	5.9 0.9	3.91 0.14	41.2 0.4
20	29.79 0.26	62.4 2.3	17.83 0.12	5.0 1.0	3.77 0.14	40.8 0.2
March 1	29.53 0.21	60.1 2.7	17.71 0.10	4.0 1.0	3.63 0.12	40.6 0.1
11	29.32 0.16	57.4 3.0	17.61 0.07	3.0 0.9	3.51 0.09	40.5 0.1
21	29.16 0.09	54.4 3.3	17.54 0.03	2.1 0.8	3.42 0.06	40.6 0.3
31	29.07 0.03	51.1 3.4	17.51 0.01	1.3 0.6	3.36 0.02	40.9 0.5
April 10	29.04 0.04	47.7 3.6	17.52 0.06	0.7 0.4	3.34 0.01	41.4 0.7
20	29.08 0.11	44.1 3.6	17.58 0.12	0.3 0.3	3.35 0.05	42.1 0.8
30	29.19 0.19	40.5 3.5	17.70 0.17	0.0 0.0	3.40 0.09	42.9 1.1
May 10	29.38 0.25	37.0 3.5	17.87 0.20	0.0 0.3	3.49 0.16	44.0 1.3
20	29.63 0.32	33.5 3.3	18.07 0.23	0.3 0.6	3.65 0.21	45.3 1.5
30	29.95 0.37	30.2 3.0	18.30 0.28	0.9 0.9	3.86 0.24	46.8 1.6
June 9	30.32 0.41	27.2 2.7	18.58 0.31	1.8 1.0	4.10 0.26	48.4 1.7
19	30.73 0.44	24.5 2.3	18.89 0.33	2.8 1.2	4.36 0.27	50.1 1.9
29	31.17 0.46	22.2 1.8	19.22 0.34	4.0 1.5	4.63 0.29	52.0 1.9
July 9	31.63 0.47	20.4 1.3	19.56 0.34	5.5 1.8	4.92 0.31	53.9 1.8
19	32.10 0.48	19.1 0.7	19.90 0.34	7.3 1.9	5.23 0.33	55.7 1.6
29	32.58 0.46	18.4 0.1	20.24 0.33	9.2 1.9	5.56 0.31	57.3 1.5
Aug. 8	33.04 0.44	18.3 0.4	20.57 0.31	11.1 1.8	5.87 0.30	58.8 1.4
18	33.49 0.39	18.7 1.1	20.88 0.28	12.9 1.7	6.17 0.28	60.2 1.3
28	33.87 0.34	19.8 1.7	21.16 0.25	14.6 1.7	6.45 0.26	61.5 0.9
Sept. 7	34.21 0.28	21.5 2.1	21.41 0.22	16.3 1.6	6.71 0.23	62.4 0.6
17	34.49 0.21	23.6 2.3	21.63 0.20	17.9 1.5	6.94 0.21	63.0 0.4
27	34.70 0.14	25.9 2.7	21.83 0.18	19.4 1.4	7.15 0.19	63.4 0.1
Oct. 7	34.84 0.08	28.6 3.0	22.01 0.13	20.8 1.2	7.34 0.15	63.5 0.1
17	34.92 0.01	31.6 2.9	22.14 0.10	22.0 0.9	7.49 0.12	63.4 0.3
27	34.91 0.06	34.5 2.9	22.24 0.07	22.9 0.8	7.61 0.09	63.1 0.4
Nov. 6	34.85 0.12	37.4 2.7	22.31 0.03	23.7 0.7	7.70 0.07	62.7 0.6
16	34.73 0.19	40.1 2.5	22.34 0.01	24.4 0.6	7.77 0.04	62.1 0.7
26	34.54 0.24	42.6 2.1	22.35 0.02	25.0 0.3	7.81 0.00	61.4 0.7
Dec. 6	34.30 0.27	44.7 1.6	22.33 0.06	25.3 0.1	7.81 0.02	60.7 0.8
16	34.03 0.31	46.3 1.1	22.27 0.08	25.4 0.1	7.79 0.05	59.9 0.9
26	33.72 0.34	47.4 0.6	22.19 0.10	25.3 0.3	7.74 0.09	59.0 0.8
36	33.38	48.0	22.09	25.0	7.65	58.2

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α CETI.		α PERSEI.		γ TAURI.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m. 2 54	° 32'	h. m. 3 14	° 21'	h. m. 3 39	° 40'
Jan. 1	59.34 0.08	23.2 0.7	22.82 0.14	52.1 0.9	11.91 0.06	21.0 0.0
11	59.26 0.11	22.5 0.7	22.68 0.17	53.0 0.6	11.85 0.09	21.0 0.1
21	59.15 0.18	21.8 0.6	22.51 0.21	53.6 0.3	11.76 0.12	20.9 0.2
31	59.02 0.14	21.2 0.5	22.30 0.24	53.9 0.1	11.64 0.15	20.7 0.3
Feb. 10	58.88 0.15	20.7 0.3	22.06 0.25	53.8 0.6	11.49 0.16	20.4 0.4
20	58.73 0.18	20.4 0.3	21.81 0.24	53.2 1.0	11.33 0.18	20.0 0.6
March 1	58.60 0.18	20.1 0.2	21.57 0.23	52.2 1.3	11.15 0.16	19.4 0.6
11	58.47 0.11	19.9 0.1	21.34 0.19	50.9 1.5	10.99 0.14	18.8 0.6
21	58.36 0.08	20.0 0.2	21.15 0.15	49.4 1.5	10.85 0.12	18.2 0.6
31	58.28 0.04	20.2 0.4	21.00 0.10	47.9 1.7	10.73 0.08	17.6 0.6
April 10	58.24 0.00	20.6 0.6	20.90 0.03	46.2 1.3	10.65 0.03	17.0 0.5
20	58.24 0.05	21.2 0.9	20.87 0.03	44.4 1.3	10.62 0.01	16.5 0.5
30	58.29 0.09	22.1 1.1	20.90 0.11	42.6 1.7	10.63 0.04	16.0 0.3
May 10	58.38 0.13	23.2 1.2	21.01 0.17	40.9 1.5	10.67 0.11	15.7 0.0
20	58.51 0.18	24.4 1.3	21.18 0.23	39.4 1.3	10.78 0.17	15.7 0.1
30	58.69 0.22	25.7 1.4	21.41 0.30	38.1 0.9	10.95 0.21	15.8 0.3
June 9	58.91 0.24	27.1 1.7	21.71 0.34	37.2 0.6	11.16 0.24	16.1 0.5
19	59.15 0.27	28.8 1.8	22.05 0.37	36.6 0.4	11.40 0.26	16.6 0.6
29	59.42 0.29	30.6 1.8	22.42 0.41	36.2 0.0	11.66 0.30	17.2 0.7
July 9	59.71 0.31	32.4 1.7	22.83 0.44	36.2 0.4	11.96 0.32	17.9 0.9
19	60.02 0.30	34.1 1.6	23.27 0.46	36.6 0.5	12.28 0.34	18.8 1.1
29	60.32 0.32	35.7 1.5	23.73 0.46	37.1 0.9	12.62 0.35	19.9 1.2
Aug. 8	60.64 0.30	37.2 1.3	24.19 0.45	38.0 1.2	12.97 0.33	21.1 1.1
18	60.94 0.30	38.5 1.2	24.64 0.43	39.2 1.5	13.30 0.32	22.2 1.1
28	61.24 0.27	39.7 1.0	25.07 0.40	40.7 1.7	13.62 0.31	23.3 1.1
Sept. 7	61.51 0.25	40.7 0.6	25.47 0.38	42.4 1.3	13.93 0.30	24.4 1.1
17	61.76 0.22	41.3 0.4	25.85 0.36	44.2 1.9	14.23 0.28	25.5 1.0
27	61.98 0.20	41.7 0.1	26.21 0.34	46.1 2.1	14.51 0.26	26.5 0.9
Oct. 7	62.18 0.17	41.8 0.1	26.55 0.30	48.2 2.1	14.77 0.24	27.4 0.8
17	62.35 0.15	41.7 0.3	26.85 0.24	50.3 2.2	15.01 0.21	28.2 0.7
27	62.50 0.12	41.4 0.4	27.09 0.19	52.5 2.2	15.22 0.17	28.9 0.7
Nov. 6	62.62 0.08	41.0 0.6	27.28 0.16	54.7 2.1	15.39 0.14	29.6 0.5
16	62.70 0.05	40.4 0.7	27.44 0.11	56.8 1.9	15.53 0.12	30.1 0.3
26	62.75 0.02	39.7 0.8	27.55 0.04	58.7 1.8	15.65 0.08	30.4 0.3
Dec. 6	62.77 0.01	38.9 0.8	27.59 0.00	60.5 1.7	15.73 0.03	30.7 0.2
16	62.76 0.04	38.1 0.8	27.59 0.06	62.2 1.4	15.76 0.00	30.9 0.2
26	62.72 0.07	37.3 0.8	27.53 0.12	63.6 1.1	15.76 0.05	31.1 0.1
36	62.65	36.5	27.41	64.7	15.71	31.2

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sideral Day of the Month.	γ Eridani.		α TAURI. (Aldebaran.)		α AURIGÆ. (Capella.)	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m. 3 51	° ' " 13 54	h. m. 4 27	° ' " 16 13	h. m. 5 6	° ' " 45 51
Jan. 1	31.70 0.07	31.6 1.4	55.47 0.08	36.8 0.3	24.00 0.00	14.9 1.3
11	31.63 0.11	33.0 1.2	55.44 0.06	36.5 0.3	24.00 0.06	16.2 1.1
21	31.52 0.13	34.2 0.9	55.38 0.09	36.2 0.2	23.94 0.11	17.3 1.0
31	31.39 0.15	35.1 0.6	55.29 0.13	36.0 0.3	23.83 0.16	18.3 0.7
Feb. 10	31.24 0.17	35.7 0.4	55.16 0.15	35.7 0.4	23.67 0.21	19.0 0.4
20	31.07 0.17	36.1 0.2	55.01 0.17	35.3 0.3	23.46 0.24	19.4 0.2
March 1	30.90 0.17	36.3 0.2	54.84 0.17	35.0 0.3	23.22 0.25	19.6 0.1
11	30.73 0.15	36.1 0.5	54.67 0.16	34.7 0.3	22.97 0.24	19.5 0.5
21	30.58 0.13	35.6 0.8	54.51 0.14	34.4 0.2	22.73 0.22	19.0 0.8
31	30.45 0.10	34.8 1.1	54.37 0.11	34.2 0.2	22.51 0.18	18.2 1.0
April 10	30.35 0.07	33.7 1.3	54.26 0.08	34.0 0.1	22.33 0.15	17.2 1.1
20	30.28 0.02	32.4 1.6	54.18 0.03	33.9 0.1	22.18 0.10	16.1 1.3
30	30.26 0.02	30.8 1.8	54.15 0.01	33.8 0.1	22.08 0.04	14.8 1.4
May 10	30.28 0.06	29.0 2.0	54.16 0.05	33.9 0.2	22.04 0.01	13.4 1.4
20	30.34 0.12	27.0 2.2	54.21 0.11	34.1 0.4	22.05 0.09	12.0 1.5
30	30.46 0.16	24.8 2.3	54.32 0.16	34.5 0.5	22.14 0.15	10.5 1.4
June 9	30.62 0.19	22.5 2.3	54.48 0.19	35.0 0.6	22.29 0.20	9.1 1.2
19	30.81 0.22	20.2 2.2	54.67 0.21	35.6 0.8	22.49 0.24	7.9 1.1
29	31.03 0.26	18.0 2.1	54.88 0.24	36.4 0.8	22.73 0.29	6.8 0.9
July 9	31.29 0.28	15.9 2.0	55.12 0.28	37.2 0.9	23.02 0.33	5.9 0.7
19	31.57 0.30	13.9 1.8	55.40 0.31	38.1 1.1	23.35 0.36	5.2 0.6
29	31.87 0.31	12.1 1.6	55.71 0.32	39.2 1.0	23.71 0.40	4.6 0.3
Aug. 8	32.18 0.30	10.5 1.3	56.03 0.32	40.2 0.9	24.11 0.41	4.3 0.1
18	32.48 0.29	9.2 1.0	56.35 0.31	41.1 0.8	24.52 0.43	4.2 0.1
28	32.77 0.28	8.2 0.6	56.66 0.31	41.9 0.9	24.95 0.43	4.3 0.2
Sept. 7	33.05 0.27	7.6 0.1	56.97 0.30	42.8 0.6	25.38 0.42	4.5 0.3
17	33.32 0.27	7.5 0.3	57.27 0.29	43.4 0.3	25.80 0.41	4.8 0.7
27	33.59 0.25	7.8 0.6	57.56 0.28	43.7 0.3	26.21 0.40	5.5 0.8
Oct. 7	33.84 0.22	8.4 1.0	57.84 0.26	44.0 0.1	26.61 0.39	6.3 0.9
17	34.06 0.18	9.4 1.4	58.10 0.24	44.1 0.1	27.00 0.37	7.2 1.0
27	34.24 0.15	10.8 1.6	58.34 0.21	44.2 0.1	27.37 0.34	8.2 1.1
Nov. 6	34.39 0.12	12.4 1.8	58.55 0.19	44.1 0.2	27.71 0.30	9.3 1.2
16	34.51 0.10	14.2 1.8	58.74 0.16	43.9 0.2	28.01 0.26	10.5 1.4
26	34.61 0.08	16.0 1.8	58.90 0.12	43.7 0.3	28.27 0.20	11.9 1.5
Dec. 6	34.69 0.02	17.8 1.8	59.02 0.08	43.4 0.4	28.47 0.16	13.4 1.4
16	34.71 0.03	19.6 1.8	59.10 0.05	43.0 0.3	28.63 0.10	14.8 1.4
26	34.68 0.06	21.4 1.6	59.15 0.01	42.7 0.2	28.73 0.03	16.2 1.3
36	34.62	23.0	59.14	42.5	28.76	17.5

after the 22d of March it begins at the Sideral Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER
TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β ORIONIS. (Rigel.)		β TAURI.		δ ORIONIS.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.
	h. m. 5 7	° 21'	h. m. 5 17	28 29'	h. m. 5 24	° 24'
Jan. 1	50.65 0.01	56.2 1.6	29.01 0.08	14.1 0.4	53.42 0.01	17.5 1.2
11	50.64 0.05	57.8 1.4	29.04 0.08	14.5 0.3	53.43 0.08	18.7 1.1
21	50.59 0.09	59.2 1.2	29.01 0.08	14.8 0.3	53.40 0.06	19.8 1.0
31	50.50 0.13	60.4 0.9	28.98 0.11	15.1 0.2	53.34 0.10	20.8 0.8
Feb. 10	50.37 0.15	61.3 0.7	28.82 0.15	15.3 0.1	53.24 0.14	21.6 0.6
20	50.22 0.16	62.0 0.5	28.67 0.18	15.4 0.0	53.10 0.16	22.2 0.4
March 1	50.06 0.17	62.5 0.2	28.49 0.18	15.4 0.1	52.94 0.17	22.6 0.2
11	49.89 0.17	62.7 0.1	28.31 0.19	15.3 0.3	52.77 0.17	22.8 0.1
21	49.72 0.16	62.6 0.3	28.12 0.18	15.0 0.4	52.60 0.16	22.9 0.1
31	49.56 0.15	62.3 0.5	27.94 0.16	14.6 0.5	52.44 0.14	22.8 0.3
April 10	49.41 0.12	61.8 0.8	27.79 0.12	14.1 0.6	52.30 0.11	22.5 0.5
20	49.29 0.08	61.0 1.0	27.67 0.08	13.5 0.5	52.19 0.09	22.0 0.6
30	49.21 0.04	60.0 1.3	27.59 0.08	13.0 0.6	52.10 0.05	21.4 0.8
May 10	49.17 0.01	58.7 1.5	27.56 0.01	12.4 0.5	52.05 0.00	20.6 1.0
20	49.18 0.04	57.2 1.6	27.57 0.05	11.9 0.4	52.05 0.04	19.6 1.3
30	49.22 0.09	55.6 1.7	27.62 0.11	11.5 0.4	52.09 0.07	18.3 1.3
June 9	49.31 0.13	53.9 1.8	27.73 0.16	11.1 0.3	52.16 0.12	17.0 1.4
19	49.44 0.16	52.1 2.0	27.89 0.20	10.8 0.1	52.28 0.16	15.6 1.4
29	49.60 0.20	50.1 1.9	28.09 0.24	10.7 0.0	52.44 0.20	14.2 1.4
July 9	49.80 0.23	48.2 1.8	28.33 0.27	10.7 0.0	52.64 0.22	12.8 1.4
19	50.03 0.25	46.4 1.6	28.60 0.30	10.7 0.1	52.86 0.24	11.4 1.4
29	50.28 0.27	44.8 1.5	28.90 0.31	10.8 0.1	53.10 0.25	10.0 1.2
Aug. 8	50.55 0.28	43.3 1.3	29.21 0.33	10.9 0.2	53.35 0.28	8.8 1.0
18	50.83 0.29	42.0 1.1	29.54 0.33	11.1 0.3	53.63 0.30	7.8 0.9
28	51.12 0.30	40.9 0.6	29.87 0.34	11.4 0.3	53.93 0.30	6.9 0.8
Sept. 7	51.42 0.29	40.3 0.2	30.21 0.34	11.7 0.4	54.23 0.29	6.3 0.8
17	51.71 0.29	40.1 0.1	30.55 0.33	12.1 0.4	54.52 0.28	6.0 0.1
27	52.00 0.28	40.2 0.3	30.88 0.33	12.5 0.3	54.80 0.28	6.1 0.3
Oct. 7	52.28 0.26	40.5 0.8	31.21 0.32	12.8 0.3	55.08 0.28	6.4 0.6
17	52.54 0.25	41.3 1.2	31.53 0.30	13.1 0.2	55.36 0.27	7.0 0.9
27	52.79 0.23	42.5 1.4	31.83 0.28	13.3 0.3	55.63 0.25	7.9 1.2
Nov. 6	53.02 0.20	43.9 1.6	32.11 0.25	13.6 0.4	55.88 0.22	9.1 1.3
16	53.22 0.17	45.5 1.8	32.36 0.23	14.0 0.3	56.10 0.19	10.4 1.3
26	53.39 0.14	47.3 1.8	32.59 0.20	14.3 0.3	56.29 0.16	11.7 1.4
Dec. 6	53.53 0.10	49.1 1.9	32.79 0.14	14.6 0.3	56.45 0.13	13.1 1.4
16	53.63 0.06	51.0 1.8	32.93 0.09	14.9 0.3	56.58 0.08	14.5 1.5
26	53.69 0.02	52.8 1.7	33.02 0.06	15.2 0.4	56.66 0.04	16.0 1.4
36	53.71	54.5	33.08	15.6	56.70	17.4

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Leporis.		ε ORIONIS.		α Columbae.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.
	h. m. 5 26	° ′ 17 55	h. m. 5 29	° ′ 1 17	h. m. 5 34	° ′ 34 8
Jan. 1	35.46 0.01	28.3 2.1	8.71 0.02	36.1 1.3	37.09 0.03	61.1 2.7
11	35.45 0.04	30.4 1.9	8.73 0.02	37.4 1.2	37.06 0.07	63.8 2.5
21	35.41 0.09	32.3 1.5	8.71 0.07	38.6 1.0	36.99 0.13	66.3 2.1
31	35.32 0.13	33.8 1.2	8.64 0.10	39.6 0.8	36.86 0.17	68.4 1.7
Feb. 10	35.19 0.15	35.0 1.0	8.54 0.14	40.4 0.6	36.69 0.20	70.1 1.3
20	35.04 0.18	36.0 0.7	8.40 0.16	41.0 0.5	36.49 0.22	71.4 0.8
March 1	34.86 0.19	36.7 0.3	8.24 0.17	41.5 0.2	36.27 0.23	72.2 0.4
11	34.67 0.19	37.0 0.0	8.07 0.17	41.7 0.0	36.04 0.24	72.6 0.0
21	34.48 0.19	37.0 0.4	7.90 0.17	41.7 0.1	35.80 0.23	72.6 0.5
31	34.29 0.17	36.6 0.7	7.73 0.15	41.6 0.3	35.57 0.21	72.1 0.9
April 10	34.12 0.14	35.9 1.0	7.58 0.12	41.3 0.5	35.36 0.19	71.2 1.3
20	33.98 0.10	34.9 1.3	7.46 0.08	40.8 0.7	35.17 0.15	69.9 1.7
30	33.88 0.06	33.6 1.6	7.38 0.04	40.1 0.9	35.02 0.12	68.2 2.0
May 10	33.82 0.08	32.0 1.8	7.34 0.01	39.2 1.0	34.90 0.06	66.2 2.3
20	33.79 0.02	30.2 1.9	7.33 0.03	38.2 1.1	34.84 0.02	63.9 2.5
30	33.81 0.06	28.3 2.0	7.36 0.07	37.1 1.3	34.82 0.03	61.4 2.7
June 9	33.87 0.10	26.3 2.2	7.43 0.12	35.8 1.4	34.85 0.08	58.7 2.8
19	33.97 0.14	24.1 2.4	7.55 0.15	34.4 1.5	34.93 0.12	55.9 3.0
29	34.11 0.18	21.7 2.3	7.70 0.19	32.9 1.5	35.05 0.17	52.9 2.9
July 9	34.29 0.21	19.4 2.1	7.89 0.22	31.4 1.4	35.22 0.20	50.0 2.7
19	34.50 0.24	17.3 2.0	8.11 0.24	30.0 1.4	35.42 0.24	47.3 2.4
29	34.74 0.27	15.3 1.9	8.35 0.25	28.6 1.3	35.66 0.27	44.9 2.2
Aug. 8	35.01 0.23	13.4 1.5	8.60 0.27	27.3 1.1	35.93 0.29	42.7 1.8
18	35.29 0.28	11.9 1.1	8.87 0.29	26.2 0.9	36.22 0.31	40.9 1.4
28	35.57 0.29	10.8 0.8	9.16 0.30	25.3 0.5	36.53 0.32	39.5 1.0
Sept. 7	35.86 0.29	10.0 0.3	9.46 0.29	24.8 0.2	36.85 0.32	38.5 0.4
17	36.15 0.30	9.7 0.2	9.75 0.29	24.6 0.0	37.17 0.32	38.1 0.4
27	36.45 0.29	9.9 0.6	10.04 0.29	24.6 0.3	37.49 0.32	38.5 0.9
Oct. 7	36.74 0.28	10.5 1.0	10.33 0.28	24.9 0.6	37.81 0.30	39.4 1.4
17	37.02 0.26	11.5 1.5	10.61 0.26	25.5 0.9	38.11 0.29	40.8 1.8
27	37.28 0.24	13.0 1.8	10.87 0.24	26.4 1.2	38.40 0.26	42.6 2.1
Nov. 6	37.52 0.22	14.8 2.0	11.11 0.22	27.6 1.3	38.66 0.23	44.7 2.6
16	37.74 0.19	16.8 2.3	11.33 0.20	28.9 1.5	38.89 0.19	47.3 3.0
26	37.93 0.16	19.1 2.4	11.53 0.17	30.4 1.5	39.08 0.16	50.3 3.0
Dec. 6	38.09 0.11	21.5 2.4	11.70 0.13	31.9 1.5	39.24 0.10	53.3 3.1
16	38.20 0.06	23.9 2.4	11.83 0.08	33.4 1.5	39.34 0.05	56.4 3.0
26	38.26 0.01	26.3 2.2	11.91 0.05	34.9 1.4	39.39 0.00	59.4 2.9
36	38.27	28.5	11.96	36.3	39.39	62.3

after the 22d of March it begins at the Sidereal Ob. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α ORIONIS.		μ Geminorum.		α Argus. (Canopus.)	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.
	h. m. 5 47	° ′ 7 22	h. m. 6 14	° ′ 22 34	h. m. 6 20	° ′ 52 36
Jan. 1	37.74 0.04	43.1 0.9	31.86 0.08	57.9 0.0	53.31 0.08	70.8 3.3
11	37.78 0.00	42.2 0.8	31.94 0.03	57.9 0.0	53.28 0.10	74.1 3.2
21	37.78 0.04	41.4 0.7	31.97 0.03	57.9 0.1	53.18 0.17	77.3 3.0
31	37.74 0.09	40.7 0.6	31.94 0.07	58.0 0.1	53.01 0.23	80.3 2.8
Feb. 10	37.65 0.18	40.1 0.4	31.87 0.11	58.1 0.1	52.78 0.27	82.9 2.1
20	37.52 0.15	39.7 0.2	31.76 0.15	58.2 0.1	52.51 0.31	85.0 1.5
March 1	37.37 0.17	39.5 0.2	31.61 0.17	58.3 0.1	52.20 0.34	86.5 1.1
11	37.20 0.17	39.3 0.1	31.44 0.18	58.4 0.0	51.86 0.36	87.6 0.5
21	37.03 0.17	39.2 0.0	31.26 0.18	58.4 0.1	51.50 0.36	88.1 0.0
31	36.86 0.15	39.2 0.1	31.08 0.17	58.3 0.1	51.14 0.35	88.1 0.5
April 10	36.71 0.12	39.3 0.2	30.91 0.14	58.2 0.2	50.79 0.32	87.6 1.0
20	36.59 0.10	39.5 0.3	30.77 0.11	58.0 0.1	50.47 0.28	86.6 1.5
30	36.49 0.06	39.8 0.4	30.66 0.07	57.9 0.2	50.19 0.24	85.1 2.0
May 10	36.43 0.01	40.2 0.6	30.59 0.08	57.7 0.2	49.95 0.20	83.1 2.3
20	36.42 0.08	40.8 0.7	30.56 0.00	57.5 0.2	49.75 0.15	80.8 2.5
30	36.45 0.06	41.5 0.8	30.56 0.04	57.3 0.1	49.60 0.09	78.3 2.8
June 9	36.51 0.10	42.3 0.9	30.60 0.08	57.2 0.1	49.51 0.02	75.5 3.0
19	36.61 0.14	43.2 0.9	30.68 0.14	57.1 0.0	49.49 0.05	72.5 3.2
29	36.75 0.18	44.1 1.0	30.82 0.18	57.1 0.1	49.54 0.10	69.3 3.3
July 9	36.93 0.21	45.1 1.0	31.00 0.21	57.0 0.0	49.64 0.16	66.0 3.0
19	37.14 0.25	46.1 0.9	31.21 0.24	57.0 0.1	49.80 0.22	63.0 2.8
29	37.39 0.26	47.0 0.8	31.45 0.26	57.1 0.0	50.02 0.27	60.2 2.7
Aug. 8	37.65 0.27	47.8 0.8	31.71 0.28	57.1 0.1	50.29 0.30	57.5 2.4
18	37.92 0.28	48.6 0.6	31.99 0.29	57.2 0.0	50.59 0.34	55.1 2.0
28	38.20 0.29	49.2 0.4	32.28 0.31	57.2 0.1	50.93 0.36	53.1 1.5
Sept. 7	38.49 0.30	49.6 0.1	32.59 0.32	57.1 0.1	51.29 0.40	51.6 0.7
17	38.79 0.30	49.7 0.0	32.91 0.33	57.0 0.1	51.69 0.41	50.9 0.1
27	39.09 0.30	49.7 0.2	33.24 0.33	56.9 0.2	52.10 0.42	50.8 0.4
Oct. 7	39.39 0.29	49.5 0.5	33.57 0.32	56.7 0.3	52.52 0.40	51.2 1.2
17	39.68 0.28	49.0 0.7	33.89 0.32	56.4 0.5	52.92 0.39	52.4 1.8
27	39.96 0.26	48.3 0.9	34.21 0.31	55.9 0.5	53.31 0.36	54.2 2.3
Nov. 6	40.22 0.25	47.4 1.0	34.52 0.29	55.4 0.4	53.67 0.32	56.5 2.8
16	40.47 0.22	46.4 1.0	34.81 0.26	55.0 0.3	53.99 0.28	59.3 3.2
26	40.69 0.20	45.4 1.1	35.07 0.24	54.7 0.3	54.27 0.21	62.5 3.4
Dec. 6	40.89 0.15	44.3 1.0	35.31 0.20	54.4 0.3	54.48 0.16	65.9 3.6
16	41.04 0.11	43.3 1.0	35.51 0.15	54.1 0.2	54.64 0.09	69.5 3.6
26	41.15 0.06	42.3 1.0	35.66 0.10	53.9 0.1	54.73 0.01	73.1 3.5
36	41.21	41.3	35.76	53.8	54.74	76.6

NOTE.— Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	51 (Hev.) Cephei.		α CANIS MAJORIS. (Sirius.)		ε Canis Majoris.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.
	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "
	6 33	87 14	6 38	16 31	6 53	28 46
Jan. 1	75.87 0.42	59.1 8.2	60.95 0.06	32.7 2.4	9.57 0.07	60.1 2.9
11	76.29 0.50	62.3 8.1	61.01 0.02	35.1 2.2	9.64 0.01	63.0 2.7
21	75.79 1.38	65.4 2.9	61.03 0.03	37.3 1.9	9.65 0.04	65.7 2.5
31	74.41 2.19	68.3 2.6	61.00 0.07	39.2 1.8	9.61 0.09	68.2 2.3
Feb. 10	72.22 2.92	70.9 2.3	60.93 0.12	41.0 1.4	9.52 0.13	70.5 1.9
20	69.30 3.51	73.2 1.7	60.81 0.15	42.4 1.0	9.39 0.16	72.4 1.6
March 1	65.79 3.92	74.9 1.1	60.66 0.17	43.4 0.8	9.23 0.19	74.0 1.1
11	61.87 4.17	76.0 0.6	60.49 0.18	44.2 0.4	9.04 0.21	75.1 0.7
21	57.70 4.26	76.6 0.0	60.31 0.19	44.6 0.1	8.83 0.22	75.8 0.2
31	53.44 4.15	76.6 0.6	60.12 0.18	44.7 0.2	8.61 0.21	76.0 0.1
April 10	49.29 3.59	76.0 1.2	59.94 0.17	44.5 0.5	8.40 0.19	75.9 0.5
20	45.40 3.47	74.8 1.6	59.77 0.14	44.0 0.8	8.21 0.18	75.4 1.0
30	41.93 2.94	73.2 2.2	59.63 0.11	43.2 1.1	8.03 0.15	74.4 1.4
May 10	38.99 2.29	71.0 2.6	59.52 0.08	42.1 1.3	7.88 0.11	73.0 1.5
20	36.70 1.59	68.4 2.8	59.44 0.04	40.8 1.5	7.77 0.07	71.5 1.8
30	35.11 0.81	65.6 3.0	59.40 0.00	39.3 1.8	7.70 0.03	69.7 2.1
June 9	34.30 0.03	62.6 3.1	59.40 0.04	37.5 1.9	7.67 0.01	67.6 2.3
19	34.27 0.74	59.5 3.3	59.44 0.07	35.6 1.9	7.68 0.05	65.3 2.5
29	35.01 1.52	56.2 3.2	59.51 0.11	33.7 2.0	7.73 0.09	62.8 2.5
July 9	36.53 2.25	53.0 3.0	59.62 0.15	31.7 1.9	7.82 0.12	60.3 2.5
19	38.78 2.93	50.0 2.8	59.77 0.17	29.8 1.9	7.94 0.16	57.8 2.4
29	41.71 3.55	47.2 2.5	59.94 0.20	27.9 1.7	8.10 0.20	55.4 2.2
Aug. 8	45.26 4.09	44.7 2.2	60.14 0.22	26.2 1.5	8.30 0.22	53.2 1.9
18	49.35 4.53	42.5 2.0	60.36 0.25	24.7 1.3	8.52 0.25	51.3 1.6
28	53.88 4.90	40.5 1.7	60.61 0.27	23.4 0.8	8.77 0.27	49.7 1.3
Sept. 7	58.78 5.19	38.8 1.1	60.88 0.29	22.6 0.4	9.04 0.29	48.4 0.7
17	63.97 5.40	37.7 0.6	61.17 0.30	22.2 0.0	9.33 0.31	47.7 0.2
27	69.37 5.48	37.1 0.1	61.47 0.30	22.2 0.4	9.64 0.32	47.5 0.3
Oct. 7	74.85 5.44	37.0 0.3	61.77 0.30	22.6 0.8	9.96 0.32	47.8 0.3
17	80.29 5.28	37.3 0.7	62.07 0.30	23.4 1.5	10.28 0.32	48.6 1.4
27	85.57 4.99	38.0 1.2	62.37 0.28	24.9 1.8	10.60 0.31	50.0 1.9
Nov. 6	90.56 4.60	39.2 1.7	62.65 0.27	26.7 1.9	10.91 0.28	51.9 2.1
16	95.16 4.07	40.9 2.2	62.92 0.24	28.6 2.2	11.19 0.26	54.0 2.6
26	99.23 3.44	43.1 2.6	63.16 0.22	30.8 2.4	11.45 0.23	56.6 2.9
Dec. 6	102.67 2.70	45.7 2.7	63.38 0.19	33.2 2.6	11.68 0.20	59.5 3.0
16	105.37 1.37	48.4 3.0	63.57 0.14	35.8 2.6	11.88 0.15	62.5 3.1
26	107.24 0.98	51.4 3.2	63.71 0.09	38.4 2.4	12.03 0.09	65.6 3.0
36	108.22	54.6	63.80	40.8	12.12	68.6

after the 23d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER
TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Geminorum.		α ² GEMINORUM. (Castor.)		α CANIS MINORIS. (Procyon.)	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m. 7 11	22° 14'	h. m. 7 25	32° 11'	h. m. 7 31	5° 34'
Jan. 1	48.04 0.14	12.5 0.2	42.11 0.16	28.4 0.4	60.45 0.14	52.9 1.3
11	48.18 0.08	12.3 0.1	42.27 0.11	28.8 0.5	60.59 0.09	51.6 1.2
21	48.26 0.03	12.2 0.1	42.38 0.04	29.3 0.7	60.68 0.04	50.4 1.0
31	48.29 0.03	12.3 0.1	42.42 0.01	30.0 0.7	60.72 0.01	49.4 0.8
Feb. 10	48.26 0.07	12.4 0.2	42.41 0.07	30.7 0.7	60.71 0.05	48.6 0.7
20	48.19 0.11	12.6 0.3	42.34 0.11	31.4 0.7	60.66 0.10	47.9 0.4
March 1	48.08 0.14	12.9 0.3	42.23 0.15	32.1 0.6	60.56 0.13	47.5 0.3
11	47.94 0.16	13.2 0.2	42.08 0.18	32.7 0.5	60.43 0.15	47.2 0.2
21	47.78 0.18	13.4 0.2	41.90 0.19	33.2 0.4	60.28 0.16	47.0 0.0
31	47.60 0.17	13.6 0.1	41.71 0.19	33.6 0.2	60.12 0.16	47.0 0.0
April 10	47.43 0.16	13.7 0.1	41.52 0.18	33.8 0.1	59.96 0.15	47.0 0.2
20	47.27 0.14	13.8 0.0	41.34 0.15	33.9 0.1	59.81 0.14	47.2 0.3
30	47.13 0.11	13.8 0.0	41.19 0.13	33.8 0.3	59.67 0.11	47.5 0.4
May 10	47.02 0.08	13.8 0.0	41.06 0.10	33.5 0.4	59.56 0.09	47.9 0.5
20	46.94 0.04	13.8 0.0	40.96 0.06	33.1 0.5	59.47 0.06	48.4 0.6
30	46.90 0.00	13.8 0.1	40.90 0.02	32.6 0.6	59.41 0.02	49.0 0.6
June 9	46.90 0.04	13.7 0.3	40.88 0.02	32.0 0.7	59.39 0.01	49.6 0.6
19	46.94 0.06	13.4 0.3	40.90 0.07	31.3 0.8	59.40 0.05	50.2 0.7
29	47.00 0.11	13.1 0.2	40.97 0.11	30.5 0.8	59.45 0.07	50.9 0.7
July 9	47.11 0.15	12.9 0.2	41.08 0.15	29.7 0.8	59.52 0.12	51.6 0.7
19	47.26 0.20	12.7 0.2	41.23 0.18	28.9 0.9	59.64 0.15	52.3 0.6
29	47.46 0.22	12.5 0.3	41.41 0.21	28.0 0.9	59.79 0.17	52.9 0.6
Aug. 8	47.68 0.23	12.2 0.3	41.62 0.24	27.1 0.8	59.96 0.20	53.5 0.4
18	47.91 0.25	11.9 0.3	41.86 0.27	26.3 0.9	60.16 0.22	53.9 0.3
28	48.16 0.28	11.6 0.4	42.13 0.30	25.4 0.9	60.38 0.24	54.2 0.0
Sep ^r 7	48.44 0.30	11.2 0.5	42.43 0.31	24.5 0.9	60.62 0.26	54.2 0.1
17	48.74 0.31	10.7 0.7	42.74 0.32	23.6 0.9	60.88 0.28	54.1 0.4
27	49.05 0.32	10.0 0.7	43.06 0.34	22.7 0.9	61.16 0.29	53.7 0.7
Oct. 7	49.37 0.33	9.3 0.7	43.40 0.36	21.8 0.8	61.45 0.30	53.0 0.9
17	49.70 0.33	8.6 0.7	43.76 0.38	21.0 0.8	61.75 0.30	52.1 1.1
27	50.03 0.33	7.9 0.8	44.14 0.37	20.2 0.7	62.05 0.31	51.0 1.2
Nov. 6	50.36 0.32	7.1 0.9	44.51 0.35	19.5 0.6	62.36 0.31	49.8 1.4
16	50.68 0.31	6.2 0.8	44.86 0.34	18.9 0.5	62.67 0.29	48.4 1.6
26	50.99 0.29	5.4 0.7	45.20 0.31	18.4 0.2	62.96 0.27	46.8 1.6
Dec. 6	51.28 0.25	4.7 0.6	45.51 0.29	18.2 0.1	63.23 0.24	45.2 1.6
16	51.53 0.20	4.1 0.4	45.80 0.24	18.1 0.0	63.47 0.21	43.6 1.5
26	51.73 0.16	3.7 0.3	46.04 0.19	18.1 0.3	63.68 0.16	42.1 1.4
36	51.89	3.4	46.23	18.4	63.84	40.7

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Geminorum. (Pollux.)		15 Argus.		ε Hydræ.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	h. m. 7 36	28 21	h. m. 8 1	23 54	h. m. 8 39	6 55
	s. s.	" "	s. s.	" "	s. s.	" "
Jan. 1	47.20 0.16	37.7 0.1	36.92 0.15	7.1 3.0	23.68 0.20	46.4 1.5
11	47.36 0.11	37.8 0.3	37.07 0.10	10.1 2.8	23.88 0.16	44.9 1.2
21	47.47 0.06	38.1 0.4	37.17 0.04	12.9 2.6	24.04 0.11	43.7 1.0
31	47.53 0.00	38.5 0.5	37.21 0.01	15.5 2.4	24.15 0.06	42.7 0.8
Feb. 10	47.53 0.05	39.0 0.6	37.20 0.06	17.9 2.2	24.21 0.00	41.9 0.6
20	47.48 0.10	39.6 0.5	37.14 0.10	20.1 1.8	24.21 0.04	41.3 0.5
March 1	47.38 0.14	40.1 0.5	37.04 0.13	21.9 1.5	24.17 0.08	40.8 0.3
11	47.24 0.16	40.6 0.5	36.91 0.16	23.4 1.1	24.09 0.11	40.5 0.1
21	47.08 0.18	41.1 0.4	36.75 0.18	24.5 0.7	23.98 0.18	40.4 0.1
31	46.90 0.18	41.5 0.3	36.57 0.19	25.2 0.3	23.85 0.14	40.5 0.2
April 10	46.72 0.17	41.8 0.2	36.38 0.18	25.5 0.0	23.71 0.14	40.7 0.2
20	46.55 0.16	42.0 0.0	36.20 0.16	25.5 0.3	23.57 0.14	40.9 0.3
30	46.39 0.13	42.0 0.1	36.04 0.15	25.2 0.7	23.43 0.13	41.2 0.4
May 10	46.26 0.10	41.9 0.2	35.89 0.14	24.5 1.0	23.30 0.11	41.6 0.4
20	46.16 0.07	41.7 0.4	35.75 0.12	23.5 1.3	23.19 0.09	42.0 0.5
30	46.09 0.02	41.3 0.5	35.63 0.08	22.2 1.4	23.10 0.07	42.5 0.5
June 9	46.07 0.01	40.8 0.5	35.55 0.04	20.8 1.8	23.03 0.04	43.0 0.5
19	46.08 0.05	40.3 0.5	35.51 0.00	19.0 2.0	22.99 0.01	43.5 0.6
29	46.13 0.08	39.8 0.6	35.51 0.03	17.0 2.0	22.98 0.03	44.1 0.5
July 9	46.21 0.13	39.2 0.6	35.54 0.06	15.0 2.1	23.01 0.06	44.6 0.4
19	46.34 0.17	38.6 0.7	35.60 0.09	12.9 2.2	23.07 0.09	45.0 0.4
29	46.51 0.20	37.9 0.7	35.69 0.14	10.7 2.0	23.16 0.12	45.4 0.3
Aug. 8	46.71 0.23	37.2 0.7	35.83 0.17	8.7 1.8	23.28 0.13	45.7 0.2
18	46.94 0.24	36.5 0.8	36.00 0.19	6.9 1.6	23.41 0.17	45.9 0.0
28	47.18 0.28	35.7 0.8	36.19 0.22	5.3 1.3	23.58 0.20	45.9 0.1
Sept. 7	47.46 0.30	34.9 0.9	36.41 0.24	4.0 0.9	23.78 0.22	45.8 0.4
17	47.76 0.31	34.0 0.9	36.65 0.27	3.1 0.4	24.00 0.23	45.4 0.6
27	48.07 0.32	33.1 1.0	36.92 0.29	2.7 0.0	24.23 0.25	44.8 0.7
Oct. 7	48.39 0.34	32.1 1.0	37.21 0.30	2.7 0.5	24.48 0.29	44.1 1.1
17	48.73 0.35	31.1 0.9	37.51 0.33	3.2 1.0	24.77 0.32	43.0 1.3
27	49.08 0.36	30.2 0.9	37.84 0.33	4.2 1.5	25.09 0.33	41.7 1.5
Nov. 6	49.44 0.35	29.3 0.8	38.17 0.32	5.7 1.9	25.42 0.32	40.2 1.6
16	49.79 0.33	28.5 0.7	38.49 0.31	7.6 2.3	25.74 0.32	38.6 1.7
26	50.12 0.31	27.8 0.6	38.80 0.28	9.9 2.6	26.06 0.31	36.9 1.8
Dec. 6	50.43 0.29	27.2 0.4	39.08 0.25	12.5 2.8	26.37 0.29	35.1 1.7
16	50.72 0.24	26.8 0.2	39.33 0.22	15.3 3.0	26.66 0.26	33.4 1.7
26	50.96 0.19	26.6 0.0	39.55 0.18	18.3 3.0	26.92 0.22	31.7 1.5
36	51.15	26.6	39.73	21.3	27.14	30.2

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	♌ Ursæ Majoris.		♈ Argus.		♉ HYDRÆ.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.
	h. m. 8 49	° ′ 48 34	h. m. 9 13	° ′ 58 41	h. m. 9 20	° ′ 8 3
Jan. 1	39.31 0.80	69.4 1.0	22.53 0.28	7.9 3.7	44.17 0.28	14.1 2.8
11	39.61 0.28	70.4 1.2	22.81 0.20	11.6 3.8	44.40 0.19	16.4 2.2
21	39.84 0.17	71.6 1.4	23.01 0.11	15.4 3.9	44.59 0.14	18.6 2.1
31	40.01 0.09	73.0 1.6	23.12 0.08	19.3 3.9	44.73 0.09	20.7 1.9
Feb. 10	40.10 0.02	74.6 1.7	23.15 0.06	23.2 3.7	44.82 0.04	22.6 1.6
20	40.12 0.06	76.3 1.7	23.09 0.12	26.9 3.4	44.86 0.00	24.2 1.2
March 1	40.06 0.12	78.0 1.6	22.97 0.19	30.3 3.1	44.86 0.05	25.4 1.0
11	39.94 0.17	79.6 1.5	22.78 0.25	33.4 2.7	44.81 0.08	26.4 0.8
21	39.77 0.21	81.1 1.4	22.53 0.29	36.1 2.3	44.73 0.11	27.2 0.7
31	39.56 0.23	82.5 1.0	22.24 0.32	38.4 1.9	44.62 0.12	27.9 0.4
April 10	39.33 0.24	83.5 0.7	21.92 0.33	40.3 1.4	44.50 0.13	28.3 0.1
20	39.09 0.24	84.2 0.4	21.59 0.37	41.7 0.8	44.37 0.14	28.4 0.2
30	38.85 0.22	84.6 0.0	21.22 0.37	42.5 0.3	44.23 0.14	28.2 0.4
May 10	38.63 0.20	84.6 0.3	20.85 0.34	42.8 0.1	44.09 0.12	27.8 0.5
20	38.43 0.17	84.3 0.7	20.51 0.31	42.7 0.7	43.97 0.10	27.3 0.6
30	38.26 0.13	83.6 1.0	20.20 0.29	42.0 1.1	43.87 0.08	26.7 0.8
June 9	38.13 0.09	82.6 1.2	19.91 0.26	40.9 1.6	43.79 0.07	25.9 0.9
19	38.04 0.05	81.4 1.4	19.65 0.22	39.3 2.1	43.72 0.05	25.0 0.9
29	37.99 0.00	80.0 1.6	19.43 0.17	37.2 2.4	43.67 0.02	24.1 1.1
July 9	37.99 0.05	78.4 1.9	19.26 0.12	34.8 2.5	43.65 0.01	23.0 1.1
19	38.04 0.09	76.5 2.0	19.14 0.05	32.3 2.8	43.66 0.04	21.9 1.2
29	38.13 0.14	74.5 2.1	19.09 0.00	29.5 2.9	43.70 0.06	20.7 1.1
Aug. 8	38.27 0.19	72.4 2.2	19.09 0.08	26.6 2.9	43.76 0.09	19.6 1.1
18	38.46 0.22	70.2 2.2	19.17 0.14	23.7 2.9	43.85 0.12	18.5 0.8
28	38.68 0.25	68.0 2.2	19.31 0.20	20.8 2.6	43.97 0.15	17.7 0.5
Sept. 7	38.93 0.30	65.8 2.2	19.51 0.28	18.2 2.3	44.12 0.19	17.2 0.3
17	39.23 0.35	63.6 2.1	19.79 0.34	15.9 1.8	44.31 0.20	16.9 0.0
27	39.58 0.37	61.5 2.0	20.13 0.38	14.1 1.5	44.51 0.24	16.9 0.3
Oct. 7	39.95 0.40	59.5 1.8	20.51 0.44	12.6 0.8	44.75 0.27	17.2 0.6
17	40.35 0.43	57.7 1.6	20.95 0.48	11.8 0.1	45.02 0.29	17.8 1.1
27	40.78 0.45	56.1 1.4	21.43 0.50	11.7 0.4	45.31 0.30	18.9 1.5
Nov. 6	41.23 0.45	54.7 1.2	21.93 0.50	12.1 1.2	45.61 0.32	20.4 1.7
16	41.68 0.46	53.5 0.9	22.43 0.51	13.3 1.7	45.93 0.34	22.1 1.7
26	42.14 0.44	52.6 0.4	22.94 0.48	15.0 2.4	46.27 0.33	23.8 2.1
Dec. 6	42.58 0.41	52.2 0.0	23.42 0.44	17.4 2.8	46.60 0.30	25.9 2.3
16	42.99 0.38	52.2 0.3	23.86 0.38	20.2 3.1	46.90 0.29	28.2 2.5
26	43.37 0.33	52.5 0.7	24.24 0.31	23.3 3.6	47.19 0.24	30.7 2.3
36	43.70	53.2	24.55	26.9	47.43	33.0

NOTE. — Before the 23d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	♃ Ursæ Majoris.		♁ Leonis.		♌ LEONIS. (Regulus.)	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "
	9 23	52 18	9 37	24 24	10 0	12 38
Jan. 1	31.39 0.26	33.9 0.8	56.01 0.28	52.8 0.7	56.54 0.28	52.7 1.4
11	31.75 0.29	34.7 1.1	56.29 0.24	52.1 0.5	56.82 0.24	51.3 1.2
21	32.04 0.21	35.8 1.5	56.53 0.19	51.6 0.1	57.06 0.19	50.1 1.0
31	32.25 0.13	37.3 1.8	56.72 0.13	51.5 0.1	57.25 0.14	49.1 0.7
Feb. 10	32.38 0.06	39.1 1.9	56.85 0.07	51.6 0.4	57.39 0.09	48.4 0.4
20	32.44 0.01	41.0 2.0	56.92 0.01	52.0 0.6	57.48 0.04	48.0 0.1
March 1	32.43 0.09	43.0 1.9	56.93 0.03	52.6 0.7	57.52 0.00	47.9 0.0
11	32.34 0.15	44.9 1.8	56.90 0.07	53.3 0.8	57.52 0.05	47.9 0.2
21	32.19 0.19	46.7 1.7	56.83 0.10	54.1 0.8	57.47 0.08	48.1 0.5
31	32.00 0.23	48.4 1.4	56.73 0.12	54.9 0.8	57.39 0.10	48.6 0.5
April 10	31.77 0.25	49.8 1.0	56.61 0.13	55.7 0.7	57.29 0.11	49.1 0.5
20	31.52 0.26	50.8 0.7	56.48 0.15	56.4 0.7	57.18 0.12	49.6 0.4
30	31.26 0.26	51.5 0.3	56.33 0.15	57.1 0.6	57.06 0.13	50.0 0.5
May 10	31.00 0.24	51.8 0.1	56.18 0.13	57.7 0.4	56.93 0.12	50.5 0.6
20	30.76 0.21	51.7 0.4	56.05 0.12	58.1 0.2	56.81 0.11	51.1 0.5
30	30.55 0.18	51.3 0.8	55.93 0.10	58.3 0.1	56.70 0.10	51.6 0.5
June 9	30.37 0.15	50.5 1.1	55.83 0.08	58.4 0.1	56.60 0.08	52.1 0.4
19	30.22 0.10	49.4 1.4	55.75 0.05	58.3 0.2	56.52 0.06	52.5 0.2
29	30.12 0.05	48.0 1.8	55.70 0.02	58.1 0.4	56.46 0.04	52.7 0.1
July 9	30.07 0.00	46.2 2.0	55.68 0.01	57.7 0.5	56.42 0.01	52.8 0.1
19	30.07 0.03	44.2 2.2	55.69 0.03	57.3 0.7	56.41 0.02	52.9 0.0
29	30.10 0.09	42.0 2.4	55.72 0.05	56.5 0.9	56.43 0.04	52.9 0.1
Aug. 8	30.19 0.14	39.6 2.5	55.77 0.09	55.6 0.9	56.47 0.06	52.8 0.3
18	30.33 0.18	37.1 2.5	55.86 0.13	54.7 1.1	56.53 0.08	52.5 0.6
28	30.51 0.22	34.6 2.6	55.99 0.16	53.6 1.3	56.61 0.12	51.9 0.7
Sept. 7	30.73 0.27	32.0 2.5	56.15 0.18	52.3 1.4	56.73 0.15	51.2 0.9
17	31.00 0.31	29.5 2.5	56.33 0.20	50.9 1.5	56.88 0.17	50.3 1.0
27	31.31 0.35	27.0 2.4	56.53 0.24	49.4 1.7	57.05 0.21	49.3 1.1
Oct. 7	31.66 0.40	24.6 2.3	56.77 0.28	47.7 1.8	57.26 0.25	48.2 1.4
17	32.06 0.44	22.3 2.1	57.05 0.31	45.9 1.8	57.51 0.27	46.8 1.7
27	32.50 0.46	20.2 1.8	57.36 0.34	44.1 1.9	57.78 0.31	45.1 1.8
Nov. 6	32.96 0.48	18.4 1.5	57.70 0.35	42.2 1.8	58.09 0.32	43.3 1.9
16	33.44 0.48	16.9 1.1	58.05 0.35	40.4 1.7	58.41 0.34	41.4 2.0
26	33.92 0.47	15.8 0.8	58.40 0.35	38.7 1.6	58.75 0.34	39.4 2.0
Dec. 6	34.39 0.46	15.0 0.3	58.75 0.34	37.1 1.5	59.09 0.33	37.4 1.8
16	34.85 0.42	14.7 0.1	59.09 0.33	35.6 1.2	59.42 0.32	35.6 1.7
26	35.27 0.39	14.8 0.6	59.42 0.29	34.4 0.9	59.74 0.29	33.9 1.6
36	35.66	15.4	59.71	33.5	60.03	32.3

after the 23d of March it begins at the Sidereal Cl. 4/hrs the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ Argus.		α URSE MAJORIS.		δ LEONIS.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m. 10 39	° ′ 58 56	h. m. 10 55	° ′ 62 29	h. m. 11 6	° ′ 21 16
Jan. 1	39.60 0.42	43.9 3.1	6.44 0.54	60.4 0.4	41.06 0.33	72.6 1.3
11	40.02 0.36	47.0 3.4	6.98 0.49	60.8 0.9	41.39 0.29	71.3 1.1
21	40.38 0.29	50.4 3.7	7.47 0.43	61.7 1.3	41.68 0.26	70.2 0.8
31	40.67 0.22	54.1 3.8	7.90 0.34	63.0 1.7	41.94 0.21	69.4 0.3
Feb. 10	40.89 0.13	57.9 3.9	8.24 0.24	64.7 2.2	42.15 0.16	69.1 0.0
20	41.02 0.06	61.8 3.7	8.48 0.15	66.9 2.5	42.31 0.12	69.1 0.3
March 1	41.08 0.02	65.5 3.5	8.63 0.05	69.4 2.6	42.43 0.06	69.4 0.5
11	41.06 0.08	69.0 3.3	8.68 0.04	72.0 2.6	42.49 0.02	69.9 0.7
21	40.98 0.15	72.3 3.1	8.64 0.14	74.6 2.5	42.51 0.02	70.6 1.0
31	40.83 0.19	75.4 2.7	8.50 0.20	77.1 2.3	42.49 0.05	71.6 1.0
April 10	40.64 0.23	78.1 2.3	8.30 0.24	79.4 2.0	42.44 0.07	72.6 1.0
20	40.41 0.26	80.4 1.9	8.06 0.31	81.4 1.8	42.37 0.10	73.6 1.0
30	40.15 0.29	82.3 1.4	7.75 0.33	83.2 1.4	42.27 0.11	74.6 0.9
May 10	39.86 0.29	83.7 0.9	7.42 0.34	84.6 0.3	42.16 0.11	75.5 0.9
20	39.57 0.31	84.6 0.3	7.08 0.36	85.4 0.3	42.05 0.12	76.4 0.8
30	39.26 0.31	84.9 0.1	6.72 0.34	85.7 0.1	41.93 0.11	77.2 0.5
June 9	38.95 0.30	84.8 0.6	6.38 0.31	85.6 0.6	41.82 0.11	77.7 0.4
19	38.65 0.28	84.2 0.9	6.07 0.29	85.0 1.0	41.71 0.10	78.1 0.2
29	38.37 0.25	83.3 1.4	5.78 0.25	84.0 1.6	41.61 0.09	78.3 0.0
July 9	38.12 0.21	81.9 1.9	5.53 0.21	82.4 1.9	41.52 0.07	78.3 0.2
19	37.91 0.18	80.0 2.4	5.32 0.16	80.5 2.2	41.45 0.04	78.1 0.5
29	37.73 0.14	77.6 2.6	5.16 0.12	78.3 2.6	41.41 0.02	77.6 0.7
Aug. 8	37.59 0.06	75.0 2.7	5.04 0.05	75.7 2.9	41.39 0.00	76.9 0.7
18	37.53 0.00	72.3 2.7	4.99 0.01	72.8 3.1	41.39 0.02	76.2 1.0
28	37.53 0.05	69.6 2.7	5.00 0.08	69.7 3.2	41.41 0.04	75.2 1.2
Sept. 7	37.58 0.14	66.9 2.6	5.08 0.14	66.5 3.3	41.45 0.09	74.0 1.4
17	37.72 0.21	64.3 2.5	5.22 0.20	63.2 3.3	41.54 0.12	72.6 1.7
27	37.93 0.29	61.8 2.2	5.42 0.28	59.9 3.3	41.66 0.16	70.9 1.9
Oct. 7	38.22 0.34	59.6 1.6	5.70 0.34	56.6 3.3	41.82 0.20	69.0 2.0
17	38.56 0.41	58.0 1.1	6.04 0.42	53.3 3.1	42.02 0.24	67.0 2.1
27	38.97 0.46	56.9 0.5	6.46 0.47	50.2 2.9	42.26 0.26	64.9 2.3
Nov. 6	39.43 0.50	56.4 0.1	6.93 0.52	47.3 2.5	42.52 0.30	62.6 2.3
16	39.93 0.54	56.5 0.7	7.45 0.57	44.8 2.1	42.82 0.34	60.3 2.3
26	40.47 0.54	57.2 1.4	8.02 0.59	42.7 1.8	43.16 0.35	58.0 2.3
Dec. 6	41.01 0.53	58.6 2.0	8.61 0.60	40.9 1.1	43.51 0.35	55.7 2.0
16	41.54 0.50	60.6 2.4	9.21 0.60	39.8 0.6	43.86 0.35	53.7 1.7
26	42.04 0.45	63.0 2.9	9.81 0.56	39.2 0.0	44.21 0.34	52.0 1.5
36	42.49	65.9	10.37	39.2	44.55	50.5

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Hydraz et Crateris.		β LEONIS.		γ URSAE MAJORIS	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "
	11 12	14 1	11 41	15 20	11 46	54 27
Jan. 1	21.79 0.32	18.3 2.5	56.20 0.33	64.9 1.8	28.88 0.48	61.1 0.7
11	22.11 0.28	20.8 2.5	56.53 0.31	63.1 1.5	29.36 0.45	60.4 0.0
21	22.39 0.24	23.3 2.3	56.84 0.28	61.6 1.1	29.81 0.41	60.4 0.6
31	22.63 0.20	25.6 2.2	57.12 0.24	60.5 0.7	30.22 0.35	61.0 1.1
Feb. 10	22.83 0.16	27.8 2.0	57.36 0.19	59.8 0.4	30.57 0.28	62.1 1.6
20	22.99 0.11	29.8 1.9	57.55 0.14	59.4 0.2	30.85 0.21	63.7 1.9
March 1	23.10 0.06	31.7 1.7	57.69 0.10	59.2 0.1	31.06 0.13	65.6 2.2
11	23.16 0.03	33.4 1.3	57.79 0.06	59.3 0.4	31.19 0.06	67.8 2.4
21	23.19 0.01	34.7 1.0	57.85 0.01	59.7 0.7	31.25 0.01	70.2 2.6
31	23.18 0.04	35.7 0.8	57.86 0.01	60.4 0.9	31.24 0.07	72.8 2.5
April 10	23.14 0.06	36.5 0.6	57.85 0.04	61.3 0.9	31.17 0.12	75.3 2.3
20	23.08 0.09	37.1 0.4	57.81 0.08	62.2 0.9	31.05 0.18	77.6 2.1
30	22.99 0.10	37.5 0.2	57.73 0.09	63.1 0.9	30.87 0.21	79.7 1.8
May 10	22.89 0.10	37.7 0.1	57.64 0.09	64.0 0.9	30.66 0.23	81.5 1.5
20	22.79 0.10	37.6 0.4	57.55 0.10	64.9 0.8	30.43 0.24	83.0 1.0
30	22.69 0.11	37.2 0.5	57.45 0.11	65.7 0.7	30.19 0.25	84.0 0.6
June 9	22.58 0.10	36.7 0.6	57.34 0.10	66.4 0.6	29.94 0.25	84.6 0.2
19	22.48 0.10	36.1 0.8	57.24 0.10	67.0 0.4	29.69 0.25	84.8 0.3
29	22.38 0.09	35.3 0.9	57.14 0.10	67.4 0.2	29.44 0.23	84.5 0.7
July 9	22.29 0.07	34.4 1.0	57.04 0.08	67.6 0.1	29.21 0.20	83.8 1.2
19	22.22 0.05	33.4 1.0	56.96 0.07	67.7 0.0	29.01 0.17	82.6 1.5
29	22.17 0.04	32.4 1.1	56.89 0.05	67.7 0.2	28.84 0.14	81.1 2.0
Aug. 8	22.13 0.02	31.3 1.1	56.84 0.03	67.5 0.5	28.70 0.11	79.1 2.3
18	22.11 0.02	30.2 1.0	56.81 0.02	67.0 0.7	28.59 0.08	76.8 2.6
28	22.13 0.04	29.2 0.8	56.79 0.01	66.3 0.9	28.51 0.03	74.2 2.8
Sept. 7	22.17 0.08	28.4 0.6	56.80 0.03	65.4 1.1	28.48 0.02	71.4 3.1
17	22.25 0.10	27.8 0.4	56.83 0.09	64.3 1.3	28.50 0.09	68.3 3.2
27	22.35 0.15	27.4 0.1	56.92 0.12	63.0 1.5	28.59 0.14	65.1 3.2
Oct. 7	22.50 0.19	27.3 0.2	57.04 0.16	61.5 1.8	28.73 0.19	61.9 3.4
17	22.69 0.23	27.5 0.4	57.20 0.20	59.7 2.0	28.92 0.27	58.5 3.5
27	22.92 0.27	27.9 0.9	57.40 0.23	57.7 2.1	29.19 0.33	55.0 3.3
Nov. 6	23.19 0.30	28.8 1.3	57.63 0.27	55.6 2.2	29.52 0.37	51.7 3.0
16	23.49 0.32	30.1 1.7	57.90 0.31	53.4 2.3	29.89 0.42	48.7 2.7
26	23.81 0.33	31.8 1.9	58.21 0.32	51.1 2.3	30.31 0.46	46.0 2.5
Dec. 6	24.14 0.34	33.7 2.1	58.53 0.34	48.8 2.2	30.77 0.47	43.5 1.9
16	24.48 0.35	35.8 2.3	58.87 0.35	46.6 2.1	31.24 0.50	41.6 1.4
26	24.83 0.33	38.1 2.4	59.22 0.34	44.5 2.0	31.74 0.49	40.2 0.8
36	25.16	40.5	59.56	42.5	32.23	39.4

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Chamæleonis.		α ¹ Crucis.		β Corvi.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.
	h. m.	° ′	h. m.	° ′	h. m.	° ′
	12 10	78 31	12 18	62 19	12 27	22 37
Jan. 1	12.55 1.20	51.6 1.9	50.50 0.59	8.3 2.1	2.97 0.33	18.9 2.3
11	13.75 1.10	53.5 2.4	51.09 0.54	10.4 2.5	3.30 0.34	21.2 2.4
21	14.85 0.98	55.9 2.8	51.63 0.50	12.9 2.9	3.64 0.31	23.6 2.4
31	15.83 0.85	58.7 3.2	52.13 0.43	15.8 3.2	3.95 0.28	26.0 2.4
Feb. 10	16.68 0.69	61.9 3.6	52.56 0.36	19.0 3.4	4.23 0.24	28.4 2.3
20	17.37 0.51	65.5 3.8	52.92 0.30	22.4 3.6	4.47 0.19	30.7 2.3
March 1	17.88 0.35	69.3 4.0	53.22 0.22	26.0 3.6	4.66 0.15	33.0 2.1
11	18.23 0.20	73.3 3.9	53.44 0.14	29.6 3.5	4.81 0.11	35.1 1.8
21	18.43 0.04	77.2 3.7	53.58 0.06	33.1 3.4	4.92 0.07	36.9 1.5
31	18.47 0.12	80.9 3.6	53.64 0.00	36.5 3.2	4.99 0.04	38.4 1.3
April 10	18.35 0.27	84.5 3.4	53.64 0.06	39.7 2.9	5.03 0.01	39.7 1.2
20	18.08 0.42	87.9 3.3	53.58 0.11	42.6 2.6	5.04 0.02	40.9 1.0
30	17.66 0.54	91.2 2.9	53.47 0.17	45.2 2.4	5.02 0.05	41.9 0.7
May 10	17.12 0.65	94.1 2.4	53.30 0.21	47.6 2.1	4.97 0.07	42.6 0.4
20	16.47 0.76	96.5 1.9	53.09 0.25	49.7 1.7	4.90 0.07	43.0 0.2
30	15.71 0.83	98.4 1.4	52.84 0.29	51.4 1.2	4.83 0.09	43.2 0.0
June 9	14.88 0.87	99.8 0.9	52.55 0.30	52.6 0.7	4.74 0.10	43.2 0.3
19	14.01 0.89	100.7 0.5	52.25 0.32	53.3 0.2	4.64 0.12	42.9 0.5
29	13.12 0.90	101.2 0.1	51.93 0.32	53.5 0.3	4.52 0.12	42.4 0.7
July 9	12.22 0.87	101.1 0.7	51.61 0.32	53.2 0.9	4.40 0.11	41.7 0.8
19	11.35 0.84	100.4 1.2	51.29 0.30	52.3 1.3	4.29 0.09	40.9 0.8
29	10.51 0.76	99.2 1.7	50.99 0.28	51.0 1.8	4.20 0.09	40.1 1.1
Aug. 8	9.75 0.63	97.5 2.2	50.71 0.24	49.2 2.1	4.11 0.08	39.0 1.2
18	9.12 0.50	95.3 2.5	50.47 0.19	47.1 2.3	4.03 0.07	37.8 1.2
28	8.62 0.36	92.8 2.8	50.28 0.12	44.8 2.5	3.96 0.04	36.6 1.1
Sept. 7	8.26 0.16	90.0 2.9	50.16 0.04	42.3 2.6	3.92 0.00	35.5 1.1
17	8.10 0.05	87.1 3.1	50.12 0.02	39.7 2.8	3.92 0.04	34.4 1.0
27	8.15 0.25	84.0 2.9	50.14 0.13	36.9 2.6	3.96 0.07	33.4 0.7
Oct. 7	8.40 0.45	81.1 2.7	50.27 0.22	34.3 2.4	4.03 0.12	32.7 0.5
17	8.85 0.66	78.4 2.5	50.49 0.31	31.9 2.0	4.15 0.18	32.2 0.2
27	9.51 0.83	75.9 2.1	50.80 0.39	29.9 1.6	4.33 0.22	32.0 0.0
Nov. 6	10.34 0.99	73.8 1.6	51.19 0.45	28.3 1.1	4.55 0.25	32.0 0.6
16	11.33 1.12	72.2 1.1	51.64 0.52	27.2 0.6	4.80 0.31	32.6 1.1
26	12.45 1.21	71.1 0.4	52.16 0.56	26.6 0.1	5.11 0.34	33.7 1.4
Dec. 6	13.66 1.24	70.7 0.2	52.72 0.60	26.7 0.5	5.45 0.35	35.1 1.7
16	14.90 1.27	70.9 1.0	53.32 0.62	27.2 1.2	5.80 0.36	36.8 1.9
26	16.17 1.23	71.9 1.6	53.94 0.60	28.4 1.7	6.16 0.35	38.7 2.1
36	17.40	73.5	54.54	30.1	6.51	40.8

NOTE.— Before the 23d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	12 Canum Venaticorum.		α VIRGINIS. (Spica.)		γ URSAE MAJORIS.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	h. m. 12 49	39° 3'	h. m. 13 17	10° 25'	h. m. 13 42	50° 0'
Jan. 1	29.32 0.39	70.5 1.7	49.80 0.35	51.5 2.1	1.66 0.44	24.0 2.0
11	29.71 0.38	68.8 1.1	50.15 0.33	53.6 2.0	2.10 0.45	22.0 1.4
21	30.09 0.37	67.7 0.6	50.48 0.32	55.6 2.0	2.55 0.43	20.6 0.7
31	30.46 0.34	67.1 0.0	50.80 0.29	57.6 1.9	2.98 0.41	19.9 0.2
Feb. 10	30.80 0.29	67.1 0.5	51.09 0.26	59.5 1.7	3.39 0.37	19.7 0.5
20	31.09 0.22	67.6 0.9	51.35 0.23	61.2 1.5	3.76 0.33	20.2 1.0
March 1	31.31 0.19	68.5 1.3	51.58 0.19	62.7 1.3	4.08 0.27	21.2 1.5
11	31.50 0.14	69.8 1.7	51.77 0.16	64.0 1.1	4.35 0.22	22.7 2.0
21	31.64 0.08	71.5 1.9	51.93 0.12	65.1 0.8	4.57 0.16	24.7 2.4
31	31.72 0.04	73.4 2.1	52.05 0.09	65.9 0.6	4.73 0.11	27.1 2.6
April 10	31.76 0.01	75.5 2.1	52.14 0.06	66.5 0.4	4.84 0.05	29.7 2.6
20	31.75 0.04	77.6 2.2	52.20 0.03	66.9 0.2	4.89 0.01	32.3 2.7
30	31.71 0.07	79.8 2.0	52.23 0.01	67.1 0.1	4.88 0.05	35.0 2.6
May 10	31.64 0.10	81.8 1.8	52.24 0.02	67.2 0.1	4.83 0.10	37.6 2.4
20	31.54 0.14	83.6 1.7	52.22 0.05	67.1 0.3	4.73 0.14	40.0 2.2
30	31.40 0.15	85.3 1.4	52.17 0.06	66.8 0.3	4.59 0.17	42.2 1.9
June 9	31.25 0.15	86.7 0.9	52.11 0.07	66.5 0.4	4.42 0.19	44.1 1.5
19	31.10 0.16	87.6 0.6	52.04 0.08	66.1 0.5	4.23 0.21	45.6 1.1
29	30.94 0.17	88.2 0.2	51.96 0.10	65.6 0.6	4.02 0.23	46.7 0.6
July 9	30.77 0.16	88.4 0.1	51.86 0.10	65.0 0.6	3.79 0.24	47.3 0.2
19	30.61 0.16	88.3 0.5	51.76 0.11	64.4 0.6	3.55 0.25	47.5 0.2
29	30.45 0.15	87.8 0.9	51.65 0.10	63.8 0.7	3.30 0.24	47.3 0.5
Aug. 8	30.30 0.13	86.9 1.3	51.55 0.09	63.1 0.6	3.06 0.23	46.8 1.2
18	30.17 0.11	85.6 1.6	51.46 0.09	62.5 0.6	2.83 0.22	45.6 1.7
28	30.06 0.08	84.0 2.0	51.37 0.08	61.9 0.5	2.61 0.20	43.9 2.1
Sept. 7	29.98 0.05	82.0 2.2	51.29 0.05	61.4 0.4	2.41 0.15	41.8 2.4
17	29.93 0.02	79.8 2.5	51.24 0.02	61.0 0.2	2.26 0.11	39.4 2.8
27	29.91 0.02	77.3 2.8	51.22 0.02	60.8 0.0	2.15 0.07	36.6 3.0
Oct. 7	29.93 0.09	74.5 2.9	51.24 0.06	60.8 0.2	2.08 0.01	33.6 3.2
17	30.02 0.14	71.6 3.1	51.30 0.12	61.0 0.4	2.07 0.05	30.4 3.6
27	30.16 0.19	68.5 3.2	51.42 0.16	61.4 0.8	2.12 0.12	26.8 3.6
Nov. 6	30.35 0.23	65.3 3.1	51.58 0.21	62.2 1.0	2.24 0.18	23.2 3.5
16	30.58 0.29	62.2 3.1	51.79 0.24	63.2 1.2	2.42 0.25	19.7 3.4
26	30.87 0.33	59.1 2.9	52.03 0.29	64.4 1.5	2.67 0.30	16.3 3.2
Dec. 6	31.20 0.36	56.2 2.6	52.32 0.32	65.9 1.8	2.97 0.36	13.1 3.0
16	31.56 0.39	53.6 2.2	52.64 0.34	67.7 2.0	3.33 0.40	10.1 2.8
26	31.95 0.39	51.4 1.9	52.98 0.34	69.7 2.0	3.73 0.42	7.3 2.2
36	32.34	49.5	53.32	71.7	4.15	5.1

after the 23d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ Bootis.		β Centauri.		α Bootis. (Arcturus.)	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	h. m. 13 48	° ′ 19 5	h. m. 13 53	° ′ 59 41	h. m. 14 9	° ′ 19 54
Jan. 1	1.58 0.34	48.6 2.2	58.35 0.60	34.3 0.8	16.88 0.34	31.3 2.4
11	1.92 0.34	46.4 1.9	58.95 0.58	35.1 1.3	17.22 0.34	28.9 2.0
21	2.26 0.34	44.5 1.5	59.53 0.55	36.4 1.8	17.56 0.33	26.9 1.6
31	2.60 0.32	43.0 1.1	60.08 0.53	38.2 2.1	17.89 0.31	25.3 1.2
Feb. 10	2.92 0.29	41.9 0.6	60.61 0.50	40.3 2.4	18.20 0.30	24.1 0.8
20	3.21 0.25	41.3 0.2	61.11 0.45	42.7 2.8	18.50 0.26	23.3 0.3
March 1	3.46 0.21	41.1 0.2	61.56 0.38	45.5 2.9	18.76 0.23	23.0 0.2
11	3.67 0.18	41.3 0.5	61.94 0.33	48.4 3.0	18.99 0.20	23.2 0.5
21	3.85 0.15	41.8 0.9	62.27 0.28	51.4 3.0	19.19 0.17	23.7 0.9
31	4.00 0.11	42.7 1.2	62.55 0.22	54.4 3.1	19.36 0.13	24.6 1.2
April 10	4.11 0.08	43.9 1.3	62.77 0.16	57.5 2.9	19.49 0.09	25.8 1.4
20	4.19 0.04	45.2 1.5	62.93 0.09	60.4 2.8	19.58 0.06	27.2 1.5
30	4.23 0.01	46.7 1.6	63.02 0.04	63.2 2.7	19.64 0.03	28.7 1.6
May 10	4.24 0.02	48.3 1.5	63.06 0.03	65.9 2.4	19.67 0.00	30.3 1.6
20	4.22 0.04	49.8 1.5	63.03 0.08	68.3 2.2	19.67 0.02	31.9 1.6
30	4.18 0.06	51.3 1.4	62.95 0.13	70.5 1.8	19.65 0.04	33.5 1.5
June 9	4.12 0.08	52.7 1.2	62.82 0.17	72.3 1.4	19.61 0.08	35.0 1.3
19	4.04 0.10	53.9 1.0	62.65 0.22	73.7 1.1	19.53 0.10	36.3 1.1
29	3.94 0.11	54.9 0.8	62.43 0.26	74.8 0.7	19.43 0.11	37.4 0.9
July 9	3.83 0.12	55.7 0.6	62.17 0.27	75.5 0.2	19.32 0.12	38.3 0.6
19	3.71 0.13	56.3 0.3	61.90 0.29	75.7 0.3	19.20 0.14	38.9 0.4
29	3.58 0.14	56.6 0.0	61.61 0.30	75.4 0.7	19.06 0.14	39.3 0.1
Aug. 8	3.44 0.14	56.6 0.2	61.31 0.29	74.7 1.1	18.92 0.15	39.4 0.2
18	3.30 0.12	56.4 0.5	61.02 0.28	73.6 1.6	18.77 0.14	39.2 0.5
28	3.18 0.10	55.9 0.8	60.74 0.24	72.0 1.8	18.63 0.13	38.7 0.8
Sept. 7	3.08 0.08	55.1 1.0	60.50 0.19	70.2 2.1	18.50 0.10	37.9 1.0
17	3.00 0.05	54.1 1.4	60.31 0.14	68.1 2.3	18.40 0.08	36.9 1.3
27	2.95 0.02	52.7 1.6	60.17 0.05	65.8 2.4	18.32 0.04	35.6 1.6
Oct. 7	2.93 0.03	51.1 1.9	60.12 0.03	63.4 2.4	18.28 0.00	34.0 1.9
17	2.96 0.06	49.2 2.2	60.15 0.12	61.0 2.4	18.28 0.03	32.1 2.3
27	3.02 0.12	47.0 2.4	60.27 0.21	58.6 2.1	18.31 0.09	29.8 2.5
Nov. 6	3.14 0.17	44.6 2.5	60.48 0.29	56.5 1.8	18.40 0.14	27.3 2.6
16	3.31 0.21	42.1 2.6	60.77 0.39	54.7 1.5	18.54 0.20	24.7 2.6
26	3.52 0.25	39.5 2.7	61.16 0.45	53.2 1.1	18.74 0.23	22.1 2.6
Dec. 6	3.77 0.29	36.8 2.6	61.61 0.51	52.1 0.5	18.97 0.26	19.5 2.8
16	4.06 0.32	34.2 2.5	62.12 0.54	51.6 0.1	19.23 0.31	16.7 2.6
26	4.38 0.33	31.7 2.2	62.66 0.58	51.7 0.5	19.54 0.33	14.1 2.4
36	4.71	29.5	63.24	52.2	19.87	11.7

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α ¹ Centauri.		ε BOOTIS.		α ¹ LIBRÆ.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.
	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "
	14 30	60 15	14 38	27 39	14 43	15 27
Jan. 1	7.38 0.58	1.5 0.8	52.42 0.34	41.1 2.4	8.38 0.34	32.0 1.6
11	7.96 0.58	1.8 0.8	52.76 0.34	38.7 2.0	8.72 0.34	33.6 1.6
21	8.54 0.58	2.6 1.2	53.10 0.34	36.7 1.6	9.06 0.34	35.2 1.7
31	9.12 0.56	3.8 1.6	53.44 0.34	35.1 1.2	9.40 0.32	36.9 1.6
Feb. 10	9.68 0.54	5.4 1.9	53.78 0.32	33.9 0.6	9.72 0.31	38.5 1.5
20	10.22 0.50	7.3 2.3	54.10 0.29	33.3 0.1	10.03 0.30	40.0 1.4
March 1	10.72 0.45	9.6 2.5	54.39 0.26	33.2 0.4	10.33 0.27	41.4 1.2
11	11.17 0.37	12.1 2.6	54.65 0.24	33.6 0.8	10.60 0.24	42.6 1.1
21	11.54 0.33	14.7 2.8	54.89 0.20	34.4 1.3	10.84 0.21	43.7 0.9
31	11.87 0.28	17.5 2.8	55.09 0.16	35.7 1.6	11.05 0.18	44.6 0.7
April 10	12.15 0.22	20.3 2.8	55.25 0.13	37.3 1.8	11.23 0.15	45.3 0.5
20	12.37 0.17	23.1 2.8	55.38 0.09	39.1 2.1	11.38 0.12	45.8 0.3
30	12.54 0.10	25.9 2.7	55.47 0.05	41.2 2.1	11.50 0.09	46.1 0.2
May 10	12.64 0.03	28.6 2.5	55.52 0.02	43.8 2.1	11.59 0.06	46.3 0.1
20	12.67 0.03	31.1 2.2	55.54 0.01	45.4 2.0	11.65 0.03	46.4 0.0
30	12.64 0.09	33.3 2.0	55.53 0.04	47.4 1.9	11.68 0.00	46.4 0.1
June 9	12.55 0.14	35.3 1.7	55.49 0.07	49.3 1.7	11.68 0.02	46.3 0.2
19	12.41 0.19	37.0 1.4	55.42 0.10	51.0 1.6	11.66 0.05	46.1 0.3
29	12.22 0.22	38.4 1.0	55.32 0.12	52.6 1.3	11.61 0.08	45.8 0.3
July 9	12.00 0.28	39.4 0.6	55.20 0.14	53.9 0.9	11.53 0.10	45.5 0.4
19	11.72 0.31	40.0 0.1	55.06 0.15	54.8 0.5	11.43 0.11	45.1 0.5
29	11.41 0.32	40.1 0.3	54.91 0.16	55.3 0.3	11.32 0.13	44.6 0.5
Aug. 8	11.09 0.33	39.8 0.8	54.75 0.17	55.6 0.1	11.19 0.13	44.1 0.5
18	10.76 0.32	39.0 1.2	54.58 0.17	55.5 0.5	11.06 0.14	43.6 0.6
28	10.44 0.30	37.8 1.6	54.41 0.15	55.0 0.9	10.92 0.13	43.0 0.5
Sept. 7	10.14 0.26	36.2 1.8	54.26 0.14	54.1 1.1	10.79 0.11	42.5 0.5
17	9.88 0.20	34.4 2.1	54.12 0.12	53.0 1.4	10.68 0.09	42.0 0.5
27	9.68 0.14	32.3 2.3	54.00 0.08	51.6 1.9	10.59 0.07	41.5 0.3
Oct. 7	9.54 0.04	30.0 2.4	53.92 0.04	49.7 2.2	10.52 0.03	41.2 0.2
17	9.50 0.04	27.6 2.5	53.88 0.00	47.5 2.4	10.55 0.08	41.0 0.0
27	9.54 0.14	25.1 2.3	53.88 0.04	45.1 2.5	10.63 0.13	41.0 0.2
Nov. 6	9.68 0.22	22.8 2.0	53.92 0.11	42.6 2.8	10.76 0.18	41.2 0.4
16	9.90 0.31	20.8 1.8	54.03 0.17	39.8 3.1	10.94 0.23	41.6 0.7
26	10.21 0.39	19.0 1.4	54.20 0.21	36.7 3.0	11.17 0.26	42.3 1.0
Dec. 6	10.60 0.47	17.6 0.9	54.41 0.26	33.7 2.9	11.43 0.31	43.3 1.2
16	11.07 0.52	16.7 0.6	54.67 0.28	30.8 2.8	11.74 0.32	44.5 1.3
26	11.59 0.56	16.1 0.0	54.95 0.32	28.0 2.5	12.06	45.8 1.5
36	12.15	16.1	55.27	25.5		47.3

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β URSAE MINORIS.		β LIBRAE.		α CORONAE BOREALIS	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	h. m. 14 51	74° 42'	h. m. 15 9	8 51'	h. m. 15 28	27° 10'
	s. s.	" "	s. s.	" "	s. s.	" "
Jan. 1	7.41 0.78	73.9 2.3	28.58 0.32	55.9 1.6	45.41 0.31	61.1 2.6
11	8.19 0.88	71.6 1.7	28.90 0.33	57.5 1.7	45.72 0.32	58.5 2.3
21	9.02 0.86	69.9 1.1	29.23 0.33	59.2 1.6	46.04 0.34	56.2 1.8
31	9.88 0.88	68.8 0.4	29.56 0.33	60.8 1.5	46.38 0.34	54.4 1.4
Feb. 10	10.76 0.87	68.4 0.3	29.89 0.30	62.3 1.3	46.72 0.33	53.0 0.9
20	11.63 0.82	68.7 0.9	30.19 0.30	63.6 1.1	47.05 0.31	52.1 0.4
March 1	12.45 0.73	69.6 1.5	30.49 0.28	64.7 0.9	47.36 0.28	51.7 0.2
11	13.18 0.63	71.1 2.0	30.77 0.25	65.6 0.7	47.64 0.27	51.9 0.6
21	13.81 0.49	73.1 2.6	31.02 0.22	66.3 0.5	47.91 0.24	52.5 1.0
31	14.30 0.37	75.7 2.9	31.24 0.20	66.8 0.3	48.15 0.21	53.5 1.4
April 10	14.67 0.24	78.6 3.1	31.44 0.17	67.1 0.0	48.36 0.18	54.9 1.8
20	14.91 0.08	81.7 3.2	31.61 0.15	67.1 0.2	48.54 0.14	56.7 2.1
30	14.99 0.07	84.9 3.2	31.76 0.11	66.9 0.3	48.68 0.10	58.8 2.2
May 10	14.92 0.20	88.1 3.0	31.87 0.08	66.6 0.3	48.78 0.07	61.0 2.3
20	14.72 0.32	91.1 2.8	31.95 0.05	66.3 0.4	48.85 0.04	63.3 2.3
30	14.40 0.44	93.9 2.6	32.00 0.02	65.9 0.5	48.89 0.00	65.6 2.2
June 9	13.96 0.54	96.5 2.2	32.02 0.00	65.4 0.5	48.89 0.08	67.8 2.0
19	13.42 0.64	98.7 1.7	32.02 0.04	64.9 0.6	48.86 0.06	69.8 1.9
29	12.78 0.70	100.4 1.2	31.98 0.06	64.3 0.5	48.80 0.09	71.7 1.6
July 9	12.08 0.75	101.6 0.7	31.92 0.07	63.8 0.5	48.71 0.12	73.3 1.3
19	11.33 0.80	102.3 0.2	31.85 0.10	63.3 0.5	48.59 0.15	74.6 0.9
29	10.53 0.81	102.5 0.3	31.75 0.13	62.8 0.5	48.44 0.17	75.5 0.6
Aug. 8	9.72 0.81	102.2 0.9	31.62 0.14	62.3 0.5	48.27 0.18	76.1 0.3
18	8.91 0.79	101.3 1.4	31.48 0.15	61.8 0.4	48.09 0.18	76.4 0.0
28	8.12 0.75	99.9 1.8	31.33 0.14	61.4 0.3	47.91 0.18	76.4 0.4
Sept. 7	7.37 0.70	98.1 2.3	31.19 0.13	61.1 0.2	47.73 0.17	76.0 0.7
17	6.67 0.61	95.8 2.7	31.06 0.11	60.9 0.2	47.56 0.16	75.3 1.2
27	6.06 0.52	93.1 3.0	30.95 0.07	60.7 0.0	47.40 0.13	74.1 1.7
Oct. 7	5.54 0.42	90.1 3.4	30.88 0.04	60.7 0.2	47.27 0.09	72.4 1.9
17	5.12 0.28	86.7 3.6	30.84 0.00	60.9 0.3	47.18 0.05	70.5 2.2
27	4.84 0.14	83.1 3.8	30.84 0.04	61.2 0.5	47.13 0.00	68.3 2.5
Nov. 6	4.70 0.01	79.3 3.8	30.88 0.10	61.7 0.8	47.13 0.05	65.8 2.6
16	4.71 0.17	75.5 3.8	30.98 0.16	62.5 1.0	47.18 0.10	63.2 2.8
26	4.88 0.31	71.7 3.7	31.14 0.20	63.5 1.2	47.28 0.16	60.4 2.9
Dec. 6	5.19 0.46	68.0 3.4	31.34 0.23	64.7 1.3	47.44 0.21	57.5 3.0
16	5.65 0.60	64.6 3.1	31.57 0.28	66.0 1.5	47.65 0.25	54.5 2.8
26	6.25 0.72	61.5 2.5	31.85 0.30	67.5 1.6	47.90 0.28	51.7 2.7
36	6.97	59.0	32.15	69.1	48.18	49.0

NOTE. — Before the 23d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α SERPENTIS.		ζ Ursæ Minoris.		β ¹ Scorpii.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.
	^{h.} ^{m.} 15 37	[°] ['] 6 51	^{h.} ^{m.} 15 48	[°] ['] 78 12	^{h.} ^{m.} 15 57	[°] ['] 19 25
Jan. 1	^{h.} ^{m.} 22.24 0.29	[°] ['] 55.6 2.1	^{h.} ^{m.} 63.96 0.78	[°] ['] 62.3 2.8	^{h.} ^{m.} 17.81 0.31	[°] ['] 12.7 1.0
11	22.53 0.31	53.5 1.9	64.74 0.90	59.5 2.8	18.12 0.38	13.7 1.1
21	22.84 0.32	51.6 1.7	65.64 1.00	57.2 1.8	18.45 0.33	14.8 1.1
31	23.16 0.32	49.9 1.4	66.64 1.08	55.4 1.1	18.78 0.34	15.9 1.2
Feb. 10	23.48 0.32	48.5 1.1	67.72 1.11	54.3 0.4	19.12 0.34	17.1 1.1
20	23.80 0.30	47.4 0.9	68.83 1.09	53.9 0.2	19.46 0.33	18.2 1.0
March 1	24.10 0.27	46.5 0.5	69.92 1.03	54.1 0.9	19.79 0.31	19.2 0.9
11	24.37 0.26	46.0 0.0	70.95 0.94	55.0 1.5	20.10 0.29	20.1 0.8
21	24.63 0.24	46.0 0.3	71.89 0.88	56.5 2.0	20.39 0.27	20.9 0.7
31	24.87 0.21	46.3 0.6	72.72 0.67	58.5 2.5	20.66 0.25	21.6 0.6
April 10	25.06 0.18	46.9 0.8	73.39 0.52	61.0 2.8	20.91 0.23	22.2 0.4
20	25.26 0.16	47.7 1.1	73.91 0.34	63.8 3.2	21.14 0.20	22.6 0.3
30	25.42 0.13	48.8 1.2	74.25 0.15	67.0 3.2	21.34 0.17	22.9 0.2
May 10	25.55 0.10	50.0 1.3	74.40 0.04	70.2 3.2	21.51 0.14	23.1 0.1
20	25.65 0.06	51.3 1.5	74.36 0.23	73.4 3.2	21.65 0.10	23.2 0.1
30	25.71 0.04	52.8 1.4	74.13 0.40	76.6 3.0	21.75 0.07	23.3 0.0
June 9	25.75 0.01	54.2 1.3	73.73 0.55	79.6 2.7	21.82 0.04	23.3 0.0
19	25.76 0.03	55.5 1.2	73.18 0.69	82.3 2.4	21.86 0.00	23.3 0.1
29	25.73 0.05	56.7 1.1	72.49 0.83	84.7 2.0	21.86 0.03	23.2 0.1
July 9	25.68 0.08	57.8 1.0	71.66 0.98	86.7 1.5	21.83 0.06	23.1 0.2
19	25.60 0.11	58.8 0.8	70.73 1.03	88.2 0.9	21.77 0.10	22.9 0.3
29	25.49 0.13	59.6 0.6	69.70 1.10	89.1 0.4	21.67 0.12	22.6 0.3
Aug. 8	25.36 0.14	60.2 0.4	68.60 1.13	89.5 0.0	21.55 0.14	22.3 0.3
18	25.22 0.16	60.6 0.3	67.47 1.16	89.5 0.4	21.41 0.16	22.0 0.4
28	25.06 0.15	60.9 0.0	66.31 1.13	89.1 1.0	21.25 0.16	21.6 0.5
Sept. 7	24.91 0.15	60.9 0.2	65.18 1.08	88.1 1.5	21.09 0.16	21.1 0.4
17	24.76 0.13	60.7 0.4	64.10 1.02	86.6 2.1	20.93 0.14	20.7 0.4
27	24.63 0.10	60.3 0.7	63.08 0.93	84.5 2.5	20.79 0.11	20.3 0.4
Oct. 7	24.53 0.07	59.6 0.9	62.15 0.81	82.0 2.8	20.68 0.08	19.9 0.3
17	24.46 0.03	58.7 1.1	61.34 0.65	79.2 3.1	20.60 0.04	19.6 0.3
27	24.43 0.01	57.6 1.4	60.69 0.50	76.1 3.3	20.56 0.00	19.3 0.2
Nov. 6	24.44 0.06	56.2 1.6	60.19 0.32	72.8 3.6	20.56 0.05	19.1 0.0
16	24.50 0.10	54.6 1.9	59.87 0.12	69.2 3.8	20.61 0.12	19.1 0.2
26	24.60 0.16	52.7 2.0	59.75 0.09	65.4 3.7	20.73 0.17	19.3 0.4
Dec. 6	24.76 0.21	50.7 2.1	59.84 0.30	61.7 3.6	20.90 0.21	19.7 0.6
16	24.97 0.25	48.6 2.1	60.14 0.49	58.1 3.4	21.11 0.25	20.3 0.7
26	25.22 0.27	46.5 2.1	60.63 0.67	54.7 3.0	21.36 0.29	21.0 0.9
36	25.49	44.4	61.30	51.7	21.65	21.9

after the 23d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	♄ OPHIUCHI.		♏ SCORPIL. (Antares.)		♁ Draconis.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	h. m. 16 7	° ' 3 19	h. m. 16 20	° ' 26 7	h. m. 16 22	° ' 61 49
Jan. 1	0.40 0.28	59.0 1.7	49.33 0.30	7.9 0.6	4.70 0.36	36.7 2.3
11	0.68 0.30	60.7 1.6	49.63 0.33	8.5 0.7	5.06 0.41	33.4 2.3
21	0.98 0.31	62.3 1.5	49.96 0.35	9.2 0.7	5.47 0.46	30.6 2.2
31	1.29 0.32	63.8 1.3	50.31 0.35	9.9 0.8	5.93 0.50	28.4 1.6
Feb. 10	1.61 0.32	65.1 1.1	50.66 0.35	10.7 0.8	6.43 0.52	26.8 1.0
20	1.93 0.30	66.2 0.9	51.01 0.35	11.5 0.9	6.95 0.52	25.8 0.4
March 1	2.23 0.28	67.1 0.6	51.36 0.34	12.4 0.8	7.47 0.51	25.4 0.4
11	2.51 0.28	67.7 0.3	51.70 0.31	13.2 0.8	7.98 0.48	25.8 1.0
21	2.79 0.26	68.0 0.1	52.01 0.30	14.0 0.8	8.46 0.44	26.8 1.5
31	3.05 0.24	68.1 0.1	52.31 0.28	14.8 0.7	8.90 0.37	28.3 2.1
April 10	3.29 0.22	68.0 0.4	52.59 0.26	15.5 0.6	9.27 0.33	30.4 2.5
20	3.51 0.19	67.6 0.7	52.85 0.23	16.1 0.5	9.60 0.26	32.9 3.0
30	3.70 0.16	66.9 0.8	53.08 0.21	16.6 0.5	9.86 0.18	35.9 3.2
May 10	3.86 0.13	66.1 0.8	53.29 0.17	17.1 0.4	10.04 0.11	39.1 3.2
20	3.99 0.10	65.3 0.9	53.46 0.13	17.5 0.4	10.15 0.04	42.3 3.3
30	4.09 0.07	64.4 0.9	53.59 0.10	17.9 0.3	10.19 0.04	45.6 3.2
June 9	4.16 0.03	63.5 0.9	53.69 0.06	18.2 0.3	10.15 0.11	48.8 3.0
19	4.19 0.01	62.6 0.9	53.75 0.03	18.5 0.3	10.04 0.18	51.8 2.9
29	4.20 0.02	61.7 0.8	53.78 0.01	18.8 0.2	9.86 0.25	54.7 2.5
July 9	4.18 0.06	60.9 0.7	53.77 0.06	19.0 0.1	9.61 0.31	57.2 2.0
19	4.12 0.09	60.2 0.7	53.71 0.09	19.1 0.1	9.30 0.35	59.2 1.6
29	4.03 0.11	59.5 0.6	53.62 0.11	19.2 0.0	8.95 0.40	60.8 1.2
Aug. 8	3.92 0.14	58.9 0.5	53.51 0.14	19.2 0.2	8.55 0.44	62.0 0.7
18	3.78 0.15	58.4 0.3	53.37 0.17	19.0 0.3	8.11 0.46	62.7 0.1
28	3.63 0.16	58.1 0.2	53.20 0.18	18.7 0.4	7.65 0.46	62.8 0.4
Sept. 7	3.47 0.15	57.9 0.2	53.02 0.17	18.3 0.4	7.19 0.44	62.4 0.3
17	3.32 0.14	57.7 0.0	52.85 0.16	17.9 0.5	6.75 0.43	61.6 1.3
27	3.18 0.12	57.7 0.2	52.69 0.14	17.4 0.6	6.32 0.40	60.3 1.8
Oct. 7	3.06 0.09	57.9 0.4	52.55 0.10	16.8 0.6	5.92 0.35	58.5 2.4
17	2.97 0.05	58.3 0.6	52.45 0.06	16.2 0.6	5.57 0.29	56.1 2.8
27	2.92 0.01	58.9 0.8	52.39 0.02	15.6 0.5	5.28 0.22	53.3 3.0
Nov. 6	2.91 0.04	59.7 0.9	52.37 0.04	15.1 0.5	5.06 0.15	50.3 3.4
16	2.95 0.08	60.6 1.1	52.41 0.09	14.6 0.3	4.91 0.05	46.9 3.6
26	3.03 0.15	61.7 1.4	52.50 0.16	14.3 0.1	4.86 0.05	43.3 3.7
Dec. 6	3.18 0.19	63.1 1.5	52.66 0.20	14.2 0.0	4.91 0.13	39.6 3.7
16	3.37 0.22	64.6 1.5	52.86 0.24	14.2 0.2	5.04 0.23	35.9 3.6
26	3.59 0.26	66.1 1.6	53.10 0.28	14.4 0.5	5.27 0.31	32.3 3.3
36	3.85	67.7	53.38	14.9	5.58	29.0

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Trianguli Australis.		ε Ursæ Minoris.		α HERCULIS.	
	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	^{h.} 16 ^{m.} 33	[°] 68 ['] 45	^{h.} 17 ^{m.} 0	[°] 82 ['] 15	^{h.} 17 ^{m.} 8	[°] 14 ['] 32
Jan. 1	^{s.} 50.89 ^{s.} 0.63	["] 48.2 ["] 1.6	^{s.} 16.99 ^{s.} 0.68	["] 25.3 ["] 3.2	^{s.} 15.32 ^{s.} 0.22	["] 59.2 ["] 2.3
11	51.52 0.69	46.6 1.2	17.67 0.92	22.1 2.9	15.54 0.25	56.9 2.1
21	52.21 0.74	45.4 0.9	18.59 1.17	19.2 2.4	15.79 0.27	54.8 1.8
31	52.95 0.77	44.5 0.4	19.76 1.37	16.8 1.9	16.06 0.29	53.0 1.7
Feb. 10	53.72 0.78	44.1 0.1	21.13 1.53	14.9 1.3	16.35 0.30	51.3 1.3
20	54.50 0.80	44.2 0.5	22.66 1.60	13.6 0.7	16.65 0.31	50.0 0.8
March 1	55.30 0.79	44.7 0.9	24.26 1.61	12.9 0.0	16.96 0.30	49.2 0.4
11	56.09 0.74	45.6 1.2	25.87 1.56	12.9 0.6	17.26 0.29	48.8 0.1
21	56.83 0.70	46.8 1.4	27.43 1.46	13.5 1.3	17.55 0.29	48.9 0.4
31	57.53 0.66	48.2 1.7	28.89 1.32	14.8 1.9	17.84 0.28	49.3 0.9
April 10	58.19 0.60	49.9 2.1	30.21 1.13	16.7 2.3	18.12 0.25	50.2 1.2
20	58.79 0.54	52.0 2.3	31.34 0.88	19.0 2.7	18.37 0.23	51.4 1.5
30	59.33 0.44	54.3 2.4	32.22 0.63	21.7 3.0	18.60 0.21	52.9 1.8
May 10	59.77 0.37	56.7 2.5	32.85 0.36	24.7 3.1	18.81 0.17	54.7 1.9
20	60.14 0.28	59.2 2.6	33.21 0.08	27.8 3.3	18.98 0.14	56.6 2.0
30	60.42 0.18	61.8 2.6	33.29 0.20	31.1 3.3	19.12 0.12	58.6 2.0
June 9	60.60 0.09	64.4 2.5	33.09 0.48	34.4 3.1	19.24 0.08	60.6 2.0
19	60.69 0.01	66.9 2.4	32.61 0.73	37.5 3.0	19.32 0.03	62.6 2.0
29	60.68 0.11	69.3 2.1	31.88 0.99	40.5 2.7	19.35 0.00	64.6 1.9
July 9	60.57 0.20	71.4 2.0	30.89 1.20	43.2 2.3	19.35 0.04	66.5 1.6
19	60.37 0.30	73.4 1.5	29.69 1.39	45.5 2.0	19.31 0.07	68.1 1.4
29	60.07 0.36	74.9 1.2	28.30 1.57	47.5 1.5	19.24 0.11	69.5 1.2
Aug. 8	59.71 0.43	76.1 0.8	26.73 1.70	49.0 1.1	19.13 0.14	70.7 0.9
18	59.28 0.47	76.9 0.3	25.03 1.78	50.1 0.6	18.99 0.16	71.6 0.6
28	58.81 0.49	77.2 0.2	23.25 1.83	50.7 0.1	18.83 0.18	72.2 0.4
Sept. 7	58.32 0.49	77.0 0.7	21.42 1.84	50.8 0.4	18.65 0.18	72.6 0.1
17	57.83 0.47	76.3 1.1	19.58 1.81	50.4 1.0	18.47 0.18	72.7 0.2
27	57.36 0.41	75.2 1.5	17.77 1.74	49.4 1.4	18.29 0.17	72.5 0.5
Oct. 7	56.95 0.34	73.7 1.9	16.03 1.61	48.0 1.8	18.12 0.14	72.0 0.8
17	56.61 0.25	71.8 2.3	14.42 1.47	46.2 2.4	17.98 0.11	71.2 1.2
27	56.36 0.14	69.5 2.5	12.95 1.26	43.8 2.3	17.87 0.07	70.0 1.4
Nov. 6	56.22 0.01	67.0 2.6	11.69 1.03	41.0 3.0	17.80 0.03	68.6 1.7
16	56.21 0.10	64.4 2.6	10.66 0.75	38.0 3.2	17.77 0.01	66.9 1.9
26	56.31 0.24	61.8 2.5	9.91 0.46	34.8 3.5	17.78 0.05	65.0 2.1
Dec. 6	56.55 0.37	59.3 2.3	9.45 0.14	31.3 3.5	17.83 0.11	62.9 2.2
16	56.92 0.46	57.0 2.2	9.31 0.20	27.8 3.5	17.94 0.16	60.7 2.3
26	57.38 0.56	54.8 1.8	9.51 0.49	24.3 3.3	18.10 0.20	58.4 2.3
36	57.94	53.0	10.00	21.0	18.30	56.1

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β DRACONIS.		α OPHIUCHI		σ Octantis.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.
	h. m.	° ′	h. m.	° ′	h.	° ′
	17 27	52 23	17 28	12 39	17	89 16
Jan. 1	14.56 0.21	70.6 3.5	25.61 0.21	44.4 2.2	46 49.96 10.42	41.6 3.0
11	14.77 0.27	67.1 3.1	25.82 0.23	42.2 2.0	47 0.38 13.23	38.6 2.8
21	15.04 0.32	64.0 2.7	26.05 0.26	40.2 1.9	47 13.61 15.67	35.8 2.4
31	15.36 0.36	61.3 2.3	26.31 0.28	38.3 1.5	47 29.28 17.68	33.4 1.8
Feb. 10	15.72 0.39	59.0 1.6	26.59 0.29	36.8 1.2	47 46.96 19.20	31.6 1.5
20	16.11 0.41	57.4 1.2	26.88 0.30	35.6 0.9	48 6.16 20.23	30.1 1.0
March 1	16.52 0.42	56.2 0.5	27.18 0.30	34.7 0.5	48 26.39 20.80	29.1 0.5
11	16.94 0.41	55.7 0.2	27.48 0.30	34.2 0.0	48 47.19 20.94	28.6 0.0
21	17.35 0.40	55.9 0.9	27.78 0.29	34.2 0.4	49 8.13 20.62	28.6 0.4
31	17.75 0.37	56.8 1.5	28.07 0.27	34.6 0.8	49 28.75 19.84	29.0 0.9
April 10	18.12 0.34	58.3 2.0	28.34 0.26	35.4 1.1	49 48.59 18.69	29.9 1.4
20	18.46 0.30	60.3 2.4	28.60 0.25	36.5 1.4	50 7.28 17.16	31.3 1.8
30	18.76 0.26	62.7 2.8	28.85 0.22	37.9 1.7	50 24.44 15.28	33.1 2.2
May 10	19.02 0.21	65.5 3.0	29.07 0.20	39.6 1.9	50 39.72 13.07	35.3 2.4
20	19.23 0.16	68.5 3.3	29.27 0.16	41.5 2.0	50 52.79 10.61	37.7 2.7
30	19.39 0.10	71.8 3.3	29.43 0.13	43.5 2.0	51 3.40 7.92	40.4 2.9
June 9	19.49 0.04	75.1 3.3	29.56 0.10	45.5 2.0	51 11.32 5.06	43.3 3.0
19	19.53 0.03	78.4 3.3	29.66 0.06	47.5 1.9	51 16.38 2.06	46.3 3.0
29	19.50 0.08	81.7 3.0	29.72 0.02	49.4 1.8	51 18.46 0.98	49.3 3.0
July 9	19.42 0.14	84.7 2.7	29.74 0.02	51.2 1.7	51 17.53 3.89	52.3 2.9
19	19.28 0.20	87.4 2.3	29.72 0.06	52.9 1.4	51 13.64 6.74	55.2 2.7
29	19.06 0.25	89.7 2.0	29.66 0.10	54.3 1.2	51 6.90 9.38	57.9 2.3
Aug. 8	18.83 0.28	91.7 1.6	29.56 0.12	55.5 1.0	50 57.52 11.68	60.2 1.9
18	18.55 0.30	93.3 1.1	29.44 0.15	56.5 0.7	50 45.84 13.58	62.1 1.5
28	18.25 0.34	94.4 0.6	29.29 0.17	57.2 0.4	50 32.26 15.02	63.6 0.9
Sept. 7	17.91 0.35	95.0 0.1	29.12 0.18	57.6 0.2	50 17.24 15.90	64.5 0.4
17	17.56 0.35	95.1 0.4	28.94 0.18	57.8 0.0	50 1.34 16.17	64.9 0.2
27	17.21 0.34	94.7 0.9	28.76 0.18	57.8 0.3	49 45.17 15.77	64.7 0.8
Oct. 7	16.87 0.31	93.8 1.4	28.58 0.15	57.5 0.7	49 29.40 14.75	63.9 1.3
17	16.56 0.28	92.4 1.8	28.43 0.12	56.8 1.1	49 14.65 13.18	62.6 2.1
27	16.28 0.23	90.6 2.3	28.31 0.08	55.7 1.2	49 1.52 10.93	60.5 2.6
Nov. 6	16.05 0.17	88.3 2.7	28.23 0.05	54.5 1.5	48 50.59 8.23	57.9 2.8
16	15.88 0.10	85.6 3.0	28.18 0.00	53.0 1.7	48 42.36 5.17	55.1 3.0
26	15.78 0.05	82.6 3.4	28.18 0.06	51.3 1.9	48 37.19 1.87	52.1 3.2
Dec 6	15.73 0.02	79.2 3.5	28.23 0.08	49.4 2.1	48 35.32 1.57	48.9 3.4
16	15.75 0.11	75.7 3.5	28.31 0.14	47.3 2.2	48 36.89 5.01	45.5 3.4
26	15.86 0.18	72.2 3.4	28.45 0.18	45.1 2.2	48 41.90 8.28	42.1 3.2
36	16.04	68.8	28.63	42.9	48 50.18	38.9

NOTE. — Before the 23d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ DRACONIS.		μ ¹ Sagittarii.		α LYRÆ. (Vega.)	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	^{h.} ^{m.} 17 53	⁵¹ ²⁹	^{h.} ^{m.} 18 5	²¹ ⁵	^{h.} ^{m.} 18 32	³⁸ ³⁸
Jan. 1	^{h.} ^{m.} 19.62 0.17	^{h.} ^{m.} 73.8 3.5	^{h.} ^{m.} 22.86 0.20	^{h.} ^{m.} 35.8 0.1	^{h.} ^{m.} 10.66 0.12	^{h.} ^{m.} 72.5 3.1
11	19.79 0.23	70.3 3.2	23.06 0.24	35.9 0.2	10.78 0.17	69.4 3.0
21	20.02 0.28	67.1 2.9	23.30 0.27	36.1 0.2	10.95 0.21	66.4 2.8
31	20.30 0.33	64.2 2.5	23.57 0.29	36.3 0.2	11.16 0.25	63.6 2.4
Feb. 10	20.63 0.36	61.7 1.9	23.86 0.31	36.5 0.2	11.41 0.29	61.2 2.0
20	20.99 0.39	59.8 1.3	24.17 0.31	36.7 0.1	11.70 0.32	59.2 1.5
March 1	21.38 0.40	58.5 0.8	24.48 0.32	36.8 0.0	12.02 0.33	57.7 0.9
11	21.78 0.41	57.7 0.1	24.80 0.33	36.8 0.1	12.35 0.34	56.8 0.4
21	22.19 0.41	57.6 0.7	25.13 0.31	36.7 0.2	12.69 0.34	56.4 0.2
31	22.60 0.39	58.3 1.2	25.44 0.32	36.5 0.2	13.03 0.34	56.6 0.8
April 10	22.99 0.35	59.5 1.7	25.76 0.32	36.3 0.3	13.37 0.32	57.4 1.3
20	23.34 0.33	61.2 2.3	26.08 0.30	36.0 0.4	13.69 0.32	58.7 1.8
30	23.67 0.29	63.5 2.8	26.38 0.28	35.6 0.3	14.01 0.29	60.5 2.3
May 10	23.96 0.24	66.3 3.0	26.66 0.26	35.3 0.4	14.30 0.26	62.8 2.7
20	24.20 0.20	69.3 3.1	26.92 0.22	34.9 0.4	14.56 0.22	65.5 3.1
30	24.40 0.14	72.4 3.3	27.14 0.19	34.5 0.3	14.78 0.19	68.6 3.1
June 9	24.54 0.08	75.7 3.4	27.33 0.16	34.2 0.3	14.97 0.14	71.7 3.1
19	24.62 0.01	79.1 3.3	27.49 0.13	33.9 0.2	15.11 0.10	74.8 3.1
29	24.63 0.05	82.4 3.2	27.62 0.08	33.7 0.1	15.21 0.04	77.9 3.0
July 9	24.58 0.10	85.6 2.9	27.70 0.04	33.6 0.1	15.25 0.01	80.9 2.9
19	24.48 0.15	88.5 2.5	27.74 0.01	33.5 0.0	15.24 0.06	83.8 2.8
29	24.33 0.20	91.0 2.2	27.73 0.05	33.5 0.0	15.18 0.10	86.6 2.5
Aug. 8	24.13 0.26	93.2 1.9	27.68 0.09	33.5 0.0	15.08 0.15	89.1 2.1
18	23.87 0.29	95.1 1.5	27.59 0.13	33.5 0.0	14.93 0.19	91.2 1.6
28	23.58 0.33	96.6 1.0	27.46 0.16	33.5 0.0	14.74 0.21	92.8 1.2
Sept. 7	23.25 0.35	97.6 0.5	27.30 0.17	33.5 0.0	14.53 0.25	94.0 0.9
17	22.90 0.34	98.1 0.1	27.13 0.17	33.5 0.0	14.28 0.25	94.9 0.5
27	22.56 0.34	98.0 0.5	26.96 0.17	33.5 0.1	14.03 0.25	95.4 0.0
Oct. 7	22.22 0.32	97.5 1.1	26.79 0.16	33.4 0.1	13.78 0.24	95.4 0.5
17	21.90 0.29	96.4 1.5	26.63 0.14	33.3 0.2	13.54 0.23	94.9 1.0
27	21.61 0.25	94.9 2.0	26.49 0.10	33.1 0.1	13.31 0.20	93.9 1.4
Nov. 6	21.36 0.20	92.9 2.4	26.39 0.06	33.0 0.2	13.11 0.18	92.5 1.9
16	21.16 0.14	90.5 2.9	26.33 0.01	32.8 0.1	12.93 0.12	90.6 2.2
26	21.02 0.07	87.6 3.3	26.32 0.04	32.7 0.0	12.81 0.06	88.4 2.6
Dec. 6	20.95 0.00	84.3 3.3	26.36 0.08	32.7 0.0	12.75 0.00	85.8 2.8
16	20.95 0.06	81.0 3.3	26.44 0.13	32.7 0.0	12.75 0.04	83.0 3.0
26	21.01 0.14	77.7 3.4	26.57 0.18	32.7 0.1	12.79 0.08	80.0 3.0
36	21.15	74.3	26.75	32.8	12.87	77.0

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β LYRÆ.			ζ AQUILÆ.			δ AQUILÆ.					
	Right Ascension.		Dec. North.	Right Ascension.		Dec. North.	Right Ascension.		Dec. North.			
	h.	m.	°	'	h.	m.	°	'	h.	m.	°	'
	18	44	33	11	18	58	13	39	19	18	2	50
Jan. 1	53.53	0.11	62.5	2.9	57.73	0.11	24.8	2.1	25.73	0.10	14.3	1.4
11	53.64	0.16	59.6	2.8	57.84	0.15	22.7	1.9	25.83	0.14	12.9	1.3
21	53.80	0.20	56.8	2.7	57.99	0.19	20.8	1.7	25.97	0.18	11.6	1.1
31	54.00	0.23	54.1	2.3	58.18	0.22	19.1	1.6	26.15	0.20	10.5	1.0
Feb. 10	54.23	0.26	51.8	1.9	58.40	0.24	17.5	1.2	26.35	0.23	9.5	0.8
20	54.49	0.29	49.9	1.4	58.64	0.25	16.3	1.1	26.58	0.25	8.7	0.6
March 1	54.78	0.31	48.5	0.9	58.89	0.27	15.2	0.7	26.83	0.27	8.1	0.3
11	55.09	0.32	47.6	0.4	59.16	0.29	14.5	0.1	27.10	0.28	7.8	0.0
21	55.41	0.32	47.2	0.0	59.45	0.30	14.4	0.3	27.38	0.29	7.8	0.4
31	55.73	0.33	47.2	0.6	59.75	0.31	14.7	0.7	27.67	0.30	8.2	0.7
April 10	56.06	0.33	47.8	1.3	60.06	0.30	15.4	1.0	27.97	0.30	8.9	1.0
20	56.39	0.30	49.1	1.8	60.36	0.28	16.4	1.4	28.27	0.29	9.9	1.3
30	56.69	0.28	50.9	2.2	60.64	0.28	17.8	1.7	28.56	0.29	11.2	1.5
May 10	56.97	0.26	53.1	2.5	60.92	0.26	19.5	1.9	28.85	0.27	12.7	1.6
20	57.23	0.24	55.6	2.7	61.18	0.24	21.4	2.2	29.12	0.26	14.3	1.8
30	57.47	0.20	58.3	2.9	61.42	0.22	23.6	2.3	29.38	0.23	16.1	1.9
June 9	57.67	0.16	61.2	3.0	61.64	0.18	25.9	2.3	29.61	0.21	18.0	1.8
19	57.83	0.11	64.2	3.0	61.82	0.14	28.2	2.2	29.82	0.17	19.8	1.7
29	57.94	0.07	67.2	3.0	61.96	0.10	30.4	2.2	29.99	0.13	21.5	1.7
July 9	58.01	0.01	70.2	2.8	62.06	0.06	32.6	2.1	30.12	0.09	23.2	1.6
19	58.02	0.03	73.0	2.5	62.12	0.01	34.7	1.9	30.21	0.04	24.8	1.4
29	57.99	0.07	75.5	2.3	62.13	0.03	36.6	1.7	30.25	0.00	26.2	1.3
Aug. 8	57.92	0.12	77.8	2.1	62.10	0.07	38.3	1.5	30.25	0.05	27.5	1.1
18	57.80	0.16	79.9	1.8	62.03	0.11	39.8	1.2	30.20	0.08	28.6	0.8
28	57.64	0.19	81.7	1.4	61.92	0.13	41.0	1.0	30.12	0.11	29.4	0.6
Sept. 7	57.45	0.22	83.1	0.9	61.79	0.16	42.0	0.6	30.01	0.14	30.0	0.5
17	57.23	0.22	84.0	0.4	61.63	0.18	42.6	0.3	29.87	0.17	30.5	0.3
27	57.01	0.23	84.4	0.0	61.45	0.18	42.9	0.0	29.70	0.17	30.8	0.0
Oct. 7	56.78	0.22	84.4	0.4	61.27	0.18	42.9	0.2	29.53	0.17	30.8	0.1
17	56.56	0.21	84.0	0.7	61.09	0.16	42.7	0.4	29.36	0.15	30.7	0.3
27	56.35	0.18	83.3	1.2	60.93	0.14	42.3	0.8	29.21	0.13	30.4	0.5
Nov. 6	56.17	0.16	82.1	1.5	60.79	0.11	41.5	1.1	29.08	0.11	29.9	0.7
16	56.01	0.11	80.6	2.1	60.68	0.08	40.4	1.3	28.97	0.07	29.2	0.9
26	55.90	0.06	78.5	2.4	60.60	0.04	39.1	1.6	28.90	0.03	28.3	1.1
Dec. 6	55.84	0.01	76.1	2.6	60.56	0.01	37.5	1.7	28.87	0.00	27.2	1.1
16	55.83	0.03	73.5	2.7	60.57	0.05	35.8	1.9	28.87	0.04	26.1	1.2
26	55.86	0.09	70.8	2.9	60.62	0.09	33.9	2.0	28.91	0.08	24.9	1.4
36	55.95		67.9		60.71		31.9		28.99		23.5	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ AQUILÆ.		α AQUILÆ. (Altair.)		β AQUILÆ.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m. s.	° ' "	h. m. s.	° ' "	h. m. s.	° ' "
	19 39	10 16	19 43	8 29	19 48	6 3
Jan. 1	35.56 0.07	25.3 1.7	56.52 0.07	60.8 1.6	25.56 0.07	30.8 1.4
11	35.63 0.12	23.6 1.6	56.59 0.11	59.2 1.5	25.63 0.11	29.4 1.4
21	35.75 0.15	22.0 1.6	56.70 0.15	57.7 1.5	25.74 0.15	28.0 1.4
31	35.90 0.18	20.4 1.4	56.85 0.18	56.2 1.3	25.89 0.18	26.6 1.2
Feb. 10	36.08 0.21	19.0 1.0	57.03 0.20	54.9 1.0	26.07 0.20	25.4 0.9
20	36.29 0.23	18.0 0.9	57.23 0.23	53.9 0.8	26.27 0.22	24.5 0.7
March 1	36.52 0.25	17.1 0.5	57.46 0.25	53.1 0.4	26.49 0.25	23.8 0.4
11	36.77 0.27	16.6 0.2	57.71 0.27	52.7 0.1	26.74 0.27	23.4 0.0
21	37.04 0.29	16.4 0.2	57.98 0.29	52.6 0.3	27.01 0.28	23.4 0.3
31	37.33 0.30	16.6 0.6	58.27 0.30	52.9 0.7	27.29 0.29	23.7 0.6
April 10	37.63 0.30	17.2 1.0	58.57 0.30	53.6 1.0	27.58 0.31	24.3 1.0
20	37.93 0.30	18.2 1.4	58.87 0.31	54.6 1.3	27.89 0.31	25.3 1.3
30	38.23 0.30	19.6 1.6	59.18 0.30	55.9 1.6	28.20 0.30	26.6 1.6
May 10	38.53 0.29	21.2 1.8	59.48 0.28	57.5 1.8	28.50 0.27	28.2 1.8
20	38.82 0.26	23.0 2.1	59.76 0.26	59.3 2.0	28.77 0.27	30.0 1.9
30	39.08 0.24	25.1 2.2	60.02 0.25	61.3 2.1	29.04 0.25	31.9 2.0
June 9	39.32 0.22	27.3 2.2	60.27 0.22	63.4 2.1	29.29 0.22	33.9 2.0
19	39.54 0.18	29.5 2.2	60.49 0.19	65.5 2.2	29.51 0.19	35.9 2.0
29	39.72 0.14	31.7 2.1	60.68 0.14	67.7 2.1	29.70 0.16	37.9 1.9
July 9	39.86 0.10	33.8 2.0	60.82 0.10	69.8 2.0	29.86 0.12	39.8 1.8
19	39.96 0.05	35.8 1.9	60.92 0.07	71.8 1.8	29.98 0.06	41.6 1.7
29	40.01 0.01	37.7 1.7	60.99 0.02	73.6 1.6	30.04 0.02	43.3 1.5
Aug. 8	40.02 0.03	39.4 1.5	61.01 0.03	75.2 1.4	30.06 0.02	44.8 1.3
18	39.99 0.07	40.9 1.3	60.98 0.06	76.6 1.2	30.04 0.06	46.1 1.1
28	39.92 0.11	42.2 1.0	60.92 0.10	77.8 0.9	29.98 0.10	47.2 0.9
Sept. 7	39.81 0.13	43.2 0.7	60.82 0.13	78.7 0.7	29.88 0.13	48.1 0.6
17	39.68 0.16	43.9 0.5	60.69 0.16	79.4 0.5	29.75 0.15	48.7 0.4
27	39.52 0.17	44.4 0.2	60.53 0.16	79.9 0.2	29.60 0.16	49.1 0.2
Oct. 7	39.35 0.17	44.6 0.0	60.37 0.17	80.1 0.0	29.44 0.17	49.3 0.1
17	39.18 0.17	44.6 0.3	60.20 0.16	80.1 0.2	29.27 0.16	49.2 0.3
27	39.01 0.15	44.3 0.5	60.04 0.15	79.9 0.4	29.11 0.15	48.9 0.5
Nov. 6	38.86 0.12	43.8 0.8	59.89 0.13	79.5 0.8	28.96 0.12	48.4 0.7
16	38.74 0.10	43.0 1.1	59.76 0.09	78.7 1.0	28.84 0.09	47.7 1.0
26	38.64 0.06	41.9 1.2	59.67 0.05	77.7 1.1	28.75 0.06	46.7 1.1
Dec. 6	38.58 0.02	40.7 1.4	59.62 0.02	76.6 1.3	28.69 0.02	45.6 1.1
16	38.56 0.02	39.3 1.6	59.60 0.01	75.3 1.5	28.67 0.01	44.5 1.3
26	38.58 0.05	37.7 1.7	59.61 0.05	73.8 1.6	28.68 0.05	43.2 1.5
36	38.63	36.0	59.66	72.2	28.73	41.7

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	λ Ursæ Minoris.		α ³ CAPRICORNI.		α Pavonis.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.
	h. 20	° 88 53	h. m. 20 10	° 58	h. m. 20 14	° 57 10
Jan. 1	m. s. s. 2 23.22 4.75	° ' " 29.3 2.9	s. s. 16.64 0.06	° ' " 39.7 0.2	s. s. 32.48 0.07	° ' " 54.2 2.4
11	2 18.47 2.55	26.4 3.1	16.70 0.10	39.9 0.2	32.55 0.14	51.8 2.4
21	2 15.92 0.30	23.3 3.2	16.80 0.14	40.1 0.2	32.69 0.20	49.4 2.5
31	2 15.62 1.95	20.1 3.2	16.94 0.16	40.3 0.0	32.89 0.26	46.9 2.5
Feb. 10	2 17.57 4.10	16.9 2.9	17.10 0.19	40.3 0.1	33.15 0.32	44.4 2.4
20	2 21.67 6.03	14.0 2.6	17.29 0.22	40.2 0.3	33.47 0.37	42.0 2.4
March 1	2 27.70 7.71	11.4 2.2	17.51 0.25	39.9 0.5	33.84 0.41	39.6 2.2
11	2 35.41 9.05	9.2 1.6	17.76 0.27	39.4 0.6	34.25 0.45	37.4 1.9
21	2 44.46 10.02	7.6 1.2	18.03 0.29	38.8 0.8	34.70 0.47	35.5 1.7
31	2 54.48 10.58	6.4 0.6	18.32 0.30	38.0 1.0	35.17 0.50	33.8 1.5
April 10	3 5.06 10.73	5.8 0.0	18.62 0.31	37.0 1.2	35.67 0.52	32.3 1.2
20	3 15.79 10.49	5.8 0.7	18.93 0.32	35.8 1.3	36.19 0.53	31.1 1.0
30	3 26.28 9.85	6.5 1.3	19.25 0.32	34.5 1.4	36.72 0.53	30.1 0.6
May 10	3 36.13 8.90	7.8 1.8	19.57 0.30	33.1 1.4	37.25 0.51	29.5 0.2
20	3 45.03 7.68	9.6 2.2	19.87 0.30	31.7 1.3	37.76 0.50	29.3 0.1
30	3 52.71 6.22	11.8 2.6	20.17 0.28	30.4 1.3	38.26 0.46	29.4 0.4
June 9	3 58.93 4.58	14.4 3.0	20.45 0.26	29.1 1.2	38.72 0.41	29.8 0.8
19	4 3.51 2.81	17.4 3.3	20.71 0.22	27.9 1.2	39.13 0.36	30.6 1.1
29	4 6.32 0.98	20.7 3.4	20.93 0.19	26.7 1.0	39.49 0.30	31.7 1.4
July 9	4 7.30 0.87	24.1 3.5	21.12 0.15	25.7 0.8	39.79 0.23	33.1 1.6
19	4 6.43 2.70	27.6 3.4	21.27 0.10	24.9 0.7	40.02 0.15	34.7 1.8
29	4 3.73 4.48	31.0 3.4	21.37 0.06	24.2 0.5	40.17 0.07	36.5 1.9
Aug. 8	3 59.25 6.16	34.4 3.2	21.43 0.00	23.7 0.3	40.24 0.01	38.4 1.9
18	3 53.09 7.72	37.6 3.1	21.43 0.04	23.4 0.2	40.23 0.08	40.3 2.0
28	3 45.37 9.11	40.7 2.8	21.39 0.08	23.2 0.1	40.15 0.15	42.3 1.8
Sept. 7	3 36.26 10.31	43.5 2.4	21.31 0.11	23.1 0.0	40.00 0.22	44.1 1.6
17	3 25.95 11.33	45.9 2.1	21.20 0.13	23.1 0.2	39.78 0.26	45.7 1.3
27	3 14.62 12.12	48.0 1.6	21.07 0.15	23.3 0.2	39.52 0.30	47.0 1.0
Oct. 7	3 2.50 12.66	49.6 1.1	20.92 0.16	23.5 0.3	39.22 0.32	48.0 0.6
17	2 49.84 12.93	50.7 0.7	20.76 0.16	23.8 0.3	38.90 0.32	48.6 0.2
27	2 36.91 12.87	51.4 0.1	20.60 0.15	24.1 0.3	38.58 0.30	48.8 0.2
Nov. 6	2 24.04 12.50	51.5 0.5	20.45 0.12	24.4 0.3	38.28 0.27	48.6 0.7
16	2 11.54 11.80	51.0 0.9	20.33 0.09	24.7 0.3	38.01 0.24	47.9 1.1
26	1 59.74 10.80	50.1 1.5	20.24 0.06	25.0 0.3	37.77 0.18	46.8 1.5
Dec. 6	1 48.94 9.47	48.6 2.0	20.18 0.03	25.3 0.3	37.59 0.12	45.3 1.7
16	1 39.47 7.84	46.6 2.5	20.15 0.00	25.6 0.3	37.47 0.04	43.6 2.0
26	1 31.63 5.91	44.1 2.8	20.15 0.04	25.9 0.3	37.43 0.02	41.6 2.2
36	1 25.72	41.3	20.19	26.2	37.45	39.4

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α CYGNI.		61 ¹ CYGNI.		ζ Cygni.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.	Right Ascension.	Dec. North.
	h. m. 20 36	° ′ ″ 44 46	h. m. 21 0	° ′ ″ 38 3	h. m. 21 6	° ′ ″ 29 39
Jan. 1	38.18 0.04	58.2 2.7	36.21 0.08	52.2 2.4	57.93 0.04	20.6 2.1
11	38.14 0.01	55.5 2.8	36.18 0.00	49.8 2.5	57.89 0.01	18.5 2.3
21	38.15 0.06	52.7 3.0	36.18 0.05	47.3 2.6	57.90 0.05	16.2 2.4
31	38.21 0.12	49.7 2.9	36.23 0.10	44.7 2.5	57.95 0.09	13.8 2.3
Feb. 10	38.33 0.16	46.8 2.6	36.33 0.14	42.2 2.3	58.04 0.12	11.5 2.1
20	38.49 0.21	44.2 2.3	36.47 0.18	39.9 2.0	58.16 0.16	9.4 1.8
March 1	38.70 0.25	41.9 1.9	36.65 0.22	37.9 1.6	58.32 0.19	7.6 1.5
11	38.95 0.29	40.0 1.3	36.87 0.26	36.3 1.2	58.51 0.23	6.1 0.9
21	39.24 0.38	38.7 0.9	37.13 0.30	35.1 0.8	58.74 0.26	5.2 0.6
31	39.57 0.35	37.8 0.3	37.43 0.33	34.3 0.3	59.00 0.29	4.6 0.1
April 10	39.92 0.37	37.5 0.3	37.76 0.34	34.0 0.3	59.29 0.31	4.5 0.4
20	40.29 0.38	37.8 0.8	38.10 0.36	34.3 1.0	59.60 0.33	4.9 0.8
30	40.67 0.38	38.6 1.4	38.46 0.36	35.3 1.5	59.93 0.34	5.7 1.3
May 10	41.05 0.37	40.0 1.9	38.82 0.36	36.8 1.8	60.27 0.33	7.0 1.8
20	41.42 0.35	41.9 2.5	39.18 0.36	38.6 2.2	60.60 0.33	8.8 2.3
30	41.77 0.31	44.4 2.8	39.54 0.34	40.8 2.6	60.93 0.31	11.1 2.5
June 9	42.08 0.29	47.2 3.0	39.88 0.29	43.4 2.9	61.24 0.28	13.6 2.7
19	42.37 0.25	50.2 3.3	40.17 0.27	46.3 3.2	61.52 0.25	16.3 2.8
29	42.62 0.20	53.5 3.4	40.44 0.23	49.5 3.3	61.77 0.22	19.1 2.9
July 9	42.82 0.14	56.9 3.4	40.67 0.19	52.8 3.4	61.99 0.18	22.0 3.0
19	42.96 0.08	60.3 3.4	40.86 0.13	56.2 3.4	62.17 0.13	25.0 3.0
29	43.04 0.02	63.7 3.3	40.99 0.06	59.6 3.3	62.30 0.08	28.0 2.9
Aug. 8	43.06 0.04	67.0 3.1	41.05 0.02	62.9 3.1	62.38 0.04	30.9 2.7
18	43.02 0.08	70.1 2.9	41.07 0.02	66.0 2.8	62.42 0.01	33.6 2.4
28	42.94 0.12	73.0 2.6	41.05 0.07	68.8 2.6	62.41 0.05	36.0 2.2
Sept. 7	42.82 0.17	75.6 2.2	40.98 0.11	71.4 2.3	62.36 0.10	38.2 1.9
17	42.65 0.21	77.8 1.9	40.87 0.14	73.7 1.9	62.26 0.14	40.1 1.6
27	42.44 0.24	79.7 1.4	40.73 0.18	75.6 1.6	62.12 0.17	41.7 1.2
Oct. 7	42.20 0.25	81.1 0.9	40.55 0.20	77.2 1.1	61.95 0.17	42.9 0.9
17	41.95 0.26	82.0 0.5	40.35 0.21	78.3 0.7	61.78 0.18	43.8 0.5
27	41.69 0.26	82.5 0.0	40.14 0.21	79.0 0.2	61.60 0.18	44.3 0.0
Nov. 6	41.43 0.24	82.5 0.5	39.93 0.19	79.2 0.3	61.42 0.18	44.3 0.4
16	41.19 0.22	82.0 1.1	39.74 0.18	78.9 0.7	61.24 0.16	43.9 0.7
26	40.97 0.19	80.9 1.5	39.56 0.15	78.2 1.0	61.06 0.14	43.2 1.1
Dec. 6	40.78 0.16	79.4 1.9	39.41 0.13	77.2 1.5	60.94 0.12	42.1 1.4
16	40.62 0.11	77.5 2.3	39.28 0.10	75.7 2.0	60.82 0.08	40.7 1.8
26	40.51 0.07	75.2 2.6	39.18 0.06	73.7 2.3	60.74 0.05	38.9 2.1
36	40.44	72.6	39.12	71.4	60.69	36.8

after the 23d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α CEPHEI.		β AQUARI.		β CEPHEI.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	^{h.} 21 ^{m.} 15	[°] 61 ['] 59	^{h.} 21 ^{m.} 24	[°] 6 10	^{h.} 21 ^{m.} 26	[°] 69 56
Jan. 1	^{s.} 11.61 0.19	["] 45.9 2.7	^{s.} 10.93 0.00	["] 68.4 0.5	^{s.} 46.78 0.35	["] 59.7 2.5
11	11.42 0.11	43.2 2.9	10.93 0.02	68.9 0.4	46.43 0.24	57.2 2.8
21	11.31 0.04	40.3 3.1	10.95 0.05	69.3 0.4	46.19 0.13	54.4 3.1
31	11.27 0.04	37.2 3.1	11.00 0.08	69.7 0.3	46.06 0.01	51.3 3.2
Feb. 10	11.31 0.13	34.1 3.1	11.08 0.12	70.0 0.1	46.05 0.09	48.1 3.2
20	11.44 0.19	31.0 3.0	11.20 0.15	70.1 0.2	46.14 0.22	44.9 3.1
March 1	11.63 0.27	28.0 2.6	11.35 0.18	69.9 0.3	46.36 0.32	41.8 2.8
11	11.90 0.34	25.4 2.1	11.53 0.20	69.6 0.6	46.68 0.42	39.0 2.4
21	12.24 0.41	23.3 1.6	11.73 0.23	69.0 0.8	47.10 0.52	36.6 1.9
31	12.65 0.46	21.7 1.0	11.96 0.26	68.2 1.1	47.62 0.59	34.7 1.2
April 10	13.11 0.50	20.7 0.5	12.22 0.29	67.1 1.3	48.21 0.64	33.5 0.7
20	13.61 0.53	20.2 0.2	12.51 0.30	65.8 1.5	48.85 0.67	32.8 0.2
30	14.14 0.54	20.4 0.3	12.81 0.31	64.3 1.6	49.52 0.69	32.6 0.5
May 10	14.68 0.52	21.2 1.4	13.12 0.31	62.7 1.8	50.21 0.69	33.1 1.1
20	15.20 0.50	22.6 2.0	13.43 0.32	60.9 1.8	50.90 0.66	34.2 1.7
30	15.70 0.47	24.6 2.4	13.75 0.31	59.1 1.8	51.56 0.62	35.9 2.2
June 9	16.17 0.43	27.0 2.3	14.06 0.29	57.3 1.8	52.18 0.56	38.1 2.6
19	16.60 0.36	29.8 3.2	14.35 0.26	55.5 1.8	52.74 0.49	40.7 3.1
29	16.96 0.30	33.0 3.5	14.61 0.24	53.7 1.6	53.23 0.39	43.8 3.4
July 9	17.26 0.22	36.5 3.6	14.85 0.20	52.1 1.4	53.62 0.29	47.2 3.5
19	17.48 0.15	40.1 3.7	15.05 0.17	50.7 1.3	53.91 0.19	50.7 3.7
29	17.63 0.07	43.8 3.7	15.22 0.12	49.4 1.1	54.10 0.08	54.4 3.8
Aug. 8	17.70 0.01	47.5 3.6	15.34 0.08	48.3 0.8	54.18 0.02	58.2 3.8
18	17.69 0.10	51.1 3.5	15.42 0.03	47.5 0.6	54.16 0.11	62.0 3.7
28	17.59 0.17	54.6 3.3	15.45 0.02	46.9 0.4	54.05 0.22	65.7 3.5
Sept. 7	17.42 0.23	57.9 3.0	15.43 0.05	46.5 0.3	53.83 0.32	69.2 3.2
17	17.19 0.28	60.9 2.7	15.38 0.09	46.2 0.0	53.51 0.39	72.4 2.9
27	16.91 0.34	63.6 2.3	15.29 0.11	46.2 0.1	53.12 0.47	75.3 2.6
Oct. 7	16.57 0.38	65.9 1.8	15.18 0.13	46.3 0.2	52.65 0.52	77.9 2.1
17	16.19 0.41	67.7 1.2	15.05 0.14	46.5 0.3	52.13 0.56	80.0 1.6
27	15.78 0.43	68.9 0.7	14.91 0.14	46.8 0.4	51.57 0.59	81.6 1.0
Nov. 6	15.35 0.41	69.6 0.2	14.77 0.13	47.2 0.5	50.98 0.60	82.6 0.5
16	14.94 0.39	69.8 0.3	14.64 0.11	47.7 0.5	50.38 0.59	83.1 0.0
26	14.55 0.37	69.5 1.0	14.53 0.10	48.2 0.5	49.79 0.57	83.1 0.6
Dec. 6	14.18 0.34	68.5 1.4	14.43 0.08	48.7 0.6	49.22 0.52	82.5 1.3
16	13.84 0.29	67.1 2.0	14.35 0.05	49.3 0.6	48.70 0.46	81.2 1.8
26	13.55 0.23	65.1 2.5	14.30 0.03	49.9 0.5	48.24 0.38	79.4 2.3
36	13.32	62.6	14.27	50.4	47.86	77.1

NOTE. — Before the 23d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Pegasi.		α AQUARI.		α Gruis.	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. South.
	^{h.} ^{m.} 21 37	[°] ['] 9 14	^{h.} ^{m.} 21 58	[°] ['] 0 59	^{h.} ^{m.} 21 59	[°] ['] 47 37
Jan. 1	18.30 0.01	7.2 1.3	35.40 0.02	55.6 0.7	23.55 0.07	82.5 1.5
11	18.29 0.00	5.9 1.2	35.38 0.01	56.3 0.7	23.48 0.08	81.0 1.8
21	18.29 0.02	4.7 1.2	35.37 0.01	57.0 0.6	23.45 0.01	79.2 2.1
31	18.31 0.06	3.5 1.1	35.38 0.05	57.6 0.5	23.46 0.06	77.1 2.3
Feb. 10	18.37 0.10	2.4 0.9	35.43 0.09	58.1 0.3	23.52 0.10	74.8 2.4
20	18.47 0.14	1.5 0.8	35.52 0.12	58.4 0.1	23.62 0.14	72.4 2.6
March 1	18.61 0.16	0.7 0.5	35.64 0.15	58.5 0.1	23.76 0.19	69.8 2.7
11	18.77 0.19	0.2 0.1	35.79 0.17	58.4 0.4	23.95 0.24	67.1 2.6
21	18.96 0.22	0.1 0.1	35.96 0.19	58.0 0.6	24.19 0.28	64.5 2.6
31	19.18 0.25	0.2 0.4	36.15 0.23	57.4 0.9	24.47 0.32	61.9 2.6
April 10	19.43 0.27	0.6 0.9	36.38 0.26	56.5 1.2	24.79 0.35	59.3 2.4
20	19.70 0.30	1.5 1.3	36.64 0.28	55.3 1.4	25.14 0.38	56.9 2.2
30	20.00 0.32	2.8 1.5	36.92 0.30	53.9 1.6	25.52 0.41	54.7 1.9
May 10	20.32 0.31	4.3 1.7	37.22 0.31	52.3 1.8	25.93 0.43	52.8 1.7
20	20.63 0.31	6.0 2.0	37.53 0.32	50.5 1.9	26.36 0.43	51.1 1.3
30	20.94 0.30	8.0 2.1	37.85 0.32	48.6 2.0	26.79 0.43	49.8 1.0
June 9	21.24 0.28	10.1 2.2	38.17 0.31	46.6 2.0	27.22 0.41	48.8 0.7
19	21.52 0.28	12.3 2.3	38.48 0.28	44.6 2.0	27.63 0.39	48.1 0.8
29	21.80 0.25	14.6 2.3	38.76 0.26	42.6 1.9	28.02 0.36	47.8 0.1
July 9	22.05 0.21	16.9 2.2	39.02 0.22	40.7 1.8	28.38 0.31	47.9 0.5
19	22.26 0.16	19.1 2.1	39.24 0.18	38.9 1.6	28.69 0.27	48.4 0.9
29	22.42 0.12	21.2 2.0	39.42 0.15	37.3 1.4	28.96 0.21	49.3 1.2
Aug. 8	22.54 0.08	23.2 1.7	39.57 0.10	35.9 1.2	29.17 0.14	50.5 1.4
18	22.62 0.04	24.9 1.5	39.67 0.06	34.7 1.0	29.31 0.08	51.9 1.7
28	22.66 0.00	26.4 1.3	39.73 0.01	33.7 0.8	29.39 0.01	53.6 1.8
Sept. 7	22.66 0.05	27.7 1.1	39.74 0.02	32.9 0.5	29.40 0.05	55.4 1.9
17	22.61 0.09	28.8 0.8	39.72 0.05	32.4 0.3	29.35 0.10	57.3 1.9
27	22.52 0.11	29.6 0.6	39.67 0.08	32.1 0.1	29.25 0.14	59.2 1.8
Oct. 7	22.41 0.12	30.2 0.3	39.59 0.10	32.0 0.0	29.11 0.18	61.0 1.5
17	22.29 0.13	30.5 0.1	39.49 0.13	32.0 0.2	28.93 0.22	62.5 1.2
27	22.16 0.14	30.6 0.1	39.36 0.13	32.2 0.3	28.71 0.23	63.7 0.9
Nov. 6	22.02 0.14	30.5 0.4	39.23 0.12	32.5 0.4	28.48 0.23	64.6 0.6
16	21.88 0.12	30.1 0.6	39.11 0.12	32.9 0.6	28.25 0.21	65.2 0.2
26	21.76 0.11	29.5 0.8	38.99 0.11	33.5 0.6	28.04 0.19	65.4 0.1
Dec. 6	21.65 0.09	28.7 0.9	38.88 0.09	34.1 0.7	27.85 0.18	65.3 0.6
16	21.56 0.07	27.8 1.1	38.79 0.08	34.8 0.7	27.67 0.15	64.7 1.0
26	21.49 0.04	26.7 1.2	38.71 0.05	35.5 0.7	27.52 0.11	63.7 1.3
36	21.45	25.5	38.66	36.2	27.41	62.4

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ Pegasi.		α PISCIS AUSTRALIS. (Fomalhaut.)		α PEGASI. (Markab.)	
	Right Ascension.	Dec. North.	Right Ascension.	Dec. South.	Right Ascension.	Dec. North.
	h. m. 22 34	° ′ 10 6	h. m. 22 49	° ′ 30 21	h. m. 22 57	° ′ 14 27
Jan. 1	28.65 0.07	10.5 1.0	54.72 0.09	57.6 0.5	47.40 0.08	16.7 1.1
11	28.58 0.04	9.5 1.1	54.63 0.06	57.1 0.8	47.32 0.06	15.6 1.2
21	28.54 0.02	8.4 1.1	54.57 0.03	56.3 1.0	47.26 0.04	14.4 1.2
31	28.52 0.00	7.3 1.0	54.54 0.00	55.3 1.2	47.22 0.01	13.2 1.2
Feb. 10	28.52 0.04	6.3 0.8	54.54 0.03	54.1 1.5	47.21 0.01	12.0 1.1
20	28.56 0.08	5.5 0.9	54.57 0.07	52.6 1.8	47.22 0.03	10.9 1.0
March 1	28.64 0.10	4.6 0.6	54.64 0.10	50.8 1.9	47.25 0.07	9.9 0.8
11	28.74 0.14	4.0 0.2	54.74 0.14	48.9 2.0	47.32 0.12	9.1 0.4
21	28.88 0.17	3.8 0.1	54.88 0.17	46.9 2.2	47.44 0.17	8.7 0.2
31	29.05 0.21	3.9 0.4	55.05 0.21	44.7 2.3	47.61 0.20	8.5 0.1
April 10	29.26 0.24	4.3 0.7	55.26 0.25	42.4 2.4	47.81 0.23	8.6 0.5
20	29.50 0.27	5.0 1.0	55.51 0.28	40.0 2.4	48.04 0.25	9.1 0.8
30	29.77 0.29	6.0 1.3	55.79 0.31	37.6 2.3	48.29 0.28	9.9 1.1
May 10	30.06 0.31	7.3 1.7	56.10 0.34	35.3 2.1	48.57 0.31	11.0 1.5
20	30.37 0.33	9.0 1.9	56.44 0.35	33.2 2.0	48.88 0.33	12.5 1.8
30	30.70 0.33	10.9 2.1	56.79 0.36	31.2 1.8	49.21 0.33	14.3 2.0
June 9	31.03 0.31	13.0 2.2	57.15 0.35	29.4 1.6	49.54 0.32	16.3 2.1
19	31.34 0.30	15.2 2.2	57.50 0.34	27.8 1.3	49.86 0.31	18.4 2.3
29	31.64 0.27	17.4 2.3	57.84 0.33	26.5 1.0	50.17 0.29	20.7 2.4
July 9	31.91 0.25	19.7 2.2	58.17 0.29	25.5 0.6	50.46 0.26	23.1 2.4
19	32.16 0.22	21.9 2.2	58.46 0.26	24.9 0.3	50.72 0.24	25.5 2.3
29	32.38 0.18	24.1 2.1	58.72 0.22	24.6 0.0	50.96 0.20	27.8 2.2
Aug. 8	32.56 0.13	26.2 1.9	58.94 0.17	24.6 0.4	51.16 0.16	30.0 2.1
18	32.69 0.09	28.1 1.6	59.11 0.13	25.0 0.7	51.32 0.12	32.1 1.9
28	32.78 0.04	29.7 1.4	59.24 0.08	25.7 1.0	51.44 0.08	34.0 1.7
Sept. 7	32.82 0.01	31.1 1.2	59.32 0.02	26.7 1.1	51.52 0.03	35.7 1.5
17	32.83 0.02	32.3 1.0	59.34 0.02	27.8 1.3	51.55 0.01	37.2 1.2
27	32.81 0.05	33.3 0.8	59.32 0.06	29.1 1.4	51.54 0.04	38.4 1.0
Oct. 7	32.76 0.08	34.1 0.5	59.26 0.09	30.5 1.3	51.50 0.06	39.4 0.8
17	32.68 0.11	34.6 0.2	59.17 0.11	31.8 1.3	51.44 0.09	40.2 0.5
27	32.57 0.12	34.8 0.0	59.06 0.13	33.1 1.2	51.35 0.11	40.7 0.2
Nov. 6	32.45 0.12	34.8 0.2	58.93 0.15	34.3 1.0	51.24 0.11	40.9 0.0
16	32.33 0.11	34.6 0.4	58.78 0.15	35.3 0.7	51.13 0.12	40.9 0.3
26	32.22 0.11	34.2 0.6	58.63 0.15	36.0 0.5	51.01 0.12	40.6 0.5
Dec. 6	32.11 0.11	33.6 0.7	58.48 0.13	36.5 0.3	50.89 0.11	40.1 0.7
16	32.00 0.10	32.9 0.9	58.35 0.12	36.8 0.0	50.78 0.11	39.4 0.8
26	31.90 0.08	32.0 1.1	58.23 0.10	36.8 0.3	50.67 0.09	38.6 1.1
36	31.82	30.9	58.13	36.5	50.58	37.5

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal Oh. after the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	♈ Piscium.			γ Cephei.				
	Right Ascension.		Dec. North.	Right Ascension.		Dec. North.		
	h.	m.	°	h.	m.	°		
	23	32	4	23	33	76		
	h. m.			h. m.				
Jan. 1	45.40	0.09	52 8.9	0.8	35.16	0.85	51 27.1	0.9
11	45.31	0.07	52 8.1	0.7	34.31	0.73	51 26.2	1.5
21	45.24	0.06	52 7.4	0.7	33.58	0.62	51 24.7	2.0
31	45.18	0.04	52 6.7	0.6	32.96	0.51	51 22.7	2.4
Feb. 10	45.14	0.02	52 6.1	0.6	32.45	0.38	51 20.3	2.7
20	45.12	0.01	52 5.5	0.5	32.07	0.22	51 17.6	3.1
March 1	45.13	0.05	52 5.0	0.2	31.85	0.06	51 14.5	3.1
11	45.18	0.08	52 4.8	0.0	31.79	0.12	51 11.4	3.0
21	45.26	0.12	52 4.8	0.3	31.91	0.30	51 8.4	2.9
31	45.38	0.16	52 5.1	0.6	32.21	0.47	51 5.5	2.5
April 10	45.54	0.20	52 5.7	0.9	32.68	0.68	51 3.0	2.2
20	45.74	0.23	52 6.6	1.2	33.31	0.79	51 0.8	1.8
30	45.97	0.26	52 7.8	1.4	34.10	0.99	50 59.0	1.2
May 10	46.23	0.23	52 9.2	1.6	34.99	0.97	50 57.8	0.7
20	46.51	0.31	52 10.8	1.8	35.96	1.02	50 57.1	0.0
30	46.82	0.32	52 12.6	2.0	36.98	1.05	50 57.1	0.6
June 9	47.14	0.32	52 14.6	2.1	38.03	1.04	50 57.7	1.1
19	47.46	0.32	52 16.7	2.1	39.07	0.98	50 58.8	1.5
29	47.78	0.31	52 18.8	2.1	40.05	0.92	51 0.3	2.0
July 9	48.09	0.29	52 20.9	2.0	40.97	0.86	51 2.3	2.5
19	48.38	0.26	52 22.9	2.0	41.83	0.76	51 4.8	3.1
29	48.64	0.23	52 24.9	1.8	42.59	0.65	51 7.9	3.4
Aug. 8	48.87	0.19	52 26.7	1.6	43.24	0.50	51 11.3	3.5
18	49.06	0.16	52 28.3	1.4	43.74	0.37	51 14.8	3.7
28	49.22	0.11	52 29.7	1.2	44.11	0.23	51 18.5	3.8
Sept. 7	49.33	0.07	52 30.9	0.9	44.34	0.09	51 22.3	3.8
17	49.40	0.03	52 31.8	0.6	44.43	0.05	51 26.1	3.8
27	49.43	0.00	52 32.4	0.4	44.38	0.19	51 29.9	3.7
Oct. 7	49.43	0.03	52 32.8	0.3	44.19	0.33	51 33.6	3.4
17	49.40	0.05	52 33.1	0.1	43.86	0.45	51 37.0	3.2
27	49.35	0.07	52 33.2	0.1	43.41	0.55	51 40.2	2.9
Nov. 6	49.28	0.09	52 33.1	0.3	42.86	0.66	51 43.1	2.3
16	49.19	0.10	52 32.8	0.5	42.20	0.74	51 45.4	1.8
26	49.09	0.11	52 32.3	0.6	41.46	0.81	51 47.2	1.2
Dec. 6	48.98	0.10	52 31.7	0.6	40.65	0.84	51 48.4	0.6
16	48.88	0.10	52 31.1	0.7	39.81	0.86	51 49.0	0.1
26	48.78	0.10	52 30.4	0.8	38.95	0.83	51 49.1	0.6
36	48.68		52 29.6		38.12		51 48.5	

after the 22d of March it begins at the Sidereal Oh. before the Mean Noon.

TABLE GIVING THE CORRECTION OF THREE OF THE POLAR STARS
FOR TERMS OF NUTATION INVOLVING 2ζ .

D or D - 180°.	51 Cephei.		σ Octanis.		λ Urs. Min.		D or D - 180°.	D or D - 180°.	51 Cephei.		σ Octanis.		λ Urs. Min.		D or D - 180°.
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.			R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	
0	.018	+	.025	+	.159	+	90	45	.122	+	.436	+	.224	+	135
1	.014	.09	.040	.09	.151	.08	91	46	.123	.00	.435	.01	.229	.04	136
2	.009	.09	.055	.09	.143	.08	92	47	.124	.00	.433	.02	.234	.04	137
3	.005	.09	.070	.09	.135	.08	93	48	.124	+	.431	.02	.239	.04	138
4	+.001	.09	.085	.09	.127	.08	94	49	.124	-.01	.428	.02	.244	.04	139
5	-.003	+.09	-.100	-.09	-.118	-.08	95	50	-.124	-.01	-.425	+.02	+.249	-.03	140
6	.008	.09	.115	.08	.109	.08	96	51	.123	.01	.421	.03	.253	.03	141
7	.012	.09	.130	.08	.100	.08	97	52	.123	.02	.417	.03	.256	.03	142
8	.017	.09	.144	.08	.091	.08	98	53	.122	.02	.412	.03	.259	.02	143
9	.021	.09	.158	.08	.082	.08	99	54	.122	.02	.407	.04	.262	.02	144
10	-.025	+.09	-.172	-.08	-.073	-.09	100	55	-.121	-.02	-.401	+.04	+.255	-.02	145
11	.029	.09	.186	.08	.064	.09	101	56	.121	.03	.395	.04	.267	.02	146
12	.033	.09	.200	.08	.055	.09	102	57	.120	.03	.389	.04	.269	.01	147
13	.037	.08	.213	.08	.046	.09	103	58	.119	.03	.382	.05	.271	.01	148
14	.041	.08	.226	.08	.036	.09	104	59	.117	.04	.374	.05	.273	-.01	149
15	-.045	+.08	-.239	-.08	-.026	-.09	105	60	-.115	-.04	-.365	+.05	+.274	+.00	150
16	.049	.08	.251	.07	.017	.09	106	61	.114	.04	.356	.05	.275	.00	151
17	.053	.08	.263	.07	-.008	.09	107	62	.112	.04	.347	.06	.275	.00	152
18	.056	.08	.275	.07	+.002	.09	108	63	.110	.05	.338	.06	.275	.01	153
19	.060	.08	.287	.07	.012	.09	109	64	.108	.05	.328	.06	.275	.01	154
20	-.065	+.08	-.299	-.07	+.022	-.09	110	65	-.106	-.05	-.318	+.06	+.275	+.01	155
21	.069	.07	.310	.07	.032	.09	111	66	.102	.06	.307	.07	.274	.02	156
22	.073	.07	.320	.06	.041	.09	112	67	.100	.06	.296	.07	.272	.02	157
23	.076	.07	.330	.06	.050	.08	113	68	.098	.06	.284	.07	.270	.02	158
24	.079	.07	.340	.06	.060	.08	114	69	.095	.06	.272	.07	.268	.02	159
25	-.082	+.07	-.350	-.06	+.070	-.08	115	70	-.093	-.06	-.261	+.07	+.266	+.03	160
26	.085	.06	.359	.05	.079	.08	116	71	.090	.07	.249	.08	.263	.03	161
27	.088	.06	.368	.05	.088	.08	117	72	.087	.07	.237	.08	.260	.03	162
28	.091	.06	.376	.05	.097	.08	118	73	.084	.07	.224	.08	.257	.04	163
29	.094	.05	.383	.04	.106	.08	119	74	.080	.07	.211	.08	.254	.04	164
30	-.097	+.05	-.390	-.04	+.115	-.08	120	75	-.077	-.07	-.197	+.08	+.250	+.04	165
31	.100	.05	.396	.04	.124	.08	121	76	.074	.08	.183	.09	.246	.04	166
32	.103	.05	.402	.03	.133	.08	122	77	.070	.08	.169	.09	.242	.05	167
33	.105	.04	.408	.03	.142	.07	123	78	.066	.08	.155	.09	.237	.05	168
34	.107	.04	.413	.03	.150	.07	124	79	.062	.08	.141	.09	.232	.05	169
35	-.109	+.04	-.418	-.02	+.158	-.07	125	80	-.059	-.08	-.126	+.09	+.227	+.06	170
36	.111	.04	.423	.02	.165	.07	126	81	.055	.08	.111	.09	.221	.06	171
37	.113	.03	.427	.02	.172	.06	127	82	.050	.08	.096	.09	.215	.06	172
38	.115	.03	.430	-.01	.179	.06	128	83	.047	.09	.081	.09	.209	.06	173
39	.116	.03	.432	+.01	.186	.06	129	84	.043	.09	.066	.09	.203	.06	174
40	-.117	+.03	-.434	+.01	+.193	-.06	130	85	-.039	-.09	-.051	+.09	+.196	+.07	175
41	.118	.02	.435	.00	.199	.05	131	86	.035	.09	.036	.09	.189	.07	176
42	.119	.02	.436	.00	.206	.05	132	87	.030	.09	.021	.09	.182	.07	177
43	.120	.01	.436	.00	.212	.05	133	88	.026	.09	-.006	.09	.175	.07	178
44	.121	.01	.436	.00	.218	.05	134	89	.022	.09	+.009	.09	.167	.07	179
45	.122	.01	.436	+.01	+.224	-.04	135	90	-.018	-.09	+.025	+.09	+.159	+.08	180

NOTE. — When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed.

SOLAR EPHEMERIS, 1860. 301

AT 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.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
May 1	2 36 15.99	15.50	+15 17 44.9	42.5	9.552	44.92	- 3 7.15	15 53.99	1 6.11	2 39 23.16
2	2 40 5.52	5.01	15 35 35.2	32.7	9.574	44.28	3 14.17	15 53.76	1 6.19	2 43 19.71
3	2 43 55.58	55.05	15 53 10.0	7.5	9.597	43.63	3 20.67	15 53.53	1 6.27	2 47 16.27
4	2 47 46.20	45.65	16 10 29.1	26.6	9.620	42.97	3 26.61	15 53.31	1 6.35	2 51 12.82
5	2 51 37.38	36.81	16 27 32.2	29.7	9.643	42.29	3 31.99	15 53.08	1 6.43	2 55 9.38
6	2 55 29.12	28.54	16 44 18.9	16.4	9.667	41.60	3 36.80	15 52.86	1 6.51	2 59 5.93
7	2 59 21.42	20.83	17 0 49.1	46.6	9.691	40.91	3 41.06	15 52.64	1 6.59	3 3 2.49
8	3 3 14.31	13.71	17 16 62.4	59.9	9.715	40.20	3 44.73	15 52.42	1 6.67	3 6 59.05
9	3 7 7.79	7.18	17 32 58.5	56.0	9.740	39.48	3 47.80	15 52.20	1 6.76	3 10 55.60
10	3 11 1.86	1.24	17 48 37.1	34.6	9.765	38.74	3 50.29	15 51.99	1 6.85	3 14 52.16
11	3 14 56.52	53.89	18 3 57.9	55.4	9.790	37.99	3 52.19	15 51.78	1 6.93	3 18 48.71
12	3 18 51.77	51.13	18 18 60.6	58.1	9.815	37.23	3 53.50	15 51.57	1 7.01	3 22 45.27
13	3 22 47.62	46.98	18 33 45.0	42.6	9.840	36.46	3 54.52	15 51.36	1 7.09	3 26 41.82
14	3 26 44.06	43.42	18 48 10.7	8.4	9.864	35.67	3 54.32	15 51.15	1 7.17	3 30 38.38
15	3 30 41.09	40.45	19 2 17.4	15.2	9.888	34.88	3 53.85	15 50.95	1 7.25	3 34 34.94
16	3 34 38.70	38.06	19 16 4.9	2.8	9.912	34.07	3 52.80	15 50.76	1 7.33	3 38 31.50
17	3 38 36.89	36.25	19 29 32.8	30.8	9.936	33.25	3 51.16	15 50.57	1 7.41	3 42 28.05
18	3 42 35.65	35.02	19 42 40.9	38.9	9.960	32.42	3 48.96	15 50.38	1 7.49	3 46 24.61
19	3 46 34.97	34.34	19 55 28.9	26.9	9.983	31.58	3 46.21	15 50.19	1 7.57	3 50 21.17
20	3 50 34.85	34.23	20 7 56.5	54.6	10.005	30.73	3 42.89	15 50.01	1 7.65	3 54 17.73
21	3 54 35.26	34.65	20 20 3.6	1.8	10.027	29.86	3 39.03	15 49.84	1 7.73	3 58 14.28
22	3 58 36.20	35.60	20 31 49.7	48.0	10.049	28.98	3 34.65	15 49.67	1 7.80	4 2 10.84
23	4 2 37.65	37.06	20 43 14.7	13.1	10.070	28.10	3 29.76	15 49.51	1 7.87	4 6 7.40
24	4 6 39.60	39.02	20 54 18.3	16.7	10.091	27.20	3 24.37	15 49.35	1 7.94	4 10 3.96
25	4 10 42.04	41.47	21 4 60.3	58.8	10.111	26.30	3 18.48	15 49.19	1 8.01	4 14 0.51
26	4 14 44.95	44.40	21 15 20.4	19.0	10.133	25.38	3 12.13	15 49.04	1 8.08	4 17 57.07
27	4 18 48.32	47.79	21 25 18.5	17.2	10.152	24.46	3 5.32	15 48.89	1 8.15	4 21 53.63
28	4 22 52.15	51.64	21 34 54.5	53.3	10.169	23.53	2 58.05	15 48.74	1 8.21	4 25 50.19
29	4 26 56.41	55.92	21 44 8.1	7.0	10.186	22.60	2 50.35	15 48.61	1 8.27	4 29 46.75
30	4 31 1.07	0.60	21 52 59.0	58.0	10.203	21.65	2 42.24	15 48.47	1 8.33	4 33 43.30
31	4 35 6.14	5.70	22 1 27.2	26.3	10.220	20.69	2 33.78	15 48.34	1 8.39	4 37 39.86
June 1	4 39 11.61	11.20	22 9 32.3	31.5	10.236	19.73	2 24.82	15 48.21	1 8.45	4 41 36.42
2	4 43 17.47	17.09	22 17 14.3	13.6	10.252	18.77	2 15.51	15 48.08	1 8.50	4 45 32.97
3	4 47 23.70	23.34	22 24 33.1	32.5	10.267	17.80	2 5.84	15 47.95	1 8.55	4 49 29.53
4	4 51 30.29	29.96	22 31 28.5	28.0	10.281	16.82	1 55.81	15 47.82	1 8.60	4 53 26.09
5	4 55 37.21	36.91	22 37 60.3	59.9	10.295	15.83	1 45.45	15 47.70	1 8.65	4 57 22.65
6	4 59 44.45	44.18	22 44 8.3	8.0	10.308	14.85	1 34.76	15 47.58	1 8.69	5 1 19.20
7	5 3 52.01	51.77	22 49 52.5	52.2	10.321	13.85	1 23.76	15 47.47	1 8.73	5 5 15.76
8	5 7 59.86	59.65	22 55 12.8	12.5	10.332	12.85	1 12.47	15 47.36	1 8.77	5 9 12.32
9	5 12 7.99	7.81	23 0 8.9	8.7	10.343	11.84	1 0.89	15 47.25	1 8.81	5 13 8.88
10	5 16 16.38	16.23	23 4 40.8	40.7	10.353	10.83	0 49.06	15 47.15	1 8.84	5 17 5.44
11	5 20 25.00	24.89	23 8 48.3	48.3	10.363	9.81	0 37.00	15 47.05	1 8.87	5 21 2.00
12	5 24 33.34	33.77	23 12 31.4	31.4	10.372	8.79	0 24.72	15 46.96	1 8.89	5 24 58.56
13	5 28 42.87	42.84	23 15 49.9	49.9	10.379	7.77	0 12.24	15 46.88	1 8.91	5 28 55.11
14	5 32 52.07	52.07	23 18 43.9	43.9	10.385	6.74	+ 0 0.40	15 46.80	1 8.93	5 32 51.67
15	5 37 1.41	1.44	23 21 13.2	13.2	10.390	5.71	0 13.18	15 46.72	1 8.94	5 36 48.23
16	5 41 10.88	10.95	23 23 17.8	17.8	10.395	4.68	0 26.09	15 46.65	1 8.95	5 40 44.79
17	5 45 20.42	20.53	23 24 57.6	57.6	10.398	3.64	0 39.07	15 46.58	1 8.96	5 44 41.35
18	5 49 30.02	30.17	23 26 12.5	12.5	10.400	2.61	0 52.12	15 46.52	1 8.97	5 48 37.91
19	5 53 39.67	39.86	23 27 2.6	2.6	10.400	1.57	1 5.21	15 46.46	1 8.97	5 52 34.47
20	5 57 49.33	49.56	23 27 27.9	27.9	10.399	0.54	1 18.31	15 46.41	1 8.97	5 56 31.03
21	6 1 58.96	59.23	23 27 28.3	28.3	10.398	0.50	1 31.38	15 46.36	1 8.97	6 0 27.59
22	6 6 8.53	8.84	23 27 3.8	3.8	10.396	1.54	1 44.40	15 46.32	1 8.96	6 4 24.14
23	6 10 18.04	18.38	23 26 14.6	14.5	10.393	2.57	1 57.36	15 46.28	1 8.96	6 8 20.70
24	6 14 27.46	27.84	23 25 0.7	0.6	10.389	3.59	2 10.22	15 46.26	1 8.96	6 12 17.26
25	6 18 36.74	37.16	23 23 22.1	22.0	10.384	4.61	2 22.94	15 46.24	1 8.95	6 16 13.82
26	6 22 45.86	46.32	23 21 18.8	18.6	10.376	5.64	2 35.50	15 46.22	1 8.92	6 20 10.38
27	6 26 54.80	55.29	23 18 51.0	50.7	10.368	6.66	2 47.89	15 46.20	1 8.89	6 24 6.93
28	6 31 3.54	4.06	23 15 58.7	58.3	10.360	7.68	3 0.07	15 46.18	1 8.86	6 28 3.49
29	6 35 12.07	12.63	23 12 41.9	41.5	10.351	8.70	3 12.04	15 46.17	1 8.83	6 32 0.05
30	6 39 20.38	20.97	23 9 0.8	0.3	10.341	9.71	3 23.79	15 46.16	1 8.80	6 35 56.61
31	6 43 28.42	29.04	+23 4 55.5	54.9	10.329	10.72	+ 3 35.28	15 46.15	1 8.77	6 39 53.16

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.8 from the Sidereal Interval.

302 SOLAR EPHEMERIS, 1860.

AT 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.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h. m. s.	s.	° ' "	"	s.	"				
July 1	6 43 28.42	29.04	+23 4 55.5	54.9	10.329	10.72	+ 3 35.28	15 46.15	1 8.77	6 39 53.16
2	6 47 36.19	36.84	23 0 26.0	25.3	10.317	11.72	3 46.50	15 46.16	1 8.73	6 43 49.72
3	6 51 43.67	44.35	22 55 32.5	31.7	10.304	12.72	3 57.42	15 46.17	1 8.68	6 47 46.28
4	6 55 50.85	51.56	22 50 15.1	14.2	10.291	13.72	4 8.04	15 46.18	1 8.63	6 51 42.84
5	6 59 57.70	58.44	22 44 33.8	32.8	10.278	14.71	4 18.33	15 46.19	1 8.58	6 55 39.40
6	7 4 4.21	4.98	22 38 28.8	27.7	10.264	15.69	4 28.28	15 46.20	1 8.53	6 59 35.96
7	7 8 10.88	11.18	22 31 60.3	59.1	10.250	16.67	4 37.89	15 46.22	1 8.48	7 3 32.52
8	7 12 16.18	17.00	22 25 8.4	7.0	10.234	17.65	4 57.04	15 46.25	1 8.43	7 7 29.07
9	7 16 21.59	22.44	22 17 53.2	51.7	10.218	18.62	4 55.99	15 46.28	1 8.38	7 11 25.63
10	7 20 26.61	27.47	22 10 14.8	13.2	10.201	19.58	5 4.45	15 46.31	1 8.32	7 15 22.19
11	7 24 31.21	32.09	22 2 13.5	11.8	10.184	20.53	5 12.49	15 46.34	1 8.26	7 19 18.75
12	7 28 35.38	36.28	21 53 49.4	47.6	10.166	21.47	5 20.10	15 46.37	1 8.19	7 23 15.31
13	7 32 39.10	40.02	21 45 2.8	0.8	10.146	22.41	5 27.26	15 46.41	1 8.12	7 27 11.87
14	7 36 42.35	43.29	21 35 53.8	51.7	10.126	23.34	5 33.95	15 46.46	1 8.05	7 31 8.43
15	7 40 45.12	46.08	21 26 22.6	20.4	10.106	24.26	5 40.17	15 46.51	1 7.98	7 35 4.98
16	7 44 47.39	48.36	21 16 29.4	27.1	10.084	25.16	5 45.88	15 46.57	1 7.91	7 39 1.54
17	7 48 49.15	50.13	21 6 14.6	12.2	10.063	26.06	5 51.08	15 46.63	1 7.84	7 42 58.10
18	7 52 50.38	51.37	20 55 38.2	35.6	10.039	26.95	5 55.74	15 46.71	1 7.76	7 46 54.66
19	7 56 51.07	52.07	20 44 40.7	37.9	10.016	27.84	5 59.88	15 46.79	1 7.68	7 50 51.21
20	8 0 51.21	52.22	20 33 22.1	19.2	9.993	28.70	6 3.46	15 46.87	1 7.60	7 54 47.77
21	8 4 50.77	51.79	20 21 42.9	39.9	9.970	29.56	6 6.46	15 46.95	1 7.52	7 58 44.33
22	8 8 49.76	50.78	20 9 43.2	40.1	9.946	30.41	6 8.90	15 47.04	1 7.44	8 2 40.88
23	8 12 48.16	49.18	19 57 23.4	20.2	9.922	31.25	6 10.73	15 47.14	1 7.36	8 6 37.44
24	8 16 45.97	46.99	19 44 43.6	40.3	9.897	32.07	6 11.98	15 47.24	1 7.28	8 10 34.00
25	8 20 43.17	44.19	19 31 44.2	40.8	9.872	32.87	6 12.63	15 47.35	1 7.20	8 14 30.55
26	8 24 39.75	40.77	19 18 25.5	22.0	9.846	33.67	6 12.64	15 47.46	1 7.12	8 18 27.11
27	8 28 35.71	36.73	19 4 47.6	44.0	9.820	34.47	6 12.03	15 47.58	1 7.03	8 22 23.67
28	8 32 31.06	32.07	18 50 51.0	47.4	9.794	35.24	6 10.83	15 47.70	1 6.94	8 26 20.22
29	8 36 25.79	26.79	18 36 35.8	32.1	9.768	36.01	6 9.01	15 47.82	1 6.86	8 30 16.78
30	8 40 19.91	20.90	18 21 62.3	58.5	9.742	36.77	6 6.56	15 47.94	1 6.78	8 34 13.34
31	8 44 13.42	14.40	18 7 10.8	7.0	9.717	37.52	6 3.52	15 48.07	1 6.69	8 38 9.89
Aug. 1	8 48 6.32	7.29	17 51 61.5	57.7	9.692	38.25	5 59.85	15 48.20	1 6.60	8 42 6.45
2	8 51 58.62	59.58	17 36 34.8	31.0	9.667	38.97	5 55.59	15 48.33	1 6.51	8 46 3.01
3	8 55 50.31	51.25	17 20 50.9	47.1	9.642	39.69	5 50.73	15 48.46	1 6.42	8 49 59.56
4	8 59 41.41	42.33	17 4 50.0	46.2	9.617	40.38	5 45.27	15 48.60	1 6.33	8 53 56.12
5	9 3 31.92	32.82	16 48 32.4	28.6	9.593	41.07	5 39.22	15 48.74	1 6.24	8 57 52.68
6	9 7 21.85	22.73	16 31 58.4	58.6	9.569	41.75	5 32.60	15 48.88	1 6.15	9 1 49.23
7	9 11 11.21	11.87	16 15 8.4	4.6	9.545	42.41	5 25.39	15 49.03	1 6.07	9 5 45.79
8	9 15 0.00	0.84	15 57 62.5	58.7	9.521	43.07	5 17.62	15 49.18	1 5.98	9 9 42.35
9	9 18 48.23	49.05	15 40 41.1	37.3	9.498	43.70	5 9.31	15 49.33	1 5.90	9 13 38.90
10	9 22 35.90	36.69	15 23 4.5	0.7	9.475	44.33	5 0.41	15 49.49	1 5.82	9 17 35.46
11	9 26 23.02	23.78	15 5 13.0	9.3	9.452	44.94	4 50.98	15 49.66	1 5.74	9 21 32.01
12	9 30 9.60	10.33	14 47 6.9	3.3	9.430	45.54	4 41.00	15 49.83	1 5.66	9 25 28.57
13	9 33 55.64	56.34	14 28 46.5	43.0	9.408	46.13	4 30.49	15 50.00	1 5.58	9 29 25.12
14	9 37 41.16	41.83	14 10 12.1	8.7	9.386	46.71	4 19.45	15 50.17	1 5.50	9 33 21.68
15	9 41 26.16	26.80	13 51 24.2	20.9	9.364	47.27	4 7.90	15 50.35	1 5.42	9 37 18.23
16	9 45 10.65	11.26	13 32 23.0	19.8	9.342	47.81	3 55.83	15 50.53	1 5.35	9 41 14.79
17	9 48 54.62	55.20	13 13 8.9	5.9	9.321	48.34	3 45.25	15 50.72	1 5.28	9 45 11.34
18	9 52 38.07	38.62	12 53 42.2	39.3	9.300	48.87	3 30.14	15 50.91	1 5.21	9 49 7.90
19	9 56 21.02	21.53	12 34 3.3	0.5	9.280	49.36	3 16.54	15 51.11	1 5.14	9 53 4.45
20	10 0 3.47	3.94	12 14 12.5	9.9	9.260	49.85	3 2.43	15 51.31	1 5.07	9 57 1.01
21	10 3 45.44	45.87	11 54 10.1	7.7	9.240	50.33	2 47.85	15 51.51	1 4.99	10 0 57.56
22	10 7 26.95	27.34	11 33 56.5	54.3	9.220	50.80	2 32.80	15 51.72	1 4.93	10 4 54.12
23	10 11 8.01	8.36	11 13 32.0	30.0	9.201	51.24	2 17.32	15 51.93	1 4.87	10 8 50.67
24	10 14 48.63	48.94	10 52 56.9	55.1	9.183	51.68	2 1.39	15 52.15	1 4.81	10 12 47.23
25	10 18 28.82	29.09	10 32 11.6	10.0	9.166	52.10	1 45.03	15 52.37	1 4.75	10 16 43.78
26	10 22 8.60	8.83	10 11 16.3	14.9	9.149	52.50	1 28.25	15 52.59	1 4.69	10 20 40.34
27	10 25 47.98	48.16	9 50 11.4	10.3	9.133	52.89	1 11.08	15 52.82	1 4.63	10 24 36.89
28	10 29 26.98	27.12	9 28 57.2	56.3	9.118	53.28	0 53.53	15 53.05	1 4.58	10 28 33.44
29	10 33 5.62	5.72	9 7 34.0	33.4	9.104	53.65	0 35.62	15 53.28	1 4.53	10 32 30.00
30	10 36 43.92	43.97	8 46 2.0	1.7	9.090	54.00	+ 0 17.36	15 53.51	1 4.48	10 36 26.56
31	10 40 21.90	21.90	+ 8 24 21.5	21.5	9.076	54.34	- 0 1.21	15 53.74	1 4.44	10 40 23.11

NOTE.— For Mean Interval of Semidiameter passing the Meridian, subtract 0s.13 from the Sidereal Interval.

304 SOLAR EPHEMERIS, 1860.

AT 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.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h. m. s.	s.	° ′ ″	″	s.	″				
Nov. 1	14 28 31.01	28.36	14 40 41.3	28.3	9.821	47.69	-16 18.41	16 10.11	7.03	14 44 49.43
2	14 32 27.13	24.46	14 59 38.9	26.0	9.855	47.09	16 18.86	16 10.35	7.14	14 48 45.99
3	14 36 24.09	21.41	15 18 21.9	9.2	9.890	46.48	16 18.47	16 10.59	7.26	14 52 42.55
4	14 40 21.89	19.20	15 36 49.9	37.4	9.925	45.85	16 17.23	16 10.83	7.38	14 56 39.10
5	14 44 20.53	17.84	15 54 62.6	:50.3	9.961	45.19	16 15.16	16 11.06	7.50	15 0 35.66
6	14 48 20.01	17.33	16 12 59.4	47.3	9.997	44.53	16 12.23	16 11.29	7.61	15 4 32.21
7	14 52 20.34	17.66	16 30 89.8	27.9	10.033	43.84	16 8.47	16 11.52	7.74	15 8 28.77
8	14 56 21.53	18.85	16 47 63.6	51.9	10.069	43.14	16 3.85	16 11.75	7.86	15 12 25.33
9	15 0 23.59	20.91	17 4 70.4	:59.0	10.105	42.41	15 58.36	16 11.97	7.98	15 16 21.89
10	15 4 26.51	23.83	17 21 59.6	48.5	10.140	41.68	15 52.00	16 12.19	8.10	15 20 18.44
11	15 8 30.29	27.62	17 38 30.9	20.1	10.176	40.93	15 44.79	16 12.41	8.22	15 24 15.01
12	15 12 34.94	32.28	17 54 43.9	33.4	10.211	40.16	15 36.69	16 12.63	8.34	15 28 11.55
13	15 16 40.44	37.80	18 10 38.1	27.9	10.246	39.36	15 27.76	16 12.84	8.46	15 32 8.11
14	15 20 46.78	44.16	18 26 13.1	3.2	10.281	38.55	15 17.99	16 13.05	8.58	15 36 4.67
15	15 24 53.96	51.36	18 41 28.6	19.0	10.316	37.72	15 7.37	16 13.26	8.70	15 40 1.22
16	15 28 61.98	:59.40	18 56 24.1	14.8	10.350	36.89	14 55.91	16 13.48	8.82	15 43 57.78
17	15 33 10.83	8.28	19 10 59.2	50.2	10.384	36.04	14 43.63	16 13.69	8.94	15 47 54.34
18	15 37 20.49	17.97	19 25 13.6	4.9	10.418	35.16	14 30.53	16 13.89	9.06	15 51 50.89
19	15 41 30.95	28.46	19 38 67.0	:58.7	10.451	34.28	14 16.64	16 14.09	9.16	15 55 47.45
20	15 45 42.19	39.74	19 52 88.8	30.9	10.484	33.38	14 1.96	16 14.28	9.27	15 59 44.00
21	15 49 54.22	51.81	20 5 48.8	41.3	10.517	32.47	13 46.49	16 14.48	9.38	16 3 40.56
22	15 54 7.02	4.65	20 18 36.7	29.6	10.549	31.53	13 30.25	16 14.67	9.49	16 7 37.12
23	15 58 20.59	18.27	20 30 62.0	:55.3	10.581	30.59	13 13.23	16 14.86	9.60	16 11 33.67
24	16 2 34.93	32.66	20 42 64.5	58.1	10.613	29.62	12 55.46	16 15.04	9.70	16 15 30.23
25	16 6 50.00	47.77	20 54 43.9	37.8	10.643	28.64	12 36.96	16 15.22	9.80	16 19 26.79
26	16 11 5.80	3.62	21 5 59.7	54.0	10.673	27.67	12 17.71	16 15.39	9.90	16 23 23.34
27	16 15 22.31	20.18	21 16 51.7	46.4	10.702	26.67	11 57.76	16 15.55	10.00	16 27 19.90
28	16 19 39.53	37.46	21 27 19.7	14.7	10.731	25.66	11 37.10	16 15.72	10.10	16 31 16.46
29	16 23 57.44	55.43	21 37 23.2	18.5	10.760	24.63	11 15.75	16 15.87	10.20	16 35 13.02
30	16 28 16.03	14.07	21 46 62.0	:57.6	10.788	23.60	10 53.72	16 16.02	10.29	16 39 9.58
Dec. 1	16 32 35.27	33.37	21 56 15.9	11.9	10.815	22.56	10 31.03	16 16.17	10.38	16 43 6.13
2	16 36 55.15	53.32	22 5 4.4	0.7	10.841	21.50	10 7.71	16 16.31	10.46	16 47 2.69
3	16 41 15.65	13.89	22 13 27.4	24.0	10.866	20.42	9 43.77	16 16.45	10.54	16 50 59.25
4	16 45 36.76	35.07	22 21 24.6	21.5	10.891	19.34	9 19.22	16 16.58	10.61	16 54 55.81
5	16 49 58.44	56.82	22 28 55.7	52.9	10.915	18.26	8 54.09	16 16.70	10.68	16 58 52.37
6	16 54 20.67	19.12	22 35 60.5	:58.0	10.936	17.16	8 28.42	16 16.82	10.75	17 2 48.93
7	16 58 43.42	41.95	22 42 38.8	36.6	10.957	16.05	8 2.22	16 16.93	10.81	17 6 45.48
8	17 3 6.67	5.28	22 48 50.2	48.3	10.977	14.91	7 35.52	16 17.04	10.87	17 10 42.04
9	17 7 30.38	29.08	22 54 34.7	33.0	10.997	13.79	7 8.36	16 17.15	10.93	17 14 38.60
10	17 11 54.52	53.29	22 59 52.0	50.5	11.014	12.65	6 40.77	16 17.25	10.99	17 18 35.16
11	17 16 19.06	17.91	23 4 41.9	40.6	11.030	11.52	6 12.79	16 17.35	11.04	17 22 31.72
12	17 20 43.96	42.90	23 9 4.3	3.2	11.045	10.37	5 44.44	16 17.45	11.08	17 26 28.28
13	17 25 9.19	8.22	23 12 59.1	58.2	11.058	9.22	5 15.75	16 17.55	11.12	17 30 24.83
14	17 29 34.71	33.83	23 16 26.0	25.3	11.069	8.05	4 46.78	16 17.64	11.16	17 34 21.39
15	17 33 60.49	:59.70	23 19 25.0	24.5	11.079	6.88	4 17.55	16 17.72	11.20	17 38 17.95
16	17 38 26.48	25.78	23 21 56.0	55.6	11.086	5.71	3 48.11	16 17.80	11.22	17 42 14.51
17	17 42 52.65	52.04	23 23 58.9	58.6	11.092	4.54	3 18.48	16 17.88	11.24	17 46 11.06
18	17 47 18.96	18.44	23 25 33.7	33.5	11.097	3.36	2 48.72	16 17.95	11.26	17 50 7.62
19	17 51 45.37	44.94	23 26 40.3	40.2	11.102	2.19	2 18.86	16 18.02	11.28	17 54 4.18
20	17 56 11.86	11.52	23 27 18.7	18.7	11.104	1.01	1 48.92	16 18.09	11.30	17 58 0.74
21	18 0 38.39	38.14	23 27 28.8	28.8	11.104	0.17	1 18.94	16 18.15	11.30	18 1 57.30
22	18 5 4.92	4.76	23 27 10.6	10.6	11.104	1.35	0 48.96	16 18.20	11.30	18 5 53.86
23	18 9 31.42	31.36	23 26 24.0	24.0	11.102	2.53	- 0 19.01	16 18.25	11.30	18 9 50.42
24	18 13 57.85	57.89	23 25 9.1	9.1	11.099	3.71	+ 0 10.88	16 18.30	11.30	18 13 46.97
25	18 18 24.19	24.32	23 23 26.1	26.1	11.095	4.88	0 40.67	16 18.34	11.29	18 17 43.53
26	18 22 50.41	50.63	23 21 14.9	14.9	11.090	6.05	1 10.34	16 18.37	11.27	18 21 40.09
27	18 27 16.48	16.79	23 18 35.6	35.4	11.082	7.22	1 39.66	16 18.39	11.24	18 25 36.65
28	18 31 42.37	42.77	23 15 28.3	28.0	11.074	8.38	2 9.20	16 18.40	11.21	18 29 33.21
29	18 36 8.05	8.54	23 11 53.0	52.6	11.065	9.54	2 38.33	16 18.41	11.18	18 33 29.77
30	18 40 33.49	34.07	23 7 50.0	49.5	11.055	10.70	3 7.22	16 18.42	11.15	18 37 26.33
31	18 44 58.67	59.34	23 3 19.2	18.5	11.043	11.85	3 35.85	16 18.42	11.11	18 41 22.89
32	18 49 23.55	24.31	-22 58 20.8	19.9	11.030	13.00	+ 4 4.18	16 18.42	11.07	18 45 19.45

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

MOON CULMINATIONS, 1860. 305

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.			Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
			h.	m.	s.				
Jan. 1	1	I. U.	0	53	5.30	2.06766	63.31	+10 57 7.7	+2.90511
	1	I. L.	1	16	48.85	2.08239	64.42	+13 35 17.6	+2.88997
2	2	I. U.	1	41	25.30	2.09937	65.72	+16 6 59.1	+2.86855
2	2	I. L.	2	7	3.41	2.11816	67.17	+18 30 2.2	+2.83860
3	3	I. U.	2	33	51.45	2.13789	68.74	+20 41 56.5	+2.79724
3	3	I. L.	3	1	55.44	2.15803	70.37	+22 39 50.8	+2.73983
4	4	I. U.	3	31	18.52	2.17751	72.00	+24 20 36.6	+2.65823
4	4	I. L.	4	1	59.66	2.19532	73.53	+25 40 53.7	+2.53724
5	5	I. U.	4	33	52.62	2.21035	74.84	+26 37 23.4	+2.33794
5	5	I. L.	5	6	45.30	2.22146	75.83	+27 7 6.4	+1.88897
6	6	I. U.	5	40	20.17	2.22809	76.41	+27 7 41.5	-1.86136
6	6	I. L.	6	14	15.65	2.23002	76.57	+26 37 45.5	-2.35570
7	7	I. U.	6	48	8.76	2.22694	76.29	+25 37 5.8	-2.57862
8	7	II. L.	7	24	9.14	2.21948	75.62	+24 6 47.9	-2.71795
8	8	II. U.	7	56	54.69	2.20860	74.63	+22 9 4.8	-2.81442
9	8	II. L.	8	28	46.13	2.19540	73.46	+19 47 5.1	-2.88349
9	9	II. U.	8	59	37.51	2.18107	72.24	+17 4 34.0	-2.93311
10	9	II. L.	9	29	28.23	2.16664	71.04	+14 5 34.2	-2.96810
10	10	II. U.	9	58	21.90	2.15311	69.93	+10 54 12.5	-2.99164
11	10	II. L.	10	26	25.33	2.14123	68.98	+ 7 34 25.9	-3.00584
11	11	II. U.	10	53	47.29	2.13156	68.23	+ 4 9 57.3	-3.01214
12	11	II. L.	11	20	37.61	2.12437	67.67	+ 0 44 11.7	-2.91145
12	12	II. U.	11	47	6.48	2.11992	67.32	- 2 39 44.2	-3.00442
13	13	II. L.	12	13	24.12	2.11819	67.20	- 5 59 1.3	-2.99140
13	13	II. U.	12	39	40.16	2.11900	67.28	- 9 11 5.4	-2.97239
14	14	II. L.	13	6	3.44	2.12212	67.53	-12 13 35.2	-2.94684
14	14	II. U.	13	32	41.77	2.12713	67.94	-15 4 18.8	-2.91415
15	15	II. L.	13	59	41.27	2.13354	68.45	-17 41 12.0	-2.87307
15	15	II. U.	14	27	6.72	2.14070	69.02	-20 2 19.1	-2.82152
16	16	II. L.	14	54	59.83	2.14796	69.60	-22 5 51.6	-2.75657
16	16	II. U.	15	23	20.15	2.15461	70.14	-23 50 10.5	-2.67306
17	17	II. L.	15	52	4.75	2.16011	70.57	-25 13 50.8	-2.56203
17	17	II. U.	16	21	7.48	2.16364	70.83	-26 15 46.0	-2.40486
18	18	II. L.	16	50	20.07	2.16489	70.91	-26 55 12.2	-2.14706
18	18	II. U.	17	19	32.11	2.16343	70.76	-27 11 51.3	-1.42160
19	19	II. L.	17	48	32.88	2.15924	70.35	-27 5 53.6	+1.93202
19	19	II. U.	18	17	11.55	2.15238	69.74	-26 37 58.4	+2.28500
20	20	II. L.	18	45	18.58	2.14317	68.96	-25 49 10.6	+2.46829
20	20	II. U.	19	13	46.50	2.13200	68.05	-24 40 55.5	+2.58779
21	21	II. L.	19	39	29.91	2.11949	67.02	-23 14 55.6	+2.67345
21	21	I. U.	20	3	14.40	2.10626	65.95	-21 33 1.7	+2.73723
22	22	I. L.	20	38	25.64	2.09279	64.91	-19 37 8.6	+2.78619
22	22	I. U.	20	52	51.28	2.07947	63.98	-17 29 10.9	+2.82405
23	23	I. L.	21	16	34.74	2.06718	63.08	-15 10 59.5	+2.85346
24	23	I. U.	21	39	40.92	2.05648	62.24	-12 44 18.7	+2.87612
24	24	I. L.	22	2	15.41	2.04762	61.60	-10 10 46.7	+2.89335
25	24	I. U.	22	24	24.71	2.04084	61.12	- 7 31 55.1	+2.90589
25	25	I. L.	22	46	15.84	2.03611	60.80	- 4 49 8.5	+2.91455
26	25	I. U.	23	7	56.14	2.03391	60.67	- 2 3 47.1	+2.91963
26	26	I. L.	23	29	33.30	2.03427	60.74	+ 0 42 52.9	+2.92145

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ' "	
Jan. 27	26	I. U.	23 51 15.30	2.03739	61.00	+ 3 29 36.8	+2.92000
27	27	I. L.	0 13 10.41	2.04324	61.44	+ 6 15 9.7	+2.91518
28	28	I. U.	0 35 27.07	2.05169	62.08	+ 8 58 13.5	+2.90674
28	28	I. L.	0 58 13.94	2.06285	62.92	+11 37 24.2	+2.89414
29	29	I. U.	1 21 39.77	2.07628	63.96	+14 11 9.8	+2.87653
29	29	I. L.	1 45 53.23	2.09192	65.17	+16 37 47.4	+2.85254
30	30	I. U.	2 11 3.63	2.10917	66.52	+18 55 19.6	+2.82039
30	30	I. L.	2 7 15.39	2.12756	68.00	+21 1 32.6	+2.77727
31	31	I. U.	3 4 37.43	2.14644	69.55	+22 53 59.3	+2.71879
31	31	I. L.	3 33 12.36	2.16510	71.10	+24 29 53.2	+2.63673
Feb. 1	32	I. U.	4 3 0.37	2.18241	72.56	+25 46 19.5	+2.51658
1	32	I. L.	4 33 57.68	2.19769	73.88	+26 40 21.3	+2.32062
2	33	I. U.	5 5 55.30	2.20978	74.95	+27 9 11.0	+1.88632
2	33	I. L.	5 38 39.75	2.21817	75.68	+27 10 27.5	-1.81684
3	34	I. U.	6 11 53.47	2.22249	76.01	+26 42 32.3	-2.33072
3	34	I. L.	6 45 16.77	2.22207	75.96	+25 44 43.6	-2.56073
4	35	I. U.	7 18 30.20	2.21793	75.55	+24 17 25.1	-2.70611
4	35	I. L.	7 51 16.82	2.21013	74.84	+22 22 7.5	-2.80782
5	36	I. U.	8 23 23.86	2.20008	73.92	+20 1 20.2	-2.88218
5	36	I. L.	8 54 43.28	2.18854	72.90	+17 18 20.1	-2.93668
6	37	II. U.	9 27 36.22	2.17682	71.86	+14 16 56.3	-2.97612
7	37	II. L.	9 57 14.69	2.16521	70.90	+11 1 16.4	-3.00306
7	38	II. U.	10 26 9.42	2.15531	70.06	+ 7 35 32.8	-3.01982
8	38	II. L.	10 54 27.50	2.14681	69.38	+ 4 3 54.4	-3.02785
8	39	II. U.	11 22 17.50	2.14070	68.88	+ 0 30 18.3	-3.02799
9	39	II. L.	11 49 48.59	2.13688	68.59	- 3 1 31.7	-3.02068
9	40	II. U.	12 17 9.91	2.13551	68.51	- 6 28 9.6	-3.00639
10	41	II. L.	12 44 30.19	2.13627	68.62	- 9 46 28.4	-2.98495
10	41	II. U.	13 11 57.14	2.13899	68.87	-12 53 38.6	-2.95600
11	42	II. L.	13 39 37.33	2.14314	69.24	-15 47 7.7	-2.91874
11	43	II. U.	14 7 35.64	2.14832	69.69	-18 24 40.6	-2.87185
12	43	II. L.	14 35 54.80	2.15387	70.15	-20 44 16.7	-2.81298
12	43	II. U.	15 4 35.31	2.15900	70.61	-22 44 12.0	-2.73870
13	44	II. L.	15 33 34.83	2.16331	70.98	-24 23 3.4	-2.64311
13	44	II. U.	16 2 48.86	2.16610	71.22	-25 39 46.5	-2.51429
14	45	II. L.	16 32 10.31	2.16690	71.27	-26 33 39.7	-2.32578
14	45	II. U.	17 1 30.50	2.16540	71.13	-27 4 28.3	-1.98462
15	46	II. L.	17 30 39.71	2.16146	70.76	-27 12 21.3	+1.23198
15	46	II. U.	17 59 28.22	2.15512	70.20	-26 57 54.9	+2.10202
16	47	II. L.	18 27 47.14	2.14660	69.46	-26 22 7.3	+2.36222
16	47	II. U.	18 55 23.18	2.13612	68.58	-25 26 17.7	+2.51407
17	48	II. L.	19 22 29.11	2.12431	67.58	-24 11 57.7	+2.61805
17	48	II. U.	19 48 43.99	2.11170	66.52	-23 40 50.9	+2.69436
18	49	II. L.	20 14 12.91	2.09871	65.46	-20 54 42.2	+2.75224
18	49	II. U.	20 38 57.13	2.08600	64.45	-18 55 18.0	+2.79728
19	50	II. L.	21 2 59.41	2.07390	63.51	-16 44 28.0	+2.83244
19	50	II. U.	21 26 23.77	2.06296	62.66	-14 23 53.7	+2.86000
20	51	II. L.	21 49 15.29	2.05338	61.94	-11 55 13.8	+2.88136
21	51	II. U.	22 11 39.73	2.04563	61.37	- 9 20 1.5	+2.89755
21	52	I. L.	22 31 41.47	2.04003	60.95	- 6 39 46.1	+2.90926

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.			Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
			h.	m.	s.				
Feb. 22	52	I. U.	22	53	31.44	2.03636	60.69	- 3 55 53.3	+2.91702
22	53	I. L.	23	15	13.84	2.03511	60.60	- 1 9 47.1	+2.92109
23	53	I. U.	23	36	55.74	2.03623	60.69	+ 1 37 12.4	+2.92160
23	54	I. L.	23	58	44.58	2.03985	60.98	+ 4 23 43.8	+2.91865
24	55	I. U.	0	20	47.42	2.04602	61.45	+ 7 8 24.4	+2.91186
24	55	I. L.	0	43	12.20	2.05446	62.11	+ 9 49 49.8	+2.90114
25	56	I. U.	1	6	6.49	2.06487	62.99	+12 26 28.4	+2.88570
25	56	I. L.	1	29	37.82	2.07748	63.90	+14 56 44.7	+2.86482
26	57	I. U.	1	53	53.31	2.09181	65.04	+17 18 52.8	+2.83709
26	57	I. L.	2	18	59.79	2.10738	66.29	+19 30 57.9	+2.80064
27	58	I. U.	2	45	3.08	2.12382	67.62	+21 30 55.1	+2.75257
27	58	I. L.	3	12	7.21	2.14045	68.99	+23 16 28.4	+2.68818
28	59	I. U.	3	40	14.21	2.15667	70.36	+24 45 13.8	+2.59943
28	59	I. L.	4	9	23.42	2.17164	71.64	+25 54 43.3	+2.47000
29	60	I. U.	4	39	30.60	2.18466	72.77	+26 42 30.7	+2.25730
29	60	I. L.	5	10	27.90	2.19504	73.68	+27 6 21.9	+1.74920
Mar. 1	61	I. U.	5	42	3.94	2.20230	74.32	+27 4 25.0	-1.88463
1	61	I. L.	6	14	4.91	2.20607	74.65	+26 35 20.5	-2.33135
2	62	I. U.	6	46	15.40	2.20637	74.65	+25 38 32.5	-2.54822
2	62	I. L.	7	18	20.49	2.20344	74.36	+24 14 14.2	-2.68920
3	63	I. U.	7	50	7.04	2.19783	73.83	+22 23 28.7	-2.79044
3	63	I. L.	8	21	25.06	2.19030	73.15	+20 8 5.9	-2.86601
4	64	I. U.	8	52	8.41	2.18172	72.37	+17 30 37.3	-2.92301
4	64	I. L.	9	22	14.80	2.17283	71.56	+14 34 8.4	-2.96577
5	65	I. U.	9	51	45.39	2.16444	70.83	+11 22 8.1	-2.99676
5	65	I. L.	10	20	44.24	2.15731	70.20	+ 7 58 23.2	-3.01769
6	66	I. U.	10	49	17.44	2.15180	69.71	+ 4 26 49.7	-3.02968
7	66	II. L.	11	19	51.36	2.14826	69.40	+ 0 51 25.1	-3.03341
7	67	II. U.	11	47	56.30	2.14687	69.29	- 2 43 53.0	-3.02927
8	68	II. L.	12	15	59.91	2.14759	69.38	- 6 15 14.4	-3.01741
8	68	II. U.	12	44	10.03	2.15014	69.62	- 9 39 0.3	-2.99734
9	69	II. L.	13	12	33.35	2.15427	69.97	-12 51 45.2	-2.96886
9	69	II. U.	13	41	15.16	2.15936	70.44	-15 50 21.2	-2.93082
10	70	II. L.	14	10	18.64	2.16504	70.93	-18 31 58.0	-2.88161
10	70	II. U.	14	39	44.67	2.17047	71.42	-20 54 10.3	-2.81878
11	71	II. L.	15	9	31.30	2.17502	71.85	-22 54 57.7	-2.73843
11	71	II. U.	15	39	33.84	2.17808	72.15	-24 32 47.2	-2.63305
12	72	II. L.	16	9	44.93	2.17906	72.26	-25 46 38.5	-2.48898
12	72	II. U.	16	39	55.25	2.17765	72.16	-26 36 4.5	-2.26912
13	73	II. L.	17	9	54.30	2.17363	71.84	-27 1 6.6	-1.81411
13	73	II. U.	17	39	31.37	2.16699	71.28	-27 2 24.3	+1.70978
14	74	II. L.	18	8	36.63	2.15800	70.47	-26 40 59.9	+2.20847
14	74	II. U.	18	37	2.11	2.14703	69.55	-25 58 17.1	+2.42155
15	75	II. L.	19	4	41.99	2.13453	68.54	-24 55 56.2	+2.55368
15	75	II. U.	19	31	32.91	2.12113	67.44	-23 35 45.1	+2.64578
16	76	II. L.	19	57	33.99	2.10735	66.30	-21 59 35.0	+2.71404
16	76	II. U.	20	22	46.48	2.09374	65.20	-20 9 16.7	+2.76629
17	77	II. L.	20	47	13.36	2.08081	64.17	-18 6 37.9	+2.80704
17	77	II. U.	20	10	58.95	2.06904	63.24	-15 53 19.3	+2.83917
18	78	II. L.	21	34	8.53	2.05866	62.44	-13 30 57.1	+2.86446

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ' "	
Mar. 18	78	II. U.	21 54 48.12	2.05011	61.77	-11 1 2.5	+2.88418
19	79	II. L.	22 19 4.13	2.04336	61.35	- 8 25 1.9	+2.89924
19	79	II. U.	22 41 3.32	2.03910	60.91	- 5 44 18.5	+2.91015
20	80	II. L.	23 2 52.61	2.03695	60.74	- 3 0 13.5	+2.91726
20	80	II. U.	23 24 39.01	2.03723	60.72	- 0 14 7.5	+2.92077
21	81	II. L.	23 46 29.70	2.03989	60.88	+ 2 32 37.3	+2.92069
22	82	I. U.	0 6 29.40	2.04481	61.24	+ 5 18 37.5	+2.91682
22	82	I. L.	0 28 49.15	2.05196	61.77	+ 8 2 24.5	+2.90892
23	83	I. U.	0 51 34.34	2.06127	62.46	+10 42 26.0	+2.89651
23	83	I. L.	1 14 51.91	2.07247	63.31	+18 17 2.0	+2.87883
24	84	I. U.	1 38 48.48	2.08525	64.30	+15 44 26.6	+2.85487
24	84	I. L.	2 3 30.11	2.09934	65.41	+18 2 45.9	+2.82315
25	85	I. U.	2 29 1.94	2.11414	66.60	+20 9 57.2	+2.78146
25	85	I. L.	2 55 27.71	2.12924	67.84	+22 3 50.6	+2.72634
26	86	I. U.	3 22 49.28	2.14404	69.08	+23 42 12.2	+2.65240
26	86	I. L.	3 51 6.13	2.15785	70.26	+25 2 45.9	+2.54978
27	87	I. U.	4 20 14.93	2.16997	71.34	+26 3 20.3	+2.39672
27	87	I. L.	4 50 9.33	2.17987	72.22	+26 41 54.4	+2.12991
28	88	I. U.	5 20 39.99	2.18710	72.86	+26 55 46.0	+1.10890
28	88	I. L.	5 51 35.28	2.19123	73.24	+26 46 40.5	-2.05847
29	89	I. U.	6 22 42.30	2.19232	73.35	+26 10 55.7	-2.28619
29	89	I. L.	6 53 48.09	2.19050	73.20	+25 9 27.7	-2.56929
30	90	I. U.	7 24 41.01	2.18617	72.83	+23 42 51.0	-2.69393
30	90	I. L.	7 55 11.84	2.18001	72.28	+21 52 16.5	-2.78525
31	91	I. U.	8 25 14.50	2.17272	71.64	+19 39 27.2	-2.85508
31	91	I. L.	8 54 45.77	2.16498	70.95	+17 6 34.7	-2.90868
Apr. 1	92	I. U.	9 23 46.14	2.15752	70.29	+14 16 11.3	-2.94989
1	92	I. L.	9 52 18.64	2.15100	69.71	+11 11 7.5	-2.96080
2	93	I. U.	10 20 28.45	2.14607	69.25	+ 7 54 29.2	-3.00292
2	93	I. L.	10 48 22.29	2.14304	68.96	+ 4 29 32.9	-3.01695
3	94	I. U.	11 16 8.01	2.14211	68.86	+ 0 59 45.0	-3.02335
3	94	I. L.	11 43 53.98	2.14333	68.93	- 2 81 21.2	-3.02232
4	95	I. U.	12 11 48.51	2.14669	69.18	- 6 0 8.1	-3.01369
4	96	I. L.	12 39 59.41	2.15189	69.62	- 9 22 56.0	-2.99690
5	96	II. U.	13 10 53.82	2.15854	70.18	-12 36 8.5	-2.97134
6	97	II. L.	13 39 57.39	2.16601	70.81	-15 36 16.3	-2.93564
6	97	II. U.	14 9 32.10	2.17377	71.48	-18 20 2.1	-2.88799
7	98	II. L.	14 39 37.72	2.18096	72.10	-20 44 28.5	-2.82568
7	98	II. U.	15 10 10.91	2.18682	72.64	-22 47 3.9	-2.74408
8	99	II. L.	15 41 4.81	2.19058	73.03	-24 25 49.4	-2.63513
8	99	II. U.	16 12 9.50	2.19173	73.19	-25 39 25.3	-2.48269
9	100	II. L.	16 43 12.71	2.18988	73.04	-26 27 16.6	-2.24287
9	100	II. U.	17 14 1.29	2.18489	72.84	-26 49 28.2	-1.67934
10	101	II. L.	17 44 22.20	2.17684	71.99	-26 46 47.0	+1.86806
10	101	II. U.	18 14 4.04	2.16610	71.11	-26 20 33.6	+2.27229
11	102	II. L.	18 42 57.92	2.15323	70.04	-25 32 33.6	+2.46424
11	102	II. U.	19 10 58.09	2.13887	68.86	-24 24 47.1	+2.58518
12	103	II. L.	19 38 1.79	2.12369	67.63	-22 59 22.3	+2.66992
12	103	II. U.	20 4 9.39	2.10833	66.39	-21 18 26.0	+2.73245
13	104	II. L.	20 29 23.14	2.09353	65.23	-19 23 59.3	+2.78011

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Moon Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascen- sion for 1 hour of Longitude.	Sidereal Time of Semi- diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	a.		h. m. s.		s.	° ' "	
Apr. 13	104	II. v.	20 53 47.74	2.07972	64.15	-17 17 56.6	+2.81707
14	105	II. L.	21 17 28.57	2.06733	63.19	-15 2 1.9	+2.84603
14	105	II. v.	21 40 32.40	2.05679	62.38	-12 37 50.2	+2.86875
15	106	II. L.	22 3 6.23	2.04836	61.72	-10 6 48.9	+2.88643
15	106	II. v.	22 25 17.51	2.04226	61.24	- 7 30 19.3	+2.89982
16	107	II. L.	22 47 13.81	2.03862	60.94	- 4 49 38.6	+2.90944
16	107	II. v.	23 9 2.80	2.03751	60.61	- 2 6 1.6	+2.91563
17	108	II. L.	23 30 52.16	2.03378	60.26	+ 0 39 16.2	+2.91832
17	108	II. v.	23 52 49.68	2.04274	61.12	+ 3 24 57.7	+2.91756
18	109	II. L.	0 15 2.86	2.04906	61.55	+ 6 9 39.7	+2.91813
18	110	II. v.	0 37 39.14	2.05775	62.15	+ 8 51 54.5	+2.90449
19	110	II. L.	1 0 46.34	2.06849	62.94	+11 30 8.1	+2.89106
19	111	II. v.	1 24 31.47	2.08099	63.87	+14 2 35.7	+2.87188
20	111	II. L.	1 49 0.48	2.09486	64.92	+16 27 19.8	+2.84556
21	112	I. v.	2 12 6.98	2.10972	66.07	+18 42 15.5	+2.81049
21	112	I. L.	2 38 16.97	2.12500	67.39	+20 45 10.2	+2.76384
22	113	I. v.	3 5 22.92	2.14004	68.54	+22 33 42.9	+2.70136
22	113	I. L.	3 33 24.75	2.15415	69.73	+24 5 30.2	+2.61606
23	114	I. v.	4 2 19.59	2.16664	70.80	+25 18 13.4	+2.49423
23	114	I. L.	4 32 0.78	2.17690	71.72	+26 9 43.2	+2.30380
24	115	I. v.	5 2 19.44	2.18438	72.40	+26 38 11.8	+1.91561
24	115	I. L.	5 33 3.51	2.18865	72.81	+26 42 18.4	-1.62190
25	116	I. v.	6 3 59.42	2.18966	72.93	+26 21 18.1	-2.26111
25	116	I. L.	6 34 53.47	2.18755	72.78	+25 35 4.5	-2.46773
26	117	I. v.	7 5 33.02	2.18273	72.40	+24 24 11.1	-2.61759
26	117	I. L.	7 35 47.97	2.17577	71.81	+22 49 46.1	-2.72301
27	118	I. v.	8 5 31.12	2.16741	71.12	+20 53 28.2	-2.80129
27	118	I. L.	8 34 38.88	2.15842	70.40	+18 37 19.0	-2.86129
28	119	I. v.	9 3 11.03	2.14962	69.63	+16 3 36.7	-2.90762
28	119	I. L.	9 31 10.17	2.14170	68.96	+13 14 49.2	-2.94315
29	120	I. v.	9 56 41.29	2.13523	68.40	+10 13 34.8	-2.96977
29	120	I. L.	10 25 51.23	2.13069	68.01	+ 7 2 35.7	-2.98884
30	121	I. v.	10 52 48.04	2.12843	67.79	+ 3 44 40.0	-3.00095
30	121	I. L.	11 19 40.55	2.12862	67.76	+ 0 22 41.5	-3.00645
May 1	122	I. v.	11 46 37.94	2.13124	67.95	- 3 0 19.9	-3.00540
1	123	I. L.	12 13 49.25	2.13621	68.33	- 6 21 17.9	-2.99752
2	123	I. v.	12 41 23.05	2.14327	68.87	- 9 87 0.0	-2.98218
2	124	I. L.	13 9 26.76	2.15183	69.55	-12 44 8.3	-2.95842
3	124	I. v.	13 38 6.22	2.16149	70.33	-15 39 24.1	-2.92488
4	125	I. L.	14 7 24.86	2.17134	71.16	-18 19 31.2	-2.87935
4	125	I. v.	14 37 23.22	2.18064	71.96	-20 41 23.3	-2.81878
5	126	II. L.	15 10 23.41	2.18854	72.64	-22 42 12.6	-2.73824
5	126	II. v.	15 41 28.80	2.19427	73.13	-24 19 39.6	-2.62909
6	127	II. L.	16 12 52.57	2.19706	73.41	-25 32 1.2	-2.47298
6	127	II. v.	16 44 20.90	2.19629	73.37	-26 18 20.7	-2.21998
7	128	II. L.	17 15 38.57	2.19201	73.63	-26 38 29.4	-1.55727
7	128	II. v.	17 46 30.32	2.18424	72.39	-26 33 6.4	+1.94792
8	129	II. L.	18 16 42.66	2.17336	71.50	-26 3 31.4	+2.31258
8	129	II. v.	18 46 4.93	2.15996	70.42	-25 11 36.4	+2.49391
8	130	II. L.	19 14 30.08	2.14492	69.20	-23 59 33.1	+2.80934

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ′ ″	
May 9	130	II. U.	19 41 54.74	2.12875	67.90	-22 29 42.7	+2.69000
10	131	II. L.	20 8 18.81	2.11241	66.62	-20 44 26.0	+2.74912
10	131	II. U.	20 33 44.96	2.09656	65.39	-18 45 57.4	+2.79365
11	132	II. L.	20 58 18.09	2.08175	64.27	-16 36 20.8	+2.82776
11	132	II. U.	21 22 4.38	2.06856	63.28	-14 17 28.5	+2.85410
12	133	II. L.	21 45 11.00	2.05740	62.43	-11 51 0.5	+2.87435
12	133	II. U.	22 7 45.73	2.04840	61.76	-9 18 26.6	+2.88973
13	134	II. L.	22 29 56.75	2.04199	61.28	-6 41 7.5	+2.90111
13	134	II. U.	22 51 52.28	2.03830	60.99	-4 0 18.2	+2.90895
14	135	II. L.	23 13 40.71	2.03735	60.89	-1 17 9.7	+2.91361
14	135	II. U.	23 35 30.38	2.03910	60.99	+ 1 27 7.7	+2.91506
15	136	II. L.	23 57 29.65	2.04364	61.28	+ 4 11 21.6	+2.91327
15	137	II. U.	0 19 46.90	2.05085	61.77	+ 6 54 15.4	+2.90784
16	137	II. L.	0 42 30.33	2.06047	62.45	+ 9 34 25.6	+2.89842
16	138	II. U.	1 5 47.97	2.07232	63.29	+12 10 19.2	+2.88418
17	138	II. L.	1 29 47.53	2.08604	64.29	+14 40 11.9	+2.86399
17	139	II. U.	1 54 36.02	2.10126	65.44	+17 2 7.0	+2.83638
18	139	II. L.	2 20 19.35	2.11737	66.69	+19 13 53.6	+2.79912
18	140	II. U.	2 47 1.75	2.13376	67.98	+21 13 10.7	+2.74895
19	140	II. L.	3 14 45.22	2.14970	69.27	+23 57 26.1	+2.68060
19	141	II. U.	3 43 28.80	2.16447	70.50	+24 24 5.1	+2.56542
20	141	I. L.	4 10 44.73	2.17716	71.59	+25 30 36.9	+2.44454
21	142	I. U.	4 41 9.31	2.18713	72.47	+26 14 45.1	+2.30777
21	142	I. L.	5 12 9.70	2.19371	73.07	+26 34 38.6	+1.56253
22	143	I. U.	5 43 31.43	2.19665	73.35	+26 29 3.6	-1.96703
22	143	I. L.	6 14 58.49	2.19587	73.32	+25 57 29.3	-2.24780
23	144	I. U.	6 46 15.33	2.19173	72.98	+25 0 13.3	-2.54291
23	144	I. L.	7 17 8.34	2.18469	72.40	+23 38 16.4	-2.67104
24	145	I. U.	7 47 37.07	2.17545	71.66	+21 53 20.1	-2.76245
24	145	I. L.	8 17 5.03	2.16501	70.80	+19 47 33.9	-2.85051
25	146	I. U.	8 45 59.68	2.15390	69.91	+17 23 27.1	-2.88197
25	146	I. L.	9 14 11.98	2.14358	69.06	+14 43 40.0	-2.92095
26	147	I. U.	9 41 45.96	2.13440	68.31	+11 50 57.3	-2.94998
26	147	I. L.	10 8 47.85	2.12694	67.71	+ 8 48 4.0	-2.97094
27	148	I. U.	10 35 25.50	2.12159	67.28	+ 5 37 43.0	-2.98490
27	148	I. L.	11 1 47.85	2.11880	67.05	+ 2 22 36.1	-2.99257
28	149	I. U.	11 28 4.41	2.11870	67.02	- 0 54 36.7	-2.99420
28	149	I. L.	11 54 24.86	2.12120	67.30	- 4 11 14.5	-2.98997
29	150	I. U.	12 20 58.78	2.12623	67.57	- 7 24 34.0	-2.97944
29	151	I. L.	12 47 55.21	2.13341	68.18	-10 31 49.2	-2.96207
30	151	I. U.	13 15 21.87	2.14242	68.83	-13 30 9.1	-2.93678
30	152	I. L.	13 43 25.25	2.15259	69.63	-16 16 40.4	-2.90208
31	152	I. U.	14 12 9.65	2.16319	70.51	-18 48 28.7	-2.85583
31	153	I. L.	14 41 36.34	2.17345	71.33	-21 2 44.7	-2.79446
June 1	153	I. U.	15 11 43.08	2.18238	72.07	-22 56 50.4	-2.71280
1	154	I. L.	15 42 23.76	2.18929	72.65	-24 28 28.7	-2.60079
2	154	I. U.	16 13 28.45	2.19337	73.00	-25 35 52.5	-2.43796
2	155	II. L.	16 47 10.07	2.19399	73.07	-26 17 54.8	-2.16373
3	155	II. U.	17 18 20.68	2.19100	72.83	-26 34 14.3	-1.84699
4	156	II. L.	17 49 10.53	2.18432	72.34	-26 25 17.1	+2.02702

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ' "	
June 4	156	II. U.	18 19 25.39	2.17438	71.41	-25 52 11.8	+2.34838
5	157	II. L.	18 48 53.45	2.16173	70.37	-24 56 43.3	+2.51825
5	157	II. U.	19 17 26.55	2.14712	69.19	-23 41 0.6	+2.62865
6	158	II. L.	19 45 0.18	2.13111	67.93	-22 7 26.0	+2.70623
6	158	II. U.	20 11 33.40	2.11491	66.66	-20 18 24.9	+2.76322
7	159	II. L.	20 37 8.18	2.09892	65.42	-18 16 18.5	+2.80587
7	159	II. U.	21 1 48.86	2.08382	64.30	-16 3 18.7	+2.83809
8	160	II. L.	21 25 41.34	2.07026	63.31	-13 41 24.7	+2.86251
8	160	II. U.	21 48 52.63	2.05862	62.45	-11 12 24.2	+2.88086
9	161	II. L.	22 11 30.50	2.04918	61.78	- 8 37 52.3	+2.89433
9	161	II. U.	22 33 43.12	2.04234	61.28	- 6 59 13.9	+2.90378
10	162	II. L.	22 55 38.91	2.03814	60.99	- 3 17 46.5	+2.90970
10	162	II. U.	23 17 26.37	2.03683	60.90	- 0 34 41.6	+2.91251
11	163	II. L.	23 39 14.07	2.03834	60.99	+ 2 8 52.2	+2.91326
11	164	II. U.	0 1 10.70	2.04274	61.30	+ 4 51 45.5	+2.90893
12	164	II. L.	0 23 24.96	2.04984	61.80	+ 7 32 46.1	+2.90211
12	165	II. U.	0 46 5.48	2.05960	62.49	+10 10 36.0	+2.89147
13	165	II. L.	1 9 20.83	2.07173	63.37	+12 45 48.2	+2.87613
13	166	II. U.	1 33 19.29	2.08593	64.42	+15 10 44.8	+2.85493
14	166	II. L.	1 58 8.48	2.10175	65.61	+17 29 32.8	+2.82624
14	167	II. U.	2 23 55.13	2.11867	66.92	+19 28 6.9	+2.78777
15	167	II. L.	2 50 44.37	2.13612	68.29	+21 34 6.2	+2.73575
15	168	II. U.	3 18 38.92	2.15314	69.68	+23 14 56.9	+2.66466
16	168	II. L.	3 47 38.42	2.16900	70.99	+24 37 58.3	+2.56364
16	169	II. U.	4 17 38.73	2.18290	72.16	+25 40 30.7	+2.41037
17	169	II. L.	4 48 31.38	2.19390	73.11	+26 20 5.8	+2.13646
17	170	II. U.	5 20 3.96	2.20129	73.74	+26 34 41.0	+0.89265
18	170	II. L.	5 52 0.61	2.20477	74.04	+26 22 61.7	-2.10189
19	171	I. U.	6 21 35.86	2.20428	74.00	+25 44 3.1	-2.41756
19	171	I. L.	6 53 29.20	2.20006	73.62	+24 38 33.2	-2.59385
20	172	I. U.	7 24 57.22	2.19257	72.99	+23 7 34.1	-2.71242
20	172	I. L.	7 55 48.23	2.18278	72.18	+21 13 3.2	-2.79749
21	173	I. U.	8 25 54.85	2.17152	71.24	+18 57 32.1	-2.86043
21	173	I. L.	8 55 14.02	2.15975	70.28	+16 23 56.5	-2.90740
22	174	I. U.	9 23 46.68	2.14841	69.35	+13 35 23.8	-2.94193
22	174	I. L.	9 51 36.88	2.13821	68.55	+10 35 3.3	-2.96659
23	175	I. U.	10 18 51.19	2.12975	67.90	+ 7 26 2.6	-2.98300
23	175	I. L.	10 45 37.73	2.12355	67.41	+ 4 11 23.6	-2.99239
24	176	I. U.	11 12 5.62	2.11992	67.12	+ 0 53 56.6	-2.99537
24	176	I. L.	11 38 24.50	2.11886	67.05	- 2 23 28.7	-2.99235
25	177	I. U.	12 4 44.13	2.12047	67.18	- 5 38 12.1	-2.98338
25	178	I. L.	12 31 13.96	2.12460	67.50	- 8 47 36.8	-2.96823
26	178	I. U.	12 58 2.75	2.13095	68.00	-11 49 7.9	-2.94626
26	179	I. L.	13 25 13.28	2.13893	68.63	-14 40 11.8	-2.91639
27	179	I. U.	13 53 6.65	2.14808	69.37	-17 18 15.7	-2.87717
27	180	I. L.	14 21 31.93	2.15779	70.15	-19 40 49.5	-2.82612
28	180	I. U.	14 50 35.40	2.16726	70.91	-21 45 28.9	-2.75930
28	181	I. L.	15 20 15.16	2.17551	71.59	-23 30 0.1	-2.67104
29	181	I. U.	15 50 25.80	2.18187	72.11	-24 52 27.7	-2.54957
29	182	I. L.	16 20 58.40	2.18566	72.41	-25 51 22.2	-2.36901

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ' "	
June 30	182	I. v.	16 51 41.05	2.18633	72.46	-26 25 47.8	-2.04210
30	183	I. L.	17 22 20.08	2.18364	72.20	-26 35 27.1	+1.12352
July 1	183	I. v.	17 52 41.25	2.17762	71.68	-26 20 44.2	+2.12355
1	184	I. L.	18 22 31.18	2.16847	70.91	-25 42 42.1	+2.39101
2	184	II. v.	18 53 58.67	2.15673	69.91	-24 42 55.5	+2.54407
3	185	II. L.	19 22 13.77	2.14301	68.78	-23 23 24.7	+2.64658
3	185	II. v.	19 49 33.64	2.12808	67.55	-21 46 33.0	+2.72020
4	186	II. L.	20 15 56.99	2.11264	66.24	-19 54 10.6	+2.77457
4	186	II. v.	20 41 25.14	2.09740	65.18	-17 49 5.6	+2.81552
5	187	II. L.	21 6 1.73	2.08290	64.10	-15 33 18.6	+2.84641
5	187	II. v.	21 29 51.99	2.06978	63.12	-13 8 52.1	+2.86960
6	188	II. L.	21 53 2.36	2.05843	62.31	-10 37 37.7	+2.88670
6	188	II. v.	22 15 39.95	2.04914	61.67	-8 1 14.7	+2.89887
7	189	II. L.	22 37 52.42	2.04226	61.18	-5 21 12.9	+2.90681
7	189	II. v.	22 59 47.71	2.03786	60.89	-2 38 54.7	+2.91123
8	190	II. L.	23 21 33.96	2.03639	60.80	+0 4 24.1	+2.91233
8	190	II. v.	23 43 19.45	2.03755	60.91	+2 47 33.0	+2.91019
9	191	II. L.	0 5 12.48	2.04123	61.19	+5 29 22.6	+2.90511
9	192	II. v.	0 27 21.56	2.04789	61.66	+8 8 39.3	+2.89651
10	192	II. L.	0 49 55.01	2.05706	62.36	+10 44 8.2	+2.88406
10	193	II. v.	1 13 1.40	2.06871	63.22	+13 14 27.7	+2.86703
11	193	II. L.	1 36 48.95	2.08243	64.25	+15 38 6.1	+2.84431
11	194	II. v.	2 1 25.42	2.09792	65.43	+17 53 19.8	+2.81424
12	194	II. L.	2 26 57.77	2.11458	66.72	+19 58 12.1	+2.77441
12	195	II. v.	2 53 31.65	2.13188	68.10	+21 50 31.7	+2.72129
13	195	II. L.	3 21 10.56	2.14919	69.49	+23 27 54.7	+2.64861
13	196	II. v.	3 49 55.33	2.16563	70.83	+24 47 46.9	+2.54553
14	196	II. L.	4 19 43.21	2.18027	72.07	+25 47 32.0	+2.38759
14	197	II. v.	4 50 27.28	2.19243	73.09	+26 24 39.8	+2.09746
15	197	II. L.	5 21 56.63	2.20126	73.84	+26 36 59.7	-0.54407
15	198	II. v.	5 53 56.66	2.20637	74.26	+26 22 53.8	-0.14073
16	198	II. L.	6 26 10.71	2.20753	74.36	+25 41 28.9	-2.44018
16	199	II. v.	6 58 21.43	2.20496	74.10	+24 32 47.3	-2.61318
17	199	II. L.	7 30 13.26	2.19910	73.58	+22 57 43.8	-2.73113
18	200	I. v.	7 59 7.73	2.19064	72.86	+20 58 7.9	-2.81652
18	200	I. L.	8 29 49.58	2.18050	71.99	+18 36 30.9	-2.87978
19	201	I. v.	8 59 47.35	2.16964	71.05	+15 55 56.5	-2.92574
19	201	I. L.	9 29 0.64	2.15891	70.16	+12 59 46.6	-2.96089
20	202	I. v.	9 57 32.52	2.14916	69.37	+9 51 32.9	-2.98465
20	202	I. L.	10 25 28.83	2.14088	68.72	+6 34 49.3	-2.99959
21	203	I. v.	10 52 56.96	2.13466	68.23	+3 13 4.4	-3.00676
21	203	I. L.	11 20 5.59	2.13072	67.94	-0 10 22.2	-3.00691
22	204	I. v.	11 47 3.83	2.12931	67.85	-3 32 19.9	-3.00045
22	205	I. L.	12 14 0.86	2.13030	67.94	-6 49 49.3	-2.98743
23	205	I. v.	12 41 5.51	2.13351	68.23	-10 0 0.9	-2.96759
23	206	I. L.	13 8 25.81	2.13868	68.67	-13 0 12.8	-2.94032
24	206	I. v.	13 36 8.57	2.14505	69.22	-15 47 51.9	-2.90463
24	207	I. L.	14 4 18.85	2.15293	69.85	-18 20 33.9	-2.85874
25	207	I. v.	14 32 59.56	2.16074	70.49	-20 36 2.6	-2.80003
25	208	I. L.	15 2 10.96	2.16811	71.10	-22 32 14.5	-2.72405

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ' "	
July 26	206	I. U.	15 31 50.21	2.17429	71.61	-24 7 21.2	-2.62353
26	209	I. L.	16 1 51.49	2.17852	71.96	-25 19 55.2	-2.48347
27	209	I. U.	16 32 6.02	2.18035	72.09	-26 8 56.1	-2.26762
27	210	I. L.	17 2 22.93	2.17935	71.97	-26 33 53.2	-1.80895
28	210	I. U.	17 38 30.02	2.17539	71.60	-26 34 50.8	+1.73528
28	211	I. L.	18 2 15.13	2.16853	71.00	-26 12 26.4	+2.22737
29	211	I. U.	18 31 27.34	2.15900	70.17	-25 27 49.5	+2.44105
29	212	I. L.	18 59 57.72	2.14743	69.17	-24 22 36.1	+2.57363
30	212	I. U.	19 27 40.05	2.13428	68.07	-22 58 38.6	+2.66584
30	213	I. L.	19 54 30.87	2.12011	66.91	-21 18 0.7	+2.73336
31	213	I. U.	20 20 29.66	2.10575	65.76	-19 22 53.5	+2.78411
Aug. 1	214	I. L.	20 45 37.76	2.09160	64.67	-17 15 24.6	+2.82275
1	214	II. U.	21 12 6.16	2.07828	63.67	-14 57 37.5	+2.85207
2	215	II. L.	21 35 43.11	2.06629	62.77	-12 31 29.8	+2.87417
2	215	II. U.	21 58 44.01	2.05591	62.08	-9 58 49.6	+2.89035
3	216	II. L.	22 21 15.27	2.04754	61.41	-7 21 17.3	+2.90162
3	216	II. U.	22 43 24.05	2.04135	60.98	-4 40 34.3	+2.90868
4	217	II. L.	23 5 17.53	2.03755	60.72	-1 57 36.2	+2.91199
4	217	II. U.	23 27 3.12	2.03619	60.65	+0 45 46.9	+2.91184
5	218	II. L.	23 46 48.49	2.03735	60.77	+3 28 29.0	+2.90832
5	219	II. U.	0 10 41.25	2.04112	61.07	+6 9 15.5	+2.90145
6	219	II. L.	0 32 49.11	2.04731	61.55	+8 46 52.1	+2.90896
6	220	II. U.	0 55 19.84	2.05587	62.20	+11 20 0.7	+2.87643
7	220	II. L.	1 18 21.09	2.06666	63.03	+13 47 20.2	+2.85709
7	221	II. U.	1 42 0.29	2.07943	64.01	+16 7 21.3	+2.83198
8	221	II. L.	2 6 24.64	2.09374	65.12	+18 18 26.6	+2.79942
8	222	II. U.	2 31 40.30	2.10924	66.33	+20 18 47.9	+2.75717
9	222	II. L.	2 57 52.52	2.12542	67.63	+22 6 26.8	+2.70152
9	223	II. U.	3 25 4.61	2.14161	68.94	+23 39 13.8	+2.62624
10	223	II. L.	3 58 17.72	2.15715	70.23	+24 54 51.7	+2.52026
10	224	II. U.	4 22 29.88	2.17131	71.41	+25 51 0.5	+2.35809
11	224	II. L.	4 52 35.82	2.18330	72.43	+26 25 24.2	+2.05717
11	225	II. U.	5 23 26.71	2.19251	73.21	+26 36 1.0	-0.97128
12	225	II. L.	5 54 50.63	2.19863	73.71	+26 21 13.8	-2.14421
12	226	II. U.	6 26 33.67	2.20134	73.92	+25 40 1.7	-2.43590
13	226	II. L.	6 58 20.98	2.20063	73.85	+24 32 7.4	-2.60837
13	227	II. U.	7 29 58.66	2.19700	73.50	+22 58 2.9	-2.72744
14	227	II. L.	8 1 15.04	2.19086	72.93	+20 59 8.7	-2.81526
14	228	II. U.	8 32 1.81	2.18315	72.24	+18 37 29.7	-2.88127
15	228	II. L.	9 2 14.26	2.17476	71.49	+15 55 47.6	-2.93111
15	229	II. U.	9 31 51.41	2.16631	70.78	+12 57 13.7	-2.96812
16	229	I. L.	9 58 35.09	2.15851	70.13	+9 45 18.8	-2.99423
17	230	I. U.	10 27 11.57	2.15207	69.59	+6 23 44.6	-3.01100
17	230	I. L.	10 55 25.74	2.14740	69.21	+2 56 17.8	-3.01932
18	231	I. U.	11 23 25.13	2.14470	69.01	-0 33 16.1	-3.01990
18	231	I. L.	11 51 17.96	2.14417	68.99	-4 1 16.7	-3.01294
19	232	I. U.	12 19 12.45	2.14573	69.12	-7 24 12.9	-2.99841
19	233	I. L.	12 47 16.28	2.14913	69.43	-10 38 44.4	-2.97603
20	233	I. U.	13 15 36.16	2.15409	69.88	-13 41 44.1	-2.94514
20	234	I. L.	13 44 17.46	2.16002	70.40	-16 30 19.1	-2.90438

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	d.		h. m. s.		s.	° ' "	
Aug. 21	234	I. v.	14 18 23.30	2.16630	70.96	-19 1 53.1	-2.85208
21	235	I. L.	14 42 54.70	2.17240	71.50	-21 14 8.8	-2.78501
22	235	I. v.	15 12 49.75	2.17760	71.96	-23 5 9.2	-2.69822
22	236	I. L.	15 43 3.61	2.18124	72.28	-24 33 22.6	-2.58222
23	236	I. v.	16 13 28.75	2.18273	72.41	-25 37 46.3	-2.41719
23	237	I. L.	16 43 55.50	2.18170	72.31	-26 17 48.6	-2.14323
24	237	I. v.	17 14 12.75	2.17797	71.97	-26 33 30.6	-1.26316
24	238	I. L.	17 44 9.20	2.17149	71.40	-26 25 26.5	+1.99233
25	238	I. v.	18 13 34.39	2.16244	70.92	-25 54 39.9	+2.31896
25	239	I. L.	18 42 19.61	2.15131	69.66	-25 2 37.5	+2.49219
26	239	I. v.	19 10 18.52	2.13878	68.60	-23 51 6.1	+2.60566
26	240	I. L.	19 37 27.43	2.12519	67.45	-22 21 59.3	+2.68671
27	240	I. v.	20 3 45.07	2.11118	66.29	-20 37 21.5	+2.74710
27	241	I. L.	20 29 12.53	2.09723	65.17	-18 39 14.0	+2.79311
28	241	I. v.	20 53 52.63	2.08393	64.12	-16 29 35.8	+2.82848
28	242	I. L.	21 17 49.63	2.07170	63.17	-14 10 20.8	+2.85565
29	242	I. v.	21 41 8.80	2.06092	62.36	-11 43 16.3	+2.87629
29	243	I. L.	22 3 56.19	2.05192	61.68	-9 10 3.0	+2.89142
30	243	II. v.	22 28 20.43	2.04485	61.15	-6 32 16.0	+2.90191
31	244	II. L.	22 50 22.94	2.03993	60.78	-3 51 24.5	+2.90815
Sept. 31	244	II. v.	23 19 13.96	2.03723	60.61	-1 8 53.3	+2.91085
1	245	II. L.	23 34 0.43	2.03695	60.59	+1 33 56.1	+2.90985
1	245	II. v.	23 55 49.30	2.03890	60.74	+4 15 43.5	+2.90537
2	246	II. L.	0 17 47.61	2.04317	61.05	+6 55 9.7	+2.89716
2	247	II. v.	0 40 2.35	2.04965	61.55	+9 30 54.9	+2.88492
3	247	II. L.	1 2 40.32	2.05813	62.90	+12 1 35.8	+2.86827
3	248	II. v.	1 25 48.18	2.06849	63.00	+14 25 46.5	+2.84639
4	248	II. L.	1 49 32.25	2.08041	63.94	+16 41 55.2	+2.81821
4	249	II. v.	2 13 58.32	2.09367	64.99	+18 48 24.2	+2.78202
5	249	II. L.	2 39 11.24	2.10772	66.10	+20 43 28.9	+2.73545
5	250	II. v.	3 5 14.76	2.12212	67.97	+22 25 18.1	+2.67461
6	250	II. L.	3 32 10.97	2.13637	68.45	+23 51 55.1	+2.59298
6	251	II. v.	3 59 59.74	2.14986	69.58	+25 1 20.0	+2.47834
7	251	II. L.	4 28 38.61	2.16197	70.60	+25 51 34.6	+2.30090
7	252	II. v.	4 58 2.42	2.17217	71.48	+26 20 46.6	+1.95679
8	252	II. L.	5 28 3.35	2.18001	72.15	+26 27 18.4	-1.42012
8	253	II. v.	5 58 31.56	2.18520	72.59	+26 9 52.9	-2.17182
9	253	II. L.	6 29 15.76	2.18760	72.79	+25 27 41.9	-2.43672
9	254	II. v.	7 0 4.42	2.18735	72.76	+24 20 30.7	-2.59997
10	254	II. L.	7 30 46.93	2.18475	72.50	+22 48 41.6	-2.71549
10	255	II. v.	8 1 14.59	2.18038	72.09	+20 53 14.5	-2.80198
11	255	II. L.	8 31 21.27	2.17487	71.59	+18 35 45.4	-2.86873
11	256	II. v.	9 1 3.75	2.16879	71.04	+15 58 22.1	-2.92037
12	256	II. L.	9 30 21.77	2.16298	70.50	+13 3 41.4	-2.95984
12	257	II. v.	9 59 17.68	2.15794	70.04	+9 54 48.6	-2.98905
13	257	II. L.	10 27 56.03	2.15421	69.71	+6 34 47.9	-3.00911
13	258	II. v.	10 56 22.83	2.15214	69.52	+3 7 29.1	-3.02072
14	258	I. L.	11 22 26.30	2.15201	69.50	-0 23 27.9	-3.02426
15	259	I. v.	11 50 51.72	2.15381	69.65	-3 54 12.1	-3.01978
15	260	I. L.	12 19 27.61	2.15746	69.96	-7 20 50.9	-3.00713

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	d		h. m. s.		s.	° ' "	
Sept. 16	260	I. U.	12 48 20.94	2.16262	70.41	-10 39 34.3	-2.98567
16	261	I. L.	13 17 37.35	2.16894	70.98	-13 46 41.8	-2.95460
17	261	I. U.	13 47 20.73	2.17580	71.60	-16 38 45.2	-2.91234
17	262	I. L.	14 17 32.54	2.18253	72.18	-19 12 37.5	-2.85681
18	262	I. U.	14 48 11.18	2.18837	72.71	-21 25 35.2	-2.78436
18	263	I. L.	15 19 11.99	2.19271	73.14	-23 15 27.4	-2.68897
19	263	I. U.	15 50 27.10	2.19479	73.37	-24 40 38.9	-2.55919
19	264	I. L.	16 21 46.12	2.19421	73.35	-25 40 15.3	-2.36820
20	264	I. U.	16 52 56.90	2.19068	73.07	-26 14 4.5	-2.02164
20	265	I. L.	17 23 46.77	2.18421	72.52	-26 22 33.8	+1.28353
21	265	I. U.	17 54 3.93	2.17499	71.72	-26 6 47.8	+2.13691
21	266	I. L.	18 23 38.37	2.16343	70.74	-25 28 18.8	+2.39148
22	266	I. U.	18 52 22.73	2.15070	69.62	-24 29 0.1	+2.53822
22	267	I. L.	19 20 12.68	2.13558	68.40	-23 10 56.2	+2.63702
23	267	I. U.	19 47 6.64	2.12047	67.16	-21 36 16.8	+2.70853
23	268	I. L.	20 13 5.60	2.10548	65.94	-19 47 9.7	+2.76211
24	268	I. U.	20 38 12.58	2.09114	64.79	-17 45 37.4	+2.80311
24	269	I. L.	21 2 32.13	2.07791	63.75	-15 33 24.8	+2.83466
25	269	I. U.	21 26 9.89	2.06610	62.83	-13 12 48.9	+2.85902
25	270	I. L.	21 49 12.20	2.05606	62.04	-10 44 59.2	+2.87748
26	270	I. U.	22 11 45.76	2.04809	61.43	- 8 11 38.2	+2.89103
26	271	I. L.	22 33 57.59	2.04226	60.96	- 5 34 12.5	+2.90039
27	271	I. U.	22 55 54.66	2.03862	60.66	- 2 54 4.7	+2.90586
27	272	I. L.	23 17 44.00	2.03735	60.57	- 0 12 35.5	+2.90775
28	272	I. U.	23 39 32.68	2.03838	60.61	+ 2 28 55.6	+2.90606
28	273	I. L.	0 1 27.54	2.04167	60.84	+ 5 9 9.2	+2.90073
29	274	II. U.	0 25 37.85	2.04712	61.23	+ 7 46 43.7	+2.89150
30	274	II. L.	0 48 6.31	2.05483	61.76	+10 20 14.2	+2.87789
30	275	II. U.	1 11 0.97	2.06378	62.44	+12 48 12.5	+2.85938
Oct. 1	275	II. L.	1 34 27.74	2.07454	63.25	+15 9 5.5	+2.83501
1	276	II. U.	1 58 31.87	2.08647	64.18	+17 21 14.5	+2.80355
2	276	II. L.	2 23 17.84	2.09927	65.20	+19 22 56.1	+2.76293
2	277	II. U.	2 48 49.03	2.11241	66.26	+21 12 22.4	+2.71049
3	277	II. L.	3 15 7.02	2.12542	67.32	+22 47 40.9	+2.64151
3	278	II. U.	3 42 12.10	2.13780	68.35	+24 7 0.8	+2.54840
4	278	II. L.	4 10 2.01	2.14897	69.31	+25 8 33.0	+2.41552
4	279	II. U.	4 38 32.31	2.15843	70.15	+25 50 36.1	+2.20140
5	279	II. L.	5 7 36.43	2.16593	70.82	+26 11 41.4	+1.70706
5	280	II. U.	5 37 5.94	2.17102	71.27	+26 10 39.5	-1.79190
6	280	II. L.	6 6 51.22	2.17363	71.52	+25 46 42.6	-2.25020
6	281	II. U.	6 36 42.32	2.17386	71.56	+24 59 29.9	-2.46864
7	281	II. L.	7 6 39.88	2.17202	71.40	+23 49 10.5	-2.61137
7	282	II. U.	7 36 6.07	2.16841	71.09	+22 16 20.0	-2.71509
8	282	II. L.	8 5 25.12	2.16367	70.68	+20 22 1.2	-2.79451
8	283	II. U.	8 34 23.89	2.15845	70.23	+18 7 42.5	-2.85654
9	283	II. L.	9 3 1.69	2.15326	69.76	+15 35 12.4	-2.90555
9	284	II. U.	9 31 20.34	2.14876	69.36	+12 46 39.7	-2.94397
10	284	II. L.	9 59 23.75	2.14548	69.06	+ 9 44 30.6	-2.97332
10	285	II. U.	10 27 17.54	2.14386	68.88	+ 6 31 28.4	-2.99454
11	285	II. L.	10 55 8.60	2.14414	68.86	+ 8 10 32.1	-3.00817

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	d.		h. m. s.		s.	° ' "	
Oct. 11	286	II. v.	11 23 4.75	2.14650	69.02	— 0 15 3.8	—3.01439
12	286	II. L.	11 51 14.07	2.15088	69.36	— 3 41 50.4	—3.01311
12	287	II. v.	12 19 44.54	2.15727	69.86	— 7 6 6.8	—3.00384
13	288	II. L.	12 48 43.42	2.16515	70.51	—10 24 3.5	—2.98560
13	288	I. v.	13 15 54.06	2.17406	71.27	—13 31 46.8	—2.95743
14	289	I. L.	13 46 3.60	2.18335	72.08	—16 25 26.8	—2.91758
15	289	I. v.	14 16 52.05	2.19235	72.85	—19 1 24.4	—2.86327
15	290	I. L.	14 48 16.72	2.20008	73.52	—21 16 21.8	—2.79070
16	290	I. v.	15 20 11.01	2.20568	74.04	—23 7 34.2	—2.69266
16	291	I. L.	15 52 24.42	2.20841	74.37	—24 32 58.9	—2.55641
17	291	I. v.	16 24 43.38	2.20777	74.38	—25 31 24.2	—2.24953
17	292	I. L.	16 56 52.30	2.20358	74.04	—26 2 32.6	—1.94537
18	292	I. v.	17 28 35.62	2.19587	73.89	—26 6 59.0	+1.62921
18	293	I. L.	17 59 38.73	2.18498	72.46	—25 46 4.1	+2.21730
19	293	I. v.	18 29 50.44	2.17140	71.55	—25 1 43.8	+2.44170
19	294	I. L.	18 59 2.96	2.15600	70.07	—23 56 16.5	+2.57513
20	294	I. v.	19 27 12.26	2.13953	68.72	—22 32 10.6	+2.66555
20	295	I. L.	19 54 17.82	2.12264	67.34	—20 51 55.1	+2.73056
21	295	I. v.	20 20 22.00	2.10616	66.03	—18 57 52.6	+2.77883
21	296	I. L.	20 45 29.29	2.09065	64.81	—16 52 15.6	+2.81529
22	296	I. v.	21 9 45.71	2.07650	63.71	—14 37 3.8	+2.84509
22	297	I. L.	21 33 18.22	2.06423	62.77	—12 14 4.7	+2.86426
23	297	I. v.	21 56 14.37	2.05400	61.99	— 9 44 55.1	+2.88011
23	298	I. L.	22 18 41.95	2.04626	61.39	— 7 11 2.8	+2.89149
24	298	I. v.	22 40 48.86	2.04088	60.95	— 4 33 48.1	+2.89902
24	299	I. L.	23 2 42.88	2.03806	60.70	— 1 54 27.4	+2.90306
25	299	I. v.	23 24 31.67	2.03766	60.64	+ 0 45 45.4	+2.90374
25	300	I. L.	23 46 22.82	2.03981	60.75	+ 3 25 36.4	+2.90105
26	300	I. v.	0 8 23.75	2.04435	61.05	+ 6 3 50.0	+2.89481
26	301	I. L.	0 30 41.61	2.05104	61.49	+ 8 39 6.6	+2.88469
27	302	I. v.	0 53 23.20	2.05979	62.10	+11 10 1.5	+2.86998
27	302	I. L.	1 16 84.99	2.07015	62.86	+13 35 3.9	+2.84998
28	303	I. v.	1 40 22.83	2.08193	63.73	+15 52 35.5	+2.82343
28	303	I. L.	2 4 51.71	2.09482	64.69	+18 0 51.3	+2.78892
29	304	II. v.	2 32 16.89	2.10813	65.72	+19 57 59.6	+2.74412
30	304	II. L.	2 58 20.00	2.12136	66.81	+21 42 4.0	+2.68526
30	305	II. v.	3 25 10.58	2.13402	67.84	+23 11 6.3	+2.60679
31	305	II. L.	3 52 46.75	2.14554	68.78	+24 23 11.2	+2.49807
31	306	II. v.	4 21 4.10	2.15528	69.62	+25 16 30.5	+2.33608
Nov. 1	306	II. L.	4 49 55.87	2.16289	70.30	+25 49 30.6	+2.04871
1	307	II. v.	5 19 13.04	2.16806	70.78	+26 0 57.8	+0.37184
2	307	II. L.	5 48 45.40	2.17029	71.02	+25 50 2.5	—2.04650
2	308	II. v.	6 18 22.07	2.17012	71.03	+25 16 24.4	—2.35172
3	308	II. L.	6 47 52.92	2.16752	70.85	+24 20 15.4	—2.52683
3	309	II. v.	7 17 9.08	2.16292	70.51	+23 2 11.5	—2.64685
4	309	II. L.	7 46 3.92	2.15703	70.03	+21 23 17.1	—2.73591
4	310	II. v.	8 14 33.62	2.15034	69.48	+19 24 57.4	—2.80455
5	310	II. L.	8 42 36.85	2.14361	68.94	+17 8 52.3	—2.85846
5	311	II. v.	9 10 15.10	2.13748	68.43	+14 36 55.9	—2.90087
6	311	II. L.	9 37 31.95	2.13245	68.02	+11 51 12.9	—2.93418

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
Nov. 6	312	II. U.	10 4 32.94	2.12902	67.72	+ 8 53 55.3	-2.95977
7	312	II. L.	10 31 25.08	2.12765	67.60	+ 5 47 24.8	-2.97843
7	313	II. U.	10 58 16.46	2.12866	67.65	+ 2 34 12.4	-2.99054
8	313	II. L.	11 25 15.84	2.13207	67.89	- 0 43 1.8	-2.99623
8	314	II. U.	11 52 32.28	2.13780	68.31	- 4 1 20.6	-2.99530
9	315	II. L.	12 20 14.74	2.14567	68.93	- 7 17 39.3	-2.98722
9	315	II. U.	12 48 31.62	2.15540	69.72	-10 28 36.9	-2.97107
10	316	II. L.	13 17 29.87	2.16652	70.59	-13 30 41.1	-2.94545
10	316	II. U.	13 47 14.58	2.17826	71.55	-16 20 12.3	-2.90855
11	317	II. L.	14 17 47.73	2.18971	72.53	-18 53 33.6	-2.85740
11	317	II. U.	14 49 7.82	2.20000	73.41	-21 7 13.0	-2.78787
12	318	I. L.	15 18 40.23	2.20814	74.13	-22 58 2.5	-2.69254
13	318	I. U.	15 51 9.90	2.21330	74.63	-24 23 30.7	-2.55720
13	319	I. L.	16 23 55.26	2.21476	74.77	-25 21 55.3	-2.34788
14	319	I. U.	16 56 38.85	2.21216	74.56	-25 52 30.0	-1.92101
14	320	I. L.	17 29 2.13	2.20545	74.02	-25 55 32.8	+1.71659
15	320	I. U.	18 0 47.88	2.19493	73.12	-25 32 13.6	+2.25411
15	321	I. L.	18 31 41.97	2.18139	71.98	-24 44 30.9	+2.47060
16	321	I. U.	19 1 34.02	2.16548	70.67	-23 34 54.0	+2.60020
16	322	I. L.	19 30 18.67	2.14805	69.26	-22 6 7.0	+2.68777
17	322	I. U.	19 57 54.58	2.13004	67.81	-20 20 57.3	+2.74993
17	323	II. L.	20 24 23.65	2.11244	66.44	-18 22 5.0	+2.79540
18	323	I. U.	20 49 50.78	2.09570	65.15	-16 11 58.7	+2.82919
18	324	I. L.	21 14 22.32	2.08045	63.99	-13 52 50.4	+2.85427
19	324	I. U.	21 38 6.01	2.06707	62.99	-11 26 37.0	+2.87268
19	325	I. L.	22 1 10.05	2.05603	62.17	- 8 55 0.4	+2.88591
20	325	I. U.	22 23 43.02	2.04766	61.54	- 6 19 30.6	+2.89492
20	326	I. L.	22 45 53.46	2.04187	61.10	- 3 41 27.5	+2.90017
21	326	I. U.	23 7 49.98	2.03878	60.86	- 1 2 5.1	+2.90213
21	327	I. L.	23 29 40.94	2.03834	60.81	+ 1 37 26.9	+2.90098
22	327	I. U.	23 51 34.61	2.04076	60.94	+ 4 16 0.3	+2.89672
22	328	I. L.	0 13 39.05	2.04571	61.26	+ 6 52 24.9	+2.88910
23	329	I. U.	0 36 2.11	2.05312	61.76	+ 9 25 26.7	+2.87767
23	329	I. L.	0 58 51.20	2.06266	62.43	+11 53 44.9	+2.86178
24	330	I. U.	1 22 13.52	2.07397	63.23	+14 15 51.9	+2.84037
24	330	I. L.	1 46 15.44	2.08676	64.16	+16 30 11.6	+2.81234
25	331	I. U.	2 11 2.39	2.10069	65.20	+18 34 55.8	+2.77571
25	331	I. L.	2 36 38.56	2.11504	66.30	+20 28 10.2	+2.72771
26	332	I. U.	3 3 6.29	2.12924	67.39	+22 7 51.4	+2.66360
26	332	I. L.	3 30 25.58	2.14264	68.46	+23 31 54.0	+2.57679
27	333	I. U.	3 58 33.84	2.15458	69.43	+24 38 13.1	+2.45329
27	333	II. L.	4 29 45.93	2.16438	70.25	+25 24 53.3	+2.25888
28	334	II. U.	4 59 13.75	2.17161	70.88	+25 50 18.0	+1.85558
29	334	II. L.	5 29 5.26	2.17589	71.30	+25 53 12.0	-1.63478
29	335	II. U.	5 59 7.95	2.17711	71.42	+25 32 54.6	-2.20366
30	335	II. L.	6 29 9.28	2.17528	71.30	+24 49 20.2	-2.44004
30	336	II. U.	6 58 57.60	2.17085	70.96	+23 42 53.5	-2.58786
Dec. 1	336	II. L.	7 28 23.19	2.16429	70.44	+22 14 52.9	-2.69244
1	337	II. U.	7 57 19.45	2.15634	69.81	+20 26 33.5	-2.77029
2	337	II. L.	8 25 42.48	2.14771	69.12	+18 19 52.5	-2.82999

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ′ ″	
Dec. 2	338	II. U.	8 53 31.73	2.13909	68.45	+15 56 55.8	-2.87611
3	338	II. L.	9 20 49.41	2.13120	67.83	+13 19 57.5	-2.91176
3	339	II. U.	9 47 40.11	2.12470	67.32	+10 31 17.0	-2.93885
4	339	II. L.	10 14 10.07	2.12005	66.97	+ 7 33 15.9	-2.95880
4	340	II. U.	10 40 27.02	2.11760	66.78	+ 4 28 16.5	-2.97239
5	340	II. L.	11 6 39.59	2.11767	66.78	+ 1 18 44.5	-2.98003
5	341	II. U.	11 32 57.11	2.12031	66.98	- 1 52 52.1	-2.98179
6	341	II. L.	11 59 29.02	2.12558	67.38	- 5 3 58.8	-2.97767
6	342	II. U.	12 26 24.72	2.13319	67.97	- 8 11 54.1	-2.96705
7	343	II. L.	12 53 53.04	2.14286	68.73	-11 13 47.6	-2.94919
7	343	II. U.	13 22 1.77	2.15412	69.62	-14 6 39.0	-2.92260
8	344	II. L.	13 50 56.83	2.16625	70.61	-16 47 22.1	-2.88537
8	344	II. U.	14 20 41.66	2.17846	71.61	-19 12 43.9	-2.83439
9	345	II. L.	14 51 16.25	2.18994	72.56	-21 19 34.8	-2.76563
9	345	II. U.	15 22 36.38	2.19965	73.39	-23 4 58.1	-2.67130
10	346	II. L.	15 54 33.23	2.20667	73.98	-24 26 23.2	-2.53600
10	346	II. U.	16 26 53.65	2.21016	74.30	-25 21 55.8	-2.32400
11	347	II. L.	16 59 31.22	2.20973	74.26	-25 50 30.1	-1.87419
12	347	I. U.	17 29 9.92	2.20517	73.86	-25 51 59.1	+1.77364
12	348	I. L.	18 0 58.75	2.19870	73.11	-25 27 10.6	+2.27254
13	348	I. U.	18 32 3.61	2.18481	72.11	-24 37 42.2	+2.48472
13	349	I. L.	19 2 12.51	2.17012	70.88	-23 25 52.0	+2.61362
14	349	I. U.	19 31 17.76	2.15363	69.53	-24 54 20.1	+2.70092
14	350	I. L.	19 59 16.14	2.13621	68.13	-20 5 56.3	+2.76302
15	350	I. U.	20 26 8.11	2.11867	66.76	-18 3 28.8	+2.80625
15	351	I. L.	20 51 57.25	2.10185	65.48	-15 49 36.0	+2.84118
16	351	I. U.	21 16 49.29	2.08625	64.31	-13 26 43.6	+2.86516
16	352	I. L.	21 40 51.32	2.07236	63.28	-10 57 0.0	+2.88235
17	352	I. U.	22 4 11.19	2.06078	62.43	- 8 22 17.8	+2.89389
17	353	I. L.	22 26 57.45	2.05150	61.77	- 5 44 15.3	+2.90089
18	353	I. U.	22 49 18.67	2.04497	61.30	- 3 4 20.1	+2.90423
18	354	I. L.	23 11 23.50	2.04116	61.04	- 0 23 49.3	+2.90417
19	354	I. U.	23 33 20.55	2.04009	60.97	+ 2 16 6.3	+2.90106
19	355	I. L.	23 55 18.28	2.04183	61.09	+ 4 54 18.8	+2.89485
20	356	I. U.	0 17 24.98	2.04626	61.39	+ 7 29 40.6	+2.88528
20	356	I. L.	0 39 49.01	2.05323	61.89	+10 1 2.1	+2.87206
21	357	I. U.	1 2 38.10	2.06243	62.55	+12 27 9.5	+2.85449
21	357	I. L.	1 25 59.85	2.07372	63.38	+14 46 41.0	+2.83159
22	358	I. U.	1 50 1.37	2.08676	64.33	+16 58 6.2	+2.80228
22	358	I. L.	2 14 48.72	2.10099	65.39	+18 59 44.6	+2.76403
23	359	I. U.	2 40 26.90	2.11594	66.51	+20 49 45.1	+2.71401
23	359	I. L.	3 6 59.01	2.13088	67.67	+22 26 7.8	+2.64779
24	360	I. U.	3 34 25.94	2.14514	68.81	+23 46 45.5	+2.55656
24	360	I. L.	4 2 45.92	2.15809	69.85	+24 49 30.3	+2.42409
25	361	I. U.	4 31 53.81	2.16903	70.74	+25 32 20.4	+2.30753
25	361	I. L.	5 1 41.42	2.17731	71.41	+25 53 27.8	+1.68797
26	362	I. U.	5 31 57.76	2.18256	71.85	+25 51 28.0	-1.84105
26	362	I. L.	6 2 29.85	2.18455	72.01	+25 25 32.1	-2.27689
27	363	II. U.	6 35 27.71	2.18333	71.92	+24 35 27.5	-2.49170
28	363	II. L.	7 5 50.02	2.17912	71.56	+23 21 44.0	-2.62942

MOON CULMINATIONS, 1860. 319

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ' "	
Dec. 28	364	II. U.	7 35 49.87	2.17260	71.05	+21 45 30.1	-2.72814
29	364	II. L.	8 5 19.20	2.16441	70.36	+19 48 29.5	-2.80179
29	365	II. U.	8 34 13.34	2.15534	69.61	+17 32 53.0	-2.85765
30	365	II. L.	9 2 30.92	2.14607	68.87	+15 1 8.0	-2.90021
30	366	II. U.	9 30 13.63	2.13738	68.21	+12 15 54.8	-2.93212
31	366	II. L.	9 57 25.72	2.12995	67.66	+ 9 19 55.8	-2.95527
31	367	II. U.	10 24 13.19	2.12428	67.24	+ 6 15 59.0	-2.97082

320 MOON-CULMINATING STARS.

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	35 Piscium.	d Piscium.	44 Piscium.	13 Ceti.	δ Piscium.	20 Ceti.	
	0 ^h 7 ^m .	0 ^h 13 ^m .	0 ^h 18 ^m .	0 ^h 28 ^m .	0 ^h 41 ^m .	0 ^h 45 ^m .	
	s.	s.	s.	s.	s.	s.	
28	46.52	24.27	14.08	2.99	25.32	51.88	-.010
55	46.37	24.10	13.92	2.80	25.60	51.66	+.006
137	47.39	25.08	14.84	3.64	26.37	52.37	.016
164	48.20	25.89	15.69	4.42	27.14	53.13	.030
191	49.07	26.76	16.50	5.28	28.01	53.99	.030
219	49.86	27.55	17.30	6.09	28.84	54.82	.024
246	50.38	28.09	17.84	6.66	29.43	55.42	.015
273	50.64	28.35	18.12	6.97	29.78	55.77	+.006
301	50.64	28.37	18.15	7.02	29.88	55.87	-.002
328	50.46	28.21	18.00	6.87	29.77	55.77	.008
355	50.20	27.95	17.74	6.62	29.54	55.54	-.013
Dec.	= + 8° 3'	+ 7° 25'	+ 1° 10'	- 4° 22'	+ 6° 49'	- 1° 54'	
Mag.	= 6	6.5	6	6.5	4.5	5.6	
	s Piscium.	e Piscium.	ζ ¹ Piscium.	40 Ceti.	μ Piscium.	γ Piscium.	
	0 ^h 55 ^m .	1 ^h 1 ^m .	1 ^h 6 ^m .	1 ^h 9 ^m .	1 ^h 22 ^m .	1 ^h 24 ^m .	
	s.	s.	s.	s.	s.	s.	
1	41.96	10.52	26.25	49.99	52.20	0.94	-.012
29	41.66	10.21	25.94	49.67	51.88	0.61	.011
56	41.42	9.96	25.68	49.41	51.59	0.31	-.007
165	42.87	11.26	27.04	50.69	52.80	1.55	+.001
192	43.74	12.22	27.90	51.54	53.65	2.43	.031
220	44.57	13.06	28.74	52.39	54.51	3.21	.028
247	45.19	13.68	29.38	53.03	55.17	3.99	.020
274	45.56	14.07	29.78	53.48	55.61	4.45	.012
302	45.69	14.21	29.94	53.59	55.82	4.67	+.003
329	45.62	14.15	29.89	53.53	55.81	4.66	-.004
356	45.40	13.93	29.69	53.33	55.62	4.49	-.010
Dec.	= + 7° 8'	+ 4° 55'	+ 6° 50'	- 3° 1'	+ 5° 25'	+ 14° 37'	
Mag.	= 4	6.5	5.4	6	5	4.3	
	π Piscium.	ρ Piscium.	o Piscium.	ε Arietis.	ξ ¹ Ceti.	δ Arietis.	
	1 ^h 29 ^m .	1 ^h 34 ^m .	1 ^h 38 ^m .	1 ^h 49 ^m .	2 ^h 5 ^m .	2 ^h 10 ^m .	
	s.	s.	s.	s.	s.	s.	
2	41.95	10.06	1.48	43.79	36.30	22.12	-.010
30	41.62	9.74	1.10	43.45	35.97	21.78	-.011
57	41.32	9.44	0.80	43.12	35.63	21.41	+.007
166	42.53	10.57	1.91	44.17	36.49	22.29	.015
193	43.40	11.42	2.77	45.05	37.32	23.15	.028
221	44.27	12.28	3.64	45.95	38.20	24.07	.028
248	44.95	12.96	4.32	46.68	38.94	24.84	.020
275	45.40	13.42	4.80	47.20	39.48	25.42	.012
303	45.62	13.64	5.04	47.48	39.79	25.77	+.004
330	45.63	13.65	5.06	47.55	39.89	25.89	-.003
357	45.46	13.48	4.90	47.50	39.78	25.79	-.010
Dec.	= + 11° 26'	+ 4° 47'	+ 8° 27'	+ 17° 8'	+ 8° 11'	+ 19° 15'	
Mag.	= 6	5.4	4	6	4.5	6.5	
	ξ ² Ceti.	38 Arietis.	π Arietis.	ρ ² Arietis.	s Arietis.	53 Arietis.	
	2 ^h 20 ^m .	2 ^h 37 ^m .	2 ^h 41 ^m .	2 ^h 48 ^m .	2 ^h 51 ^m .	2 ^h 59 ^m .	
	s.	s.	s.	s.	s.	s.	
3	44.57	21.69	30.62	33.61	14.35	34.54	-.015
31	44.24	21.38	30.29	33.29	14.02	34.23	-.013
58	43.89	21.00	29.91	32.90	13.62	33.83	+.001
167	44.65	21.63	30.52	33.45	14.16	34.28	.010
194	45.47	22.44	31.35	34.27	14.99	35.06	.031
222	46.35	23.33	32.26	35.18	15.92	35.99	.031
249	47.10	24.11	33.06	35.99	16.75	36.81	.026
276	47.66	24.72	33.69	36.64	17.41	37.48	.019
303	48.00	25.12	34.11	37.09	17.88	37.96	.011
331	48.13	25.30	34.31	37.31	18.12	38.21	+.003
358	48.05	25.25	34.27	37.29	18.10	38.22	-.003
Dec.	= + 7° 50'	+ 11° 51'	+ 16° 53'	+ 17° 28'	+ 20° 47'	+ 17° 20'	
Mag.	= 4	5	6.5	6	4.5	6	

MOON-CULMINATING STARS. 321

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	δ Arietis.	ζ Arietis.	τ^1 Arietis.	9 Tauri.	17 Tauri.	7 Tauri.	
	3 ^h 3 ^m .	3 ^h 6 ^m .	3 ^h 13 ^m .	3 ^h 28 ^m .	3 ^h 36 ^m .	3 ^h 39 ^m .	
d.	s.	s.	s.	s.	s.	s.	
4	39.36	53.27	10.58	46.12	35.86	11.93	-.006
31	39.06	52.97	10.29	45.84	35.59	11.66	.013
59	38.64	52.53	9.86	45.39	35.14	11.21	.014
86	38.31	52.21	9.51	45.02	34.75	10.81	-.010
195	39.92	53.79	11.04	46.43	36.10	12.14	+.031
222	40.81	54.69	11.93	47.32	36.99	13.03	.032
250	41.66	55.56	12.81	48.22	37.91	13.95	.029
277	42.33	56.25	13.51	48.97	38.67	14.71	.022
304	42.83	56.74	14.03	49.53	39.26	15.31	.015
331	43.08	57.01	14.31	49.87	39.62	15.68	+.006
359	43.09	57.03	14.35	49.94	39.71	15.79	-.005
	Dec. = + 19° 13'	+ 20° 31'	+ 20° 38'	+ 22° 45'	+ 23° 40'	+ 23° 40'	
	Mag. = 4.5	4.5	5	6	4	3	
	Δ^1 Tauri.	α^2 Tauri.	δ^1 Tauri.	ν^1 Tauri.	ϵ Tauri.	α Tauri.	
	3 ^h 56 ^m .	4 ^h 9 ^m .	4 ^h 14 ^m .	4 ^h 17 ^m .	4 ^h 20 ^m .	4 ^h 27 ^m .	
	s.	s.	s.	s.	s.	s.	
5	27.29	5.75	53.31	53.03	28.68	55.50	-.002
32	27.04	5.52	53.60	57.79	28.46	55.30	.011
59	26.61	5.11	53.19	57.39	28.06	54.90	.016
87	26.19	4.67	52.75	56.94	27.61	54.45	-.017
196	27.38	5.73	53.74	57.93	28.55	55.31	+.027
223	28.25	6.58	54.57	58.79	29.39	56.12	.031
251	29.16	7.48	55.45	59.71	30.28	57.00	.031
278	29.94	8.27	56.24	60.52	31.08	57.80	.027
305	30.56	8.92	56.88	61.20	31.75	58.47	.021
332	30.97	9.36	57.33	61.67	32.21	58.94	.012
360	31.10	9.53	57.51	61.87	32.41	59.16	+.001
	Dec. = + 21° 42'	+ 20° 14'	+ 17° 13'	+ 22° 30'	+ 18° 52'	+ 16° 14'	
	Mag. = 5.4	6.5	4	5.4	4.3	1	
	τ Tauri.	ι Tauri.	ϵ Aurigæ.	ϵ Tauri.	11 Orionis.	η Tauri.	
	4 ^h 33 ^m .	4 ^h 43 ^m .	4 ^h 47 ^m .	4 ^h 54 ^m .	4 ^h 56 ^m .	5 ^h 10 ^m .	
	s.	s.	s.	s.	s.	s.	
5	52.84	13.31	55.23	46.10	36.40	54.39	.000
33	52.66	13.13	55.02	45.93	36.25	54.26	-.010
60	52.24	12.73	54.56	45.53	35.86	53.87	.015
87	51.79	12.28	54.05	45.07	35.41	53.40	.014
115	51.51	11.99	53.71	44.75	35.10	53.05	-.008
224	53.48	13.82	56.72	46.52	36.75	54.69	+.032
251	54.36	14.68	56.69	47.40	37.62	55.55	.032
279	55.23	15.56	57.66	48.27	38.46	56.44	.029
306	55.94	16.24	58.47	49.02	39.18	57.24	.024
333	56.45	16.77	59.07	49.58	39.73	57.83	.016
360	56.76	17.09	59.37	49.89	40.02	58.18	+.005
	Dec. = + 22° 39'	+ 18° 36'	+ 32° 56'	+ 21° 23'	+ 15° 12'	+ 21° 57'	
	Mag. = 4.5	5.6	3	5	5	6	
	β Tauri.	θ Tauri.	ζ Tauri.	129 Tauri.	136 Tauri.	1 Geminorum.	
	3 ^h 17 ^m .	5 ^h 19 ^m .	5 ^h 29 ^m .	3 ^h 38 ^m .	5 ^h 44 ^m .	3 ^h 55 ^m .	
	s.	s.	s.	s.	s.	s.	
6	29.09	16.04	19.16	44.88	34.27	39.17	+.004
34	28.96	15.92	19.06	44.81	34.21	39.13	-.008
61	28.55	15.54	18.68	44.45	33.83	38.79	.016
88	28.05	15.07	18.21	43.99	33.33	38.31	.016
115	27.69	14.72	17.86	43.63	32.94	37.91	-.011
225	29.38	16.31	19.34	44.98	34.35	39.13	+.029
252	30.29	17.17	20.19	45.79	35.23	40.01	.033
279	31.20	18.03	21.05	46.62	36.14	40.89	.033
307	32.06	18.85	21.88	47.44	37.04	41.77	.029
334	32.71	19.47	22.53	48.08	37.75	42.49	.021
361	33.08	19.62	22.91	48.48	38.20	42.95	+.010
	Dec. = + 28° 29'	+ 21° 49'	+ 21° 3'	+ 15° 45'	+ 27° 34'	+ 23° 16'	
	Mag. = 2	6	3	5	5	5	

322 MOON-CULMINATING STARS.

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	γ Geminorum.	κ Aurigæ.	μ Geminorum.	ν Geminorum.	49 Aurigæ.	ϵ Geminorum.	
	6 ^h 6 ^m .	6 ^h 6 ^m .	6 ^h 14 ^m .	6 ^h 20 ^m .	6 ^h 26 ^m .	6 ^h 35 ^m .	
	s.	s.	s.	s.	s.	s.	
7	27.98	30.12	31.92	40.47	25.50	21.71	+ .005
34	27.94	30.10	31.92	40.49	25.53	21.77	— .008
62	27.59	29.73	31.59	40.17	25.21	21.47	.016
89	27.12	29.23	31.11	39.71	24.72	21.00	.017
116	26.73	28.80	30.72	39.40	24.28	20.56	— .009
226	27.94	30.10	31.85	40.37	25.34	21.53	+ .028
253	28.79	30.97	32.66	41.17	26.30	22.33	.032
280	29.65	31.90	33.56	42.03	27.11	23.23	.033
307	30.51	32.80	34.43	42.88	28.02	24.12	.030
335	31.26	33.56	35.19	43.66	28.85	24.95	.023
362	31.72	34.09	35.68	44.16	29.42	25.51	+ .012
Dec. =	+ 22° 39'	+ 29° 33'	+ 23° 35'	+ 20° 18'	+ 28° 9'	+ 25° 16'	
Mag. =	4	5.4	3	5.4	6.5	3.4	
	ω Geminorum.	ζ Geminorum.	τ Geminorum.	δ Geminorum.	ι Geminorum.	α^2 Geminor.	
	6 ^h 53 ^m .	6 ^h 55 ^m .	7 ^h 2 ^m .	7 ^h 11 ^m .	7 ^h 17 ^m .	7 ^h 25 ^m .	
	s.	s.	s.	s.	s.	s.	
8	55.86	50.78	16.32	48.14	4.46	42.32	+ .011
35	55.46	50.68	16.45	48.28	4.62	42.42	— .003
62	55.20	50.63	16.19	48.07	4.40	42.22	.015
90	54.73	50.17	15.69	47.62	3.93	41.73	.017
117	54.29	49.75	15.22	47.19	3.45	41.25	.013
144	54.12	49.52	14.96	46.93	3.19	40.94	— .003
254	55.92	51.28	16.78	48.55	4.84	42.54	+ .031
281	56.75	52.13	17.70	49.39	5.72	43.42	.034
308	57.66	53.01	18.65	50.26	6.60	44.42	.035
336	58.51	53.84	19.56	51.15	7.58	45.37	.030
363	59.10	54.42	20.21	51.78	8.24	46.10	+ .017
Dec. =	+ 24° 25'	+ 20° 46'	+ 30° 28'	+ 22° 14'	+ 26° 4'	+ 32° 12'	
Mag. =	6	4	5.4	3.4	4	2.1	
	β Geminorum.	ϕ Geminorum.	ϵ Cancri.	12 Cancri.	ζ^1 Cancri.	2 Cancri.	
	7 ^h 36 ^m .	7 ^h 44 ^m .	7 ^h 54 ^m .	8 ^h 0 ^m .	8 ^h 4 ^m .	8 ^h 12 ^m .	
	s.	s.	s.	s.	s.	s.	
8	47.31	58.26	57.62	55.15	13.26	14.91	+ .013
36	47.53	58.48	57.90	55.42	13.55	15.23	+ .003
63	47.35	58.32	57.76	55.30	13.45	15.14	— .014
90	46.92	57.90	57.36	54.94	13.08	14.78	.018
118	46.43	57.43	56.88	54.51	12.64	14.32	.014
145	46.13	57.11	56.55	54.22	12.34	13.99	— .005
255	47.60	58.50	57.84	55.33	13.47	15.07	+ .031
282	48.44	59.34	58.68	56.09	14.22	15.86	.033
309	49.39	60.28	59.62	56.95	15.10	16.66	.035
336	50.29	62.19	60.55	57.81	15.98	17.68	.031
364	51.04	61.94	61.33	58.53	16.72	18.49	+ .018
Dec. =	+ 28° 22'	+ 27° 7'	+ 28° 11'	+ 14° 3'	+ 18° 4'	+ 24° 28'	
Mag. =	1.2	5	5	6	5.4	6	
	θ Cancri.	γ Cancri.	δ Cancri.	ϕ^2 Cancri.	α Cancri.	κ Cancri.	
	8 ^h 23 ^m .	8 ^h 35 ^m .	8 ^h 36 ^m .	8 ^h 47 ^m .	8 ^h 50 ^m .	9 ^h 0 ^m .	
	s.	s.	s.	s.	s.	s.	
9	38.78	13.30	45.93	18.63	51.95	12.06	+ .020
36	39.08	13.65	46.30	19.04	52.33	12.46	+ .006
64	39.03	13.62	46.26	19.03	52.33	12.49	— .006
91	38.69	13.29	45.95	18.71	52.05	12.23	.013
119	38.25	12.86	45.52	18.23	51.65	11.84	.014
146	37.94	12.52	45.19	17.88	51.33	11.52	— .003
255	38.88	13.36	46.00	18.63	51.99	12.08	+ .017
283	39.65	14.13	46.76	19.40	52.68	12.76	.029
310	40.52	15.02	47.62	20.22	53.52	13.58	.033
337	41.42	15.94	48.53	21.29	54.41	14.47	.031
364	42.18	16.74	49.31	22.15	55.19	15.27	+ .003
Dec. =	+ 18° 34'	+ 21° 59'	+ 18° 40'	+ 28° 28'	+ 12° 24'	+ 11° 14'	
Mag. =	6	4.5	4	6	4	5	

MOON-CULMINATING STARS. 323

Stippled Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	♄ Cancri.	♁ Cancri.	♃ Leonis.	♄ Leonis.	♅ Leonis.	♁ Leonis.	
	9 ^h 1 ^m .	9 ^h 11 ^m .	9 ^h 23 ^m .	9 ^h 24 ^m .	9 ^h 33 ^m .	9 ^h 37 ^m .	
d.	s.	s.	s.	s.	s.	s.	
10	20.76	12.08	46.08	26.09	42.90	57.40	+0.22
37	21.17	12.52	46.57	26.54	43.37	57.92	+0.20
65	21.90	12.57	46.65	26.62	43.48	58.05	-0.04
92	20.91	12.31	46.41	26.41	43.28	57.84	.009
119	20.51	11.94	46.03	26.06	42.93	57.47	.013
147	20.14	11.58	45.65	25.71	42.60	57.09	.010
174	19.97	11.39	45.44	25.51	42.40	56.85	-0.04
233	21.44	12.72	46.68	26.68	43.47	57.96	+0.22
311	22.29	13.55	47.52	27.47	44.24	58.77	.031
338	23.26	14.50	48.50	28.40	45.17	59.76	.032
365	24.11	15.34	49.38	29.33	46.01	60.66	+0.25
	Dec. = + 22° 37'	+ 18° 18'	+ 23° 35'	+ 11° 55'	+ 11° 32'	+ 24° 25'	
	Mag. = 5.6	6	5.4	6	4.3	3	
	ν Leonis.	γ Leonis.	α Leonis.	γ ¹ Leonis.	45 Leonis.	ρ Leonis.	
	9 ^h 50 ^m .	9 ^h 59 ^m .	10 ^h 0 ^m .	10 ^h 12 ^m .	10 ^h 20 ^m .	10 ^h 25 ^m .	
	s.	s.	s.	s.	s.	s.	
11	43.54	44.05	56.84	17.12	17.25	28.30	+0.26
38	44.04	44.61	57.36	17.81	17.82	28.88	.015
65	44.19	44.78	57.52	17.92	18.04	29.12	+0.03
93	44.02	44.63	57.36	17.79	17.95	29.04	-0.06
120	43.69	44.29	57.06	17.48	17.68	28.78	.010
147	43.37	43.97	56.73	17.14	17.36	28.47	.010
175	43.13	43.72	56.49	16.87	17.11	28.21	-0.04
234	44.08	44.59	57.36	17.62	17.76	28.81	+0.20
312	44.88	45.39	58.15	18.41	18.51	29.55	.029
339	45.78	46.31	59.06	19.33	19.39	30.43	.032
366	46.65	47.19	59.92	20.16	20.28	31.32	+0.25
	Dec. = + 13° 7'	+ 17° 27'	+ 12° 39'	+ 20° 33'	+ 10° 29'	+ 10° 2'	
	Mag. = 5	3.4	1.2	2	6	4	
	37 Sextantis.	ι Leonis.	ε Leonis.	χ Leonis.	π Leonis.	σ Leonis.	
	10 ^h 38 ^m .	10 ^h 41 ^m .	10 ^h 53 ^m .	10 ^h 57 ^m .	11 ^h 8 ^m .	11 ^h 13 ^m .	
	s.	s.	s.	s.	s.	s.	
11	50.22	55.62	31.33	49.55	34.15	56.71	+0.27
39	50.34	56.26	31.99	50.22	34.86	57.41	.017
66	51.10	56.53	32.29	50.53	35.31	57.76	+0.05
94	51.04	56.48	32.27	50.53	35.23	57.90	-0.04
121	50.80	56.24	32.06	50.32	35.03	57.64	.009
148	50.51	55.94	31.77	50.04	34.75	57.36	.010
176	50.25	55.67	31.51	49.77	34.47	57.09	.008
203	50.10	55.52	31.34	49.60	34.27	56.90	-0.04
235	50.75	56.15	31.87	50.10	34.69	57.27	+0.22
313	51.46	56.87	32.56	50.78	35.36	57.92	.028
340	52.23	57.74	33.42	51.64	36.22	58.76	+0.34
	Dec. = + 7° 7'	+ 11° 17'	+ 6° 51'	+ 8° 6'	+ 14° 4'	+ 6° 48'	
	Mag. = 6	5	5	5	6	4	
	ε Leonis.	τ Leonis.	ν Virginis.	β Virginis.	π Virginis.	ο Virginis.	
	11 ^h 16 ^m .	11 ^h 20 ^m .	11 ^h 38 ^m .	11 ^h 43 ^m .	11 ^h 53 ^m .	11 ^h 58 ^m .	
	s.	s.	s.	s.	s.	s.	
12	39.32	46.04	41.48	25.77	43.52	6.28	+0.30
40	40.02	46.74	42.23	26.51	44.23	7.06	.022
67	40.38	47.10	42.64	26.92	44.73	7.52	.011
95	40.41	47.15	42.74	27.04	44.87	7.67	+0.03
122	40.23	46.99	42.61	26.93	44.88	7.58	-0.06
149	39.96	46.73	42.36	26.70	44.56	7.37	.011
176	39.69	46.47	42.12	26.44	44.30	7.11	.009
204	39.49	46.27	41.88	26.31	44.06	6.85	-0.05
231	39.41	46.19	41.76	26.08	43.90	6.69	+0.23
313	40.49	47.23	42.66	26.95	44.70	7.45	.024
341	41.37	48.09	43.51	27.79	45.52	8.27	+0.27
	Dec. = + 11° 18'	+ 3° 38'	+ 7° 19'	+ 2° 38'	+ 7° 24'	+ 9° 31'	
	Mag. = 4	5	4.5	3.4	4.5	4	

324 MOON-CULMINATING STARS.

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	Piazzi xii. 6. 12 ^h . 4 ^m .	13 Virginis. 12 ^h . 11 ^m .	η Virginis. 12 ^h . 12 ^m .	c Virginis. 12 ^h . 13 ^m .	q Virginis. 12 ^h . 26 ^m .	γ Virginis. 12 ^h . 34 ^m .	
d.	s.	s.	s.	s.	s.	s.	
13	31.67	31.12	45.93	15.89	34.73	35.39	+.034
40	32.42	31.88	46.69	16.66	35.52	36.19	.026
68	32.90	32.38	47.19	17.16	36.06	36.74	.014
95	33.06	32.56	47.37	17.35	36.28	36.98	+.001
123	32.99	32.51	47.33	17.30	36.28	37.00	-.006
150	32.81	32.32	47.15	17.11	36.12	36.85	.009
177	32.54	32.08	46.90	16.86	35.87	36.63	.010
204	32.30	31.84	46.66	16.61	35.63	36.36	-.007
232	32.12	31.65	46.46	16.42	35.40	36.13	+.000
314	32.80	32.34	47.14	17.09	35.99	36.65	.028
341	33.56	33.12	47.92	17.87	36.76	37.39	+.034
Dec. =	+ 4° 50'	- 0° 1'	+ 0° 7'	+ 4° 6'	- 8° 41'	- 0° 41'	
Mag. =	6.7	6	3.4	5	6	3.2	
	38 Virginis. 12 ^h . 46 ^m .	ψ Virginis. 12 ^h . 47 ^m .	δ Virginis. 12 ^h . 48 ^m .	θ Virginis. 13 ^h . 2 ^m .	α Virginis. 13 ^h . 17 ^m .	ζ Virginis. 13 ^h . 27 ^m .	
	s.	s.	s.	s.	s.	s.	
14	2.53	5.92	34.49	43.48	50.22	34.82	+.033
41	3.33	6.73	35.31	44.25	51.04	35.68	.027
69	3.94	7.31	35.90	44.90	51.71	36.33	.015
96	4.19	7.59	36.20	45.18	52.09	36.82	+.002
123	4.22	7.63	36.24	45.23	52.23	36.87	-.000
151	4.10	7.50	36.11	45.17	52.17	36.82	.005
178	3.92	7.29	35.87	44.97	51.99	36.64	.008
205	3.61	7.02	35.58	44.70	51.73	36.37	-.010
233	3.37	6.76	35.30	44.43	51.45	36.07	+.000
315	4.03	7.28	35.57	44.78	51.62	36.21	.030
342	5.07	8.17	36.38	45.48	52.29	36.78	+.027
Dec. =	- 2° 47'	- 8° 47'	+ 4° 10'	- 4° 47'	- 10° 26'	+ 0° 7'	
Mag. =	6	5	3	4.5	1	3.4	
	m Virginis. 13 ^h . 34 ^m .	86 Virginis. 13 ^h . 38 ^m .	89 Virginis. 13 ^h . 42 ^m .	94 Virginis. 13 ^h . 58 ^m .	κ Virginis. 14 ^h . 5 ^m .	λ Virginis. 14 ^h . 11 ^m .	
	s.	s.	s.	s.	s.	s.	
15	17.28	29.94	16.14	54.05	26.86	33.24	+.035
42	18.00	29.76	17.03	54.92	27.75	34.13	.032
70	18.62	31.50	17.74	55.65	28.49	34.79	.022
97	19.02	31.91	18.18	56.11	29.02	35.47	.013
124	19.20	32.09	18.37	56.34	29.22	35.66	+.005
152	19.16	32.08	18.37	56.37	29.27	35.73	-.002
179	18.98	31.91	18.24	56.23	29.14	35.61	.007
206	18.70	31.62	17.92	55.96	28.90	35.35	.011
234	18.40	31.31	17.58	55.61	28.56	35.00	-.011
261	18.19	31.09	17.35	55.37	28.27	34.72	+.032
343	19.21	32.09	18.35	56.22	29.05	35.48	+.027
Dec. =	- 8° 0'	- 11° 43'	- 17° 26'	- 8° 13'	- 9° 37'	- 12° 43'	
Mag. =	6	6	5	6	4.5	5.4	
	μ Librae. 14 ^h . 35 ^m .	5 Librae. 14 ^h . 38 ^m .	ν Librae. 14 ^h . 41 ^m .	α Librae. 14 ^h . 43 ^m .	ξ Librae. 14 ^h . 49 ^m .	20 Librae. 14 ^h . 55 ^m .	
	s.	s.	s.	s.	s.	s.	
16	41.89	15.61	39.75	8.89	11.25	51.77	+.036
43	42.78	16.53	40.68	9.78	12.16	52.74	.031
70	43.53	17.32	41.46	10.60	12.94	53.60	.026
98	44.07	17.87	42.02	11.18	13.51	54.24	.017
125	44.39	18.22	42.37	11.54	13.86	54.66	.010
153	44.50	18.35	42.51	11.68	14.01	54.85	+.002
180	44.41	18.22	42.44	11.61	13.96	54.81	-.006
207	44.18	18.03	42.20	11.36	13.72	54.55	.011
234	43.74	17.67	41.85	11.02	13.35	54.16	-.013
262	43.50	17.33	41.50	10.67	13.02	53.78	+.029
344	44.08	17.94	42.08	11.49	13.55	54.32	+.031
Dec. =	- 5° 3'	- 14° 53'	- 13° 34'	- 15° 27'	- 10° 52'	- 24° 44'	
Mag. =	4	6	6	2.3	6	3.4	

MOON-CULMINATING STARS. 325

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	^ι Libræ.	^ζ Libræ.	^γ Libræ.	^κ Libræ.	^η Libræ.	^λ Libræ.	
	15 ^h 4 ^m .	15 ^h 20 ^m .	15 ^h 27 ^m .	15 ^h 33 ^m .	15 ^h 36 ^m .	15 ^h 45 ^m .	
d.	s.	s.	s.	s.	s.	s.	
17	15.43	22.41	42.28	53.63	12.74	13.13	+ .034
44	16.36	23.32	43.19	54.56	13.65	14.06	.033
71	17.18	24.15	44.02	55.41	14.39	14.93	.029
99	17.84	24.83	44.71	56.13	15.20	15.68	.022
126	18.26	25.28	45.17	56.63	15.69	16.20	.013
153	18.45	25.51	45.42	56.90	15.96	16.51	+ .005
181	18.42	25.51	45.44	56.94	16.00	16.58	-.004
208	18.19	25.30	45.24	56.75	15.81	16.40	.011
235	17.82	24.93	44.86	56.38	15.46	16.03	.014
263	17.46	24.53	44.48	55.96	15.05	15.60	.012
290	17.24	24.32	44.25	55.71	14.80	15.33	-.009
Dec. =	— 19° 15'	— 16° 13'	— 14° 19'	— 19° 13'	— 15° 13'	— 19° 45'	
Mag. =	5.4	4	4.5	5	6	6	
	^ε Scorpii.	^δ Scorpii.	^ρ Scorpii.	^σ Scorpii.	^α Scorpii.	^τ Scorpii.	
	15 ^h 48 ^m .	15 ^h 52 ^m .	15 ^h 57 ^m .	16 ^h 12 ^m .	16 ^h 20 ^m .	16 ^h 27 ^m .	
	s.	s.	s.	s.	s.	s.	
17	15.34	3.97	18.32	41.28	49.83	10.65	+ .038
45	16.36	4.94	19.26	42.25	50.80	11.63	.036
72	17.28	5.84	20.13	43.17	51.73	12.58	.032
99	18.06	6.56	20.86	43.97	52.53	13.42	.026
127	18.65	7.15	21.44	44.61	53.21	14.11	.019
154	18.98	7.44	21.78	44.99	53.62	14.55	+ .010
181	19.04	7.53	21.86	45.13	53.78	14.72	-.000
209	18.85	7.36	21.69	44.98	53.64	14.59	.010
236	18.44	6.98	21.33	44.61	53.29	14.22	.015
263	18.00	6.56	20.90	44.16	52.82	13.76	.014
291	17.70	6.26	20.60	43.81	52.46	13.38	-.009
Dec. =	— 28° 48'	— 22° 13'	— 19° 25'	— 25° 15'	— 26° 7'	— 27° 55'	
Mag. =	5.4	2.3	2	3.4	1.2	3.4	
	²⁴ Scorpii.	²⁰ Ophiuchi.	^η Ophiuchi.	^Α Ophiuchi.	^ξ Ophiuchi.	^θ Ophiuchi.	
	16 ^h 33 ^m .	16 ^h 42 ^m .	17 ^h 2 ^m .	17 ^h 6 ^m .	17 ^h 12 ^m .	17 ^h 13 ^m .	
	s.	s.	s.	s.	s.	s.	
18	28.93	5.60	21.18	44.73	37.00	24.94	+ .030
45	29.80	6.44	22.02	45.62	37.85	25.80	.034
73	30.72	7.32	22.92	46.59	38.77	26.76	.033
100	31.56	8.08	23.72	47.46	39.62	27.63	.028
128	32.14	8.70	24.42	48.24	40.37	28.40	.021
155	32.55	9.14	24.90	48.76	40.89	28.94	.013
182	32.72	9.31	25.14	49.03	41.16	29.22	+ .002
209	32.61	9.22	25.09	49.00	41.13	29.20	-.007
237	32.27	8.88	24.76	48.65	40.82	28.87	.008
264	32.16	8.78	24.65	48.55	40.73	28.78	.015
291	31.49	8.11	23.96	47.77	39.98	28.01	-.020
Dec. =	— 17° 28'	— 10° 32'	— 15° 33'	— 26° 23'	— 20° 57'	— 24° 52'	
Mag. =	5	5	2.3	5	5	3.4	
	^δ Ophiuchi.	^ε Ophiuchi.	^ο Serpentis.	⁴ Sagittarii.	⁹ Sagittarii.	^γ Sagittarii.	
	17 ^h 17 ^m .	17 ^h 22 ^m .	17 ^h 33 ^m .	17 ^h 51 ^m .	17 ^h 55 ^m .	17 ^h 56 ^m .	
	s.	s.	s.	s.	s.	s.	
19	49.46	52.77	32.89	14.64	17.32	49.03	+ .031
46	50.32	53.62	33.67	15.44	18.12	49.87	.034
74	51.27	54.56	34.54	16.37	19.04	50.84	.034
101	52.13	55.43	35.36	17.25	19.94	51.78	.031
128	52.88	56.18	36.08	18.06	20.75	52.67	.026
156	53.46	56.78	36.66	18.73	21.43	53.37	.017
183	53.73	57.06	36.94	19.07	21.79	53.92	+ .006
210	53.67	57.02	36.94	19.03	21.85	53.82	-.005
237	53.39	56.74	36.68	18.88	21.61	53.56	.014
265	52.92	56.27	36.22	18.41	21.14	53.07	.016
292	52.50	55.85	35.82	17.97	20.69	52.49	-.019
Dec. =	— 24° 2'	— 23° 51'	— 12° 48'	— 23° 48'	— 24° 22'	— 30° 25'	
Mag. =	5	5	5.4	5	5.4	3.4	

326 MOON-CULMINATING STARS.

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	μ^1 Sagittarii.	δ Sagittarii.	λ Sagittarii.	Bradley 2333	φ Sagittarii.	σ Sagittarii.	
	18 ^h 5 ^m .	18 ^h 12 ^m .	18 ^h 19 ^m .	18 ^h 30 ^m .	18 ^h 36 ^m .	18 ^h 41 ^m .	
d.	s.	s.	s.	s.	s.	s.	
47	24.05	2.55	20.45	0.29	55.23	22.12	+.037
74	24.90	3.56	21.46	1.34	56.37	23.20	.035
102	25.79	4.45	22.20	2.11	57.13	23.90	.033
129	26.61	5.35	23.15	2.96	58.01	24.74	.032
156	27.25	6.07	23.86	3.68	58.76	25.47	.022
184	27.64	6.50	24.31	4.15	59.26	25.95	+.010
211	27.73	6.59	24.42	4.29	59.42	26.04	-.004
238	27.50	6.36	24.30	4.10	59.24	25.95	.012
265	27.06	5.89	23.77	3.69	58.82	25.64	.018
293	26.62	5.40	23.29	3.20	58.32	25.08	.015
320	26.34	5.10	22.99	2.89	57.99	24.76	-.011
Dec. =	- 21° 6'	- 29° 53'	- 25° 30'	- 23° 37'	- 27° 8'	- 20° 29'	
Mag. =	4	3.4	3	5	4.3	6	
	ν^1 Sagittarii.	σ Sagittarii.	ζ Sagittarii.	τ Sagittarii.	χ^1 Sagittarii.	Λ^2 Sagittarii.	
	18 ^h 45 ^m .	18 ^h 46 ^m .	18 ^h 53 ^m .	18 ^h 56 ^m .	19 ^h 16 ^m .	19 ^h 28 ^m .	
48	43.60	35.73	42.97	12.54	45.59	11.58	+.029
75	44.43	36.55	43.84	13.38	46.35	12.33	.031
102	45.35	37.50	44.79	14.30	47.21	13.21	.032
130	46.21	38.42	45.74	15.24	48.20	14.18	.028
157	46.96	39.19	46.55	16.05	49.02	15.02	.023
184	47.43	39.68	47.07	16.57	49.54	15.61	.012
212	47.61	39.86	47.28	16.79	49.83	15.89	+.000
239	47.44	39.69	47.12	16.64	49.73	15.82	-.013
266	46.93	39.27	46.69	16.23	49.36	15.46	.016
293	46.58	38.80	46.30	15.74	48.90	15.02	.013
321	46.23	38.46	45.82	15.37	48.51	14.60	-.009
Dec. =	- 22° 55'	- 26° 28'	- 30° 5'	- 27° 52'	- 24° 47'	- 25° 11'	
Mag. =	5	2.3	3.4	4.3	6	5.4	
	ϵ^2 Sagittarii.	f Sagittarii.	δ Sagittarii.	A Sagittarii.	c Sagittarii.	Piazzi xix-366.	
	19 ^h 33 ^m .	19 ^h 38 ^m .	19 ^h 48 ^m .	19 ^h 50 ^m .	19 ^h 54 ^m .	19 ^h 55 ^m .	
49	31.10	11.99	21.61	25.70	3.14	27.54	+.025
76	31.77	12.73	22.35	26.44	3.87	28.30	.029
103	32.58	13.57	23.23	27.31	4.75	29.21	.032
131	33.46	14.48	24.20	28.27	5.72	30.21	.032
158	34.27	15.30	25.08	29.15	6.61	31.15	.027
185	34.82	15.87	25.71	29.78	7.25	31.82	.019
213	35.25	16.32	26.21	30.28	7.77	32.44	+.005
240	35.03	16.11	26.01	30.09	7.59	32.17	-.006
267	34.62	15.69	25.58	29.67	7.17	31.73	.014
294	34.27	15.34	25.21	29.30	6.80	31.24	.014
322	33.89	14.95	24.78	28.88	6.36	30.88	-.009
Dec. =	- 16° 27'	- 20° 6'	- 27° 32'	- 26° 34'	- 22° 6'	- 32° 27'	
Mag. =	5	5	5	5	5	5	
	α^3 Capricorni.	π Capricorni.	ρ Capricorni.	ν Capricorni.	ψ Capricorni.	ω Capricorni.	
	20 ^h 10 ^m .	20 ^h 19 ^m .	20 ^h 20 ^m .	20 ^h 32 ^m .	20 ^h 37 ^m .	20 ^h 45 ^m .	
77	17.92	19.20	53.28	5.53	49.10	27.55	+.029
104	18.71	20.04	54.08	6.31	49.91	28.36	.032
132	19.60	20.95	54.98	7.22	50.85	29.31	.033
159	20.42	21.81	55.85	8.10	51.81	30.26	.029
186	21.03	22.45	56.49	8.77	52.49	30.99	.020
213	21.38	22.84	56.88	9.18	52.94	31.45	+.008
241	21.39	22.87	56.91	9.25	53.03	31.56	-.004
268	21.11	22.60	56.65	9.00	52.78	31.31	.012
295	20.71	22.20	56.24	8.61	52.37	30.92	.015
322	20.33	21.80	55.85	8.21	51.94	30.47	.011
350	20.16	21.59	55.64	7.98	51.69	30.29	-.005
Dec. =	- 12° 59'	- 18° 40'	- 18° 16'	- 18° 38'	- 25° 46'	- 27° 27'	
Mag. =	3.4	5	5	6.5	4.5	4.5	

MOON-CULMINATING STARS. 327

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	♈ Aquarii. 21 ^h 1 ^m .	♐ Capricorni. 21 ^h 14 ^m .	♐ Capricorni. 21 ^h 18 ^m .	♐ Capricorni. 21 ^h 29 ^m .	♐ Capricorni. 21 ^h 32 ^m .	♐ Capricorni. 21 ^h 39 ^m .	
	s.	s.	s.	s.	s.	s.	
78	58.60	26.73	40.90	15.01	20.82	19.21	+ .016
105	59.32	27.46	41.63	15.70	21.30	19.88	.029
133	60.19	28.34	42.53	16.59	22.17	20.73	.032
160	61.04	29.21	43.44	17.48	23.05	21.62	.031
187	61.75	29.97	44.23	18.27	23.84	22.41	.024
214	62.21	30.47	44.76	18.81	24.38	22.96	.014
242	62.34	30.64	44.94	19.02	24.59	23.20	+ .002
269	62.16	30.48	44.79	18.90	24.48	23.10	— .007
296	61.79	30.13	44.42	18.55	24.15	22.76	.014
324	61.40	29.72	43.99	18.15	23.75	22.39	.013
351	61.16	29.46	43.71	17.86	23.47	22.10	— .008
Dec. =	— 11° 56'	— 17° 26'	— 23° 1'	— 20° 5'	— 17° 18'	— 16° 46'	
Mag. =	4.5	4.5	4	5.4	4.3	3	
	♐ Capricorni. 21 ^h 45 ^m .	♈ Aquarii. 21 ^h 58 ^m .	♈ Aquarii. 22 ^h 9 ^m .	♈ Aquarii. 22 ^h 12 ^m .	♈ Aquarii. 22 ^h 18 ^m .	♈ Aquarii. 22 ^h 23 ^m .	
	s.	s.	s.	s.	s.	s.	
79	40.24	52.99	27.18	50.32	58.80	13.65	+ .016
106	40.89	53.62	27.77	50.90	59.38	14.21	.025
134	41.74	54.45	28.57	51.70	60.20	15.00	.030
161	42.61	55.33	29.44	52.57	61.10	15.87	.030
188	43.40	56.14	30.24	53.37	61.92	16.69	.026
216	43.97	56.73	30.84	53.98	62.57	17.33	.016
243	44.19	56.99	31.12	54.27	62.88	17.65	+ .005
270	44.10	56.92	31.09	54.25	62.87	17.65	— .005
297	43.79	56.63	30.83	54.00	62.62	17.42	.011
325	43.42	56.27	30.48	53.65	62.30	17.08	.012
352	43.12	55.96	30.19	53.35	61.94	16.77	— .008
Dec. =	— 14° 13'	— 14° 33'	— 8° 29'	— 8° 31'	— 17° 27'	— 11° 24'	
Mag. =	5	4	4.5	5.6	6	5.4	
	♈ Aquarii. 22 ^h 30 ^m .	♈ Aquarii. 22 ^h 42 ^m .	♈ Aquarii. 22 ^h 47 ^m .	♈ Aquarii. 23 ^h 7 ^m .	♈ Aquarii. 23 ^h 8 ^m .	♈ Aquarii. 23 ^h 11 ^m .	
	s.	s.	s.	s.	s.	s.	
25	30.42	10.73	13.20	4.52	33.47	40.87	— .001
107	31.35	11.59	14.02	5.17	34.11	41.49	+ .022
135	32.14	12.37	14.80	5.90	34.83	42.21	.029
162	32.99	13.24	15.68	6.75	35.68	43.06	.031
189	33.80	14.09	16.53	7.59	36.54	43.91	.028
217	34.44	14.76	17.23	8.30	37.25	44.63	.019
244	34.80	15.12	17.60	8.71	37.67	45.06	+ .008
271	34.76	15.16	17.65	8.81	37.78	45.18	— .001
298	34.55	14.96	17.46	8.68	37.64	45.05	.009
326	34.22	14.62	17.12	8.39	37.35	44.76	.011
353	33.93	14.32	16.80	8.09	37.05	44.46	— .011
Dec. =	— 4° 57'	— 14° 20'	— 16° 34'	— 6° 48'	— 9° 51'	— 10° 23'	
Mag. =	5	4	3	4.5	5.4	5	
	♈ Piscium. 23 ^h 19 ^m .	♈ Piscium. 23 ^h 34 ^m .	♈ Piscium. 23 ^h 40 ^m .	♈ Piscium. 23 ^h 51 ^m .	♈ Piscium. 23 ^h 54 ^m .	♈ Piscium. 23 ^h 56 ^m .	
	s.	s.	s.	s.	s.	s.	
27	45.61	54.66	44.95	30.65	47.25	10.65	— .007
108	46.16	55.09	45.34	30.98	47.56	10.93	+ .020
136	46.91	55.81	46.05	31.64	48.22	11.57	.027
163	47.74	56.63	46.87	32.44	49.01	12.37	.030
190	48.58	57.48	47.72	33.30	49.88	13.24	.029
218	49.39	58.22	48.48	34.07	50.66	14.02	.023
245	49.71	58.68	48.95	34.57	51.17	14.54	.013
272	49.84	58.85	49.14	34.79	51.39	14.77	+ .003
300	49.73	58.77	49.07	34.75	51.36	14.75	— .005
327	49.46	58.54	48.85	34.55	51.16	14.55	.009
354	49.18	58.26	48.56	34.27	50.88	14.27	— .011
Dec. =	+ 0° 29'	+ 1° 1'	— 3° 32'	— 4° 20'	— 6° 48'	— 6° 29'	
Mag. =	5.4	5	6	5.6	5	5	

FOR WASHINGTON MEAN NOON AND MIDNIGHT.										
JANUARY.						FEBRUARY.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	' "	' "	"	h. m.	m.	' "	' "	"	h. m.	m.
1.0	15 3.0	55 7.8	+1.48	U. 6 10.7	1.78	15 38.4	57 17.2	+2.35	U. 7 18.3	2.37
1.5	15 8.3	55 26.7	1.68	L. 18 32.5	1.85	15 46.2	57 45.8	2.42	L. 19 47.2	2.45
2.0	15 14.1	55 47.8	1.85	U. 6 55.1	1.93	15 54.1	58 15.2	2.45	U. 8 17.1	2.52
2.5	15 20.4	56 11.0	2.01	L. 19 18.8	2.02	16 2.2	58 44.7	2.44	L. 20 47.8	2.58
3.0	15 27.2	56 35.9	2.15	U. 7 43.6	2.12	16 10.1	59 13.8	2.37	U. 9 19.1	2.60
3.5	15 34.3	57 2.2	2.25	L. 20 9.5	2.23	16 17.5	59 41.6	2.23	L. 21 50.5	2.60
4.0	15 41.7	57 29.7	2.31	U. 8 37.0	2.33	16 24.7	60 7.3	2.03	U. 10 21.7	2.57
4.5	15 49.3	57 57.6	2.33	L. 21 5.6	2.43	16 31.0	60 30.5	1.78	L. 22 52.4	2.52
5.0	15 56.9	58 25.3	2.29	U. 9 35.4	2.53	16 36.4	60 50.3	1.47	U. 11 22.4	2.46
5.5	16 4.4	58 52.4	2.19	L. 22 6.2	2.60	16 40.6	61 5.9	1.12	L. 23 51.7	2.40
6.0	16 11.2	59 18.0	2.05	U. 10 37.7	2.64	16 43.5	61 17.0	0.72		
6.5	16 17.6	59 41.8	1.85	L. 23 9.6	2.65	16 45.3	61 23.1	+0.29	U. 12 20.2	2.23
7.0	16 23.4	60 2.8	1.60	U. 11 41.5	2.63	16 45.6	61 24.1	-0.13	L. 0 47.8	2.27
7.5	16 28.2	60 20.5	1.31			16 44.5	61 20.2	0.54	U. 13 14.7	2.22
8.0	16 32.1	60 34.6	0.98	L. 0 13.0	2.59	16 42.1	61 11.3	0.93	L. 1 41.0	2.17
8.5	16 34.8	60 44.6	0.63	U. 12 43.7	2.52	16 38.4	60 57.8	1.28	U. 14 6.8	2.14
9.0	16 36.4	60 50.4	+0.27	L. 1 13.4	2.44	16 33.6	60 40.4	1.59	L. 2 32.2	2.12
9.5	16 36.7	60 51.6	-0.10	U. 13 42.2	2.36	16 27.9	60 19.6	1.85	U. 14 57.5	2.11
10.0	16 35.9	60 48.6	0.44	L. 2 10.1	2.28	16 21.5	59 56.1	2.04	L. 3 22.8	2.11
10.5	16 34.0	60 41.6	0.76	U. 14 37.0	2.20	16 14.6	59 30.5	2.18	U. 15 48.2	2.12
11.0	16 31.1	60 30.9	1.04	L. 3 3.1	2.14	16 7.4	59 3.7	2.26	L. 4 13.7	2.14
11.5	16 27.2	60 17.0	1.29	U. 15 28.4	2.09	15 59.9	58 36.2	2.29	U. 16 39.6	2.17
12.0	16 22.7	60 0.3	1.49	L. 3 53.2	2.05	15 52.4	58 8.7	2.27	L. 5 5.8	2.20
12.5	16 17.6	59 41.4	1.64	U. 16 17.5	2.03	15 45.0	57 41.7	2.22	U. 17 32.5	2.23
13.0	16 12.0	59 21.0	1.75	L. 4 41.8	2.02	15 37.9	57 15.5	2.13	L. 5 59.5	2.26
13.5	16 6.1	58 59.6	1.81	U. 17 6.1	2.02	15 31.1	56 50.6	2.02	U. 18 26.8	2.27
14.0	16 0.1	58 37.4	1.83	L. 5 30.4	2.04	15 24.7	56 27.1	1.89	L. 6 54.1	2.28
14.5	15 54.1	58 15.2	1.83	U. 17 55.0	2.07	15 18.8	56 5.3	1.75	U. 19 21.4	2.26
15.0	15 48.3	57 53.4	1.80	L. 6 20.0	2.10	15 13.3	55 45.2	1.60	L. 7 48.5	2.24
15.5	15 42.5	57 32.3	1.74	U. 18 45.4	2.14	15 8.3	55 26.9	1.45	U. 20 15.2	2.20
16.0	15 36.8	57 11.6	1.68	L. 7 11.2	2.17	15 3.9	55 10.4	1.30	L. 8 41.5	2.16
16.5	15 31.4	56 51.8	1.60	U. 19 37.5	2.20	14 59.9	54 55.8	1.15	U. 21 7.3	2.11
17.0	15 26.4	56 33.0	1.52	L. 8 4.1	2.23	14 56.4	54 42.9	1.00	L. 9 32.3	2.04
17.5	15 21.6	56 15.3	1.43	U. 20 31.1	2.26	14 53.3	54 31.7	0.86	U. 21 56.5	1.98
18.0	15 17.0	55 58.7	1.34	L. 8 58.4	2.27	14 50.7	54 22.3	0.72	L. 10 19.9	1.91
18.5	15 12.7	55 43.2	1.25	U. 21 25.5	2.25	14 48.5	54 14.3	0.60	U. 22 42.6	1.86
19.0	15 8.9	55 28.7	1.16	L. 9 52.4	2.23	14 46.8	54 7.9	0.48	L. 11 4.6	1.80
19.5	15 5.2	55 15.4	1.07	U. 22 19.1	2.20	14 45.5	54 3.0	0.36	U. 23 26.0	1.75
20.0	15 1.8	55 3.1	0.98	L. 10 45.3	2.15	14 44.5	53 59.4	0.24	L. 11 46.8	1.73
20.5	14 58.7	54 51.8	0.90	U. 23 10.7	2.09	14 43.9	53 57.0	0.13		
21.0	14 55.9	54 41.5	0.81	L. 11 35.4	2.02	14 43.6	53 56.0	-0.03	U. 0 7.2	1.69
21.5	14 53.4	54 32.1	0.73	U. 23 59.3	1.96	14 43.6	53 56.3	+0.07	L. 12 27.3	1.66
22.0	14 51.2	54 23.8	0.65			14 44.0	53 57.7	0.18	U. 0 47.1	1.65
22.5	14 49.2	54 16.5	0.56	L. 12 22.5	1.90	14 44.8	54 0.6	0.29	L. 13 6.7	1.64
23.0	14 47.6	54 10.4	0.46	U. 0 45.0	1.84	14 46.0	54 4.8	0.41	U. 1 26.4	1.64
23.5	14 46.2	54 5.5	0.36	L. 13 6.7	1.78	14 47.5	54 10.4	0.53	L. 13 46.2	1.66
24.0	14 45.1	54 1.8	0.25	U. 1 27.6	1.73	14 49.5	54 17.6	0.66	U. 2 6.2	1.69
24.5	14 44.5	53 59.5	0.13	L. 13 48.1	1.70	14 51.8	54 26.2	0.79	L. 14 26.5	1.72
25.0	14 44.3	53 58.6	-0.00	U. 2 8.3	1.67	14 54.6	54 36.6	0.93	U. 2 47.4	1.77
25.5	14 44.5	53 59.5	+0.14	L. 14 28.0	1.64	14 57.9	54 48.6	1.07	L. 15 8.9	1.83
26.0	14 45.2	54 1.9	0.30	U. 2 47.6	1.63	15 1.7	55 2.4	1.22	U. 3 31.1	1.89
26.5	14 46.4	54 6.3	0.47	L. 15 7.2	1.64	15 5.9	55 17.9	1.37	L. 15 54.2	1.97
27.0	14 48.2	54 12.9	0.65	U. 3 27.0	1.65	15 10.6	55 35.3	1.52	U. 4 18.3	2.05
27.5	14 50.6	54 21.4	0.82	L. 15 46.8	1.67	15 15.9	55 54.6	1.67	L. 16 43.3	2.13
28.0	14 53.4	54 32.0	1.00	U. 4 6.9	1.71	15 21.6	56 15.6	1.82	U. 5 9.4	2.22
28.5	14 56.9	54 44.9	1.18	L. 16 27.6	1.75	15 27.8	56 38.4	1.97	L. 17 36.5	2.30
29.0	15 1.1	55 0.1	1.37	U. 4 49.1	1.82	15 34.4	57 2.8	2.09	U. 6 4.5	2.38
29.5	15 5.8	55 17.6	1.56	L. 17 11.3	1.89	15 41.4	57 28.4	2.19	L. 18 33.4	2.46
30.0	15 11.2	55 37.4	1.75	U. 5 34.4	1.97	15 48.7	57 55.2	2.27	U. 7 3.2	2.50
30.5	15 17.3	55 59.4	1.93	L. 17 58.5	2.06	15 56.2	58 22.8	2.30	L. 19 33.3	2.50
31.0	15 23.8	56 23.6	2.10	U. 6 23.8	2.17	16 3.8	58 50.5	2.30	U. 8 3.3	2.50
31.5	15 30.9	56 49.6	+2.24	L. 18 50.4	2.28	16 11.2	59 17.9	+2.24	L. 20 33.3	2.49

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

MARCH.

APRIL.

Date.	MARCH.		Hourly Dif.	Meridian Trans.		Hourly Dif.	APRIL.		Hourly Dif.	Meridian Trans.		Hourly Dif.
	Semi-diameter.	Horizontal Parallax.		h. m.	m.		Semi-diameter.	Horizontal Parallax.		h. m.	m.	
1.0	15 48.7	57 55.2	+2.37	U. 7 3.3	2.50	16 21.5	59 55.7	+1.56	U. 8 42.4	2.24		
1.5	15 56.2	58 22.8	2.30	L. 19 33.3	2.50	16 26.3	60 13.4	1.37	L. 21 8.9	2.19		
2.0	16 3.8	58 50.5	2.30	U. 8 3.3	2.50	16 30.4	60 28.5	1.13	U. 9 35.0	2.16		
2.5	16 11.2	59 17.9	2.24	L. 20 33.3	2.49	16 33.7	60 40.4	0.85	L. 22 0.8	2.15		
3.0	16 18.4	59 44.3	2.13	U. 9 3.0	2.48	16 36.0	60 48.8	0.54	U. 10 26.6	2.14		
3.5	16 25.1	60 9.0	1.96	L. 21 32.3	2.45	16 37.2	60 53.2	+0.19	L. 22 52.3	2.15		
4.0	16 31.2	60 31.4	1.73	U. 10 1.1	2.40	16 37.2	60 53.4	-0.17	U. 11 18.2	2.16		
4.5	16 36.4	60 50.5	1.44	L. 22 29.2	2.35	16 36.1	60 49.2	0.53	L. 23 44.3	2.19		
5.0	16 40.7	61 5.9	1.10	U. 10 56.6	2.30	16 33.7	60 40.6	0.89				
5.5	16 43.7	61 17.0	0.72	L. 23 23.5	2.26	16 30.3	60 27.9	1.22	U. 12 10.8	2.23		
6.0	16 45.4	61 23.2	+0.31	U. 11 50.0	2.22	16 25.8	60 11.4	1.52	L. 0 37.8	2.27		
6.5	16 45.7	61 24.5	-0.11			16 20.4	59 51.5	1.78	U. 13 5.4	2.31		
7.0	16 44.7	61 20.6	0.52	L. 0 16.1	2.18	16 14.2	59 28.8	1.99	L. 1 33.4	2.36		
7.5	16 42.3	61 11.9	0.92	U. 12 42.1	2.17	16 7.4	59 3.9	2.15	U. 14 1.9	2.39		
8.0	16 38.6	60 58.4	1.30	L. 1 8.2	2.17	16 0.2	58 37.4	2.26	L. 2 30.7	2.41		
8.5	16 33.7	60 40.6	1.63	U. 13 34.3	2.18	15 52.7	58 10.0	2.31	U. 14 59.8	2.42		
9.0	16 27.9	60 19.3	1.91	L. 2 0.6	2.19	15 45.2	57 42.2	2.31	L. 3 28.8	2.41		
9.5	16 21.8	59 54.9	2.14	U. 14 27.2	2.21	15 37.7	57 14.7	2.26	U. 15 57.5	2.38		
10.0	16 13.9	59 27.8	2.30	L. 2 54.2	2.23	15 30.4	56 48.1	2.18	L. 4 25.8	2.33		
10.5	16 6.2	58 59.6	2.40	U. 15 21.6	2.26	15 23.5	56 22.6	2.06	U. 16 53.5	2.27		
11.0	15 58.3	58 30.4	2.43	L. 3 49.4	2.20	15 17.0	55 58.7	1.91	L. 5 20.4	2.20		
11.5	15 50.3	58 1.1	2.42	U. 16 17.4	2.22	15 11.0	55 36.8	1.74	U. 17 46.3	2.13		
12.0	15 42.4	57 32.0	2.37	L. 4 45.5	2.24	15 5.6	55 17.0	1.56	L. 6 11.4	2.05		
12.5	15 34.7	57 4.2	2.27	U. 17 13.6	2.23	15 0.8	54 59.4	1.36	U. 18 35.5	1.97		
13.0	15 27.4	56 37.7	2.15	L. 5 41.5	2.22	14 56.7	54 44.3	1.16	L. 6 58.7	1.90		
13.5	15 20.6	56 12.6	2.00	U. 18 9.2	2.20	14 53.3	54 31.7	0.95	U. 19 21.1	1.84		
14.0	15 14.4	55 49.5	1.83	L. 6 36.3	2.27	14 50.5	54 21.5	0.74	L. 7 42.8	1.78		
14.5	15 8.8	55 28.5	1.65	U. 19 2.7	2.22	14 48.5	54 13.9	0.53	U. 20 3.8	1.73		
15.0	15 3.7	55 9.8	1.47	L. 7 28.4	2.16	14 47.0	54 8.7	0.33	L. 8 24.4	1.70		
15.5	14 59.1	54 53.3	1.27	U. 19 53.2	2.09	14 46.3	54 5.9	-0.14	U. 20 44.6	1.67		
16.0	14 55.2	54 39.1	1.09	L. 8 17.2	2.02	14 46.1	54 5.3	+0.04	L. 9 4.5	1.65		
16.5	14 52.0	54 27.0	0.90	U. 20 40.4	1.95	14 46.5	54 6.8	0.21	U. 21 24.3	1.65		
17.0	14 49.3	54 17.2	0.72	L. 9 2.8	1.89	14 47.4	54 10.3	0.37	L. 9 44.1	1.65		
17.5	14 47.2	54 9.6	0.55	U. 21 24.5	1.83	14 48.9	54 15.6	0.51	U. 22 4.0	1.67		
18.0	14 45.7	54 4.1	0.38	L. 9 45.6	1.78	14 50.8	54 22.5	0.64	L. 10 24.2	1.70		
18.5	14 44.7	54 0.4	0.23	U. 22 6.3	1.74	14 53.1	54 30.8	0.75	U. 22 44.8	1.73		
19.0	14 44.2	53 58.6	-0.08	L. 10 26.5	1.70	14 55.7	54 40.5	0.85	L. 11 5.8	1.78		
19.5	14 44.2	53 58.6	+0.05	U. 22 46.5	1.67	14 58.6	54 51.2	0.93	U. 23 27.5	1.84		
20.0	14 44.6	53 59.8	0.17	L. 11 6.2	1.65	15 1.8	55 2.8	1.01	L. 11 50.0	1.90		
20.5	14 45.4	54 2.6	0.29	U. 23 26.0	1.65	15 5.2	55 15.3	1.07				
21.0	14 46.5	54 6.7	0.40	L. 11 45.8	1.66	15 8.7	55 28.4	1.12	U. 0 13.2	1.97		
21.5	14 47.9	54 12.2	0.50			15 12.5	55 42.1	1.16	L. 12 37.4	2.05		
22.0	14 49.7	54 18.8	0.60	U. 0 5.8	1.67	15 16.3	55 56.3	1.20	U. 1 2.5	2.13		
22.5	14 51.8	54 26.4	0.69	L. 12 26.1	1.69	15 20.3	56 10.8	1.22	L. 13 28.5	2.20		
23.0	14 54.3	54 35.2	0.78	U. 0 46.8	1.72	15 24.3	56 25.6	1.25	U. 1 55.3	2.27		
23.5	14 57.0	54 45.1	0.87	L. 13 8.0	1.75	15 28.4	56 40.7	1.27	L. 14 23.0	2.33		
24.0	14 59.9	54 56.0	0.96	U. 1 29.9	1.80	15 32.6	56 56.0	1.28	U. 2 51.3	2.37		
24.5	15 3.2	55 8.2	1.05	L. 13 52.6	1.87	15 36.8	57 11.5	1.29	L. 15 20.0	2.40		
25.0	15 6.8	55 21.4	1.15	U. 2 16.2	1.94	15 41.0	57 27.0	1.30	U. 3 48.8	2.41		
25.5	15 10.7	55 35.7	1.24	L. 14 40.6	2.01	15 45.3	57 42.7	1.31	L. 16 17.7	2.40		
26.0	15 14.9	55 51.0	1.33	U. 3 5.8	2.08	15 49.6	57 58.4	1.31	U. 4 46.3	2.37		
26.5	15 19.4	56 7.5	1.42	L. 15 32.1	2.16	15 53.8	58 14.1	1.30	L. 17 14.5	2.33		
27.0	15 24.2	56 25.2	1.52	U. 3 59.2	2.24	15 58.0	58 29.5	1.27	U. 5 42.1	2.28		
27.5	15 29.3	56 43.9	1.60	L. 16 27.2	2.30	16 2.2	58 44.7	1.24	L. 18 9.2	2.23		
28.0	15 34.7	57 3.6	1.68	U. 4 55.7	2.36	16 6.2	58 59.3	1.19	U. 6 35.7	2.18		
28.5	15 40.3	57 24.3	1.76	L. 17 24.5	2.40	16 10.0	59 13.2	1.12	L. 19 1.6	2.14		
29.0	15 46.1	57 45.9	1.82	U. 5 53.6	2.42	16 13.5	59 26.1	1.02	U. 7 27.1	2.11		
29.5	15 52.2	58 8.0	1.86	L. 18 22.6	2.42	16 16.6	59 37.7	0.90	L. 19 52.2	2.08		
30.0	15 58.3	58 30.4	1.87	U. 6 51.5	2.41	16 19.3	59 47.6	0.75	U. 8 17.1	2.07		
30.5	16 4.4	58 52.8	1.85	L. 19 20.1	2.39	16 21.5	59 55.5	0.57	L. 20 42.0	2.07		
31.0	16 10.4	59 14.9	1.80	U. 7 48.3	2.36	16 23.0	60 1.1	0.36	U. 9 6.9	2.08		
31.5	16 16.2	59 36.1	+1.70	L. 20 15.9	2.31	16 23.8	60 4.0	+0.13	L. 21 32.0	2.11		

FOR WASHINGTON MEAN NOON AND MIDNIGHT.										
MAY.						JUNE.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly DM.	Meridian Transit.	Hourly DM.	Semi-diameter.	Horizontal Parallax.	Hourly DM.	Meridian Transit.	Hourly DM.
d.	^h ^m	^h ^m	^h ^m	h. m.	m.	^h ^m	^h ^m	^h ^m	h. m.	m.
1.0	16 23.0	60 1.1	+0.36	U. 9 6.9	2.08	16 0.8	68 39.8	-1.02	U. 10 29.6	2.36
1.5	16 23.8	60 4.0	+0.13	L. 21 32.0	2.11	15 57.3	68 26.7	1.16	L. 22 58.2	2.41
2.0	16 23.8	60 4.1	-0.12	U. 9 57.6	2.15	15 53.3	68 19.0	1.29	U. 11 27.2	2.43
2.5	16 23.0	60 1.1	0.38	L. 22 23.6	2.19	15 48.9	67 55.9	1.40	L. 23 56.5	2.43
3.0	16 21.3	59 55.0	0.64	U. 10 50.2	2.24	15 44.2	67 38.5	1.49		
3.5	16 18.8	59 45.7	0.90	L. 23 17.5	2.30	15 39.2	67 20.2	1.56	U. 12 25.6	2.42
4.0	16 15.4	59 33.3	1.15	U. 11 45.4	2.35	15 34.0	67 1.2	1.60	L. 0 54.4	2.38
4.5	16 11.3	59 18.1	1.38			15 28.7	66 41.8	1.62	U. 13 22.6	2.32
5.0	16 6.4	59 0.4	1.58	L. 0 14.0	2.40	15 23.4	66 22.4	1.60	L. 1 50.1	2.25
5.5	16 1.0	58 40.4	1.74	U. 12 43.0	2.43	15 18.3	66 3.4	1.56	U. 14 16.6	2.17
6.0	15 55.1	58 18.8	1.86	L. 1 12.4	2.45	15 13.3	65 45.1	1.49	L. 2 42.1	2.09
6.5	15 48.9	57 55.9	1.95	U. 13 41.8	2.45	15 8.5	65 27.7	1.40	U. 15 6.6	2.00
7.0	15 42.4	57 32.2	1.99	L. 2 11.0	2.42	15 4.2	65 11.6	1.27	L. 3 30.2	1.93
7.5	15 35.9	57 8.2	1.99	U. 14 39.9	2.38	15 0.2	64 57.2	1.13	U. 15 52.9	1.85
8.0	15 29.4	56 44.5	1.96	L. 3 8.0	2.31	14 56.8	64 44.6	0.97	L. 4 14.7	1.79
8.5	15 23.2	56 21.4	1.88	U. 15 35.3	2.24	14 53.9	64 34.0	0.79	U. 16 35.9	1.74
9.0	15 17.2	55 59.4	1.77	L. 4 1.8	2.16	14 51.7	64 25.8	0.59	L. 4 56.5	1.70
9.5	15 11.6	55 38.9	1.64	U. 16 27.2	2.07	14 50.1	64 19.8	0.39	U. 17 16.7	1.67
10.0	15 6.5	55 20.1	1.49	L. 4 51.5	1.99	14 49.1	64 16.4	-0.18	L. 5 36.6	1.65
10.5	15 1.9	55 3.3	1.31	U. 17 15.0	1.92	14 48.9	64 15.5	+0.08	U. 17 56.4	1.65
11.0	14 57.9	54 48.7	1.12	L. 5 37.5	1.85	14 49.3	64 17.1	0.25	L. 6 16.2	1.65
11.5	14 54.6	54 36.5	0.91	U. 17 59.3	1.78	14 50.5	64 21.4	0.46	U. 18 36.1	1.67
12.0	14 52.0	54 26.8	0.70	L. 6 20.8	1.73	14 52.4	64 28.2	0.67	L. 6 56.2	1.70
12.5	14 50.0	54 19.6	0.49	U. 18 40.9	1.70	14 54.9	64 37.5	0.87	U. 19 16.9	1.74
13.0	14 48.7	54 15.0	0.27	L. 7 1.1	1.67	14 58.0	64 49.1	1.06	L. 7 38.1	1.79
13.5	14 48.2	54 13.0	-0.06	U. 19 21.0	1.65	15 1.8	65 2.8	1.23	U. 20 0.0	1.86
14.0	14 48.4	54 13.5	+0.15	L. 7 40.7	1.65	15 6.1	65 18.6	1.39	L. 8 22.8	1.93
14.5	14 49.2	54 16.5	0.35	U. 20 0.6	1.65	15 10.8	65 36.1	1.52	U. 20 46.5	2.02
15.0	14 50.6	54 21.8	0.54	L. 8 20.5	1.67	15 16.0	65 55.1	1.63	L. 9 11.2	2.11
15.5	14 52.6	54 29.3	0.71	U. 20 40.8	1.70	15 21.5	66 15.2	1.71	U. 21 37.1	2.20
16.0	14 55.2	54 38.8	0.87	L. 9 1.4	1.75	15 27.1	66 36.0	1.76	L. 10 4.1	2.29
16.5	14 58.3	54 50.1	1.01	U. 21 22.7	1.80	15 32.9	66 57.2	1.78	U. 22 32.0	2.36
17.0	15 1.8	55 3.0	1.13	L. 9 44.6	1.86	15 38.7	67 18.5	1.76	L. 11 0.8	2.43
17.5	15 5.7	55 17.2	1.23	U. 22 7.4	1.93	15 44.4	67 39.3	1.70	U. 23 30.3	2.48
18.0	15 9.9	55 32.6	1.31	L. 10 31.1	2.01	15 49.8	67 59.2	1.62		
18.5	15 14.3	55 48.7	1.37	U. 22 55.7	2.10	15 54.9	68 18.0	1.50	L. 12 0.2	2.50
19.0	15 18.8	56 5.4	1.40	L. 11 21.4	2.18	15 59.6	68 35.2	1.36	U. 0 30.2	2.50
19.5	15 23.4	56 22.3	1.42	U. 23 48.0	2.26	16 3.8	68 50.5	1.19	L. 13 0.0	2.47
20.0	15 28.0	56 39.3	1.41			16 7.4	69 3.8	1.01	U. 1 29.4	2.43
20.5	15 32.6	56 56.1	1.38	L. 12 15.6	2.33	16 10.4	69 14.9	0.82	L. 13 58.2	2.37
21.0	15 37.1	57 12.5	1.34	U. 0 44.0	2.39	16 12.8	69 23.6	0.63	U. 2 26.2	2.31
21.5	15 41.4	57 28.2	1.28	L. 13 13.0	2.43	16 14.5	69 29.9	0.43	L. 14 53.5	2.24
22.0	15 45.4	57 43.2	1.21	U. 1 42.3	2.45	16 15.6	69 33.9	0.24	U. 3 20.0	2.18
22.5	15 49.3	57 57.3	1.14	L. 14 11.7	2.44	16 16.1	69 35.6	+0.06	L. 15 45.7	2.12
23.0	15 52.8	58 10.4	1.05	U. 2 40.9	2.42	16 16.0	69 35.3	-0.11	U. 4 11.0	2.08
23.5	15 56.1	58 22.5	0.96	L. 15 9.7	2.38	16 15.3	69 33.0	0.26	L. 16 35.7	2.05
24.0	15 59.1	58 33.5	0.87	U. 3 38.0	2.33	16 14.3	69 29.0	0.40	U. 5 0.1	2.03
24.5	16 1.8	58 43.4	0.78	L. 16 5.5	2.27	16 12.8	69 23.5	0.52	L. 17 24.4	2.02
25.0	16 4.2	58 52.1	0.69	U. 4 32.4	2.21	16 10.9	69 16.6	0.62	U. 5 48.7	2.03
25.5	16 6.3	58 59.8	0.60	L. 16 58.6	2.15	16 8.7	69 8.6	0.72	L. 18 13.1	2.05
26.0	16 8.1	59 6.4	0.50	U. 5 24.1	2.10	16 6.2	68 59.5	0.80	U. 6 37.9	2.08
26.5	16 9.6	59 11.9	0.41	L. 17 49.0	2.06	16 3.5	68 49.5	0.86	L. 19 3.1	2.12
27.0	16 10.8	59 16.2	0.31	U. 6 13.6	2.04	16 0.6	68 38.8	0.93	U. 7 28.9	2.17
27.5	16 11.6	59 19.3	0.21	L. 18 38.0	2.02	15 57.4	68 27.2	0.99	L. 19 55.3	2.23
28.0	16 12.1	59 21.2	+0.10	U. 7 2.2	2.02	15 54.1	68 15.0	1.04	U. 8 22.3	2.28
28.5	16 12.3	59 21.7	-0.01	L. 19 26.5	2.03	15 50.6	68 2.2	1.10	L. 20 50.0	2.32
29.0	16 12.0	59 20.8	0.14	U. 7 51.0	2.06	15 47.0	67 48.8	1.14	U. 9 18.1	2.36
29.5	16 11.3	59 18.3	0.28	L. 20 15.9	2.09	15 43.1	67 34.8	1.19	L. 21 46.6	2.38
30.0	16 10.2	59 14.1	0.42	U. 8 41.4	2.14	15 39.2	67 20.2	1.22	U. 10 15.3	2.39
30.5	16 8.6	59 8.2	0.56	L. 21 7.4	2.20	15 35.2	67 5.5	1.25	L. 22 43.9	2.38
31.0	16 6.5	59 0.6	0.71	U. 9 34.1	2.25	15 31.0	66 50.2	1.28	U. 11 12.1	2.33
31.5	16 3.9	58 51.1	-0.87	L. 22 1.5	2.31	15 26.8	66 34.8	-1.29	L. 23 39.9	2.28

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

JULY.						AUGUST.					
Date.	Semi-diameter.	Horizontal Parallax.	Hourly DIF.	Meridian Transit.	Hourly DIF.	Semi-diameter.	Horizontal Parallax.	Hourly DIF.	Meridian Transit.	Hourly DIF.	
d.	'	"	"	h. m.	m.	'	"	"	h. m.	m.	
1.0	15 31.0	56 50.2	-1.28	U. 11 12.1	2.33	14 58.2	54 49.7	-0.89	L. 0 4.6	1.89	
1.5	15 26.8	56 34.8	1.29	L. 23 39.9	2.28	14 55.4	54 39.5	0.81	U. 12 26.9	1.83	
2.0	15 22.6	56 19.2	1.30	U. 12 7.0	2.22	14 52.9	54 30.3	0.73	L. 0 48.5	1.77	
2.5	15 18.3	56 8.6	1.29			14 50.7	54 22.2	0.62	U. 13 9.5	1.73	
3.0	15 14.1	55 48.3	1.26	L. 0 33.2	2.15	14 48.8	54 15.3	0.51	L. 1 30.0	1.69	
3.5	15 10.1	55 33.3	1.22	U. 12 58.5	2.07	14 47.4	54 9.9	0.39	U. 13 50.1	1.67	
4.0	15 6.2	55 19.0	1.16	L. 1 22.9	1.99	14 46.3	54 5.9	0.26	L. 2 10.0	1.65	
4.5	15 2.5	55 5.4	1.09	U. 13 46.4	1.92	14 45.7	54 3.6	-0.11	U. 14 29.7	1.64	
5.0	14 59.1	54 52.8	0.99	L. 2 9.0	1.85	14 45.6	54 3.2	+0.05	L. 2 49.4	1.65	
5.5	14 56.0	54 41.5	0.88	U. 14 30.8	1.79	14 46.0	54 4.8	0.22	U. 15 9.3	1.66	
6.0	14 53.2	54 31.7	0.75	L. 2 51.9	1.74	14 47.0	54 8.5	0.40	L. 3 29.4	1.69	
6.5	14 51.1	54 23.6	0.60	U. 15 12.5	1.70	14 48.6	54 14.4	0.59	U. 15 49.9	1.73	
7.0	14 49.4	54 17.3	0.44	L. 3 32.7	1.67	14 50.8	54 22.6	0.78	L. 4 10.9	1.77	
7.5	14 48.3	54 13.1	0.26	U. 15 52.6	1.65	14 53.7	54 33.2	0.98	U. 16 32.5	1.83	
8.0	14 47.7	54 11.1	-0.07	L. 4 12.4	1.65	14 57.3	54 46.2	1.18	L. 4 54.8	1.90	
8.5	14 47.8	54 11.5	+0.13	U. 16 32.1	1.65	15 1.4	55 1.6	1.38	U. 17 18.0	1.97	
9.0	14 48.5	54 14.2	0.33	L. 4 52.0	1.66	15 6.3	55 19.4	1.58	L. 5 42.2	2.05	
9.5	14 50.0	54 19.5	0.54	U. 17 12.1	1.69	15 11.7	55 39.4	1.76	U. 18 7.3	2.14	
10.0	14 52.1	54 27.3	0.76	L. 5 32.6	1.73	15 17.8	56 1.6	1.98	L. 6 33.5	2.22	
10.5	14 54.9	54 37.6	0.97	U. 17 53.7	1.78	15 24.3	56 25.7	2.08	U. 19 0.6	2.30	
11.0	14 58.4	54 50.5	1.17	L. 6 15.4	1.85	15 31.3	56 51.5	2.20	L. 7 28.6	2.37	
11.5	15 2.6	55 5.7	1.37	U. 18 38.0	1.92	15 38.7	57 18.5	2.29	U. 19 57.4	2.42	
12.0	15 7.3	55 23.3	1.55	L. 7 1.4	2.00	15 46.3	57 46.5	2.34	L. 8 26.7	2.46	
12.5	15 12.7	55 42.9	1.71	U. 19 25.9	2.09	15 54.0	58 14.8	2.35	U. 20 56.4	2.47	
13.0	15 18.6	56 4.5	1.86	L. 7 51.5	2.18	16 1.7	58 42.9	2.31	L. 9 26.1	2.47	
13.5	15 24.9	56 27.6	1.98	U. 20 18.2	2.27	16 9.1	59 10.2	2.22	U. 21 55.7	2.45	
14.0	15 31.5	56 51.9	2.06	L. 8 45.9	2.35	16 16.2	59 36.1	2.06	L. 10 25.0	2.41	
14.5	15 38.3	57 17.0	2.11	U. 21 14.6	2.42	16 23.6	59 59.7	1.85	U. 22 53.7	2.37	
15.0	15 45.2	57 42.4	2.11	L. 9 44.0	2.47	16 28.3	60 20.6	1.59	L. 11 21.9	2.32	
15.5	15 52.1	58 7.7	2.08	U. 22 14.0	2.50	16 33.0	60 37.9	1.28	U. 23 49.5	2.28	
16.0	15 58.8	58 32.3	1.99	L. 10 44.2	2.51	16 36.7	60 51.4	0.94	L. 12 16.5	2.23	
16.5	16 5.2	58 55.6	1.86	U. 23 14.3	2.50	16 39.2	61 0.5	0.57			
17.0	16 11.0	59 17.0	1.69	L. 11 44.1	2.46	16 40.4	61 5.0	+0.18	U. 0 43.0	2.20	
17.5	16 16.2	59 36.1	1.47			16 40.4	61 4.9	-0.20	L. 13 9.2	2.17	
18.0	16 20.6	59 52.4	1.22	U. 0 13.4	2.41	16 39.1	61 0.3	0.56	U. 1 35.2	2.16	
18.5	16 24.2	60 5.5	0.95	L. 12 42.0	2.36	16 36.7	60 51.4	0.90	L. 14 1.0	2.15	
19.0	16 26.8	60 15.2	0.65	U. 1 9.9	2.29	16 33.2	60 38.6	1.21	U. 2 26.9	2.16	
19.5	16 28.5	60 21.3	0.35	L. 13 37.1	2.23	16 28.8	60 22.4	1.47	L. 14 52.9	2.18	
20.0	16 29.1	60 23.7	+0.05	U. 2 3.6	2.18	16 23.6	60 3.3	1.68	U. 3 19.2	2.21	
20.5	16 28.8	60 22.6	-0.23	L. 14 29.5	2.14	16 17.8	59 42.0	1.84	L. 15 45.8	2.24	
21.0	16 27.6	60 18.1	0.50	U. 2 54.9	2.10	16 11.5	59 19.1	1.95	U. 4 12.9	2.27	
21.5	16 25.6	60 10.5	0.74	L. 15 20.0	2.08	16 5.0	58 55.2	2.01	L. 16 40.4	2.31	
22.0	16 22.8	60 0.3	0.95	U. 3 44.9	2.08	15 58.4	58 30.8	2.03	U. 5 8.3	2.34	
22.5	16 19.3	59 47.7	1.13	L. 16 9.8	2.08	15 51.8	58 6.4	2.01	L. 17 36.5	2.36	
23.0	16 15.4	59 33.2	1.27	U. 4 34.9	2.10	15 45.2	57 42.4	1.97	U. 6 4.8	2.37	
23.5	16 11.1	59 17.3	1.37	L. 17 0.2	2.12	15 38.9	57 19.2	1.90	L. 18 33.2	2.36	
24.0	16 6.4	59 0.3	1.45	U. 5 25.8	2.16	15 32.8	56 56.9	1.81	U. 7 1.5	2.34	
24.5	16 1.6	58 42.6	1.49	L. 17 52.0	2.20	15 27.1	56 35.8	1.71	L. 19 29.4	2.30	
25.0	15 56.7	58 24.5	1.51	U. 6 18.6	2.24	15 21.7	56 15.9	1.60	U. 7 56.7	2.25	
25.5	15 51.7	58 6.3	1.51	L. 18 45.8	2.28	15 16.6	55 57.4	1.49	L. 20 23.4	2.19	
26.0	15 46.8	57 48.2	1.50	U. 7 13.4	2.32	15 11.9	55 40.2	1.37	U. 8 49.3	2.13	
26.5	15 41.9	57 30.3	1.48	L. 19 41.4	2.34	15 7.7	55 24.5	1.26	L. 21 14.4	2.06	
27.0	15 37.2	57 12.8	1.44	U. 8 9.6	2.35	15 3.7	55 10.1	1.14	U. 9 38.7	1.98	
27.5	15 32.5	56 55.7	1.40	L. 20 37.8	2.35	15 0.2	54 57.1	1.03	L. 22 2.1	1.92	
28.0	15 28.0	56 39.1	1.35	U. 9 5.9	2.32	14 57.0	54 45.4	0.91	U. 10 24.7	1.85	
28.5	15 23.7	56 23.2	1.30	L. 21 33.6	2.28	14 54.2	54 35.1	0.81	L. 22 46.6	1.80	
29.0	15 19.5	56 7.8	1.26	U. 10 0.7	2.23	14 51.8	54 26.1	0.70	U. 11 7.9	1.75	
29.5	15 15.4	55 53.0	1.20	L. 22 27.2	2.17	14 49.6	54 18.3	0.60	L. 23 28.6	1.71	
30.0	15 11.6	55 38.9	1.15	U. 10 52.8	2.10	14 47.9	54 11.8	0.49	U. 11 48.9	1.68	
30.5	15 7.9	55 25.5	1.09	L. 23 17.6	2.08	14 46.4	54 6.5	0.39			
31.0	15 4.5	55 12.8	1.03	U. 11 41.5	1.96	14 45.3	54 2.4	0.29	L. 0 9.0	1.66	
31.5	15 1.2	55 0.8	-0.96			14 44.6	53 59.6	-0.18	U. 12 28.8	1.65	

FOR WASHINGTON MEAN NOON AND MIDNIGHT.										
SEPTEMBER.						OCTOBER.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	' "	' "	"	h. m.	m.	' "	' "	"	h. m.	m.
1.0	14 44.2	53 58.1	-0.07	L. 0 48.5	1.65	14 49.1	54 16.0	+0.57	L. 0 50.8	1.80
1.5	14 44.1	53 58.0	+0.05	U. 13 8.3	1.66	14 51.1	54 23.6	0.68	U. 13 12.7	1.86
2.0	14 44.5	53 59.4	0.18	L. 1 28.3	1.67	14 53.5	54 32.5	0.80	L. 1 35.4	1.92
2.5	14 45.3	54 2.4	0.32	U. 13 48.5	1.70	14 56.2	54 42.8	0.92	U. 13 58.9	1.98
3.0	14 46.6	54 7.1	0.46	L. 2 9.1	1.74	14 59.4	54 54.5	1.04	L. 2 23.1	2.05
3.5	14 48.4	54 13.5	0.62	U. 14 30.2	1.78	15 3.1	55 7.8	1.17	U. 14 48.1	2.12
4.0	14 50.8	54 21.9	0.78	L. 2 51.8	1.84	15 7.2	55 22.6	1.31	L. 3 14.0	2.17
4.5	14 53.4	54 32.2	0.94	U. 15 14.2	1.90	15 11.7	55 39.0	1.44	U. 15 40.4	2.22
5.0	14 56.8	54 44.6	1.12	L. 3 37.4	1.97	15 16.6	55 57.0	1.57	L. 4 7.4	2.27
5.5	15 0.7	54 59.0	1.29	U. 16 1.4	2.04	15 21.9	56 16.6	1.70	U. 16 34.7	2.30
6.0	15 5.3	55 15.6	1.47	L. 4 26.3	2.11	15 27.6	56 37.7	1.82	L. 5 2.5	2.32
6.5	15 10.3	55 34.3	1.64	U. 16 52.0	2.18	15 33.7	57 0.2	1.93	U. 17 30.3	2.32
7.0	15 16.0	55 55.0	1.81	L. 5 18.6	2.25	15 40.2	57 23.9	2.02	L. 5 58.2	2.31
7.5	15 22.2	56 17.7	1.96	U. 17 45.9	2.30	15 46.9	57 48.6	2.08	U. 18 25.6	2.29
8.0	15 28.8	56 42.2	2.11	L. 6 13.9	2.35	15 53.8	58 13.9	2.12	L. 6 56.0	2.26
8.5	15 35.9	57 8.3	2.23	U. 18 42.3	2.38	16 0.8	58 39.5	2.13	U. 19 19.9	2.22
9.0	15 43.4	57 35.6	2.32	L. 7 11.0	2.39	16 7.8	59 5.0	2.10	L. 7 46.4	2.20
9.5	15 51.1	58 3.9	2.37	U. 19 39.8	2.39	16 14.5	59 29.8	2.03	U. 20 12.8	2.18
10.0	15 58.9	58 32.5	2.38	L. 8 8.4	2.38	16 20.9	59 53.5	1.90	L. 8 38.7	2.16
10.5	16 6.6	59 1.1	2.35	U. 20 36.8	2.35	16 26.8	60 15.3	1.71	U. 21 4.6	2.16
11.0	16 14.2	59 28.9	2.26	L. 9 4.9	2.32	16 32.0	60 34.4	1.46	L. 9 30.5	2.16
11.5	16 21.4	59 55.2	2.10	U. 21 32.6	2.29	16 36.3	60 50.3	1.17	U. 21 56.4	2.17
12.0	16 28.0	60 19.4	1.89	L. 9 59.8	2.26	16 39.6	61 2.4	0.84	L. 10 22.4	2.19
12.5	16 33.8	60 40.6	1.62	U. 22 26.7	2.23	16 41.8	61 10.3	0.47	U. 22 48.9	2.23
13.0	16 38.6	60 58.3	1.30	L. 10 53.8	2.21	16 42.7	61 13.6	+0.08	L. 11 15.9	2.27
13.5	16 42.3	61 11.8	0.93	U. 23 19.7	2.20	16 42.3	61 12.1	-0.33	U. 23 43.4	2.31
14.0	16 44.7	61 20.7	0.53	L. 11 46.1	2.20	16 40.6	61 5.7	0.73	U. 23 43.4	2.31
14.5	16 45.7	61 24.7	+0.12			16 37.6	60 54.6	1.11	L. 12 11.4	2.37
15.0	16 45.4	61 23.5	-0.31	U. 0 12.5	2.21	16 33.4	60 39.2	1.45	U. 0 40.2	2.42
15.5	16 43.7	61 17.3	0.71	L. 12 39.0	2.23	16 28.2	60 19.9	1.75	L. 13 9.6	2.45
16.0	16 40.8	61 6.4	1.10	U. 1 5.9	2.25	16 22.0	59 57.3	2.00	U. 1 39.3	2.49
16.5	16 36.6	60 51.0	1.44	L. 13 33.1	2.29	16 15.1	59 32.1	2.20	L. 14 9.4	2.51
17.0	16 31.3	60 31.7	1.74	U. 2 0.8	2.33	16 7.7	59 4.8	2.33	U. 2 39.7	2.52
17.5	16 25.8	60 9.2	1.98	L. 14 29.0	2.37	15 59.9	58 36.3	2.39	L. 15 10.0	2.50
18.0	16 18.4	59 44.2	2.16	U. 2 57.6	2.40	15 52.0	58 7.4	2.40	U. 3 39.7	2.45
18.5	16 11.1	59 17.3	2.28	L. 15 26.5	2.42	15 44.2	57 38.6	2.38	L. 16 8.7	2.38
19.0	16 3.5	58 49.4	2.34	U. 3 55.7	2.43	15 36.6	57 10.4	2.31	U. 4 36.8	2.30
19.5	15 55.8	58 21.1	2.35	L. 16 25.0	2.43	15 29.3	56 43.3	2.19	L. 17 3.9	2.21
20.0	15 48.1	57 52.9	2.32	U. 4 54.1	2.41	15 22.3	56 17.8	2.05	U. 5 29.9	2.13
20.5	15 40.6	57 25.5	2.24	L. 17 22.9	2.37	15 15.8	55 54.3	1.89	L. 17 54.9	2.05
21.0	15 33.4	56 59.1	2.14	U. 5 51.1	2.32	15 9.9	55 32.8	1.72	U. 6 19.0	1.97
21.5	15 26.6	56 34.1	2.01	L. 18 18.6	2.26	15 4.6	55 13.4	1.52	L. 18 42.1	1.89
22.0	15 20.3	56 10.8	1.86	U. 6 45.3	2.19	15 0.0	54 56.4	1.31	U. 7 4.4	1.82
22.5	15 14.4	55 49.4	1.71	L. 19 11.1	2.11	14 56.0	54 41.9	1.12	L. 19 25.9	1.76
23.0	15 9.1	55 29.9	1.55	U. 7 35.9	2.03	14 52.7	54 29.7	0.93	U. 7 46.7	1.72
23.5	15 4.3	55 12.3	1.38	L. 19 59.8	1.96	14 50.0	54 19.8	0.73	L. 20 7.1	1.68
24.0	15 0.1	54 56.7	1.22	U. 8 22.9	1.89	14 48.0	54 12.2	0.54	U. 8 27.2	1.66
24.5	14 56.4	54 43.0	1.05	L. 20 45.2	1.83	14 46.5	54 6.7	0.36	L. 20 47.1	1.65
25.0	14 53.2	54 31.4	0.90	U. 9 6.8	1.77	14 45.6	54 3.4	0.19	U. 9 6.9	1.64
25.5	14 50.5	54 21.6	0.74	L. 21 27.8	1.73	14 45.2	54 2.1	-0.03	L. 21 26.6	1.66
26.0	14 48.4	54 13.6	0.60	U. 9 48.3	1.70	14 45.4	54 2.6	+0.12	U. 9 46.6	1.68
26.5	14 46.7	54 7.3	0.45	L. 22 8.5	1.67	14 46.0	54 4.9	0.26	L. 22 6.9	1.71
27.0	14 45.4	54 2.7	0.32	U. 10 28.4	1.65	14 47.0	54 8.7	0.38	U. 10 27.6	1.75
27.5	14 44.6	53 59.6	0.20	L. 22 48.2	1.65	14 48.4	54 13.9	0.49	L. 22 48.8	1.79
28.0	14 44.1	53 58.0	-0.08	U. 11 7.9	1.65	14 50.2	54 20.4	0.59	U. 11 10.6	1.84
28.5	14 44.1	53 57.7	+0.04	L. 23 27.8	1.67	14 52.3	54 28.1	0.68	L. 23 38.0	1.90
29.0	14 44.4	53 58.8	0.15	U. 11 48.0	1.69	14 54.7	54 36.8	0.76	U. 11 56.2	1.97
29.5	14 45.0	54 1.2	0.25			14 57.4	54 46.5	0.84		
30.0	14 46.0	54 4.9	0.36	L. 0 8.4	1.72	15 0.3	54 57.1	0.92	L. 0 20.2	2.03
30.5	14 47.4	54 9.9	0.47	U. 12 29.2	1.76	15 3.4	55 8.6	1.00	U. 12 45.0	2.09
31.0	14 49.1	54 16.0	0.57	L. 0 50.8	1.80	15 6.8	55 21.0	1.07	L. 1 10.5	2.15
31.5	14 51.1	54 23.6	+0.68	U. 13 12.7	1.86	15 10.3	55 34.1	+1.13	U. 13 36.8	2.21

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

NOVEMBER.						DECEMBER.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Dif.	Meridian Transit.	Hourly Dif.	Semi-diameter.	Horizontal Parallax.	Hourly Dif.	Meridian Transit.	Hourly Dif.
d.	' "	' "	"	h. m.	m.	' "	' "	"	h. m.	m.
1.0	15 14.1	55 47.9	+1.20	L. 2 8.6	2.28	15 41.4	57 28.3	+1.15	L. 2 48.7	2.26
1.5	15 18.0	56 2.6	1.25	U. 14 30.9	2.28	15 45.1	57 41.9	1.11	U. 15 10.6	2.21
2.0	15 22.2	56 18.0	1.31	L. 2 58.3	2.28	15 48.7	57 55.1	1.08	L. 3 36.9	2.17
2.5	15 26.7	56 34.2	1.38	U. 15 25.9	2.29	15 52.2	57 7.9	1.04	U. 16 2.7	2.13
3.0	15 31.3	56 51.1	1.44	L. 3 53.3	2.28	15 55.5	58 20.2	1.00	L. 4 28.0	2.09
3.5	15 36.1	57 8.8	1.49	U. 16 20.6	2.26	15 58.7	58 32.0	0.96	U. 16 52.8	2.06
4.0	15 41.0	57 27.0	1.54	L. 4 47.5	2.22	16 1.8	58 43.2	0.91	L. 5 17.3	2.03
4.5	15 46.1	57 45.7	1.58	U. 17 13.9	2.18	16 4.7	58 53.9	0.86	U. 17 41.5	2.02
5.0	15 51.3	58 4.8	1.60	L. 5 39.9	2.15	16 7.4	59 3.9	0.79	L. 6 5.7	2.02
5.5	15 56.6	58 24.2	1.61	U. 18 5.5	2.12	16 9.9	59 13.0	0.71	U. 18 29.9	2.03
6.0	16 1.9	58 43.7	1.60	L. 6 30.8	2.09	16 12.1	59 21.1	0.62	L. 6 54.4	2.06
6.5	16 7.1	59 2.8	1.56	U. 18 55.8	2.08	16 13.9	59 28.0	0.51	U. 19 19.3	2.10
7.0	16 12.2	59 21.9	1.49	L. 7 20.6	2.07	16 15.4	59 33.3	0.37	L. 7 44.7	2.15
7.5	16 17.0	59 38.6	1.39	U. 19 45.4	2.07	16 16.4	59 36.8	0.21	U. 20 10.8	2.21
8.0	16 21.2	59 54.4	1.24	L. 8 10.3	2.09	16 16.8	59 38.4	+0.03	L. 8 37.7	2.27
8.5	16 24.9	60 8.1	1.04	U. 20 35.5	2.12	16 16.7	59 37.9	-0.16	U. 21 5.4	2.34
9.0	16 27.9	60 19.3	0.81	L. 9 1.2	2.17	16 15.9	59 35.0	0.36	L. 9 33.9	2.40
9.5	16 30.1	60 27.5	0.54	U. 21 27.5	2.22	16 14.4	59 29.6	0.57	U. 22 3.1	2.45
10.0	16 31.4	60 32.3	+0.25	L. 9 54.4	2.27	16 12.2	59 21.6	0.78	L. 10 33.0	2.50
10.5	16 31.8	60 33.5	-0.06	U. 22 22.1	2.34	16 9.3	59 11.0	0.98	U. 23 3.3	2.52
11.0	16 31.1	60 30.9	0.39	L. 10 50.6	2.41	16 5.8	58 57.9	1.18	L. 11 33.7	2.52
11.5	16 29.3	60 24.3	0.71	U. 23 19.9	2.46	16 1.6	58 42.5	1.36		
12.0	16 26.4	60 13.9	1.02	L. 11 49.8	2.51	15 56.9	58 25.1	1.52	U. 0 3.9	2.50
12.5	16 22.6	59 59.8	1.30			15 51.7	58 6.0	1.65	L. 12 33.7	2.45
13.0	16 17.9	59 42.4	1.57	U. 0 20.2	2.54	15 46.1	57 45.5	1.75	U. 1 2.7	2.38
13.5	16 12.3	59 22.0	1.80	L. 12 50.8	2.55	15 40.2	57 23.9	1.81	L. 13 30.8	2.29
14.0	16 6.1	58 59.2	1.98	U. 1 21.4	2.54	15 34.2	57 1.9	1.83	U. 1 57.8	2.20
14.5	15 59.4	58 34.5	2.11	L. 13 51.7	2.51	15 28.2	56 39.8	1.82	L. 14 23.7	2.11
15.0	15 52.3	58 8.6	2.18	U. 2 21.5	2.44	15 22.3	56 18.1	1.78	U. 2 48.5	2.02
15.5	15 45.1	57 42.1	2.21	L. 14 50.4	2.36	15 16.6	55 57.1	1.70	L. 15 12.2	1.94
16.0	15 37.9	57 15.6	2.19	U. 3 18.2	2.27	15 11.2	55 37.3	1.59	U. 3 35.0	1.87
16.5	15 30.8	56 49.6	2.13	L. 15 44.9	2.17	15 6.2	55 19.1	1.45	L. 15 57.0	1.80
17.0	15 24.0	56 24.6	2.03	U. 4 10.4	2.07	15 1.7	55 2.7	1.29	U. 4 18.3	1.75
17.5	15 17.6	56 1.0	1.90	L. 16 34.8	1.99	14 57.8	54 48.3	1.11	L. 16 39.1	1.71
18.0	15 11.7	55 39.1	1.74	U. 4 58.2	1.91	14 54.5	54 36.2	0.91	U. 4 59.5	1.68
18.5	15 6.3	55 19.3	1.56	L. 17 20.7	1.84	14 51.9	54 26.5	0.70	L. 17 19.5	1.67
19.0	15 1.5	55 1.8	1.36	U. 5 42.4	1.78	14 49.9	54 19.4	0.48	U. 5 39.4	1.66
19.5	14 57.3	54 46.7	1.16	L. 18 3.5	1.73	14 48.8	54 14.9	0.26	L. 17 59.3	1.67
20.0	14 53.9	54 34.1	0.95	U. 6 24.0	1.69	14 48.3	54 13.0	-0.04	U. 6 19.4	1.69
20.5	14 51.2	54 24.0	0.73	L. 18 44.1	1.67	14 48.5	54 13.8	+0.18	L. 18 39.8	1.72
21.0	14 49.1	54 16.5	0.51	U. 7 4.1	1.66	14 49.4	54 17.3	0.40	U. 7 0.6	1.75
21.5	14 47.8	54 11.6	0.30	L. 19 23.9	1.65	14 51.0	54 23.4	0.60	L. 19 21.9	1.80
22.0	14 47.2	54 9.2	-0.10	U. 7 43.7	1.66	14 53.3	54 31.8	0.79	U. 7 43.9	1.86
22.5	14 47.2	54 9.2	+0.09	L. 20 3.8	1.68	14 56.2	54 42.5	0.97	L. 20 6.7	1.93
23.0	14 47.8	54 11.5	0.27	U. 8 24.1	1.71	14 59.6	54 55.2	1.14	U. 8 30.3	2.01
23.5	14 49.0	54 15.9	0.44	L. 20 44.9	1.76	15 3.6	55 9.8	1.28	L. 20 54.8	2.08
24.0	14 50.8	54 22.3	0.60	U. 9 6.3	1.81	15 8.0	55 25.9	1.40	U. 9 20.3	2.15
24.5	14 53.0	54 30.5	0.75	L. 21 28.3	1.86	15 12.8	55 43.4	1.50	L. 21 46.6	2.22
25.0	14 55.6	54 40.3	0.87	U. 9 51.1	1.93	15 17.9	56 1.8	1.56	U. 10 13.7	2.28
25.5	14 58.7	54 51.5	0.97	L. 22 14.6	2.01	15 23.1	56 20.9	1.60	L. 22 41.4	2.33
26.0	15 2.1	55 3.8	1.06	U. 10 39.1	2.07	15 28.3	56 40.2	1.61	U. 11 9.6	2.36
26.5	15 5.7	55 17.1	1.14	L. 23 4.4	2.14	15 33.5	56 59.4	1.58	L. 23 38.1	2.37
27.0	15 9.5	55 31.2	1.19	U. 11 30.5	2.20	15 38.7	57 18.3	1.53		
27.5	15 13.4	55 45.7	1.22	L. 23 57.3	2.26	15 43.7	57 36.4	1.46	U. 12 6.6	2.37
28.0	15 17.5	56 0.5	1.23			15 48.3	57 53.5	1.36	L. 0 35.0	2.35
28.5	15 21.6	56 15.4	1.24	U. 12 24.7	2.30	15 52.5	58 9.2	1.24	U. 13 3.0	2.31
29.0	15 25.7	56 30.4	1.24	L. 0 52.5	2.32	15 56.3	58 23.4	1.11	L. 1 30.4	2.26
29.5	15 29.7	56 45.3	1.23	U. 13 20.5	2.33	15 59.7	58 35.9	0.97	U. 13 57.2	2.21
30.0	15 33.7	57 0.0	1.21	L. 1 48.5	2.32	16 2.7	58 46.7	0.83	L. 2 23.5	2.17
30.5	15 37.6	57 14.3	1.18	U. 14 16.3	2.30	16 5.2	58 55.8	0.68	U. 14 49.2	2.12
31.0	15 41.4	57 28.3	1.15	L. 2 43.7	2.26	16 7.2	59 3.0	0.53	L. 3 14.4	2.08
31.5	15 45.1	57 41.9	+1.11	U. 15 10.6	2.21	16 8.7	59 8.5	+0.38	U. 15 39.2	2.06

WASHINGTON MEAN TIME.

PHASES.

Month.	Full Moon.	Last Quarter.	New Moon.	First Quarter.	First Quarter.
	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.
January	7 22 15.2	14 13 50.5	22 7 8.5	30 12 2.7	
February	6 9 27.2	13 1 43.1	21 2 30.4	29 9 47.1	
March	6 19 36.0	13 16 0.5	21 20 47.3	29 13 44.6	
April	5 4 51.8	12 8 26.3	20 12 36.6	27 21 28.0	
May	4 13 53.6	12 2 8.2	20 1 37.8	27 2 56.5	
June	2 23 37.7	10 19 56.1	18 12 15.5	25 7 27.9	
July	2 10 58.8	10 12 49.9	17 21 12.1	24 12 32.1	
August	1 0 25.4	9 4 15.2	16 5 12.0	23 19 41.6	d. h. m. 30 15 49.2
September		7 17 58.9	14 13 1.3	21 6 16.7	29 8 31.6
October		7 5 56.6	13 21 29.4	20 21 2.4	29 1 41.7
November		5 16 9.3	12 7 28.2	19 15 44.5	27 18 29.7
December		5 0 52.6	11 19 40.3	19 13 1.6	27 10 9.2

PERIGEE, APOGEE, AND LIBRATION.

Month.	Perigee.	Apogee.	Perigee.	GREATEST LIBRATION.		
				d. h. m.	d. h. m.	d. h. m.
January	9 9.7	25 0.3		3 15 7 N.E.	16 0 25 N.W.	31 22 17 N.E.
February	6 20.5	21 3.6		13 0 52 N.W.	29 5 9 N.E.	
March	6 10.9	19 8.0		12 8 10 N.W.	28 4 10 N.E.	
April	3 18.4	15 21.3		9 14 20 N.W.	24 5 44 N.E.	
May	1 18.3	13 15.4	d. h. 28 10.2	7 14 8 S.W.	20 12 29 N.E.	
June		10 10.1	22 16.3	4 1 55 S.W.	16 13 44 N.E.	30 17 45 N.W.
July		8 4.4	20 2.1	14 6 57 N.E.	27 4 26 N.W.	
August		4 20.6	17 5.9	11 8 40 N.E.	23 16 3 N.W.	
September		1 6.8	14 15.2	8 14 8 S.E.	20 17 30 S.W.	
September		28 8.1				
October	13 2.1	25 14.2		6 18 27 S.E.	18 23 20 S.W.	
November	10 9.8	22 6.3		3 12 4 S.E.	16 3 47 S.W.	29 22 54 S.E.
December	8 2.9	20 2.4		14 0 46 S.W.	26 10 33 S.E.	

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables.

I = the inclination of the moon's equator $1^{\circ} 28'.8$,

Ω = mean longitude of moon's ascending node (see page 250),

C = the angle which the mean meridian of the moon's disc makes with the circle of declination reckoned from north to west on the apparent disc.

$\lambda, \beta, \alpha',$ and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

$$\Delta \lambda = 0'.57 \sin 2(\lambda - \Omega),$$

$$a = \cos(\Omega - \lambda) \sin I,$$

$$\tan B = \sin(\Omega - \lambda) \tan I.$$

In these formulas, the tables p. 8 of the Appendix may be substituted.

The libration in latitude = $b = B - \beta$.

The libration in longitude = $l = \lambda + \Delta \lambda + a b - C$.

$$\sin C = \sin i \frac{\cos(C + l - \Omega + \Delta)}{\cos \delta'} = - \sin i \frac{\cos(\alpha' - \Omega')}{\cos b}.$$

WASHINGTON MEAN TIME.

MOON'S EQUATOR.

Sidereal Date Ob.	i Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	Ω' Ascending Node on Earth's Equator.	ζ Moon's Mean Longitude.
d. 0	22° 28.7	130° 12.3	2° 50.3	9° 1.9
10	22° 29.3	129 39.4	2 51.6	140 26.1
20	22 29.9	129 6.5	2 53.0	272 50.4
30	22 30.6	128 33.6	2 54.3	43 14.6
40	22 31.2	128 0.7	2 55.7	174 38.9
50	22 31.8	127 27.8	2 57.0	306 3.1
60	22 32.5	126 54.9	2 58.3	77 27.4
70	22 33.1	126 22.1	2 59.5	208 51.6
80	22 33.8	125 49.2	3 0.8	340 15.9
90	22 34.4	125 16.4	3 2.0	111 40.1
100	22 35.1	124 43.5	3 3.3	243 4.4
110	22 35.8	124 10.7	3 4.5	14 28.6
120	22 36.5	123 38.0	3 5.6	145 52.9
130	22 37.2	123 5.2	3 6.8	277 17.1
140	22 37.9	122 32.5	3 7.9	48 41.4
150	22 38.6	121 59.7	3 9.1	180 5.6
160	22 39.3	121 27.0	3 10.2	311 29.8
170	22 40.0	120 54.3	3 11.3	82 54.1
180	22 40.7	120 21.7	3 12.3	214 18.3
190	22 41.4	119 49.0	3 13.4	345 42.6
200	22 42.1	119 16.3	3 14.5	117 6.8
210	22 42.8	118 43.7	3 15.5	248 31.1
220	22 43.5	118 11.1	3 16.5	19 55.3
230	22 44.3	117 38.5	3 17.5	151 19.6
240	22 45.0	117 5.0	3 18.5	282 43.8
250	22 45.7	116 33.3	3 19.5	54 8.1
260	22 46.4	116 0.8	3 20.4	185 32.3
270	22 47.2	115 28.3	3 21.3	316 56.6
280	22 47.9	114 55.7	3 22.2	88 20.8
290	22 48.7	114 23.2	3 23.1	219 45.1
300	22 49.4	113 50.7	3 24.0	351 9.3
310	22 50.1	113 18.3	3 24.8	122 33.5
320	22 50.9	112 45.9	3 25.6	253 57.8
330	22 51.6	112 13.4	3 26.4	25 22.0
340	22 52.4	111 41.0	3 27.2	156 46.3
350	22 53.1	111 8.6	3 28.0	288 10.5
360	22 53.9	110 36.3	3 28.7	59 34.8
370	22 54.7	110 4.0	3 29.4	190 59.0

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.											
Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t .		Log. Coefficient of t^2 .		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.	
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.			
d.	h. m. s.	m. s.	° ' "	' "	+9.20126	+9.93558	+4.38	+5.38	d. h. m.	d.	
May 1	0 59 20.93	59 5.05	+ 3 8 42.4	7 16.4					0 22 20.0	122	
2	1 3 14.72	2 58.15	3 30 11.1	28 38.3	9.21938	9.9677	4.36	5.36	1 22 19.9	123	
3	1 7 18.18	7 0.92	3 53 14.7	51 35.6	9.23632	9.9970	4.35	5.34	2 22 20.0	124	
4	1 11 30.92	11 13.12	4 17 49.3	16 4.3	9.25222	0.0231	4.34	5.32	3 22 20.3	125	
5	1 15 52.85	15 34.50	4 43 50.6	42 0.2	9.26719	0.0467	4.33	5.30	4 22 20.7	126	
6	1 20 23.78	20 4.92	5 11 14.7	9 19.4	9.28155	0.0680	4.33	5.28	5 22 21.3	127	
7	1 25 3.56	24 44.24	5 39 57.8	37 58.1	9.29521	0.0874	4.32	5.26	6 22 22.0	128	
8	1 29 52.09	29 32.35	6 9 56.1	7 52.5	9.30835	0.1051	4.32	5.23	7 22 22.8	129	
9	1 34 49.34	34 29.22	6 41 5.6	38 58.6	9.32105	0.1213	4.32	5.21	8 22 23.8	130	
10	1 39 55.28	39 34.83	7 13 22.8	11 12.9	9.33339	0.1360	4.32	5.19	9 22 25.0	131	
11	1 45 9.92	44 49.18	7 46 43.9	44 31.8	9.34544	0.1495	4.32	5.16	10 22 26.3	132	
12	1 50 33.32	50 12.33	8 21 5.0	18 51.2	9.35725	0.1617	4.33	5.13	11 22 27.7	133	
13	1 56 5.55	55 44.36	8 56 22.1	54 7.9	9.36887	0.1728	4.33	5.10	12 22 29.3	134	
14	2 1 46.73	1 25.39	9 32 31.6	30 16.2	9.38035	0.1829	4.34	5.06	13 22 31.0	135	
15	2 7 37.01	7 15.57	10 9 29.2	7 13.9	9.39172	0.1919	4.35	5.03	14 22 32.9	136	
16	2 13 36.55	13 15.06	10 47 10.8	44 56.2	9.40302	0.1999	4.36	4.97	15 22 35.0	137	
17	2 19 45.54	19 24.06	11 25 31.8	23 18.5	9.41427	0.2070	4.37	4.92	16 22 37.2	138	
18	2 26 4.22	25 42.81	12 4 27.7	2 16.4	9.42554	0.2130	4.38	4.86	17 22 39.5	139	
19	2 32 32.80	32 11.51	12 43 53.3	41 44.6	9.43682	0.2180	4.38	4.78	18 22 42.1	140	
20	2 39 11.55	38 50.45	13 23 43.2	21 37.3	9.44806	0.2218	4.39	4.65	19 22 44.8	141	
21	2 46 0.66	45 39.84	14 3 52.0	1 50.5	9.45923	0.2246	4.40	4.49	20 22 47.6	142	
22	2 53 0.44	52 39.98	14 44 13.0	42 16.3	9.47037	0.2262	4.41	+4.12	21 22 50.7	143	
23	2 60 11.12	59 51.11	15 24 39.6	22 48.3	9.48147	0.2265	4.42	-3.65	22 22 53.9	144	
24	3 7 32.92	7 13.45	16 5 4.4	3 19.1	9.49249	0.2254	4.43	4.38	23 22 57.3	145	
25	3 15 5.99	14 47.18	16 45 19.2	43 40.5	9.50335	0.2229	4.43	4.65	24 23 0.9	146	
26	3 22 50.47	22 32.43	17 25 15.3	23 43.9	9.51405	0.2186	4.44	4.83	25 23 4.7	147	
27	3 30 46.44	30 29.30	18 4 43.3	3 19.7	9.52451	0.2125	4.43	4.96	26 23 8.7	148	
28	3 38 53.85	38 37.74	18 43 32.9	42 17.6	9.53462	0.2043	4.43	5.07	27 23 12.9	149	
29	3 47 12.57	46 57.62	19 21 33.2	20 26.6	9.54433	0.1938	4.42	5.16	28 23 17.3	150	
30	3 55 42.34	55 28.70	19 58 32.9	57 35.1	9.55362	0.1807	4.41	5.24	29 23 21.9	151	
31	4 4 22.78	4 10.59	20 34 19.9	33 31.1	9.56228	0.1647	4.38	5.31	30 23 26.6	152	
June 1	4 13 13.31	13 2.72	21 8 42.0	8 2.2	9.57025	0.1455	4.35	5.37	0 23 31.5	153	
2	4 22 13.23	22 4.38	21 41 26.9	40 55.9	9.57744	0.1225	4.31	5.42	1 23 36.6	154	
3	4 31 21.64	31 14.66	22 12 22.1	11 59.4	9.58373	0.0954	4.25	5.46	2 23 41.8	155	
4	4 40 37.48	40 32.49	22 41 15.9	41 1.0	9.58906	0.0635	4.17	5.49	3 23 47.1	156	
5	4 49 59.55	49 56.64	23 7 57.3	7 49.4	9.59333	0.0261	4.07	5.52	4 23 52.5	157	
6	4 59 26.49	59 25.75	23 32 16.2	32 14.4	9.59651	9.9822	3.92	5.55	5 23 58.1	158	
7	5 8 56.87	8 58.34	23 54 4.0	54 7.2	9.59854	9.9307	3.66	5.57	7 0 3.7	159	
8	5 18 29.16	18 32.87	24 13 13.7	13 20.6	9.59940	9.8696	+2.95	5.59	8 0 9.3	160	
9	5 28 1.84	28 7.77	24 29 39.7	29 49.0	9.59910	9.7964	-3.45	5.60	9 0 14.9	161	
10	5 37 33.36	37 41.49	24 43 18.4	43 28.9	9.59763	9.7067	3.81	5.61	10 0 20.5	162	
11	5 47 2.23	47 12.50	24 54 8.3	54 18.6	9.59505	9.5930	3.99	5.61	11 0 26.1	163	
12	5 56 27.03	56 39.36	25 2 9.3	2 18.0	9.59140	9.4393	4.11	5.60	12 0 31.6	164	
13	6 5 46.42	6 0.70	25 7 22.7	7 28.5	9.58673	9.2036	4.20	5.59	13 0 37.0	165	
14	6 14 59.21	15 15.32	25 9 51.8	9 53.7	9.58111	+8.6754	4.26	5.58	14 0 42.3	166	
15	6 24 4.34	24 22.15	25 9 41.3	9 38.3	9.57462	-8.7901	4.32	5.57	15 0 47.4	167	
16	6 33 0.87	33 20.23	25 6 56.4	6 47.6	9.56732	9.2222	4.35	5.55	16 0 52.4	168	
17	6 41 47.98	42 8.74	25 1 43.1	1 27.7	9.55927	9.4273	4.38	5.53	17 0 57.3	169	
18	6 50 25.00	50 47.00	24 54 8.2	53 45.6	9.55055	9.5601	4.41	5.51	18 1 2.0	170	
19	6 58 51.37	59 14.47	24 44 19.2	43 48.9	9.54121	9.6567	4.43	5.48	19 1 6.5	171	
20	7 7 6.63	7 30.68	24 32 23.8	31 45.3	9.53130	9.7314	4.44	5.45	20 1 10.8	172	
21	7 15 10.42	15 35.27	24 18 29.1	17 42.6	9.52088	9.7914	4.45	5.42	21 1 14.9	173	
22	7 23 2.46	23 27.96	24 2 43.6	1 48.8	9.50997	9.8407	4.46	5.39	22 1 18.9	174	
23	7 30 42.56	31 8.57	23 45 14.8	44 11.7	9.49862	9.8920	4.46	5.36	23 1 22.6	175	
24	7 38 10.57	38 36.96	23 26 10.2	24 58.9	9.48686	9.9169	4.47	5.33	24 1 26.1	176	
25	7 45 26.40	45 53.05	23 5 37.5	4 18.2	9.47470	9.9467	4.47	5.29	25 1 29.4	177	
26	7 52 30.00	52 56.79	22 43 44.0	42 17.0	9.46214	9.9722	4.47	5.25	26 1 32.5	178	
27	7 59 21.32	59 48.14	22 20 36.8	19 2.5	9.44918	9.9942	4.47	5.21	27 1 35.4	179	
28	8 6 0.37	6 27.11	21 56 22.8	54 41.6	9.43582	0.0131	4.47	5.16	28 1 38.1	180	
29	8 12 27.17	12 53.73	21 31 8.8	29 21.1	9.42207	0.0294	4.47	5.11	29 1 40.6	181	
30	8 18 41.73	19 8.01	21 5 1.4	3 7.6	9.40788	0.0434	4.47	5.05	30 1 42.9	182	
31	8 24 44.05	25 9.98	+20 38 6.7	36 7.4	+9.39322	-0.0552	-4.47	-4.99	31 1 45.0	183	

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of r .		Log. Coefficient of r^2 .		Mean Solar Time of Meridian Transit.	Side- real Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Sept. 1	9 40 39.13	40 23.19	+14 46 57.4	47 46.0	+9.39699	-9.8836	+4.60	-5.65	0 22 56.2	245
2	9 46 46.59	46 30.54	14 27 3.5	27 58.3	9.41546	9.9511	4.54	5.64	1 22 58.4	246
3	9 53 8.48	52 52.53	14 4 7.4	5 7.3	9.43062	0.0073	4.47	5.62	2 23 0.9	247
4	9 59 42.59	59 26.99	13 38 17.3	39 21.2	9.44293	0.0549	4.38	5.60	3 23 3.5	248
5	10 6 26.82	6 11.59	13 9 42.6	10 49.4	9.45267	0.0953	4.27	5.57	4 23 6.3	249
6	10 13 19.05	13 4.49	12 38 33.5	39 41.9	9.45997	0.1998	4.14	5.53	5 23 9.2	250
7	10 20 17.17	20 3.25	12 5 2.0	6 10.8	9.46504	0.1992	3.98	5.49	6 23 12.3	251
8	10 27 19.25	27 6.14	11 29 20.8	30 28.9	9.46842	0.1841	3.79	5.45	7 23 15.4	252
9	10 34 23.90	34 11.64	10 51 42.4	52 48.9	9.47041	0.2055	3.50	5.40	8 23 18.5	253
10	10 41 29.86	41 18.50	10 12 19.0	13 23.1	9.47109	0.2338	+1.68	5.35	9 23 21.6	254
11	10 48 35.89	48 25.49	9 31 22.6	32 23.6	9.47050	0.2399	-3.45	5.29	10 23 24.8	255
12	10 55 40.79	55 31.37	8 49 5.2	50 2.4	9.46898	0.2521	3.66	5.22	11 23 28.0	256
13	11 2 43.75	2 35.29	8 5 38.5	6 81.4	9.46669	0.2627	3.79	5.15	12 23 31.1	257
14	11 9 44.20	9 36.67	7 21 13.1	22 1.5	9.46382	0.2715	3.87	5.07	13 23 34.1	258
15	11 16 41.62	16 35.01	6 35 59.0	36 42.5	9.46044	0.2786	3.92	4.98	14 23 37.1	259
16	11 23 35.63	23 29.93	5 50 5.1	50 43.4	9.45672	0.2841	3.95	4.87	15 23 40.1	260
17	11 30 25.94	30 21.12	5 3 39.9	4 12.9	9.45281	0.2884	3.97	4.75	16 23 43.0	261
18	11 37 12.39	37 8.41	4 16 51.0	17 18.7	9.44871	0.2916	3.98	4.61	17 23 45.9	262
19	11 43 54.85	43 51.68	3 29 45.2	30 7.6	9.44442	0.2937	3.98	4.42	18 23 48.6	263
20	11 50 33.34	50 30.95	2 42 28.5	42 45.7	9.43999	0.2949	3.98	4.04	19 23 51.3	264
21	11 57 7.87	57 6.23	1 55 6.9	55 18.7	9.43555	0.2952	3.97	-2.68	20 23 54.0	265
22	12 3 38.51	3 37.57	1 7 45.2	7 51.8	9.43125	0.2950	3.96	+3.97	21 23 56.6	266
23	12 10 5.34	10 5.07	+ 0 20 27.3	20 29.1	9.42706	0.2941	3.95	4.29	22 23 59.0	267
24	12 16 38.49	16 28.87	- 0 26 42.5	26 45.5	9.42299	0.2925	3.93	4.46	24 0 1.5	268
25	12 22 48.13	22 49.14	1 13 40.3	13 48.0	9.41906	0.2904	3.91	4.57	25 0 3.9	269
26	12 29 4.41	29 6.03	2 0 22.3	0 34.6	9.41529	0.2879	3.89	4.64	26 0 6.2	270
27	12 35 17.51	35 19.71	2 46 46.4	47 3.8	9.41170	0.2848	3.86	4.68	27 0 8.5	271
28	12 41 27.62	41 30.37	3 32 50.2	33 10.7	9.40829	0.2814	3.83	4.72	28 0 10.7	272
29	12 47 34.91	47 38.19	4 18 31.8	18 56.3	9.40507	0.2777	3.80	4.77	29 0 12.9	273
30	12 53 39.57	53 43.36	5 3 48.6	4 16.8	9.40204	0.2735	3.77	4.82	30 0 15.0	274
Oct. 1	12 59 41.79	59 46.08	5 48 37.6	49 9.4	9.39921	0.2689	3.74	4.86	1 0 17.1	275
2	1 3 51.73	5 46.52	6 32 57.6	38 32.9	9.39658	0.2640	3.70	4.88	2 0 19.2	276
3	1 11 39.58	11 44.84	7 16 46.9	17 25.5	9.39414	0.2588	3.65	4.89	3 0 21.2	277
4	1 18 35.50	17 41.22	8 0 4.2	0 45.7	9.39190	0.2530	3.61	4.91	4 0 23.2	278
5	1 23 29.67	23 35.84	8 42 47.6	43 32.0	9.38988	0.2475	3.58	4.93	5 0 25.1	279
6	1 30 22.26	29 28.86	9 24 55.9	25 43.2	9.38797	0.2413	3.55	4.94	6 0 27.1	280
7	1 35 13.36	35 20.41	10 6 27.8	7 17.7	9.38620	0.2340	3.51	4.96	7 0 29.0	281
8	1 41 3.06	41 10.59	10 47 22.1	48 14.4	9.38462	0.2281	3.45	4.97	8 0 30.9	282
9	1 46 51.65	46 59.60	11 27 37.3	28 31.8	9.38332	0.2209	3.39	4.98	9 0 32.8	283
10	1 52 39.27	52 47.61	12 7 11.8	8 8.4	9.38212	0.2133	3.36	5.00	10 0 34.6	284
11	1 58 25.93	58 34.68	12 46 4.8	47 3.3	9.38092	0.2054	3.33	5.01	11 0 36.5	285
12	1 4 11.65	4 20.83	13 24 15.0	25 15.3	9.37979	0.1973	3.30	5.02	12 0 38.3	286
13	1 9 56.50	10 6.09	14 1 41.4	2 43.3	9.37879	0.1887	3.26	5.04	13 0 40.1	287
14	1 15 40.61	15 50.61	14 38 22.5	39 25.8	9.37788	0.1796	3.22	5.05	14 0 41.9	288
15	1 21 24.04	21 34.45	15 14 16.9	15 21.5	9.37705	0.1701	3.17	5.06	15 0 43.7	289
16	1 27 6.83	27 17.65	15 49 23.5	50 29.2	9.37629	0.1599	3.13	5.07	16 0 45.5	290
17	1 32 49.04	33 0.25	16 23 40.7	24 47.3	9.37552	0.1495	3.19	5.09	17 0 47.2	291
18	1 38 30.62	38 42.23	16 57 7.3	58 14.7	9.37465	0.1384	3.24	5.10	18 0 49.0	292
19	1 44 11.51	44 23.50	17 29 42.1	30 50.0	9.37372	0.1267	3.25	5.11	19 0 50.7	293
20	1 49 51.64	50 4.00	18 1 23.5	2 31.7	9.37273	0.1143	3.29	5.12	20 0 52.4	294
21	1 55 30.95	55 43.68	18 32 10.2	33 18.5	9.37162	0.1013	3.35	5.13	21 0 54.1	295
22	1 51 9.34	1 22.46	19 2 0.4	3 8.7	9.37034	0.0874	3.40	5.14	22 0 55.9	296
23	1 56 46.68	7 0.12	19 30 52.5	32 0.5	9.36888	0.0726	3.47	5.16	23 0 57.5	297
24	1 52 22.79	12 36.55	19 58 45.1	59 52.5	9.36714	0.0569	3.54	5.17	24 0 59.1	298
25	1 57 46.12	18 11.55	20 25 36.3	26 42.9	9.36511	0.0401	3.61	5.18	25 1 0.8	299
26	1 53 30.44	23 44.82	20 51 24.3	52 29.9	9.36264	0.0221	3.68	5.19	26 1 2.4	300
27	1 59 1.41	29 16.06	21 16 7.3	17 11.7	9.35981	0.0028	3.75	5.21	27 1 4.0	301
28	1 54 30.01	34 44.89	21 39 43.3	40 46.1	9.35641	0.9818	3.83	5.22	28 1 5.5	302
29	1 59 55.82	40 10.90	22 2 10.4	3 11.3	9.35235	0.9593	3.90	5.23	29 1 7.0	303
30	1 55 18.36	45 33.59	22 23 26.6	24 25.4	9.34755	0.9348	3.96	5.24	30 1 8.4	304
31	1 50 37.06	50 52.39	22 43 29.5	44 25.9	9.34186	0.9079	4.03	5.26	31 1 9.8	305
32	1 55 51.26	56 6.63	-23 2 16.6	3 10.2	+9.33512	-9.8781	-4.10	+5.28	32 1 11.1	306

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.				Log. Coefficient of t.		Log. Coefficient of t ² .		Mean Solar Time of Meridian Transit.			Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.			In R.A.	In Dec.	In R.A.	In Dec.	d.	h. m.	d.	
Nov. 1	15 55 51.26	56 6.68	23 2 16.6	3 10.2			+9.33512	-9.8781	-4.10	+5.28	1	1 11.1	306	
2	16 1 0.22	1 15.56	23 19 45.3	20 35.8			9.32712	9.8450	4.17	5.29	2	1 12.3	307	
3	16 6 3.06	6 18.30	23 35 53.2	36 40.3			9.31761	9.8082	4.23	5.30	3	1 13.4	308	
4	16 10 58.77	11 13.82	23 50 37.9	51 21.3			9.30628	9.7666	4.30	5.31	4	1 14.4	309	
5	16 15 46.23	16 0.96	24 3 56.5	4 35.8			9.29283	9.7187	4.36	5.33	5	1 15.1	310	
6	16 20 24.17	20 38.49	24 15 45.6	16 20.4			9.27680	9.6626	4.42	5.35	6	1 15.8	311	
7	16 24 51.14	25 4.94	24 26 2.0	26 32.0			9.25752	9.5960	4.48	5.36	7	1 16.4	312	
8	16 29 5.47	29 18.59	24 34 42.3	35 7.2			9.23428	9.5186	4.54	5.38	8	1 16.6	313	
9	16 33 5.30	33 17.60	24 41 42.9	42 2.3			9.20569	9.4076	4.60	5.40	9	1 16.7	314	
10	16 36 48.58	36 59.90	24 46 59.4	47 13.1			9.17152	9.2598	4.66	5.41	10	1 16.5	315	
11	16 40 13.02	40 23.19	24 50 27.4	50 35.2			9.12851	9.0204	4.71	5.43	11	1 15.9	316	
12	16 43 16.05	43 24.90	24 52 2.4	52 4.0			9.07406	-8.3870	4.76	5.45	12	1 14.9	317	
13	16 45 54.88	46 2.23	24 51 39.2	51 34.6			9.00926	+8.7782	4.81	5.48	13	1 13.6	318	
14	16 48 6.54	48 12.26	24 49 10.9	49 0.0			9.90729	9.1743	4.86	5.50	14	1 11.9	319	
15	16 49 47.86	49 51.90	24 44 30.5	44 13.4			8.76775	9.3862	4.91	5.52	15	1 9.6	320	
16	16 50 55.60	50 57.84	24 37 31.1	37 8.1			8.53321	9.5344	4.95	5.54	16	1 6.7	321	
17	16 51 26.53	51 26.97	24 28 5.6	27 37.1			+7.87647	9.6500	4.98	5.57	17	1 3.3	322	
18	16 51 17.64	51 16.35	24 16 6.4	15 33.3			-8.32323	9.7452	5.01	5.59	18	0 59.2	323	
19	16 50 26.29	50 23.47	24 1 25.2	0 48.6			8.70920	9.8268	5.03	5.61	19	0 54.3	324	
20	16 48 50.58	48 46.53	23 43 55.1	43 16.5			8.91529	9.8976	5.04	5.62	20	0 48.8	325	
21	16 46 29.69	46 24.85	23 23 31.7	23 53.0			9.05475	9.9593	5.03	5.62	21	0 42.5	326	
22	16 43 24.22	43 19.11	22 60 14.5	59 38.0			9.15700	0.0125	5.01	5.61	22	0 35.5	327	
23	16 39 36.58	39 31.81	22 34 8.8	33 37.1			9.23371	0.0576	4.96	5.57	23	0 27.8	328	
24	16 35 11.20	35 7.39	22 5 27.8	5 3.6			9.29041	0.0939	4.87	5.50	24	0 19.5	329	
25	16 30 14.72	30 12.43	21 34 34.9	34 20.7			9.32991	0.1209	4.73	5.37	25	0 10.7	330	
26	16 24 55.75	24 55.21	21 2 4.8	2 2.6			9.35867	0.1376	4.46	+5.10	26	0 1.5	331	
27	16 19 24.48	19 26.27	20 28 42.6	28 53.4			9.36235	0.1431	-3.35	-3.58	26	23 52.2	332	
28	16 13 52.32	13 56.16	19 55 21.6	55 45.1			9.35827	0.1364	+4.39	5.16	27	23 42.8	333	
29	16 8 30.29	8 36.03	19 23 0.1	23 34.7			9.33540	0.1163	4.70	5.45	28	23 33.5	334	
30	16 3 28.91	3 35.96	18 52 36.3	53 19.1			9.29869	0.0817	4.85	5.61	29	23 24.6	335	
Dec. 1	15 58 57.18	59 4.92	18 25 3.1	25 50.2			9.24520	0.0309	4.94	5.71	0	23 16.1	336	
2	15 55 2.13	55 9.85	18 1 2.3	1 49.9			9.17232	9.9617	5.00	5.77	1	23 8.3	337	
3	15 51 48.61	51 55.64	17 41 4.6	41 48.3			9.07522	9.8695	5.03	5.80	2	23 1.2	338	
4	15 49 19.35	49 25.13	17 25 27.6	26 4.3			8.94385	9.7463	5.03	5.81	3	22 54.8	339	
5	15 47 35.18	47 39.25	17 14 16.9	14 43.8			8.75284	9.5736	5.03	5.80	4	22 49.1	340	
6	15 46 35.57	46 37.66	17 7 26.6	7 42.0			-8.52311	9.2970	5.01	5.78	5	22 44.1	341	
7	15 46 18.75	46 18.61	17 4 43.9	4 46.9			+7.38941	+8.5175	4.99	5.74	6	22 39.8	342	
8	15 46 42.26	46 39.85	17 5 49.5	5 40.0			8.46885	-9.0709	4.95	5.69	7	22 36.2	343	
9	15 47 43.15	47 38.50	17 10 21.0	9 59.4			8.73496	9.4019	4.92	5.64	8	22 33.3	344	
10	15 49 18.33	49 11.53	17 17 55.0	17 22.3			8.86667	9.5690	4.87	5.58	9	22 30.9	345	
11	15 51 24.66	51 15.85	17 28 6.6	27 24.0			8.98942	9.6739	4.83	5.51	10	22 29.1	346	
12	15 53 59.07	53 48.40	17 40 32.3	39 41.1			9.06488	9.7460	4.78	5.43	11	22 27.7	347	
13	15 56 58.74	56 46.40	17 54 49.8	53 51.4			9.12293	9.7978	4.73	5.34	12	22 26.7	348	
14	16 0 21.00	0 7.17	18 10 38.5	9 34.4			9.16902	9.8353	4.69	5.24	13	22 26.0	349	
15	16 4 3.47	3 48.35	18 27 39.5	26 31.1			9.20647	9.8625	4.64	5.12	14	22 25.8	350	
16	16 8 4.04	7 47.84	18 45 35.5	44 24.0			9.23748	9.8816	4.59	4.98	15	22 25.9	351	
17	16 12 20.81	12 3.64	19 4 11.2	2 57.8			9.26342	9.8943	4.54	4.80	16	22 26.2	352	
18	16 16 52.01	16 34.03	19 23 13.1	21 58.8			9.28535	9.9021	4.49	4.55	17	22 26.7	353	
19	16 21 36.16	21 17.55	19 42 29.5	41 15.1			9.30415	9.9056	4.45	-3.95	18	22 27.5	354	
20	16 26 31.96	26 12.85	20 1 49.7	0 36.1			9.32042	9.9052	4.40	+4.15	19	22 28.5	355	
21	16 31 38.25	31 18.76	20 21 4.2	19 52.2			9.33458	9.9014	4.36	4.53	20	22 29.7	356	
22	16 36 54.02	36 34.25	20 40 4.7	38 54.8			9.34702	9.8947	4.31	4.71	21	22 31.1	357	
23	16 42 18.39	41 58.44	20 58 43.8	57 36.5			9.35802	9.8851	4.27	4.83	22	22 32.4	358	
24	16 47 50.61	47 30.56	21 16 55.0	15 50.7			9.36780	9.8728	4.23	4.91	23	22 34.0	359	
25	16 53 29.96	53 9.91	21 34 32.6	33 31.7			9.37654	9.8579	4.19	4.97	24	22 35.7	360	
26	16 59 15.83	58 55.86	21 51 31.4	50 34.2			9.38441	9.8403	4.16	5.02	25	22 37.5	361	
27	17 5 7.72	4 47.88	22 7 46.8	6 53.4			9.39154	9.8200	4.12	5.06	26	22 39.4	362	
28	17 11 5.16	10 45.52	22 23 14.8	22 25.4			9.39802	9.7969	4.09	5.09	27	22 41.4	363	
29	17 17 7.72	16 48.37	22 37 51.7	37 6.4			9.40393	9.7707	4.06	5.12	28	22 43.6	364	
30	17 23 15.04	22 56.01	22 51 34.0	50 52.9			9.40936	9.7411	4.03	5.14	29	22 45.8	365	
31	17 29 26.78	29 8.09	23 4 18.8	3 41.9			9.41434	9.7076	4.00	5.16	30	22 48.0	366	
32	17 35 42.64	35 24.35	23 16 3.4	15 30.7			+9.41894	-9.6696	+3.97	+5.18	31	22 50.3	367	

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor ϵ .		Log. Factor ϵ^2 .		Mean Solar Time of Meridian Transit.			Side-real Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	d.	h. m.	d.	
Mar. 1	1 5 43.35	6 10.16	+ 6 55 10.5	56 17.8	+9.26138	+0.1055	+2.68	-4.36	d. 61	h. m. 2 26.9	d. 61	
2	1 10 6.32	10 33.23	7 23 41.7	26 48.6	9.26171	0.1033	2.72	4.39	62 2 27.3	62		
3	1 14 29.50	14 56.50	7 54 3.2	57 9.5	9.26204	0.1009	2.83	4.43	63 2 27.7	63		
4	1 18 52.91	19 30.02	8 24 14.3	27 20.0	9.26249	0.0983	2.86	4.46	64 2 28.1	64		
5	1 23 16.60	23 43.83	8 54 14.2	57 19.4	9.26297	0.0955	2.91	4.48	65 2 28.6	65		
6	1 27 40.59	28 7.94	9 24 9.2	27 6.8	9.26349	0.0925	2.93	4.51	66 2 29.0	66		
7	1 32 4.92	32 32.38	9 53 37.5	56 41.3	9.26407	0.0894	2.96	4.52	67 2 29.5	67		
8	1 36 29.61	36 57.10	10 22 59.6	26 2.4	9.26467	0.0860	3.01	4.54	68 2 30.0	68		
9	1 40 54.69	41 22.42	10 52 7.9	55 9.7	9.26533	0.0825	3.04	4.56	69 2 30.5	69		
10	1 45 20.19	45 48.06	11 21 1.7	24 2.5	9.26607	0.0788	3.04	4.59	70 2 31.0	70		
11	1 49 46.15	50 14.16	11 49 40.2	52 40.1	9.26682	0.0748	3.06	4.60	71 2 31.5	71		
12	1 54 12.57	54 40.72	12 18 2.7	21 1.5	9.26758	0.0707	3.10	4.62	72 2 32.0	72		
13	1 58 39.48	59 7.77	12 46 8.5	49 6.1	9.26841	0.0663	3.10	4.64	73 2 32.5	73		
14	2 3 6.92	3 35.37	13 13 57.0	16 53.3	9.26931	0.0617	3.11	4.65	74 2 33.0	74		
15	2 7 34.92	8 3.52	13 41 27.5	44 22.4	9.27020	0.0569	3.14	4.67	75 2 33.5	75		
16	2 12 3.47	12 32.23	14 8 39.3	11 32.7	9.27112	0.0518	3.16	4.68	76 2 34.0	76		
17	2 16 32.60	17 1.53	14 35 31.7	38 23.6	9.27210	0.0465	3.16	4.70	77 2 34.6	77		
18	2 21 2.34	21 31.43	15 2 4.1	4 54.4	9.27308	0.0409	3.16	4.71	78 2 35.1	78		
19	2 25 32.69	26 1.95	15 28 15.7	31 4.4	9.27403	0.0351	3.16	4.72	79 2 35.7	79		
20	2 30 3.65	30 33.10	15 54 5.9	56 52.9	9.27507	0.0291	3.18	4.74	80 2 36.3	80		
21	2 34 35.25	35 4.88	16 19 34.1	22 19.3	9.27605	0.0226	3.18	4.75	81 2 36.9	81		
22	2 39 7.47	39 37.28	16 44 39.5	47 22.8	9.27709	0.0160	3.19	4.76	82 2 37.5	82		
23	2 43 40.34	44 10.34	17 9 21.5	12 2.8	9.27812	0.0091	3.19	4.78	83 2 38.1	83		
24	2 48 13.85	48 44.03	17 33 39.4	36 18.5	9.27912	0.0018	3.18	4.79	84 2 38.7	84		
25	2 52 47.99	53 18.35	17 57 32.4	0 9.3	9.28012	0.9940	3.16	4.80	85 2 39.3	85		
26	2 57 22.75	57 53.29	18 20 59.8	23 24.4	9.28108	9.9861	3.16	4.80	86 2 39.9	86		
27	3 1 58.12	2 28.86	18 44 1.2	46 33.6	9.28203	9.9779	3.14	4.81	87 2 40.6	87		
28	3 6 34.09	7 5.02	19 6 36.0	9 6.0	9.28301	9.9692	3.13	4.82	88 2 41.2	88		
29	3 11 10.67	11 41.80	19 28 43.4	31 10.9	9.28395	9.9601	3.11	4.82	89 2 41.9	89		
30	3 15 47.84	16 19.17	19 50 22.8	52 47.8	9.28484	9.9507	3.10	4.85	90 2 42.6	90		
31	3 20 25.57	20 57.10	20 11 33.7	13 56.0	9.28570	9.9408	3.08	4.85	91 2 43.3	91		
Apr. 1	3 25 3.24	25 35.56	20 32 15.4	34 34.9	9.28654	9.9306	3.08	4.86	92 2 44.0	92		
2	3 29 42.64	30 14.56	20 52 27.5	54 44.2	9.28735	9.9198	3.04	4.86	93 2 44.7	93		
3	3 34 21.94	34 54.05	21 12 9.3	14 23.1	9.28810	9.9086	3.03	4.87	94 2 45.4	94		
4	3 39 1.71	39 34.01	21 31 20.3	33 31.1	9.28881	9.8969	3.01	4.88	95 2 46.1	95		
5	3 43 41.93	44 14.42	21 50 0.1	52 7.8	9.28948	9.8847	2.99	4.89	96 2 46.8	96		
6	3 48 22.57	48 55.26	22 8 8.2	10 12.8	9.29018	9.8719	2.91	4.89	97 2 47.6	97		
7	3 53 3.61	53 36.50	22 25 44.1	27 45.5	9.29070	9.8586	2.86	4.90	98 2 48.4	98		
8	3 57 44.99	58 18.05	22 42 47.4	44 45.5	9.29118	9.8447	2.86	4.91	99 2 49.1	99		
9	4 2 26.68	2 59.92	22 59 17.6	1 12.2	9.29169	9.8301	2.76	4.91	100 2 49.8	100		
10	4 7 8.67	7 42.10	23 15 14.2	17 5.3	9.29212	9.8145	2.64	4.91	101 2 50.6	101		
11	4 11 50.91	12 24.52	23 30 36.6	32 24.2	9.29243	9.7985	2.59	4.92	102 2 51.4	102		
12	4 16 33.34	17 7.13	23 45 24.8	47 8.8	9.29272	9.7817	2.38	4.93	103 2 52.2	103		
13	4 21 15.93	21 49.89	23 59 38.4	1 18.7	9.29292	9.7640	+1.99	4.93	104 2 53.0	104		
14	4 25 58.62	26 32.75	24 13 16.9	14 53.4	9.29303	9.7452	-1.68	4.94	105 2 53.8	105		
15	4 30 41.35	31 15.61	24 26 19.9	27 52.4	9.29304	9.7254	2.29	4.94	106 2 54.5	106		
16	4 35 24.06	35 58.45	24 38 47.2	40 15.7	9.29295	9.7047	2.46	4.94	107 2 55.2	107		
17	4 40 6.69	40 41.23	24 50 38.7	52 3.2	9.29281	9.6828	2.68	4.94	108 2 56.0	108		
18	4 44 49.19	45 23.85	25 1 54.2	3 14.6	9.29255	9.6595	2.81	4.95	109 2 56.7	109		
19	4 49 31.49	50 6.28	25 12 33.2	13 49.4	9.29220	9.6345	2.91	4.95	110 2 57.5	110		
20	4 54 13.52	54 48.42	25 22 35.4	23 47.3	9.29174	9.6077	3.03	4.95	111 2 58.3	111		
21	4 58 55.20	59 30.19	25 32 0.6	33 8.3	9.29112	9.5796	3.10	4.95	112 2 59.0	112		
22	5 3 36.44	4 11.51	25 40 49.1	41 52.5	9.29035	9.5493	3.14	4.95	113 2 59.7	113		
23	5 8 17.15	8 52.31	25 49 0.6	49 59.6	9.28951	9.5163	3.21	4.95	114 3 0.5	114		
24	5 12 57.27	13 32.48	25 56 34.8	57 29.3	9.28852	9.4806	3.26	4.95	115 3 1.2	115		
25	5 17 36.71	18 11.97	26 3 31.8	4 21.9	9.28742	9.4423	3.33	4.95	116 3 1.9	116		
26	5 22 15.38	22 50.67	26 9 51.9	10 37.4	9.28613	9.3996	3.36	4.95	117 3 2.6	117		
27	5 26 53.17	27 28.48	26 15 34.8	16 15.8	9.28467	9.3525	3.40	4.95	118 3 3.3	118		
28	5 31 30.00	32 5.31	26 20 40.6	21 17.0	9.28309	9.3000	3.45	4.95	119 3 4.0	119		
29	5 36 5.77	36 41.05	26 25 9.5	25 41.3	9.28134	9.2403	3.48	4.94	120 3 4.6	120		
30	5 40 40.37	41 15.63	26 29 1.6	29 28.8	9.27941	9.1714	3.51	4.94	121 3 5.3	121		
31	5 45 13.71	45 48.92	+26 32 17.1	32 39.7	+9.27734	+9.0896	-3.54	-4.94	122 3 5.9	122		

VENUS, 1860.

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FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.				Apparent Declination.				Log. Factor ¹ .		Log. Factor ² .		Mean Solar Time of Meridian Transit.	Side- real Date of Transit.
	At Mean Noon.		At Transit.		At Mean Noon.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.		
	h. m. s.	m. s.	^o ['] ["]	['] ["]	^o ['] ["]	['] ["]					d. h. m.	d.		
July 1	8 25 6.78	25 2.77	+17 28 34.7	27 47.8	-8.57129	-9.5505	-4.38	+4.69	183 1 44.9	183				
2	8 24 8.16	24 3.73	17 18 0.9	17 17.6	8.54482	9.6368	4.37	4.68	184 1 40.0	184				
3	8 23 59.77	22 54.95	17 7 47.6	7 7.8	8.70692	9.6220	4.36	4.69	185 1 35.0	185				
4	8 21 41.73	21 36.55	16 57 55.6	57 19.4	8.76035	9.6060	4.34	4.71	186 1 29.7	186				
5	8 20 14.23	20 8.78	16 48 25.9	47 53.2	8.80670	9.5887	4.33	4.73	187 1 24.2	187				
6	8 18 37.57	18 31.99	16 39 19.2	38 49.9	8.84702	9.5700	4.30	4.74	188 1 18.6	188				
7	8 16 52.15	16 46.57	16 30 36.1	30 10.1	8.88236	9.5504	4.29	4.75	189 1 13.0	189				
8	8 14 58.37	14 52.85	16 22 16.9	21 54.2	8.91356	9.5294	4.26	4.76	190 1 7.2	190				
9	8 12 56.69	12 51.34	16 14 22.9	14 2.6	8.94091	9.5066	4.21	4.77	191 1 1.2	191				
0	8 10 47.67	10 42.59	16 6 52.6	6 35.9	8.96461	9.4821	4.15	4.78	192 0 55.1	192				
11	8 8 31.96	8 27.23	15 59 48.4	59 34.4	9.98490	9.4559	4.11	4.78	193 0 49.0	193				
12	8 6 10.28	6 5.99	15 53 9.9	52 58.5	9.00208	9.4279	4.02	4.79	194 0 42.7	194				
13	8 3 43.39	3 39.61	15 46 57.3	46 48.3	9.01637	9.3973	3.93	4.79	195 0 36.4	195				
14	8 1 12.09	1 8.89	15 41 11.0	41 4.1	9.02786	9.3642	3.81	4.80	196 0 30.0	196				
15	7 58 37.25	58 34.69	15 35 51.1	35 46.1	9.03649	9.3284	3.58	4.80	197 0 23.5	197				
16	7 55 59.80	55 57.94	15 30 57.6	30 54.3	9.04233	9.2894	-3.25	4.80	198 0 16.9	198				
17	7 53 20.69	53 19.55	15 26 30.5	26 28.7	9.04557	9.2460	+2.59	4.80	199 0 10.3	199				
18	7 50 40.84	50 40.42	15 22 30.0	22 29.4	9.04641	9.1981	3.42	4.80	200 0 3.8	200				
19	7 48 1.15	48 1.46	15 18 56.0	18 56.4	9.04475	9.1442	3.71	4.80	200 23 57.2	201				
20	7 45 22.57	45 23.59	15 15 48.4	15 49.5	9.04032	9.0829	3.87	4.80	201 23 50.7	202				
21	7 42 46.09	42 47.80	15 13 7.0	13 8.6	9.03309	9.0128	3.97	4.79	202 23 44.2	203				
22	7 40 12.67	40 15.01	15 10 51.5	10 53.4	9.02311	8.9294	4.07	4.78	203 23 37.8	204				
23	7 37 43.22	37 46.15	15 9 1.6	9 3.5	9.01023	8.8289	4.14	4.78	204 23 31.3	205				
24	7 35 18.61	35 22.06	15 7 36.8	7 38.5	8.99436	8.6990	4.18	4.76	205 23 25.0	206				
25	7 32 59.64	33 3.33	15 6 36.7	6 38.0	8.97556	8.5211	4.23	4.75	206 23 18.8	207				
26	7 30 47.01	30 51.26	15 6 0.5	6 1.3	8.95374	8.2327	4.26	4.73	207 23 12.6	208				
27	7 28 41.36	28 45.88	15 5 47.6	5 47.7	8.92846	-6.9208	4.29	4.71	208 23 6.6	209				
28	7 26 43.32	26 48.01	15 5 57.1	5 56.2	8.89927	+8.1576	4.33	4.69	209 23 0.8	210				
29	7 24 53.47	24 58.24	15 6 28.0	6 26.1	8.86567	8.4607	4.34	4.68	210 22 54.9	211				
30	7 23 12.30	23 17.05	15 7 19.3	7 16.3	8.82747	8.6319	4.35	4.64	211 22 49.3	212				
31	7 21 40.18	21 44.81	15 8 30.1	8 25.8	8.78404	8.7480	4.37	4.61	212 22 43.9	213				
Aug 1	7 20 17.44	20 21.86	15 9 59.1	9 53.5	8.73379	8.8333	4.38	4.57	213 22 38.6	214				
2	7 19 4.39	19 8.50	15 11 44.9	11 38.0	8.67511	8.8989	4.38	4.53	214 22 33.4	215				
3	7 18 1.27	18 4.98	15 13 46.1	13 37.9	8.60582	8.9526	4.38	4.48	215 22 28.4	216				
4	7 17 8.21	17 11.46	15 16 1.5	15 52.0	8.52288	8.9962	4.38	4.44	216 22 23.6	217				
5	7 16 25.24	16 27.92	15 18 29.6	18 18.8	8.42051	9.0309	4.38	4.37	217 22 19.0	218				
6	7 15 52.34	15 54.41	15 21 9.1	20 57.0	8.28647	9.0594	4.38	4.33	218 22 14.4	219				
7	7 15 29.49	15 30.88	15 23 58.5	23 45.2	8.09206	9.0834	4.38	4.22	219 22 10.2	220				
8	7 15 16.65	15 17.30	15 26 56.5	26 42.1	-7.73373	9.1024	4.37	4.12	220 22 6.1	221				
9	7 15 13.73	15 13.60	15 30 1.5	29 46.1	+7.10125	9.1170	4.36	3.99	221 22 2.1	222				
10	7 15 20.57	15 19.62	15 33 11.9	32 55.6	7.91090	9.1274	4.35	3.76	222 21 58.2	223				
11	7 15 36.98	15 35.17	15 36 26.2	36 9.1	8.16818	9.1346	4.35	+3.37	223 21 54.5	224				
12	7 16 2.80	16 0.09	15 39 43.0	39 25.3	8.32665	9.1385	4.33	-2.99	224 21 51.0	225				
13	7 16 37.84	16 34.22	15 43 0.9	42 42.7	8.44032	9.1390	4.32	3.59	225 21 47.6	226				
14	7 17 21.87	17 17.33	15 46 18.4	45 59.8	8.52729	9.1368	4.31	3.80	226 21 44.3	227				
15	7 18 14.59	18 9.13	15 49 34.2	49 15.4	8.59820	9.1319	4.30	3.99	227 21 41.4	228				
16	7 19 15.78	19 9.37	15 52 47.8	52 28.4	8.65728	9.1245	4.28	4.13	228 21 38.8	229				
17	7 20 25.17	20 17.83	15 55 56.3	55 37.5	8.70781	9.1130	4.27	4.22	229 21 35.5	230				
18	7 21 42.52	21 34.23	15 58 59.7	58 41.2	8.75199	9.0984	4.25	4.30	230 21 32.8	231				
19	7 23 7.61	22 58.40	16 1 56.2	1 38.2	8.79083	9.0797	4.24	4.36	231 21 30.3	232				
20	7 24 40.18	24 30.05	16 4 44.5	4 27.1	8.82527	9.0568	4.23	4.39	232 21 27.4	233				
21	7 26 19.97	26 8.93	16 7 23.4	7 6.8	8.85624	9.0297	4.22	4.45	233 21 25.6	234				
22	7 28 6.77	27 54.82	16 9 51.8	9 36.1	8.88424	8.9973	4.20	4.49	234 21 23.4	235				
23	7 30 0.34	29 47.49	16 12 8.5	11 54.0	8.90960	8.9583	4.18	4.53	235 21 21.4	236				
24	7 32 0.43	31 46.70	16 14 12.4	13 59.2	8.93274	8.9117	4.17	4.56	236 21 19.4	237				
25	7 34 6.79	33 52.22	16 16 2.4	15 50.7	8.95391	8.8545	4.15	4.59	237 21 17.6	238				
26	7 36 19.22	36 3.82	16 17 37.4	17 27.3	8.97348	8.7832	4.14	4.61	238 21 15.8	239				
27	7 38 37.51	38 21.29	16 18 56.8	18 48.0	8.99154	8.6923	4.12	4.64	239 21 14.2	240				
28	7 41 1.45	40 44.44	16 19 58.2	19 51.9	9.00828	8.5692	4.11	4.66	240 21 12.7	241				
29	7 43 30.84	43 13.06	16 20 42.1	20 37.9	9.02880	8.3832	4.09	4.68	241 21 11.3	242				
30	7 46 5.47	45 46.94	16 21 7.0	21 5.0	9.03826	+8.0292	4.07	4.69	242 21 9.9	243				
31	7 48 45.15	48 25.89	+16 21 12.1	21 12.5	+9.05166	-7.5318	+4.05	-4.71	243 21 8.7	244				

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.				Apparent Declination.				Log. Factor 1.		Log. Factor 2.		Mean Solar Time of Meridian Transit.			Side- real Date of Transit.			
	At Mean Noon.		At Transit.		At Mean Noon.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	d.	h.	m.		d.		
Sept. 1	d.	h.	m.	s.	m.	s.	o.	'	"	+	9.06420	-8.2583	+4.03	-4.72	244	21	7.4	245	
2	2	7	54	18.85	53	58.18	16	20	19.4	20	25.0	9.07595	8.5202	4.02	4.74	245	21	6.2	246
3	3	7	57	12.52	56	51.18	16	19	20.2	19	28.6	9.08693	8.6892	4.00	4.75	246	21	5.1	247
4	4	8	0	10.49	59	48.52	16	17	58.0	18	9.3	9.09723	8.8138	3.99	4.76	247	21	4.2	248
5	5	8	3	12.59	2	50.01	16	16	12.2	16	26.5	9.10684	8.9117	3.96	4.78	248	21	3.2	249
6	6	8	6	18.63	5	55.47	16	14	2.3	14	19.6	9.11580	8.9942	3.94	4.78	249	21	2.4	250
7	7	8	9	28.43	9	4.72	16	11	27.6	11	48.1	9.12419	9.0649	3.92	4.79	250	21	1.6	251
8	8	8	12	41.83	12	17.58	16	8	27.6	8	51.4	9.13214	9.1268	3.90	4.79	251	21	0.9	252
9	9	8	15	58.69	15	33.91	16	5	1.9	5	29.0	9.13960	9.1811	3.88	4.80	252	21	0.2	253
10	10	8	19	18.85	18	53.58	16	1	10.3	1	40.7	9.14658	9.2299	3.86	4.80	253	20	59.6	254
11	11	8	22	42.15	22	16.42	15	56	52.4	57	26.2	9.15310	9.2751	3.84	4.81	254	20	59.0	255
12	12	8	26	8.43	25	42.26	15	52	7.6	52	45.0	9.15922	9.3163	3.81	4.81	255	20	58.5	256
13	13	8	29	37.55	29	10.96	15	46	55.7	47	36.6	9.16497	9.3542	3.79	4.82	256	20	58.0	257
14	14	8	33	9.37	32	42.39	15	41	16.5	42	1.0	9.17036	9.3893	3.76	4.82	257	20	57.6	258
15	15	8	36	43.76	36	16.41	15	35	9.8	35	57.9	9.17547	9.4218	3.76	4.82	258	20	57.2	259
16	16	8	40	20.61	39	52.90	15	28	35.5	29	27.2	9.18024	9.4526	3.70	4.82	259	20	56.9	260
17	17	8	43	59.78	43	31.75	15	21	33.2	22	28.6	9.18471	9.4815	3.69	4.82	260	20	56.7	261
18	18	8	47	41.16	47	12.82	15	14	2.8	15	1.9	9.18893	9.5084	3.65	4.83	261	20	56.5	262
19	19	8	51	24.64	50	55.99	15	6	4.4	7	7.1	9.19291	9.5342	3.63	4.82	262	20	56.2	263
20	20	8	55	10.12	54	41.18	14	57	37.6	58	44.0	9.19667	9.5585	3.60	4.82	263	20	56.0	264
21	21	8	58	57.50	58	28.30	14	48	42.5	49	52.6	9.20022	9.5814	3.59	4.82	264	20	55.8	265
22	22	9	2	46.69	2	17.25	14	39	19.1	40	32.8	9.20355	9.6033	3.57	4.82	265	20	55.7	266
23	23	9	6	37.59	6	7.92	14	29	27.3	30	44.7	9.20664	9.6241	3.56	4.82	266	20	55.6	267
24	24	9	10	30.09	10	0.22	14	19	7.1	20	28.1	9.20957	9.6440	3.55	4.82	267	20	55.6	268
25	25	9	14	24.13	13	54.06	14	8	18.5	9	43.2	9.21236	9.6631	3.54	4.82	268	20	55.5	269
26	26	9	18	19.64	17	49.37	13	57	1.5	58	29.9	9.21501	9.6813	3.51	4.82	269	20	55.5	270
27	27	9	22	16.55	21	46.10	13	45	16.2	46	48.2	9.21750	9.6986	3.48	4.82	270	20	55.5	271
28	28	9	26	14.78	25	44.17	13	33	2.8	34	38.4	9.21983	9.7153	3.44	4.81	271	20	55.5	272
29	29	9	30	14.25	29	43.50	13	20	21.3	22	0.5	9.22200	9.7313	3.42	4.81	272	20	55.5	273
30	30	9	34	14.89	33	44.01	13	7	12.0	8	54.7	9.22409	9.7464	3.41	4.81	273	20	55.6	274
Oct. 1	1	9	38	16.66	37	45.66	12	53	35.2	55	21.3	9.22608	9.7610	3.37	4.82	274	20	55.7	275
2	2	9	42	19.50	41	48.39	12	39	30.9	41	20.4	9.22789	9.7753	3.35	4.81	275	20	55.9	276
3	3	9	46	23.32	45	52.10	12	24	59.2	26	52.2	9.22955	9.7887	3.34	4.81	276	20	55.9	277
4	4	9	50	28.06	49	56.74	12	10	0.8	11	57.0	9.23120	9.8018	3.31	4.80	277	20	56.0	278
5	5	9	54	33.70	54	2.29	11	54	35.5	56	35.1	9.23273	9.8140	3.28	4.80	278	20	56.1	279
6	6	9	58	40.18	58	8.69	11	38	44.2	40	47.0	9.23416	9.8260	3.23	4.79	279	20	56.3	280
7	7	10	2	47.44	2	15.88	11	22	26.9	24	32.9	9.23548	9.8374	3.20	4.78	280	20	56.5	281
8	8	10	6	55.42	6	23.79	11	5	44.1	7	53.2	9.23669	9.8483	3.18	4.78	281	20	56.6	282
9	9	10	11	4.07	10	32.39	10	48	36.3	50	48.5	9.23729	9.8588	3.16	4.77	282	20	56.8	283
10	10	10	15	13.34	14	41.64	10	31	3.9	33	19.0	9.23887	9.8690	3.13	4.76	283	20	57.1	284
11	11	10	19	23.21	18	51.49	10	13	7.1	15	25.0	9.23989	9.8786	3.10	4.75	284	20	57.4	285
12	12	10	23	33.65	23	1.89	9	54	46.6	57	7.3	9.24083	9.8879	3.06	4.73	285	20	57.6	286
13	13	10	27	44.61	27	12.84	9	36	2.9	38	26.3	9.24169	9.8968	3.03	4.73	286	20	57.9	287
14	14	10	31	56.05	31	24.26	9	16	56.5	19	22.5	9.24249	9.9052	3.01	4.72	287	20	58.1	288
15	15	10	36	7.94	35	36.13	8	57	27.9	59	56.5	9.24323	9.9135	3.01	4.71	288	20	58.3	289
16	16	10	40	20.26	39	48.44	8	37	37.5	40	8.7	9.24399	9.9213	2.96	4.69	289	20	58.6	290
17	17	10	44	33.00	44	1.18	8	17	25.8	19	59.4	9.24467	9.9289	2.93	4.68	290	20	58.9	291
18	18	10	48	46.13	48	14.31	7	56	53.4	59	29.4	9.24531	9.9360	2.91	4.68	291	20	59.1	292
19	19	10	52	59.62	52	27.80	7	36	1.0	38	39.2	9.24591	9.9429	2.91	4.66	292	20	59.4	293
20	20	10	57	13.46	56	41.66	7	14	49.0	17	29.4	9.24649	9.9495	2.91	4.64	293	20	59.7	294
21	21	11	1	27.64	0	55.85	6	53	18.0	56	0.5	9.24707	9.9558	2.91	4.63	294	21	0.0	295
22	22	11	5	42.16	5	10.37	6	31	28.6	34	13.1	9.24769	9.9617	2.86	4.62	295	21	0.3	296
23	23	11	9	57.02	9	25.25	6	9	21.3	12	7.7	9.24820	9.9677	2.89	4.60	296	21	0.6	297
24	24	11	14	12.19	13	40.43	5	46	56.3	49	44.7	9.24876	9.9731	2.89	4.59	297	21	0.9	298
25	25	11	18	27.69	17	55.95	5	24	14.7	27	4.7	9.24930	9.9784	2.91	4.57	298	21	1.2	299
26	26	11	22	43.52	22	11.79	5	1	16.8	4	8.5	9.24988	9.9834	2.91	4.56	299	21	1.5	300
27	27	11	26	59.69	26	27.98	4	38	3.3	40	56.5	9.25047	9.9882	2.89	4.54	300	21	1.9	301
28	28	11	31	16.20	30	44.51	4	14	34.7	17	29.5	9.25103	9.9928	2.89	4.52	301	21	2.2	302
29	29	11	35	33.04	35	1.36	3	50	51.6	53	47.9	9.25162	9.9971	2.96	4.50	302	21	2.5	303
30	30	11	39	50.21	39	18.55	3	26	54.8	29	52.4	9.25225	0.0011	2.89	4.48	303	21	2.8	304
31	31	11	44	7.77	43	36.13	3	2	44.9	5	43.6	9.25279	0.0051	2.93	4.46	304	21	3.2	305
32	32	11	48	25.66	47	54.05	+ 2	38	22.3	41	22.1	+9.25334	-0.0086	+2.99	-4.42	305	21	3.6	306

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.									
Mean Solar Time of Meridian Transit.	Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
		h. m. s.	m. s.	O' / ' / "	' / "				
Jan. 1 19 55.3	1	14 39 24.58	40 53.32	14 31 38.3	38 44.3	+9.00305	-9.6855	+2.66	+4.15
2 19 53.8	2	14 41 49.65	43 18.73	14 43 13.6	50 16.9	9.00354	9.6819	2.66	4.16
3 19 52.3	3	14 44 14.91	45 44.36	14 54 42.8	61 43.5	9.00406	9.6781	2.66	4.17
4 19 50.8	4	14 46 40.36	48 10.15	15 6 5.9	13 4.0	9.00461	9.6741	2.65	4.18
5 19 49.2	5	14 49 5.98	50 36.12	15 17 22.8	24 18.2	9.00516	9.6702	2.65	4.18
6 19 47.7	6	14 51 31.78	53 2.31	15 28 33.5	35 26.2	9.00570	9.6661	2.64	4.18
7 19 46.2	7	14 53 57.77	55 28.65	15 39 37.9	46 27.7	9.00624	9.6620	2.64	4.18
8 19 44.7	8	14 56 23.94	57 55.18	15 50 36.0	57 22.9	9.00677	9.6578	2.63	4.19
9 19 43.3	9	14 58 50.29	60 21.88	16 1 27.6	8 11.5	9.00729	9.6534	2.63	4.20
10 19 41.8	10	15 1 16.81	2 48.76	16 12 12.7	18 53.5	9.00780	9.6490	2.62	4.21
11 19 40.3	11	15 3 43.51	5 15.83	16 22 51.1	29 28.8	9.00832	9.6445	2.62	4.21
12 19 38.8	12	15 6 10.38	7 43.06	16 33 22.8	39 57.4	9.00884	9.6398	2.62	4.21
13 19 37.3	13	15 8 37.43	10 10.46	16 43 47.8	50 19.3	9.00934	9.6351	2.61	4.21
14 19 35.8	14	15 11 4.64	12 38.03	16 54 6.1	60 34.1	9.00983	9.6304	2.61	4.22
15 19 34.4	15	15 13 32.02	15 5.76	17 4 17.4	10 42.1	9.01032	9.6254	2.60	4.23
16 19 32.9	16	15 15 59.56	17 33.67	17 14 21.7	20 43.0	9.01080	9.6203	2.59	4.23
17 19 31.4	17	15 18 27.27	20 1.72	17 24 18.9	30 36.8	9.01125	9.6152	2.58	4.24
18 19 29.9	18	15 20 55.12	22 29.92	17 34 9.1	40 23.3	9.01167	9.6099	2.56	4.24
19 19 28.5	19	15 23 23.11	24 58.25	17 43 52.0	50 2.5	9.01208	9.6045	2.54	4.25
20 19 27.0	20	15 25 51.24	27 26.72	17 53 27.6	59 34.4	9.01247	9.5990	2.51	4.25
21 19 25.5	21	15 28 19.50	29 55.32	18 2 55.9	8 59.0	9.01283	9.5934	2.48	4.25
22 19 24.1	22	15 30 47.88	32 24.03	18 12 16.8	18 16.0	9.01319	9.5877	2.46	4.25
23 19 22.6	23	15 33 16.38	34 52.86	18 21 30.3	27 25.6	9.01355	9.5818	2.45	4.26
24 19 21.2	24	15 35 45.00	37 21.81	18 30 36.3	36 27.6	9.01389	9.5758	2.43	4.27
25 19 19.7	25	15 38 13.73	39 50.88	18 39 34.7	45 21.9	9.01422	9.5697	2.41	4.27
26 19 18.3	26	15 40 42.58	42 20.05	18 48 25.4	54 8.5	9.01452	9.5634	2.40	4.27
27 19 16.8	27	15 43 11.53	44 49.31	18 57 8.5	62 47.5	9.01481	9.5570	2.39	4.28
28 19 15.4	28	15 45 40.57	47 18.67	19 5 43.8	11 18.6	9.01509	9.5505	2.37	4.27
29 19 13.9	29	15 48 9.70	49 48.13	19 14 11.5	19 42.1	9.01537	9.5439	2.35	4.28
30 19 12.5	30	15 50 38.95	52 17.68	19 22 31.4	27 57.7	9.01564	9.5371	2.33	4.28
31 19 11.0	31	15 53 8.27	54 47.32	19 30 43.5	36 5.5	9.01588	9.5302	2.30	4.28
Feb. 1 19 9.6	32	15 55 37.67	57 17.04	19 38 47.8	44 5.4	9.01611	9.5232	2.27	4.29
2 19 8.1	33	15 58 7.15	59 46.83	19 46 44.2	51 57.3	9.01635	9.5160	2.24	4.29
3 19 6.7	34	16 0 36.71	2 16.71	19 54 32.7	59 41.4	9.01659	9.5087	2.21	4.29
4 19 5.3	35	16 3 6.36	4 46.66	20 2 13.3	7 17.4	9.01681	9.5012	2.18	4.29
5 19 3.8	36	16 5 36.08	7 16.68	20 9 45.9	14 45.4	9.01701	9.4935	2.15	4.29
6 19 2.4	37	16 8 5.86	9 46.76	20 17 10.5	22 5.4	9.01718	9.4856	2.11	4.29
7 19 0.9	38	16 10 35.69	12 16.89	20 24 27.0	29 17.1	9.01733	9.4776	2.06	4.29
8 18 59.5	39	16 13 5.58	14 47.05	20 31 35.4	36 20.7	9.01745	9.4693	+2.00	4.30
9 18 58.1	40	16 15 35.50	17 17.25	20 38 35.6	43 16.2	9.01753	9.4609		4.30
10 18 56.6	41	16 18 5.44	19 47.47	20 45 27.7	50 3.4	9.01757	9.4522		4.30
11 18 55.2	42	16 20 35.39	22 17.70	20 52 11.5	56 42.2	9.01762	9.4434		4.30
12 18 53.8	43	16 23 5.36	24 47.95	20 58 47.1	63 12.9	9.01768	9.4344		4.30
13 18 52.3	44	16 25 35.36	27 18.21	21 5 14.5	9 35.3	9.01773	9.4252		4.30
14 18 50.9	45	16 28 5.36	29 48.47	21 11 33.7	15 49.6	9.01776	9.4157		4.30
15 18 49.5	46	16 30 35.37	32 18.76	21 17 44.6	21 55.5	9.01777	9.4061		4.30
16 18 48.0	47	16 33 5.39	34 49.03	21 23 47.3	27 53.2	9.01775	9.3963		4.30
17 18 46.6	48	16 35 35.39	37 19.26	21 29 41.8	33 42.6	9.01767	9.3862	-2.00	4.30
18 18 45.2	49	16 38 5.35	39 49.44	21 35 28.1	39 23.6	9.01752	9.3758		4.30
19 18 43.7	50	16 40 35.35	42 19.55	21 41 6.0	44 56.3	9.01731	9.3651	2.25	4.30
20 18 42.3	51	16 43 5.06	44 49.54	21 46 35.6	50 20.6	9.01709	9.3540	2.23	4.30
21 18 40.9	52	16 45 34.77	47 19.45	21 51 56.8	55 36.4	9.01666	9.3427	2.24	4.31
22 18 39.4	53	16 48 4.39	49 49.26	21 57 9.6	60 43.9	9.01641	9.3311	2.27	4.30
23 18 38.0	54	16 50 33.91	52 18.96	22 2 14.0	5 43.1	9.01616	9.3192	2.32	4.30
24 18 36.5	55	16 53 3.31	54 48.55	22 7 10.2	10 34.1	9.01584	9.3071	2.47	4.29
25 18 35.1	56	16 55 32.59	57 17.99	22 11 58.2	15 16.8	9.01547	9.2948	2.50	4.29
26 18 33.7	57	16 58 1.75	59 47.30	22 16 38.0	19 51.4	9.01507	9.2822	2.53	4.29
27 18 32.2	58	17 0 30.76	2 16.46	22 21 9.8	24 17.9	9.01464	9.2694	2.55	4.29
28 18 30.7	59	17 2 59.62	4 45.46	22 25 33.5	28 36.3	9.01418	9.2561	2.56	4.29
29 18 29.3	60	17 5 28.31	7 14.30	22 29 49.1	32 46.5	9.01370	9.2423	2.60	4.29
30 18 27.8	61	17 7 56.85	9 42.96	22 33 56.6	36 48.4	9.01322	9.2279	2.64	4.29
31 18 26.3	62	17 10 25.22	12 11.45	22 37 55.9	40 42.2	+9.01271	-9.2130	-2.67	+4.29

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Side-real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Mar. 1 18 27.8	61	17 7 56.85	9 42.96	-22 35 56.6	36 48.4	+9.01322	-9.2279	-2.64	+4.29
2 18 26.3	62	17 10 25.22	12 11.45	22 37 55.9	40 42.2	9.01271	9.2130	2.66	4.29
3 18 24.9	63	17 12 53.40	14 39.75	22 41 46.9	44 28.0	9.01215	9.1978	2.67	4.28
4 18 23.4	64	17 15 21.39	17 7.85	22 45 30.0	48 5.7	9.01156	9.1823	2.69	4.28
5 18 21.9	65	17 17 49.17	19 35.74	22 49 5.1	51 35.3	9.01097	9.1661	2.70	4.29
6 18 20.4	66	17 20 16.75	22 3.42	22 52 32.1	54 57.1	9.01036	9.1494	2.71	4.28
7 18 19.0	67	17 22 44.12	24 30.87	22 55 51.3	58 10.9	9.00970	9.1322	2.74	4.28
8 18 17.5	68	17 25 11.26	26 58.09	22 59 2.6	61 16.9	9.00902	9.1144	2.77	4.28
9 18 16.0	69	17 27 38.16	29 25.05	23 2 6.1	4 15.1	9.00838	9.0960	2.79	4.27
10 18 14.5	70	17 30 4.80	31 51.75	23 5 1.9	7 5.5	9.00774	9.0770	2.81	4.27
11 18 13.0	71	17 32 31.17	34 18.15	23 7 50.0	9 48.2	9.00666	9.0571	2.84	4.27
12 18 11.5	72	17 34 57.25	36 44.26	23 10 30.4	12 23.2	9.00578	9.0364	2.86	4.26
13 18 10.0	73	17 37 23.03	39 10.03	23 13 3.2	14 50.8	9.00488	9.0149	2.89	4.26
14 18 8.5	74	17 39 48.47	41 35.48	23 15 28.5	17 10.8	9.00383	8.9926	2.90	4.26
15 18 7.0	75	17 42 13.58	44 0.57	23 17 46.3	19 23.4	9.00281	8.9692	2.93	4.25
16 18 5.4	76	17 44 38.33	46 25.29	23 19 56.8	21 28.6	9.00173	8.9448	2.95	4.25
17 18 3.9	77	17 47 2.71	48 49.62	23 21 59.9	23 26.6	9.00058	8.9192	2.98	4.24
18 18 2.4	78	17 49 26.69	51 13.54	23 23 55.9	25 17.5	8.99934	8.8924	3.00	4.25
19 18 0.8	79	17 51 50.27	53 37.04	23 25 44.7	27 1.2	8.99805	8.8642	3.02	4.23
20 17 59.3	80	17 54 13.41	56 0.08	23 27 26.5	28 38.0	8.99672	8.8344	3.03	4.22
21 17 57.7	81	17 56 36.10	58 22.66	23 29 1.4	30 8.0	8.99534	8.8029	3.04	4.22
22 17 56.1	82	17 58 58.33	60 44.76	23 30 29.5	31 31.2	8.99390	8.7695	3.05	4.22
23 17 54.5	83	18 1 20.08	3 6.38	23 31 50.8	32 47.8	8.99241	8.7343	3.07	4.21
24 17 53.0	84	18 3 41.33	5 27.48	23 33 5.7	33 57.9	8.99086	8.6969	3.08	4.20
25 17 51.4	85	18 6 2.08	7 48.05	23 34 14.1	35 1.6	8.98927	8.6559	3.10	4.19
26 17 49.8	86	18 8 22.30	10 8.10	23 35 16.1	35 59.0	8.98768	8.6118	3.11	4.18
27 17 48.2	87	18 10 41.99	12 27.60	23 36 11.9	36 50.1	8.98594	8.5634	3.12	4.17
28 17 46.5	88	18 13 1.13	14 46.53	23 37 1.5	37 35.2	8.98420	8.5100	3.13	4.16
29 17 44.9	89	18 15 19.70	17 4.89	23 37 45.1	38 14.3	8.98242	8.4507	3.13	4.15
30 17 43.3	90	18 17 37.70	19 22.66	23 38 22.8	38 47.7	8.98059	8.3832	3.14	4.14
31 17 41.6	91	18 19 55.11	21 39.83	23 38 54.7	39 15.3	8.97870	8.3055	3.15	4.13
Apr. 1 17 40.0	92	18 22 11.92	23 56.37	23 39 21.0	39 37.4	8.97676	8.2136	3.17	4.12
2 17 38.3	93	18 24 28.10	26 12.30	23 39 41.8	39 54.2	8.97478	8.1005	3.18	4.11
3 17 36.6	94	18 26 43.66	28 27.58	23 39 57.3	40 5.7	8.97276	7.9522	3.19	4.10
4 17 34.9	95	18 28 58.59	30 42.20	23 40 7.6	40 12.0	8.97064	7.7309	3.20	4.09
5 17 33.2	96	18 31 12.84	32 56.14	23 40 12.8	40 13.4	8.96845	-7.2800	3.21	4.08
6 17 31.5	97	18 33 26.41	35 9.39	23 40 13.1	40 10.0	8.96628	+7.1638	3.22	4.06
7 17 29.7	98	18 35 39.30	37 21.93	23 40 8.6	40 1.9	8.96395	7.6741	3.23	4.05
8 17 28.0	99	18 37 51.47	39 33.73	23 39 59.5	39 49.4	8.96156	7.8947	3.25	4.03
9 17 26.2	100	18 40 2.89	41 44.77	23 39 46.0	39 32.4	8.95908	8.0361	3.27	4.02
10 17 24.5	101	18 42 13.57	43 55.02	23 39 28.2	39 11.3	8.95652	8.1405	3.28	4.00
11 17 22.7	102	18 44 23.45	46 4.46	23 39 6.2	38 46.3	8.95381	8.2200	3.29	3.97
12 17 20.9	103	18 46 32.51	48 13.06	23 38 40.4	38 17.5	8.95103	8.2833	3.30	3.96
13 17 19.1	104	18 48 40.74	50 20.79	23 38 10.9	37 45.2	8.94809	8.3365	3.32	3.94
14 17 17.3	105	18 50 48.09	52 27.63	23 37 37.9	37 9.6	8.94512	8.3807	3.34	3.90
15 17 15.4	106	18 52 54.55	54 33.55	23 37 1.7	36 31.0	8.94201	8.4180	3.35	3.86
16 17 13.6	107	18 55 0.09	56 38.51	23 36 22.5	35 49.3	8.93876	8.4512	3.37	3.83
17 17 11.7	108	18 57 4.67	58 42.51	23 35 40.3	35 5.1	8.93539	8.4796	3.38	3.78
18 17 9.8	109	18 59 8.28	60 45.50	23 34 55.6	34 18.3	8.93192	8.5039	3.40	3.75
19 17 7.9	110	19 1 10.88	2 47.46	23 34 8.4	33 29.3	8.92832	8.5256	3.41	3.71
20 17 6.0	111	19 3 12.46	4 48.37	23 33 19.0	32 38.2	8.92460	8.5446	3.42	3.68
21 17 4.0	112	19 5 12.98	6 48.20	23 32 27.6	31 45.3	8.92075	8.5601	3.42	3.62
22 17 2.1	113	19 7 12.42	8 46.92	23 31 34.4	30 50.8	8.91679	8.5736	3.43	3.55
23 17 0.1	114	19 9 10.76	10 44.54	23 30 39.7	29 55.0	8.91273	8.5848	3.43	3.47
24 16 58.1	115	19 11 7.99	12 41.03	23 29 43.7	28 58.1	8.90860	8.5939	3.44	3.38
25 16 56.1	116	19 13 4.10	14 36.37	23 28 46.6	28 0.3	8.90435	8.6009	3.44	3.29
26 16 54.1	117	19 14 59.06	16 30.56	23 27 48.8	27 1.9	8.90000	8.6061	3.44	+3.16
27 16 52.0	118	19 16 52.86	18 23.55	23 26 50.4	26 3.2	8.89549	8.6092	3.45	
28 16 49.9	119	19 18 45.46	20 15.31	23 25 51.7	25 4.3	8.89082	8.6107	3.46	
29 16 47.8	120	19 20 36.84	22 5.83	23 24 52.9	24 5.5	8.88600	8.6106	3.47	
30 16 45.7	121	19 22 26.97	23 55.05	23 23 54.2	23 6.9	8.88098	8.6093	3.49	
31 16 43.6	122	19 24 15.80	25 42.97	-23 22 55.8	22 8.8	+8.87579	+8.6062	-3.49	-3.08

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Table with 10 columns: Mean Solar Time of Meridian Transit (d, h, m), Sidereal Date, Apparent Right Ascension (At Sidereal Oh, At Transit), Apparent Declination (At Sidereal Oh, At Transit), Log. Coefficient of t in Sidereal Minutes (In R.A., In Dec.), and Log. Coefficient of r (In R.A., In Dec.). Rows are organized by month (May and June).

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Table with columns: Mean Solar Time of Meridian Transit (d, h, m), Sidereal Date, Apparent Right Ascension (At Sidereal Oh., At Transit), Apparent Declination (At Sidereal Oh., At Transit), Log. Coefficient of t in Sidereal Minutes (In R.A., In Dec.), and Log. Coefficient of t² (In R.A., In Dec.). Rows are listed by month from July to August 31st.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sideral Date.	Apparent Right Ascension.		Apparent Declination.				Log. Coefficient of t in Sideral Minutes.		Log. Coefficient of t ² .	
		At Sideral Oh.	At Transit.	At Sideral Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
Sept. 1 8 47.4	245	h. m. s.	m. s.	^o ['] ["]	['] ["]	+8.50449	+9.3011	+3.88	+4.32		
2 8 44.3	246	19 32 31.88	33 10.45	-26 61 6.8	57 3.4	8.53299	9.3141	3.87	4.32		
3 8 41.3	247	19 33 19.48	34 0.57	26 56 8.4	52 3.6	8.55902	9.3267	3.87	4.32		
4 8 38.3	248	19 34 10.14	34 53.71	26 51 7.2	46 55.1	8.58319	9.3388	3.86	4.31		
5 8 35.3	249	19 35 3.81	35 49.83	26 45 57.3	41 38.0	8.60570	9.3506	3.85	4.32		
6 8 32.4	250	19 36 0.44	36 48.88	26 40 38.9	36 12.1	8.62676	9.3621	3.84	4.31		
7 8 29.5	251	19 36 59.98	37 50.81	26 35 11.7	30 37.6	8.64649	9.3730	3.83	4.30		
8 8 26.7	252	19 38 2.38	38 55.56	26 29 35.9	24 54.9	8.66498	9.3834	3.83	4.30		
9 8 24.0	253	19 39 7.59	40 3.08	26 23 51.8	19 3.9	8.68240	9.3935	3.82	4.30		
10 8 21.2	254	19 40 15.54	41 13.31	26 17 59.6	13 4.6	8.69882	9.4035	3.81	4.31		
11 8 18.6	255	19 41 26.20	42 26.19	26 11 59.2	6 56.9	8.71480	9.4135	3.80	4.31		
12 8 15.9	256	19 42 39.49	43 41.67	26 5 50.3	0 40.7	8.72898	9.4234	3.79	4.32		
13 8 13.3	257	19 43 55.37	44 59.71	25 59 32.9	54 15.8	8.74284	9.4330	3.78	4.31		
14 8 10.8	258	19 45 13.79	46 20.24	25 53 6.8	47 42.4	8.75593	9.4423	3.77	4.31		
15 8 8.3	259	19 46 34.67	47 43.20	25 46 32.3	41 0.5	8.76842	9.4515	3.76	4.31		
16 8 5.8	260	19 47 57.97	49 8.55	25 39 49.3	34 10.1	8.78088	9.4608	3.75	4.31		
17 8 3.4	261	19 49 23.64	50 36.21	25 32 57.7	27 11.1	8.79153	9.4695	3.74	4.32		
18 8 1.0	262	19 50 51.62	52 6.15	25 25 57.6	20 3.4	8.80223	9.4781	3.72	4.32		
19 7 58.6	263	19 52 21.85	53 38.30	25 18 48.9	12 47.1	8.81246	9.4865	3.71	4.31		
20 7 56.3	264	19 53 54.27	55 12.63	25 11 31.6	5 22.4	8.82217	9.4947	3.70	4.31		
21 7 54.0	265	19 55 28.85	56 49.04	24 64 6.0	57 49.2	8.83129	9.5028	3.68	4.31		
22 7 51.7	266	19 57 5.50	58 27.47	24 56 31.9	50 7.5	8.83996	9.5108	3.67	4.31		
23 7 49.5	267	19 58 44.14	60 7.85	24 48 49.3	42 17.3	8.84821	9.5186	3.65	4.31		
24 7 47.3	268	20 0 24.73	1 50.13	24 40 58.2	34 18.6	8.85599	9.5263	3.64	4.31		
25 7 45.1	269	20 2 7.19	3 34.22	24 32 58.6	26 11.3	8.86341	9.5339	3.62	4.31		
26 7 43.0	270	20 3 51.45	5 20.08	24 24 50.5	17 55.4	8.87050	9.5414	3.61	4.31		
27 7 40.9	271	20 5 37.47	7 7.66	24 16 33.8	9 31.0	8.87719	9.5487	3.59	4.32		
28 7 38.8	272	20 7 25.19	8 56.87	24 8 8.7	0 58.0	8.88353	9.5560	3.58	4.32		
29 7 36.7	273	20 9 14.53	10 47.68	23 59 35.0	52 16.3	8.88956	9.5631	3.56	4.32		
30 7 34.7	274	20 11 5.44	12 40.00	23 50 52.7	43 26.1	8.89598	9.5701	3.55	4.31		
Oct. 1 7 32.6	275	20 12 57.86	14 38.79	23 42 1.8	34 27.3	8.90075	9.5770	3.53	4.31		
2 7 30.6	276	20 14 51.73	16 29.02	23 33 2.4	25 19.9	8.90599	9.5837	3.52	4.31		
3 7 28.7	277	20 16 47.02	18 25.63	23 23 54.5	16 4.3	8.91097	9.5902	3.50	4.30		
4 7 26.7	278	20 18 43.67	20 23.57	23 14 38.2	6 40.2	8.91572	9.5966	3.49	4.31		
5 7 24.8	279	20 20 41.64	22 22.78	22 65 13.6	57 7.7	8.92026	9.6030	3.47	4.31		
6 7 22.9	280	20 22 40.87	24 23.23	22 55 40.6	47 26.7	8.92461	9.6094	3.46	4.31		
7 7 21.0	281	20 24 41.33	26 24.88	22 45 59.1	37 37.0	8.92876	9.6157	3.44	4.31		
8 7 19.1	282	20 26 42.97	28 27.68	22 36 9.0	27 38.8	8.93276	9.6219	3.43	4.32		
9 7 17.3	283	20 28 45.76	30 31.63	22 26 10.5	17 32.1	8.93663	9.6281	3.42	4.32		
10 7 15.4	284	20 30 49.66	32 36.67	22 16 8.4	7 16.6	8.94042	9.6343	3.42	4.33		
11 7 13.6	285	20 32 54.66	34 42.77	21 65 47.5	56 52.4	8.94413	9.6404	3.41	4.32		
12 7 11.8	286	20 35 0.74	36 49.94	21 55 22.7	46 19.2	8.94776	9.6463	3.40	4.33		
13 7 10.0	287	20 37 7.89	38 58.14	21 44 49.3	35 37.3	8.95124	9.6523	3.38	4.33		
14 7 8.3	288	20 39 16.10	41 7.86	21 34 7.1	24 46.6	8.95446	9.6581	3.36	4.33		
15 7 6.5	289	20 41 25.30	43 17.55	21 23 16.1	13 47.1	8.95747	9.6639	3.33	4.33		
16 7 4.8	290	20 43 35.43	45 28.65	21 12 16.3	2 38.8	8.96027	9.6696	3.30	4.32		
17 7 3.0	291	20 45 46.43	47 40.58	20 61 7.6	51 21.6	8.96294	9.6751	3.28	4.32		
18 7 1.3	292	20 47 58.25	49 53.31	20 49 50.4	39 55.8	8.96554	9.6805	3.27	4.31		
19 6 59.6	293	20 50 10.87	52 6.82	20 38 24.6	28 21.6	8.96806	9.6857	3.25	4.31		
20 6 57.9	294	20 52 24.28	54 21.10	20 26 50.5	16 39.0	8.97048	9.6909	3.23	4.30		
21 6 56.3	295	20 54 38.45	56 36.12	20 15 7.9	4 48.0	8.97276	9.6960	3.21	4.30		
22 6 54.6	296	20 56 53.35	58 51.84	19 63 17.0	52 48.7	8.97492	9.7009	3.19	4.29		
23 6 52.9	297	20 59 8.94	61 8.22	19 51 17.8	40 41.1	8.97693	9.7058	3.17	4.29		
24 6 51.3	298	21 1 25.19	3 25.22	19 39 10.5	28 25.4	8.97882	9.7106	3.14	4.29		
25 6 49.7	299	21 3 42.04	5 42.81	19 26 54.9	16 1.6	8.98062	9.7153	3.12	4.28		
26 6 48.0	300	21 5 59.48	8 0.95	19 14 31.3	3 29.8	8.98229	9.7199	3.09	4.28		
27 6 46.4	301	21 8 17.47	10 19.62	18 61 59.7	50 50.0	8.98386	9.7244	3.07	4.28		
28 6 44.8	302	21 10 35.97	12 38.79	18 49 20.2	38 2.3	8.98537	9.7288	3.05	4.27		
29 6 43.2	303	21 12 54.96	14 58.43	18 36 32.9	25 6.8	8.98681	9.7332	3.03	4.27		
30 6 41.6	304	21 15 14.43	17 18.52	18 23 37.8	12 3.6	8.98817	9.7375	3.01	4.27		
31 6 40.0	305	21 17 34.34	19 39.04	17 70 34.9	58 52.6	8.98949	9.7417	2.99	4.26		
32 6 38.4	306	21 19 54.69	21 59.99	17 57 24.2	45 33.8	+8.99072	+9.7459	+2.97	+4.26		
		21 22 15.45	24 21.32	-17 44 5.9	32 7.4						

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sideral Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sideral Minutes.		Log. Coefficient of t^2 .	
		At Sideral Oh.	At Transit.	At Sideral Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
		h. m. s.	m. s.	$^{\circ}$ $'$ $''$	$'$ $''$				
Nov. 1 6 38.4	306	21 22 15.45	24 21.32	-17 44 5.9	32 7.4	+8.99072	+9.7459	+2.97	+4.26
2 6 36.9	307	21 24 36.60	26 43.02	17 30 40.0	18 33.4	8.99187	9.7500	2.95	4.25
3 6 35.3	308	21 26 58.11	29 5.07	17 17 6.5	4 52.0	8.99296	9.7540	2.93	4.25
4 6 33.7	309	21 29 19.97	31 27.45	16 63 25.5	51 3.0	8.99400	9.7580	2.91	4.25
5 6 32.2	310	21 31 42.16	33 50.16	16 49 37.0	37 6.6	8.99500	9.7619	2.89	4.24
6 6 30.6	311	21 34 4.67	36 13.16	16 35 41.1	23 2.7	8.99596	9.7657	2.87	4.24
7 6 29.0	312	21 36 27.49	38 36.49	16 21 38.0	8 51.8	8.99688	9.7693	2.85	4.24
8 6 27.5	313	21 38 50.61	41 0.11	15 67 27.9	54 34.0	8.99778	9.7729	2.84	4.23
9 6 26.0	314	21 41 14.02	43 24.02	15 53 10.9	40 9.4	8.99864	9.7763	2.82	4.22
10 6 24.4	315	21 43 37.71	45 48.19	15 38 47.1	25 38.1	8.99944	9.7797	2.80	4.21
11 6 22.9	316	21 46 1.65	48 12.62	15 24 16.7	11 0.2	9.00018	9.7830	2.78	4.20
12 6 21.4	317	21 48 25.83	50 37.27	14 69 39.7	56 15.8	9.00091	9.7862	2.76	4.19
13 6 19.9	318	21 50 50.26	53 2.14	14 54 56.2	41 25.0	9.00163	9.7894	2.72	4.18
14 6 18.8	319	21 53 14.91	55 27.23	14 40 6.2	26 27.8	9.00230	9.7925	2.70	4.17
15 6 16.8	320	21 55 39.78	57 52.53	14 25 10.0	11 24.4	9.00292	9.7955	2.68	4.17
16 6 15.3	321	21 58 4.85	60 18.02	13 70 7.6	56 14.9	9.00351	9.7985	2.66	4.17
17 6 13.8	322	22 0 30.11	2 43.69	13 54 59.0	40 59.4	9.00405	9.8014	2.63	4.16
18 6 12.3	323	22 2 55.55	5 9.52	13 39 44.5	25 38.0	9.00455	9.8042	2.61	4.15
19 6 10.8	324	22 5 21.15	7 35.51	13 24 24.3	10 11.0	9.00502	9.8068	2.59	4.13
20 6 9.3	325	22 7 46.90	10 1.64	12 68 58.6	54 28.6	9.00547	9.8095	2.56	4.13
21 6 7.8	326	22 10 12.80	12 27.90	12 53 27.3	39 0.8	9.00589	9.8121	2.53	4.13
22 6 6.3	327	22 12 38.83	14 54.28	12 37 50.3	23 17.2	9.00627	9.8146	2.50	4.12
23 6 4.8	328	22 15 4.99	17 20.78	12 22 7.9	7 28.3	9.00662	9.8171	2.40	4.11
24 6 3.3	329	22 17 31.25	19 47.38	11 66 20.2	51 34.2	9.00692	9.8195	2.35	4.10
25 6 1.8	330	22 19 57.61	22 14.07	11 50 27.3	35 35.0	9.00717	9.8219	2.24	4.09
26 6 0.3	331	22 22 24.04	24 40.92	11 34 29.3	19 30.8	9.00735	9.8241	2.16	4.07
27 5 58.8	332	22 24 50.52	27 7.61	11 18 26.5	3 21.9	9.00748	9.8263	2.15	4.06
28 5 57.3	333	22 27 17.04	29 34.43	10 62 18.9	47 8.4	9.00763	9.8283	2.15	4.04
29 5 55.8	334	22 29 43.61	32 1.30	10 46 6.9	30 50.6	9.00777	9.8303	2.16	4.03
30 5 54.3	335	22 32 10.24	34 28.22	10 29 50.4	14 28.3	9.00795	9.8322	2.15	4.02
Dec. 1 5 52.8	336	22 34 36.93	36 55.20	9 73 29.6	58 1.9	9.00813	9.8341	2.14	4.00
2 5 51.4	337	22 37 3.68	39 22.24	9 57 4.8	41 31.6	9.00827	9.8359	2.10	3.99
3 5 49.9	338	22 39 30.47	41 49.33	9 40 35.9	24 57.3	9.00842	9.8376	2.09	3.97
4 5 48.4	339	22 41 57.31	44 16.48	9 24 3.1	8 19.2	9.00856	9.8393	2.08	3.96
5 5 46.9	340	22 44 24.20	46 43.67	8 67 26.6	51 37.5	9.00871	9.8409	2.06	3.94
6 5 45.4	341	22 46 51.14	49 10.91	8 50 46.5	34 52.3	9.00886	9.8425	2.08	3.93
7 5 43.9	342	22 49 18.14	51 38.21	8 34 2.9	18 3.7	9.00902	9.8440	2.08	3.92
8 5 42.5	343	22 51 45.18	54 5.55	8 17 15.8	1 11.7	9.00917	9.8454	2.06	3.90
9 5 41.0	344	22 54 12.28	56 32.95	7 60 25.4	44 16.5	9.00933	9.8468	2.05	3.87
10 5 39.5	345	22 56 39.43	59 0.39	7 43 31.8	27 18.2	9.00946	9.8482	2.03	3.86
11 5 38.1	346	22 59 6.62	61 27.88	7 26 35.1	10 16.8	9.00959	9.8495	+2.00	3.85
12 5 36.5	347	23 1 33.86	3 55.41	6 69 35.3	53 12.6	9.00972	9.8507		3.83
13 5 35.1	348	23 4 1.14	6 22.97	6 52 32.8	36 5.7	9.00984	9.8519		3.80
14 5 33.6	349	23 6 28.46	8 50.57	6 35 27.5	18 56.3	9.00994	9.8530		3.78
15 5 32.1	350	23 8 55.80	11 18.21	6 18 19.7	1 44.5	9.01003	9.8540		3.75
16 5 30.6	351	23 11 23.19	13 45.88	5 61 9.6	44 30.6	9.01015	9.8550		3.73
17 5 29.1	352	23 13 50.61	16 13.61	5 43 57.4	27 14.5	9.01028	9.8559		3.70
18 5 27.7	353	23 16 18.09	18 41.38	5 26 43.1	9 56.6	9.01042	9.8567		3.66
19 5 26.3	354	23 18 45.62	21 9.20	4 69 26.9	52 36.8	9.01056	9.8574		3.63
20 5 24.7	355	23 21 13.18	23 37.04	4 52 9.0	35 15.3	9.01066	9.8582		3.60
21 5 23.2	356	23 23 40.77	26 4.94	4 34 49.3	17 52.1	9.01077	9.8589		3.57
22 5 21.8	357	23 26 8.41	28 32.85	4 17 28.0	0 27.9	9.01087	9.8595		3.50
23 5 20.3	358	23 28 36.07	31 0.81	3 60 5.5	43 2.5	9.01096	9.8599		3.44
24 5 18.8	359	23 31 3.77	33 28.77	3 42 42.0	25 36.4	9.01105	9.8603		3.39
25 5 17.4	360	23 33 31.49	35 56.78	3 25 17.5	8 9.2	9.01114	9.8607		3.33
26 5 15.9	361	23 35 59.25	38 24.82	2 67 52.1	50 41.4	9.01124	9.8611		3.28
27 5 14.4	362	23 38 27.04	40 52.89	2 50 25.8	33 12.7	9.01133	9.8614		3.23
28 5 12.9	363	23 40 54.86	43 20.99	2 32 58.9	15 43.4	9.01141	9.8617		3.20
29 5 11.5	364	23 43 22.71	45 49.12	1 75 31.3	58 13.4	9.01149	9.8620		3.16
30 5 10.0	365	23 45 50.58	48 17.29	1 58 3.1	40 43.1	9.01158	9.8622		+3.00
31 5 8.5	366	23 48 18.49	50 45.49	1 40 34.5	23 12.4	9.01167	9.8623		
32 5 7.1	367	23 50 46.42	53 13.70	-1 23 5.6	5 41.5	+9.01175	+9.8624		

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of <i>t</i> in Sidereal Minutes.		Log. Coefficient of <i>t</i> ² .	
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Jan.	0	12 52.8	0	h. m. s.	m. s.	^o ['] ^{''}	['] ^{''} ^{'''}	-8.3597	+8.7581	-2.80	
	1	12 48.3	1	7 33 31.72	33 21.32	+22 0 48.4	1 14.3	8.3630	8.7581	2.75	
	2	12 43.9	2	7 32 58.63	32 48.12	22 2 10.9	2 36.7	8.3659	8.7575	2.72	
	3	12 39.4	3	7 32 25.30	32 14.78	22 3 33.3	3 59.2	8.3685	8.7571	2.67	
	4	12 34.9	4	7 31 51.75	31 41.18	22 4 55.7	5 21.5	8.3708	8.7565	2.61	
	5	12 30.4	5	7 31 18.02	31 7.41	22 6 18.0	6 43.7	8.3728	8.7556	2.55	
	6	12 25.9	6	7 30 44.12	30 33.47	22 7 40.2	8 5.7	8.3745	8.7543	2.46	
	7	12 21.4	7	7 30 10.07	29 59.39	22 9 2.1	9 27.6	8.3759	8.7527	-2.84	
	8	12 16.9	8	7 29 35.91	29 25.21	22 10 23.8	10 49.2	8.3769	8.7506		
	9	12 12.4	9	7 29 1.65	28 50.95	22 11 45.1	12 10.4	8.3776	8.7481		
	10	12 7.9	10	7 28 27.33	28 16.63	22 13 6.0	13 31.1	8.3780	8.7453		
	11	12 3.4	11	7 27 52.96	27 42.28	22 14 26.4	14 51.3	8.3780	8.7423		
	12	11 58.9	12	7 27 18.58	27 7.92	22 15 46.3	16 11.0	8.3777	8.7390		
	13	11 54.4	13	7 26 44.21	26 33.57	22 17 5.6	17 30.1	8.3770	8.7355		
	14	11 49.9	14	7 26 19.88	25 59.27	22 18 24.2	18 48.5	8.3761	8.7317	+2.29	
	15	11 45.4	15	7 25 35.61	25 25.04	22 19 42.2	20 6.2	8.3749	8.7275	2.42	
	16	11 40.9	16	7 25 1.42	24 50.90	22 20 59.5	21 23.2	8.3733	8.7230	2.53	-3.31
	17	11 36.4	17	7 24 27.34	24 16.88	22 22 16.0	22 39.4	8.3714	8.7180	2.60	3.33
	18	11 31.9	18	7 23 53.40	23 43.01	22 23 31.7	23 54.8	8.3691	8.7127	2.66	3.35
	19	11 27.4	19	7 23 19.62	23 9.30	22 24 46.5	25 9.3	8.3665	8.7070	2.71	3.37
	20	11 22.9	20	7 22 46.03	22 35.79	22 26 0.3	26 22.8	8.3635	8.7011	2.76	3.38
	21	11 18.4	21	7 22 12.66	22 2.51	22 27 13.2	27 35.3	8.3603	8.6948	2.81	3.40
	22	11 13.9	22	7 21 39.53	21 29.48	22 28 25.1	28 46.8	8.3566	8.6883	2.85	3.42
	23	11 9.4	23	7 21 6.66	20 56.71	22 29 35.9	29 57.3	8.3526	8.6815	2.89	3.43
	24	11 5.0	24	7 20 34.08	20 24.24	22 30 45.7	31 6.7	8.3481	8.6743	2.92	3.44
	25	11 0.5	25	7 20 1.82	19 52.09	22 31 54.3	32 14.9	8.3439	8.6668	2.95	3.46
	26	10 56.0	26	7 19 29.91	19 20.30	22 33 1.7	33 21.9	8.3390	8.6589	2.98	3.47
	27	10 51.6	27	7 18 58.36	18 48.89	22 34 8.0	34 27.8	8.3323	8.6507	3.01	3.48
	28	10 47.2	28	7 18 27.21	18 17.87	22 35 13.0	35 32.4	8.3262	8.6420	3.03	3.49
	29	10 42.8	29	7 17 56.47	17 47.27	22 36 16.8	36 35.8	8.3197	8.6329	3.05	3.50
30	10 38.4	30	7 17 26.17	17 17.12	22 37 19.3	37 37.9	8.3128	8.6234	3.07	3.51	
Feb.	31	10 34.0	31	7 16 56.34	16 47.44	22 38 20.4	38 38.6	8.3056	8.6134	3.09	3.52
	1	10 29.6	32	7 16 26.99	16 18.24	22 39 20.2	39 38.0	8.2979	8.6032	3.10	3.52
	2	10 25.2	33	7 15 58.14	15 49.55	22 40 18.6	40 36.0	8.2899	8.5926	3.12	3.53
	3	10 20.8	34	7 15 29.81	15 21.39	22 41 15.6	41 32.6	8.2814	8.5816	3.13	3.53
	4	10 16.4	35	7 15 1.01	14 53.76	22 42 11.3	42 27.9	8.2724	8.5703	3.14	3.53
	5	10 12.0	36	7 14 34.76	14 26.68	22 43 5.6	43 21.8	8.2630	8.5586	3.15	3.53
	6	10 7.6	37	7 14 8.09	14 0.19	22 43 58.4	44 14.2	8.2531	8.5466	3.17	3.54
	7	10 3.3	38	7 13 42.00	13 34.29	22 44 49.8	45 5.1	8.2426	8.5342	3.18	3.54
	8	9 59.0	39	7 13 16.52	13 9.00	22 45 39.8	45 54.6	8.2316	8.5214	3.19	3.54
	9	9 54.7	40	7 12 51.66	12 44.34	22 46 28.4	46 42.7	8.2201	8.5081	3.20	3.55
	10	9 50.4	41	7 12 27.43	12 20.31	22 47 15.5	47 29.4	8.2080	8.4943	3.21	3.55
	11	9 46.1	42	7 12 3.85	11 56.94	22 48 1.2	48 14.7	8.1953	8.4801	3.22	3.55
	12	9 41.8	43	7 11 40.94	11 34.24	22 48 45.5	48 58.5	8.1819	8.4654	3.23	3.55
	13	9 37.5	44	7 11 18.71	11 12.22	22 49 28.3	49 40.8	8.1678	8.4501	3.23	3.55
	14	9 33.2	45	7 10 57.17	10 50.90	22 50 9.6	50 21.7	8.1530	8.4343	3.24	3.55
	15	9 28.9	46	7 10 36.34	10 30.29	22 50 49.4	51 1.1	8.1373	8.4177	3.25	3.55
	16	9 24.6	47	7 10 16.22	10 10.39	22 51 27.8	51 39.0	8.1208	8.4004	3.26	3.55
	17	9 20.4	48	7 9 56.83	9 51.22	22 52 4.7	52 15.5	8.1033	8.3823	3.26	3.55
	18	9 16.2	49	7 9 38.19	9 32.81	22 52 40.2	52 50.5	8.0848	8.3634	3.27	3.55
	19	9 12.0	50	7 9 20.30	9 15.16	22 53 14.2	53 24.0	8.0653	8.3437	3.27	3.55
	20	9 7.8	51	7 9 3.18	8 58.27	22 53 46.7	53 56.1	8.0446	8.3230	3.28	3.55
	21	9 3.6	52	7 8 46.83	8 42.16	22 54 17.7	54 26.7	8.0226	8.3014	3.28	3.55
	22	8 59.4	53	7 8 31.27	8 26.83	22 54 47.3	54 55.8	7.9992	8.2787	3.29	3.55
	23	8 55.2	54	7 8 16.50	8 12.30	22 55 15.4	55 23.4	7.9742	8.2547	3.29	3.55
	24	8 51.0	55	7 8 2.53	7 58.57	22 55 42.0	55 49.6	7.9473	8.2293	3.30	3.55
	25	8 46.9	56	7 7 49.37	7 45.65	22 56 7.1	56 14.3	7.9183	8.2024	3.30	3.55
	26	8 42.8	57	7 7 37.03	7 33.55	22 56 30.8	56 37.5	7.8873	8.1737	3.30	3.55
	27	8 38.7	58	7 7 25.51	7 22.28	22 56 53.0	56 59.3	7.8538	8.1431	3.31	3.54
	28	8 34.6	59	7 7 14.82	7 11.84	22 57 13.8	57 19.6	7.8172	8.1103	3.31	3.54
	29	8 30.5	60	7 7 7.23	7 2.33	22 57 33.1	57 38.5	7.7771	8.0752	3.31	3.54
30	8 26.4	61	7 6 55.92	6 53.44	22 57 50.9	57 55.9	-7.7326	+8.0371	+3.31	-3.54	
			7 6 47.72	6 45.48	+22 58 7.3	58 11.9					

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of <i>t</i> in Sidereal Minutes.		Log. Coefficient of <i>t</i> ² .	
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Mar.	d.	h. m.	h. m. s.	m. s.	° ′ ″	′ ″					
	1	8 26.4	7 6 47.72	6 45.48	+22 58 7.3	58 11.9	-7.7326	+8.0371	+3.31	-3.54	
	2	8 22.3	7 6 40.36	6 38.37	22 58 22.3	58 26.4	7.6831	7.9954	3.31	3.53	
	3	8 18.3	7 6 33.84	6 32.10	22 58 35.9	58 39.6	7.6266	7.9503	3.31	3.53	
	4	8 14.3	7 6 28.16	6 26.67	22 58 48.0	58 51.3	7.5622	7.9004	3.31	3.53	
	5	8 10.3	7 6 23.32	6 22.07	22 58 58.7	59 1.6	7.4865	7.8442	3.31	3.52	
	6	8 6.3	7 6 19.32	6 18.32	22 59 8.0	59 10.5	7.3949	7.7798	3.31	3.52	
	7	8 2.3	7 6 16.16	6 15.41	22 59 15.9	59 18.0	7.2789	7.7041	3.31	3.51	
	8	7 58.3	7 6 13.83	6 13.33	22 59 22.5	59 24.2	7.1204	7.6125	3.31	3.51	
	9	7 54.4	7 6 12.33	6 12.08	22 59 27.7	59 29.0	6.8687	7.4968	3.31	3.51	
	10	7 50.5	7 6 11.67	6 11.67	22 59 31.5	59 32.4	-6.2034	7.3399	3.31	3.51	
	11	7 46.6	7 6 11.85	6 12.10	22 59 34.0	59 34.5	+6.6222	7.0933	3.31	3.51	
	12	7 42.7	7 6 12.86	6 13.36	22 59 35.1	59 35.2	6.9984	+6.4700	3.30	3.51	
	13	7 38.8	7 6 14.71	6 15.45	22 59 34.8	59 34.5	7.1963	-6.8148	3.30	3.51	
	14	7 34.9	7 6 17.39	6 18.38	22 59 33.2	59 32.5	7.3316	7.2034	3.30	3.51	
	15	7 31.0	7 6 20.90	6 22.13	22 59 30.2	59 29.1	7.4345	7.4057	3.30	3.51	
	16	7 27.1	7 6 25.23	6 26.70	22 59 25.9	59 24.4	7.5174	7.5427	3.30	3.51	
	17	7 23.3	7 6 30.38	6 32.09	22 59 20.2	59 18.3	7.5870	7.6472	3.30	3.51	
	18	7 19.5	7 6 36.36	6 38.31	22 59 13.2	59 10.9	7.6468	7.7309	3.30	3.51	
	19	7 15.7	7 6 43.16	6 45.35	22 59 4.8	59 2.1	7.6992	7.8007	3.29	3.51	
	20	7 11.9	7 6 50.77	6 53.20	22 58 55.0	58 51.9	7.7458	7.8607	3.29	3.51	
	21	7 8.1	7 6 59.20	7 1.87	22 58 43.9	58 40.4	7.7877	7.9134	3.29	3.51	
	22	7 4.3	7 7 8.44	7 11.35	22 58 31.4	58 27.5	7.8257	7.9606	3.29	3.51	
	23	7 0.5	7 7 18.49	7 21.64	22 58 17.6	58 13.3	7.8605	8.0033	3.28	3.51	
	24	6 56.8	7 7 29.33	7 32.72	22 58 2.4	57 57.7	7.8923	8.0424	3.28	3.51	
	25	6 53.1	7 7 40.97	7 44.59	22 57 45.8	57 40.7	7.9219	8.0784	3.28	3.51	
	26	6 49.4	7 7 53.39	7 57.24	22 57 27.9	57 22.3	7.9493	8.1117	3.27	3.51	
	27	6 45.7	7 8 6.59	8 10.67	22 57 8.6	57 2.6	7.9750	8.1428	3.27	3.51	
	28	6 42.0	7 8 20.57	8 24.88	22 56 47.9	56 41.5	7.9988	8.1715	3.26	3.51	
	29	6 38.3	7 8 35.31	8 39.85	22 56 25.9	56 19.1	8.0211	8.1985	3.26	3.51	
	30	6 34.6	7 8 50.80	8 55.57	22 56 2.5	55 55.3	8.0423	8.2236	3.26	3.51	
	31	6 30.9	7 9 7.04	9 12.03	22 55 37.7	55 30.1	8.0623	8.2476	3.25	3.51	
Apr.	1	6 27.3	7 9 24.03	9 29.24	22 55 11.6	55 3.6	8.0813	8.2702	3.25	3.52	
	2	6 23.7	7 9 41.76	9 47.19	22 54 44.1	54 35.7	8.0992	8.2912	3.25	3.52	
	3	6 20.1	7 10 0.21	10 5.86	22 54 15.3	54 6.5	8.1161	8.3110	3.24	3.52	
	4	6 16.5	7 10 19.38	10 25.25	22 53 45.2	53 36.0	8.1322	8.3302	3.24	3.52	
	5	6 12.9	7 10 39.26	10 45.35	22 53 13.7	53 4.1	8.1476	8.3488	3.23	3.52	
	6	6 9.3	7 10 59.84	11 6.15	22 52 40.9	52 30.8	8.1624	8.3666	3.23	3.52	
	7	6 5.7	7 11 21.12	11 27.64	22 52 6.7	51 56.2	8.1766	8.3838	3.22	3.52	
	8	6 2.1	7 11 43.09	11 49.82	22 51 31.2	51 20.3	8.1902	8.4006	3.22	3.53	
	9	5 58.5	7 12 5.74	12 12.68	22 50 54.3	50 42.9	8.2033	8.4168	3.21	3.53	
	10	5 55.0	7 12 29.07	12 36.22	22 50 16.0	50 4.2	8.2158	8.4327	3.21	3.53	
	11	5 51.5	7 12 53.07	13 0.42	22 49 36.3	49 24.1	8.2279	8.4480	3.20	3.53	
	12	5 48.0	7 13 17.73	13 25.29	22 48 55.2	48 42.6	8.2395	8.4628	3.20	3.53	
	13	5 44.5	7 13 43.05	13 50.81	22 48 12.7	47 59.7	8.2507	8.4771	3.19	3.53	
	14	5 41.0	7 14 9.02	14 16.98	22 47 28.9	47 15.4	8.2615	8.4909	3.19	3.53	
	15	5 37.5	7 14 35.63	14 43.79	22 46 43.6	46 29.6	8.2719	8.5044	3.18	3.53	
	16	5 34.0	7 15 2.87	15 11.23	22 45 56.9	45 42.5	8.2819	8.5176	3.18	3.54	
	17	5 30.5	7 15 30.74	15 39.29	22 45 8.8	44 53.9	8.2915	8.5305	3.17	3.54	
	18	5 27.0	7 15 59.22	16 7.97	22 44 19.2	44 3.9	8.3009	8.5432	3.17	3.54	
	19	5 23.6	7 16 28.32	16 37.26	22 43 28.2	43 12.4	8.3100	8.5555	3.16	3.54	
	20	5 20.2	7 16 58.02	17 7.15	22 42 35.7	42 19.5	8.3188	8.5675	3.16	3.54	
	21	5 16.8	7 17 28.32	17 37.64	22 41 41.8	41 25.1	8.3272	8.5792	3.15	3.54	
	22	5 13.4	7 17 59.21	18 8.72	22 40 46.4	40 29.3	8.3355	8.5906	3.15	3.54	
	23	5 10.0	7 18 30.67	18 40.36	22 39 49.6	39 32.0	8.3435	8.6017	3.14	3.55	
	24	5 6.6	7 19 2.70	19 12.57	22 38 51.3	38 33.2	8.3511	8.6124	3.13	3.55	
	25	5 3.2	7 19 35.30	19 45.35	22 37 51.6	37 33.0	8.3585	8.6229	3.12	3.55	
	26	4 59.8	7 20 8.45	20 18.68	22 36 50.4	36 31.4	8.3657	8.6332	3.12	3.55	
	27	4 56.4	7 20 42.14	20 52.55	22 35 47.8	35 28.3	8.3726	8.6433	3.11	3.55	
	28	4 53.0	7 21 16.36	21 26.95	22 34 43.7	34 23.7	8.3792	8.6533	3.11	3.56	
	29	4 49.7	7 21 51.11	22 1.87	22 33 38.1	33 17.7	8.3858	8.6631	3.10	3.56	
	30	4 46.3	7 22 26.37	22 37.30	22 32 31.1	32 10.2	8.3921	8.6728	3.09	3.56	
	31	4 43.0	7 23 2.14	23 13.24	+22 31 22.6	31 1.2	+8.3982	-8.6824	+3.08	-3.56	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.																		
Mean Solar Time of Meridian Transit.			Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t ² .								
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.							
d.	h.	m.	h.	m.	s.	m.	s.	o.	i.	u.	o.	i.	u.					
May	1	4	43.0	122	7	23	2.14	23	13.24	+22	31	22.6	31	1.2	+8.3982	-8.6824	+3.08	-3.56
	2	4	39.7	123	7	23	38.41	23	49.68	22	30	13.5	29	50.6	8.4041	8.6917	3.08	3.56
	3	4	36.4	124	7	24	15.17	24	26.61	22	29	1.0	28	38.5	8.4099	8.7008	3.07	3.56
	4	4	33.1	125	7	24	52.41	25	4.02	22	27	47.9	27	25.0	8.4155	8.7097	3.06	3.57
	5	4	29.8	126	7	25	30.13	25	41.90	22	26	33.4	26	10.0	8.4209	8.7184	3.05	3.57
	6	4	26.5	127	7	26	8.32	26	20.25	22	25	17.4	24	53.5	8.4261	8.7270	3.05	3.57
	7	4	23.2	128	7	26	46.96	26	59.05	22	23	59.9	23	35.5	8.4312	8.7354	3.04	3.57
	8	4	19.9	129	7	27	26.06	27	38.30	22	22	40.8	22	16.0	8.4363	8.7435	3.04	3.57
	9	4	16.6	130	7	28	5.60	28	18.00	22	21	20.3	20	54.9	8.4412	8.7515	3.03	3.57
	10	4	13.3	131	7	28	45.58	28	58.14	22	19	58.8	19	32.3	8.4459	8.7595	3.02	3.57
	11	4	10.0	132	7	29	26.00	29	38.71	22	18	34.7	18	8.2	8.4505	8.7675	3.01	3.57
	12	4	6.8	133	7	30	6.84	30	19.70	22	17	9.6	16	42.6	8.4550	8.7754	3.01	3.57
	13	4	3.6	134	7	30	48.10	31	1.11	22	15	43.0	15	15.5	8.4594	8.7831	3.00	3.57
	14	4	0.4	135	7	31	29.77	31	42.93	22	14	14.8	13	46.8	8.4637	8.7907	2.99	3.58
	15	3	57.2	136	7	32	11.85	32	25.15	22	12	45.0	12	16.5	8.4678	8.7981	2.98	3.58
	16	3	54.0	137	7	32	54.33	33	7.77	22	11	13.7	10	44.6	8.4718	8.8054	2.98	3.58
	17	3	50.8	138	7	33	37.19	33	50.77	22	9	40.8	9	11.2	8.4757	8.8127	2.97	3.58
	18	3	47.6	139	7	34	20.44	34	34.16	22	8	6.4	7	36.2	8.4795	8.8200	2.96	3.58
	19	3	44.4	140	7	35	4.06	35	17.92	22	6	30.4	5	59.7	8.4832	8.8272	2.95	3.58
	20	3	41.2	141	7	35	48.05	36	2.05	22	4	52.8	4	21.6	8.4869	8.8343	2.94	3.58
	21	3	38.0	142	7	36	32.41	36	46.54	22	3	13.7	2	41.9	8.4904	8.8413	2.93	3.57
	22	3	34.8	143	7	37	17.12	37	31.39	22	1	33.0	1	0.7	8.4938	8.8481	2.92	3.57
	23	3	31.6	144	7	38	2.18	38	16.58	21	59	50.7	59	17.9	8.4971	8.8547	2.91	3.57
	24	3	28.4	145	7	38	47.58	39	2.11	21	58	6.9	57	33.5	8.5008	8.8611	2.90	3.57
	25	3	25.2	146	7	39	33.30	39	47.96	21	56	21.5	55	47.5	8.5034	8.8675	2.89	3.57
	26	3	22.0	147	7	40	19.35	40	34.18	21	54	34.5	54	0.0	8.5064	8.8738	2.88	3.57
	27	3	18.8	148	7	41	5.71	41	20.62	21	52	46.0	52	10.9	8.5093	8.8801	2.86	3.57
	28	3	15.6	149	7	41	52.38	42	7.41	21	50	55.9	50	20.3	8.5121	8.8862	2.85	3.57
	29	3	12.5	150	7	42	39.34	42	54.49	21	49	4.3	48	28.1	8.5148	8.8922	2.84	3.57
	30	3	9.4	151	7	43	26.59	43	41.86	21	47	11.1	46	34.3	8.5174	8.8981	2.83	3.57
	31	3	6.3	152	7	44	14.13	44	29.52	21	45	16.4	44	39.0	8.5200	8.9040	2.82	3.57
June	1	3	3.1	153	7	45	1.95	45	17.46	21	43	20.1	42	42.2	8.5225	8.9098	2.81	3.57
	2	2	59.9	154	7	45	50.04	46	5.67	21	41	22.3	40	43.8	8.5249	8.9155	2.80	3.57
	3	2	56.8	155	7	46	38.40	46	54.14	21	39	23.0	38	43.9	8.5273	8.9211	2.79	3.57
	4	2	53.7	156	7	47	27.01	47	42.86	21	37	23.1	36	42.5	8.5296	8.9267	2.78	3.57
	5	2	50.6	157	7	48	15.88	48	31.84	21	35	19.7	34	39.5	8.5318	8.9322	2.77	3.57
	6	2	47.5	158	7	49	5.00	49	21.07	21	33	15.7	32	34.9	8.5340	8.9375	2.76	3.57
	7	2	44.4	159	7	49	54.37	50	10.55	21	31	10.2	30	28.8	8.5361	8.9428	2.75	3.56
	8	2	41.3	160	7	50	43.98	51	0.26	21	29	3.1	28	21.1	8.5382	8.9480	2.74	3.56
	9	2	38.2	161	7	51	33.82	51	50.20	21	26	54.4	26	11.9	8.5402	8.9532	2.73	3.56
	10	2	35.1	162	7	52	23.88	52	40.36	21	24	44.3	24	1.2	8.5421	8.9584	2.72	3.56
	11	2	32.0	163	7	53	14.16	53	30.74	21	22	32.7	21	49.0	8.5439	8.9635	2.71	3.56
	12	2	28.9	164	7	54	4.65	54	21.33	21	20	19.5	19	35.3	8.5457	8.9685	2.70	3.56
	13	2	25.8	165	7	54	55.36	55	12.18	21	18	4.8	17	20.0	8.5475	8.9735	2.69	3.56
	14	2	22.7	166	7	55	46.27	56	3.14	21	15	48.5	15	3.1	8.5492	8.9784	2.68	3.56
	15	2	19.6	167	7	56	37.38	56	54.35	21	13	30.7	12	44.7	8.5509	8.9833	2.67	3.55
	16	2	16.6	168	7	57	28.68	57	45.74	21	11	11.4	10	24.8	8.5525	8.9881	2.66	3.55
	17	2	13.5	169	7	58	20.17	58	37.32	21	8	50.6	8	3.5	8.5540	8.9927	2.64	3.55
	18	2	10.4	170	7	59	11.84	59	29.08	21	6	28.3	5	40.6	8.5555	8.9972	2.63	3.55
	19	2	7.4	171	8	0	3.68	0	21.01	21	4	4.5	3	16.2	8.5569	9.0017	2.61	3.54
	20	2	4.3	172	8	0	55.69	1	13.10	21	1	39.2	0	50.4	8.5583	9.0061	2.60	3.54
	21	2	1.3	173	8	1	47.86	2	5.35	20	59	12.5	58	23.1	8.5597	9.0104	2.58	3.54
	22	1	58.2	174	8	2	40.18	2	57.75	20	56	44.3	55	54.3	8.5610	9.0147	2.56	3.54
	23	1	55.2	175	8	3	32.65	3	50.30	20	54	14.6	53	24.0	8.5622	9.0189	2.54	3.53
	24	1	52.1	176	8	4	25.26	4	42.99	20	51	43.5	50	52.3	8.5633	9.0231	2.52	3.53
	25	1	49.0	177	8	5	18.01	5	35.82	20	49	11.0	48	19.2	8.5644	9.0272	2.50	3.53
	26	1	46.0	178	8	6	10.89	6	28.78	20	46	37.0	45	44.7	8.5654	9.0312	2.48	3.52
	27	1	42.9	179	8	7	3.89	7	21.85	20	44	1.6	43	8.7	8.5664	9.0351	2.46	3.52
	28	1	39.9	180	8	7	57.00	8	15.03	8	15	24.8	40	31.3	8.5673	9.0388	2.44	3.52
	29	1	36.8	181	8	8	50.22	9	8.32	20	38	46.7	37	52.6	8.5682	9.0425	2.41	3.52
	30	1	33.8	182	8	9	43.55	10	1.72	20	36	7.2	35	12.6	8.5691	9.0462	2.38	3.51
	31	1	30.7	183	8	10	36.99	10	55.23	+20	33	26.4	32	31.3	+8.5699	-9.0498	+2.35	-3.51

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
				h. m. s.	m. s.	O I N	I N				
July	1	1 30.7	183	8 10 36.99	10 55.23	+20 33 26.4	32 31.3	+8.5699	-9.0498	+2.35	-3.51
	2	1 27.7	184	8 11 30.52	11 48.83	20 30 44.2	29 48.5	8.5707	9.0634	+2.31	3.51
	3	1 24.7	185	8 12 24.15	12 42.59	20 28 0.6	27 4.4	8.5714	9.0670		3.51
	4	1 21.6	186	8 13 17.86	13 36.30	20 25 15.7	24 19.0	8.5721	9.0605		3.51
	5	1 18.6	187	8 14 11.66	14 30.16	20 22 29.6	21 32.3	8.5728	9.0640		3.50
	6	1 15.6	188	8 15 5.54	15 24.10	20 19 42.1	18 44.2	8.5734	9.0675		3.50
	7	1 12.6	189	8 15 59.50	16 18.12	20 16 53.2	15 54.8	8.5740	9.0709		3.50
	8	1 9.5	190	8 16 53.53	17 12.21	20 14 3.0	13 4.0	8.5745	9.0742		3.49
	9	1 6.5	191	8 17 47.63	18 6.36	20 11 11.6	10 12.0	8.5750	9.0775		3.49
	10	1 3.5	192	8 18 41.79	19 0.57	20 8 18.9	7 18.7	8.5755	9.0807		3.48
	11	1 0.5	193	8 19 36.00	19 54.83	20 5 24.9	4 24.2	8.5760	9.0838		3.48
	12	0 57.4	194	8 20 30.27	20 49.15	20 2 29.7	1 28.5	8.5764	9.0868		3.47
	13	0 54.4	195	8 21 24.58	21 43.51	19 59 33.3	58 31.6	8.5768	9.0898		3.47
	14	0 51.4	196	8 22 18.94	22 37.92	19 56 35.6	55 33.4	8.5771	9.0927		3.46
	15	0 48.4	197	8 23 13.33	23 32.36	19 53 36.8	52 34.0	8.5774	9.0956		3.46
	16	0 45.3	198	8 24 7.76	24 26.83	19 50 36.8	49 33.5	8.5776	9.0984		3.45
	17	0 42.3	199	8 25 2.21	25 21.32	19 47 35.6	46 31.8	8.5778	9.1012		3.44
	18	0 39.3	200	8 25 56.68	26 15.83	19 44 33.3	43 29.0	8.5779	9.1039		3.43
	19	0 36.3	201	8 26 51.16	27 10.35	19 41 29.8	40 25.0	8.5780	9.1065		3.42
	20	0 33.2	202	8 27 45.65	28 4.88	19 38 25.2	37 19.9	8.5780	9.1091		3.41
	21	0 30.2	203	8 28 40.15	28 59.41	19 35 19.6	34 13.8	8.5780	9.1116		3.40
	22	0 27.2	204	8 29 34.65	29 53.94	19 32 12.9	31 6.6	8.5780	9.1141		3.39
	23	0 24.2	205	8 30 29.14	30 48.46	19 29 5.1	27 58.3	8.5780	9.1165		3.39
	24	0 21.1	206	8 31 23.62	31 42.97	19 25 56.3	24 49.0	8.5779	9.1188		3.38
	25	0 18.1	207	8 32 18.09	32 37.47	19 22 46.5	21 38.7	8.5778	9.1211		3.37
	26	0 15.1	208	8 33 12.53	33 31.94	19 19 35.7	18 27.5	8.5776	9.1233		3.36
	27	0 12.0	209	8 34 6.95	34 26.38	19 16 24.0	15 15.3	8.5774	9.1254		3.35
	28	0 9.0	210	8 35 1.33	35 20.79	19 13 11.3	12 2.2	8.5771	9.1275		3.34
	29	0 6.0	211	8 35 55.68	36 15.16	19 9 57.8	8 48.2	8.5768	9.1295		3.33
	30	0 2.9	212	8 36 49.99	37 9.49	19 6 43.4	5 33.3	8.5764	9.1314		-3.32
	30	23 59.9	213	8 37 44.26	38 3.78	19 3 28.1	2 17.6	8.5760	9.1333		
	31	23 56.8	214	8 38 38.48	38 58.02	19 0 11.9	59 1.0	8.5756	9.1352		
Aug.	1	23 53.8	215	8 39 32.64	39 52.20	18 56 54.9	55 43.6	8.5751	9.1370		
	2	23 50.8	216	8 40 26.75	40 46.32	18 53 37.0	52 25.3	8.5747	9.1388		
	3	23 47.7	217	8 41 20.80	41 40.38	18 50 18.4	49 6.3	8.5742	9.1405		
	4	23 44.7	218	8 42 14.79	42 34.38	18 46 59.0	45 46.5	8.5737	9.1422		
	5	23 41.7	219	8 43 8.71	43 28.31	18 43 38.8	42 25.9	8.5732	9.1438		
	6	23 38.6	220	8 44 2.56	44 22.17	18 40 17.9	39 4.6	8.5727	9.1454		
	7	23 35.6	221	8 44 56.34	45 15.96	18 36 56.2	35 42.5	8.5721	9.1470	-2.30	
	8	23 32.5	222	8 45 50.04	46 9.66	18 33 33.8	32 19.7	8.5714	9.1485	2.33	
	9	23 29.5	223	8 46 43.66	47 3.28	18 30 10.8	28 56.3	8.5707	9.1499	2.36	
	10	23 26.4	224	8 47 37.19	47 56.81	18 26 47.1	25 32.3	8.5699	9.1513	2.38	
	11	23 23.4	225	8 48 30.62	48 50.24	18 23 22.8	22 7.6	8.5691	9.1526	2.40	
	12	23 20.3	226	8 49 23.96	49 43.57	18 19 57.9	18 42.4	8.5683	9.1538	2.42	
	13	23 17.3	227	8 50 17.19	50 36.80	18 16 32.4	15 16.6	8.5674	9.1549	2.43	
	14	23 14.2	228	8 51 10.31	51 29.91	18 13 6.4	11 50.3	8.5665	9.1559	2.45	
	15	23 11.2	229	8 52 3.31	52 22.90	18 9 40.0	8 23.6	8.5655	9.1569	2.46	
	16	23 8.1	230	8 52 56.19	53 15.77	18 6 13.1	4 56.4	8.5645	9.1578	2.48	
	17	23 5.1	231	8 53 48.95	54 8.51	18 2 45.8	1 28.8	8.5634	9.1587	2.49	
	18	23 2.0	232	8 54 41.58	55 1.12	17 59 18.0	58 0.7	8.5623	9.1595	2.51	
	19	22 59.0	233	8 55 34.07	55 53.59	17 55 49.9	54 32.3	8.5611	9.1603	2.52	
	20	22 55.9	234	8 56 26.42	56 45.92	17 52 21.4	51 3.6	8.5599	9.1610	2.54	
	21	22 52.9	235	8 57 18.63	57 38.10	17 48 52.6	47 34.5	8.5586	9.1616	2.55	
	22	22 49.8	236	8 58 10.69	58 30.13	17 45 23.5	44 5.2	8.5573	9.1621	2.57	
	23	22 46.8	237	8 59 2.59	59 22.00	17 41 54.2	40 35.7	8.5560	9.1626	2.58	
	24	22 43.7	238	8 59 54.33	0 13.71	17 38 24.7	37 6.0	8.5547	9.1630	2.60	
	25	22 40.6	239	9 0 45.90	1 5.25	17 34 55.0	33 36.1	8.5533	9.1633	2.61	
	26	22 37.5	240	9 1 37.31	1 56.62	17 31 25.2	30 6.1	8.5519	9.1636	2.62	
	27	22 34.4	241	9 2 28.54	2 47.81	17 27 55.2	26 35.9	8.5504	9.1638	2.63	
	28	22 31.4	242	9 3 19.60	3 38.83	17 24 25.1	23 6.7	8.5489	9.1640	2.64	
	29	22 28.3	243	9 4 10.47	4 29.66	17 20 55.0	19 35.4	8.5473	9.1641	2.65	
	30	22 25.2	244	9 5 1.16	5 20.31	17 17 24.8	16 5.1	8.5457	9.1641	2.66	
	31	22 22.1	245	9 5 51.66	6 10.77	+17 13 54.6	12 34.8	+8.5441	-9.1641	-2.67	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t.	
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Sept. 1 22 19.0	246	9 6 41.96	7 1.02	+17 10 24.4	9 4.5	+8.5424	-9.1641	-2.68	
2 22 15.9	247	9 7 32.07	7 51.08	17 6 54.3	5 34.3	8.5407	9.1640	2.69	
3 22 12.8	248	9 8 21.98	8 40.94	17 3 24.2	2 4.1	8.5389	9.1638	2.70	
4 22 9.7	249	9 9 11.68	9 30.59	16 59 54.2	58 34.0	8.5371	9.1636	2.71	
5 22 6.6	250	9 10 1.17	10 20.02	16 56 24.4	55 4.1	8.5352	9.1633	2.72	
6 22 3.5	251	9 10 50.44	11 9.23	16 52 54.7	51 34.4	8.5333	9.1629	2.73	
7 22 0.4	252	9 11 39.49	11 58.22	16 49 25.3	48 5.0	8.5313	9.1624	2.74	
8 21 57.3	253	9 12 28.31	12 46.98	16 45 56.2	44 35.9	8.5292	9.1618	2.75	
9 21 54.2	254	9 13 16.90	13 35.50	16 42 27.3	41 7.0	8.5271	9.1612	2.76	
10 21 51.1	255	9 14 5.24	14 23.78	16 38 58.7	37 38.5	8.5249	9.1605	2.77	
11 21 47.9	256	9 14 53.34	15 11.81	16 35 30.5	34 10.3	8.5226	9.1597	2.78	
12 21 44.7	257	9 15 41.19	15 59.59	16 32 2.7	30 42.6	8.5203	9.1588	2.79	
13 21 41.6	258	9 16 28.78	16 47.12	16 28 35.4	27 15.4	8.5180	9.1578	2.80	
14 21 38.5	259	9 17 16.12	17 34.38	16 25 8.6	23 48.7	8.5156	9.1567	2.81	
15 21 35.4	260	9 18 3.19	18 21.37	16 21 42.4	20 22.6	8.5131	9.1554	2.82	
16 21 32.2	261	9 18 49.99	19 8.09	16 18 16.8	16 57.1	8.5106	9.1541	2.83	
17 21 29.0	262	9 19 36.51	19 54.53	16 14 51.8	13 32.3	8.5080	9.1527	2.84	
18 21 25.8	263	9 20 22.75	20 40.68	16 11 27.5	10 8.1	8.5053	9.1512	2.85	
19 21 22.6	264	9 21 8.69	21 26.54	16 8 3.9	6 44.7	8.5025	9.1496	2.86	
20 21 19.4	265	9 21 54.34	22 2.10	16 4 41.1	3 22.1	8.4996	9.1479	2.87	
21 21 16.2	266	9 22 39.68	22 57.36	16 1 19.1	0 0.3	8.4967	9.1461	2.88	
22 21 13.0	267	9 23 24.72	23 42.30	15 57 57.9	56 39.3	8.4937	9.1443	2.88	+3.32
23 21 9.8	268	9 24 9.44	24 26.92	15 54 37.5	53 19.2	8.4906	9.1424	2.89	3.34
24 21 6.6	269	9 24 53.84	25 11.22	15 51 18.1	50 0.1	8.4875	9.1404	2.89	3.36
25 21 3.4	270	9 25 37.93	25 55.20	15 47 59.6	46 41.9	8.4843	9.1383	2.90	3.38
26 21 0.2	271	9 26 21.70	26 38.86	15 44 42.1	43 24.7	8.4811	9.1361	2.90	3.40
27 20 57.0	272	9 27 5.14	27 22.19	15 41 25.6	40 8.5	8.4778	9.1338	2.91	3.41
28 20 53.8	273	9 27 48.25	28 5.19	15 38 10.2	36 53.4	8.4745	9.1313	2.92	3.43
29 20 50.6	274	9 28 31.02	28 47.84	15 34 55.9	33 39.5	8.4711	9.1287	2.93	3.44
30 20 47.4	275	9 29 13.44	29 30.14	15 31 42.8	30 26.8	8.4675	9.1261	2.93	3.45
Oct. 1 20 44.2	276	9 29 55.50	30 12.08	15 28 30.9	27 15.3	8.4638	9.1234	2.94	3.47
2 20 41.0	277	9 30 37.21	30 53.66	15 25 20.2	24 5.0	8.4600	9.1206	2.94	3.48
3 20 37.8	278	9 31 18.56	31 34.88	15 22 10.7	20 56.0	8.4561	9.1176	2.95	3.50
4 20 34.5	279	9 31 59.53	32 15.72	15 19 2.6	17 48.3	8.4522	9.1144	2.95	3.51
5 20 31.2	280	9 32 40.13	32 56.18	15 15 55.8	14 42.0	8.4481	9.1111	2.96	3.53
6 20 27.9	281	9 33 20.35	33 36.26	15 12 50.5	11 37.2	8.4440	9.1077	2.97	3.54
7 20 24.7	282	9 34 0.19	34 15.96	15 9 46.7	8 33.9	8.4397	9.1042	2.97	3.56
8 20 21.4	283	9 34 39.63	34 55.26	15 6 44.4	5 32.1	8.4354	9.1006	2.98	3.57
9 20 18.1	284	9 35 18.67	35 34.15	15 3 43.6	2 31.9	8.4309	9.0968	2.99	3.58
10 20 14.8	285	9 35 57.31	36 12.64	15 0 44.5	59 33.4	8.4263	9.0928	2.99	3.59
11 20 11.5	286	9 36 35.53	36 50.71	14 57 47.1	56 36.6	8.4215	9.0887	3.00	3.61
12 20 8.2	287	9 37 13.33	37 28.36	14 54 51.3	53 41.4	8.4166	9.0844	3.01	3.62
13 20 4.9	288	9 37 50.70	38 5.57	14 51 57.3	50 48.0	8.4116	9.0799	3.02	3.64
14 20 1.6	289	9 38 27.04	38 42.35	14 49 5.1	47 56.5	8.4065	9.0752	3.03	3.65
15 19 58.3	290	9 39 4.14	39 18.69	14 46 14.8	45 6.9	8.4012	9.0703	3.04	3.67
16 19 55.0	291	9 39 40.18	39 54.57	14 43 26.4	42 19.2	8.3957	9.0652	3.04	3.68
17 19 51.7	292	9 40 15.77	40 29.98	14 40 40.0	39 33.5	8.3901	9.0600	3.05	3.69
18 19 48.4	293	9 40 50.89	41 4.93	14 37 55.7	36 49.9	8.3844	9.0546	3.05	3.70
19 19 45.0	294	9 41 25.55	41 39.41	14 35 13.4	34 8.4	8.3785	9.0490	3.06	3.71
20 19 41.6	295	9 41 59.73	42 13.41	14 32 33.3	31 29.1	8.3724	9.0432	3.06	3.72
21 19 38.2	296	9 42 33.43	42 46.93	14 29 55.3	28 51.9	8.3662	9.0372	3.07	3.73
22 19 34.8	297	9 43 6.65	43 19.97	14 27 19.6	26 17.0	8.3598	9.0309	3.07	3.73
23 19 31.4	298	9 43 39.38	43 52.51	14 24 46.2	23 44.4	8.3533	9.0244	3.08	3.74
24 19 28.0	299	9 44 11.61	44 24.55	14 22 15.0	21 14.2	8.3466	9.0177	3.08	3.75
25 19 24.6	300	9 44 43.34	44 56.09	14 19 46.2	18 46.3	8.3398	9.0108	3.09	3.76
26 19 21.2	301	9 45 14.57	45 27.13	14 17 19.7	16 20.8	8.3327	9.0037	3.10	3.76
27 19 17.8	302	9 45 45.29	45 57.65	14 14 55.6	13 57.7	8.3254	8.9964	3.11	3.77
28 19 14.4	303	9 46 15.49	46 27.55	14 12 34.0	11 37.1	8.3179	8.9889	3.11	3.78
29 19 10.9	304	9 46 45.16	46 57.11	14 10 14.9	9 19.0	8.3101	8.9811	3.12	3.79
30 19 7.4	305	9 47 14.30	47 26.04	14 7 58.3	7 3.4	8.3021	8.9729	3.12	3.80
31 19 3.9	306	9 47 42.90	47 54.43	14 5 44.4	4 50.5	8.2939	8.9643	3.13	3.81
32 19 0.4	307	9 48 10.95	48 22.26	+14 3 33.1	2 40.2	+8.2854	-8.9553	-3.13	+3.82

JUPITER, 1860.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Nov. 1 19 0.4	307	9 48 10.95	48 22.26	+14 3 33.1	2 40.2	+8.2854	-8.9553	-3.13	+3.82
2 18 56.9	308	9 48 38.45	48 49.54	14 1 24.6	0 32.8	8.2767	8.9460	3.14	3.83
3 18 53.4	309	9 49 5.40	49 16.27	13 59 18.8	58 28.1	8.2676	8.9363	3.14	3.83
4 18 49.9	310	9 49 31.78	49 42.42	13 57 15.8	56 26.2	8.2583	8.9263	3.15	3.84
5 18 46.4	311	9 49 57.58	50 7.99	13 55 15.7	54 27.3	8.2485	8.9159	3.15	3.85
6 18 42.9	312	9 50 22.81	50 32.98	13 53 18.5	52 31.3	8.2385	8.9051	3.16	3.86
7 18 39.3	313	9 50 47.45	50 57.38	13 51 24.2	50 38.2	8.2280	8.8938	3.16	3.86
8 18 35.8	314	9 51 11.50	51 21.18	13 49 33.0	48 48.2	8.2172	8.8820	3.17	3.87
9 18 32.3	315	9 51 34.94	51 44.38	13 47 44.8	47 1.3	8.2060	8.8696	3.17	3.88
10 18 28.8	316	9 51 57.77	52 6.97	13 45 59.8	45 17.6	8.1943	8.8565	3.18	3.89
11 18 25.2	317	9 52 19.99	52 28.94	13 44 17.9	43 37.0	8.1822	8.8427	3.18	3.89
12 18 21.6	318	9 52 41.58	52 50.28	13 42 39.3	41 59.7	8.1696	8.8282	3.19	3.90
13 18 18.0	319	9 53 2.54	53 10.99	13 41 4.0	40 25.7	8.1564	8.8131	3.19	3.90
14 18 14.4	320	9 53 22.87	53 31.06	13 39 32.0	38 55.1	8.1427	8.7972	3.20	3.91
15 18 10.8	321	9 53 42.55	53 50.48	13 38 3.4	37 27.9	8.1285	8.7806	3.20	3.91
16 18 7.2	322	9 54 1.59	54 9.25	13 36 38.1	36 4.0	8.1137	8.7632	3.21	3.91
17 18 3.6	323	9 54 19.97	54 27.37	13 35 16.3	34 43.6	8.0982	8.7450	3.21	3.92
18 18 0.0	324	9 54 37.70	54 44.88	13 33 58.0	33 26.7	8.0820	8.7258	3.22	3.92
19 17 56.4	325	9 54 54.76	55 1.62	13 32 43.1	32 13.9	8.0651	8.7056	3.22	3.92
20 17 52.7	326	9 55 11.16	55 17.74	13 31 31.7	31 3.2	8.0474	8.6842	3.22	3.93
21 17 49.0	327	9 55 26.88	55 33.19	13 30 23.9	29 56.9	8.0287	8.6616	3.22	3.93
22 17 45.3	328	9 55 41.93	55 47.96	13 29 19.6	28 54.1	8.0090	8.6375	3.23	3.94
23 17 41.6	329	9 55 56.29	56 2.04	13 28 18.9	27 54.9	7.9883	8.6118	3.23	3.94
24 17 37.9	330	9 56 9.96	56 15.43	13 27 21.8	26 59.3	7.9664	8.5841	3.23	3.94
25 17 34.2	331	9 56 22.94	56 28.12	13 26 28.4	26 7.4	7.9431	8.5542	3.23	3.95
26 17 30.5	332	9 56 35.23	56 40.13	13 25 36.7	25 19.2	7.9184	8.5216	3.24	3.95
27 17 26.8	333	9 56 46.81	56 51.42	13 24 52.7	24 34.8	7.8920	8.4861	3.24	3.96
28 17 23.0	334	9 56 57.69	57 2.01	13 24 10.5	23 54.2	7.8638	8.4464	3.24	3.96
29 17 19.2	335	9 57 7.86	57 11.88	13 23 32.1	23 17.4	7.8336	8.4027	3.24	3.96
30 17 15.4	336	9 57 17.32	57 21.05	13 22 57.6	22 44.5	7.8008	8.3542	3.25	3.97
Dec. 1 17 11.6	337	9 57 26.06	57 29.49	13 22 27.0	22 15.5	7.7651	8.2995	3.25	3.97
2 17 7.8	338	9 57 34.09	57 37.21	13 22 0.3	21 50.4	7.7257	8.2361	3.25	3.97
3 17 4.0	339	9 57 41.37	57 44.20	13 21 37.4	21 29.1	7.6818	8.1618	3.25	3.97
4 17 0.2	340	9 57 47.92	57 50.45	13 21 18.5	21 11.8	7.6330	8.0708	3.25	3.98
5 16 56.4	341	9 57 53.74	57 55.96	13 21 3.5	20 58.5	7.5780	7.9556	3.25	3.98
6 16 52.5	342	9 57 58.82	58 0.74	13 20 52.5	20 49.1	7.5146	7.7959	3.25	3.98
7 16 48.6	343	9 58 3.15	58 4.76	13 20 45.5	20 43.8	7.4399	7.5406	3.25	3.98
8 16 44.7	344	9 58 6.73	58 8.08	13 20 42.5	20 42.5	7.3489	-6.8194	3.26	3.98
9 16 40.8	345	9 58 9.57	58 10.55	13 20 43.6	20 43.3	7.2394	+7.3330	3.26	3.99
10 16 36.9	346	9 58 11.66	58 12.33	13 20 48.7	20 52.1	7.0747	7.6959	3.26	3.99
11 16 33.0	347	9 58 13.00	58 13.35	13 20 57.9	21 2.9	6.8216	7.8908	3.26	3.99
12 16 29.1	348	9 58 13.57	58 13.60	13 21 11.1	21 17.8	+6.1372	8.0249	3.26	3.99
13 16 25.1	349	9 58 13.38	58 13.09	13 21 28.4	21 36.8	-6.5898	8.1272	3.26	3.99
14 16 21.1	350	9 58 12.43	58 11.82	13 21 49.7	21 59.8	6.9614	8.3099	3.26	3.99
15 16 17.1	351	9 58 10.73	58 9.80	13 22 15.1	22 26.9	7.1586	8.3794	3.26	3.99
16 16 13.1	352	9 58 8.27	58 7.02	13 22 44.5	22 58.0	7.2938	8.3393	3.26	3.98
17 16 9.1	353	9 58 5.06	58 3.49	13 23 18.0	23 33.1	7.3966	8.3912	3.26	3.98
18 16 5.1	354	9 58 1.09	57 59.21	13 23 55.5	24 12.2	7.4794	8.4371	3.26	3.98
19 16 1.1	355	9 57 56.37	57 54.18	13 24 36.9	24 55.3	7.5486	8.4786	3.26	3.98
20 15 57.1	356	9 57 50.90	57 48.40	13 25 22.3	25 42.3	7.6085	8.5160	3.26	3.97
21 15 53.1	357	9 57 44.68	57 41.87	13 26 11.5	26 33.2	7.6608	8.5504	3.26	3.97
22 15 49.1	358	9 57 37.71	57 34.60	13 27 4.6	27 27.9	7.7065	8.5820	3.26	3.97
23 15 45.0	359	9 57 30.01	57 26.59	13 28 1.6	28 26.5	7.7482	8.6114	3.25	3.97
24 15 40.9	360	9 57 21.57	57 17.85	13 29 2.4	29 28.9	7.7862	8.6389	3.25	3.96
25 15 36.8	361	9 57 12.40	57 8.38	13 30 7.1	30 35.1	7.8210	8.6645	3.25	3.96
26 15 32.7	362	9 57 2.50	56 58.18	13 31 15.5	31 45.0	7.8530	8.6885	3.25	3.96
27 15 28.6	363	9 56 51.87	56 47.26	13 32 27.7	32 58.7	7.8826	8.7111	3.24	3.95
28 15 24.5	364	9 56 40.53	56 35.62	13 33 43.6	34 16.1	7.9100	8.7323	3.24	3.95
29 15 20.4	365	9 56 28.47	56 23.27	13 35 3.2	35 37.2	7.9355	8.7522	3.23	3.94
30 15 16.3	366	9 56 15.71	56 10.22	13 36 26.4	37 1.9	7.9593	8.7708	3.23	3.93
31 15 12.2	367	9 56 2.25	55 56.48	13 37 53.1	38 30.0	7.9817	8.7883	3.22	3.92
32 15 8.0	368	9 55 48.10	55 42.05	+13 39 23.3	40 1.6	-8.0027	+8.8050	-3.22	+3.91

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.										
Mean Solar Time of Meridian Transit.	Side-real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of <i>t</i> in Sidereal Minutes.		Log. Coefficient of <i>t</i> ² .		
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. 0 15 12.0	0	9 52 58.55	52 54.46	+14 14 27.0	14 53.7	-7.8349	+ 8.650	-2.96	+3.67	
1 15 7.9	1	9 52 48.52	52 44.28	14 15 32.2	15 59.6	7.8509	8.662	2.95	3.66	
2 15 3.8	2	9 52 38.12	52 33.74	14 16 39.2	17 7.3	7.8661	8.673	2.94	3.64	
3 14 59.7	3	9 52 27.36	52 22.83	14 17 47.9	18 16.7	7.8807	8.684	2.93	3.63	
4 14 55.6	4	9 52 16.24	52 11.56	14 18 58.3	19 27.8	7.8945	8.694	2.92	3.62	
5 14 51.4	5	9 52 4.77	51 59.95	14 20 10.4	20 40.5	7.9076	8.704	2.91	3.61	
6 14 47.3	6	9 51 52.96	51 48.00	14 21 24.1	21 54.9	7.9201	8.714	2.91	3.60	
7 14 43.2	7	9 51 40.81	51 35.71	14 22 39.4	23 10.8	7.9323	8.723	2.90	3.59	
8 14 39.0	8	9 51 28.32	51 23.08	14 23 56.3	24 28.3	7.9441	8.732	2.89	3.58	
9 14 34.9	9	9 51 15.49	51 10.12	14 25 14.7	25 47.3	7.9553	8.740	2.88	3.57	
10 14 30.7	10	9 51 2.34	50 56.85	14 26 34.7	27 7.9	7.9657	8.749	2.87	3.56	
11 14 26.6	11	9 50 48.88	50 43.27	14 27 56.2	28 30.0	7.9755	8.756	2.87	3.55	
12 14 22.4	12	9 50 35.12	50 29.39	14 29 19.0	29 53.4	7.9851	8.763	2.86	3.54	
13 14 18.3	13	9 50 21.05	50 15.20	14 30 43.2	31 18.1	7.9945	8.770	2.85	3.52	
14 14 14.1	14	9 50 6.68	50 0.71	14 32 8.7	32 44.1	8.0035	8.777	2.84	3.50	
15 14 9.9	15	9 49 52.02	49 45.94	14 33 35.5	34 11.4	8.0118	8.783	2.83	3.48	
16 14 5.8	16	9 49 37.09	49 30.90	14 35 3.5	35 39.9	8.0198	8.789	2.82	3.46	
17 14 1.6	17	9 49 21.88	49 15.59	14 36 32.7	37 9.6	8.0275	8.795	2.81	3.44	
18 13 57.4	18	9 49 6.41	49 0.02	14 38 3.1	38 40.4	8.0346	8.800	2.80	3.42	
19 13 53.2	19	9 48 50.69	48 44.20	14 39 34.6	40 12.3	8.0414	8.805	2.78	3.40	
20 13 49.0	20	9 48 34.73	48 28.14	14 41 7.1	41 45.2	8.0478	8.810	2.76	3.38	
21 13 44.8	21	9 48 18.54	48 11.85	14 42 40.6	43 19.1	8.0541	8.815	2.74	3.35	
22 13 40.6	22	9 48 2.11	47 55.34	14 44 15.0	44 53.8	8.0602	8.819	2.72	3.32	
23 13 36.4	23	9 47 45.46	47 38.61	14 45 50.3	46 29.4	8.0659	8.823	2.70	3.29	
24 13 32.2	24	9 47 28.59	47 21.66	14 47 26.4	48 5.8	8.0713	8.826	2.68	3.26	
25 13 27.9	25	9 47 11.52	47 4.51	14 49 3.2	49 42.9	8.0763	8.829	2.66	3.23	
26 13 23.7	26	9 46 54.26	46 47.18	14 50 40.7	51 20.6	8.0808	8.832	2.63	3.19	
27 13 19.5	27	9 46 36.83	46 29.68	14 52 18.8	52 58.9	8.0851	8.835	2.60	3.15	
28 13 15.3	28	9 46 19.23	46 12.02	14 53 57.5	54 37.8	8.0891	8.837	2.57	3.10	
29 13 11.0	29	9 46 1.47	45 54.21	14 55 36.8	56 17.3	8.0928	8.840	2.53	3.04	
30 13 6.8	30	9 45 43.57	45 36.26	14 57 16.6	57 57.3	8.0961	8.842	2.49	2.96	
Feb. 1 12 58.4	31	9 45 25.54	45 18.17	14 58 56.8	59 37.6	8.0992	8.843	2.45	2.91	
2 12 54.1	32	9 45 7.38	44 59.96	15 0 37.3	1 18.2	8.1022	8.844	2.41	2.84	
3 12 49.9	33	9 44 49.10	44 41.64	15 2 18.0	2 59.0	8.1049	8.845	2.37	2.76	
4 12 45.6	34	9 44 30.71	44 23.21	15 3 59.0	4 40.1	8.1074	8.846	2.33	+2.68	
5 12 41.4	35	9 44 12.22	44 4.69	15 5 40.2	6 21.3	8.1095	8.847	2.28		
6 12 37.2	36	9 43 53.65	43 46.09	15 7 21.5	8 2.6	8.1114	8.847	2.23		
7 12 32.9	37	9 43 35.00	43 27.42	15 9 2.9	9 44.0	8.1130	8.848	2.17		
8 12 28.7	38	9 43 16.29	43 8.69	15 10 44.3	11 25.4	8.1144	8.848	2.09		
9 12 24.4	39	9 42 57.52	42 49.90	15 12 25.7	13 6.7	8.1157	8.848	1.99		
10 12 20.2	40	9 42 38.70	42 31.07	15 14 7.1	14 48.0	8.1166	8.847	1.86		
11 12 15.9	41	9 42 19.85	42 12.21	15 15 48.4	16 29.2	8.1172	8.847	-1.68	-2.68	
12 12 11.7	42	9 42 0.98	41 53.34	15 17 29.4	18 10.1	8.1176	8.845		2.76	
13 12 7.5	43	9 41 42.09	41 34.45	15 19 10.1	19 50.7	8.1180	8.844		2.84	
14 12 3.2	44	9 41 23.19	41 15.56	15 20 50.5	21 30.9	8.1180	8.843		2.91	
15 11 59.0	45	9 41 4.30	40 56.68	15 22 30.6	23 10.8	8.1176	8.841	+1.68	2.98	
16 11 54.7	46	9 40 45.43	40 37.82	15 24 10.3	24 50.3	8.1172	8.839	1.87	3.04	
17 11 50.5	47	9 40 26.58	40 18.99	15 25 49.5	26 29.3	8.1165	8.837	2.01	3.09	
18 11 46.3	48	9 40 7.77	40 0.21	15 27 28.1	28 7.7	8.1155	8.834	2.12	3.14	
19 11 42.0	49	9 39 49.01	39 41.48	15 29 6.2	29 45.5	8.1142	8.832	2.21	3.19	
20 11 37.8	50	9 39 30.31	39 22.82	15 30 43.7	31 22.7	8.1126	8.829	2.28	3.23	
21 11 33.5	51	9 39 11.69	39 4.24	15 32 20.6	32 59.3	8.1106	8.826	2.33	3.26	
22 11 29.3	52	9 38 53.16	38 45.74	15 33 56.7	34 35.1	8.1085	8.823	2.37	3.28	
23 11 25.0	53	9 38 34.72	38 27.34	15 35 32.0	36 10.0	8.1061	8.819	2.41	3.30	
24 11 20.8	54	9 38 16.39	38 9.05	15 37 6.4	37 44.1	8.1035	8.815	2.45	3.32	
25 11 16.6	55	9 37 58.17	37 50.89	15 38 40.0	39 17.3	8.1006	8.811	2.49	3.33	
26 11 12.3	56	9 37 40.08	37 32.86	15 40 12.7	40 49.6	8.0974	8.806	2.52	3.35	
27 11 8.1	57	9 37 22.13	37 14.97	15 41 44.4	42 20.9	8.0939	8.801	2.55	3.37	
28 11 3.9	58	9 37 4.33	36 57.24	15 43 15.0	43 51.1	8.0902	8.796	2.58	3.38	
29 10 59.7	59	9 36 46.68	36 39.67	15 44 44.4	45 20.1	8.0863	8.790	2.61	3.40	
30 10 55.4	60	9 36 29.20	36 22.26	15 46 12.7	46 47.9	8.0819	8.785	2.64	3.42	
	61	9 36 11.90	36 5.03	+15 47 39.9	48 14.5	-8.0774	+ 8.779	+2.66	-3.44	

SATURN, 1860.

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FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.			h. m. s.	m. s.	o' "	' "					
Mar. 1 10 55.4	61		9 36 11.90	36 5.03	+15 47 39.9	48 14.5	-8.0774	+ 8.779	+2.66	-3.44	
2 10 51.2	62		9 35 54.78	35 47.99	15 49 5.9	49 40.0	8.0726	8.773	2.68	3.45	
3 10 47.0	63		9 35 37.86	35 31.15	15 50 30.7	51 4.3	8.0673	8.766	2.69	3.47	
4 10 42.8	64		9 35 21.15	35 14.52	15 51 54.2	52 27.3	8.0619	8.760	2.71	3.48	
5 10 38.6	65		9 35 4.65	34 58.11	15 53 16.3	53 48.9	8.0562	8.753	2.72	3.49	
6 10 34.4	66		9 34 48.37	34 41.93	15 54 37.1	55 9.1	8.0501	8.745	2.74	3.51	
7 10 30.2	67		9 34 32.33	34 25.99	15 55 56.5	56 27.9	8.0436	8.737	2.75	3.52	
8 10 26.0	68		9 34 16.53	34 10.29	15 57 14.4	57 45.2	8.0370	8.729	2.77	3.53	
9 10 21.8	69		9 34 0.97	33 54.83	15 58 30.9	59 1.1	8.0301	8.721	2.78	3.54	
10 10 17.6	70		9 33 45.66	33 39.63	15 59 45.9	60 15.5	8.0231	8.712	2.80	3.56	
11 10 13.4	71		9 33 30.60	33 24.68	16 0 59.4	1 28.4	8.0156	8.703	2.81	3.57	
12 10 9.2	72		9 33 15.81	33 10.00	16 2 11.3	2 39.7	8.0073	8.694	2.83	3.58	
13 10 5.0	73		9 33 1.31	32 55.61	16 3 21.6	3 49.3	7.9986	8.684	2.84	3.59	
14 10 0.8	74		9 32 47.10	32 41.51	16 4 30.3	4 57.3	7.9898	8.674	2.85	3.60	
15 9 56.7	75		9 32 33.18	32 27.71	16 5 37.4	6 3.7	7.9806	8.663	2.86	3.61	
16 9 52.5	76		9 32 19.56	32 14.22	16 6 42.9	7 8.5	7.9708	8.652	2.87	3.62	
17 9 48.4	77		9 32 6.25	32 1.04	16 7 46.6	8 11.5	7.9607	8.640	2.88	3.63	
18 9 44.3	78		9 31 53.25	31 48.17	16 8 48.6	9 12.8	7.9502	8.628	2.89	3.63	
19 9 40.1	79		9 31 40.57	31 35.62	16 9 48.8	10 12.3	7.9392	8.615	2.90	3.64	
20 9 36.0	80		9 31 28.21	31 23.40	16 10 47.3	11 10.0	7.9276	8.602	2.91	3.64	
21 9 31.9	81		9 31 16.19	31 11.52	16 11 43.9	12 5.9	7.9154	8.587	2.92	3.65	
22 9 27.7	82		9 31 4.51	30 59.98	16 12 38.6	12 59.9	7.9025	8.572	2.93	3.65	
23 9 23.6	83		9 30 53.18	30 48.79	16 13 31.5	13 52.0	7.8891	8.558	2.94	3.65	
24 9 19.5	84		9 30 42.20	30 37.95	16 14 22.6	14 42.3	7.8750	8.542	2.95	3.66	
25 9 15.4	85		9 30 31.58	30 27.48	16 15 11.8	15 30.7	7.8601	8.525	2.95	3.66	
26 9 11.3	86		9 30 21.33	30 17.38	16 15 59.0	16 17.2	7.8445	8.507	2.95	3.66	
27 9 7.2	87		9 30 11.45	30 7.65	16 16 44.3	17 1.7	7.8282	8.488	2.96	3.67	
28 9 3.1	88		9 30 1.94	29 58.29	16 17 27.6	17 44.2	7.8111	8.468	2.96	3.67	
29 8 59.0	89		9 29 52.81	29 49.31	16 18 9.0	18 24.8	7.7930	8.448	2.96	3.67	
30 8 55.0	90		9 29 44.06	29 40.72	16 18 48.4	19 3.4	7.7739	8.426	2.97	3.68	
31 8 50.9	91		9 29 35.70	29 32.51	16 19 25.8	19 40.0	7.7535	8.403	2.97	3.68	
Apr. 1 8 46.8	92		9 29 27.73	29 24.68	16 20 1.2	20 14.6	7.7326	8.378	2.97	3.68	
2 8 42.8	93		9 29 20.14	29 17.24	16 20 34.6	20 47.2	7.7106	8.353	2.98	3.68	
3 8 38.7	94		9 29 12.94	29 10.20	16 21 6.1	21 17.9	7.6867	8.326	2.98	3.68	
4 8 34.7	95		9 29 6.14	29 3.56	16 21 35.6	21 46.6	7.6609	8.296	2.99	3.68	
5 8 30.7	96		9 28 59.75	28 57.33	16 22 3.0	22 13.2	7.6333	8.263	2.99	3.68	
6 8 26.7	97		9 28 53.76	28 51.50	16 22 28.4	22 37.8	7.6043	8.229	2.99	3.68	
7 8 22.6	98		9 28 48.17	28 46.07	16 22 51.8	23 0.4	7.5732	8.192	2.99	3.69	
8 8 18.6	99		9 28 42.98	28 41.04	16 23 13.2	23 21.0	7.5393	8.151	3.00	3.69	
9 8 14.6	100		9 28 38.20	28 36.42	16 23 32.6	23 39.6	7.5020	8.105	3.00	3.69	
10 8 10.6	101		9 28 33.83	28 32.21	16 23 49.9	23 56.1	7.4613	8.052	3.00	3.69	
11 8 6.6	102		9 28 29.87	28 28.42	16 24 5.1	24 10.5	7.4157	7.994	3.00	3.69	
12 8 2.6	103		9 28 26.33	28 25.04	16 24 18.3	24 22.9	7.3641	7.928	3.01	3.69	
13 7 58.6	104		9 28 23.21	28 22.08	16 24 29.5	24 33.3	7.3063	7.848	3.01	3.69	
14 7 54.6	105		9 28 20.50	28 10.54	16 24 38.6	24 41.6	7.2396	7.747	3.01	3.69	
15 7 50.7	106		9 28 18.21	28 17.42	16 24 45.6	24 47.8	7.1597	7.620	3.01	3.69	
16 7 46.7	107		9 28 16.34	28 15.72	16 24 50.6	24 52.0	7.0609	7.438	3.01	3.69	
17 7 42.7	108		9 28 14.90	28 14.44	16 24 53.5	24 54.1	6.9315	+ 7.109	3.02	3.69	
18 7 38.8	109		9 28 13.88	28 13.59	16 24 54.3	24 54.1	6.7501	- 6.143	3.02	3.69	
19 7 34.9	110		9 28 13.28	28 13.16	16 24 53.1	24 52.0	-6.4271	7.194	3.02	3.69	
20 7 30.9	111		9 28 13.11	28 13.16	16 24 49.8	24 47.8	+5.4437	7.480	3.02	3.69	
21 7 27.0	112		9 28 13.36	28 13.58	16 24 44.4	24 41.6	6.5091	7.651	3.02	3.69	
22 7 23.1	113		9 28 14.04	28 14.43	16 24 36.9	24 33.3	6.7910	7.771	3.01	3.69	
23 7 19.2	114		9 28 15.14	28 15.70	16 24 27.4	24 23.0	6.9606	7.863	3.01	3.69	
24 7 15.3	115		9 28 16.67	28 17.39	16 24 15.9	24 10.7	7.0822	7.940	3.01	3.69	
25 7 11.4	116		9 28 18.62	28 19.51	16 24 2.3	23 56.3	7.1761	8.006	3.01	3.69	
26 7 7.5	117		9 28 20.99	28 22.05	16 23 46.7	23 39.9	7.2533	8.063	3.01	3.69	
27 7 3.6	118		9 28 23.78	28 25.01	16 23 29.0	23 21.4	7.3188	8.113	3.01	3.68	
28 6 59.7	119		9 28 26.99	28 28.38	16 23 9.3	23 0.9	7.3757	8.158	3.01	3.68	
29 6 55.9	120		9 28 30.62	28 32.17	16 22 47.6	22 38.4	7.4254	8.198	3.01	3.68	
30 6 52.0	121		9 28 34.66	28 36.38	16 22 23.9	22 13.9	7.4700	8.234	3.01	3.68	
31 6 48.2	122		9 28 39.12	28 41.00	+16 21 58.2	21 47.4	+7.5105	- 8.267	+3.01	-3.68	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.												
Mean Solar Time of Meridian Transit.			Side-real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t ² .		
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
May	d.	h.	m.	h.	m.	s.	m.	s.	+	-	+	-
1	6	48.2	122	9 28 39.12	28 41.00	+16 21 58.2	21 47.4	+7.5105	- 8.267	+3.01	-3.68	
2	6	44.4	123	9 28 43.99	28 46.03	16 21 30.6	21 19.0	7.5471	8.298	3.00	3.68	
3	6	40.5	124	9 28 49.27	28 51.47	16 21 1.0	20 48.6	7.5808	8.327	3.00	3.68	
4	6	36.7	125	9 28 54.96	28 57.32	16 20 29.4	20 16.2	7.6121	8.355	3.00	3.68	
5	6	32.9	126	9 29 1.06	29 3.58	16 19 55.8	19 41.9	7.6410	8.380	3.00	3.68	
6	6	29.1	127	9 29 7.56	29 10.24	16 19 20.3	19 5.7	7.6681	8.403	3.00	3.68	
7	6	25.2	128	9 29 14.47	29 17.31	16 18 42.9	18 27.5	7.6935	8.425	2.99	3.67	
8	6	21.4	129	9 29 21.78	29 24.78	16 18 3.6	17 47.4	7.7170	8.446	2.99	3.67	
9	6	17.6	130	9 29 29.48	29 32.64	16 17 22.4	17 5.4	7.7393	8.466	2.99	3.67	
10	6	13.8	131	9 29 37.58	29 40.89	16 16 39.3	16 21.6	7.7605	8.486	2.99	3.67	
11	6	10.0	132	9 29 46.07	29 49.53	16 15 54.3	15 35.9	7.7804	8.504	2.98	3.67	
12	6	6.2	133	9 29 54.95	29 58.57	16 15 7.4	14 48.3	7.7995	8.522	2.98	3.66	
13	6	2.4	134	9 30 4.22	30 8.00	16 14 18.6	13 58.8	7.8180	8.538	2.98	3.66	
14	5	58.7	135	9 30 13.89	30 17.82	16 13 28.0	13 7.4	7.8355	8.554	2.97	3.66	
15	5	54.9	136	9 30 23.94	30 28.03	16 12 35.5	12 14.2	7.8519	8.570	2.97	3.66	
16	5	51.1	137	9 30 34.37	30 38.61	16 11 41.1	11 19.1	7.8678	8.584	2.97	3.65	
17	5	47.4	138	9 30 45.18	30 49.57	16 10 44.9	10 22.1	7.8828	8.598	2.96	3.65	
18	5	43.6	139	9 30 56.36	31 0.90	16 9 46.9	9 23.3	7.8974	8.612	2.96	3.65	
19	5	39.9	140	9 31 7.92	31 12.61	16 8 47.1	8 22.8	7.9117	8.625	2.95	3.64	
20	5	36.2	141	9 31 19.86	31 24.70	16 7 45.5	7 20.5	7.9253	8.638	2.95	3.64	
21	5	32.5	142	9 31 32.17	31 37.16	16 6 42.1	6 16.4	7.9382	8.650	2.95	3.64	
22	5	28.7	143	9 31 44.84	31 49.98	16 5 36.9	5 10.5	7.9505	8.662	2.94	3.63	
23	5	25.0	144	9 31 57.87	32 3.16	16 4 29.8	4 2.7	7.9625	8.674	2.94	3.63	
24	5	21.3	145	9 32 11.26	32 16.69	16 3 21.0	2 53.2	7.9742	8.685	2.93	3.62	
25	5	17.6	146	9 32 25.01	32 30.57	16 2 10.5	1 42.0	7.9853	8.695	2.93	3.62	
26	5	13.9	147	9 32 39.10	32 44.80	16 0 58.3	0 29.1	7.9959	8.705	2.93	3.61	
27	5	10.2	148	9 32 53.54	32 59.38	15 59 44.4	59 14.5	8.0063	8.715	2.92	3.61	
28	5	6.5	149	9 33 8.32	33 14.30	15 58 28.9	57 58.3	8.0163	8.724	2.92	3.60	
29	5	2.9	150	9 33 23.44	33 29.56	15 57 11.7	56 40.4	8.0260	8.734	2.91	3.60	
30	4	59.2	151	9 33 38.90	33 45.15	15 55 52.8	55 20.9	8.0353	8.743	2.91	3.59	
31	4	55.5	152	9 33 54.68	34 1.07	15 54 32.3	53 59.8	8.0443	8.752	2.90	3.59	
June	1	51.9	153	9 34 10.79	34 17.31	15 53 10.2	52 37.0	8.0530	8.760	2.90	3.58	
2	4	48.2	154	9 34 27.22	34 33.87	15 51 46.5	51 12.6	8.0615	8.769	2.90	3.58	
3	4	44.6	155	9 34 43.97	34 50.75	15 50 21.2	49 46.6	8.0697	8.777	2.89	3.57	
4	4	40.9	156	9 35 1.03	35 7.94	15 48 54.3	48 19.1	8.0777	8.784	2.89	3.57	
5	4	37.3	157	9 35 18.41	35 25.45	15 47 25.9	46 50.0	8.0854	8.792	2.88	3.57	
6	4	33.7	158	9 35 36.09	35 43.26	15 45 56.0	45 19.5	8.0929	8.799	2.88	3.56	
7	4	30.0	159	9 35 54.08	36 1.37	15 44 24.5	43 47.4	8.1003	8.807	2.87	3.56	
8	4	26.4	160	9 36 12.37	36 19.78	15 42 51.5	42 13.8	8.1074	8.814	2.86	3.56	
9	4	22.8	161	9 36 30.96	36 38.49	15 41 17.0	40 38.7	8.1143	8.821	2.86	3.55	
10	4	19.2	162	9 36 49.84	36 57.49	15 39 41.0	39 2.1	8.1210	8.827	2.85	3.55	
11	4	15.5	163	9 37 9.01	37 16.78	15 38 3.6	37 24.1	8.1275	8.834	2.85	3.55	
12	4	11.9	164	9 37 28.47	37 36.36	15 36 24.7	35 44.6	8.1339	8.840	2.84	3.54	
13	4	8.3	165	9 37 48.21	37 56.22	15 34 44.3	34 3.6	8.1401	8.846	2.83	3.54	
14	4	4.7	166	9 38 8.23	38 16.35	15 33 2.5	32 21.2	8.1461	8.853	2.83	3.54	
15	4	1.1	167	9 38 28.53	38 36.76	15 31 19.2	30 37.3	8.1520	8.859	2.82	3.54	
16	3	57.5	168	9 38 49.10	38 57.44	15 29 34.5	28 52.0	8.1576	8.864	2.82	3.53	
17	3	53.9	169	9 39 9.93	39 18.38	15 27 48.5	27 5.4	8.1630	8.870	2.81	3.53	
18	3	50.3	170	9 39 31.02	39 39.58	15 26 1.1	25 17.4	8.1684	8.875	2.80	3.53	
19	3	46.7	171	9 39 52.37	40 1.04	15 24 12.3	23 28.1	8.1737	8.881	2.80	3.52	
20	3	43.2	172	9 40 13.98	40 22.76	15 22 22.1	21 37.4	8.1788	8.886	2.79	3.52	
21	3	39.6	173	9 40 35.84	40 44.72	15 20 30.7	19 45.4	8.1837	8.891	2.78	3.51	
22	3	36.1	174	9 40 57.94	41 6.92	15 18 38.0	17 52.2	8.1885	8.896	2.77	3.51	
23	3	32.5	175	9 41 20.29	41 29.37	15 16 44.0	15 57.7	8.1932	8.901	2.76	3.50	
24	3	29.0	176	9 41 42.88	41 52.06	15 14 48.7	14 1.9	8.1978	8.906	2.76	3.50	
25	3	25.5	177	9 42 5.70	42 14.98	15 12 52.2	12 4.8	8.2020	8.910	2.75	3.49	
26	3	21.9	178	9 42 28.74	42 38.12	15 10 54.5	10 6.6	8.2062	8.915	2.74	3.48	
27	3	18.4	179	9 42 52.00	43 1.48	15 8 55.6	8 7.2	8.2103	8.919	2.73	3.47	
28	3	14.9	180	9 43 15.48	43 25.05	15 6 55.5	6 6.6	8.2143	8.923	2.72	3.46	
29	3	11.4	181	9 43 39.17	43 48.83	15 4 54.2	4 4.8	8.2182	8.927	2.72	3.46	
30	3	7.8	182	9 44 3.07	44 12.82	15 2 51.8	2 1.9	8.2220	8.932	2.71	3.45	
31	3	4.3	183	9 44 27.18	44 37.02	+14 60 48.2	59 57.8	+8.2256	- 8.936	+2.70	-3.44	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Sideral Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of <i>t</i> in Sideral Minutes.		Log. Coefficient of <i>t</i> ².	
				At Sideral Oh.	At Transit.	At Sideral Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
July	d. h. m.										
1	3 4.3	183	9 44 27.18	44 37.02	+14 60 48.2	59 57.8	+8.2256	- 8.936	+2.70	-3.44	
2	3 0.8	184	9 44 51.49	45 1.42	14 58 43.5	57 52.6	8.2293	8.939	2.69	3.43	
3	2 57.3	185	9 45 16.01	45 26.03	14 56 37.7	55 46.3	8.2328	8.943	2.68	3.42	
4	2 53.7	186	9 45 40.72	45 50.83	14 54 30.9	53 39.0	2.2362	8.947	2.68	3.42	
5	2 50.2	187	9 46 5.62	46 15.81	14 52 23.0	51 30.6	8.2395	8.950	2.67	3.41	
6	2 46.7	188	9 46 30.71	46 40.98	14 50 14.1	49 21.2	8.2427	8.954	2.66	3.40	
7	2 43.2	189	9 46 55.98	47 6.33	14 48 4.1	47 10.7	8.2457	8.957	2.65	3.39	
8	2 39.7	190	9 47 21.42	47 31.85	14 45 53.1	44 59.2	8.2487	8.961	2.64	3.38	
9	2 36.2	191	9 47 47.04	47 57.55	14 43 41.0	42 46.7	8.2517	8.964	2.63	3.37	
10	2 32.7	192	9 48 12.83	48 23.42	14 41 27.9	40 33.2	8.2545	8.967	2.62	3.36	
11	2 29.2	193	9 48 38.79	48 49.45	14 39 13.9	38 18.8	8.2573	8.970	2.61	3.35	
12	2 25.7	194	9 49 4.91	49 15.64	14 36 59.0	36 3.4	8.2600	8.973	2.60	3.34	
13	2 22.2	195	9 49 31.19	49 41.99	14 34 43.1	33 47.1	8.2626	8.976	2.59	3.33	
14	2 18.7	196	9 49 57.63	50 8.50	14 32 26.3	31 29.9	8.2651	8.979	2.58	3.32	
15	2 15.2	197	9 50 24.22	50 35.16	14 30 8.6	29 11.8	8.2676	8.982	2.57	3.31	
16	2 11.7	198	9 50 50.96	51 1.97	14 27 50.0	26 52.8	8.2699	8.985	2.55	3.30	
17	2 8.2	199	9 51 17.84	51 28.92	14 25 30.5	24 33.0	8.2723	8.987	2.53	3.29	
18	2 4.7	200	9 51 44.87	51 56.01	14 23 10.2	22 12.3	8.2746	8.990	2.51	3.28	
19	2 1.2	201	9 52 12.04	52 23.24	14 20 49.1	19 50.8	8.2767	8.992	2.50	3.27	
20	1 57.7	202	9 52 39.33	52 50.59	14 18 27.2	17 28.6	8.2786	8.995	2.48	3.26	
21	1 54.2	203	9 53 6.74	53 18.06	14 16 4.5	15 5.6	8.2805	8.997	2.46	3.25	
22	1 50.7	204	9 53 34.27	53 45.65	14 13 41.1	12 41.8	8.2824	8.999	2.44	3.24	
23	1 47.3	205	9 54 1.92	54 13.36	14 11 17.0	10 17.3	8.2842	9.002	2.42	3.23	
24	1 43.8	206	9 54 29.68	54 41.17	14 8 52.1	7 52.2	8.2859	9.004	2.41	3.22	
25	1 40.3	207	9 54 57.55	55 9.09	14 6 26.6	5 26.4	8.2876	9.006	2.39	3.20	
26	1 36.9	208	9 55 25.53	55 37.12	14 4 0.4	2 59.9	8.2893	9.008	2.37	3.19	
27	1 33.4	209	9 55 53.61	56 5.25	14 1 33.5	0 32.7	8.2907	9.010	2.35	3.18	
28	1 30.0	210	9 56 21.78	56 33.47	13 59 6.0	58 4.9	8.2921	9.011	2.33	3.16	
29	1 26.5	211	9 56 50.04	57 1.78	13 56 37.9	55 36.5	8.2935	9.013	2.31	3.15	
30	1 23.0	212	9 57 18.39	57 30.18	13 54 9.2	53 7.5	8.2948	9.015	2.29	3.13	
31	1 19.6	213	9 57 46.82	57 58.65	13 51 39.9	50 37.9	8.2960	9.016	2.27	3.12	
Aug. 1	1 16.1	214	9 58 15.33	58 27.20	13 49 10.1	48 7.8	8.2972	9.018	2.25	3.10	
2	1 12.7	215	9 58 43.92	58 55.83	13 46 39.8	45 37.3	8.2985	9.019	2.23	3.08	
3	1 9.2	216	9 59 12.59	59 24.54	13 44 9.0	43 6.3	8.2996	9.021	2.20	3.06	
4	1 5.8	217	9 59 41.33	59 53.32	13 41 37.7	40 34.7	8.3006	9.022	2.17	3.04	
5	1 2.4	218	10 0 10.13	0 22.16	13 39 5.9	38 2.6	8.3015	9.024	2.14	3.02	
6	0 58.9	219	10 0 38.99	0 51.05	13 36 33.6	35 30.0	8.3024	9.025	2.11	3.00	
7	0 55.5	220	10 1 7.91	1 20.00	13 34 0.8	32 57.0	8.3033	9.026	2.08	2.98	
8	0 52.0	221	10 1 36.89	1 49.01	13 31 27.5	30 23.5	8.3040	9.028	2.04	2.96	
9	0 48.6	222	10 2 5.91	2 18.07	13 28 53.9	27 49.6	8.3047	9.029	2.00	2.94	
10	0 45.1	223	10 2 34.98	2 47.17	13 26 19.9	25 15.4	8.3055	9.030	1.95	2.92	
11	0 41.6	224	10 3 4.10	3 16.31	13 23 45.6	22 40.9	8.3061	9.031	1.91	2.89	
12	0 38.2	225	10 3 33.26	3 45.49	13 21 10.9	20 6.0	8.3067	9.032	1.86	2.86	
13	0 34.7	226	10 4 2.45	4 14.70	13 18 35.9	17 30.8	8.3071	9.032	1.82	2.83	
14	0 31.3	227	10 4 31.67	4 43.94	13 16 0.6	14 55.3	8.3076	9.033	1.77	2.80	
15	0 27.8	228	10 5 0.92	5 13.21	13 13 25.0	12 19.6	8.3079	9.034	1.73	2.76	
16	0 24.4	229	10 5 30.19	5 42.50	13 10 49.2	9 43.6	8.3082	9.034	+1.68	2.72	
17	0 21.0	230	10 5 59.48	6 11.81	13 8 13.2	7 7.5	8.3085	9.035		-2.68	
18	0 17.5	231	10 6 28.79	6 41.13	13 5 37.0	4 31.2	8.3087	9.036			
19	0 14.1	232	10 6 58.10	7 10.46	13 3 0.6	1 54.7	8.3087	9.036			
20	0 10.6	233	10 7 27.42	7 39.79	12 60 24.0	59 18.0	8.3088	9.036			
21	0 7.1	234	10 7 56.74	8 9.12	12 57 47.4	56 41.3	8.3087	9.037			
22	0 3.7	235	10 8 26.05	8 38.44	12 55 10.7	54 4.5	8.3086	9.037			
23	0 0.2	236	10 8 55.35	9 7.75	12 52 33.9	51 27.6	8.3084	9.037			
23	23 56.8	237	10 9 24.64	9 37.04	12 49 57.1	48 50.7	8.3082	9.037	-1.68		
24	23 53.3	238	10 9 53.91	10 6.31	12 47 20.3	46 13.8	8.3080	9.037	1.74		
25	23 49.9	239	10 10 23.17	10 35.57	12 44 43.4	43 36.9	8.3078	9.037	1.80		
26	23 46.5	240	10 10 52.41	11 4.81	12 42 6.6	41 0.1	8.3074	9.037	1.86		
27	23 43.0	241	10 11 21.62	11 34.02	12 39 29.8	38 23.3	8.3069	9.037	1.91		
28	23 39.6	242	10 11 50.79	12 3.19	12 36 53.1	35 46.5	8.3064	9.037	1.96		
29	23 36.2	243	10 12 19.93	12 32.32	12 34 16.5	33 9.8	8.3058	9.036	2.00		
30	23 32.7	244	10 12 49.03	13 1.41	12 31 40.0	30 33.3	8.3052	9.036	2.04		
31	23 29.3	245	10 13 18.09	13 30.46	+12 29 3.6	27 57.0	+8.3046	- 9.036	-2.09	+2.68	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.									
Mean Solar Time of Meridian Transit.	Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Sep. 1 23 25.8	246	10 13 47.10	13 59.46	+12 26 27.4	25 20.9	+8.3038	- 9.035	-2.11	+2.72
2 23 22.4	247	10 14 16.06	14 28.41	12 23 51.4	22 44.9	8.3031	9.034	2.14	2.76
3 23 18.9	248	10 14 44.97	14 57.31	12 21 15.6	20 9.1	8.3023	9.034	2.17	2.80
4 23 15.4	249	10 15 13.83	15 26.15	12 18 39.9	17 33.5	8.3015	9.034	2.20	2.83
5 23 12.0	250	10 15 42.63	15 54.93	12 16 4.4	14 58.1	8.3006	9.033	2.23	2.86
6 23 8.5	251	10 16 11.37	16 23.65	12 13 29.2	12 23.0	8.2995	9.032	2.25	2.89
7 23 5.1	252	10 16 40.03	16 52.29	12 10 54.4	9 48.2	8.2984	9.031	2.27	2.92
8 23 1.6	253	10 17 8.62	17 20.86	12 8 19.9	7 13.8	8.2973	9.030	2.29	2.94
9 22 58.1	254	10 17 37.13	17 49.35	12 5 45.7	4 39.7	8.2961	9.029	2.31	2.96
10 22 54.7	255	10 18 5.57	18 17.75	12 3 11.9	2 6.0	8.2949	9.028	2.33	2.98
11 22 51.2	256	10 18 33.92	18 46.07	11 60 38.5	59 32.7	8.2935	9.027	2.35	3.01
12 22 47.8	257	10 19 2.18	19 14.30	11 58 5.5	56 59.9	8.2921	9.026	2.37	3.03
13 22 44.3	258	10 19 30.34	19 42.43	11 55 33.0	54 27.5	8.2905	9.024	2.39	3.06
14 22 40.8	259	10 19 58.40	20 10.45	11 53 1.0	51 55.6	8.2890	9.023	2.41	3.08
15 22 37.4	260	10 20 26.36	20 38.37	11 50 29.5	49 24.3	8.2873	9.021	2.42	3.10
16 22 33.9	261	10 20 54.21	21 6.18	11 47 58.5	46 53.6	8.2856	9.020	2.44	3.12
17 22 30.5	262	10 21 21.95	21 33.88	11 45 28.1	44 23.4	8.2839	9.018	2.45	3.14
18 22 27.0	263	10 21 49.58	22 1.47	11 42 58.3	41 53.8	8.2821	9.016	2.47	3.16
19 22 23.5	264	10 22 17.09	22 28.93	11 40 29.1	39 24.8	8.2801	9.014	2.48	3.18
20 22 20.1	265	10 22 44.47	22 56.26	11 38 0.6	36 56.5	8.2780	9.012	2.49	3.20
21 22 16.6	266	10 23 11.71	23 23.46	11 35 32.8	34 29.0	8.2758	9.010	2.51	3.22
22 22 13.1	267	10 23 38.82	23 50.52	11 33 5.7	32 2.2	8.2737	9.008	2.52	3.24
23 22 9.7	268	10 24 5.80	24 17.45	11 30 39.4	29 36.2	8.2716	9.006	2.54	3.25
24 22 6.2	269	10 24 32.64	24 44.24	11 28 13.8	27 10.9	8.2693	9.004	2.55	3.27
25 22 2.7	270	10 24 59.34	25 10.88	11 25 49.0	24 46.4	8.2669	9.001	2.56	3.28
26 21 59.2	271	10 25 25.89	25 37.37	11 23 25.0	22 22.7	8.2645	8.999	2.57	3.29
27 21 55.7	272	10 25 52.29	26 3.71	11 21 1.8	19 59.8	8.2619	8.996	2.58	3.30
28 21 52.2	273	10 26 18.53	26 29.89	11 18 39.5	17 37.8	8.2593	8.994	2.59	3.31
29 21 48.7	274	10 26 44.61	26 55.91	11 16 18.0	15 16.7	8.2566	8.991	2.60	3.32
30 21 45.2	275	10 27 10.53	27 21.76	11 13 57.5	12 56.6	8.2538	8.988	2.61	3.33
Oct. 1 21 41.7	276	10 27 36.28	27 47.44	11 11 37.9	10 37.4	8.2511	8.985	2.62	3.34
2 21 38.2	277	10 28 1.87	28 12.96	11 9 19.3	8 19.2	8.2482	8.982	2.63	3.35
3 21 34.7	278	10 28 27.28	28 38.30	11 7 1.7	6 2.0	8.2451	8.979	2.64	3.36
4 21 31.1	279	10 28 52.51	29 3.45	11 4 45.1	3 45.8	8.2419	8.975	2.65	3.37
5 21 27.6	280	10 29 17.55	29 28.42	11 2 29.5	1 30.6	8.2386	8.972	2.66	3.38
6 21 24.1	281	10 29 42.40	29 53.20	10 60 15.0	59 16.5	8.2354	8.969	2.67	3.39
7 21 20.6	282	10 30 7.07	30 17.79	10 58 1.6	57 3.5	8.2320	8.965	2.68	3.40
8 21 17.1	283	10 30 31.54	30 42.18	10 55 49.3	54 51.7	8.2285	8.961	2.69	3.41
9 21 13.5	284	10 30 55.81	31 6.37	10 53 38.2	52 41.1	8.2249	8.957	2.70	3.42
10 21 10.0	285	10 31 19.88	31 30.36	10 51 28.2	50 31.6	8.2212	8.954	2.70	3.43
11 21 6.5	286	10 31 43.74	31 54.13	10 49 19.4	48 23.3	8.2173	8.949	2.71	3.44
12 21 2.9	287	10 32 7.38	32 17.68	10 47 11.9	46 16.3	8.2133	8.945	2.72	3.45
13 20 59.4	288	10 32 30.80	32 41.01	10 45 5.8	44 10.7	8.2092	8.940	2.73	3.47
14 20 55.8	289	10 32 54.00	33 4.12	10 43 1.0	42 6.5	8.2051	8.936	2.74	3.48
15 20 52.3	290	10 33 16.98	33 27.00	10 40 57.5	40 3.6	8.2007	8.931	2.74	3.49
16 20 48.7	291	10 33 39.72	33 49.65	10 38 55.4	38 2.1	8.1961	8.926	2.75	3.50
17 20 45.1	292	10 34 2.22	34 12.06	10 36 54.7	36 2.0	8.1915	8.921	2.76	3.52
18 20 41.6	293	10 34 24.48	34 34.22	10 34 55.4	34 3.3	8.1868	8.916	2.77	3.53
19 20 38.0	294	10 34 46.50	34 56.13	10 32 57.6	32 6.1	8.1820	8.910	2.78	3.54
20 20 34.4	295	10 35 8.27	35 17.79	10 31 1.3	30 10.4	8.1769	8.904	2.78	3.56
21 20 30.9	296	10 35 29.78	35 39.19	10 29 6.5	28 16.3	8.1716	8.899	2.79	3.57
22 20 27.3	297	10 35 51.03	36 0.33	10 27 13.2	26 23.7	8.1663	8.893	2.80	3.58
23 20 23.7	298	10 36 12.02	36 21.21	10 25 21.4	24 32.6	8.1610	8.887	2.80	3.59
24 20 20.1	299	10 36 32.75	36 41.83	10 23 31.2	22 43.1	8.1555	8.880	2.81	3.60
25 20 16.5	300	10 36 53.22	37 2.18	10 21 42.7	20 53.3	8.1498	8.874	2.81	3.61
26 20 12.9	301	10 37 13.41	37 22.25	10 19 55.9	19 9.2	8.1438	8.867	2.82	3.62
27 20 9.3	302	10 37 33.32	37 42.04	10 18 10.7	17 24.7	8.1378	8.860	2.83	3.62
28 20 5.7	303	10 37 52.96	38 1.56	10 16 27.1	15 41.8	8.1317	8.853	2.84	3.63
29 20 2.1	304	10 38 12.32	38 20.80	10 14 45.2	14 0.7	8.1254	8.846	2.84	3.63
30 19 58.4	305	10 38 31.40	38 39.76	10 13 5.1	12 21.4	8.1189	8.838	2.85	3.64
31 19 54.8	306	10 38 50.19	38 58.42	10 11 26.8	10 43.8	8.1121	8.830	2.85	3.64
32 19 51.2	307	10 39 8.68	39 16.78	+10 9 50.2	9 8.0	+8.1050	- 8.823	-2.86	+3.65

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of <i>t</i> in Sidereal Minutes.		Log. Coefficient of <i>t</i> ² .	
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
				h. m. s.	m. s.	° ' "	' "				
Nov. 1	19 51.2	307	10 39 8.68	39 16.78	+10 9 50.2	9 8.0	+8.1050	- 8.823	-2.86	+3.65	
2	19 47.5	308	10 39 26.87	39 34.84	10 8 15.4	7 34.0	8.0978	8.814	2.86	3.65	
3	19 43.9	309	10 39 44.75	39 52.59	10 6 42.5	6 1.9	8.0902	8.805	2.87	3.66	
4	19 40.2	310	10 40 2.32	40 10.03	10 5 11.5	4 31.7	8.0827	8.796	2.87	3.66	
5	19 36.6	311	10 40 19.59	40 27.16	10 3 42.4	3 3.3	8.0750	8.787	2.88	3.66	
6	19 33.0	312	10 40 36.55	40 43.98	10 2 15.1	1 36.3	8.0670	8.778	2.88	3.67	
7	19 29.3	313	10 40 53.19	41 0.48	10 0 49.8	0 12.5	8.0585	8.767	2.89	3.67	
8	19 25.7	314	10 41 9.50	41 16.65	9 59 26.5	58 50.1	8.0498	8.757	2.89	3.67	
9	19 22.0	315	10 41 25.49	41 32.50	9 58 5.2	57 29.7	8.0410	8.746	2.90	3.68	
10	19 18.3	316	10 41 41.15	41 48.02	9 56 46.0	56 11.4	8.0317	8.735	2.90	3.68	
11	19 14.6	317	10 41 56.47	42 3.20	9 55 28.8	54 55.1	8.0221	8.723	2.91	3.68	
12	19 11.0	318	10 42 11.45	42 18.03	9 54 13.7	53 40.9	8.0122	8.711	2.91	3.69	
13	19 7.3	319	10 42 26.09	42 32.51	9 53 0.7	52 28.8	8.0020	8.698	2.92	3.69	
14	19 3.6	320	10 42 40.38	42 46.65	9 51 49.9	51 18.9	7.9913	8.685	2.92	3.70	
15	18 59.9	321	10 42 54.32	43 0.44	9 50 41.2	50 11.2	7.9804	8.672	2.93	3.70	
16	18 56.2	322	10 43 7.91	43 13.87	9 49 34.7	49 5.7	7.9691	8.657	2.93	3.70	
17	18 52.5	323	10 43 21.14	43 26.94	9 48 30.4	48 2.3	7.9573	8.642	2.93	3.71	
18	18 48.8	324	10 43 34.01	43 39.65	9 47 28.3	47 1.2	7.9451	8.627	2.94	3.71	
19	18 45.0	325	10 43 46.52	43 52.00	9 46 28.4	46 2.3	7.9326	8.611	2.94	3.72	
20	18 41.3	326	10 43 58.67	44 3.99	9 45 30.8	45 5.7	7.9196	8.594	2.94	3.72	
21	18 37.6	327	10 44 10.45	44 15.61	9 44 35.4	44 11.3	7.9059	8.576	2.95	3.72	
22	18 33.8	328	10 44 21.86	44 26.85	9 43 42.3	43 19.2	7.8918	8.557	2.95	3.73	
23	18 30.1	329	10 44 32.90	44 37.72	9 42 51.5	42 29.4	7.8771	8.538	2.95	3.73	
24	18 26.3	330	10 44 43.56	44 48.21	9 42 3.0	41 41.9	7.8618	8.517	2.96	3.74	
25	18 22.6	331	10 44 53.85	44 58.33	9 41 16.8	40 56.8	7.8457	8.495	2.96	3.74	
26	18 18.8	332	10 45 3.75	45 8.06	9 40 32.9	40 14.0	7.8289	8.472	2.96	3.74	
27	18 15.0	333	10 45 13.27	45 17.41	9 39 51.4	39 33.5	7.8113	8.447	2.97	3.75	
28	18 11.2	334	10 45 22.40	45 26.37	9 39 12.3	38 55.5	7.7927	8.420	2.97	3.75	
29	18 7.4	335	10 45 31.14	45 34.93	9 38 35.7	38 19.9	7.7734	8.391	2.97	3.76	
30	18 3.6	336	10 45 39.49	45 43.11	9 38 1.4	37 46.7	7.7531	8.361	2.98	3.76	
Dec. 1	17 59.8	337	10 45 47.45	45 50.89	9 37 29.5	37 15.9	7.7315	8.329	2.98	3.76	
2	17 56.0	338	10 45 55.01	45 58.27	9 37 0.0	36 47.5	7.7088	8.293	2.98	3.76	
3	17 52.2	339	10 46 2.18	46 5.26	9 36 32.9	36 21.5	7.6849	8.254	2.99	3.77	
4	17 48.3	340	10 46 8.95	46 11.85	9 36 8.3	35 58.0	7.6592	8.211	2.99	3.77	
5	17 44.5	341	10 46 15.32	46 18.04	9 35 46.1	35 36.9	7.6316	8.163	2.99	3.77	
6	17 40.7	342	10 46 21.28	46 23.82	9 35 26.4	35 18.3	7.6017	8.108	2.99	3.77	
7	17 36.8	343	10 46 26.83	46 29.19	9 35 9.2	35 2.2	7.5696	8.043	3.00	3.78	
8	17 33.0	344	10 46 31.97	46 34.15	9 34 54.6	34 48.7	7.5349	7.967	3.00	3.78	
9	17 29.1	345	10 46 36.70	46 38.70	9 34 42.5	34 37.7	7.4973	7.879	3.00	3.78	
10	17 25.3	346	10 46 41.02	46 42.83	9 34 32.8	34 29.2	7.4560	7.768	3.00	3.78	
11	17 21.4	347	10 46 44.93	46 46.55	9 34 25.6	34 23.2	7.4104	7.612	3.00	3.78	
12	17 17.5	348	10 46 48.43	46 49.86	9 34 21.0	34 19.7	7.3588	7.360	3.01	3.78	
13	17 13.7	349	10 46 51.51	46 52.75	9 34 19.0	34 18.8	7.2988	- 6.717	3.01	3.78	
14	17 9.8	350	10 46 54.16	46 55.22	9 34 19.5	34 20.5	7.2290	+ 7.085	3.01	3.78	
15	17 5.9	351	10 46 56.39	46 57.27	9 34 22.5	34 24.7	7.1481	7.470	3.01	3.78	
16	17 2.0	352	10 46 58.21	46 58.90	9 34 28.0	34 31.3	7.0498	7.671	3.01	3.78	
17	16 58.1	353	10 46 59.62	47 0.12	9 34 36.0	34 40.4	6.9208	7.810	3.01	3.78	
18	16 54.1	354	10 47 0.61	47 0.92	9 34 46.6	34 52.1	6.7337	7.915	3.01	3.78	
19	16 50.2	355	10 47 1.18	47 1.30	9 34 59.7	35 6.3	+6.3979	7.998	3.01	3.78	
20	16 46.3	356	10 47 1.33	47 1.26	9 35 15.3	35 23.1	-5.5820	8.068	3.01	3.78	
21	16 42.3	357	10 47 1.07	47 0.81	9 35 33.4	35 42.3	6.5137	8.128	3.01	3.78	
22	16 38.4	358	10 47 0.39	46 59.95	9 35 54.0	36 4.0	6.7886	8.180	3.00	3.78	
23	16 34.4	359	10 46 59.30	46 58.67	9 36 17.0	36 28.1	6.9549	8.225	3.00	3.77	
24	16 30.5	360	10 46 57.80	46 56.98	9 36 42.4	36 54.6	7.0746	8.267	3.00	3.77	
25	16 26.5	361	10 46 55.88	46 54.88	9 37 10.3	37 23.6	7.1690	8.306	3.00	3.77	
26	16 22.5	362	10 46 53.55	46 52.37	9 37 40.6	37 55.0	7.2448	8.341	3.00	3.77	
27	16 18.5	363	10 46 50.82	46 49.46	9 38 13.4	38 28.9	7.3093	8.373	3.00	3.77	
28	16 14.5	364	10 46 47.68	46 46.14	9 38 48.6	39 5.2	7.3654	8.402	3.00	3.76	
29	16 10.5	365	10 46 44.14	46 42.42	9 39 26.1	39 43.8	7.4151	8.429	3.00	3.76	
30	16 6.5	366	10 46 40.19	46 38.29	9 40 6.0	40 24.7	7.4597	8.455	3.00	3.76	
31	16 2.5	367	10 46 35.94	46 33.76	9 40 48.3	41 8.0	7.5001	8.480	2.99	3.75	
32	15 58.5	368	10 46 31.03	46 28.82	+ 9 41 32.9	41 53.7	-7.5371	+ 8.503	-2.99	+3.75	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.												
Mean Solar Time of Meridian Transit.			Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t ² .		
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d.	h.	m.	h.	m.	s.	m.	s.	o.	′	″	′	″
Jan.	0	9 29.7	0	4 9 46.25	9 44.83	+20 56 26.3	56 22.7	-7.7540	-	8.168	+2.60	+3.02
	1	9 25.7	1	4 9 38.14	9 36.75	20 56 5.6	56 2.1	7.7453		8.153	2.60	3.02
	2	9 21.6	2	4 9 30.22	9 28.86	20 55 45.4	55 42.0	7.7354		8.143	2.61	3.03
	3	9 17.5	3	4 9 22.48	9 21.15	20 55 25.6	55 22.3	7.7259		8.132	2.61	3.03
	4	9 13.5	4	4 9 14.90	9 13.60	20 55 6.4	55 3.1	7.7167		8.120	2.61	3.03
	5	9 9.4	5	4 9 7.47	9 6.20	20 54 47.6	54 44.4	7.7074		8.111	2.62	3.04
	6	9 5.4	6	4 9 0.21	8 58.97	20 54 29.2	54 26.1	7.6972		8.099	2.62	3.04
	7	9 1.3	7	4 8 53.13	8 51.90	20 54 11.4	54 8.4	7.6867		8.087	2.63	3.05
	8	8 57.3	8	4 8 46.22	8 45.04	20 53 54.0	53 51.0	7.6748		8.075	2.63	3.05
	9	8 53.3	9	4 8 39.50	8 38.36	20 53 37.2	53 34.3	7.6625		8.062	2.64	3.05
	10	8 49.2	10	4 8 32.97	8 31.86	20 53 20.8	53 18.0	7.6506		8.051	2.64	3.06
	11	8 45.2	11	4 8 26.61	8 25.53	20 53 4.8	53 2.2	7.6383		8.040	2.64	3.06
	12	8 41.2	12	4 8 20.43	8 19.38	20 52 49.2	52 46.6	7.6263		8.029	2.65	3.06
	13	8 37.1	13	4 8 14.42	8 13.41	20 52 34.0	52 31.5	7.6133		8.018	2.65	3.07
	14	8 33.1	14	4 8 8.60	8 7.62	20 52 19.3	52 16.9	7.5983		8.008	2.66	3.07
	15	8 29.1	15	4 8 2.99	8 2.04	20 52 5.1	52 2.8	7.5820		7.985	2.66	3.07
	16	8 25.1	16	4 7 57.59	7 56.67	20 51 51.5	51 49.3	7.5660		7.969	2.66	3.08
	17	8 21.0	17	4 7 52.39	7 51.52	20 51 38.4	51 36.3	7.5510		7.952	2.67	3.08
	18	8 17.0	18	4 7 47.35	7 46.50	20 51 25.8	51 23.8	7.5372		7.935	2.67	3.09
	19	8 13.0	19	4 7 42.46	7 41.64	20 51 13.7	51 11.7	7.5220		7.914	2.68	3.09
	20	8 9.0	20	4 7 37.76	7 36.97	20 51 2.2	51 0.3	7.5035		7.891	2.68	3.10
	21	8 5.0	21	4 7 33.27	7 32.52	20 50 51.3	50 49.5	7.4817		7.871	2.69	3.10
	22	8 1.0	22	4 7 28.98	7 28.26	20 50 40.9	50 39.2	7.4593		7.850	2.69	3.10
	23	7 57.0	23	4 7 24.93	7 24.25	20 50 31.0	50 29.4	7.4341		7.828	2.70	3.11
	24	7 53.0	24	4 7 21.11	7 20.47	20 50 21.6	50 20.1	7.4122		7.810	2.70	3.11
	25	7 49.0	25	4 7 17.49	7 16.89	20 50 12.5	50 11.1	7.3882		7.776	2.71	3.12
	26	7 45.0	26	4 7 14.07	7 13.50	20 50 4.2	50 2.9	7.3628		7.745	2.71	3.12
	27	7 41.0	27	4 7 10.85	7 10.32	20 49 56.5	49 55.3	7.3331		7.711	2.71	3.13
	28	7 37.0	28	4 7 7.86	7 7.37	20 49 49.4	49 48.3	7.2996		7.674	2.72	3.13
	29	7 33.0	29	4 7 5.10	7 4.64	20 49 42.9	49 41.9	7.2649		7.641	2.72	3.14
	30	7 29.1	30	4 7 2.55	7 2.13	20 49 36.9	49 36.0	7.2219		7.597	2.72	3.14
	31	7 25.1	31	4 7 0.19	6 59.81	20 49 31.5	49 30.7	7.1858		7.549	2.72	3.14
Feb.	1	7 21.1	32	4 6 58.03	6 57.69	20 49 26.7	49 26.0	7.1492		7.495	2.72	3.14
	2	7 17.2	33	4 6 56.12	6 55.81	20 49 22.5	49 21.9	7.0970		7.433	2.72	3.15
	3	7 13.2	34	4 6 54.43	6 54.16	20 49 18.9	49 18.4	7.0403		7.373	2.72	3.15
	4	7 9.3	35	4 6 52.96	6 52.72	20 49 15.8	49 15.3	6.9752		7.289	2.73	3.15
	5	7 5.3	36	4 6 51.70	6 51.51	20 49 13.3	49 12.9	6.9024		7.184	2.73	3.15
	6	7 1.4	37	4 6 50.66	6 50.51	20 49 11.4	49 11.2	6.8055		7.046	2.73	3.15
	7	6 57.4	38	4 6 49.85	6 49.73	20 49 10.1	49 10.0	6.6805		6.842	2.73	3.16
	8	6 53.5	39	4 6 49.27	6 49.19	20 49 9.4	49 9.4	6.5138		- 6.319	2.73	3.16
	9	6 49.5	40	4 6 48.91	6 48.87	20 49 9.5	49 9.6	6.2396		+ 6.319	2.73	3.16
	10	6 45.6	41	4 6 48.77	6 48.76	20 49 10.1	49 10.3	-5.3188		6.745	2.73	3.16
	11	6 41.6	42	4 6 48.84	6 48.88	20 49 11.2	49 11.5	+6.0721		6.988	2.73	3.16
	12	6 37.7	43	4 6 49.14	6 49.22	20 49 12.8	49 13.2	6.4544		7.120	2.73	3.16
	13	6 33.8	44	4 6 49.66	6 49.78	20 49 14.9	49 15.4	6.6410		7.239	2.73	3.16
	14	6 29.9	45	4 6 50.39	6 50.54	20 49 17.7	49 18.3	6.7660		7.347	2.73	3.16
	15	6 26.0	46	4 6 51.35	6 51.55	20 49 21.2	49 21.9	6.8711		7.421	2.73	3.15
	16	6 22.1	47	4 6 52.53	6 52.76	20 49 25.3	49 26.1	6.9523		7.485	2.73	3.15
	17	6 18.2	48	4 6 53.94	6 54.21	20 49 30.0	49 30.9	7.0235		7.540	2.73	3.15
	18	6 14.3	49	4 6 55.58	6 55.89	20 49 35.3	49 36.3	7.0822		7.590	2.73	3.15
	19	6 10.4	50	4 6 57.43	6 57.78	20 49 41.1	49 42.2	7.1317		7.634	2.73	3.15
	20	6 6.5	51	4 6 59.48	6 59.87	20 49 47.6	49 48.8	7.1761		7.674	2.73	3.15
	21	6 2.6	52	4 7 1.76	7 2.19	20 49 54.7	49 56.0	7.2201		7.711	2.72	3.14
	22	5 58.7	53	4 7 4.27	7 4.73	20 50 2.4	50 3.8	7.2600		7.745	2.73	3.14
	23	5 54.8	54	4 7 7.01	7 7.51	20 50 10.7	50 12.2	7.2981		7.776	2.72	3.14
	24	5 51.0	55	4 7 10.00	7 10.54	20 50 19.5	50 21.1	7.3302		7.801	2.72	3.14
	25	5 47.1	56	4 7 13.18	7 13.76	20 50 28.9	50 30.6	7.3562		7.828	2.72	3.14
	26	5 43.2	57	4 7 16.55	7 17.17	20 50 38.9	50 40.7	7.3845		7.854	2.72	3.14
	27	5 39.3	58	4 7 20.17	7 20.82	20 50 49.5	50 51.4	7.4146		7.879	2.71	3.13
	28	5 35.4	59	4 7 24.03	7 24.72	20 51 0.7	51 2.7	7.4394		7.898	2.71	3.13
	29	5 31.6	60	4 7 28.09	7 28.82	20 51 12.4	51 14.4	7.4597		7.917	2.71	3.13
	30	5 27.7	61	4 7 32.34	7 33.11	+20 51 24.6	51 26.7	+7.4802		+ 7.938	+2.71	+3.12

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t ² .	
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Mar.	d. h. m.		h. m. s.	m. s.	° ' "	' "					
	1	5 27.7	61 4 7 32.34	7 33.11	+20 51 24.6	51 26.7	+7.4802	+ 7.938	+2.71	+3.12	
	2	5 23.9	62 4 7 36.79	7 37.59	20 51 37.4	51 39.6	7.5007	7.959	2.70	3.12	
	3	5 20.0	63 4 7 41.46	7 42.30	20 51 50.8	51 53.1	7.5211	7.978	2.70	3.12	
	4	5 16.2	64 4 7 46.35	7 47.23	20 52 4.8	52 7.2	7.5407	7.994	2.70	3.12	
	5	5 14.3	65 4 7 51.48	7 52.38	20 52 19.2	52 21.7	7.5594	8.009	2.69	3.11	
	6	5 8.5	66 4 7 56.79	7 57.74	20 52 34.1	52 36.7	7.5757	8.023	2.69	3.11	
	7	5 4.6	67 4 8 2.31	8 3.29	20 52 49.6	52 52.3	7.5914	8.040	2.69	3.11	
	8	5 0.8	68 4 8 8.03	8 9.05	20 53 5.7	53 8.5	7.6066	8.051	2.68	3.10	
	9	4 56.9	69 4 8 13.95	8 15.00	20 53 22.2	53 25.1	7.6206	8.067	2.68	3.10	
	10	4 53.1	70 4 8 20.06	8 21.15	20 53 39.3	53 42.3	7.6348	8.080	2.68	3.10	
	11	4 49.2	71 4 8 26.38	8 27.50	20 53 56.9	53 59.9	7.6492	8.092	2.68	3.09	
	12	4 45.4	72 4 8 32.91	8 34.07	20 54 15.0	54 18.1	7.6625	8.104	2.67	3.09	
	13	4 41.6	73 4 8 39.62	8 40.81	20 54 33.6	54 36.8	7.6742	8.118	2.67	3.08	
	14	4 37.8	74 4 8 46.52	8 47.75	20 54 52.7	54 56.0	7.6868	8.132	2.67	3.08	
	15	4 34.0	75 4 8 53.62	8 54.88	20 55 12.6	55 16.0	7.6990	8.140	2.66	3.08	
	16	4 30.2	76 4 9 0.93	9 2.22	20 55 32.7	55 36.2	7.7115	8.151	2.66	3.07	
	17	4 26.4	77 4 9 8.45	9 9.77	20 55 53.3	55 56.9	7.7231	8.162	2.66	3.07	
	18	4 22.6	78 4 9 16.16	9 17.50	20 56 14.4	56 18.1	7.7332	8.172	2.65	3.07	
	19	4 18.8	79 4 9 24.03	9 25.39	20 56 36.0	56 39.7	7.7432	8.182	2.65	3.06	
	20	4 15.0	80 4 9 32.10	9 33.48	20 56 58.2	57 2.0	7.7529	8.194	2.64	3.06	
	21	4 11.2	81 4 9 40.34	9 41.78	20 57 21.1	57 25.0	7.7628	8.203	2.64	3.06	
	22	4 7.4	82 4 9 48.77	9 50.25	20 57 44.3	57 48.2	7.7721	8.209	2.63	3.05	
	23	4 3.6	83 4 9 57.38	9 58.88	20 58 7.8	58 11.8	7.7812	8.216	2.63	3.05	
	24	3 59.8	84 4 10 6.18	10 7.71	20 58 31.7	58 35.7	7.7901	8.222	2.62	3.04	
	25	3 56.1	85 4 10 15.15	10 16.70	20 58 55.8	58 59.9	7.7983	8.227	2.62	3.04	
	26	3 52.3	86 4 10 24.29	10 25.87	20 59 20.2	59 24.4	7.8064	8.234	2.61	3.03	
	27	3 48.5	87 4 10 33.60	10 35.21	20 59 45.1	59 49.3	7.8143	8.239	2.61	3.03	
	28	3 44.7	88 4 10 43.07	10 44.71	21 0 10.2	0 14.5	7.8221	8.245	2.60	3.02	
	29	3 40.9	89 4 10 52.73	10 54.40	21 0 35.7	0 40.0	7.8307	8.250	2.59	3.01	
	30	3 37.2	90 4 11 2.55	11 4.27	21 1 1.6	1 5.8	7.8382	8.256	2.58	3.00	
	31	3 33.5	91 4 11 12.53	11 14.28	21 1 27.8	1 32.0	7.8447	8.262	2.58	2.99	
Apr.	1	3 29.7	92 4 11 22.66	11 24.43	21 1 54.2	1 58.6	7.8508	8.268	2.57	2.98	
	2	3 26.0	93 4 11 32.93	11 34.72	21 2 21.0	2 25.6	7.8568	8.273	2.57	2.97	
	3	3 22.2	94 4 11 43.35	11 45.17	21 2 48.5	2 53.1	7.8627	8.278	2.56	2.96	
	4	3 18.4	95 4 11 53.92	11 55.77	21 3 16.5	3 21.2	7.8685	8.283	2.56	2.94	
	5	3 14.7	96 4 12 4.64	12 6.52	21 3 44.9	3 49.7	7.8742	8.288	2.55	2.93	
	6	3 10.9	97 4 12 15.52	12 17.42	21 4 13.7	4 18.6	7.8798	8.293	2.55	2.91	
	7	3 7.2	98 4 12 26.55	12 28.48	21 4 42.9	4 47.9	7.8853	8.298	2.54	2.89	
	8	3 3.4	99 4 12 37.72	12 39.68	21 5 12.7	5 17.8	7.8907	8.303	2.54	2.87	
	9	2 59.6	100 4 12 49.04	12 51.02	21 5 43.1	5 48.3	7.8961	8.308	2.53	2.86	
	10	2 55.9	101 4 13 0.49	13 2.49	21 6 13.7	6 19.0	7.9014	8.312	2.52	2.84	
	11	2 52.2	102 4 13 12.07	13 14.09	21 6 44.5	6 49.8	7.9066	8.316	2.51	2.82	
	12	2 48.4	103 4 13 23.78	13 25.83	21 7 15.5	7 20.9	7.9117	8.320	2.50	2.80	
	13	2 44.7	104 4 13 35.62	13 37.69	21 7 46.7	7 52.1	7.9167	8.324	2.49	2.78	
	14	2 41.0	105 4 13 47.58	13 49.68	21 8 17.9	8 23.3	7.9217	8.328	2.48	2.75	
	15	2 37.2	106 4 13 59.68	14 1.81	21 8 49.3	8 54.8	7.9254	8.332	2.47	2.72	
	16	2 33.5	107 4 14 11.91	14 14.07	21 9 20.8	9 26.3	7.9300	8.336	2.46	2.69	
	17	2 29.8	108 4 14 24.27	14 26.45	21 9 52.5	9 58.0	7.9345	8.339	2.45	2.66	
	18	2 26.0	109 4 14 36.76	14 38.96	21 10 24.4	10 30.0	7.9389	8.342	2.44	2.63	
	19	2 22.3	110 4 14 49.37	14 51.59	21 10 56.4	11 2.0	7.9444	8.345	2.43	2.60	
	20	2 18.6	111 4 15 2.09	15 4.33	21 11 28.6	11 34.2	7.9484	8.348	2.41	2.56	
	21	2 14.9	112 4 15 14.92	15 17.18	21 12 1.1	12 6.7	7.9522	8.351	2.40	2.52	
	22	2 11.2	113 4 15 27.86	15 30.14	21 12 33.8	12 39.5	7.9558	8.354	2.38	2.48	
	23	2 7.5	114 4 15 40.91	15 43.21	21 13 6.7	13 12.2	7.9592	8.357	2.37	2.44	
	24	2 3.8	115 4 15 54.08	15 56.40	21 13 39.3	13 45.0	7.9625	8.360	2.35	+2.40	
	25	2 0.0	116 4 16 7.33	16 9.69	21 14 12.2	14 18.0	7.9656	8.362	2.34		
	26	1 56.3	117 4 16 20.66	16 23.03	21 14 45.4	14 51.2	7.9685	8.364	2.32		
	27	1 52.6	118 4 16 34.07	16 36.46	21 15 18.8	15 24.7	7.9713	8.366	2.31		
	28	1 48.9	119 4 16 47.56	16 49.97	21 15 52.5	15 58.4	7.9739	8.368	2.30		
	29	1 45.2	120 4 17 1.13	17 3.56	21 16 26.5	16 32.5	7.9764	8.370	2.29		
	30	1 41.5	121 4 17 14.78	17 17.23	21 17 0.7	17 6.8	7.9789	8.372	2.27		
	31	1 37.8	122 4 17 28.51	17 30.98	+21 17 35.1	17 41.2	+7.9813	+ 8.374	+2.25		

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.										
Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of <i>t</i> in Sidereal Minutes.		Log. Coefficient of <i>t</i> ² .		
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
		h. m. s.	m. s.	° ' "	' "					
May	d. h. m.									
	1 1 37.8	122	4 17 28.51	17 30.98	+21 17 35.1	17 41.2	+7.9813	+ 8.374	+2.25	
	2 1 34.1	123	4 17 42.32	17 44.90	21 18 9.7	18 15.9	7.9836	8.376	2.23	
	3 1 30.4	124	4 17 56.21	17 58.71	21 18 44.5	18 50.8	7.9858	8.378	2.21	
	4 1 26.7	125	4 18 10.19	18 12.71	21 19 19.5	19 25.8	7.9880	8.380	2.19	
	5 1 23.0	126	4 18 24.24	18 26.78	21 19 54.5	20 0.8	7.9902	8.382	2.17	
	6 1 19.3	127	4 18 38.36	18 40.92	21 20 29.5	20 35.8	7.9923	8.383	2.15	
	7 1 15.6	128	4 18 52.54	18 55.11	21 21 4.5	21 10.8	7.9943	8.384	2.13	
	8 1 11.9	129	4 19 6.78	19 9.36	21 21 39.5	21 45.9	7.9962	8.385	2.11	
	9 1 8.2	130	4 19 21.09	19 23.69	21 22 14.5	22 21.0	7.9981	8.385	2.08	
	0 1 4.5	131	4 19 35.46	19 38.07	21 22 49.7	22 56.2	7.9999	8.386	+2.06	
	11 1 0.8	132	4 19 49.88	19 52.50	21 23 24.9	23 31.4	8.0016	8.386		
	12 0 57.1	133	4 20 4.35	20 6.98	21 24 0.1	24 6.6	8.0032	8.386		
	13 0 53.4	134	4 20 18.87	20 21.51	21 24 35.3	24 41.8	8.0047	8.386		
	14 0 49.7	135	4 20 33.45	20 36.10	21 25 10.5	25 17.0	8.0060	8.387		
	15 0 46.0	136	4 20 48.07	20 50.73	21 25 45.7	25 52.2	8.0074	8.387		
	16 0 42.3	137	4 21 2.73	21 5.40	21 26 20.9	26 27.4	8.0087	8.387		
	17 0 38.6	138	4 21 17.43	21 20.11	21 26 56.0	27 2.5	8.0099	8.387		
	18 0 34.9	139	4 21 32.17	21 34.86	21 27 31.0	27 37.5	8.0110	8.387		
	19 0 31.3	140	4 21 46.96	21 49.65	21 28 6.0	28 12.5	8.0121	8.386		
	20 0 27.6	141	4 22 1.78	22 4.47	21 28 41.1	28 47.7	8.0129	8.386		
	21 0 23.9	142	4 22 16.62	22 19.32	21 29 16.2	29 22.8	8.0136	8.386		
	22 0 20.2	143	4 22 31.48	22 34.19	21 29 51.3	29 57.9	8.0141	8.386		
	23 0 16.5	144	4 22 46.36	22 49.07	21 30 26.4	30 33.0	8.0144	8.385		
	24 0 12.9	145	4 23 1.24	23 3.96	21 31 1.5	31 8.0	8.0146	8.385		
	25 0 9.2	146	4 23 16.14	23 18.86	21 31 36.4	31 43.0	8.0149	8.385		
	26 0 5.5	147	4 23 31.06	23 33.78	21 32 11.2	32 17.9	8.0151	8.384		
	27 0 1.8	148	4 23 45.99	23 48.72	21 32 45.9	32 52.7	8.0153	8.384		
	27 23 58.1	149	4 24 0.94	24 3.68	21 33 20.5	33 27.4	8.0155	8.383		
	28 23 54.5	150	4 24 15.89	24 18.63	21 33 55.0	34 2.0	8.0157	8.382		
	29 23 50.8	151	4 24 30.83	24 33.57	21 34 29.5	34 36.5	8.0157	8.381		
	30 23 47.1	152	4 24 45.76	24 48.50	21 35 4.0	35 11.0	8.0156	8.380		
	31 23 43.4	153	4 25 0.68	25 3.42	21 35 38.5	35 45.4	8.0154	8.379		
June	1 23 39.7	154	4 25 15.59	25 18.33	21 36 13.0	36 19.7	8.0151	8.377		
	2 23 36.0	155	4 25 30.50	25 33.24	21 36 47.5	36 53.9	8.0148	8.375		
	3 23 32.3	156	4 25 45.39	25 48.13	21 37 21.5	37 28.0	8.0145	8.373		
	4 23 28.6	157	4 26 0.27	26 3.01	21 37 55.4	38 1.9	8.0141	8.371		
	5 23 24.9	158	4 26 15.13	26 17.87	21 38 29.1	38 35.6	8.0136	8.369		
	6 23 21.3	159	4 26 29.98	26 32.72	21 39 2.6	39 9.1	8.0129	8.367		
	7 23 17.6	160	4 26 44.81	26 47.55	21 39 36.0	39 42.5	8.0121	8.366		
	8 23 13.9	161	4 26 59.61	27 2.34	21 40 9.5	40 15.8	8.0113	8.364		
	9 23 10.2	162	4 27 14.38	27 17.11	21 40 42.8	40 49.1	8.0104	8.362		
	10 23 6.5	163	4 27 29.12	27 31.84	21 41 15.9	41 22.1	8.0094	8.360		
	11 23 2.8	164	4 27 43.83	27 46.55	21 41 48.8	41 55.0	8.0083	8.358		-2.14
	12 22 59.1	165	4 27 58.50	28 1.21	21 42 21.5	42 27.7	8.0071	8.356		2.20
	13 22 55.4	166	4 28 13.12	28 15.83	21 42 54.1	43 0.8	8.0059	8.354	-2.08	2.25
	14 22 51.7	167	4 28 27.69	28 30.39	21 43 26.5	43 32.6	8.0046	8.352	2.11	2.30
	15 22 48.0	168	4 28 42.21	28 44.91	21 43 58.6	44 4.7	8.0032	8.349	2.14	2.35
	16 22 44.3	169	4 28 56.68	28 59.37	21 44 30.5	44 36.6	8.0017	8.346	2.16	2.42
	17 22 40.7	170	4 29 11.11	29 13.80	21 45 2.2	45 8.3	8.0000	8.343	2.18	2.48
	18 22 37.0	171	4 29 25.48	29 28.16	21 45 33.9	45 39.9	7.9982	8.340	2.20	2.54
	19 22 33.3	172	4 29 39.78	29 42.45	21 46 5.4	46 11.4	7.9963	8.337	2.22	2.56
	20 22 29.6	173	4 29 54.01	29 56.68	21 46 36.7	46 42.6	7.9943	8.334	2.24	2.61
	21 22 25.9	174	4 30 8.17	30 10.83	21 47 7.8	47 13.6	7.9922	8.331	2.26	2.66
	22 22 22.2	175	4 30 22.29	30 24.93	21 47 38.6	47 44.4	7.9902	8.328	2.27	2.70
	23 22 18.5	176	4 30 36.34	30 38.97	21 48 9.1	48 14.9	7.9880	8.324	2.28	2.73
	24 22 14.8	177	4 30 50.31	30 52.93	21 48 39.4	48 45.1	7.9857	8.320	2.30	2.76
	25 22 11.1	178	4 31 4.20	31 6.80	21 49 9.4	49 15.0	7.9833	8.316	2.31	2.78
	26 22 7.4	179	4 31 18.01	31 20.59	21 49 39.1	49 44.6	7.9808	8.311	2.32	2.79
	27 22 3.7	180	4 31 31.74	31 34.31	21 50 8.5	50 13.9	7.9780	8.306	2.34	2.80
	28 22 0.0	181	4 31 45.41	31 47.96	21 50 37.8	50 43.3	7.9753	8.302	2.35	2.80
	29 21 56.3	182	4 31 58.99	32 1.52	21 51 6.9	51 12.3	7.9725	8.298	2.36	2.81
	30 21 52.6	183	4 32 12.48	32 15.00	+21 51 35.6	51 41.0	+7.9696	+ 8.294	-2.37	-2.81

URANUS, 1860.

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FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Sideral Date.	Apparent Right Ascension.		Apparent Declination.				Log. Coefficient of t in Sideral Minutes.		Log. Coefficient of t^2 .			
				At Sideral Oh.	At Transit.	At Sideral Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.		
d.	h.	m.		h. m. s.	m. s.	$^{\circ}$	$'$	$"$	$'$	$"$					
July	1	21	48.9	184	4 32 25.38	32 28.39	+21	52	4.0	52	9.3	+7.9666	+ 8.290	-2.38	-2.82
	2	21	45.2	185	4 32 39.20	32 41.69	21	52	32.1	52	37.4	7.9635	8.286	2.39	2.82
	3	21	41.5	186	4 32 52.41	32 54.88	21	52	59.9	53	5.1	7.9602	8.282	2.40	2.83
	4	21	37.8	187	4 33 5.52	33 7.97	21	53	27.4	53	32.6	7.9568	8.278	2.41	2.83
	5	21	34.1	188	4 33 18.53	33 20.97	21	53	54.7	53	59.8	7.9533	8.274	2.42	2.84
	6	21	30.4	189	4 33 31.44	33 33.86	21	54	21.8	54	26.9	7.9497	8.270	2.43	2.84
	7	21	26.7	190	4 33 44.24	33 46.64	21	54	48.6	54	53.6	7.9461	8.265	2.45	2.85
	8	21	23.0	191	4 33 56.92	33 59.30	21	55	15.1	55	20.1	7.9424	8.260	2.46	2.85
	9	21	19.3	192	4 34 9.49	34 11.85	21	55	41.4	55	46.3	7.9385	8.255	2.47	2.86
	10	21	15.5	193	4 34 21.95	34 24.29	21	56	7.4	56	12.2	7.9344	8.250	2.48	2.86
	11	21	11.8	194	4 34 34.30	34 36.62	21	56	33.0	56	37.9	7.9301	8.245	2.49	2.87
	12	21	8.1	195	4 34 46.53	34 48.83	21	56	58.6	57	3.3	7.9258	8.240	2.50	2.87
	13	21	4.3	196	4 34 58.63	35 0.91	21	57	23.6	57	28.2	7.9214	8.235	2.51	2.87
	14	21	0.6	197	4 35 10.60	35 12.86	21	57	48.3	57	52.8	7.9169	8.230	2.51	2.88
	15	20	56.9	198	4 35 22.45	35 24.69	21	58	12.6	58	17.0	7.9123	8.224	2.52	2.88
	16	20	53.1	199	4 35 34.18	35 36.40	21	58	36.7	58	41.0	7.9076	8.218	2.53	2.88
	17	20	49.4	200	4 35 45.79	35 47.98	21	59	0.4	59	4.7	7.9030	8.212	2.53	2.89
	18	20	45.6	201	4 35 57.27	35 59.44	21	59	23.9	59	28.2	7.8980	8.206	2.54	2.89
	19	20	41.9	202	4 36 8.61	36 10.75	21	59	47.0	59	51.2	7.8928	8.200	2.54	2.89
	20	20	38.1	203	4 36 19.81	36 21.93	22	0	9.9	0	14.0	7.8874	8.193	2.55	2.90
	21	20	34.4	204	4 36 30.87	36 32.96	22	0	32.5	0	36.5	7.8818	8.186	2.55	2.90
	22	20	30.6	205	4 36 41.79	36 43.86	22	0	54.7	0	58.7	7.8762	8.179	2.56	2.90
	23	20	26.9	206	4 36 52.58	36 54.62	22	1	16.6	1	20.5	7.8703	8.172	2.57	2.91
	24	20	23.1	207	4 37 3.21	37 5.23	22	1	38.1	1	41.9	7.8642	8.165	2.57	2.91
	25	20	19.4	208	4 37 13.68	37 15.67	22	1	59.1	2	2.9	7.8579	8.158	2.58	2.92
	26	20	15.6	209	4 37 23.98	37 25.94	22	2	19.8	2	23.6	7.8514	8.151	2.59	2.92
	27	20	11.9	210	4 37 34.13	37 36.06	22	2	40.1	2	43.9	7.8448	8.143	2.60	2.93
	28	20	8.1	211	4 37 44.13	37 46.03	22	3	0.1	3	3.8	7.8378	8.135	2.61	2.93
	29	20	4.3	212	4 37 53.97	37 55.84	22	3	19.7	3	23.3	7.8306	8.127	2.61	2.93
	30	20	0.6	213	4 38 3.65	38 5.49	22	3	39.1	3	42.6	7.8239	8.118	2.62	2.94
	31	19	56.8	214	4 38 13.17	38 14.98	22	3	58.2	4	1.7	7.8169	8.109	2.62	2.94
Aug.	1	19	53.0	215	4 38 22.54	38 24.31	22	4	17.1	4	20.5	7.8094	8.100	2.63	2.94
	2	19	49.3	216	4 38 31.74	38 33.48	22	4	35.5	4	38.8	7.8014	8.091	2.63	2.95
	3	19	45.5	217	4 38 40.77	38 42.48	22	4	53.6	4	56.9	7.7930	8.082	2.64	2.95
	4	19	41.7	218	4 38 49.62	38 51.30	22	5	11.3	5	14.5	7.7841	8.073	2.64	2.95
	5	19	37.9	219	4 38 58.29	38 59.94	22	5	28.5	5	31.6	7.7753	8.064	2.65	2.96
	6	19	34.1	220	4 39 6.79	39 8.40	22	5	45.3	5	48.4	7.7664	8.054	2.65	2.96
	7	19	30.3	221	4 39 15.11	39 16.68	22	6	1.7	6	4.7	7.7572	8.044	2.65	2.96
	8	19	26.5	222	4 39 23.26	39 24.79	22	6	17.8	6	20.7	7.7482	8.034	2.66	2.96
	9	19	22.7	223	4 39 31.24	39 32.74	22	6	33.5	6	36.3	7.7390	8.023	2.66	2.97
	10	19	18.9	224	4 39 39.05	39 40.51	22	6	48.7	6	51.5	7.7289	8.012	2.67	2.97
	11	19	15.1	225	4 39 46.67	39 48.09	22	7	3.5	7	6.3	7.7181	8.001	2.67	2.97
	12	19	11.3	226	4 39 54.10	39 55.49	22	7	18.0	7	20.7	7.7068	7.990	2.67	2.98
	13	19	7.5	227	4 40 1.33	40 2.68	22	7	32.2	7	34.8	7.6947	7.979	2.68	2.98
	14	19	3.7	228	4 40 8.36	40 9.67	22	7	46.0	7	48.5	7.6824	7.967	2.68	2.98
	15	18	59.9	229	4 40 15.19	40 16.46	22	7	59.4	8	1.9	7.6700	7.955	2.69	2.98
	16	18	56.0	230	4 40 21.83	40 23.07	22	8	12.5	8	14.9	7.6573	7.942	2.69	2.99
	17	18	52.2	231	4 40 28.27	40 29.47	22	8	25.2	8	27.5	7.6441	7.929	2.70	2.99
	18	18	48.4	232	4 40 34.52	40 35.68	22	8	37.5	8	39.7	7.6308	7.915	2.70	2.99
	19	18	44.6	233	4 40 40.58	40 41.70	22	8	49.3	8	51.4	7.6172	7.900	2.70	2.99
	20	18	40.6	234	4 40 46.45	40 47.53	22	9	0.7	9	2.7	7.6024	7.884	2.71	2.99
	21	18	36.8	235	4 40 52.11	40 53.16	22	9	11.7	9	13.7	7.5867	7.868	2.71	2.99
	22	18	32.9	236	4 40 57.57	40 58.58	22	9	23.3	9	24.2	7.5708	7.852	2.71	2.99
	23	18	29.1	237	4 41 2.83	41 3.80	22	9	32.5	9	34.3	7.5542	7.835	2.72	2.99
	24	18	25.3	238	4 41 7.89	41 8.83	22	9	42.3	9	44.0	7.5371	7.818	2.72	2.99
	25	18	21.5	239	4 41 12.75	41 13.65	22	9	51.8	9	53.4	7.5183	7.800	2.72	3.00
	26	18	17.6	240	4 41 17.39	41 18.25	22	10	1.0	10	2.5	7.4982	7.781	2.72	3.00
	27	18	13.8	241	4 41 21.82	41 22.63	22	10	9.7	10	11.2	7.4776	7.761	2.73	3.00
	28	18	9.9	242	4 41 26.04	41 26.81	22	10	17.9	10	19.4	7.4560	7.739	2.73	3.00
	29	18	6.0	243	4 41 30.05	41 30.78	22	10	25.8	10	27.2	7.4333	7.714	2.73	3.00
	30	18	2.2	244	4 41 33.85	41 34.54	22	10	33.2	10	34.6	7.4081	7.689	2.73	3.00
	31	17	58.3	245	4 41 37.42	41 38.08	+22	10	40.3	10	41.6	+7.3813	+ 7.661	-2.73	-3.00

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Table with columns: Mean Solar Time of Meridian Transit (d. h. m.), Sidereal Date, Apparent Right Ascension (At Sidereal Oh., At Transit.), Apparent Declination (At Sidereal Oh., At Transit.), Log. Coefficient of t in Sidereal Minutes (In R.A., In Dec.), and Log. Coefficient of t^2 (In R.A., In Dec.). Rows are grouped by month (Sept. and Oct.) and day.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Side- real Date.	Apparent Right Ascension.		Apparent Declination.				Log. Coefficient of <i>t</i> in Sidereal Minutes.		Log. Coefficient of <i>t</i> ² .	
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.			In R.A.	In Dec.	In R.A.	In Dec.
		h. m. s.	m. s.	° ' "	° ' "	° ' "	° ' "	° ' "			
Nov. 1 13 51.4	307	4 36 27.42	38 25.73	+22 5 2.0	4 58.9	-7.7849	-8.062	-2.50	-2.85		
2 13 47.3	308	4 38 18.60	38 16.88	22 4 45.2	4 42.0	7.7913	8.070	2.49	2.85		
3 13 43.2	309	4 38 9.66	38 7.92	22 4 28.1	4 24.9	7.7975	8.078	2.48	2.84		
4 13 39.1	310	4 38 0.61	37 58.84	22 4 10.8	4 7.5	7.8035	8.085	2.47	2.83		
5 13 35.1	311	4 37 51.43	37 49.64	22 3 53.1	3 49.7	7.8095	8.092	2.46	2.82		
6 13 31.0	312	4 37 42.12	37 40.31	22 3 35.1	3 31.7	7.8149	8.098	2.45	2.81		
7 13 26.9	313	4 37 32.70	37 30.87	22 3 16.9	3 13.4	7.8200	8.104	2.44	2.80		
8 13 22.8	314	4 37 23.16	37 21.32	22 2 58.5	2 55.0	7.8248	8.110	2.43	2.79		
9 13 18.7	315	4 37 13.50	37 11.64	22 2 39.8	2 36.3	7.8292	8.116	2.42	2.78		
10 13 14.6	316	4 37 3.74	37 1.86	22 2 20.9	2 17.3	7.8334	8.121	2.41	2.77		
11 13 10.5	317	4 36 53.90	36 52.00	22 2 1.9	1 58.3	7.8374	8.126	2.39	2.75		
12 13 6.4	318	4 36 43.98	36 42.06	22 1 42.9	1 39.1	7.8412	8.131	2.38	2.74		
13 13 2.3	319	4 36 33.98	36 32.04	22 1 23.3	1 19.6	7.8448	8.135	2.36	2.73		
14 12 58.2	320	4 36 23.88	36 21.93	22 1 3.6	0 59.9	7.8480	8.139	2.34	2.72		
15 12 54.1	321	4 36 13.69	36 11.73	22 0 43.8	0 40.1	7.8516	8.143	2.31	2.70		
16 12 50.0	322	4 36 3.42	36 1.45	22 0 23.8	0 20.0	7.8545	8.147	2.27	2.68		
17 12 45.9	323	4 35 53.09	35 51.11	22 0 3.7	59 59.9	7.8571	8.150	2.23	2.65		
18 12 41.8	324	4 35 42.71	35 40.72	21 59 43.4	59 39.6	7.8594	8.153	2.18	2.62		
19 12 37.7	325	4 35 32.28	35 30.28	21 59 22.9	59 19.1	7.8615	8.156	2.13	2.59		
20 12 33.5	326	4 35 21.79	35 19.78	21 59 2.2	58 58.3	7.8634	8.158	-2.07	2.56		
21 12 29.4	327	4 35 11.24	35 9.22	21 58 41.4	58 37.6	7.8652	8.161		2.52		
22 12 25.3	328	4 35 0.64	34 58.61	21 58 20.5	58 16.7	7.8669	8.163		2.48		
23 12 21.2	329	4 34 49.99	34 47.95	21 57 59.5	57 55.7	7.8685	8.165		2.45		
24 12 17.0	330	4 34 39.31	34 37.26	21 57 38.6	57 34.7	7.8700	8.167		2.41		
25 12 12.9	331	4 34 28.59	34 26.54	21 57 17.5	57 13.6	7.8713	8.169		-2.38		
26 12 8.8	332	4 34 17.85	34 15.80	21 56 56.2	56 52.3	7.8724	8.171				
27 12 4.7	333	4 34 7.09	34 5.04	21 56 34.8	56 30.9	7.8733	8.173				
28 12 0.6	334	4 33 56.31	33 54.26	21 56 13.3	56 9.3	7.8740	8.174				
29 11 56.5	335	4 33 45.52	33 43.47	21 55 51.6	55 47.6	7.8746	8.175				
30 11 52.4	336	4 33 34.72	33 32.67	21 55 29.9	55 25.9	7.8750	8.176				
Dec. 1 11 48.3	337	4 33 23.92	33 21.87	21 55 8.2	55 4.2	7.8751	8.177				
2 11 44.2	338	4 33 13.12	33 11.07	21 54 46.4	54 42.4	7.8750	8.179				
3 11 40.1	339	4 33 2.32	33 0.27	21 54 24.5	54 20.5	7.8748	8.180				
4 11 35.9	340	4 32 51.51	32 49.47	21 54 2.5	53 58.5	7.8746	8.182				
5 11 31.8	341	4 32 40.72	32 38.69	21 53 40.6	53 36.6	7.8740	8.182				
6 11 27.7	342	4 32 29.96	32 27.94	21 53 18.7	53 14.7	7.8731	8.183				
7 11 23.6	343	4 32 19.23	32 17.22	21 52 56.8	52 52.8	7.8719	8.183				
8 11 19.5	344	4 32 8.53	32 6.53	21 52 34.8	52 30.8	7.8704	8.183				
9 11 15.4	345	4 31 57.87	31 55.88	21 52 12.8	52 8.9	7.8684	8.182				
10 11 11.3	346	4 31 47.25	31 45.27	21 51 51.0	51 47.1	7.8664	8.181				
11 11 7.2	347	4 31 36.67	31 34.70	21 51 29.3	51 25.4	7.8642	8.180	+2.05			
12 11 3.1	348	4 31 26.14	31 24.18	21 51 7.7	51 3.8	7.8618	8.178	2.11			
13 10 59.0	349	4 31 15.66	31 13.71	21 50 46.1	50 42.2	7.8592	8.175	2.16			
14 10 54.8	350	4 31 5.23	31 3.29	21 50 24.6	50 20.7	7.8564	8.172	2.20			
15 10 50.7	351	4 30 54.87	30 52.94	21 50 3.3	49 59.5	7.8535	8.170	2.24			
16 10 46.6	352	4 30 44.59	30 42.67	21 49 42.1	49 38.3	7.8505	8.167	2.27			
17 10 42.5	353	4 30 34.38	30 32.47	21 49 21.0	49 17.2	7.8477	8.165	2.30			
18 10 38.4	354	4 30 24.24	30 22.35	21 49 0.0	48 56.2	7.8443	8.163	2.33			
19 10 34.3	355	4 30 14.17	30 12.30	21 48 39.2	48 35.4	7.8400	8.160	2.35			
20 10 30.2	356	4 30 4.19	30 2.34	21 48 18.5	48 14.7	7.8360	8.157	2.38	+2.38		
21 10 26.1	357	4 29 54.31	29 52.48	21 47 58.0	47 54.3	7.8319	8.155	2.40	2.40		
22 10 22.0	358	4 29 44.53	29 42.72	21 47 37.6	47 33.9	7.8277	8.152	2.42	2.44		
23 10 17.9	359	4 29 34.85	29 33.06	21 47 17.3	47 13.6	7.8234	8.149	2.44	2.47		
24 10 13.8	360	4 29 25.28	29 23.51	21 46 57.0	46 53.3	7.8188	8.147	2.46	2.50		
25 10 9.7	361	4 29 15.82	29 14.07	21 46 36.9	46 33.2	7.8140	8.144	2.47	2.54		
26 10 5.6	362	4 29 6.48	29 4.76	21 46 16.9	46 13.2	7.8090	8.140	2.48	2.57		
27 10 1.5	363	4 28 57.26	28 55.56	21 45 57.1	45 53.4	7.8038	8.136	2.49	2.60		
28 9 57.4	364	4 28 48.16	28 46.49	21 45 37.4	45 33.8	7.7984	8.131	2.50	2.62		
29 9 53.3	365	4 28 39.18	28 37.53	21 45 18.0	45 14.5	7.7928	8.126	2.51	2.65		
30 9 49.2	366	4 28 30.32	28 28.70	21 44 58.8	44 55.3	7.7870	8.121	2.52	2.67		
31 9 45.1	367	4 28 21.57	28 19.97	+21 44 39.8	44 36.4	-7.7810	-8.116	+2.53	+2.69		

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.			Sidereal Date.	Apparent Right Ascension.				Apparent Declination.				Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t ² .	
				At Sidereal Oh.		At Transit.		At Sidereal Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.
d.	h. m.		h. m. s.	m. s.	o' i' s"	i' s"	o' i' s"	i' s"							
Jan.	0	5 2.8	0	23 42 2.76	42 2.72	- 3 20 3.9	20 4.1	+7.3445	+ 8.202	+2.48	+3.87				
	1	4 59.0	1	23 42 6.00	42 5.95	3 19 40.6	19 40.8	7.3604	8.216	2.48	3.27				
	2	4 55.1	2	23 42 9.36	42 9.31	3 19 16.6	19 16.9	7.3754	8.229	2.47	3.26				
	3	4 51.2	3	23 42 12.83	42 12.78	3 18 51.8	18 52.2	7.3900	8.242	2.47	3.26				
	4	4 47.3	4	23 42 16.42	42 16.37	3 18 26.3	18 26.6	7.4041	8.254	2.47	3.26				
	5	4 43.5	5	23 42 20.13	42 20.08	3 18 0.1	18 0.4	7.4177	8.266	2.46	3.26				
	6	4 39.6	6	23 42 23.95	42 23.90	3 17 33.2	17 33.5	7.4308	8.278	2.46	3.25				
	7	4 35.7	7	23 42 27.89	42 27.84	3 17 5.5	17 5.8	7.4434	8.289	2.46	3.25				
	8	4 31.9	8	23 42 31.94	42 31.89	3 16 37.1	16 37.4	7.4555	8.300	2.45	3.25				
	9	4 28.0	9	23 42 36.11	42 36.06	3 16 8.0	16 8.3	7.4673	8.311	2.45	3.24				
	10	4 24.1	10	23 42 40.39	42 40.33	3 15 38.2	15 38.6	7.4785	8.322	2.44	3.24				
	11	4 20.3	11	23 42 44.78	42 44.72	3 15 7.7	15 8.1	7.4897	8.332	2.44	3.23				
	12	4 16.4	12	23 42 49.28	42 49.22	3 14 36.4	14 36.8	7.5004	8.342	2.43	3.23				
	13	4 12.6	13	23 42 53.89	42 53.83	3 14 4.5	14 4.9	7.5107	8.351	2.43	3.22				
	14	4 8.7	14	23 42 58.61	42 58.55	3 13 31.9	13 32.3	7.5206	8.360	2.42	3.22				
	15	4 4.9	15	23 42 58.43	42 58.37	3 12 58.6	12 59.0	7.5302	8.368	2.42	3.21				
	16	4 1.0	16	23 42 58.36	42 58.30	3 12 24.7	12 25.1	7.5393	8.376	2.41	3.21				
	17	3 57.2	17	23 42 58.40	42 58.34	3 11 50.1	11 50.5	7.5482	8.384	2.41	3.20				
	18	3 53.3	18	23 42 58.54	42 58.48	3 11 14.9	11 15.3	7.5568	8.392	2.40	3.20				
	19	3 49.5	19	23 42 58.78	42 58.72	3 10 39.1	10 39.5	7.5651	8.400	2.40	3.19				
	20	3 45.6	20	23 42 59.12	42 59.06	3 10 2.7	10 3.1	7.5732	8.407	2.39	3.18				
	21	3 41.8	21	23 42 59.56	42 59.50	3 9 25.6	9 26.0	7.5810	8.414	2.38	3.17				
	22	3 37.9	22	23 42 60.10	43 00.04	3 8 47.9	8 48.3	7.5886	8.421	2.38	3.17				
	23	3 34.1	23	23 42 60.74	43 00.68	3 8 9.7	8 10.1	7.5960	8.427	2.37	3.16				
	24	3 30.2	24	23 42 61.47	43 01.41	3 7 30.9	7 31.3	7.6038	8.434	2.36	3.15				
	25	3 26.4	25	23 42 62.29	43 02.23	3 6 51.5	6 51.9	7.6103	8.440	2.35	3.14				
	26	3 22.5	26	23 42 63.21	43 03.15	3 6 11.6	6 12.0	7.6171	8.446	2.35	3.14				
	27	3 18.7	27	23 42 64.21	43 04.15	3 5 31.0	5 31.5	7.6237	8.452	2.34	3.13				
	28	3 14.9	28	23 42 65.29	43 05.23	3 4 50.0	4 50.5	7.6299	8.458	2.33	3.12				
	29	3 11.1	29	23 42 66.44	43 06.44	3 4 8.4	4 8.9	7.6361	8.463	2.32	3.11				
	30	3 7.2	30	23 42 67.75	43 07.78	3 3 26.3	3 26.8	7.6420	8.469	2.32	3.10				
	31	3 3.4	31	23 42 69.21	43 09.34	3 2 43.7	2 44.2	7.6476	8.474	2.31	3.09				
Feb.	1	2 59.6	32	23 42 70.83	43 11.03	3 2 0.5	2 1.0	7.6530	8.479	2.30	3.08				
	2	2 55.7	33	23 42 72.51	43 12.85	3 1 16.9	1 17.4	7.6582	8.484	2.29	3.07				
	3	2 51.9	34	23 42 74.33	43 14.81	3 0 32.8	0 33.3	7.6633	8.489	2.28	3.06				
	4	2 48.1	35	23 42 76.30	43 16.92	2 59 48.2	59 48.7	7.6682	8.494	2.27	3.05				
	5	2 44.3	36	23 42 78.44	43 19.27	2 59 3.1	59 3.6	7.6730	8.498	2.26	3.04				
	6	2 40.5	37	23 42 80.74	43 21.87	2 58 17.6	58 18.1	7.6776	8.502	2.25	3.03				
	7	2 36.6	38	23 42 83.29	43 24.63	2 57 31.7	57 31.2	7.6821	8.506	2.24	3.02				
	8	2 32.8	39	23 42 86.01	43 27.54	2 56 45.3	56 45.8	7.6865	8.510	2.23	3.01				
	9	2 29.0	40	23 42 88.90	43 30.61	2 55 58.5	55 59.0	7.6908	8.514	2.22	3.00				
	10	2 25.2	41	23 42 91.94	43 33.84	2 55 11.3	55 11.8	7.6950	8.517	2.21	2.98				
	11	2 21.4	42	23 42 95.14	43 37.24	2 54 23.7	54 24.2	7.6990	8.521	2.20	2.97				
	12	2 17.6	43	23 42 98.50	43 40.81	2 53 35.7	53 36.2	7.7029	8.524	2.19	2.96				
	13	2 13.8	44	23 42 102.03	43 44.54	2 52 47.4	52 47.9	7.7066	8.528	2.18	2.95				
	14	2 10.0	45	23 42 105.74	43 48.44	2 51 58.7	51 59.2	7.7101	8.531	2.16	2.93				
	15	2 6.2	46	23 42 109.61	43 52.51	2 51 9.7	51 10.2	7.7135	8.534	2.15	2.92				
	16	2 2.4	47	23 42 113.64	43 56.74	2 50 20.3	50 20.8	7.7167	8.537	2.14	2.90				
	17	1 58.6	48	23 42 117.84	43 61.14	2 49 30.6	49 31.1	7.7198	8.540	2.13	2.88				
	18	1 54.8	49	23 42 122.21	43 65.71	2 48 40.5	48 41.0	7.7228	8.543	2.11	2.86				
	19	1 51.0	50	23 42 126.74	43 70.44	2 47 50.1	47 50.5	7.7257	8.545	2.10	2.84				
	20	1 47.2	51	23 42 131.44	43 75.34	2 46 59.5	46 59.9	7.7286	8.547	2.08	2.82				
	21	1 43.4	52	23 42 136.31	43 80.41	2 46 8.6	46 9.0	7.7313	8.549	2.07	2.80				
	22	1 39.6	53	23 42 141.34	43 85.64	2 45 17.5	45 17.9	7.7340	8.551	2.05	2.78				
	23	1 35.8	54	23 42 146.54	43 91.04	2 44 26.1	44 26.5	7.7366	8.553	2.04	2.76				
	24	1 32.0	55	23 42 151.91	43 96.61	2 43 34.5	43 34.9	7.7390	8.555	2.02	2.73				
	25	1 28.2	56	23 42 157.44	43 102.34	2 42 42.6	42 43.0	7.7412	8.557	2.00	+2.70				
	26	1 24.4	57	23 42 163.14	43 108.24	2 41 50.5	41 50.9	7.7434	8.559	1.98					
	27	1 20.6	58	23 42 169.01	43 114.31	2 40 58.2	40 58.6	7.7455	8.561	1.96					
	28	1 16.8	59	23 42 175.04	43 120.54	2 40 5.7	40 6.1	7.7474	8.563	1.93					
	29	1 13.0	60	23 42 181.34	43 127.04	2 39 13.0	39 13.4	7.7492	8.565	1.90					
	30	1 9.2	61	23 42 187.91	43 133.81	2 38 20.2	38 20.6	+7.7509	+ 8.566	+1.86					

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Data.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
		h. m. s.	m. s.	° ' "	' "				
Mar. 1 1 9.2	61	23 48 15.48	48 15.41	- 2 38 20.2	38 20.6	+7.7509	+ 8.566	+1.86	
2 1 5.4	62	23 48 23.61	48 23.54	2 37 27.2	37 27.6	7.7524	8.567	+1.82	
3 1 1.6	63	23 48 31.76	48 31.69	2 36 34.1	36 34.5	7.7539	8.568		
4 0 57.8	64	23 48 39.94	48 39.87	2 35 40.8	35 41.2	7.7553	8.569		
5 0 54.0	65	23 48 48.14	48 48.07	2 34 47.5	34 47.9	7.7565	8.570		
6 0 50.2	66	23 48 56.37	48 56.30	2 33 54.1	33 54.5	7.7576	8.571		
7 0 46.4	67	23 49 4.62	49 4.55	2 33 0.6	33 1.0	7.7586	8.571		
8 0 42.6	68	23 49 12.89	49 12.82	2 32 7.0	32 7.4	7.7595	8.572		
9 0 38.8	69	23 49 21.17	49 21.10	2 31 13.3	31 13.7	7.7603	8.572		
10 0 35.0	70	23 49 29.47	49 29.40	2 30 19.6	30 20.0	7.7611	8.573		
11 0 31.2	71	23 49 37.78	49 37.71	2 29 25.8	29 26.2	7.7618	8.573		
12 0 27.4	72	23 49 46.10	49 46.03	2 28 32.0	28 32.4	7.7623	8.573		
13 0 23.6	73	23 49 54.43	49 54.37	2 27 38.1	27 38.5	7.7628	8.573		
14 0 19.8	74	23 50 2.76	50 2.70	2 26 44.2	26 44.5	7.7630	8.573		
15 0 16.0	75	23 50 11.10	50 11.04	2 25 50.3	25 50.6	7.7631	8.573		
16 0 12.2	76	23 50 19.44	50 19.38	2 24 56.4	24 56.7	7.7630	8.573		
17 0 8.5	77	23 50 27.79	50 27.73	2 24 2.6	24 2.9	7.7628	8.573		
18 0 4.7	78	23 50 36.13	50 36.07	2 23 8.8	23 9.1	7.7627	8.573		
19 0 0.9	79	23 50 44.47	50 44.41	2 22 15.0	22 15.3	7.7625	8.573		
19 23 57.1	80	23 50 52.81	50 52.75	2 21 21.3	21 21.6	7.7623	8.572		
20 23 53.3	81	23 51 1.14	51 1.08	2 20 27.7	20 28.0	7.7621	8.571		
21 28 49.5	82	23 51 9.47	51 9.41	2 19 34.2	19 34.5	7.7618	8.570		
22 23 45.7	83	23 51 17.80	51 17.75	2 18 40.8	18 41.1	7.7614	8.569		
23 23 41.9	84	23 51 26.11	51 26.06	2 17 47.6	17 47.9	7.7610	8.568		
24 23 38.1	85	23 51 34.41	51 34.36	2 16 54.5	16 54.8	7.7602	8.567		
25 23 34.3	86	23 51 42.69	51 42.64	2 16 1.5	16 1.8	7.7593	8.566		
26 23 30.6	87	23 51 50.95	51 50.90	2 15 8.7	15 9.0	7.7583	8.565		
27 23 26.8	88	23 51 59.20	51 59.15	2 14 16.0	14 16.3	7.7572	8.563		
28 23 23.0	89	23 52 7.43	52 7.38	2 13 23.5	13 23.8	7.7560	8.562		
29 23 19.2	90	23 52 15.63	52 15.58	2 12 31.1	12 31.4	7.7548	8.560		
30 23 15.4	91	23 52 23.81	52 23.77	2 11 38.9	11 39.2	7.7536	8.558		-2.69
31 23 11.6	92	23 52 31.97	52 31.93	2 10 47.0	10 47.3	7.7522	8.556	-1.78	2.73
Apr. 1 23 7.8	93	23 52 40.10	52 40.06	2 9 55.3	9 55.6	7.7507	8.554	1.82	2.76
2 23 4.0	94	23 52 48.19	52 48.15	2 9 3.8	9 4.1	7.7492	8.552	1.85	2.78
3 23 0.2	95	23 52 56.26	52 56.22	2 8 12.5	8 12.8	7.7475	8.550	1.88	2.80
4 23 56.4	96	23 53 4.29	53 4.25	2 7 21.5	7 21.8	7.7458	8.548	1.91	2.82
5 23 52.6	97	23 53 12.29	53 12.25	2 6 30.8	6 31.1	7.7439	8.546	1.94	2.84
6 23 48.8	98	23 53 20.26	53 20.22	2 5 40.3	5 40.6	7.7420	8.543	1.96	2.85
7 23 45.0	99	23 53 28.19	53 28.16	2 4 50.1	4 50.3	7.7400	8.541	1.99	2.87
8 23 41.2	100	23 53 36.08	53 36.05	2 4 0.2	4 0.4	7.7378	8.538	2.01	2.88
9 23 37.4	101	23 53 43.93	53 43.90	2 3 10.7	3 10.9	7.7355	8.536	2.08	2.90
10 23 33.6	102	23 53 51.74	53 51.71	2 2 21.5	2 21.7	7.7331	8.533	2.05	2.91
11 23 29.8	103	23 53 59.51	53 59.48	2 1 32.6	1 32.8	7.7307	8.530	2.07	2.93
12 23 26.0	104	23 54 7.23	54 7.20	2 0 44.0	0 44.2	7.7281	8.527	2.08	2.94
13 23 22.2	105	23 54 14.91	54 14.88	1 59 55.8	59 56.0	7.7253	8.524	2.09	2.95
14 23 18.4	106	23 54 22.53	54 22.50	1 59 7.9	59 8.1	7.7224	8.520	2.10	2.96
15 23 14.6	107	23 54 30.10	54 30.08	1 58 20.4	58 20.6	7.7193	8.517	2.12	2.98
16 23 10.8	108	23 54 37.62	54 37.60	1 57 33.3	57 33.5	7.7162	8.513	2.13	2.99
17 23 7.0	109	23 54 45.08	54 45.06	1 56 46.6	56 46.8	7.7130	8.509	2.14	3.00
18 23 3.1	110	23 54 52.49	54 52.47	1 56 0.3	56 0.5	7.7097	8.505	2.15	3.01
19 21 59.3	111	23 54 59.84	54 59.82	1 55 14.4	55 14.6	7.7062	8.501	2.16	3.02
20 21 55.5	112	23 55 7.13	55 7.11	1 54 28.9	54 29.1	7.7026	8.497	2.17	3.03
21 21 51.7	113	23 55 14.36	55 14.34	1 53 43.8	53 44.0	7.6988	8.493	2.18	3.04
22 21 47.9	114	23 55 21.52	55 21.50	1 52 59.2	52 59.4	7.6949	8.489	2.19	3.05
23 21 44.1	115	23 55 28.62	55 28.60	1 52 15.0	52 15.2	7.6910	8.485	2.20	3.06
24 21 40.3	116	23 55 35.65	55 35.63	1 51 31.3	51 31.5	7.6870	8.480	2.21	3.07
25 21 36.5	117	23 55 42.62	55 42.60	1 50 48.1	50 48.3	7.6827	8.475	2.22	3.08
26 21 32.6	118	23 55 49.52	55 49.50	1 50 5.4	50 5.6	7.6783	8.470	2.23	3.08
27 21 28.8	119	23 55 56.35	55 56.33	1 49 23.2	49 23.4	7.6739	8.465	2.24	3.09
28 21 25.0	120	23 56 3.11	56 3.09	1 48 41.5	48 41.7	7.6693	8.460	2.25	3.10
29 21 21.2	121	23 56 9.80	56 9.78	1 48 0.2	48 0.4	7.6644	8.455	2.26	3.10
30 21 17.3	122	23 56 16.41	56 16.39	- 1 47 19.5	47 19.7	+7.6595	+ 8.449	-2.27	-3.11

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.													
Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.				Apparent Declination.				Log. Coefficient of <i>t</i> in Sidereal Minutes.		Log. Coefficient of <i>t</i> ² .	
		At Sidereal Oh.		At Transit.		At Sidereal Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.
		h.	m.	s.	m.	s.	°	'	"	°	'	"	"
May 1 21 13.5	123	23 56 22.95	56 22.94	-	1 46 39.3	46 39.4	+7.6546	+ 8.443	-2.28	-3.11			
2 21 9.7	124	23 56 29.41	56 29.40	1 45 59.6	45 59.7	7.6495	8.437	2.29	3.12				
3 21 5.9	125	23 56 35.79	56 35.78	1 45 20.5	45 20.6	7.6442	8.431	2.30	3.12				
4 21 2.0	126	23 56 42.10	56 42.09	1 44 41.9	44 42.0	7.6387	8.425	2.30	3.13				
5 20 58.2	127	23 56 48.33	56 48.32	1 44 3.9	44 4.0	7.6331	8.419	2.31	3.14				
6 20 54.4	128	23 56 54.47	56 54.46	1 43 26.5	43 26.6	7.6273	8.412	2.32	3.15				
7 20 50.6	129	23 57 0.53	57 0.52	1 42 49.6	42 49.7	7.6213	8.405	2.33	3.16				
8 20 46.7	130	23 57 6.51	57 6.50	1 42 13.3	42 13.4	7.6151	8.398	2.33	3.16				
9 20 42.9	131	23 57 12.40	57 12.39	1 41 37.6	41 37.7	7.6087	8.391	2.34	3.17				
10 20 39.1	132	23 57 18.20	57 18.19	1 41 2.5	41 2.6	7.6021	8.383	2.34	3.17				
11 20 35.3	133	23 57 23.91	57 23.90	1 40 28.0	40 28.1	7.5954	8.376	2.35	3.18				
12 20 31.4	134	23 57 29.54	57 29.53	1 39 54.1	39 54.2	7.5884	8.368	2.35	3.18				
13 20 27.6	135	23 57 35.08	57 35.07	1 39 20.8	39 20.9	7.5812	8.360	2.36	3.19				
14 20 23.8	136	23 57 40.52	57 40.51	1 38 48.2	38 48.3	7.5737	8.352	2.36	3.19				
15 20 19.9	137	23 57 45.87	57 45.86	1 38 16.3	38 16.3	7.5659	8.343	2.37	3.20				
16 20 16.1	138	23 57 51.12	57 51.11	1 37 44.8	37 44.9	7.5580	8.334	2.37	3.20				
17 20 12.3	139	23 57 56.28	57 56.28	1 37 14.1	37 14.2	7.5499	8.325	2.38	3.21				
18 20 8.4	140	23 58 1.34	58 1.34	1 36 44.0	36 44.1	7.5416	8.315	2.38	3.21				
19 20 4.6	141	23 58 6.30	58 6.30	1 36 14.6	36 14.7	7.5331	8.305	2.39	3.22				
20 20 0.7	142	23 58 11.17	58 11.17	1 35 45.9	35 46.0	7.5242	8.295	2.39	3.22				
21 19 56.9	143	23 58 15.94	58 15.94	1 35 17.9	35 18.0	7.5150	8.285	2.40	3.22				
22 19 53.0	144	23 58 20.60	58 20.60	1 34 50.5	34 50.6	7.5055	8.274	2.40	3.23				
23 19 49.2	145	23 58 25.16	58 25.16	1 34 23.8	34 23.9	7.4957	8.263	2.41	3.23				
24 19 45.3	146	23 58 29.62	58 29.62	1 33 57.8	33 57.9	7.4856	8.251	2.41	3.23				
25 19 41.5	147	23 58 33.97	58 33.97	1 33 32.5	33 32.5	7.4752	8.239	2.41	3.23				
26 19 37.6	148	23 58 38.22	58 38.22	1 33 7.9	33 7.9	7.4644	8.227	2.42	3.24				
27 19 33.7	149	23 58 42.36	58 42.36	1 32 44.0	32 44.0	7.4531	8.214	2.42	3.24				
28 19 29.8	150	23 58 46.40	58 46.40	1 32 20.8	32 20.8	7.4415	8.201	2.42	3.24				
29 19 26.0	151	23 58 50.33	58 50.33	1 31 58.3	31 58.3	7.4297	8.187	2.42	3.24				
30 19 22.1	152	23 58 54.15	58 54.15	1 31 36.6	31 36.6	7.4175	8.172	2.43	3.25				
31 19 18.2	153	23 58 57.86	58 57.86	1 31 15.6	31 15.6	7.4050	8.157	2.43	3.25				
June 1 19 14.3	154	23 59 1.47	59 1.47	1 30 55.3	30 55.3	7.3920	8.141	2.43	3.25				
2 19 10.5	155	23 59 4.97	59 4.97	1 30 35.7	30 35.7	7.3785	8.125	2.43	3.25				
3 19 6.6	156	23 59 8.35	59 8.35	1 30 16.9	30 16.9	7.3644	8.108	2.44	3.26				
4 19 2.7	157	23 59 11.62	59 11.62	1 29 58.8	29 58.8	7.3498	8.091	2.44	3.26				
5 18 58.8	158	23 59 14.78	59 14.78	1 29 41.4	29 41.4	7.3344	8.073	2.44	3.26				
6 18 55.0	159	23 59 17.83	59 17.83	1 29 24.8	29 24.8	7.3180	8.053	2.44	3.26				
7 18 51.1	160	23 59 20.77	59 20.77	1 29 8.9	29 8.9	7.3010	8.033	2.45	3.27				
8 18 47.2	161	23 59 23.59	59 23.59	1 28 53.8	28 53.8	7.2832	8.010	2.45	3.27				
9 18 43.3	162	23 59 26.30	59 26.30	1 28 39.5	28 39.5	7.2649	7.986	2.45	3.27				
10 18 39.4	163	23 59 28.89	59 28.89	1 28 25.9	28 25.9	7.2456	7.962	2.45	3.27				
11 18 35.5	164	23 59 31.37	59 31.37	1 28 13.1	28 13.1	7.2254	7.936	2.46	3.27				
12 18 31.6	165	23 59 33.73	59 33.73	1 28 1.0	28 1.0	7.2039	7.909	2.46	3.28				
13 18 27.7	166	23 59 35.98	59 35.98	1 27 49.7	27 49.7	7.1811	7.880	2.46	3.28				
14 18 23.8	167	23 59 38.11	59 38.11	1 27 39.2	27 39.2	7.1571	7.849	2.46	3.28				
15 18 19.9	168	23 59 40.12	59 40.12	1 27 29.4	27 29.4	7.1317	7.815	2.46	3.28				
16 18 16.0	169	23 59 42.02	59 42.02	1 27 20.4	27 20.4	7.1047	7.776	2.46	3.28				
17 18 12.1	170	23 59 43.80	59 43.80	1 27 12.2	27 12.2	7.0759	7.734	2.47	3.28				
18 18 8.2	171	23 59 45.46	59 45.46	1 27 4.8	27 4.8	7.0451	7.687	2.47	3.28				
19 18 4.3	172	23 59 47.00	59 47.00	1 26 58.2	26 58.2	7.0119	7.636	2.47	3.28				
20 18 0.4	173	23 59 48.42	59 48.42	1 26 52.4	26 52.4	6.9760	7.578	2.47	3.28				
21 17 56.5	174	23 59 49.73	59 49.73	1 26 47.3	26 47.3	6.9368	7.511	2.47	3.28				
22 17 52.6	175	23 59 50.92	59 50.92	1 26 43.1	26 43.1	6.8928	7.433	2.47	3.28				
23 17 48.7	176	23 59 51.98	59 51.98	1 26 39.6	26 39.6	6.8438	7.336	2.47	3.28				
24 17 44.8	177	23 59 52.92	59 52.92	1 26 36.9	26 36.9	6.7886	7.213	2.47	3.28				
25 17 40.9	178	23 59 53.75	59 53.75	1 26 34.9	26 34.9	6.7294	7.039	2.47	3.28				
26 17 36.9	179	23 59 54.45	59 54.45	1 26 33.7	26 33.7	6.6478	6.745	2.47	3.28				
27 17 33.0	180	23 59 55.03	59 55.03	1 26 33.3	26 33.3	6.5576	+ 5.240	2.47	3.28				
28 17 29.1	181	23 59 55.49	59 55.49	1 26 33.7	26 33.7	6.4448	- 6.717	2.47	3.28				
29 17 25.1	182	23 59 55.83	59 55.83	1 26 34.8	26 34.8	6.2926	7.025	2.47	3.28				
30 17 21.2	183	23 59 56.05	59 56.05	1 26 36.7	26 36.7	6.0591	7.203	2.47	3.28				
31 17 17.3	184	23 59 56.16	59 56.16	- 1 26 39.4	26 39.4	+5.5183	- 7.330	-2.47	-3.28				

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .		
		At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
										h. m. s.
July	d. h. m.	h. m. s.	m. s.	$^{\circ}$ ' "	' "					
1 17 17.3	184	23 59 56.16	59 56.16	- 1 26 39.4	26 39.4	+5.5183	- 7.330	-2.47	-3.28	
2 17 18.4	185	23 59 56.15	59 56.15	1 26 42.9	26 42.9	-5.6867	7.426	2.47	3.27	
3 17 9.4	186	23 59 56.02	59 56.02	1 26 47.1	26 47.1	6.1146	7.504	2.47	3.27	
4 17 5.5	187	23 59 55.77	59 55.77	1 26 52.1	26 52.1	6.3259	7.570	2.47	3.27	
5 17 1.5	188	23 59 55.41	59 55.41	1 26 57.8	26 57.8	6.4675	7.627	2.46	3.27	
6 16 57.6	189	23 59 54.93	59 54.93	1 27 4.3	27 4.3	6.5740	7.677	2.46	3.27	
7 16 53.6	190	23 59 54.33	59 54.33	1 27 11.5	27 11.5	6.6595	7.722	2.46	3.27	
8 16 49.7	191	23 59 53.61	59 53.61	1 27 19.5	27 19.5	6.7309	7.763	2.46	3.27	
9 16 45.7	192	23 59 52.78	59 52.78	1 27 28.2	27 28.2	6.7922	7.801	2.46	3.26	
10 16 41.8	193	23 59 51.83	59 51.83	1 27 37.7	27 37.7	6.8460	7.835	2.46	3.26	
11 16 37.8	194	23 59 50.76	59 50.76	1 27 47.9	27 47.9	6.8938	7.867	2.46	3.26	
12 16 33.9	195	23 59 49.57	59 49.57	1 27 58.9	27 58.9	6.9365	7.896	2.45	3.26	
13 16 29.9	196	23 59 48.27	59 48.27	1 28 10.6	28 10.6	6.9752	7.923	2.45	3.26	
14 16 26.0	197	23 59 46.85	59 46.85	1 28 23.1	28 23.1	7.0104	7.949	2.45	3.25	
15 16 22.0	198	23 59 45.32	59 45.32	1 28 36.3	28 36.3	7.0430	7.974	2.45	3.25	
16 16 18.1	199	23 59 43.67	59 43.67	1 28 50.2	28 50.2	7.0727	7.996	2.45	3.25	
17 16 14.1	200	23 59 41.91	59 41.91	1 29 4.8	29 4.8	7.1005	8.018	2.44	3.25	
18 16 10.2	201	23 59 40.04	59 40.04	1 29 20.1	29 20.1	7.1267	8.038	2.44	3.24	
19 16 6.2	202	23 59 38.06	59 38.06	1 29 36.2	29 36.2	7.1513	8.057	2.44	3.24	
20 16 2.2	203	23 59 35.97	59 35.97	1 29 53.0	29 53.0	7.1741	8.075	2.44	3.24	
21 15 58.3	204	23 59 33.77	59 33.77	1 30 10.4	30 10.4	7.1957	8.092	2.43	3.23	
22 15 54.3	205	23 59 31.45	59 31.45	1 30 28.5	30 28.5	7.2160	8.108	2.43	3.23	
23 15 50.3	206	23 59 29.03	59 29.03	1 30 47.3	30 47.3	7.2352	8.124	2.42	3.22	
24 15 46.3	207	23 59 26.50	59 26.50	1 31 6.8	31 6.8	7.2532	8.139	2.42	3.22	
25 15 42.3	208	23 59 23.86	59 23.86	1 31 26.9	31 26.9	7.2706	8.153	2.41	3.21	
26 15 38.3	209	23 59 21.12	59 21.12	1 31 47.7	31 47.7	7.2869	8.167	2.41	3.21	
27 15 34.3	210	23 59 18.28	59 18.28	1 32 9.1	32 9.1	7.3025	8.180	2.40	3.20	
28 15 30.4	211	23 59 15.34	59 15.34	1 32 31.2	32 31.2	7.3177	8.192	2.40	3.20	
29 15 26.4	212	23 59 12.30	59 12.30	1 32 53.9	32 53.9	7.3323	8.204	2.39	3.19	
30 15 22.4	213	23 59 9.15	59 9.15	1 33 17.2	33 17.2	7.3463	8.215	2.39	3.19	
31 15 18.4	214	23 59 5.91	59 5.91	1 33 41.2	33 41.2	7.3595	8.226	2.38	3.18	
Aug.	1 15 14.4	215	23 59 2.57	59 2.57	1 34 5.8	34 5.8	7.3721	8.237	2.38	3.18
2 15 10.4	216	23 58 59.13	58 59.13	1 34 31.0	34 31.0	7.3842	8.247	2.37	3.17	
3 15 6.4	217	23 58 55.60	58 55.60	1 34 56.7	34 56.7	7.3958	8.257	2.37	3.16	
4 15 2.4	218	23 58 51.97	58 51.97	1 35 23.0	35 23.0	7.4070	8.267	2.36	3.15	
5 14 58.4	219	23 58 48.25	58 48.25	1 35 49.9	35 49.9	7.4178	8.276	2.36	3.15	
6 14 54.4	220	23 58 44.43	58 44.43	1 36 17.4	36 17.4	7.4282	8.285	2.35	3.14	
7 14 50.4	221	23 58 40.52	58 40.52	1 36 45.4	36 45.4	7.4383	8.293	2.34	3.13	
8 14 46.4	222	23 58 36.53	58 36.53	1 37 14.0	37 14.0	7.4480	8.301	2.33	3.12	
9 14 42.4	223	23 58 32.45	58 32.45	1 37 43.1	37 43.1	7.4573	8.309	2.33	3.11	
10 14 38.4	224	23 58 28.28	58 28.28	1 38 12.7	38 12.7	7.4662	8.317	2.32	3.10	
11 14 34.4	225	23 58 24.03	58 24.03	1 38 42.8	38 42.8	7.4748	8.325	2.31	3.09	
12 14 30.4	226	23 58 19.69	58 19.69	1 39 13.5	39 13.5	7.4831	8.332	2.30	3.08	
13 14 26.4	227	23 58 15.27	58 15.27	1 39 44.7	39 44.6	7.4911	8.339	2.29	3.07	
14 14 22.4	228	23 58 10.77	58 10.78	1 40 16.3	40 16.2	7.4988	8.345	2.28	3.06	
15 14 18.4	229	23 58 6.19	58 6.20	1 40 48.4	40 48.3	7.5062	8.351	2.27	3.05	
16 14 14.4	230	23 58 1.53	58 1.54	1 41 20.9	41 20.8	7.5133	8.357	2.26	3.04	
17 14 10.4	231	23 57 56.80	57 56.81	1 41 53.9	41 53.8	7.5202	8.363	2.25	3.03	
18 14 6.4	232	23 57 51.99	57 52.00	1 42 27.3	42 27.2	7.5269	8.369	2.24	3.02	
19 14 2.4	233	23 57 47.11	57 47.12	1 43 1.1	43 1.0	7.5332	8.374	2.23	3.01	
20 13 58.4	234	23 57 42.16	57 42.17	1 43 35.4	43 35.3	7.5393	8.379	2.21	2.99	
21 13 54.3	235	23 57 37.14	57 37.15	1 44 10.1	44 10.0	7.5451	8.384	2.20	2.98	
22 13 50.3	236	23 57 32.06	57 32.07	1 44 45.1	44 45.0	7.5506	8.389	2.19	2.96	
23 13 46.3	237	23 57 26.92	57 26.93	1 45 20.5	45 20.4	7.5559	8.393	2.18	2.95	
24 13 42.3	238	23 57 21.71	57 21.72	1 45 56.3	45 56.2	7.5609	8.397	2.16	2.93	
25 13 38.3	239	23 57 16.44	57 16.45	1 46 32.4	46 32.3	7.5656	8.401	2.15	2.92	
26 13 34.3	240	23 57 11.12	57 11.13	1 47 8.8	47 8.7	7.5702	8.405	2.13	2.90	
27 13 30.3	241	23 57 5.74	57 5.75	1 47 45.5	47 45.4	7.5746	8.409	2.12	2.88	
28 13 26.3	242	23 57 0.31	57 0.32	1 48 22.6	48 22.5	7.5788	8.413	2.10	2.86	
29 13 22.3	243	23 56 54.82	56 54.84	1 49 0.0	48 59.9	7.5828	8.416	2.09	2.84	
30 13 18.2	244	23 56 49.29	56 49.31	1 49 37.6	49 37.5	7.5867	8.419	2.07	2.82	
31 13 14.2	245	23 56 43.71	56 43.73	- 1 50 15.5	50 15.4	-7.5903	- 8.422	-2.06	-2.80	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.											
Mean Solar Time of Meridian Transit.			Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of ϵ in Sidereal Minutes.		Log. Coefficient of ϵ^2 .	
				At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.			h. m. s.	m. s.	° ' "	' "	-	-	-	-	
Sept. 1	13	10.2	246	23 56 38.08	56 38.10	- 1 50 53.6	50 53.5	-7.5937	- 8.425	-2.04	-2.77
2	13	6.2	247	23 56 32.41	56 32.43	1 51 31.9	51 31.8	7.5968	8.428	2.02	2.73
3	13	2.2	248	23 56 26.70	56 26.72	1 52 10.5	52 10.4	7.5998	8.430	1.99	-2.68
4	12	58.1	249	23 56 20.95	56 20.97	1 52 49.3	52 49.2	7.6027	8.432	1.97	
5	12	54.1	250	23 56 15.16	56 15.18	1 53 28.3	53 28.2	7.6055	8.434	1.94	
6	12	50.1	251	23 56 9.33	56 9.35	1 54 7.5	54 7.4	7.6082	8.436	1.91	
7	12	46.1	252	23 56 3.47	56 3.49	1 54 46.8	54 46.7	7.6107	8.438	1.88	
8	12	42.0	253	23 55 57.58	55 57.60	1 55 26.3	55 26.2	7.6129	8.439	1.84	
9	12	38.0	254	23 55 51.66	55 51.68	1 56 5.9	56 5.8	7.6151	8.440	1.80	
10	12	34.0	255	23 55 45.71	55 45.73	1 56 45.6	56 45.5	7.6170	8.441	-1.75	
11	12	29.9	256	23 55 39.74	55 39.76	1 57 25.4	57 25.3	7.6187	8.442		
12	12	25.9	257	23 55 33.74	55 33.76	1 58 5.3	58 5.2	7.6202	8.443		
13	12	21.9	258	23 55 27.73	55 27.75	1 58 45.3	58 45.2	7.6215	8.444		
14	12	17.8	259	23 55 21.70	55 21.72	1 59 25.4	59 25.3	7.6225	8.445		
15	12	13.8	260	23 55 15.65	55 15.67	2 0 5.5	0 5.4	7.6234	8.445		
16	12	9.8	261	23 55 9.59	55 9.61	2 0 45.6	0 45.5	7.6240	8.445		
17	12	5.7	262	23 55 3.53	55 3.55	2 1 25.7	1 25.6	7.6246	8.445		
18	12	1.7	263	23 54 57.46	54 57.48	2 2 5.8	2 5.7	7.6251	8.445		
19	11	57.7	264	23 54 51.38	54 51.40	2 2 45.9	2 45.8	7.6255	8.444		
20	11	53.6	265	23 54 45.30	54 45.32	2 3 25.9	3 25.8	7.6257	8.444		
21	11	49.6	266	23 54 39.21	54 39.23	2 4 5.9	4 5.8	7.6258	8.443		
22	11	45.6	267	23 54 33.13	54 33.16	2 4 45.8	4 45.7	7.6255	8.442		
23	11	41.5	268	23 54 27.05	54 27.08	2 5 25.7	5 25.6	7.6250	8.441		
24	11	37.5	269	23 54 20.98	54 21.01	2 6 5.4	6 5.3	7.6244	8.440		
25	11	33.4	270	23 54 14.92	54 14.95	2 6 45.0	6 44.9	7.6237	8.439		
26	11	29.4	271	23 54 8.87	54 8.90	2 7 24.5	7 24.4	7.6228	8.438		
27	11	25.4	272	23 54 2.83	54 2.86	2 8 3.8	8 3.7	7.6218	8.436		
28	11	21.3	273	23 53 56.81	53 56.84	2 8 42.9	8 42.8	7.6208	8.434		
29	11	17.3	274	23 53 50.81	53 50.84	2 9 21.9	9 21.8	7.6195	8.432		
30	11	13.3	275	23 53 44.83	53 44.86	2 10 0.7	10 0.6	7.6178	8.430	+1.77	
Oct. 1	11	9.3	276	23 53 38.87	53 38.90	2 10 39.3	10 39.2	7.6159	8.428	1.81	+2.69
2	11	5.2	277	23 53 32.94	53 32.97	2 11 17.7	11 17.6	7.6137	8.426	1.84	2.75
3	11	1.2	278	23 53 27.04	53 27.07	2 11 55.9	11 55.8	7.6114	8.423	1.87	2.79
4	10	57.2	279	23 53 21.17	53 21.20	2 12 33.8	12 33.7	7.6091	8.420	1.90	2.82
5	10	53.2	280	23 53 15.33	53 15.36	2 13 11.5	13 11.4	7.6066	8.417	1.93	2.84
6	10	49.1	281	23 53 9.52	53 9.55	2 13 48.9	13 48.8	7.6040	8.413	1.96	2.86
7	10	45.1	282	23 53 3.75	53 3.78	2 14 26.0	14 25.9	7.6013	8.409	1.98	2.88
8	10	41.1	283	23 52 58.02	52 58.05	2 15 2.7	15 2.6	7.5986	8.405	2.01	2.90
9	10	37.1	284	23 52 52.33	52 52.36	2 15 39.1	15 39.0	7.5956	8.401	2.03	2.92
10	10	33.0	285	23 52 46.68	52 46.71	2 16 15.2	16 15.1	7.5923	8.397	2.06	2.94
11	10	29.0	286	23 52 41.08	52 41.11	2 16 50.9	16 50.8	7.5886	8.392	2.08	2.96
12	10	25.0	287	23 52 35.53	52 35.56	2 17 26.2	17 26.1	7.5844	8.388	2.10	2.98
13	10	21.0	288	23 52 30.03	52 30.06	2 18 1.2	18 1.1	7.5801	8.383	2.12	2.99
14	10	16.9	289	23 52 24.58	52 24.61	2 18 35.8	18 35.7	7.5757	8.378	2.14	3.01
15	10	12.9	290	23 52 19.19	52 19.22	2 19 10.0	19 9.9	7.5710	8.373	2.16	3.02
16	10	8.9	291	23 52 13.86	52 13.89	2 19 43.8	19 43.7	7.5662	8.368	2.18	3.04
17	10	4.9	292	23 52 8.58	52 8.61	2 20 17.1	20 17.0	7.5613	8.362	2.19	3.05
18	10	0.8	293	23 52 3.36	52 3.39	2 20 50.0	20 49.9	7.5565	8.356	2.21	3.06
19	9	56.8	294	23 51 58.21	51 58.24	2 21 22.4	21 22.3	7.5513	8.350	2.22	3.07
20	9	52.8	295	23 51 53.12	51 53.15	2 21 54.3	21 54.2	7.5455	8.344	2.23	3.08
21	9	48.8	296	23 51 48.10	51 48.13	2 22 25.8	22 25.7	7.5393	8.337	2.24	3.09
22	9	44.8	297	23 51 43.15	51 43.18	2 22 56.8	22 56.7	7.5327	8.330	2.25	3.10
23	9	40.8	298	23 51 38.28	51 38.31	2 23 27.2	23 27.1	7.5260	8.322	2.26	3.11
24	9	36.7	299	23 51 33.48	51 33.50	2 23 57.1	23 57.0	7.5193	8.314	2.27	3.12
25	9	32.7	300	23 51 28.76	51 28.78	2 24 26.4	24 26.3	7.5123	8.306	2.28	3.13
26	9	28.7	301	23 51 24.11	51 24.13	2 24 55.2	24 55.1	7.5049	8.297	2.29	3.14
27	9	24.7	302	23 51 19.55	51 19.57	2 25 23.4	25 23.3	7.4972	8.288	2.30	3.15
28	9	20.7	303	23 51 15.07	51 15.09	2 25 51.0	25 50.9	7.4890	8.279	2.31	3.16
29	9	16.7	304	23 51 10.67	51 10.69	2 26 18.1	26 18.0	7.4806	8.269	2.32	3.17
30	9	12.7	305	23 51 6.36	51 6.38	2 26 44.6	26 44.5	7.4721	8.259	2.33	3.18
31	9	8.7	306	23 51 2.13	51 2.15	2 27 10.5	27 10.4	7.4633	8.249	2.34	3.18
32	9	4.7	307	23 50 57.99	50 58.01	- 2 27 35.8	27 35.7	-7.4543	- 8.239	+2.35	+3.19

NEPTUNE, 1860.

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FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.		Side- real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2 .	
			At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
Nov.	d. h. m.		h. m. s.	m. s.	$^{\circ}$ $'$ $''$	$'$ $''$				
1	9 4.7	307	23 50 57.99	50 58.01	- 2 27 35.8	27 35.7	-7.4543	- 8.239	+2.35	+3.20
2	9 0.7	308	23 50 53.94	50 53.96	2 28 0.4	28 0.3	7.4448	8.228	2.36	3.20
3	8 56.7	309	23 50 49.98	50 50.00	2 28 24.4	28 24.3	7.4348	8.217	2.37	3.21
4	8 52.7	310	23 50 46.11	50 46.13	2 28 47.8	28 47.7	7.4243	8.205	2.37	3.21
5	8 48.7	311	23 50 42.34	50 42.36	2 29 10.5	29 10.4	7.4128	8.193	2.38	3.22
6	8 44.7	312	23 50 38.66	50 38.68	2 29 32.6	29 32.5	7.4009	8.180	2.39	3.22
7	8 40.7	313	23 50 35.08	50 35.10	2 29 54.0	29 53.9	7.3888	8.166	2.40	3.23
8	8 36.7	314	23 50 31.61	50 31.63	2 30 14.7	30 14.6	7.3763	8.151	2.40	3.23
9	8 32.8	315	23 50 28.24	50 28.25	2 30 34.7	30 34.6	7.3634	8.135	2.41	3.24
10	8 28.8	316	23 50 24.97	50 24.98	2 30 54.0	30 53.9	7.3498	8.119	2.41	3.24
11	8 24.8	317	23 50 21.81	50 21.82	2 31 12.5	31 12.4	7.3354	8.102	2.42	3.25
12	8 20.8	318	23 50 18.75	50 18.76	2 31 30.3	31 30.2	7.3202	8.085	2.42	3.25
13	8 16.8	319	23 50 15.79	50 15.80	2 31 47.4	31 47.3	7.3041	8.066	2.43	3.26
14	8 12.8	320	23 50 12.95	50 12.96	2 32 3.8	32 3.7	7.2872	8.046	2.43	3.26
15	8 8.9	321	23 50 10.22	50 10.23	2 32 19.4	32 19.3	7.2694	8.025	2.44	3.27
16	8 4.9	322	23 50 7.60	50 7.61	2 32 34.3	32 34.2	7.2507	8.003	2.44	3.27
17	8 0.9	323	23 50 5.09	50 5.10	2 32 48.4	32 48.3	7.2308	7.980	2.44	3.28
18	7 56.9	324	23 50 2.70	50 2.71	2 33 1.8	33 1.7	7.2099	7.955	2.45	3.28
19	7 53.0	325	23 50 0.42	50 0.43	2 33 14.4	33 14.3	7.1880	7.928	2.45	3.28
20	7 49.0	326	23 49 58.26	49 58.27	2 33 26.2	33 26.1	7.1649	7.900	2.45	3.28
21	7 45.0	327	23 49 56.21	49 56.22	2 33 37.2	33 37.1	7.1399	7.870	2.46	3.28
22	7 41.1	328	23 49 54.28	49 54.29	2 33 47.5	33 47.4	7.1135	7.837	2.46	3.29
23	7 37.1	329	23 49 52.47	49 52.48	2 33 57.0	33 56.9	7.0853	7.800	2.47	3.29
24	7 33.1	330	23 49 50.77	49 50.78	2 34 5.7	34 5.6	7.0551	7.759	2.47	3.29
25	7 29.2	331	23 49 49.19	49 49.19	2 34 13.6	34 13.6	7.0220	7.715	2.47	3.29
26	7 25.2	332	23 49 47.74	49 47.74	2 34 20.7	34 20.7	6.9862	7.664	2.48	3.29
27	7 21.2	333	23 49 46.41	49 46.41	2 34 27.0	34 27.0	6.9463	7.608	2.48	3.29
28	7 17.3	334	23 49 45.20	49 45.20	2 34 32.4	34 32.4	6.9023	7.543	2.48	3.29
29	7 13.3	335	23 49 44.12	49 44.12	2 34 37.0	34 37.0	6.8535	7.466	2.49	3.29
30	7 9.4	336	23 49 43.15	49 43.15	2 34 40.9	34 40.9	6.7983	7.373	2.49	3.30
Dec.	d. h. m.		h. m. s.	m. s.	$^{\circ}$ $'$ $''$	$'$ $''$				
1	7 5.4	337	23 49 42.30	49 42.30	2 34 43.9	34 43.9	6.7351	7.255	2.49	3.30
2	7 1.5	338	23 49 41.58	49 41.58	2 34 46.1	34 46.1	6.6612	7.091	2.49	3.30
3	6 57.5	339	23 49 40.98	49 40.98	2 34 47.5	34 47.5	6.5700	6.818	2.50	3.30
4	6 53.6	340	23 49 40.51	49 40.51	2 34 48.1	34 48.1	6.4544	- 5.938	2.50	3.30
5	6 49.7	341	23 49 40.16	49 40.16	2 34 47.8	34 47.8	6.2965	+ 6.687	2.50	3.30
6	6 45.8	342	23 49 39.94	49 39.94	2 34 46.7	34 46.7	6.0457	7.025	2.50	3.30
7	6 41.8	343	23 49 39.84	49 39.84	2 34 44.7	34 44.7	-5.3535	7.213	2.50	3.30
8	6 37.9	344	23 49 39.87	49 39.87	2 34 42.0	34 42.0	+5.8194	7.343	2.49	3.30
9	6 34.0	345	23 49 40.03	49 40.03	2 34 38.4	34 38.4	6.1938	7.445	2.49	3.30
10	6 30.0	346	23 49 40.32	49 40.32	2 34 34.0	34 34.0	6.3919	7.527	2.49	3.30
11	6 26.1	347	23 49 40.74	49 40.73	2 34 28.8	34 28.8	6.5265	7.596	2.49	3.30
12	6 22.2	348	23 49 41.29	49 41.28	2 34 22.7	34 22.7	6.6287	7.656	2.49	3.30
13	6 18.3	349	23 49 41.97	49 41.96	2 34 15.8	34 15.8	6.7109	7.708	2.49	3.30
14	6 14.4	350	23 49 42.77	49 42.76	2 34 8.0	34 8.0	6.7798	7.755	2.49	3.30
15	6 10.4	351	23 49 43.70	49 43.69	2 33 59.4	33 59.4	6.8395	7.798	2.49	3.30
16	6 6.5	352	23 49 44.76	49 44.75	2 33 50.0	33 50.0	6.8918	7.836	2.49	3.29
17	6 2.6	353	23 49 45.95	49 45.94	2 33 39.7	33 39.7	6.9385	7.871	2.49	3.29
18	5 58.7	354	23 49 47.26	49 47.25	2 33 28.6	33 28.6	6.9807	7.903	2.49	3.29
19	5 54.8	355	23 49 48.70	49 48.69	2 33 16.7	33 16.7	7.0192	7.933	2.48	3.29
20	5 50.9	356	23 49 50.27	49 50.26	2 33 3.9	33 3.9	7.0545	7.961	2.48	3.29
21	5 47.0	357	23 49 51.97	49 51.96	2 32 50.4	32 50.4	7.0871	7.987	2.48	3.29
22	5 43.1	358	23 49 53.80	49 53.78	2 32 36.0	32 36.1	7.1175	8.011	2.48	3.29
23	5 39.2	359	23 49 55.75	49 55.73	2 32 20.8	32 20.9	7.1453	8.034	2.48	3.29
24	5 35.3	360	23 49 57.82	49 57.80	2 32 4.8	32 4.9	7.1715	8.056	2.47	3.29
25	5 31.4	361	23 50 0.02	50 0.00	2 31 48.1	31 48.2	7.1957	8.076	2.47	3.28
26	5 27.5	362	23 50 2.34	50 2.32	2 31 30.5	31 30.6	7.2187	8.096	2.47	3.28
27	5 23.6	363	23 50 4.78	50 4.76	2 31 12.1	31 12.2	7.2404	8.114	2.47	3.28
28	5 19.7	364	23 50 7.85	50 7.83	2 30 53.0	30 53.1	7.2612	8.132	2.46	3.28
29	5 15.8	365	23 50 10.04	50 10.02	2 30 33.1	30 33.2	7.2808	8.149	2.46	3.28
30	5 11.9	366	23 50 12.85	50 12.83	2 30 12.4	30 12.5	7.2995	8.165	2.46	3.27
31	5 8.0	367	23 50 15.78	50 15.76	2 29 50.9	29 51.0	7.3173	8.181	2.45	3.27
32	5 4.1	368	23 50 18.83	50 18.81	- 2 29 28.7	29 28.9	+7.3344	+ 8.196	+2.45	+3.27

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.									
Sidereal Date.	HORIZONTAL PARALLAXES.			VERTICAL SEMIDIAMETER.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♂	♀	♂	♂	♀	♂	♂	♀	♂
d.	"	"	"	"	"	"	"	"	"
1	8.75	5.68	4.50	3.41	5.63	2.65	0.25	0.40	0.18
6	7.96	5.77	4.60	3.11	5.70	2.71	0.23	0.40	0.19
11	7.39	5.82	4.72	2.88	5.77	2.78	0.21	0.40	0.19
16	6.97	5.91	4.85	2.72	5.87	2.85	0.20	0.41	0.20
21	6.66	6.00	4.98	2.59	5.96	2.94	0.19	0.41	0.20
26	6.43	6.10	5.12	2.50	6.06	3.02	0.18	0.41	0.21
31	6.27	6.21	5.27	2.45	6.17	3.11	0.18	0.42	0.22
36	6.18	6.32	5.43	2.41	6.28	3.20	0.17	0.42	0.23
41	6.13	6.45	5.59	2.39	6.41	3.30	0.17	0.43	0.23
46	6.15	6.58	5.78	2.40	6.54	3.40	0.17	0.44	0.24
51	6.25	6.73	5.98	2.44	6.68	3.52	0.17	0.45	0.25
56	6.46	6.90	6.19	2.51	6.85	3.64	0.17	0.46	0.26
61	6.81	7.07	6.42	2.65	7.03	3.78	0.18	0.47	0.27
66	7.40	7.25	6.66	2.88	7.20	3.92	0.19	0.49	0.28
71	8.29	7.44	6.91	3.23	7.40	4.08	0.22	0.50	0.29
76	9.55	7.67	7.19	3.71	7.62	4.24	0.25	0.52	0.31
81	11.12	7.91	7.49	4.33	7.86	4.42	0.29	0.55	0.32
86	12.78	8.17	7.80	4.99	8.11	4.61	0.34	0.56	0.34
91	14.12	8.45	8.14	5.51	8.39	4.81	0.37	0.60	0.35
96	14.70	8.77	8.51	5.73	8.73	5.02	0.37	0.63	0.37
101	14.41	9.11	8.91	5.61	9.08	5.26	0.37	0.66	0.39
106	13.56	9.50	9.33	5.28	9.47	5.51	0.35	0.69	0.41
111	12.47	9.92	9.79	4.86	9.89	5.79	0.32	0.73	0.42
116	11.36	10.39	10.28	4.44	10.34	6.08	0.29	0.77	0.44
121	10.37	10.90	10.81	4.04	10.85	6.39	0.27	0.81	0.46
126	9.43	11.48	11.38	3.68	11.43	6.71	0.24	0.85	0.48
131	8.68	12.09	12.00	3.38	12.09	7.08	0.23	0.90	0.51
136	8.01	12.86	12.64	3.12	12.80	7.46	0.21	0.95	0.54
141	7.44	13.68	13.35	2.90	13.66	7.88	0.20	1.01	0.57
146	7.00	14.61	14.10	2.73	14.56	8.32	0.19	1.07	0.61
151	6.68	15.67	14.90	2.60	15.62	8.79	0.19	1.15	0.64
156	6.51	16.85	15.73	2.53	16.78	9.28	0.18	1.21	0.68
161	6.51	18.17	16.59	2.54	18.11	9.79	0.18	1.30	0.71
166	6.69	19.67	17.48	2.60	19.60	10.32	0.19	1.40	0.76
171	7.00	21.32	18.35	2.72	21.23	10.83	0.20	1.50	0.80
176	7.44	23.12	19.20	2.90	23.03	11.33	0.21	1.62	0.84
181	7.98	24.97	19.99	3.11	24.88	11.80	0.22	1.74	0.88
186	8.64	26.74	20.69	3.37	26.65	12.21	0.24	1.86	0.92
191	9.38	28.24	21.27	3.66	28.17	12.55	0.26	1.96	0.94
196	10.25	29.25	21.69	4.01	29.19	12.77	0.28	2.03	0.95
201	11.21	29.58	21.91	4.37	29.47	12.93	0.30	2.04	0.96
206	12.25	29.15	21.93	4.78	29.02	12.94	0.33	2.01	0.95
211	13.27	28.08	21.76	5.17	27.98	12.84	0.35	1.93	0.95
216	14.06	26.50	21.41	5.48	26.41	12.63	0.37	1.83	0.94
221	14.26	24.77	20.92	5.57	24.65	12.34	0.38	1.71	0.93
226	13.57	22.97	20.30	5.31	22.88	11.97	0.37	1.59	0.91
231	12.23	21.27	19.61	4.77	21.16	11.57	0.33	1.47	0.88
236	10.62	19.64	18.86	4.14	19.62	11.13	0.29	1.37	0.84
241	9.14	18.26	18.08	3.56	18.19	10.67	0.25	1.28	0.80
246	7.98	16.97	17.32	3.11	16.90	10.22	0.22	1.18	0.77
251	7.12	15.82	16.55	2.78	15.75	9.76	0.20	1.10	0.73
256	6.61	14.79	15.80	2.58	14.74	9.32	0.18	1.03	0.70
261	6.32	13.89	15.09	2.46	13.84	8.90	0.17	0.96	0.67
266	6.16	13.10	14.41	2.40	13.03	8.50	0.16	0.90	0.63
271	6.08	12.39	13.76	2.37	12.30	8.12	0.16	0.84	0.60
276	6.09	11.76	13.14	2.37	11.66	7.76	0.16	0.80	0.56
281	6.15	11.17	12.56	2.40	11.09	7.41	0.16	0.75	0.53
286	6.27	10.65	12.02	2.45	10.50	7.09	0.17	0.72	0.50
291	6.45	10.18	11.51	2.52	10.11	6.79	0.18	0.68	0.48
296	6.71	9.76	11.01	2.62	9.69	6.49	0.18	0.65	0.46

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Sidereal Date.	HORIZONTAL PARALLAXES.			VERTICAL SEMIDIAMETER.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♃	♀	♂	♃	♀	♂	♃	♀	♂
d.	"	"	"	"	"	"	"	"	"
301	7.06	9.35	10.55	2.75	9.29	6.28	0.19	0.62	0.44
306	7.52	9.01	10.13	2.93	8.95	5.98	0.20	0.60	0.42
311	8.17	8.70	9.72	3.19	8.64	5.74	0.22	0.58	0.40
316	9.06	8.39	9.34	3.53	8.34	5.52	0.26	0.56	0.38
321	10.21	8.12	8.98	4.07	8.06	5.31	0.30	0.54	0.37
326	11.57	7.86	8.65	4.51	7.81	5.10	0.33	0.52	0.35
331	12.57	7.64	8.33	4.90	7.56	4.91	0.33	0.51	0.34
336	12.32	7.41	8.03	4.80	7.36	4.73	0.32	0.50	0.33
341	11.02	7.18	7.75	4.30	7.17	4.57	0.30	0.49	0.32
346	9.64	6.99	7.48	3.76	6.98	4.41	0.26	0.48	0.31
351	8.54	6.82	7.22	3.33	6.81	4.26	0.23	0.46	0.30
356	7.74	6.68	6.98	3.02	6.66	4.12	0.21	0.46	0.29
361	7.18	6.55	6.75	2.80	6.51	3.98	0.20	0.45	0.29
366	6.77	6.43	6.54	2.64	6.40	3.86	0.19	0.45	0.28
Sidereal Date.	♃	♂	♁	♃	♂	♁	♃	♂	♁
d.	"	"	"	"	"	"	"	"	"
1	2.02	1.01	0.46	22.62	9.23	1.81	1.69	0.63	0.13
11	2.02	1.02	0.46	22.67	9.34	1.80	1.69	0.64	0.13
21	2.00	1.03	0.46	22.55	9.43	1.78	1.68	0.65	0.13
31	1.98	1.04	0.45	22.28	9.49	1.77	1.67	0.66	0.13
41	1.94	1.04	0.45	21.88	9.51	1.75	1.64	0.66	0.13
51	1.90	1.04	0.44	21.37	9.50	1.74	1.60	0.66	0.12
61	1.85	1.04	0.44	20.80	9.45	1.72	1.56	0.65	0.12
71	1.79	1.03	0.44	20.18	9.37	1.71	1.51	0.65	0.12
81	1.73	1.02	0.43	19.55	9.26	1.70	1.46	0.64	0.12
91	1.68	1.01	0.43	18.94	9.13	1.68	1.42	0.63	0.12
101	1.63	0.99	0.43	18.36	8.99	1.67	1.37	0.62	0.12
111	1.58	0.97	0.43	17.82	8.83	1.66	1.33	0.61	0.12
121	1.54	0.95	0.42	17.33	8.67	1.66	1.29	0.60	0.12
131	1.50	0.93	0.42	16.90	8.51	1.65	1.26	0.59	0.12
141	1.47	0.92	0.42	16.50	8.36	1.65	1.23	0.58	0.12
151	1.44	0.90	0.42	16.17	8.22	1.65	1.20	0.57	0.12
161	1.41	0.89	0.42	15.89	8.09	1.65	1.18	0.56	0.12
171	1.39	0.87	0.42	15.65	7.97	1.65	1.16	0.55	0.12
181	1.38	0.86	0.43	15.48	7.87	1.66	1.14	0.54	0.12
191	1.37	0.86	0.43	15.35	7.78	1.67	1.18	0.54	0.12
201	1.36	0.85	0.43	15.26	7.71	1.68	1.12	0.53	0.12
211	1.36	0.85	0.43	15.24	7.66	1.69	1.11	0.53	0.12
221	1.36	0.84	0.43	15.25	7.63	1.70	1.11	0.53	0.12
231	1.37	0.84	0.44	15.33	7.61	1.72	1.11	0.53	0.12
241	1.38	0.84	0.44	15.44	7.61	1.73	1.12	0.53	0.12
251	1.39	0.84	0.45	15.61	7.63	1.74	1.13	0.53	0.13
261	1.41	0.84	0.45	15.84	7.68	1.76	1.14	0.53	0.13
271	1.43	0.85	0.45	16.10	7.74	1.78	1.16	0.53	0.13
281	1.46	0.85	0.46	16.43	7.81	1.79	1.18	0.53	0.13
291	1.49	0.86	0.46	16.81	7.90	1.80	1.20	0.54	0.13
301	1.53	0.88	0.46	17.25	8.00	1.81	1.23	0.54	0.13
311	1.57	0.89	0.46	17.72	8.12	1.82	1.26	0.55	0.13
321	1.62	0.91	0.47	18.24	8.25	1.83	1.29	0.56	0.13
331	1.67	0.92	0.47	18.81	8.40	1.83	1.33	0.57	0.13
341	1.72	0.94	0.47	19.38	8.56	1.83	1.37	0.58	0.13
351	1.77	0.96	0.47	19.96	8.71	1.83	1.41	0.59	0.13
361	1.82	0.97	0.47	20.54	8.85	1.82	1.45	0.60	0.13
371	1.86	0.99	0.46	21.06	8.99	1.81	1.49	0.61	0.13

NOTE. — For Neptune the Horizontal Parallax = 0".28 (before 180d. and after 361d.)
 " " " " = 0".29 (between 180d. and 280d., between 266d. and 361d.)
 " " " " = 0".30 (between 280d. and 296d.)

880 SUN'S COÖRDINATES, 1860.

Date, 1860.	RECTANGULAR EQUATORIAL						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Jan. 1.0	+1806696	6082	-8865993	6200	-3847462	7265	280 35 18.1	5.1	+0.43	926527
1.5	1892589	1972	.8850881	1094	.3840902	0707	281 5 53.2	40.1	0.44	926516
2.0	.1978331	7711	.8835080	5299	.3834044	3852	281 36 28.0	14.6	0.46	926511
2.5	2063918	3295	.8818593	8818	.3826889	6700	282 6 62.6	49.3	0.47	926513
3.0	2149342	8716	.8801420	1651	.3819437	9251	282 37 37.1	23.7	0.48	926520
3.5	+2234596	3967	-8783563	3800	-3811689	1506	283 7 71.6	58.1	+0.48	926534
4.0	.2319674	9042	.8765025	5268	.3803645	3465	283 38 46.0	32.4	0.47	926554
4.5	2404570	3932	.8745807	6056	.3795307	5130	284 9 20.3	6.6	0.45	926581
5.0	.2489278	8640	.8725912	6167	.3786675	6501	284 39 54.6	40.8	0.43	926615
5.5	.2573791	3151	.8705341	5602	.3777750	7579	285 10 28.8	15.0	0.39	926655
6.0	+2658102	7459	-8684097	4365	-3768534	8366	285 40 62.9	49.0	+0.35	926703
6.5	.2742206	1561	.8662180	2454	.3759026	8861	286 11 37.0	23.0	0.31	926758
7.0	.2826096	5449	.8639593	9873	.3749228	9067	286 41 71.0	56.9	0.26	926820
7.5	.2909767	9118	.8616338	6624	.3739139	8981	287 12 45.9	30.7	0.20	926889
8.0	.2993212	2561	.8592417	2709	.3728760	8606	287 43 18.8	4.5	0.14	926966
8.5	+3076425	5772	-8567830	8128	-3718093	7942	288 13 52.6	38.2	+0.10	927049
9.0	.3159400	8745	.8542580	2885	.3707138	6991	288 44 26.8	11.8	+0.02	927140
9.5	.3242131	1474	.8516670	6981	.3695896	5752	289 14 60.0	45.4	-0.04	927238
10.0	.3324612	3953	.8490100	0418	.3684368	4228	289 45 33.6	18.9	0.11	927343
10.5	.3406838	6178	.8462870	3194	.3672555	2419	290 15 67.1	52.4	0.18	927455
11.0	+3488801	8139	-8434983	5314	-3660457	0324	290 46 40.6	25.8	-0.23	927573
11.5	.3570497	9834	.8406442	6779	.3648076	7946	291 16 74.1	59.2	0.29	927698
12.0	.3651920	1255	.8377249	7593	.3635412	5286	291 47 47.5	32.5	0.34	927830
12.5	.3733063	2397	.8347406	7756	.3622465	2342	292 18 20.9	5.8	0.39	927968
13.0	.3813920	3253	.8316914	7271	.3609236	9117	292 48 54.2	39.0	0.44	928112
13.5	+3894485	3817	-8285777	6140	-3595725	5609	293 19 27.5	12.2	-0.48	928263
14.0	.3974751	4082	.8253995	4365	.3581934	1822	293 49 60.7	45.3	0.52	928419
14.5	.4054712	4042	.8221570	1946	.3567865	7756	294 20 33.9	18.4	0.55	928582
15.0	.4134362	3701	.8188506	8889	.3553518	3413	294 50 67.0	51.4	0.57	928750
15.5	.4213695	3023	.8154806	5195	.3538895	8794	295 21 40.1	24.5	0.58	928924
16.0	+4292704	2031	-8120470	0866	-3523996	3899	295 51 73.1	57.4	-0.59	929104
16.5	.4371383	0710	.8085500	5902	.3508821	8728	296 22 46.1	30.3	0.59	929289
17.0	.4449726	9052	.8049900	0309	.3493372	3283	296 53 18.9	3.0	0.59	929479
17.5	.4527726	7052	.8013671	4086	.3477650	7565	297 23 51.7	35.8	0.58	929674
18.0	.4605376	4741	.7976818	7240	.3461656	1575	297 54 24.4	8.3	0.56	929873
18.5	+4682671	1996	-7939342	9770	-3445390	5313	298 24 57.0	40.9	-0.53	930077
19.0	.4759603	8927	.7901245	1680	.3428855	8782	298 55 29.5	13.2	0.50	930285
19.5	.4836167	5491	.7862531	2973	.3412051	1982	299 25 62.0	45.6	0.46	930497
20.0	.4912355	1678	.7823203	3652	.3394981	4916	299 56 34.2	17.7	0.41	930713
20.5	.4988162	7485	.7783264	3720	.3377647	7586	300 26 66.3	49.8	0.36	930933
21.0	+5063581	2904	-7742718	3181	-3360049	9992	300 57 38.2	21.6	-0.20	931157
21.5	.5138605	7928	.7701567	2047	.3342190	1637	301 27 70.0	53.3	0.24	931384
22.0	.5213229	2552	.7659814	0291	.3324071	4023	301 58 41.6	24.8	0.17	931615
22.5	.5287447	6770	.7617463	7947	.3305692	5648	302 28 73.0	56.1	0.10	931850
23.0	.5361254	0578	.7574519	5010	.3287055	7016	302 59 44.2	27.2	-0.03	932089
23.5	+5434643	3967	-7530984	1482	-3268161	8126	303 29 75.2	58.1	+0.03	932332
24.0	.5507608	6933	.7486863	7368	.3249011	8981	304 0 46.0	28.8	0.10	932579
24.5	.5580143	9468	.7442161	2673	.3229608	9582	304 30 76.5	59.3	0.17	932830
25.0	.5652242	1568	.7396881	7400	.3209954	9933	305 1 46.8	29.5	0.24	933084
25.5	.5723900	3227	.7351027	1553	.3190050	0033	305 31 76.8	59.5	0.30	933343
26.0	+5795109	4437	-7304602	5135	-3169897	9885	306 2 46.6	29.2	+0.26	933605
26.5	.5865865	5194	.7257608	8148	.3149499	9491	306 32 76.1	58.6	0.41	933871
27.0	.5936162	5493	.7210053	0601	.3128858	8855	307 3 45.3	27.7	0.46	934141
27.5	.6005995	5325	.7161939	2494	.3107975	7977	307 33 74.2	56.5	0.50	934415
28.0	.6075359	4693	.7113270	3833	.3086853	6859	308 4 42.7	24.9	0.54	934693
28.5	+6144248	3583	-7064051	4621	-3065493	5503	308 34 71.0	53.1	+0.57	934976
29.0	.6212657	1994	.7014289	4867	.3043898	3913	309 5 38.8	20.8	0.59	935262
29.5	.6280583	9921	.6963985	4570	.3022068	2087	309 35 66.4	48.4	0.60	935553
30.0	.6348021	7361	.6913145	3737	.3000006	0080	310 6 33.6	15.5	0.61	935850
30.5	.6414965	4907	.6861773	2372	.2977714	7742	310 36 60.5	42.5	0.60	936152
31.0	+6481410	0754	-6809874	0480	-2955192	5225	311 7 27.1	8.9	+0.60	936459

NOTE. — The accented letters correspond to the mean equinox and equator of January 0d.0.

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Date, 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Jan. 31.5	+6547352	6698	-6757453	8066	-2932444	2481	$\begin{matrix} \circ & i & u & u \\ 311 & 37 & 53.4 & 35.1 \end{matrix}$		+0.59	936771	
Feb. 1.0	.6612785	2134	.6704512	5132	.2909470	9512	$\begin{matrix} 312 & 8 & 19.3 & 0.8 \end{matrix}$		0.57	937089	
1.5	.6677706	7057	.6651055	1682	.2886274	6320	$\begin{matrix} 312 & 38 & 44.8 & 26.3 \end{matrix}$		0.53	937412	
2.0	.6742109	1464	.6597089	7723	.2862857	2908	$\begin{matrix} 313 & 8 & 69.9 & 51.3 \end{matrix}$		0.49	937740	
2.5	.6805991	5349	.6542616	3257	.2839221	9276	$\begin{matrix} 313 & 39 & 34.8 & 16.2 \end{matrix}$		0.45	938074	
3.0	+6869347	8708	-6487642	8290	-2815367	5427	$\begin{matrix} 314 & 9 & 59.3 & 40.6 \end{matrix}$		+0.40	938414	
3.5	.6932173	1537	.6432170	2825	.2791297	1361	$\begin{matrix} 314 & 40 & 23.4 & 4.7 \end{matrix}$		0.35	938760	
4.0	.6994465	3832	.6376206	6868	.2767013	7082	$\begin{matrix} 315 & 10 & 47.2 & 28.4 \end{matrix}$		0.29	939111	
4.5	.7056219	5589	.6319754	0423	.2742516	2589	$\begin{matrix} 315 & 40 & 70.7 & 51.9 \end{matrix}$		0.23	939469	
5.0	.7117430	6803	.6262818	3495	.2717810	7888	$\begin{matrix} 316 & 11 & 33.8 & 14.9 \end{matrix}$		0.17	939832	
5.5	+7178095	7471	-6205401	6063	-2692896	2978	$\begin{matrix} 316 & 41 & 56.6 & 37.7 \end{matrix}$		+0.11	940201	
6.0	.7238209	7589	.6147508	8197	.2667777	7864	$\begin{matrix} 317 & 12 & 19.1 & 0.0 \end{matrix}$		+0.04	940576	
6.5	.7297767	7151	.6089145	9840	.2642454	2545	$\begin{matrix} 317 & 42 & 41.3 & 22.1 \end{matrix}$		-0.02	940957	
7.0	.7356766	6154	.6030314	1016	.2616930	7026	$\begin{matrix} 318 & 12 & 63.1 & 43.8 \end{matrix}$		0.09	941344	
7.5	.7415202	4594	.5971019	1727	.2591203	1303	$\begin{matrix} 318 & 43 & 24.7 & 5.4 \end{matrix}$		0.15	941738	
8.0	+7473071	2467	-5911266	1981	-2565277	5382	$\begin{matrix} 319 & 13 & 45.9 & 26.5 \end{matrix}$		-0.21	942137	
8.5	.7530370	9770	.5851059	1780	.2539153	9262	$\begin{matrix} 319 & 43 & 66.9 & 47.5 \end{matrix}$		0.27	942542	
9.0	.7587093	6497	.5790404	1132	.2513833	2948	$\begin{matrix} 320 & 14 & 27.5 & 8.0 \end{matrix}$		0.32	942953	
9.5	.7643237	2645	.5729304	0038	.2488320	6440	$\begin{matrix} 320 & 44 & 47.9 & 28.4 \end{matrix}$		0.36	943370	
10.0	.7698797	8209	.5667765	8506	.2459616	9741	$\begin{matrix} 321 & 14 & 67.9 & 48.3 \end{matrix}$		0.40	943792	
10.5	+7753769	8185	-5605790	6537	-2432722	2851	$\begin{matrix} 321 & 45 & 27.7 & 8.0 \end{matrix}$		-0.44	944220	
11.0	.7808149	7570	.5543383	4137	.2405640	5774	$\begin{matrix} 322 & 15 & 47.1 & 27.3 \end{matrix}$		0.47	944652	
11.5	.7861932	1358	.5480548	1308	.2378373	8511	$\begin{matrix} 322 & 45 & 66.3 & 46.4 \end{matrix}$		0.48	945089	
12.0	.7915114	4545	.5417291	8058	.2350923	1066	$\begin{matrix} 323 & 16 & 25.1 & 5.1 \end{matrix}$		0.49	945531	
12.5	.7967690	7126	.5353615	4368	.2323290	3437	$\begin{matrix} 323 & 46 & 43.7 & 23.7 \end{matrix}$		0.48	945978	
13.0	+8019657	9098	-5289526	0305	-2295478	5630	$\begin{matrix} 324 & 16 & 62.0 & 41.8 \end{matrix}$		-0.48	946429	
13.5	.8071012	0458	.5225027	5812	.2267488	7645	$\begin{matrix} 324 & 46 & 80.0 & 59.9 \end{matrix}$		0.46	946884	
14.0	.8121750	1201	.5160123	0914	.2239322	9484	$\begin{matrix} 325 & 17 & 37.6 & 17.4 \end{matrix}$		0.45	947343	
14.5	.8171866	1322	.5094820	5612	.2210982	1149	$\begin{matrix} 325 & 47 & 55.0 & 34.9 \end{matrix}$		0.42	947805	
15.0	.8221357	0818	.5029123	9926	.2182470	2642	$\begin{matrix} 326 & 17 & 72.1 & 51.8 \end{matrix}$		0.39	948271	
15.5	+8270219	9685	-4963037	3646	-2153789	3965	$\begin{matrix} 326 & 48 & 28.9 & 8.5 \end{matrix}$		-0.35	948740	
16.0	.8318448	7920	.4896568	7383	.2124942	5123	$\begin{matrix} 327 & 18 & 45.3 & 24.8 \end{matrix}$		0.30	949213	
16.5	.8366039	5517	.4829721	0542	.2095929	6114	$\begin{matrix} 327 & 48 & 61.5 & 41.8 \end{matrix}$		0.25	949689	
17.0	.8412990	2474	.4762499	3326	.2066755	6945	$\begin{matrix} 328 & 18 & 77.3 & 56.7 \end{matrix}$		0.19	950167	
17.5	.8459296	8786	.4694908	5741	.2037420	7615	$\begin{matrix} 328 & 49 & 32.8 & 12.1 \end{matrix}$		0.13	950648	
18.0	+8504953	4449	-4626954	7793	-2007928	8128	$\begin{matrix} 329 & 19 & 47.9 & 27.2 \end{matrix}$		-0.07	951132	
18.5	.8549958	9460	.4558643	9487	.1978281	8486	$\begin{matrix} 329 & 49 & 62.7 & 41.9 \end{matrix}$		-0.01	951619	
19.0	.8594308	3816	.4489980	0830	.1948479	8689	$\begin{matrix} 330 & 19 & 77.1 & 56.3 \end{matrix}$		+0.06	952108	
19.5	.8637999	7513	.4420971	1826	.1918529	8744	$\begin{matrix} 330 & 50 & 31.2 & 10.3 \end{matrix}$		0.13	952599	
20.0	.8681025	0545	.4351622	2483	.1888431	8651	$\begin{matrix} 331 & 20 & 44.8 & 23.9 \end{matrix}$		0.20	953092	
20.5	+8733383	2909	-4281940	2806	-1858187	8411	$\begin{matrix} 331 & 50 & 58.1 & 37.1 \end{matrix}$		+0.27	953587	
21.0	.8765070	4603	.4211928	2900	.1827801	9030	$\begin{matrix} 332 & 20 & 70.9 & 49.9 \end{matrix}$		0.34	954083	
21.5	.8806084	5623	.4141592	2469	.1797275	7508	$\begin{matrix} 332 & 51 & 23.3 & 2.1 \end{matrix}$		0.40	954582	
22.0	.8846423	5969	.4070938	1821	.1766611	6849	$\begin{matrix} 333 & 21 & 35.3 & 14.1 \end{matrix}$		0.46	955082	
22.5	.8886084	5636	.3999972	0860	.1735811	6054	$\begin{matrix} 333 & 51 & 46.8 & 25.5 \end{matrix}$		0.52	955584	
23.0	+8925063	4622	-3928699	9593	-1704879	5127	$\begin{matrix} 334 & 21 & 57.9 & 36.6 \end{matrix}$		+0.57	956088	
23.5	.8963358	2924	.3857128	8027	.1673817	4070	$\begin{matrix} 334 & 51 & 68.5 & 47.1 \end{matrix}$		0.61	956594	
24.0	.9000966	0539	.3785262	6167	.1642629	2887	$\begin{matrix} 335 & 21 & 78.7 & 57.3 \end{matrix}$		0.65	957102	
24.5	.9037884	7464	.3713109	4019	.1611315	1578	$\begin{matrix} 335 & 52 & 28.5 & 7.1 \end{matrix}$		0.68	957612	
25.0	.9074110	3697	.3640674	1589	.1579879	0147	$\begin{matrix} 336 & 22 & 37.7 & 16.2 \end{matrix}$		0.71	958125	
25.5	+9109642	9236	-3567963	8883	-1548324	8596	$\begin{matrix} 336 & 52 & 46.5 & 24.9 \end{matrix}$		+0.72	958640	
26.0	.9144477	4079	.3494983	5908	.1516653	6930	$\begin{matrix} 337 & 22 & 54.7 & 33.0 \end{matrix}$		0.73	959156	
26.5	.9178612	8221	.3421738	2668	.1484868	5149	$\begin{matrix} 337 & 52 & 62.4 & 40.7 \end{matrix}$		0.73	959675	
27.0	.9212044	1661	.3348234	9169	.1452972	3258	$\begin{matrix} 338 & 22 & 69.6 & 47.8 \end{matrix}$		0.72	960195	
27.5	.9244772	4396	.3274480	5420	.1420967	1257	$\begin{matrix} 338 & 52 & 76.8 & 54.5 \end{matrix}$		0.70	960718	
28.0	+9276796	6428	-3200481	1426	-1388856	9151	$\begin{matrix} 339 & 23 & 22.5 & 0.6 \end{matrix}$		+0.68	961243	
28.5	.9308113	7752	.3126242	7192	.1356641	6940	$\begin{matrix} 339 & 53 & 28.2 & 6.2 \end{matrix}$		0.65	961771	
29.0	.9338722	8369	.3051770	3725	.1324325	4629	$\begin{matrix} 340 & 23 & 33.3 & 11.3 \end{matrix}$		0.62	962302	
29.5	.9368622	8277	.2977069	8029	.1291909	2217	$\begin{matrix} 340 & 53 & 37.9 & 15.8 \end{matrix}$		0.58	962836	
Mar. 1.0	.9397811	7474	.2902146	3111	.1259398	9711	$\begin{matrix} 341 & 23 & 41.9 & 19.8 \end{matrix}$		0.54	963373	
1.5	+9426287	5958	-2827008	7978	-1226791	7108	$\begin{matrix} 341 & 53 & 45.5 & 23.3 \end{matrix}$		+0.49	963913	

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Date, 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Mar. 2.0	+9454049	3728	-2751658	2633	-1194095	4417	342 23 48.4	26.1	+0.43	9.9 964466
2.5	.9481094	0781	.2676103	7083	.1161810	1636	342 58 51.0	28.6	0.37	965003
3.0	.9507422	7117	.2600348	1332	.1128439	8770	343 23 52.9	30.5	0.31	965533
3.5	.9533031	2734	.2524398	5386	.1095483	5818	343 53 54.4	31.9	0.25	966107
4.0	.9557920	7631	.2448261	9254	.1062446	2786	344 23 55.3	32.8	0.18	966664
4.5	+9582088	1807	-2371942	2939	-1029820	9673	344 53 55.7	33.1	0.12	967225
5.0	.9605533	5261	.2295445	6446	.0996136	6485	345 23 55.6	33.0	+0.05	967790
5.5	.9628255	7991	.2218778	9783	.0962869	3222	345 53 55.0	32.3	-0.01	968359
6.0	.9650253	:9998	.2141945	2952	.0929530	9888	346 23 53.9	31.2	0.07	968931
6.5	.9671526	1279	.2104952	5963	.0896120	6483	346 53 52.3	29.5	0.13	969507
7.0	+9692073	1835	-1987803	8817	-0862643	3010	347 23 50.3	27.5	0.18	970086
7.5	.9711892	1662	.1910505	1522	.0829100	9471	347 53 47.8	24.9	0.23	970669
8.0	.9730982	0761	.1833063	4083	.0795495	5871	348 23 44.8	21.9	0.27	971255
8.5	.9749342	9130	.1755481	6504	.0761829	2309	348 53 41.4	18.4	0.31	971845
9.0	.9766970	6767	.1677766	8792	.0728106	8490	349 23 37.5	14.5	0.34	972438
9.5	+9783866	3672	-1599924	:0953	-0694326	4714	349 53 33.1	10.0	0.35	973034
10.0	.9800028	:9843	.1521960	2992	.0660494	0886	350 23 28.3	5.2	0.36	973634
10.5	.9815455	5279	.1443881	4916	.0626610	7006	350 53 83.0	59.8	0.37	974237
11.0	.9830146	:9979	.1365690	6727	.0592679	3079	351 23 77.3	54.1	0.37	974842
11.5	.9844100	3942	.1287893	8432	.0558701	9105	351 52 71.2	47.9	0.36	975451
12.0	+9857316	7167	-1208998	:0039	-0524679	5067	352 22 64.6	41.2	0.34	976061
12.5	.9869794	9654	.1130508	1551	.0490616	1028	352 52 57.6	34.1	0.32	976674
13.0	.9881531	1401	.1051932	2977	.0456515	6931	353 22 50.2	26.7	0.29	977289
13.5	.9892527	2406	.0973275	4322	.0422279	2799	353 52 42.3	18.7	0.25	977906
14.0	.9902780	2669	.0894540	5589	.0388209	8633	354 22 34.0	10.4	0.21	978524
14.5	+9912290	2188	-0815733	6786	-0354007	4435	354 52 25.3	1.6	0.16	979144
15.0	.9921056	0964	.0736864	7917	.0319777	:0208	355 21 76.1	52.4	0.11	979765
15.5	.9929078	8995	.0657933	8987	.0285521	5956	355 51 66.6	42.8	-0.05	980388
16.0	.9936354	6281	.0578948	:0004	.0251242	1660	356 20 56.6	32.8	+0.02	981012
16.5	.9942882	2819	.0499916	:0973	.0216941	7383	356 51 46.2	22.3	0.09	981636
17.0	+9948663	8610	-0420844	1903	-0182623	3068	357 20 35.3	11.4	0.16	982260
17.5	.9953698	3655	.0341736	2796	.0148289	8738	357 51 24.0	0.0	0.23	982885
18.0	.9957985	7952	.0262600	3662	.0113941	4393	358 20 72.2	48.2	0.30	983509
18.5	.9961525	1502	.0183442	4505	.0079685	:0041	358 50 60.0	36.0	0.37	984134
19.0	.9964316	4303	.0104268	5333	.0045223	5682	359 20 47.4	23.3	0.44	984758
19.5	+9966359	6356	-0025085	6151	-0010857	1320	359 50 34.4	10.2	0.51	985382
20.0	.9967634	7661	+0054101	3033	+0023509	3043	0 19 80.8	56.5	0.57	986006
20.5	.9968201	8218	.0133285	2216	.0057873	7404	0 49 66.7	42.4	0.62	986629
21.0	.9968000	8027	.0212460	1390	.0092234	1762	1 19 52.0	27.7	0.67	987252
21.5	.9967051	7088	.0291620	0549	.0126589	6113	1 49 36.9	12.5	0.71	987874
22.0	+9965354	5402	+0370759	:9687	+0160934	0455	2 18 81.2	56.8	0.75	988495
22.5	.9962909	2967	.0449869	8796	.0195267	4784	2 48 65.1	40.6	0.79	988915
23.0	.9959717	9786	.0526943	7869	.0229583	9097	3 18 48.4	23.9	0.82	989734
23.5	.9955778	5858	.0607976	6901	.0263882	3393	3 48 31.2	6.6	0.83	990352
24.0	.9951095	1185	.0686962	5886	.0298159	7667	4 17 73.4	48.8	0.84	990970
24.5	+9945667	5768	+0763896	4819	+0332414	1919	4 47 55.1	30.4	0.84	991587
25.0	.9939495	9606	.0844769	3691	.0366642	6144	5 17 36.2	11.5	0.84	992203
25.5	.9932581	2702	.0923579	2500	.0400642	0341	5 46 76.8	52.0	0.83	992818
26.0	.9924926	5058	.1002216	1235	.0435009	4505	6 16 56.8	32.0	0.81	993433
26.5	.9916532	6674	.1080975	:9894	.0469143	8636	6 46 36.3	11.4	0.78	994047
27.0	+9907400	7553	+1159552	8471	+0503241	2731	7 15 75.1	50.2	0.75	994660
27.5	.9897532	7695	.1238041	6960	.0537299	6786	7 45 53.5	28.5	0.71	995273
28.0	.9886929	7103	.1316433	5351	.0571817	0801	8 15 31.2	6.3	0.66	995886
28.5	.9875592	5776	.1394723	3641	.0605291	4772	8 44 68.3	43.2	0.60	996499
29.0	.9863523	3718	.1472905	1923	.0639216	8695	9 14 44.8	19.7	0.54	997112
29.5	+9850724	0930	+1550973	:9891	+0673092	2568	9 43 80.7	55.5	0.48	997725
30.0	.9837195	7412	.1628923	7841	.0706916	6390	10 13 56.0	30.8	0.42	998338
30.5	.9822940	3168	.1706749	5667	.0740686	0157	10 43 30.8	5.5	0.36	998952
31.0	.9807959	8198	.1784447	3365	.0774399	3868	11 12 64.9	39.6	0.30	999565
31.5	.9792255	2504	.1862010	0929	.0808055	7521	11 42 38.6	13.2	0.23	000180
Apr. 1.0	+9775829	6089	+1939433	8353	+0841649	1113	12 11 71.6	46.2	+0.17	000794

(C) The first figures of this and the following logarithms are 0.0.

SUN'S COÖRDINATES, 1860. 383

Date, 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s		$\delta = \odot$'s	Log. Rad. Vect. = ρ .
							True Longitude.				$\lambda'$	Latitude.
Apr. 1.5	+9758683	8954	+3016709	5630	+0675181	4642	12 41 44.1	18.6	+0.12	0.0
2.0	9740820	1102	3093835	2757	0908647	8106	13 10 76.0	50.5	+0.06	001410
2.5	9722240	2533	3170804	9727	0942046	1503	13 40 47.4	21.8	0.00	00:642
3.0	9702946	3250	3247612	6536	0975375	4830	14 9 78.2	52.6	-0.05	003260
3.5	9682939	3254	3324253	3178	1006632	8087	14 39 48.5	22.8	0.10	003878
4.0	+9662222	3548	+3400722	9648	+1041814	1265	15 8 78.2	52.5	0.14	004498
4.5	9640797	1134	3477013	5940	1074921	4370	15 38 47.5	21.7	0.18	005118
5.0	9618665	9013	3553122	2050	1107947	7394	16 7 76.1	50.3	0.21	005740
5.5	9595829	6188	3629044	7973	1140892	0337	16 37 44.3	18.4	0.23	006363
6.0	9572291	2661	3704774	3704	1173755	3198	17 6 71.9	46.0	0.25	006987
6.5	+9548058	8433	+3780307	9238	+1206523	5974	17 36 39.1	13.1	0.26	007612
7.0	9523114	3506	3855637	4570	1239223	8662	18 5 65.8	39.8	0.26	008237
7.5	9497478	7881	3930759	9693	1271823	1360	18 35 32.0	5.9	0.25	008863
8.0	9471147	1561	3005669	4605	1304331	3766	19 4 57.8	31.7	0.24	009489
8.5	9444121	4536	3080659	9296	1336745	6178	19 38 83.0	56.8	0.22	010116
9.0	+9416404	6840	+3154827	3766	+1369052	8494	20 3 47.9	21.7	0.20	010742
9.5	9387996	8443	3229066	8006	1401281	0711	20 32 72.3	46.0	0.17	011369
10.0	9358900	9359	3303073	2015	1433398	2837	21 2 36.3	9.9	0.13	011995
10.5	9329117	9587	3376841	5785	1465412	4839	21 31 59.9	33.4	0.08	012621
11.0	9298651	9132	3450865	9811	1497320	6746	22 0 83.0	56.5	-0.03	013247
11.5	+9267504	7996	+3523638	2586	+1529121	8545	22 30 45.7	19.1	+0.08	013872
12.0	9233677	6180	3596656	5606	1560812	0235	22 59 67.9	41.3	0.09	014496
12.5	9203173	3687	3669413	8365	1592390	1812	23 29 29.7	3.0	0.16	015120
13.0	9169994	0520	3741905	0859	1623852	3373	23 58 51.0	24.3	0.23	015742
13.5	9136142	6679	3814127	3083	1655197	4617	24 27 71.9	45.1	0.30	016363
14.0	+9101619	2168	+3886073	5032	+1686421	5840	24 57 32.3	5.5	0.37	016981
14.5	9066429	6989	3957738	6699	1717523	6941	25 26 52.8	25.5	0.44	017598
15.0	9030574	1146	4029116	8080	1748501	7918	25 55 72.0	45.0	0.50	518213
15.5	8994055	4638	4100201	9168	1779352	8768	26 25 31.3	4.1	0.56	018826
16.0	8956875	7470	4170989	9959	1810075	9490	26 54 50.0	22.9	0.62	019437
16.5	+8919038	9644	+4241475	0448	+1840666	0080	27 23 68.4	41.2	0.68	020046
17.0	8880546	1164	4311654	0630	1871123	0537	27 52 86.4	59.2	0.73	020651
17.5	8841402	2031	4381520	0499	1901444	0857	28 22 44.0	16.7	0.78	021254
18.0	8801609	2250	4451065	0047	1931626	1039	28 51 61.1	33.8	0.82	021853
18.5	8761170	1822	4520286	9271	1961668	1080	29 20 77.8	50.4	0.86	022450
19.0	+8720089	0753	+4589177	8165	+1991565	0977	29 50 34.0	6.5	0.89	023043
19.5	8678369	9045	4657732	6723	2021317	0728	30 19 49.7	22.1	0.91	023633
20.0	8636014	6702	4725947	4942	2050921	0332	30 48 65.0	37.3	0.93	024219
20.5	8593027	3726	4793816	2806	2080374	9784	31 17 79.7	51.9	0.94	024803
21.0	8549413	0124	4861336	0337	2109675	9085	31 47 34.0	6.2	0.94	025382
21.5	+8505174	5896	+4928499	7505	+2138821	8231	32 16 47.8	19.9	0.93	025959
22.0	8460314	1048	4995300	4309	2167809	7219	32 45 61.1	33.2	0.92	026531
22.5	8414836	5581	5061735	0748	2196637	6047	33 14 74.0	46.0	0.90	027101
23.0	8368745	9502	5127798	6815	2225304	4714	33 43 86.3	58.3	0.87	027666
23.5	8322045	2814	5193486	2507	2253807	3217	34 13 38.2	10.1	0.83	028228
24.0	+8274741	5522	+5258793	7818	+2282144	1554	34 42 49.4	21.3	0.79	028786
24.5	8226836	7629	5323716	2746	2310314	9724	35 11 60.3	32.1	0.74	029341
25.0	8178335	9140	5388249	7284	2338315	7725	35 40 70.5	42.2	0.68	029893
25.5	8129241	0055	5452388	1428	2366145	5555	36 9 80.3	51.9	0.62	030442
26.0	8079559	0387	5518129	5173	2393802	3213	36 39 29.5	1.1	0.56	030988
26.5	+8029293	0132	+5579468	8517	+3421284	0695	37 8 38.3	9.8	0.50	031531
27.0	7978447	9298	5642400	1453	2448590	8002	37 37 46.5	18.0	0.43	032072
27.5	7927026	7888	5704921	3979	2475718	5130	38 6 54.2	25.6	0.37	032610
28.0	7875035	5909	5767026	6089	2502665	2078	38 35 61.4	32.8	0.30	033146
28.5	7822478	3364	5828712	7780	2529430	8843	39 4 68.0	39.3	0.23	033680
29.0	+7769359	0257	+5889974	9047	+2556011	5425	39 33 74.2	45.5	0.17	034211
29.5	7715681	6591	5950807	9885	2582407	1821	40 2 79.9	50.9	0.11	034740
30.0	7661450	2372	6011208	0291	2608616	8031	40 31 85.1	56.1	0.06	035267
30.5	7606668	7602	6071174	0262	2634636	4052	41 1 29.8	0.7	+0.01	035792
May 1.0	7551343	2289	6130701	9795	2660465	9882	41 30 34.0	4.9	-0.04	036315
1.5	+7495476	6433	+6189787	8896	+2686104	5522	41 59 37.7	8.5	-0.08	036837

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	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
May	2.0	+7439073	:0042	+6248426	7531	+2711549	0968	$\begin{matrix} \circ & ' & '' \\ 42 & 28 & 41.0 \end{matrix}$	11.8	-0.12	0.0 037857
	2.5	.7382137	3117	.6306616	5726	.2736799	6219	42 57 43.8	14.5	0.15	037876
	3.0	.7324672	5664	.6364352	3468	.2761852	1273	43 26 46.2	16.9	0.17	038392
	3.5	.7266684	7687	.6421631	0752	.2786708	6130	43 55 48.1	18.7	0.18	038907
	4.0	.7208177	9192	.6478449	7576	.2811363	0787	44 24 49.6	20.1	0.19	039420
	4.5	+7149155	:0181	+6534803	3935	+2835817	5242	44 53 50.6	21.0	0.19	039932
	5.0	.7089621	:0659	.6590689	9827	.2860069	:9496	45 22 51.2	21.5	0.18	040442
	5.5	.7029580	:0629	.6646104	5248	.2884115	3543	45 51 51.4	21.6	0.17	040952
	6.0	.6969035	:0096	.6701042	0192	.2907958	7388	46 20 51.2	21.4	0.15	041459
	6.5	.6907991	9063	.6755502	4658	.2931592	1023	46 49 50.7	20.9	0.11	041966
	7.0	+6846452	7536	+6809479	8641	+2955018	4451	47 18 49.8	19.8	0.07	042470
	7.5	.6784421	5516	.6862970	2138	.2978233	7667	47 47 48.5	18.5	-0.03	042973
	8.0	.6721904	3011	.6915972	5147	.3001235	0672	48 16 46.8	16.7	+0.02	043473
	8.5	.6658904	:0022	.6968482	7663	.3024024	3462	48 45 44.8	14.7	0.08	043971
	9.0	.6595426	6555	.7020496	9684	.3046598	6039	49 14 42.5	12.2	0.14	044467
9.5	+6531475	2615	+7072010	1204	+3068956	8399	49 43 39.9	9.5	0.20	044961	
10.0	.6467055	8206	.7123019	2220	.3091096	0541	50 12 36.8	6.3	0.27	045452	
10.5	.6402170	3332	.7173521	2729	.3113016	2463	50 41 33.5	3.0	0.33	045941	
11.0	.6336825	7998	.7223513	2728	.3134713	4162	51 9 89.8	59.2	0.40	046426	
11.5	.6271023	2207	.7272991	2213	.3156187	5638	51 39 85.9	55.3	0.47	046909	
12.0	+6204769	5964	+7321951	1180	+3177437	6890	52 7 81.6	50.9	0.53	047388	
12.5	.6138068	9274	.7370390	:9626	.3198460	7915	52 36 77.1	46.3	0.60	047865	
13.0	.6070924	2141	.7418303	7546	.3219254	8712	53 5 72.2	41.3	0.66	048337	
13.5	.6003342	4569	.7465686	4936	.3239819	9279	53 34 67.1	36.1	0.72	048806	
14.0	.5935328	6566	.7512537	1795	.3260153	:9616	54 3 61.7	30.5	0.77	049271	
14.5	+5866885	8133	+7558851	8116	+3280253	:9718	54 32 56.0	24.8	0.82	049732	
15.0	.5798017	9276	.7604625	3898	.3300119	:9587	55 1 49.9	18.6	0.86	050188	
15.5	.5728731	9997	.7649856	9137	.3319748	9218	55 30 43.6	12.3	0.90	050639	
16.0	.5659032	:0311	.7694540	3829	.3339141	8614	55 59 37.0	5.6	0.93	051086	
16.5	.5588924	:0213	.7738674	7971	.3358293	7768	56 27 30.1	58.7	0.95	051528	
17.0	+5518412	9712	+7782255	1560	+3377205	6683	56 56 82.9	51.4	0.97	051965	
17.5	.5447503	8814	.7825279	4592	.3395875	5355	57 25 75.5	43.9	0.98	052397	
18.0	.5376202	7524	.7867743	7064	.3414302	3785	57 54 67.7	35.9	0.98	052823	
18.5	.5304515	5847	.7909643	8973	.3432484	1970	58 23 59.6	27.8	0.97	053244	
19.0	.5232447	3789	.7950976	0314	.3450420	:9909	58 52 51.1	19.2	0.95	053660	
19.5	+5160004	1356	+7991739	1086	+3468108	7600	59 21 42.4	10.4	0.93	054071	
20.0	.5087191	8553	.8031927	1282	.3485547	5042	59 50 33.2	1.1	0.91	054476	
20.5	.5014014	5386	.8071539	0903	.3502736	2234	60 18 83.8	51.6	0.87	054875	
21.0	.4940479	1861	.8110572	:0945	.3519672	9173	60 47 74.0	41.8	0.83	055268	
21.5	.4866591	7983	.8149025	8407	.3536355	5859	61 16 64.0	31.7	0.79	055656	
22.0	+4792355	3757	+8186896	6287	+3552785	2293	61 45 53.5	21.2	0.75	056039	
22.5	.4717779	9191	.8224183	3583	.3568961	8472	62 14 42.8	10.4	0.69	056416	
23.0	.4642867	4289	.8260879	0288	.3584880	4395	62 42 91.6	59.1	0.63	056788	
23.5	.4567625	9057	.8296983	6402	.3600542	0061	63 11 80.2	47.6	0.57	057156	
24.0	.4492060	3502	.8332493	1921	.3615948	5470	63 40 68.3	35.6	0.50	057518	
24.5	+4416177	6629	+8367408	6846	+3631097	0623	64 9 56.2	23.4	0.43	057875	
25.0	.4339983	:1444	.8401725	1172	.3645985	5514	64 38 43.6	10.7	0.36	058226	
25.5	.4263483	4954	.8435442	4899	.3660613	0146	65 6 90.8	57.8	0.29	058573	
26.0	.4186683	8163	.8468556	8023	.3674980	4517	65 35 77.5	44.5	0.23	058915	
26.5	.4109588	:1078	.8501067	0544	.3689086	8627	66 4 64.0	30.9	0.17	059253	
27.0	+4032205	3704	+8532973	2460	+3702929	2474	66 33 50.1	16.9	0.11	059586	
27.5	.3954539	6048	.8564271	3768	.3716507	6056	67 2 35.8	2.5	+0.05	059915	
28.0	.3876596	8114	.8594961	4468	.3729821	9374	67 30 81.2	47.8	0.00	060240	
28.5	.3798382	9910	.8625040	4557	.3742871	2428	67 59 66.3	32.8	-0.04	060561	
29.0	.3719903	:1440	.8654507	4034	.3755655	5216	68 28 51.0	17.4	0.08	060877	
29.5	+3641165	2712	+8683361	2898	+3768173	7738	68 57 35.5	1.8	0.12	061190	
30.0	.3562172	3728	.8711599	1147	.3780426	:9996	69 25 79.6	43.8	0.15	061499	
30.5	.3582930	4495	.8739221	8780	.3792411	1985	69 54 63.4	29.5	0.16	061805	
31.0	.3403445	5019	.8766225	5795	.3804127	3706	70 23 46.9	13.0	0.17	062107	
31.5	.3323721	5304	.8792608	2189	.3815575	5158	70 51 90.1	56.1	0.17	062407	
June 1.0	+3243766	5358	+8818371	7963	+3826754	6342	71 20 73.0	38.9	-0.17	062703	

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Date, 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
June 1.5	+3163584	5185	+8843510	3113	+3837664	7256	71 49 55.6	21.4	-0.15	062997
2.0	.3083180	4790	.8868027	7641	.3848303	7900	72 18 38.0	3.7	0.14	063287
2.5	.3002561	4180	.8891917	1542	.3858672	8274	72 46 80.1	45.7	0.12	063574
3.0	.2921730	3358	.8915181	4817	.3868770	8377	73 15 62.0	27.5	0.09	063858
3.5	.2840693	2330	.8937817	7464	.3878596	8208	73 44 43.7	9.1	-0.05	064138
4.0	+2759457	:1102	+8959824	9482	+3888149	7766	74 12 85.1	50.4	0.00	064415
4.5	.2678027	9681	.8981202	0872	.3897428	7050	74 41 66.4	31.6	+0.05	064689
5.0	.2596408	8070	.9001947	1629	.3906433	6060	75 10 47.4	12.6	0.11	064959
5.5	.2514605	6275	.9022060	1754	.3915164	4796	75 38 88.3	53.4	0.17	065226
6.0	.2432623	4301	.9041538	1244	.3923620	3257	76 7 68.9	33.9	0.24	065490
6.5	+2350468	2154	+9060381	1099	+3931798	1440	76 36 49.5	14.4	0.30	065751
7.0	.2268146	9840	.9078587	8317	.3939701	9348	77 4 89.8	54.5	0.36	066009
7.5	.2185661	7363	.9096155	5897	.3947327	6979	77 33 70.0	34.7	0.43	066263
8.0	.2103018	4728	.9113082	2836	.3954675	4333	78 2 50.0	14.6	0.49	066513
8.5	.2020223	1941	.9129368	9135	.3961746	1409	78 30 90.0	54.5	0.55	066759
9.0	+1937282	9007	+9145011	4790	+3968537	8206	78 59 69.8	34.2	0.61	067001
9.5	.1854201	5933	.9160010	:9802	.3975049	4723	79 28 49.6	14.0	0.67	067239
10.0	.1770986	2725	.9174364	4169	.3981281	0961	79 56 89.2	53.5	0.73	067472
10.5	.1687642	9388	.9189072	7890	.3987232	6917	80 25 68.8	33.0	0.78	067701
11.0	.1604174	5927	.9201131	0962	.3992901	2592	80 54 48.2	12.3	0.82	067925
11.5	+1520590	1350	+9213542	3386	+3998288	7984	81 22 87.6	51.6	0.86	068144
12.0	.1436894	8660	.9225302	5159	.4003393	3095	81 51 66.8	30.6	0.89	068358
12.5	.1353093	4866	.9236411	6281	.4008215	7922	82 20 45.9	9.7	0.91	068567
13.0	.1269193	:0972	.9246867	6750	.4012753	2466	82 48 84.9	48.5	0.93	068770
13.5	.1185199	6984	.9256670	6566	.4017007	6726	83 17 63.9	27.5	0.93	068968
14.0	+1101119	2910	+9265818	5727	+4020976	0701	83 46 42.7	6.1	0.93	069160
14.5	.1016958	9755	.9274311	4234	.4024661	4392	84 14 81.5	44.9	0.92	069346
15.0	.0932723	4526	.9282146	2082	.4028060	7797	84 43 60.1	23.4	0.91	069526
15.5	.0848419	:0228	.9289324	9274	.4031174	0907	85 12 38.7	2.0	0.90	069699
16.0	.0764053	5867	.9295844	5807	.4034002	3751	85 40 77.2	40.3	0.88	069866
16.5	+0679630	:1450	+9301706	1683	+4036544	6299	86 9 55.7	18.7	0.84	070027
17.0	.0595158	6983	.9306910	6900	.4038799	8560	86 37 94.0	56.9	0.80	070181
17.5	.0510642	2473	.9311456	1460	.4040768	0535	87 6 72.3	35.1	0.75	070329
18.0	.0426087	7923	.9315341	5358	.4042450	2223	87 35 50.4	13.1	0.70	070471
18.5	.0341502	3343	.9318565	8596	.4043846	3625	88 3 88.5	51.1	0.64	070606
19.0	+0256893	8738	+9321127	1171	+4044955	4741	88 32 66.4	28.9	0.58	070735
19.5	.0172266	4116	.9323029	3087	.4045777	5569	89 1 44.3	6.7	0.52	070857
20.0	.0087629	9483	.9324270	4342	.4046313	6112	89 29 81.9	44.3	0.45	070973
20.5	+0002988	4847	.9324851	4937	.4046562	6367	89 58 59.5	21.8	0.39	071082
21.0	-0081651	:9788	.9324772	4872	.4046525	6337	90 26 96.9	59.1	0.32	071185
21.5	-0166282	4414	+9324033	4147	+4046201	6019	90 55 74.2	36.3	0.25	071282
22.0	.0250897	:9025	.9322635	2763	.4045591	5416	91 24 51.3	13.3	0.18	071373
22.5	.0335491	3614	.9320579	0721	.4044694	4525	91 52 88.4	50.3	0.12	071457
23.0	.0420059	:8778	.9317865	8021	.4043511	3349	92 21 65.3	27.0	+0.05	071535
23.5	.0504594	2709	.9314493	4663	.4042043	1887	92 50 42.1	3.8	-0.01	071607
24.0	-0589089	7201	+9310464	0649	+4040290	0141	93 18 78.7	40.2	0.06	071673
24.5	.0673538	1646	.9305778	5978	.4038253	8110	93 47 55.2	16.7	0.11	071735
25.0	.0757936	6041	.9300435	0650	.4035932	5796	94 15 91.5	53.0	0.16	071791
25.5	.0842277	0378	.9294437	4667	.4033327	3197	94 44 67.8	29.2	0.19	071842
26.0	.0926554	4652	.9287785	8030	.4030439	0316	95 13 43.9	5.2	0.22	071887
26.5	-1010763	:9858	+9280479	0739	+4027266	7150	95 41 80.0	41.2	0.24	071928
27.0	.1094897	2989	.9272520	2797	.4023811	3702	96 10 55.9	17.0	0.26	071963
27.5	.1178951	7041	.9263910	4200	.4020073	:9971	96 38 91.7	52.7	0.27	071994
28.0	.1262918	1005	.9254650	4955	.4016055	5960	97 7 67.5	28.4	-0.27	072020
28.5	.1346793	4878	.9244741	5061	.4011754	1666	97 36 43.1	3.9	0.26	072042
29.0	-1430571	:8653	+9234183	4517	+4007173	7092	98 4 78.7	39.4	0.25	072060
29.5	.1514247	2327	.9222977	3326	.4002311	2237	98 33 54.2	14.8	0.23	072074
30.0	.1597813	5890	.9211124	1489	.3997170	7103	99 1 89.7	50.2	0.20	072083
30.5	.1681264	:9339	.9198627	9007	.3991749	1689	99 30 65.1	25.5	0.16	072088
July 1.0	.1764595	2667	.9185486	5882	.3986050	5997	99 59 40.4	0.7	0.12	072089
1.5	-1847800	5871	+9171702	2113	+3980071	0025	100 27 75.7	35.9	-0.07	072092

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Date, 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .		
July 2.0	—1930874	:8943	+9157277	7704	+3973816	3776	100 56	51.0	11.1	—0.02	0.0	072084
2.5	2013813	1881	.9142211	2653	.3967280	7248	101 24	86.3	46.3	+0.04	0.0	072075
3.0	.2096611	4678	.9126506	6964	.3960468	0448	101 53	61.6	21.5	0.10	0.1	072063
3.5	.2179264	7331	.9110163	0636	.3953379	3361	102 21	96.9	56.7	0.16	0.2	072047
4.0	.2261765	:9831	.9093182	8671	.3946014	6003	102 50	72.2	31.8	0.23	0.3	072028
4.5	—2344109	2175	+9075565	6069	+3938879	8368	103 19	47.5	7.1	0.29	0.4	072005
5.0	.2426290	4357	.9067311	7831	.3930454	0457	103 47	82.8	42.3	0.36	0.5	071978
5.5	.2508303	6370	.9058422	8957	.3922260	2270	104 16	58.2	17.6	0.42	0.6	071947
6.0	.2590141	:8209	.9048899	9450	.3913791	3808	104 44	93.7	63.0	0.49	0.7	071913
6.5	.2671798	:9866	.8998744	9310	.3905048	5072	105 13	69.2	28.4	0.55	0.8	071874
7.0	—2753271	1339	+8977958	8540	+3896031	6063	105 42	44.9	4.0	0.60	0.9	071832
7.5	.2834553	2621	.8956541	7138	.3886740	6779	106 10	80.7	39.6	0.65	1.0	071785
8.0	.2915640	3708	.8934495	5108	.3877176	7223	106 39	56.6	15.5	0.70	1.1	071735
8.5	.2996527	4595	.8911821	2449	.3867339	7398	107 7	92.6	51.4	0.74	1.2	071681
9.0	.3077208	5276	.8888520	9164	.3857229	7291	107 36	68.8	27.6	0.77	1.3	071621
9.5	—3157677	5745	+8864592	5251	+3846847	6916	108 5	45.1	3.8	0.79	1.4	071557
10.0	.3237928	5997	.8840039	0714	.3836194	6271	108 33	81.5	40.1	0.81	1.5	071487
10.5	.3317954	6024	.8814863	5553	.3825269	5353	109 2	58.0	16.5	0.82	1.6	071413
11.0	.3397749	5821	.8789065	9771	.3814074	4166	109 30	94.7	53.1	0.83	1.7	071333
11.5	.3477308	5382	.8762647	3368	.3802609	2708	109 59	71.5	29.8	0.82	1.8	071248
12.0	—3556625	4701	+8735609	6346	+3790875	0982	110 28	48.5	6.7	0.81	1.9	071158
12.5	.3636594	3772	.8707953	8706	.3778873	8987	110 56	85.6	43.7	0.79	2.0	071062
13.0	.3714509	2590	.8679682	0451	.3766604	6726	111 25	62.9	20.9	0.77	2.1	070960
13.5	.3793064	1147	.8650797	1582	.3754068	4197	111 53	100.3	58.3	0.73	2.2	070852
14.0	.3871355	:9441	.8621299	2100	.3741265	1402	112 22	77.8	35.7	0.69	2.3	070739
14.5	—3949375	7464	+8591190	3007	+3728197	8341	112 51	55.5	13.3	0.65	2.4	070619
15.0	.4027118	5210	.8560471	1304	.3714865	5017	113 19	93.3	51.0	0.60	2.5	070493
15.5	.4104579	2674	.8529144	9993	.3701269	1428	113 48	71.3	28.9	0.54	2.6	070361
16.0	.4181752	:9850	.8497213	8078	.3687410	7577	114 17	49.5	6.9	0.48	2.7	070222
16.5	.4258630	6731	.8464680	5561	.3673289	3463	114 45	87.8	45.2	0.42	2.8	070077
17.0	—4335207	3311	+8431546	2443	+3658908	9090	115 14	66.2	23.5	0.35	2.9	069926
17.5	.4411476	:9583	.8397814	8727	.3644267	4456	115 43	44.8	2.0	0.28	3.0	069768
18.0	.4487430	5541	.8363488	4417	.3629367	9564	116 11	83.5	40.7	0.21	3.1	069604
18.5	.4563063	1178	.8328569	9514	.3614210	4414	116 40	62.3	19.5	0.14	3.2	069433
19.0	.4638372	6491	.8293061	4021	.3598797	9009	117 8	101.2	58.3	0.08	3.3	069255
19.5	—4713351	1474	+8256964	7940	+3583129	8348	117 37	80.2	37.2	+0.01	3.4	069071
20.0	.4787994	5121	.8220284	1276	.3567208	7435	118 6	59.4	16.3	—0.05	3.5	068881
20.5	.4862296	0427	.8183023	4031	.3551034	1268	118 34	98.6	55.4	0.11	3.6	068685
21.0	.4936252	4387	.8145180	6205	.3534608	4850	119 3	78.0	34.7	0.16	3.7	068483
21.5	.5009856	7995	.8106762	7802	.3517933	8182	119 32	57.4	14.0	0.21	3.8	068275
22.0	—5083106	1250	+8067768	8824	+3501009	1266	120 0	97.0	53.5	0.25	3.9	068061
22.5	.5155996	4145	.8028204	9276	.3483839	4103	120 29	76.7	33.1	0.29	4.0	067841
23.0	.5228519	6673	.7988072	9159	.3466423	6695	120 58	56.5	12.8	0.32	4.1	067615
23.5	.5300668	:8827	.7947376	8479	.3448762	9042	121 26	96.5	52.7	0.34	4.2	067384
24.0	.5372438	0602	.7906119	7237	.3430858	1146	121 55	76.6	32.8	0.36	4.3	067147
24.5	—5443823	1992	+7864304	5437	+3412713	3009	122 24	56.8	12.9	0.37	4.4	066905
25.0	.5514819	2994	.7821935	3084	.3394327	4630	122 52	97.2	53.2	0.38	4.5	066658
25.5	.5585423	3604	.7779015	:0180	.3375702	6013	123 21	77.7	33.6	0.37	4.6	066406
26.0	.5655630	3817	.7735548	6728	.3356840	7158	123 50	58.3	14.1	0.36	4.7	066150
26.5	.5725435	3628	.7691537	2733	.3337742	8068	124 18	99.0	54.7	0.34	4.8	065889
27.0	—5794832	3032	+7644985	8196	+3318410	8743	124 47	79.8	35.4	0.31	4.9	065624
27.5	.5863816	2023	.7601895	3122	.3298846	9185	125 16	60.7	16.2	0.27	5.0	065355
28.0	.5932333	0597	.7556271	7513	.3279050	9398	125 44	101.7	57.2	0.23	5.1	065082
28.5	.6000528	:8750	.7510119	1376	.3259025	9380	126 13	82.9	38.3	0.19	5.2	064805
29.0	.6068247	6477	.7463440	4712	.3238771	9135	126 42	64.1	19.5	0.14	5.3	064525
29.5	—6135535	3773	+7416239	7526	+3218290	8662	127 11	45.6	0.9	0.08	5.4	064242
30.0	.6202389	0636	.7368516	9818	.3197584	7963	127 39	87.2	42.4	—0.02	5.5	063955
30.5	.6268804	7060	.7320275	1593	.3176654	7041	128 8	68.0	24.1	+0.04	5.6	063666
31.0	.6334776	3041	.7271518	2850	.3155500	5894	128 37	51.0	6.0	0.10	5.7	063373
31.5	.6400301	:8575	.7222248	3593	.3134125	4527	129 5	93.3	48.2	0.16	5.8	063077
Aug 1.0	—6465374	3657	+7172471	3833	+3112528	2937	129 34	75.7	30.5	+0.23	5.9	062777

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Date. 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				Log. Rad. Vect. = ρ .
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.		
Sept. 1.0	-.9441996	0447	+3250966	2361	+1410497	1820	159 24	107.6	58.4	+0.57	036420
1.5	.9469760	8929	.3176538	8641	.1378605	9334	159 54	51.5	2.3	0.60	035900
2.0	.9497543	6731	.3102583	4694	.1346414	7243	160 23	55.8	6.5	0.64	035369
2.5	.9524645	3851	.3028403	0592	.1314225	5064	160 52	60.7	11.4	0.65	034837
3.0	.9551064	0289	.2954003	6129	.1281939	2783	161 21	65.9	16.5	0.66	034304
3.5	-.9576797	6040	+2879889	1523	+1249560	0409	161 50	71.7	22.3	0.66	033769
4.0	.9601840	1102	.2804565	6706	.1217090	7944	162 19	77.9	28.4	0.66	033233
4.5	.9626193	5478	.2729536	1684	.1184530	5389	162 48	84.6	35.1	0.65	032695
5.0	.9649853	9152	.2654308	6463	.1151884	2748	163 17	91.8	42.2	0.63	032155
5.5	.9672818	2136	.2578895	1047	.1119152	0021	163 46	99.5	49.9	0.60	031613
6.0	-.9695085	4423	+2503272	5441	+1086339	7213	164 15	107.8	58.1	0.57	031070
6.5	.9716653	6010	.2427476	9652	.1053445	4324	164 45	56.5	6.8	0.53	031525
7.0	.9737518	6895	.2351501	3683	.1020473	1357	165 14	65.8	16.0	0.49	029978
7.5	.9757679	7075	.2275354	7542	.0987425	8313	165 43	75.6	25.7	0.44	029428
8.0	.9777134	6550	.2199037	1231	.0954304	5197	166 12	85.9	35.9	0.39	028876
8.5	-.9795880	5316	+2122557	4757	+0921111	9008	166 41	96.7	46.7	0.33	028322
9.0	.9813914	3370	.2045919	8125	.0887850	8752	167 10	108.1	58.0	0.27	027765
9.5	.9831236	0712	.1969130	1342	.0854522	5429	167 40	60.0	9.9	0.21	027206
10.0	.9847843	7339	.1892193	4410	.0821132	2043	168 9	72.5	22.3	0.14	026644
10.5	.9863733	3249	.1815115	7338	.0787680	8596	168 38	85.5	35.3	0.08	026079
11.0	-.9878905	8441	+1737902	0130	+0754170	5090	169 7	99.0	48.7	+0.01	025511
11.5	.9893356	8912	.1660559	2792	.0720604	1529	169 37	53.0	2.7	-0.06	024940
12.0	.9907085	6661	.1583093	5330	.0686984	7913	170 6	67.5	17.1	0.12	024366
12.5	.9920090	9686	.1505509	7751	.0653813	4246	170 35	82.5	32.1	0.18	023789
13.0	.9932370	1987	.1427813	0059	.0621994	0531	171 4	98.0	47.5	0.24	023208
13.5	-.9943923	3560	+1350012	2262	+0585828	6769	171 34	54.1	3.6	0.29	022624
14.0	.9954748	4406	.1272111	4365	.0552020	2965	172 3	70.6	20.0	0.35	022037
14.5	.9964844	4522	.1194115	6373	.0518170	9119	172 32	87.6	37.0	0.39	021447
15.0	.9974210	3909	.1116031	8293	.0484233	5236	173 1	105.1	54.4	0.43	020853
15.5	.9982843	2563	.1037865	0131	.0450360	1317	173 31	63.1	12.4	0.46	020256
16.0	-.9990744	0485	+0959623	1893	+0416406	7366	174 0	81.5	30.7	0.49	019656
16.5	.9997912	7674	.0881312	3585	.0382421	3385	174 29	100.5	49.7	0.50	019053
17.0	1.0004347	4130	.0802940	5216	.0348411	7378	174 59	59.9	8.9	0.51	018447
17.5	1.0010047	9851	.0724510	6788	.0314376	5346	175 28	79.7	28.8	0.51	017838
18.0	1.0015012	4838	.0646081	8312	.0280319	1292	175 57	99.9	48.9	0.50	017226
18.5	-1.0019242	9089	+0567505	9768	+0246243	7219	176 27	60.6	9.6	0.48	016611
19.0	1.0022736	2605	.0488940	1226	.0212151	3130	176 56	81.7	30.6	0.46	015994
19.5	1.0025492	5382	.0410341	2629	.0178044	9026	177 25	103.3	52.2	0.43	015374
20.0	1.0027512	7424	.0331715	4005	.0143925	4910	177 55	65.3	14.1	0.40	014753
20.5	1.0028796	8729	.0253068	5360	.0109798	0786	178 24	87.8	36.6	0.36	014130
21.0	-1.0029344	9299	+0174406	6700	+0075665	6656	178 53	110.6	59.3	0.32	013505
21.5	1.0029156	9132	.0095734	8029	.0041528	2522	179 23	73.9	22.6	0.27	012879
22.0	1.0028232	8230	+0017057	9353	+0007391	8387	179 52	97.6	46.2	0.21	012251
22.5	1.0026572	6591	-.0061616	9319	-.0026747	5748	180 22	61.8	10.4	0.15	011621
23.0	1.0024177	4218	.0140281	7983	.0060880	9879	180 51	86.4	34.9	0.09	010991
23.5	-1.0021047	1109	-.0218933	6635	-.0095009	4006	181 21	111.4	59.9	-0.03	010361
24.0	1.0017183	7267	.0297565	5267	.0129128	8123	181 50	76.9	25.3	+0.04	009731
24.5	1.0012584	2639	.0376172	3874	.0163236	2229	182 19	102.8	51.2	0.10	009100
25.0	1.0007251	7378	.0454747	2449	.0197330	6321	182 49	69.1	17.4	0.17	008470
25.5	1.0001186	1334	.0533285	0987	.0231409	0398	183 18	95.9	44.2	0.23	007839
26.0	-.9994387	4557	-.0611780	9482	-.0285469	4456	183 48	63.0	11.2	0.29	007209
26.5	.9986856	7048	.0690228	7930	.0299509	8494	184 17	90.7	38.9	0.35	006579
27.0	.9978593	8807	.0768624	6326	.0333526	2509	184 47	58.8	6.9	0.40	005949
27.5	.9969598	9833	.0846960	4662	.0367518	6499	185 16	87.4	35.5	0.45	005320
28.0	.9959872	0129	.0925234	2937	.0401484	0464	185 46	56.5	4.5	0.49	004691
28.5	-.9949415	9693	-.1003440	1144	-.0435419	4897	186 15	86.0	34.0	0.52	004062
29.0	.9938228	8528	.1081571	9276	.0469322	8299	186 45	56.1	4.0	0.55	003436
29.5	.9926311	6632	.1159622	7328	.0503191	2166	187 14	86.6	34.5	0.57	002810
30.0	.9913666	4009	.1237588	5296	.0537023	5997	187 44	57.7	5.5	0.59	002186
30.5	.9900292	0656	.1315463	3173	.0570817	9790	188 13	89.3	37.1	0.60	001563
Oct. 1.0	-.9886191	6577	-.1393242	0954	-.0604570	3542	188 43	61.4	9.1	+0.60	000942

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Date 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.		Y.		Z.		λ = ☉'s True Longitude.		μ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.	
	X.	X'.	Y.	Y'.	Z.	Z'.	°	'	"			
Oct. 1.5	-.9871362	1770	-.1470921	:8635	-.0638279	7250	189	13	94.1	41.8	+0.59	0.0
2.0	.9855806	6236	.1548492	6208	.0671942	0912	189	42	67.3	14.9	0.57	999703
2.5	.9839525	9976	.1625949	3668	.0705556	4525	190	11	101.0	48.6	0.55	999085
3.0	.9822519	2992	.1703287	1008	.0739119	8087	190	41	75.3	22.8	0.52	998468
3.5	.9804788	5282	.1780502	:8226	.0772629	1596	191	10	110.1	57.6	0.48	997852
4.0	-.9786334	6650	-.1857589	5315	-.0806088	8050	191	46	85.5	32.9	0.44	997236
4.5	.9767156	7693	.1934544	2273	.0839480	8446	192	10	61.5	8.9	0.39	996622
5.0	.9747254	7813	.2011358	:9090	.0872817	1783	192	39	98.1	45.4	0.33	996009
5.5	.9726630	7210	.2088028	5764	.0906092	5057	193	9	75.3	22.6	0.27	995397
6.0	.9705284	5886	.2164547	2286	.0939301	9266	193	39	53.0	0.2	0.20	994785
6.5	-.9683217	3841	-.2240910	:8653	-.0972442	1406	194	8	91.4	38.6	0.14	994173
7.0	.9660429	1075	.2317109	4855	.1005511	4475	194	38	70.3	17.4	+0.07	993561
7.5	.9636922	7589	.2393140	0890	.1038507	7471	195	7	109.9	57.0	0.00	992949
8.0	.9612698	3385	.2468994	6748	.1071429	0393	195	37	90.0	37.0	-0.06	992338
8.5	.9587754	8465	.2544667	2423	.1104272	3236	196	7	70.7	17.7	0.13	991727
9.0	-.9562096	2829	-.2620154	:7917	-.1137033	5997	196	36	111.9	58.8	0.19	991116
9.5	.9535724	6479	.2695449	3216	.1169711	8675	197	6	93.7	40.6	0.25	990505
10.0	.9508638	9415	.2770546	:8318	.1202302	1266	197	36	76.1	22.9	0.31	989893
10.5	.9480840	1639	.2845439	3215	.1234905	3769	198	6	59.0	5.8	0.36	989280
11.0	.9452338	3154	.2920123	:7904	.1267216	6181	198	35	102.5	49.2	0.42	988668
11.5	-.9423117	8960	-.2994592	2378	-.1299533	8498	199	5	86.6	33.2	0.47	988055
12.0	.9393194	4059	.3068839	6630	.1331754	0720	199	35	71.2	17.7	0.51	987442
12.5	.9362565	3452	.3142855	0652	.1363875	2841	200	5	56.4	2.8	0.55	986829
13.0	.9331234	2143	.3216637	4439	.1395894	4861	200	34	102.1	48.5	0.58	986214
13.5	.9299201	:0132	.3290179	:7987	.1427809	6777	201	4	88.3	34.6	0.59	985599
14.0	-.9266470	7423	-.3363472	1286	-.1459615	8584	201	34	76.1	21.4	0.60	984984
14.5	.9233042	4017	.3436513	4333	.1491311	0281	202	4	62.4	8.6	0.60	984367
15.0	.9198919	9916	.3509295	7121	.1522896	1867	202	33	110.2	56.4	0.60	983750
15.5	.9164105	5123	.3581814	:9648	.1554366	3338	203	3	98.4	44.6	0.59	983133
16.0	.9128608	9643	.3654062	1900	.1585717	4690	203	33	87.2	33.3	0.57	982516
16.5	-.9092414	3475	-.3726035	3880	-.1616948	5923	204	3	76.5	22.5	0.54	981898
17.0	.9055542	6625	.3797728	5578	.1648056	7032	204	33	66.1	12.0	0.51	981280
17.5	.9017989	9094	.3869130	6988	.1679039	8017	205	3	56.3	2.1	0.47	980661
18.0	.8979757	:0884	.3940239	:8106	.1709894	8873	205	32	106.9	52.7	0.42	980043
18.5	.8940850	1999	.4011049	:8924	.1740620	:9601	206	2	98.0	43.7	0.37	979425
19.0	-.8901270	2441	-.4081554	:9437	-.1771213	0196	206	32	89.5	35.2	0.32	978807
19.5	.8861021	2213	.4151749	:9640	.1801672	0657	207	2	81.5	27.1	0.26	978189
20.0	.8820106	1320	.4221629	:9528	.1831994	0981	207	32	73.8	19.4	0.20	977574
20.5	.8778529	8764	.4291188	:9095	.1862177	1166	208	2	66.6	12.2	0.14	976958
21.0	.8736292	7550	.4360420	:8335	.1892217	1208	208	32	59.8	5.3	-0.07	976345
21.5	-.8693400	4678	-.4429321	7245	-.1922113	1106	209	1	113.5	58.9	0.00	975732
22.0	.8649856	:1156	.4497886	5818	.1951863	0859	209	31	107.5	52.8	+0.06	975122
22.5	.8605664	6985	.4566109	4050	.1981464	0463	210	1	102.0	47.3	0.12	974513
23.0	.8560827	2170	.4633985	1935	.2010915	:9917	210	31	96.9	42.1	0.18	973906
23.5	.8515349	6713	.4701509	:9468	.2040213	:9218	211	1	92.2	37.4	0.24	973301
24.0	-.8469234	:0620	-.4768677	6645	-.2069356	8364	211	31	87.9	33.0	0.29	972699
24.5	.8422484	5891	.4835484	3462	.2098343	7354	212	1	84.1	29.2	0.34	972098
25.0	.8375104	6533	.4901925	:9912	.2127172	6186	212	31	80.7	25.7	0.39	971502
25.5	.8327095	8545	.4967996	5993	.2155841	4858	213	1	77.8	22.8	0.43	970907
26.0	.8278463	9935	.5033691	1698	.2184348	3368	213	31	75.3	20.1	0.46	970317
26.5	-.8229209	:0702	-.5099006	7024	-.2212690	1714	214	1	73.2	18.0	0.49	969728
27.0	.8179337	:0852	.5163935	1964	.2240864	:9891	214	31	71.5	16.2	0.50	969146
27.5	.8128851	:0388	.5228476	6516	.2268870	7901	215	1	70.3	15.0	0.51	968565
28.0	.8077753	9310	.5292621	0672	.2296704	5738	215	31	69.5	14.1	0.51	967990
28.5	.8026047	7624	.5356367	4429	.2324365	3403	216	1	69.2	15.8	0.51	967417
29.0	-.7973738	5336	-.5419709	7782	-.2351853	0894	216	31	69.3	13.8	0.50	966849
29.5	.7920828	2446	.5482644	0728	.2379164	8209	217	1	69.9	14.3	0.48	966283
30.0	.7867320	8958	.5545165	3260	.2406296	5344	217	31	71.0	15.4	0.46	965722
30.5	.7813220	4879	.5607268	5374	.2433248	2300	218	1	72.6	16.9	0.42	965164
31.0	.7758530	:0210	.5668950	7067	.2460017	:9073	218	31	74.7	18.9	0.38	964611
31.5	-.7703254	4953	-.5730205	:8334	-.2486602	5663	219	1	77.3	21.4	+0.34	964061

☉ The first figures of this and the following logarithms are 9.9.

390 SUN'S COÖRDINATES, 1860.

Date. 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.						
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.		λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .		
Nov. 1.0	-.7647395	9114	-.5791028	:9169	-.2512998	3063	219	31	80.4	24.4	+0.99	9.9	963546
1.5	.7590957	3695	.5851416	:9569	.2539207	8277	220	1	84.0	28.0	0.25		962973
2.0	.7533944	5702	.5911864	:9529	.2565223	4297	220	31	88.1	32.0	0.16		962435
2.5	.7476359	8136	.5970868	:9046	.2591046	0125	221	1	92.7	36.6	0.10		961900
3.0	.7418206	:0003	.6029922	8112	.2616676	5759	221	31	97.8	41.6	+0.03		961369
3.5	-.7359489	:1305	-.6088521	6724	-.2642109	1197	222	1	103.4	47.2	-0.03		960841
4.0	.7300212	2047	.6146661	4876	.2667341	6433	222	31	109.5	53.2	0.10		960318
4.5	.7240378	2232	.6204337	2565	.2692373	1470	223	1	116.1	59.7	0.17		959797
5.0	.7179991	:1864	.6261543	:9784	.2717201	6303	223	32	63.3	6.8	0.24		959281
5.5	.7119054	:0946	.6318276	6531	.2741824	0931	224	2	70.9	14.3	0.31		958767
6.0	-.7057572	9489	-.6374530	2798	-.2766238	5359	224	32	72.1	22.5	0.37		958256
6.5	.6995549	7479	.6430301	:8583	.2790442	:9560	225	2	87.8	31.1	0.43		957747
7.0	.6932989	4937	.6485585	3681	.2814434	3557	225	32	97.1	40.3	0.49		957241
7.5	.6869895	:1869	.6540376	:8686	.2838212	7340	226	2	106.8	50.0	0.54		956738
8.0	.6806274	8259	.6594668	2922	.2861774	0908	226	33	57.0	0.1	0.59		956237
8.5	-.6742130	4133	-.6648462	6800	-.2885118	4257	227	3	67.7	10.8	0.63		955733
9.0	.6677469	9491	.6701747	0099	.2908242	7387	227	33	78.9	21.9	0.66		955242
9.5	.6612293	4334	.6754521	2887	.2931144	0295	228	3	90.6	33.5	0.67		954747
10.0	.6546608	8667	.6806779	:5160	.2953822	2979	228	33	102.7	45.5	0.68		954255
10.5	.6480420	2498	.6858517	6912	.2976274	5437	229	3	115.3	58.0	0.68		953765
11.0	-.6413733	5829	-.6909730	8140	-.2998497	7666	229	34	68.3	10.9	0.68		953277
11.5	.6346553	8667	.6960413	:8838	.3020490	:9666	230	4	81.8	24.3	0.67		952791
12.0	.6278884	:1016	.7010561	:9001	.3042251	1433	230	34	95.7	38.2	0.66		952307
12.5	.6210732	2882	.7060172	:8628	.3063778	2966	231	4	110.0	52.4	0.62		951825
13.0	.6142103	4271	.7109240	7712	.3085069	4264	231	35	64.7	7.1	0.61		951346
13.5	-.6073002	5188	-.7157762	6250	-.3106122	5323	232	5	79.8	22.1	0.57		950869
14.0	.6003433	5637	.7205732	4286	.3126935	6143	232	35	95.3	37.5	0.53		950394
14.5	.5933403	5615	.7253147	1667	.3147507	6792	233	5	111.2	53.3	0.48		949921
15.0	.5862918	6157	.7300002	:8539	.3167837	7058	233	36	67.4	9.4	0.43		949450
15.5	.5791983	4240	.7346294	4848	.3187922	7150	234	6	84.0	25.9	0.38		948982
16.0	-.5720604	2878	-.7392020	0591	-.3207761	6996	234	36	100.9	42.7	0.32		948516
16.5	.5648787	:1078	.7437176	5764	.3227353	6595	235	6	118.2	59.9	0.26		948052
17.0	.5575737	8845	.7481758	0363	.3246695	5944	235	37	75.8	17.5	0.20		947592
17.5	.5503859	6184	.7525762	4384	.3265786	5042	236	7	93.7	35.3	0.14		947134
18.0	.5430762	3103	.7569185	7824	.3284625	3688	236	37	111.9	53.5	-0.07		946681
18.5	-.5357249	9607	-.7612023	0680	-.3303210	2480	237	8	70.4	11.9	0.00		946230
19.0	.5283328	5702	.7654273	2947	.3321541	0819	237	38	89.2	30.6	+0.06		945783
19.5	.5209005	:1395	.7695933	4625	.3339616	8902	238	8	108.3	49.6	0.12		945339
20.0	.5134285	6691	.7736999	5708	.3357433	6726	238	39	67.7	8.9	0.17		944899
20.5	.5059174	:4596	.7777470	6197	.3374992	4293	239	9	87.4	18.5	0.22		944463
21.0	-.4983677	6114	-.7817340	6085	-.3392291	1599	239	39	107.3	48.3	0.27		944031
21.5	.4907800	:0253	.7856608	5371	.3409328	8644	240	10	67.6	8.6	0.31		943604
22.0	.4831550	4018	.7895271	4052	.3426103	5426	240	40	88.0	28.9	0.35		943181
22.5	.4754932	7415	.7933327	2126	.3442614	1945	241	10	108.7	49.2	0.38		942762
23.0	.4677951	:0459	.7970771	:9588	.3458861	8200	241	41	69.8	10.6	0.40		942350
23.5	-.4600614	3127	-.8007602	6438	-.3474842	4190	242	11	91.3	31.9	0.41		941942
24.0	.4522297	5455	.8043817	2672	.3490558	:9913	242	41	112.8	53.3	0.42		941540
24.5	.4444895	7438	.8079414	8289	.3506005	5368	243	12	74.7	15.2	0.42		941141
25.0	.4366525	9083	.8114389	3283	.3521182	0553	243	42	96.8	37.2	0.41		940753
25.5	.4287823	:0396	.8148741	7655	.3536089	5468	244	12	119.2	59.7	0.40		940368
26.0	-.4208793	:1380	-.8182466	1399	-.3550725	0112	244	43	82.0	22.2	0.38		939990
26.5	.4129441	:2042	.8215563	4516	.3565088	4484	245	13	105.1	45.2	0.34		939617
27.0	.4049774	:2389	.8248028	7000	.3579178	8582	245	44	68.3	8.4	0.30		939250
27.5	.3969797	:2426	.8279860	8852	.3592993	2406	246	14	91.9	31.9	0.25		938889
28.0	.3889514	:2157	.8311056	0067	.3606533	5954	246	44	115.7	55.6	0.20		938534
28.5	-.3808933	:1590	-.8341615	0646	-.3619796	9226	247	15	79.9	17.7	0.14		938185
29.0	.3728058	:0728	.8371534	0585	.3632782	2221	247	45	104.4	44.1	0.08		937842
29.5	.3646894	9577	.8400810	:9881	.3645489	4937	248	16	69.2	8.8	+0.01		937505
30.0	.3565449	8145	.8429440	8531	.3657916	7373	248	46	94.4	33.9	-0.05		937174
30.5	.3483727	6436	.8457424	6536	.3670062	:9528	249	16	119.8	59.2	0.11		936849
Dec. 1.0	-.3401735	4456	-.8484758	3891	-.3681926	1401	249	47	85.7	25.0	-0.18		936531

SUN'S COÖRDINATES, 1860. 391

Date. 1860.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ '	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = r .	
Dec. 1.5	-3319477	:2211	-8511440	0594	-3693507	2992	250 17 111.8	51.1	-0.24	9.9	
2.0	3236962	9708	8537466	6641	3704803	4297	250 48 78.3	17.5	0.31	936218	
2.5	3154194	6953	8562836	2032	3715814	5318	251 18 105.1	44.2	0.37	935912	
3.0	3071178	3949	8587545	6762	3726539	6052	251 49 72.2	11.2	0.44	935610	
3.5	2987922	:0705	8611598	0831	3736977	6500	252 19 99.6	38.5	0.50	935315	
4.0	-2904432	7227	-8634976	4236	-3747126	6658	252 50 67.3	6.1	0.55	935025	
4.5	2820714	3521	8657694	6976	3756986	6528	253 20 95.3	34.0	0.60	934740	
5.0	2736774	9592	8679741	9045	3766555	6106	253 51 63.7	2.3	0.65	934461	
5.5	2652619	5448	8701119	0445	3775833	5394	254 21 92.4	0.9	0.69	934188	
6.0	2568254	:1093	8721822	1169	3784820	4391	254 51 121.4	59.8	0.72	933920	
6.5	-2483686	6535	-8741851	1220	-3793514	3095	255 22 90.7	29.0	0.74	933656	
7.0	2398921	:1780	8761202	0593	3801912	1502	255 52 120.3	58.6	0.76	933397	
7.5	2313966	6835	8779875	9289	3810014	:9614	256 23 90.2	28.4	0.77	933143	
8.0	2228828	:1707	8797866	7302	3817890	7429	256 53 120.4	58.5	0.77	932892	
8.5	2143513	6402	8815175	4634	3825330	4949	257 24 90.8	28.8	0.77	932646	
9.0	-2058028	:0926	-8831798	1279	-3832542	2171	257 54 121.5	59.4	0.76	932404	
9.5	1972380	5287	8847734	7238	3839456	9095	258 25 92.5	30.3	0.74	932166	
10.0	1886577	9493	8862980	2507	3846071	5720	258 56 63.7	1.4	0.71	931932	
10.5	1800624	3549	8877535	7086	3852386	2045	259 26 95.2	32.8	0.67	931703	
11.0	1714529	7463	8891898	0972	3858399	8068	259 57 66.9	4.4	0.63	931477	
11.5	-1628299	:1242	-8904568	4166	-3864113	3792	260 27 98.8	36.3	0.58	931255	
12.0	1541941	4892	8917044	6665	3869523	9212	260 58 70.9	8.3	0.53	931037	
12.5	1455462	8421	8928825	8470	3874633	4332	261 28 103.2	40.5	0.47	930823	
13.0	1368871	:1838	8939909	9577	3879439	9149	261 59 75.6	12.8	0.41	930612	
13.5	1282173	5148	8950296	:9988	3883943	3663	262 29 108.2	45.3	0.35	930405	
14.0	-1195377	8559	-8959984	9700	-3888143	7874	263 0 90.9	17.9	0.29	930202	
14.5	1108489	:1478	8968973	8713	3892040	1781	263 30 113.8	50.7	0.23	930003	
15.0	1021516	4512	8977262	7026	3895633	5385	264 1 86.8	23.6	0.16	929808	
15.5	0934465	7468	8984850	4638	3898922	8684	264 31 119.9	56.6	0.09	929617	
16.0	0847345	:0354	8991737	1548	3901907	1680	265 2 93.1	29.7	-0.03	929430	
16.5	-0760163	3178	-8997923	7758	-3904588	4371	265 33 66.5	3.1	+0.03	929247	
17.0	0672925	5946	9003407	3266	3906964	6758	266 3 99.8	36.3	0.09	929069	
17.5	0585637	5664	9008189	8073	3909036	8841	266 34 73.3	9.7	0.15	928895	
18.0	0498307	:1339	9012269	2177	3910803	0619	267 4 106.7	43.0	0.20	928726	
18.5	0410942	3980	9015646	5579	3912266	2093	267 35 80.3	16.5	0.25	928562	
19.0	-0323549	6592	-9018320	8277	-3913424	3262	268 5 113.9	50.0	0.29	928402	
19.5	0236135	9184	9020293	0275	3914278	4127	268 36 87.6	23.6	0.32	928248	
20.0	0148706	:1760	9021566	1569	3914826	4688	269 6 121.3	57.2	0.34	928098	
20.5	0061268	4329	9022132	2163	3915075	4946	269 37 95.1	30.9	0.35	927955	
21.0	+0026171	3107	9022001	2057	3915017	4899	269 37 95.1	30.9	0.35	927817	
21.5	+0113605	0537	-9021169	1250	-3914656	4549	270 8 68.9	4.6	0.36	927685	
22.0	0201026	:7954	9019638	9744	3913992	3896	270 38 102.8	38.4	0.36	927559	
22.5	0288428	5352	9017407	7538	3913024	2939	271 9 76.6	12.1	0.35	927440	
23.0	0375802	2722	9014476	4632	3911753	1679	271 39 110.4	45.9	0.33	927327	
23.5	0463143	0059	9010846	1027	3910179	0116	272 10 84.3	19.6	0.31	927220	
24.0	+0550444	:7356	-9006518	6724	-3908308	8251	272 40 118.2	53.4	0.28	927120	
24.5	0637699	4607	9001493	1724	3906124	6083	273 11 92.1	27.2	0.24	927026	
25.0	0724901	1806	8995772	6029	3903643	3613	273 42 66.0	1.0	0.20	926938	
25.5	0812046	:8949	8989353	9635	3900860	0842	274 12 99.9	34.8	0.16	926859	
26.0	0899137	6028	8982228	2546	3897775	7768	274 43 73.8	8.7	0.10	926786	
26.5	+0986138	3037	-8974427	4760	-3894388	4393	275 13 107.8	42.5	+0.04	926721	
27.0	1073073	:9971	8965922	6281	3890700	0716	275 44 81.9	16.5	-0.02	926662	
27.5	1159925	6821	8956722	7107	3886711	6739	276 14 115.9	50.5	0.08	926611	
28.0	1246687	3582	8946829	7240	3882421	2461	276 45 90.1	24.6	0.15	926566	
28.5	1333354	0247	8936242	6679	3877830	7882	277 15 124.2	58.6	0.21	926529	
29.0	+1419920	6812	-8924963	5426	-3872939	3003	277 46 95.5	31.8	0.28	926498	
29.5	1506378	3269	8912992	3481	3867747	7823	278 17 72.7	6.9	0.34	926475	
30.0	1592721	:9611	8900331	0846	3862256	2344	278 47 107.0	38.2	0.41	926459	
30.5	1678943	5832	8886979	7520	3856465	6565	279 18 81.4	15.4	0.47	926451	
31.0	1765038	1927	8872938	3505	3850375	0486	279 48 115.8	49.7	0.53	926450	
31.5	1851000	:7890	8858208	8901	3843986	4109	280 19 90.2	24.0	0.59	926454	
32.0	+1936821	3713	-8842791	3410	-3837299	7433	280 49 124.7	58.5	0.64	926466	
							281 20 99.3	32.9	-0.68	926483	

392 HELIOCENTRIC COORDINATES.

MERCURY.						VENUS.				
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.
240										
0410	-0.3770	+0.0257	+0.0519	9.5814	173 6.0	+0.6888	-0.2642	-0.1608	9.8620	335 5.1
0415	0.3983	-0.0923	-0.0094	9.6117	192 18.9	0.6944	0.1777	0.1240	9.8618	342 59.6
0420	0.3766	0.2007	0.0699	9.6360	209 14.8	0.7164	-0.0678	0.0848	9.8616	350 55.2
0425	0.3205	0.2911	0.1242	9.6536	224 37.0	0.7251	+0.0036	0.0440	9.8619	358 51.2
0430	0.2384	0.3580	0.1685	9.6646	239 0.4	0.7198	0.0950	-0.0024	9.8609	6 48.0
0435	0.1384	0.3981	0.2002	9.6689	252 52.6	0.7007	0.1846	+0.0393	9.8606	14 45.5
0440	-0.0283	0.4093	0.2173	9.6668	266 42.6	0.6674	0.2706	0.0803	9.8602	22 44.0
0445	+0.0839	0.3904	0.2185	9.6581	280 42.4	0.6215	0.3513	0.1195	9.8597	30 43.2
0450	0.1893	0.3409	0.2025	9.6428	295 50.6	0.5635	0.4255	0.1567	9.8594	38 43.3
0455	0.2781	0.2618	0.1690	9.6208	312 9.6	0.4946	0.4911	0.1907	9.8590	46 44.3
0460	0.3385	0.1565	0.1184	9.5925	330 29.7	0.4160	0.5470	0.2210	9.8585	54 46.3
0465	0.3570	-0.0325	-0.0536	9.5593	351 38.7	0.3292	0.5923	0.2469	9.8582	62 49.1
0470	0.3206	+0.0958	+0.0191	9.5252	16 23.6	0.2359	0.6260	0.2680	9.8578	70 52.3
0475	0.2226	0.2047	0.0876	9.4981	44 59.0	0.1379	0.6473	0.2837	9.8574	78 57.4
0480	+0.0740	0.2659	0.1356	9.4879	76 13.9	+0.0373	0.6558	0.2940	9.8572	87 2.6
0485	-0.0929	0.2617	0.1502	9.4993	107 23.2	-0.0641	0.6513	0.2982	9.8569	95 8.5
0490	0.2393	0.1975	0.1304	9.5271	135 45.7	0.1642	0.6338	0.2967	9.8567	103 14.9
0495	0.3410	+0.0950	0.0856	9.5613	160 16.7	0.2610	0.6038	0.2893	9.8565	111 21.6
0500	0.3913	-0.0227	+0.0274	9.5943	181 14.2	0.3527	0.5618	0.2760	9.8564	119 28.6
0505	0.3942	0.1381	-0.0344	9.6223	199 25.7	0.4373	0.5086	0.2573	9.8564	127 35.9
0510	0.3575	0.2400	0.0896	9.6489	215 88.9	0.5132	0.4450	0.2335	9.8564	135 43.1
0515	0.2898	0.3213	0.1435	9.6588	230 33.4	0.5789	0.3731	0.2049	9.8564	143 50.3
0520	0.1995	0.3777	0.1830	9.6671	244 41.1	0.6316	0.2932	0.1724	9.8566	151 57.2
0525	-0.0943	0.4063	0.2090	9.6689	258 29.6	0.6747	0.2079	0.1364	9.8568	160 3.8
0530	+0.0175	0.4053	0.2198	9.6641	272 24.0	0.7029	0.1181	0.0978	9.8570	168 9.8
0535	0.1280	0.3739	0.2141	9.6527	286 49.9	0.7171	+0.0260	0.0570	9.8573	176 15.3
0540	0.2280	0.3122	0.1910	9.6347	302 16.7	0.7172	-0.0662	+0.0152	9.8576	184 20.2
0545	0.3068	0.2219	0.1504	9.6100	319 19.5	0.7031	0.1575	-0.0268	9.8579	192 24.1
0550	0.3518	-0.1078	0.0935	9.5794	338 42.1	0.6752	0.2456	0.0684	9.8583	200 27.4
0555	0.3495	+0.0902	-0.0244	9.5452	1 4.0	0.6339	0.3290	0.1086	9.8587	208 29.9
0560	0.2881	0.1440	+0.0483	9.5128	27 34.4	0.5802	0.4055	0.1466	9.8591	216 31.3
0565	0.1669	0.2367	0.1105	9.4914	57 29.4	0.5153	0.4743	0.1819	9.8596	224 31.9
0570	+0.0061	0.2724	0.1459	9.4900	89 4.8	0.4403	0.5339	0.2134	9.8599	232 31.5
0575	-0.1567	0.2419	0.1459	9.5092	119 21.2	0.3567	0.5832	0.2411	9.8604	240 30.3
0580	0.2868	0.1591	0.1146	9.5408	146 11.5	0.2661	0.6215	0.2641	9.8603	248 28.0
0585	0.3676	+0.0479	0.0629	9.5752	169 10.9	0.1705	0.6473	0.2817	9.8611	256 25.4
0590	0.3978	-0.0706	+0.0224	9.6064	188 54.9	-0.0716	0.6608	0.2940	9.8614	264 21.7
0595	0.3836	0.1816	-0.0589	9.6319	206 13.0	+0.0288	0.6616	0.3006	9.8617	272 17.5
0600	0.3332	0.2758	0.1147	9.6508	221 49.9	0.1288	0.6495	0.3016	9.8619	280 12.9
0605	0.2554	0.3474	0.1610	9.6630	236 21.8	0.2259	0.6251	0.2967	9.8621	288 7.6
0610	0.1581	0.3928	0.1953	9.6686	250 18.8	0.3190	0.5888	0.2861	9.8622	296 2.0
0615	-0.0493	0.4095	0.2153	9.6677	264 6.6	0.4057	0.5411	0.2700	9.8623	303 56.2
0620	+0.0631	0.3962	0.2195	9.6602	278 10.6	0.4847	0.4833	0.2488	9.8623	311 50.4
0625	0.1705	0.3524	0.2068	9.6462	292 57.4	0.5546	0.4159	0.2229	9.8623	319 44.7
0630	0.2633	0.2788	0.1766	9.6254	306 58.6	0.6137	0.3410	0.1926	9.8622	327 39.0
0635	0.3299	0.1780	0.1291	9.5982	326 52.5	0.6613	0.2590	0.1586	9.8620	335 33.6
0640	0.3574	-0.0566	-0.0666	9.5657	347 28.0	0.6961	0.1722	0.1217	9.8618	343 28.6
0645	0.3321	+0.0724	+0.0054	9.5313	11 27.4	0.7176	-0.0823	0.0824	9.8615	351 24.1
0650	0.2455	0.1871	0.0758	9.5022	39 21.8	0.7251	+0.0092	-0.0415	9.8613	359 20.3
0655	+0.1045	0.2592	0.1288	9.4881	70 17.2	0.7190	0.1006	+0.0003	9.8609	7 17.0
0660	-0.0621	0.2676	0.1502	9.4956	101 41.8	0.6989	0.1900	0.0418	9.8606	15 14.7
0665	0.2148	0.2132	0.1364	9.5211	130 43.7	0.6650	0.2759	0.0828	9.8602	23 13.0
0670	0.3259	+0.1160	0.0953	9.5548	155 58.5	0.6184	0.3560	0.1219	9.8598	31 12.3
0675	0.3857	-0.0004	+0.0388	9.5884	177 32.7	0.5597	0.4297	0.1590	9.8594	39 13.3
0680	0.3969	0.1172	-0.0229	9.6175	196 11.5	0.4902	0.4948	0.1927	9.8590	47 13.4
0685	0.3670	0.2223	0.0825	9.6404	212 43.6	0.4109	0.5501	0.2226	9.8585	55 14.4
0690	0.3044	0.3079	0.1348	9.6565	227 50.2	0.3236	0.5946	0.2484	9.8581	63 18.2
0695	0.2177	0.3692	0.1765	9.6661	242 4.7	0.2301	0.6276	0.2690	9.8578	71 22.0
0700	0.1148	0.4031	0.2052	9.6690	255 54.9	0.1320	0.6481	0.2845	9.8575	79 26.5
0705	-0.0036	0.4078	0.2190	9.6655	269 46.2	+0.0312	0.6559	0.2944	9.8571	87 31.7
0710	+0.1079	-0.3821	-0.2165	9.6554	284 4.2	-0.0701	+0.6507	+0.2982	9.8568	95 37.6

HELIOCENTRIC COÖRDINATES. 393

MERCURY.						VENUS.					
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.	
240											
0715	+0.2106	-0.3260	-0.1967	9.6388	299 17.1	-0.1701	+0.6324	+0.2964	9.8567	103 44.0	
0720	0.2542	0.2408	0.1593	9.6151	315 58.9	0.2667	0.6017	0.2885	9.8565	111 50.8	
0725	0.2466	0.1806	0.1058	9.5855	334 51.5	0.3580	0.5589	0.2750	9.8565	119 57.8	
0730	0.2541	-0.0041	-0.0380	9.5517	356 44.1	0.4421	0.5050	0.2559	9.8564	128 5.0	
0735	0.3044	+0.1223	+0.0350	9.5183	22 20.6	0.5175	0.4410	0.2319	9.8564	136 12.3	
0740	0.1986	0.2231	0.1004	9.4941	51 40.4	0.5825	0.3683	0.2031	9.8564	144 19.5	
0745	+0.0376	0.2708	0.1418	9.4886	83 10.0	0.6361	0.2882	0.1703	9.8566	152 26.4	
0750	-0.1278	0.2522	0.1486	9.5044	113 53.9	0.6767	0.2023	0.1341	9.8567	160 33.0	
0755	0.2659	0.1775	0.1294	9.5344	141 27.6	0.7041	0.1126	0.0953	9.8569	168 39.1	
0760	0.2564	+0.0698	0.0736	9.5688	165 8.7	0.7175	+0.0206	0.0545	9.8572	176 44.6	
0765	0.2558	-0.0486	+0.0139	9.6009	185 25.6	0.7168	-0.0719	+0.0127	9.8578	184 49.5	
0770	0.2892	0.1619	-0.0477	9.6276	203 7.4	0.7017	0.1629	-0.0294	9.8579	192 53.5	
0775	0.3450	0.2597	0.1048	9.6478	219 0.3	0.6728	0.2508	0.0709	9.8583	200 56.7	
0780	-0.2716	-0.3359	-0.1532	9.6612	233 42.1	-0.6309	-0.3342	-0.1110	9.8586	208 59.1	
MARS.						JUPITER.					
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.	
240											
0410	-1.6051	-0.2831	-0.0874	0.2128	190 22.9	-1.73097	+4.51010	+1.98074	0.71776	109 21 39	
0420	1.5686	0.3961	0.1403	0.2105	194 57.0	1.80385	4.48922	1.97353	0.71807	110 11 5	
0430	1.5213	0.5064	0.1923	0.2081	199 34.1	1.87436	4.46739	1.96591	0.71837	111 0 27	
0440	1.4633	0.6132	0.2429	0.2055	204 14.5	1.94548	4.44464	1.95789	0.71866	111 49 45	
0450	1.3949	0.7156	0.2918	0.2026	208 58.5	2.01616	4.42097	1.94947	0.71896	112 38 59	
0460	1.3162	0.8128	0.3386	0.1996	213 46.3	2.08644	4.39639	1.94064	0.71926	113 28 8	
0470	1.2278	0.9039	0.3828	0.1964	218 38.2	2.15629	4.37092	1.93140	0.71955	114 17 14	
0480	1.1300	0.9881	0.4241	0.1931	223 34.6	2.22570	4.34454	1.92177	0.71984	115 6 16	
0490	1.0235	1.0647	0.4621	0.1896	228 35.7	2.29465	4.31726	1.91175	0.72014	115 55 14	
0500	0.9087	1.1327	0.4965	0.1860	233 41.8	2.36313	4.28910	1.90133	0.72043	116 44 8	
0510	0.7865	1.1914	0.5267	0.1823	238 53.0	2.43113	4.26007	1.89052	0.72072	117 32 58	
0520	0.6577	1.2402	0.5525	0.1786	244 9.6	2.49863	4.23017	1.87934	0.72101	118 21 44	
0530	0.5233	1.2782	0.5736	0.1748	249 31.7	2.56563	4.19941	1.86776	0.72129	119 10 26	
0540	0.3842	1.3050	0.5896	0.1710	254 59.5	2.63211	4.16780	1.85580	0.72158	119 59 4	
0550	0.2417	1.3199	0.6003	0.1673	260 33.0	2.69806	4.13533	1.84346	0.72186	120 47 38	
0560	-0.0969	1.3225	0.6053	0.1637	266 12.2	2.76346	4.10202	1.83075	0.72214	121 36 9	
0570	+0.0488	1.3125	0.6046	0.1602	271 57.1	2.82831	4.06788	1.81768	0.72242	122 24 36	
0580	0.1941	1.2897	0.5980	0.1568	277 47.5	2.89259	4.03292	1.80424	0.72270	123 12 59	
0590	0.3373	1.2540	0.5854	0.1536	283 43.1	2.95629	3.99716	1.79043	0.72298	124 1 19	
0600	0.4772	1.2054	0.5668	0.1507	289 43.7	3.01939	3.96059	1.77626	0.72326	124 49 35	
0610	0.6120	1.1443	0.5423	0.1481	295 49.1	3.08189	3.92322	1.76175	0.72353	125 37 47	
0620	0.7403	1.0709	0.5120	0.1458	301 58.6	3.14377	3.88507	1.74688	0.72380	126 25 56	
0630	0.8607	0.9861	0.4762	0.1439	308 11.7	3.20501	3.84614	1.73166	0.72407	127 14 1	
0640	0.9715	0.8904	0.4352	0.1423	314 27.7	3.26562	3.80644	1.71609	0.72434	128 2 3	
0650	1.0717	0.7849	0.3893	0.1412	320 46.1	3.32558	3.76600	1.70019	0.72461	128 50 1	
0660	1.1599	0.6706	0.3391	0.1405	327 6.1	3.38487	3.72480	1.68395	0.72487	129 37 56	
0670	1.2352	0.5489	0.2852	0.1403	333 26.8	3.44350	3.68287	1.66737	0.72514	130 25 47	
0680	1.2965	0.4210	0.2280	0.1406	339 47.5	3.50144	3.64022	1.65046	0.72540	131 13 34	
0690	1.3434	0.2884	0.1683	0.1412	346 7.5	3.55869	3.59684	1.63323	0.72566	132 1 18	
0700	1.3753	0.1525	0.1067	0.1423	352 25.8	3.61523	3.55276	1.61567	0.72592	132 48 59	
0710	1.3920	-0.0150	-0.0440	0.1439	358 41.9	3.67107	3.50797	1.59779	0.72617	133 36 36	
0720	1.3935	+0.1227	+0.0193	0.1458	4 55.0	3.72619	3.46251	1.57961	0.72642	134 24 10	
0730	1.3798	0.2591	0.0824	0.1481	11 4.4	3.78059	3.41635	1.56111	0.72667	135 11 40	
0740	1.3516	0.3928	0.1445	0.1507	17 9.7	3.83424	3.36952	1.54231	0.72691	135 59 7	
0750	1.3092	0.5223	0.2052	0.1536	23 10.4	3.88714	3.32203	1.52319	0.72716	136 46 31	
0760	1.2535	0.6464	0.2638	0.1568	29 6.1	3.93930	3.27388	1.50378	0.72740	137 33 52	
0770	1.1852	0.7642	0.3197	0.1602	34 56.5	3.99068	3.22511	1.48409	0.72764	138 21 10	
0780	+1.1052	+0.8745	+0.3724	0.1637	40 41.4	-4.04128	+3.17571	+1.46410	0.72788	139 8 25	

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SATURN.						URANUS.				
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.
240					° ' "					° ' "
0420	-7.19410	+5.17540	+2.45716	0.96363	141 30 23	+7.81259	+16.25788	+7.02030	1.28682	66 11 39
0440	7.26937	5.09286	2.42622	0.96386	142 13 40	7.73917	16.28321	7.03249	1.28673	66 25 34
0460	7.34350	5.00956	2.39498	0.96409	142 56 54	7.66586	16.30822	7.04456	1.28665	66 39 29
0480	7.41649	4.92552	2.36328	0.96433	143 40 4	7.59244	16.33296	7.05649	1.28656	66 53 24
0500	7.48834	4.84074	2.33126	0.96456	144 23 11	7.51891	16.35746	7.06827	1.28647	67 7 20
0520	7.55905	4.75530	2.29887	0.96480	145 6 15	7.44526	16.38168	7.07991	1.28639	67 21 16
0540	7.62861	4.66892	2.26613	0.96504	145 49 16	7.37145	16.40561	7.09145	1.28630	67 35 12
0560	7.69702	4.58192	2.23303	0.96528	146 32 15	7.29746	16.42931	7.10291	1.28622	67 49 8
0580	7.76428	4.49421	2.19959	0.96553	147 15 11	7.22332	16.45273	7.11425	1.28613	68 3 5
0600	7.83036	4.40582	2.16583	0.96577	147 58 5	7.14907	16.47588	7.12544	1.28605	68 17 2
0620	7.89525	4.31678	2.13175	0.96602	148 40 36	7.07475	16.49874	7.13651	1.28597	68 30 59
0640	7.95894	4.22711	2.09736	0.96627	149 23 43	7.00034	16.52133	7.14745	1.28588	68 44 57
0660	8.02141	4.13681	2.06266	0.96652	150 6 26	6.92586	16.54369	7.15825	1.28580	68 58 55
0680	8.08266	4.04589	2.02764	0.96677	150 49 6	6.85131	16.56565	7.16893	1.28571	69 12 53
0700	8.14269	3.95437	1.99231	0.96702	151 31 44	6.77663	16.58737	7.17944	1.28563	69 26 51
0720	8.20151	3.86224	1.95667	0.96728	152 14 19	6.70180	16.60885	7.18981	1.28554	69 40 50
0740	8.25912	3.76951	1.92073	0.96753	152 56 52	6.62682	16.63012	7.20007	1.28545	69 54 49
0760	8.31551	3.67620	1.88451	0.96779	153 39 22	6.55167	16.65106	7.21021	1.28536	70 8 48
0780	-8.37066	+3.58235	+1.84802	0.96804	154 21 48	+6.47640	+16.67170	+7.22027	1.28527	70 22 48

NEPTUNE.						INCLINATIONS AND NODES.				
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longi- tude in Orbit.	For Julian Date 2400600.				
240					° ' "	Planets.	Inclina- tion.	Increase in 100 Days.	Longitude of Ascend- ing Node.	Incr. in 100 Days.
0440	+29.8190	-1.3762	-1.3302	1.47538	356 34.5	Mercury	7° 1' 8.9"	+0.01947	46 40 28	11.469
0480	29.8252	1.2588	1.2822	1.47537	356 49.1	Venus	8 31 22.0	+0.01232	75 26 27	9.004
0520	29.8308	1.1414	1.2341	1.47535	357 3.7	Mars	1 51 2.1	-0.00611	48 28 27	7.600
0560	29.8359	1.0240	1.1860	1.47534	357 18.3	Jupiter	1 18 39.2	-0.05632	99 2 33	9.990
0600	29.8404	0.9065	1.1379	1.47532	357 32.9	Saturn	2 29 21.8	-0.03768	112 27 40	8.566
0640	29.8444	0.7890	1.0898	1.47531	357 47.5	Uranus	0 46 29.8	+0.00634	73 17 23	4.888
0680	29.8479	0.6716	1.0417	1.47529	358 2.2	Neptune	1 46 59.0		130 11 40	
0720	29.8509	0.5542	0.9936	1.47527	358 16.8					
0760	29.8534	0.4368	0.9454	1.47526	358 31.4					
0800	+29.8554	-0.3194	-0.8973	1.47524	358 46.0					

LOGARITHMS OF MASSES.							
Sun's = 1.							
Mercury,	93.3129	The Earth,	94.44985	Jupiter,	96.979689	Uranus,	95.60371
Venus,	94.4089	Mars,	93.57176	Saturn,	96.45573	Neptune,	95.72630

ECLIPSES IN 1860.

In the year 1860 there will be four Eclipses ; two of the Sun and two of the Moon.

I. An Annular Eclipse of the Sun, January 22, 1860, invisible at Washington, with the following elements : —

	Washington Mean Time of ζ in Right Ascension, January 22			d.	h.	m.	s.
				22	6	43	4.3
Sun's and Moon's R.A.	^{h.} 20	^{m.} 18	^{s.} 6.68	Hourly Motions	^{s.} 10.53	and	^{s.} 121.76
Sun's Declination	—19	40	22.6	Hourly Motion	+ 0	34.5	
Moon's Declination	—21	31	40.7	"	"	+ 9	24.4
Moon's Longitude	302	3	51.4	"	"	29	54.0
Moon's Latitude	— 0	49	58.5	"	"	+ 2	44.0
Sun's Equa. Hor. Par.	8.7			True Semidiameter	16	17.3	
Moon's Equa. Hor. Par.	54	19.6		"	"	14	47.5

From these elements may be deduced the following results : —

Eclipse begins on the Earth, January 22^d. 4^h. 46^m.5, Washington mean time, in longitude 183° 8'.1 West of Washington, and in latitude 49° 22'.8 South.

Central Eclipse begins 6^h. 27^m.5, in longitude 253° 19'.7 West of Washington, and in latitude 69° 13'.7 South.

Central Eclipse at noon 6^h. 43^m.1, in longitude 277° 48'.0, and in latitude 89° 1'.0 South.

Central Eclipse ends 8^h. 11^m.3, in longitude 10° 59'.0 West of Washington, and in latitude 41° 52'.2 South.

Eclipse ends on the Earth 9^h. 51^m.9, in longitude 49° 30'.2 West of Washington, and in latitude 15° 7'.0 South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

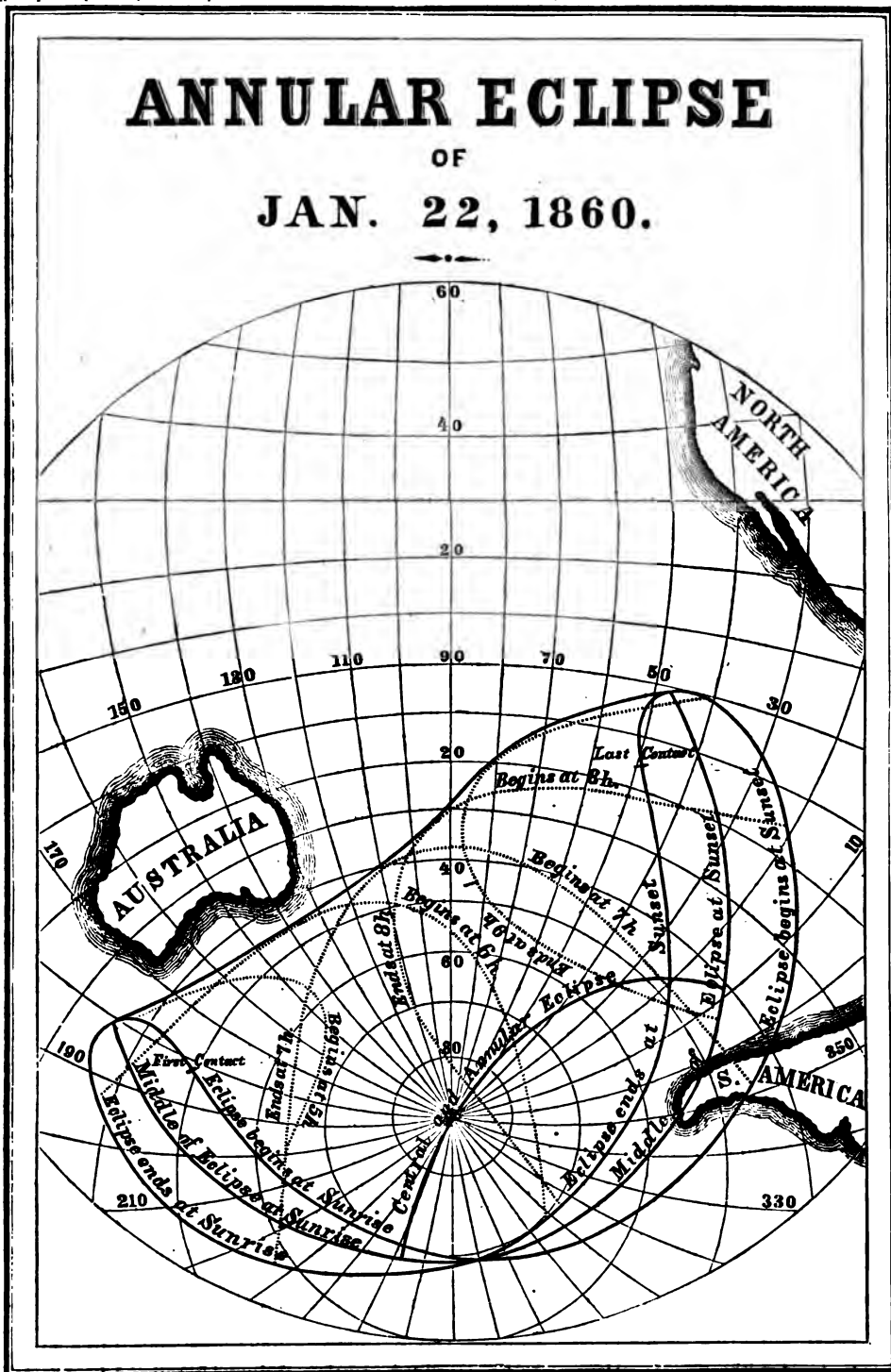
Wash. M. Time.	A.	B.	C.	log H.	log F.	log G.	log H.	μ
				9.97	9.97	—9.53	—9.52	
4 40	—0.98617	—0.70750	—1.85293	3097	4573	3258	1724	67° 2' 0.2
4 45	0.94610	0.69397	1.83942	3099	4575	3242	1708	68 16 59.7
4 50	0.90603	0.68044	1.82591	3101	4577	3226	1692	69 31 59.3
4 55	0.86596	0.66691	1.81240	3103	4579	3210	1675	70 46 58.8
5 0	0.82590	0.65338	1.79888	3105	4581	3194	1659	72 1 58.3
5 5	0.78583	0.63985	1.78536	3107	4583	3178	1643	73 16 57.8
5 10	0.74576	0.62631	1.77184	3109	4585	3162	1627	74 31 57.3
5 15	0.70570	0.61377	1.75832	3111	4587	3146	1610	75 46 56.8
5 20	0.66563	0.60023	1.74480	3113	4589	3130	1594	77 1 56.3
5 25	—0.62556	—0.58669	—1.73127	3115	4591	3114	1578	78 16 55.8

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.								
Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
				9.97	9.97	-9.53	-9.52	
h. m.				3117	4593	3099	1561	79° 31' 55.4
5 30	-0.58550	-0.57214	-1.75774	3119	4595	3083	1545	80 46 54.9
5 35	0.54543	0.55859	1.74421	3121	4597	3067	1529	82 1 54.4
5 40	0.50536	0.54504	1.73068	3123	4699	3051	1512	83 16 54.0
5 45	0.46530	0.53149	1.71714	3125	4601	3035	1496	84 31 53.5
5 50	0.42523	0.51794	1.70360	3127	4603	3019	1479	85 46 53.0
5 55	0.38517	0.50439	1.69006	3130	4606	3003	1462	87 1 52.6
6 0	0.34511	0.49083	1.63651	3132	4608	2987	1446	88 16 52.1
6 5	0.30504	0.47727	1.62296	3134	4610	2971	1430	89 31 51.6
6 10	0.26498	0.46371	1.60941	3136	4612	2955	1413	90 46 51.2
6 15	0.22492	0.45015	1.59586	3138	4614	2939	1396	92 1 50.7
6 20	0.18486	0.43659	1.58231	3140	4616	2923	1380	93 16 50.2
6 25	0.14480	0.42302	1.56875	3142	4618	2907	1364	94 31 49.7
6 30	0.10474	0.40945	1.55519	3144	4620	2891	1348	95 46 49.2
6 35	0.06468	0.39588	1.54163	3146	4622	2875	1331	97 1 48.7
6 40	-0.02462	0.38230	1.52807	3148	4624	2859	1315	98 16 48.3
6 45	+0.01544	0.36872	1.51450	3150	4666	2843	1298	99 31 47.8
6 50	0.05550	0.35514	1.50093	3152	4628	2827	1282	100 46 47.3
6 55	0.09556	0.34156	1.48736	3155	4630	2811	1265	102 1 46.9
7 0	0.13561	0.32797	1.47379	3157	4632	2795	1249	103 16 46.4
7 5	0.17567	0.31439	1.46022	3159	4634	2779	1232	104 31 46.0
7 10	0.21572	0.30080	1.44664	3161	4636	2763	1216	105 46 45.5
7 15	0.25577	0.28721	1.43306	3163	4638	2747	1199	107 1 45.0
7 20	0.29583	0.27362	1.41948	3165	4640	2731	1182	108 16 44.5
7 25	0.33588	0.26003	1.40590	3167	4642	2715	1166	109 31 44.1
7 30	0.37593	0.24643	1.39231	3169	4644	2699	1150	110 46 43.6
7 35	0.41598	0.23283	1.37872	3171	4646	2683	1133	112 1 43.1
7 40	0.45603	0.21923	1.36513	3173	4648	2667	1117	113 16 42.7
7 45	0.49608	0.20563	1.35154	3175	4650	2651	1100	114 31 42.2
7 50	0.53613	0.19203	1.33795	3177	4652	2635	1084	115 46 41.8
7 55	0.57617	0.17842	1.32435	3180	4655	2619	1067	117 1 41.3
8 0	0.61621	0.16481	1.31075	3182	4657	2603	1050	118 16 40.9
8 5	0.65626	0.15120	1.29715	3184	4659	2587	1034	119 31 40.4
8 10	0.69630	0.13759	1.28355	3186	4661	2571	1017	120 46 39.9
8 15	0.73634	0.12398	1.26994	3188	4663	2555	1001	122 1 39.4
8 20	0.77638	0.11037	1.25633	3191	4665	2539	985	123 16 39.0
8 25	0.81642	0.09675	1.24272	3193	4667	2523	968	124 31 38.5
8 30	0.85646	0.08313	1.22910	3195	4669	2507	952	125 46 38.0
8 35	0.89650	0.06951	1.21549	3197	4671	2491	935	127 1 37.5
8 40	0.93654	0.05589	1.20187	3199	4673	2475	918	128 16 37.1
8 45	0.97657	0.04226	1.18825	3201	4675	2459	902	129 31 36.6
8 50	1.01661	0.02864	1.17463	3203	4777	2443	886	130 46 36.1
8 55	1.05664	0.01501	1.16101	3206	4679	2427	869	132 1 35.7
9 0	1.09667	-0.00138	1.14738	3208	4681	2411	853	133 16 35.2
9 5	1.13670	+0.01225	1.13376	3210	4683	2395	836	134 31 34.8
9 10	1.17673	0.02588	1.12013	3212	4685	2379	820	135 46 34.3
9 15	1.21676	0.03952	1.10650	3214	4687	2363	803	137 1 33.8
9 20	1.25679	0.05314	1.09287	3216	4689	2347	787	138 16 33.4
9 25	1.29681	0.06678	1.07924	3218	4691	2331	770	139 31 32.9
9 30	1.33683	0.08040	1.06561	3220	4693	2315	754	140 46 32.4
9 35	1.37685	0.09407	1.05198	3222	4695	2299	737	142 1 32.0
9 40	1.41687	0.10771	1.03835	3224	4697	2283	720	143 16 31.5
9 45	1.45689	0.12136	1.02471	3226	4699	2267	703	144 31 31.0
9 50	1.49691	0.13501	1.01107	3228	4701	2251	687	145 46 30.6
9 55	1.53693	0.14866	0.99743	3231	4704	2234	670	147 1 30.2
10 0	+1.57695	+0.16231	-0.98379					

ANNULAR ECLIPSE

OF

JAN. 22, 1860.



FOR SHADOW.					
Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h. m.			h. m.		
6 20	—0.98257	—1.03632	7 20	—0.81961	—0.87349
6 25	0.96900	1.02276	7 25	0.80602	0.85991
6 30	0.95543	1.00920	7 30	0.79242	0.84632
6 35	0.94186	0.99564	7 35	0.77882	0.83273
6 40	0.92828	0.98208	7 40	0.76522	0.81914
6 45	0.91470	0.96851	7 45	0.75162	0.80555
6 50	0.90112	0.95494	7 50	0.73802	0.79195
6 55	0.88754	0.94137	7 55	0.72442	0.77835
7 0	0.87396	0.92780	8 0	0.71081	0.76475
7 5	0.86038	0.91423	8 5	0.69720	0.75115
7 10	0.84679	0.90065	8 10	0.68369	0.73755
7 15	—0.83320	—0.88707	8 15	—0.66998	—0.72394

A, μ , log E, and log F are given in the Table for Penumbra, and the values of log G and log H are obtained from the corresponding values for Penumbra by numerically increasing log G by 0.000110, and log H by 0.000150.

II. A Partial Eclipse of the Moon, February 6, 1860, visible at Washington, with the following elements: —

Washington Mean Time of γ in Right Ascension, February 6 ^{d. h. m. s.} 9 47 11.2.

Sun's Right Ascension	^{h. m. s.} 21 20 14.67	Hourly Motion	^{s.} 10.01
Moon's Right Ascension	9 20 14.67	" "	145.42
Sun's Declination	—15° 34' 1.9"	Hourly Motion	+ 0' 46.3"
Moon's Declination	—14 55 19.3	" "	—14 56.0

Washington Mean Time of γ in Longitude, February 6 ^{d. h. m. s.} 9 27 10.8.

Moon's Longitude	^{° ' "} 137 35 53.7	Hourly Motion	38 0.6
Moon's Latitude	—0 35 42.1	" "	—3 28.1
Sun's Equa. Hor. Par.	8.7	True Semidiameter	16 15.2
Moon's Equa. Hor. Par.	61 22.3	" "	16 42.6

From these elements are deduced the following results: —

Moon enters Penumbra, February 6 ^{d. h. m.} 6 54.2	Washington Mean Time.
Moon enters Shadow	6 7 55.1 " "
Greatest Eclipse	6 9 21.3 " "
Moon leaves Shadow	6 10 47.5 " "
Moon leaves Penumbra	6 11 48.5 " "

First contact of Shadow with Moon's limb 79° from north point towards the East.

Last contact of Shadow with Moon's limb 32° from north point towards the West.

Magnitude of Eclipse = 0.812 (Moon's diameter = 1).

III. A Total Eclipse of the Sun, July 17, 1860, visible as a partial one at Washington, with the following elements: —

Washington Mean Time of δ in Right Ascension, July 17 ^{d. h. m. s.} 21 0 44.4

Sun's and Moon's R.A.	^{h. m. s.} 7 52 20.37	Hourly Motions	^{s.} 10.04 and 149.94
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Sun's Declination	+20° 56' 58.6"	Hourly Motion	— 0' 26.8"
Moon's Declination	+21° 31' 6.9"	“ “	— 9' 53.2"
Sun's Equa. Hor. Par.	8.7	True Semidiameter	15' 46.7"
Moon's Equa. Hor. Par.	59' 48.8"	“ “	16' 19.5"

From these elements may be deduced the following results:—

Eclipse begins on the Earth, July 17^d 18^h 46^m.4, Washington mean time, in longitude 25° 22'.8 West of Washington, and in latitude 34° 40'.4 North.

Central Eclipse begins 19^h 49^m.8, in longitude 48° 53'.8 West of Washington, and in latitude 45° 40'.0 North.

Central Eclipse at noon 21^h 0^m.7, in longitude 318° 42'.2 West of Washington, and in latitude 56° 12'.4 North.

Central Eclipse ends 22^h 46^m.1, in longitude 243° 52'.5 West of Washington, and in latitude 15° 48'.2 North.

Eclipse ends on the Earth, July 17^d 23^h 49^m.3, in longitude 263° 16'.5 West of Washington, and in latitude 4° 8'.9 North.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
				9.97	9.96	+9.54	+9.55	
18 40	—1.27909	+1.48539	+0.41169	1019	9489	8388	8820	278° 31' 7.6
18 45	1.23365	1.47205	0.39835	1021	9490	8376	8808	279 46 7.8
18 50	1.18821	1.45871	0.38501	1022	9491	8365	8797	281 1 7.9
18 55	1.14277	1.44536	0.37167	1024	9493	8353	8785	282 16 8.1
19 0	1.09733	1.43201	0.35833	1026	9495	8341	8773	283 31 8.3
19 5	1.05189	1.41866	0.34498	1027	9496	8330	8762	284 46 8.4
19 10	1.00645	1.40531	0.33163	1029	9498	8318	8751	286 1 8.6
19 15	0.96101	1.39194	0.31828	1031	9500	8306	8739	287 16 8.8
19 20	0.91557	1.37858	0.30493	1032	9501	8295	8728	288 31 9.0
19 25	0.87013	1.36522	0.29157	1034	9503	8283	8716	289 46 9.2
19 30	0.82468	1.35185	0.27821	1036	9505	8271	8704	291 1 9.4
19 35	0.77924	1.33848	0.26485	1037	9506	8260	8693	292 16 9.5
19 40	0.73380	1.32511	0.25149	1039	9508	8248	8682	293 31 9.7
19 45	0.68836	1.31173	0.23812	1041	9510	8236	8670	294 46 9.9
19 50	0.64292	1.29835	0.22475	1042	9512	8224	8659	296 1 10.1
19 55	0.59748	1.28497	0.21138	1044	9514	8212	8647	297 16 10.3
20 0	0.55203	1.27159	0.19801	1046	9516	8200	8635	298 31 10.5
20 5	0.50659	1.25821	0.18463	1047	9517	8189	8624	299 46 10.6
20 10	0.46115	1.24482	0.17125	1049	9519	8177	8613	301 1 10.8
20 15	0.41571	1.23143	0.15787	1051	9521	8165	8601	302 16 11.0
20 20	0.37027	1.21804	0.14449	1052	9522	8154	8590	303 31 11.1
20 25	0.32483	1.20464	0.13111	1054	9524	8142	8578	304 46 11.3
20 30	0.27938	1.19124	0.11772	1056	9526	8130	8566	306 1 11.5
20 35	0.23394	1.17784	0.10533	1057	9527	8119	8555	307 16 11.6
20 40	0.18850	1.16444	0.09194	1059	9529	8107	8544	308 31 11.8
20 45	0.14305	1.15103	0.07855	1061	9531	8095	8532	309 46 12.0
20 50	0.09761	1.13762	0.06516	1062	9533	8083	8521	311 1 12.2
20 55	0.05217	1.12421	0.05176	1064	9535	8071	8509	312 16 12.4
21 0	—0.00672	1.11080	0.03736	1066	9537	8059	8497	313 31 12.6
21 5	+0.03872	1.09739	0.02396	1067	9538	8048	8486	314 46 12.7
21 10	0.08416	1.08397	+0.01056	1069	9540	8036	8475	316 1 12.9
21 15	0.12960	1.07055	—0.00285	1071	9542	8024	8463	317 16 13.1
21 20	0.17504	1.05713	0.01626	1072	9543	8012	8452	318 31 13.2
21 25	+0.22048	+1.04370	—0.02967	1074	9545	8000	8440	319 46 13.4

TOTAL ECLIPSE

OF
JULY 17. 1860.



ECLIPSES, 1860.

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DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h. m.				9.97	9.96	+9.54	+9.55	
21 30	+0.26593	+1.03027	-0.04308	1076	9547	7988	8428	321° 1' 13.6
21 35	0.31137	1.01684	0.05649	1077	9548	7977	8417	322 16 13.7
21 40	0.35681	1.00341	0.06991	1079	9550	7965	8406	323 31 13.9
21 45	0.40225	0.98997	0.08383	1081	9552	7953	8394	324 46 14.1
21 50	0.44769	0.97653	0.09675	1083	9553	7941	8383	326 1 14.3
21 55	0.49313	0.96309	0.11017	1085	9555	7929	8371	327 16 14.5
22 0	0.53857	0.94965	0.12359	1087	9557	7917	8359	328 31 14.7
22 5	0.58401	0.93621	0.13702	1088	9558	7906	8348	329 46 14.8
22 10	0.62945	0.92276	0.15045	1090	9560	7894	8337	331 1 15.0
22 15	0.67488	0.90931	0.16388	1092	9562	7882	8325	332 16 15.2
22 20	0.72032	0.89586	0.17731	1093	9563	7871	8314	333 31 15.3
22 25	0.76575	0.88240	0.19074	1095	9565	7859	8302	334 46 15.5
22 30	0.81118	0.86894	0.20418	1097	9567	7847	8290	336 1 15.7
22 35	0.85661	0.85548	0.21762	1098	9568	7836	8279	337 16 15.8
22 40	0.90204	0.84202	0.23106	1100	9570	7824	8267	338 31 16.0
22 45	0.94746	0.82855	0.24451	1102	9572	7812	8255	339 46 16.2
22 50	0.99289	0.81508	0.25795	1103	9574	7800	8244	341 1 16.3
22 55	1.03831	0.80161	0.27140	1105	9576	7788	8232	342 16 16.5
23 0	1.08373	0.78813	0.28485	1107	9578	7776	8220	343 31 16.7
23 5	1.12915	0.77465	0.29830	1108	9579	7765	8209	344 46 16.8
23 10	1.17457	0.76117	0.31176	1110	9581	7753	8197	346 1 17.0
23 15	1.21998	0.74769	0.32522	1112	9583	7741	8185	347 16 17.2
23 20	1.26539	0.73421	0.33868	1113	9584	7729	8174	348 31 17.3
23 25	1.31080	0.72072	0.35214	1115	9586	7717	8162	349 46 17.5
23 30	1.35621	0.70723	0.36561	1117	9588	7705	8150	351 1 17.7
23 35	1.40161	0.69374	0.37906	1118	9589	7694	8139	352 16 17.8
23 40	1.44701	0.68024	0.39255	1120	9591	7682	8127	353 31 18.0
23 45	1.49241	0.66674	0.40602	1122	9593	7670	8115	354 46 18.2
23 50	+1.53781	+0.65324	-0.41949	1124	9595	7658	8103	356 1 18.4

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h. m.			h. m.		
19 45	+0.76855	+0.78130	21 20	+0.51394	+0.52692
19 50	0.75517	0.76793	21 25	0.50052	0.51351
19 55	0.74179	0.75456	21 30	0.48709	0.50010
20 0	0.72841	0.74119	21 35	0.47366	0.48669
20 5	0.71502	0.72782	21 40	0.46023	0.47327
20 10	0.70163	0.71444	21 45	0.44679	0.45985
20 15	0.68824	0.70106	21 50	0.43335	0.44643
20 20	0.67485	0.68768	21 55	0.41991	0.43301
20 25	0.66146	0.67430	22 0	0.40647	0.41958
20 30	0.64806	0.66091	22 5	0.39302	0.40616
20 35	0.63466	0.64752	22 10	0.37957	0.39273
20 40	0.62126	0.63413	22 15	0.36612	0.37930
20 45	0.60785	0.62074	22 20	0.35267	0.36587
20 50	0.59444	0.60735	22 25	0.33922	0.35244
20 55	0.58103	0.59395	22 30	0.32576	0.33900
21 0	0.56762	0.58055	22 35	0.31230	0.32556
21 5	0.55420	0.56715	22 40	0.29883	0.31212
21 10	0.54078	0.55374	22 45	0.28536	0.29867
21 15	+0.52736	+0.54033	22 50	+0.27189	+0.28522

A, μ , log E, and log F are given in the Table for Penumbra, and the values of log G and log H are obtained from the corresponding values for Penumbra by numerically increasing log G by 0.000028, and increasing log H by 0.000027.

IV. A Partial Eclipse of the Moon, July 31 and August 1, 1860, invisible at Washington, with the following elements:—

Washington Mean Time of δ in Right Ascension, August 1			
	d.	h.	m.
	0	50	45.1
Sun's Right Ascension	8	48	14.51
Moon's Right Ascension	20	48	14.51
Sun's Declination	+17	51	29.1
Moon's Declination	-17	7	7.0
Hourly Motion			9.69
" "			119.57
Hourly Motion			- 0 38.3
" "			+10 47.6
Washington Mean Time of δ in Longitude, July 1			
	d.	h.	m.
	1	0	25 24.0
Moon's Longitude	309	35	56.2
Moon's Latitude	+0	41	36.9
Sun's Equa. Hor. Par.			8.5
Moon's Equa. Hor. Par.	54	49.3	
Hourly Motion			30 25.2
" "			+2 47.1
True Semidiameter			15 48.2
" "			14 55.6

From these elements are deduced the following results:—

	d.	h.	m.	Washington Mean Time.
Moon enters Penumbra, July	31	21	35.4	
Moon enters Shadow	31	23	0.6	" "
Greatest Eclipse, August	1	0	16.6	" "
Moon leaves Shadow	1	1	32.6	" "
Moon leaves Penumbra	1	2	58.3	" "

First contact of Shadow with Moon's limb 118° from north point towards the East.

Last contact of Shadow with Moon's limb 160° from north point towards the West.

Magnitude of the Eclipse = 0.443 (Moon's diameter = 1).

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA FOR ECLIPSE OF JANUARY 22.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
h. m.						
4 40	+8014.0	+2706.0	+2702.0	+133.57	+45.10	+45.03
4 55	8013.0	2706.0	2703.0	133.55	45.10	45.05
5 10	8013.0	2708.0	2704.0	133.55	45.13	45.07
5 25	8013.0	2709.0	2706.0	133.55	45.15	45.10
5 40	8013.0	2711.0	2707.0	133.55	45.18	45.12
5 55	8012.0	2711.0	2709.0	133.53	45.18	45.15
6 10	8012.0	2712.0	2710.0	133.53	45.20	45.17
6 25	8012.0	2714.0	2712.0	133.53	45.23	45.20
6 40	8012.0	2716.0	2713.0	133.53	45.27	45.22
6 55	8011.0	2717.0	2714.0	133.52	45.28	45.23
7 10	8010.0	2718.0	2716.0	133.50	45.30	45.27
7 25	8010.0	2719.0	2717.0	133.50	45.32	45.28
7 40	8010.0	2720.0	2718.0	133.50	45.33	45.30
7 55	8008.0	2722.0	2720.0	133.47	45.37	45.33
8 10	8008.0	2722.0	2721.0	133.47	45.37	45.35
8 25	8008.0	2724.0	2723.0	133.47	45.40	45.38
8 40	8007.0	2725.0	2724.0	133.45	45.42	45.40
8 55	8006.0	2726.0	2725.0	133.43	45.43	45.42
9 10	8006.0	2727.0	2726.0	133.43	45.45	45.43
9 25	8004.0	2727.0	2726.0	133.40	45.45	45.43
9 40	8004.0	2728.0	2727.0	133.40	45.47	45.45
9 55	+8004.0	+2730.0	+2728.0	+133.40	+45.50	+45.47

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA FOR ECLIPSE OF JULY 17.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
h. m.						
18 40	+9088.0	+2669.0	+2668.0	+151.47	+44.48	+44.47
18 55	9088.0	2670.0	2668.0	151.47	44.50	44.47
19 10	9088.0	2672.0	2670.0	151.47	44.53	44.50
19 25	9088.0	2673.0	2672.0	151.47	44.55	44.53
19 40	9088.0	2675.0	2673.0	151.47	44.58	44.55
19 55	9089.0	2676.0	2674.0	151.48	44.60	44.57
20 10	9088.0	2678.0	2676.0	151.47	44.63	44.60
20 25	9089.0	2680.0	2677.0	151.48	44.67	44.62
20 40	9089.0	2681.0	2678.0	151.48	44.68	44.63
20 55	9089.0	2682.0	2680.0	151.48	44.70	44.67
21 10	9088.0	2684.0	2681.0	151.47	44.73	44.68
21 25	9089.0	2686.0	2682.0	151.48	44.77	44.70
21 40	9088.0	2687.0	2684.0	151.47	44.78	44.73
21 55	9088.0	2688.0	2685.0	151.47	44.80	44.75
22 10	9087.0	2690.0	2686.0	151.45	44.83	44.77
22 25	9086.0	2692.0	2687.0	151.43	44.87	44.78
22 40	9085.0	2693.0	2689.0	151.42	44.88	44.82
22 55	9084.0	2695.0	2690.0	151.40	44.92	44.83
23 10	9083.0	2696.0	2692.0	151.38	44.93	44.87
23 25	9082.0	2698.0	2693.0	151.37	44.97	44.89
23 40	+9080.0	+2700.0	+2694.0	+151.34	+45.00	+44.90

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ϕ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Jan.	1 γ Piscium	4	+22	-61	h. m. 21 39.7	h. m. s. - 8 58 24	-0.4121	0.5074	+2196	+9.4023	9.9857
	2 B.A.C. 632	6	+33	-45	13 31.4	+ 6 23 49	-0.1833	.5183	+2012	+9.4801	.9792
	3 ϵ Arietis	4½	+90	+36	14 58.7	+ 7 0 7	+1.1476	.5508	+1639	+9.5500	.9708
	4 7 Tauri	6	+45	-26	5 59.0	- 2 32 6	+0.0200	.5674	+1326	+9.6090	.9608
	4 11 Tauri	6	+12	-57	8 35.3	- 0 1 34	-0.5563	.5702	+1262	+9.6238	.9577
	4 g Pleiadum	5½	+90	+12	10 16.3	+ 1 35 39	+0.7178	.5716	+1226	+9.6068	.9612
	4 b Pleiadum	4½	+90	+23	10 18.3	+ 1 37 36	+0.9042	.5716	+1225	+9.6087	.9618
	4 m Pleiadum	7	+53	-17	10 24.4	+ 1 43 25	+0.1632	.5717	+1223	+9.6161	.9594
	4 ϵ Tauri	5	+81	+3	10 26.0	+ 1 44 58	+0.5520	.5717	+1223	+9.6098	.9607
	4 c Pleiadum	5	+90	+10	10 41.4	+ 1 59 47	+0.6845	.5719	+1217	+9.6080	.9610
	4 k Pleiadum	7½	+79	+2	10 43.1	+ 2 1 29	+0.5288	.5719	+1217	+9.6113	.9603
	4 l Pleiadum	7½	+79	+2	10 46.6	+ 2 4 50	+0.5319	.5720	+1212	+9.6108	.9604
	4 d Pleiadum	5	+90	+41	10 54.3	+ 2 12 12	+1.1437	.5721	+1213	+9.6009	.9624
	4 12 Pleiadum	7½	+85	+5	11 10.9	+ 2 28 11	+0.5803	.5722	+1207	+9.6107	.9604
	4 p Tauri	7½	+90	+31	11 19.2	+ 2 36 10	+1.0162	.5724	+1204	+9.6039	.9618
	4 η Tauri	3½	+90	+32	11 22.5	+ 2 39 19	+1.0337	.5724	+1203	+9.6036	.9618
	4 f Pleiadum	4½	+90	+43	12 3.8	+ 3 19 5	+1.1641	.5729	+1188	+9.6029	.9620
4 h Pleiadum	5½	+90	+33	11 43.8	+ 2 59 49	+1.0394	.5733	+1187	+9.6046	.9617	
4 B.A.C. 1192	6½	+23	-45	12 30.0	+ 3 44 18	-0.3677	.5752	+1165	+9.6284	.9567	
5 φ Tauri	5	-22	-63	0 29.3	- 5 44 19	-1.0681	.5863	+0.853	+9.6573	.9498	
5 χ Tauri	5½	+90	+19	1 24.1	- 4 51 37	+0.7754	.5856	+0.825	+9.6308	.9562	
6 B.A.C. 1746	6½	+50	-8	5 16.3	- 5 7 59	+0.1160	.6026	-0.017	+9.6581	.9496	
6 136 Tauri	5	+17	-42	11 43.5	+ 1 2 57	-0.4753	.6044	-0.233	+9.6655	.9477	
6 139 Tauri	5½	+90	+47	13 30.0	+ 2 44 56	+1.1301	.6045	-0.292	+9.6408	.9539	
7 ϵ Geminor.	3½	+90	+23	6 28.9	- 4 59 24	+0.8304	.6048	-0.841	+9.6303	.9563	
7 37 Geminor.	6	+53	-14	10 41.9	- 0 57 6	+0.1683	.6045	-0.0973	+9.6348	.9558	
7 ω Geminor.	6	+90	-34	13 22.0	+ 1 36 12	+1.0266	.6032	-1.047	+9.6163	.9594	
7 48 Geminor.	6	+90	+10	17 6.8	+ 5 11 35	+0.6610	.6020	-1.167	+9.6153	.9595	
7 52 Geminor.	6	+32	-35	17 56.1	+ 5 58 52	-0.1940	.6016	-1.192	+9.6279	.9569	
8 μ^2 Cancri	5	+39	-34	14 14.1	+ 1 26 49	-0.0988	.5909	-1.752	+9.5733	.9672	
8 B.A.C. 2854	6½	+87	0	23 41.6	+10 31 44	+0.6298	.5840	-1.980	+9.5225	.9745	
9 η Cancri	6	-6	-69	0 4.4	+10 53 37	-0.8823	.5838	-1.986	+9.5525	.9704	
9 39 Cancri	6	-19	-70	3 2.2	-10 15 34	-1.0713	.5817	-2.051	+9.5543	.9702	
9 40 Cancri	6	-17	-70	3 4.3	-10 13 29	-1.0430	.5817	-2.051	+9.5434	.9717	
9 B.A.C. 2919	7	+1	-67	3 9.0	-10 9 1	-0.7614	.5817	-2.052	+9.5374	.9726	
9 ϵ Cancri	6½	+8	-68	3 10.9	-10 7 9	-0.8448	.5817	-2.053	+9.5347	.9729	
9 42 Cancri	6½	+3	-70	3 17.3	-10 1 1	-0.8395	.5817	-2.054	+9.5383	.9724	
9 B.A.C. 2925	6½	+4	-70	3 22.7	-9 55 49	-0.7213	.5813	-2.060	+9.5355	.9728	
9 B.A.C. 2931	7	-9	-70	3 43.9	-9 36 27	-0.9226	.5813	-2.065	+9.5382	.9724	
9 δ Cancri	4	+65	-17	4 54.6	- 8 27 31	+0.3471	.5804	-2.254	+9.5052	.9765	
9 π^2 Cancri	6	+90	-2	17 27.9	+ 3 37 7	+0.6758	.5706	-2.378	+9.4274	.9839	
10 A Leonis	5	+36	-48	16 3.7	+ 1 23 40	-0.1561	.5547	-2.613	+9.2680	.9924	
11 d Leonis	5	+28	-59	15 47.8	+ 0 18 46	-0.2885	.5419	-2.752	+8.8816	.9987	
11 q^2 Leonis	6	+74	-17	18 45.1	+ 3 10 12	+0.5120	.5405	-2.757	+8.6798	9.9995	
12 v Leonis	4½	+16	-76	8 41.9	- 7 20 46	-0.5368	.5360	-2.755	-6.9682	0.0000	
13 χ Virginis	5	-27	-90	14 2.0	- 2 58 4	-1.2020	.5335	-2.599	-9.0997	9.9965	
13 B.A.C. 4259	6	-26	-90	14 5.8	- 2 54 28	-1.1806	.5335	-2.598	-9.1017	.9965	
14 75 Virginis	6	+49	-32	15 3.4	- 2 45 54	-0.9151	.5379	-2.319	-9.4028	.9857	
14 89 Virginis	5½	+73	+47	22 52.2	+ 4 47 18	+1.3381	.5398	-2.204	-9.4765	.9796	
16 42 Libræ	5½	-33	-90	23 54.3	+ 4 7 44	-1.0558	.5569	-1.338	-9.5983	.9629	
17 b Scorpii	5	+52	-16	4 28.5	+ 8 32 5	+0.4877	.5583	-1.126	-9.6312	.9561	
17 A Scorpii	5	+20	-48	5 37.1	+ 9 38 14	-0.0823	.5586	-1.100	-9.6244	.9576	
17 π Scorpii	3½	+54	-13	7 50.9	+11 47 13	+0.5317	.5591	-1.046	-9.6372	.9548	
17 B.A.C. 5347	5	+45	-21	11 48.5	- 8 23 42	+0.3946	.5601	-0.947	-9.6411	.9538	
17 σ Scorpii	3½	-23	-90	17 25.0	- 2 59 27	-0.8553	0.5715	-0.818	-9.6300	9.9564	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Table with columns: Date, Star's Name, Magnitude, Limiting Parallels (North-south), Washington Mean Time of Conjunction (h. m. s.), and occultation parameters (H, Y, p', q', Log sin D, Log cos D). Rows include stars like Scorpii, Ophiuchi, Sagittarii, and Pleiadum.

Handwritten notes and corrections at the bottom right, including numerical values and star names like '31 37 Pleiadum' and '31 B.A.C. 1193'.

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>P'</i>	<i>q'</i>	Log $\sin D$	Log $\cos D$
Feb. 1	χ Tauri	5½	+90	+23	11 20.1	+ 3 52 24	+0.8396	0.5753	+0.0819	+9.6308	9.9562
2	136 Tauri	5	+18	-42	22 33.4	-10 18 57	-0.4588	.5970	-0.0235	+9.6655	.9477
3	139 Tauri	5½	+90	+49	0 22.1	- 8 34 43	+1.1439	.5977	-0.0294	+9.6408	.9539
3	ϵ Geminor.	3½	+90	+24	17 38.8	+ 7 58 43	+0.8590	.6001	-0.0839	+9.6303	.9563
4	A Geminor.	5½	- 1	-65	8 32.6	- 1 44 32	-0.7798	.5970	-0.1296	+9.6311	.9561
5	μ^2 Cancri	5	+38	-35	1 35.5	- 9 27 26	-0.0918	.5905	-0.1762	+9.5734	.9672
5	δ Cancri	4	+64	-16	16 10.7	+ 4 36 56	+0.3463	.5829	-0.2094	+9.5052	.9765
6	18 Leonis	6	+73	-14	17 32.4	+ 5 0 40	+0.4832	.5679	-0.2547	+9.3336	.9897
6	B.A.C. 3345	6	+90	- 1	18 2.2	+ 5 29 21	+0.7269	.5675	-0.2553	+9.3203	.9903
7	A Leonis	5	+34	-49	2 41.6	-10 10 25	-0.1678	.5625	-0.2653	+9.2678	.9924
8	<i>d</i> Leonis	5	+28	-60	1 42.6	-11 58 20	-0.3024	.5523	-0.2807	+8.8814	9.9987
8	<i>v</i> Leonis	4½	+15	-77	18 0.9	+ 3 46 10	-0.5507	.5498	-0.2827	-6.9792	0.0000
11	χ Virginis	5	-27	-90	22 14.8	+ 7 2 31	-1.2009	.5440	-0.2650	-9.0997	9.9965
11	89 Virginis	5½	+73	+41	5 56.5	-10 20 54	+1.2996	.5485	-0.2238	-9.4766	.9796
12	B.A.C. 4984	6	+67	+ 6	16 49.0	- 0 42 4	+0.8560	.5573	-0.1547	-9.5998	.9626
13	42 Libræ	5½	-33	-90	5 50.1	+11 50 54	-1.0561	.5603	-0.1242	-9.5983	.9628
13	δ Scorpii	5	+51	-17	10 20.5	- 7 48 32	+0.4752	.5608	-0.1134	-9.6312	.9561
13	A Scorpii	5	+20	-48	11 28.2	- 6 43 14	-0.0900	.5610	-0.1099	-9.6244	.9576
13	π Scorpii	3½	+53	-14	13 40.4	- 4 35 52	+0.5200	.5616	-0.1047	-9.6373	.9548
13	B.A.C. 5347	5	+44	-22	17 35.5	- 0 49 22	+0.3850	.5619	-0.0947	-9.6411	.9538
13	α Scorpii	3½	-23	-90	23 8.8	+ 4 31 47	-0.8412	.5622	-0.0808	-9.6901	.9564
14	α Scorpii	1½	+11	-54	2 36.1	+ 7 51 27	-0.1862	.5625	-0.0715	-9.6437	.9532
14	A Ophiuchi	5	-25	-90	22 5.6	+ 2 38 20	-0.7978	.5615	-0.0215	-9.6478	.9522
15	3 Sagittarii	5	+56	- 6	11 47.7	- 8 9 25	+0.6555	.5586	+0.0153	-9.6684	.9469
15	B.A.C. 6194	5½	+38	-24	1 3.4	+ 4 37 58	+0.3436	.5545	+0.0498	-9.6585	.9496
16	λ Sagittarii	3	-47	-90	5 28.1	+ 8 53 21	-1.1545	.5523	+0.0599	-9.6339	.9555
16	φ Sagittarii	3½	+63	+34	13 16.3	- 7 34 42	+1.1682	.5492	+0.0778	-9.6590	.9494
16	σ Sagittarii	2½	+64	+ 3	17 36.9	- 3 23 10	+0.8039	.5468	+0.0883	-9.6490	.9519
17	ψ Sagittarii	5	+62	- 7	2 52.7	+ 5 33 51	+0.6521	.5420	+0.1086	-9.6338	.9555
17	χ^1 Sagittarii	5½	+46	-22	7 23.9	+ 9 55 59	+0.3797	.5395	+0.1186	-9.6223	.9581
18	<i>v</i> Capricor.	5½	-13	-90	19 46.7	- 2 50 35	-0.8658	.5183	+0.1829	-9.5044	9.9766
22	α Piscium	4½	-39	-90	15 6.7	-10 3 14	-1.3344	.4883	+0.2505	+7.9320	0.0000
22	2 Piscium	5	+57	-30	23 43.0	- 1 40 38	+0.2456	.4886	+0.2505	+8.2462	9.9999
23	22 Piscium	6	+65	-24	5 19.6	+ 3 47 0	+0.3812	.4891	+0.2500	-8.5749	.9997
25	η Piscium	4	+22	-61	11 40.2	+ 8 37 21	-0.4111	.5143	+0.2220	+9.4022	.9857
27	ϵ Arietis	4½	+90	+88	6 39.3	+ 2 16 14	+1.1695	.5385	+0.1593	+9.5498	.9708
28	φ Pleiadum	5½	+90	+12	3 1.4	- 2 3 35	+0.7173	.5545	+0.1183	+9.6068	.9612
28	δ Pleiadum	4½	+90	+23	3 3.5	- 2 1 32	+0.9076	.5545	+0.1182	+9.6037	.9618
28	ϵ Pleiadum	7	+52	-18	3 10.0	- 1 55 18	+0.1461	.5546	+0.1179	+9.6161	.9594
28	ϵ Tauri	5	+81	+ 3	3 11.6	- 1 53 45	+0.5456	.5546	+0.1178	+9.6097	.9607
28	1 Pleiadum	8	+90	+40	3 18.3	- 1 47 21	+1.1347	.5546	+0.1175	+9.6022	.9621
28	2 Pleiadum	8½	+83	+ 4	3 21.2	- 1 44 29	+0.5667	.5547	+0.1173	+9.6097	.9607
28	3 Pleiadum	9	+90	+28	3 22.2	- 1 43 30	-0.9734	.5547	+0.1172	+9.6032	.9620
28	4 Pleiadum	8	+90	+11	3 22.9	- 1 42 55	+0.7058	.5547	+0.1171	+9.6076	.9611
28	5 Pleiadum	9	+68	- 5	3 23.5	- 1 42 19	+0.3968	.5548	+0.1171	+9.6125	.9601
28	6 Pleiadum	9	+90	+15	3 24.5	- 1 41 18	+0.7623	.5548	+0.1171	+9.6068	.9612
28	α Pleiadum	5	+90	+10	3 27.9	- 1 38 2	+0.6784	.5548	+0.1170	+9.6081	.9610
28	7 Pleiadum	8	+90	+32	3 29.3	- 1 36 40	+1.0330	.5549	+0.1170	+9.6024	.9621
28	κ Pleiadum	7½	+75	0	3 29.8	- 1 36 12	+0.4855	.5549	+0.1169	+9.6113	.9603
28	ι Pleiadum	7½	+78	+ 2	3 33.5	- 1 32 40	+0.5212	.5549	+0.1168	+9.6108	.9604
28	9 Pleiadum	8½	+90	+23	3 39.7	- 1 26 41	+0.8921	.5550	+0.1165	+9.6051	.9616
28	δ Pleiadum	5	+90	+42	3 41.6	- 1 24 49	+1.1529	.5550	+0.1164	+9.6009	.9624
28	10 Pleiadum	8	+90	+19	3 44.5	- 1 22 4	+0.8314	.5550	+0.1164	+9.6062	.9613
28	11 Pleiadum	8½	+90	+30	3 49.9	- 1 16 49	+1.0028	.5551	+0.1162	+9.6036	.9618
28	12 Pleiadum	7½	+83	+ 4	3 58.1	- 1 8 55	+0.5744	0.5551	+0.1159	+9.6107	9.9604

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Feb. 28	13 Pleiadum	8½	+90	+40	4 0.9	-1 6 16	+1.1374	0.5551	+1.158	+9.6018	9.9622
28	15 Pleiadum	8½	+90	+30	4 6.1	-1 1 16	+1.0055	.5552	+1.156	+9.6041	.9618
28	18 Pleiadum	8	+90	+29	4 7.2	-1 0 8	+0.9959	.5552	+1.155	+9.6043	.9617
28	p Pleiadum	7½	+90	+31	4 8.0	-0 59 23	+1.0216	.5552	+1.155	+9.6039	.9618
28	20 Pleiadum	8	+78	+1	4 8.7	-0 58 44	+0.5202	.5552	+1.155	+9.6119	.9602
28	22 Pleiadum	8	+90	+51	4 9.7	-0 57 44	+1.2362	.5552	+1.155	+9.6006	.9625
28	21 Pleiadum	8½	+72	-2	4 9.7	-0 57 43	+0.4497	.5552	+1.155	+9.6131	.9600
28	24 Pleiadum	8	+90	+20	4 11.4	-0 56 6	+0.8445	.5552	+1.154	+9.6069	.9612
28	γ Tauri	3½	+90	+33	4 11.5	-0 56 0	+1.0399	.5552	+1.154	+9.6037	.9618
28	27 Pleiadum	8½	+90	+20	4 30.5	-0 37 44	+0.8470	.5554	+1.147	+9.6074	.9611
28	29 Pleiadum	8	+90	+19	4 37.6	-0 30 51	+0.8312	.5554	+1.145	+9.6079	.9610
28	f Pleiadum	4½	+90	+44	4 55.2	-0 13 52	+1.1735	.5556	+1.138	+9.6028	.9620
28	λ Pleiadum	5½	+90	+36	4 55.7	-0 13 22	+1.0859	.5556	+1.138	+9.6043	.9617
28	31 Pleiadum	8	+90	+18	4 57.8	-0 11 24	+0.8130	.5557	+1.138	+9.6088	.9608
28	32 Pleiadum	8	+90	+19	4 59.9	-0 9 18	+0.8329	.5557	+1.137	+9.6085	.9609
28	33 Pleiadum	8½	+90	+29	5 2.0	-0 7 21	+0.9784	.5558	+1.136	+9.6062	.9613
28	35 Pleiadum	9	+90	+30	5 10.7	+0 1 5	+0.9979	.5560	+1.133	+9.6062	.9613
28	36 Pleiadum	9	+90	+32	5 14.5	+0 4 44	+1.0382	.5561	+1.131	+9.6057	.9615
28	37 Pleiadum	8	+90	+23	5 15.0	+0 5 16	+0.8937	.5561	+1.131	+9.6079	.9610
28	B.A.C. 1192	6½	+21	-47	5 23.0	+0 12 55	-0.4013	.5563	+1.127	+9.6284	.9567
28	39 Pleiadum	8	+90	+15	5 28.4	+0 18 9	+0.7619	.5564	+1.125	+9.6104	.9605
28	φ Tauri	5	-29	-63	18 6.5	-11 31 17	-1.1241	.5655	+0.823	+9.6573	.9498
29	χ Tauri	5½	+90	+19	19 4.8	-10 35 6	+0.7668	.5662	+0.798	+9.6308	.9562
Mar. 1	136 Tauri	5	+13	-47	7 32.8	+0 28 24	-0.5299	.5855	-0.228	+9.6655	.9477
1	139 Tauri	5½	+90	+47	9 52.2	+2 16 16	+1.1138	.5856	-0.285	+9.6408	.9539
2	♁ Geminor.	3½	+90	+21	3 20.2	-4 31 45	+0.7998	.5879	-0.812	+9.6303	.9563
2	37 Geminor.	6	+51	-16	7 45.5	-0 17 5	+0.1238	.5882	-0.948	+9.6348	.9553
2	ω Geminor.	6	+90	+31	10 33.1	+2 33 43	+0.9984	.5879	-1.038	+9.6162	.9594
2	48 Geminor.	6	+88	+8	14 27.8	+6 9 3	+0.6243	.5875	-1.144	+9.6153	.9595
2	A Geminor.	5½	-6	-65	18 45.5	+10 16 22	-0.8557	.5869	-1.263	+9.6311	.9561
3	μ ² Cancri	5	+35	-38	12 18.6	+3 7 54	-0.1460	.5837	-1.729	+9.5733	.9672
3	η Cancri	6	-9	-69	22 21.0	-11 13 15	-0.9305	.5785	-1.961	+9.5527	.9704
3	35 Cancri	6½	+27	-49	23 25.4	-10 11 17	-0.3025	.5780	-1.992	+9.5354	.9728
4	B.A.C. 2899	7	+32	-44	0 29.3	-9 9 50	-0.2029	.5774	-2.015	+9.5288	.9737
4	B.A.C. 2906	7½	+5	-70	0 57.4	-8 42 50	-0.7069	.5774	-2.024	+9.5374	.9725
4	38 Cancri	7	-5	-70	1 11.9	-8 28 53	-0.8580	.5774	-2.029	+9.5396	.9722
4	B.A.C. 2914	7	+8	-68	1 16.2	-8 24 44	-0.6446	.5774	-2.031	+9.5348	.9729
4	39 Cancri	6	-23	-70	1 21.3	-8 19 50	-1.1189	.5773	-2.032	+9.5443	.9716
4	40 Cancri	6	-21	-70	1 23.5	-8 17 44	-1.0899	.5773	-2.033	+9.5435	.9717
4	B.A.C. 2919	7	-1	-70	1 28.2	-8 13 15	-0.8070	.5772	-2.034	+9.5374	.9726
4	♁ Cancri	6½	+6	-70	1 30.1	-8 11 20	-0.6896	.5772	-2.035	+9.5347	.9729
4	42 Cancri	6½	-6	-70	1 36.6	-8 5 8	-0.8851	.5771	-2.037	+9.5384	.9724
4	B.A.C. 2925	6½	+1	-66	1 42.1	-7 59 53	-0.7659	.5771	-2.039	+9.5355	.9728
4	B.A.C. 2931	7	-12	-70	2 3.5	-7 39 14	-0.9680	.5770	-2.046	+9.5382	.9724
4	44 Cancri	7½	+71	-10	2 87.3	-7 6 45	+0.4545	.5766	-2.059	+9.5049	.9766
4	δ Cancri	4	+61	-18	3 15.1	-6 30 27	+0.3080	.5761	-2.069	+9.5052	.9765
4	π ² Cancri	6	+67	-4	15 52.0	+5 37 46	+0.6378	.5711	-2.318	+9.4274	.9839
5	B.A.C. 3345	6	+90	-2	5 28.8	-5 15 44	+0.7125	.5652	-2.533	+9.3204	.9908
5	A Leonis	5	+34	-50	14 10.7	+3 7 8	-0.1730	.5622	-2.638	+9.2677	.9924
6	d Leonis	5	+29	-58	13 6.7	+1 14 7	-0.2783	.5553	-2.808	+8.8813	.9981
6	ε ³ Leonis	6	+74	-17	15 56.3	+3 57 42	+0.5099	.5546	-2.816	+8.6801	.9993
7	υ Leonis	4½	+17	-73	5 11.3	-7 15 6	-0.5006	.5528	-2.829	+8.9860	.9993
8	χ Virginis	5	-20	-90	8 45.0	-4 39 7	-1.1094	.5535	-2.685	+8.9998	.9981
8	ψ Virginis	5	-43	-90	15 22.8	+1 44 38	-1.3341	.5544	-2.615	+8.8212	.9981
11	δ Scorpii	5	+59	-9	18 2.5	+1 41 13	+0.6036	0.5703	-1.147	+9.5819	.9681

OCCULTATIONS, 1860. 409

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Mar. 26	β Pleiadum	8	+90	+8	10 38.6	+7 16 49	+0.6449	0.5554	+1.126	+9.6085	9.9609
26	γ Pleiadum	8½	+90	+17	10 40.6	+7 18 44	+0.7911	.5554	+1.125	+9.6062	.9613
26	δ Pleiadum	9	+90	+18	10 49.5	+7 27 17	+0.8108	.5555	+1.125	+9.6062	.9613
26	ϵ Pleiadum	9	+90	+20	10 53.3	+7 30 57	+0.8462	.5555	+1.122	+9.6057	.9615
26	ζ Pleiadum	8	+90	+13	10 53.9	+7 31 30	+0.7058	.5555	+1.121	+9.6080	.9610
26	θ Pleiadum	8	+90	+52	10 55.2	+7 32 48	+1.2431	.5555	+1.121	+9.5993	.9627
26	B.A.C. 1192	6½	+10	-59	11 1.9	+7 39 15	-0.5968	.5555	+1.118	+9.6284	.9567
26	η Pleiadum	8	+82	+4	11 7.3	+7 44 29	+0.5555	.5556	+1.117	+9.6104	.9605
26	ι Pleiadum	7½	+90	+43	11 18.8	+7 55 30	+1.1633	.5558	+1.114	+9.6014	.9623
27	χ Tauri	5½	+84	+8	0 52.9	-2 59 40	+0.5735	.5642	+0.787	+9.6308	.9562
28	α Tauri	5	0	-63	14 5.3	+8 48 27	-0.7440	.5782	-0.221	+9.6655	.9477
28	β Tauri	5½	+90	+33	16 1.2	+10 39 49	+0.9228	.5788	-0.278	+9.6408	.9539
29	γ Geminor.	8½	+88	+10	10 28.5	+4 24 7	+0.6079	.5792	-0.804	+9.6303	.9563
30	α Geminor.	5	-22	-65	2 25.6	+4 15 42	-1.0688	.5768	-1.236	+9.6311	.9561
30	β Cancri	5	+25	-48	20 38.0	-10 44 55	-0.3345	.5715	-1.686	+9.5733	.9672
31	γ Cancri	6	-24	-69	7 2.7	-0 43 37	-1.1218	.5677	-1.192	+9.5526	.9704
31	δ Cancri	6½	+17	-59	8 9.6	+0 20 46	-0.4818	.5673	-1.193	+9.5354	.9728
31	B.A.C. 2899	7	+23	-63	9 15.8	+1 24 35	-0.3794	.5670	-1.196	+9.5288	.9737
31	B.A.C. 2906	7½	-7	-70	9 45.0	+1 52 40	-0.3910	.5668	-1.193	+9.5375	.9725
31	ϵ Cancri	7	-18	-70	10 0.0	+2 7 8	-1.0445	.5668	-1.197	+9.5396	.9722
31	B.A.C. 2914	7	-3	-70	10 3.6	+2 10 36	-0.3245	.5666	-1.198	+9.5347	.9729
31	ζ Cancri	6	-47	-70	10 9.8	+2 16 31	-1.3092	.5666	-1.198	+9.5443	.9716
31	η Cancri	6	-41	-70	10 12.0	+2 18 41	-1.2803	.5666	-1.198	+9.5436	.9717
31	B.A.C. 2919	7	-14	-70	10 16.9	+2 23 23	-0.9922	.5666	-1.198	+9.5373	.9726
31	θ Cancri	6½	-6	-70	10 19.0	+2 25 22	-0.3730	.5666	-1.198	+9.5347	.9729
31	ι Cancri	6½	-20	-70	10 25.6	+2 31 48	-1.0713	.5664	-1.199	+9.5383	.9724
31	B.A.C. 2925	6	-11	-70	10 31.3	+2 37 17	-0.9506	.5661	-1.199	+9.5354	.9728
31	B.A.C. 2931	7	-27	-70	10 53.6	+2 58 42	-1.1550	.5661	-1.196	+9.5382	.9724
31	κ Cancri	7½	+60	-18	11 28.6	+3 32 27	+0.2923	.5660	-2.014	+9.5049	.9766
31	λ Cancri	4	+51	-26	12 8.2	+4 10 33	+0.1423	.5660	-2.020	+9.5052	.9765
Apr. 1	μ Leonis	6	+63	-21	14 45.8	+5 50 26	+0.3420	.5564	-2.467	+9.3336	.9897
1	B.A.C. 3345	6	+81	-8	15 16.8	+6 20 20	+0.5914	.5563	-2.472	+9.3204	.9903
2	ν Leonis	5	+28	-66	0 14.6	-9 0 49	-0.2914	.5539	-2.581	+9.2679	.9924
2	ξ Leonis	5	+25	-62	23 44.2	-10 20 15	-0.3478	.5499	-2.758	+8.8713	9.9987
3	ζ Leonis	4½	+15	-75	16 3.7	+5 25 29	-0.5320	.5500	-2.789	+8.9882	0.0000
4	η Virginis	6	+82	+12	17 20.3	+5 49 29	+1.0118	.5541	-2.689	-9.1789	9.9950
4	θ Virginis	5	-18	-90	19 45.0	+8 9 5	-1.0705	.5551	-2.667	-9.0998	.9965
5	ι Virginis	5	-37	-90	2 21.2	-9 28 40	-1.2794	.5576	-2.610	-9.1838	.9949
5	κ Virginis	6	+59	-23	18 56.2	+6 30 48	+0.3830	.5626	-2.376	-9.4029	.9857
7	B.A.C. 4984	6	+67	+27	11 5.8	-2 49 25	+1.1293	.5765	-1.580	-9.5998	.9626
7	λ Libras	5½	-11	-90	23 22.1	+8 58 36	-0.7071	.5794	-1.262	-9.5982	.9629
8	μ Scorpii	5	+65	+9	8 37.1	-10 56 12	+0.7894	.5797	-1.151	-9.6312	.9561
8	ν Scorpii	5	+37	-29	4 41.0	-9 54 46	+0.2413	.5799	-1.122	-9.6244	.9576
8	ξ Scorpii	3½	+65	+6	6 45.8	-7 54 49	+0.8379	.5801	-1.066	-9.6373	.9548
8	B.A.C. 5347	5	+64	-2	10 27.8	-4 31 27	+0.7091	.5802	-0.962	-9.6411	.9538
8	ζ Scorpii	3½	-3	-74	15 42.9	+0 41 28	-0.4742	.5802	-0.817	-9.6301	.9564
8	η Scorpii	1½	+90	-33	18 59.1	+3 50 2	+0.1676	.5797	-0.727	-9.6437	.9532
8	θ Scorpii	5	-54	-90	19 20.2	+4 10 24	-1.2210	.5798	-0.720	-9.6227	.9580
9	ι Ophiuchi	5	-5	-70	13 30.5	-2 21 27	-0.4095	.5762	-0.200	-9.6478	.9522
9	κ Ophiuchi	6	+72	+44	16 41.3	+0 41 57	+1.2334	.5752	-0.113	-9.6716	.9459
10	λ Sagittarii	5	+63	+20	2 37.0	+10 15 12	+1.0195	.5709	+0.160	-9.6684	.9469
10	B.A.C. 6194	5½	+63	-1	15 23.2	-1 26 59	+0.7209	.5638	+0.050	-9.6584	.9496
10	μ Sagittarii	3	-19	-90	19 39.3	+2 39 43	-0.7473	.5616	+0.065	-9.6340	.9555
11	ν Sagittarii	2½	+64	+35	7 27.1	-9 57 44	+1.1776	.5536	+0.088	-9.6490	.9519
11	ξ Sagittarii	5	+65	+19	16 29.9	-1 13 49	+1.0283	0.5470	+1.091	-9.6338	9.9555

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.**

Date.	Star's Name.	Magnitudo.	Limiting Parallels.		Washing- ton Mean Time of C.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°		h. m. s.	h. m. s.				
Apr. 22	34 Pleiadum	7½	+90	+48	16 27.3	— 9 7 29	+1.2023	.5601	+1.1111	+9.5969	9.9631
22	35 Pleiadum	9	+90	+ 8	16 27.7	— 9 7 7	+0.6359	.5601	+1.1111	+9.6062	.9613
22	36 Pleiadum	9	+90	+10	16 31.5	— 9 3 26	+0.6714	.5603	+1.1110	+9.6057	.9615
22	37 Pleiadum	8	+79	+ 3	16 32.1	— 9 2 53	+0.5316	.5603	+1.1109	+9.6080	.9610
22	38 Pleiadum	8	+90	+35	16 33.5	— 9 1 35	+1.0666	.5604	+1.1109	+9.5993	.9627
22	B.A.C. 1192	6½	— 1	—65	16 40.0	— 8 55 15	—0.7670	.5604	+1.1107	+9.6284	.9567
22	39 Pleiadum	8	+68	— 4	16 45.5	— 8 50 2	+0.3993	.5605	+1.1106	+9.6104	.9605
22	40 Pleiadum	7½	+90	+30	16 55.9	— 8 40 2	+0.9870	.5606	+1.1103	+9.6014	.9623
23	χ Tauri	5½	+67	— 1	6 23.5	+ 4 18 17	+0.3784	.5682	+0.773	+9.6308	.9562
24	VENUS	—	+90	+26	7 16.1	+ 4 14 45	+0.7681	.5338	+0.0053	+9.6415	.9538
24	136 Tauri	5	—17	—63	19 28.9	— 8 0 38	—0.9824	.5781	—0.236	+9.6655	.9477
25	♋ Geminor.	3½	+65	— 3	15 59.1	+11 42 8	+0.3545	.5778	—0.805	+9.6303	.9563
26	JUPITER	—	+90	+43	10 23.2	+ 5 24 13	+1.1714	.5678	—1.278	+9.5848	.9653
27	μ² Cancri	5	+ 9	—64	2 40.8	— 2 54 39	—0.6085	.5658	—1.668	+9.5734	.9672
27	δ Cancri	6	+90	+28	12 54.8	+ 6 56 55	+1.0723	.5614	—1.881	+9.5030	.9768
27	B.A.C. 2854	6½	+52	—24	12 55.9	+ 6 57 57	+0.1585	.5614	—1.882	+9.5226	.9745
27	35 Cancri	6½	+ 1	—67	14 29.1	+ 8 27 45	—0.7591	.5605	—1.915	+9.5354	.9728
27	B.A.C. 2899	7	+ 7	—69	15 37.1	+ 9 33 19	—0.6552	.5599	—1.937	+9.5288	.9737
27	B.A.C. 2906	7½	—27	—70	17 57.0	+ 9 52 6	—1.1776	.5601	—1.944	+9.5375	.9725
27	38 Cancri	7	—51	—70	16 22.4	+10 17 0	—1.3286	.5596	—1.951	+9.5396	.9722
27	B.A.C. 2914	7	—23	—70	16 26.1	+10 20 34	—1.1056	.5595	—1.952	+9.5348	.9729
27	B.A.C. 2919	7	—41	—70	16 29.7	+10 33 41	—1.2753	.5596	—1.956	+9.5378	.9726
27	♋ Cancri	6½	—27	—70	16 41.8	+10 35 43	—1.1543	.5592	—1.957	+9.5347	.9729
27	B.A.C. 2925	6½	—35	—70	16 54.5	+10 47 56	—1.2325	.5594	—1.960	+9.5355	.9728
27	44 Cancri	7½	+44	—32	17 53.3	+11 44 38	+0.0250	.5578	—1.978	+9.5049	.9766
27	δ Cancri	4	+36	—40	18 33.5	—11 36 38	—0.1247	.5587	—1.992	+9.5052	.9765
28	π² Cancri	6	+56	—22	7 59.5	+ 1 20 52	+0.2426	.5531	—2.051	+9.4274	.9839
29	A Leonis	5	+15	—71	7 45.6	+ 0 17 52	—0.5344	.5448	—2.525	+9.2678	.9924
30	d Leonis	5	+14	—76	8 1.3	— 0 15 17	—0.5502	.5411	—2.695	+8.8813	.9987
30	q² Leonis	6	+58	—29	10 59.8	+ 2 37 16	+0.2691	.5412	—2.706	+8.6801	9.9995
May 1	ν Leonis	4½	+ 6	—90	0 51.6	— 7 58 44	—0.7005	.5420	—2.726	—6.9887	0.0000
2	χ Virginis	5	—26	—90	5 16.1	— 4 31 45	—1.1690	.5492	—2.613	—9.0998	9.9965
2	ψ Virginis	5	—48	—90	12 0.5	+ 1 58 41	—1.3593	.5517	—2.553	—9.1838	.9949
5	42 Librae	5½	— 5	—84	9 26.3	— 3 9 3	—0.5895	.5832	—1.229	—9.5984	.9628
5	b Scorpii	5	+65	+11	13 39.5	+ 0 54 18	+0.9139	.5837	—1.135	—6.6312	.9561
5	A Scorpii	5	+44	—22	14 42.9	+ 1 55 14	+0.3692	.5840	—1.108	—9.6244	.9576
5	B.A.C. 5255	6	+48	—19	14 56.9	+ 2 8 42	+0.4309	.5840	—1.103	—9.6258	.9573
5	4 Scorpii	6	+64	+47	15 26.8	+ 2 37 21	+1.2578	.5841	—1.086	—9.6396	.9542
5	π Scorpii	3½	+65	+15	16 46.6	+ 3 54 4	+0.9685	.5842	—1.051	—9.6372	.9548
5	B.A.C. 5314	6	+54	—12	18 34.1	+ 5 37 23	+0.5440	.5847	—1.003	—9.6336	.9556
5	B.A.C. 5347	5	+64	+ 7	20 26.5	+ 7 25 22	+0.8505	.5849	—0.947	—9.6411	.9538
6	σ Scorpii	3½	+ 5	—63	1 38.2	—11 35 7	—0.3200	.5851	—0.803	—9.6301	.9564
6	α Scorpii	1½	+38	—24	4 52.1	— 8 28 52	+0.3256	.5858	—0.713	—9.6437	.9532
6	22 Scorpii	5	—39	—90	5 13.0	— 8 8 48	—1.0558	.5853	—0.705	—9.6228	.9580
6	A Ophiuchi	5	+ 5	—56	23 7.8	+ 9 3 51	—0.2129	.5828	—0.190	—9.6478	.9522
7	3 Sagittarii	5	+63	+45	12 1.2	— 2 32 38	+1.2283	.5779	+0.176	—9.6684	.9469
8	B.A.C. 6194	6	+63	+15	0 33.6	+ 9 31 21	+0.9510	.5710	+0.0517	—9.6584	.9496
8	1 Sagittarii	3	— 6	—77	4 49.0	—10 22 34	—0.4987	.5684	+0.0624	—9.6340	.9555
9	φ Sagittarii	5	+65	+54	1 13.1	+ 9 17 13	+1.2888	.5538	+1.108	—9.6338	.9555
9	χ¹ Sagittarii	5½	+66	+18	5 34.2	—10 30 47	+1.0081	.5401	+1.184	—9.6223	.9581
9	MARS	—	+67	— 3	16 43.8	+ 0 18 13	+0.7190	.5152	+1.140	—9.5965	.9632
10	σ Capricor.	5½	—21	—90	6 51.1	—10 4 17	—0.9629	.5298	+1.672	—9.5248	.9742
10	π Capricor.	5	—47	—90	10 42.9	— 6 19 52	—1.2706	.5267	+1.733	—9.5052	.9765
10	ν Capricor.	5½	+23	—54	16 58.9	— 0 15 35	—0.1994	.5220	+1.824	—9.5043	.9767
12	λ Capricor.	5½	+16	—69	3 29.9	+ 9 14 13	—0.4383	0.5005	+2.209	—9.3182	9.9904

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.						
			North-ern.	South-ern.		<i>H</i>		<i>Y</i>		Log <i>sin D</i>		Log <i>cos D</i>
			\circ	\circ		h. m.	h. m. s.	<i>p'</i>	<i>q'</i>			
May 19	δ Aquarii	4½	+11	-78	20 11.7	+ 1 28 17	-0.5667	0.4940	+ 2325	-0.1685	9.9952	
	ϵ Aquarii	5½	+37	-47	22 3.9	+ 3 17 29	-0.0823	4.933	+ 2336	-0.1707	9.9952	
	ζ Piscium	4½	-10	-90	11 42.3	- 8 5 4	-0.9782	4.889	+ 2455	+ 7.9333	0.0000	
	λ Piscium	5	+77	-14	20 15.2	+ 0 14 16	+0.5467	4.898	+ 2455	+ 8.2469	9.9999	
	η Piscium	4	+18	-64	7 20.6	+ 9 40 15	-0.4672	.5156	+ 2465	+ 9.4022	.9857	
22	136 Tauri	5	-31	-63	1 37.5	- 0 4 38	-1.1324	.5855	-0.0256	+ 9.6655	.9477	
	139 Tauri	5½	+79	+10	3 31.4	+ 1 44 47	+0.5196	.5853	-0.312	+ 9.6408	.9540	
22	σ Geminor.	3½	+52	-13	21 49.4	- 4 40 13	+0.1635	.5832	-0.0828	+ 9.6303	.9563	
	JUPITER		+80	0	23 35.8	- 3 53 4	+0.5439	.5656	-1.471	+ 9.5729	.9673	
24	μ^2 Cancrì	5	- 5	-68	8 11.1	+ 4 22 57	-0.8441	.5689	-1.680	+ 9.5733	.9672	
	δ Cancrì	6	+90	+11	18 23.0	- 9 47 33	+0.8243	.5628	-1.197	+ 9.5030	.9768	
24	B.A.C. 2854	6½	+38	-37	18 24.1	- 9 46 32	-0.0689	.5628	-1.198	+ 9.5225	.9745	
	35 Cancrì	7	-15	-70	19 57.1	- 8 16 52	-1.0072	.5620	-1.1924	+ 9.3354	.9728	
24	B.A.C. 2899	6½	- 8	-71	21 5.3	- 7 11 6	-0.9044	.5613	-1.1945	+ 9.5288	.9737	
	44 Cancrì	7½	+30	-46	23 20.9	- 5 0 22	-0.2262	.5602	-1.1986	+ 9.5049	.9766	
24	δ Cancrì	4	+22	-64	0 1.3	- 4 21 27	-0.3772	.5599	-1.1999	+ 9.5052	.9765	
	A Leonis	5	0	-80	13 27.8	+ 7 47 28	-0.8041	.5416	-2.508	+ 9.2678	.9924	
27	d Leonis	5	0	-86	14 7.8	+ 7 38 40	-0.8104	.5358	-2.659	+ 8.8814	9.9987	
	q^2 Leonis	5	+80	+30	20 23.2	-10 18 10	+1.2388	.5355	-2.675	+ 8.0790	0.0000	
28	v Leonis	4½	- 8	-90	7 20.0	+ 0 17 10	-0.9436	.5353	-2.680	- 6.9851	0.0000	
	γ Virginis	6	+79	- 3	9 56.1	+ 2 0 54	+0.7809	.5408	-2.577	- 9.1789	9.9950	
29	γ Virginis	5	-50	-90	12 27.9	+ 4 27 43	+1.3709	.5443	-2.558	- 9.0998	.9965	
	1 42 Libræ	5½	- 6	-86	18 18.0	+ 7 30 30	-0.6020	.5794	-1.123	- 9.5984	.9628	
1	b Scorpii	5	+65	+12	22 34.5	+11 37 9	+0.9217	.5809	-1.106	- 9.6312	.9561	
	A Scorpii	5	+45	-22	23 38.6	-11 21 10	+0.3757	.5812	-1.1077	- 9.6244	.9576	
2	π Scorpii	3½	+65	+16	1 43.8	- 9 20 52	+0.9833	.5817	-1.1023	- 9.6372	.9548	
	B.A.C. 5347	5	+64	+ 8	5 26.0	- 5 47 16	+0.8726	.5825	-0.921	- 9.6411	.9538	
2	σ Scorpii	3½	+ 6	-61	10 40.6	- 0 44 51	-0.2331	.5835	-0.778	- 9.6303	.9564	
	α Scorpii	1½	+40	-22	13 56.0	+ 2 22 57	+0.3631	.5838	-0.689	- 9.6437	.9532	
2	22 Scorpii	5	-37	-90	14 17.1	+ 2 43 13	-1.0242	.5839	-0.681	- 9.6228	.9580	
	A Ophiuchi	5	+ 9	-51	8 17.0	- 3 58 58	-0.1384	.5843	-0.172	- 9.6479	.9522	
4	B.A.C. 6194	5½	+63	+25	9 41.5	- 3 32 54	+1.0755	.5736	-0.537	- 9.6584	.9496	
	λ Sagittarii	3	+ 1	-67	13 51.6	+ 0 27 53	-0.3651	.5712	-0.644	- 9.6338	.9555	
5	B.A.C. 6576	6	+41	-26	10 13.9	- 3 54 10	+0.3054	.5573	-1.132	- 9.6163	.9593	
	χ^1 Sagittarii	5½	+66	+36	14 30.5	+ 0 13 28	+1.2001	.5538	-1.128	- 9.6223	.9581	
5	χ^2 Sagittarii	6½	+66	+26	14 33.5	+ 0 16 20	+1.1059	.5538	-1.128	- 9.6208	.9584	
	χ^3 Sagittarii	6	+62	- 7	14 37.6	+ 0 20 17	+0.6304	.5537	-1.129	- 9.6133	.9599	
6	σ Capricor.	5½	- 7	-90	15 33.0	+ 0 25 33	-0.7874	.5279	-1.678	- 9.5246	.9742	
	π Capricor.	5	-28	-90	19 22.6	+ 4 7 42	-1.0459	.5307	+ 1.758	- 9.5052	.9765	
6	ϵ Capricor.	5	-65	-90	20 7.8	+ 4 51 29	-1.3412	.5302	+ 1.766	- 9.4962	.9775	
	v Capricor.	5½	+35	-41	1 34.7	+10 8 8	+0.0277	.5259	+ 1.852	- 9.5043	.9767	
8	λ Capricor.	5½	+30	-53	11 52.5	- 4 35 23	-0.1784	.5029	+ 2.222	- 9.3181	.9904	
	δ Aquarii	4½	+25	-60	4 23.8	+11 28 9	-0.2982	.4942	+ 2.229	- 9.1685	.9952	
9	ϵ Aquarii	5½	+51	-33	6 15.5	-10 43 9	+0.1874	.4938	+ 2.339	- 9.1708	9.9952	
	ζ Piscium	4½	+ 5	-88	19 50.8	+ 1 51 22	-0.7181	.4879	+ 2.444	+ 7.9345	0.0000	
11	λ Piscium	5	+90	0	4 25.0	+10 11 48	+0.8013	.4885	+ 2.441	+ 8.2475	9.9999	
	η Piscium	4	+27	-53	15 47.9	- 4 4 37	-0.2881	.5133	+ 2.137	+ 9.4023	.9857	
13	101 Piscium	6	+90	+12	17 59.9	- 1 56 32	+0.9179	.5152	+ 2.119	+ 9.3922	.9870	
	σ Arctis	4½	+90	+23	9 55.7	-11 17 4	+0.9668	.5470	+ 1.546	+ 9.5499	.9708	
16	g Pleiadum	5½	+66	- 6	5 50.5	+ 7 55 40	+0.3710	.5640	+ 1.132	+ 9.6068	.9612	
	b Pleiadum	4½	+82	+ 4	5 52.8	+ 7 57 54	+0.5608	.5640	+ 1.131	+ 9.6087	.9618	
16	m Pleiadum	7	+32	-35	5 58.8	+ 8 8 45	-0.1952	.5640	+ 1.131	+ 9.6161	.9594	
	α Tauri	5	+55	-14	6 0.5	+ 8 8 20	+0.2012	.5641	+ 1.129	+ 9.6097	.9607	
16	1 Pleiadum	8	+90	+10	6 6.9	+ 8 11 31	+0.6686	.5641	+ 1.127	+ 9.6023	.9621	
	2 Pleiadum	8½	+56	-13	6 9.9	+ 8 14 21	+0.2210	0.5641	+ 1.126	+ 9.6097	.9607	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
June 16	3 Pleiadum	9	+88	+ 8	6 10.1	+ 8 14 30	+0.6230	0.5641	+ .1126	+9.6032	9.9620
16	4 Pleiadum	8	+65	- 6	6 11.5	+ 8 15 53	+0.3589	.5641	+ .1125	+9.6074	.9611
16	5 Pleiadum	9	+46	-22	6 12.1	+ 8 16 28	+0.0522	.5641	+ .1125	+9.6125	.9601
16	6 Pleiadum	9	+69	- 4	6 13.1	+ 8 17 27	+0.4111	.5641	+ .1124	+9.6068	.9612
16	e Pleiadum	5	+63	- 8	6 16.4	+ 8 20 39	+0.2339	.5643	+ .1123	+9.6081	.9610
16	7 Pleiadum	7	+90	+11	6 18.0	+ 8 22 12	+0.6836	.5642	+ .1122	+9.6025	.9621
16	k Pleiadum	7½	+51	-18	6 18.3	+ 8 22 27	+0.1395	.5642	+ .1122	+9.6113	.9603
16	l Pleiadum	7½	+52	-16	6 21.8	+ 8 25 54	+0.1740	.5643	+ .1120	+9.6108	.9604
16	9 Pleiadum	8½	+90	+ 3	6 22.9	+ 8 31 48	+0.5417	.5644	+ .1118	+9.6050	.9616
16	d Pleiadum	5	+99	+18	6 23.8	+ 8 33 34	+0.8004	.5645	+ .1117	+9.6009	.9624
16	10 Pleiadum	8	+74	0	6 32.6	+ 8 36 17	+0.4810	.5646	+ .1116	+9.6062	.9613
16	11 Pleiadum	8½	+90	+ 9	6 37.9	+ 8 41 24	+0.6501	.5647	+ .1113	+9.6036	.9618
16	12 Pleiadum	7½	+56	-13	6 45.9	+ 8 49 6	+0.2242	.5648	+ .1110	+9.6107	.9604
16	13 Pleiadum	8½	+90	+17	6 48.6	+ 8 51 43	+0.7830	.5649	+ .1109	+9.6018	.9622
16	14 Pleiadum	9	+90	+83	6 51.1	+ 8 54 8	+1.0801	.5649	+ .1109	+9.5978	.9629
16	15 Pleiadum	8½	+90	+ 9	6 53.7	+ 8 56 37	+0.6519	.5649	+ .1108	+9.6041	.9618
16	16 Pleiadum	9½	+90	+29	6 54.2	+ 8 57 4	+0.9813	.5650	+ .1107	+9.5987	.9628
16	17 Pleiadum	8	+90	+37	6 54.8	+ 8 57 38	+1.0789	.5650	+ .1107	+9.5970	.9631
16	18 Pleiadum	8	+90	+ 9	6 54.9	+ 8 57 44	+0.6425	.5650	+ .1107	+9.6043	.9617
16	p Pleiadum	7½	+90	+10	6 55.6	+ 8 58 27	+0.6689	.5650	+ .1106	+9.6039	.9618
16	19 Pleiadum	8	+90	+45	6 56.0	+ 8 58 50	+1.1752	.5650	+ .1106	+9.5954	.9634
16	20 Pleiadum	8	+53	-15	6 56.2	+ 8 59 4	+0.1703	.5650	+ .1106	+9.6119	.9602
16	22 Pleiadum	8	+90	+23	6 57.3	+ 9 0 3	+0.8810	.5650	+ .1106	+9.6004	.9625
16	21 Pleiadum	8½	+49	-19	6 57.4	+ 9 0 8	+0.1001	.5650	+ .1106	+9.6131	.9600
16	23 Pleiadum	8½	+90	+41	6 58.6	+ 9 1 23	+1.1358	.5651	+ .1105	+9.5962	.9633
16	24 Pleiadum	8	+75	+ 1	6 59.0	+ 9 1 40	+0.4918	.5651	+ .1105	+9.6068	.9612
16	γ Tauri	3½	+90	+11	6 59.0	+ 9 1 45	+0.6858	.5651	+ .1105	+9.6036	.9618
16	25 Pleiadum	8½	+90	+49	7 2.9	+ 9 5 26	+1.2148	.5651	+ .1103	+9.5950	.9635
16	27 Pleiadum	8½	+75	+ 1	7 17.6	+ 9 19 36	+0.4918	.5655	+ .1096	+9.6073	.9611
16	29 Pleiadum	8	+74	0	7 24.6	+ 9 26 21	+0.4755	.5656	+ .1092	+9.6079	.9610
16	s Pleiadum	7½	+90	+32	7 36.5	+ 9 37 51	+1.0109	.5658	+ .1090	+9.5993	.9627
16	f Pleiadum	4½	+90	+19	7 41.8	+ 9 42 57	+0.8136	.5658	+ .1088	+9.6028	.9620
16	h Pleiadum	5½	+90	+14	7 42.3	+ 9 43 25	+0.7268	.5658	+ .1088	+9.6043	.9617
16	30 Pleiadum	8½	+90	+30	7 43.1	+ 9 44 10	+0.9908	.5659	+ .1088	+9.5999	.9626
16	31 Pleiadum	8	+73	- 1	7 44.3	+ 9 45 24	+0.4540	.5659	+ .1087	+9.6087	.9608
16	32 Pleiadum	8	+74	0	7 46.4	+ 9 47 24	+0.4752	.5659	+ .1086	+9.6085	.9609
16	33 Pleiadum	8½	+88	+ 8	7 48.4	+ 9 49 20	+0.6193	.5659	+ .1085	+9.6062	.9613
16	34 Pleiadum	7½	+90	+48	7 56.6	+ 9 57 11	+1.1984	.5659	+ .1082	+9.5969	.9631
16	35 Pleiadum	9	+90	+ 9	7 57.9	+ 9 57 34	+0.6380	.5660	+ .1082	+9.6062	.9613
16	36 Pleiadum	9	+90	+11	8 0.3	+10 0 45	+0.6728	.5660	+ .1080	+9.6057	.9615
16	37 Pleiadum	8	+79	+ 3	8 1.2	+10 1 41	+0.5340	.5660	+ .1080	+9.6079	.9610
16	38 Pleiadum	8	+90	+36	8 2.6	+10 2 57	+1.0641	.5660	+ .1080	+9.5993	.9627
16	B.A.C. 1192	6½	0	-65	8 9.0	+10 9 10	-0.7525	.5660	+ .1077	+9.6284	.9567
16	39 Pleiadum	8	+68	- 4	8 14.3	+10 14 18	+0.4020	.5661	+ .1074	+9.6104	.9605
16	40 Pleiadum	7½	+90	+30	8 25.4	+10 24 55	+0.9828	.5662	+ .1070	+9.6013	.9623
16	χ Tauri	5½	+63	- 4	21 34.0	- 0 59 43	+0.3266	.5775	+ .0746	+9.6307	.9563
20	μ^3 Cancri	5	-13	-68	15 0.6	-11 0 1	-0.9561	.5762	- .1720	+9.5733	.9612
20	JUPITER		+37	-36	15 54.1	-10 8 31	-0.1026	.5667	- .1722	+9.5541	.9702
21	δ Cancri	6	+90	+ 3	0 59.1	- 1 23 59	+0.6806	.5701	- .1930	+9.5030	.9765
21	B.A.C. 2354	6½	+30	-44	1 0.1	- 1 23 0	-0.2232	.5701	- .1980	+9.5225	.9745
21	VENUS		+20	-56	1 56.7	- 0 28 26	-0.4216	.5672	- .1868	+9.5228	.9744
21	35 Cancri	6½	-25	-70	2 30.6	+ 0 4 11	-1.1347	.5690	- .1962	+9.5234	.9744
21	B.A.C. 2899	7	-17	-70	3 37.4	+ 1 8 32	-1.0344	.5682	- .1983	+9.5239	.9744
21	44 Cancri	7½	+23	-54	5 57.7	+ 3 16 56	-0.3659	.5669	- .2024	+9.5039	.9744
21	δ Cancri	4	+15	-62	6 30.1	+ 3 54 52	-0.5162	.5669	- .2038	+9.5039	.9744

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ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
June 22	A Leonis	5	-11	-80	h. m.	h. m. s.	-0.9792	0.5462	-2532	+9.2678	9.9924
	d Leonis	5	-12	-86	19 41.0	- 9 0 51	-1.0000	.5375	-2669	+8.8814	9.9987
	q ^h Leonis	5	+90	+15	1 54.4	- 2 59 42	+1.0438	.5365	-2681	+8.0793	0.0000
	v Leonis	4½	-21	-90	12 49.5	+ 7 34 4	-1.1358	.5355	-2679	-6.9816	0.0000
	89 Virginis	5½	+73	+87	2 10.5	- 5 7 24	+1.2615	.5511	-2160	-9.4767	9.9796
	28 B.A.C. 4984	6	+67	+24	12 35.5	+ 4 3 49	+1.0988	.5675	-1491	-9.5998	.9626
	42 Libræ	5½	-11	-90	1 14.5	- 7 45 22	-0.6905	.5727	-1193	-9.5984	.9628
	b Scorpis	5	+65	+ 7	5 36.0	- 3 33 42	+0.8531	.5744	-1080	-9.6312	.9561
	A Scorpis	5	+40	-26	6 41.5	- 2 30 44	+0.3037	.5746	-1052	-9.6244	.9576
	π Scorpis	3½	+65	+12	8 49.0	- 0 27 59	+0.9202	.5753	-0998	-9.6373	.9548
29 B.A.C. 5314	6	+51	-15	10 39.8	+ 1 18 34	+0.4953	.5758	-0946	-9.6386	.9556	
29 B.A.C. 5347	5	+64	+ 5	12 35.6	+ 3 9 58	+0.8130	.5761	-0894	-9.6411	.9538	
σ Scorpis	3½	+ 3	-65	17 56.2	+ 8 18 22	-0.2546	.5876	-0771	-9.6301	.9564	
α Scorpis	1½	+37	-25	21 15.2	+11 29 48	+0.8119	.5882	-0682	-9.6438	.9582	
22 Scorpis	5	-42	-90	21 36.6	+11 50 25	-1.0867	.5883	-0668	-9.6228	.9590	
30 A Ophiuchi	5	+ 7	-53	15 54.8	+ 5 26 29	-0.1668	.5784	-0152	-9.6479	.9522	
July 1	B.A.C. 6194	5½	+63	+27	17 38.5	+ 6 11 53	+1.0919	.5710	+0.547	-9.6584	.9495
	λ Sagittarii	3	+ 2	-65	21 51.2	+10 14 14	-0.3523	.5690	+0.655	-9.6339	.9555
	γ ¹ Sagittarii	5½	+65	+44	22 39.3	+10 10 2	+1.2514	.5535	+1.240	-9.6223	.9581
	B.A.C. 6889	6	+60	-14	16 51.5	+ 3 45 12	+0.5310	.5403	+1.593	-9.5680	.9681
	σ Capricor.	5½	- 3	-90	23 43.9	+10 24 12	-0.6671	.5348	+1.710	-9.5246	.9742
	π Capricor.	5	-20	-90	8 33.1	- 9 53 57	-0.9640	.5320	+1.770	-9.5052	.9765
	ρ Capricor.	5	-45	-90	4 18.3	- 9 10 15	-1.2581	.5319	+1.780	-9.4962	.9775
	v Capricor.	5½	+34	-43	9 54.0	- 3 45 6	+0.0028	.5273	+1.864	-9.5018	.9770
	B.A.C. 7202	6	+72	+14	13 51.9	+ 0 5 25	+0.9886	.5246	+1.920	-9.5082	.9764
	λ Capricor.	5½	+36	-46	19 55.8	+ 5 11 46	-0.0547	.5052	+2.289	-9.3181	.9904
δ Aquarii	4½	+32	-52	12 23.1	- 2 44 45	-0.1643	.4971	+2.247	-9.1684	.9952	
ρ Aquarii	5½	+59	-26	14 14.5	- 0 56 24	+0.3203	.4965	+2.357	-9.1706	.9952	
z Aquarii	5	-37	-90	0 1.8	+ 8 34 48	-1.2972	.4929	+2.400	-9.9355	9.9984	
α Piscium	4½	+13	-78	3 47.0	+11 35 16	-0.5696	.4882	+2.446	+7.9360	0.0000	
8 λ Piscium	5	+90	+ 9	12 22.2	- 4 3 15	+0.9532	.4884	+2.441	+8.2482	9.9999	
8 22 Piscium	6	+90	+15	17 58.2	+ 1 23 49	+1.0517	.4887	+2.431	+8.5758	.9997	
9 45 Piscium	6	+61	-24	12 52.5	- 4 12 28	+0.3286	.4926	+2.370	+9.0810	.9968	
11 γ Piscium	4	+34	-46	0 12.9	+ 6 8 15	-0.1592	.5093	+2.119	+9.4023	.9857	
11 B.A.C. 632	6	+39	-38	16 31.3	- 2 2 46	-0.0739	.5208	+1.932	+9.4801	.9792	
12 ε Arietis	4½	+90	+30	18 54.5	- 0 30 27	+1.0588	.5424	+1.526	+9.5500	.9708	
13 γ Pleiadum	5½	+73	- 2	15 3.8	- 5 3 1	+0.4511	.5595	+1.116	+9.6068	.9612	
13 δ Pleiadum	4½	+90	+ 9	15 5.9	- 5 0 59	+0.6418	.5597	+1.115	+9.6037	.9618	
13 m Pleiadum	7	+36	-31	15 12.3	- 4 54 50	-0.1173	.5598	+1.114	+9.6161	.9594	
13 e Tauri	5	+60	-10	15 14.0	- 4 53 15	+0.2808	.5597	+1.113	+9.6097	.9607	
13 1 Pleiadum	8	+90	+15	15 20.5	- 4 46 59	+0.7497	.5598	+1.110	+9.6022	.9621	
13 2 Pleiadum	8½	+61	- 9	15 23.4	- 4 44 8	+0.3007	.5598	+1.109	+9.6097	.9607	
13 3 Pleiadum	9	+90	+19	15 24.5	- 4 43 7	+0.7057	.5598	+1.109	+9.6032	.9620	
13 4 Pleiadum	8	+71	- 2	15 25.0	- 4 42 35	+0.4391	.5599	+1.108	+9.6076	.9611	
13 5 Pleiadum	9	+50	-18	15 25.2	- 4 42 25	+0.1304	.5599	+1.108	+9.6124	.9601	
13 6 Pleiadum	9	+75	+ 1	15 26.7	- 4 41 0	+0.4918	.5599	+1.108	+9.6068	.9612	
13 c Pleiadum	5	+70	- 3	15 30.1	- 4 37 45	+0.4146	.5599	+1.106	+9.6080	.9610	
13 7 Pleiadum	8	+90	+16	15 31.4	- 4 36 25	+0.7649	.5599	+1.106	+9.6024	.9621	
13 k Pleiadum	7½	+56	-13	15 31.9	- 4 35 57	+0.2191	.5600	+1.105	+9.6113	.9603	
13 l Pleiadum	7½	+58	-12	15 35.6	- 4 32 26	+0.2537	.5600	+1.103	+9.6108	.9604	
13 9 Pleiadum	8½	+88	+ 8	15 41.7	- 4 26 31	+0.8224	.5601	+1.102	+9.6050	.9616	
13 10 Pleiadum	5	+90	+22	15 43.6	- 4 24 41	+0.8822	.5601	+1.101	+9.6008	.9624	
13 11 Pleiadum	8	+81	+ 4	15 46.4	- 4 21 57	+0.5529	.5602	+1.100	+9.6062	.9613	
13 12 Pleiadum	8½	+90	+14	15 51.8	- 4 16 45	+0.7318	.5603	+1.098	+9.6036	.9618	
13 13 Pleiadum	7½	+61	- 9	15 59.9	- 4 8 58	+0.3035	0.5603	+1.094	+9.6107	9.9604	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washing- ton Mean Time of δ .	At Washington Mean Time of Conjunction.							
			North- ern.	South- ern.		H		Y		p'	q'	Log sin D	Log cos D
						h. m.	s.	h. m. s.					
Aug. 2	λ Capricor.	5 $\frac{1}{2}$	+36	-46	3 8.3	-	9 44 13	-0.0577	0.5058	+2242	-9.3180	9.9904	
2	δ Aquarii	4 $\frac{1}{2}$	+39	-51	19 36.1	+	6 15 49	-0.1601	.5037	+2353	-9.1683	.9952	
2	η Aquarii	5 $\frac{1}{2}$	+59	-26	21 27.3	+	8 3 56	+0.3249	.4975	+2363	-9.1705	.9952	
3	ϵ Aquarii	5	-37	-90	7 14.1	-	6 24 19	-1.2957	.4943	+2405	-8.9352	9.9984	
4	π Piscium	4 $\frac{1}{2}$	+13	-78	10 57.9	-	3 26 8	-0.5679	.4890	+2451	+7.9372	0.0000	
4	λ Piscium	5	+90	+9	19 53.4	+	4 55 33	+0.9576	.4892	+2445	+8.2488	9.9999	
7	η Piscium	4	+34	-46	7 44.7	-	8 32 17	-0.1678	.5068	+2105	+9.4023	.9857	
9	ϵ Arietis	4 $\frac{1}{2}$	+90	+30	3 8.5	+	9 31 22	+1.0549	.5363	+1.509	+9.5500	.9708	
9	η Pleiadum	5 $\frac{1}{2}$	+71	-2	23 44.1	+	5 25 8	+0.4400	.5526	+1.099	+9.6068	.9612	
9	δ Pleiadum	4 $\frac{1}{2}$	+89	+8	23 45.8	+	5 26 46	+0.6317	.5526	+1.098	+9.6037	.9618	
9	π Pleiadum	7	+35	-32	23 52.8	+	5 53 29	-0.1332	.5527	+1.097	+9.6161	.9594	
9	α Tauri	5	+59	-11	23 54.5	+	5 35 9	+0.2680	.5527	+1.096	+9.6097	.9607	
10	1 Pleiadum	8	+90	+14	0 0.7	+	5 41 9	+0.7408	.5527	+1.094	+9.6024	.9621	
10	2 Pleiadum	8 $\frac{1}{2}$	+60	-10	0 4.2	+	5 44 28	+0.2882	.5527	+1.092	+9.6097	.9607	
10	3 Pleiadum	9	+90	+12	0 5.2	+	5 45 29	+0.6971	.5528	+1.092	+9.6082	.9620	
10	4 Pleiadum	8	+70	-3	0 5.8	+	5 46 4	+0.4282	.5528	+1.092	+9.6075	.9611	
10	5 Pleiadum	9	+50	-19	0 6.4	+	5 46 39	+0.1171	.5529	+1.091	+9.6126	.9601	
10	6 Pleiadum	9	+75	0	0 7.5	+	5 47 40	+0.4809	.5529	+1.091	+9.6068	.9612	
10	c Pleiadum	5	+68	-3	0 10.9	+	5 51 0	+0.4024	.5530	+1.089	+9.6081	.9610	
10	7 Pleiadum	8	+90	+15	0 12.4	+	5 52 24	+0.7567	.5530	+1.089	+9.6094	.9621	
10	k Pleiadum	7 $\frac{1}{2}$	+55	-14	0 12.8	+	5 52 51	+0.2055	.5531	+1.088	+9.6113	.9603	
10	l Pleiadum	7 $\frac{1}{2}$	+56	-12	0 16.8	+	5 56 39	+0.2403	.5531	+1.087	+9.6108	.9604	
10	9 Pleiadum	8 $\frac{1}{2}$	+87	+7	0 22.8	+	6 2 27	+0.6128	.5531	+1.085	+9.6051	.9616	
10	d Pleiadum	5	+90	+22	0 24.8	+	6 4 20	+0.8746	.5531	+1.084	+9.6009	.9624	
10	10 Pleiadum	8	+81	+4	0 27.7	+	6 7 9	+0.5513	.5532	+1.083	+9.6062	.9613	
10	11 Pleiadum	8 $\frac{1}{2}$	+90	+13	0 33.2	+	6 12 29	+0.7233	.5532	+1.081	+9.6036	.9618	
10	12 Pleiadum	7 $\frac{1}{2}$	+61	-10	0 41.5	+	6 20 25	+0.2912	.5535	+1.078	+9.6107	.9604	
10	13 Pleiadum	8 $\frac{1}{2}$	+90	+21	0 44.3	+	6 23 9	+0.8576	.5535	+1.077	+9.6017	.9622	
10	14 Pleiadum	9	+90	+39	0 46.9	+	6 25 40	+1.1076	.5535	+1.076	+9.5978	.9629	
10	15 Pleiadum	8 $\frac{1}{2}$	+90	+13	0 49.5	+	6 28 10	+0.7244	.5535	+1.076	+9.6040	.9618	
10	16 Pleiadum	9 $\frac{1}{2}$	+90	+35	0 50.0	+	6 28 40	+1.0578	.5535	+1.075	+9.5987	.9628	
10	17 Pleiadum	8	+90	+43	0 50.6	+	6 29 16	+1.1566	.5536	+1.075	+9.5971	.9631	
10	18 Pleiadum	8	+90	+13	0 50.7	+	6 29 22	+0.7145	.5536	+1.075	+9.6043	.9617	
10	p Pleiadum	7 $\frac{1}{2}$	+90	+14	0 51.5	+	6 30 7	+0.7401	.5536	+1.075	+9.6039	.9618	
10	19 Pleiadum	8	+90	+54	0 51.9	+	6 30 30	+1.2540	.5536	+1.074	+9.5954	.9634	
10	20 Pleiadum	8	+57	-12	0 52.1	+	6 30 46	+0.2359	.5536	+1.074	+9.6119	.9602	
10	22 Pleiadum	8	+90	+28	0 53.2	+	6 31 46	+0.9559	.5536	+1.074	+9.6004	.9625	
10	21 Pleiadum	8 $\frac{1}{2}$	+52	-16	0 53.2	+	6 31 47	+0.1644	.5536	+1.074	+9.6132	.9600	
10	23 Pleiadum	8 $\frac{1}{2}$	+90	+49	0 54.6	+	6 33 8	+1.2139	.5537	+1.074	+9.5961	.9633	
10	24 Pleiadum	8	+82	+4	0 54.9	+	6 33 26	+0.5616	.5537	+1.074	+9.6069	.9612	
10	γ Tauri	3 $\frac{1}{2}$	+90	+15	0 55.0	+	6 33 32	+0.7581	.5537	+1.073	+9.6037	.9618	
10	25 Pleiadum	8 $\frac{1}{2}$	+90	+63	0 59.0	+	6 37 20	+1.2945	.5537	+1.073	+9.5949	.9635	
10	27 Pleiadum	8 $\frac{1}{2}$	+82	+5	1 14.2	+	6 52 2	+0.5615	.5537	+1.069	+9.6074	.9611	
10	29 Pleiadum	8	+80	+4	1 21.4	+	6 58 49	+0.5448	.5538	+1.066	+9.6079	.9610	
10	s Pleiadum	7 $\frac{1}{2}$	+90	+37	1 33.8	+	7 10 54	+1.0867	.5540	+1.061	+9.5993	.9627	
10	f Pleiadum	4 $\frac{1}{2}$	+90	+23	1 39.2	+	7 16 11	+0.8868	.5541	+1.058	+9.6038	.9620	
10	31 Pleiadum	8	+79	+3	1 41.8	+	7 18 41	+0.5238	.5542	+1.057	+9.6087	.9608	
10	32 Pleiadum	8	+80	+4	1 44.0	+	7 20 48	+0.5438	.5542	+1.056	+9.6085	.9609	
10	33 Pleiadum	8 $\frac{1}{2}$	+90	+12	1 46.1	+	7 22 46	+0.6897	.5542	+1.055	+9.6063	.9613	
10	34 Pleiadum	7 $\frac{1}{2}$	+90	+58	1 54.5	+	7 30 52	+1.2764	.5544	+1.052	+9.5967	.9632	
10	35 Pleiadum	9	+90	+13	1 54.9	+	7 31 18	+0.7081	.5545	+1.051	+9.6062	.9613	
10	36 Pleiadum	9	+90	+15	1 58.8	+	7 35 1	+0.7433	.5545	+1.050	+9.6057	.9615	
10	37 Pleiadum	8	+86	+7	1 59.3	+	7 35 35	+0.6090	.5545	+1.050	+9.6080	.9610	
10	38 Pleiadum	8	+90	+42	2 0.7	+	7 35 53	+1.1400	.5545	+1.049	+9.5993	.9627	
10	B.A.C. 1192	6 $\frac{1}{2}$	+3	-64	2 7.3	+	7 43 19	-0.7009	0.5546	+1.046	+9.6284	9.9567	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>P'</i>	<i>q'</i>	Log <i>sin D</i>	Log <i>cos D</i>
Aug. 10	39 Pleiadum	8	+74	0	2 12.8	+ 7 48 33	+0.4685	0.5548	+1.044	+9.6104	9.9605
10	40 Pleiadum	7½	+90	+35	2 24.2	+ 7 59 36	+1.0575	.5549	+1.039	+9.6013	.9623
10	γ Tauri	5½	+67	- 2	15 58.5	- 2 55 22	+0.3781	.5646	+0.723	+9.6308	.9562
12	136 Tauri	5	-33	-63	1 51.8	+ 8 33 31	-1.1458	.5840	-0.281	+9.6655	.9477
12	139 Tauri	5½	+76	+ 3	6 45.6	+10 22 43	+0.4957	.5847	-0.338	+9.6408	.9539
13	α Geminor.	3½	+48	-17	0 52.8	+ 3 47 0	+0.0938	.5871	-0.0858	+9.6303	.9563
14	μ^2 Cancr	5	-16	-68	10 13.4	+11 48 51	-0.9683	.5814	-1.742	+9.5783	.9672
17	<i>d</i> Leonis	5	-13	-86	11 43.6	+10 37 20	-1.0148	.5542	-2.751	+8.8820	9.9987
17	ϵ^2 Leonis	5	+90	+ 2	17 36.3	- 7 42 14	+0.8406	.5519	-2.762	+8.0797	0.0000
18	ν Leonis	4½	-21	-90	8 56.2	+ 2 15 12	-1.1371	.5521	-2.758	-6.9756	0.0000
20	69 Virginis	5½	+73	+31	4 44.5	+ 1 22 18	+1.2232	.5561	-2.342	-9.4200	9.9844
20	89 Virginis	5½	+73	+34	14 24.2	+10 41 18	+1.2365	.5600	-2.185	-9.4767	.9795
22	42 Libras	5½	-10	-90	12 35.2	+ 7 10 5	-0.6685	.5725	-1.185	-9.5983	.9629
22	<i>b</i> Scorpii	5	+65	+ 8	16 55.9	+11.20 56	+0.8700	.5731	-1.076	-9.6312	.9561
22	A Scorpii	5	+41	-24	18 1.2	-11 36 14	+0.8234	.5733	-1.048	-9.6244	.9576
22	π Scorpii	3½	+65	+13	20 8.7	- 9 33 34	+0.9378	.5737	-1.012	-9.6373	.9548
22	B.A.C. 5347	5	+64	+ 6	23 55.4	- 5 54 25	+0.8347	.5741	-0.893	-9.6411	.9538
23	α Scorpii	3½	+ 4	-63	5 17.1	- 0 45 59	-0.3296	.5745	-0.753	-9.6301	.9564
23	σ Scorpii	1½	+39	-24	8 37.2	+ 2 26 32	+0.3378	.5742	-0.659	-9.6437	.9532
23	22 Scorpii	5	-40	-90	8 58.7	+ 2 47 17	-1.0602	.5742	-0.651	-9.6228	.9580
24	A Ophiuchi	5	+ 9	-52	3 28.2	- 3 25 16	-0.1363	.5723	-0.146	-9.6479	.9522
25	λ Sagittarii	3	+ 4	-63	9 56.4	+ 1 55 20	-0.3203	.5614	+0.646	-9.6339	.9555
26	χ^1 Sagittarii	5½	+65	+54	11 15.2	+ 3 20 52	+1.2930	.5471	+1.220	-9.6226	.9581
26	χ^2 Sagittarii	6	+66	- 2	11 22.5	+ 2 27 55	+0.7178	.5468	+1.226	-9.6133	.9599
27	σ Capricor.	5½	- 2	-90	12 47.4	+ 3 2 44	-0.6480	.5303	+1.1690	-9.5246	.9742
27	π Capricor.	5	-19	-90	16 40.2	+ 6 48 11	-0.9486	.5277	+1.752	-9.5052	.9765
27	ϵ Capricor.	5	-43	-90	17 26.1	+ 7 32 37	-1.2454	.5272	+1.780	-9.4962	.9775
27	ν Capricor.	5½	+41	-35	22 57.2	-11 6 36	+0.1370	.5237	+1.843	-9.5043	.9767
28	29 Capricor.	6	+68	-12	17 9.0	+ 6 32 17	+0.5650	.5131	+2.067	-9.4335	.9834
29	λ Capricor.	5½	+36	-46	9 27.6	- 1 37 27	-0.0620	.5048	+2.229	-9.3181	.9904
30	δ Aquarii	4½	+31	-53	1 58.3	- 9 34 26	-0.1864	.4983	+2.243	-9.1684	.9952
30	ϵ Aquarii	5½	+57	-27	3 49.9	- 7 44 56	+0.2982	.4977	+2.354	-9.1705	.9952
30	α Aquarii	5	-42	-90	13 37.6	+ 1 45 40	-1.3360	.4948	+2.398	-8.9353	9.9984
31	α Piscium	4½	+ 9	-84	17 20.9	+ 4 44 20	-0.6360	.4907	+2.447	+7.9379	0.0000
Sept. 1	λ Piscium	5	+90	+ 4	1 56.6	-10 54 41	+0.8828	.4907	+2.441	+8.2492	9.9999
3	γ Piscium	4	+27	- 3	14 8.2	- 0 21 18	-0.2976	.5068	+2.090	+9.4024	.9857
3	101 Piscium	6	+90	+13	16 24.1	+ 1 50 40	+0.9247	.5086	+2.204	+9.3822	.9870
5	α Arctis	4½	+90	+20	9 57.3	- 5 52 16	+0.9152	.5332	+1.494	+9.5500	.9708
6	ϵ Pleiadum	5½	+61	-10	6 55.9	- 9 35 29	+0.2932	.5473	+1.087	+9.6068	.9612
6	δ Pleiadum	4½	+75	0	6 58.1	- 9 33 22	+0.4875	.5473	+1.086	+9.6037	.9618
6	m Pleiadum	7	+26	-40	7 4.7	- 9 26 58	-0.2871	.5474	+1.086	+9.6161	.9594
6	s Tauri	5	+50	-19	7 6.5	- 9 25 15	+0.1192	.5474	+1.082	+9.6097	.9607
6	1 Pleiadum	8	+85	+ 6	7 13.2	- 9 18 33	+0.5972	.5475	+1.080	+9.6024	.9621
6	2 Pleiadum	8½	+51	-18	7 16.3	- 9 15 47	+0.1392	.5475	+1.078	+9.6098	.9607
6	3 Pleiadum	9	+81	+ 4	7 17.4	- 9 14 43	+0.5522	.5475	+1.078	+9.6032	.9619
6	4 Pleiadum	8	+60	-10	7 18.0	- 9 14 9	+0.2804	.5475	+1.078	+9.6076	.9611
6	5 Pleiadum	9	+41	-26	7 18.6	- 9 13 34	-0.0338	.5475	+1.077	+9.6125	.9601
6	6 Pleiadum	9	+63	- 7	7 19.7	- 9 12 31	+0.3337	.5475	+1.076	+9.6068	.9612
6	<i>c</i> Pleiadum	5	+58	-11	7 23.4	- 9 8 58	+0.2551	.5476	+1.074	+9.6082	.9610
6	7 Pleiadum	8	+87	+ 7	7 24.8	- 9 7 35	+0.6125	.5476	+1.073	+9.6025	.9621
6	z Pleiadum	7½	+46	-22	7 25.3	- 9 7 6	+0.0559	.5476	+1.073	+9.6113	.9603
6	l Pleiadum	7½	+47	-20	7 29.2	- 9 3 20	+0.0915	.5476	+1.073	+9.6109	.9604
6	9 Pleiadum	8½	+72	- 2	7 35.5	- 8 57 17	+0.4494	.5477	+1.071	+9.6051	.9616
6	<i>d</i> Pleiadum	5	+90	+14	7 37.4	- 8 55 23	+0.7324	.5477	+1.071	+9.6009	.9624
6	10 Pleiadum	8	+68	- 4	7 40.4	- 8 52 31	+0.4024	0.5477	+1.070	+9.6063	9.9613

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.						
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D	
			$^{\circ}$	$'$	$^{\text{h. m.}}$	$^{\text{h. m. s.}}$						
Sept. 6	11 Pleiadum	8½	+83	+ 5	7 46.0	- 8 47 4	+0.5789	0.5478	+1.068	+9.6037	.9618	
6	12 Pleiadum	7½	+51	-17	7 54.5	- 8 38 56	+0.1420	.5479	+1.066	+9.6107	.9604	
6	13 Pleiadum	8½	+90	+13	7 57.3	- 8 36 9	+0.7114	.5479	+1.065	+9.6018	.9622	
6	14 Pleiadum	9	+90	+29	8 0.0	- 8 33 36	+0.9670	.5479	+1.065	+9.5978	.9629	
6	15 Pleiadum	8½	+84	+ 5	8 2.7	- 8 30 59	+0.5795	.5479	+1.065	+9.6041	.9618	
6	16 Pleiadum	9½	+90	+25	8 3.2	- 8 30 30	+0.9166	.5479	+1.064	+9.5987	.9628	
6	17 Pleiadum	8	+90	+39	8 3.8	- 8 29 55	+1.0165	.5479	+1.064	+9.5971	.9631	
6	18 Pleiadum	8	+83	+ 5	8 3.9	- 8 29 49	+0.5698	.5480	+1.064	+9.6043	.9617	
6	p Pleiadum	7½	+85	+ 6	8 4.7	- 8 29 3	+0.5957	.5480	+1.063	+9.6039	.9618	
6	19 Pleiadum	8	+90	+40	8 5.1	- 8 28 39	+1.1151	.5480	+1.063	+9.5955	.9634	
6	20 Pleiadum	8	+47	-20	8 5.4	- 8 28 23	+0.0862	.5480	+1.063	+9.6120	.9602	
6	22 Pleiadum	8	+90	+19	8 6.2	- 8 27 37	+0.8136	.5480	+1.063	+9.6005	.9625	
6	21 Pleiadum	8½	+43	-24	8 6.5	- 8 27 21	+0.0142	.5480	+1.063	+9.6131	.9600	
6	23 Pleiadum	8½	+90	+36	8 7.9	- 8 25 57	+1.0747	.5480	+1.062	+9.5962	.9632	
6	24 Pleiadum	8	+69	- 3	8 8.2	- 8 25 39	+0.4157	.5480	+1.062	+9.6069	.9612	
6	γ Tauri	3½	+87	+ 7	8 8.8	- 8 25 33	+0.6144	.5480	+1.062	+9.6037	.9618	
6	25 Pleiadum	8½	+90	+43	8 12.4	- 8 21 39	+1.1558	.5480	+1.061	+9.5949	.9635	
6	27 Pleiadum	8½	+69	- 3	8 27.9	- 8 6 38	+0.4155	.5481	+1.056	+9.6074	.9611	
6	29 Pleiadum	8	+68	- 4	8 35.3	- 7 59 31	+0.3981	.5482	+1.053	+9.6079	.9610	
6	ε Pleiadum	7½	+90	+27	8 47.9	- 7 47 22	+0.9461	.5483	+1.049	+9.5995	.9626	
6	ν Pleiadum	4½	+90	+15	8 53.5	- 7 41 54	+0.7444	.5483	+1.047	+9.6028	.9620	
6	λ Pleiadum	5½	+90	+10	8 54.1	- 7 41 24	+0.6546	.5483	+1.047	+9.6044	.9617	
6	30 Pleiadum	8½	+90	+24	8 54.8	- 7 40 41	+0.9260	.5483	+1.047	+9.6000	.9625	
6	31 Pleiadum	8	+66	- 5	8 56.1	- 7 39 22	+0.3775	.5483	+1.046	+9.6087	.9608	
6	32 Pleiadum	8	+68	- 4	8 58.4	- 7 37 12	+0.3974	.5483	+1.046	+9.6086	.9609	
6	33 Pleiadum	8½	+80	+ 4	9 0.5	- 7 35 13	+0.5448	.5483	+1.045	+9.6062	.9613	
6	34 Pleiadum	7½	+90	+39	9 9.1	- 7 26 53	+1.1879	.5484	+1.042	+9.5970	.9631	
6	35 Pleiadum	9	+82	+ 5	9 9.5	- 7 26 27	+0.5636	.5484	+1.042	+9.6062	.9613	
6	36 Pleiadum	9	+86	+ 7	9 13.5	- 7 22 39	+0.5991	.5487	+1.040	+9.6057	.9615	
6	37 Pleiadum	8	+73	0	9 14.0	- 7 22 5	+0.4572	.5487	+1.040	+9.6080	.9610	
6	38 Pleiadum	8	+90	+31	9 15.6	- 7 20 44	+1.0000	.5487	+1.039	+9.5993	.9627	
6	B.A.C. 1192	6½	- 8	-65	9 22.2	- 7 14 10	-0.8608	.5488	+1.036	+9.6285	.9567	
6	39 Pleiadum	8	+63	- 8	9 27.8	- 7 8 45	+0.3217	.5489	+1.033	+9.6106	.9605	
6	40 Pleiadum	7½	+90	+26	9 39.5	- 6 57 29	+0.9171	.5491	+1.027	+9.6014	.9623	
6	χ Tauri	5½	+57	- 9	23 33.2	+ 6 27 2	+0.2305	.5580	+0.0356	+9.6308	.9563	
8	139 Tauri	5½	+66	+ 1	15 27.8	- 3 7 8	+0.3618	.5750	-0.0329	+9.6408	.9539	
9	ε Geminor.	3½	+41	-24	10 8.9	- 9 8 56	-0.0342	.5782	-0.0836	+9.6303	.9563	
9	α Geminor.	6	+51	-17	17 39.9	- 1 55 16	+0.1420	.5780	-1.050	+9.6162	.9594	
10	α² Cancri	5	-22	-68	20 25.1	- 0 11 20	-1.0775	.5738	-1.710	+9.5733	.9672	
11	δ Cancri	6	+80	- 4	6 22.4	+ 9 23 34	+0.5616	.5713	-1.930	+9.5030	.9768	
11	B.A.C. 2854	6½	+24	-51	6 23.2	+ 9 24 22	-0.3369	.5713	-1.930	+9.5225	.9745	
11	δ Cancri	4	+ 9	-69	11 50.2	- 9 20 54	-0.6224	.5699	-2.039	+9.5052	.9765	
11	α² Cancri	6	+90	+ 6	17 17.9	- 4 5 17	+0.7849	.5685	-2.141	+9.4434	.9826	
12	A Leonis	5	-14	-80	23 28.5	+ 0 59 33	-1.0219	.5607	-2.583	+9.2679	.9924	
16	89 Virginis	5½	+73	+54	23 24.9	- 2 30 3	+1.2496	.5682	-2.203	-9.4767	.9796	
18	42 Libræ	5½	+ 1	-74	20 5.8	- 7 31 33	-0.4818	.5821	-1.229	-9.5983	.9629	
19	δ Scorpii	5	+65	+21	0 18.8	- 3 28 28	+1.0373	.5825	-1.091	-9.6312	.9561	
19	A Scorpii	5	+52	-14	1 22.1	- 2 27 36	+0.4993	.5825	-1.055	-9.6244	.9576	
19	π Scorpii	3½	+65	+27	3 26.1	- 0 28 31	+1.1066	.5823	-1.000	-9.6372	.9548	
19	B.A.C. 5347	5	+64	+18	7 6.5	+ 3 3 16	+1.0055	.5825	-0.904	-9.6411	.9538	
19	σ Scorpii	3½	+14	-51	12 19.5	+ 8 4 2	-0.1397	.5825	-0.760	-9.6301	.9564	
19	α Scorpii	1½	+50	-13	15 34.4	+11 11 23	+0.5190	.5825	-0.652	-9.6437	.9532	
19	22 Scorpii	5	-26	-90	15 55.5	+11 31 35	-0.8596	.5823	-0.656	-9.6228	.9580	
20	A Ophiuchi	5	+19	-39	9 59.8	+ 4 53 49	+0.0553	.5782	-0.151	-9.6479	.9522	
21	λ Sagittarii	3	+14	-50	16 0.0	+ 9 46 24	-0.1294	0.5640	+0.0443	-9.6339	.9555	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ζ .	At Washington Mean Time of Conjunction.						
			North-ern.	South-ern.		H		Y	p'	q'	Log sin D	Log cos D
						h. m.	s.					
Sept. 22	B.A.C. 6576	6	+57	-11	12 45.6	+ 5 47 41	+0.5630	0.5505	+1.123	-9.6163	9.9598	
23	B.A.C. 6889	6	+68	- 2	11 38.6	+ 3 54 47	+0.7258	.5341	+1.562	-9.5679	.9681	
23	σ Capricor.	5 $\frac{1}{2}$	+ 6	-74	18 38.2	+10 40 54	-0.4869	.5292	+1.677	-9.5246	.9742	
23	π Capricor.	5	- 9	-90	22 31.8	- 9 33 19	-0.7907	.5265	+1.736	-9.5052	.9765	
23	ρ Capricor.	5	-29	-90	23 17.2	- 8 48 47	-1.0872	.5260	+1.745	-9.4962	.9775	
24	ν Capricor.	5 $\frac{1}{2}$	+49	-27	4 48.9	- 3 27 25	+0.2867	.5224	+1.826	-9.5043	.9767	
24	B.A.C. 7202	6	+72	+27	9 0.1	+ 0 36 3	+1.1548	.5199	+1.882	-9.5062	.9764	
25	λ Capricor.	5 $\frac{1}{2}$	+41	-40	15 26.1	+ 6 8 27	+0.0417	.5035	+2.207	-9.3179	.9904	
26	δ Aquarii	4 $\frac{1}{2}$	+35	-48	8 0.0	- 1 45 18	-0.1105	.4973	+2.819	-9.1683	.9952	
26	ρ Aquarii	5 $\frac{1}{2}$	+62	-28	9 52.1	+ 0 3 39	+0.3715	.4969	+2.831	-9.1705	.9952	
26	κ Aquarii	5	-36	-90	19 40.9	+ 9 36 26	-1.2880	.4941	+2.875	-8.9852	9.9984	
27	κ Piscium	4 $\frac{1}{2}$	+ 9	-84	23 24.9	-11 24 13	-0.6371	.4912	+2.431	+7.9384	0.0000	
28	λ Piscium	5	+90	+ 4	7 58.9	- 3 4 3	+0.8650	.4918	+2.426	+8.2494	9.9999	
28	22 Piscium	6	+90	+ 9	13 34.1	+ 2 22 11	+0.9462	.4922	+2.415	+8.5764	.9997	
30	η Piscium	4	+19	-61	19 57.3	+ 7 15 11	-0.4336	.5095	+2.091	+9.4025	.9857	
Oct. 2	μ Arietis	5 $\frac{1}{2}$	+90	+22	7 37.9	- 6 8 49	+0.9663	.5298	+1.619	+9.5218	.9746	
2	σ Arietis	4 $\frac{1}{2}$	+90	+ 9	15 41.5	+ 1 39 16	+0.7185	.5346	+1.482	+9.5500	.9708	
3	9 Tauri	6	+90	+22	9 13.5	- 5 23 19	+0.8833	.5473	+1.154	+9.5874	.9648	
3	g Pleiadum	5 $\frac{1}{2}$	+47	-21	12 45.7	- 1 58 16	+0.0737	.5470	+1.074	+9.6068	.9612	
3	δ Pleiadum	4 $\frac{1}{2}$	+59	-11	12 47.9	- 1 56 9	+0.2691	.5470	+1.074	+9.6037	.9618	
3	m Pleiadum	7	+14	-54	12 54.7	- 1 49 38	-0.5089	.5471	+1.073	+9.6161	.9594	
3	s Tauri	5	+37	-30	12 56.4	- 1 47 57	-0.1012	.5471	+1.072	+9.6098	.9607	
3	c Pleiadum	5	+44	-23	13 13.3	- 1 31 36	+0.0352	.5473	+1.065	+9.6082	.9610	
3	k Pleiadum	7 $\frac{1}{2}$	+33	-33	13 15.3	- 1 29 44	-0.1651	.5473	+1.064	+9.6113	.9603	
3	l Pleiadum	7 $\frac{1}{2}$	+35	-31	13 19.1	- 1 26 0	-0.1115	.5474	+1.063	+9.6109	.9604	
3	d Pleiadum	5	+77	+ 2	13 27.5	- 1 17 52	+0.5150	.5475	+1.059	+9.6009	.9623	
3	12 Pleiadum	7 $\frac{1}{2}$	+38	-29	13 44.7	- 1 1 16	-0.0789	.5477	+1.052	+9.6108	.9604	
3	p Pleiadum	7 $\frac{1}{2}$	+66	- 5	13 55.1	- 0 51 17	+0.3774	.5478	+1.047	+9.6039	.9618	
3	η Tauri	3 $\frac{1}{2}$	+68	- 4	13 58.7	- 0 47 49	+0.3959	.5478	+1.046	+9.6037	.9618	
3	28 Pleiadum	7	+90	+46	14 23.0	- 0 24 17	+1.1784	.5481	+1.036	+9.5918	.9641	
3	s Pleiadum	7 $\frac{1}{2}$	+90	+14	14 38.6	- 0 9 16	+0.7290	.5483	+1.030	+9.5995	.9626	
3	f Pleiadum	4 $\frac{1}{2}$	+78	+ 3	14 44.2	- 0 3 47	+0.5258	.5484	+1.027	+9.6029	.9620	
3	h Pleiadum	5	+71	- 2	14 44.8	- 0 3 16	+0.4362	.5484	+1.027	+9.6043	.9617	
3	34 Pleiadum	7 $\frac{1}{2}$	+90	+26	14 59.9	+ 0 11 21	+0.9217	.5486	+1.021	+9.5970	.9631	
3	B.A.C. 1192	6 $\frac{1}{2}$	-25	-85	15 13.2	+ 0 24 10	-1.0874	.5487	+1.015	+9.6284	.9567	
3	40 Pleiadum	7 $\frac{1}{2}$	+90	+13	15 30.6	+ 0 41 1	+0.6990	.5489	+1.008	+9.6014	.9623	
4	χ Tauri	5 $\frac{1}{2}$	+42	-21	5 33.1	- 9 45 45	-0.0003	.5564	+0.699	+9.6308	.9562	
5	125 Tauri	6	+69	+ 6	14 34.3	- 1 56 4	+0.4152	.5678	-0.029	+9.6390	.9543	
5	139 Tauri	5 $\frac{1}{2}$	+49	-11	22 13.8	+ 5 26 27	+0.1173	.5703	-0.022	+9.6408	.9539	
6	ϵ Geminor.	3 $\frac{1}{2}$	+26	-37	17 27.1	- 0 3 5	-0.2833	.5694	-0.026	+9.6303	.9563	
8	δ Cancri	6	+63	-15	15 12.4	- 3 58 34	+0.3491	.5612	-0.179	+9.5029	.9768	
8	δ Cancri	4	- 5	-72	20 51.9	+ 1 28 46	-0.8502	.5612	-0.194	+9.5052	.9765	
10	A Leonis	5	-27	-80	9 39.2	-11 1 38	-1.1888	.5526	-0.252	+9.2678	.9924	
10	43 Leonis	6	+72	-15	16 25.6	- 4 29 20	+0.4939	.5523	-0.251	+9.1010	.9965	
11	δ Leonis	5	-19	-86	9 13.5	+11 43 44	-1.0982	.5523	-0.269	+8.8814	9.9987	
11	q^5 Leonis	5	+90	+ 8	15 8.3	- 6 33 48	+0.9268	.5530	-0.275	+8.0795	0.0000	
12	ν Leonis	4 $\frac{1}{2}$	-22	-90	1 26.1	+ 3 22 28	-1.1439	.5547	-0.276	-6.9792	0.0000	
16	42 Libræ	5 $\frac{1}{2}$	+11	-80	5 47.3	+ 3 57 59	-0.2837	.5924	-0.104	-9.5983	9.9629	
16	B.A.C. 5197	6	+46	-21	7 54.9	+ 6 0 24	+0.3851	.5925	-0.114	-9.6140	.9598	
16	δ Scorpii	5	+65	+41	9 53.1	+ 7 53 50	+1.2207	.5926	-0.109	-9.6312	.9561	
16	A Scorpii	5	+64	- 3	10 54.7	+ 8 52 55	+0.6913	.5928	-0.106	-9.6244	.9576	
16	B.A.C. 5347	5	+64	+39	16 28.8	- 9 46 28	+1.1998	.5931	-0.089	-9.6411	.9576	
16	σ Scorpii	3 $\frac{1}{2}$	+25	-38	21 32.5	- 4 55 0	+0.0779	.5929	-0.075	-9.6301	.9581	
17	α Scorpii	1 $\frac{1}{2}$	+64	0	0 41.6	- 1 53 31	+0.7323	.5926	-0.064	-9.6437	.9587	
17	22 Scorpii	5	-13	-69	1 2.0	- 1 33 56	-0.6269	0.5928	-0.056	-9.6227	.9580	

Handwritten notes and corrections in the bottom right corner, including values like 9.576, 9.578, 9.580, 9.582, 9.584, 9.586, 9.588, 9.590, 9.592, 9.594, 9.596, 9.598, 9.600, 9.602, 9.604, 9.606, 9.608, 9.610, 9.612, 9.614, 9.616, 9.618, 9.620, 9.622, 9.624, 9.626, 9.628, 9.630, 9.632, 9.634, 9.636, 9.638, 9.640, 9.642, 9.644, 9.646, 9.648, 9.650.

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	P'	q'	Log sin D	Log cos D
			°	'		h. m. s.	h. m. s.				
Oct. 17	A Ophiuchi	5	+82	-25	18 34.0	- 8 44 2	-0.2977	0.5882	-0.141	-0.6479	9.3522
18	λ Sagittarii	3	+28	-34	23 45.4	- 4 40 30	+0.1423	.5717	+0.0558	-0.6339	.9555
19	B.A.C. 6389	6	+39	-25	6 49.1	+ 2 7 31	+0.2072	.5665	+0.0838	-0.6284	.9567
21	σ Capricor.	5 $\frac{1}{2}$	+21	-54	1 27.1	- 4 42 36	-0.2003	.5321	+0.1680	-0.5246	.9742
21	π Capricor.	5	+ 6	-75	5 18.0	- 0 59 5	-0.5018	.5293	+0.1735	-0.5052	.9765
21	ϵ Capricor.	5	-10	-90	6 3.4	- 0 15 7	-0.7949	.5288	+0.1747	-0.4962	.9775
21	ν Capricor.	5 $\frac{1}{2}$	+65	-11	11 31.7	+ 5 2 56	+0.5669	.5261	+0.1832	-0.5043	.9767
22	λ Capricor.	5 $\frac{1}{2}$	+55	-26	21 56.5	- 9 38 32	+0.2943	.5080	+0.2191	-0.3180	.9904
23	δ Aquarii	4 $\frac{1}{2}$	+47	-36	14 28.7	+ 6 30 51	+0.1197	.4967	+0.2300	-0.1684	.9952
23	ϵ Aquarii	5 $\frac{1}{2}$	+77	-11	16 20.5	+ 8 19 35	+0.5969	.4961	+0.2300	-0.1704	.9952
24	α Aquarii	5	-18	-90	2 9.1	- 6 7 48	-1.0691	.4934	+0.2353	-0.2353	0.9984
25	α Piscium	4 $\frac{1}{2}$	+17	-71	5 53.0	- 3 8 38	-0.4814	.4906	+0.2404	+0.7384	0.0000
25	λ Piscium	5	+90	+12	14 26.6	+ 5 11 15	+0.9982	.4916	+0.2401	+0.2494	0.9999
26	45 Piscium	6	+55	-99	14 51.3	+ 4 56 22	+0.2346	.4967	+0.2398	-0.0812	.9968
28	η Piscium	4	+18	-62	2 11.4	- 8 43 18	-0.4487	.5119	+0.2076	+0.4094	.9857
29	μ Arietis	5 $\frac{1}{2}$	+90	+16	13 33.8	+ 1 34 27	+0.8626	.5336	+0.1606	+0.9218	.9746
29	α Arietis	4 $\frac{1}{2}$	+84	+ 2	21 32.8	+ 9 18 4	+0.5974	.5386	+0.1469	+0.5500	.9708
30	θ Tauri	6	+90	+18	14 55.6	+ 2 6 7	+0.7234	.5492	+0.1136	+0.5874	.9648
30	g Pleiadum	5 $\frac{1}{2}$	+38	-28	18 25.9	+ 5 29 18	-0.0877	.5512	+0.1062	+0.6068	.9612
30	b Pleiadum	4 $\frac{1}{2}$	+48	-19	18 28.1	+ 5 31 28	+0.1972	.5512	+0.1059	+0.6037	.9618
30	α Tauri	5	+27	-39	18 36.5	+ 5 39 34	-0.2624	.5513	+0.1058	+0.6008	.9607
30	c Pleiadum	5	+35	-31	18 53.3	+ 5 55 47	-0.1966	.5513	+0.1053	+0.6022	.9610
30	d Pleiadum	5	+64	- 6	19 8.4	+ 6 10 18	+0.3533	.5514	+0.1048	+0.6010	.9623
30	η Tauri	3 $\frac{1}{2}$	+56	-12	19 38.4	+ 6 39 15	+0.2319	.5519	+0.1035	+0.6037	.9618
30	f Pleiadum	4 $\frac{1}{2}$	+65	- 5	20 28.5	+ 7 22 53	+0.3600	.5523	+0.1018	+0.6029	.9620
30	h Pleiadum	5 $\frac{1}{2}$	+59	-10	20 24.0	+ 7 24 22	+0.3708	.5523	+0.1017	+0.6043	.9617
30	γ Tauri	5 $\frac{1}{2}$	+42	-21	10 54.5	- 2 36 32	-0.0033	.5594	+0.0690	+0.6276	.9569
Nov. 1	k Tauri	5 $\frac{1}{2}$	+90	+44	2 27.2	-11 37 13	+1.0822	.5678	+0.0309	+0.6232	.9579
2	139 Tauri	5 $\frac{1}{2}$	+34	-25	3 44.3	-11 15 43	-0.1323	.5691	-0.0337	+0.6408	.9539
2	α Geminor.	3 $\frac{1}{2}$	+11	-54	23 6.6	+ 7 23 48	-0.5542	.5677	-0.0828	+0.6303	.9563
3	δ Geminor.	3 $\frac{1}{2}$	+90	+24	14 34.4	- 1 42 20	+1.0568	.5642	-0.1205	+0.5779	.9664
4	d^1 Cancri	6	+75	- 6	18 7.0	+ 0 51 9	+0.5055	.5554	-0.1904	+0.5077	.9763
5	d Cancri	4	-27	-72	3 34.9	+ 9 59 20	-1.1497	.5518	-0.1967	+0.5051	.9766
7	d Leonis	5	-43	-86	18 1.0	- 1 40 58	-1.3421	.5425	-0.2628	+0.8813	0.9987
8	e^1 Leonis	5	+90	- 4	0 8.2	+ 0.7393	.5432	-0.2647	+0.8078	0.0000	
8	ν Leonis	4 $\frac{1}{2}$	-44	-90	10 46.7	- 9 28 56	-1.3527	.5458	-0.2658	-0.2666	0.0000
14	A Ophiuchi	5	+43	-15	4 46.7	+ 3 16 48	+0.4703	.5958	-0.0124	-0.6479	9.9522
14	δ Ophiuchi	3 $\frac{1}{2}$	-50	-90	7 21.0	+ 5 44 49	-1.1280	.5951	-0.0053	-0.6236	.9578
15	λ Sagittarii	3	+41	-21	9 19.9	+ 6 42 3	+0.3691	.5805	+0.0677	-0.6329	.9555
17	σ Capricor.	5 $\frac{1}{2}$	+36	-37	9 53.7	+ 5 31 51	+0.0946	.5385	+0.1702	-0.5246	.9742
17	π Capricor.	5	+22	-54	13 39.5	+ 9 10 16	-0.2018	.5354	+0.1761	-0.5052	.9765
17	ϵ Capricor.	5	+ 7	-74	14 24.1	+ 9 53 22	-0.4933	.5346	+0.1772	-0.4962	.9775
17	ν Capricor.	5 $\frac{1}{2}$	+72	+ 6	19 46.0	- 8 54 59	+0.8598	.5301	+0.1848	-0.5043	.9767
19	λ Capricor.	5 $\frac{1}{2}$	+74	-10	5 39.3	- 0 3 3	+0.6034	.5062	+0.2199	-0.3181	.9904
19	B.A.C. 7620	6	+56	-26	9 26.2	+ 3 37 25	+0.3084	.5037	+0.2227	-0.2793	.9920
19	δ Aquarii	4 $\frac{1}{2}$	+65	-20	22 1.7	- 8 8 22	+0.4224	.4985	+0.2299	-0.1684	.9952
19	ϵ Aquarii	5 $\frac{1}{2}$	+82	+ 6	23 52.6	- 6 20 32	+0.8962	.4977	+0.2308	-0.1705	.9952
19	α Aquarii	5	+ 1	-90	9 37.4	+ 3 8 10	+0.7685	.4942	+0.2348	-0.2348	0.9984
21	α Piscium	4 $\frac{1}{2}$	+31	-54	13 15.5	+ 6 1 31	-0.2167	.4903	+0.2389	+0.7382	0.0000
21	λ Piscium	5	+90	+38	21 48.5	- 9 39 13	+1.2471	.4907	+0.2381	+0.2343	0.9999
24	η Piscium	4	+25	-54	9 31.1	+ 0 24 5	-0.3188	.5120	+0.2047	+0.4024	.9857
25	μ Arietis	5 $\frac{1}{2}$	+90	+19	20 43.4	+10 31 41	+0.9055	.5354	+0.1591	+0.5218	.9746
26	α Arietis	4 $\frac{1}{2}$	+87	+ 4	4 38.6	- 5 48 34	+0.6224	.5409	+0.1454	+0.5500	.9708
27	g Pleiadum	5 $\frac{1}{2}$	+36	-30	1 18.8	- 9 50 17	-0.1070	.5553	+0.1050	+0.6068	.9612
27	b Pleiadum	4 $\frac{1}{2}$	+47	-20	1 20.9	- 9 48 12	+0.0870	0.5553	+0.1050	+0.6037	.9618

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1860.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Nov. 27	ϵ Tauri	5	+26	-40	1 29.2	- 9 40 11	-0.2815	0.8554	+1.042	+9.6099	9.9606
27	c Pleiadum	5	+34	-32	1 45.8	- 9 24 12	-0.1470	.5554	+1.037	+9.6082	.9610
27	d Pleiadum	5	+62	- 7	1 59.7	- 9 10 44	+0.3286	.5554	+1.033	+9.6010	.9623
27	η Tauri	3½	+54	-13	2 30.2	- 8 41 17	+0.2080	.5559	+1.019	+9.6037	.9618
27	f Pleiadum	4½	+63	- 7	3 14.9	- 7 58 10	+0.3339	.5560	+1.008	+9.6029	.9620
27	h Pleiadum	5½	+57	-11	3 15.4	- 7 57 41	+0.2443	.5559	+1.007	+9.6043	.9617
27	χ Tauri	5½	+28	-34	17 46.1	+ 6 2 8	-0.2469	.5643	+0.670	+9.6308	.9562
29	139 Tauri	5½	+31	-28	8 46.6	- 4 26 9	-0.1870	.5670	-0.0296	+9.6408	.9539
30	ϵ Geminor.	3½	+ 1	-65	4 54.7	- 9 0 48	-0.7180	.5729	-0.0853	+9.6303	.9563
30	B.A.C. 2338	6	+81	+ 6	8 19.8	- 5 43 26	+0.5531	.5723	-0.0935	+9.6052	.9616
30	δ Geminor.	3½	+90	+21	20 12.2	+ 5 42 51	+0.8634	.5687	-1.224	+9.5779	.9664
Dec. 2	α Cancri	6	+64	-16	14 45.2	- 1 14 50	+0.3656	.5503	-0.2060	+9.4365	.9832
2	α Cancri	6	+46	-31	14 54.1	- 1 6 19	+0.0686	.5503	-0.2062	+9.4433	.9826
3	B.A.C. 3398	6	+88	- 4	18 3.5	+ 1 8 26	+0.6719	.5401	-0.2399	+9.2216	.9939
3	β Leonis	5	+90	+25	19 50.0	+ 2 51 23	+1.1450	.3898	-0.2509	+9.1801	.9950
4	34 Sextantis	6	+70	-17	15 51.4	- 1 46 30	+0.4661	.5363	-0.2558	+8.8921	9.9987
5	ρ Leonis	5	+72	-16	6 37.2	-11 29 30	+0.4984	.5363	-0.2601	+8.0779	0.0000
8	89 Virginis	5½	+73	+47	5 27.1	+ 9 56 21	+1.3192	.5645	-0.2117	-9.4766	9.9796
10	42 Libræ	5½	+13	-56	2 15.1	+ 4 2 0	-0.2253	.5905	-0.1157	-9.5983	.9629
10	A Scorpii	5	+65	+11	6 4.7	+ 7 42 2	+0.9001	.5920	-0.1049	-9.6244	.9576
12	λ Sagittarii	3	+48	-15	19 25.5	- 5 24 11	+0.4749	.5969	+0.0722	-9.6338	.9555
14	σ Capricor.	5½	+47	-26	19 24.4	- 7 9 28	+0.2653	.5442	+0.1734	-9.5246	.9742
14	π Capricor.	5	+31	-43	23 6.5	- 3 34 41	-0.0248	.5411	+0.1788	-9.6052	.9765
11	ρ Capricor.	5	+16	-61	23 50.3	- 2 52 19	-0.3125	.5406	+0.1800	-9.4963	.9775
15	ν Capricor.	5½	+34	-42	4 53.6	+ 2 1 4	+0.0010	.5363	+0.1874	-9.4827	.9790
16	λ Capricor.	5½	+78	+ 2	14 27.5	+10 33 0	+0.8128	.5107	+0.2224	-9.3180	.9904
17	δ Aquarii	4½	+80	- 8	6 48.5	+ 2 26 15	+0.6436	.5022	+0.2319	-9.1683	.9952
17	ρ Aquarii	5½	+82	+21	8 46.2	+ 4 20 58	+1.1156	.5012	+0.2327	-9.1705	.9952
17	κ Aquarii	5	+13	-75	18 3.8	-10 37 40	-0.5383	.4975	+0.2362	-8.9353	9.9984
18	κ Piscium	4½	+42	-42	21 28.9	- 7 57 17	+0.0079	.4914	+0.2389	-7.9382	0.0000
20	45 Piscium	6	+85	- 7	6 22.9	+ 0 3 26	+0.6443	.4945	+0.2295	+9.0812	9.9968
21	η Piscium	4	+34	-45	17 48.3	+10 29 8	-0.1537	.5094	+0.2031	+9.4025	.9857
23	μ Arietis	5	+90	+27	5 10.0	- 3 13 52	+1.0368	.5328	+0.1571	+9.5214	.9746
23	ϵ Arietis	4½	+90	+10	13 6.4	+ 4 27 3	+0.7264	.5389	+0.1437	+9.5500	.9708
24	9 Tauri	6	+90	+17	6 19.2	- 2 54 46	+0.7856	.5517	+0.1109	+9.5874	.9648
24	g Pleiadum	5½	+40	-26	9 46.9	+ 0 25 44	-0.0327	.5537	+0.1032	+9.6068	.9612
24	b Pleiadum	4½	+52	-16	9 49.2	+ 0 27 55	+0.1607	.5542	+0.1031	+9.6037	.9618
24	m Pleiadum	7	+ 8	-60	9 55.8	+ 0 34 15	-0.6113	.5543	+0.1028	+9.6161	.9594
24	ϵ Tauri	5	+30	-35	9 57.5	+ 0 35 55	-0.2072	.5543	+0.1028	+9.6099	.9606
24	c Pleiadum	5	+38	-28	10 14.0	+ 0 51 53	-0.0739	.5546	+0.1022	+9.6082	.9610
24	d Pleiadum	5	+68	- 3	10 27.9	+ 1 5 20	+0.4010	.5548	+0.1016	+9.6010	.9623
24	η Tauri	3½	+59	- 9	10 58.4	+ 1 34 44	+0.2797	.5552	+0.1005	+9.6037	.9618
24	28 Pleiadum	7	+90	+36	11 22.2	+ 1 57 45	+1.0534	.5556	+0.0996	+9.5918	.9641
24	f Pleiadum	4½	+68	- 3	11 43.0	+ 2 17 45	+0.4045	.5559	+0.0989	+9.6029	.9620
24	h Pleiadum	5½	+62	- 7	11 43.4	+ 2 18 10	+0.3156	.5559	+0.0988	+9.6043	.9617
25	χ Tauri	5½	+31	-31	2 11.0	- 7 45 7	-0.1953	.5648	+0.0660	+9.6308	.9562
26	139 Tauri	5½	+27	-33	17 48.1	+ 6 23 18	-0.2711	.5794	-0.0375	+9.6409	.9539
27	ϵ Geminor.	3½	- 1	-65	12 35.1	+ 0 27 22	-0.7433	.5784	-0.0878	+9.6303	.9563
27	B.A.C. 2338	6	+77	+ 3	15 56.3	+ 3 40 57	+0.5121	.5784	-0.0962	+9.6052	.9616
28	δ Geminor.	3½	+90	+17	3 34.0	- 9 7 44	+0.8042	.5753	-0.1255	+9.5779	.9664
29	α Cancri	6	+58	-31	21 9.5	+ 6 56 53	+0.2667	.5573	-0.2094	+9.4364	.9832
30	α Leonis	3½	+90	+40	16 56.4	+ 2 2 48	+1.2770	.5489	-0.2359	+9.2615	.9939
31	π Leonis	5	+90	+16	1 40.5	+10 29 14	+1.0184	.5450	-0.2447	+9.1801	.9950
31	B.A.C. 3529	6	+58	-26	11 5.5	- 4 24 35	+0.2826	0.5421	-0.2531	+9.0936	.9629

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1860.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vert.	Sidereal Time.	Mean Time.	North Point.	Vert.	
Jan. 4	α Pleiadum	7	h. m. 5 34	h. m. 10 38	° 290	° 342	h. m. 6 51	h. m. 11 55	° 89	° 147	h. m. 1 17
4	δ Tauri	5	6 6	11 10	190	245	Star 3'2 south of		C's limb.		
4	k Pleiadum	7 $\frac{1}{2}$	6 31	11 35	188	246	Star 1'5 south of		C's limb.		
4	l Pleiadum	7 $\frac{1}{2}$	6 35	11 39	188	245	Star 1'5 south of		C's limb.		
4	n Pleiadum	7 $\frac{1}{2}$	7 8	12 12	187	245	Star 3'3 south of		C's limb.		
7	δ Geminor.	3 $\frac{1}{2}$	0 16	5 9	183	130	Star 4'6 south of		C's limb.		
7	37 Geminor.	6	4 42	9 34	268	213	5 59	10 51	74	39	1 17
7	48 Geminor.	6	13 7	17 58	272	326	13 53	18 45	52	102	0 47
Feb. 12	B.A.C. 4984	6	13 11	15 40	276	257	14 33	17 2	54	54	1 22
16	σ Sagittarii †	2 $\frac{1}{2}$	13 28	15 42	267	218	14 36	16 50	93	48	1 08
Mar. 23	22 Piscium	6	4 30	6 18	268	317	5 25	7 13	148	198	0 55
2	37 Geminor. †	6	5 38	6 54	277	234	6 56	8 13	58	68	1 18
2	48 Geminor. †	6	13 59	15 14	244	293	14 58	16 13	75	118	0 59
26	g Pleiadum	5 $\frac{1}{2}$	9 54	9 35	258	311	10 48	10 29	109	158	0 54
26	b Pleiadum	4 $\frac{1}{2}$	10 10	9 51	210	261	10 33	10 14	158	207	0 23
26	δ Tauri	5	10 7	9 49	301	353	10 55	10 36	66	118	0 48
26	2 Pleiadum †	8 $\frac{1}{2}$	10 16	9 57	299	350	11 4	10 45	67	114	0 48
26	3 Pleiadum	9	10 39	10 20	183	232	Star 0'8 south of		C's limb.		
26	4 Pleiadum †	9	10 14	9 55	270	321	11 7	10 49	97	143	0 53
26	5 Pleiadum	9	10 43	10 24	3	52	Star 1'2 north of		C's limb.		
26	c Pleiadum †	5	10 19	10 0	276	327	11 12	10 53	90	136	0 53
26	k Pleiadum †	7 $\frac{1}{2}$	10 32	10 13	325	14	11 5	10 46	42	86	0 33
26	l Pleiadum †	7 $\frac{1}{2}$	10 32	10 13	315	5	11 11	10 52	51	97	0 39
26	9 Pleiadum †	8 $\frac{1}{2}$	10 36	10 17	232	281	11 15	10 56	135	180	0 39
26	10 Pleiadum †	8	10 36	10 17	248	297	11 23	11 4	119	163	0 47
26	11 Pleiadum	8 $\frac{1}{2}$	11 4	10 45	183	228	Star 0'3 south of		C's limb.		
26	12 Pleiadum †	7 $\frac{1}{2}$	10 53	10 34	310	358	11 34	11 15	56	99	0 41
26	15 Pleiadum*	8 $\frac{1}{2}$	11 10	10 51	202	248	11 26	11 7	165	209	0 16
26	18 Pleiadum*	8	11 9	10 50	208	254	11 30	11 11	159	203	0 21
26	p Pleiadum*	7 $\frac{1}{2}$	11 20	11 1	184	228	Star 0'0 south of		C's limb.		
26	20 Pleiadum*	8	11 10	10 51	332	18	11 36	11 17	35	77	0 26
26	21 Pleiadum*	8 $\frac{1}{2}$	11 25	11 6	3	48	Star 1'8 north of		C's limb.		
26	24 Pleiadum †	8	11 0	10 41	254	301	11 48	11 29	113	155	0 48
26	η Tauri*	3 $\frac{1}{2}$	11 23	11 4	184	228	Star 0'8 south of		C's limb.		
29	δ Geminor.	3 $\frac{1}{2}$	11 52	11 21	262	319	12 46	12 15	63	118	0 55
April 10	B.A.C. 6194	5 $\frac{1}{2}$	15 24	14 5	309	277	16 29	15 10	51	31	1 5
11	ψ Sagittarii	5	16 28	15 5	260	229	17 50	16 27	121	104	1 22
13	19 Capricor.	6	16 30	14 59	358	313	16 54	15 23	37	355	0 34
23	χ Tauri	5 $\frac{1}{2}$	9 25	7 16	280	337	10 24	8 15	78	131	0 58
24	VENUS		10 46	8 33	200	256	11 16	9 3	142	196	0 30
May 5	b Scorpii	5	16 24	13 27	261	270	17 45	14 48	75	99	1 21
29	g Virginis	6	14 49	10 18	282	315	15 41	11 10	17	56	0 53
June 5	χ^1 Sagittarii	5 $\frac{1}{2}$	19 20	14 20	200	201	Star 1'7 south of		C's limb.		
5	χ^2 Sagittarii	6 $\frac{1}{2}$	19 4	14 4	237	234	19 55	14 55	163	173	0 52
5	χ^3 Sagittarii	6	19 36	14 36	344	347	20 29	15 29	58	74	0 53
29	π Scorpii	3 $\frac{1}{2}$	14 28	7 55	243	226	15 50	9 17	83	83	1 22
29	B.A.C. 5347 †	5	19 51	13 17	268	310	20 57	14 23	90	138	1 6
July 4	B.A.C. 7202	6	19 58	13 4	271	269	21 14	14 20	151	165	1 16
8	λ Piscium †	5	17 29	10 19	308	257	18 29	11 20	107	57	1 0
13	g Pleiadum	5 $\frac{1}{2}$	21 19	18 50	18	326	Star 1'3 north of		C's limb.		
13	b Pleiadum	4 $\frac{1}{2}$	20 52	13 22	313	262	21 40	14 11	64	30	0 49
13	1 Pleiadum	8	20 59	13 29	287	236	21 53	14 23	110	56	0 54
13	3 Pleiadum	9	21 2	13 32	295	244	21 57	14 27	103	48	0 54

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1860.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.	
			Washington		Angle from		Washington		Angle from			
			Sidereal Time.	Mean Time.	North Point.	Vert. Tex.	Sidereal Time.	Mean Time.	North Point.	Vert. Tex.		
July 13	4 Pleiadum	8	h. m.	h. m.	°	°	h. m.	h. m.	°	°	h. m.	
13	6 Pleiadum	9	21 41	14 11	19	325	Star 0'0 north of	21 56	14 26	52	358	0 30
13	c Pleiadum	5	21 25	13 55	345	293	Star 1'3 north of	22 3	14 34	117	62	0 55
13	7 Pleiadum	8	21 46	14 16	19	325	Star 1'3 north of	22 3	14 34	117	62	0 55
13	9 Pleiadum	8½	21 9	13 39	281	230	Star 1'3 north of	22 3	14 34	117	62	0 55
13	d Pleiadum	5	21 24	13 54	307	254	Star 1'3 north of	22 17	14 48	91	36	0 53
13	10 Pleiadum	8	21 21	13 52	253	200	Star 1'3 north of	22 16	14 37	146	91	0 45
13	11 Pleiadum	8	21 34	14 4	321	268	Star 1'3 north of	22 22	14 52	78	22	0 48
13	12 Pleiadum	8½	21 29	13 59	282	229	Star 1'3 north of	22 25	14 55	116	60	0 56
13	13 Pleiadum	8½	21 41	14 11	250	197	Star 1'3 north of	22 25	14 55	149	93	0 45
13	15 Pleiadum	8½	21 45	14 15	278	224	Star 1'3 north of	22 42	15 12	122	65	0 57
13	18 Pleiadum	8	21 46	14 16	279	225	Star 1'3 north of	22 43	15 13	120	63	0 57
13	p Pleiadum	7½	21 46	14 17	274	220	Star 1'3 north of	22 43	15 13	126	69	0 56
13	22 Pleiadum	8½	22 9	14 39	200	144	Star 0'3 south of	22 52	15 22	92	34	0 56
13	24 Pleiadum	8	21 57	14 27	308	253	Star 0'3 south of	22 52	15 22	92	34	0 56
13	γ Tauri	3½	21 50	14 20	269	215	Star 0'3 south of	22 45	15 15	131	74	0 55
13	27 Pleiadum	8½	22 14	14 44	303	247	Star 0'3 south of	23 12	15 43	98	40	0 59
13	29 Pleiadum	8	22 22	14 52	304	248	Star 0'3 south of	23 21	15 51	97	39	1 0
13	f Pleiadum	4½	22 57	15 27	201	143	Star 0'5 south of	23 22	15 52	158	100	0 43
13	λ Pleiadum	5½	22 39	15 9	243	186	Star 0'5 south of	23 22	15 52	158	100	0 43
13	31 Pleiadum	8	22 43	15 13	301	244	Star 0'5 south of	23 45	16 15	101	42	1 2
13	32 Pleiadum	8	22 44	15 14	296	239	Star 0'5 south of	23 47	16 17	105	47	1 3
13	33 Pleiadum	8½	22 42	15 12	267	210	Star 0'5 south of	23 41	16 11	135	77	0 58
13	35 Pleiadum	9	22 53	15 23	259	202	Star 0'5 south of	23 48	16 18	143	84	0 55
13	36 Pleiadum	9	22 58	15 28	250	192	Star 0'5 south of	23 47	16 17	153	94	0 49
13	37 Pleiadum	8	22 57	15 27	280	221	Star 0'5 south of	0 1	16 31	122	64	1 4
13	39 Pleiadum	8	23 17	15 47	300	242	Star 0'5 south of	0 23	16 53	101	42	1 6
Aug. 24	89 Virginis	5	16 40	8 28	202	162	Star 0'5 south of	17 31	9 19	114	81	0 51
10	γ Tauri	5½	23 39	14 19	312	254	Star 0'5 south of	0 40	15 19	83	24	1 0
26	γ Sagittarii	6	22 17	11 54	273	310	Star 0'5 south of	23 22	12 59	135	179	1 5
Sept 5	ε Arietis †	4½	19 9	8 7	283	238	Star 0'5 south of	20 0	8 58	117	68	0 51
8	139 Tauri	5½	0 55	13 41	280	222	Star 0'5 south of	2 1	14 47	91	31	1 6
9	ω Geminor.	6	3 27	16 8	284	225	Star 0'5 south of	4 38	17 19	64	10	1 12
19	B.A.C. 5347 †	5	19 51	7 55	226	267	Star 0'5 south of	20 40	8 43	132	179	0 49
28	ι Piscium	5	18 38	6 6	321	271	Star 0'5 south of	19 41	7 9	100	54	1 3
Oct. 3	9 Tauri	6	20 14	7 22	271	223	Star 0'5 south of	21 5	8 13	125	74	0 52
3	δ Pleiadum	4½	0 21	11 28	331	273	Star 0'5 south of	1 20	12 28	74	20	0 59
3	δ Pleiadum	5	0 54	12 1	260	203	Star 0'5 south of	2 3	13 11	143	95	1 10
3	p Pleiadum	7½	1 33	12 40	281	228	Star 0'5 south of	2 58	14 5	120	92	1 25
3	γ Tauri	3½	1 38	12 45	276	224	Star 0'5 south of	3 2	14 9	125	100	1 24
3	f Pleiadum	4½	3 4	14 11	220	196	Star 0'5 south of	3 40	14 47	174	173	0 35
3	λ Pleiadum	5½	2 51	13 58	249	217	Star 0'5 south of	4 3	15 10	145	162	1 12
5	125 Tauri	6	2 1	13 1	252	192	Star 0'5 south of	3 12	14 11	121	64	1 11
8	δ Cancrī	6	2 35	13 22	245	192	Star 0'5 south of	3 34	14 21	89	34	0 59
10	43 Leonis	6	4 15	14 54	192	141	Star 0'5 south of	4 47	15 26	122	70	0 32
26	45 Piscium †	6	6 21	15 57	298	350	Star 0'5 south of	7 19	15 55	105	154	0 58
Nov. 14	A Ophiuchi †	5	21 24	5 47	338	22	Star 0'5 south of	21 56	6 19	38	86	0 32
19	ι Capricor.	5½	21 13	5 17	338	331	Star 0'5 south of	22 28	6 31	94	106	1 15
19	B.A.C. 7620 †	6	2 24	10 26	301	348	Star 0'5 south of	3 26	11 28	118	169	1 2
30	B.A.C. 2238 †	6	23 15	6 35	264	218	Star 0'5 south of	0 7	7 27	93	42	0 52
Dec. 2	ο' Cancrī	6	6 21	13 32	226	179	Star 0'5 south of	7 37	14 47	82	51	1 15
2	ο' Cancrī	6	6 24	13 34	287	240	Star 0'5 south of	7 22	14 32	20	344	0 58
4	34 Sextantis	6	7 28	14 31	213	169	Star 0'5 south of	8 34	15 36	82	47	1 6
17	δ Aquarii	4½	1 9	7 21	255	294	Star 0'5 south of	1 56	8 8	177	220	0 47

OCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1860.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
Dec. 20	45 Piscium	6	h. m.	h. m.	°	°	h. m.	h. m.	°	°	h. m.
24	b Pleiadum	4½	23 30	9 31	287	270	0 53	6 54	150	162	1 22
24	d Pleiadum	5	3 40	9 25	299	302	5 7	10 52	88	134	1 27
24	e Pleiadum	5	4 41	10 25	242	280	5 49	11 33	138	193	1 8
24	γ Tauri	3½	5 22	11 6	268	318	6 44	12 28	107	165	1 22
24	f Pleiadum	4½	6 29	12 14	245	302	7 35	13 20	125	183	1 6
24	h Pleiadum	5½	6 26	12 11	264	321	7 42	13 26	105	163	1 15
27	B.A.C. 2238	6	11 12	16 43	272	330	12 7	17 39	51	106	0 55
31	B.A.C. 3529	6	3 55	9 12	241	190	4 51	10 8	73	21	0 56

NOTES.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct vision*, and are reckoned from the Moon's *North Point* and from its *Vertex* towards the West. For *inverted image*, add 180° to the angles given.

JUPITER'S SATELLITES, 1860. 425

WASHINGTON MEAN TIME.

JANUARY.

		d.	h.	m.	s.			d.	h.	m.	s.		
I.	Shadow	Egress	1	1	5	II.	Transit	Ingress	9	4	12		
I.	Transit	Egress	1	1	19	II.	Shadow	Egress W.	9	6	56		
IV.	Eclipse	Disapp.	1	2	30	59.2	II.	Transit	Egress W.	9	7	0	
IV.	Occult.	Reapp. W.	1	8	25	IV.	Shadow	Ingress W.	9	10	33		
I.	Eclipse	Disapp.	1	19	57	41.8	IV.	Transit	Ingress W.	9	10	41	
I.	Occult.	Reapp.	1	22	27	IV.	Shadow	Egress W.	9	14	13		
II.	Shadow	Ingress	2	1	34	IV.	Transit	Egress W.	9	14	30		
II.	Transit	Ingress	2	2	0	III.	Shadow	Ingress W.	9	17	33		
II.	Shadow	Egress	2	4	21	III.	Transit	Ingress W.	9	17	41		
II.	Transit	Egress	2	4	48	I.	Shadow	Ingress	9	19	9		
III.	Shadow	Ingress W.	2	13	39	I.	Transit	Ingress	9	19	10		
III.	Transit	Ingress W.	2	14	26	III.	Shadow	Egress	9	21	3		
III.	Shadow	Egress W.	2	17	3	III.	Transit	Egress	9	21	8		
I.	Shadow	Ingress W.	2	17	15	I.	Shadow	Egress	9	21	23		
I.	Transit	Ingress W.	2	17	26	I.	Transit	Egress	9	21	29		
III.	Transit	Egress W.	2	17	53	I.	Occult.	Disapp. W.	10	16	17		
I.	Shadow	Egress	2	19	34	I.	Occult.	Reapp.	10	18	36		
I.	Transit	Egress	2	19	45	II.	Occult.	Disapp.	10	23	12		
I.	Eclipse	Disapp. W.	3	14	26	13.2	II.	Occult.	Reapp.	11	2	0	
I.	Occult.	Reapp. W.	3	16	53	I.	Transit	Ingress W.	11	13	36		
II.	Eclipse	Disapp.	3	20	39	28.8	I.	Shadow	Ingress W.	11	13	33	
II.	Occult.	Reapp.	3	23	46	I.	Transit	Egress W.	11	15	55		
I.	Shadow	Ingress W.	4	11	43	I.	Shadow	Egress W.	11	15	57		
I.	Transit	Ingress W.	4	11	52	I.	Occult.	Disapp. W.	12	10	43		
I.	Shadow	Egress W.	4	14	2	I.	Eclipse	Reapp. W.	12	19	2	50.4	
I.	Transit	Egress W.	4	14	11	II.	Transit	Ingress W.	12	17	13		
I.	Eclipse	Disapp. W.	5	8	54	41.8	II.	Shadow	Ingress W.	12	17	23	
I.	Occult.	Reapp. W.	5	11	13	II.	Transit	Egress	12	20	7		
II.	Shadow	Ingress W.	5	14	51	II.	Shadow	Egress	12	20	14		
II.	Transit	Ingress W.	5	15	6	III.	Occult.	Disapp. W.	13	7	23		
II.	Shadow	Egress W.	5	17	39	I.	Transit	Ingress W.	13	8	2		
II.	Transit	Egress W.	5	17	54	I.	Shadow	Ingress W.	13	8	7		
III.	Eclipse	Disapp.	6	3	46	21.0	I.	Transit	Egress W.	13	10	21	
I.	Shadow	Ingress W.	6	6	12	I.	Shadow	Egress W.	13	10	26		
I.	Transit	Ingress W.	6	6	18	III.	Eclipse	Reapp. W.	13	11	2	15.6	
III.	Occult.	Reapp. W.	6	7	34	I.	Occult.	Reapp.	14	5	9		
I.	Shadow	Egress W.	6	8	31	I.	Eclipse	Disapp. W.	14	7	31	25.6	
I.	Transit	Egress W.	6	8	37	II.	Occult.	Disapp. W.	14	12	19		
I.	Eclipse	Disapp.	7	3	23	12.9	II.	Eclipse	Reapp. W.	14	15	17	40.6
I.	Occult.	Reapp.	7	5	44	I.	Transit	Ingress	15	2	23		
II.	Eclipse	Disapp. W.	7	9	57	21.1	I.	Shadow	Ingress	15	2	35	
II.	Occult.	Reapp. W.	7	12	53	I.	Transit	Egress	15	4	47		
I.	Shadow	Ingress	8	0	41	I.	Shadow	Egress	15	4	54		
I.	Transit	Ingress	8	0	44	I.	Occult.	Disapp.	15	23	35		
I.	Shadow	Egress	8	3	0	I.	Eclipse	Reapp.	16	1	59	53.3	
I.	Transit	Egress	8	3	3	II.	Transit	Ingress W.	16	6	25		
I.	Occult.	Disapp.	8	21	51	II.	Shadow	Ingress W.	16	6	43		
I.	Occult.	Reapp.	9	0	10	II.	Transit	Egress W.	16	9	13		
II.	Shadow	Ingress	9	4	8	II.	Shadow	Egress W.	16	9	32		

426 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

JANUARY.

		d.	h.	m.	s.			d.	h.	m.	s.
I.	Transit	Ingress	16	20	54	III.	Shadow	Egress	24	5	2
III.	Transit	Ingress	16	20	56	I.	Occult.	Disapp.	24	19	45
I.	Shadow	Ingress	16	21	4	I.	Eclipse	Reapp.	24	22	23 5.9
III.	Shadow	Ingress	16	21	37	II.	Occult.	Disapp.	25	3	42
I.	Transit	Egress	16	23	13	II.	Eclipse	Reapp. W.	25	7	13 1.1
I.	Shadow	Egress	16	23	23	I.	Transit	Ingress W.	25	17	4
III.	Transit	Egress	17	0	23	I.	Shadow	Ingress W.	25	17	27
III.	Shadow	Egress	17	1	3	I.	Transit	Egress	25	19	23
I.	Occult.	Disapp. W.	17	18	1	I.	Shadow	Egress	25	19	46
IV.	Occult.	Disapp.	17	18	38	IV.	Transit	Ingress	26	0	49
I.	Eclipse	Reapp.	17	20	28 37.2	IV.	Shadow	Ingress	26	4	39
IV.	Eclipse	Reapp.	18	0	10 1.4	IV.	Transit	Egress	26	4	37
II.	Occult.	Disapp.	18	1	26	IV.	Shadow	Egress W.	26	8	20
II.	Eclipse	Reapp.	18	4	36 22.5	I.	Occult.	Disapp. W.	26	14	11
I.	Transit	Ingress W.	18	15	20	I.	Eclipse	Reapp. W.	26	16	51 42.8
I.	Shadow	Ingress W.	18	15	33	II.	Transit	Ingress	26	21	46
I.	Transit	Egress W.	18	17	39	II.	Shadow	Ingress	26	22	36
I.	Transit	Egress W.	18	17	52	II.	Transit	Egress	27	0	34
I.	Occult.	Disapp. W.	19	12	27	II.	Shadow	Egress	27	1	25
I.	Eclipse	Reapp. W.	19	14	57 12.0	I.	Transit	Ingress W.	27	11	30
II.	Transit	Ingress	19	19	32	I.	Shadow	Ingress W.	27	11	55
II.	Shadow	Ingress	19	20	1	I.	Transit	Egress W.	27	13	49
II.	Transit	Egress	19	22	20	III.	Occult.	Disapp. W.	27	13	56
II.	Shadow	Egress	19	22	49	I.	Shadow	Egress W.	27	14	14
I.	Transit	Ingress W.	20	9	46	III.	Eclipse	Reapp.	27	19	2 8.7
I.	Shadow	Ingress W.	20	10	1	I.	Occult.	Disapp. W.	28	8	37
I.	Transit	Egress W.	20	12	5	I.	Eclipse	Reapp. W.	28	11	20 22.8
I.	Shadow	Egress W.	20	12	20	II.	Occult.	Disapp. W.	28	16	50
I.	Occult.	Disapp. W.	21	6	53	II.	Eclipse	Reapp.	28	20	31 1.8
I.	Eclipse	Reapp. W.	21	9	25 49.5	I.	Transit	Ingress W.	29	5	56
II.	Occult.	Disapp. W.	21	14	34	I.	Shadow	Ingress W.	29	6	24
II.	Eclipse	Reapp.	21	17	54 22.2	I.	Transit	Egress W.	29	8	15
I.	Transit	Ingress	22	4	12	I.	Shadow	Egress W.	29	8	43
I.	Shadow	Ingress	22	4	30	I.	Occult.	Disapp.	30	3	3
I.	Transit	Egress W.	22	6	31	I.	Eclipse	Reapp. W.	30	5	49 0.3
I.	Shadow	Egress W.	22	6	49	II.	Transit	Ingress W.	30	10	54
I.	Occult.	Disapp.	23	1	19	II.	Shadow	Ingress W.	30	11	54
I.	Eclipse	Reapp.	23	8	54 25.0	II.	Transit	Egress W.	30	13	42
II.	Transit	Ingress W.	23	8	39	II.	Shadow	Egress W.	30	14	43
II.	Shadow	Ingress W.	23	9	18	I.	Transit	Ingress	31	0	22
II.	Transit	Egress W.	23	11	27	I.	Shadow	Ingress	31	0	53
II.	Shadow	Egress W.	23	12	7	I.	Transit	Egress	31	2	41
I.	Transit	Ingress	23	22	38	I.	Shadow	Egress	31	3	12
I.	Shadow	Ingress	23	22	58	III.	Transit	Ingress	31	3	32
III.	Transit	Ingress	24	0	13	III.	Shadow	Ingress W.	31	5	35
I.	Transit	Egress	24	0	57	III.	Transit	Egress W.	31	6	57
I.	Shadow	Egress	24	1	17	III.	Shadow	Egress W.	31	9	2
III.	Shadow	Ingress	24	1	36	I.	Occult.	Disapp.	31	21	29
III.	Transit	Egress	24	3	39						

JUPITER'S SATELLITES, 1860. 427

WASHINGTON MEAN TIME.

JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



FEBRUARY.

			d. h. m. s.				d. h. m. s.
I.	Eclipse	Reapp.	1 0 17 43.3	I.	Shadow	Egress W.	5 10 38
II.	Occult.	Disapp. W.	1 5 58	I.	Occult.	Disapp.	6 4 48
II.	Eclipse	Reapp. W.	1 9 49 37.3	I.	Eclipse	Reapp. W.	6 7 43 44.3
I.	Transit	Ingress	1 18 48	II.	Transit	Ingress W.	6 13 11
I.	Shadow	Ingress	1 19 21	II.	Shadow	Ingress W.	6 14 30
I.	Transit	Egress	1 21 7	II.	Transit	Egress W.	6 15 59
I.	Shadow	Egress	1 21 40	II.	Shadow	Egress	6 17 19
I.	Occult.	Disapp. W.	2 15 55	I.	Transit	Ingress	7 2 7
I.	Eclipse	Reapp.	2 18 46 22.5	I.	Shadow	Ingress	7 2 47
II.	Transit	Ingress	3 0 2	I.	Transit	Egress	7 4 26
II.	Shadow	Ingress	3 1 12	I.	Shadow	Egress	7 5 6
II.	Transit	Egress	3 2 50	III.	Transit	Ingress W.	7 6 53
II.	Shadow	Egress	3 4 0	III.	Shadow	Ingress W.	7 9 35
IV.	Occult.	Disapp. W.	3 8 56	III.	Transit	Egress W.	7 10 19
IV.	Occult.	Reapp. W.	3 12 44	III.	Shadow	Egress W.	7 13 3
I.	Transit	Ingress W.	3 13 14	I.	Occult.	Disapp.	7 23 14
I.	Shadow	Ingress W.	3 13 50	I.	Eclipse	Reapp.	8 2 12 29.9
IV.	Eclipse	Disapp. W.	3 14 34 29.7	II.	Occult.	Disapp. W.	8 8 16
I.	Transit	Egress W.	3 15 33	II.	Eclipse	Reapp. W.	8 12 26 10.2
I.	Shadow	Egress W.	3 16 9	I.	Transit	Ingress	8 20 33
III.	Occult.	Disapp.	3 17 16	I.	Shadow	Ingress	8 21 16
IV.	Eclipse	Reapp.	3 18 19 14.5	I.	Transit	Egress	8 22 52
III.	Eclipse	Reapp.	3 23 1 52.6	I.	Shadow	Egress	8 23 35
I.	Occult.	Disapp. W.	4 10 22	I.	Occult.	Disapp.	9 17 40
I.	Eclipse	Reapp. W.	4 13 15 4.9	I.	Eclipse	Reapp.	9 20 41 10.8
II.	Occult.	Disapp.	4 19 7	II.	Transit	Ingress	10 2 20
II.	Eclipse	Reapp.	4 23 7 38.6	II.	Shadow	Ingress	10 3 48
I.	Transit	Ingress W.	5 7 41	I.	Transit	Egress	10 5 8
I.	Shadow	Ingress W.	5 8 19	II.	Shadow	Egress W.	10 6 37
I.	Transit	Egress W.	5 10 0	I.	Transit	Ingress W.	10 15 0

428 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

FEBRUARY.

		d.	h.	m.	s.			d.	h.	m.	s.
I. Shadow	Ingress W.	10	15	45		III. Occult.	Disapp.	18	0	5	
I. Transit	Egress	10	17	19		III. Occult.	Reapp.	18	3	31	
I. Shadow	Egress	10	18	4		III. Eclipse	Disapp.	18	3	42	10.6
III. Occult.	Disapp.	10	20	38		III. Eclipse	Reapp. W.	18	7	1	55.6
III. Eclipse	Reapp.	11	3	1	41.5	I. Occult.	Disapp. W.	18	13	55	
I. Occult.	Disapp. W.	11	12	7		I. Eclipse	Reapp.	18	17	4	53.8
I. Eclipse	Reapp. W.	11	15	9	55.5	II. Occult.	Disapp.	18	23	46	
IV. Transit	Ingress W.	11	15	24		II. Eclipse	Reapp.	19	4	20	40.6
IV. Transit	Egress	11	19	12		I. Transit	Ingress W.	19	11	15	
II. Occult.	Disapp.	11	21	26		I. Shadow	Ingress W.	19	12	9	
IV. Shadow	Ingress	11	22	32		I. Transit	Egress W.	19	13	34	
II. Eclipse	Reapp.	12	1	44	11.6	I. Shadow	Egress W.	19	14	28	
IV. Shadow	Egress	12	2	27		IV. Occult.	Disapp.	19	23	53	
I. Transit	Ingress W.	12	9	27		IV. Occult.	Reapp.	20	3	41	
I. Shadow	Ingress W.	12	10	13		I. Occult.	Disapp. W.	20	8	22	
I. Transit	Egress W.	12	11	46		IV. Eclipse	Disapp. W.	20	8	37	27.9
I. Shadow	Egress W.	12	12	32		I. Eclipse	Reapp. W.	20	11	33	37.0
I. Occult.	Disapp. W.	13	6	34		IV. Eclipse	Reapp. W.	20	12	28	47.1
I. Eclipse	Reapp. W.	13	9	38	36.9	II. Transit	Ingress	20	17	51	
II. Transit	Ingress W.	13	15	30		II. Shadow	Ingress	20	19	42	
II. Shadow	Ingress	13	17	6		II. Transit	Egress	20	20	39	
II. Transit	Egress	13	18	18		II. Shadow	Egress	20	22	31	
II. Shadow	Egress	13	19	55		I. Transit	Ingress	21	5	42	
I. Transit	Ingress	14	3	54		I. Shadow	Ingress W.	21	6	37	
I. Shadow	Ingress	14	4	42		I. Transit	Egress W.	21	8	1	
I. Transit	Egress W.	14	6	13		I. Shadow	Egress W.	21	8	56	
I. Shadow	Egress W.	14	7	1		III. Transit	Ingress W.	21	13	48	
III. Transit	Ingress W.	14	10	19		III. Transit	Egress	21	17	14	
III. Shadow	Ingress W.	14	13	35		III. Shadow	Ingress	21	17	35	
III. Transit	Egress W.	14	13	44		III. Shadow	Egress	21	21	3	
III. Shadow	Egress	14	17	3		I. Occult.	Disapp.	22	2	49	
I. Occult.	Disapp.	15	1	1		I. Eclipse	Reapp. W.	22	6	2	26.5
I. Eclipse	Reapp.	15	4	7	24.4	II. Occult.	Disapp. W.	22	12	57	
II. Occult.	Disapp. W.	15	10	36		II. Eclipse	Reapp.	22	17	39	3.5
II. Eclipse	Reapp. W.	15	15	2	39.1	I. Transit	Ingress	23	0	9	
I. Transit	Ingress	15	22	21		I. Shadow	Ingress	23	1	6	
I. Shadow	Ingress	15	23	11		I. Transit	Egress	23	2	28	
I. Transit	Egress	16	0	40		I. Shadow	Egress	23	3	25	
I. Shadow	Egress	16	1	30		I. Occult.	Disapp.	23	21	16	
I. Occult.	Disapp.	16	19	28		I. Eclipse	Reapp.	24	0	31	11.0
I. Eclipse	Reapp.	16	22	36	7.3	II. Transit	Ingress W.	24	7	2	
II. Transit	Ingress	17	4	40		II. Shadow	Ingress W.	24	9	0	
II. Shadow	Ingress W.	17	6	24		II. Transit	Egress W.	24	9	50	
II. Transit	Egress W.	17	7	28		II. Shadow	Egress W.	24	11	49	
II. Shadow	Egress W.	17	9	13		I. Transit	Ingress	24	18	36	
I. Transit	Ingress	17	16	43		I. Shadow	Ingress	24	19	35	
I. Shadow	Ingress	17	17	40		I. Transit	Egress	24	20	55	
I. Transit	Egress	17	19	7		I. Shadow	Egress	24	21	54	
I. Shadow	Egress	17	19	59		III. Occult.	Disapp.	25	3	37	


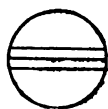
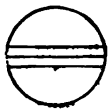
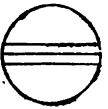
JUPITER'S SATELLITES, 1860. 429

WASHINGTON MEAN TIME.

FEBRUARY.

		d.	h.	m.	s.			d.	h.	m.	s.
III. Occult.	Reapp. W.	25	7	3		IV. Transit	Ingress W.	28	6	47	
III. Eclipse	Disapp. W.	25	7	41	52.6	I. Transit	Ingress W.	28	7	30	
III. Eclipse	Reapp. W.	25	11	2	16.2	I. Shadow	Ingress W.	28	8	32	
I. Occult.	Disapp.	25	15	43		I. Transit	Egress W.	28	9	49	
I. Eclipse	Reapp.	25	18	59	59.4	IV. Transit	Egress W.	28	10	36	
II. Occult.	Disapp.	26	2	9		I. Shadow	Egress W.	28	10	51	
II. Eclipse	Reapp. W.	26	6	57	4.3	IV. Shadow	Ingress	28	16	33	
I. Transit	Ingress W.	26	13	3		III. Transit	Ingress	28	17	21	
I. Shadow	Ingress W.	26	14	4		IV. Shadow	Egress	28	20	34	
I. Transit	Egress W.	26	15	22		III. Transit	Egress	28	20	47	
I. Shadow	Egress	26	16	23		III. Shadow	Ingress	28	21	34	
I. Occult.	Disapp. W.	27	10	10		III. Shadow	Egress	29	1	3	
I. Eclipse	Reapp. W.	27	13	26	44.0	I. Occult.	Disapp.	29	4	37	
II. Transit	Ingress	27	20	14		I. Eclipse	Reapp. W.	29	7	57	35.1
II. Shadow	Ingress	27	22	18		II. Occult.	Disapp.	29	15	21	
II. Transit	Egress	27	23	3		II. Eclipse	Reapp.	29	20	15	22.5
II. Shadow	Egress	28	1	8							

Phases of the Eclipses of the Satellites for an Inverting Telescope.

<p>I.  r *</p>	<p>III.  r *</p>
<p>II.  r *</p>	<p>IV.  d * r *</p>

MARCH.

		d.	h.	m.	s.			d.	h.	m.	s.
I. Transit	Ingress	1	1	57		I. Shadow	Ingress	2	21	30	
I. Shadow	Ingress	1	3	1		I. Transit	Egress	2	22	43	
I. Transit	Egress	1	4	16		I. Shadow	Egress	2	23	49	
I. Shadow	Egress	1	5	20		III. Occult.	Disapp. W.	3	7	14	
I. Occult.	Disapp.	1	23	5		III. Occult.	Reapp. W.	3	10	40	
I. Eclipse	Reapp.	2	2	26	21.1	III. Eclipse	Disapp. W.	3	11	42	17.2
II. Transit	Ingress W.	2	9	27		III. Eclipse	Reapp.	3	15	3	18.4
II. Shadow	Ingress W.	2	11	36		I. Occult.	Disapp.	3	17	32	
II. Transit	Egress W.	2	13	15		I. Eclipse	Reapp.	3	20	55	11.3
II. Shadow	Egress W.	2	14	26		II. Occult.	Disapp.	4	4	34	
I. Transit	Ingress	2	20	24		II. Eclipse	Reapp. W.	4	9	33	20.2




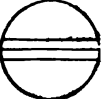
430 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

MARCH.

		d. h. m. s.			d. h. m. s.
I. Transit	Ingress	4 14 51	I. Shadow	Ingress	11 17 54
I. Shadow	Ingress	4 15 58	I. Transit	Egress	11 19 2
I. Transit	Egress	4 17 10	I. Shadow	Egress	11 20 13
I. Shadow	Egress	4 18 17	I. Occult.	Disapp. W.	12 18 51
I. Occult.	Disapp. W.	5 12 0	I. Eclipse	Reapp.	12 17 19 15.0
I. Eclipse	Reapp.	5 15 23 56.9	II. Transit	Ingress	13 1 10
II. Transit	Ingress	5 22 40	II. Shadow	Ingress	13 3 32
II. Shadow	Ingress	6 0 55	II. Transit	Egress	13 3 58
II. Transit	Egress	6 1 29	II. Shadow	Egress W.	13 6 22
II. Shadow	Egress	6 3 45	I. Transit	Ingress W.	13 11 11
I. Transit	Ingress W.	6 9 19	I. Shadow	Ingress W.	13 12 22
I. Shadow	Ingress W.	6 10 27	I. Transit	Egress W.	13 13 30
I. Transit	Egress W.	6 11 38	I. Shadow	Egress	13 14 41
I. Shadow	Egress W.	6 12 46	III. Transit	Ingress	14 0 43
III. Transit	Ingress	6 21 0	III. Transit	Egress	14 4 9
III. Transit	Egress	7 0 26	III. Shadow	Ingress	14 5 33
III. Shadow	Ingress	7 1 33	I. Occult.	Disapp. W.	14 8 19
III. Shadow	Egress	7 5 3	III. Shadow	Egress W.	14 9 4
I. Occult.	Disapp. W.	7 6 28	I. Eclipse	Reapp. W.	14 11 48 8.7
I. Eclipse	Reapp. W.	7 9 52 49.4	II. Occult.	Disapp.	14 20 16
IV. Occult.	Disapp.	7 15 46	II. Eclipse	Reapp.	15 1 27 42.5
II. Occult.	Disapp.	7 17 48	I. Transit	Ingress	15 5 39
IV. Occult.	Reapp.	7 19 36	I. Shadow	Ingress W.	15 6 51
II. Eclipse	Reapp.	7 22 51 35.3	I. Transit	Egress W.	15 7 58
IV. Eclipse	Disapp.	8 2 40 35.6	I. Shadow	Egress W.	15 9 10
I. Transit	Ingress	8 3 47	IV. Transit	Ingress	15 23 9
I. Shadow	Ingress	8 4 56	I. Occult.	Disapp.	16 2 47
I. Transit	Egress	8 6 6	IV. Transit	Egress	16 2 59
IV. Eclipse	Reapp. W.	8 6 38 2.8	I. Eclipse	Reapp.	16 6 16 57.1
I. Shadow	Egress W.	8 7 15	IV. Shadow	Ingress W.	16 10 34
I. Occult.	Disapp.	9 0 55	II. Transit	Ingress	16 14 25
I. Eclipse	Reapp.	9 4 21 36.7	IV. Shadow	Egress	16 14 43
II. Transit	Ingress W.	9 11 54	II. Shadow	Ingress	16 16 50
II. Shadow	Ingress W.	9 14 13	II. Transit	Egress	16 17 13
II. Transit	Egress W.	9 14 43	II. Shadow	Egress	16 19 40
II. Shadow	Egress	9 17 3	I. Transit	Ingress	17 0 7
I. Transit	Ingress	9 22 15	I. Shadow	Ingress	17 1 20
I. Shadow	Ingress	9 23 25	I. Transit	Egress	17 2 26
I. Transit	Egress	10 0 34	I. Shadow	Egress	17 3 39
I. Shadow	Egress	10 1 44	III. Occult.	Disapp.	17 14 41
III. Occult.	Disapp. W.	10 10 55	III. Occult.	Reapp.	17 18 7
III. Occult.	Reapp. W.	10 14 21	III. Eclipse	Disapp.	17 19 42 13.5
III. Eclipse	Disapp.	10 15 42 11.5	I. Occult.	Disapp.	17 21 15
III. Eclipse	Reapp.	10 19 3 49.5	III. Eclipse	Reapp.	17 23 4 27.3
I. Occult.	Disapp.	10 19 23	I. Eclipse	Reapp.	18 0 45 49.6
I. Eclipse	Reapp.	10 22 50 28.3	II. Occult.	Disapp. W.	18 9 31
II. Occult.	Disapp. W.	11 7 2	II. Eclipse	Reapp.	18 14 45 37.6
II. Eclipse	Reapp. W.	11 12 9 34.5	I. Transit	Ingress	18 18 35
I. Transit	Ingress	11 16 43	I. Shadow	Ingress	18 19 49

432 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.																																																																																																																																																																																																																																																	
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Shadow</td><td>Ingress</td><td>2 4</td><td>36</td></tr> <tr><td>IV. Shadow</td><td>Egress W.</td><td>2 8</td><td>49</td></tr> <tr><td>II. Transit</td><td>Ingress W.</td><td>3 8</td><td>50</td></tr> <tr><td>II. Shadow</td><td>Ingress W.</td><td>3 11</td><td>23</td></tr> <tr><td>II. Transit</td><td>Egress W.</td><td>3 11</td><td>39</td></tr> <tr><td>II. Shadow</td><td>Egress</td><td>3 14</td><td>14</td></tr> <tr><td>I. Transit</td><td>Ingress</td><td>3 16</td><td>50</td></tr> <tr><td>I. Shadow</td><td>Ingress</td><td>3 16</td><td>8</td></tr> <tr><td>I. Transit</td><td>Egress</td><td>3 19</td><td>9</td></tr> <tr><td>I. Shadow</td><td>Egress</td><td>3 20</td><td>27</td></tr> <tr><td>III. Transit</td><td>Ingress W.</td><td>4 12</td><td>21</td></tr> <tr><td>I. Occult.</td><td>Disapp.</td><td>4 13</td><td>59</td></tr> <tr><td>III. Transit</td><td>Egress</td><td>4 15</td><td>48</td></tr> <tr><td>III. Shadow</td><td>Ingress</td><td>4 17</td><td>33</td></tr> <tr><td>I. Eclipse</td><td>Reapp.</td><td>4 17 34</td><td>25.8</td></tr> <tr><td>III. Shadow</td><td>Egress</td><td>4 21</td><td>5</td></tr> <tr><td>II. Occult.</td><td>Disapp.</td><td>5 8</td><td>54</td></tr> </table>	I. Occult.	Disapp.	d. h. m. s.		III. Occult.	Reapp.	1 1 1		III. Eclipse	Disapp.	1 3 41	32.6	I. Eclipse	Reapp.	1 4 36	41.7	III. Eclipse	Reapp. W.	1 7 4	55.8	II. Occult.	Disapp.	1 14	36	IV. Transit	Ingress	1 16	30	II. Eclipse	Reapp.	1 19 57	22.4	IV. Transit	Egress	1 20	22	I. Transit	Ingress	1 22	21	I. Shadow	Ingress	1 23	39	I. Transit	Egress	2 0	40	I. Shadow	Egress	2 1	58	IV. Shadow	Ingress	2 4	36	IV. Shadow	Egress W.	2 8	49	II. Transit	Ingress W.	3 8	50	II. Shadow	Ingress W.	3 11	23	II. Transit	Egress W.	3 11	39	II. Shadow	Egress	3 14	14	I. Transit	Ingress	3 16	50	I. Shadow	Ingress	3 16	8	I. Transit	Egress	3 19	9	I. Shadow	Egress	3 20	27	III. Transit	Ingress W.	4 12	21	I. Occult.	Disapp.	4 13	59	III. Transit	Egress	4 15	48	III. Shadow	Ingress	4 17	33	I. Eclipse	Reapp.	4 17 34	25.8	III. Shadow	Egress	4 21	5	II. Occult.	Disapp.	5 8	54	<table border="0" style="width: 100%;"> <tr><td>II. Eclipse</td><td>Reapp. W.</td><td>d. h. m. s.</td><td>5 9 15 14.9</td></tr> <tr><td>I. Transit</td><td>Ingress W.</td><td>5 11</td><td>19</td></tr> <tr><td>I. Shadow</td><td>Ingress W.</td><td>5 12</td><td>56</td></tr> <tr><td>I. Transit</td><td>Egress</td><td>5 13</td><td>38</td></tr> <tr><td>I. Shadow</td><td>Egress</td><td>5 14</td><td>55</td></tr> <tr><td>I. Occult.</td><td>Disapp. W.</td><td>6 8</td><td>28</td></tr> <tr><td>I. Eclipse</td><td>Reapp. W.</td><td>6 12 3</td><td>15.8</td></tr> <tr><td>II. Transit</td><td>Ingress</td><td>6 22</td><td>9</td></tr> <tr><td>II. Shadow</td><td>Ingress</td><td>7 0</td><td>42</td></tr> <tr><td>II. Transit</td><td>Egress</td><td>7 0</td><td>57</td></tr> <tr><td>II. Shadow</td><td>Egress</td><td>7 3</td><td>33</td></tr> <tr><td>I. Transit</td><td>Ingress</td><td>7 5</td><td>48</td></tr> <tr><td>I. 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II. Occult.	Disapp.	8 17	12																																																																																																																																																																																																																																														
II. Eclipse	Reapp.	8 22 33	2.7																																																																																																																																																																																																																																														
I. Transit	Ingress	9 0	17																																																																																																																																																																																																																																														
I. Shadow	Ingress	9 1	34																																																																																																																																																																																																																																														
I. Transit	Egress	9 2	36																																																																																																																																																																																																																																														
I. Shadow	Egress	9 3	53																																																																																																																																																																																																																																														
I. Occult.	Disapp.	9 21	26																																																																																																																																																																																																																																														
I. Eclipse	Reapp.	10 1 0	59.2																																																																																																																																																																																																																																														
IV. Occult.	Disapp.	10 2	32																																																																																																																																																																																																																																														
IV. Occult.	Reapp.	10 6	26																																																																																																																																																																																																																																														

JUPITER'S SATELLITES, 1860. 433

WASHINGTON MEAN TIME.

APRIL.

				d.	h.	m.	s.					d.	h.	m.	s.
II.	Transit	Ingress	W.	10	11	28		I.	Transit	Ingress		17	20	42	
II.	Shadow	Ingress		10	14	1		I.	Shadow	Ingress		17	21	58	
II.	Transit	Egress		10	14	17		I.	Transit	Egress		17	23	1	
IV.	Eclipse	Disapp.		10	14	47	57.3	I.	Shadow	Egress		18	0	17	
II.	Shadow	Egress		10	16	52		IV.	Transit	Ingress	W.	18	10	43	
I.	Transit	Ingress		10	18	46		IV.	Transit	Egress		18	14	40	
IV.	Eclipse	Reapp.		10	18	56	23.7	I.	Occult.	Disapp.		18	17	52	
I.	Shadow	Ingress		10	20	3		III.	Transit	Ingress		18	20	27	
I.	Transit	Egress		10	21	5		I.	Eclipse	Reapp.		18	21	25	25.0
I.	Shadow	Egress		10	22	22		IV.	Shadow	Ingress		18	22	37	
I.	Occult.	Disapp.		11	15	55		III.	Transit	Egress		18	23	54	
III.	Transit	Ingress		11	16	22		III.	Shadow	Ingress		19	1	32	
I.	Eclipse	Reapp.		11	19	29	55.2	IV.	Shadow	Egress		19	2	55	
III.	Transit	Egress		11	19	49		III.	Shadow	Egress		19	5	5	
III.	Shadow	Ingress		11	21	33		I.	Occult.	Disapp.		20	12	21	
III.	Shadow	Egress		12	1	5		I.	Eclipse	Reapp.		20	15	54	15.3
II.	Occult.	Disapp.		12	6	30		II.	Transit	Ingress		21	3	28	
II.	Eclipse	Reapp.	W.	12	11	50	50.1	II.	Shadow	Ingress		21	5	57	
I.	Transit	Ingress		12	13	15		II.	Transit	Egress		21	6	17	
I.	Shadow	Ingress		12	14	32		II.	Shadow	Egress	W.	21	8	48	
I.	Transit	Egress		12	15	34		I.	Transit	Ingress	W.	21	9	40	
I.	Shadow	Egress		12	16	51		I.	Shadow	Ingress	W.	21	10	56	
I.	Occult.	Disapp.	W.	13	10	24		I.	Transit	Egress		21	11	59	
I.	Eclipse	Reapp.		13	13	58	45.3	I.	Shadow	Egress		21	13	15	
II.	Transit	Ingress		14	0	48		I.	Occult.	Disapp.		22	6	51	
II.	Shadow	Ingress		14	3	19		I.	Eclipse	Reapp.	W.	22	10	23	10.5
II.	Transit	Egress		14	3	37		III.	Occult.	Disapp.	W.	22	10	36	
II.	Shadow	Egress		14	6	10		III.	Occult.	Reapp.		22	14	4	
I.	Transit	Ingress	W.	14	7	44		III.	Eclipse	Disapp.		22	15	42	15.5
I.	Shadow	Ingress	W.	14	9	0		III.	Eclipse	Reapp.		22	19	7	16.3
I.	Transit	Egress	W.	14	10	3		II.	Occult.	Disapp.		22	22	28	
I.	Shadow	Egress	W.	14	11	19		II.	Eclipse	Reapp.		23	3	48	58.6
I.	Occult.	Disapp.		15	4	53		I.	Transit	Ingress		23	4	9	
III.	Occult.	Disapp.		15	6	28		I.	Shadow	Ingress		23	5	24	
I.	Eclipse	Reapp.	W.	15	8	27	40.4	I.	Transit	Egress		23	6	28	
III.	Occult.	Reapp.	W.	15	9	56		I.	Shadow	Egress	W.	23	7	44	
III.	Eclipse	Disapp.	W.	15	11	41	36.7	I.	Occult.	Disapp.		24	1	20	
III.	Eclipse	Reapp.		15	15	6	5.9	I.	Eclipse	Reapp.		24	4	51	58.8
II.	Occult.	Disapp.		15	19	49		II.	Transit	Ingress		24	16	49	
I.	Transit	Ingress		16	2	13		II.	Shadow	Ingress		24	19	16	
I.	Shadow	Ingress		16	3	29		II.	Transit	Egress		24	19	38	
I.	Transit	Egress		16	4	32		II.	Shadow	Egress		24	22	7	
I.	Shadow	Egress		16	5	48		I.	Transit	Ingress		24	22	38	
I.	Occult.	Disapp.		16	23	22		I.	Shadow	Ingress		24	23	53	
I.	Eclipse	Reapp.		17	2	56	29.0	I.	Transit	Egress		25	0	57	
II.	Transit	Ingress		17	14	8		I.	Shadow	Egress		25	2	12	
II.	Shadow	Ingress		17	16	38		I.	Occult.	Disapp.		25	19	49	
II.	Transit	Egress		17	16	57		I.	Eclipse	Reapp.		25	23	20	54.7
II.	Shadow	Egress		17	19	29		III.	Transit	Ingress		26	0	33	

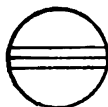

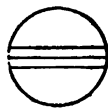
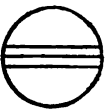
434 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

APRIL.

		d.	h.	m.	s.			d.	h.	m.	s.
III.	Transit	Egress	26	4	2	II.	Shadow	Egress W.	28	11	26
III.	Shadow	Ingress	26	5	32	I.	Transit	Ingress	28	11	37
III.	Shadow	Egress W.	26	9	5	I.	Shadow	Ingress	28	12	50
II.	Occult.	Disapp.	26	11	48	I.	Transit	Egress	28	13	56
II.	Eclipse	Reapp.	26	17	1 36.8	I.	Shadow	Egress	28	15	10
I.	Transit	Ingress	26	17	7	I.	Occult.	Disapp. W.	29	8	49
I.	Shadow	Ingress	26	18	21	I.	Eclipse	Reapp.	29	12	18 39.9
I.	Transit	Egress	26	19	26	IV.	Occult.	Disapp.	29	14	44
I.	Shadow	Egress	26	20	41	IV.	Occult.	Reapp.	29	18	13
IV.	Occult.	Disapp.	26	21	12	IV.	Eclipse	Disapp.	29	19	42 17.7
IV.	Occult.	Reapp.	27	1	11	IV.	Eclipse	Reapp.	29	23	7 49.3
IV.	Eclipse	Disapp. W.	27	8	51 19.1	II.	Occult.	Disapp.	30	1	8
IV.	Eclipse	Reapp.	27	13	4 40.3	I.	Transit	Ingress	30	6	7
I.	Occult.	Disapp.	27	14	19	II.	Eclipse	Reapp.	30	6	19 12.4
I.	Eclipse	Reapp.	27	17	49 44.9	I.	Shadow	Ingress	30	7	19
II.	Transit	Ingress	28	6	10	I.	Transit	Egress W.	30	8	26
II.	Shadow	Ingress W.	28	8	34	I.	Shadow	Egress W.	30	9	39
II.	Transit	Egress W.	28	8	59						

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		r *	III.		d * r *
II.		r *	IV.		d * r *

MAY.

		d.	h.	m.	s.			d.	h.	m.	s.
I.	Occult.	Disapp.	1	3	18	I.	Occult.	Disapp.	2	21	48
I.	Eclipse	Reapp.	1	6	47 27.9	I.	Eclipse	Reapp.	3	1	16 23.4
II.	Transit	Ingress	1	19	33	III.	Transit	Ingress	3	4	45
II.	Shadow	Ingress	1	21	53	III.	Transit	Egress W.	3	8	14
II.	Transit	Egress	1	22	22	III.	Shadow	Ingress W.	3	9	31
I.	Transit	Ingress	2	0	36	III.	Shadow	Egress	3	13	5
II.	Shadow	Egress	2	0	45	II.	Occult.	Disapp.	3	14	29
I.	Shadow	Ingress	2	1	47	I.	Transit	Ingress	3	19	6
I.	Transit	Egress	2	2	55	II.	Eclipse	Reapp.	3	19	26 48.5
I.	Shadow	Egress	2	4	7	I.	Shadow	Ingress	3	20	16

JUPITER'S SATELLITES, 1860. 435

WASHINGTON MEAN TIME.

M A Y.

		d.	h.	m.	s.			d.	h.	m.	s.	
I.	Transit	Egress	8	21	25		I.	Shadow	Egress	11	0	31
I.	Shadow	Egress	3	23	36		I.	Occult.	Disapp.	11	18	17
I.	Occult.	Disapp.	4	16	18		I.	Eclipse	Reapp.	11	21	40 39.5
I.	Eclipse	Reapp.	4	19	45 19.2		II.	Transit	Ingress	12	11	40
IV.	Transit	Ingress	5	5	42		II.	Shadow	Ingress	12	13	49
II.	Transit	Ingress W.	5	8	54		II.	Transit	Egress	12	14	29
IV.	Transit	Egress W.	5	9	43		I.	Transit	Ingress	12	15	34
II.	Shadow	Ingress	5	11	12		I.	Shadow	Ingress	12	16	39
II.	Transit	Egress	5	11	44		II.	Shadow	Egress	12	16	41
I.	Transit	Ingress	5	13	35		I.	Transit	Egress	12	17	53
II.	Shadow	Egress	5	14	4		I.	Shadow	Egress	12	18	59
I.	Shadow	Ingress	5	14	45		I.	Occult.	Disapp.	13	12	46
I.	Transit	Egress	5	15	54		I.	Eclipse	Reapp.	13	16	9 33.8
IV.	Shadow	Ingress	5	16	39		IV.	Occult.	Disapp.	13	16	32
I.	Shadow	Egress	5	17	5		IV.	Occult.	Reapp.	13	20	36
IV.	Shadow	Egress	5	21	2		III.	Occult.	Disapp.	13	23	14
I.	Occult.	Disapp. W.	6	10	47		III.	Occult.	Reapp.	14	2	44
I.	Eclipse	Reapp.	6	14	14 7.7		IV.	Eclipse	Disapp.	14	2	54 44.8
III.	Occult.	Disapp.	6	18	59		III.	Eclipse	Disapp.	14	3	41 57.6
III.	Occult.	Reapp.	6	22	28		II.	Occult.	Disapp.	14	6	32
III.	Eclipse	Disapp.	6	23	42 20.7		III.	Eclipse	Reapp.	14	7	8 28.0
III.	Eclipse	Reapp.	7	3	8 22.1		IV.	Eclipse	Reapp.	14	7	12 39.4
II.	Occult.	Disapp.	7	3	50		I.	Transit	Ingress W.	14	10	4
I.	Transit	Ingress W.	7	8	5		I.	Shadow	Ingress	14	11	8
II.	Eclipse	Reapp. W.	7	8	54 22.4		II.	Eclipse	Reapp.	14	11	29 23.1
I.	Shadow	Ingress W.	7	9	13		I.	Transit	Egress	14	12	23
I.	Transit	Egress W.	7	10	24		I.	Shadow	Egress	14	13	28
I.	Shadow	Egress	7	11	33		I.	Occult.	Disapp.	15	7	16
I.	Occult.	Disapp.	8	5	17		I.	Eclipse	Reapp.	15	10	33 20.4
I.	Eclipse	Reapp. W.	8	8	42 55.1		II.	Transit	Ingress	16	1	3
II.	Transit	Ingress	8	22	17		II.	Shadow	Ingress	16	3	9
II.	Shadow	Ingress	9	0	31		II.	Transit	Egress	16	3	53
II.	Transit	Egress	9	1	7		I.	Transit	Ingress	16	4	33
I.	Transit	Ingress	9	2	34		I.	Shadow	Ingress	16	5	37
II.	Shadow	Egress	9	3	23		II.	Shadow	Egress	16	6	1
I.	Shadow	Ingress	9	3	42		I.	Transit	Egress	16	6	52
I.	Transit	Egress	9	4	53		I.	Shadow	Egress	16	7	57
I.	Shadow	Egress	9	6	2		I.	Occult.	Disapp.	17	1	46
I.	Occult.	Disapp.	9	23	47		I.	Eclipse	Reapp.	17	5	7 14.8
I.	Eclipse	Reapp.	10	3	11 50.3		III.	Transit	Ingress	17	13	17
III.	Transit	Ingress W.	10	9	0		III.	Transit	Egress	17	16	47
III.	Transit	Egress	10	12	29		III.	Shadow	Ingress	17	17	31
III.	Shadow	Ingress	10	13	31		II.	Occult.	Disapp.	17	19	54
III.	Shadow	Egress	10	17	5		III.	Shadow	Egress	17	21	6
II.	Occult.	Disapp.	10	17	11		I.	Transit	Ingress	17	23	3
I.	Transit	Ingress	10	21	4		I.	Shadow	Ingress	18	0	5
I.	Shadow	Ingress	10	22	11		II.	Eclipse	Reapp.	18	0	46 50.1
II.	Eclipse	Reapp.	10	22	11 52.6		I.	Transit	Egress	18	1	22
I.	Transit	Egress	10	23	23		I.	Shadow	Egress	18	2	25

436 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

M A Y .

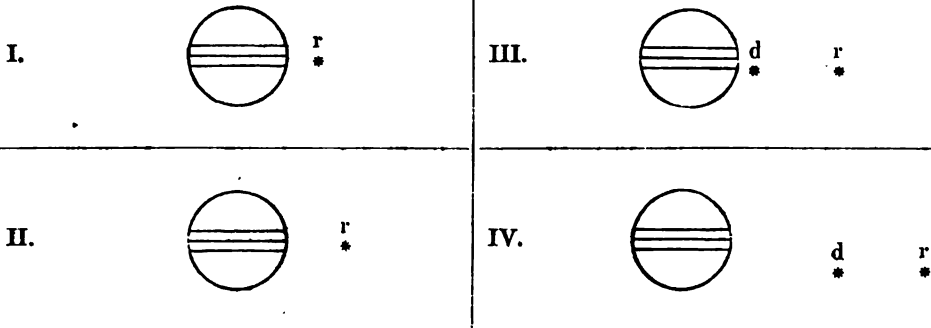
		d.	h.	m.	s.			d.	h.	m.	s.		
I.	Occult.	Disapp.	18	20	18		I.	Transit	Egress	25	3	22	
I.	Eclipse	Reapp.	18	23	36	3.2	I.	Shadow	Egress	25	4	20	
II.	Transit	Ingress	19	14	26		I.	Occult.	Disapp.	25	22	16	
II.	Shadow	Ingress	19	16	27		I.	Eclipse	Reapp.	26	1	31	
II.	Transit	Egress	19	17	16		II.	Transit	Ingress	26	17	13	
I.	Transit	Ingress	19	17	33		II.	Shadow	Ingress	26	19	5	
I.	Shadow	Ingress	19	18	34		I.	Transit	Ingress	26	19	32	
II.	Shadow	Egress	19	19	19		II.	Transit	Egress	26	20	3	
I.	Transit	Egress	19	19	52		I.	Shadow	Ingress	26	20	29	
I.	Shadow	Egress	19	20	54		I.	Transit	Egress	26	21	52	
I.	Occult.	Disapp.	20	14	46		II.	Shadow	Egress	26	21	57	
I.	Eclipse	Reapp.	20	18	4	57.0	I.	Shadow	Egress	26	22	9	
III.	Occult.	Disapp.	21	3	32		I.	Occult.	Disapp.	27	16	46	
III.	Occult.	Reapp.	21	7	8		I.	Eclipse	Reapp.	27	20	0	17.3
III.	Eclipse	Disapp.	21	7	41	31.8	III.	Occult.	Disapp.	28	7	52	
II.	Occult.	Disapp. W.	21	9	16		III.	Occult.	Reapp.	28	11	24	
III.	Eclipse	Reapp.	21	11	8	30.0	III.	Eclipse	Disapp.	28	11	41	24.7
I.	Transit	Ingress	21	12	3		II.	Occult.	Disapp.	28	12	1	
I.	Shadow	Ingress	21	13	3		I.	Transit	Ingress	28	14	2	
II.	Eclipse	Reapp.	21	14	4	17.4	I.	Shadow	Ingress	28	14	57	
I.	Transit	Egress	21	14	22		III.	Eclipse	Reapp.	28	15	8	49.9
I.	Shadow	Egress	21	15	23		I.	Transit	Egress	28	16	22	
I.	Occult.	Disapp. W.	22	9	16		II.	Eclipse	Reapp.	28	16	39	5.6
I.	Eclipse	Reapp.	22	12	33	43.1	I.	Shadow	Egress	28	17	14	
II.	Transit	Ingress	23	3	50		I.	Occult.	Disapp.	29	11	16	
II.	Shadow	Ingress	23	5	47		I.	Eclipse	Reapp.	29	14	29	2.2
I.	Transit	Ingress	23	6	33		II.	Transit	Ingress	30	6	38	
II.	Transit	Egress	23	6	40		II.	Shadow	Ingress W.	30	8	24	
I.	Shadow	Ingress	23	7	31		I.	Transit	Ingress W.	30	8	32	
II.	Shadow	Egress W.	23	8	39		I.	Shadow	Ingress W.	30	9	26	
I.	Transit	Egress W.	23	8	52		II.	Transit	Egress W.	30	9	28	
I.	Shadow	Egress W.	23	9	51		I.	Transit	Egress	30	10	52	
I.	Occult.	Disapp.	24	3	46		II.	Shadow	Egress	30	11	17	
I.	Eclipse	Reapp.	24	7	2	36.7	I.	Shadow	Egress	30	11	46	
III.	Transit	Ingress	24	17	35		IV.	Occult.	Disapp.	30	12	23	
III.	Transit	Egress	24	21	6		IV.	Occult.	Reapp.	30	16	34	
III.	Shadow	Ingress	24	21	30		IV.	Eclipse	Disapp.	30	20	57	52.0
II.	Occult.	Disapp.	24	22	38		IV.	Eclipse	Reapp.	31	1	19	58.2
I.	Transit	Ingress	25	1	3		I.	Occult.	Disapp.	31	5	46	
III.	Shadow	Egress	25	1	6		I.	Eclipse	Reapp. W.	31	8	57	54.9
I.	Shadow	Ingress	25	2	0		III.	Transit	Ingress	31	21	56	
II.	Eclipse	Reapp.	25	3	21	41.6							

JUPITER'S SATELLITES, 1860. 437

WASHINGTON MEAN TIME.

M A Y .

Phases of the Eclipses of the Satellites for an Inverting Telescope.



J U N E .

		d. h. m. s.			d. h. m. s.
II. Occult.	Disapp.	1 1 23	I. Eclipse	Reapp.	5 16 24 17.6
III. Transit	Egress	1 1 27	II. Transit	Ingress	6 9 26
III. Shadow	Ingress	1 1 29	I. Transit	Ingress	6 10 32
I. Transit	Ingress	1 3 2	II. Shadow	Ingress	6 11 2
I. Shadow	Ingress	1 3 55	I. Shadow	Ingress	6 11 21
III. Shadow	Egress	1 5 5	II. Transit	Egress	6 12 17
I. Transit	Egress	1 5 22	I. Transit	Egress	6 12 52
II. Eclipse	Reapp.	1 5 56 27.2	I. Shadow	Egress	6 13 41
I. Shadow	Egress	1 6 15	II. Shadow	Egress	6 13 54
I. Occult.	Disapp.	2 0 16	I. Occult.	Disapp.	7 7 47
I. Eclipse	Reapp.	2 3 26 41.6	I. Eclipse	Reapp.	7 10 53 9.3
II. Transit	Ingress	2 20 1	IV. Transit	Ingress	7 21 15
I. Transit	Ingress	2 21 32	IV. Transit	Egress	8 1 30
II. Shadow	Ingress	2 21 43	III. Transit	Ingress	8 2 17
I. Shadow	Ingress	2 22 23	II. Occult.	Disapp.	8 4 9
II. Transit	Egress	2 22 52	IV. Shadow	Ingress	8 4 41
I. Transit	Egress	2 23 52	I. Transit	Ingress	8 5 2
II. Shadow	Egress	3 0 35	III. Shadow	Ingress	8 5 29
I. Shadow	Egress	3 0 43	I. Shadow	Ingress	8 5 49
I. Occult.	Disapp.	3 18 46	III. Transit	Egress	8 5 50
I. Eclipse	Reapp.	3 21 55 33.5	I. Transit	Egress	8 7 22
III. Occult.	Disapp.	4 12 14	I. Shadow	Egress	8 8 9
II. Occult.	Disapp.	4 14 46	II. Eclipse	Reapp. W.	8 8 31 7.3
I. Transit	Ingress	4 16 2	III. Shadow	Egress W.	8 9 5
I. Shadow	Ingress	4 16 52	IV. Shadow	Egress	8 9 12
I. Transit	Egress	4 18 22	I. Occult.	Disapp.	9 2 18
III. Eclipse	Reapp.	4 19 9 3.2	I. Eclipse	Reapp.	9 5 21 55.0
I. Shadow	Egress	4 19 12	II. Transit	Ingress	9 22 50
II. Eclipse	Reapp.	4 19 13 48.1	I. Transit	Ingress	9 23 32
I. Occult.	Disapp.	5 13 17	I. Shadow	Ingress	10 0 18

438 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

JUNE.

			d.	h.	m.	s.				d.	h.	m.	s.
II.	Shadow	Ingress	10	0	20			I.	Shadow	Egress	17	4	32
II.	Transit	Egress	10	1	41			II.	Shadow	Egress	17	5	50
I.	Transit	Egress	10	1	52			I.	Occult.	Disapp.	17	22	49
I.	Shadow	Egress	10	2	38			I.	Eclipse	Reapp.	18	1	45 53.6
II.	Shadow	Egress	10	3	13			I.	Transit	Ingress	18	20	3
I.	Occult.	Disapp.	10	20	48			II.	Occult.	Disapp.	18	20	18
I.	Eclipse	Reapp.	10	23	50	45.9		I.	Shadow	Ingress	18	20	41
III.	Occult.	Disapp.	11	16	38			III.	Occult.	Disapp.	18	21	3
II.	Occult.	Disapp.	11	17	32			I.	Transit	Egress	18	22	23
I.	Transit	Ingress	11	18	2			I.	Shadow	Egress	18	23	1
I.	Shadow	Ingress	11	18	46			II.	Eclipse	Reapp.	19	0	22 59.3
I.	Transit	Egress	11	20	22			III.	Eclipse	Reapp.	19	3	9 49.7
I.	Shadow	Egress	11	21	6			I.	Occult.	Disapp.	19	17	20
II.	Eclipse	Reapp.	11	21	48	25.7		I.	Eclipse	Reapp.	19	20	14 35.2
III.	Eclipse	Reapp.	11	23	9	47.4		I.	Transit	Ingress	20	14	33
I.	Occult.	Disapp.	12	15	18			II.	Transit	Ingress	20	15	5
I.	Eclipse	Reapp.	12	18	19	28.9		I.	Shadow	Ingress	20	15	9
II.	Transit	Ingress	13	12	15			II.	Shadow	Ingress	20	16	17
I.	Transit	Ingress	13	12	32			I.	Transit	Egress	20	16	53
I.	Shadow	Ingress	13	13	15			I.	Shadow	Egress	20	17	29
II.	Shadow	Ingress	13	13	39			II.	Transit	Egress	20	17	56
I.	Transit	Egress	13	14	52			II.	Shadow	Egress	20	19	10
II.	Transit	Egress	13	15	6			I.	Occult.	Disapp.	21	11	50
I.	Shadow	Egress	13	15	35			I.	Eclipse	Reapp.	21	14	43 24.0
II.	Shadow	Egress	13	16	32			I.	Transit	Ingress	22	9	3
I.	Occult.	Disapp.	14	9	49			I.	Shadow	Ingress	22	9	38
I.	Eclipse	Reapp.	14	12	48	19.1		II.	Occult.	Disapp.	22	9	41
III.	Transit	Ingress	15	6	41			III.	Transit	Ingress	22	11	6
II.	Occult.	Disapp.	15	6	55			I.	Transit	Egress	22	11	23
I.	Transit	Ingress	15	7	2			I.	Shadow	Egress	22	11	58
I.	Shadow	Ingress	15	7	43			III.	Shadow	Ingress	22	13	26
I.	Transit	Egress	15	9	22			II.	Eclipse	Reapp.	22	13	40 15.1
III.	Shadow	Ingress	15	9	27			III.	Transit	Egress	22	14	40
I.	Shadow	Egress	15	10	3			III.	Shadow	Egress	22	17	4
III.	Transit	Egress	15	10	14			I.	Occult.	Disapp.	23	6	20
II.	Eclipse	Reapp.	15	11	5	43.2		I.	Eclipse	Reapp.	23	9	12 7.5
III.	Shadow	Egress	15	13	4			I.	Transit	Ingress	24	3	33
I.	Occult.	Disapp.	16	4	19			I.	Shadow	Ingress	24	4	7
I.	Eclipse	Reapp.	16	7	17	3.6		II.	Transit	Ingress	24	4	29
IV.	Occult.	Disapp.	16	8	36			II.	Shadow	Ingress	24	5	35
IV.	Occult.	Reapp.	16	12	54			I.	Transit	Egress	24	5	53
IV.	Eclipse	Disapp.	16	15	0	16.1		I.	Shadow	Egress	24	6	27
IV.	Eclipse	Reapp.	16	19	26	12.5		II.	Transit	Egress	24	7	21
I.	Transit	Ingress	17	1	32			II.	Shadow	Egress	24	8	28
II.	Transit	Ingress	17	1	39			IV.	Transit	Ingress	24	17	34
I.	Shadow	Ingress	17	2	12			IV.	Transit	Egress	24	21	56
II.	Shadow	Ingress	17	2	57			IV.	Shadow	Ingress	24	22	43
I.	Transit	Egress	17	3	52			I.	Occult.	Disapp.	25	0	51
II.	Transit	Egress	17	4	31			IV.	Shadow	Egress	25	3	17

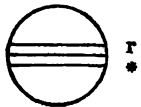
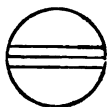
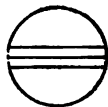
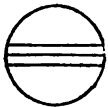
JUPITER'S SATELLITES, 1860. 439

WASHINGTON MEAN TIME.

JUNE.

			d. h. m. s.				d. h. m. s.
I.	Eclipse	Reapp.	25 3 40 56.0	II.	Transit	Egress	27 20 47
I.	Transit	Ingress	25 22 3	II.	Shadow	Egress	27 21 47
I.	Shadow	Ingress	25 22 36	I.	Occult.	Disapp.	28 13 51
II.	Occult.	Disapp.	25 23 5	I.	Eclipse	Reapp.	28 16 38 23.4
I.	Transit	Egress	26 0 23	I.	Transit	Ingress	29 11 4
I.	Shadow	Egress	26 0 56	I.	Shadow	Ingress	29 11 33
III.	Occult.	Disapp.	26 1 29	II.	Occult.	Disapp.	29 12 29
II.	Eclipse	Reapp.	26 2 57 29.1	I.	Transit	Egress	29 13 24
III.	Eclipse	Reapp.	26 7 9 47.3	I.	Shadow	Egress	29 13 53
I.	Occult.	Disapp.	26 19 21	III.	Transit	Ingress	29 15 31
I.	Eclipse	Reapp.	26 22 9 36.1	II.	Eclipse	Reapp.	29 16 14 43.7
I.	Transit	Ingress	27 16 34	III.	Shadow	Ingress	29 17 25
I.	Shadow	Ingress	27 17 5	III.	Transit	Egress	29 19 6
II.	Transit	Ingress	27 17 55	III.	Shadow	Egress	29 21 3
I.	Transit	Egress	27 18 54	I.	Occult.	Disapp.	30 8 22
II.	Shadow	Ingress	27 18 54	I.	Eclipse	Reapp.	30 11 7 5.2
I.	Shadow	Egress	27 19 25				

Phases of the Eclipses of the Satellites for an Inverting Telescope.

<p>I. </p>	<p>III. </p>
<p>II. </p>	<p>IV. </p>

The Satellites are not visible from June 30th to September 1st, Jupiter being too near the Sun.

SEPTEMBER.

I.	Shadow	Ingress	d. h. m.	1 4 40	I.	Occult.	Reapp.	d. h. m. s.	2 4 54
I.	Transit	Ingress	1 5 12	III.	Shadow	Ingress	2 5 13		
I.	Shadow	Egress	1 7 0	III.	Transit	Ingress	2 7 32		
I.	Transit	Egress	1 7 32	III.	Shadow	Egress	2 8 54		
II.	Eclipse	Disapp.	1 12 35 17.1	III.	Transit	Egress	2 11 13		
II.	Occult.	Reapp. W.	1 16 35	I.	Shadow	Ingress	2 23 8		
I.	Eclipse	Disapp.	2 2 1 12.3	I.	Transit	Ingress	2 23 42		

440 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

SEPTEMBER.

		d.	h.	m.	s.			d.	h.	m.	s.
I.	Shadow Egress	3	1	28		II.	Transit Ingress	10	11	37	
I.	Transit Egress	3	2	2		II.	Shadow Egress	10	13	9	
II.	Shadow Ingress	3	7	39		II.	Transit Egress	10	14	32	
II.	Transit Ingress	3	8	49		I.	Eclipse Disapp.	10	22	28	37.6
II.	Shadow Egress	3	10	34		I.	Occult. Reapp.	11	1	24	
II.	Transit Egress	3	11	41		I.	Shadow Ingress	11	19	30	
I.	Eclipse Disapp.	3	20	29	44.9	I.	Transit Ingress	11	20	12	
I.	Occult. Reapp.	3	23	24		I.	Shadow Egress W.	11	21	50	
I.	Shadow Ingress	4	17	36		I.	Transit Egress W.	11	22	32	
I.	Transit Ingress	4	18	12		II.	Eclipse Disapp.	12	4	26	56.0
I.	Shadow Egress	4	19	56		II.	Occult. Reapp.	12	8	46	
I.	Transit Egress	4	20	32		I.	Eclipse Disapp. W.	12	16	52	1.6
II.	Eclipse Disapp.	5	1	52	32.8	I.	Occult. Reapp.	12	19	54	
II.	Occult. Reapp.	5	5	59		III.	Eclipse Disapp.	12	23	28	18.4
I.	Eclipse Disapp.	5	14	58	10.5	III.	Occult. Reapp.	13	6	2	
I.	Occult. Reapp.	5	17	54		I.	Shadow Ingress	13	13	58	
III.	Eclipse Disapp.	5	19	29	55.4	I.	Transit Ingress	13	14	42	
III.	Occult. Reapp.	6	1	38		I.	Shadow Egress W.	13	16	18	
I.	Shadow Ingress	6	12	4		I.	Transit Egress W.	13	17	2	
I.	Transit Ingress	6	12	42		II.	Shadow Ingress	13	23	32	
I.	Shadow Egress	6	14	24		II.	Transit Ingress	14	1	1	
I.	Transit Egress	6	15	2		II.	Shadow Egress	14	2	27	
II.	Shadow Ingress	6	20	57		II.	Transit Egress	14	3	56	
II.	Transit Ingress	6	22	14		I.	Eclipse Disapp.	14	11	20	30.0
II.	Shadow Egress	6	23	52		I.	Occult. Reapp.	14	14	24	
H.	Transit Egress	7	1	9		I.	Shadow Ingress	15	8	26	
I.	Eclipse Disapp.	7	9	26	40.7	I.	Transit Ingress	15	9	12	
I.	Occult. Reapp.	7	12	24		I.	Shadow Egress	15	10	46	
I.	Shadow Ingress	8	6	33		I.	Transit Egress	15	11	32	
I.	Transit Ingress	8	7	12		II.	Eclipse Disapp.	15	17	44	0.1
I.	Shadow Egress	8	8	53		II.	Occult. Reapp.	15	22	9	
IV.	Eclipse Disapp.	8	9	6	11.0	I.	Eclipse Disapp.	16	5	48	54.2
I.	Transit Egress	8	9	32		I.	Occult. Reapp.	16	8	54	
IV.	Eclipse Reapp.	8	13	46	10.2	III.	Shadow Ingress	16	13	10	
II.	Eclipse Disapp.	8	15	9	36.8	III.	Transit Ingress W.	16	16	18	
IV.	Occult. Disapp.	8	15	24		IV.	Shadow Ingress W.	16	16	38	
II.	Occult. Reapp.	8	19	22		III.	Shadow Egress W.	16	16	51	
IV.	Occult. Reapp.	8	20	14		III.	Transit Egress	16	20	0	
I.	Eclipse Disapp.	9	3	55	6.7	IV.	Shadow Egress	16	21	27	
I.	Occult. Reapp.	9	6	54		IV.	Transit Ingress	17	0	5	
III.	Shadow Ingress	9	9	12		I.	Shadow Ingress	17	2	55	
III.	Transit Ingress	9	11	56		I.	Transit Ingress	17	3	42	
III.	Shadow Egress	9	12	53		IV.	Transit Egress	17	4	56	
III.	Transit Egress	9	15	37		I.	Shadow Egress	17	5	15	
I.	Shadow Ingress	10	1	1		I.	Transit Egress	17	6	2	
I.	Transit Ingress	10	1	42		II.	Shadow Ingress	17	12	49	
I.	Shadow Egress	10	3	21		II.	Transit Ingress	17	14	24	
I.	Transit Egress	10	4	2		II.	Shadow Egress W.	17	15	44	
II.	Shadow Ingress	10	10	14		II.	Transit Egress W.	17	17	20	

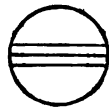
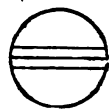
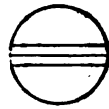
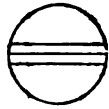
JUPITER'S SATELLITES, 1860. 441

WASHINGTON MEAN TIME.

SEPTEMBER.

		d.	h.	m.	s.			d.	h.	m.	s.	
I.	Eclipse	Disapp.	18	0	17	23.7	II.	Shadow	Ingress W.	24	15	24
I.	Occult.	Reapp.	18	3	24		II.	Transit	Ingress W.	24	17	10
I.	Shadow	Ingress	18	21	23		II.	Shadow	Egress	24	18	19
I.	Transit	Ingress	18	22	12		II.	Transit	Egress	24	20	6
I.	Shadow	Egress	18	23	43		I.	Eclipse	Disapp.	25	2	11 3.2
I.	Transit	Egress	18	0	32		IV.	Eclipse	Disapp.	25	3	5 41.3
II.	Eclipse	Disapp.	19	7	1 23.6		I.	Occult.	Reapp.	25	5	23
II.	Occult.	Reapp.	19	11	33		IV.	Eclipse	Reapp.	25	7	47 31.3
I.	Eclipse	Disapp.	19	18	45 46.3		IV.	Occult.	Disapp.	25	11	34
I.	Occult.	Reapp.	19	21	54		IV.	Occult.	Reapp. W.	25	16	27
III.	Eclipse	Disapp.	20	3	27 10.0		I.	Shadow	Ingress	25	23	17
III.	Occult.	Reapp.	20	10	25		I.	Transit	Ingress	26	0	11
I.	Shadow	Ingress W.	20	15	52		I.	Shadow	Egress	26	1	37
I.	Transit	Ingress W.	20	16	41		I.	Transit	Egress	26	2	31
I.	Shadow	Egress	20	18	12		II.	Eclipse	Disapp.	26	9	35 56.1
I.	Transit	Egress	20	19	1		II.	Occult.	Reapp.	26	14	19
II.	Shadow	Ingress	21	2	7		I.	Eclipse	Disapp.	26	20	39 24.5
II.	Transit	Ingress	21	3	43		I.	Occult.	Reapp.	26	23	52
II.	Shadow	Egress	21	5	2		III.	Eclipse	Disapp.	27	7	25 20.2
II.	Transit	Egress	21	6	43		III.	Eclipse	Reapp.	27	10	57 59.0
I.	Eclipse	Disapp.	21	13	14 13.8		III.	Occult.	Disapp.	27	11	3
I.	Occult.	Reapp. W.	21	16	23		III.	Occult.	Reapp.	27	14	46
I.	Shadow	Ingress	22	10	20		I.	Shadow	Ingress	27	17	45
I.	Transit	Ingress	22	11	11		I.	Transit	Ingress	27	18	41
I.	Shadow	Egress	22	12	40		I.	Shadow	Egress	27	20	5
I.	Transit	Egress	22	13	31		I.	Transit	Egress	27	21	1
II.	Eclipse	Disapp.	22	20	18 23.1		I.	Eclipse	Disapp. W.	28	15	7 49.3
II.	Occult.	Reapp.	23	0	56		I.	Occult.	Reapp.	28	18	22
I.	Eclipse	Disapp.	23	7	42 35.6		I.	Shadow	Ingress	29	12	14
I.	Occult.	Reapp.	23	10	53		I.	Transit	Ingress	29	13	10
III.	Shadow	Ingress W.	23	17	8		I.	Shadow	Egress	29	14	34
III.	Transit	Ingress	23	20	39		I.	Transit	Egress W.	29	15	30
III.	Shadow	Egress	23	20	49		II.	Eclipse	Disapp.	29	22	53 1.3
III.	Transit	Egress	24	0	21		II.	Occult.	Reapp.	30	3	41
I.	Shadow	Ingress	24	4	49		I.	Eclipse	Disapp.	30	9	36 10.7
I.	Transit	Ingress	24	5	41		I.	Occult.	Reapp.	30	12	52
I.	Shadow	Egress	24	7	9		III.	Shadow	Ingress	30	21	6
I.	Transit	Egress	24	8	1							

442 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.																																																																																																																																																																																																																																																																																																																																																																																					
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<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th></th> <th style="text-align: center;">d.</th> <th style="text-align: center;">h.</th> <th style="text-align: center;">m.</th> <th style="text-align: center;">s.</th> </tr> </thead> <tbody> <tr><td>III. Shadow</td><td>Egress</td><td>1</td><td>0</td><td>47</td><td></td></tr> <tr><td>III. Transit</td><td>Ingress</td><td>1</td><td>0</td><td>58</td><td></td></tr> <tr><td>III. Transit</td><td>Egress</td><td>1</td><td>4</td><td>41</td><td></td></tr> <tr><td>I. Shadow</td><td>Ingress</td><td>1</td><td>6</td><td>42</td><td></td></tr> <tr><td>I. Transit</td><td>Ingress</td><td>1</td><td>7</td><td>40</td><td></td></tr> <tr><td>I. Shadow</td><td>Egress</td><td>1</td><td>9</td><td>2</td><td></td></tr> <tr><td>I. Transit</td><td>Egress</td><td>1</td><td>10</td><td>0</td><td></td></tr> <tr><td>II. Shadow</td><td>Ingress</td><td>1</td><td>17</td><td>58</td><td></td></tr> <tr><td>II. Transit</td><td>Ingress</td><td>1</td><td>19</td><td>55</td><td></td></tr> <tr><td>II. Shadow</td><td>Egress</td><td>1</td><td>20</td><td>54</td><td></td></tr> <tr><td>II. Transit</td><td>Egress</td><td>1</td><td>22</td><td>51</td><td></td></tr> <tr><td>I. Eclipse</td><td>Disapp.</td><td>2</td><td>4</td><td>4</td><td>36.7</td></tr> <tr><td>I. Occult.</td><td>Reapp.</td><td>2</td><td>7</td><td>21</td><td></td></tr> <tr><td>I. Shadow</td><td>Ingress</td><td>3</td><td>1</td><td>11</td><td></td></tr> <tr><td>I. Transit</td><td>Ingress</td><td>3</td><td>2</td><td>9</td><td></td></tr> <tr><td>I. Shadow</td><td>Egress</td><td>3</td><td>3</td><td>31</td><td></td></tr> <tr><td>I. Transit</td><td>Egress</td><td>3</td><td>4</td><td>29</td><td></td></tr> <tr><td>IV. Shadow</td><td>Ingress</td><td>3</td><td>10</td><td>35</td><td></td></tr> <tr><td>II. Eclipse</td><td>Disapp.</td><td>3</td><td>12</td><td>10</td><td>34.2</td></tr> <tr><td>IV. Shadow</td><td>Egress W.</td><td>3</td><td>15</td><td>26</td><td></td></tr> <tr><td>II. Occult.</td><td>Reapp. W.</td><td>3</td><td>17</td><td>4</td><td></td></tr> <tr><td>IV. Transit</td><td>Ingress</td><td>3</td><td>20</td><td>0</td><td></td></tr> <tr><td>I. Eclipse</td><td>Disapp.</td><td>3</td><td>22</td><td>32</td><td>56.7</td></tr> <tr><td>IV. Transit</td><td>Egress</td><td>4</td><td>0</td><td>55</td><td></td></tr> <tr><td>I. Occult.</td><td>Reapp.</td><td>4</td><td>1</td><td>51</td><td></td></tr> <tr><td>III. Eclipse</td><td>Disapp.</td><td>4</td><td>11</td><td>23</td><td>22.7</td></tr> <tr><td>III. Eclipse</td><td>Reapp. W.</td><td>4</td><td>14</td><td>56</td><td>11.5</td></tr> <tr><td>III. Occult.</td><td>Disapp. W.</td><td>4</td><td>15</td><td>21</td><td></td></tr> <tr><td>III. Occult.</td><td>Reapp. -</td><td>4</td><td>19</td><td>4</td><td></td></tr> <tr><td>I. Shadow</td><td>Ingress</td><td>4</td><td>19</td><td>39</td><td></td></tr> </tbody> </table>			d.	h.	m.	s.	III. Shadow	Egress	1	0	47		III. Transit	Ingress	1	0	58		III. Transit	Egress	1	4	41		I. Shadow	Ingress	1	6	42		I. Transit	Ingress	1	7	40		I. Shadow	Egress	1	9	2		I. Transit	Egress	1	10	0		II. Shadow	Ingress	1	17	58		II. Transit	Ingress	1	19	55		II. Shadow	Egress	1	20	54		II. Transit	Egress	1	22	51		I. Eclipse	Disapp.	2	4	4	36.7	I. Occult.	Reapp.	2	7	21		I. Shadow	Ingress	3	1	11		I. Transit	Ingress	3	2	9		I. Shadow	Egress	3	3	31		I. Transit	Egress	3	4	29		IV. Shadow	Ingress	3	10	35		II. Eclipse	Disapp.	3	12	10	34.2	IV. Shadow	Egress W.	3	15	26		II. Occult.	Reapp. W.	3	17	4		IV. Transit	Ingress	3	20	0		I. Eclipse	Disapp.	3	22	32	56.7	IV. Transit	Egress	4	0	55		I. Occult.	Reapp.	4	1	51		III. Eclipse	Disapp.	4	11	23	22.7	III. Eclipse	Reapp. W.	4	14	56	11.5	III. Occult.	Disapp. W.	4	15	21		III. Occult.	Reapp. -	4	19	4		I. Shadow	Ingress	4	19	39		<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th></th> <th style="text-align: center;">d.</th> <th style="text-align: center;">h.</th> <th style="text-align: center;">m.</th> <th style="text-align: center;">s.</th> </tr> </thead> <tbody> <tr><td>I. Transit</td><td>Ingress</td><td>4</td><td>20</td><td>49</td><td></td></tr> <tr><td>I. Shadow</td><td>Egress</td><td>4</td><td>21</td><td>59</td><td></td></tr> <tr><td>I. Transit</td><td>Egress</td><td>4</td><td>22</td><td>59</td><td></td></tr> <tr><td>II. Shadow</td><td>Ingress</td><td>5</td><td>7</td><td>16</td><td></td></tr> <tr><td>II. Transit</td><td>Ingress</td><td>5</td><td>9</td><td>18</td><td></td></tr> <tr><td>II. Shadow</td><td>Egress</td><td>5</td><td>16</td><td>11</td><td></td></tr> <tr><td>II. Transit</td><td>Egress</td><td>5</td><td>12</td><td>14</td><td></td></tr> <tr><td>I. Eclipse</td><td>Disapp. W.</td><td>5</td><td>17</td><td>1</td><td>20.1</td></tr> <tr><td>I. Occult.</td><td>Reapp.</td><td>5</td><td>20</td><td>26</td><td></td></tr> <tr><td>I. Shadow</td><td>Ingress</td><td>6</td><td>14</td><td>7</td><td></td></tr> <tr><td>I. Transit</td><td>Ingress W.</td><td>6</td><td>15</td><td>8</td><td></td></tr> <tr><td>I. Shadow</td><td>Egress W.</td><td>6</td><td>16</td><td>27</td><td></td></tr> <tr><td>I. Transit</td><td>Egress W.</td><td>6</td><td>17</td><td>29</td><td></td></tr> <tr><td>II. Eclipse</td><td>Disapp.</td><td>7</td><td>1</td><td>27</td><td>40.2</td></tr> <tr><td>II. Occult.</td><td>Reapp.</td><td>7</td><td>6</td><td>26</td><td></td></tr> <tr><td>I. Eclipse</td><td>Disapp.</td><td>7</td><td>11</td><td>29</td><td>40.2</td></tr> <tr><td>I. Occult.</td><td>Reapp. W.</td><td>7</td><td>14</td><td>50</td><td></td></tr> <tr><td>III. Shadow</td><td>Ingress</td><td>8</td><td>1</td><td>4</td><td></td></tr> <tr><td>III. Shadow</td><td>Egress</td><td>8</td><td>4</td><td>46</td><td></td></tr> <tr><td>III. 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Shadow	Egress	4	21	59		I. Transit	Egress	4	22	59		II. Shadow	Ingress	5	7	16		II. Transit	Ingress	5	9	18		II. Shadow	Egress	5	16	11		II. Transit	Egress	5	12	14		I. Eclipse	Disapp. W.	5	17	1	20.1	I. Occult.	Reapp.	5	20	26		I. Shadow	Ingress	6	14	7		I. Transit	Ingress W.	6	15	8		I. Shadow	Egress W.	6	16	27		I. Transit	Egress W.	6	17	29		II. Eclipse	Disapp.	7	1	27	40.2	II. Occult.	Reapp.	7	6	26		I. Eclipse	Disapp.	7	11	29	40.2	I. Occult.	Reapp. W.	7	14	50		III. Shadow	Ingress	8	1	4		III. Shadow	Egress	8	4	46		III. Transit	Ingress	8	5	15		I. Shadow	Ingress	8	6	35		III. Transit	Egress	8	8	58		I. Transit	Ingress	8	9	38		I. Shadow	Egress	8	10	55		I. Transit	Egress	8	11	58		II. Shadow	Ingress	8	20	35		II. Transit	Ingress	8	22	39		II. Shadow	Egress	8	23	28		II. Transit	Egress	9	1	35		I. Eclipse	Disapp.	9	5	58	4.9
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JUPITER'S SATELLITES, 1860. 443

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I.	Occult.	Reapp.	9	9	19	I.	Shadow	Ingress	17	4	57
I.	Shadow	Ingress	10	3	3	I.	Transit	Ingress	17	6	5
I.	Transit	Ingress	10	4	7	I.	Shadow	Egress	17	7	17
I.	Shadow	Egress	10	5	23	I.	Transit	Egress	17	8	25
I.	Transit	Egress	10	6	27	II.	Eclipse	Disapp. W.	17	17	20 8.1
II.	Eclipse	Disapp. W.	10	14	45 8.1	II.	Occult.	Reapp.	17	22	31
II.	Occult.	Reapp.	10	19	48	I.	Eclipse	Disapp.	18	2	19 45.1
I.	Eclipse	Disapp.	11	0	26 23.5	I.	Occult.	Reapp.	18	5	46
I.	Occult.	Reapp.	11	3	48	III.	Eclipse	Disapp.	18	19	18 36.8
III.	Eclipse	Disapp. W.	11	15	21 1.0	III.	Eclipse	Reapp.	18	22	51 43.0
III.	Eclipse	Reapp.	11	18	53 59.0	I.	Shadow	Ingress	18	23	25
III.	Occult.	Disapp.	11	19	37	III.	Occult.	Disapp.	18	23	50
IV.	Eclipse	Disapp.	11	21	5 4.6	I.	Transit	Ingress	19	0	35
I.	Shadow	Ingress	11	21	32	I.	Shadow	Egress	19	1	45
I.	Transit	Ingress	11	22	37	I.	Transit	Egress	19	2	55
III.	Occult.	Reapp.	11	23	20	III.	Occult.	Reapp.	19	3	33
I.	Shadow	Egress	11	23	52	II.	Shadow	Ingress	19	12	24
I.	Transit	Egress	12	0	57	II.	Transit	Ingress W.	19	14	42
IV.	Eclipse	Reapp.	12	1	48 26.8	II.	Shadow	Egress W.	19	15	19
IV.	Occult.	Disapp.	12	7	19	II.	Transit	Egress W.	19	17	33
II.	Shadow	Ingress	12	9	50	I.	Eclipse	Disapp.	19	20	48 5.3
II.	Transit	Ingress	12	12	1	I.	Occult.	Reapp.	20	0	15
IV.	Occult.	Reapp.	12	12	14	IV.	Shadow	Ingress	20	4	33
II.	Shadow	Egress	12	12	45	IV.	Shadow	Egress	20	9	25
II.	Transit	Egress W.	12	14	57	IV.	Transit	Ingress W.	20	15	37
I.	Eclipse	Disapp.	12	18	54 45.3	I.	Shadow	Ingress W.	20	17	54
I.	Occult.	Reapp.	12	22	18	I.	Transit	Ingress	20	19	4
I.	Shadow	Ingress W.	12	16	0	I.	Shadow	Egress	20	20	14
I.	Transit	Ingress W.	13	17	6	IV.	Transit	Egress	20	20	22
I.	Shadow	Egress	13	18	20	I.	Transit	Egress	20	21	24
I.	Transit	Egress	13	19	26	II.	Eclipse	Disapp.	21	6	37 16.3
II.	Eclipse	Disapp.	14	4	2 25.0	II.	Occult.	Reapp.	21	11	51
II.	Occult.	Reapp.	14	9	9	I.	Eclipse	Disapp. W.	21	15	16 22.9
I.	Eclipse	Disapp. W.	14	13	23 4.0	I.	Occult.	Reapp.	21	18	44
I.	Occult.	Reapp. W.	14	16	47	III.	Shadow	Ingress	22	9	0
III.	Shadow	Ingress	15	5	2	I.	Shadow	Ingress	22	12	22
III.	Shadow	Egress	15	8	44	III.	Shadow	Egress	22	12	42
III.	Transit	Ingress	15	9	30	I.	Transit	Ingress W.	22	13	33
I.	Shadow	Ingress	15	10	29	III.	Transit	Ingress W.	22	13	42
I.	Transit	Ingress	15	11	36	I.	Shadow	Egress W.	22	14	42
I.	Shadow	Egress	15	12	49	I.	Transit	Egress W.	22	15	53
III.	Transit	Egress	15	13	18	III.	Transit	Egress W.	22	17	25
I.	Transit	Egress W.	15	13	56	II.	Shadow	Ingress	23	1	41
II.	Shadow	Ingress	15	23	7	II.	Transit	Ingress	23	4	2
II.	Transit	Ingress	16	1	21	II.	Shadow	Egress	23	4	36
II.	Shadow	Egress	16	2	2	II.	Transit	Egress	23	6	59
II.	Transit	Egress	16	4	18	I.	Eclipse	Disapp.	23	9	44 44.9
I.	Eclipse	Disapp.	16	7	51 27.2	I.	Occult.	Reapp.	23	13	13
I.	Occult.	Reapp.	16	11	16	I.	Shadow	Ingress	24	6	50

JUPITER'S SATELLITES, 1860. 445

WASHINGTON MEAN TIME.

NOVEMBER.

		d.	h.	m.	s.			d.	h.	m.	s.
I.	Transit	Ingress	2	4	26			III.	Eclipse	Reapp.	9 10 46 8.4
I.	Shadow	Egress	2	5	33			II.	Shadow	Ingress	9 20 5
I.	Transit	Egress	2	6	46			II.	Transit	Ingress	9 22 37
III.	Eclipse	Reapp.	2	6	47	43.4		II.	Shadow	Egress	9 23 1
II.	Shadow	Ingress W.	2	17	31			II.	Transit	Egress	10 1 34
II.	Transit	Ingress	2	20	0			I.	Eclipse	Disapp.	10 2 27 40.2
II.	Shadow	Egress	2	20	27			I.	Occult.	Reapp.	10 6 2
II.	Transit	Egress	2	22	56			I.	Shadow	Ingress	10 23 34
I.	Eclipse	Disapp.	3	0	34	32.2		I.	Transit	Ingress	11 0 49
I.	Occult.	Reapp.	3	4	7			I.	Shadow	Egress	11 1 54
I.	Shadow	Ingress	3	21	41			I.	Transit	Egress	11 3 9
I.	Transit	Ingress	3	22	55			II.	Eclipse	Disapp. W.	11 14 22 30.8
I.	Shadow	Egress	4	0	1			II.	Occult.	Reapp.	11 19 50
I.	Transit	Egress	4	1	15			I.	Eclipse	Disapp.	11 20 55 55.3
II.	Eclipse	Disapp.	4	11	47	18.8		I.	Occult.	Reapp.	12 0 30
II.	Occult.	Reapp. W.	4	17	12			I.	Shadow	Ingress W.	12 18 3
I.	Eclipse	Disapp.	4	19	2	47.8		I.	Transit	Ingress	12 19 18
I.	Occult.	Reapp.	4	22	36			I.	Shadow	Egress	12 20 23
I.	Shadow	Ingress W.	5	16	10			III.	Shadow	Ingress	12 20 53
III.	Shadow	Ingress W.	5	16	50			I.	Transit	Egress	12 21 38
I.	Transit	Ingress W.	5	17	23			III.	Shadow	Egress	13 0 36
I.	Shadow	Egress	5	18	30			III.	Transit	Ingress	13 1 58
I.	Transit	Egress	5	19	44			III.	Transit	Egress	13 5 41
III.	Shadow	Egress	5	20	38			II.	Shadow	Ingress	13 9 21
III.	Transit	Ingress	5	21	56			II.	Transit	Ingress	13 11 55
IV.	Shadow	Ingress	5	22	30			II.	Shadow	Egress W.	13 12 17
III.	Transit	Egress	6	1	39			II.	Transit	Egress W.	13 14 51
IV.	Shadow	Egress	6	8	24			I.	Eclipse	Disapp. W.	13 15 24 13.9
II.	Shadow	Ingress	6	6	48			I.	Occult.	Reapp.	13 18 58
II.	Transit	Ingress	6	9	18			IV.	Eclipse	Disapp.	14 9 2 32.0
H.	Shadow	Egress	6	9	44			I.	Shadow	Ingress W.	14 12 31
IV.	Transit	Ingress	6	10	16			I.	Transit	Ingress W.	14 13 46
II.	Transit	Egress	6	12	15			IV.	Eclipse	Reapp. W.	14 13 48 3.8
I.	Eclipse	Disapp. W.	6	13	31	7.5		I.	Shadow	Egress W.	14 14 51
IV.	Transit	Egress W.	6	15	11			I.	Transit	Egress W.	14 16 6
I.	Occult.	Reapp. W.	6	17	4			IV.	Occult.	Disapp.	14 20 59
I.	Shadow	Ingress	7	10	38			IV.	Occult.	Reapp.	15 1 54
I.	Transit	Ingress	7	11	52			II.	Eclipse	Disapp.	15 3 40 35.7
I.	Shadow	Egress W.	7	12	58			II.	Occult.	Reapp.	15 9 9
I.	Transit	Egress W.	7	14	13			I.	Eclipse	Disapp.	15 9 52 29.1
II.	Eclipse	Disapp.	8	1	5	18.4		I.	Occult.	Reapp. W.	15 13 26
II.	Occult.	Reapp.	8	6	32			I.	Shadow	Ingress	16 7 0
I.	Eclipse	Disapp.	8	7	59	23.1		I.	Transit	Ingress	16 8 15
I.	Occult.	Reapp.	8	11	33			I.	Shadow	Egress	16 9 20
I.	Shadow	Ingress	9	5	6			I.	Transit	Egress	16 10 35
I.	Transit	Ingress	9	6	21			III.	Eclipse	Disapp.	16 11 10 22.1
III.	Eclipse	Disapp.	9	7	12	42.6		III.	Eclipse	Reapp. W.	16 14 43 52.7
I.	Shadow	Egress	9	7	26			III.	Occult.	Disapp. W.	16 16 12
I.	Transit	Egress	9	8	41			III.	Occult.	Reapp.	16 19 55

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WASHINGTON MEAN TIME.

NOVEMBER.

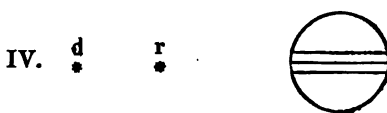
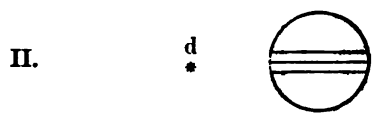
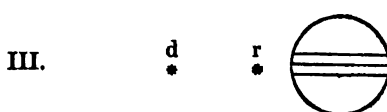
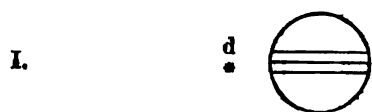
		d.	h.	m.	s.			d.	h.	m.	s.		
II.	Shadow	Ingress	16	22	38		III.	Occult.	Disapp.	23	20	8	
II.	Transit	Ingress	17	1	12		III.	Occult.	Reapp.	23	23	50	
II.	Shadow	Egress	17	1	34		II.	Shadow	Ingress	24	1	11	
II.	Transit	Egress	17	4	8		II.	Transit	Ingress	24	3	44	
I.	Eclipse	Disapp.	17	4	24	45.6	II.	Shadow	Egress	24	4	7	
I.	Occult.	Reapp.	17	7	54		I.	Eclipse	Disapp.	24	6	13	49.2
I.	Shadow	Ingress	18	1	28		II.	Transit	Egress	24	6	40	
I.	Transit	Ingress	18	2	43		I.	Occult.	Reapp.	24	9	46	
I.	Shadow	Egress	18	3	48		I.	Shadow	Ingress	25	3	22	
I.	Transit	Egress	18	5	3		I.	Transit	Ingress	25	4	36	
II.	Eclipse	Disapp. W.	18	16	57	50.3	I.	Shadow	Egress	25	5	42	
II.	Occult.	Reapp.	18	22	26		I.	Transit	Egress	25	6	56	
I.	Eclipse	Disapp.	18	23	49	0.2	II.	Eclipse	Disapp.	25	19	33	17.1
I.	Occult.	Reapp.	19	2	22		I.	Eclipse	Disapp.	26	0	42	3.5
I.	Shadow	Ingress	19	19	56		II.	Occult.	Reapp.	26	1	0	
I.	Transit	Ingress	19	21	12		I.	Occult.	Reapp.	26	4	14	
I.	Shadow	Egress	19	22	16		I.	Shadow	Ingress	26	21	50	
I.	Transit	Egress	19	23	32		I.	Transit	Ingress	26	23	4	
III.	Shadow	Ingress	20	0	51		I.	Shadow	Egress	27	0	10	
III.	Shadow	Egress	20	4	34		I.	Transit	Egress	27	1	24	
III.	Transit	Ingress	20	5	57		III.	Shadow	Ingress	27	4	49	
III.	Transit	Egress	20	9	39		III.	Shadow	Egress	27	3	32	
II.	Shadow	Ingress W.	20	11	55		III.	Transit	Ingress	27	9	50	
II.	Transit	Ingress W.	20	14	28		III.	Transit	Egress W.	27	13	33	
II.	Shadow	Egress W.	20	14	51		II.	Shadow	Ingress W.	27	14	28	
I.	Eclipse	Disapp. W.	20	17	17	18.3	II.	Transit	Ingress W.	27	16	59	
II.	Transit	Egress W.	20	17	24		II.	Shadow	Egress W.	27	17	24	
I.	Occult.	Reapp.	20	20	50		I.	Eclipse	Disapp.	27	19	10	21.4
I.	Shadow	Ingress W.	21	14	25		II.	Transit	Egress	27	19	56	
I.	Transit	Ingress W.	21	15	40		I.	Occult.	Reapp.	27	22	43	
I.	Shadow	Egress W.	21	16	45		I.	Shadow	Ingress W.	28	16	18	
I.	Transit	Egress W.	21	18	0		I.	Transit	Ingress W.	28	17	32	
II.	Eclipse	Disapp.	22	6	16	0.4	I.	Shadow	Egress W.	28	18	38	
II.	Occult.	Reapp. W.	22	11	44		I.	Transit	Egress	28	19	52	
I.	Eclipse	Disapp. W.	22	11	45	33.2	II.	Eclipse	Disapp.	29	3	51	32.9
I.	Occult.	Reapp. W.	22	15	18		I.	Eclipse	Disapp. W.	29	13	38	36.2
IV.	Shadow	Ingress W.	22	16	27		II.	Occult.	Reapp. W.	29	14	17	
IV.	Shadow	Egress	22	21	22		I.	Occult.	Reapp. W.	29	17	10	
IV.	Transit	Ingress	23	4	17		I.	Shadow	Ingress	30	10	46	
I.	Shadow	Ingress	23	8	53		I.	Transit	Ingress W.	30	12	0	
IV.	Transit	Egress	23	9	12		I.	Shadow	Egress W.	30	13	6	
I.	Transit	Ingress	23	10	8		I.	Transit	Egress W.	30	14	20	
I.	Shadow	Egress	23	11	13		III.	Eclipse	Disapp.	30	19	5	14.6
I.	Transit	Egress W.	23	12	28		III.	Eclipse	Reapp.	30	22	38	52.4
III.	Eclipse	Disapp. W.	23	15	7	57.4	III.	Occult.	Disapp.	30	23	59	
III.	Eclipse	Reapp. W.	23	18	41	32.0							

JUPITER'S SATELLITES, 1860. 447

WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



DECEMBER.

		d.	h.	m.	s.
IV.	Eclipse	Disapp.	1	3	1 21.0
III.	Occult.	Reapp.	1	3	41
II.	Shadow	Ingress	1	3	45
II.	Transit	Ingress	1	6	14
II.	Shadow	Egress	1	6	41
IV.	Eclipse	Reapp.	1	7	47 30.0
I.	Eclipse	Disapp.	1	8	6 51.9
II.	Transit	Egress	1	9	10
I.	Occult.	Reapp. W.	1	11	38
IV.	Occult.	Disapp. W.	1	14	36
IV.	Occult.	Reapp.	1	19	30
I.	Shadow	Ingress	2	5	15
I.	Transit	Ingress	2	6	28
I.	Shadow	Egress	2	7	35
I.	Transit	Egress	2	8	48
II.	Eclipse	Disapp.	2	22	6 52.2
I.	Eclipse	Disapp.	3	2	35 6.2
II.	Occult.	Reapp.	3	3	32
I.	Occult.	Reapp.	3	6	6
I.	Shadow	Ingress	3	23	43
I.	Transit	Ingress	4	0	56
I.	Shadow	Egress	4	2	8
I.	Transit	Egress	4	3	16
III.	Shadow	Ingress	4	8	48
III.	Shadow	Egress W.	4	12	30
III.	Transit	Ingress W.	4	13	40
II.	Shadow	Ingress W.	4	17	1
III.	Transit	Egress W.	4	17	22
II.	Transit	Ingress	4	19	28
II.	Shadow	Egress	4	19	57

		d.	h.	m.	s.
I.	Eclipse	Disapp.	4	21	3 23.8
II.	Transit	Egress	4	22	25
I.	Occult.	Reapp.	5	0	33
I.	Shadow	Ingress W.	5	18	11
I.	Transit	Ingress	5	19	24
I.	Shadow	Egress	5	20	31
I.	Transit	Egress	5	21	44
II.	Eclipse	Disapp. W.	6	11	27 12.9
I.	Eclipse	Disapp. W.	6	15	31 38.9
II.	Occult.	Reapp. W.	6	16	47
I.	Occult.	Reapp.	6	19	1
I.	Shadow	Ingress W.	7	12	40
I.	Transit	Ingress W.	7	13	52
I.	Shadow	Egress W.	7	15	0
I.	Transit	Egress W.	7	16	13
III.	Eclipse	Disapp.	7	23	2 35.3
III.	Eclipse	Reapp.	8	2	36 15.3
III.	Occult.	Disapp.	8	3	45
II.	Shadow	Ingress	8	6	18
III.	Occult.	Reapp.	8	7	27
II.	Transit	Ingress	8	8	42
II.	Shadow	Egress	8	9	14
I.	Eclipse	Disapp.	8	9	59 54.6
II.	Transit	Egress W.	8	11	38
I.	Occult.	Reapp. W.	8	13	28
I.	Shadow	Ingress	9	7	8
I.	Transit	Ingress	9	8	19
I.	Shadow	Egress	9	9	29
IV.	Shadow	Ingress	9	10	24
I.	Transit	Egress W.	9	10	39

448 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME.

D E C E M B E R.

		d.	h.	m.	s.			d.	h.	m.	s.
IV.	Transit	Ingress	W.	9	15	20		II.	Occult.	Reapp.	17 8 29
IV.	Shadow	Egress		9	21	23		I.	Occult.	Reapp.	17 9 44
II.	Eclipse	Disapp.		10	0	44	34.5	IV.	Eclipse	Disapp.	17 20 59 57.9
IV.	Transit	Egress		10	2	16		IV.	Eclipse	Reapp.	18 1 46 26.7
I.	Eclipse	Disapp.		10	4	28	9.2	I.	Shadow	Ingress	18 3 31
II.	Occult.	Reapp.		10	6	1		I.	Transit	Ingress	18 4 36
I.	Occult.	Reapp.		10	7	56		I.	Shadow	Egress	18 5 51
I.	Shadow	Ingress		11	1	37		I.	Transit	Egress	18 6 56
I.	Transit	Ingress		11	2	47		IV.	Occult.	Disapp.	18 7 13
I.	Shadow	Egress		11	3	57		IV.	Occult.	Reapp. W.	18 12 6
I.	Transit	Egress		11	5	7		III.	Shadow	Ingress W.	18 16 44
III.	Shadow	Ingress	W.	11	12	46		III.	Shadow	Egress	18 20 26
III.	Shadow	Egress	W.	11	16	28		III.	Transit	Ingress	18 21 5
III.	Transit	Ingress	W.	11	17	25		II.	Shadow	Ingress	18 22 7
II.	Shadow	Ingress		11	19	34		II.	Transit	Ingress	19 0 18
III.	Transit	Egress		11	21	7		III.	Transit	Egress	19 0 47
II.	Transit	Ingress		11	21	54		I.	Eclipse	Disapp.	19 0 49 31.4
II.	Shadow	Egress		11	22	30		II.	Shadow	Egress	19 1 4
I.	Eclipse	Disapp.		11	22	56	26.8	II.	Transit	Egress	19 3 14
II.	Transit	Egress		12	0	51		I.	Occult.	Reapp.	19 4 11
I.	Occult.	Reapp.		12	2	23		I.	Shadow	Ingress	19 21 59
I.	Shadow	Ingress		12	20	5		I.	Transit	Ingress	19 23 3
I.	Transit	Ingress		12	21	15		I.	Shadow	Egress	20 0 19
I.	Shadow	Egress		12	22	25		I.	Transit	Egress	20 1 23
I.	Transit	Egress		12	23	35		II.	Eclipse	Disapp. W.	20 16 38 55.9
II.	Eclipse	Disapp. W.		13	14	3	0.5	I.	Eclipse	Disapp.	20 19 17 47.8
I.	Eclipse	Disapp. W.		13	17	24	42.6	II.	Occult.	Reapp.	20 21 42
II.	Occult.	Reapp.		13	19	16		I.	Occult.	Reapp.	20 22 38
I.	Occult.	Reapp.		13	20	50		I.	Shadow	Ingress W.	21 16 27
I.	Shadow	Ingress	W.	14	14	34		I.	Transit	Ingress W.	21 17 30
I.	Transit	Ingress	W.	14	15	42		I.	Shadow	Egress	21 18 47
I.	Shadow	Egress	W.	14	16	54		I.	Transit	Egress	21 19 50
I.	Transit	Egress	W.	14	18	2		III.	Eclipse	Disapp.	22 6 58 9.5
III.	Eclipse	Disapp.		15	3	0	25.0	III.	Eclipse	Reapp. W.	22 10 31 51.7
III.	Eclipse	Reapp.		15	6	34	6.4	III.	Occult.	Disapp. W.	22 11 4
III.	Occult.	Disapp.		15	7	27		II.	Shadow	Ingress W.	22 11 24
II.	Shadow	Ingress		15	8	51		II.	Shadow	Ingress W.	22 13 30
II.	Transit	Ingress	W.	15	11	7		I.	Eclipse	Disapp. W.	22 13 46 4.3
III.	Occult.	Reapp. W.		15	11	9		II.	Shadow	Egress W.	22 14 20
II.	Shadow	Egress	W.	15	11	47		III.	Occult.	Reapp. W.	22 14 46
I.	Eclipse	Disapp. W.		15	11	52	58.4	II.	Transit	Egress W.	22 16 26
II.	Transit	Egress	W.	15	14	3		I.	Occult.	Reapp. W.	22 17 5
I.	Occult.	Reapp. W.		15	15	17		I.	Shadow	Ingress W.	23 10 56
I.	Shadow	Ingress		16	9	2		I.	Transit	Ingress W.	23 11 57
I.	Transit	Ingress		16	10	9		I.	Shadow	Egress W.	23 13 16
I.	Shadow	Egress	W.	16	11	22		I.	Transit	Egress W.	23 14 17
I.	Transit	Egress	W.	16	12	29		II.	Eclipse	Disapp.	24 5 56 23.6
II.	Eclipse	Disapp.		17	3	20	25.3	I.	Eclipse	Disapp.	24 8 14 20.2
I.	Eclipse	Disapp.		17	6	21	13.6	II.	Occult.	Reapp. W.	24 10 54

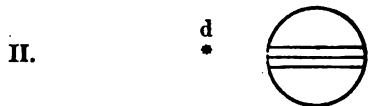
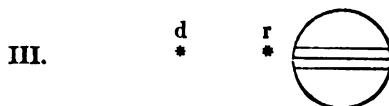
JUPITER'S SATELLITES, 1860. 449

WASHINGTON MEAN TIME.

D E C E M B E R .

				d. h. m. s.					d. h. m. s.			
I. Occult.	Reapp.	W.	24	11	32	II. Eclipse	Disapp.	27	19	14	58.6	
I. Shadow	Ingress		25	5	24	I. Eclipse	Disapp.	27	21	10	56.2	
I. Transit	Ingress		25	6	24	II. Occult.	Reapp.	28	0	6		
I. Shadow	Egress		25	7	44	I. Occult.	Reapp.	28	0	26		
I. Transit	Egress		25	8	44	I. Shadow	Ingress W.	28	18	21		
III. Shadow	Ingress		25	20	41	I. Transit	Ingress	28	19	18		
III. Shadow	Egress		26	0	24	I. Shadow	Egress	28	20	41		
III. Transit	Ingress		26	0	39	I. Transit	Egress	28	21	38		
II. Shadow	Ingress		26	0	41	II. Shadow	Ingress W.	29	13	57		
II. Transit	Ingress		26	2	40	I. Eclipse	Disapp. W.	29	15	39	13.4	
I. Eclipse	Disapp.		26	2	42	38.5	II. Transit	Ingress W.	29	15	50	
II. Shadow	Egress		26	3	37	II. Shadow	Egress W.	29	16	53		
III. Transit	Egress		26	4	21	II. Transit	Egress	29	18	46		
IV. Shadow	Ingress		26	4	22	I. Occult.	Reapp.	29	18	52		
II. Transit	Egress		26	5	36	I. Shadow	Ingress W.	30	12	49		
I. Occult.	Reapp.		26	5	58	I. Transit	Ingress W.	30	13	44		
IV. Shadow	Egress		26	9	18	I. Shadow	Egress W.	30	15	10		
IV. Transit	Ingress W.		26	13	29	I. Transit	Egress W.	30	16	4		
IV. Transit	Egress W.		26	18	21	II. Eclipse	Disapp.	31	8	32	29.4	
I. Shadow	Ingress		26	23	53	I. Eclipse	Disapp. W.	31	10	7	30.4	
I. Transit	Ingress		27	0	51	II. Occult.	Reapp. W.	31	13	16		
I. Shadow	Egress		27	2	13	I. Occult.	Reapp. W.	31	13	18		
I. Transit	Egress		27	3	11							

Phases of the Eclipses of the Satellites for an Inverting Telescope.



450 JUPITER'S SATELLITES, 1860.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

		h. m.			h. m.			h. m.			h. m.
Jan.	1	21 17.9	March	17	22 24.4	June	2	1 26.3	Oct.	18	4 35.5
	3	15 43.7		19	16 52.5		3	19 56.5		19	23 4.8
	5	10 9.4		21	11 20.8		5	14 26.7		21	17 33.8
	7	4 35.2		23	5 49.1		7	8 56.9		23	12 3.0
	8	23 1.0		25	0 17.5		9	3 27.2		25	6 32.0
	10	17 26.9		26	18 45.8		10	21 57.5		27	1 0.9
	12	11 52.7		28	13 14.4		12	16 27.7		28	19 29.8
	14	6 18.6		30	7 42.9		14	10 58.1		30	13 58.7
	16	0 44.4	April	1	2 11.6		16	5 28.4	Nov.	1	8 27.5
	17	19 10.4		2	20 40.2		17	23 58.8		3	2 56.3
	19	13 36.2		4	15 9.0		19	18 29.1		4	21 24.9
	21	8 2.2		6	9 37.8		21	12 59.5		6	15 53.5
	23	2 28.2		8	4 6.7		23	7 29.9		8	10 22.1
	24	20 54.3		9	22 35.6		25	2 0.3		10	4 50.6
	26	15 20.3		11	17 4.7		26	20 30.6		11	23 19.0
	28	9 46.4		13	11 33.8		28	15 1.0		13	17 47.4
	30	4 12.5		15	6 3.0		30	9 31.4		15	12 15.8
	31	22 38.9		17	0 32.1	Sept.	2	8 43.3		17	6 44.0
Feb.	2	17 5.1		18	19 1.4		3	22 13.5		19	1 12.3
	4	11 31.4		20	13 30.6		5	16 43.5		20	19 40.5
	6	5 57.7		22	8 0.0		7	11 13.6		22	14 8.5
	8	0 24.2		24	2 29.4		9	5 43.6		24	8 36.5
	9	18 50.6		25	20 58.9		11	0 13.6		26	3 4.4
	11	13 17.3		27	15 28.5		12	18 43.5		27	21 32.3
	13	7 43.8		29	9 58.1		14	13 13.5		29	16 0.1
	15	2 10.5	May	1	4 27.6		16	7 43.4	Dec.	1	10 27.8
	16	20 37.2		2	22 57.3		18	2 13.3		3	4 55.4
	18	15 4.1		4	17 26.9		19	20 43.0		4	23 23.0
	20	9 31.0		6	11 56.7		21	15 12.9		6	17 50.6
	22	3 58.1		8	6 26.4		23	9 42.7		8	12 18.0
	23	22 25.1		10	0 56.2		25	4 12.4		10	6 45.4
	25	16 52.3		11	19 26.0		26	22 42.1		12	1 12.3
	27	11 19.5		13	13 56.9		28	17 11.8		13	19 40.0
	29	5 46.9		15	8 25.7		30	11 41.3		15	14 7.2
March	2	0 14.2		17	2 55.7	Oct.	2	6 10.9		17	8 34.2
	3	18 41.8		18	21 25.6		4	0 40.5		19	3 1.3
	5	13 9.3		20	15 55.7		5	19 10.1		20	21 28.3
	7	7 37.0		22	10 25.6		7	13 39.5		22	15 55.2
	9	2 4.6		24	4 55.7		9	8 9.0		24	10 22.0
	10	20 32.5		25	23 25.8		11	2 38.4		26	4 48.8
	12	15 0.3		27	17 56.0		12	21 7.7		27	23 15.5
	14	9 28.2		29	12 26.0		14	15 37.1		29	17 42.1
	16	3 56.2		31	6 56.2		16	10 6.3		31	12 8.7

SATELLITE II.

		h. m.			h. m.			h. m.			h. m.
Jan.	3	22 21.8	Jan.	28	18 13.8	Feb.	22	14 21.6	March	18	10 55.4
	7	11 28.6	Feb.	1	7 22.5		26	3 35.0		22	0 11.1
	11	0 36.2		4	20 30.9		29	16 45.4		25	13 27.2
	14	13 43.0		8	9 40.3	March	4	5 58.2		29	2 43.7
	18	2 50.7		11	22 49.7		7	19 11.9	April	1	16 0.8
	21	15 57.9		15	12 0.0		11	8 25.8		5	5 18.3
	25	5 6.0		19	1 10.4		14	21 40.4		8	18 36.3

JUPITER'S SATELLITES. 1860. 451

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

April 12	h. m. 7 54.7	June 4	h. m. 16 11.2	Sept. 26	h. m. 12 50.6	Nov. 15	h. m. 7 40.5
15	21 13.5	8	5 34.2	30	2 13.1	18	20 57.7
19	10 32.7	11	18 57.3	Oct. 3	15 25.7	22	10 15.5
22	23 52.4	15	8 20.5	7	4 57.7	25	23 31.7
26	13 12.4	18	21 43.8	10	18 19.7	29	12 48.4
30	2 32.8	22	11 7.3	14	7 41.1	Dec. 3	2 3.6
May 3	15 53.6	26	0 31.0	17	21 2.7	6	15 19.2
7	5 14.6	29	13 54.8	21	10 23.3	10	4 33.1
10	18 35.8	Sept. 1	15 7.2	24	23 44.8	13	17 47.7
14	7 57.5	5	4 31.2	28	13 4.3	17	7 0.5
17	21 19.2	8	17 54.7	Nov. 1	2 24.7	20	20 13.9
21	10 41.2	12	7 18.3	4	15 43.9	24	9 25.6
25	0 3.4	15	20 41.5	8	5 8.5	27	22 37.7
28	13 25.8	19	10 4.9	11	18 21.8	31	11 48.0
June 1	2 48.4	22	23 27.7				

SATELLITE III.

Jan. 6	h. m. 5 50.4	March 24	h. m. 20 14.5	June 11	h. m. 18 24.9	Oct. 26	h. m. 5 52.1
13	9 5.9	April 1	0 9.3	18	22 50.1	Nov. 2	9 59.3
20	12 21.5	8	4 8.6	26	3 16.3	9	14 3.5
27	15 39.0	15	8 12.1	Sept. 5	23 47.7	16	18 3.4
Feb. 3	18 58.4	22	12 19.9	13	4 11.5	23	21 59.0
10	22 20.9	29	16 28.6	20	8 34.2	Dec. 1	1 49.9
18	1 43.3	May 6	20 43.7	27	12 54.6	8	5 36.1
25	5 19.9	14	0 59.5	Oct. 4	17 12.7	15	9 18.2
March 3	8 56.7	21	5 17.6	11	21 28.4	22	12 55.2
10	12 37.9	28	9 38.1	19	1 41.4	29	16 28.3
17	16 24.0	June 4	14 0.3				

SATELLITE IV.

Jan. 1	h. m. 6 30.7	March 24	h. m. 10 36.3	June 16	h. m. 10 45.0	Oct. 29	h. m. 4 58.0
17	20 32.7	April 10	4 29.1	Sept. 8	17 49.3	Nov. 14	23 26.5
Feb. 3	10 49.7	26	23 11.4	25	14 0.5	Dec. 1	17 2.7
20	1 47.4	May 13	18 34.3	Oct. 12	9 46.6	18	9 39.5
March 7	17 41.0	30	14 28.5				

Factors by which x' and y' in the following Table must be multiplied to obtain the coordinates x and y for any time.

p = the inclination of the northern Semiminor Axis of the apparent ellipse to the circle of Declination; + East, — West.

x and y at the time of the visible phase of every fourth eclipse for the Ist, of every second eclipse for the IInd, and of every eclipse for the IIIrd and IVth Satellites.

452 JUPITER'S SATELLITES, 1860.

SATELLITE I.

AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		
Date,	Factor for z'.	Factor for y'.	p.	z'.	y'.	Date,	Factor for z'.	Factor for y'.	p.	z'.	y'.
1860.											
Jan. 1	1.224	+0.428	+10 32.0	-26 ^h	+3 ^m	June 5	0.864	+0.237	+12 4.3	+27 ^h	+2 ^m
8	1.227	0.432	10 8.0	-23	3	12	0.854	0.223	12 41.1	26	1
16	1.225	0.435	9 43.8	+25	3	19	0.846	0.209	13 15.5	24	1
23	1.219	0.436	9 20.1	28	3	26	0.839	0.195	13 50.1	+22	1
30	1.208	0.435	8 57.8	31	3	Sept. 2	0.840	0.057	18 52.0	-23	0
Feb. 6	1.194	+0.432	+ 8 37.5	+34	+3	9	0.847	+0.042	+19 17.8	-25	+0
13	1.176	0.428	8 20.9	36	3	16	0.856	0.026	19 42.0	26	0
20	1.155	0.422	8 8.1	38	3	23	0.866	+0.010	20 4.7	26	0
27	1.133	0.414	7 59.2	39	3	30	0.878	-0.007	20 25.6	29	0
March 5	1.110	0.405	7 54.3	40	2	Oct. 7	0.891	0.023	20 44.7	31	0
12	1.086	+0.395	+ 7 53.3	+40	+2	14	0.905	-0.040	+21 2.1	-32	+0
19	1.062	0.384	7 56.1	40	2	21	0.921	0.056	21 17.7	34	0
26	1.039	0.373	8 3.6	40	2	28	0.939	0.073	21 31.3	36	+0
April 2	1.016	0.361	8 15.2	39	2	Nov. 4	0.957	0.090	21 43.0	36	-0
9	0.994	0.348	8 30.7	38	2	11	0.977	0.107	21 52.8	37	1
17	0.973	+0.334	+ 8 49.5	+37	+2	19	0.998	-0.123	+22 0.6	-38	-1
24	0.953	0.320	9 11.3	36	2	26	1.020	0.139	22 6.4	38	1
May 1	0.934	0.306	9 35.8	35	2	Dec. 3	1.042	0.154	22 10.2	39	1
8	0.917	0.292	10 2.7	33	2	10	1.064	0.167	22 11.9	38	1
15	0.902	0.278	10 31.9	32	2	17	1.087	0.180	22 11.5	38	1
22	0.888	+0.265	+11 2.7	+30	+2	24	1.109	-0.191	+22 9.1	-37	-1
29	0.875	+0.251	+11 34.4	+29	+2	31	1.129	-0.199	+22 4.5	-36	-1

SATELLITE II.

AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		
Date,	Factor for z'.	Factor for y'.	p.	z'.	y'.	Date,	Factor for z'.	Factor for y'.	p.	z'.	y'.
1860.											
Jan. 3	1.226	+0.512	+10 16.6	-27 ^h	+6 ^m	June 8	0.860	+0.303	+12 15.9	+32 ^h	+4 ^m
11	1.228	0.515	9 52.0	+22	6	15	0.851	0.290	12 50.9	30	4
18	1.224	0.516	9 27.4	27	6	22	0.843	0.277	13 26.4	28	3
25	1.215	0.514	9 3.4	33	6	29	0.837	0.264	14 2.1	+25	3
Feb. 1	1.203	0.511	8 41.5	38	6	Sept. 1	0.840	0.148	18 56.7	-27	2
8	1.187	+0.506	+ 8 22.0	+42	+6	8	0.847	+0.135	+19 23.6	-30	+2
15	1.169	0.499	8 6.0	45	6	15	0.856	0.121	19 48.8	32	1
22	1.149	0.491	7 53.6	48	6	22	0.866	0.108	20 12.4	35	1
29	1.127	0.482	7 45.6	50	6	30	0.877	0.094	20 34.2	37	1
March 7	1.103	0.471	7 42.0	51	6	Oct. 7	0.890	0.080	20 54.2	40	1
14	1.079	+0.459	+ 7 42.7	+52	+6	14	0.905	+0.066	+21 12.4	-42	+1
22	1.055	0.447	7 47.8	52	5	21	0.921	0.052	21 28.7	44	1
29	1.031	0.434	7 57.2	52	5	28	0.938	0.038	21 43.0	46	0
April 5	1.008	0.421	8 10.4	51	5	Nov. 4	0.957	0.025	21 55.3	48	0
12	0.986	0.408	8 27.5	49	5	11	0.977	+0.012	22 5.6	49	0
19	0.965	+0.395	+ 8 48.0	+48	+5	18	0.998	-0.001	+22 13.8	-50	+0
26	0.946	0.381	9 11.4	46	5	25	1.020	0.013	22 20.0	51	0
May 3	0.928	0.378	9 37.4	44	4	Dec. 3	1.042	0.024	22 24.1	51	0
10	0.912	0.355	10 5.9	42	4	10	1.064	0.034	22 26.0	51	-0
17	0.897	0.342	10 36.3	40	4	17	1.087	0.043	22 25.7	50	0
25	0.883	+0.329	+11 8.3	+37	+4	24	1.109	-0.050	+22 23.2	-48	-1
June 1	0.871	+0.316	+11 41.6	+35	+4	31	1.129	-0.055	+22 18.6	-46	-1

JUPITER'S SATELLITES, 1860. 453

SATELLITE III.

Date, 1860	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for α' .	Factor for γ' .	p .	Disappearance.		Reappearance.	
				α' .	γ' .	α' .	γ' .
Jan. 6	1.226	+0.440	+10 ^o 5.3	+25 ^h	+ 8 ^h	..	..
13	1.226	0.442	9 40.7	..	..	+24	+ 8
20	1.222	0.442	9 16.4	..	..	33	8
27	1.213	0.440	8 53.2	..	..	41	8
Feb. 3	1.199	0.437	8 32.1	..	..	49	8
10	1.181	+0.432	+ 8 13.7	..	..	+56	+ 7
18	1.162	0.426	7 59.0	+22	+ 7	61	7
25	1.141	0.419	7 48.2	27	7	65	7
March 3	1.118	0.410	7 41.7	31	7	68	7
10	1.094	0.400	7 39.6	34	7	70	7
17	1.069	+0.389	+ 7 41.9	+36	+ 7	+71	+ 7
24	1.045	0.377	7 48.6	37	6	71	6
April 1	1.022	0.365	7 59.5	37	6	71	6
8	0.999	0.353	8 14.1	36	6	70	6
15	0.977	0.340	8 32.4	35	6	68	5
22	0.957	+0.328	+ 8 53.9	+33	+ 5	+66	+ 5
29	0.938	0.315	9 18.2	31	5	63	5
May 6	0.921	0.303	9 45.1	28	5	60	5
14	0.905	0.290	10 14.1	25	5	56	5
21	0.890	0.277	10 44.9	22	5	53	5
28	0.877	+0.265	+11 17.3	+18	+ 5	+49	+ 5
June 4	0.865	0.251	11 50.8	..	..	45	4
11	0.855	0.239	12 25.2	..	..	41	4
18	0.847	0.226	13 0.1	..	..	37	4
26	0.840	0.214	13 35.3	..	..	+33	4
Sept. 5	0.850	+0.086	+18 57.0	-37	+ 1	..	..
13	0.854	0.070	19 22.5	41	1	..	..
20	0.862	0.054	19 46.4	44	1	..	..
27	0.873	0.039	20 8.6	48	1	-17	+ 1
Oct. 4	0.885	0.024	20 29.0	51	0	20	0
11	0.899	+0.009	+20 47.5	-55	+ 0	-23	+ 0
19	0.915	-0.005	21 4.1	59	0	26	0
26	0.933	0.020	21 18.8	62	+ 0	29	+ 0
Nov. 2	0.951	0.035	21 31.5	64	- 1	31	- 1
9	0.971	0.050	21 42.3	66	1	32	1
16	0.991	-0.065	+21 51.0	-68	- 1	-33	- 1
23	1.013	0.079	21 57.6	69	1	33	1
Dec. 1	1.035	0.092	22 2.1	70	2	33	2
8	1.058	0.105	22 4.5	69	2	32	2
15	1.080	0.116	22 4.7	68	2	30	2
22	1.101	-0.126	+22 2.8	-65	- 2	-27	- 2
29	1.121	-0.184	+21 58.7	-62	- 2	-22	- 2

454 JUPITER'S SATELLITES, 1860.

SATELLITE IV.

Date, 1860.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x' .	Factor for y' .	p .	Disappearance.		Reappearance.	
				x' .	y' .	x' .	y' .
Jan. 1	1.223	+0.376	+10 13.3	- 37	+18	..	..
17	1.224	0.378	9 16.7	..	..	+ 33	+13
Feb. 3	1.199	0.373	8 24.4	+ 34	13	68	13
20	1.157	0.360	7 47.0	60	12	94	12
March 7	1.103	0.342	7 81.4	75	12	108	12
April 24	1.047	+0.321	+ 7 89.6	+ 80	+11	+113	+11
10	0.993	0.297	8 10.3	78	10	108	10
26	0.945	0.273	9 0.0	69	10	99	10
May 13	0.905	0.248	10 4.3	57	9	87	9
30	0.874	0.224	11 18.6	43	8	72	8
June 16	0.860	+0.204	+12 38.9	+ 28	+ 7	+ 57	+ 7
Sept. 8	0.847	0.073	18 58.1	- 56	2	- 26	2
25	0.870	0.046	19 54.0	72	2	41	2
Oct. 12	0.901	+0.017	20 40.1	87	1	55	1
29	0.940	-0.012	21 15.8	99	+ 0	65	0
Nov. 14	0.986	-0.041	+21 40.6	-107	- 1	- 72	- 1
Dec. 1	1.038	0.068	21 54.1	101	2	73	2
18	1.090	-0.091	+21 55.8	-104	- 3	- 65	- 3

SATELLITE I.

COORDINATES IN THE MEAN APPARENT ELLIPSE, DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (t) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

t	x'	y'	t	x'	y'	t	x'	y'
d. h. m.	u	u	d. h. m.	u	u	d. h. m.	u	u
0 0 0	+ 0.0	+ 6.6	0 5 20	+ 77.5	+ 4.7	0 10 40	+109.1	- 0.1
0 0 20	5.4	6.6	0 5 40	81.2	4.4	0 11 0	109.0	0.4
0 0 40	10.8	6.6	0 6 0	84.7	4.2	0 11 20	108.6	0.7
0 1 0	16.1	6.6	0 6 20	88.0	3.9	0 11 40	107.9	1.0
0 1 20	21.4	6.5	0 6 40	91.1	3.7	0 12 0	106.9	1.3
0 1 40	+ 26.6	+ 6.4	0 7 0	+ 94.0	+ 3.4	0 12 20	+105.7	- 1.7
0 2 0	31.8	6.3	0 7 20	96.6	3.1	0 12 40	104.3	2.0
0 2 20	36.9	6.2	0 7 40	99.0	2.8	0 13 0	102.5	2.3
0 2 40	42.0	6.1	0 8 0	101.1	2.5	0 13 20	100.5	2.6
0 3 0	46.9	6.0	0 8 20	103.0	2.2	0 13 40	98.3	2.9
0 3 20	+ 51.7	+ 5.8	0 8 40	+104.7	+ 1.9	0 14 0	+ 95.8	- 3.2
0 3 40	56.4	5.7	0 9 0	106.1	1.6	0 14 20	93.1	3.5
0 4 0	60.9	5.5	0 9 20	107.3	1.3	0 14 40	90.3	3.7
0 4 20	65.3	5.3	0 9 40	108.1	0.9	0 15 0	87.1	4.0
0 4 40	69.5	5.1	0 10 0	108.7	0.6	0 15 20	83.7	4.3
0 5 0	+ 73.6	+ 4.9	0 10 20	+109.1	+ 0.3	0 15 40	+ 80.1	- 4.5

JUPITER'S SATELLITES, 1860. 455

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE I.

t	x'	y'	t	x'	y'	t	x'	y'
d. h. m.	#	#	d. h. m.	#	#	d. h. m.	#	#
0 16 0	+ 76.4	- 4.7	1 1 40	- 66.6	- 5.2	1 11 0	- 97.6	+ 3.0
0 16 20	72.5	5.0	1 2 0	70.8	5.0	1 11 20	95.1	3.3
0 16 40	68.4	5.2	1 2 20	74.8	4.8	1 11 40	92.3	3.5
0 17 0	64.1	5.4	1 2 40	78.6	4.6	1 12 0	89.3	3.8
0 17 20	59.6	5.5	1 3 0	82.2	4.4	1 12 20	86.1	4.1
0 17 40	+ 55.0	- 5.7	1 3 20	- 85.6	- 4.1	1 12 40	- 82.7	+ 4.3
0 18 0	50.8	5.9	1 3 40	88.9	3.8	1 13 0	79.1	4.6
0 18 20	45.5	6.0	1 4 0	91.9	3.6	1 13 20	75.3	4.8
0 18 40	40.5	6.1	1 4 20	94.7	3.3	1 13 40	71.3	5.0
0 19 0	35.5	6.3	1 4 40	97.3	3.0	1 14 0	67.1	5.2
0 19 20	+ 30.4	- 6.4	1 5 0	- 99.6	- 2.7	1 14 20	- 62.8	+ 5.4
0 19 40	25.2	6.4	1 5 20	101.7	2.4	1 14 40	58.3	5.6
0 20 0	19.9	6.5	1 5 40	103.5	2.1	1 15 0	53.7	5.8
0 20 20	14.6	6.6	1 6 0	105.1	1.8	1 15 20	49.0	5.9
0 20 40	9.2	6.6	1 6 20	106.4	1.5	1 15 40	44.1	6.1
0 21 0	+ 3.8	- 6.6	1 6 40	- 107.5	- 1.2	1 16 0	- 39.1	+ 6.2
0 21 20	- 1.5	6.6	1 7 0	108.3	0.8	1 16 20	34.0	6.3
0 21 40	6.9	6.6	1 7 20	108.8	0.5	1 16 40	28.9	6.4
0 22 0	12.3	6.6	1 7 40	109.1	- 0.2	1 17 0	23.7	6.5
0 22 20	17.6	6.5	1 8 0	109.1	+ 0.1	1 17 20	18.4	6.5
0 22 40	- 22.9	- 6.5	1 8 20	- 108.9	+ 0.5	1 17 40	- 13.0	+ 6.6
0 23 0	- 28.1	6.4	1 8 40	108.4	0.8	1 18 0	7.7	6.6
0 23 20	33.3	6.3	1 9 0	107.6	1.1	1 18 20	- 2.3	6.6
0 23 40	38.4	6.2	1 9 20	106.6	1.4	1 18 40	+ 3.1	6.6
1 0 0	43.4	6.1	1 9 40	105.3	1.8	1 19 0	8.5	6.6
1 0 20	- 48.3	- 5.9	1 10 0	- 103.8	+ 2.1	1 19 20	+ 13.8	+ 6.6
1 0 40	53.1	5.8	1 10 20	102.0	2.4	1 19 40	19.1	6.5
1 1 0	57.7	5.6	1 10 40	- 99.9	+ 2.7	1 20 0	+ 24.4	+ 6.5
1 1 20	- 62.2	- 5.4						

SATELLITE II.

t	x'	y'	t	x'	y'	t	x'	y'
d. h. m.	#	#	d. h. m.	#	#	d. h. m.	#	#
0 0 0	+ 0.0	+ 12.2	0 10 40	+ 122.9	+ 8.6	0 21 20	+ 173.8	- 0.0
0 0 20	8.5	12.2	0 11 20	128.8	8.2	0 22 0	173.6	0.6
0 1 40	17.0	12.1	0 12 0	134.4	7.7	0 22 40	172.9	1.2
0 2 0	25.5	12.1	0 12 40	139.6	7.3	0 23 20	171.8	1.8
0 2 40	33.9	12.0	0 13 20	144.5	6.8	1 0 0	170.4	2.4
0 3 20	+ 42.2	+ 11.8	0 14 0	+ 149.0	+ 6.3	1 0 40	+ 168.5	- 3.0
0 4 0	50.5	11.7	0 14 40	153.2	5.7	1 1 20	166.2	3.5
0 4 40	58.6	11.5	0 15 20	157.0	5.2	1 2 0	163.5	4.1
0 5 20	66.5	11.3	0 16 0	160.5	4.7	1 2 40	160.4	4.7
0 6 0	74.3	11.0	0 16 40	163.6	4.1	1 3 20	157.0	5.2
0 6 40	+ 81.9	+ 10.8	0 17 20	+ 166.3	+ 3.5	1 4 0	+ 153.2	- 5.8
0 7 20	89.4	10.5	0 18 0	168.6	3.0	1 4 40	149.0	6.3
0 8 0	96.6	10.1	0 18 40	170.5	2.4	1 5 20	144.4	6.8
0 8 40	103.6	9.8	0 19 20	171.9	1.8	1 6 0	139.5	7.3
0 9 20	110.3	9.4	0 20 0	172.9	1.2	1 6 40	134.2	7.7
0 10 0	+ 116.7	+ 9.0	0 20 40	+ 173.6	+ 0.6	1 7 20	+ 128.6	- 8.2

456 JUPITER'S SATELLITES, 1860.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.	''	''	d. h. m.	''	''	d. h. m.	''	''
1 8 0	+122.7	- 8.6	2 3 20	-103.7	- 9.8	2 22 0	-156.9	+ 5.2
1 8 40	116.5	9.0	2 4 0	110.4	9.4	2 22 40	153.0	5.8
1 9 20	110.1	9.4	2 4 40	116.8	9.0	2 23 20	148.8	6.3
1 10 0	103.4	9.8	2 5 20	123.0	8.6	3 0 0	144.2	6.8
1 10 40	96.4	10.1	2 6 0	128.9	8.2	3 0 40	139.3	7.3
1 11 20	+ 89.2	-10.5	2 6 40	-134.5	- 7.7	3 1 20	-134.1	+ 7.8
1 12 0	81.7	10.8	2 7 20	139.7	7.2	3 2 0	128.5	8.2
1 12 40	74.1	11.0	2 8 0	144.6	6.7	3 2 40	122.6	8.6
1 13 20	66.3	11.3	2 8 40	149.1	6.2	3 3 20	116.4	9.0
1 14 0	58.3	11.5	2 9 20	153.3	5.7	3 4 0	109.9	9.4
1 14 40	+ 50.2	-11.7	2 10 0	-157.1	- 5.2	3 4 40	-103.1	+ 9.8
1 15 20	42.0	11.8	2 10 40	160.6	4.6	3 5 20	96.1	10.1
1 16 0	33.7	12.0	2 11 20	163.7	4.1	3 6 0	88.9	10.5
1 16 40	25.3	12.1	2 12 0	166.4	3.5	3 6 40	81.5	10.8
1 17 20	16.8	12.1	2 12 40	168.6	2.9	3 7 20	73.9	11.0
1 18 0	+ 8.3	-12.2	2 13 20	-170.4	- 2.3	3 8 0	- 66.1	+11.3
1 18 40	- 0.2	12.2	2 14 0	171.9	1.8	3 8 40	58.1	11.5
1 19 20	8.8	12.2	2 14 40	173.0	1.2	3 9 20	50.0	11.7
1 20 0	17.3	12.1	2 15 20	173.6	- 0.6	3 10 0	41.8	11.8
1 20 40	25.7	12.1	2 16 0	173.8	+ 0.0	3 10 40	33.5	12.0
1 21 20	- 34.1	-12.0	2 16 40	-173.6	+ 0.6	3 11 20	- 25.1	+12.1
1 22 0	42.4	11.8	2 17 20	172.9	1.2	3 12 0	16.6	12.1
1 22 40	50.6	11.7	2 18 0	171.8	1.8	3 12 40	- 8.1	12.2
1 23 20	58.7	11.5	2 18 40	170.3	2.4	3 13 20	+ 0.4	12.2
2 0 0	66.7	11.3	2 19 20	168.4	3.0	3 14 0	9.0	12.2
2 0 40	- 74.5	-11.0	2 20 0	-166.2	+ 3.5	3 14 40	+ 17.5	+12.1
2 1 20	82.1	10.7	2 20 40	163.5	4.1	3 15 20	26.0	12.1
2 2 0	89.5	10.4	2 21 20	-160.4	+ 4.7	3 16 0	+ 34.4	+12.0
2 2 40	- 96.7	-10.1						

SATELLITE III.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.	''	''	d. h. m.	''	''	d. h. m.	''	''
0 0 0	+ 0.0	+17.4	0 21 20	+194.7	+12.4	1 18 40	+277.2	+ 0.2
0 1 20	13.5	17.4	0 22 40	204.1	11.8	1 20 0	277.0	- 0.6
0 2 40	26.9	17.3	1 0 0	213.0	11.1	1 21 20	276.2	1.5
0 4 0	40.3	17.2	1 1 20	221.4	10.5	1 22 40	274.7	2.3
0 5 20	53.6	17.1	1 2 40	229.3	9.8	2 0 0	272.6	3.2
0 6 40	+ 66.8	+16.9	1 4 0	+236.6	+ 9.1	2 1 20	+269.8	- 4.0
0 8 0	79.8	16.7	1 5 20	243.3	8.3	2 2 40	266.4	4.8
0 9 20	92.7	16.4	1 6 40	249.5	7.6	2 4 0	262.3	5.6
0 10 40	105.3	16.1	1 8 0	255.1	6.8	2 5 20	257.6	6.4
0 12 0	117.6	15.8	1 9 20	260.0	6.0	2 6 40	252.3	7.2
0 13 20	+129.7	+15.4	1 10 40	+264.3	+ 5.2	2 8 0	+246.4	- 8.0
0 14 40	141.5	15.0	1 12 0	268.0	4.4	2 9 20	240.0	8.7
0 16 0	153.0	14.5	1 13 20	271.1	3.6	2 10 40	233.0	9.4
0 17 20	164.1	14.0	1 14 40	273.6	2.7	2 12 0	225.4	10.1
0 18 40	174.7	13.5	1 16 0	275.5	1.9	2 13 20	217.3	10.8
0 20 0	+184.9	+13.0	1 17 20	+276.7	+ 1.1	2 14 40	+208.6	-11.5

JUPITER'S SATELLITES, 1860. 457

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.	[#]	[#]	d. h. m.	[#]	[#]	d. h. m.	[#]	[#]
2 16 0	+199.5	-12.1	4 6 40	-158.4	-14.3	5 20 0	-255.1	+ 6.8
2 17 20	189.9	12.7	4 8 0	169.3	13.8	5 21 20	249.5	7.6
2 18 40	179.9	13.3	4 9 20	179.8	13.3	5 22 40	243.3	8.3
2 20 0	169.4	13.8	4 10 40	189.9	12.7	6 0 0	236.6	9.1
2 21 20	158.5	14.3	4 12 0	199.5	12.1	6 1 20	229.3	9.8
2 22 40	+147.2	-14.8	4 13 20	-208.6	-11.5	6 2 40	-221.4	+10.5
3 0 0	135.6	15.2	4 14 40	217.3	10.8	6 4 0	213.0	11.1
3 1 20	123.7	15.6	4 16 0	225.5	10.1	6 5 20	204.1	11.8
3 2 40	111.5	16.0	4 17 20	233.1	9.4	6 6 40	194.7	12.4
3 4 0	99.0	16.3	4 18 40	240.1	8.7	6 8 0	184.9	13.0
3 5 20	+ 86.3	-16.6	4 20 0	-246.5	- 8.0	6 9 20	-174.7	+13.5
3 6 40	73.3	16.8	4 21 20	252.3	7.2	6 10 40	164.1	14.0
3 8 0	60.2	17.0	4 22 40	257.6	6.4	6 12 0	153.0	14.5
3 9 20	47.0	17.2	5 0 0	262.3	5.6	6 13 20	141.5	15.0
3 10 40	33.6	17.3	5 1 20	266.4	4.8	6 14 40	129.7	15.4
3 12 0	+ 20.2	-17.4	5 2 40	-269.8	- 4.0	6 16 0	-117.6	+15.8
3 13 20	+ 6.7	17.4	5 4 0	272.6	3.2	6 17 20	105.2	16.1
3 14 40	- 6.8	17.4	5 5 20	274.7	2.3	6 18 40	92.6	16.4
3 16 0	20.8	17.4	5 6 40	276.2	1.5	6 20 0	79.8	16.7
3 17 20	33.7	17.3	5 8 0	277.0	- 0.6	6 21 20	66.8	16.9
3 18 40	- 47.1	-17.2	5 9 20	-277.2	+ 0.2	6 22 40	- 53.6	+17.1
3 20 0	60.3	17.0	5 10 40	276.7	1.1	7 0 0	40.3	17.2
3 21 20	73.4	16.8	5 12 0	275.5	1.9	7 1 20	26.9	17.3
3 22 40	86.3	16.6	5 13 20	273.7	2.7	7 2 40	- 13.4	17.4
4 0 0	99.0	16.3	5 14 40	271.2	3.6	7 4 0	+ 0.1	17.4
4 1 20	-111.5	-16.0	5 16 0	-268.1	+ 4.4	7 5 20	+ 13.6	+17.4
4 2 40	123.7	15.6	5 17 20	264.4	5.2	7 6 40	27.0	17.3
4 4 0	135.7	15.2	5 18 40	-260.1	+ 6.0	7 8 0	+ 40.4	+17.2
4 5 20	-147.2	-14.8						

SATELLITE IV.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h.	[#]	[#]	d. h.	[#]	[#]	d. h.	[#]	[#]
0 0	+ 0.0	+34.8	2 0	+332.3	+25.5	4 0	+486.2	+ 2.5
0 3	22.8	34.8	2 3	348.6	24.3	4 3	487.3	+ 0.8
0 6	45.6	34.7	2 6	364.1	23.1	4 6	487.3	- 0.8
0 9	68.3	34.5	2 9	378.9	21.9	4 9	486.3	2.4
0 12	90.9	34.2	2 12	392.9	20.6	4 12	484.2	4.1
0 15	+113.2	+33.9	2 15	+406.0	+19.3	4 15	+480.9	- 5.7
0 18	135.3	33.5	2 18	418.2	17.9	4 18	476.6	7.3
0 21	157.1	33.0	2 21	429.5	16.5	4 21	471.3	8.9
1 0	178.5	32.4	3 0	439.8	15.0	5 0	465.0	10.4
1 3	199.6	31.8	3 3	449.1	13.5	5 3	457.7	12.0
1 6	+220.3	+31.1	3 6	+457.5	+12.0	5 6	+449.3	-13.5
1 9	240.4	30.3	3 9	464.9	10.5	5 9	439.9	15.0
1 12	260.0	29.5	3 12	471.3	8.9	5 12	429.6	16.4
1 15	279.0	28.6	3 15	476.6	7.3	5 15	418.4	17.9
1 18	297.4	27.6	3 18	480.8	5.7	5 18	406.2	19.3
1 21	+315.2	+26.6	3 21	+484.0	+ 4.1	5 21	+393.1	-20.6

458 JUPITER'S SATELLITES, 1860.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t		x'	y'	t		x'	y'	t		x'	y'
d.	h.	"	"	d.	h.	"	"	d.	h.	"	"
6	0	+379.2	-21.9	9	18	-240.1	-30.3	13	12	-457.6	+12.0
6	3	364.4	23.1	9	21	259.7	29.5	13	15	449.3	13.5
6	6	348.8	24.3	10	0	278.7	28.6	13	18	440.0	15.0
6	9	332.5	25.5	10	3	297.2	27.6	13	21	429.7	16.4
6	12	315.4	26.6	10	6	315.0	26.6	14	0	418.5	17.8
6	15	+297.6	-27.6	10	9	-332.1	-25.5	14	3	-406.3	+19.2
6	18	279.2	28.5	10	12	348.4	24.4	14	6	393.2	20.6
6	21	260.2	29.4	10	15	363.9	23.2	14	9	379.3	21.9
7	0	240.6	30.3	10	18	378.7	21.9	14	12	364.6	23.1
7	3	220.5	31.1	10	21	392.7	20.6	14	15	349.1	24.3
7	6	+199.9	-31.8	11	0	-405.8	-19.3	14	18	-332.8	+25.4
7	9	178.8	32.4	11	3	418.0	17.9	14	21	315.7	26.5
7	12	157.4	33.0	11	6	429.3	16.5	15	0	298.0	27.5
7	15	135.6	33.5	11	9	439.6	15.0	15	3	279.6	28.5
7	18	113.5	33.9	11	12	449.0	13.5	15	6	260.5	29.4
7	21	+ 91.2	-34.2	11	15	-457.4	-12.0	15	9	-240.9	+30.3
8	0	68.7	34.5	11	18	464.8	10.5	15	12	220.8	31.1
8	3	46.0	34.7	11	21	471.2	8.9	15	15	200.2	31.8
8	6	23.2	34.8	12	0	476.5	7.3	15	18	179.2	32.4
8	9	+ 0.3	34.8	12	3	480.8	5.7	15	21	157.7	33.0
8	12	- 22.5	-34.8	12	6	-484.0	- 4.1	16	0	-135.9	+33.5
8	15	45.3	34.7	12	9	486.2	2.5	16	3	113.8	33.9
8	18	68.0	34.5	12	12	487.3	- 0.8	16	6	91.5	34.2
8	21	90.5	34.2	12	15	487.3	+ 0.8	16	9	69.0	34.5
9	0	112.9	33.9	12	18	486.3	2.4	16	12	46.3	34.7
9	3	-135.0	-33.5	12	21	-484.2	+ 4.0	16	15	- 23.5	+34.8
9	6	156.8	33.0	13	0	480.9	5.7	16	18	- 0.6	34.8
9	9	178.2	32.4	13	3	476.6	7.3	16	21	+ 22.2	34.8
9	12	192.3	31.8	13	6	471.3	8.9	17	0	+ 45.0	+34.7
9	15	-220.0	-31.1	13	9	-465.0	+10.5				

THE APPARENT ELEMENTS OF SATURN'S RING.

Sidereal Date Oh.	<i>a</i> Outer Major Axis.	<i>b</i> Outer Minor Axis.	<i>p</i> Inclination of Northern Semiminor Axis to Circle of Declination from North to East.	<i>l</i> The Elevation of the Earth above the Plane of the Ring.	<i>l'</i> The Elevation of the Sun above the Plane of the Ring.	<i>u</i> Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on	
						Equator.	Ecliptic.
0	44.23	8.75	-6 42.4	-11 24.2	-13 15.0	204 9.4	160 51.3
20	45.24	9.38	6 46.4	11 58.2	12 57.6	203 7.8	159 49.8
40	45.65	10.03	6 51.6	12 41.3	12 40.2	201 43.6	158 25.7
60	45.37	10.50	6 56.7	13 23.1	12 22.8	200 17.2	156 59.4
80	44.51	10.73	7 0.7	13 57.0	12 5.3	199 6.0	155 48.3
100	43.20	10.63	7 7.8	14 14.8	11 47.7	198 26.0	155 8.5
120	41.68	10.25	7 7.8	14 14.2	11 30.1	198 21.0	155 3.6
140	40.21	9.68	7 0.7	13 55.9	11 12.4	199 1.4	155 44.1
160	38.89	8.98	6 56.7	13 21.1	10 54.5	200 12.0	156 54.8
180	37.84	8.22	6 50.9	12 33.1	10 36.6	201 50.8	158 33.7
200	37.08	7.45	6 43.4	11 35.5	10 18.6	203 50.4	160 37.4
220	36.65	6.69	6 34.9	10 30.7	10 0.7	206 3.3	162 46.4
240	36.55	5.96	6 25.4	9 23.0	9 42.7	208 20.7	165 3.9
260	36.81	5.29	6 15.6	8 16.2	9 24.6	210 36.7	167 20.0
280	37.40	4.71	6 6.2	7 14.6	9 6.5	212 41.6	169 25.1
300	38.32	4.25	5 57.9	6 22.2	8 48.3	214 28.6	171 12.2
320	39.52	3.94	5 51.3	5 43.5	8 30.0	215 50.5	172 34.2
340	40.93	3.84	5 47.3	5 23.0	8 11.7	216 40.0	173 23.8
360	42.41	3.97	5 46.4	5 22.3	7 53.4	216 54.4	173 38.3
366	42.91	4.07	-5 46.9	-5 27.5	-7 46.8	216 47.0	173 30.9

Factor which is to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring = 0.8801 log. Factor = 9.9445

The outer ellipse of the inner Ring = 0.8599 " = 9.9344

The inner ellipse of the inner Ring = 0.6650 " = 9.8228

The inner ellipse of Bond's dusky Ring = 0.5486 " = 9.7392

NOTE. — The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1860.		Venus.	Mars.	1860.		Venus.	Mars.
January	15	0.897	0.918	July	15	0.005	1.000
February	15	0.833	0.898	August	15	0.186	0.958
March	15	0.745	0.884	September	15	0.430	0.892
April	15	0.625	0.882	October	15	0.591	0.861
May	15	0.468	0.903	November	15	0.714	0.856
June	15	0.241	0.955	December	15	0.807	0.867

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d.	h.	m.			d.	h.	m.			
Jan.	2	4	0	☉	in Perigee.	April	12	15	53	♃	in ♊
	3	9	0	♃	greatest elong. W. 22 54		14	14	44	♃	stationary.
	6	12	34	♃	greatest Hel. Lat. S.		17	23	43	♃	♃ ♃ - 5 44
	8	2	33	♃	♃ ♃ - 1 35		18	17	39	♃	♃ ♃ - 6 22
	10	10	58	♃	♃		19	19	43	♃	♃ stationary.
	10	11	53	♃	♃ ♃ + 2 50		22	20	0	♃	♃ in Aphelion.
	15	16	38	♃	♃ in ♊		23	7	13	♃	♃ ♃ - 4 29
	16	17	31	♃	♃ ♃ + 6 14		24	7	16	♃	♃ ♃ - 0 44
	20	15	9	♃	♃ ♃ + 1 56		26	10	23	♃	♃ ♃ - 1 8
	22			☉	Eclipsed, invis. at Wash.		27	7	7	♃	♃ greatest Hel. Lat. N.
Feb.	25	2	18	♃	♃ ♃ - 3 59	28	17	19	♃	♃ ♃ + 2 44	
	25	20	43	♃	♃ in Aphelion.	30	2	52	♃	♃ greatest elong. W. 26 39	
	26	22	50	♃	♃ ♃ - 5 33	9	2	14	♃	♃ greatest elong. E. 45 24	
	4	8	21	♃	♃ ♃ - 1 50	9	6	52	☉	☉	
	6			☉	Eclipsed, vis. at Wash.	9	15	44	♃	♃ ♃ - 0 40	
	6	19	25	♃	♃ ♃ + 2 43	13	6	4	♃	♃ greatest Hel. Lat. S.	
	10	9	4	♃	♃ stationary.	15	9	3	♃	♃ ♃ - 6 0	
	11	9	16	♃	♃	18	15	44	♃	♃ ♃ - 7 35	
	14	5	49	♃	♃ ♃ + 5 17	20	16	38	♃	♃ ♃ - 4 10	
	15	6	51	♃	♃ greatest Hel. Lat. S.	23	15	30	♃	♃ ♃ + 1 40	
March	18	21	52	♃	♃ ☉ Sup.	23	23	36	♃	♃ ♃ - 0 32	
	21	10	49	♃	♃ ♃ - 4 20	26	0	46	♃	♃ ♃ + 3 4	
	22	11	18	☉	☉	28	8	58	♃	♃ ♃ + 2 13	
	23	6	47	♃	♃ ♃ - 5 33	31	6	54	♃	♃ in ♋	
	24	13	9	♃	♃ ♃ - 5 29	2	9	4	♃	♃ ♃ + 0 16	
	2	15	29	♃	♃ ♃ - 1 53	5	19	36	♃	♃ in Perihelion.	
	2	19	12	♃	♃ in ♋	5	23	25	☉	☉ Sup.	
	5	3	21	♃	♃ ♃ + 2 33	6	15	14	♃	♃ ♃ - 3 18	
	5	6	37	♃	♃ in ♋	11			♃	♃ at greatest brilliancy.	
	9	20	21	♃	♃ in Perihelion.	11	18	14	♃	♃ ♃ - 6 15	
April	10	7	27	♃	♃ stationary.	16	3	33	♃	♃ greatest Hel. Lat. N.	
	13	18	31	♃	♃ ♃ + 3 47	17	3	47	♃	♃ ♃ - 4 15	
	15	13	50	♃	♃ greatest elong. E. 18 22	17	19	24	♃	♃ stationary.	
	16	5	40	☉	☉	19	16	56	♃	♃ ♃ + 0 24	
	16	11	30	♃	♃	19	20	48	☉	☉	
	19	15	34	♃	♃ in ♋	20	12	35	☉	☉ enters ♌, sum'r begins.	
	19	15	57	♃	♃ enters ♌, spring begins.	20	15	53	♃	♃ ♃ + 0 6	
	20	4	15	♃	♃ greatest Hel. Lat. N.	21	1	56	♃	♃ ♃ + 0 25	
	21	15	1	♃	♃ ♃ - 5 35	22	8	47	♃	♃ in ♋	
	23	3	27	♃	♃ stationary.	22	10	34	♃	♃ ♃ + 3 26	
April	23	5	55	♃	♃ ♃ - 1 34	25	14	11	♃	♃ stationary.	
	25	14	11	♃	♃ ♃ - 3 48	26	9	25	♃	♃ ♃ + 1 7	
	26	23	30	♃	♃ ♃ - 4 44	1	1	24	♃	♃ ♃ + 3 9	
	29	23	57	♃	♃ ♃ - 1 38	1	3	41	☉	☉ in Apogee.	
	29	23	57	♃	♃ ♃ - 1 38	2	3	17	♃	♃ stationary.	
	1	10	38	♃	♃ ♃ + 2 32	3	21	32	♃	♃ ♃ - 5 19	
	2	5	9	♃	♃ ☉ Inf.	7	5	21	♃	♃ ♃ - 3 47	
	5	0	37	♃	♃ in Perihelion.	9	2	27	♃	♃ ♃ - 6 25	
	5	2	43	☉	☉	9	15	8	♃	♃ in ♋	
	11	6	48	♃	♃ ♃ + 1 46						
11	8	40	♃	♃ ♃ + 2 28							

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

		d.	h.	m.							
July		12	13	54	♂	♂	♂	♂	♂	♂	♂
		14	15	41	♂	♂	♂	♂	♂	♂	♂
		16	20	0	♂	♂	♂	♂	♂	♂	♂
		17			♂	♂	♂	♂	♂	♂	♂
		17	20	30	♂	♂	♂	♂	♂	♂	♂
		18	8	5	♂	♂	♂	♂	♂	♂	♂
		18	10	54	♂	♂	♂	♂	♂	♂	♂
		19	17	19	♂	♂	♂	♂	♂	♂	♂
		19	19	17	♂	♂	♂	♂	♂	♂	♂
		19	23	26	♂	♂	♂	♂	♂	♂	♂
	25	18	30	♂	♂	♂	♂	♂	♂	♂	
	26	13	25	♂	♂	♂	♂	♂	♂	♂	
	28	18	20	♂	♂	♂	♂	♂	♂	♂	
	30	14	47	♂	♂	♂	♂	♂	♂	♂	
Aug.	1				♂	♂	♂	♂	♂	♂	♂
		5	9	3	♂	♂	♂	♂	♂	♂	♂
		8	19	14	♂	♂	♂	♂	♂	♂	♂
		9	5	14	♂	♂	♂	♂	♂	♂	♂
		9	12	43	♂	♂	♂	♂	♂	♂	♂
		11	2	48	♂	♂	♂	♂	♂	♂	♂
		13	17	20	♂	♂	♂	♂	♂	♂	♂
		15	7	31	♂	♂	♂	♂	♂	♂	♂
		15	11	8	♂	♂	♂	♂	♂	♂	♂
		16	14	58	♂	♂	♂	♂	♂	♂	♂
	18	5	20	♂	♂	♂	♂	♂	♂	♂	
	18	8	30	♂	♂	♂	♂	♂	♂	♂	
	18	19	57	♂	♂	♂	♂	♂	♂	♂	
	21	18	26	♂	♂	♂	♂	♂	♂	♂	
	23			♂	♂	♂	♂	♂	♂	♂	
	23	6	52	♂	♂	♂	♂	♂	♂	♂	
	26	17	1	♂	♂	♂	♂	♂	♂	♂	
	27	1	0	♂	♂	♂	♂	♂	♂	♂	
	28	5	5	♂	♂	♂	♂	♂	♂	♂	
Sept.	1	14	10	♂	♂	♂	♂	♂	♂	♂	♂
		1	18	58	♂	♂	♂	♂	♂	♂	♂
		3	16	2	♂	♂	♂	♂	♂	♂	♂
		6	9	40	♂	♂	♂	♂	♂	♂	♂
		7	11	36	♂	♂	♂	♂	♂	♂	♂
		11	6	21	♂	♂	♂	♂	♂	♂	♂
		12	2	48	♂	♂	♂	♂	♂	♂	♂
		12	4	7	♂	♂	♂	♂	♂	♂	♂
		13	7	41	♂	♂	♂	♂	♂	♂	♂
		14	6	30	♂	♂	♂	♂	♂	♂	♂
	16	0	5	♂	♂	♂	♂	♂	♂	♂	
	16	11	14	♂	♂	♂	♂	♂	♂	♂	
	20	1	35	♂	♂	♂	♂	♂	♂	♂	
	21	9	17	♂	♂	♂	♂	♂	♂	♂	
	22	2	44	♂	♂	♂	♂	♂	♂	♂	
	23	14	16	♂	♂	♂	♂	♂	♂	♂	
	27	18	52	♂	♂	♂	♂	♂	♂	♂	
Sept.		28	8	54	♂	♂	♂	♂	♂	♂	♂
		28	18	40	♂	♂	♂	♂	♂	♂	♂
	Oct.	4	17	34	♂	♂	♂	♂	♂	♂	♂
		5	14	24	♂	♂	♂	♂	♂	♂	♂
		9	22	37	♂	♂	♂	♂	♂	♂	♂
		10	17	33	♂	♂	♂	♂	♂	♂	♂
		10	23	29	♂	♂	♂	♂	♂	♂	♂
		13	12	5	♂	♂	♂	♂	♂	♂	♂
		14	5	1	♂	♂	♂	♂	♂	♂	♂
		15	2	12	♂	♂	♂	♂	♂	♂	♂
	15	18	31	♂	♂	♂	♂	♂	♂	♂	
	22	1	50	♂	♂	♂	♂	♂	♂	♂	
	25	23	43	♂	♂	♂	♂	♂	♂	♂	
	31	21	48	♂	♂	♂	♂	♂	♂	♂	
Nov.	5	4	28	♂	♂	♂	♂	♂	♂	♂	♂
		6	12	56	♂	♂	♂	♂	♂	♂	♂
		6	22	31	♂	♂	♂	♂	♂	♂	♂
		7	12	15	♂	♂	♂	♂	♂	♂	♂
		9	11	43	♂	♂	♂	♂	♂	♂	♂
		13	21	31	♂	♂	♂	♂	♂	♂	♂
		16	0	37	♂	♂	♂	♂	♂	♂	♂
		17	6	44	♂	♂	♂	♂	♂	♂	♂
		17	10	11	♂	♂	♂	♂	♂	♂	♂
		19	21	51	♂	♂	♂	♂	♂	♂	♂
	22	6	13	♂	♂	♂	♂	♂	♂	♂	
	22	21	20	♂	♂	♂	♂	♂	♂	♂	
	24	4	22	♂	♂	♂	♂	♂	♂	♂	
	27	7	47	♂	♂	♂	♂	♂	♂	♂	
	28	2	22	♂	♂	♂	♂	♂	♂	♂	
	28	18	8	♂	♂	♂	♂	♂	♂	♂	
Dec.		30	9	58	♂	♂	♂	♂	♂	♂	♂
		1	5	52	♂	♂	♂	♂	♂	♂	♂
		3	22	6	♂	♂	♂	♂	♂	♂	♂
		4	20	56	♂	♂	♂	♂	♂	♂	♂
		6	21	57	♂	♂	♂	♂	♂	♂	♂
		7	12	40	♂	♂	♂	♂	♂	♂	♂
		8	0	1	♂	♂	♂	♂	♂	♂	♂
		9	2	5	♂	♂	♂	♂	♂	♂	♂
		9	5	27	♂	♂	♂	♂	♂	♂	♂
		10	9	16	♂	♂	♂	♂	♂	♂	♂
	12	12	34	♂	♂	♂	♂	♂	♂	♂	
	15	22	41	♂	♂	♂	♂	♂	♂	♂	
	17	13	19	♂	♂	♂	♂	♂	♂	♂	
	18	21	47	♂	♂	♂	♂	♂	♂	♂	
	19	14	21	♂	♂	♂	♂	♂	♂	♂	
	20	2	52	♂	♂	♂	♂	♂	♂	♂	
	20	20	43	♂	♂	♂	♂	♂	♂	♂	
	25	8	44	♂	♂	♂	♂	♂	♂	♂	
	30	9	33	♂	♂	♂	♂	♂	♂	♂	
	31	3	6	♂	♂	♂	♂	♂	♂	♂	

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

COMPILED BY DR. B. A. GOULD.

HAVING been requested by Commander DAVIS to arrange for the *Astronomical Ephemeris* a Table of Latitudes and Longitudes of the principal Observatories, I have devoted some time and attention to the critical preparation of this catalogue. But since the values decided upon differ considerably in many cases from those in the other published catalogues, and in some few instances from the values which appear to be made use of at the Observatories themselves, I feel some hesitation in publishing them without asking the attention of astronomers to the catalogue, that such inaccuracies as it may contain may be corrected as speedily as possible. The sources of information are given in each case, and when possible the probable error also is given with the determination. One important change consists in the adoption of the differences of longitude between Altona and Pulkowa, and Greenwich and Altona, as determined by STRAUVE in his chronometric expeditions of 1843 and 1844. The adoption of these values necessarily implies a corresponding change for the longitude of those Observatories whose position has been fixed by their difference of longitude from Altona or Pulkowa, or from other Observatories dependent upon these. The differences of longitude of the American Observatories are deduced from the telegraphic determinations of the United States Coast-Survey, — and have been communicated by Professor BACHE, by authority of the Honorable Secretary of the Treasury. I have endeavored to include in the list all Observatories now in a state of astronomical activity, or which have been so within the last quarter of a century. Any corrections or additions with which astronomers may favor me will be gratefully acknowledged.

Åbo. . . . N. Lat. $60^{\circ} 26' 56''.8 \pm 0''.11$. ARGELANDER, *Obs. Astron.*, I. p. xxi.
Long. E. from Paris, $1^{\text{h}} 19^{\text{m}} 47^{\text{s}}.3$. *Astr. Nachr.*, IX. 264.

This Observatory was abandoned, and the instruments transferred, together with the University of Finland, to Helsingfors, in consequence of the great fire of 1827, by which the University buildings, library, &c. were destroyed.

Altona. . . . N. Lat. $53^{\circ} 32' 45''.27$. GAUSS, *Bestimmung des Breiten-Unterschiedes zwischen den Sternwarten von Göttingen und Altona*, p. 71. In the edition of SCHUMACHER'S *Hülftafeln*, published by WARNSTORFF, Altona, 1845, the latitude of Altona is given p. 114, as $+53^{\circ} 32' 45''.7$.

Long. E. from Greenwich, $0^h 39^m 46^s.151 \pm 0^s.042$. STRUVE, *Ex-péd. Chronomet. exécutée in 1844, entre Altona et Greenwich*, p. 206.

Ann Arbor. . . . N. Lat. $42^\circ 16' 48''$. *Astron. Journ.*, V. 112.
Long. W. from Washington, $0^h 27^m 12^s.0$.

Athens. . . . N. Lat. $37^\circ 58' 20'' \pm 1''$. BOURIS, *Astr. Nachr.*, XXXIII. 197.
Long. E. from Paris, $1^h 25^m 34^s.23 \pm 1^s$. *Ergänzungs-Heft zu den Astr. Nachr.*, 1849, p. 151. This longitude was obtained from moon-culminating stars observed on ten nights at Athens and Hamburg. The result of a series observed at Athens and Copenhagen gave the longitude of Athens $6^s.84$ farther East, but this series was rejected. *Ibid.*, pp. 150, 151, 158. Diminishing the E. longitude of Hamburg in conformity with STRUVE'S chronometric determination, we have for the longitude of the meridian-circle $1^h 25^m 33^s.73 \pm 1^s$.

The centre of the Observatory is $0^s.19$ W. from the meridian-circle, *Erg.-Heft z. d. Astr. Nachr.*, p. 152.

Berlin. . . . N. Lat. $52^\circ 30' 16''.68 \pm 0''.2$. ENCKE, *Astr. Nachr.*, XXIII. 372.
For the Longitude of the centre of the Observatory, we have

Berlin E. from Altona,	$0^h 13^m 48^s.78$	± 0.03	<i>Berl. Astr. Jahrb.</i> ,
Altona E. from Greenwich,	$0^h 39^m 46^s.15$		[1839, p. 275.
Berlin " " "	$0^h 53^m 34^s.93$		

The old Observatory was situated $0^s 56^s.72$ North (*Berl. Astr. Jahrb.*, 1839, p. 242; *Astr. Nachr.*, XXIII. 370), and $0^s.39$ West (*Ibid.*, pp. 261, 265), of the new one. Hence we have for the old Berlin Observatory,

N. Lat., $52^\circ 31' 13''.4$.

Long. E. from Greenwich, $0^h 53^m 34^s.54$.

Bilk. . . . N. Lat. $51^\circ 12' 25''$. *Astr. Nachr.*, XXVII. 300.
Long. W. from Berlin, $0^h 26^m 30^s.0$. *Ibid.*

Bonn. . . . N. Lat. $50^\circ 43' 45''.0$. } Orally communicated by Prof.
Long. E. from Paris, $0^h 19^m 3^s.0$. } ARGELANDER to the compiler.

The provisional Observatory on the "Alter Zoll," in which were made the observations published in Vol. I. of the Bonn series, was situated in

N. Lat. $50^\circ 44' 9''$.

Long. E. from Paris, $0^h 19^m 5^s.5$. *Bonn Astr. Beob.*, I. p. i.

Breslau. . . . N. Lat. $51^\circ 6' 56''.0$. (MS. communication from Professor BOGUSLAWSKI to Professor ENCKE.) *Berl. Astr. Jahrb.*, 1852, p. 289. The value given in the *Berl. Jahrb.* previously to 1851, was $51^\circ 6' 30''.0$. The Longitude given in the table is derived from a mean of four determinations of the longitude E. from Paris, viz. : —

THE PRINCIPAL OBSERVATORIES.

	Triangulation in 1805 (fire-signals), <i>Astr. Nachr.</i> ,			
	XVI. 371,		h. m. s.	0 58 48.6
	STECZKOWSKI (6 star-immersions), <i>Ibid.</i> ,			48.17
	HANSEN (occultations), <i>Astr. Nachr.</i> , XVII. 170.			48.74
	ERMAN and PETERSEN (meteors), <i>Astr. Nachr.</i> ,			48.67
	XIX. 27,			<u>48.67</u>
	Mean, Breslau E. from Paris,			0 58 48.54
Brussels. . . .	N. Lat. 50° 51' 10".7. <i>Annales de l'Obs. de Bruxelles</i> , 1837,			
	p. 264.			
	Long. W. from Greenwich, 0 ^h 17 ^m 27 ^s .6. QUETELET, <i>Mém. de</i>			
	<i>l'Acad. R. de Bruxelles</i> , XVI. 18.			
Cambridge (Eng.).	N. Lat. 52° 12' 51".76. <i>Camb. Phil. Trans.</i> , V. 279.			
	Long. E. from Greenwich, 0 ^h 0 ^m 23 ^s .54. <i>Ibid.</i> , III. 168.			
Cambridge (Mass.).	N. Lat. 42° 22' 48".60. PEIRCE, <i>Mém. Amer. Acad.</i> , N. S., II. 203.			
	Long. by the telegraphic determinations of the U. S. Coast-Survey,			
	Cambridge E. from Stuyvesant Garden, N. Y.,			
	By 34 sets of clock-signals,		h. m. s.	0 11 26.10
	“ 10 “ “ star-signals (Western),			26.13
	“ 24 “ “ “ (exchanged E. and W.),			25.96
	“ 17 “ “ “ (Eastern),			<u>26.18</u>
	Mean,			0 11 26.09
	Geodetic reduction to dome of Cambridge Observa-			
	tory,			—0.02
	Stuyvesant Garden E. of Jersey City (geodetic),			<u>0 11.93</u>
	Cambridge E. from C. S. Station, Jersey City,			<u>0 11 38.00</u>
	Jersey City E. from Washington (see Philadelphia),			0 12 3.54
	Cambridge (dome) E. from Washington,			0 23 41.54
Cape of Good Hope.	S. Lat. 33° 56' 3". HENDERSON, <i>Mém. R. Astr. Soc.</i> , VI. 130.			
	Long. E. from Greenwich,			
	By Greenwich Observations, 1 13 56.1 <i>Ibid.</i> , p. 126.		h. m. s.	
	“ Cambridge “ 55.04 “ p. 127.			
	“ Åbo “ 58.56 “ p. 128.			
	“ Edinburgh “ 54.2 “ p. 129.			
	Mean, .			<u>1 13 56.0</u>
Christiania. . . .	N. Lat. 59° 54' 43".7.			
	Long. E. from Paris, 0 ^h 33 ^m 33 ^s .3. } <i>Astron. Journ.</i> , II. 173.			
Cincinnati. . . .	N. Lat. 39° 5' 54". <i>Astr. Nachr.</i> , XXIII. 313.			
	Long. W. from Washington, 0 ^h 29 ^m 46 ^s .85. (U. S. Coast-Sur-			
	vey.) <i>Proc. Amer. Assoc. for Adv. Science</i> , Cincinnati, 1851,			
	p. 118.			

Copenhagen. By Copenhagen Observatory is usually understood the "Round Tower" of the University. The new instruments are, however, mounted in a temporary wooden building known as "Holkens Bastion." (See *Astr. Nachr.*, XIX. 119).

N. Lat. of the Round Tower, $55^{\circ} 40' 53''.0$. *Astr. Nachr.*, V. 366.

For the Longitude,

Holkens Bastion E. from Altona,	^{h.} ^{m.} ^{s.}	
HANSEN (<i>Astr. Nachr.</i> , VIII. 281),	0 10 32.585	139.88
SCHUMACHER (<i>Astr. Nachr.</i> , IX. 463),	32.565	19.42
Mean,	10 32.583	
Altona E. from Greenwich,	39 46.151	
Holkens Bastion E. from Greenwich,	50 18.734	
Round Tower E. from Holkens Bastion		
(WURM, <i>Astr. Nachr.</i> , III. 438; V. 337),	0.57	
Round Tower E. from Greenwich,	0 50 19.30	

Cracow . N. Lat. $50^{\circ} 3' 50''.0 \pm 0.09$. WEISSE, *Astr. Nachr.*, VIII. 175; XVI. 256.

Longitude E. from Paris,

Mean of 18 obs. by WURM (<i>Astr. Nachr.</i> , VIII. 459), (6 of the 25 being rejected),	^{h.} ^{m.} ^{s.}	
	1 10 28.986	± 0.461
Mean of 25 obs. by STECZKOWSKI (<i>Astr. Nachr.</i> , XVI. 352),	30.221	± 0.301
Mean of 4 obs. by STECZKOWSKI (<i>Astr. Nachr.</i> , XVIII. 332),	29.760	± 0.085
Mean of 16 obs. of three occultations (STECZKOWSKI, <i>Astr. Nachr.</i> , X. 232),	30.95	± 0.253
Assigning to each of these determinations a weight proportional to the number of observations from which it was derived, we obtain the mean,		
Cracow E. from Paris,	1 10 29.78	

Berpal . . N. Lat. $58^{\circ} 22' 47''.05$. STRUVE, *Observ. Astron.*, VI. p. lx.

Long. E. from Paris,	^{h.} ^{m.} ^{s.}	
	1 37 32.70	WURM, <i>Astr. Nachr.</i> , III. 437.
	33.5	BESSEL, " III. 46.
Mean,	1 37 33.1	

Dublin . . N. Lat. $53^{\circ} 23' 13''$.

Long. W. from Greenwich, $0^{\text{h}} 25^{\text{m}} 22^{\text{s}}$. *Astr. Nachr.*, X. 274.

Durham . . N. Lat. $54^{\circ} 46' 6''.4$.

Long. W. from Greenwich, $0^{\text{h}} 6^{\text{m}} 18^{\text{s}}.0$. *Astr. Nachr.*, XXVI. 215
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- Edinburgh.** . N. Lat. $55^{\circ} 57' 23''.2$.
 Long. W. from Greenwich, $0^{\text{h}} 12^{\text{m}} 43^{\text{s}}.0$. *Edinb. Observ.*, X. p. v.
- Florence.** . N. Lat. $43^{\circ} 46' 40''.8$. ZACH, *Corresp. Astron.*, I. 15.
 Long. E. from Paris, $0^{\text{h}} 35^{\text{m}} 40''.2$. *Ibid.*, p. 14.
- Geneva.** . . N. Lat. by observations of pole-star, $46^{\circ} 11' 58''.72 \pm 0''.1$
 " " " nadir-point, 58.97 ± 0.1
 Mean, $46 11 58.84$ PLANTAMOUR, *Mém. de la Soc. de Physique et d'Hist. Nat. de Genève*, XI. 15.
 Long. E. from Paris, $0^{\text{h}} 15^{\text{m}} 16''.22$. *Astr. Nachr.*, XX. 7.
- Georgetown.** N. Lat. $38^{\circ} 54' 26''.1$. *Astron. Journ.*, I. 69.
 Long. W. from Washington, $0^{\text{h}} 0^{\text{m}} 6^{\text{s}}.20$. *Astron. Journ.*, I. 70.
- Göttingen.** . GAUSS found, *Best. d. Breit.-Untersch.*, p. 71, for the N. Latitude of the meridian-circle, $51^{\circ} 31' 47''.85$, with the weight 60.9.
 The Longitude of the same GAUSS found (*Ibid.*) by his trigonometrical survey to be West of the meridian-circle in Altona by 7211 Paris Toises. Using BESSEL's data we find $1'' = 148.33$ Toises, whence we have,
- | | |
|------------------------------|-----------------------------------|
| Göttingen West of Altona, | $0^{\text{h}} 0^{\text{m}} 0.049$ |
| Altona East of Greenwich, | $0 39 46.151$ |
| Göttingen East of Greenwich, | $0 39 46.102$ |
- For the old Observatory,
 Lat. = $+51^{\circ} 31' 55''.6$. *Monatl. Corr.*, XXVII. 483.
 Long. E. of Paris, $0^{\text{h}} 30^{\text{m}} 25^{\text{s}}.2$. *Astr. Nachr.*, II. 407, 408.
- Gotha.** . . (Seeberg.)
 N. Lat. $50^{\circ} 56' 5''.19$. GAUSS, *Best. d. Breit.-Untersch.*, p. 80.
 For the Longitude E. from Paris,
 WURM found by 11 occultations (*Astr. Nachr.*, II. 405), $0 33 34.8 \pm 0.13$
 PETERS found (*Astr. Nachr.*, V. 68),
- | | Weight. |
|---------------------------|--------------|
| Seeberg East from Altona, | $3 10.2 2$ |
| " " Göttingen, | $3 8.9 15$ |
| West " Königsberg, | $39 5.6 18$ |
| East " Paris, | $33 34.3 24$ |
| West " Vienna, | $22 38.0 17$ |
- Whence, using the present data, we find,
 Seeberg E. from Paris, $0 33 33.66$
 Mean, $0 33 34.2$
- For the Observatory attached to Professor HANSEN's house,
 Long. E. from Paris, $0^{\text{h}} 33^{\text{m}} 30''.046$. SCHUMACHER, *Astr. Nachr.*, XXIII. 263.

- Greenwich.** . . N. Lat. $51^{\circ} 28' 38''.2$. AIRY, *Mem. Astr. Soc.*, XVII. p. 49.
 Long. W. from Paris, $0^{\text{h}} 9^{\text{m}} 21''.46 \pm 15$. HENDERSON, *Phil. Trans.*, 1827, p. 286. See also Washington.
- Hamburg.** . . N. Lat. $53^{\circ} 33' 7''$, by geodetical connection with Altona. *Preface to RÜMKER'S Catalogue.*
 The Longitude given in the table is derived thus :
 Hamburg E. from Altona (HANSEN, *Astr. Nachr.*, VIII. 277), h. m. s.
0 0 7.41
 Altona E. from Greenwich (STRUVE, *Exp. Chron. de 1844*), 0 39 46.15
 Whence Hamburg E. from Greenwich, 0 39 53.56
- Hudson.** . . . N. Lat. $41^{\circ} 14' 42''.6$. LOOMIS, *Trans. Am. Phil. Soc.*, N. S., X. 61.
 Long. W. from Philadelphia (U. S. Coast-Survey),
 By 3 sets Eastern clock-signals, h. m. s.
0 25 5.72
 " 2 " Western " 5.68
 0 25 5.70
 Philadelphia E. from Washington, 7 33.64
 Hudson W. from Washington, 0 17 32.06
 Professor LOOMIS deduced from moon-culminations,
 Hudson W. from Greenwich, $5^{\text{h}} 25^{\text{m}} 41''.3$. *Astr. Journ.*, I. 67.
- Kasan.** . . . N. Lat. $55^{\circ} 47' 23''.1$. *Astr. Nachr.*, XXVIII. 47.
 Long. E. from Berlin, $2^{\text{h}} 22^{\text{m}} 57''.0$. *Berl. Astr. Jahrb.*, 1854, p. 293.
- Königsberg.** . . N. Lat. $54^{\circ} 42' 50''.4$. BESSEL, *Astr. Nachr.*, I. 248.
 Long. E. from Paris, $1^{\text{h}} 12^{\text{m}} 38.8$ WURM, *Astr. Nachr.*, III. 437.
 38.93 BESSEL, " III. 46.
 Mean, 1 12 38.9
- Kremsmünster.** N. Lat. $48^{\circ} 3' 23''.81 \pm 0''.03$. *Astr. Nachr.* XXXVII. 271.
 Long. E. from Paris, $0^{\text{h}} 47^{\text{m}} 11''.96$. SCHUMACHER, *Astr. Nachr.*, XXIII. 263.
- Leipzig.** . . . (Pleissenburg.)
 N. Lat. D'ARREST, *Astr. Nachr.*, XXVIII. 148, 51° 20' 20.7 ± 0.36 Weight. 26.37
 D'ARREST, *Astr. Nachr.*, XXVIII. 160, 20.4
 Long. E. from Greenwich, $0^{\text{h}} 49^{\text{m}} 28''.5$.
- Leyden.** . . . N. Lat. $52^{\circ} 9' 28''.16 \pm 0''.15$ } KAISER, *Astr. Nachr.*,
 Long. E. from Paris, $0^{\text{h}} 8^{\text{m}} 35''.97 \pm 0''.19$ } XVII. 100.
- Liverpool.** . . N. Lat. $+53^{\circ} 24' 47''.72$. *M. Notices Astr. Soc.* XIII., 247.
 Long. W. from Greenwich, $0^{\text{h}} 12^{\text{m}} 0''.11$ *Naut. Alm.*, 1852, p. 598.

- London.** . (Mr. Bishop's Observatory.)
 N. Lat. $51^{\circ} 31' 29''.8$. *Astr. Obs. at the Observatory South Villa*,
 p. xix.
 Long. W. from Greenwich, $0^{\text{h}} 0^{\text{m}} 37^{\text{s}}.1$.
- Madras.** . N. Lat. $13^{\circ} 4' 9''.2$.
 Long. E. from Greenwich, $5^{\text{h}} 20^{\text{m}} 57^{\text{s}}$. TAYLOR, *Madras General
 Catal.*, 1844, *Pref.* p. ii.
- Mannheim.** N. Lat. $49^{\circ} 29' 12''.9$. *Astr. Nachr.*, XII. 129.
 Long. E. from Paris, as determined
 By WURM, from occultations (*Astr. Nachr.*, VIII. 458), $\begin{matrix} \text{h.} & \text{m.} & \text{s.} \\ 0 & 24 & 29.92 \end{matrix}$
 " connection with Strasburg (*Astr. Nachr.*, XV. 280), 29.87
 " " " Vienna (*Astr. Nachr.*, XV. 279;
 XXIII. 263), 30.28
 By connection with Dunkirk (MÜFFLING, *Astr. Nachr.*,
 XV. 279), 30.05
 By OLUFSEN from Solar Eclipse (*Astr. Nachr.*, XXII. 234), 30.10
 Mean, $0 \ 24 \ 30.04$
- Markree.** . N. Lat. $54^{\circ} 10' 31''.72$. *Astr. Journ.*, II. 12.
 Long. W. from Greenwich, $0^{\text{h}} 33^{\text{m}} 48^{\text{s}}.4$. *Naut. Alm.*, 1852, p. 598.
- Marzilles.** N. Lat. $43^{\circ} 17' 49''$. *Monatl. Corresp.*, XIII. 139.
 Long. E. from Paris, according to
 LINDENAU (*Monatl. Corr.*, XIX. 421), $\begin{matrix} \text{No. Obs.} & \text{h.} & \text{m.} & \text{s.} \\ 4 & 0 & 12 & 7.7 \end{matrix}$
 WURM (*Monatl. Corr.*, XXVI. 185), 19 7.6
 " (*Astr. Nachr.*, IV. 33), 12 7.5
 INNES (*Astr. Nachr.*, VIII. 435), 4 7.05
 Mean, $0 \ 12 \ 7.53$
- Milan.** . (Brera.)
 N. Lat. $45^{\circ} 28' 0''.7$. *Corresp. Astron.*, V. 300; *Effem. Astr. di Mi-
 lano*, 1846, *App.*, pp. 73-86.
 Long. E. from Paris,
 DAUSSY found from 31 occultations (*Conn. d. Temps*,
 1836, *Add.*, p. 131), $\begin{matrix} \text{h.} & \text{m.} & \text{s.} \\ 0 & 27 & 24.91 \end{matrix}$
 LITTELOW found Milan W. from Vienna (*Ibid.*), $\begin{matrix} \text{m.} & \text{s.} \\ 28 & 45.63 \end{matrix}$
 $56 \ 11.07$
 Mean, $0 \ 27 \ 25.44$
 $0 \ 27 \ 25.18$
- Modena.** . N. Lat. $44^{\circ} 38' 52''.75$. BIANCHI, *Astr. Nachr.*, XVI. 221; *Atti del R.
 Osserv. di Modena*, I. 336 (1834).
 Long. E. from Milan, $0^{\text{h}} 6^{\text{m}} 55^{\text{s}}.99$. *Id.*, p. 337.
 Hence E. from Paris,

By comparison with Milan,	0 ^h 34 ^m 20.45 ^s
WURM from occultations,	23.5 <i>Astr. Nachr.</i> , I. 504.
“ “ “	24.5 “ III. 222.
STECZKOWSKI from occultations,	21.81 “ XVI. 299, 302.
OLUFSEN from solar eclipse,	22.32 “ XXII. 234.
Mean,	0 34 22.51

- Moscow.** . N. Lat. 55° 45' 19". S. SCHWEIZER, *Astr. Nachr.*, XXVII. 215.
 Long. Moscow E. from Pulkowa, 0^h 28^m 58.2^s *Astr. Nachr.*, XXIV. 90.
 Pulkowa E. from Greenwich, 2 1 19.09
 Moscow “ “ “ 2 30 17.29
- Munich.** . (Bogenhausen.)
 N. Lat. 48° 8' 45". SOLDNER, *Astr. Nachr.*, IX. 422.
 Long. E. from Paris, 0^h 37^m 4.98. *Astr. Nachr.*, VIII. 148.
- Naples.** . N. Lat. 40° 51' 48".63. BRIOSCHI, *Astr. Nachr.*, V. 294.
 The Longitude adopted is that by which PETERS has apparently made his reductions, *Astr. Nachr.*, XXIII. 302, 303, according to which we have,
 Naples E. from Berlin, 0^h 3^m 26".0.
 For determinations from solar eclipses by BRIOSCHI and SANTINI, see
Astr. Nachr., VI. 413.
- Olmütz.** . . N. Lat. 49° 35' 40".
 Long. E. from Greenwich, 1^h 9^m 0".1. } *Astr. Nachr.*, XXXVII. 77.
- Oxford.** . N. Lat. 51° 45' 36".0
 Long. W. from Greenwich, 0^h 5^m 2".6 } *Naut. Alm.*, 1852, p. 599.
- Padua.** . N. Lat. 45° 24' 2".5. SANTINI, *Astr. Nachr.*, VI. 411; XVII. 346.
 Long. E. from Paris,
 WURM (*Astr. Nachr.*, IV. 347), 0 38 7.7
 Padua E. from Milan by powder signals
 (FALLON, *Astr. Nachr.*, IV. 115), 0 10 43.27
 Milan E. from Paris, 27 24.18
0 38 7.45
 Mean, Padua E. from Paris, 0 38 7.57
- Palermo.** . N. Lat. 38° 6' 44". CACCIATORE, *Del Real Osservatorio di Palermo Libri VII., VIII., IX.*, p. 2; *Storia Celeste del R. Osserv. di Palermo*, in *Ann. d. Wiener Sternwarte*, XXIV. 6.
 Long. E. from Paris, 0^h 44^m 4".0. DAUSSY, *Add. Conn. d. Temps*, 1835, p. 8.
 BIANCHI, *Astr. Nachr.*, XVII. 350, calls the latitude of the Palermo Observatory, +38° 6' 25".50.
- Paramatta.** S. Lat. 33° 48' 49".79. RÜMKE, *Phil. Trans.*, 1829, Part III. p. 16.
 Long. E. from Greenwich, 10^h 4^m 6".25. *Ibid.*, p. 29.

470 THE PRINCIPAL OBSERVATORIES.

Paris. . . N. Lat. $48^{\circ} 50' 18''.2$. *Conn. d. Temps*, 1835, p. 356.
 Long. as above under Greenwich.

St. Peteraburg. (Academy.)
 N. Lat. $59^{\circ} 56' 29''.67$.
 Long. W. from Pulkowa, $0^m 5^s.194$. STRUVE, *Description de l'Obs. de Poulkova*, p. 292.

Philadelphia. N. Lat. $39^{\circ} 57' 7''.5$. MS. communication from Professor KENDALL.
 Long. E. from Washington (U. S. Coast Survey),
 By 5 sets Eastern clock-signals, $7^m 33.66^s$
 " " Western " 33.60
 Mean, $7^m 33.63^s$
 Long. Jersey City Station E. from Washington,
 By 2 sets Eastern clock-signals, $12^m 3.58^s$
 " " Western " 3.52
 Mean, $12^m 3.56^s$
 Long. W. from Jersey City Station,
 By 8 sets Eastern clock-signals, $4^m 29.91^s$
 " " " " 29.84
 Mean, $4^m 29.88^s$

Hence we may use,

Jersey City Station E. from Philadelphia,	$0^h 4^m 29.89^s$
" " " Washington,	$0^h 12^m 3.53^s$
Philadelphia, " "	$0^h 7^m 33.64^s$

Pragn. . . N. Lat. $50^{\circ} 5' 18''.5$. DAVID, *Astr. Nachr.*, VIII. 198.
 Long. E. from Paris,
 Mean of 6 occultations (*Astr. Nachr.*, XVI. 299, 302), $0^h 48^m 21.66^s \pm 4.15$
 HANSEN from occultations (*Astr. Nachr.*, XVII. 170), 19.59 ± 3.67
 Mean, Prague E. from Paris, $0^h 48^m 20.50^s$

Pulkowa. . N. Lat. $59^{\circ} 46' 18''.70$. STRUVE, *Descr. de l'Obs. de Poulkova*, p. 290.
 Long. E. from Altona (*Exp. Chron. de 1843*, p. 144), $1^h 21^m 32.523^s \pm 0.039$
 Altona E. from Greenwich (*Exp. Chron. de 1844*, p. 206), $0^h 39^m 46.151^s \pm 0.042$
 Pulkowa E. from Greenwich (*Exp. Chron. de 1844*, p. ix.), $2^h 1^m 18.674^s \pm 0.057$

Rome. . . (Collegio Romano.)
 N. Lat. $41^{\circ} 53' 54''$. *Conn. d. Temps*, 1840, p. 354.
 Long. E. from Greenwich, $0^h 49^m 54''.7$. *Astr. Nachr.*, VIII. 88.

- San Fernando.** N. Lat. $36^{\circ} 27' 45''$. *Corresp. Astron.*, XIV. 240.
 Long. W. from Paris, $0^{\text{h}} 34^{\text{m}} 10^{\text{s}}.6 \pm 0^{\text{s}}.31$. *Astr. Nachr.*, IX. 358.
- Santiago.** . (Observatory of the U. S. Astronomical Expedition.)
 S. Lat. $33^{\circ} 26' 25''.9$. GILLISS, *Astron. Exped., Introd.*, III.
 Long. W. from Greenwich, $4^{\text{h}} 42^{\text{m}} 33^{\text{s}}.81$. GILLISS, *Astron. Exped., Introd.*, III.
- Senftenberg.** . N. Lat. $50^{\circ} 5' 10''.1$.
 Long. E. from Berlin, $0^{\text{h}} 12^{\text{m}} 15^{\text{s}}$. } *Astr. Nachr.*, XXXI. 174, 331.
- Vienna.** . . N. Lat. $48^{\circ} 12' 35''.5$. *Berl. Astr. Jahrb.*, 1852, p. 290.
 Long. E. from Paris, $0^{\text{h}} 56^{\text{m}} 11^{\text{s}}.07$. SCHUMACHER, *Astr. Nachr.*,
 XXIII. 263.
- Washington.** . N. Lat. $38^{\circ} 53' 39''.25$. *Astron. Journ.*, III. 12.
 Long. W. from Greenwich, as derived from data of the U. S. Coast
 Survey, up to 1852, $5^{\text{h}} 8^{\text{m}} 11^{\text{s}}.2$.
 Lieutenant MAURY uses $5^{\text{h}} 8^{\text{m}} 10^{\text{s}}.17$. *Astron. Journ.*, III. 12.
 The situation of the first, or provisional, Naval Observatory, in which
 were made the observations published by Lieutenant GILLISS was,
 N. Lat. $38^{\circ} 53' 32''.8$. GILLISS, *Astr. Obs.*, p. viii.
 Long. W. from Greenwich, $5^{\text{h}} 8^{\text{m}} 4^{\text{s}}.6$. *Ibid.*, p. x.
- Wilna.** . . N. Lat. $54^{\circ} 40' 59''.1$. *Astr. Nachr.*, IV. 562.
 Long. E. from Paris,
 WURM from 22 occultations (*Astr. Nachr.*, VIII. 96), $\begin{array}{r} \text{h} \quad \text{m} \quad \text{s} \\ 1 \quad 31 \quad 50.4 \end{array}$
 STECZKOWSKI from 1 occultation (*Astr. Nachr.*, XVI. 302), $\underline{48.3}$
 Mean, $\underline{1 \quad 31 \quad 50.31}$

These results are arranged in the following Table for reference.

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(North Latitudes and West Longitudes are considered as positive.)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
Åbo,	+60° 26' 56.8	— 6 ^h 37 ^m 20.0 ^s	260° 40' 0.6	337° 42' 46.6
Altona,	+53 32 45.3	— 5 47 57.4	273 0 39.8	350 3 27.8
Ann Arbor,	+42 16 48.0	+ 0 27 12.0	6 48 0.0	83 50 48.0
Athens,	+37 58 20.0	— 6 43 6.4	259 13 24.2	336 16 12.2
Berlin,	+52 30 16.7	— 6 1 46.1	269 33 28.1	346 36 16.1
Bilk,	+51 12 25.0	— 5 35 16.1	276 10 58.1	353 13 46.1
Bonn,	+50 43 45.0	— 5 36 35.7	275 51 5.1	352 53 53.1
Breslau,	+51 6 56.0	— 6 16 21.2	265 54 42.0	342 57 30.0
Brussels,	+50 51 10.7	— 5 25 38.8	278 35 18.0	355 38 6.0
Cambridge (Eng.),	+52 12 51.8	— 5 8 34.7	282 51 18.9	359 54 6.9
Cambridge (Mass.),	+42 22 48.6	— 0 23 41.5	354 4 36.9	71 7 24.9
Cape of Good Hope,	—33 56 3.0	— 6 22 7.2	264 28 12.3	341 31 0.3
Christiania,	+59 54 43.7	— 5 51 6.0	272 13 30.6	349 16 18.6
Cincinnati,	+39 5 54.0	+ 0 29 46.9	7 26 42.8	84 29 30.8
Copenhagen,	+55 40 53.0	— 5 58 30.5	270 22 22.5	347 25 10.5
Cracow,	+50 3 50.0	— 6 28 2.4	262 59 23.4	340 2 11.4
Dorpat,	+58 22 47.1	— 6 55 5.8	256 13 32.6	333 16 21.6
Dublin,	+53 23 13.0	— 4 42 49.2	289 17 42.0	6 20 30.0
Durham,	+54 46 6.4	— 5 1 53.2	284 31 42.0	1 34 30.0
Edinburgh,	+55 57 23.2	— 4 55 28.2	286 7 57.0	3 10 45.0
Florence,	+43 46 40.8	— 5 53 12.9	271 41 47.1	348 44 35.1
Geneva,	+46 11 58.8	— 5 32 48.9	276 47 46.8	353 50 34.8
Georgetown,	+38 54 26.1	+ 0 0 6.2	0 1 33.0	77 4 21.0
Göttingen,	+51 31 47.9	— 5 47 57.3	273 0 40.5	350 3 28.5
Gotha,	+50 56 5.2	— 5 51 6.9	272 13 17.1	349 16 5.1
Greenwich,	+51 28 38.2	— 5 8 11.2	282 57 12.0	0 0 0.0
Hamburg,	+53 33 7.0	— 5 48 4.8	272 58 48.6	350 1 36.6
Hudson,	+41 14 42.6	+ 0 17 32.1	4 23 0.9	81 25 48.9
Kasan,	+55 47 23.1	— 8 24 43.1	233 49 13.1	310 52 1.1
Königsberg,	+54 42 50.4	— 6 30 11.6	262 27 6.6	339 29 54.6
Kremsmünster,	+48 3 23.8	— 6 4 44.6	268 48 50.7	345 51 38.7
Leipsic,	+51 20 20.7	— 5 57 39.7	270 35 4.5	347 37 52.5
Leyden,	+52 9 28.2	— 5 26 8.6	278 27 50.6	355 30 38.6
Liverpool,	+53 24 47.7	— 4 56 11.1	285 57 13.7	3 0 1.7
London,	+51 31 29.8	— 5 7 34.1	283 6 28.5	0 9 16.5
Madras,	+13 4 9.2	—10 29 8.2	202 42 57.0	279 45 45.0
Mannheim,	+49 29 12.9	— 5 42 2.7	274 29 19.5	351 32 7.5
Markree,	+54 10 31.7	— 4 34 22.8	291 24 18.0	8 27 6.0
Marseilles,	+43 17 49.0	— 5 29 40.2	277 34 57.2	354 37 45.2
Milan,	+45 28 0.7	— 5 44 57.8	273 45 32.4	350 48 20.4
Modena,	+44 38 52.8	— 5 51 55.2	272 1 12.5	349 4 0.5
Moscow,	+55 45 19.8	— 7 38 28.5	245 22 52.7	322 25 40.7
Munich,	+48 8 45.0	— 5 54 37.6	271 20 35.4	348 23 23.4
Naples,	+40 51 46.6	— 6 5 12.1	268 41 58.1	345 44 46.1
Olmütz,	+49 35 40.0	— 6 17 11.3	265 42 10.5	342 44 58.5
Oxford,	+51 45 36.0	— 5 3 8.6	284 12 51.0	1 15 39.0
Padua,	+45 24 2.5	— 5 55 40.2	271 4 56.6	348 7 44.6
Palermo,	+38 6 44.0	— 6 1 36.7	269 35 50.1	346 38 38.1
Paramatta,	—33 48 49.8	+ 8 47 42.6	131 55 38.3	208 58 26.3
Paris,	+48 50 13.2	— 5 17 32.7	280 36 50.1	357 39 38.1

Place.	Latitude.	Longitude from Washington in Time.			Longitude from Washington in Arc.			Longitude from Greenwich in Arc.		
		^h	^m	^s	^o	[']	["]	^o	[']	["]
St. Petersburg, . . .	+59° 56' 29.7"	—7	9	24.7	252	38	49.8	329	41	37.8
Philadelphia, . . .	+39 57 7.5	—0	7	33.6	358	6	35.4	75	9	23.4
Prague,	+50 5 18.5	—6	5	53.2	268	31	42.6	345	34	30.6
Pulkowa,	+59 46 18.7	—7	9	29.9	252	37	81.9	329	40	19.9
Rome,	+41 53 54.0	—5	58	5.9	270	28	31.5	347	31	19.5
San Fernando, . . .	+36 27 45.0	—4	43	22.1	289	9	29.1	6	12	17.1
Santiago,	—33 26 25.9	—0	25	37.4	353	35	39.1	70	38	27.1
Senftenberg, . . .	+50 5 10.1	—6	14	1.1	266	29	43.1	343	32	31.1
Vienna,	+48 12 35.5	—6	13	43.7	266	34	4.1	343	36	52.1
Washington,	+38 53 39.3	—0	0	0.0	0	0	0.0	77	2	48.0
Wilna,	+54 40 59.1	—6	49	23.0	257	39	15.5	334	42	3.5

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

THIS Ephemeris is divided into two distinct parts. One part is designed for the special use of NAVIGATORS, and is adapted to the Meridian of Greenwich.

The other part is suited to the convenience of ASTRONOMERS, on this continent particularly, and is adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris 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 Ephemeris of the Planets Venus, Mars, Jupiter, and Saturn; the Mean Places of 100 principal Fixed Stars, for January 1, 1860.

Time. — Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

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 ascensions of the stars are counted.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. 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.

Solar Time. — Solar Time 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 meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun*; the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it.

True or Apparent Time is measured by the motion of the real sun.

The difference between the *true* and *mean* time is called the *Equation of Time*. By means of it we pass from *true* to *mean* time, or the reverse. Thus, if the *true* 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. If the *mean* time be given, the *true* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

The vernal equinox, by the motion of which Sidereal Time is measured, is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the Sidereal Time in common use might therefore be called *Apparent Sidereal Time*, and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed 2'.3 in a period of nineteen years, and is, therefore, of no practical importance.

Day. — According to the customs of society, the hours are counted from 0 to 12 from noon to midnight, after which they are again reckoned from 0 to 12 from midnight to noon. The *civil day* consists of twenty-four hours, but is divided in this manner into two periods, commencing at midnight. In this respect it differs from the *astronomical day*, which commences at noon. The *civil day* comprises twenty-four hours, from one midnight to the next following. The first period of twelve hours is marked A. M., the last period of twelve hours is marked P. M. The *astronomical day* also comprises twenty-four hours, but they are counted from 0 to 24, and from the noon of one day to that of the next following.

The *civil day* begins twelve hours before the *astronomical day*; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day*. Thus, January 10th, 2^h. A. M., *civil day*, is January 9th, 14^h, *astronomical day*; and January 9th, 2^h. P. M., *civil day*, is also January 9th, 2^h, *astronomical day*. The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, 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.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows: —

Pages I, II, III. are devoted to the Ephemeris of the Sun. Page I. contains, first, the *Apparent Right Ascension and Declination* of the sun at Greenwich apparent noon.

The former of these quantities is used for finding the error of a clock regulated to sidereal time. The difference between the time by the clock of the meridian passage of the sun, and the sun's right ascension reduced to apparent noon, is the error of the clock from sidereal time. It is also employed in determining the time by the transit of a fixed star over the meridian, as is explained in page 223 of BOWDITCH'S *American Practical Navigator*. The use of the sun's declination in finding the true amplitude and azimuth, the latitude by altitudes of the sun in and out of the meridian, the time, &c., is also so clearly defined in this standard work, which is in the hands of all American seamen, that any further explanation in this place is unnecessary. Adjoining the columns of *Right Ascension* and *Declination* are the differences of these quantities for one hour (at noon), by means of which they may be calculated for any time out of the meridian, by multiplying this difference by the hours and parts of hours from noon, and adding the amount to, or subtracting it from, the quantity at noon, according as it is increasing or decreasing. If, for example, the declination of the sun were required at 3^h. 40^m. P. M. of Wednesday, January 18th, 1860, the declination of the sun would be taken out first for

January 18th, at noon,	20° 38' 25.2" S.
From which subtract the diff. for 1 hour, 30 ^m .18, multiplied by 3,	1 30.5
	20 36 54.7
And the proportional part for 40 minutes,	20.1
The result is the sun's declination on the 18th, at 3 ^h . 40 ^m . P. M.,	20 36 34.6

The difference for one hour is not the same for every hour in the twenty-four; but being given in the pages of this Ephemeris for the first hour of the day, it is sufficiently accurate for the purposes of the navigator.

The column of the *Sun's Semidiameter* requires no explanation.

The column headed *Sidereal Time of the Semidiameter passing the Meridian*, is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. If the western limb has been observed, the quantity found in this column is to be added to the time of transit over the middle wire, or the mean of the times of transit over all the wires; but if the eastern limb has been observed, the quantities in this column are to be subtracted.

The next column contains the *Equation of Time*, which, 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*, or the time shown by a clock. The heading of the column directs the manner in which the equation is to be applied, and where 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 date at which the change takes place. The difference for one hour is given in an adjoining column, by means of which the equation for any time from noon is easily obtained. If, for example, the equation of time for January 16th, at 3^h 20^m P. M., were required, we should have

Equation for January 16, at noon,	m. s.
	9 52.81
Correction for 3 ^h 20 ^m (additive),	2.88
Equation, January 16, at 3 ^h 20 ^m P. M.,	9 55.69

Which, according to the rule at the head of the column, is to be added to *apparent time* to obtain *mean time*.

Page II. contains the Apparent Right Ascension and Declination of the Sun, and the Equation of Time for Greenwich *Mean Noon*; to these is added a column containing the Sidereal Time of Mean Noon.

Page III. contains the Longitude and Latitude of the Sun, and the Logarithm of the Distance of the Earth, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ' ; the one, λ , is the Sun's longitude counted from the true equinox of the date; the other, λ' , is the same coordinate counted from the mean equinox of the beginning of the year. 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 longitudes of the Sun are the true longitudes, not affected by aberration. The last column on this page contains the Mean Time of Sidereal Noon.

Page IV. contains the Moon's *Semidiameter* and *Horizontal Parallax* for every noon and midnight. The former may be corrected for any time between the dates for which it is given in the Ephemeris, by means of Table XI. of BOWDITCH'S *Navigator*, or simply by computing the proportional part.

This is readily done by considering that the semidiameter is given for every twelve hours, that the difference, therefore, between any two successive semidiameters corresponds to twelve hours, and that the difference required (or correction) is that difference which corresponds to a time less than twelve hours. If, for example, the semidiameter of the moon is to be taken out for 9 o'clock, P. M. of the 3d of January, then we say, that as twelve hours is to 7".0, the whole difference between the semidiameters at noon and midnight of the 3d, so is nine hours to 5".2, the correction to be added to the semidiameter at noon, because it is increasing; the moon's semidiameter, then, for Jan. 3^d 9^h is 15' 29".4. Adjoining the columns containing the Moon's

Horizontal Parallax for noon and midnight, are columns giving the change which these quantities undergo in one hour. The sign plus or minus (+ or —) is prefixed to these differences, showing whether they are additive or subtractive, or, in other words, whether the horizontal parallax is increasing or decreasing. In order to reduce the parallax to any time intermediate between those dates for which it is given in the Ephemeris, the mode of proceeding is that which has been already explained in the case of the equation of time. The Moon's *Meridian Passage*, which is given on this page to minutes and tenths of minutes, is also accompanied with a column of differences for one hour, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. Or it may be more quickly derived from BOWDITCH'S Table XVIII., by simple inspection. The last column of this page contains the *Age* of the Moon, to tenths of days, or the time elapsed since the preceding new moon. It requires no explanation.

The pages from V. to XII. inclusive are taken up with the Moon's *Right Ascension and Declination*, which are given for every hour of every day in the month, and are accompanied with columns of differences for every minute of each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from the face of a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local time of the computer. They have only to be corrected for the minutes and seconds of the time at Greenwich. Thus, if the right ascension and declination of the moon were required for Sunday, January 1^d. 8^h. 10^m., we have only to add to the right ascension at 8^h. as given in the Ephemeris, viz. to 0^h. 47^m. 53^s.93, the product of the difference for one minute in the adjoining column multiplied by 10, the product, that is, of 1^s.8755 by 10, or 18^s.76; the result is the moon's right ascension at the required time, equal to 0^h. 48^m. 12^s.69. If we were to take out the declination for the same date, the correction for the ten minutes above the hour would be additive, because the declination, like the right ascension, is increasing; thus,—

Moon's declination for January 1 ^d . 8 ^h .	10 13̄ 48.8 N.
Correction for 10 ^m . is 181 ^s .1, or	2 11.1
Moon's declination for January 1 ^d . 8 ^h . 10 ^m .	10 15 59.9

The last page of the right ascensions and declinations contains the *Phases* of the Moon, and the dates of the Moon's *Perigee* and *Apogee*, or least and greatest distances from the earth.

The remaining six pages of the month are occupied by the *Lunar Distances*. They are given in the same manner as in the *British Nautical Almanac*, in order to conform to the rules of BOWDITCH'S *Navigator*. These tables contain the geocentric distances of the centre of the moon from the sun, the larger planets, and certain fixed stars, at intervals of three hours, beginning with the noon of each day. All the distances that can be observed on the same day are grouped together under that date, and the letter E. or W. is affixed to the name of the star or planet, to indicate whether it is on the east or west side of the moon. The columns are read from the left to the right, across both pages of the same opening. The principle of determining the longitude by means of lunar distances consists in this: that they furnish the navigator with the means of comparing his own time, on board ship, with the time at the Greenwich Observatory. At the moment of observing a distance he notes the time by his own watch or chronometer, and by looking into the Ephemeris he discovers what o'clock it is at Greenwich when the moon and star are in the relative position with regard to each other which he has measured with his sextant. But it will very rarely occur that the navigator's *true distance*, that is, his observed distance cleared from the effects of refraction and

lunar parallax, will be found in the Ephemeris. It will prove in most cases to be a quantity lying between two given distances. He is obliged, therefore, to take the difference between his own true distance and the one nearest to it in the pages of the Ephemeris, and to apply to the time standing over the latter a correction proportioned to this difference. This is a case of the simple rule of three. Owing, however, to the various denominations of space and time that enter into the question, it has been found convenient to lessen the labor of the operation by putting between every two successive distances given in the Ephemeris the proportional logarithm of their difference. This proportional logarithm is obtained by subtracting the logarithm of the difference of the two distances from the logarithm of three hours (both quantities being reduced to seconds), because three hours is the interval of time between two successive distances.

On the 9th of March, at midnight, of Greenwich mean time, the distance of the moon's centre from the planet Saturn, west of her, is $63^{\circ} 57' 23''$, and at fifteen hours of the same date it is $65^{\circ} 47' 4''$; the difference between the two distances is $1^{\circ} 49' 41''$, or, reduced to seconds, is 6581'', the logarithm of which, subtracted from the logarithm of three hours, or 10800'', gives for the proportional logarithm of the difference between the two distances 2151, as it is in the column headed *P. L. of Diff.* If the calculated true distance of the navigator lie between the two given distances above mentioned, as, for instance, if it should be $64^{\circ} 17' 54''$, the corresponding correction of the time would be found as follows:—

Distance in the Ephemeris at Midnight,	$63^{\circ} 57' 23''$
Calculated True Distance,	$64^{\circ} 17' 54''$
Difference,	<u>0 20 31</u>
Prop. log. in Ephemeris,	2151
Prop. log. of Difference, $0^{\circ} 20' 31''$,	<u>9492</u>
Prop. log. of $0^{\text{h}} 33^{\text{m}} 40^{\text{s}}$	7281

And this time is to be added to the time at the head of the column from which the distance of the Ephemeris was taken, which would make the time at Greenwich corresponding to the Navigator's True Distance $0^{\text{h}} 33^{\text{m}} 40^{\text{s}}$ on the morning of the 10th of March.

This method of getting the Greenwich time between two given times in the Ephemeris rests upon the supposition, that the variation between one distance and the next following is uniform and regular. But owing to the inequalities in the moon's motion, this is not the case; and it is, in consequence of this, necessary to apply to the Greenwich time obtained by the preceding method a small correction.

This correction, due to the second differences in the moon's motion, is given in the Table on page 28 of the Appendix, and is taken out and applied as follows.

The top of the Table is entered with the difference between that proportional logarithm of the Ephemeris which has already been used and the one next following, and the side of the Table is entered with the time which has been added to that at the head of the column of the Ephemeris, that is, the time given by the difference of the proportional logarithms at the close of the preceding paragraph; under the former, and opposite the latter, will be found the correction, in seconds of time, to be added to the time at Greenwich if the proportional logarithms are decreasing, but subtracted if they are increasing.

The Ephemeris of the Planets, from page 218 to page 241, consists of the apparent right ascension at Greenwich mean noon and its variation for one hour, the apparent declination at the same date and its variation for one hour, and the mean time of their meridian passage; and at the bottom of the page will be found the semidiameter and horizontal parallax for every fifth day of the month. The hourly variations belong to noon of the day on which they are given. The mode of correcting by means of the hourly variation for any time from noon has already been explained.

The Solar Coördinates for Greenwich mean noon, on pages 242 - 244, are added, and the Moon's Longitude and Latitude on pages 245 - 248.

Finally, the Mean Places of the one hundred principal Fixed Stars for January 1, 1860, are given on pages 256 - 258.

When the latitude is to be deduced from the meridian altitude of one of these stars, its time of passing the meridian can be ascertained by taking the sum of the right ascension of the star, and the mean time of sidereal noon contained in the last column of page III. of each month. The right ascension of the star is, in fact, its hour angle, or difference in time, from the sidereal noon, or 0^h. If then a vessel in longitude 45° West should wish to obtain the latitude by a meridian observation of a star, as, for example, a TAURI (*Aldebaran*), on the evening of January 1, 1860, the process for obtaining the time of meridian passage would be as follows:—

Mean Time of sidereal 0 ^h . January 1, 1860,	h. m. s.
Correction for Longitude omitted.	5 17 38
Right Ascension of a TAURI (<i>Aldebaran</i>),	4 27 53
Time of star's meridian passage,	9 45 31

The instant of passage might be more accurately determined by making an allowance for the difference between mean solar and sidereal time, and by applying the correction for longitude; but the above is sufficiently near for the purpose for which it is wanted, which is, to know the period of meridian passage approximately, in order to identify the star if necessary, and to be in time with the observation. The navigator will perceive that the dates in this column of page III. are astronomical, and will observe the distinctions of time explained in the first part of this article; he will also remember that when the sum exceeds 24 hours, 24 hours are to be subtracted, and a unit is to be added to the day of the month.

The Sun's Right Ascension may also be used for finding the time of meridian passage of a star, as shown in BOWDITCH's *Navigator*, p. 223.

NOTE.—The Right Ascension, Declination, Equation of Time, and Sidereal Time of Mean Noon, and also the Sun's Coördinates, have been computed from Hansen's Solar Tables, using Peters's Nutation and Obliquity, for the meridian of Washington, and interpolated for Greenwich. The Semidiameter, and Sidereal Time of Semidiameter passing the Meridian, have been computed as in the Almanacs for the preceding years.

THE ASTRONOMICAL PART.

THIS part is adapted to the meridian of Washington.

Obliquity of the Ecliptic, &c., p. 250. — On this page are given the apparent obliquity, the equation of equinoxes in longitude and right ascension, the precession of equinoxes in longitude, and the sun's aberration and horizontal parallax, for every ten days of the year; at the bottom of the page will be found the mean obliquity for the beginning of the year, the precession for the middle of the year, the logarithm of the precession in a sidereal day, and the logarithm of the precession in a solar day. On the same page, the mean longitude of the moon's ascending node is also given for every ten days, and at the bottom of the page its daily motion.

Fixed Stars. — The Logarithms *A, B, C, D*, for correcting the places of the Fixed Stars, are given for the mean midnight of every day of the year, and the constants of reduction for every five days. To these tables are added BESSEL's formulas of reduction, with PETERS' coefficients, and the notation of the catalogue of stars of the British Association.

The *mean* places of 100 principal Fixed Stars on January 1, 1860; the *apparent* places of α and δ Ursæ Minoris, at the time of the upper transit at Washington, for every day of the year; and the *apparent* places of the remaining principal stars for every ten days; together with a table giving the correction of 51 Cephei, σ Octantis, and λ Ursæ Minoris, for terms of nutation involving $2\ \mathcal{C}$, — complete the subject of the Fixed Stars.

Solar Ephemeris. — In the Solar Ephemeris, given for Washington mean and apparent noon, the hourly motions in right ascension and declination are the motions at the instant of noon. Only the seconds of right ascension and declination are given for apparent noon, the degrees and minutes being usually the same as for mean noon.

The *Moon Culminations* and *Moon-culminating Stars* are given in two distinct lists. The list of Moon Culminations contains both the solar and sidereal dates of transit; the apparent right ascension is the right ascension of the limb, and the declination is the declination of the centre, at their respective periods of culmination. The form of the lists of moon-culminating stars has been somewhat changed. In the first volume of the Ephemeris, reference to the stars to be used in connection with the Moon was made by a figure, and the stars themselves were entered successively in the order of numbers. In the present volume these figures are dispensed with, and the proper star to be observed in connection with the transit of the moon's limb is determined by means of the sidereal dates, common to both lists. Each star occupies a separate column containing its right ascension to hundredths of seconds for every sidereal date throughout the year for which it is available, and also its declination and magnitude. The first column of each page contains the sidereal date, and the last the daily change in right ascension of the corresponding stars. It is hoped that the standard observatories will determine the place of each one of these stars once at least in the course of the year. The whole list has been taken from the Twelve-Year Catalogue.

The *Ephemeris of the Moon*, which follows, and the *Moon's Phases*, require no special observation. In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instant for which they are given.

The ephemeris of the two interior planets is given for mean noon and the time of transit; and that of the exterior planets is given for sidereal noon and the time of transit. The place of a planet for any number of minutes t , from the nearest noon for which it is given, t being negative when the time precedes the noon, may be computed by the formula,

$$\text{Planet's R. A. (or Dec.)} = A + B t + C t^2,$$

in which $A =$ R. A. (or Dec.) for the noon,
 $B =$ the motion of R. A. (or Dec.) for 1 minute,
 or, more exactly, $=$ the factor of t , as given in the Ephemeris;
 $C =$ the factor of $t^2 =$ factor for second differences.

The *Solar Coördinates* are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator, at the beginning of the year. In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:).

The *Planetary Coördinates* are given for days of the Julian Period, in order that they may be a part of a connected series, and therefore more convenient for the continued computation of perturbations.

Eclipses. — The *Tables of Data of the Solar Eclipses* are adapted to very accurate computation by the following formulas.

$$\begin{aligned} \text{Let } \phi &= \text{the latitude of the place,} \\ \lambda &= \text{its western longitude from Washington,} \\ \log e &= 8.9110835, \\ \log(1 - e^2) &= 9.9971066, \\ \sin \phi' &= e \sin \phi, \\ h &= \sec \phi' \cos \phi, \\ k &= (1 - e^2) \sec \phi' \sin \phi, \\ a &= A - h \sin(\mu - \lambda), \\ b &= B - E k + G h \cos(\mu - \lambda), \\ c &= -C + F k - H h \cos(\mu - \lambda), \\ m &= \sqrt{b c}. \end{aligned}$$

If the instant for computation were correctly chosen at the time of beginning or end of the eclipse, m would be exactly equal to a . If m is not equal to a , the instant for a new computation, which will be an approximation to the actual time of beginning or end, may be found by adding to the preceding time of computation an interval t , which may be obtained in seconds by the formulas,

$$\begin{aligned} \log \mu' &= 1.86167, \\ \tan \frac{1}{2} \psi &= \frac{c}{m} = \frac{m}{b}, \\ a' &= A' - \mu' h \cos(\mu - \lambda), \\ b' &= B' - \mu' G h \sin(\mu - \lambda), \\ t &= \frac{1000000(m - a)}{a' + b' \cot \psi}; \end{aligned}$$

ψ must be taken of the same sign with a , and is a sufficiently near approximation to the angle of contact from the north towards the east. For the shadow of a total eclipse, ψ must be taken with a sign opposite that of a .

The magnitude of the eclipse is found by taking the difference (with regard to the signs) of ψ at the beginning and end of the eclipse, and if this difference is denoted by 2θ , the magnitude of the eclipse is

$$\frac{24}{1-s} \sin^2 \frac{1}{2} \theta, \text{ or } \frac{24}{1-s} \cos^2 \frac{1}{2} \theta,$$

accordingly as θ is acute or obtuse; s is the radius of the shadow divided by the radius of the penumbra.

The value of θ may also be obtained by the formulas

$$\tan \chi = \frac{b'}{a'}, \quad \theta = \psi + \chi,$$

(in which χ has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \cdot \frac{m-a}{a'} \cdot \frac{\cos \chi \sin \psi}{\sin \theta}$$

The following is an example of the computation of the beginning of the Total Eclipse of July 17, for the Observatory at Ann Arbor, Michigan.

For Ann Arbor, $\phi + 42^\circ 16' 48''$	$\lambda + 6^\circ 48' 0''$
log sin ϕ 9.827856	log cos ϕ 9.869153
log sin ϕ' 8.738940	log sec ϕ' 0.000653
log k 9.825616	log h 9.869806

From the chart take $18^h 50^m$, Washington mean time, as a first approximation to the time of beginning; but for a nearer approximation we find from the table (p. 399) for $18^h 50^m$.

$A - 1.18821$	log E 9.971022
$B + 1.45871$	log F 9.969491
$C + 0.38501$	log G 9.548365
$A' + 151.47$	log H 9.558797
$B' - 44.48$	μ $281^\circ 1' 7''.9$

Hence

$$\mu - \lambda = 274^\circ 13' 7''.9$$

log cos $(\mu - \lambda)$ 8.866680	log sin $(\mu - \lambda)$ 9.998822 n
log h cos $(\mu - \lambda)$ 8.736486	log h sin $(\mu - \lambda)$ 9.868628 n
log $G h$ cos $(\mu - \lambda)$ 8.284851	log $H h$ cos $(\mu - \lambda)$ 8.295283
log $E k$ 9.796638	log $F k$ 9.795107
$G h$ cos $(\mu - \lambda) + 0.01927$	$- H h$ cos $(\mu - \lambda) - 0.01974$
$- E k - 0.62609$	$F k + 0.62389$
$B + 1.45871$	$- C - 0.38501$
$b + 0.85189$	$c + 0.21914$
log b 9.93038	$- h$ sin $(\mu - \lambda) + 0.73897$
log c 9.34072	$A - 1.18821$
log m 9.63555 n	$a - 0.44924$
log tan $\frac{1}{2} \psi$ 9.70517 n	$m - 0.43207$
ψ $306^\circ 12' 42''$	$m - a + 0.01717$
log $\mu' h$ cos $(\mu - \lambda)$ 0.5982	log $G \mu' h$ sin $(\mu - \lambda)$ 1.2787 n
$- \mu' h$ cos $(\mu - \lambda) - 3.97$	$- G \mu' h$ sin $(\mu - \lambda) + 19.00$
$a' + 147.50$	$b' - 25.48$
$a' + b' \cot \psi + 166.16$	log b' 1.4062 n
log $10^6 (m - a)$ 4.2348	log cot ψ 9.8646 n
log $(a' + b' \cot \psi)$ 2.2205	$b' \cot \psi + 18.66$
log t 2.0143	

First approximation from chart	18 50 0.0
t , the correction	+ 1 43.3
Washington mean time of beginning	18 51 43.3

Another approximation will increase the time of beginning by $0^s.5$, giving $18^h 51^m 43^s.8$ as the correct time; the corrected times always being used in making the successive approximations.

Occultations.—The pages 404 to 424 inclusive are taken up with *Elements for Facilitating the Calculation of Occultations of Planets and Stars by the Moon*. These elements are given for all the stars to the fifth, and for some of the sixth magnitude, inclusive, contained in the British Association Catalogue, which can be occulted by the moon during the year 1860.

The several columns of these pages contain, — 1. the date; 2. the star's name; 3. the star's magnitude; 4. the limiting parallels of visibility; 5. Washington mean time of the moon's true conjunction with the star in right ascension; 6. Washington hour angle, in time, of the star at the time of true conjunction; 7. coördinate q at the time of true conjunction, 8. hourly variation p' of coördinate p ; 9. hourly variation q' of coördinate q ; 10. logarithmic sine of the star's declination; 11. logarithmic cosine of the star's declination.

Designating the time of true conjunction by the usual symbol, δ , we have, at this time, $T = \delta$, $h = H$, $p = 0$, and $q = Y$. For any other time during the occultation, we shall have $T = \delta + (t)$, $h = H +$ sidereal equivalent of (t) , $p = (t) p'$, and $q = Y + (t) q'$. The other elements are considered as constant for the occultation.

In the prediction of an occultation for a particular place, the principal objects of determination are, the instant of *immersion*, or of the star's disappearance behind the moon's limb; of *emersion*, or of the star's reappearance; and the points on the moon's border where these appearances take place.

The calculations are made according to the method of BESSEL, whose original paper on the subject may be found in SCHUMACHER'S *Astronomische Nachrichten*, Vol. VII. p. 1; also in the *Berliner Astronomisches Jahrbuch* for 1831, p. 257. The letters and numerals prefixed to the stars belonging to the group of the Pleiades, and the magnitudes of these stars, are taken from No. V. of BESSEL'S *Astronomische Untersuchungen*.

The process of computation is shown by the following equations:—

d = Longitude for Washington, of the place, + West, — East

ϕ = Geographical North Latitude of the place.

ϕ' = Geocentric North Latitude of the place.

r = Earth's radius at the place, or the distance of the observer's position from the earth's centre.

It is unnecessary to calculate ϕ' and r separately, as we have

$$r \sin \phi' = \frac{(1 - e^2) \sin \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}} \qquad r \cos \phi' = \frac{\cos \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}}$$

in which e denotes the eccentricity of the earth's meridians.

The logarithms of $\frac{1 - e^2}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log A$, and of $\frac{1}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log B$, derived from $e = .081697$, according to the latest determination of BESSEL, may be taken from the following table, where the geographical latitude of the place is the argument.

ϕ	Log. A	Log. B
0	9.9971	0.0000
10	9.9971	0.0000
20	9.9973	0.0002
30	9.9975	0.0004
40	9.9977	0.0006
50	9.9979	0.0009
60	9.9982	0.0011
70	9.9984	0.0013

$$r \sin \phi' = A \sin \phi$$

$$r \cos \phi' = B \cos \phi$$

$$a = r \cos \phi' \sin (h - d)$$

$$b = r \cos \phi' \cos (h - d)$$

$$\log \lambda = 9.4192$$

$$u = a$$

$$v = r \sin \phi' \cos D - b \sin D$$

$$u' = b \lambda$$

$$v' = a \lambda \sin D$$

$$m \sin M = p - u$$

$$n \sin N = p' - u'$$

$$m \cos M = q - v$$

$$n \cos N = q' - v'$$

$$\log k = 9.4350$$

$$\cos \psi = \frac{m \sin (M - N)}{k}$$

$$Q = 90^\circ - N \mp \psi$$

$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

Upper signs for Immersion ; under signs for Emersion.

$$c \sin C = u + t u'$$

$$c \cos C = v + t v'$$

$$V = Q + C$$

Mean solar time of the star's apparent contact with the moon's limb

$$= T - d + t$$

$$\text{Angle from North Point} = Q$$

$$\text{Angle from Vertex} = V$$

The angle ψ is to be taken out positive and less than 180° . If $\log m \sin (M - N)$ be greater than $\log k$, $\cos \psi$ will evidently be greater than 1, or impossible, and there will be no occultation, except in some rare instances where the moon's limb passes very close to the star, when $\log \cos \psi$ will result very near 0. In these cases, a recalculation should be made according to the method which follows, using

$$t = -\frac{m}{n} \cos (M - N),$$

which may give $\log m \sin (M - N)$ less than $\log k$, when the star will be occulted. On the other hand, it may happen that, in these cases of very near approach, a first determination may give a $\cos \psi$ less than 1, which a recalculation will show to be impossible. The angle ψ is then to be considered $= 0^\circ$ when $m \sin (M - N)$ is positive, and we shall have $Q = 90^\circ - N$. When $m \sin (M - N)$ is negative, $\psi = 180^\circ$, or $Q = 90^\circ - N + 180^\circ = 270^\circ - N$. We shall also have, at the time of nearest approach,

$$\text{star's distance from moon's limb} = \pi (m \sin (M - N) - .2723),$$

in which π is the moon's horizontal parallax.

By *Angle from North Point* is to be understood the arc included between the star when in contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the North Pole ; and by *Angle from Vertex*, the arc between the star at contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the zenith. These angles are reckoned from the north point and from the vertex towards the *West* round the circumference of the moon's disc. For the image as seen in an inverting telescope, add to them 180° .

The results obtained by the above equations are only approximate, yet the computed times of immersion and emersion will usually be within one or two minutes of the truth. The error generally increases with the star's distance from the apparent path of the moon's centre, and may, in some cases, amount to several minutes. For an immersion, this error is not of much consequence; but for an emersion, especially of a small star, the time should be determined with greater precision. For this purpose u' and v' must be computed with

$$h' - d = h - d + \frac{1}{2} \mu,$$

u being the symbol by which we express the sidereal equivalent of t in these equations.

$$\begin{aligned} u' &= r \cos \phi' \lambda \cos (h' - d) \\ v' &= r \cos \phi' \lambda \sin (h' - d) \sin D. \end{aligned}$$

Then with these values of u' and v' , recompute N , n , ψ , and t , by means of

$$\begin{aligned} n \sin N &= p' - u' \\ n \cos N &= q' - v' \\ \cos \psi &= \frac{m \sin (M - N)}{k} \end{aligned}$$

$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

using the M and m obtained by the first computation, and we shall have the time of contact $T - d + t$, generally within a few seconds of the truth.

As a check on the accuracy of the work, we might compute

$$\begin{aligned} u &= r \cos \phi' \sin (h - d + \mu) \\ v &= r \cos \phi' \cos D - r \cos \phi' \cos (h - d + \mu) \end{aligned}$$

and we should have

$$(p + t p' - u)^2 + (q + t q' - v)^2 = k^2 = 0.0741.$$

But if $m \sin M$, $m \cos M$, $\log n \sin N$, and $\log n \cos N$, have been correctly computed, we shall have the following shorter and more convenient check on the subsequent calculations for the time of contact:

$$(m \sin M + t n \sin N)^2 + (m \cos M + t n \cos N)^2 = k^2 = 0.0741.$$

The elements of computation, H , Y , etc., are given for the instant of the moon's true conjunction with the star in right ascension. It is desirable, however, in computing an occultation for a particular place, to assume a time for the calculation near to the time of the nearest approach of the moon's centre to the star, as seen at that place, and to reduce the elements to this assumed time. This time, for which the nearest tenth of an hour will be sufficiently accurate, will not differ greatly from the time of *apparent* conjunction, as affected by parallax, which may be determined approximately by the following equations. Let $T - d$ be the time of apparent conjunction; then

$$\begin{aligned} (t) &= \frac{\sin (H - d)}{p' \sec \phi - [9.4027] \cos (H - d)} \\ T - d &= \delta - d + (t). \end{aligned}$$

The elements corresponding to the time $T - d$ may then be obtained as follows:

$$\begin{aligned} h - d &= H - d + (\mu) \\ p &= (t) p' \\ q &= Y + (t) q' \end{aligned}$$

Where occultations are to be generally observed, as at astronomical stations, either temporary or permanent, the observer will find an advantage in looking over the list and selecting, beforehand, all those which may be visible at his station, by observing if his latitude be included between the *limiting parallels* for any given occultation, if the time ($T - d$) be favorable as regards the absence of daylight, and if the star's hour-angle ($h - d$) be not greater than its semidiurnal arc for the given latitude.

For obtaining the time

$$T - d = \delta - d + (t),$$

it will be well to tabulate the values of

$$(t) = \frac{\sin(H - d)}{p' \sec \phi - [9.4027] \cos(H - d)}$$

for every half-hour of ($H - d$) as far as the greatest semidiurnal arc computed for the latitude of the station with a declination of 30° ; and for all values of p' , using two decimal figures, from 0.50 to 0.60.

It will also be found advantageous to have tabulated values of

$$u = r \cos \phi' \sin(h - d)$$

$$u' = r \cos \phi' \lambda \cos(h - d)$$

which should be given for every minute (in time) of ($h - d$), from 0^h to 6^h . If ($h - d$) exceeds 6^h , the argument will be $12^h - (h - d)$, instead of ($h - d$). It will be seen by the equations that u will have the same sign as $\sin(h - d)$, and that u' will have the same sign as $\cos(h - d)$.

In the equation

$$v = r \sin \phi' \cos D - b \sin D$$

the term $r \sin \phi' \cos D$ may be tabulated for every tenth minute of declination, from 0° to 30° .

For a practical application of the preceding formulæ, we will make the calculations for an occultation of the star ϵ Tauri, January 4, 1860, as it will appear at the Point Hudson, Oregon, in north latitude $48^\circ 7' = \phi$, and west longitude from Washington $3^h 2^m 47^s = d$. The data for the computation are given on page 404, and, with the latitude and longitude of the place, are as follows:—

January 4. ϵ Tauri, 5.

$\phi + 48^\circ 7.0$	$H + 1^h 44^m 58^s$	$\log \sin D + 9.6098$
$d + 3^h 2.8$	$d + 3^h 2^m 47^s$	$\log \cos D + 9.9007$
$\delta 10 26.0$	$H - d - 1^h 17^m 49^s$	$p' 0.5717$
$\delta - d 7 23.2$	$Y + 0.5520$	$q' + 0.1223$

Calculation of the Time, $T - d$, and reduction of the elements of computation.

	$\log p' 9.757$		$(t) + 0.5$
	$\log \sec \phi + 0.176$		
$\log p' \sec \phi =$	$\log (1) + 9.933$	(Reduced to hours and minutes)	$(t) - 0^h 30^m 0^s$
	$\log \text{constant } 9.403$	Sidereal equivalent for (t)	$(\mu) - 0^h 30^m 5^s$
	$\log \cos(H - d) + 9.974$		$H - d - 1^h 17^m 49^s$
$\log [9.403] \cos(H - d) =$	$\log (2) + 9.377$	$H - d + (\mu) =$	$h - d - 1^h 47^m 54^s$
	$(2) + .238$		$\delta - d 7 23.2$
	$(1) + .857$	$\delta - d + (t) =$	$T - d 6 53.2$
$(1) - (2) =$	$(3) + .619$	$(t) p' = 0.5 \times 0.5717 =$	$p - 0.2859$
	$\log (3) + 9.792$	$- 0.5 \times - 0.1223 =$	$Y + 0.5520$
	$\log \sin(H - d) - 9.523$	$Y + (t) q' =$	$(t) q' - 0.0612$
$\log \frac{\sin(H - d)}{(3)} =$	$\log (t) - 9.731$		$q + 0.4908$

Calculation of the times of *Immersion* and *Emersion*, etc.

(Table, page 483, Arg. ϕ)	$\log A$	9.9979
	$\log \sin \phi$	+9.8719
$\log A \sin \phi =$	$\log r \sin \phi'$	+9.8698
	$\log r \cos D$	+9.9607
	$\log r \sin \phi' \cos D$	+9.8305
(Table, page 483, Arg. ϕ)	$\log B$	0.0008
	$\log \cos \phi$	+9.8245
$\log B \cos \phi =$	$\log r \cos \phi'$	+9.8253
	$\log \sin (h-d)$	-9.6566
$\log r \cos \phi' \sin (h-d) = \log u = \log a$		-9.4819
	$\log \cos (h-d)$	+9.9500
$\log r \cos \phi' \cos (h-d) =$	$\log b$	+9.7753
	$\log \lambda$	9.4192
	$\log \alpha \lambda$	-8.9011
	$\log \sin D$	+9.6098
	$\log b \sin D$	+9.3851
$\log \alpha \lambda \sin D =$	$\log v'$	-8.5109
$\log b \lambda =$	$\log u'$	+9.1945
	$r \sin \phi' \cos D$	+ .6769
	$b \sin D$	+ .2428
$r \sin \phi' \cos D - b \sin D =$	v	+ 4341
	q	+ 4908
$q - v =$	$m \cos M$	+ .0567
	p	- .2859
	u	- .3033
$p - u =$	$m \sin M$	+ .0174
	q'	+ .1223
	v'	- .0324
$q' - v' =$	$n \cos N$	+ .1547
	p'	+ .5717
	u'	+ .1565
$p' - u' =$	$n \sin N$	+ 4152
	M	17° 3'
	N	69 34
	$M - N$	307 29
	$90^\circ - N$	20 26
	ψ	99 57
For Immersion, $90^\circ - N - \psi =$	Q	280 29

	$\log m \sin M$	+8.2405
	$\log m \cos M$	+8.7536
	$\log \tan M$	+9.4869
	$\log \cos M$	+9.9805
	$\log m$	+8.7731
	$\log n \sin N$	+9.6182
	$\log n \cos N$	+9.1895
	$\log \tan N$	+0.4287
	$\log \sin N$	+9.9718
	$\log n$	+9.6464
	$\log \frac{m}{n}$	-9.1267
	$\log \cos (M - N)$	+9.7843
$-\log \frac{m}{n} \cos (M - N) =$	$\log (1)$	-8.9110
	$\log \sin (M - N)$	-9.8996
	$\log m \sin (M - N)$	-8.6727
	$\log k$	9.4350
$\log \frac{m \sin (M - N)}{k} =$	$\log \cos \psi$	-9.2377
	$\log \sin \psi$	+9.9934
	$\log k \sin \psi$	+9.4284
$\log \frac{k \sin \psi}{n} =$	$\log (2)$	+9.7820
	(1) -	.0815
	(2) +	.6053
For Immersion, (1) - (2) =	t_1	- .6868
For Emersion, (1) + (2) =	t_2	+ .5238
	$\log t_1$	-9.8369
	$\log u'$	+9.1945
	$\log t_1 u'$	-9.0814
	$\log v'$	-8.5109
	$\log t_1 v'$	+8.3478
	$t_1 v'$	+ .0223
	v	+ 4341
$v + t_1 v' =$	$c \cos C$	+ 4564
	$t_1 u'$	- .1075
	u	- .3033
$u + t_1 u' =$	$c \sin C$	- .4108
	$\log c \sin C$	-9.6136
	$\log c \cos C$	+9.6594
	$\log \tan C$	-9.9542

IMMERSION: Point Hudson Mean Time, $T - d$ 6 53.2
 (Reduced to hours and minutes), $t_1 - 0$ 41.2
 $T - d + t_1$ 6 12.0

Immersion Angle from North Point = $C - 41^\circ 59'$
 Immersion Angle from Vertex = $Q + C =$ Q 280 29
 V 238 30

EMERSION: Point Hudson Mean Time, $T - d + t_2$ 7 24.6
 (Reduced to hours and minutes), $t_2 + 0$ 31.4

Calculation of a more accurate time, etc. of *Emersion*.

	log cos ($h' - d$) +9.9639
	log r cos ϕ' +9.8253
	log λ 9.4192
r cos $\phi' \lambda$ cos ($h' - d$) =	log u' +9.2084
	log sin ($h' - d$) -9.5925
	log r cos $\phi' \lambda$ +9.2445
	log sin D +9.6098
log r cos $\phi' \lambda$ sin ($h' - d$) sin D =	log v' -8.4468
	log n sin N +9.6130
	log n cos N +9.1769
	log tan N +0.4361
	log sin N +9.9727
	log n +9.6403
From first determination,	log m +8.7731
	- log $\frac{m}{n}$ -9.1328
	log cos ($M - N$) +9.7811
	log sin ($M - N$) -9.9014
	log m sin ($M - N$) -8.6745
	log k 9.4350
log $\frac{m \sin (M - N)}{k}$ =	log cos ψ -9.2395
	log sin ψ +9.9934
	log k sin ψ +9.4284
log $\frac{k \sin \psi}{n}$ =	log (2) +9.7881
- log $\frac{m}{n}$ cos ($M - N$) =	log (1) -8.9139
	(1) - .0820
	(2) + .6139
(1) + (2) =	t + .5319
From first determination,	M 17° 3'
	N 69 53
	$M - N$ 307 10
	90° - N 20 7
	ψ 100 0
For <i>Emersion</i> , 90° - N + ψ =	Q 120 7

		h. m. s.
Sidereal equiv. for $\frac{1}{2} t_2$ =	$h - d$ -1 47 54	
	$\frac{1}{2} \mu_2$ + 15 45	
$h - d + \frac{1}{2} \mu =$	$h' - d$ -1 32 9	
	$q' +$.1223	
	$v' -$.0280	
$q' - v' =$	n cos N + .1503	
	$p' +$.5717	
	$u' +$.1615	
$p' - n' =$	n sin N + .4102	
	log t +9.7258	
	log n sin N +9.6130	
	log n t sin N +9.2388	
	log n cos N +9.1769	
	log n t cos N +8.9027	
	n t cos N + .0799	
From first determination,	m cos M + n t cos N =	(3) .1366
		n t sin N + .2182
From first determination,	m sin M + n t sin N =	(4) .2356
		(4) ² .0555
		(3) ² .0187
(3) ² + (4) ² = k^2 = 0.0741,	Check	.0742
	log u' +9.2084	
	log t u' +8.9342	
	log v' -8.4468	
	log t v' -8.1726	
	t v' - .0149	
From first determination,	v + .4341	
$v + t$ $v' =$	c cos C + 4192	
	t u' + .0859	
From first determination,	u - .3033	
$u + t$ $u' =$	c sin C - .2174	
	log c sin C -9.3373	
	log c cos C +9.6224	
	log tan C -9.7149	

	h. m.
(Reduced to hours and minutes),	$T - d$ 6 53.2
	t + 0 31.9
EMERSION: Point Hudson Mean Time,	$T - d + t$ 7 25.1

	C - 27° 25'
Emersion Angle from North Point =	Q 120 7
Emersion Angle from Vertex = $Q + V$ =	V 92 42

The last three pages of the Occultations contain a list of such Occultations as will be visible at Washington during the year 1860.

The Tables of *Jupiter's Satellites* embrace, —

A list of the occultations, eclipses, transits, and transits of shadows, in the order of the time of the occurrence of the phenomena for the satellites taken promiscuously. They are given for every month, accompanied with a diagram, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipses for an inverting telescope.

A table containing the mean time of the geocentric superior conjunction, and the rectangu-

lar coördinates of the satellites corresponding to the time from the next preceding superior conjunction, at intervals of twenty minutes for the first satellite, of forty minutes for the second, of one hour and twenty minutes for the third, and of three hours for the fourth satellite. They are also given for the time of eclipse for the first, second, and third satellites at intervals of seven days, and for the fourth for every eclipse. They enable the astronomer to obtain the configurations at all times. They are given in seconds of arc.

The coördinates have their origin in the centre of the primary, and are referred to the major and minor axes of the apparent ellipse described by the path of the satellite.

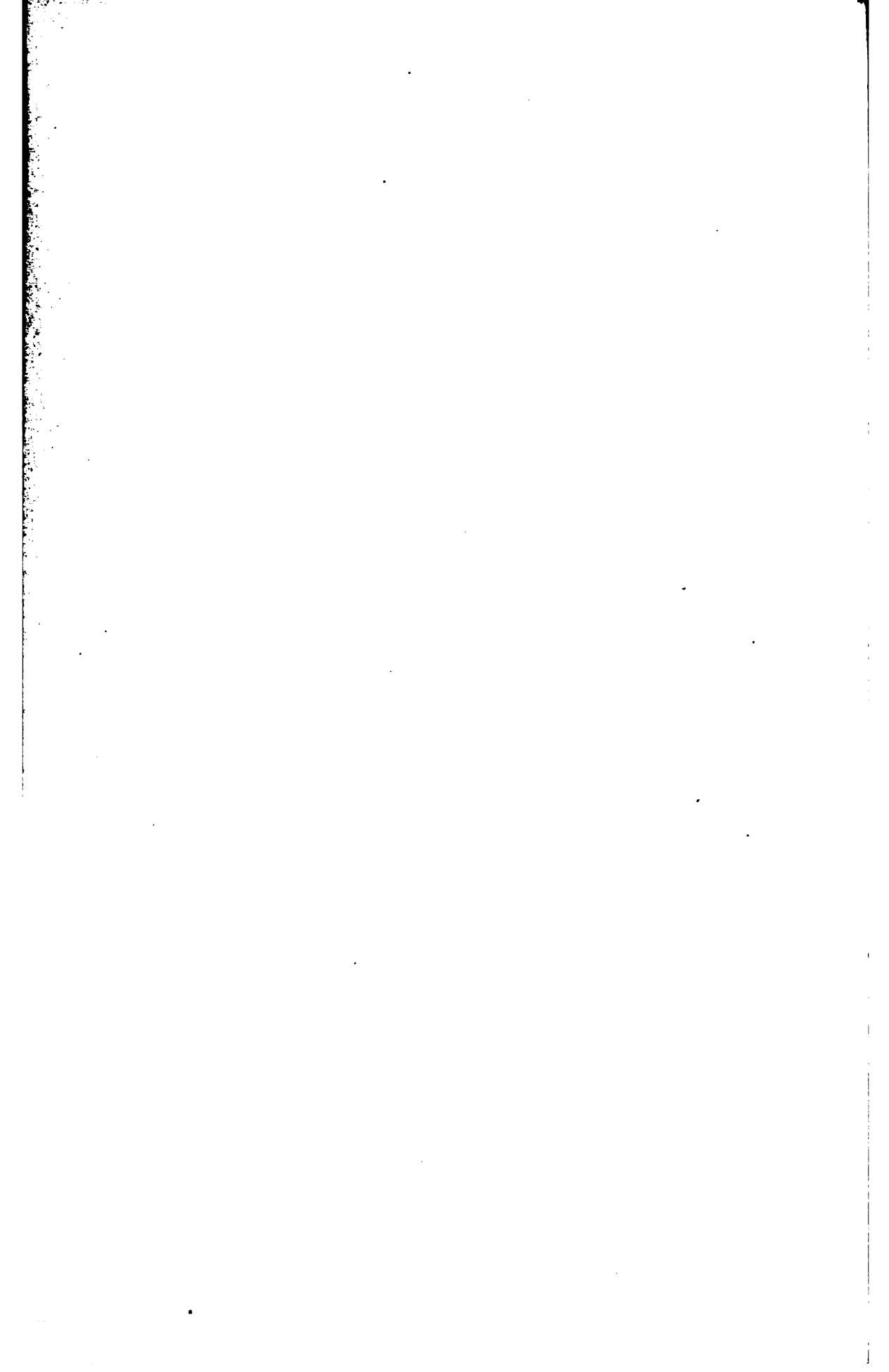
The major axis of this ellipse is constant, for the earth's mean place; but the minor axis takes all values from the positive and negative maxima to zero, owing to the changes in the earth's elevation above the plane of the satellite's orbit.

The values in the table correspond to the maximum value of the conjugate axis, as seen from the sun or that of the mean maximum for the earth (which is a constant value). Factors are given in an adjoining column, at intervals of seven days for the first, second, and third satellites, and seventeen days for the fourth, to reduce the above values to those corresponding to the axis for the time being; also for the same intervals, the angle of inclination of the northern semi-minor axis to the circle of declination.

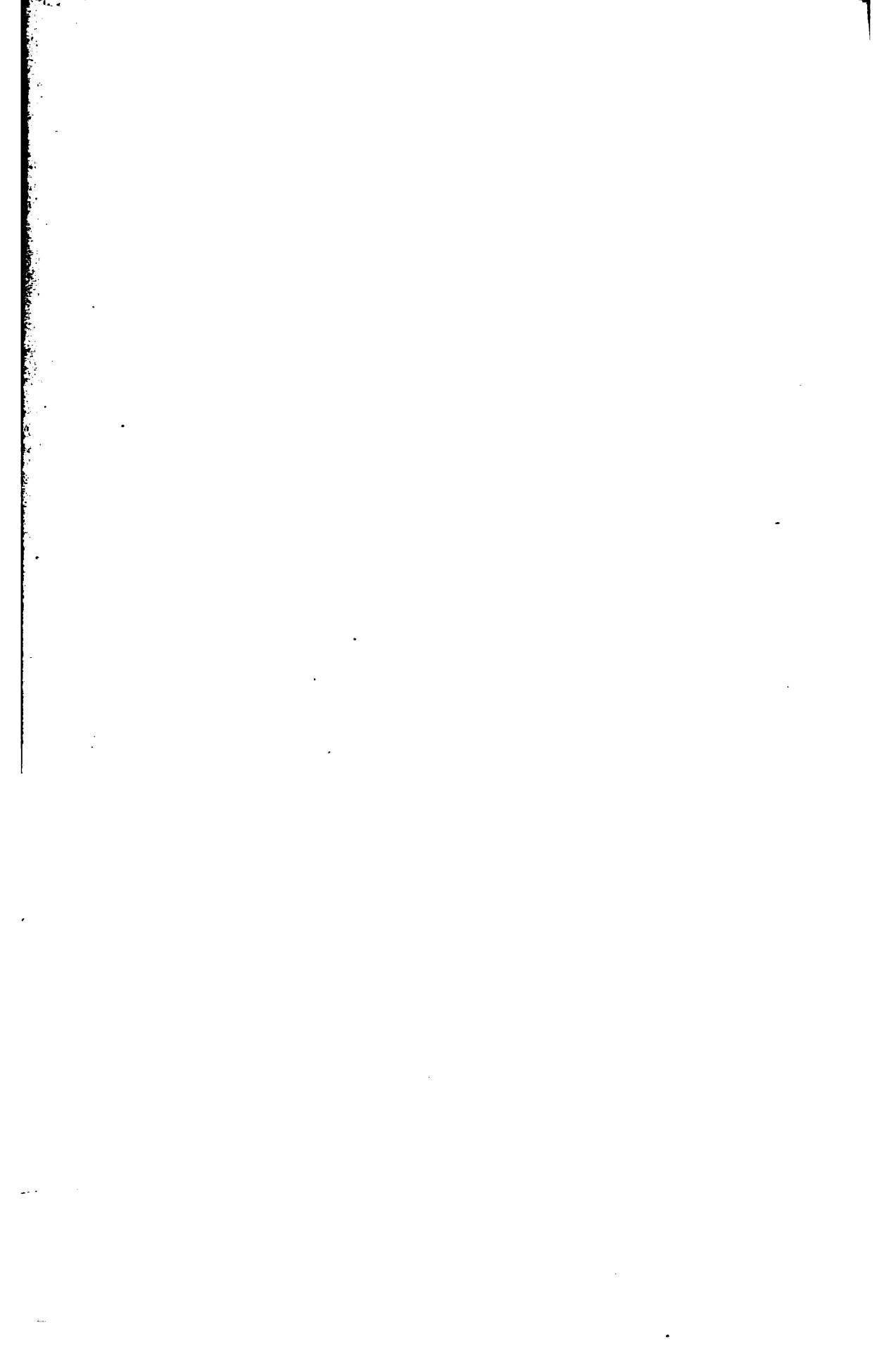
x is positive after superior conjunction, or on the east side of the planet, negative before superior conjunction, or on the west side. y will be positive north, negative south. The eclipses, occultations, &c. of the satellites, visible at Washington, that is, those which occur when the sun is 8° below and Jupiter 8° above the horizon, are distinguished by a *W.* placed after the name of the phase.

The *Appendix* contains an article on the construction of this work, similar to that of the preceding year.

It also contains tables of reduction from the equator to the ecliptic, and the reverse; a general table for the Libration of the Moon, constructed by means of the formulas on page 334, and furnishing the values to be employed in the computation of the moon's libration in latitude and longitude (see page 334); a table showing the moon's mean motion in longitude for sidereal intervals of time, carried out to tenths of minutes; a table of logarithms of small arcs in space and time; a table showing the correction required on account of second differences in the moon's motion, the use of which is explained in the preceding part of this article, page 478; a table for converting mean solar into sidereal time, and the reverse; and a table containing the corrections to be applied to the places of Polaris and δ Ursæ Minoris in the years 1857, 1858, and 1859, arising from the terms of nutation depending upon 2 C .



A P P E N D I X .



CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1860.

THE Precession of the Equinoxes adopted in this volume is taken from STRUVE and PETERS; * it is,

$$\text{Precession} = 50''.2411 + 0''.0002268 t,$$

in which t is the number of years after 1800.

The Mean Obliquity of the Ecliptic is also taken from STRUVE and PETERS, and its value is, †

$$\text{Obliquity} = 23^\circ 27' 54''.22 - 0''.4645 t - 0''.0000014 t^2.$$

The constant of aberration is that of STRUVE, and is, ‡

$$\text{Aberration} = 20''.4451 \pm 0''.0111.$$

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulas given in his *Numerus Constans Nutationis*. § These formulas are reprinted in the volume of this ephemeris for 1855.

Of the Mean Places of 100 Fixed Stars, thirty-three have been taken from LE VERRIER'S list of Fundamental Stars, *Annales de l'Observatoire Impériale de Paris*, Vol. II.; nine from a list of Circumpolar Stars prepared by Dr. GOULD, *U. S. Coast Survey Report*, 1855; and the remainder from the list of stars in the *English Nautical Almanac* for 1855, combined with that given in the *Astronomical Observations made during the Year 1846 at the National Observatory, Washington*.

The Apparent Places of the Fixed Stars have been obtained by means of PETERS' formulas, which are given on page 255.

The place of Sirius is corrected by the following formula, given by PETERS, for the variability of its motion in right ascension compared with those of β Orionis, α Orionis, and Procyon.

$$\text{Variation of right ascension} = 0''.101 + 0''.00072 t + 0''.170 \sin. (u + 92^\circ 18');$$

in which

* PETERS' *Numerus Constans Nutationis*, p. 71.

† Ibid., pp. 66 and 71.

‡ STRUVE'S *Constant de l'Aberration*, p. 47.

§ PETERS' *Numerus Constans Nutationis*, pp. 46-48.

APPENDIX.

ω = the eccentric anomaly from the inferior apsis. It is found from the elements,

Mean annual motion of Sirius in its orbit	= $7^{\circ}.3104 \pm 0^{\circ}.2162$
Period of its revolution	= $49^{\circ}.245 \pm 1^{\circ}.456$
Passage through the inferior apsis	= $1792.819 \pm 2^{\circ}.039$
Eccentricity	= 0.5647 ± 0.0627 .

The List of Moon-culminating Stars is large, and so arranged in a systematic form as to permit the observer a great range for selection.

The Ephemeris of the Sun is constructed from the Tables of HANSEN and OLUFSEN, Copenhagen, 1853. In the computation of the Sun's Geocentric Coördinates, regard has been had to the sun's latitude; the computation has been made by means of the formulas given in the *Construction of the Almanac for 1855*.

ENCKE's discussion of the Transits of Venus in 1761 and 1769, in his *Der Venusdurchgang von 1769, &c.*, has furnished the standard

Equatorial Horizontal Parallax at the Earth's Mean Distance = $8''.5776$.

The Sun's Semidiameter at the Earth's Mean Distance has been taken equal to $16' 2''$.

For reducing observations of different observers, the following corrections may be added:—

For Greenwich Mural Circle, H.	+ 0.21
“ “ “ “ H. B.	— 0.43
“ “ “ “ F.	— 0.86
“ “ “ “ E.	+ 0.17
“ “ “ “ R.	— 0.57
“ “ “ “ G.	— 0.18
“ “ “ “ I. H.	— 0.87
“ “ “ “ D.	— 0.61
“ “ “ “ W. R.	+ 0.49
“ “ “ “ P.	— 1.28
Königsberg Meridian Circle, Bessel	— 1.10
Dorpat “ “ W. Struve	— 1.36
Washington Mural Circle, Prof. Coffin	+ 1.00
“ “ “ Lieut. Page	+ 1.00
Washington Meridian Circle, Prof. Hubbard	— 0.41

The Ephemeris of the Moon has been constructed from PEIRCE's *Tables of the Moon*, with the *Tables of the Moon's Parallax*, constructed from WALKER's and ADAMS' formulas, and arranged as a Supplement to the first edition of PEIRCE's *Tables of the Moon*.

The Semidiameter of the Moon at the Earth's Mean Distance is taken to be $\frac{1}{100}$ part greater than that given by BURCKHARDT, although that given by BURCKHARDT is probably better adapted to the computation of eclipses and occultations.

CONSTRUCTION OF THE ALMANAC.

The Ephemeris of Mercury has been constructed from the theory of LE VERRIER, published in the *Additions* to the *Connaissance des Temps* for 1848, without any alteration. Manuscript Tables have been computed from LE VERRIER'S formulas for this purpose.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from LINDENAU'S Tables, in a form similar to that adopted for the Lunar Tables; applying AIRY'S Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. HUGH BREEN'S results contained in his paper on the *Corrections of LINDENAU'S Elements of the Orbit of Venus, &c.*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from LE VERRIER'S *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0.

$$\begin{aligned} L &= 289^{\circ} 51' 53.5'' \\ \pi &= 129 32 59.6 + 49''.57459 t. \\ \Omega &= 75 23 27.3 + 32.88424 t. \\ i &= 3 23 34.6 + 0.04363 t. \\ e &= 1410''.6847 - 0.11157 t. \\ n &= 2106641.438 \\ a &= 0.7233323 \end{aligned}$$

The Ephemeris of Mars is derived from manuscript Tables constructed from LINDENAU'S Tables in the same manner as the Tables of Venus. 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 following are the corresponding corrected elements, and secular variations for Washington, 1855.0.

$$\begin{aligned} L &= 320^{\circ} 13' 33.71'' \\ \pi &= 333 23 17.80 + 65''.99145 t. \\ \Omega &= 48 25 55.18 + 27.68294 t. \\ i &= 1 51 2.20 - 0.02141 t. \\ e &= 19238''.75 + 0.18549 t. \\ n &= 689050.9023 \\ a &= 1.5236878 \end{aligned}$$

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 formulas.

The Ephemeris of Saturn is also derived from manuscript Tables constructed from the Tables of BOUVARD, with changes having the same object. The mass of Jupiter given by BESSEL has been adopted and used.

$$\text{This mass} = \frac{1}{1047.879 \pm 0.235} \text{ of the sun's mass.}$$

The following corrections of the elements have also been introduced for 1859 :—

APPENDIX.

corr. mean long. for Jan. 1, 1860	= +4".9
corr. long. of node	= -143".4
corr. inclination	= -5".7.

The Ephemeris of Uranus is derived from the elliptical portion of BOUVARD'S Tables, with LE VERRIER'S corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel (dite Uranus)*, published in the *Connaissance des Temps* for 1849, and also PEIRCE'S corrections and perturbations arising from the influence of Neptune,

The combined corrections of the elements deduced by PEIRCE for January 1, 1800, are as follows:—

corr. mean distance	= +0.000942
corr. mean motion	= -1."13560
corr. eccentricity	= -0.0003626
corr. long. of per.	= +8252".4
corr. long. of epoch	= +2575".4.

The Ephemeris of Neptune is derived from PEIRCE'S theory and WALKER'S orbit. The eclipses and elongations of Jupiter's Satellites are computed from DAMOISEAU'S Tables.

The vertical semidiameters of the Planets are computed from the following values:—

	Vertical Semidiameter.	Log. Dist.	Authority
Mercury	3.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 ± 0.086	0.00	
Mars	2.842 ± 0.057	0.25	PEIRCE, from the Washington Observations of 1845 and 1846, made with the mural circle.
Jupiter	18.78 ± 0.067	0.70	
Saturn	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	

To correspond to the apparent semidiameters observed with the Washington mural circle, all the semidiameters, except those of Mercury, computed from these values, must be increased by a constant quantity = 0".57.

The apparent elements of Saturn's Rings are computed from BESSEL'S data, except those for BOND'S dusky ring.

The elements of the eclipse are adapted to the neat and simple modification of BESSEL'S formulas, suggested by T. HENRY SAFFORD, Jr.

The elements adapted to BESSEL'S formulas are given for all occultations of stars greater than those of the sixth magnitude.

The Heliocentric Coördinates of the Planets are given for the computation of perturbations, and the following are the values of the masses, that of the Sun being unity:—

Mercury	$\frac{1}{4865751}$	ENCKE, <i>A. N.</i> , No. 443.
Venus	$\frac{1}{390000}$	LE VERRIER, <i>Théor. de Merc.</i> , p. 115.

CONSTRUCTION OF THE ALMANAC.

The Earth	$\frac{1}{354936}$	LE VERRIER, <i>Théor. de Merc.</i> , p. 26.
Mars	$\frac{1}{2680637}$	BURCKHARDT, <i>Conn. des Temps</i> , 1816, p. 343.
Jupiter	$\frac{1}{1047.879 \pm 0.935}$	BESSEL, <i>Die Masse des Jupiter</i> , p. 64.
Saturn	$\frac{1}{3501.6}$	BESSEL, <i>Comptes Rendus</i> , 1841.
Uranus	$\frac{1}{24905}$	LAMONT, <i>Mem. Ast. Soc.</i> , Vol. XI p. 54.
Neptune	$\frac{1}{18780}$	PEIRCE, <i>Am. Ac. Proc.</i> , Vol. I. p. 333.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the stereotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

The principal computations of the Ephemeris have been distributed in the following manner.

The Sun has been computed by Mr. EASTWOOD. The Moon, with the Culminations and Lunar Distances, has been divided between Mr. RUNKLE, Mr. OLIVER, Mr. LOOMIS, Mr. KEER, Mr. WRIGHT, and T. H. SAFFORD, Jr. Mercury has been computed by Mr. BRADFORD and Mr. NEWCOMB, Venus by Miss MITCHELL, Mars by Mr. BARDWELL and Mr. NEWCOMB, Jupiter by Professor KENDALL, Saturn by Professor VAN VLECK, Uranus by Mr. FERREL, and Neptune by Professor KENDALL. The Fixed Stars have been computed by Mr. SPRAGUE, the General Constants for Reduction by Professor PEIRCE, and the Occultations by Mr. DOWNES. The Eclipses have been computed by Mr. RUNKLE, and the Charts projected by Mr. WRIGHT. The Table of Geographical Positions of the Principal Observatories has been prepared by Dr. GOULD.

EQUATOR TO ECLIPTIC.

TABLE FOR CHANGING LATITUDE AND LONGITUDE TO RIGHT ASCENSION AND DECLINATION, OR THE REVERSE.

<i>k</i>	<i>k</i>	<i>A</i>	<i>a</i>	Diff.	Log. <i>a</i>	Diff.	<i>b</i>	Log. <i>b</i>	<i>B</i>	Diff.	<i>k</i>	<i>k</i>			
0	h. m.	0	0.0	0.3981	1	9.6000	1	0.9173	9.9625	0	0.0	26.0	12	0	180
1	0 4	0	5.4	0.3980	2	9.5999	2	0.9174	9.9626	0	26.0	26.1	11	56	179
2	0 8	0	10.8	0.3978	3	9.5997	3	0.9175	9.9626	0	52.1	26.0	11	52	178
3	0 12	0	16.2	0.3975	4	9.5994	4	0.9176	9.9627	1	18.1	25.9	11	48	177
4	0 16	0	21.5	0.3971	5	9.5989	5	0.9178	9.9627	1	44.0	25.9	11	44	176
5	0 20	0	26.9	0.3966	7	9.5983	7	0.9180	9.9628	2	9.9	25.9	11	40	175
6	0 24	0	32.2	0.3959	8	9.5976	8	0.9183	9.9630	2	35.8	25.8	11	36	174
7	0 28	0	37.4	0.3951	9	9.5967	9	0.9186	9.9631	3	1.6	25.8	11	32	173
8	0 32	0	42.6	0.3942	10	9.5957	10	0.9190	9.9633	3	27.4	25.6	11	28	172
9	0 36	0	47.7	0.3932	13	9.5946	13	0.9195	9.9635	3	53.0	25.6	11	24	171
10	0 40	0	52.8	0.3920	13	9.5933	14	0.9200	9.9638	4	18.6	25.4	11	20	170
11	0 44	0	57.8	0.3907	13	9.5919	15	0.9205	9.9640	4	44.0	25.3	11	16	169
12	0 48	1	2.7	0.3894	15	9.5904	17	0.9211	9.9643	5	9.3	25.2	11	12	168
13	0 52	1	7.5	0.3879	16	9.5887	18	0.9217	9.9646	5	34.5	25.1	11	8	167
14	0 56	1	12.8	0.3863	17	9.5869	20	0.9224	9.9649	5	59.6	24.9	11	4	166
15	1 0	1	17.0	0.3846	19	9.5849	21	0.9231	9.9652	6	24.5	24.8	11	0	165
16	1 4	1	21.5	0.3827	20	9.5828	22	0.9239	9.9656	6	49.3	24.6	10	56	164
17	1 8	1	25.9	0.3807	21	9.5806	24	0.9247	9.9660	7	13.9	24.4	10	52	163
18	1 12	1	30.2	0.3786	22	9.5782	25	0.9256	9.9664	7	38.3	24.2	10	48	162
19	1 16	1	34.4	0.3764	23	9.5757	27	0.9265	9.9668	8	2.5	24.0	10	44	161
20	1 20	1	38.5	0.3741	24	9.5730	29	0.9274	9.9673	8	26.5	23.9	10	40	160
21	1 24	1	42.4	0.3717	26	9.5701	30	0.9284	9.9677	8	50.4	23.6	10	36	159
22	1 28	1	46.2	0.3691	27	9.5671	31	0.9294	9.9682	9	14.0	23.4	10	32	158
23	1 32	1	49.9	0.3664	27	9.5640	33	0.9304	9.9687	9	37.4	23.3	10	28	157
24	1 36	1	53.4	0.3637	29	9.5607	35	0.9315	9.9692	10	0.6	22.9	10	24	156
25	1 40	1	56.7	0.3608	30	9.5572	36	0.9326	9.9697	10	23.5	22.7	10	20	155
26	1 44	1	59.9	0.3578	31	9.5536	38	0.9338	9.9708	10	46.2	22.5	10	16	154
27	1 48	2	2.9	0.3547	32	9.5498	39	0.9350	9.9708	11	8.7	22.2	10	12	153
28	1 52	2	5.8	0.3515	33	9.5459	41	0.9362	9.9714	11	30.9	21.9	10	8	152
29	1 56	2	8.5	0.3482	34	9.5418	43	0.9374	9.9719	11	52.8	21.7	10	4	151
30	2 0	2	11.1	0.3448	35	9.5375	45	0.9387	9.9725	12	14.5	21.4	10	0	150
31	2 4	2	13.5	0.3413	37	9.5330	46	0.9400	9.9731	12	35.9	21.1	9	56	149
32	2 8	2	15.7	0.3376	38	9.5284	48	0.9413	9.9737	12	57.0	20.8	9	52	148
33	2 12	2	17.7	0.3338	38	9.5236	51	0.9426	9.9748	13	17.8	20.6	9	48	147
34	2 16	2	19.6	0.3300	39	9.5185	52	0.9440	9.9750	13	38.4	20.2	9	44	146
35	2 20	2	21.3	0.3261	40	9.5133	54	0.9453	9.9756	13	58.6	20.0	9	40	145
36	2 24	2	22.8	0.3221	41	9.5079	56	0.9467	9.9762	14	18.6	19.6	9	36	144
37	2 28	2	24.1	0.3180	43	9.5023	58	0.9481	9.9768	14	38.2	19.3	9	32	143
38	2 32	2	25.2	0.3137	44	9.4965	60	0.9495	9.9775	14	57.5	19.0	9	28	142
39	2 36	2	26.2	0.3093	44	9.4905	63	0.9509	9.9781	15	16.5	18.6	9	24	141
40	2 40	2	27.0	0.3049	45	9.4842	65	0.9524	9.9788	15	35.1	18.4	9	20	140
41	2 44	2	27.6	0.3004	46	9.4777	67	0.9538	9.9794	15	53.5	18.0	9	16	139
42	2 48	2	28.0	0.2958	47	9.4710	69	0.9552	9.9801	16	11.5	17.7	9	12	138
43	2 52	2	28.2	0.2911	47	9.4641	72	0.9566	9.9807	16	29.2	17.3	9	8	137
44	2 56	2	28.2	0.2864	49	9.4569	74	0.9581	9.9814	16	46.5	17.0	9	4	136
45	3 0	2	28.1	0.2815	50	9.4495	78	0.9595	9.9820	17	3.5	16.7	9	0	135
46	3 4	2	27.8	0.2765	50	9.4417	80	0.9610	9.9827	17	20.2	16.3	8	56	134
47	3 8	2	27.3	0.2715	51	9.4337	82	0.9625	9.9834	17	36.5	15.9	8	52	133
48	3 12	2	26.6	0.2664	52	9.4255	86	0.9639	9.9840	17	52.4	15.6	8	48	132
49	3 16	2	25.8	0.2612	53	9.4169	89	0.9653	9.9847	18	8.0	15.3	8	44	131
50	3 20	2	24.8	0.2559	54	9.4080	92	0.9667	9.9853	18	23.3	14.9	8	40	130
51	3 24	2	23.6	0.2505	54	9.3988	95	0.9681	9.9859	18	38.2	14.5	8	36	129
52	3 28	2	22.2	0.2451	55	9.3893	99	0.9695	9.9865	18	52.7	14.2	8	32	128
53	3 32	2	20.7	0.2396	56	9.3794	102	0.9709	9.9872	19	6.9	13.8	8	28	127
54	3 36	2	19.0	0.2340	57	9.3692	106	0.9722	9.9878	19	20.7	13.4	8	24	126
55	3 40	2	17.1	0.2283	57	9.3586	111	0.9736	9.9884	19	34.1	13.1	8	20	125

EQUATOR TO ECLIPTIC.

TABLE FOR CHANGING LATITUDE AND LONGITUDE TO RIGHT ASCENSION AND DECLINATION, OR THE REVERSE.

<i>k</i>	<i>k</i>	<i>A</i>	<i>a</i>	Diff.	Log. <i>a</i>	Diff.	<i>b</i>	Log. <i>b</i>	<i>B</i>	Diff.	<i>k</i>	<i>k</i>
°	h. m.	°							°		h. m.	°
56	3 44	2 15.1	0.2226	58	9.3475	114	0.9749	9.9890	19 47.2	12.7	8 16	124
57	3 48	2 13.0	0.2168	59	9.3361	119	0.9762	9.9895	19 59.9	12.3	8 11	123
58	3 52	2 10.7	0.2109	59	9.3242	124	0.9775	9.9901	20 12.2	12.0	8 8	122
59	3 56	2 8.2	0.2050	60	9.3118	129	0.9788	9.9907	20 24.2	11.6	8 4	121
60	4 0	2 5.6	0.1990	60	9.2989	134	0.9800	9.9912	20 35.8	11.2	8 0	120
61	4 4	2 2.8	0.1930	61	9.2855	139	0.9812	9.9918	20 47.0	10.9	7 56	119
62	4 8	1 59.9	0.1896	62	9.2716	146	0.9824	9.9923	20 57.9	10.4	7 52	118
63	4 12	1 56.9	0.1807	62	9.2570	152	0.9836	9.9928	21 8.3	10.1	7 48	117
64	4 16	1 53.7	0.1745	63	9.2418	159	0.9847	9.9933	21 18.4	9.7	7 44	116
65	4 20	1 50.4	0.1682	63	9.2259	166	0.9858	9.9938	21 28.1	9.4	7 40	115
66	4 24	1 47.0	0.1619	64	9.2093	175	0.9868	9.9942	21 37.5	8.9	7 36	114
67	4 28	1 43.5	0.1555	64	9.1918	183	0.9878	9.9947	21 46.4	8.6	7 32	113
68	4 32	1 39.8	0.1491	64	9.1735	192	0.9888	9.9951	21 55.0	8.2	7 28	112
69	4 36	1 36.1	0.1427	65	9.1543	203	0.9898	9.9955	22 3.2	7.9	7 24	111
70	4 40	1 32.2	0.1362	66	9.1340	214	0.9907	9.9959	22 11.1	7.4	7 20	110
71	4 44	1 28.9	0.1296	66	9.1126	227	0.9916	9.9963	22 18.5	7.1	7 16	109
72	4 48	1 24.2	0.1230	66	9.0899	240	0.9924	9.9967	22 25.6	6.7	7 12	108
73	4 52	1 20.0	0.1164	67	9.0659	256	0.9932	9.9970	22 32.3	6.3	7 8	107
74	4 56	1 15.7	0.1097	67	9.0403	273	0.9940	9.9974	22 38.6	5.9	7 4	106
75	5 0	1 11.4	0.1030	67	9.0130	294	0.9947	9.9977	22 44.5	5.6	7 0	105
76	5 4	1 7.0	0.0963	67	8.9836	315	0.9954	9.9980	22 50.1	5.1	6 56	104
77	5 8	1 2.5	0.0896	68	8.9521	342	0.9960	9.9982	22 55.2	4.8	6 52	103
78	5 12	0 58.0	0.0828	68	8.9179	373	0.9966	9.9985	23 0.0	4.4	6 48	102
79	5 16	0 53.4	0.0760	69	8.8806	410	0.9971	9.9987	23 4.4	4.0	6 41	101
80	5 20	0 48.7	0.0696	68	8.8396	453	0.9976	9.9990	23 8.4	3.6	6 40	100
81	5 24	0 44.0	0.0623	69	8.7943	508	0.9981	9.9992	23 12.0	3.3	6 36	99
82	5 28	0 39.2	0.0554	69	8.7435	576	0.9985	9.9993	23 15.3	2.8	6 32	98
83	5 32	0 34.4	0.0485	69	8.6859	667	0.9988	9.9995	23 18.1	2.5	6 28	97
84	5 36	0 29.6	0.0416	69	8.6192	789	0.9991	9.9996	23 20.6	2.1	6 24	96
85	5 40	0 24.7	0.0347	69	8.5403	967	0.9994	9.9997	23 22.7	1.7	6 20	95
86	5 44	0 19.8	0.0278	69	8.4436	1248	0.9996	9.9998	23 24.4	1.3	6 16	94
87	5 48	0 14.9	0.0209	70	8.3188	1760	0.9998	9.9999	23 25.7	1.0	6 12	93
88	5 52	0 9.9	0.0139	69	8.1428	3010	0.9999	0.0000	23 26.7	0.6	6 8	92
89	5 56	0 5.0	0.0070	70	7.8418		1.0000	0.0000	23 27.3	0.2	6 4	91
90	6 0	0 0.0	0.0000				1.0000	0.0000	23 27.5		6 0	90

This table is computed for an obliquity of 23° 27' 30".

The argument *k* is either the longitude or the right ascension, or their excess above 180° or 12^h.

Right ascension (*α*) and declination (*δ*) are converted into longitude (*λ*) and latitude (*β*) by the formulæ

$$k = \alpha \text{ or } = \alpha - 12^h \quad \left| \quad \begin{array}{l} \text{in which the sign of } \alpha \text{ is that of } \cos. \alpha \\ \text{the sign of } B \text{ is that of } \sin. \alpha \\ \text{the sign of } A \text{ is that of } \tan. \alpha \end{array} \right.$$

$$\tan. p = \alpha \tan. (\delta - B)$$

$$\tan. \beta = b \tan. (\delta - B) \cos. p$$

$$\lambda = \alpha + A + p$$

Longitude (*λ*) and latitude (*β*) are converted into right ascension and declination by the formulæ

$$k = \lambda \text{ or } = \lambda - 180^\circ \quad \left| \quad \begin{array}{l} \text{in which the sign of } \alpha \text{ is that of } \cos. \lambda \\ \text{the sign of } B \text{ is that of } \sin. \lambda \\ \text{the sign of } A \text{ is that of } \tan. \lambda \end{array} \right.$$

$$\tan. g = \alpha \tan. (\beta + B)$$

$$\tan. \delta = b \tan. (\beta + B) \cos. g$$

$$\alpha = \lambda + A - g$$

The following approximate formulæ can be used when *β* is less than 10°.

$$\beta = b (\delta - B)$$

$$\lambda = \alpha + A + \alpha (\delta - B) \sec. \beta$$

and the factor sec. *β* can be neglected when *β* is less than 4°.

MOON'S LIBRATION.

TABLE FOR THE LIBRATION OF THE MOON.									
$\Omega - \lambda$	$\Delta \lambda$	a	B	$\Omega - \lambda$	$\Omega - \lambda$	$\Delta \lambda$	a	B	$\Omega - \lambda$
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					

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

When $\Omega - \lambda$ exceeds 180° the table is to be entered with $(\Omega - \lambda) - 180^\circ$ as the argument in the column $\Omega - \lambda$.

MOON'S MEAN MOTION.

MOON'S MEAN MOTION IN LONGITUDE FOR SIDEREAL INTERVALS.					
Day.	C's Motion in Longitude.	Minutes.	C's Motion in Longitude.	Minutes.	C's Motion in Longitude.
	° /		/	30	/
1	13 8.4	1	0.5	31	16.4
2	26 16.9	2	1.1	32	17.5
3	39 25.3	3	1.6	33	18.1
4	52 33.7	4	2.2	34	18.6
5	65 42.1	5	2.7	35	19.2
6	78 50.6	6	3.3	36	19.7
7	91 59.0	7	3.8	37	20.3
8	105 7.4	8	4.4	38	20.8
9	118 15.8	9	4.9	39	21.4
10	131 24.3	10	5.5	40	21.9
Hour.		11	6.0	41	22.4
		12	6.6	42	23.0
1	0 32.9	13	7.1	43	23.5
2	1 5.7	14	7.7	44	24.1
3	1 38.6	15	8.2	45	24.6
4	2 11.3	16	8.8	46	25.2
5	2 44.3	17	9.3	47	25.7
6	3 17.1	18	9.9	48	26.3
7	3 50.0	19	10.4	49	26.8
8	4 22.8	20	11.0	50	27.4
9	4 55.7	21	11.5	51	27.9
10	5 28.5	22	12.0	52	28.5
11	6 1.4	23	12.5	53	29.0
12	6 34.2	24	13.1	54	29.6
13	7 7.1	25	13.6	55	30.1
14	7 39.9	26	14.2	56	30.7
15	8 12.8	27	14.7	57	31.3
16	8 45.6	28	15.3	58	31.8
17	9 18.5	29	15.9	59	32.3
18	9 51.3	30	16.4	60	32.9
19	10 24.2			Seconds.	/
20	10 57.0			10	0.1
21	11 29.9			20	0.2
22	12 2.7			30	0.3
23	12 35.6			40	0.4
24	13 8.4			50	0.5
				60	0.5

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.											
Arc.	0	1	2	3	4	5	6	7	8	9	
0° 0'	1.0000	1.0414	1.0792	1.1139	1.1461	1.1761	1.2041	1.2304	1.2553	1.2788	
0 10	1.3010	1.3222	1.3424	1.3617	1.3802	1.3979	1.4150	1.4314	1.4472	1.4624	
0 20	1.4771	1.4914	1.5051	1.5185	1.5315	1.5441	1.5563	1.5682	1.5798	1.5911	
0 30	1.6021	1.6128	1.6232	1.6335	1.6435	1.6532	1.6628	1.6721	1.6812	1.6902	
0 40	1.6990	1.7076	1.7160	1.7243	1.7324	1.7404	1.7482	1.7559	1.7634	1.7709	
0 50	1.7782	1.7853	1.7924	1.7993	1.8062	1.8129	1.8195	1.8261	1.8325	1.8388	
0 1 0	1.8451	1.8513	1.8573	1.8633	1.8692	1.8751	1.8808	1.8865	1.8921	1.8976	
0 1 10	1.9031	1.9085	1.9138	1.9191	1.9243	1.9294	1.9345	1.9395	1.9445	1.9494	
0 1 20	1.9542	1.9589	1.9638	1.9685	1.9731	1.9777	1.9823	1.9868	1.9912	1.9956	
0 1 30	2.0000	2.0043	2.0086	2.0128	2.0170	2.0212	2.0253	2.0294	2.0334	2.0374	
0 1 40	2.0414	2.0453	2.0492	2.0531	2.0569	2.0607	2.0645	2.0682	2.0719	2.0755	
0 1 50	2.0792	2.0828	2.0864	2.0899	2.0934	2.0969	2.1004	2.1038	2.1072	2.1106	
0 2 0	2.1139	2.1173	2.1206	2.1239	2.1271	2.1303	2.1335	2.1367	2.1399	2.1430	
0 2 10	2.1461	2.1492	2.1523	2.1553	2.1584	2.1614	2.1644	2.1673	2.1703	2.1732	
0 2 20	2.1761	2.1790	2.1818	2.1847	2.1875	2.1903	2.1931	2.1959	2.1987	2.2014	
0 2 30	2.2041	2.2068	2.2095	2.2122	2.2148	2.2175	2.2201	2.2227	2.2253	2.2279	
0 2 40	2.2304	2.2330	2.2355	2.2380	2.2405	2.2430	2.2455	2.2480	2.2504	2.2529	
0 2 50	2.2553	2.2577	2.2601	2.2625	2.2648	2.2672	2.2695	2.2718	2.2742	2.2765	
0 3 0	2.2788	2.2810	2.2833	2.2856	2.2878	2.2900	2.2923	2.2945	2.2967	2.2989	
0 3 10	2.3010	2.3032	2.3054	2.3075	2.3096	2.3118	2.3139	2.3160	2.3181	2.3201	
0 3 20	2.3222	2.3243	2.3263	2.3284	2.3304	2.3324	2.3345	2.3365	2.3385	2.3404	
0 3 30	2.3424	2.3444	2.3464	2.3483	2.3502	2.3522	2.3541	2.3560	2.3579	2.3598	
0 3 40	2.3617	2.3636	2.3655	2.3674	2.3692	2.3711	2.3729	2.3747	2.3766	2.3784	
0 3 50	2.3802	2.3820	2.3838	2.3856	2.3874	2.3892	2.3909	2.3927	2.3945	2.3962	
0 4 0	2.3979	2.3997	2.4014	2.4031	2.4048	2.4065	2.4082	2.4099	2.4116	2.4133	
0 4 10	2.4150	2.4166	2.4183	2.4200	2.4216	2.4232	2.4249	2.4265	2.4281	2.4298	
0 4 20	2.4314	2.4330	2.4346	2.4362	2.4378	2.4393	2.4409	2.4425	2.4440	2.4456	
0 4 30	2.4472	2.4487	2.4502	2.4518	2.4533	2.4548	2.4564	2.4579	2.4594	2.4609	
0 4 40	2.4624	2.4639	2.4654	2.4669	2.4683	2.4698	2.4713	2.4728	2.4742	2.4757	
0 4 50	2.4771	2.4786	2.4800	2.4814	2.4829	2.4843	2.4857	2.4871	2.4886	2.4900	
0 5 0	2.4914	2.4928	2.4942	2.4955	2.4969	2.4983	2.4997	2.5011	2.5024	2.5038	
0 5 10	2.5051	2.5065	2.5079	2.5092	2.5105	2.5119	2.5132	2.5145	2.5159	2.5172	
0 5 20	2.5185	2.5198	2.5211	2.5224	2.5237	2.5250	2.5263	2.5276	2.5289	2.5302	
0 5 30	2.5315	2.5328	2.5340	2.5353	2.5366	2.5378	2.5391	2.5403	2.5416	2.5428	
0 5 40	2.5441	2.5453	2.5465	2.5478	2.5490	2.5502	2.5514	2.5527	2.5539	2.5551	
0 5 50	2.5563	2.5575	2.5587	2.5599	2.5611	2.5623	2.5635	2.5647	2.5658	2.5670	
0 6 0	2.5682	2.5694	2.5705	2.5717	2.5729	2.5740	2.5752	2.5763	2.5775	2.5786	
0 6 10	2.5798	2.5809	2.5821	2.5832	2.5843	2.5855	2.5866	2.5877	2.5888	2.5899	
0 6 20	2.5911	2.5922	2.5933	2.5944	2.5955	2.5966	2.5977	2.5988	2.5999	2.6010	
0 6 30	2.6021	2.6031	2.6042	2.6053	2.6064	2.6075	2.6085	2.6096	2.6107	2.6117	
0 6 40	2.6128	2.6138	2.6149	2.6160	2.6170	2.6180	2.6191	2.6201	2.6212	2.6222	
0 6 50	2.6232	2.6243	2.6253	2.6263	2.6274	2.6284	2.6294	2.6304	2.6314	2.6325	
0 7 0	2.6335	2.6345	2.6355	2.6365	2.6375	2.6385	2.6395	2.6405	2.6415	2.6425	
0 7 10	2.6435	2.6444	2.6454	2.6464	2.6474	2.6484	2.6493	2.6503	2.6513	2.6522	
0 7 20	2.6532	2.6542	2.6551	2.6561	2.6571	2.6580	2.6590	2.6599	2.6609	2.6618	
0 7 30	2.6628	2.6637	2.6646	2.6656	2.6665	2.6675	2.6684	2.6693	2.6702	2.6712	
0 7 40	2.6721	2.6730	2.6739	2.6749	2.6758	2.6767	2.6776	2.6785	2.6794	2.6803	
0 7 50	2.6812	2.6821	2.6830	2.6839	2.6848	2.6857	2.6866	2.6875	2.6884	2.6893	
0 8 0	2.6902	2.6911	2.6920	2.6928	2.6937	2.6946	2.6955	2.6964	2.6972	2.6981	
0 8 10	2.6990	2.6999	2.7007	2.7016	2.7024	2.7033	2.7042	2.7050	2.7059	2.7067	
0 8 20	2.7076	2.7084	2.7093	2.7101	2.7110	2.7118	2.7126	2.7135	2.7143	2.7152	
0 8 30	2.7160	2.7168	2.7177	2.7185	2.7193	2.7202	2.7210	2.7218	2.7226	2.7235	
0 8 40	2.7243	2.7251	2.7259	2.7267	2.7275	2.7284	2.7292	2.7300	2.7308	2.7316	
0 8 50	2.7324	2.7332	2.7340	2.7348	2.7356	2.7364	2.7372	2.7380	2.7388	2.7396	
0 9 0	2.7404	2.7412	2.7419	2.7427	2.7435	2.7443	2.7451	2.7459	2.7466	2.7474	
0 9 10	2.7482	2.7490	2.7497	2.7505	2.7513	2.7520	2.7528	2.7536	2.7543	2.7551	
0 9 20	2.7559	2.7566	2.7574	2.7582	2.7589	2.7597	2.7604	2.7612	2.7619	2.7627	
0 9 30	2.7634	2.7642	2.7649	2.7657	2.7664	2.7672	2.7679	2.7686	2.7694	2.7701	
0 9 40	2.7709	2.7716	2.7723	2.7731	2.7738	2.7745	2.7752	2.7760	2.7767	2.7774	
0 9 50											

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
0° 10' 0"	2.7782	2.7789	2.7796	2.7803	2.7810	2.7818	2.7825	2.7832	2.7839	2.7846
10 10	2.7853	2.7860	2.7868	2.7875	2.7882	2.7889	2.7896	2.7903	2.7910	2.7917
10 20	2.7924	2.7931	2.7938	2.7945	2.7952	2.7959	2.7966	2.7973	2.7980	2.7987
10 30	2.7993	2.8000	2.8007	2.8014	2.8021	2.8028	2.8035	2.8041	2.8048	2.8055
10 40	2.8062	2.8069	2.8075	2.8082	2.8089	2.8096	2.8102	2.8109	2.8116	2.8122
10 50	2.8129	2.8136	2.8142	2.8149	2.8156	2.8162	2.8169	2.8176	2.8182	2.8189
0 11 0	2.8195	2.8202	2.8209	2.8215	2.8222	2.8228	2.8235	2.8241	2.8248	2.8254
11 10	2.8261	2.8267	2.8274	2.8280	2.8287	2.8293	2.8299	2.8306	2.8312	2.8319
11 20	2.8325	2.8331	2.8338	2.8344	2.8351	2.8357	2.8363	2.8370	2.8376	2.8382
11 30	2.8388	2.8395	2.8401	2.8407	2.8414	2.8420	2.8426	2.8432	2.8439	2.8445
11 40	2.8451	2.8457	2.8463	2.8470	2.8476	2.8482	2.8488	2.8494	2.8500	2.8506
11 50	2.8513	2.8519	2.8525	2.8531	2.8537	2.8543	2.8549	2.8555	2.8561	2.8567
0 12 0	2.8573	2.8579	2.8585	2.8591	2.8597	2.8603	2.8609	2.8615	2.8621	2.8627
12 10	2.8633	2.8639	2.8645	2.8651	2.8657	2.8663	2.8669	2.8675	2.8681	2.8686
12 20	2.8692	2.8698	2.8704	2.8710	2.8716	2.8722	2.8727	2.8733	2.8739	2.8745
12 30	2.8751	2.8756	2.8762	2.8768	2.8774	2.8779	2.8785	2.8791	2.8797	2.8802
12 40	2.8808	2.8814	2.8820	2.8825	2.8831	2.8837	2.8842	2.8848	2.8854	2.8859
12 50	2.8865	2.8871	2.8876	2.8882	2.8887	2.8893	2.8899	2.8904	2.8910	2.8915
0 13 0	2.8921	2.8927	2.8932	2.8938	2.8943	2.8949	2.8954	2.8960	2.8965	2.8971
13 10	2.8976	2.8982	2.8987	2.8993	2.8998	2.9004	2.9009	2.9015	2.9020	2.9025
13 20	2.9031	2.9036	2.9042	2.9047	2.9053	2.9058	2.9063	2.9069	2.9074	2.9079
13 30	2.9085	2.9090	2.9096	2.9101	2.9106	2.9112	2.9117	2.9122	2.9128	2.9133
13 40	2.9138	2.9143	2.9149	2.9154	2.9159	2.9165	2.9170	2.9175	2.9180	2.9186
13 50	2.9191	2.9196	2.9201	2.9206	2.9212	2.9217	2.9222	2.9227	2.9232	2.9238
0 14 0	2.9243	2.9248	2.9253	2.9258	2.9263	2.9269	2.9274	2.9279	2.9284	2.9289
14 10	2.9294	2.9299	2.9304	2.9309	2.9315	2.9320	2.9325	2.9330	2.9335	2.9340
14 20	2.9345	2.9350	2.9355	2.9360	2.9365	2.9370	2.9375	2.9380	2.9385	2.9390
14 30	2.9395	2.9400	2.9405	2.9410	2.9415	2.9420	2.9425	2.9430	2.9435	2.9440
14 40	2.9445	2.9450	2.9455	2.9460	2.9465	2.9469	2.9474	2.9479	2.9484	2.9489
14 50	2.9494	2.9499	2.9504	2.9509	2.9513	2.9518	2.9523	2.9528	2.9533	2.9538
0 15 0	2.9542	2.9547	2.9552	2.9557	2.9562	2.9567	2.9571	2.9576	2.9581	2.9586
15 10	2.9590	2.9595	2.9600	2.9605	2.9609	2.9614	2.9619	2.9624	2.9628	2.9633
15 20	2.9638	2.9643	2.9647	2.9652	2.9657	2.9661	2.9666	2.9671	2.9675	2.9680
15 30	2.9685	2.9689	2.9694	2.9699	2.9703	2.9708	2.9713	2.9717	2.9722	2.9727
15 40	2.9731	2.9736	2.9741	2.9745	2.9750	2.9754	2.9759	2.9763	2.9768	2.9773
15 50	2.9777	2.9782	2.9786	2.9791	2.9795	2.9800	2.9805	2.9809	2.9814	2.9818
0 16 0	2.9823	2.9827	2.9832	2.9836	2.9841	2.9845	2.9850	2.9854	2.9859	2.9863
16 10	2.9868	2.9872	2.9877	2.9881	2.9886	2.9890	2.9894	2.9899	2.9903	2.9908
16 20	2.9912	2.9917	2.9921	2.9926	2.9930	2.9934	2.9939	2.9943	2.9948	2.9952
16 30	2.9956	2.9961	2.9965	2.9969	2.9974	2.9978	2.9983	2.9987	2.9991	2.9996
16 40	3.0000	3.0004	3.0009	3.0013	3.0017	3.0022	3.0026	3.0030	3.0035	3.0039
16 50	3.0043	3.0048	3.0052	3.0056	3.0060	3.0065	3.0069	3.0073	3.0077	3.0082
0 17 0	3.0086	3.0090	3.0095	3.0099	3.0103	3.0107	3.0111	3.0116	3.0120	3.0124
17 10	3.0128	3.0133	3.0137	3.0141	3.0145	3.0149	3.0154	3.0158	3.0162	3.0166
17 20	3.0170	3.0175	3.0179	3.0183	3.0187	3.0191	3.0195	3.0199	3.0204	3.0208
17 30	3.0212	3.0216	3.0220	3.0224	3.0228	3.0233	3.0237	3.0241	3.0245	3.0249
17 40	3.0253	3.0257	3.0261	3.0265	3.0269	3.0273	3.0278	3.0282	3.0286	3.0290
17 50	3.0294	3.0298	3.0302	3.0306	3.0310	3.0314	3.0318	3.0322	3.0326	3.0330
0 18 0	3.0334	3.0338	3.0342	3.0346	3.0350	3.0354	3.0358	3.0362	3.0366	3.0370
18 10	3.0374	3.0378	3.0382	3.0386	3.0390	3.0394	3.0398	3.0402	3.0406	3.0410
18 20	3.0414	3.0418	3.0422	3.0426	3.0430	3.0434	3.0438	3.0441	3.0445	3.0449
18 30	3.0453	3.0457	3.0461	3.0465	3.0469	3.0473	3.0477	3.0481	3.0484	3.0488
18 40	3.0492	3.0496	3.0500	3.0504	3.0508	3.0512	3.0515	3.0519	3.0523	3.0527
18 50	3.0531	3.0535	3.0538	3.0542	3.0546	3.0550	3.0554	3.0558	3.0561	3.0565
0 19 0	3.0569	3.0573	3.0577	3.0580	3.0584	3.0588	3.0592	3.0596	3.0599	3.0603
19 10	3.0607	3.0611	3.0615	3.0618	3.0622	3.0626	3.0630	3.0633	3.0637	3.0641
19 20	3.0645	3.0648	3.0652	3.0656	3.0660	3.0663	3.0667	3.0671	3.0674	3.0678
19 30	3.0682	3.0686	3.0689	3.0693	3.0697	3.0700	3.0704	3.0708	3.0711	3.0715
19 40	3.0719	3.0722	3.0726	3.0730	3.0734	3.0737	3.0741	3.0745	3.0748	3.0752
19 50	3.0755	3.0759	3.0763	3.0766	3.0770	3.0774	3.0777	3.0781	3.0785	3.0788

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
0° 20' 0"	3.0792	3.0795	3.0799	3.0803	3.0806	3.0810	3.0813	3.0817	3.0821	3.0824
20 10	3.0828	3.0831	3.0835	3.0839	3.0842	3.0846	3.0849	3.0853	3.0856	3.0860
20 20	3.0864	3.0867	3.0871	3.0874	3.0878	3.0881	3.0885	3.0888	3.0892	3.0896
20 30	3.0899	3.0903	3.0906	3.0910	3.0913	3.0917	3.0920	3.0924	3.0927	3.0931
20 40	3.0934	3.0938	3.0941	3.0945	3.0948	3.0952	3.0955	3.0959	3.0962	3.0966
20 50	3.0969	3.0973	3.0976	3.0980	3.0983	3.0986	3.0990	3.0993	3.0997	3.1000
0 21 0	3.1004	3.1007	3.1011	3.1014	3.1017	3.1021	3.1024	3.1028	3.1031	3.1035
21 10	3.1038	3.1041	3.1045	3.1048	3.1052	3.1055	3.1059	3.1062	3.1065	3.1069
21 20	3.1072	3.1075	3.1079	3.1082	3.1086	3.1089	3.1092	3.1096	3.1099	3.1103
21 30	3.1106	3.1109	3.1113	3.1116	3.1119	3.1123	3.1126	3.1129	3.1133	3.1136
21 40	3.1139	3.1143	3.1146	3.1149	3.1153	3.1156	3.1159	3.1163	3.1166	3.1169
21 50	3.1173	3.1176	3.1179	3.1183	3.1186	3.1189	3.1193	3.1196	3.1199	3.1202
0 22 0	3.1206	3.1209	3.1212	3.1216	3.1219	3.1222	3.1225	3.1229	3.1232	3.1235
22 10	3.1239	3.1242	3.1245	3.1248	3.1252	3.1255	3.1258	3.1261	3.1265	3.1268
22 20	3.1271	3.1274	3.1278	3.1281	3.1284	3.1287	3.1290	3.1294	3.1297	3.1300
22 30	3.1303	3.1307	3.1310	3.1313	3.1316	3.1319	3.1323	3.1326	3.1329	3.1332
22 40	3.1335	3.1339	3.1342	3.1345	3.1348	3.1351	3.1355	3.1358	3.1361	3.1364
22 50	3.1367	3.1370	3.1374	3.1377	3.1380	3.1383	3.1386	3.1389	3.1392	3.1396
0 23 0	3.1399	3.1402	3.1405	3.1408	3.1411	3.1414	3.1418	3.1421	3.1424	3.1427
23 10	3.1430	3.1433	3.1436	3.1440	3.1443	3.1446	3.1449	3.1452	3.1455	3.1458
23 20	3.1461	3.1464	3.1467	3.1471	3.1474	3.1477	3.1480	3.1483	3.1486	3.1489
23 30	3.1492	3.1495	3.1498	3.1501	3.1504	3.1507	3.1511	3.1514	3.1517	3.1520
23 40	3.1523	3.1526	3.1529	3.1532	3.1535	3.1538	3.1541	3.1544	3.1547	3.1550
23 50	3.1553	3.1556	3.1559	3.1562	3.1565	3.1569	3.1572	3.1575	3.1578	3.1581
0 24 0	3.1584	3.1587	3.1590	3.1593	3.1596	3.1599	3.1602	3.1605	3.1608	3.1611
24 10	3.1614	3.1617	3.1620	3.1623	3.1626	3.1629	3.1632	3.1635	3.1638	3.1641
24 20	3.1644	3.1647	3.1649	3.1652	3.1655	3.1658	3.1661	3.1664	3.1667	3.1670
24 30	3.1673	3.1676	3.1679	3.1682	3.1685	3.1688	3.1691	3.1694	3.1697	3.1700
24 40	3.1703	3.1706	3.1708	3.1711	3.1714	3.1717	3.1720	3.1723	3.1726	3.1729
24 50	3.1732	3.1735	3.1738	3.1741	3.1744	3.1746	3.1749	3.1752	3.1755	3.1758
0 25 0	3.1761	3.1764	3.1767	3.1770	3.1772	3.1775	3.1778	3.1781	3.1784	3.1787
25 10	3.1790	3.1793	3.1796	3.1798	3.1801	3.1804	3.1807	3.1810	3.1813	3.1816
25 20	3.1818	3.1821	3.1824	3.1827	3.1830	3.1833	3.1836	3.1838	3.1841	3.1844
25 30	3.1847	3.1850	3.1853	3.1855	3.1858	3.1861	3.1864	3.1867	3.1870	3.1872
25 40	3.1875	3.1878	3.1881	3.1884	3.1886	3.1889	3.1892	3.1895	3.1898	3.1901
25 50	3.1903	3.1906	3.1909	3.1912	3.1915	3.1917	3.1920	3.1923	3.1926	3.1928
0 26 0	3.1931	3.1934	3.1937	3.1940	3.1942	3.1945	3.1948	3.1951	3.1953	3.1956
26 10	3.1959	3.1962	3.1965	3.1967	3.1970	3.1973	3.1976	3.1978	3.1981	3.1984
26 20	3.1987	3.1989	3.1992	3.1995	3.1998	3.2000	3.2003	3.2006	3.2009	3.2011
26 30	3.2014	3.2017	3.2019	3.2022	3.2025	3.2028	3.2030	3.2033	3.2036	3.2038
26 40	3.2041	3.2044	3.2047	3.2049	3.2052	3.2055	3.2057	3.2060	3.2063	3.2066
26 50	3.2068	3.2071	3.2074	3.2076	3.2079	3.2082	3.2084	3.2087	3.2090	3.2092
0 27 0	3.2095	3.2098	3.2101	3.2103	3.2106	3.2109	3.2111	3.2114	3.2117	3.2119
27 10	3.2122	3.2125	3.2127	3.2130	3.2133	3.2135	3.2138	3.2140	3.2143	3.2146
27 20	3.2148	3.2151	3.2154	3.2156	3.2159	3.2162	3.2164	3.2167	3.2170	3.2172
27 30	3.2175	3.2177	3.2180	3.2183	3.2185	3.2188	3.2191	3.2193	3.2196	3.2198
27 40	3.2201	3.2204	3.2206	3.2209	3.2212	3.2214	3.2217	3.2219	3.2222	3.2225
27 50	3.2227	3.2230	3.2232	3.2235	3.2238	3.2240	3.2243	3.2245	3.2248	3.2250
0 28 0	3.2253	3.2256	3.2258	3.2261	3.2263	3.2266	3.2269	3.2271	3.2274	3.2276
28 10	3.2279	3.2281	3.2284	3.2287	3.2289	3.2292	3.2294	3.2297	3.2299	3.2302
28 20	3.2304	3.2307	3.2310	3.2312	3.2315	3.2317	3.2320	3.2322	3.2325	3.2327
28 30	3.2330	3.2333	3.2335	3.2338	3.2340	3.2343	3.2345	3.2348	3.2350	3.2353
28 40	3.2355	3.2358	3.2360	3.2363	3.2365	3.2368	3.2370	3.2373	3.2375	3.2378
28 50	3.2380	3.2383	3.2385	3.2388	3.2390	3.2393	3.2395	3.2398	3.2400	3.2403
0 29 0	3.2405	3.2408	3.2410	3.2413	3.2415	3.2418	3.2420	3.2423	3.2425	3.2428
29 10	3.2430	3.2433	3.2435	3.2438	3.2440	3.2443	3.2445	3.2448	3.2450	3.2453
29 20	3.2455	3.2458	3.2460	3.2463	3.2465	3.2467	3.2470	3.2472	3.2475	3.2477
29 30	3.2480	3.2482	3.2485	3.2487	3.2490	3.2492	3.2494	3.2497	3.2499	3.2502
29 40	3.2504	3.2507	3.2509	3.2512	3.2514	3.2516	3.2519	3.2521	3.2524	3.2526
29 50	3.2529	3.2531	3.2533	3.2536	3.2538	3.2541	3.2543	3.2545	3.2548	3.2550

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
0° 30' 0"	3.2553	3.2555	3.2558	3.2560	3.2563	3.2565	3.2567	3.2570	3.2572	3.2574
30 10	3.2577	3.2579	3.2582	3.2584	3.2586	3.2589	3.2591	3.2594	3.2596	3.2598
30 20	3.2601	3.2603	3.2606	3.2608	3.2610	3.2613	3.2615	3.2617	3.2620	3.2622
30 30	3.2625	3.2627	3.2629	3.2632	3.2634	3.2636	3.2639	3.2641	3.2643	3.2646
30 40	3.2648	3.2651	3.2653	3.2655	3.2658	3.2660	3.2662	3.2665	3.2667	3.2669
30 50	3.2672	3.2674	3.2676	3.2679	3.2681	3.2683	3.2686	3.2688	3.2690	3.2693
0 31 0	3.2695	3.2697	3.2700	3.2702	3.2704	3.2707	3.2709	3.2711	3.2714	3.2716
31 10	3.2718	3.2721	3.2723	3.2725	3.2728	3.2730	3.2732	3.2735	3.2737	3.2739
31 20	3.2742	3.2744	3.2746	3.2749	3.2751	3.2753	3.2755	3.2758	3.2760	3.2762
31 30	3.2765	3.2767	3.2769	3.2772	3.2774	3.2776	3.2778	3.2781	3.2783	3.2785
31 40	3.2788	3.2790	3.2792	3.2794	3.2797	3.2799	3.2801	3.2804	3.2806	3.2808
31 50	3.2810	3.2813	3.2815	3.2817	3.2819	3.2822	3.2824	3.2826	3.2828	3.2831
0 32 0	3.2833	3.2835	3.2838	3.2840	3.2842	3.2844	3.2847	3.2849	3.2851	3.2853
32 10	3.2856	3.2858	3.2860	3.2862	3.2865	3.2867	3.2869	3.2871	3.2874	3.2876
32 20	3.2878	3.2880	3.2882	3.2885	3.2887	3.2889	3.2891	3.2894	3.2896	3.2898
32 30	3.2900	3.2903	3.2905	3.2907	3.2909	3.2911	3.2914	3.2916	3.2918	3.2920
32 40	3.2923	3.2925	3.2927	3.2929	3.2931	3.2934	3.2936	3.2938	3.2940	3.2942
32 50	3.2945	3.2947	3.2949	3.2951	3.2953	3.2956	3.2958	3.2960	3.2962	3.2964
0 33 0	3.2967	3.2969	3.2971	3.2973	3.2975	3.2978	3.2980	3.2982	3.2984	3.2986
33 10	3.2989	3.2991	3.2993	3.2995	3.2997	3.2999	3.3002	3.3004	3.3006	3.3008
33 20	3.3010	3.3012	3.3015	3.3017	3.3019	3.3021	3.3023	3.3025	3.3028	3.3030
33 30	3.3033	3.3034	3.3036	3.3038	3.3041	3.3043	3.3045	3.3047	3.3049	3.3051
33 40	3.3054	3.3056	3.3058	3.3060	3.3062	3.3064	3.3066	3.3069	3.3071	3.3073
33 50	3.3075	3.3077	3.3079	3.3081	3.3084	3.3086	3.3088	3.3090	3.3092	3.3094
0 34 0	3.3096	3.3098	3.3101	3.3103	3.3105	3.3107	3.3109	3.3111	3.3113	3.3115
34 10	3.3118	3.3120	3.3122	3.3124	3.3126	3.3128	3.3130	3.3132	3.3134	3.3137
34 20	3.3139	3.3141	3.3143	3.3145	3.3147	3.3149	3.3151	3.3153	3.3156	3.3158
34 30	3.3160	3.3162	3.3164	3.3166	3.3168	3.3170	3.3172	3.3174	3.3176	3.3179
34 40	3.3181	3.3183	3.3185	3.3187	3.3189	3.3191	3.3193	3.3195	3.3197	3.3199
34 50	3.3201	3.3204	3.3206	3.3208	3.3210	3.3212	3.3214	3.3216	3.3218	3.3220
0 35 0	3.3222	3.3224	3.3226	3.3228	3.3230	3.3233	3.3235	3.3237	3.3239	3.3241
35 10	3.3243	3.3245	3.3247	3.3249	3.3251	3.3253	3.3255	3.3257	3.3259	3.3261
35 20	3.3263	3.3265	3.3267	3.3269	3.3272	3.3274	3.3276	3.3278	3.3280	3.3282
35 30	3.3284	3.3286	3.3288	3.3290	3.3292	3.3294	3.3296	3.3298	3.3300	3.3302
35 40	3.3304	3.3306	3.3308	3.3310	3.3312	3.3314	3.3316	3.3318	3.3320	3.3322
35 50	3.3324	3.3326	3.3328	3.3330	3.3332	3.3334	3.3336	3.3339	3.3341	3.3343
0 36 0	3.3345	3.3347	3.3349	3.3351	3.3353	3.3355	3.3357	3.3359	3.3361	3.3363
36 10	3.3365	3.3367	3.3369	3.3371	3.3373	3.3375	3.3377	3.3379	3.3381	3.3383
36 20	3.3385	3.3387	3.3389	3.3391	3.3393	3.3395	3.3397	3.3398	3.3400	3.3402
36 30	3.3404	3.3406	3.3408	3.3410	3.3412	3.3414	3.3416	3.3418	3.3420	3.3422
36 40	3.3424	3.3426	3.3428	3.3430	3.3432	3.3434	3.3436	3.3438	3.3440	3.3442
36 50	3.3444	3.3446	3.3448	3.3450	3.3452	3.3454	3.3456	3.3458	3.3460	3.3462
0 37 0	3.3464	3.3465	3.3467	3.3469	3.3471	3.3473	3.3475	3.3477	3.3479	3.3481
37 10	3.3483	3.3485	3.3487	3.3489	3.3491	3.3493	3.3495	3.3497	3.3499	3.3501
37 20	3.3502	3.3504	3.3506	3.3508	3.3510	3.3512	3.3514	3.3516	3.3518	3.3520
37 30	3.3522	3.3524	3.3526	3.3528	3.3530	3.3531	3.3533	3.3535	3.3537	3.3539
37 40	3.3541	3.3543	3.3545	3.3547	3.3549	3.3551	3.3553	3.3555	3.3556	3.3558
37 50	3.3560	3.3562	3.3564	3.3566	3.3568	3.3570	3.3572	3.3574	3.3576	3.3577
0 38 0	3.3579	3.3581	3.3583	3.3585	3.3587	3.3589	3.3591	3.3593	3.3595	3.3596
38 10	3.3598	3.3600	3.3602	3.3604	3.3606	3.3608	3.3610	3.3612	3.3614	3.3615
38 20	3.3617	3.3619	3.3621	3.3623	3.3625	3.3627	3.3629	3.3630	3.3632	3.3634
38 30	3.3636	3.3638	3.3640	3.3642	3.3644	3.3646	3.3647	3.3649	3.3651	3.3653
38 40	3.3655	3.3657	3.3659	3.3660	3.3662	3.3664	3.3666	3.3668	3.3670	3.3672
38 50	3.3674	3.3675	3.3677	3.3679	3.3681	3.3683	3.3685	3.3687	3.3688	3.3690
0 39 0	3.3692	3.3694	3.3696	3.3698	3.3700	3.3701	3.3703	3.3705	3.3707	3.3709
39 10	3.3711	3.3713	3.3714	3.3716	3.3718	3.3720	3.3722	3.3724	3.3725	3.3727
39 20	3.3729	3.3731	3.3733	3.3735	3.3736	3.3738	3.3740	3.3742	3.3744	3.3746
39 30	3.3747	3.3749	3.3751	3.3753	3.3755	3.3757	3.3758	3.3760	3.3762	3.3764
39 40	3.3766	3.3768	3.3769	3.3771	3.3773	3.3775	3.3777	3.3779	3.3780	3.3782
39 50	3.3784	3.3786	3.3788	3.3789	3.3791	3.3793	3.3795	3.3797	3.3798	3.3800

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
0 ^m 40 ^m 0 ^s	3.3802	3.3804	3.3806	3.3808	3.3809	3.3811	3.3813	3.3815	3.3817	3.3818
40 10	3.3820	3.3822	3.3824	3.3826	3.3827	3.3829	3.3831	3.3833	3.3835	3.3836
40 20	3.3838	3.3840	3.3842	3.3844	3.3845	3.3847	3.3849	3.3851	3.3852	3.3854
40 30	3.3856	3.3858	3.3860	3.3861	3.3863	3.3865	3.3867	3.3869	3.3870	3.3872
40 40	3.3874	3.3876	3.3877	3.3879	3.3881	3.3883	3.3885	3.3886	3.3888	3.3890
40 50	3.3892	3.3893	3.3895	3.3897	3.3899	3.3901	3.3902	3.3904	3.3906	3.3908
41 0	3.3909	3.3911	3.3913	3.3915	3.3916	3.3918	3.3920	3.3922	3.3923	3.3925
41 10	3.3927	3.3929	3.3930	3.3932	3.3934	3.3936	3.3938	3.3939	3.3941	3.3943
41 20	3.3945	3.3946	3.3948	3.3950	3.3952	3.3953	3.3955	3.3957	3.3959	3.3960
41 30	3.3962	3.3964	3.3965	3.3967	3.3969	3.3971	3.3972	3.3974	3.3976	3.3978
41 40	3.3979	3.3981	3.3983	3.3985	3.3986	3.3988	3.3990	3.3992	3.3993	3.3995
41 50	3.3997	3.3998	3.4000	3.4002	3.4004	3.4005	3.4007	3.4009	3.4011	3.4012
0 42 0	3.4014	3.4016	3.4017	3.4019	3.4021	3.4023	3.4024	3.4026	3.4028	3.4029
42 10	3.4031	3.4033	3.4035	3.4036	3.4038	3.4040	3.4041	3.4043	3.4045	3.4047
42 20	3.4048	3.4050	3.4052	3.4053	3.4055	3.4057	3.4059	3.4060	3.4062	3.4064
42 30	3.4065	3.4067	3.4069	3.4071	3.4072	3.4074	3.4076	3.4077	3.4079	3.4081
42 40	3.4082	3.4084	3.4086	3.4087	3.4089	3.4091	3.4093	3.4094	3.4096	3.4098
42 50	3.4099	3.4101	3.4103	3.4104	3.4106	3.4108	3.4109	3.4111	3.4113	3.4115
0 43 0	3.4116	3.4118	3.4120	3.4121	3.4123	3.4125	3.4126	3.4128	3.4130	3.4131
43 10	3.4133	3.4135	3.4136	3.4138	3.4140	3.4141	3.4143	3.4145	3.4146	3.4148
43 20	3.4150	3.4151	3.4153	3.4155	3.4156	3.4158	3.4160	3.4161	3.4163	3.4165
43 30	3.4166	3.4168	3.4170	3.4171	3.4173	3.4175	3.4176	3.4178	3.4180	3.4181
43 40	3.4183	3.4185	3.4186	3.4188	3.4190	3.4191	3.4193	3.4195	3.4196	3.4198
43 50	3.4200	3.4201	3.4203	3.4205	3.4206	3.4208	3.4209	3.4211	3.4213	3.4214
0 44 0	3.4216	3.4218	3.4219	3.4221	3.4223	3.4224	3.4226	3.4228	3.4229	3.4231
44 10	3.4232	3.4234	3.4236	3.4237	3.4239	3.4241	3.4242	3.4244	3.4246	3.4247
44 20	3.4249	3.4250	3.4252	3.4254	3.4255	3.4257	3.4259	3.4260	3.4262	3.4263
44 30	3.4265	3.4267	3.4268	3.4270	3.4272	3.4273	3.4275	3.4276	3.4278	3.4280
44 40	3.4281	3.4283	3.4285	3.4286	3.4288	3.4289	3.4291	3.4293	3.4294	3.4296
44 50	3.4298	3.4299	3.4301	3.4302	3.4304	3.4306	3.4307	3.4309	3.4310	3.4312
0 45 0	3.4314	3.4315	3.4317	3.4318	3.4320	3.4322	3.4323	3.4325	3.4326	3.4328
45 10	3.4330	3.4331	3.4333	3.4334	3.4336	3.4338	3.4339	3.4341	3.4342	3.4344
45 20	3.4346	3.4347	3.4349	3.4350	3.4352	3.4354	3.4355	3.4357	3.4358	3.4360
45 30	3.4362	3.4363	3.4365	3.4366	3.4368	3.4370	3.4371	3.4373	3.4374	3.4376
45 40	3.4378	3.4379	3.4381	3.4382	3.4384	3.4385	3.4387	3.4389	3.4390	3.4392
45 50	3.4393	3.4395	3.4396	3.4398	3.4400	3.4401	3.4403	3.4404	3.4406	3.4408
0 46 0	3.4409	3.4411	3.4412	3.4414	3.4415	3.4417	3.4419	3.4420	3.4422	3.4423
46 10	3.4425	3.4426	3.4428	3.4429	3.4431	3.4433	3.4434	3.4436	3.4437	3.4439
46 20	3.4440	3.4442	3.4444	3.4445	3.4447	3.4448	3.4450	3.4451	3.4453	3.4454
46 30	3.4456	3.4458	3.4459	3.4461	3.4462	3.4464	3.4465	3.4467	3.4468	3.4470
46 40	3.4472	3.4473	3.4475	3.4476	3.4478	3.4479	3.4481	3.4482	3.4484	3.4486
46 50	3.4487	3.4489	3.4490	3.4492	3.4493	3.4495	3.4496	3.4498	3.4499	3.4501
0 47 0	3.4502	3.4504	3.4506	3.4507	3.4509	3.4510	3.4512	3.4513	3.4515	3.4516
47 10	3.4518	3.4519	3.4521	3.4522	3.4524	3.4526	3.4527	3.4529	3.4530	3.4532
47 20	3.4533	3.4535	3.4536	3.4538	3.4539	3.4541	3.4542	3.4544	3.4545	3.4547
47 30	3.4548	3.4550	3.4551	3.4553	3.4555	3.4556	3.4558	3.4559	3.4561	3.4562
47 40	3.4564	3.4565	3.4567	3.4568	3.4570	3.4571	3.4573	3.4574	3.4576	3.4577
47 50	3.4579	3.4580	3.4582	3.4583	3.4585	3.4586	3.4588	3.4589	3.4591	3.4592
0 48 0	3.4594	3.4595	3.4597	3.4598	3.4600	3.4601	3.4603	3.4604	3.4606	3.4607
48 10	3.4609	3.4610	3.4612	3.4613	3.4615	3.4616	3.4618	3.4619	3.4621	3.4622
48 20	3.4624	3.4625	3.4627	3.4628	3.4630	3.4631	3.4633	3.4634	3.4636	3.4637
48 30	3.4639	3.4640	3.4642	3.4643	3.4645	3.4646	3.4648	3.4649	3.4651	3.4652
48 40	3.4654	3.4655	3.4657	3.4658	3.4660	3.4661	3.4663	3.4664	3.4666	3.4667
48 50	3.4669	3.4670	3.4672	3.4673	3.4675	3.4676	3.4678	3.4679	3.4681	3.4682
0 49 0	3.4683	3.4685	3.4686	3.4688	3.4689	3.4691	3.4692	3.4694	3.4695	3.4697
49 10	3.4698	3.4700	3.4701	3.4703	3.4704	3.4706	3.4707	3.4709	3.4710	3.4711
49 20	3.4713	3.4714	3.4716	3.4717	3.4719	3.4720	3.4722	3.4723	3.4725	3.4726
49 30	3.4728	3.4729	3.4730	3.4732	3.4733	3.4735	3.4736	3.4738	3.4739	3.4741
49 40	3.4742	3.4744	3.4745	3.4747	3.4748	3.4749	3.4751	3.4752	3.4754	3.4755
49 50	3.4757	3.4758	3.4760	3.4761	3.4763	3.4764	3.4765	3.4767	3.4768	3.4770

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
0° 50' 0"	3.4771	3.4773	3.4774	3.4776	3.4777	3.4778	3.4780	3.4781	3.4783	3.4784
50 10	3.4786	3.4787	3.4789	3.4790	3.4791	3.4793	3.4794	3.4796	3.4797	3.4799
50 20	3.4800	3.4802	3.4803	3.4804	3.4806	3.4807	3.4809	3.4810	3.4812	3.4813
50 30	3.4814	3.4816	3.4817	3.4819	3.4820	3.4822	3.4823	3.4824	3.4826	3.4827
50 40	3.4829	3.4830	3.4832	3.4833	3.4834	3.4836	3.4837	3.4839	3.4840	3.4842
50 50	3.4843	3.4844	3.4846	3.4847	3.4849	3.4850	3.4852	3.4853	3.4854	3.4856
0 51 0	3.4857	3.4859	3.4860	3.4861	3.4863	3.4864	3.4866	3.4867	3.4869	3.4870
51 10	3.4871	3.4873	3.4874	3.4876	3.4877	3.4878	3.4880	3.4881	3.4883	3.4884
51 20	3.4886	3.4887	3.4888	3.4890	3.4891	3.4893	3.4894	3.4895	3.4897	3.4898
51 30	3.4900	3.4901	3.4902	3.4904	3.4905	3.4907	3.4908	3.4909	3.4911	3.4912
51 40	3.4914	3.4915	3.4916	3.4918	3.4919	3.4921	3.4922	3.4923	3.4925	3.4926
51 50	3.4928	3.4929	3.4930	3.4932	3.4933	3.4935	3.4936	3.4937	3.4939	3.4940
0 52 0	3.4943	3.4943	3.4944	3.4946	3.4947	3.4949	3.4950	3.4951	3.4953	3.4954
52 10	3.4955	3.4957	3.4958	3.4960	3.4961	3.4962	3.4964	3.4965	3.4967	3.4968
52 20	3.4969	3.4971	3.4972	3.4973	3.4975	3.4976	3.4978	3.4979	3.4980	3.4982
52 30	3.4983	3.4984	3.4986	3.4987	3.4989	3.4990	3.4991	3.4993	3.4994	3.4995
52 40	3.4997	3.4998	3.5000	3.5001	3.5002	3.5004	3.5005	3.5006	3.5008	3.5009
52 50	3.5011	3.5012	3.5013	3.5015	3.5016	3.5017	3.5019	3.5020	3.5022	3.5023
0 53 0	3.5024	3.5026	3.5027	3.5028	3.5030	3.5031	3.5032	3.5034	3.5035	3.5037
53 10	3.5038	3.5039	3.5041	3.5042	3.5043	3.5045	3.5046	3.5047	3.5049	3.5050
53 20	3.5051	3.5053	3.5054	3.5056	3.5057	3.5058	3.5060	3.5061	3.5062	3.5064
53 30	3.5065	3.5066	3.5068	3.5069	3.5070	3.5072	3.5073	3.5075	3.5076	3.5077
53 40	3.5079	3.5080	3.5081	3.5083	3.5084	3.5085	3.5087	3.5088	3.5089	3.5091
53 50	3.5092	3.5093	3.5095	3.5096	3.5097	3.5099	3.5100	3.5101	3.5103	3.5104
0 54 0	3.5105	3.5107	3.5108	3.5109	3.5111	3.5112	3.5113	3.5115	3.5116	3.5117
54 10	3.5119	3.5120	3.5122	3.5123	3.5124	3.5126	3.5127	3.5128	3.5130	3.5131
54 20	3.5132	3.5134	3.5135	3.5136	3.5138	3.5139	3.5140	3.5141	3.5143	3.5144
54 30	3.5145	3.5147	3.5148	3.5149	3.5151	3.5152	3.5153	3.5155	3.5156	3.5157
54 40	3.5159	3.5160	3.5161	3.5163	3.5164	3.5165	3.5167	3.5168	3.5169	3.5171
54 50	3.5172	3.5173	3.5175	3.5176	3.5177	3.5179	3.5180	3.5181	3.5183	3.5184
0 55 0	3.5185	3.5186	3.5188	3.5189	3.5190	3.5192	3.5193	3.5194	3.5196	3.5197
55 10	3.5198	3.5200	3.5201	3.5202	3.5204	3.5205	3.5206	3.5207	3.5209	3.5210
55 20	3.5211	3.5213	3.5214	3.5215	3.5217	3.5218	3.5219	3.5221	3.5222	3.5223
55 30	3.5224	3.5226	3.5227	3.5228	3.5230	3.5231	3.5232	3.5234	3.5235	3.5236
55 40	3.5237	3.5239	3.5240	3.5241	3.5243	3.5244	3.5245	3.5247	3.5248	3.5249
55 50	3.5250	3.5252	3.5253	3.5254	3.5256	3.5257	3.5258	3.5260	3.5261	3.5262
0 56 0	3.5263	3.5265	3.5266	3.5267	3.5269	3.5270	3.5271	3.5272	3.5274	3.5275
56 10	3.5276	3.5278	3.5279	3.5280	3.5281	3.5283	3.5284	3.5285	3.5287	3.5288
56 20	3.5289	3.5290	3.5292	3.5293	3.5294	3.5296	3.5297	3.5298	3.5299	3.5301
56 30	3.5302	3.5303	3.5305	3.5306	3.5307	3.5308	3.5310	3.5311	3.5312	3.5314
56 40	3.5315	3.5316	3.5317	3.5319	3.5320	3.5321	3.5322	3.5324	3.5325	3.5326
56 50	3.5328	3.5329	3.5330	3.5331	3.5333	3.5334	3.5335	3.5336	3.5338	3.5339
0 57 0	3.5340	3.5342	3.5343	3.5344	3.5345	3.5347	3.5348	3.5349	3.5350	3.5352
57 10	3.5353	3.5354	3.5355	3.5357	3.5358	3.5359	3.5361	3.5362	3.5363	3.5364
57 20	3.5366	3.5367	3.5368	3.5369	3.5371	3.5372	3.5373	3.5374	3.5376	3.5377
57 30	3.5378	3.5379	3.5381	3.5382	3.5383	3.5384	3.5386	3.5387	3.5388	3.5390
57 40	3.5391	3.5392	3.5393	3.5395	3.5396	3.5397	3.5398	3.5400	3.5401	3.5402
57 50	3.5403	3.5405	3.5406	3.5407	3.5408	3.5410	3.5411	3.5412	3.5413	3.5415
0 58 0	3.5416	3.5417	3.5418	3.5420	3.5421	3.5422	3.5423	3.5425	3.5426	3.5427
58 10	3.5428	3.5429	3.5431	3.5432	3.5433	3.5434	3.5436	3.5437	3.5438	3.5439
58 20	3.5441	3.5442	3.5443	3.5444	3.5446	3.5447	3.5448	3.5449	3.5451	3.5452
58 30	3.5453	3.5454	3.5456	3.5457	3.5458	3.5459	3.5460	3.5462	3.5463	3.5464
58 40	3.5465	3.5467	3.5468	3.5469	3.5470	3.5472	3.5473	3.5474	3.5475	3.5477
58 50	3.5478	3.5479	3.5480	3.5481	3.5483	3.5484	3.5485	3.5486	3.5488	3.5489
0 59 0	3.5490	3.5491	3.5492	3.5494	3.5495	3.5496	3.5497	3.5499	3.5500	3.5501
59 10	3.5502	3.5504	3.5505	3.5506	3.5507	3.5508	3.5510	3.5511	3.5512	3.5513
59 20	3.5514	3.5516	3.5517	3.5518	3.5519	3.5521	3.5522	3.5523	3.5524	3.5525
59 30	3.5527	3.5528	3.5529	3.5530	3.5532	3.5533	3.5534	3.5535	3.5536	3.5538
59 40	3.5539	3.5540	3.5541	3.5542	3.5544	3.5545	3.5546	3.5547	3.5549	3.5550
59 50	3.5551	3.5552	3.5553	3.5555	3.5556	3.5557	3.5558	3.5559	3.5561	3.5562

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
0	0	10	20	30	40	50	1	10	20	30
1	0	10	20	30	40	50	1	10	20	30
2	0	10	20	30	40	50	1	10	20	30
3	0	10	20	30	40	50	1	10	20	30
4	0	10	20	30	40	50	1	10	20	30
5	0	10	20	30	40	50	1	10	20	30
6	0	10	20	30	40	50	1	10	20	30
7	0	10	20	30	40	50	1	10	20	30
8	0	10	20	30	40	50	1	10	20	30
9	0	10	20	30	40	50	1	10	20	30

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
0 10 0	3.6232	3.6234	3.6235	3.6236	3.6237	3.6238	3.6239	3.6240	3.6241	3.6242
10 10	3.6243	3.6244	3.6245	3.6246	3.6247	3.6248	3.6249	3.6250	3.6251	3.6252
10 20	3.6253	3.6254	3.6255	3.6256	3.6257	3.6258	3.6259	3.6260	3.6261	3.6262
10 30	3.6263	3.6264	3.6265	3.6266	3.6267	3.6268	3.6269	3.6270	3.6271	3.6272
10 40	3.6274	3.6275	3.6276	3.6277	3.6278	3.6279	3.6280	3.6281	3.6282	3.6283
10 50	3.6284	3.6285	3.6286	3.6287	3.6288	3.6289	3.6290	3.6291	3.6292	3.6293
1 11 0	3.6294	3.6295	3.6296	3.6297	3.6298	3.6299	3.6300	3.6301	3.6302	3.6303
11 10	3.6304	3.6305	3.6306	3.6307	3.6308	3.6309	3.6310	3.6311	3.6312	3.6313
11 20	3.6314	3.6315	3.6316	3.6317	3.6318	3.6319	3.6320	3.6321	3.6322	3.6323
11 30	3.6325	3.6326	3.6327	3.6328	3.6329	3.6330	3.6331	3.6332	3.6333	3.6334
11 40	3.6335	3.6336	3.6337	3.6338	3.6339	3.6340	3.6341	3.6342	3.6343	3.6344
11 50	3.6345	3.6346	3.6347	3.6348	3.6349	3.6350	3.6351	3.6352	3.6353	3.6354
1 12 0	3.6355	3.6356	3.6357	3.6358	3.6359	3.6360	3.6361	3.6362	3.6363	3.6364
12 10	3.6365	3.6366	3.6367	3.6368	3.6369	3.6370	3.6371	3.6372	3.6373	3.6374
12 20	3.6375	3.6376	3.6377	3.6378	3.6379	3.6380	3.6381	3.6382	3.6383	3.6384
12 30	3.6385	3.6386	3.6387	3.6388	3.6389	3.6390	3.6391	3.6392	3.6393	3.6394
12 40	3.6395	3.6396	3.6397	3.6398	3.6399	3.6400	3.6401	3.6402	3.6403	3.6404
12 50	3.6405	3.6406	3.6407	3.6408	3.6409	3.6410	3.6411	3.6412	3.6413	3.6414
1 13 0	3.6415	3.6416	3.6417	3.6418	3.6419	3.6420	3.6421	3.6422	3.6423	3.6424
13 10	3.6425	3.6426	3.6427	3.6428	3.6429	3.6430	3.6431	3.6432	3.6433	3.6434
13 20	3.6435	3.6436	3.6437	3.6438	3.6439	3.6440	3.6441	3.6442	3.6443	3.6444
13 30	3.6445	3.6446	3.6447	3.6448	3.6449	3.6450	3.6451	3.6452	3.6453	3.6454
13 40	3.6455	3.6456	3.6457	3.6458	3.6459	3.6460	3.6461	3.6462	3.6463	3.6464
13 50	3.6465	3.6466	3.6467	3.6468	3.6469	3.6470	3.6471	3.6472	3.6473	3.6474
1 14 0	3.6475	3.6476	3.6477	3.6478	3.6479	3.6480	3.6481	3.6482	3.6483	3.6484
14 10	3.6485	3.6486	3.6487	3.6488	3.6489	3.6490	3.6491	3.6492	3.6493	3.6494
14 20	3.6495	3.6496	3.6497	3.6498	3.6499	3.6500	3.6501	3.6502	3.6503	3.6504
14 30	3.6505	3.6506	3.6507	3.6508	3.6509	3.6510	3.6511	3.6512	3.6513	3.6514
14 40	3.6515	3.6516	3.6517	3.6518	3.6519	3.6520	3.6521	3.6522	3.6523	3.6524
14 50	3.6525	3.6526	3.6527	3.6528	3.6529	3.6530	3.6531	3.6532	3.6533	3.6534
1 15 0	3.6535	3.6536	3.6537	3.6538	3.6539	3.6540	3.6541	3.6542	3.6543	3.6544
15 10	3.6545	3.6546	3.6547	3.6548	3.6549	3.6550	3.6551	3.6552	3.6553	3.6554
15 20	3.6555	3.6556	3.6557	3.6558	3.6559	3.6560	3.6561	3.6562	3.6563	3.6564
15 30	3.6565	3.6566	3.6567	3.6568	3.6569	3.6570	3.6571	3.6572	3.6573	3.6574
15 40	3.6575	3.6576	3.6577	3.6578	3.6579	3.6580	3.6581	3.6582	3.6583	3.6584
15 50	3.6585	3.6586	3.6587	3.6588	3.6589	3.6590	3.6591	3.6592	3.6593	3.6594
1 16 0	3.6595	3.6596	3.6597	3.6598	3.6599	3.6600	3.6601	3.6602	3.6603	3.6604
16 10	3.6605	3.6606	3.6607	3.6608	3.6609	3.6610	3.6611	3.6612	3.6613	3.6614
16 20	3.6615	3.6616	3.6617	3.6618	3.6619	3.6620	3.6621	3.6622	3.6623	3.6624
16 30	3.6625	3.6626	3.6627	3.6628	3.6629	3.6630	3.6631	3.6632	3.6633	3.6634
16 40	3.6635	3.6636	3.6637	3.6638	3.6639	3.6640	3.6641	3.6642	3.6643	3.6644
16 50	3.6645	3.6646	3.6647	3.6648	3.6649	3.6650	3.6651	3.6652	3.6653	3.6654
1 17 0	3.6655	3.6656	3.6657	3.6658	3.6659	3.6660	3.6661	3.6662	3.6663	3.6664
17 10	3.6665	3.6666	3.6667	3.6668	3.6669	3.6670	3.6671	3.6672	3.6673	3.6674
17 20	3.6675	3.6676	3.6677	3.6678	3.6679	3.6680	3.6681	3.6682	3.6683	3.6684
17 30	3.6685	3.6686	3.6687	3.6688	3.6689	3.6690	3.6691	3.6692	3.6693	3.6694
17 40	3.6695	3.6696	3.6697	3.6698	3.6699	3.6700	3.6701	3.6702	3.6703	3.6704
17 50	3.6705	3.6706	3.6707	3.6708	3.6709	3.6710	3.6711	3.6712	3.6713	3.6714
1 18 0	3.6715	3.6716	3.6717	3.6718	3.6719	3.6720	3.6721	3.6722	3.6723	3.6724
18 10	3.6725	3.6726	3.6727	3.6728	3.6729	3.6730	3.6731	3.6732	3.6733	3.6734
18 20	3.6735	3.6736	3.6737	3.6738	3.6739	3.6740	3.6741	3.6742	3.6743	3.6744
18 30	3.6745	3.6746	3.6747	3.6748	3.6749	3.6750	3.6751	3.6752	3.6753	3.6754
18 40	3.6755	3.6756	3.6757	3.6758	3.6759	3.6760	3.6761	3.6762	3.6763	3.6764
18 50	3.6765	3.6766	3.6767	3.6768	3.6769	3.6770	3.6771	3.6772	3.6773	3.6774
1 19 0	3.6775	3.6776	3.6777	3.6778	3.6779	3.6780	3.6781	3.6782	3.6783	3.6784
19 10	3.6785	3.6786	3.6787	3.6788	3.6789	3.6790	3.6791	3.6792	3.6793	3.6794
19 20	3.6795	3.6796	3.6797	3.6798	3.6799	3.6800	3.6801	3.6802	3.6803	3.6804
19 30	3.6805	3.6806	3.6807	3.6808	3.6809	3.6810	3.6811	3.6812	3.6813	3.6814
19 40	3.6815	3.6816	3.6817	3.6818	3.6819	3.6820	3.6821	3.6822	3.6823	3.6824
19 50	3.6825	3.6826	3.6827	3.6828	3.6829	3.6830	3.6831	3.6832	3.6833	3.6834

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
1 ^h 20 ^m 0 ^s	3.6812	3.6813	3.6814	3.6815	3.6816	3.6817	3.6818	3.6819	3.6820	3.6821
20 10	3.6821	3.6822	3.6823	3.6824	3.6825	3.6826	3.6827	3.6828	3.6829	3.6830
20 20	3.6830	3.6831	3.6832	3.6833	3.6834	3.6835	3.6836	3.6837	3.6838	3.6839
20 30	3.6839	3.6840	3.6841	3.6842	3.6843	3.6844	3.6845	3.6846	3.6847	3.6848
20 40	3.6848	3.6849	3.6850	3.6851	3.6852	3.6853	3.6854	3.6855	3.6856	3.6857
20 50	3.6857	3.6858	3.6859	3.6860	3.6861	3.6862	3.6863	3.6864	3.6865	3.6866
1 21 0	3.6866	3.6867	3.6868	3.6869	3.6870	3.6871	3.6872	3.6873	3.6874	3.6875
21 10	3.6875	3.6876	3.6877	3.6878	3.6879	3.6880	3.6881	3.6882	3.6883	3.6884
21 20	3.6884	3.6885	3.6886	3.6887	3.6888	3.6889	3.6890	3.6891	3.6892	3.6893
21 30	3.6893	3.6894	3.6895	3.6896	3.6897	3.6898	3.6899	3.6900	3.6901	3.6902
21 40	3.6902	3.6903	3.6904	3.6905	3.6906	3.6907	3.6908	3.6909	3.6910	3.6911
21 50	3.6911	3.6912	3.6913	3.6914	3.6915	3.6916	3.6917	3.6918	3.6919	3.6920
1 22 0	3.6920	3.6921	3.6922	3.6923	3.6924	3.6925	3.6926	3.6927	3.6928	3.6929
22 10	3.6928	3.6929	3.6930	3.6931	3.6932	3.6933	3.6934	3.6935	3.6936	3.6937
22 20	3.6937	3.6938	3.6939	3.6940	3.6941	3.6942	3.6943	3.6944	3.6945	3.6946
22 30	3.6946	3.6947	3.6948	3.6949	3.6950	3.6951	3.6952	3.6953	3.6954	3.6955
22 40	3.6955	3.6956	3.6957	3.6958	3.6959	3.6960	3.6961	3.6962	3.6963	3.6964
22 50	3.6964	3.6965	3.6966	3.6967	3.6968	3.6969	3.6970	3.6971	3.6972	3.6973
1 23 0	3.6972	3.6973	3.6974	3.6975	3.6976	3.6977	3.6978	3.6979	3.6980	3.6981
23 10	3.6981	3.6982	3.6983	3.6984	3.6985	3.6986	3.6987	3.6988	3.6989	3.6990
23 20	3.6990	3.6991	3.6992	3.6993	3.6994	3.6995	3.6996	3.6997	3.6998	3.6999
23 30	3.6998	3.6999	3.7000	3.7001	3.7002	3.7003	3.7004	3.7005	3.7006	3.7007
23 40	3.7007	3.7008	3.7009	3.7010	3.7011	3.7012	3.7013	3.7014	3.7015	3.7016
23 50	3.7016	3.7017	3.7018	3.7019	3.7020	3.7021	3.7022	3.7023	3.7024	3.7025
1 24 0	3.7024	3.7025	3.7026	3.7027	3.7028	3.7029	3.7030	3.7031	3.7032	3.7033
24 10	3.7033	3.7034	3.7035	3.7036	3.7037	3.7038	3.7039	3.7040	3.7041	3.7042
24 20	3.7042	3.7043	3.7044	3.7045	3.7046	3.7047	3.7048	3.7049	3.7050	3.7051
24 30	3.7050	3.7051	3.7052	3.7053	3.7054	3.7055	3.7056	3.7057	3.7058	3.7059
24 40	3.7059	3.7060	3.7061	3.7062	3.7063	3.7064	3.7065	3.7066	3.7067	3.7068
24 50	3.7067	3.7068	3.7069	3.7070	3.7071	3.7072	3.7073	3.7074	3.7075	3.7076
1 25 0	3.7076	3.7077	3.7078	3.7079	3.7080	3.7081	3.7082	3.7083	3.7084	3.7085
25 10	3.7084	3.7085	3.7086	3.7087	3.7088	3.7089	3.7090	3.7091	3.7092	3.7093
25 20	3.7093	3.7094	3.7095	3.7096	3.7097	3.7098	3.7099	3.7100	3.7101	3.7102
25 30	3.7101	3.7102	3.7103	3.7104	3.7105	3.7106	3.7107	3.7108	3.7109	3.7110
25 40	3.7110	3.7111	3.7112	3.7113	3.7114	3.7115	3.7116	3.7117	3.7118	3.7119
25 50	3.7118	3.7119	3.7120	3.7121	3.7122	3.7123	3.7124	3.7125	3.7126	3.7127
1 26 0	3.7126	3.7127	3.7128	3.7129	3.7130	3.7131	3.7132	3.7133	3.7134	3.7135
26 10	3.7135	3.7136	3.7137	3.7138	3.7139	3.7140	3.7141	3.7142	3.7143	3.7144
26 20	3.7143	3.7144	3.7145	3.7146	3.7147	3.7148	3.7149	3.7150	3.7151	3.7152
26 30	3.7152	3.7153	3.7154	3.7155	3.7156	3.7157	3.7158	3.7159	3.7160	3.7161
26 40	3.7160	3.7161	3.7162	3.7163	3.7164	3.7165	3.7166	3.7167	3.7168	3.7169
26 50	3.7168	3.7169	3.7170	3.7171	3.7172	3.7173	3.7174	3.7175	3.7176	3.7177
1 27 0	3.7177	3.7178	3.7179	3.7180	3.7181	3.7182	3.7183	3.7184	3.7185	3.7186
27 10	3.7185	3.7186	3.7187	3.7188	3.7189	3.7190	3.7191	3.7192	3.7193	3.7194
27 20	3.7193	3.7194	3.7195	3.7196	3.7197	3.7198	3.7199	3.7200	3.7201	3.7202
27 30	3.7202	3.7203	3.7204	3.7205	3.7206	3.7207	3.7208	3.7209	3.7210	3.7211
27 40	3.7210	3.7211	3.7212	3.7213	3.7214	3.7215	3.7216	3.7217	3.7218	3.7219
27 50	3.7218	3.7219	3.7220	3.7221	3.7222	3.7223	3.7224	3.7225	3.7226	3.7227
1 28 0	3.7226	3.7227	3.7228	3.7229	3.7230	3.7231	3.7232	3.7233	3.7234	3.7235
28 10	3.7235	3.7236	3.7237	3.7238	3.7239	3.7240	3.7241	3.7242	3.7243	3.7244
28 20	3.7243	3.7244	3.7245	3.7246	3.7247	3.7248	3.7249	3.7250	3.7251	3.7252
28 30	3.7251	3.7252	3.7253	3.7254	3.7255	3.7256	3.7257	3.7258	3.7259	3.7260
28 40	3.7259	3.7260	3.7261	3.7262	3.7263	3.7264	3.7265	3.7266	3.7267	3.7268
28 50	3.7267	3.7268	3.7269	3.7270	3.7271	3.7272	3.7273	3.7274	3.7275	3.7276
1 29 0	3.7275	3.7276	3.7277	3.7278	3.7279	3.7280	3.7281	3.7282	3.7283	3.7284
29 10	3.7284	3.7285	3.7286	3.7287	3.7288	3.7289	3.7290	3.7291	3.7292	3.7293
29 20	3.7292	3.7293	3.7294	3.7295	3.7296	3.7297	3.7298	3.7299	3.7300	3.7301
29 30	3.7300	3.7301	3.7302	3.7303	3.7304	3.7305	3.7306	3.7307	3.7308	3.7309
29 40	3.7308	3.7309	3.7310	3.7311	3.7312	3.7313	3.7314	3.7315	3.7316	3.7317
29 50	3.7316	3.7317	3.7318	3.7319	3.7320	3.7321	3.7322	3.7323	3.7324	3.7325

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
$0^{\circ} 30' 0''$	3.7324	3.7325	3.7326	3.7326	3.7327	3.7328	3.7329	3.7330	3.7330	3.7331
30 10	3.7332	3.7333	3.7334	3.7334	3.7335	3.7336	3.7337	3.7338	3.7338	3.7339
30 20	3.7340	3.7341	3.7342	3.7342	3.7343	3.7344	3.7345	3.7346	3.7346	3.7347
30 30	3.7348	3.7349	3.7350	3.7350	3.7351	3.7352	3.7353	3.7354	3.7354	3.7355
30 40	3.7356	3.7357	3.7358	3.7358	3.7359	3.7360	3.7361	3.7362	3.7362	3.7363
30 50	3.7364	3.7365	3.7366	3.7366	3.7367	3.7368	3.7369	3.7370	3.7370	3.7371
1 31 0	3.7372	3.7373	3.7374	3.7374	3.7375	3.7376	3.7377	3.7377	3.7378	3.7379
31 10	3.7380	3.7381	3.7381	3.7382	3.7383	3.7384	3.7385	3.7385	3.7386	3.7387
31 20	3.7388	3.7389	3.7389	3.7390	3.7391	3.7392	3.7393	3.7393	3.7394	3.7395
31 30	3.7396	3.7397	3.7397	3.7398	3.7399	3.7400	3.7400	3.7401	3.7402	3.7403
31 40	3.7404	3.7404	3.7405	3.7406	3.7407	3.7408	3.7408	3.7409	3.7410	3.7411
31 50	3.7412	3.7412	3.7413	3.7414	3.7415	3.7415	3.7416	3.7417	3.7418	3.7419
1 32 0	3.7419	3.7420	3.7421	3.7422	3.7423	3.7423	3.7424	3.7425	3.7426	3.7426
32 10	3.7427	3.7428	3.7429	3.7430	3.7430	3.7431	3.7432	3.7433	3.7434	3.7434
32 20	3.7435	3.7436	3.7437	3.7437	3.7438	3.7439	3.7440	3.7441	3.7441	3.7442
32 30	3.7443	3.7444	3.7444	3.7445	3.7446	3.7447	3.7448	3.7448	3.7449	3.7450
32 40	3.7451	3.7452	3.7452	3.7453	3.7454	3.7455	3.7455	3.7456	3.7457	3.7458
32 50	3.7459	3.7459	3.7460	3.7461	3.7462	3.7462	3.7463	3.7464	3.7465	3.7466
1 33 0	3.7466	3.7467	3.7468	3.7469	3.7469	3.7470	3.7471	3.7472	3.7473	3.7473
33 10	3.7474	3.7475	3.7476	3.7476	3.7477	3.7478	3.7479	3.7480	3.7480	3.7481
33 20	3.7482	3.7483	3.7483	3.7484	3.7485	3.7486	3.7487	3.7487	3.7488	3.7489
33 30	3.7490	3.7490	3.7491	3.7492	3.7493	3.7493	3.7494	3.7495	3.7496	3.7497
33 40	3.7497	3.7498	3.7499	3.7500	3.7500	3.7501	3.7502	3.7503	3.7504	3.7504
33 50	3.7505	3.7506	3.7507	3.7507	3.7508	3.7509	3.7510	3.7510	3.7511	3.7512
1 34 0	3.7513	3.7514	3.7514	3.7515	3.7516	3.7517	3.7517	3.7518	3.7519	3.7520
34 10	3.7520	3.7521	3.7522	3.7523	3.7524	3.7524	3.7525	3.7526	3.7527	3.7527
34 20	3.7528	3.7529	3.7530	3.7530	3.7531	3.7532	3.7533	3.7534	3.7534	3.7535
34 30	3.7536	3.7537	3.7537	3.7538	3.7539	3.7540	3.7540	3.7541	3.7542	3.7543
34 40	3.7543	3.7544	3.7545	3.7546	3.7547	3.7547	3.7548	3.7549	3.7550	3.7550
34 50	3.7551	3.7552	3.7553	3.7553	3.7554	3.7555	3.7556	3.7556	3.7557	3.7558
1 35 0	3.7559	3.7560	3.7560	3.7561	3.7562	3.7563	3.7563	3.7564	3.7565	3.7566
35 10	3.7566	3.7567	3.7568	3.7569	3.7569	3.7570	3.7571	3.7572	3.7572	3.7573
35 20	3.7574	3.7575	3.7575	3.7576	3.7577	3.7578	3.7579	3.7579	3.7580	3.7581
35 30	3.7582	3.7582	3.7583	3.7584	3.7585	3.7585	3.7586	3.7587	3.7588	3.7588
35 40	3.7589	3.7590	3.7591	3.7591	3.7592	3.7593	3.7594	3.7594	3.7595	3.7596
35 50	3.7597	3.7597	3.7598	3.7599	3.7600	3.7600	3.7601	3.7602	3.7603	3.7603
1 36 0	3.7604	3.7605	3.7606	3.7606	3.7607	3.7608	3.7609	3.7609	3.7610	3.7611
36 10	3.7612	3.7613	3.7613	3.7614	3.7615	3.7616	3.7616	3.7617	3.7618	3.7619
36 20	3.7619	3.7620	3.7621	3.7622	3.7622	3.7623	3.7624	3.7625	3.7625	3.7626
36 30	3.7627	3.7628	3.7628	3.7629	3.7630	3.7631	3.7631	3.7632	3.7633	3.7634
36 40	3.7634	3.7635	3.7636	3.7637	3.7637	3.7638	3.7639	3.7640	3.7640	3.7641
36 50	3.7642	3.7643	3.7643	3.7644	3.7645	3.7645	3.7646	3.7647	3.7648	3.7648
1 37 0	3.7649	3.7650	3.7651	3.7651	3.7652	3.7653	3.7654	3.7654	3.7655	3.7656
37 10	3.7657	3.7657	3.7658	3.7659	3.7660	3.7660	3.7661	3.7662	3.7663	3.7663
37 20	3.7664	3.7665	3.7666	3.7666	3.7667	3.7668	3.7669	3.7669	3.7670	3.7671
37 30	3.7672	3.7672	3.7673	3.7674	3.7675	3.7675	3.7676	3.7677	3.7677	3.7678
37 40	3.7679	3.7680	3.7681	3.7681	3.7682	3.7683	3.7683	3.7684	3.7685	3.7686
37 50	3.7686	3.7687	3.7688	3.7689	3.7689	3.7690	3.7691	3.7692	3.7692	3.7693
1 38 0	3.7694	3.7695	3.7695	3.7696	3.7697	3.7697	3.7698	3.7699	3.7700	3.7700
38 10	3.7701	3.7702	3.7703	3.7703	3.7704	3.7705	3.7706	3.7706	3.7707	3.7708
38 20	3.7709	3.7709	3.7710	3.7711	3.7711	3.7712	3.7713	3.7714	3.7714	3.7715
38 30	3.7716	3.7717	3.7717	3.7718	3.7719	3.7720	3.7720	3.7721	3.7722	3.7722
38 40	3.7723	3.7724	3.7725	3.7725	3.7726	3.7727	3.7728	3.7728	3.7729	3.7730
38 50	3.7731	3.7731	3.7732	3.7733	3.7733	3.7734	3.7735	3.7736	3.7736	3.7737
1 39 0	3.7738	3.7739	3.7739	3.7740	3.7741	3.7742	3.7742	3.7743	3.7744	3.7744
39 10	3.7745	3.7746	3.7747	3.7747	3.7748	3.7749	3.7750	3.7750	3.7751	3.7752
39 20	3.7752	3.7753	3.7754	3.7755	3.7755	3.7756	3.7757	3.7758	3.7758	3.7759
39 30	3.7760	3.7760	3.7761	3.7762	3.7763	3.7763	3.7764	3.7765	3.7766	3.7766
39 40	3.7767	3.7768	3.7768	3.7769	3.7770	3.7771	3.7771	3.7772	3.7773	3.7774
39 50	3.7774	3.7775	3.7776	3.7776	3.7777	3.7778	3.7779	3.7779	3.7780	3.7781

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
1 ^h 40 ^m 0 ^s	3.7782	3.7782	3.7783	3.7784	3.7784	3.7785	3.7786	3.7787	3.7787	3.7788
40 10	3.7789	3.7789	3.7790	3.7791	3.7792	3.7792	3.7793	3.7793	3.7794	3.7795
40 20	3.7796	3.7797	3.7797	3.7798	3.7799	3.7799	3.7800	3.7800	3.7801	3.7802
40 30	3.7803	3.7804	3.7805	3.7805	3.7806	3.7807	3.7807	3.7808	3.7809	3.7810
40 40	3.7810	3.7811	3.7812	3.7813	3.7813	3.7814	3.7815	3.7815	3.7816	3.7817
40 50	3.7818	3.7818	3.7819	3.7820	3.7820	3.7821	3.7822	3.7823	3.7823	3.7824
1 41 0	3.7825	3.7825	3.7826	3.7827	3.7828	3.7828	3.7829	3.7830	3.7830	3.7831
41 10	3.7832	3.7833	3.7833	3.7834	3.7835	3.7835	3.7836	3.7837	3.7838	3.7838
41 20	3.7839	3.7840	3.7840	3.7841	3.7842	3.7843	3.7843	3.7844	3.7845	3.7845
41 30	3.7846	3.7847	3.7848	3.7848	3.7849	3.7850	3.7850	3.7851	3.7852	3.7853
41 40	3.7853	3.7854	3.7855	3.7855	3.7856	3.7857	3.7858	3.7858	3.7859	3.7860
41 50	3.7860	3.7861	3.7862	3.7863	3.7863	3.7864	3.7865	3.7865	3.7866	3.7867
1 42 0	3.7868	3.7868	3.7869	3.7870	3.7870	3.7871	3.7872	3.7872	3.7873	3.7874
42 10	3.7875	3.7875	3.7876	3.7877	3.7877	3.7878	3.7879	3.7880	3.7880	3.7881
42 20	3.7882	3.7882	3.7883	3.7884	3.7885	3.7885	3.7886	3.7887	3.7887	3.7888
42 30	3.7889	3.7889	3.7890	3.7891	3.7892	3.7892	3.7893	3.7894	3.7894	3.7895
42 40	3.7896	3.7897	3.7897	3.7898	3.7899	3.7899	3.7900	3.7901	3.7901	3.7902
42 50	3.7903	3.7904	3.7904	3.7905	3.7906	3.7906	3.7907	3.7908	3.7908	3.7909
1 43 0	3.7910	3.7911	3.7911	3.7912	3.7913	3.7913	3.7914	3.7915	3.7916	3.7916
43 10	3.7917	3.7918	3.7918	3.7919	3.7920	3.7920	3.7921	3.7922	3.7923	3.7923
43 20	3.7924	3.7925	3.7925	3.7926	3.7927	3.7927	3.7928	3.7929	3.7930	3.7930
43 30	3.7931	3.7932	3.7932	3.7933	3.7934	3.7934	3.7935	3.7936	3.7937	3.7937
43 40	3.7938	3.7939	3.7939	3.7940	3.7941	3.7941	3.7942	3.7943	3.7943	3.7944
43 50	3.7945	3.7946	3.7946	3.7947	3.7948	3.7948	3.7949	3.7950	3.7950	3.7951
1 44 0	3.7952	3.7953	3.7953	3.7954	3.7955	3.7955	3.7956	3.7957	3.7957	3.7958
44 10	3.7959	3.7959	3.7960	3.7961	3.7962	3.7962	3.7963	3.7964	3.7964	3.7965
44 20	3.7966	3.7966	3.7967	3.7968	3.7969	3.7969	3.7970	3.7971	3.7971	3.7972
44 30	3.7973	3.7973	3.7974	3.7975	3.7975	3.7976	3.7977	3.7978	3.7978	3.7979
44 40	3.7980	3.7980	3.7981	3.7982	3.7982	3.7983	3.7984	3.7984	3.7985	3.7986
44 50	3.7987	3.7987	3.7988	3.7989	3.7989	3.7990	3.7991	3.7991	3.7992	3.7993
1 45 0	3.7993	3.7994	3.7995	3.7995	3.7996	3.7997	3.7998	3.7998	3.7999	3.8000
45 10	3.8000	3.8001	3.8002	3.8002	3.8003	3.8004	3.8004	3.8005	3.8006	3.8006
45 20	3.8007	3.8008	3.8009	3.8009	3.8010	3.8011	3.8011	3.8012	3.8013	3.8013
45 30	3.8014	3.8015	3.8015	3.8016	3.8017	3.8017	3.8018	3.8019	3.8020	3.8020
45 40	3.8021	3.8022	3.8022	3.8023	3.8024	3.8024	3.8025	3.8026	3.8026	3.8027
45 50	3.8028	3.8028	3.8029	3.8030	3.8030	3.8031	3.8032	3.8033	3.8033	3.8034
1 46 0	3.8035	3.8035	3.8036	3.8036	3.8037	3.8038	3.8039	3.8039	3.8040	3.8041
46 10	3.8041	3.8042	3.8043	3.8043	3.8044	3.8045	3.8045	3.8046	3.8047	3.8048
46 20	3.8048	3.8049	3.8050	3.8050	3.8051	3.8052	3.8052	3.8053	3.8054	3.8054
46 30	3.8055	3.8056	3.8056	3.8057	3.8058	3.8058	3.8059	3.8060	3.8060	3.8061
46 40	3.8062	3.8062	3.8063	3.8064	3.8065	3.8065	3.8066	3.8067	3.8067	3.8068
46 50	3.8069	3.8069	3.8070	3.8071	3.8071	3.8072	3.8073	3.8073	3.8074	3.8075
1 47 0	3.8075	3.8076	3.8077	3.8077	3.8078	3.8079	3.8079	3.8080	3.8081	3.8081
47 10	3.8082	3.8083	3.8083	3.8084	3.8085	3.8085	3.8086	3.8087	3.8088	3.8088
47 20	3.8089	3.8090	3.8090	3.8091	3.8092	3.8092	3.8093	3.8094	3.8094	3.8095
47 30	3.8096	3.8096	3.8097	3.8098	3.8098	3.8099	3.8099	3.8100	3.8101	3.8102
47 40	3.8102	3.8103	3.8104	3.8104	3.8105	3.8106	3.8106	3.8107	3.8108	3.8108
47 50	3.8109	3.8110	3.8110	3.8111	3.8112	3.8112	3.8113	3.8114	3.8114	3.8115
1 48 0	3.8116	3.8116	3.8117	3.8118	3.8118	3.8119	3.8120	3.8120	3.8121	3.8122
48 10	3.8122	3.8123	3.8124	3.8124	3.8125	3.8126	3.8126	3.8127	3.8128	3.8128
48 20	3.8129	3.8130	3.8130	3.8131	3.8132	3.8132	3.8133	3.8134	3.8134	3.8135
48 30	3.8136	3.8136	3.8137	3.8138	3.8138	3.8139	3.8140	3.8140	3.8141	3.8142
48 40	3.8142	3.8143	3.8144	3.8144	3.8145	3.8146	3.8146	3.8147	3.8148	3.8148
48 50	3.8149	3.8150	3.8150	3.8151	3.8152	3.8152	3.8153	3.8154	3.8154	3.8155
1 49 0	3.8156	3.8156	3.8157	3.8158	3.8158	3.8159	3.8160	3.8160	3.8161	3.8162
49 10	3.8162	3.8163	3.8164	3.8164	3.8165	3.8166	3.8166	3.8167	3.8168	3.8168
49 20	3.8169	3.8170	3.8170	3.8171	3.8172	3.8172	3.8173	3.8174	3.8174	3.8175
49 30	3.8176	3.8176	3.8177	3.8178	3.8178	3.8179	3.8180	3.8180	3.8181	3.8182
49 40	3.8182	3.8183	3.8184	3.8184	3.8185	3.8185	3.8186	3.8187	3.8188	3.8188
49 50	3.8189	3.8190	3.8190	3.8191	3.8191	3.8192	3.8193	3.8193	3.8194	3.8195

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
$1^{\circ} 50' 0''$	3.8195	3.8196	3.8197	3.8197	3.8198	3.8199	3.8199	3.8200	3.8201	3.8201
50 10	3.8202	3.8203	3.8203	3.8204	3.8205	3.8205	3.8206	3.8207	3.8207	3.8208
50 20	3.8209	3.8209	3.8210	3.8211	3.8211	3.8212	3.8213	3.8213	3.8214	3.8214
50 30	3.8215	3.8216	3.8216	3.8217	3.8218	3.8218	3.8219	3.8220	3.8220	3.8221
50 40	3.8222	3.8222	3.8223	3.8224	3.8224	3.8225	3.8226	3.8226	3.8227	3.8228
50 50	3.8229	3.8229	3.8230	3.8230	3.8231	3.8231	3.8232	3.8233	3.8233	3.8234
1 51 0	3.8235	3.8235	3.8236	3.8237	3.8237	3.8238	3.8239	3.8239	3.8240	3.8241
51 10	3.8241	3.8242	3.8243	3.8243	3.8244	3.8245	3.8245	3.8246	3.8246	3.8247
51 20	3.8248	3.8248	3.8249	3.8249	3.8250	3.8251	3.8252	3.8252	3.8253	3.8254
51 30	3.8254	3.8255	3.8256	3.8256	3.8257	3.8258	3.8258	3.8259	3.8259	3.8260
51 40	3.8261	3.8261	3.8262	3.8263	3.8263	3.8264	3.8265	3.8265	3.8266	3.8267
51 50	3.8267	3.8268	3.8269	3.8269	3.8270	3.8270	3.8271	3.8272	3.8272	3.8273
1 52 0	3.8274	3.8274	3.8275	3.8276	3.8276	3.8277	3.8278	3.8278	3.8279	3.8280
52 10	3.8280	3.8281	3.8281	3.8282	3.8283	3.8283	3.8284	3.8285	3.8285	3.8286
52 20	3.8287	3.8287	3.8288	3.8289	3.8289	3.8290	3.8290	3.8291	3.8292	3.8292
52 30	3.8293	3.8294	3.8294	3.8295	3.8296	3.8296	3.8297	3.8298	3.8298	3.8299
52 40	3.8299	3.8300	3.8301	3.8301	3.8302	3.8303	3.8303	3.8304	3.8305	3.8305
52 50	3.8306	3.8307	3.8307	3.8308	3.8308	3.8309	3.8310	3.8310	3.8311	3.8312
1 53 0	3.8312	3.8313	3.8314	3.8314	3.8315	3.8315	3.8316	3.8317	3.8317	3.8318
53 10	3.8319	3.8319	3.8320	3.8321	3.8321	3.8322	3.8323	3.8323	3.8324	3.8324
53 20	3.8325	3.8326	3.8326	3.8327	3.8328	3.8328	3.8329	3.8330	3.8330	3.8331
53 30	3.8331	3.8332	3.8333	3.8333	3.8334	3.8335	3.8335	3.8336	3.8337	3.8337
53 40	3.8338	3.8338	3.8339	3.8340	3.8340	3.8341	3.8342	3.8342	3.8343	3.8344
53 50	3.8344	3.8345	3.8345	3.8346	3.8347	3.8347	3.8348	3.8349	3.8349	3.8350
1 54 0	3.8351	3.8351	3.8352	3.8352	3.8353	3.8354	3.8354	3.8355	3.8356	3.8356
54 10	3.8357	3.8358	3.8358	3.8359	3.8359	3.8360	3.8361	3.8361	3.8362	3.8363
54 20	3.8363	3.8364	3.8365	3.8365	3.8366	3.8366	3.8367	3.8368	3.8368	3.8369
54 30	3.8370	3.8370	3.8371	3.8371	3.8372	3.8373	3.8373	3.8374	3.8375	3.8375
54 40	3.8376	3.8377	3.8377	3.8378	3.8378	3.8379	3.8380	3.8380	3.8381	3.8382
54 50	3.8382	3.8383	3.8383	3.8384	3.8385	3.8385	3.8386	3.8387	3.8387	3.8388
1 55 0	3.8388	3.8389	3.8390	3.8390	3.8391	3.8392	3.8392	3.8393	3.8394	3.8394
55 10	3.8395	3.8395	3.8396	3.8397	3.8397	3.8398	3.8399	3.8399	3.8400	3.8400
55 20	3.8401	3.8402	3.8402	3.8403	3.8404	3.8404	3.8405	3.8405	3.8406	3.8407
55 30	3.8407	3.8408	3.8409	3.8409	3.8410	3.8410	3.8411	3.8412	3.8412	3.8413
55 40	3.8414	3.8414	3.8415	3.8415	3.8416	3.8417	3.8417	3.8418	3.8419	3.8419
55 50	3.8420	3.8420	3.8421	3.8422	3.8422	3.8423	3.8424	3.8424	3.8425	3.8425
1 56 0	3.8426	3.8427	3.8427	3.8428	3.8429	3.8429	3.8430	3.8430	3.8431	3.8432
56 10	3.8432	3.8433	3.8434	3.8434	3.8435	3.8435	3.8436	3.8437	3.8437	3.8438
56 20	3.8439	3.8439	3.8440	3.8440	3.8441	3.8442	3.8442	3.8443	3.8444	3.8444
56 30	3.8445	3.8445	3.8446	3.8447	3.8447	3.8448	3.8448	3.8449	3.8450	3.8450
56 40	3.8451	3.8452	3.8452	3.8453	3.8453	3.8454	3.8455	3.8455	3.8456	3.8457
56 50	3.8457	3.8458	3.8458	3.8459	3.8460	3.8460	3.8461	3.8462	3.8462	3.8463
1 57 0	3.8463	3.8464	3.8465	3.8465	3.8466	3.8466	3.8467	3.8468	3.8468	3.8469
57 10	3.8470	3.8470	3.8471	3.8471	3.8472	3.8473	3.8473	3.8474	3.8474	3.8475
57 20	3.8476	3.8476	3.8477	3.8478	3.8478	3.8479	3.8479	3.8480	3.8481	3.8481
57 30	3.8482	3.8483	3.8483	3.8484	3.8484	3.8485	3.8486	3.8486	3.8487	3.8487
57 40	3.8488	3.8489	3.8489	3.8490	3.8491	3.8491	3.8492	3.8492	3.8493	3.8494
57 50	3.8494	3.8495	3.8495	3.8496	3.8497	3.8497	3.8498	3.8499	3.8499	3.8500
1 58 0	3.8500	3.8501	3.8502	3.8502	3.8503	3.8503	3.8504	3.8505	3.8505	3.8506
58 10	3.8506	3.8507	3.8508	3.8508	3.8509	3.8510	3.8510	3.8511	3.8511	3.8512
58 20	3.8513	3.8513	3.8514	3.8514	3.8515	3.8516	3.8516	3.8517	3.8517	3.8518
58 30	3.8519	3.8519	3.8520	3.8521	3.8521	3.8522	3.8522	3.8523	3.8524	3.8524
58 40	3.8525	3.8525	3.8526	3.8527	3.8527	3.8528	3.8528	3.8529	3.8530	3.8530
58 50	3.8531	3.8532	3.8532	3.8533	3.8533	3.8534	3.8535	3.8535	3.8536	3.8536
1 59 0	3.8537	3.8538	3.8538	3.8539	3.8539	3.8540	3.8541	3.8541	3.8542	3.8542
59 10	3.8543	3.8544	3.8544	3.8545	3.8545	3.8546	3.8547	3.8547	3.8548	3.8549
59 20	3.8549	3.8550	3.8550	3.8551	3.8552	3.8552	3.8553	3.8553	3.8554	3.8555
59 30	3.8555	3.8556	3.8556	3.8557	3.8558	3.8558	3.8559	3.8559	3.8560	3.8561
59 40	3.8561	3.8562	3.8562	3.8563	3.8564	3.8564	3.8565	3.8565	3.8566	3.8567
59 50	3.8567	3.8568	3.8568	3.8569	3.8570	3.8570	3.8571	3.8572	3.8572	3.8573

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.											
Arc.	0	1	2	3	4	5	6	7	8	9	
2° 0 ^m 0 ^s	3.8573	3.8574	3.8575	3.8575	3.8576	3.8576	3.8577	3.8578	3.8578	3.8579	3.8579
0 10	3.8579	3.8580	3.8581	3.8581	3.8582	3.8582	3.8583	3.8584	3.8584	3.8585	3.8585
0 20	3.8585	3.8586	3.8587	3.8587	3.8588	3.8588	3.8589	3.8590	3.8590	3.8591	3.8591
0 30	3.8591	3.8592	3.8593	3.8593	3.8594	3.8594	3.8595	3.8596	3.8596	3.8597	3.8597
0 40	3.8597	3.8598	3.8599	3.8599	3.8600	3.8600	3.8601	3.8602	3.8602	3.8603	3.8603
0 50	3.8603	3.8604	3.8605	3.8605	3.8606	3.8606	3.8607	3.8608	3.8608	3.8609	3.8609
2 1 0	3.8609	3.8610	3.8611	3.8611	3.8612	3.8612	3.8613	3.8614	3.8614	3.8615	3.8615
1 10	3.8615	3.8616	3.8617	3.8617	3.8618	3.8618	3.8619	3.8620	3.8620	3.8621	3.8621
1 20	3.8621	3.8622	3.8623	3.8623	3.8624	3.8624	3.8625	3.8625	3.8626	3.8626	3.8627
1 30	3.8627	3.8628	3.8628	3.8629	3.8630	3.8630	3.8631	3.8631	3.8632	3.8633	3.8633
1 40	3.8633	3.8634	3.8634	3.8635	3.8636	3.8636	3.8637	3.8637	3.8638	3.8639	3.8639
1 50	3.8639	3.8640	3.8640	3.8641	3.8642	3.8642	3.8643	3.8643	3.8644	3.8645	3.8645
2 2 0	3.8645	3.8646	3.8646	3.8647	3.8647	3.8648	3.8649	3.8649	3.8650	3.8650	3.8650
2 10	3.8651	3.8652	3.8652	3.8653	3.8653	3.8654	3.8655	3.8655	3.8656	3.8656	3.8656
2 20	3.8657	3.8658	3.8658	3.8659	3.8659	3.8660	3.8661	3.8661	3.8662	3.8662	3.8662
2 30	3.8663	3.8663	3.8664	3.8665	3.8665	3.8666	3.8666	3.8667	3.8668	3.8668	3.8668
2 40	3.8669	3.8669	3.8670	3.8671	3.8671	3.8672	3.8672	3.8673	3.8673	3.8674	3.8674
2 50	3.8675	3.8675	3.8676	3.8676	3.8677	3.8677	3.8678	3.8678	3.8679	3.8679	3.8680
2 3 0	3.8681	3.8681	3.8682	3.8682	3.8683	3.8684	3.8684	3.8685	3.8685	3.8686	3.8686
3 10	3.8686	3.8687	3.8688	3.8688	3.8689	3.8689	3.8690	3.8691	3.8691	3.8692	3.8692
3 20	3.8692	3.8693	3.8693	3.8694	3.8695	3.8695	3.8696	3.8696	3.8697	3.8698	3.8698
3 30	3.8698	3.8699	3.8699	3.8700	3.8701	3.8701	3.8702	3.8702	3.8703	3.8703	3.8703
3 40	3.8704	3.8705	3.8705	3.8706	3.8706	3.8707	3.8707	3.8708	3.8709	3.8709	3.8709
3 50	3.8710	3.8710	3.8711	3.8712	3.8712	3.8713	3.8713	3.8714	3.8715	3.8715	3.8715
2 4 0	3.8716	3.8716	3.8717	3.8717	3.8718	3.8719	3.8719	3.8720	3.8720	3.8721	3.8721
4 10	3.8722	3.8722	3.8723	3.8723	3.8724	3.8724	3.8725	3.8726	3.8726	3.8727	3.8727
4 20	3.8727	3.8728	3.8729	3.8729	3.8730	3.8730	3.8731	3.8731	3.8732	3.8733	3.8733
4 30	3.8733	3.8734	3.8734	3.8735	3.8736	3.8736	3.8737	3.8737	3.8738	3.8738	3.8738
4 40	3.8739	3.8740	3.8740	3.8741	3.8741	3.8742	3.8742	3.8743	3.8744	3.8744	3.8744
4 50	3.8745	3.8745	3.8746	3.8747	3.8747	3.8748	3.8748	3.8749	3.8749	3.8750	3.8750
2 5 0	3.8751	3.8751	3.8752	3.8752	3.8753	3.8754	3.8754	3.8755	3.8755	3.8756	3.8756
5 10	3.8756	3.8757	3.8758	3.8758	3.8759	3.8759	3.8760	3.8760	3.8761	3.8762	3.8762
5 20	3.8762	3.8763	3.8763	3.8764	3.8764	3.8765	3.8766	3.8766	3.8767	3.8767	3.8767
5 30	3.8768	3.8769	3.8769	3.8770	3.8770	3.8771	3.8771	3.8772	3.8773	3.8773	3.8773
5 40	3.8774	3.8774	3.8775	3.8775	3.8776	3.8777	3.8777	3.8778	3.8778	3.8779	3.8779
5 50	3.8779	3.8780	3.8781	3.8781	3.8782	3.8782	3.8783	3.8783	3.8784	3.8785	3.8785
2 6 0	3.8785	3.8786	3.8786	3.8787	3.8788	3.8788	3.8789	3.8789	3.8790	3.8790	3.8790
6 10	3.8791	3.8792	3.8792	3.8793	3.8793	3.8794	3.8794	3.8795	3.8796	3.8796	3.8796
6 20	3.8797	3.8797	3.8798	3.8798	3.8799	3.8800	3.8800	3.8801	3.8801	3.8802	3.8802
6 30	3.8802	3.8803	3.8804	3.8804	3.8805	3.8805	3.8806	3.8806	3.8807	3.8808	3.8808
6 40	3.8808	3.8809	3.8809	3.8810	3.8810	3.8811	3.8812	3.8812	3.8813	3.8813	3.8813
6 50	3.8814	3.8814	3.8815	3.8816	3.8816	3.8817	3.8817	3.8818	3.8818	3.8819	3.8819
2 7 0	3.8820	3.8820	3.8821	3.8821	3.8822	3.8822	3.8823	3.8824	3.8824	3.8825	3.8825
7 10	3.8825	3.8826	3.8826	3.8827	3.8828	3.8828	3.8829	3.8829	3.8830	3.8830	3.8830
7 20	3.8831	3.8832	3.8832	3.8833	3.8833	3.8834	3.8834	3.8835	3.8835	3.8836	3.8836
7 30	3.8837	3.8837	3.8838	3.8838	3.8839	3.8839	3.8840	3.8841	3.8841	3.8842	3.8842
7 40	3.8842	3.8843	3.8843	3.8844	3.8845	3.8845	3.8846	3.8846	3.8847	3.8847	3.8847
7 50	3.8848	3.8849	3.8849	3.8850	3.8850	3.8851	3.8851	3.8852	3.8852	3.8853	3.8853
2 8 0	3.8854	3.8854	3.8855	3.8855	3.8856	3.8856	3.8857	3.8858	3.8858	3.8859	3.8859
8 10	3.8859	3.8860	3.8860	3.8861	3.8862	3.8862	3.8863	3.8863	3.8864	3.8864	3.8864
8 20	3.8865	3.8865	3.8866	3.8867	3.8867	3.8868	3.8868	3.8869	3.8869	3.8870	3.8870
8 30	3.8871	3.8871	3.8872	3.8872	3.8873	3.8873	3.8874	3.8874	3.8875	3.8876	3.8876
8 40	3.8876	3.8877	3.8877	3.8878	3.8878	3.8879	3.8880	3.8880	3.8881	3.8881	3.8881
8 50	3.8882	3.8882	3.8883	3.8883	3.8884	3.8885	3.8885	3.8886	3.8886	3.8887	3.8887
2 9 0	3.8887	3.8888	3.8889	3.8889	3.8890	3.8890	3.8891	3.8891	3.8892	3.8892	3.8892
9 10	3.8893	3.8894	3.8894	3.8895	3.8895	3.8896	3.8896	3.8897	3.8897	3.8898	3.8898
9 20	3.8899	3.8899	3.8900	3.8900	3.8901	3.8901	3.8902	3.8903	3.8903	3.8904	3.8904
9 30	3.8904	3.8905	3.8905	3.8906	3.8906	3.8907	3.8908	3.8908	3.8909	3.8909	3.8909
9 40	3.8910	3.8910	3.8911	3.8911	3.8912	3.8912	3.8913	3.8914	3.8914	3.8915	3.8915
9 50	3.8915	3.8916	3.8916	3.8917	3.8918	3.8918	3.8919	3.8919	3.8920	3.8920	3.8920

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
10^m 0	3.8921	3.8922	3.8922	3.8923	3.8923	3.8924	3.8924	3.8925	3.8925	3.8926
10 10	3.8927	3.8927	3.8928	3.8928	3.8929	3.8929	3.8930	3.8930	3.8931	3.8932
10 20	3.8932	3.8933	3.8933	3.8934	3.8934	3.8935	3.8935	3.8936	3.8937	3.8937
10 30	3.8938	3.8938	3.8939	3.8939	3.8940	3.8940	3.8941	3.8941	3.8942	3.8943
10 40	3.8943	3.8944	3.8944	3.8945	3.8945	3.8946	3.8946	3.8947	3.8948	3.8948
10 50	3.8949	3.8949	3.8950	3.8950	3.8951	3.8951	3.8952	3.8953	3.8953	3.8954
2 11 0	3.8954	3.8955	3.8955	3.8956	3.8956	3.8957	3.8957	3.8958	3.8958	3.8959
11 10	3.8960	3.8960	3.8961	3.8961	3.8962	3.8963	3.8963	3.8964	3.8964	3.8965
11 20	3.8965	3.8966	3.8966	3.8967	3.8967	3.8968	3.8969	3.8969	3.8970	3.8970
11 30	3.8971	3.8971	3.8972	3.8972	3.8973	3.8974	3.8974	3.8975	3.8975	3.8976
11 40	3.8976	3.8977	3.8977	3.8978	3.8978	3.8979	3.8980	3.8980	3.8981	3.8981
11 50	3.8982	3.8982	3.8983	3.8983	3.8984	3.8985	3.8985	3.8986	3.8986	3.8987
2 12 0	3.8987	3.8988	3.8988	3.8989	3.8989	3.8990	3.8991	3.8991	3.8992	3.8992
12 10	3.8993	3.8993	3.8994	3.8994	3.8995	3.8995	3.8996	3.8997	3.8997	3.8998
12 20	3.8998	3.8999	3.8999	3.9000	3.9000	3.9001	3.9001	3.9002	3.9003	3.9003
12 30	3.9004	3.9004	3.9005	3.9005	3.9006	3.9006	3.9007	3.9007	3.9008	3.9009
12 40	3.9009	3.9010	3.9010	3.9011	3.9011	3.9012	3.9012	3.9013	3.9013	3.9014
12 50	3.9015	3.9015	3.9016	3.9016	3.9017	3.9017	3.9018	3.9018	3.9019	3.9019
2 13 0	3.9020	3.9021	3.9021	3.9022	3.9022	3.9023	3.9023	3.9024	3.9024	3.9025
13 10	3.9025	3.9026	3.9027	3.9027	3.9028	3.9028	3.9029	3.9029	3.9030	3.9030
13 20	3.9031	3.9031	3.9032	3.9033	3.9033	3.9034	3.9034	3.9035	3.9035	3.9036
13 30	3.9036	3.9037	3.9037	3.9038	3.9038	3.9039	3.9040	3.9040	3.9041	3.9041
13 40	3.9042	3.9042	3.9043	3.9043	3.9044	3.9044	3.9045	3.9046	3.9046	3.9047
13 50	3.9047	3.9048	3.9048	3.9049	3.9049	3.9050	3.9050	3.9051	3.9051	3.9052
2 14 0	3.9053	3.9053	3.9054	3.9054	3.9055	3.9055	3.9056	3.9056	3.9057	3.9057
14 10	3.9058	3.9058	3.9059	3.9060	3.9060	3.9061	3.9061	3.9062	3.9062	3.9063
14 20	3.9063	3.9064	3.9064	3.9065	3.9066	3.9066	3.9067	3.9067	3.9068	3.9068
14 30	3.9069	3.9069	3.9070	3.9070	3.9071	3.9071	3.9072	3.9073	3.9073	3.9074
14 40	3.9074	3.9075	3.9075	3.9076	3.9076	3.9077	3.9077	3.9078	3.9078	3.9079
14 50	3.9079	3.9080	3.9081	3.9081	3.9082	3.9082	3.9083	3.9083	3.9084	3.9084
2 15 0	3.9085	3.9085	3.9086	3.9086	3.9087	3.9088	3.9088	3.9089	3.9089	3.9090
15 10	3.9090	3.9091	3.9091	3.9092	3.9092	3.9093	3.9093	3.9094	3.9094	3.9095
15 20	3.9096	3.9096	3.9097	3.9097	3.9098	3.9098	3.9099	3.9099	3.9100	3.9100
15 30	3.9101	3.9101	3.9102	3.9103	3.9103	3.9104	3.9104	3.9105	3.9105	3.9106
15 40	3.9106	3.9107	3.9107	3.9108	3.9108	3.9109	3.9109	3.9110	3.9111	3.9111
15 50	3.9112	3.9112	3.9113	3.9113	3.9114	3.9114	3.9115	3.9115	3.9116	3.9116
2 16 0	3.9117	3.9117	3.9118	3.9118	3.9119	3.9120	3.9120	3.9121	3.9121	3.9122
16 10	3.9122	3.9123	3.9123	3.9124	3.9124	3.9125	3.9125	3.9126	3.9126	3.9127
16 20	3.9128	3.9128	3.9129	3.9129	3.9130	3.9130	3.9131	3.9131	3.9132	3.9132
16 30	3.9133	3.9133	3.9134	3.9134	3.9135	3.9135	3.9136	3.9137	3.9137	3.9138
16 40	3.9138	3.9139	3.9139	3.9140	3.9140	3.9141	3.9141	3.9142	3.9142	3.9143
16 50	3.9143	3.9144	3.9144	3.9145	3.9146	3.9146	3.9147	3.9147	3.9148	3.9148
2 17 0	3.9149	3.9149	3.9150	3.9150	3.9151	3.9151	3.9152	3.9152	3.9153	3.9153
17 10	3.9154	3.9155	3.9155	3.9156	3.9156	3.9157	3.9157	3.9158	3.9158	3.9159
17 20	3.9159	3.9160	3.9160	3.9161	3.9161	3.9162	3.9162	3.9163	3.9163	3.9164
17 30	3.9165	3.9165	3.9166	3.9166	3.9167	3.9167	3.9168	3.9168	3.9169	3.9169
17 40	3.9170	3.9170	3.9171	3.9171	3.9172	3.9172	3.9173	3.9173	3.9174	3.9175
17 50	3.9175	3.9176	3.9176	3.9177	3.9177	3.9178	3.9178	3.9179	3.9179	3.9180
2 18 0	3.9180	3.9181	3.9181	3.9182	3.9182	3.9183	3.9183	3.9184	3.9184	3.9185
18 10	3.9186	3.9186	3.9187	3.9187	3.9188	3.9188	3.9189	3.9189	3.9190	3.9190
18 20	3.9191	3.9191	3.9192	3.9192	3.9193	3.9193	3.9194	3.9194	3.9195	3.9195
18 30	3.9196	3.9197	3.9197	3.9198	3.9198	3.9199	3.9199	3.9200	3.9200	3.9201
18 40	3.9201	3.9202	3.9202	3.9203	3.9203	3.9204	3.9204	3.9205	3.9205	3.9206
18 50	3.9206	3.9207	3.9207	3.9208	3.9209	3.9209	3.9210	3.9210	3.9211	3.9211
2 19 0	3.9212	3.9212	3.9213	3.9213	3.9214	3.9214	3.9215	3.9215	3.9216	3.9216
19 10	3.9217	3.9217	3.9218	3.9218	3.9219	3.9219	3.9220	3.9221	3.9221	3.9222
19 20	3.9222	3.9223	3.9223	3.9224	3.9224	3.9225	3.9225	3.9226	3.9226	3.9227
19 30	3.9227	3.9228	3.9228	3.9229	3.9229	3.9230	3.9230	3.9231	3.9231	3.9232
19 40	3.9232	3.9233	3.9233	3.9234	3.9235	3.9235	3.9236	3.9236	3.9237	3.9237
19 50	3.9238	3.9238	3.9239	3.9239	3.9240	3.9240	3.9241	3.9241	3.9242	3.9242

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
20 ^m 0	3.9243	3.9243	3.9244	3.9244	3.9245	3.9245	3.9246	3.9246	3.9247	3.9247
20 10	3.9248	3.9248	3.9249	3.9250	3.9250	3.9251	3.9251	3.9252	3.9252	3.9253
20 20	3.9253	3.9254	3.9254	3.9255	3.9255	3.9256	3.9256	3.9257	3.9257	3.9258
20 30	3.9258	3.9259	3.9259	3.9260	3.9260	3.9261	3.9261	3.9262	3.9262	3.9263
20 40	3.9263	3.9264	3.9264	3.9265	3.9265	3.9266	3.9266	3.9267	3.9268	3.9268
20 50	3.9269	3.9269	3.9270	3.9270	3.9271	3.9271	3.9272	3.9272	3.9273	3.9273
2 21 0	3.9274	3.9274	3.9275	3.9275	3.9276	3.9276	3.9277	3.9277	3.9278	3.9278
21 10	3.9279	3.9279	3.9280	3.9280	3.9281	3.9281	3.9282	3.9282	3.9283	3.9283
21 20	3.9284	3.9284	3.9285	3.9285	3.9286	3.9287	3.9287	3.9288	3.9288	3.9289
21 30	3.9289	3.9290	3.9290	3.9291	3.9291	3.9292	3.9292	3.9293	3.9293	3.9294
21 40	3.9294	3.9295	3.9295	3.9296	3.9296	3.9297	3.9297	3.9298	3.9298	3.9299
21 50	3.9299	3.9300	3.9300	3.9301	3.9301	3.9302	3.9302	3.9303	3.9303	3.9304
2 22 0	3.9304	3.9305	3.9305	3.9306	3.9306	3.9307	3.9307	3.9308	3.9308	3.9309
22 10	3.9309	3.9310	3.9311	3.9311	3.9312	3.9312	3.9313	3.9313	3.9314	3.9314
22 20	3.9315	3.9315	3.9316	3.9316	3.9317	3.9317	3.9318	3.9318	3.9319	3.9319
22 30	3.9320	3.9320	3.9321	3.9321	3.9322	3.9322	3.9323	3.9323	3.9324	3.9324
22 40	3.9325	3.9325	3.9326	3.9326	3.9327	3.9327	3.9328	3.9328	3.9329	3.9329
22 50	3.9330	3.9330	3.9331	3.9331	3.9332	3.9332	3.9333	3.9333	3.9334	3.9334
2 23 0	3.9335	3.9335	3.9336	3.9336	3.9337	3.9337	3.9338	3.9338	3.9339	3.9339
23 10	3.9340	3.9340	3.9341	3.9341	3.9342	3.9342	3.9343	3.9343	3.9344	3.9344
23 20	3.9345	3.9345	3.9346	3.9346	3.9347	3.9347	3.9348	3.9348	3.9349	3.9349
23 30	3.9350	3.9351	3.9351	3.9352	3.9352	3.9353	3.9353	3.9354	3.9354	3.9355
23 40	3.9355	3.9356	3.9356	3.9357	3.9357	3.9358	3.9358	3.9359	3.9359	3.9360
23 50	3.9360	3.9361	3.9361	3.9362	3.9362	3.9363	3.9363	3.9364	3.9364	3.9365
2 24 0	3.9365	3.9366	3.9366	3.9367	3.9367	3.9368	3.9368	3.9369	3.9369	3.9370
24 10	3.9370	3.9371	3.9371	3.9372	3.9372	3.9373	3.9373	3.9374	3.9374	3.9375
24 20	3.9375	3.9376	3.9376	3.9377	3.9377	3.9378	3.9378	3.9379	3.9379	3.9380
24 30	3.9380	3.9381	3.9381	3.9382	3.9382	3.9383	3.9383	3.9384	3.9384	3.9385
24 40	3.9385	3.9386	3.9386	3.9387	3.9387	3.9388	3.9388	3.9389	3.9389	3.9390
24 50	3.9390	3.9391	3.9391	3.9392	3.9392	3.9393	3.9393	3.9394	3.9394	3.9395
2 25 0	3.9395	3.9396	3.9396	3.9397	3.9397	3.9398	3.9398	3.9399	3.9399	3.9400
25 10	3.9400	3.9401	3.9401	3.9402	3.9402	3.9403	3.9403	3.9404	3.9404	3.9405
25 20	3.9405	3.9406	3.9406	3.9407	3.9407	3.9408	3.9408	3.9409	3.9409	3.9410
25 30	3.9410	3.9411	3.9411	3.9412	3.9412	3.9413	3.9413	3.9414	3.9414	3.9415
25 40	3.9415	3.9416	3.9416	3.9417	3.9417	3.9418	3.9418	3.9419	3.9419	3.9420
25 50	3.9420	3.9421	3.9421	3.9422	3.9422	3.9423	3.9423	3.9424	3.9424	3.9425
2 26 0	3.9425	3.9426	3.9426	3.9427	3.9427	3.9428	3.9428	3.9429	3.9429	3.9430
26 10	3.9430	3.9430	3.9431	3.9431	3.9432	3.9432	3.9433	3.9433	3.9434	3.9434
26 20	3.9435	3.9435	3.9436	3.9436	3.9437	3.9437	3.9438	3.9438	3.9439	3.9439
26 30	3.9440	3.9440	3.9441	3.9441	3.9442	3.9442	3.9443	3.9443	3.9444	3.9444
26 40	3.9445	3.9445	3.9446	3.9446	3.9447	3.9447	3.9448	3.9448	3.9449	3.9449
26 50	3.9450	3.9450	3.9451	3.9451	3.9452	3.9452	3.9453	3.9453	3.9454	3.9454
2 27 0	3.9455	3.9455	3.9456	3.9456	3.9457	3.9457	3.9458	3.9458	3.9459	3.9459
27 10	3.9460	3.9460	3.9461	3.9461	3.9462	3.9462	3.9463	3.9463	3.9464	3.9464
27 20	3.9465	3.9465	3.9466	3.9466	3.9467	3.9467	3.9468	3.9468	3.9469	3.9469
27 30	3.9469	3.9470	3.9470	3.9471	3.9471	3.9472	3.9472	3.9473	3.9473	3.9474
27 40	3.9474	3.9475	3.9475	3.9476	3.9476	3.9477	3.9477	3.9478	3.9478	3.9479
27 50	3.9479	3.9480	3.9480	3.9481	3.9481	3.9482	3.9482	3.9483	3.9483	3.9484
2 28 0	3.9484	3.9485	3.9485	3.9486	3.9486	3.9487	3.9487	3.9488	3.9488	3.9489
28 10	3.9489	3.9490	3.9490	3.9490	3.9491	3.9491	3.9492	3.9492	3.9493	3.9493
28 20	3.9494	3.9494	3.9495	3.9495	3.9496	3.9496	3.9497	3.9497	3.9498	3.9498
28 30	3.9499	3.9499	3.9500	3.9500	3.9501	3.9501	3.9502	3.9502	3.9503	3.9503
28 40	3.9504	3.9504	3.9505	3.9505	3.9506	3.9506	3.9507	3.9507	3.9508	3.9508
28 50	3.9509	3.9509	3.9509	3.9510	3.9510	3.9511	3.9511	3.9512	3.9512	3.9513
2 29 0	3.9513	3.9514	3.9514	3.9515	3.9515	3.9516	3.9516	3.9517	3.9517	3.9518
29 10	3.9518	3.9519	3.9519	3.9520	3.9520	3.9521	3.9521	3.9522	3.9522	3.9523
29 20	3.9523	3.9524	3.9524	3.9525	3.9525	3.9526	3.9526	3.9527	3.9527	3.9528
29 30	3.9528	3.9528	3.9529	3.9529	3.9530	3.9530	3.9531	3.9531	3.9532	3.9532
29 40	3.9533	3.9533	3.9534	3.9534	3.9535	3.9535	3.9536	3.9536	3.9537	3.9537
29 50	3.9538	3.9538	3.9539	3.9539	3.9540	3.9540	3.9541	3.9541	3.9542	3.9542

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
29° 30' 0"	3.9542	3.9543	3.9543	3.9544	3.9544	3.9545	3.9545	3.9546	3.9546	3.9547
30 10	3.9547	3.9548	3.9548	3.9549	3.9549	3.9550	3.9550	3.9551	3.9551	3.9552
30 20	3.9552	3.9553	3.9553	3.9554	3.9554	3.9554	3.9555	3.9555	3.9556	3.9556
30 30	3.9557	3.9557	3.9558	3.9558	3.9559	3.9559	3.9560	3.9560	3.9561	3.9561
30 40	3.9562	3.9562	3.9563	3.9563	3.9564	3.9564	3.9565	3.9565	3.9566	3.9566
30 50	3.9566	3.9567	3.9567	3.9568	3.9568	3.9569	3.9569	3.9570	3.9570	3.9571
2 81 0	3.9571	3.9572	3.9572	3.9573	3.9573	3.9574	3.9574	3.9575	3.9575	3.9576
81 10	3.9576	3.9577	3.9577	3.9578	3.9578	3.9578	3.9579	3.9579	3.9580	3.9580
81 20	3.9581	3.9581	3.9582	3.9582	3.9583	3.9583	3.9584	3.9584	3.9585	3.9585
81 30	3.9586	3.9586	3.9587	3.9587	3.9588	3.9588	3.9589	3.9589	3.9590	3.9590
81 40	3.9590	3.9591	3.9591	3.9592	3.9592	3.9593	3.9593	3.9594	3.9594	3.9595
81 50	3.9595	3.9596	3.9596	3.9597	3.9597	3.9598	3.9598	3.9599	3.9599	3.9600
2 82 0	3.9600	3.9600	3.9601	3.9601	3.9602	3.9602	3.9603	3.9603	3.9604	3.9604
82 10	3.9605	3.9605	3.9606	3.9606	3.9607	3.9607	3.9608	3.9608	3.9609	3.9609
82 20	3.9609	3.9610	3.9610	3.9611	3.9611	3.9612	3.9612	3.9613	3.9613	3.9614
82 30	3.9614	3.9615	3.9615	3.9616	3.9616	3.9617	3.9617	3.9618	3.9618	3.9618
82 40	3.9619	3.9619	3.9620	3.9620	3.9621	3.9621	3.9622	3.9622	3.9623	3.9623
82 50	3.9624	3.9624	3.9625	3.9625	3.9626	3.9626	3.9627	3.9627	3.9627	3.9628
2 83 0	3.9628	3.9629	3.9629	3.9630	3.9630	3.9631	3.9631	3.9632	3.9632	3.9633
83 10	3.9633	3.9634	3.9634	3.9635	3.9635	3.9635	3.9636	3.9636	3.9637	3.9637
83 20	3.9638	3.9638	3.9639	3.9639	3.9640	3.9640	3.9641	3.9641	3.9642	3.9642
83 30	3.9642	3.9643	3.9643	3.9644	3.9644	3.9645	3.9645	3.9646	3.9646	3.9647
83 40	3.9647	3.9648	3.9648	3.9649	3.9649	3.9650	3.9650	3.9651	3.9651	3.9652
83 50	3.9652	3.9653	3.9653	3.9653	3.9654	3.9654	3.9655	3.9655	3.9656	3.9656
2 84 0	3.9657	3.9657	3.9658	3.9658	3.9658	3.9659	3.9659	3.9660	3.9660	3.9661
84 10	3.9661	3.9662	3.9662	3.9663	3.9663	3.9664	3.9664	3.9665	3.9665	3.9666
84 20	3.9666	3.9666	3.9667	3.9667	3.9668	3.9668	3.9669	3.9669	3.9670	3.9670
84 30	3.9671	3.9671	3.9672	3.9672	3.9673	3.9673	3.9673	3.9674	3.9674	3.9675
84 40	3.9675	3.9676	3.9676	3.9677	3.9677	3.9678	3.9678	3.9679	3.9679	3.9680
84 50	3.9680	3.9681	3.9681	3.9682	3.9682	3.9682	3.9683	3.9683	3.9684	3.9684
2 85 0	3.9685	3.9685	3.9686	3.9686	3.9687	3.9687	3.9688	3.9688	3.9689	3.9689
85 10	3.9689	3.9690	3.9690	3.9691	3.9691	3.9692	3.9692	3.9693	3.9693	3.9694
85 20	3.9694	3.9695	3.9695	3.9696	3.9696	3.9696	3.9697	3.9697	3.9698	3.9698
85 30	3.9699	3.9699	3.9700	3.9700	3.9701	3.9701	3.9702	3.9702	3.9703	3.9703
85 40	3.9703	3.9704	3.9704	3.9705	3.9705	3.9706	3.9706	3.9707	3.9707	3.9708
85 50	3.9708	3.9709	3.9709	3.9710	3.9710	3.9710	3.9711	3.9711	3.9712	3.9712
2 86 0	3.9713	3.9713	3.9714	3.9714	3.9715	3.9715	3.9716	3.9716	3.9717	3.9717
86 10	3.9717	3.9718	3.9718	3.9719	3.9719	3.9720	3.9720	3.9721	3.9721	3.9722
86 20	3.9722	3.9722	3.9723	3.9723	3.9724	3.9724	3.9725	3.9725	3.9726	3.9726
86 30	3.9727	3.9727	3.9728	3.9728	3.9729	3.9729	3.9729	3.9730	3.9730	3.9731
86 40	3.9731	3.9732	3.9732	3.9733	3.9733	3.9734	3.9734	3.9735	3.9735	3.9735
86 50	3.9736	3.9736	3.9737	3.9737	3.9738	3.9738	3.9739	3.9739	3.9740	3.9740
2 87 0	3.9741	3.9741	3.9741	3.9742	3.9742	3.9743	3.9743	3.9744	3.9744	3.9745
87 10	3.9745	3.9746	3.9746	3.9746	3.9747	3.9747	3.9748	3.9748	3.9749	3.9749
87 20	3.9750	3.9750	3.9751	3.9751	3.9752	3.9752	3.9752	3.9753	3.9753	3.9754
87 30	3.9754	3.9755	3.9755	3.9756	3.9756	3.9757	3.9757	3.9758	3.9758	3.9758
87 40	3.9759	3.9759	3.9760	3.9760	3.9761	3.9761	3.9762	3.9762	3.9763	3.9763
87 50	3.9763	3.9764	3.9764	3.9765	3.9765	3.9766	3.9766	3.9767	3.9767	3.9768
2 88 0	3.9768	3.9769	3.9769	3.9769	3.9770	3.9770	3.9771	3.9771	3.9772	3.9772
88 10	3.9773	3.9773	3.9774	3.9774	3.9774	3.9775	3.9775	3.9776	3.9776	3.9777
88 20	3.9777	3.9778	3.9778	3.9779	3.9779	3.9779	3.9780	3.9780	3.9781	3.9781
88 30	3.9782	3.9782	3.9783	3.9783	3.9784	3.9784	3.9785	3.9785	3.9786	3.9786
88 40	3.9786	3.9787	3.9787	3.9788	3.9788	3.9789	3.9789	3.9790	3.9790	3.9790
88 50	3.9791	3.9791	3.9792	3.9792	3.9793	3.9793	3.9794	3.9794	3.9795	3.9795
2 89 0	3.9795	3.9796	3.9796	3.9797	3.9797	3.9798	3.9798	3.9799	3.9799	3.9800
89 10	3.9800	3.9800	3.9801	3.9801	3.9802	3.9802	3.9803	3.9803	3.9804	3.9804
89 20	3.9805	3.9805	3.9805	3.9806	3.9806	3.9807	3.9807	3.9808	3.9808	3.9809
89 30	3.9809	3.9810	3.9810	3.9810	3.9811	3.9811	3.9812	3.9812	3.9813	3.9813
89 40	3.9814	3.9814	3.9815	3.9815	3.9815	3.9816	3.9816	3.9817	3.9817	3.9818
89 50	3.9818	3.9819	3.9819	3.9819	3.9820	3.9820	3.9821	3.9821	3.9822	3.9822

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
40^m 0^s	3.9823	3.9823	3.9824	3.9824	3.9825	3.9825	3.9825	3.9826	3.9826	3.9827
40 10	3.9827	3.9828	3.9828	3.9829	3.9829	3.9829	3.9830	3.9830	3.9831	3.9831
40 20	3.9832	3.9832	3.9833	3.9833	3.9834	3.9834	3.9834	3.9835	3.9835	3.9836
40 30	3.9836	3.9837	3.9837	3.9838	3.9838	3.9839	3.9839	3.9839	3.9840	3.9840
40 40	3.9841	3.9841	3.9842	3.9842	3.9843	3.9843	3.9843	3.9844	3.9844	3.9845
40 50	3.9845	3.9846	3.9846	3.9847	3.9847	3.9848	3.9848	3.9848	3.9849	3.9849
2 41 0	3.9850	3.9850	3.9851	3.9851	3.9852	3.9852	3.9852	3.9853	3.9853	3.9854
41 10	3.9854	3.9855	3.9855	3.9856	3.9856	3.9857	3.9857	3.9857	3.9858	3.9858
41 20	3.9859	3.9859	3.9860	3.9860	3.9861	3.9861	3.9861	3.9862	3.9862	3.9863
41 30	3.9863	3.9864	3.9864	3.9865	3.9865	3.9866	3.9866	3.9866	3.9867	3.9867
41 40	3.9868	3.9868	3.9869	3.9869	3.9870	3.9870	3.9870	3.9871	3.9871	3.9872
41 50	3.9872	3.9873	3.9873	3.9874	3.9874	3.9874	3.9875	3.9875	3.9876	3.9876
2 42 0	3.9877	3.9877	3.9878	3.9878	3.9878	3.9879	3.9879	3.9880	3.9880	3.9881
42 10	3.9881	3.9882	3.9882	3.9882	3.9883	3.9883	3.9884	3.9884	3.9885	3.9885
42 20	3.9886	3.9886	3.9886	3.9887	3.9887	3.9888	3.9888	3.9889	3.9889	3.9890
42 30	3.9890	3.9890	3.9891	3.9891	3.9892	3.9892	3.9893	3.9893	3.9894	3.9894
42 40	3.9894	3.9895	3.9895	3.9896	3.9896	3.9897	3.9897	3.9898	3.9898	3.9898
42 50	3.9899	3.9899	3.9900	3.9900	3.9901	3.9901	3.9902	3.9902	3.9903	3.9903
2 43 0	3.9903	3.9904	3.9904	3.9905	3.9905	3.9906	3.9906	3.9906	3.9907	3.9907
43 10	3.9908	3.9908	3.9909	3.9909	3.9910	3.9910	3.9910	3.9911	3.9911	3.9912
43 20	3.9912	3.9913	3.9913	3.9914	3.9914	3.9914	3.9915	3.9915	3.9916	3.9916
43 30	3.9917	3.9917	3.9918	3.9918	3.9918	3.9919	3.9919	3.9920	3.9920	3.9921
43 40	3.9921	3.9922	3.9922	3.9922	3.9923	3.9923	3.9924	3.9924	3.9925	3.9925
43 50	3.9926	3.9926	3.9926	3.9927	3.9927	3.9928	3.9928	3.9929	3.9929	3.9930
2 44 0	3.9930	3.9930	3.9931	3.9931	3.9932	3.9932	3.9933	3.9933	3.9933	3.9934
44 10	3.9934	3.9935	3.9935	3.9936	3.9936	3.9937	3.9937	3.9937	3.9938	3.9938
44 20	3.9939	3.9939	3.9940	3.9940	3.9941	3.9941	3.9941	3.9942	3.9942	3.9943
44 30	3.9943	3.9944	3.9944	3.9944	3.9945	3.9945	3.9946	3.9946	3.9947	3.9947
44 40	3.9948	3.9948	3.9948	3.9949	3.9949	3.9950	3.9950	3.9951	3.9951	3.9952
44 50	3.9952	3.9952	3.9953	3.9953	3.9954	3.9954	3.9955	3.9955	3.9955	3.9956
2 45 0	3.9956	3.9957	3.9957	3.9958	3.9958	3.9959	3.9959	3.9959	3.9960	3.9960
45 10	3.9961	3.9961	3.9962	3.9962	3.9962	3.9963	3.9963	3.9964	3.9964	3.9965
45 20	3.9965	3.9966	3.9966	3.9966	3.9967	3.9967	3.9968	3.9968	3.9969	3.9969
45 30	3.9969	3.9970	3.9970	3.9971	3.9971	3.9972	3.9972	3.9973	3.9973	3.9973
45 40	3.9974	3.9974	3.9975	3.9975	3.9976	3.9976	3.9976	3.9977	3.9977	3.9978
45 50	3.9978	3.9979	3.9979	3.9980	3.9980	3.9980	3.9981	3.9981	3.9982	3.9982
2 46 0	3.9983	3.9983	3.9983	3.9984	3.9984	3.9985	3.9985	3.9986	3.9986	3.9987
46 10	3.9987	3.9987	3.9988	3.9988	3.9989	3.9989	3.9990	3.9990	3.9990	3.9991
46 20	3.9991	3.9992	3.9992	3.9993	3.9993	3.9993	3.9994	3.9994	3.9995	3.9995
46 30	3.9996	3.9996	3.9997	3.9997	3.9997	3.9998	3.9998	3.9999	3.9999	4.0000
46 40	4.0000	4.0000	4.0001	4.0001	4.0002	4.0002	4.0003	4.0003	4.0003	4.0004
46 50	4.0004	4.0005	4.0005	4.0006	4.0006	4.0007	4.0007	4.0007	4.0008	4.0008
2 47 0	4.0009	4.0009	4.0010	4.0010	4.0010	4.0011	4.0011	4.0012	4.0012	4.0013
47 10	4.0013	4.0013	4.0014	4.0014	4.0015	4.0015	4.0016	4.0016	4.0016	4.0017
47 20	4.0017	4.0018	4.0018	4.0019	4.0019	4.0019	4.0020	4.0020	4.0021	4.0021
47 30	4.0022	4.0022	4.0023	4.0023	4.0023	4.0024	4.0024	4.0025	4.0025	4.0026
47 40	4.0026	4.0026	4.0027	4.0027	4.0028	4.0028	4.0029	4.0029	4.0029	4.0030
47 50	4.0030	4.0031	4.0031	4.0032	4.0032	4.0032	4.0033	4.0033	4.0034	4.0034
2 48 0	4.0035	4.0035	4.0035	4.0036	4.0036	4.0037	4.0037	4.0038	4.0038	4.0038
48 10	4.0039	4.0039	4.0040	4.0040	4.0041	4.0041	4.0041	4.0042	4.0042	4.0043
48 20	4.0043	4.0044	4.0044	4.0045	4.0045	4.0045	4.0046	4.0046	4.0047	4.0047
48 30	4.0048	4.0048	4.0048	4.0049	4.0049	4.0050	4.0050	4.0051	4.0051	4.0051
48 40	4.0052	4.0052	4.0053	4.0053	4.0054	4.0054	4.0054	4.0055	4.0055	4.0056
48 50	4.0056	4.0057	4.0057	4.0057	4.0058	4.0058	4.0059	4.0059	4.0060	4.0060
2 49 0	4.0060	4.0061	4.0061	4.0062	4.0062	4.0063	4.0063	4.0063	4.0064	4.0064
49 10	4.0065	4.0065	4.0066	4.0066	4.0066	4.0067	4.0067	4.0068	4.0068	4.0069
49 20	4.0069	4.0069	4.0070	4.0070	4.0071	4.0071	4.0072	4.0072	4.0072	4.0073
49 30	4.0073	4.0074	4.0074	4.0074	4.0075	4.0075	4.0076	4.0076	4.0077	4.0077
49 40	4.0077	4.0078	4.0078	4.0079	4.0079	4.0080	4.0080	4.0080	4.0081	4.0081
49 50	4.0082	4.0082	4.0083	4.0083	4.0083	4.0084	4.0084	4.0085	4.0085	4.0086

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.										
Arc.	0	1	2	3	4	5	6	7	8	9
$2^{\circ} 50^m$ 0 ^s	4.0086	4.0086	4.0087	4.0087	4.0088	4.0088	4.0089	4.0089	4.0089	4.0090
50 10	4.0090	4.0091	4.0091	4.0092	4.0092	4.0092	4.0093	4.0093	4.0094	4.0094
50 20	4.0095	4.0095	4.0095	4.0096	4.0096	4.0097	4.0097	4.0097	4.0098	4.0098
50 30	4.0099	4.0099	4.0100	4.0100	4.0100	4.0101	4.0101	4.0102	4.0102	4.0103
50 40	4.0103	4.0103	4.0104	4.0104	4.0105	4.0105	4.0106	4.0106	4.0106	4.0107
50 50	4.0107	4.0108	4.0108	4.0109	4.0109	4.0109	4.0110	4.0110	4.0111	4.0111
2 51 0	4.0111	4.0112	4.0112	4.0113	4.0113	4.0114	4.0114	4.0114	4.0115	4.0115
51 10	4.0116	4.0116	4.0117	4.0117	4.0117	4.0118	4.0118	4.0119	4.0119	4.0120
51 20	4.0120	4.0120	4.0121	4.0121	4.0122	4.0122	4.0122	4.0123	4.0123	4.0124
51 30	4.0124	4.0125	4.0125	4.0125	4.0126	4.0126	4.0127	4.0127	4.0128	4.0128
51 40	4.0128	4.0129	4.0129	4.0130	4.0130	4.0130	4.0131	4.0131	4.0132	4.0132
51 50	4.0133	4.0133	4.0133	4.0134	4.0134	4.0135	4.0135	4.0136	4.0136	4.0136
2 52 0	4.0137	4.0137	4.0138	4.0138	4.0138	4.0139	4.0139	4.0140	4.0140	4.0141
52 10	4.0141	4.0141	4.0142	4.0142	4.0143	4.0143	4.0144	4.0144	4.0144	4.0145
52 20	4.0145	4.0146	4.0146	4.0146	4.0147	4.0147	4.0148	4.0148	4.0149	4.0149
52 30	4.0149	4.0150	4.0150	4.0151	4.0151	4.0152	4.0152	4.0153	4.0153	4.0153
52 40	4.0154	4.0154	4.0154	4.0155	4.0155	4.0156	4.0156	4.0157	4.0157	4.0157
52 50	4.0158	4.0158	4.0159	4.0159	4.0159	4.0160	4.0160	4.0161	4.0161	4.0162
2 53 0	4.0162	4.0162	4.0163	4.0163	4.0164	4.0164	4.0164	4.0165	4.0165	4.0166
53 10	4.0166	4.0167	4.0167	4.0167	4.0168	4.0168	4.0169	4.0169	4.0169	4.0170
53 20	4.0170	4.0171	4.0171	4.0172	4.0172	4.0172	4.0173	4.0173	4.0174	4.0174
53 30	4.0175	4.0175	4.0175	4.0176	4.0176	4.0177	4.0177	4.0177	4.0178	4.0178
53 40	4.0179	4.0179	4.0180	4.0180	4.0180	4.0181	4.0181	4.0182	4.0182	4.0182
53 50	4.0183	4.0183	4.0184	4.0184	4.0185	4.0185	4.0185	4.0186	4.0186	4.0187
2 54 0	4.0187	4.0187	4.0188	4.0188	4.0189	4.0189	4.0190	4.0190	4.0190	4.0191
54 10	4.0191	4.0192	4.0192	4.0192	4.0193	4.0193	4.0194	4.0194	4.0194	4.0195
54 20	4.0195	4.0196	4.0196	4.0197	4.0197	4.0197	4.0198	4.0198	4.0199	4.0199
54 30	4.0199	4.0200	4.0200	4.0201	4.0201	4.0202	4.0202	4.0202	4.0203	4.0203
54 40	4.0204	4.0204	4.0204	4.0205	4.0205	4.0206	4.0206	4.0207	4.0207	4.0207
54 50	4.0208	4.0208	4.0209	4.0209	4.0209	4.0210	4.0210	4.0211	4.0211	4.0211
2 55 0	4.0212	4.0212	4.0213	4.0213	4.0214	4.0214	4.0214	4.0215	4.0215	4.0216
55 10	4.0216	4.0216	4.0217	4.0217	4.0218	4.0218	4.0219	4.0219	4.0219	4.0220
55 20	4.0220	4.0221	4.0221	4.0221	4.0222	4.0222	4.0223	4.0223	4.0223	4.0224
55 30	4.0224	4.0225	4.0225	4.0225	4.0226	4.0226	4.0227	4.0227	4.0228	4.0228
55 40	4.0228	4.0229	4.0229	4.0230	4.0230	4.0230	4.0231	4.0231	4.0232	4.0232
55 50	4.0233	4.0233	4.0233	4.0234	4.0234	4.0235	4.0235	4.0235	4.0236	4.0236
2 56 0	4.0237	4.0237	4.0237	4.0238	4.0238	4.0239	4.0239	4.0240	4.0240	4.0240
56 10	4.0241	4.0241	4.0242	4.0242	4.0242	4.0243	4.0243	4.0244	4.0244	4.0244
56 20	4.0245	4.0245	4.0246	4.0246	4.0246	4.0247	4.0247	4.0248	4.0248	4.0249
56 30	4.0249	4.0249	4.0250	4.0250	4.0251	4.0251	4.0251	4.0252	4.0252	4.0253
56 40	4.0253	4.0253	4.0254	4.0254	4.0255	4.0255	4.0256	4.0256	4.0256	4.0257
56 50	4.0257	4.0258	4.0258	4.0258	4.0259	4.0259	4.0260	4.0260	4.0260	4.0261
2 57 0	4.0261	4.0262	4.0262	4.0262	4.0263	4.0263	4.0264	4.0264	4.0265	4.0265
57 10	4.0265	4.0266	4.0266	4.0267	4.0267	4.0267	4.0268	4.0268	4.0269	4.0269
57 20	4.0269	4.0270	4.0270	4.0271	4.0271	4.0271	4.0272	4.0272	4.0273	4.0273
57 30	4.0273	4.0274	4.0274	4.0275	4.0275	4.0276	4.0276	4.0276	4.0277	4.0277
57 40	4.0278	4.0278	4.0278	4.0279	4.0279	4.0280	4.0280	4.0280	4.0281	4.0281
57 50	4.0282	4.0282	4.0282	4.0283	4.0283	4.0284	4.0284	4.0284	4.0285	4.0285
2 58 0	4.0286	4.0286	4.0287	4.0287	4.0287	4.0288	4.0288	4.0289	4.0289	4.0289
58 10	4.0290	4.0290	4.0291	4.0291	4.0291	4.0292	4.0292	4.0293	4.0293	4.0293
58 20	4.0294	4.0294	4.0295	4.0295	4.0295	4.0296	4.0296	4.0297	4.0297	4.0297
58 30	4.0298	4.0298	4.0299	4.0299	4.0300	4.0300	4.0300	4.0301	4.0301	4.0302
58 40	4.0302	4.0302	4.0303	4.0303	4.0304	4.0304	4.0304	4.0305	4.0305	4.0306
58 50	4.0306	4.0306	4.0307	4.0307	4.0308	4.0308	4.0308	4.0309	4.0309	4.0310
2 59 0	4.0310	4.0310	4.0311	4.0311	4.0312	4.0312	4.0312	4.0313	4.0313	4.0314
59 10	4.0314	4.0314	4.0315	4.0315	4.0316	4.0316	4.0317	4.0317	4.0317	4.0318
59 20	4.0318	4.0319	4.0319	4.0319	4.0320	4.0320	4.0321	4.0321	4.0321	4.0322
59 30	4.0322	4.0323	4.0323	4.0323	4.0324	4.0324	4.0325	4.0325	4.0325	4.0326
59 40	4.0326	4.0327	4.0327	4.0327	4.0328	4.0328	4.0329	4.0329	4.0329	4.0330
59 50	4.0330	4.0331	4.0331	4.0331	4.0332	4.0332	4.0333	4.0333	4.0333	4.0334

TABLE II.

TABLE, SHOWING THE 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	2	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	4	5	5	5	5	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	7	8	8	8	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	6	6	7	7	8	8	9	9	10	10	11	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	11	12	12	13	14	14		
1 10	1 50	1	1	2	2	3	4	4	5	6	6	7	8	8	9	9	10	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	8	9	9	10	10	11	11	12	12	13	14	14	15	16	16		
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	9	9	10	11	11	12	12	13	14	14	15	16	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	102			
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.			
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 10	2 50	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	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	13	13			
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	14	14	14	14	15	15	16	16	16	17	17	17	17	18			
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22	22			
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	23	23	24	24	25	25	26			
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	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	30			
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	27	27	28	28	29	29	30	31	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	32			

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																
		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.
0 0	3 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	8	8	8	8	8	8	8	8	8	8	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	15	15	16	16	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	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.

TABLE III. SIDEREAL INTO MEAN SOLAR TIME.

Side- real.	0 h.		1 h.		2 h.		3 h.		4 h.		5 h.		6 h.		7 h.		For Seconds.	
	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	a.	s.
0	0	00.000	0	09.830	0	19.659	0	29.489	0	39.318	0	49.148	0	58.977	1	08.807		
1	0	00.164	0	09.993	0	19.823	0	29.653	0	39.482	0	49.312	0	59.141	1	08.971	1	0.003
2	0	00.328	0	10.157	0	19.987	0	29.816	0	39.646	0	49.475	0	59.305	1	09.135	2	.005
3	0	00.491	0	10.321	0	20.151	0	29.980	0	39.810	0	49.639	0	59.469	1	09.298	3	.008
4	0	00.655	0	10.485	0	20.314	0	30.144	0	39.974	0	49.803	0	59.633	1	09.462	4	.011
5	0	00.819	0	10.649	0	20.478	0	30.308	0	40.137	0	49.967	0	59.796	1	09.626	5	.014
6	0	00.983	0	10.813	0	20.642	0	30.472	0	40.301	0	50.131	0	59.960	1	09.790	6	.016
7	0	01.147	0	10.976	0	20.806	0	30.635	0	40.465	0	50.295	1	00.124	1	09.954	7	.019
8	0	01.311	0	11.140	0	20.970	0	30.799	0	40.629	0	50.458	1	00.288	1	10.118	8	.022
9	0	01.474	0	11.304	0	21.134	0	30.963	0	40.793	0	50.622	1	00.452	1	10.281	9	.025
10	0	01.638	0	11.468	0	21.297	0	31.127	0	40.956	0	50.786	1	00.616	1	10.445	10	.027
11	0	01.802	0	11.632	0	21.461	0	31.291	0	41.120	0	50.950	1	00.779	1	10.609	11	.030
12	0	01.966	0	11.795	0	21.625	0	31.455	0	41.284	0	51.114	1	00.943	1	10.773	12	.033
13	0	02.130	0	11.959	0	21.789	0	31.618	0	41.448	0	51.278	1	01.107	1	10.937	13	.035
14	0	02.294	0	12.123	0	21.953	0	31.782	0	41.612	0	51.441	1	01.271	1	11.100	14	.038
15	0	02.457	0	12.287	0	22.117	0	31.946	0	41.776	0	51.605	1	01.435	1	11.264	15	.041
16	0	02.621	0	12.451	0	22.280	0	32.110	0	41.939	0	51.769	1	01.599	1	11.428	16	.044
17	0	02.785	0	12.615	0	22.444	0	32.274	0	42.103	0	51.933	1	01.762	1	11.592	17	.046
18	0	02.949	0	12.778	0	22.608	0	32.438	0	42.267	0	52.097	1	01.926	1	11.756	18	.049
19	0	03.113	0	12.942	0	22.772	0	32.601	0	42.431	0	52.260	1	02.090	1	11.920	19	.052
20	0	03.277	0	13.106	0	22.936	0	32.765	0	42.595	0	52.424	1	02.254	1	12.083	20	.055
21	0	03.440	0	13.270	0	23.099	0	32.929	0	42.759	0	52.588	1	02.418	1	12.247	21	.057
22	0	03.604	0	13.434	0	23.263	0	33.093	0	42.922	0	52.752	1	02.582	1	12.411	22	.060
23	0	03.768	0	13.598	0	23.427	0	33.257	0	43.086	0	52.916	1	02.745	1	12.575	23	.063
24	0	03.932	0	13.761	0	23.591	0	33.420	0	43.250	0	53.080	1	02.909	1	12.739	24	.066
25	0	04.096	0	13.925	0	23.755	0	33.584	0	43.414	0	53.243	1	03.073	1	12.903	25	.068
26	0	04.259	0	14.089	0	23.919	0	33.748	0	43.578	0	53.407	1	03.237	1	13.066	26	.071
27	0	04.423	0	14.253	0	24.082	0	33.912	0	43.742	0	53.571	1	03.401	1	13.230	27	.074
28	0	04.587	0	14.417	0	24.246	0	34.076	0	43.905	0	53.735	1	03.564	1	13.394	28	.076
29	0	04.751	0	14.581	0	24.410	0	34.240	0	44.069	0	53.899	1	03.728	1	13.558	29	.079
30	0	04.915	0	14.744	0	24.574	0	34.403	0	44.233	0	54.063	1	03.892	1	13.722	30	.082
31	0	05.079	0	14.908	0	24.738	0	34.567	0	44.397	0	54.226	1	04.056	1	13.886	31	.085
32	0	05.242	0	15.072	0	24.902	0	34.731	0	44.561	0	54.390	1	04.220	1	14.049	32	.087
33	0	05.406	0	15.236	0	25.065	0	34.895	0	44.724	0	54.554	1	04.384	1	14.213	33	.090
34	0	05.570	0	15.400	0	25.229	0	35.059	0	44.888	0	54.718	1	04.547	1	14.377	34	.093
35	0	05.734	0	15.563	0	25.393	0	35.223	0	45.052	0	54.882	1	04.711	1	14.541	35	.096
36	0	05.898	0	15.727	0	25.557	0	35.386	0	45.216	0	55.046	1	04.875	1	14.705	36	.098
37	0	06.062	0	15.891	0	25.721	0	35.550	0	45.380	0	55.209	1	05.039	1	14.868	37	.101
38	0	06.225	0	16.055	0	25.885	0	35.714	0	45.544	0	55.373	1	05.203	1	15.032	38	.104
39	0	06.389	0	16.219	0	26.048	0	35.878	0	45.707	0	55.537	1	05.367	1	15.196	39	.106
40	0	06.553	0	16.383	0	26.212	0	36.042	0	45.871	0	55.701	1	05.530	1	15.360	40	.109
41	0	06.717	0	16.546	0	26.376	0	36.206	0	46.035	0	55.865	1	05.694	1	15.524	41	.112
42	0	06.881	0	16.710	0	26.540	0	36.369	0	46.199	0	56.028	1	05.858	1	15.688	42	.115
43	0	07.045	0	16.874	0	26.704	0	36.533	0	46.363	0	56.192	1	06.022	1	15.851	43	.117
44	0	07.208	0	17.038	0	26.867	0	36.697	0	46.527	0	56.356	1	06.186	1	16.015	44	.120
45	0	07.372	0	17.202	0	27.031	0	36.861	0	46.690	0	56.520	1	06.350	1	16.179	45	.123
46	0	07.536	0	17.366	0	27.195	0	37.025	0	46.854	0	56.684	1	06.513	1	16.343	46	.126
47	0	07.700	0	17.529	0	27.359	0	37.188	0	47.018	0	56.848	1	06.677	1	16.507	47	.128
48	0	07.864	0	17.693	0	27.523	0	37.352	0	47.182	0	57.011	1	06.841	1	16.671	48	.131
49	0	08.027	0	17.857	0	27.687	0	37.516	0	47.346	0	57.175	1	07.005	1	16.834	49	.134
50	0	08.191	0	18.021	0	27.850	0	37.680	0	47.510	0	57.339	1	07.169	1	16.998	50	.137
51	0	08.355	0	18.185	0	28.014	0	37.844	0	47.673	0	57.503	1	07.332	1	17.162	51	.139
52	0	08.519	0	18.349	0	28.178	0	38.008	0	47.837	0	57.667	1	07.496	1	17.326	52	.142
53	0	08.683	0	18.512	0	28.342	0	38.171	0	48.001	0	57.831	1	07.660	1	17.490	53	.145
54	0	08.847	0	18.676	0	28.506	0	38.335	0	48.165	0	57.994	1	07.824	1	17.654	54	.147
55	0	09.010	0	18.840	0	28.670	0	38.499	0	48.329	0	58.158	1	07.988	1	17.817	55	.150
56	0	09.174	0	19.004	0	28.833	0	38.663	0	48.492	0	58.322	1	08.152	1	17.981	56	.153
57	0	09.338	0	19.168	0	28.997	0	38.827	0	48.656	0	58.486	1	08.315	1	18.145	57	.156
58	0	09.502	0	19.331	0	29.161	0	38.991	0	48.820	0	58.650	1	08.479	1	18.309	58	.158
59	0	09.666	0	19.495	0	29.325	0	39.154	0	48.984	0	58.814	1	08.643	1	18.473	59	.161

TABLE III. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal.	8 h.	9 h.	10 h.	11 h.	12 h.	13 h.	14 h.	15 h.	For Seconds.
m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s. a.
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 07.784	2 17.614	2 27.443	1 0.003
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 07.948	2 17.778	2 27.607	2 .005
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 08.112	2 17.941	2 27.771	3 .008
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 08.276	2 18.105	2 27.935	4 .011
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 08.440	2 18.269	2 28.099	5 .014
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 08.603	2 18.433	2 28.263	6 .016
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 08.767	2 18.597	2 28.426	7 .019
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 08.931	2 18.761	2 28.590	8 .022
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 09.095	2 18.924	2 28.754	9 .025
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 09.259	2 19.088	2 28.918	10 .027
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 09.423	2 19.252	2 29.082	11 .030
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 09.586	2 19.416	2 29.245	12 .033
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 09.750	2 19.580	2 29.409	13 .035
13	1 20.766	1 30.596	1 40.425	1 50.255	2 00.084	2 09.914	2 19.744	2 29.573	14 .038
14	1 20.930	1 30.760	1 40.589	1 50.419	2 00.248	2 10.078	2 19.907	2 29.737	15 .041
15	1 21.094	1 30.923	1 40.753	1 50.583	2 00.412	2 10.242	2 20.071	2 29.901	16 .044
16	1 21.258	1 31.087	1 40.917	1 50.746	2 00.576	2 10.405	2 20.235	2 30.065	17 .046
17	1 21.422	1 31.251	1 41.081	1 50.910	2 00.740	2 10.569	2 20.399	2 30.228	18 .049
18	1 21.585	1 31.415	1 41.244	1 51.074	2 00.904	2 10.733	2 20.563	2 30.392	19 .052
19	1 21.749	1 31.579	1 41.408	1 51.238	2 01.067	2 10.897	2 20.727	2 30.556	20 .055
20	1 21.913	1 31.743	1 41.572	1 51.402	2 01.231	2 11.061	2 20.890	2 30.720	21 .057
21	1 22.077	1 31.906	1 41.736	1 51.565	2 01.395	2 11.225	2 21.054	2 30.884	22 .060
22	1 22.241	1 32.070	1 41.900	1 51.729	2 01.559	2 11.388	2 21.218	2 31.048	23 .063
23	1 22.404	1 32.234	1 42.064	1 51.893	2 01.723	2 11.552	2 21.382	2 31.212	24 .066
24	1 22.568	1 32.398	1 42.227	1 52.057	2 01.887	2 11.716	2 21.546	2 31.375	25 .068
25	1 22.732	1 32.562	1 42.391	1 52.221	2 02.050	2 11.880	2 21.709	2 31.539	26 .071
26	1 22.896	1 32.726	1 42.555	1 52.385	2 02.214	2 12.044	2 21.873	2 31.703	27 .074
27	1 23.060	1 32.889	1 42.719	1 52.548	2 02.378	2 12.208	2 22.037	2 31.867	28 .076
28	1 23.224	1 33.053	1 42.883	1 52.712	2 02.542	2 12.371	2 22.201	2 32.031	29 .079
29	1 23.387	1 33.217	1 43.047	1 52.876	2 02.706	2 12.535	2 22.365	2 32.194	30 .082
30	1 23.551	1 33.381	1 43.210	1 53.040	2 02.869	2 12.699	2 22.529	2 32.358	31 .085
31	1 23.715	1 33.545	1 43.374	1 53.204	2 03.033	2 12.863	2 22.692	2 32.522	32 .087
32	1 23.879	1 33.708	1 43.538	1 53.368	2 03.197	2 13.027	2 22.856	2 32.686	33 .090
33	1 24.043	1 33.872	1 43.702	1 53.531	2 03.361	2 13.191	2 23.020	2 32.850	34 .093
34	1 24.207	1 34.036	1 43.866	1 53.695	2 03.525	2 13.354	2 23.184	2 33.013	35 .096
35	1 24.370	1 34.200	1 44.029	1 53.859	2 03.689	2 13.518	2 23.348	2 33.177	36 .098
36	1 24.534	1 34.364	1 44.193	1 54.023	2 03.852	2 13.682	2 23.512	2 33.341	37 .101
37	1 24.698	1 34.528	1 44.357	1 54.187	2 04.016	2 13.846	2 23.675	2 33.505	38 .104
38	1 24.862	1 34.691	1 44.521	1 54.351	2 04.180	2 14.010	2 23.839	2 33.669	39 .106
39	1 25.026	1 34.855	1 44.685	1 54.514	2 04.344	2 14.173	2 24.003	2 33.833	40 .109
40	1 25.190	1 35.019	1 44.849	1 54.678	2 04.508	2 14.337	2 24.167	2 33.996	41 .112
41	1 25.353	1 35.183	1 45.012	1 54.842	2 04.672	2 14.501	2 24.331	2 34.160	42 .115
42	1 25.517	1 35.347	1 45.176	1 55.006	2 04.835	2 14.665	2 24.495	2 34.324	43 .117
43	1 25.681	1 35.511	1 45.340	1 55.170	2 04.999	2 14.829	2 24.659	2 34.488	44 .120
44	1 25.845	1 35.674	1 45.504	1 55.333	2 05.163	2 14.993	2 24.822	2 34.652	45 .123
45	1 26.009	1 35.838	1 45.668	1 55.497	2 05.327	2 15.156	2 24.986	2 34.816	46 .126
46	1 26.172	1 36.002	1 45.832	1 55.661	2 05.491	2 15.320	2 25.150	2 34.979	47 .128
47	1 26.336	1 36.166	1 45.995	1 55.825	2 05.655	2 15.484	2 25.314	2 35.143	48 .131
48	1 26.500	1 36.330	1 46.159	1 55.989	2 05.818	2 15.648	2 25.477	2 35.307	49 .134
49	1 26.664	1 36.493	1 46.323	1 56.153	2 05.982	2 15.812	2 25.641	2 35.471	50 .137
50	1 26.828	1 36.657	1 46.487	1 56.316	2 06.146	2 15.976	2 25.805	2 35.635	51 .139
51	1 26.992	1 36.821	1 46.651	1 56.480	2 06.310	2 16.139	2 25.969	2 35.798	52 .142
52	1 27.155	1 36.985	1 46.815	1 56.644	2 06.474	2 16.303	2 26.133	2 35.962	53 .145
53	1 27.319	1 37.149	1 46.978	1 56.808	2 06.637	2 16.467	2 26.297	2 36.126	54 .147
54	1 27.483	1 37.313	1 47.142	1 56.972	2 06.801	2 16.631	2 26.460	2 36.290	55 .150
55	1 27.647	1 37.476	1 47.306	1 57.136	2 06.965	2 16.795	2 26.624	2 36.454	56 .153
56	1 27.811	1 37.640	1 47.470	1 57.299	2 07.129	2 16.959	2 26.788	2 36.618	57 .156
57	1 27.975	1 37.804	1 47.634	1 57.463	2 07.293	2 17.122	2 26.952	2 36.781	58 .158
58	1 28.138	1 37.968	1 47.797	1 57.627	2 07.457	2 17.286	2 27.116	2 36.945	59 .161
59	1 28.302	1 38.132	1 47.961	1 57.791	2 07.620	2 17.450	2 27.280	2 37.109	

TABLE III. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	For Seconds.
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.
0	2 37.273	2 47.102	2 56.932	3 06.762	3 16.591	3 26.421	3 36.250	3 46.080	1 0.003
1	2 37.437	2 47.266	2 57.096	3 06.925	3 16.755	3 26.585	3 36.414	3 46.244	2 .005
2	2 37.601	2 47.430	2 57.260	3 07.089	3 16.919	3 26.748	3 36.578	3 46.407	3 .008
3	2 37.764	2 47.594	2 57.424	3 07.253	3 17.083	3 26.912	3 36.742	3 46.571	4 .011
4	2 37.928	2 47.758	2 57.587	3 07.417	3 17.246	3 27.076	3 36.906	3 46.735	5 .014
5	2 38.092	2 47.922	2 57.751	3 07.581	3 17.410	3 27.240	3 37.069	3 46.899	6 .016
6	2 38.256	2 48.085	2 57.915	3 07.745	3 17.574	3 27.404	3 37.233	3 47.063	7 .019
7	2 38.420	2 48.249	2 58.079	3 07.908	3 17.738	3 27.568	3 37.397	3 47.227	8 .022
8	2 38.584	2 48.413	2 58.243	3 08.072	3 17.902	3 27.731	3 37.561	3 47.390	9 .025
9	2 38.747	2 48.577	2 58.406	3 08.236	3 18.066	3 27.895	3 37.725	3 47.554	10 .027
10	2 38.911	2 48.741	2 58.570	3 08.400	3 18.229	3 28.059	3 37.889	3 47.718	11 .030
11	2 39.075	2 48.905	2 58.734	3 08.564	3 18.393	3 28.223	3 38.052	3 47.882	12 .033
12	2 39.239	2 49.068	2 58.898	3 08.728	3 18.557	3 28.387	3 38.216	3 48.046	13 .035
13	2 39.403	2 49.232	2 59.062	3 08.891	3 18.721	3 28.550	3 38.380	3 48.210	14 .038
14	2 39.566	2 49.396	2 59.226	3 09.055	3 18.885	3 28.714	3 38.544	3 48.373	15 .041
15	2 39.730	2 49.560	2 59.389	3 09.219	3 19.049	3 28.878	3 38.708	3 48.537	16 .044
16	2 39.894	2 49.724	2 59.553	3 09.383	3 19.212	3 29.042	3 38.871	3 48.701	17 .046
17	2 40.058	2 49.888	2 59.717	3 09.547	3 19.376	3 29.206	3 39.035	3 48.865	18 .049
18	2 40.222	2 50.051	2 59.881	3 09.710	3 19.540	3 29.370	3 39.199	3 49.029	19 .052
19	2 40.386	2 50.215	3 00.045	3 09.874	3 19.704	3 29.533	3 39.363	3 49.193	20 .055
20	2 40.549	2 50.379	3 00.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	21 .057
21	2 40.713	2 50.543	3 00.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	22 .060
22	2 40.877	2 50.707	3 00.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	23 .063
23	2 41.041	2 50.870	3 00.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	24 .066
24	2 41.205	2 51.034	3 00.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	25 .068
25	2 41.369	2 51.198	3 01.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	26 .071
26	2 41.532	2 51.362	3 01.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	27 .074
27	2 41.696	2 51.526	3 01.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	28 .076
28	2 41.860	2 51.690	3 01.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	29 .079
29	2 42.024	2 51.853	3 01.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	30 .082
30	2 42.188	2 52.017	3 01.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	31 .085
31	2 42.352	2 52.181	3 02.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	32 .087
32	2 42.515	2 52.345	3 02.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	33 .090
33	2 42.679	2 52.509	3 02.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	34 .093
34	2 42.843	2 52.673	3 02.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	35 .096
35	2 43.007	2 52.836	3 02.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	36 .098
36	2 43.171	2 53.000	3 02.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	37 .101
37	2 43.334	2 53.164	3 02.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	38 .104
38	2 43.498	2 53.328	3 03.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	39 .106
39	2 43.662	2 53.492	3 03.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	40 .109
40	2 43.826	2 53.656	3 03.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	41 .112
41	2 43.990	2 53.819	3 03.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	42 .115
42	2 44.154	2 53.983	3 03.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	43 .117
43	2 44.317	2 54.147	3 03.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	44 .120
44	2 44.481	2 54.311	3 04.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	45 .123
45	2 44.645	2 54.475	3 04.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	46 .126
46	2 44.809	2 54.638	3 04.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	47 .128
47	2 44.973	2 54.802	3 04.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	48 .131
48	2 45.137	2 54.966	3 04.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	49 .134
49	2 45.300	2 55.130	3 04.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	50 .137
50	2 45.464	2 55.294	3 05.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	51 .139
51	2 45.628	2 55.458	3 05.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	52 .142
52	2 45.792	2 55.621	3 05.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	53 .145
53	2 45.956	2 55.785	3 05.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	54 .147
54	2 46.120	2 55.949	3 05.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	55 .150
55	2 46.283	2 56.113	3 05.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	56 .153
56	2 46.447	2 56.277	3 06.106	3 15.936	3 25.766	3 35.595	3 45.425	3 55.254	57 .156
57	2 46.611	2 56.441	3 06.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	58 .158
58	2 46.775	2 56.604	3 06.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	59 .161
59	2 46.939	2 56.768	3 06.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	

TABLE III. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	0 h.		1 h.		2 h.		3 h.		4 h.		5 h.		6 h.		7 h.		For Seconds.	
	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.
0	0	00.000	0	09.856	0	19.713	0	29.569	0	39.426	0	49.282	0	59.139	1	08.995	1	0.003
1	0	00.164	0	10.021	0	19.877	0	29.734	0	39.590	0	49.447	0	59.303	1	09.160	2	.005
2	0	00.329	0	10.185	0	20.041	0	29.898	0	39.754	0	49.611	0	59.467	1	09.324	3	.008
3	0	00.493	0	10.349	0	20.206	0	30.062	0	39.919	0	49.775	0	59.632	1	09.488	4	.011
4	0	00.657	0	10.514	0	20.370	0	30.227	0	40.083	0	49.939	0	59.796	1	09.652	5	.014
5	0	00.821	0	10.678	0	20.534	0	30.391	0	40.247	0	50.104	0	59.960	1	09.817	6	.016
6	0	00.986	0	10.842	0	20.699	0	30.555	0	40.412	0	50.268	1	00.124	1	09.981	7	.019
7	0	01.150	0	11.006	0	20.863	0	30.719	0	40.576	0	50.432	1	00.289	1	10.145	8	.022
8	0	01.314	0	11.171	0	21.027	0	30.884	0	40.740	0	50.597	1	00.453	1	10.310	9	.025
9	0	01.478	0	11.335	0	21.191	0	31.048	0	40.904	0	50.761	1	00.617	1	10.474	10	.027
10	0	01.643	0	11.499	0	21.356	0	31.212	0	41.069	0	50.925	1	00.782	1	10.638	11	.030
11	0	01.807	0	11.663	0	21.520	0	31.376	0	41.233	0	51.089	1	00.946	1	10.802	12	.033
12	0	01.971	0	11.828	0	21.684	0	31.541	0	41.397	0	51.254	1	01.110	1	10.967	13	.036
13	0	02.136	0	11.992	0	21.849	0	31.705	0	41.561	0	51.418	1	01.274	1	11.131	14	.038
14	0	02.300	0	12.156	0	22.013	0	31.869	0	41.726	0	51.582	1	01.439	1	11.295	15	.041
15	0	02.464	0	12.321	0	22.177	0	32.034	0	41.890	0	51.746	1	01.603	1	11.459	16	.044
16	0	02.628	0	12.485	0	22.341	0	32.198	0	42.054	0	51.911	1	01.767	1	11.624	17	.047
17	0	02.793	0	12.649	0	22.506	0	32.362	0	42.219	0	52.075	1	01.932	1	11.788	18	.049
18	0	02.957	0	12.813	0	22.670	0	32.526	0	42.383	0	52.239	1	02.096	1	11.952	19	.052
19	0	03.121	0	12.978	0	22.834	0	32.691	0	42.547	0	52.404	1	02.260	1	12.117	20	.055
20	0	03.285	0	13.142	0	22.998	0	32.855	0	42.711	0	52.568	1	02.424	1	12.281	21	.057
21	0	03.450	0	13.306	0	23.163	0	33.019	0	42.876	0	52.732	1	02.589	1	12.445	22	.060
22	0	03.614	0	13.471	0	23.327	0	33.183	0	43.040	0	52.896	1	02.753	1	12.609	23	.063
23	0	03.778	0	13.635	0	23.491	0	33.348	0	43.204	0	53.061	1	02.917	1	12.774	24	.066
24	0	03.943	0	13.799	0	23.656	0	33.512	0	43.368	0	53.225	1	03.081	1	12.938	25	.068
25	0	04.107	0	13.963	0	23.820	0	33.676	0	43.533	0	53.389	1	03.246	1	13.102	26	.071
26	0	04.271	0	14.128	0	23.984	0	33.841	0	43.697	0	53.554	1	03.410	1	13.266	27	.074
27	0	04.435	0	14.292	0	24.148	0	34.005	0	43.861	0	53.718	1	03.574	1	13.431	28	.077
28	0	04.600	0	14.456	0	24.313	0	34.169	0	44.026	0	53.882	1	03.739	1	13.595	29	.079
29	0	04.764	0	14.620	0	24.477	0	34.333	0	44.190	0	54.046	1	03.903	1	13.759	30	.082
30	0	04.928	0	14.785	0	24.641	0	34.498	0	44.354	0	54.211	1	04.067	1	13.924	31	.085
31	0	05.093	0	14.949	0	24.805	0	34.662	0	44.518	0	54.375	1	04.231	1	14.088	32	.088
32	0	05.257	0	15.113	0	24.970	0	34.826	0	44.683	0	54.539	1	04.396	1	14.252	33	.090
33	0	05.421	0	15.278	0	25.134	0	34.990	0	44.847	0	54.703	1	04.560	1	14.416	34	.093
34	0	05.585	0	15.442	0	25.298	0	35.155	0	45.011	0	54.868	1	04.724	1	14.581	35	.096
35	0	05.750	0	15.606	0	25.463	0	35.319	0	45.176	0	55.032	1	04.888	1	14.745	36	.099
36	0	05.914	0	15.770	0	25.627	0	35.483	0	45.340	0	55.196	1	05.053	1	14.909	37	.101
37	0	06.078	0	15.935	0	25.791	0	35.648	0	45.504	0	55.361	1	05.217	1	15.073	38	.104
38	0	06.242	0	16.099	0	25.955	0	35.812	0	45.668	0	55.525	1	05.381	1	15.238	39	.107
39	0	06.407	0	16.263	0	26.120	0	35.976	0	45.833	0	55.689	1	05.546	1	15.402	40	.110
40	0	06.571	0	16.427	0	26.284	0	36.140	0	45.997	0	55.853	1	05.710	1	15.566	41	.112
41	0	06.735	0	16.592	0	26.448	0	36.305	0	46.161	0	56.018	1	05.874	1	15.731	42	.115
42	0	06.900	0	16.756	0	26.612	0	36.469	0	46.325	0	56.182	1	06.038	1	15.895	43	.118
43	0	07.064	0	16.920	0	26.777	0	36.633	0	46.490	0	56.346	1	06.203	1	16.059	44	.120
44	0	07.228	0	17.085	0	26.941	0	36.798	0	46.654	0	56.510	1	06.367	1	16.223	45	.123
45	0	07.392	0	17.249	0	27.105	0	36.962	0	46.818	0	56.675	1	06.531	1	16.388	46	.126
46	0	07.557	0	17.413	0	27.270	0	37.126	0	46.983	0	56.839	1	06.695	1	16.552	47	.129
47	0	07.721	0	17.577	0	27.434	0	37.290	0	47.147	0	57.003	1	06.860	1	16.716	48	.131
48	0	07.885	0	17.742	0	27.598	0	37.455	0	47.311	0	57.168	1	07.024	1	16.881	49	.134
49	0	08.049	0	17.906	0	27.762	0	37.619	0	47.475	0	57.332	1	07.188	1	17.045	50	.137
50	0	08.214	0	18.070	0	27.927	0	37.783	0	47.640	0	57.496	1	07.353	1	17.209	51	.140
51	0	08.378	0	18.234	0	28.091	0	37.947	0	47.804	0	57.660	1	07.517	1	17.373	52	.142
52	0	08.542	0	18.399	0	28.255	0	38.112	0	47.968	0	57.825	1	07.681	1	17.538	53	.145
53	0	08.707	0	18.563	0	28.420	0	38.276	0	48.132	0	57.989	1	07.845	1	17.702	54	.148
54	0	08.871	0	18.727	0	28.584	0	38.440	0	48.297	0	58.153	1	08.010	1	17.866	55	.151
55	0	09.035	0	18.892	0	28.748	0	38.605	0	48.461	0	58.317	1	08.174	1	18.030	56	.153
56	0	09.199	0	19.056	0	28.912	0	38.769	0	48.625	0	58.482	1	08.338	1	18.195	57	.156
57	0	09.364	0	19.220	0	29.077	0	38.933	0	48.790	0	58.646	1	08.502	1	18.359	58	.159
58	0	09.528	0	19.384	0	29.241	0	39.097	0	48.954	0	58.810	1	08.667	1	18.523	59	.162
59	0	09.692	0	19.549	0	29.405	0	39.262	0	49.118	0	58.975	1	08.831	1	18.688		

TABLE III. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	8 h.	9 h.	10 h.	11 h.	12 h.	13 h.	14 h.	15 h.	For Seconds.
0	1 18.852	1 28.708	1 38.568	1 48.421	1 58.278	2 08.134	2 17.991	2 27.847	a. s.
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 08.298	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 08.463	2 18.319	2 28.176	2 .005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 08.627	2 18.483	2 28.340	3 .008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 08.791	2 18.648	2 28.504	4 .011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 08.956	2 18.812	2 28.668	5 .014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 09.120	2 18.976	2 28.833	6 .016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 09.284	2 19.141	2 28.997	7 .019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 09.448	2 19.305	2 29.161	8 .022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 09.613	2 19.469	2 29.326	9 .025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 09.777	2 19.633	2 29.490	10 .027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 00.085	2 09.941	2 19.798	2 29.654	11 .030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 00.249	2 10.105	2 19.962	2 29.818	12 .033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 00.413	2 10.270	2 20.126	2 29.983	13 .036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 00.578	2 10.434	2 20.290	2 30.147	14 .038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 00.742	2 10.598	2 20.455	2 30.311	15 .041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 00.906	2 10.763	2 20.619	2 30.476	16 .044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 01.070	2 10.927	2 20.783	2 30.640	17 .047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 01.235	2 11.091	2 20.948	2 30.804	18 .049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 01.399	2 11.255	2 21.112	2 30.968	19 .052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 01.563	2 11.420	2 21.276	2 31.133	20 .055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 01.727	2 11.584	2 21.440	2 31.297	21 .057
22	1 22.466	1 32.323	1 42.179	1 52.035	2 01.892	2 11.748	2 21.605	2 31.461	22 .060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 02.056	2 11.912	2 21.769	2 31.625	23 .063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 02.220	2 12.077	2 21.933	2 31.790	24 .066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 02.385	2 12.241	2 22.098	2 31.954	25 .068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 02.549	2 12.405	2 22.262	2 32.118	26 .071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 02.713	2 12.570	2 22.426	2 32.283	27 .074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 02.877	2 12.734	2 22.590	2 32.447	28 .077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 03.042	2 12.898	2 22.755	2 32.611	29 .079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 03.206	2 13.062	2 22.919	2 32.775	30 .082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 03.370	2 13.227	2 23.083	2 32.940	31 .085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 03.534	2 13.391	2 23.247	2 33.104	32 .088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 03.699	2 13.555	2 23.412	2 33.268	33 .090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 03.863	2 13.720	2 23.576	2 33.432	34 .093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 04.027	2 13.884	2 23.740	2 33.597	35 .096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 04.192	2 14.048	2 23.905	2 33.761	36 .099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 04.356	2 14.212	2 24.069	2 33.925	37 .101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 04.520	2 14.377	2 24.233	2 34.090	38 .104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 04.684	2 14.541	2 24.397	2 34.254	39 .107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 04.849	2 14.705	2 24.562	2 34.418	40 .110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 05.013	2 14.869	2 24.726	2 34.582	41 .112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 05.177	2 15.034	2 24.890	2 34.747	42 .115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 05.342	2 15.198	2 25.054	2 34.911	43 .118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 05.506	2 15.362	2 25.219	2 35.075	44 .120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 05.670	2 15.527	2 25.383	2 35.239	45 .123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 05.834	2 15.691	2 25.547	2 35.404	46 .126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 05.999	2 15.855	2 25.712	2 35.568	47 .129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 06.163	2 16.019	2 25.876	2 35.732	48 .131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 06.327	2 16.184	2 26.040	2 35.897	49 .134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 06.491	2 16.348	2 26.204	2 36.061	50 .137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 06.656	2 16.512	2 26.369	2 36.225	51 .140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 06.820	2 16.676	2 26.533	2 36.389	52 .142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 06.984	2 16.841	2 26.697	2 36.554	53 .145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 07.149	2 17.005	2 26.861	2 36.718	54 .148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 07.313	2 17.169	2 27.026	2 36.882	55 .151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 07.477	2 17.334	2 27.190	2 37.047	56 .153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 07.641	2 17.498	2 27.354	2 37.211	57 .156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 07.806	2 17.662	2 27.519	2 37.375	58 .159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 07.970	2 17.826	2 27.683	2 37.539	59 .162

TABLE III. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	16 h.		17 h.		18 h.		19 h.		20 h.		21 h.		22 h.		23 h.		For Seconds.	
	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	m.	s.	s.	."
0	2	37.704	2	47.560	2	57.417	3	07.273	3	17.129	3	26.986	3	36.842	3	46.699	1	0.008
1	2	37.868	2	47.724	2	57.581	3	07.437	3	17.294	3	27.150	3	37.007	3	46.863	2	.005
2	2	38.032	2	47.889	2	57.745	3	07.602	3	17.458	3	27.315	3	37.171	3	47.027	3	.008
3	2	38.196	2	48.053	2	57.909	3	07.766	3	17.622	3	27.479	3	37.335	3	47.192	4	.011
4	2	38.361	2	48.217	2	58.074	3	07.930	3	17.787	3	27.643	3	37.500	3	47.356	5	.014
5	2	38.525	2	48.381	2	58.238	3	08.094	3	17.951	3	27.807	3	37.664	3	47.520	6	.016
6	2	38.689	2	48.546	2	58.402	3	08.259	3	18.115	3	27.972	3	37.828	3	47.685	7	.019
7	2	38.854	2	48.710	2	58.566	3	08.423	3	18.279	3	28.136	3	37.992	3	47.849	8	.022
8	2	39.018	2	48.874	2	58.731	3	08.587	3	18.444	3	28.300	3	38.157	3	48.013	9	.025
9	2	39.182	2	49.039	2	58.895	3	08.751	3	18.608	3	28.464	3	38.321	3	48.177	10	.027
10	2	39.346	2	49.203	2	59.059	3	08.916	3	18.772	3	28.629	3	38.485	3	48.342	11	.030
11	2	39.511	2	49.367	2	59.224	3	09.080	3	18.937	3	28.793	3	38.649	3	48.506	12	.033
12	2	39.675	2	49.531	2	59.388	3	09.244	3	19.101	3	28.957	3	38.814	3	48.670	13	.036
13	2	39.839	2	49.696	2	59.552	3	09.409	3	19.265	3	29.122	3	38.978	3	48.834	14	.038
14	2	40.003	2	49.860	2	59.716	3	09.573	3	19.429	3	29.286	3	39.142	3	48.999	15	.041
15	2	40.168	2	50.024	2	59.881	3	09.737	3	19.594	3	29.450	3	39.307	3	49.163	16	.044
16	2	40.332	2	50.188	3	00.045	3	09.901	3	19.758	3	29.614	3	39.471	3	49.327	17	.047
17	2	40.496	2	50.353	3	00.209	3	10.066	3	19.922	3	29.779	3	39.635	3	49.492	18	.049
18	2	40.661	2	50.517	3	00.373	3	10.230	3	20.086	3	29.943	3	39.799	3	49.656	19	.052
19	2	40.825	2	50.681	3	00.538	3	10.394	3	20.251	3	30.107	3	39.964	3	49.820	20	.055
20	2	40.989	2	50.846	3	00.702	3	10.559	3	20.415	3	30.271	3	40.128	3	49.984	21	.057
21	2	41.153	2	51.010	3	00.866	3	10.723	3	20.579	3	30.436	3	40.292	3	50.149	22	.060
22	2	41.318	2	51.174	3	01.031	3	10.887	3	20.744	3	30.600	3	40.456	3	50.313	23	.063
23	2	41.482	2	51.338	3	01.195	3	11.051	3	20.908	3	30.764	3	40.621	3	50.477	24	.066
24	2	41.646	2	51.503	3	01.359	3	11.216	3	21.072	3	30.929	3	40.785	3	50.642	25	.068
25	2	41.810	2	51.667	3	01.523	3	11.380	3	21.236	3	31.093	3	40.949	3	50.806	26	.071
26	2	41.975	2	51.831	3	01.688	3	11.544	3	21.401	3	31.257	3	41.114	3	50.970	27	.074
27	2	42.139	2	51.995	3	01.852	3	11.708	3	21.565	3	31.421	3	41.278	3	51.134	28	.077
28	2	42.303	2	52.160	3	02.016	3	11.873	3	21.729	3	31.586	3	41.442	3	51.299	29	.079
29	2	42.468	2	52.324	3	02.181	3	12.037	3	21.893	3	31.750	3	41.606	3	51.463	30	.082
30	2	42.632	2	52.488	3	02.345	3	12.201	3	22.058	3	31.914	3	41.771	3	51.627	31	.085
31	2	42.796	2	52.653	3	02.509	3	12.366	3	22.222	3	32.078	3	41.935	3	51.791	32	.088
32	2	42.960	2	52.817	3	02.673	3	12.530	3	22.386	3	32.243	3	42.099	3	51.956	33	.090
33	2	43.125	2	52.981	3	02.838	3	12.694	3	22.551	3	32.407	3	42.264	3	52.120	34	.093
34	2	43.289	2	53.145	3	03.002	3	12.858	3	22.715	3	32.571	3	42.428	3	52.284	35	.096
35	2	43.453	2	53.310	3	03.166	3	13.023	3	22.879	3	32.736	3	42.592	3	52.449	36	.099
36	2	43.617	2	53.474	3	03.330	3	13.187	3	23.043	3	32.900	3	42.756	3	52.613	37	.101
37	2	43.782	2	53.638	3	03.495	3	13.351	3	23.208	3	33.064	3	42.921	3	52.777	38	.104
38	2	43.946	2	53.803	3	03.659	3	13.515	3	23.372	3	33.228	3	43.085	3	52.941	39	.107
39	2	44.110	2	53.967	3	03.823	3	13.680	3	23.536	3	33.393	3	43.249	3	53.106	40	.110
40	2	44.275	2	54.131	3	03.988	3	13.844	3	23.700	3	33.557	3	43.413	3	53.270	41	.112
41	2	44.439	2	54.295	3	04.152	3	14.008	3	23.865	3	33.721	3	43.578	3	53.434	42	.115
42	2	44.603	2	54.460	3	04.316	3	14.173	3	24.029	3	33.886	3	43.742	3	53.598	43	.118
43	2	44.767	2	54.624	3	04.480	3	14.337	3	24.193	3	34.050	3	43.906	3	53.763	44	.120
44	2	44.932	2	54.788	3	04.645	3	14.501	3	24.358	3	34.214	3	44.071	3	53.927	45	.123
45	2	45.096	2	54.952	3	04.809	3	14.665	3	24.522	3	34.378	3	44.235	3	54.091	46	.126
46	2	45.260	2	55.117	3	04.973	3	14.830	3	24.686	3	34.543	3	44.399	3	54.256	47	.129
47	2	45.425	2	55.281	3	05.137	3	14.994	3	24.850	3	34.707	3	44.563	3	54.420	48	.131
48	2	45.589	2	55.445	3	05.302	3	15.158	3	25.015	3	34.871	3	44.728	3	54.584	49	.134
49	2	45.753	2	55.610	3	05.466	3	15.322	3	25.179	3	35.035	3	44.892	3	54.748	50	.137
50	2	45.917	2	55.774	3	05.630	3	15.487	3	25.343	3	35.200	3	45.056	3	54.913	51	.140
51	2	46.082	2	55.938	3	05.795	3	15.651	3	25.508	3	35.364	3	45.220	3	55.077	52	.142
52	2	46.246	2	56.102	3	05.959	3	15.815	3	25.672	3	35.528	3	45.385	3	55.241	53	.145
53	2	46.410	2	56.267	3	06.123	3	15.980	3	25.836	3	35.693	3	45.549	3	55.405	54	.148
54	2	46.574	2	56.431	3	06.287	3	16.144	3	26.000	3	35.857	3	45.713	3	55.570	55	.151
55	2	46.739	2	56.595	3	06.452	3	16.308	3	26.165	3	36.021	3	45.878	3	55.734	56	.153
56	2	46.903	2	56.759	3	06.616	3	16.472	3	26.329	3	36.185	3	46.042	3	55.898	57	.156
57	2	47.067	2	56.924	3	06.780	3	16.637	3	26.493	3	36.350	3	46.206	3	56.063	58	.159
58	2	47.232	2	57.088	3	06.944	3	16.801	3	26.657	3	36.514	3	46.370	3	56.227	59	.162
59	2	47.396	2	57.252	3	07.109	3	16.965	3	26.822	3	36.678	3	46.535	3	56.391		

TABLE. IV.

TABLE GIVING THE CORRECTION OF α URSÆ MINORIS AND δ URSÆ MINORIS
FOR TERMS OF NUTATION INVOLVING 2ζ .

D or D - 180°.	α Ursæ Minoris.		δ Ursæ Minoris.		D or D - 180°.	D or D - 180°.	α Ursæ Minoris.		δ Ursæ Minoris.		D or D - 180°.
	R.A.	Dec.	R.A.	Dec.			R.A.	Dec.	R.A.	Dec.	
0	-.229	+.03	-.008	-.09	90	45	-.075	-.08	+.078	-.01	135
1	.231	.02	.005	.09	91	46	.067	.08	.078	-.01	136
2	.233	.02	-.003	.09	92	47	.058	.08	.079	.00	137
3	.235	.02	.000	.09	93	48	.050	.08	.079	.00	138
4	.236	.01	+.003	.09	94	49	.042	.08	.078	.00	139
5	-.238	+.01	+.006	-.09	95	50	-.034	-.08	+.078	+.01	140
6	.239	+.01	.006	.09	96	51	.026	.08	.078	.01	141
7	.240	.00	.011	.09	97	52	.017	.08	.077	.01	142
8	.240	.00	.013	.09	98	53	-.008	.08	.077	.02	143
9	.240	.00	.016	.09	99	54	.000	.08	.077	.02	144
10	-.240	.00	+.019	-.09	100	55	+.008	-.08	+.076	+.02	145
11	.240	-.01	.021	.09	101	56	.016	.08	.075	.03	146
12	.239	.01	.024	.08	102	57	.025	.08	.074	.03	147
13	.238	.01	.026	.08	103	58	.033	.08	.073	.03	148
14	.236	.02	.029	.08	104	59	.042	.08	.072	.04	149
15	-.235	-.02	+.032	-.08	105	60	+.050	-.08	+.071	+.04	150
16	.233	.02	.034	.08	106	61	.058	.08	.070	.04	151
17	.231	.03	.037	.08	107	62	.066	.08	.069	.04	152
18	.229	.03	.039	.08	108	63	.074	.08	.067	.05	153
19	.226	.03	.042	.08	109	64	.082	.08	.066	.05	154
20	-.223	-.03	+.044	-.07	110	65	+.090	-.07	+.064	+.05	155
21	.220	.03	.046	.07	111	66	.097	.07	.062	.05	156
22	.216	.04	.048	.07	112	67	.105	.07	.061	.06	157
23	.212	.04	.050	.07	113	68	.112	.07	.060	.06	158
24	.208	.04	.052	.07	114	69	.120	.07	.058	.06	159
25	-.204	-.04	+.054	-.06	115	70	+.127	-.07	+.056	+.06	160
26	.200	.05	.055	.06	116	71	.134	.07	.054	.06	161
27	.196	.05	.057	.06	117	72	.141	.07	.052	.07	162
28	.190	.05	.059	.06	118	73	.148	.07	.050	.07	163
29	.185	.05	.061	.06	119	74	.154	.06	.048	.07	164
30	-.179	-.05	+.063	-.05	120	75	+.161	-.06	+.046	+.07	165
31	.173	.06	.064	.05	121	76	.167	.06	.045	.07	166
32	.168	.06	.065	.05	122	77	.173	.06	.043	.08	167
33	.162	.06	.067	.05	123	78	.178	.05	.040	.08	168
34	.155	.06	.068	.04	124	79	.184	.05	.037	.08	169
35	-.148	-.06	+.070	-.04	125	80	+.189	-.05	+.034	+.08	170
36	.141	.07	.071	.04	126	81	.194	.05	.031	.08	171
37	.133	.07	.072	.03	127	82	.199	.04	.029	.08	172
38	.126	.07	.073	.03	128	83	.204	.04	.026	.08	173
39	.119	.07	.074	.03	129	84	.207	.04	.024	.09	174
40	-.113	-.07	+.075	-.02	130	85	+.212	-.04	+.022	+.09	175
41	.106	.07	.076	.02	131	86	.216	.03	.020	.09	176
42	.099	.07	.077	.02	132	87	.220	.03	.017	.09	177
43	.092	.08	.077	.02	133	88	.223	.03	.013	.09	178
44	.084	.08	.078	.01	134	89	.226	.03	.011	.09	179
45	-.075	-.08	+.078	-.01	135	90	+.229	-.03	+.008	+.09	180

NOTE. — These corrections were omitted in the places of these Stars in the volumes of this Ephemeris for 1857, 1858, and 1859. They have been applied in this volume.

